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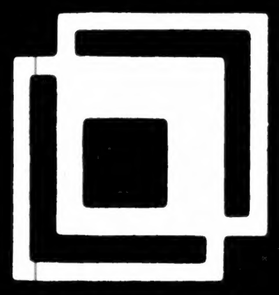
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Vol. 1010 Number 1

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

September 1, 1981

U.S.
DEPARTMENT
OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

September 1, 1981 Volume 1010 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Board of Appeals Decisions Rendered in the Month of July 1981

Affirmed	181
Affirmed in Part	18
Reversed	75
Total	274

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,848,950, Re. S.N. 253,650, Filed May 13, 1981, Cl. 339/90R, ELECTRICAL CONNECTOR, Larry L. McCormick, et al., Owner of Record: *G & H Technology, Inc., Santa Monica, Calif.,* Attorney or Agent: Francis N. Carten, et al., Ex. Gp.: 322

3,851,872, Re. S.N. 242,747, Filed Mar. 11, 1981, Cl. 271/173, SORTING APPARATUS FOR COLLATING SIMPLEX AND DUPLEX COPIES, Dennis Gerbasi, Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: John E. Beck, Ex. Gp.: 313

3,910,119, Re. S.N. 272,317, Filed June 10, 1981, Cl. 73/343.5, RECORDING THERMOMETER, William H. Maxwell, Owner of Record: *Time and Temperature Co., Ventura, Calif.,* Attorney or Agent: Patrick F. Bright, et al., Ex. Gp.: 244

4,104,500, Re. S.N. 260,010, Filed May 4, 1981, Cl. 219/69V, DEVICE FOR ELECTRICAL DISCHARGE MACHINING WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLE TRANSLATIONAL MOVEMENT OF THE ELECTRODES, George Wyss, Owner of Record: *Ateliers des Charmilles, S.A., Geneva, Switzerland,* Attorney or Agent: Claude A. Patalidis, et al., Ex. Gp.: 213

4,104,501, Re. S.N. 260,305, Filed May 4, 1981, Cl. 219/69M, METHOD OF ELECTRICAL DISCHARGE MACHINE WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES, George Wyss, Owner of Record: *Ateliers des Charmilles, S.A., Geneva, Switzerland,* Attorney or Agent: Claude A. Patalidis, et al., Ex. Gp.: 213

4,135,400, Re. S.N. 272,319, Filed June 10, 1981, Cl. 73/343.5, ELECTRONIC THERMOGRAPH, William H. Maxwell, et al., Owner of Record: *Time and Temperature Co., Los Angeles, Calif.,* Attorney or Agent: Patrick F. Bright, et al., Ex. Gp.: 244

4,156,984, Re. S.N. 270,903, Filed June 5, 1981, Cl. 43/105, MARINE LIFE TRAP, Warren H. Kinser, Sr., Owner of Record: *Inventor,* Attorney or Agent: Harvey B. Jacobson, Ex. Gp.: 323

4,161,503, Re. S.N. 270,843, Filed June 5, 1981, Cl. 264/136, METHOD OF MAKING MULTITUBULAR SHEATHS, Stanley C. Foulkes, et al., Owner of Record: *Chloride Group Ltd., London, England,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 147

4,189,686, Re. S.N. 271,141, Filed June 8, 1981, Cl. 331/94.5PE, COMBINATION FREE ELECTRON AND GASEOUS LASER, Charles A. Brau, et al., Owner of Record: *The United States of America as Represented by the United States Energy Research and Development Administration,* Attorney or Agent: James E. Denny, et al., Ex. Gp.: 254

4,206,851, Re. S.N. 257,597, Filed Apr. 27, 1981, Cl. 215/246, TAMPERPROOF CLOSURE, Efrem M. Ostrowsky, Owner of Record: *Ethyl Products Co., Baton Rouge, La.,* Attorney or Agent: Donald L. Johnson, et al., Ex. Gp.: 241

4,248,137, Re. S.N. 257,791, Filed Apr. 27, 1981, Cl. 91/375, FEEDBACK MECHANISM FOR VARIABLE DISPLACEMENT HYDRAULIC DEVICE HAVING AN ELECTROHYDRAULIC CONTROLLER, John T. Caruso, Owner of Record: *Moog, Inc., East Aurora, N.Y.,* Attorney or Agent: Kenneth R. Sommer, et al., Ex. Gp.: 343

4,249,381, Re. S.N. 261,356, Filed May 7, 1981, Cl. 60/562, MASTER CYLINDER, Robert F. Gaiser, Owner of Record: *The Bendix Corp., Southfiled, Mich.,* Attorney or Agent: Leo H. McCormick, Jr., et al., Ex. Gp.: 341

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,171,729, Reexam. No. 90/000,038, Requested: July 29, 1981, Cl. 65/76, METHOD OF MAKING A PARISON, Walter Anderson, Owner of Record: *Virginia Kremm,* Attorney or Agent: Stone, Nierman, Bumeister & Zimmer, Ex. Gp.: 173, Requester: Thatcher Glass Manufacturing Co., Greenwich, Conn.

3,589,495, Reexam. No. 90/000,042, Requested: July 31, 1981, Cl. 198/374, BRICK MAKING MACHINE, Florentin J. Pearne, et al., Owner of Record: *Aircraft Mechanic, Inc.,* Attorney or Agent: McNenny, Farrington, Pearne & Gordon, Ex. Gp.: 310, Requester: EA Industries, Inc., Asheville, N.C.

3,610,994, Reexam. No. 90/000,046, Requested: Aug. 4, 1981, Cl. 307/17, CATHODE-RAY TUBES OF TELEVISION TYPE FOR X-RAYS PROTECTION, Edward Emanuel Sheldon, Owner of Record: *Inventor,* Attorney or Agent: Polachek & Saulsbury, Ex. Gp.: 211, Requester: Richard D. Kelly, Oblon, Fisher, Spivak, McClelland & Maier, Arlington, Va.

3,839,640, Reexam. No. 90/000,041, Requested: July 30, 1981, Cl. 250/353, DIFFERENTIAL PYROELECTRIC SENSOR, John A. Rossin, Owner of Record: *Rossin Corp.,* Attorney or Agent: Evert Allen Autrey, Ex. Gp.: 250, Requester: Eltec Instruments, Inc., Daytona Beach, Fla.

4,013,395, Reexam. No. 90/000,047, Requested: Aug. 6, 1981, Cl. 431/9, AERODYNAMIC FUEL COMBUSTOR, Alex F. Wormser, Owner of Record: *Wingaersheek, Inc.,* Attorney or Agent: William W. Rymer, Ex. Gp.: 345, Requester: Uniweld Products, Inc., Fort Lauderdale, Fla.

4,257,561, Reexam. No. 90/000,045, Requested: Aug. 4, 1981, Cl. 239/581, CHILD-RESISTANT DISPENSING NOZZLE ASSEMBLY, James C. McKinney, Owner of Record: *Ethyl Products Co.,* Attorney or Agent: John F. Sieberth, Ex. Gp.: 313 Requester: Watson, Cole, Grindle & Watson, Washington, D.C.

Vacancy Announcement
Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of $50,113 per annum, which is the current statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

Qualifications: Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;
2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Crystal Plaza 2, Room 9C05
2011 Jefferson Davis Hwy.
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

MARGARET M. LAURENCE
July 27, 1981 *Assistant Commissioner for Trademarks.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Sept. 25, 1981:

Organ, Mark E., 2700 Chadwick, Plano, Tex. 75075
O'Hare, Thomas P., 1121 Arlington Blvd., Apt. 633T, Arlington, Va. 22209
Redman, John W., 9 High Ridge Rd., Ocean, N.J. 07712
Sherr, Kittie M., 17 Hamilton Ave., Weehawken, N.J. 07087

LUTRELLE F. PARKER
July 29, 1981 *Chairman, Committee on Enrollment.*

Automated Search Experiments

The United States Patent and Trademark Office (PTO) intends to carry out research and evaluation projects dealing with automated full-text searching of U.S. Patents.

To further this objective, the PTO has entered into an agreement with Mead Data Central to provide the PTO access to and support for the use of the LEXIS full-text system. Using that system, the PTO will test and evaluate the effectiveness of searching the full text of over 50,000 U.S. patents. As part of this experiment, the PTO will furnish to Mead Data Central a special compilation of tapes from an extensive library of computer tapes containing the full text of U.S. patents from 1970 to the present.

The PTO would welcome multiple experiments using the same or similar techniques and/or technology as Mead Data Central, and thus, the PTO is willing to enter into the same agreement, or a similar agreement on mutually agreeable terms, with any other responsible party, within 18 months from the date of this notice.

Additional information regarding this matter may be obtained from:

Donald P. Stein, Director
Office of Search Systems
U.S. Patent & Trademark Office
Washington, D.C. 20231
TEL: 703-557-3763

GERALD J. MOSSINGHOFF
Aug. 3, 1981 *Commissioner of Patents and Trademarks.*

Sale of Copies of Reexamination Requests

Copies of reexamination requests, all cited references, and the file wrapper and contents of the patent file for which reexamination is requested are available at a charge of $0.30 per page. Orders for such copies must indicate the control number assigned the reexamination request. Orders should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Customer Services Division.

July 31, 1981

GERALD J. MOSSINGHOFF
Commissioner of Patents and Trademarks.

Mailing of Patent and Trademark Registration Copies

The Patent and Trademark Office has recently begun mailing domestic orders for copies of U.S. patents and trademark registrations as fourth class material, on an experimental basis. The United States Postal Service has indicated that there should be no significant delay in the delivery of fourth class materials in comparison to the first class mailings which have been used in the past. This experiment will continue for six months, at which time a final determination will be made as to the most appropriate class of mail service to be used when filling such orders.

July 31, 1981

GERALD J. MOSSINGHOFF
Commissioner of Patents and Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Post Office as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

New England Toyota Distributor, Inc., Woburn, MA., Reg. No. 1,083,915, Canc. No. 12,927.
J. Freezer & Son, Inc., New York, N.Y., Reg. No. 839,188, Canc. No. 12,930.

ERMA S. BROWN,
Deputy Clerk, Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

March—July 1981 Classification Orders

The reclassifications covered by the classification changes below became effective Mar. 1, 1981 through July 31, 1981. In the future, notice of these changes will be published monthly. Addenda information will continue to be published quarterly.

Classification Order 774, effective Mar. 11, 1981

	Class	Subclasses
Abolished	65	21
Established	65	21.1–21.5

Classification Order 775, effective Mar. 11, 1981

	Class	Subclass
Abolished	264	209
Established	264	209.1–209.8

Classification Order 776, effective Mar. 16, 1981

	Class	Subclasses
Abolished	428	538; 539
Established	428	688–703

Classification Order 777, effective Mar. 24, 1981

	Class	Subclasses
Abolished	307	203–218; 229; 230; 232; 233; 237; 238; 251; 293–295
	328	92–94
Established	307	238.1–238.8; 440–482; 490–503; 510–530; 540–568; 570–585; 590–608

Classification Order 778, effective Apr. 3, 1981

	Class	Subclasses
Abolished	72	253; Digests 1–31
Established	72	253.1; 273.5; CROSS-REFERENCE ART COLLECTIONS 706–711

Classification Order 779, effective Apr. 6, 1981

	Class	Subclasses
Abolished	156	331
Established	156	307.4; 330.9; 331.1–331.9
Title Change	156	307.1

Classification Order 780, effective Apr. 6, 1981

	Class	Subclasses
Abolished	260	449–452
Established	260	398.6
	518 (NEW)*	700–728
	560	241.1
	562	512.2; 512.4
	568	398.8; 469.9; 910.5; 950–959
Title Change	568	558; 563

*Newly established Class 518 Definition separately available.

Classification Order 781, effective Apr. 6, 1981

	Class	Subclasses
Abolished	224	45–58; 137
Established	294	137–172

Classification Order 782, effective Apr. 7, 1981

	Class	Subclasses
Abolished	D12	62–81
Established	D12	300–345
Title Change	D3	35
	D16	31

Classification Order 783, effective Apr. 14, 1981

	Class	Subclasses
Abolished	131	1–26; 120–172; 261–269
Established	131	270–375; CROSS-REFERENCE ART COLLECTIONS 900–910

Classification Order 784, effective Apr. 21, 1981

	Class	Subclasses
Abolished	252	8.1
Established	252	601–611

Classification Order785, effective Apr. 24, 1981

	Class	Subclasses
Abolished	252	299
Established	252	299.01–299.6; 299.61–299.68; 299.7

Classification Order 786, effective Apr. 24, 1981

	Class	Subclasses
Abolished	564	436
Indent Changes	564	437–443
Title Changes	544	190; 200; 352; 395; 410
	546	181; 319; 348
	564	3; 225; 253; 277; 306; 317; 335

Classification Order 787, effective Apr. 27, 1981

	Class	Subclasses
Established	525	CROSS-REFERENCE ART COLLECTION 942

Classification Order 788, effective May 13, 1981

	Class	Subclasses
Abolished	102	1–105; 203; 278–280
Established	102	202.1–202.9; 202.11–202.14 275.1–275.9; 275.11; 275.12; 277.1; 277.2; 282–293; 301; 532; CROSS-REFERENCE ART COLLECTIONS 700–705
Title Change	102	

Classification Order 789, effective May 22, 1981

	Class	Subclasses
Abolished	100	Digests 1–8
Established	100	CROSS-REFERENCE ART COLLECTIONS 901–918

Classification Order 790, effective May 26, 1981

	Class	Subclasses
Abolished	24	73–88
Established	24	287–380

Classification Order 791, effective May 27, 1981

	Class	Subclasses
Abolished	73	133–145
Established	73	862; 862.01–862.09; 862.11–862.19; 862.21–862.29; 862.31–862.39; 862.41–862.49; 862.51–862.59; 862.61–862.69

Classification Order 792, effective May 28, 1981

	Class	Subclasses
Abolished	525	359
Established	525	359.1–359.6

Classification Order 793, effective May 28, 1981

	Class	Subclasses
Abolished	264	271; 272
Established	264	271.1; 272.11–272.21; 279.1

Classification Order 794, effective June 2, 1981

	Class	Subclasses
Abolished	178	22
	375	2
Established	178	22.01–22.19
	375	2.1; 2.2

Classification Order 795, effective June 2, 1981

	Class	Subclasses
Abolished	165	104–107
Established	165	104.11–104.19; 104.21–104.29; 104.31–104.34

Classification Order 796, effective June 2, 1981

	Class	Subclasses
Abolished	73	421–425.6
Established	73	863; 863.01–863.03; 863.11; 863.12; 863.21–863.25; 863.31–863.33; 863.41–863.45; 863.51–863.58; 863.61; 863.71–863.73; 863.81–863.86; 863.91; 863.92; 864; 864.01–864.03; 864.21–864.25; 864.31–864.35; 864.41–864.45; 864.51–864.59; 864.61–864.67; 864.71–864.74; 864.81; 864.91

Classification Order 797, effective July 7, 1981

	Class	Subclasses
Abolished	62	2
Established	62	235.1

Classification Order 798, effective July 7, 1981

	Class	Subclasses
Abolished	D14	40–51
Established	D14	100–117

Classification Order 799, effective July 7, 1981

	Class	Subclasses
Abolished	60	641
Established	60	641.1–641.9; 641.11–641.15

Classification Order 800, effective July 15, 1981

	Class	Subclasses
Abolished	252	300
Established	252	582–589

Classification Order 801, effective July 27, 1981

	Class	Subclasses
Abolished	65	3; 4; 11; 18; 30; Digests 2; 14; 16
Established	65	3.1–3.15; 3.2; 3.3; 3.31; 3.4–3.44; 4.1; 4.2; 4.21; 4.3; 4.4; 10.1; 10.2; 11.1; 18.1–18.4; 30.1–30.14

RENE D. TEGTMEYER
July 30, 1981 *Assistant Commissioner for Patents & Trademarks.*

Set XVIII of Addenda to the Classification Definitions

The definitions of the classes listed below were modified by addenda as part of Classification Orders issued between Oct. and Dec. 31, 1980. All of these addenda have been consolidated as Set XVIII of "Addenda to the Classification Definitions".

Class	Class	Class	Class
4	86	175	266
7	89	178	269
8	93	179	270
10	99	180	271
11	100	181	272
15	101	185	273
16	102	192	274
23	104	196	281
26	106	198	283
29	112	201	294
30	113	203	307
33	114	204	310
34	116	206	312
35	118	208	313
40	119	209	315
43	122	210	318
44	124	220	324
46	125	221	328
51	126	222	329
52	127	223	331
53	128	226	332
55	131	227	333
57	134	228	334
60	137	233	335
62	138	235	336
65	140	241	337
68	144	242	338
70	145	244	340
71	156	248	343
72	157	250	346
73	159	251	350
74	162	252	351
76	164	254	352
81	165	260	353
83	166	261	354
84	173	264	355
86	175	266	356
89	178	269	358
93	179	270	360
99	180	271	361
100	181	272	362
101	185	273	364
102	192	274	365
104	196	281	366
106	198	283	367
112	201	294	368
113	203	307	370
114	204	310	375
116	206	312	400
118	208	313	404
119	209	315	405
122	210	318	408
124	220	324	418
125	221	328	422
126	222	329	423
127	223	331	424
128	226	332	425
131	227	333	427
134	228	334	428
137	233	335	430
138	235	336	434
140	241	337	435
144	242	338	455
145	244	340	493
156	248	343	521
157	250	346	528
159	251	350	562
162	252	351	564
164	254	352	570
165	260	353	585
166	261	354	
173	264	355	

Newly established classes issued between Oct. and Dec. 1980:

434
493
564
570

RENE D. TEGTMEYER
July 30, 1981 *Assistant Commissioner for Patents & Trademarks.*

Set XIX of Addenda to the Classification Definitions

The definitions of the classes listed below were modified by addenda as part of Classification Orders issued between Jan. and Mar. 31, 1981. All of these addenda have been consolidated as Set XIX of "Addenda to the Classification Definitions".

Class	Class	Class	Class
13	165	282	346
15	171	285	350
16	172	292	351
24	174	293	352
29	175	294	353
30	179	295	355
37	181	299	356
52	184	301	357
55	185	303	358
59	188	307	360
62	192	310	361
65	198	312	362
73	204	314	363
74	206	315	364
81	213	318	365
84	219	320	367
85	221	322	368
89	222	323	369
98	226	324	370
101	227	328	371
106	236	329	375
108	237	330	402
109	238	331	403
116	242	332	405
118	249	333	411
122	250	334	425
128	251	335	428
134	264	336	429
136	269	337	430
151	274	338	431
160	279	340	455
164	280	343	

Newly established classes issued between Jan. and Mar. 1981:

369
411

RENE D. TEGTMEYER
July 30, 1981 *Assistant Commissioner for Patents & Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Sept. 1, 1981

Re. 30,472	4,243,766	4,260,643	4,268,060
Re. 30,651	4,244,601	4,261,152	4,268,380
3,845,187	4,245,121	4,261,421	4,268,496
4,001,256	4,246,340	4,261,922	4,269,169
4,052,495	4,247,528	4,261,950	4,269,316
4,125,713	4,247,592	4,262,001	4,269,401
4,135,009	4,247,625	4,262,078	4,269,630
4,138,576	4,247,687	4,262,311	4,269,720
4,155,613	4,248,689	4,262,359	4,269,844
4,166,487	4,251,436	4,262,426	4,270,313
4,166,832	4,251,755	4,262,544	4,270,358
4,173,604	4,251,863	4,262,580	4,270,440
4,182,824	4,252,013	4,262,629	4,270,470
4,183,632	4,252,617	4,262,632	4,271,440
4,190,656	4,252,714	4,262,719	4,271,525
4,195,183	4,253,256	4,262,770	4,271,944
4,201,682	4,253,430	4,262,965	4,272,052
4,209,636	4,254,068	4,263,219	4,272,176
4,209,936	4,254,074	4,263,809	4,272,733
4,212,654	4,254,223	4,263,840	4,272,833
4,217,235	4,255,177	4,263,910	4,273,175
4,217,914	4,255,178	4,263,922	4,273,272
4,218,242	4,255,179	4,264,174	4,273,575
4,223,170	4,255,274	4,264,208	4,273,588
4,223,582	4,255,329	4,264,464	4,273,725
4,228,305	4,255,431	4,264,597	4,273,892
4,230,134	4,256,505	4,264,611	4,273,895
4,232,560	4,256,650	4,264,655	4,274,528
4,232,760	4,256,893	4,264,829	4,274,555
4,234,713	4,256,972	4,265,320	4,274,665
4,236,268	4,257,272	4,266,292	4,274,942
4,236,515	4,257,423	4,266,687	4,275,206
4,237,008	4,257,717	4,266,810	4,275,355
4,237,365	4,257,958	4,266,932	4,275,787
4,239,678	4,258,031	4,267,140	4,275,896
4,242,287	4,258,841	4,267,852	4,277,512
4,243,213	4,259,191	4,267,865	
4,243,350	4,259,336*	4,267,985	

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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Program Coordinator,
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National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6–228,853. Chemotherapeutically Active Maytansinoids from Trewia nudiflora. Filed Jan. 27, 1981.

Patent 4,247,644. Foam Flotation Process for Separating Bacillus thuringiensis Sporultion Products. Filed Aug. 8, 1979. Patented Jan. 27, 1981. Not available NTIS.

Patent 4,253,970. Flocculation of Coals with Water-Soluble Starch Xanthates. Filed Oct. 1, 1979. Patented Mar. 3, 1981. Not avaiable NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents (GC–42)
1000 Independence Ave., NW.
Washington, D.C. 20585

Patent application 6–128,203. Heat Transfer System. Filed Mar. 7, 1980.

Patent application 6–129,868. Method for Fabricating Thin Films of Pyrolytic Carbon. Filed Mar. 13, 1980.

Patent application 6–130,995. Spacer Grid Assembly and Locking Mechanism. Filed Mar. 17, 1980.

Patent application 6–131,303. Reactor Control Rod Timing System. Filed Mar. 18, 1980.

Patent application 6–133,702. Device for Conversion of Electromagnetic Radiation into Electrical Current. Filed Mar. 25, 1980.

Patent application 6–134,352. Method and Apparatus for Measuring Irradiated Fuel Profiles. Filed Mar. 27, 1980.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Counsel for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6–116,700. Radar Video Compression System. Filed Oct. 14, 1980.

Patent application 6–230,577. Water-Armed/Air-Safed Release Apparatus. Filed Feb. 2, 1981.

Patent 4,221,417. Line Release System. Filed Aug. 19, 1976. Patented Sept. 9, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6–210,491. Leading Edge Vortex Flaps for Drag Reduction. Filed Nov. 26, 1980.

Patent application 6–210,498. A Low Energy Electron Magnetometer. Filed Nov. 26, 1980.

Patent application 6–210,506. Fixture for Environmental Exposure of Structural Materials under Compression. Filed Nov. 26, 1980.

Patent application 6–229,231. Intrusion Detection Method and Apparatus. Filed Jan. 28, 1981.

Patent application 6–229,693. Heat Pipes to Reduce Engine Exhaust Emissions. Filed Jan. 30, 1980.

Patent application 6-233,269. Electromigration Process for the Purification of Molten Silicon During Crystal Growth. Filed Feb. 10, 1981.

Patent application 6-233,271. Antenna Grout Replacement System. Filed Feb. 10, 1981.

Patent application 6-233,274. Optical Signature Generating and Correlating Apparatus. Filed Feb. 10, 1981.

Patent application 6-234,244. Sidelooking Laser Altimeter for a Flight Simulator. Filed Feb. 13, 1981.

Patent application 6-235,797. Improved Thermionic Energy Converters. Filed Feb. 19, 1981.

Patent application 6-235,867. Fiber glass/Epoxy Composite Automotive Door Structure Including a Glass-Reinforced Intrusion Strip. Filed Feb. 19, 1981.

Patent 4,236,684. Thrust Augmented Spin Recovery Device. Filed Apr. 27, 1979. Patented Dec. 2, 1980. Not available NTIS.

Patent 4,241,312. Self-Calibrating Threshold Detector. Filed July 27, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,242,553. Apparatus for Use in the Production of Ribbon-Shaped Crystals from a Silicon Melt. Filed Aug. 31, 1978. Patented Dec. 30, 1980. Not available NTIS.

Patent 4,242,864. Integrated Control System for a Gas Turbine Engine. Filed May 25, 1978. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,244,853. Composition and Method for Making Polyimide Resin-Reinforced Fabric. Filed Apr. 6, 1979. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,245,286. Buck/Boost Regulator. Filed May 21, 1979. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,245,288. Elimination of Current Spikes in Buck Power Converters. Filed Oct. 31, 1978. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,245,566. Safety Shield for Vacuum/Pressure Chamber Viewing Port. Filed June 29, 1979. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,245,768. Method of Cold Welding Using Ion Beam Technology. Filed July 28, 1978. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,245,956. Compensating Linkage for Main Rotor Control. Filed Dec. 25, 1978. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,247,434. Process for Preparation of Large-Particle-Size Monodisperse Latexes. Filed Dec. 29, 1978. Patented Jan. 27, 1981. Not available NTIS.

Patent 4,248,083. Containerless High Temperature Calorimeter Apparatus. Filed June 29, 1979. Patented Feb. 3, 1981. Not available NTIS.

Patent 4,249,238. Apparatus for Sensor Failure Detection and Correction in a Gas Turbine Engine Control System. Filed May 24, 1978. Patented Feb. 3, 1981. Not available NTIS.

Patent 4,249,957. Copper Droped Polycrystalline Silicon Solar Cell. Filed May 30, 1979. Patented Feb. 10, 1981. Not available NTIS.

Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

3,200,295, Honeywell, Inc., MANUALLY OPERABLE PIEZOELECTRIC LIGHTERS, **filed** May 18, 1981, D.C., N.D. Ohio (Cleveland), Doc. 81-1053, *Honeywell, Inc.* v. *Channel Products, Inc.*

3,296,636, Bernhard Markwitz, BUOYANCY RING; **3,775,788, same,** INFLATABLE SWIMMING SUPPORTS, **filed** Feb. 24, 1981, D.C., S.D.N.Y., Doc. 81-Civ-1086 GLG, *Ocean Pool Supply Co., Inc.* v. *Bema U.S.A., Inc.* Action discontinued without prejudice on May 11, 1981.

3,520,186, National Sonics Corp., ULTRASONIC FLUID INTERFACE SENSING, **filed** May 12, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2673, *National Sonics Corp.* v. *Magnetrol International, Inc., et al.*

3,713,099, Harold S. Hemstreet, METHOD AND APPARATUS FOR IDENTIFYING LETTERS, CHARACTERS, SYMBOLS AND THE LIKE; **3,713,100, same, filed** Dec. 19, 1977, D.C. Conn. (Bridgeport), Doc. B-77-412, *Recognition Equipment, Inc.* v. *Harold S. Hemstreet.*

3,713,100. (See 3,713,099.)

3,741,233, Raymond P. Smith, Jr., LEAK PREVENTION SYSTEM FOR AN OIL PIPELINE, **filed** June 18, 1981, D.C. Del. (Wilmington), Doc. 81-259, *Raymond P. Smith, Jr.,* v. *Alyeska Pipeline Service Co., et al.*

3,775,788. (See 3,296,636.)

3,778,852, Penn International Industries, Inc., WATER BED, **filed** Oct. 19, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-2453 RHS, *Penn International Industries, Inc.* v. *New World Manufacturing, Inc., et al.* Judgment filed June 15, 1981.

3,849,194, Grain Processing Corp., LOW D.E. STARCH CONVERSION PRODUCTS, **filed** May 12, 1981, D.C. Ind. (Hammond), Doc. H81-237, *Grain Processing Corp.,* v. *American Maize Products Co.*

3,858,761, James R. O'Dell, PRESSURE SPRAYING APPARATUS, **filed** June 3, 1981, D.C., N.D. Ohio (Toledo), Doc. C 81-384, *James R. O'Dell* v. *Lay-Mor Manufacturing Co.*

3,874,988, Tenneco Chemicals, Inc., MANUFACTURE OF EXPANDED CELLULAR PRODUCTS, **filed** Apr. 1, 1975, D.C. Md. (Baltimore), HM-75-394, *Tenneco Chemicals, Inc.* v. *William T. Burnett & Co., Inc.* Final Order and Judgment **filed Apr. 13, 1981. Same, filed** Nov. 18, 1977, D.C. Md. (Baltimore), Doc. HM-77-19741, *Tenneco Chemicals, Inc.* v. *Reeves Brothers, Inc.* Final Order and Judgment **filed** Apr. 13, 1981.

3,885,674, Thomas Rosenberg and Harold Rosenberg, ANTI-THEFT SECURITY CHAIN, **filed** Oct. 20, 1980, D.C. District of Columbia (Washington, D.C.), Doc. 80-2672, *Harold Rosenberg* v. *Checkpoint, Inc.* Order **filed** Jan. 30, 1981, denying defendant's motion to dismiss and transferring action to U.S. District Court for the Northern District of Texas.

3,913,530, Doctor Scratch Co., Inc., INSECTICIDE APPLICATOR FOR ANIMALS, **filed** June 14, 1978, D.C. Neb. (Omaha), Doc. CV 78-0-254, *Doctor Scratch Co., Inc.* v. *Supreme Products, Inc., et al.* Defendants are hereby permanently enjoined against infringing plaintiff's patent during the unexpired term thereof. Filed Mar. 9, 1981.

3,914,055, Lansing Research Corp., INSTRUMENT FOR HIGH RESOLUTION SPECTRAL ANALYSIS WITH LARGE OPTICAL THROUGHPUT, **filed** Nov. 12, 1980, D.C., N.D.N.Y. (Utica), Doc. 80-Civ-911, *Lansing Research Corp.* v. *Sybron Corp.* Complaint dismissed without prejudice to plaintiff's right to bring an action in an appropriate forum filed June 2, 1981.

3,968,203, Spitzer and Osipow, AEROSOL ASTRINGENT COMPOSITION, **filed** June 10, 1981, U.S. Ct. of Appeals (First Circuit, Boston, Mass.), Doc. 81-1403, *Carter-Wallace, Inc.* v. *The Gillette Co.* **Same, filed** June 19, 1981, U.S. Ct. of Appeals (First Circuit, Boston, Mass.), Doc. 81-1426, *Carter-Wallace, Inc.* v. *The Gillette Co.*

3,973,282, Marvin I. May, WATER BED LINER HOLDER; Reg. No. **1,147,691** (TUCK-A-LINER), Marvin I. May, **filed** May 1, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-0717 D, *Tite Nites, Inc. and Marvin I. May* v. *Bedderest Corp.*

4,003,321, Roy T. Card, CUT PILE APPARATUS FOR STAGGERED NEEDLE TUFTING MACHINE, **filed** June 4, 1981, D.C., E.D. Tenn. (Chattanooga), Doc. 1-80-174, *Spencer Wright Industries* v. *Tufco Corp.*

4,047,749, Zefflamb Industries, Inc., CARGO BOX LINER FOR PICK-UP TRUCKS; **D. 249,494, same, filed** July 23, 1979, D.C., E.D. Mich. (Flint), Doc. 79-40189, *Zefflamb Industries, Inc.* v. *Anderson Tank Manufacturing Co.* Final Judgment in favor of Defendant and against Plaintiff filed Feb. 5, 1980.

4,052,648, Frank J. Nola, POWER FACTOR CONTROL SYSTEM FOR AC INDUCTION MOTORS, **filed** Jan. 23, 1981, D.C.N.J. (Newark), Doc. 81-207, *Cynex Manufacturing Corp.* v. *Mercury International Sales, Inc., et al.*

4,083,033, Kulp and Florsheim, TRAFFIC CONTROL ELEMENT, **filed** June 3, 1981, D.C., E.D. Mo. (St. Louis), Doc. 81-0650C(5), *Lear Siegler, Inc.* v. *General Steel Industries, Inc.* **Same, filed** June 18, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 3433, *Lear Siegler, Inc.* v. *Glass Plastics Corp., et al.*

4,095,679, Robert W. Walker, STOP MEANS FOR SELF-PROPELLED SPRINKLER, **filed** Mar. 24, 1981, D.C. Neb. (Omaha), Doc. 81-0-150, *Robert W. Walker* v. *John Kreger, doing business as Plains Maufacturing, et al.* Consent Judgment enjoining Defendant from further infringment of Plaintiff's patent filed June 2, 1981.

4,084,646, Ingersoll-Rand Co., FLUID ACTUATED IMPACT TOOL, **filed** June 1, 1981, D.C. Conn. (Hartford), Doc. H81-395, *Ingersoll-Rand Co.* v. *Numa Tool Co.* **Same, filed** June 11, 1981, D.C.S.C. (Greenville), Doc. 81-1194-0, *Ingersoll-Rand Co.* v. *Dill Well Supply Co.*

4,108,303, The E. W. Buschman Co., POWER TRANSMISSION ASSEMBLY FOR AN ACCUMULATOR CONVEYOR, **filed** June 3, 1981, D.C., S.D. Ohio (Dayton), Doc. C-3-81-296, *The E. W. Buschman Co.* v. *Rexnord, Inc.*

4,112,927, David I. Carlson, ULTRASONIC DETECTOR WITH AUDIBLE INDICATION SIGNAL, **filed** May 27, 1981, D.C., N.D. Iowa (Cedar Rapids), Doc. 1C 81-3025, *International Livestock Improvement Services Corp.* v. *Agricultural Electronics of Iowa, Inc.*

4,142,855, Isolab, Inc., METHOD TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITION, AND, A LIQUID CHROMATOGRAPHIC MICROCOLUMN THEREFOR; **4,142,856, same; 4,142,857, same; 4,142,858, same; 4,168,147, same, filed** June 2, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-1143A, *Isolab, Inc.* v. *Akron General Medical Center.*

4,142,855, Isolab, Inc., METHOD TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITION, AND, A LIQUID CHROMATOGRAPHIC MICROCOLUMN THEREFOR; **4,122,856, same; 4,142,857, same 4,142,858, same; 4,168,147, same; 4,238,196,** METHODS TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITIONS, AND, LIQUID CHROMATOGRAPHIC COLUMNS THEREFOR (CYANIDE FREE), **same, filed** June 15, 1981, D.C., N.D. Calif. (San Francisco), Doc. C81 2421 WAI, *Bio-Rad Laboratories, Inc.* v. *Isolab, Inc.*

4,142,856. (See 4,142,855.)

4,142,857. (See 4,142,855.)

4,142,858. (See 4,142,855.)

4,145,818, Hanspeter Kulling, METHOD AND APPARATUS FOR REMOVING A VAPORIZED LIQUID FROM A GAS, FOR USE IN E.G. A PROCESS BASED ON THE FLUIDIZED BED PRINCIPLE, **filed** May 20, 1981, D.C.N.J. (Newark), Doc. 81-1539, *Aeromatic AG* v. *Glatt Air Techniques, Inc.*

4,148,112, The American Original Corp., HYDRAULIC EVISCERATION OF MOLLUSKS, **filed** Oct. 26, 1979, D.C., E.D. Va. (Norfolk), Doc. 79-950-N, *The American Original Corp.* v. *Jenkins Food Corp., et al.* Defendants are enjoined from further infringement of Plaintiff's patent. Filed June 5, 1981.

4,155,549, Donald B. Mims, POOL BALL SORTING APPARATUS, **filed** June 17, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-0975-R, *John H. Lewis, Jr.* v. *William G. Rickett, et al.*

4,159,096, General Foam Plastics Corp., SUPER STABLE, SIMPLY ASSEMBLEABLE TREE STAND, **filed** Nov. 4, 1980, D.C., E.D. Va. (Norfolk), Doc. 80-1196-N, *General Foam Plastics Corp.* v. *Leggett's Department Store, Inc.* Stipulation of dismissal without prejudice filed June 1, 1981.

4,168,147. (See 4,142,855.)

4,179,947, Robert G. James, COUNTERBALANCED PUMPING SYSTEM, **filed** May 8, 1981, D.C., S.D. Tex. (Houston), Doc. H-81-1143, *Robert G. James, et al.* v. *Rigmaster, Inc., et al.*

4,181,347, Synergetics, Inc., MOBILE COMPUTERIZED TOMOGRAPHY UNIT, **filed** June 10, 1981, D.C., S.D. Fla. (Miami), Doc. 81-6315-CIV-SMA, *Synergetics, Inc.* v. *Universal Medical Scanners, Inc.*

4,182,326, IMS Ltd., LARYNGOTRACHEAL SYRINGE, **filed** May 28, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2990, *Abbott Laboratories* v. *IMS Ltd.*

4,183,057, Charles Sonnenberg, ACTUATING SYSTEM FOR A RENTAL TELEVISION, **filed** May 13, 1981, D.C., W.D. Pa. (Pittsburgh), Doc. 81-787, *ADS Hospital Systems, Inc.* v. *Montefiore Hospital.*

4,194,544, Omark Industries, Inc., SPLITTING DEVICE, **filed** June 11, 1980, D.C.N.J. (Newark), Doc. 80-1685, *Omark Industries, Inc.* v. *Colonial Tool Co., Inc.* Judgment of no cause for action and declaring patent invalid filed May 11, 1981.

4,238,196. (See 4,142,855.)

4,239,490, Kelly, Vidal and Rosenthal, CARPET DYEING SYSTEM, **filed** June 1, 1981, D.C., N.D. Ga. (Rome), Doc. C81-137R, *Pro-Tone Carpet Dyeing System, Inc.* v. *Caleidochrome Carpet Color Concepts, Inc., et al.*

4,247,208, Fulkerson and Smith, ELECTRICAL STENOGRAPHIC MACHINE, **filed** May 15, 1981, D.C., N.D. Ill. (Chicago), Doc. 81C2751, *Stenograph Corp.* v. *Lektro-Graph, Inc.*

Re. 29,050, Louise Z. Hakim, TOY WITH SOUND PRODUCING MEANS, **filed** May 6, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2712, *Louise Z. Hakim* v. *Stahlwood Toy Manufacturing Co., Inc.*

D. 227,722, Bunk Trunk Distributors, COMBINED BED AND STORAGE UNIT, **filed** Feb. 13, 1981, D.C., W.D.N.C. (Asheville), Doc. SH-C-81-47, *Drexel Heritage Furnishings, Inc.* v. *Theodore Shapiro & Michael A. Mendlin doing business as Bunk Trunk Distributors.* Notice of Dismissal without prejudice filled by plaintiff on June 18, 1981.

D. 249,494. (See 4,047,749.)

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 322-4572
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 25, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-11-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-03-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-07-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-31-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	11-01-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,139,622 to 3,142,840, inclusive

Plant Patents ..... Numbers 2,416 to 2,430, inclusive

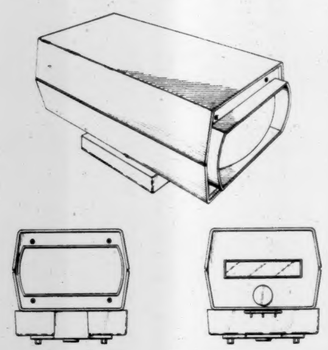
DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 1, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

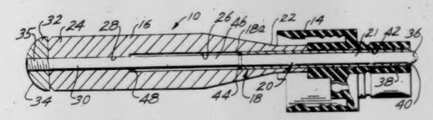
T101,001
ELECTRONIC DISTANCE MEASURING INSTRUMENT
John I. Shipp, 1422 S. Country Club La., and Charlie C. Rogers, P.O. Box 1107, both of Tullahoma, Tenn. 37388
Filed May 28, 1980, Ser. No. 154,044
Int. Cl. D10/04
U.S. Cl. D10—70
2 Sheets Drawing. 2 Pages Specification



The design relates to an electronic distance measuring instrument substantially as shown.

T101,002
TOOL FOR MANUALLY INSERTING ELECTRICAL CONTACTS
Rayburn P. Ellington, III, 4714 N. Laurel Dr., Peoria, Ill. 61614
Filed Mar. 4, 1980, Ser. No. 127,151
Int. Cl.³ H01R 43/00
U.S. Cl. 29—747
2 Sheets Drawing. 6 Pages Specification

A hand tool for inserting and removing electrical contacts from shaped axial bores formed in coupling-type elastic connector housings has coacting members that allow removal,



ready reception and accurate placement of the contacts within the axial housing bores.

T101,003
PREVENTATIVE THERAPY AGAINST HUMAN CANCER
Shane A. Watson, 7 Bragge St., Frankston, Victoria, Australia 3199
Filed Apr. 4, 1979, Ser. No. 26,811
Int. Cl.² A61K 31/195
U.S. Cl. 424—319
No Drawing. 11 Pages Specification

A method for prophylaxis against human cancer which comprises the administration of chelating or complexing agents capable of removing from the human body the various isotopic forms of lead and their radioactive precursors.

T101,004
BLOCKED PYRAZOLONE MAGENTA DYE-FORMING COUPLERS
Thomas E. Gompf; Howell A. Hammond, and Jared B. Mooberry, all of Kodak Park Works, Rochester, N.Y. 14650
Division of Ser. No. 124,872, Feb. 26, 1980. This application Dec. 29, 1980, Ser. No. 220,579
Int. Cl.³ C07D 231/10
U.S. Cl. 548—373
No Drawing. 43 Pages Specification

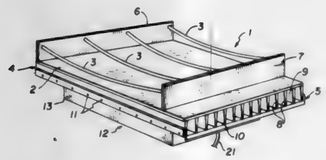
Novel 5-pyrazolone magenta dye-forming couplers are blocked with a coupler moiety which yields an alkali-soluble or colorless reaction product. The coupler moiety is joined via its coupling position to the enol oxygen of the 5-pyrazolone and is displaced therefrom during processing as a result of reaction by means of oxidized color developing agent to thereby activate the 5-pyrazolone coupler. These couplers have good reactivity and good resistance to aerial contaminants, such as formaldehyde, and can be incorporated in photographic emulsions and elements.

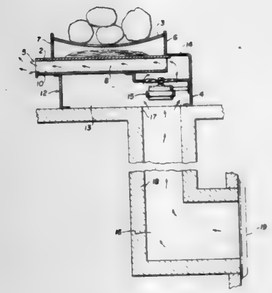
REISSUES

SEPTEMBER 1, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,725
FIREPLACE GRATE
John G. Meeker, Deansbridge Rd., Somers, N.Y. 10589
Original No. 4,076,012, dated Feb. 28, 1978, Ser. No. 627,184, Oct. 30, 1975. Application for reissue Feb. 26, 1980, Ser. No. 124,665
Int. Cl.³ F23H *13/00*; F28F *3/14*
U.S. Cl. 126—164 **33 Claims**





28. A system for increasing the heating efficiency of a fireplace fire which comprises:

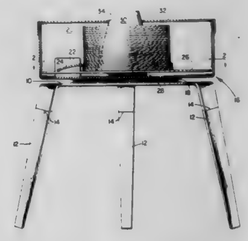
a. air passageway means having air inlet and outlet means and being bounded by spaced first and second plate means, said first plate means defining a heat transfer structure and being formed of extruded aluminum having a plurality of closely spaced fin means integrally formed therewith and extending toward said second plate means to divide said air passageway means into a plurality of separate air subpassageways, said heat transfer structure being positioned intermediate said fire and said second plate; and

b. means for forcing an air circulation between said air passageway means inlet and outlet means at sufficient rate to preclude overheating of the area beyond said heat transfer structure.

Re. 30,726
POLYMER FILM HAVING LINEAR TEAR PROPERTIES
Norman J. Otten, Prospect Heights, and Eldrige H. Presnell, Round Lake, both of Ill., assignors to Tower Products, Inc., Mundelein, Ill.
Original No. 4,098,406, dated Jul. 4, 1978, Ser. No. 713,703, Aug. 12, 1976. Continuation-in-part of Ser. No. 486,082, Jul. 5, 1974, abandoned. Application for reissue Oct. 9, 1979, Ser. No. 82,992
Int. Cl.³ B65D *33/00*; B29C *17/06*; B32B *27/08*
U.S. Cl. 206—601 **14 Claims**

1. A method of imparting linear tear properties in the direction of extrusion to a polymer film comprising the steps of preparing a blend of resins consisting essentially of from about 12% to about 95% ionomer resin and from about 5% to about 88% low density polyethylene resin, and extruding said blend of resins *at a stretch ratio of approximately 1.5 to 1* into a film [,] whereby said film exhibits linear tear properties in a direction parallel to the direction of extrusion *and an Elmendorf tear strength of from 30 to 125 g.*

Re. 30,727
CABLE DISPENSER
Robert S. Y. Chong, 98-1137 Kaonhoi St., Aiea, Hi. 96701
Original No. 4,015,795, dated Apr. 5, 1977, Ser. No. 625,891, Oct. 28, 1975. Application for reissue Apr. 5, 1979, Ser. No. 27,461
Int. Cl.³ B65H *49/00, 75/30*
U.S. Cl. 242—85 **10 Claims**



10. A cable dispenser comprising a relatively stationary base, a cable dispensing control member having a bottom and an upstanding substantially cylindrical side wall, means mounting said member on said base for free rotation about the axis of said side wall, a turntable for supporting a coil of cable disposed within said member, means mounting said turntable for free rotation about said axis independently of rotation of said member, and means providing a dispensing opening at said wall through which the cable may be withdrawn from the dispenser, whereby when cable is pulled out through said opening said member is automatically oriented to align said opening with the cable payout direction while said turntable is free to relatively rotate as the cable is pulled out of the dispenser.

Re. 30,728
HIGH SPEED FOCUSING TELEPHOTO LENS
Hideo Yokota, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Original No. 4,068,929, dated Jan. 17, 1978, Ser. No. 678,364, Apr. 19, 1976. Application for reissue Feb. 27, 1979, Ser. No. 15,644
Claims priority, application Japan, Apr. 23, 1975, 50-49384
Int. Cl.³ G02B *9/60, 9/62*
U.S. Cl. 350—464 **29 Claims**

19. A telephoto lens comprising: a front lens group which has a positive power and remains stationary during focusing; and a rear lens group having a negative power and including at least one movable sub-group and a rearmost sub-group having a negative power, whereby the focusing of said telephoto lens is effected by axially moving said movable sub-group and said rearmost sub-group remains stationary during focusing.

Re. 30,729

FLOATAGE COLLECTING APPARATUS AND METHOD

James H. Farrell; Ralph A. Bianchi, both of Lexington, and Edward E. Johanson, Andover, all of Mass., assignors to JBF Scientific Corporation, Wilmington, Mass.

Original No. 3,804,251, dated Apr. 16, 1974, Ser. No. 231,977, Mar. 6, 1972. Continuation of Ser. No. 767,833, Feb. 11, 1977, abandoned, and a continuation-in-part of Ser. No. 151,838, Jun. 10, 1971, abandoned. Application for reissue May 30, 1978, Ser. No. 910,513

Int. Cl.[3] B01D *21/00*

U.S. Cl. 210—801 27 Claims



1. Apparatus for skimming floating materials, *whether solid or liquid,* from the surface of a body of water and collecting the same comprising, in combination

A. a first roller having a longitudinal axis of rotation,

B. means positioning said first roller so that its axis of rotation is located above the surface of the body of water,

C. a second roller,

D. means positioning said second roller so that its longitudinal axis of rotation is parallel to the first roller and horizontally spaced therefrom, at least a portion of said second roller surface being below the surface of the body of water and the lower horizontal tangent of said second roller being below the lower horizontal tangent of said first roller,

E. endless-*belt* material transport means carried by said rollers,

F. means for driving at least one of said rollers in a direction so that the lower flight of said material transport means moves downwardly from said first roller to said second roller,

G. means forming a materials collecting and retaining well, said well

1. having a bottom opening and an enclosed periphery formed by sidewalls extending from above said surface to below it, said sidewalls which extend transversely to the horizontal spacing between said rollers extending downwardly substantially only to the level of said lower horizontal tangent of said second roller,

2. having said bottom opening disposed aft of said second roller and extending along the length of said well for the passage therethrough of said material and of water, and

H. perforated baffle means horizontally disposed at least partially spanning said well bottom opening substantially at said level of said lower horizontal tangent of said second roller, for passing said material into said well and for blocking the flow of turbulent currents into said well through said bottom opening, whereby

said transport means removes floating material from the surface of the water downwardly toward said second roller, and discharges said material below the water surface for the entry thereof into said well through said opening and at least in part through said baffle means.

Re. 30,730

APPARATUS FOR USE IN INVESTIGATING SPECIMENS

Ian D. Duff, Briarcliff Manor, N.Y., assignor to National Research Development Corporation, London, England

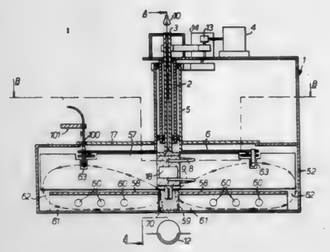
Reissued No. Re. 29,880, dated Jan. 16, 1979, Ser. No. 881,842, Feb. 27, 1978.

Original No. 4,054,416, dated Oct. 18, 1977, Ser. No. 714,677, Aug. 11, 1976. Application for reissue Oct. 12, 1979, Ser. No. 84,381

Claims priority, application United Kingdom, Jun. 11, 1975, 25-118/75; Aug. 20, 1975, 34676/75

Int. Cl.[3] F27D *11/00;* B01L *7/02, 9/06;* G01N *1/10*

U.S. Cl. 422—64 8 Claims



1. Apparatus for use in investigating liquid specimens comprising

a substantially horizontal turntable having a central rotational axis and being adapted to support a plurality of vessels for liquid specimens in a circular array centered on the said rotational axis [[such that the vessels extend below the underside thereof]];

means for [[stepwise]] rotation of the turntable for specimen investigation [[during dwell periods; an enclosure disposed beneath the turntable to define a space bounded laterally and at the bottom of said enclosure and upwardly by the turntable and into which the vessels extend when positioned in the turntable; temperature changing means for changing the temperature of air in said space; air circulating means disposed in said space and arranged to circulate air between the temperature changing means and the vessels wholly within said space; a control device for the air temperature changing means arranged to maintain the temperature of the vessels substantially at a predetermined value]]; and

a liquid dispenser mounted adjacent the turntable for dispensing liquid specimens into different vessels in the turntable [[during respective dwell periods thereof]], the dispenser comprising

a tubular body [[of a high thermal conductivity]] having an inlet through which liquid may enter said tubular body[[,]] and an outlet which comprises a dispensing tip of high thermal conductivity through which liquid may leave the tubular body,

said tubular body also including a cavity adjacent said outlet,

the dispenser being provided with means for charging the tubular body with liquid by way of said inlet and for dispensing predetermined quantities of such liquid,

said tubular body including [[an electric heating coil, wound around]] **heating means** substantially **along** its length and [[a thermistor positioned]] **temperature control means** in said cavity to control said heating [[coil]] **means** to maintain the temperature of the liquid being dispensed substantially at a predetermined value.

Re. 30,731

ENKEPHALIN ANALOGUES

Derek Hudson, 23A Elm Rd., Wembley, Middlesex; Robert Sharpe, 99 King House, Ducane Rd., London W12 OHS, and Michael Szelke, 10 North Dr., Ruislip, Middlesex, all of England

Original No. 4,198,398, dated Apr. 15, 1980, Ser. No. 923,478, Jul. 10, 1978. Application for reissue Aug. 14, 1980, Ser. No. 178,345

Claims priority, application United Kingdom, Jul. 12, 1977, 29207/77; Dec. 8, 1977, 51159/77

Int. Cl.[3] A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 24 Claims

1. Compounds having the general formula

R—Tyr—X—Gly—B—Y—Z

where

(a) —X is a Gly or any D-amino acid residue

—B is a Phe or N-methyl Phe residue

—Y is Leu, Met (as such or in the form of its sulphoxide), Pro, or Hypro, or formal derivatives thereof in which the [carbonyl oxygen of the] terminal [carboxyl]



group is replaced by [hydrogen atoms] $-CH_2-Z$

—Z is NHR or OR

(b) The peptide link between one or more of the residues is represented by a group or groups the same or different selected from dimethylene *(except where X=Gly and the Gly-Gly link is involved),* methylene-imino and ketomethylene groups.

(c) R is hydrogen or methyl, ethyl, propyl, cyclopropyl, butyl, allyl or other protective aliphatic group.

Re. 30,732

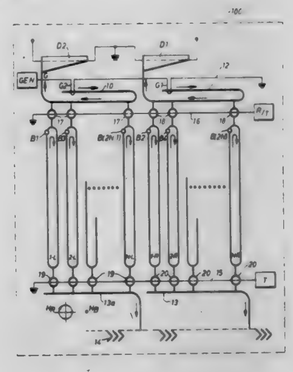
CONSECUTIVE BIT ACCESS OF MAGNETIC BUBBLE DOMAIN MEMORY DEVICES

Isoris S. Gergis, 5892 Lynnbrook Plz., Yorba Linda, Calif. 92686

Original No. 4,075,611, dated Feb. 21, 1978, Ser. No. 633,306, Nov. 19, 1975. Application for reissue Jul. 25, 1979, Ser. No. 60,690

Int. Cl.[3] G11C *19/08*

U.S. Cl. 365—15 22 Claims



14. In a magnetic bubble memory device having a magnetic film for supporting magnetic bubbles, including generator means for creating magnetic bubbles in said film, and detector means for sensing said magnetic bubbles,

the improvement which comprises a first and second storage area located on said film with said first storage area a different number of bubble periods from said detector means than said second storage area, so that bubbles from said first storage area arrive at said detector means at a different cycle of rotation than bubbles from said second storage area, enabling consecutive bit reading of said magnetic bubbles.

PLANT PATENTS

GRANTED SEPTEMBER 1, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,762

MINIATURE ROSE PLANT

Jack E. Christensen, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Jun. 11, 1980, Ser. No. 158,354
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid miniature class, substantially as herein shown and described, and being especially characterized in the profusion of its blooms throughout the growing season, and the uniformity of the coral and pink coloration of the same, said plant being vigorous and hardy and of somewhat higher than average resistance to mildew, under comparable growing conditions.

4,763

STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates Inc., Watsonville, Calif.

Filed May 27, 1980, Ser. No. 153,392
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

PATENTS

GRANTED SEP. 1, 1981

ERRATA

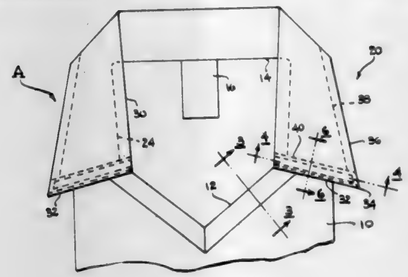
For CLASS	See PATENT NO.
411–441	4,286,496
369–244	4,286,789
369–036	4,286,790
585–006	4,287,074
106–039	4,287,075
369–045	4,287,413

PATENTS

GRANTED SEPTEMBER 1, 1981

GENERAL AND MECHANICAL

4,286,337
SHAPE RETAINING COLLAR DEVICES AND ARTICLES OF WEARING APPAREL USING SAME
Edmond A. Malouf, Jr., 13440 Tiara St., Van Nuys, Calif. 91401
Filed Sep. 24, 1979, Ser. No. 78,553
Int. Cl.³ A41B 1/14
U.S. Cl. 2—116 **15 Claims**





1. A shape retaining collar device for use with garments of wearing apparel including a torso covering segment, said shape retaining collar device comprising:
(a) a first fabric portion attachable to said torso covering segment and which first fabric portion is generally non-exposable to a viewer,
(b) a second fabric portion extending from said first fabric portion in the form of a collar extending around some of said first fabric portion, said second fabric portion having a pair of edges which are forwardly presented to a viewer of said collar, said first and second fabric portions being arranged so that the torso covering segment has an open neck area in the front of the garment such that a front portion of the neck of the user is exposed and which torso covering segment does not have a releasable fastening means in the neck-line region,
(c) a separate collar stay located at or in proximity to the forwardly presented edges of said second fabric portion and extending for at least the major portion of the dimension of said edges of said second fabric portion, said collar stays also being located so that they are parallel to the forwardly presented edges of the second fabric portion, and
(d) a tab extending from each said stay and extending along said first fabric portion at an acute angle with respect to said stays to enable said second fabric portion to establish an acute angle with said first fabric portion, said tabs also being parallel in at least one plane to the collar stays from which they extend.

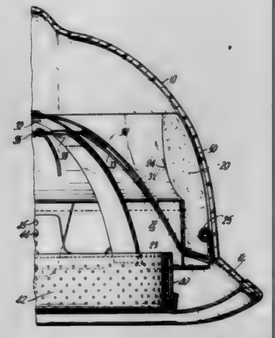
7. A shirt construction comprising:
(a) a shirt body portion,
(b) a shirt collar on said body portion and forming a neckline to at least partially encircle the neck of a wearer, said collar having a pair of tips spaced apart from the neckline and a pair of edges with each extending from the neckline to the associated tip, said shirt body portion and shirt collar being arranged so that the shirt body portion and collar have an open neck area in the front of the shirt such that a front portion of the neck of a user is exposed and which shirt body portion does not have a releasable fastening means in the neckline region,
(c) retaining means to retain a collar stay with respect to said shirt collar at each of the pair of edges, and
(d) a separate collar stay retained by each said retaining means and extending along each said edge in close proximity to each said edge from said neckline, each said collar stay having a tab located at an acute angle with respect to said stay and which tab extends inwardly of said shirt collar at said neckline, each of said collar stays also being located so that they are parallel to the edges which are forwardly presented edges.

4,286,338
ADJUSTABLE PAPER CAP
Thomas P. Maney, 535 Greenglade Ave., Worthington, Ohio 43085
Filed Oct. 9, 1980, Ser. No. 195,479
Int. Cl.³ A42B 1/00, 1/22
U.S. Cl. 2—197 **17 Claims**



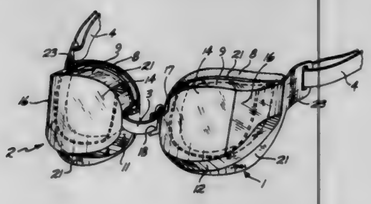
11. An adjustable cap comprising first and second elongated side panels with respective opposite ends adapted to be disposed in co-extensive relationship with each panel having opposed upper and lower longitudinally extending edges, each of said first and second panels having a marginal edge portion at each longitudinally extending edge folded relatively inwardly thereof into superimposed relationship between said two panels, said upper and lower marginal edge portions overlapping with the upper edge portion projecting a distance downwardly to partially cover the lower edge portion,
said second panel being formed with a front section and a rear section extending in longitudinally aligned overlapping relationship with adjacent ends of the front and rear sections telescopically interconnected to permit relative longitudinal displacement thereof for selective size adjustment, said interconnected sections having the overlapping marginal edge portions of the one section telescopically positioned interiorly of the overlapping marginal edge portions of the other section, each of said front and rear sections having their opposite ends connecting with a respective end of said first panel, and
an elongated crown formed from flexible sheet material and having a plurality of longitudinally extending pleated panels with an outermost pleat panel at each side thereof secured to an inwardly facing surface of the innermost positioned marginal edge portion of said first and second panel, said pleated panels disposed in coplanar relationship to said side panels when said crown is collapsed to a fully folded configuration.

4,286,339
FIREMAN'S HELMET WITH ENERGY ABSORBING LINER
Peter A. Coombs, 62 Birkendene Rd., Caldwell, N.J. 07006
Filed Dec. 4, 1978, Ser. No. 966,397
Int. Cl.³ A42B 3/02
U.S. Cl. 2—414 11 Claims



1. A fireman's helmet having an impact attenuation suspension comprising polymeric helmet shell, a non-resilient foam polymer liner in the form of a ring having an exterior conforming to the interior of the shell, a cradle of straps of webbing for engagement with the wearer's head under conditions of impact, said cradle comprising a plurality of straps arranged radially from a central apex outwardly and downwardly to the lower rim of the foam liner, about the rim and upwardly on the exterior of the foam liner, thence about a resilient member inset in a groove which encircles the exterior of the foam liner, thence downwardly and about the lower rim and toward the apex to a drawstring for adjustment of the cradle size, the lower rim of the foam liner being encased in a ring of channel cross-section formed of a relatively rigid polymer, and a headband secured to the foam liner for supporting the helmet on the wearer's head.

4,286,340
SWIM GOGGLES
Kim N. Lathrop, 1622 E. 56th Ave., Portland, Oreg. 97215
Filed Dec. 10, 1979, Ser. No. 101,819
Int. Cl.³ A61F 9/02
U.S. Cl. 2—430 9 Claims



1. In swim goggles including two eyepiece cups, nose strap means for connecting inner ends of such cups and head strap means for connecting outer ends of such cups and extending around the head of a wearer, the improvement comprising each eyepiece cup including a frame portion having an upper margin fittable into the upper portion of an eye socket of the wearer so that the eyepiece cup presents a hydrodynamically smooth transition between the wearer's eyebrow and the goggles, said eyepiece cup frame portion upper margin including a flange and a generally rounded transition portion between said flange and the remainder of the eyepiece cup to minimize discomfort to the wearer, and each eyepiece cup frame portion having a lower margin which generally conforms with the outer side of the cheekbone of the wearer at a location a substantial distance below its upper edge.

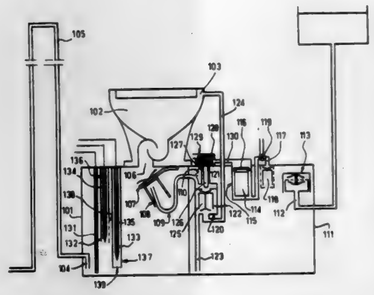
4,286,341
VASCULAR PROSTHESIS AND METHOD OF MAKING THE SAME
Raymond T. Greer; Bradley H. Vale, both of Ames, and Randall L. Knoll, Altoona, all of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Continuation-in-part of Ser. No. 30,146, Apr. 16, 1979, abandoned. This application May 23, 1979, Ser. No. 41,607
Int. Cl.³ A61F 1/24
U.S. Cl. 3—1.4 34 Claims



1. A vascular prosthesis comprising a flexible support tube having a porous homogenous hydrogel layer along the inside thereof and a porous heterogenous hydrogel layer along the outside thereof, said homogenous layer having pores of a maximum size less than 20 microns Feret diameter, and said heterogenous layer having pores of the same size as said homogenous layer and in addition having larger pores of a Feret diameter within the range of 20 to 200 microns.

22. A method for making a vascular prosthesis, comprising the steps of impregnating a porous flexible support tube with a polymerizable mixture of a monolefinic monomer and a minor proportion of a cross-linking agent dissolved in a first cosolvent medium comprising a first constituent in which both the monomer and polymer are readily soluble and a second constituent in which said monomer is soluble but said polymer is substantially insoluble, said second constituent exceeding 45% by weight of said polymerizable mixture, polymerizing said monomer in said first cosolvent medium to provide a cross-linked heterogenous hydrogel having a microstructure characterized by both microvoids and macrovoids, coating the interior of said tube with a second polymerizable mixture of the same monomer and cross-linking agent in a second cosolvent medium containing the same constituents as said first cosolvent medium but wherein said second constituent is less than 45% by weight of the polymerizable mixture, and polymerizing said monomer of said second mixture to produce a smooth hydrogel lining for said tube having a homogenous microstructure substantially free of macrovoids.

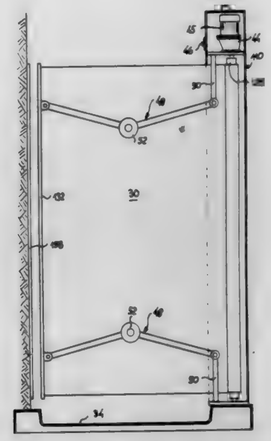
4,286,342
TOILET INSTALLATION
Alain Anthony, Parc Offenbach, 33, rue Cartault, 92800 Puteaux, France
Continuation-in-part of Ser. No. 760,397, Jan. 18, 1977, Pat. No. 4,179,048. This application Mar. 12, 1979, Ser. No. 19,646
Claims priority, application France, Sep. 28, 1978, 78 27808
Int. Cl.³ E03D 11/10; F16K 31/12; E03D 5/012, 5/02
U.S. Cl. 4—321 12 Claims



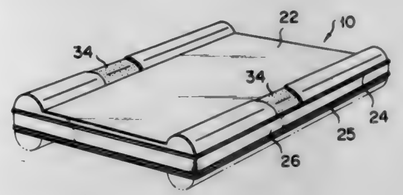
1. A toilet installation comprising a toilet fixture, a discharge tank disposed beneath said toilet fixture and having a drain orifice and an inlet orifice in communication with said fixture, an obturating member adapted to sealingly mate with the edge defining said inlet orifice to seal it off and a source of compressed fluid connected to said discharge tank through conduit means for pressurizing said discharge tank and expelling effluent including waste matter through the drain orifice, wherein the improvement comprises said obturating member having a pliable edge portion serving as a hinge to connect said obturating member to one side of said inlet orifice, and to permit said obturating member to hang into said discharge tank in open nonsealed relationship to said inlet orifice when the latter is unpressurized, said conduit means having an outlet end proximate to and aimed at said obturating member whereby a blast of fluid issuing from said conduit means outlet end thrusts said obturating member back and urges it against the edge of said inlet orifice to sealingly close the latter.

4,286,343
PARTITION-WALL ARRANGEMENT
Bruno Lampka, im Steinbichl 3, 8960 Kempton, Fed. Rep. of Germany
Filed Mar. 5, 1980, Ser. No. 127,532
Int. Cl.³ A47K 3/22
U.S. Cl. 4—596 8 Claims

1. A partition arrangement for bath or shower tubs installed in room corners characterized by a hollow post mountable on that corner of the tub which is diagonally opposed to said room corner and provided with a pair of flexible partition walls in the inner chamber of the hollow post; at least one vertical slit provided in one wall of the hollow post; at least one vertical shaft rotatably mounted in the chamber of the hollow post; at least one of said pair of flexible partition walls being fastened at and wound on said vertical shaft and being passed through said vertical slit; at an end portion of said flexible partition wall projecting out of the hollow post a vertical bar being fastened covering said vertical slit when the partition wall is wound up; the rotatable shaft being provided with means for winding up that partition wall; both partition walls of said pair of partitions walls being extractable rectangularly with respect to one another; an adjusting device arranged at the upper and/or lower end of the hollow post for changing the overall length thereof and a room ceiling fastening plate at the upper end of the post or the upper adjusting device thereof.



4,286,344
MATTRESS
Minoru Ikeda, Kokubunji, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1979, Ser. No. 105,929
Claims priority, application Japan, Oct. 22, 1979, 54-136266; Nov. 6, 1979, 54-154004[U]; Nov. 6, 1979, 54-154005[U]; Nov. 6, 1979, 54-154006[U]
Int. Cl.³ A47C 23/04
U.S. Cl. 5—424 10 Claims



1. A mattress for preventing a user lying thereon from falling from the mattress, comprising:
- a spring unit (12) including a plurality of coil springs arranged in parallel with one another;
- an elastomeric layer (18;19) disposed at least on one of the top and bottom of the spring unit (12) and wrapped with an outer covering (20; 22,23), whereon a user is to lie;
- fall preventing means disposed at least on the top side of the elastomeric layer, said fall preventing means including a pair of ridges (34) of elastomeric material extending in the longitudinal direction of the elastomeric layer and protruding from the elastomeric layer, each ridge (34) of said fall preventing means having a sectional shape including a partial circle and being harder than the elastomeric layer, and each ridge of said fall preventing means being interposed between the outer covering (20; 22,23) and the elastomeric layer (18;19); and
- connecting means (30,31; 42) one end of which is connected to the outer covering (20;22, 23) and the other end of which is connected to the coil springs of the spring unit

(12), each ridge (34) being fixed to said connecting means intermediate the connection to the outer covering and the connection to the coil springs;

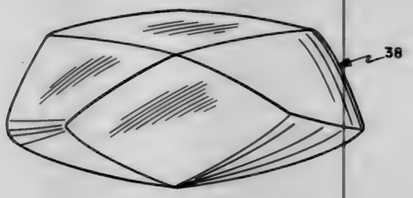
whereby the user lying on the elastomeric layer on which said fall preventing means is disposed will be prevented from falling from the mattress.

4,286,345

QUASI-OCTAGONAL PILLOW CONSTRUCTION AND METHOD

Maxine H. Maher, 14219 Minorca Cove, Del Mar, Calif. 92014

Filed Mar. 18, 1980, Ser. No. 131,282
Int. Cl.³ A47G 9/00
U.S. Cl. 5—434 **11 Claims**



1. A pillow construction comprising:

four parallelogram shaped panel pieces having edges longer than their ends,

the first end of each panel being joined along a first side of an adjacent panel with the edge of a first side of such panel being in alignment with the edge of a first end of an adjacent panel,

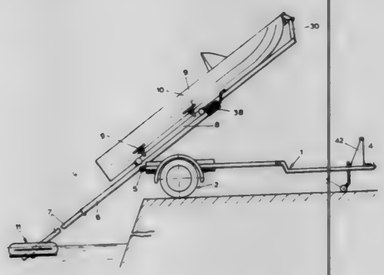
each panel being folded and the second side of each panel being joined to the first side and the second end of an adjacent panel.

4,286,346

BOAT SLIPWAY FOR MOBILE OR FIXED SET-UP

Eduard Wiek, 16, Horstlindelaan, Enschede, Netherlands

Filed Jul. 19, 1979, Ser. No. 58,956
Claims priority, application Netherlands, Mar. 28, 1979, 7902412
Int. Cl.³ B60P 3/10; B63B 21/64; B63C 13/001
U.S. Cl. 9—1.2 **7 Claims**



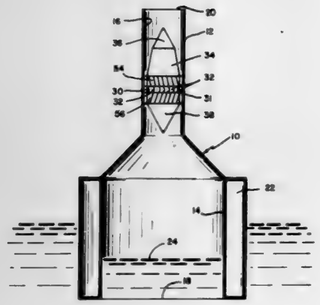
1. Mobile or fixed boat slipway apparatus, comprising a framework having means for supporting a boat, said framework supported for pivotal movement between a substantially horizontal position when a boat is supported thereby and an inclined position for facilitating the launching or landing a boat from the slipway into and out of the water, said framework mounted to be freely pivotable around a support shaft and including a slide mounted for telescopic movement in a longitudinal direction along the length of said framework, said telescopic slide having an outer end portion which is projectable outwardly from the framework, at least one buoyant element for supporting said end portion of said slide from the water, and means for selectively adjusting the buoyant force of said element so that said end portion of said slide may be submerged in the water when a boat is launched or taken out of the water, said slide including means supporting an undercarriage for a boat mounted to travel longitudinally along said framework in telescopic relation thereto, said undercarriage supported on said framework by means of at least two pairs of spaced apart flanged rollers for guiding said undercarriage against substantial lateral deflection with respect to said framework, said undercarriage and said framework including means for restraining said undercarriage against displacement normal and away from said framework during telescopic movement thereon.

4,286,347

DOUBLE ACTING TURBINE FOR CONVERTING WAVE ENERGY OF WATER TO ELECTRICAL POWER

Jerry L. Modisette, Nassau Bay, Tex., assignor to Tideland Signal Corporation, Houston, Tex.

Filed Jul. 22, 1974, Ser. No. 490,567
Int. Cl.³ B63B 21/52
U.S. Cl. 9—8 R **21 Claims**



1. An apparatus for converting the wave energy of water to electrical power comprising,

a tubular body, one end of which is adapted to be inserted into water waves and the second end adapted to extend out of the water whereby the rise and fall of water in the body creates a flow of air in alternate directions through the body,

a turbine wheel having a plurality of outwardly extending blades positioned in the body above the water level and exposed to and rotated by the flow of air,

an electrical generator connected to the turbine wheel for generating electricity in response to the rotation of the wheel,

the cross-sectional shape of the blades being shaped to provide an air flow passageway between adjacent blades which decreases in area from each edge thereby forming a restriction in the passageway between the blade edges whereby the wheel will rotate in a single direction regardless of the direction of flow of the air through the body.

10. An apparatus for converting sea wave energy into electrical energy, comprising

a buoy which moves with respect to the wave surface;

an air chamber in said buoy;

a hydraulic piston in said buoy;

a turbogenerator for converting the airflow kinetic energy into electrical energy;

a turbine stage including rigidly fixed blades in said turbogenerator;

a stator including rigidly fixed blades of said turbine stage;

a rotor of said turbine stage, disposed downstream of said stator with respect to the direction of airflow;

a supplementary stator including rigidly fixed blades of said turbine stage, disposed downstream of said rotor with respect to the direction of said airflow;

a generator of said turbogenerator;

also mounted whereon is said rotor of said turbine stage;

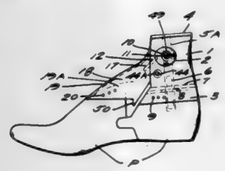
an air duct for said air chamber to communicate with said turbogenerator.

4,286,348

SHOE LAST CONVERSION ASSEMBLY FOR LASTING BOOTS

Thomas P. White, Sr., 159 King St. East, Saint John, N. B., Canada (E2L 1G9)

Filed Sep. 5, 1979, Ser. No. 72,787
Int. Cl.³ A43D 3/00
U.S. Cl. 12—133 R **4 Claims**



1. For lasting boots and similar footwear having an upper that preferably does not, although may cover but not engage the wearer's medial and lateral malleoli, if covering is preferred of said malleoli,

and for converting to such purpose a conventional shoe last which includes a forepart articulably joined to a backpart at a juncture region which includes a V-notch to permit articulation of the forepart relative to the rearpart for removal of the shoe last from a footwear upper formed thereabout; the forepart including a cone portion; and the backpart terminating at an upper end which lies below the malleoli;

an adapter assembly, comprising:

an upward extension for the backpart, including a medial vertical shoe last extension member and a lateral vertical extension member grouped together; means adjustably disposing the medial and lateral shoe last extension members adjustably fixed in lateral adjacency with a variable distance therebetween;

means for removably mounting the extension on the backpart so that the shoe last extension members extend above the malleolian level;

said shoe last extension including a skirt which, when the shoe last extension is mounted in place extends down around the exterior of the shoe last for part of the height of the shoe last;

a cone sub-assembly including a medial side portion, a lateral side portion and means for adjustably fixing these portions in lateral adjacency with a variable distance therebetween; the cone sub-assembly being externally configured at the bottom rear thereof to fit into the V-notch of the shoe last juncture region; the cone sub-assembly including a hood;

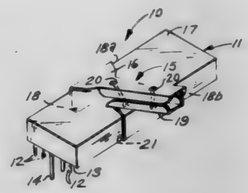
means for securing the cone-sub-assembly to the shoe last extension so that the cone sub-assembly hood at least partially covers-over the shoe last cone as a functionally somewhat enlarging structure therefor.

4,286,349

BROILER GRILL CLEANING BRUSH

Ernest Dugrenier, Box 2755, Road 124, West Sacramento, Calif. 95691

Filed Oct. 31, 1979, Ser. No. 90,010
Int. Cl.³ A46B 15/00
U.S. Cl. 15—111 **3 Claims**



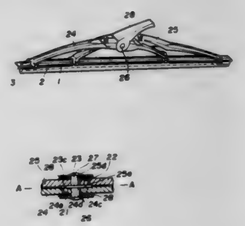
1. A broiler grill cleaning brush, comprising, in combination, a rectangular wooden block, a plurality of brush wire bristle clusters and a plurality of steel pegs embedded in said block, and protruding from the bottom side thereof; said pegs being in a straight row along a longitudinal center of said block, while said bristle clusters are on each opposite side portion of said block bottom side, separated by said peg row, and said pegs protruding further than said bristle clusters from said block.

4,286,350

WINDSCREEN WIPER BLADE

Yoshiju Ichise, Urawa, Japan, assignor to Nippon Wiper Blade Co., Ltd., Saitama, Japan

Filed Nov. 30, 1979, Ser. No. 99,027
Claims priority, application Japan, Nov. 30, 1978, 53-165246[U]; Apr. 4, 1979, 54-44259[U]
Int. Cl.³ B60S 1/40
U.S. Cl. 15—250.32 **8 Claims**



1. A windscreen wiper blade assembly comprising:

a rubber element for wiping a windscreen;

a backing strip connected to said rubber element;

a pair of yokes, said yokes having opposite ends, one end of one yoke being connected to one end of said backing strip and the opposite end of the other yoke being connected to the other end of the backing strip thereby attaching said yokes to said rubber element;

each one of said yokes having a surface portion defined intermediate said opposite ends such that the surface portions face one another;

each surface portion having a corresponding bore therethrough; and

a connecting means having a connecting pin which slidably engages the inner periphery of each of the corresponding bores for pivotably connecting said yokes and allowing for relative rotational movement of said yokes and pin elements integrally connected to said connecting pin and respectively engaging said yokes for restricting relative rotational movement of said yokes.

4,286,351

WIPER BLADES FOR VEHICLES

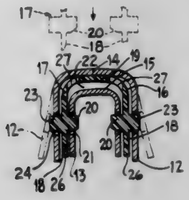
Peter Mower, Iwickenham, and John H. Gadd, Sunningdale, both of England, assignors to Trico Products Corporation, Buffalo, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,024

Claims priority, application United Kingdom, Dec. 12, 1978, 48088/78; Aug. 6, 1979, 27319/79

Int. Cl.³ B60S *1/38*

U.S. Cl. 15—250.42 **5 Claims**



1. In a wiper blade assembly comprising a harness having a primary yoke and at least one secondary yoke pivotally connected along its length to an end of the primary yoke at a joint therebetween, the yokes being of metal and each including a back portion, a pair of flanges extending down therefrom and being of similar cross section at said joint, the secondary yoke being disposed relative to the primary yoke so that the flanges thereof overlap the secondary yoke where they are pivotally connected at said joint between them, and a spacer of resilient plastics of similar cross-section to the yokes disposed between them at said joint to prevent metal-to-metal contact; the improvement wherein the spacer consists of a web and a pair of cheeks, each cheek having one of a pair of internally extending trunnions pivotally snap engaged in corresponding holes in the flanges of the secondary yoke, and the spacer cheeks each further being formed with one of a pair of externally extending projections which are aligned coaxially with the internal trunnions and engage in and extend through corresponding holes in the primary yoke flanges and hold the spacer and thereby the secondary yoke captive in the joint.

4,286,352

FURNITURE HINGE

Willi Pittasch, Herford, Fed. Rep. of Germany, assignor to Richard Heinze GmbH & Co. KG, Herford, Fed. Rep. of Germany

Filed Aug. 24, 1978, Ser. No. 936,287

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739417

Int. Cl.³ E05D *7/04*

U.S. Cl. 16—130 **24 Claims**

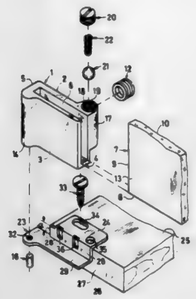
23. A hinge for pivoting and guiding a door on furniture comprising:

a hinge arm for attachment to said furniture and a hinge member for attachment to said door and being pivotally connected to the hinge arm by at least one pivot pin,

said hinge member being formed by a U-profile having two flanges with one of said flanges being positioned on the door outside face and visible when the door is closed and the other of said flanges being positioned on the door inside face and being behind the door when the door is closed.

a yoke connecting said flanges to each other and abutting a side face of the door, said two flanges of said U-profile, which encloses the door in form of a clamp, being connected to each other additionally by wall means at right angles to said flanges and said yoke,

said hinge member having a first surface which is adjacent to a second surface of the hinge arm in the door closed position, one of these surfaces being provided with a ratchet surface and the other of these surfaces being provided with a resiliently urged ratchetting element which snap fits behind said ratchet surface.



4,286,353

MULTI-ELEMENT CONNECTION FOR STRUCTURAL MEMBERS

John N. Roche, Greenville, Pa., assignor to R. D. Werner Co., Inc., Greenville, Pa.

Filed Dec. 11, 1978, Ser. No. 968,211

Int. Cl.³ E05D *11/10*

U.S. Cl. 16—143 **9 Claims**

1. A multi-element connection for joining structural members secured thereto into an automatically locked co-linear arrangement, and adapted to be rotated or folded to bring the structural members into such co-linear arrangement from an unlocked configuration, said connection comprising:

(a) a latch member adapted to secure a structural member thereto, said latch member including an outwardly projecting latch tongue having a latching recess formed therein;

(b) a clevis member adapted to secure a structural member thereto, said clevis member including a clevis channel for receiving said latch tongue;

(c) pivot means joining said latch and clevis members in rotary reciprocable engagement, whereby said latch tongue is received in said clevis channel in a closed and locked configuration, and is pivotally displaceable to an open and unlocked configuration along an arcuate path;

(d) latch means reciprocably received in said clevis member and transversely displaceable with respect to said path from a latched configuration, wherein said latch means projects into said path, to an unlatched configuration, wherein said latch means is displaced proximally away from said path, said latch means including latch pin means for engaging said latching recess;

(e) said latch tongue being a generally wedge-shaped tongue having a first radial edge coincident with an abutment end wall of said latch plate member and a second radial edge at the distal end thereof, said radial edges joined by an arcuate edge, said latch tongue further including a camming surface at said distal end for displacing said latch means from said latched to said unlatched configurations as said latch tongue is pivoted from said open to said closed configurations.

4,286,354

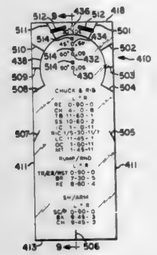
MEAT GRAIN TEMPLATE

Robert S. Weinhaus, 868 Albey La., St. Louis, Mo. 63132

Filed May 22, 1979, Ser. No. 41,492

Int. Cl.³ A22C *17/10, 17/02*

U.S. Cl. 17—1 R **11 Claims**



1. A meat grain template comprising:

(a) a body including a lower face and a plurality of continuous wall passages inclined at selected angles having a vertical component relative to said lower face, and

(b) each passage being substantially straight for receiving and directing a meat grain marker into a piece of meat disposed below the lower face.

4,286,355

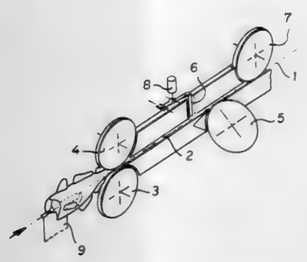
METHOD OF FILLETING FISH AND A FILLETING MACHINE FOR PERFORMING THIS METHOD

Horst K. H. Braeger, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lübeck, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,713

Int. Cl.³ A22C *25/16*

U.S. Cl. 17—46 **5 Claims**



1. A method of filleting fish comprising the steps of:

conveying the fish tail forwards toward a series of cutting knives,

performing back filleting cuts through the upper portion of the fish along the length thereof, and performing belly filleting cuts through the lower portion of the fish in the tail portion thereof up to a location close to the rear end of the belly cavity of the fish, with said back filleting cuts and belly filleting cuts terminating short of the vertebral column of the fish and leaving a flesh strip on both sides of the vertebral column,

thereafter performing first severing cuts through the upper portion of the fish along the sides of the vertebral column in a region rearwardly of the tail end of the cavity of the fish, to sever said flesh strip from both sides of the vertebral column in said region,

thereafter performing rib cuts through the sides of the fish through said region and above the length of the belly cavity, with said rib cuts extending upwardly to the ends of the back filleting cuts,

and finally performing second severing cuts along both sides of the vertebral column from the tail root of the fish to the end of the belly cavity to sever the fillets completely from the skeleton of the fish.

4,286,356

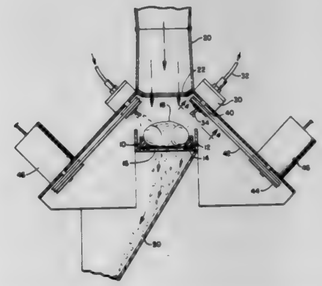
MACHINE FOR REMOVING MEAT FROM PREPARED CRAB BODIES

Richard T. Wenstrom, Ellsworth, Me., assignor to Sea Savory, Inc., Cambridge, Md.

Filed Aug. 29, 1979, Ser. No. 70,736

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—46 **5 Claims**



1. A machine for removing the meat from a crab body which has been prepared by removal of the carapace, claws, flippers and viscera leaving the two sections of meat separated by the visceral cavity and connected by the bottom shell comprising a work station, means for supporting a prepared crab body, means for moving the support below the work station with the prepared crab body hereon, and air jet means positioned above and outside the support means for directing air under pressure in a downward and inward direction toward both of the sections of crab meat, and means for rotating each the air jets in a circular path adjacent and encompassing the meat to be removed.

4,286,357

CARD CYLINDER SHROUD, FLAT MOUNTING AND BEARING ASSEMBLY

John E. Harrison, Sr., Greenville, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Division of Ser. No. 824,288, Aug. 15, 1977, Pat. No. 4,198,729.

This application Jun. 6, 1979, Ser. No. 45,993

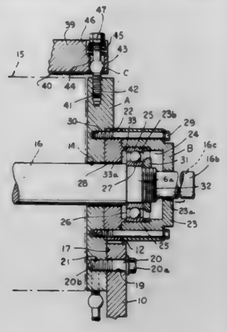
Int. Cl.³ D01G *15/32*

U.S. Cl. 19—98 **9 Claims**

1. A mounting assembly for stationary flats for a carding machine having a clothed cylinder and an arcuate mounting surface comprising:

a pair of upright spaced threaded elements carried for threadable adjustment adjacent an end portion of each flat bearing upon said arcuate mounting surface;

pivotal means securing said flat to said arcuate mounting surface intermediate said spaced threaded elements; and

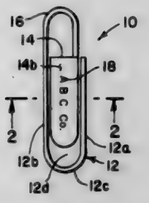


resilient means aligned with said pivotal means yieldably urging said flats toward said arcuate mounting means.

4,286,358
PAPER CLIP

Gary M. Levin, 940 E. 19 St., Brooklyn, N.Y. 11230

Filed Dec. 5, 1979, Ser. No. 100,445
Int. Cl.[3] B42F *1/02*; G09F *3/16*
U.S. Cl. 24—67 R 15 Claims



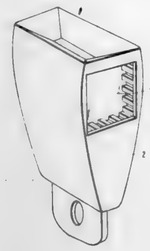
1. In a paper clip of the type formed of a single length of wire having opposite end portions bent into a U-shaped configuration to provide two distinct yet cooperating U-shaped gripping jaws, the improvement comprising a planar land disposed within the planar void that defines one of the gripping jaws, said planar land being formed with the respective wire sections defining said one gripping jaw whereby said planar land and jaw are formed from a single piece thereby monolithically to define a thin plate-like clamping plane that substantially fills the void.

4,286,359
PUSh BUTTON, ESPECIALLY FOR LOCKS OF SAFETY BELTS

Hans O. Scherenberg; Werner Breitschwerdt, both of Stuttgart; Wilhelm Klein, Aidlingen, and Walter Jahn, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1976, Ser. No. 726,560
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1975, 2543263
Int. Cl.[3] A44B *19/00*; A47C *31/00*
U.S. Cl. 24—230 R 6 Claims

1. A push button for locks whose top side is at most flush with a housing of the lock receiving the same, characterized in that the lateral guide surfaces of the push button and the corresponding guide surfaces in the lock housing are non-circular in transverse cross-section and are provided with a large number of projecting and recessed areas which are sized to prevent

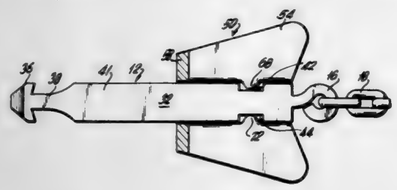


access by a user's fingernail to a clearance space formed between said projecting and recessed areas.

4,286,360
JEWELRY CLASP

Max Skobel, Edison, N.J., assignor to Laurel Enterprises, Rahway, N.J.

Filed Mar. 10, 1980, Ser. No. 128,839
Int. Cl.[3] A44C *5/18*; A44B *17/00*
U.S. Cl. 24—230 R 10 Claims



1. A jewelry clasp comprising:
a female member having an opening therein;
a male member adapted to be inserted into said female member through said opening, said male member having notches therein;
releasable locking means for clamping said male and female members together; and
means releasably engaging in said notches of said male member for preventing jewelry from sliding off said male member, said means including a retaining guard having a larger dimension than said male member.

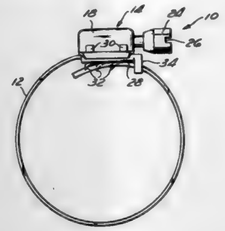
4,286,361
HOSE CLAMP

Donald R. MacKenzie, 6443 Menlo St., Simi Valley, Calif. 93063

Filed Aug. 11, 1980, Ser. No. 176,825
Int. Cl.[3] B65D *63/02*
U.S. Cl. 24—276 3 Claims

1. A hose clamp comprising:
a flexible band, said band having a series of evenly spaced apart openings;
a clamping mechanism having a housing, said housing having an inner exterior surface within which is formed a protruding member assembly, said inner exterior surface terminating longitudinally in a fore end and an aft end, said protruding member assembly being spaced from said fore end, said protruding member assembly to connect with at least one of said openings at one end of said band thereby fixing the position of said band relative to said

housing, a worm screw rotatably mounted upon said housing, said worm screw to engage at least one of said openings at the other end of said band, said other end of said band being located between said worm screw and said protruding member assembly, whereby turning of said worm screw causes relative movement between said



one end and said other end and varying of the size of the enclosed area of said band; and
a guide bracket assembly, said guide bracket assembly being attached to said housing at said fore end, said band to extend through said guide bracket assembly to guidingly locate and position said protruding member assembly within said openings of said band.

4,286,362
LIGHTWEIGHT LAMINATED GRID FOR LEAD ACID-STORAGE BATTERIES

Richard H. Hammar, Fraser, and Douglas J. Harvey, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 10,898, Feb. 9, 1979, Pat. No. 4,221,854.
This application Jan. 28, 1980, Ser. No. 116,362
Int. Cl.[3] H01M *4/72*, *35/04*
U.S. Cl. 29—2 3 Claims

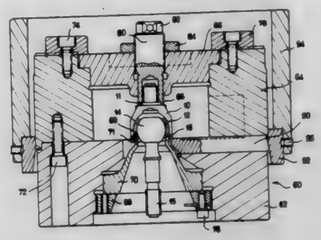


1. A method of making a lightweight laminated grid for a lead-acid storage battery comprising the steps of:
providing a trilaminate sheet comprising a support layer of a synthetic polymeric plastic bonded to a coextensive layer of lead or lead alloy foil by an interposed layer of adhesive;
forming a plurality of straight, parallel rows of intermittent slits through the thickness of said sheet, the spacing between said rows ultimately defining grid wire portions and the spacing between the slits of a said row ultimately defining node portions which interconnect said wire portions; and
stretching said sheet to open said slits and form an open mesh network of grid wire portions and interconnecting nodes, and twisting the network such that the foil layer forms ledges which face the grid header for holding battery paste.

4,286,363
METHOD OF ASSEMBLY FOR A BALL AND SOCKET JOINT

Gerard Morin, Libiaire, France, assignor to Societe Anonyme D.B.A., Drancy, France

Filed Jan. 4, 1980, Ser. No. 109,717
Claims priority, application France, Jan. 17, 1979, 79 01060
Int. Cl.[3] B21D *53/10*
U.S. Cl. 29—149.5 B 4 Claims



1. Method of assembly for a ball-and-socket joint, in particular for suspension or steering of an automobile vehicle comprising a housing in the general shape of a basin in which a blind bore receives components consisting of a bearing element of plastics material disposed in the said bore and bearing against the bottom of the latter, a pivot presenting a shank and a spherical head resiliently covered by the said bearing element, and a locking ring mounted in the said bore and applied at its internal face against the bearing element, characterised in that, the various components of the joint having been disposed in the housing, the assembly thus constituted is placed on a tool comprising stressing means acting on the external face of the ring to compress the bearing element and progressively load the joint until a predetermined value of the tilting torque of the pivot is obtained in relation to the housing, and once the said predetermined value has been obtained, the axial load exercised by the said stressing means is maintained and one then folds back towards the axis of the housing all or part of the extreme edge of the latter with the aid of means acting radially on the said edge so as to trap the ring in the bore without altering the predetermined value of the tilting torque.

4,286,364
METHOD OF ORIFICE FITTING MECHANISM FOR PIPELINES

Walter L. Connolly, 133 Danefield Pl., Moraga, Calif. 94556

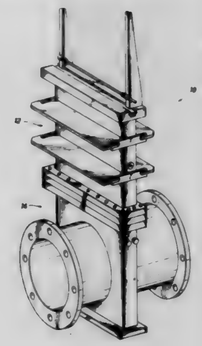
Division of Ser. No. 923,023, Jul. 10, 1978, Pat. No. 4,191,216.
This application Sep. 10, 1979, Ser. No. 74,239
Int. Cl.[3] F16K *27/10*; B23K *31/00*
U.S. Cl. 29—157.1 R 4 Claims

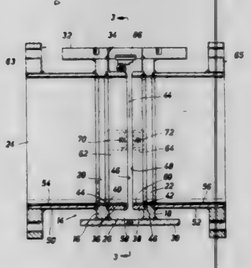
1. A method of fabricating an orifice fitting structure including restricted opening means for passage of an orifice plate carrier and having closely spaced internal hubs defining opposed sealing surfaces for engagement by the sealing element of the orifice plate carrier and wherein internal and external welds between the various structural components are necessary for high pressure service conditions, said method comprising:
forming a basic pressure containing orifice fitting body structure by connecting a plurality of generally rectangular body plates by means of external weld connections, said body structure defining a rectangular access opening and opposed openings through which fluid flows;
extending welding apparatus through said access opening and forming internal weld connections between said body plates;
locating internal hub rings within said body structure in such manner as to position opposed end faces of said hub rings in parallel closely spaced relation and to position inner

portions of said hubs about said opposed openings for welded connection to selected ones of said body plates;

extending welding apparatus through said opposed openings and forming welds between the selected body plates and hub rings;

positioning conduit sections in assembly with selected ones of said body plates defining intersection therebetween and in registry with said opposed openings;





extending welding apparatus through said conduit sections and connecting said conduit sections to the external portion of said selected body plates by means of internal welds; and

making external welds at the intersection of said conduit sections and body plates.

4,286,365

HEAT EXCHANGERS

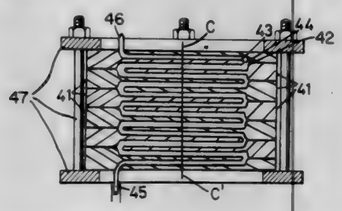
Gordon R. Creighton, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 553,868, Feb. 27, 1975, abandoned. This application Jul. 29, 1976, Ser. No. 709,831

Claims priority, application United Kingdom, Mar. 14, 1974, 11312/74

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 V **15 Claims**



1. A method of making a heat exchanger consisting of a conduit having a plurality of passes joined by integral return bends which consists essentially of, in sequence,

(i) bending two strips of pliable material together in a zigzag manner to form a stack of parallel passes, the two strips being displaced laterally with respect to one another,

(ii) bonding the two strips together along lines parallel to their longitudinal edges to form a flat, serpentine conduit, and

(iii) inflating the conduit by applying internally a fluid under pressure.

4,286,366

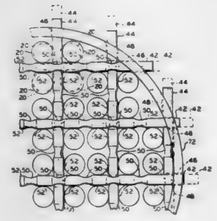
METHOD FOR THE CONSTRUCTION OF A BAFFLED HEAT EXCHANGER

Roy E. Vinyard, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 864,122, Dec. 23, 1977. This application Mar. 5, 1980, Ser. No. 127,275

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.4 **6 Claims**



1. A method of assembly of heat exchange tube bundle comprising a plurality of tubes, at least one outer ring, a plurality of rods supportable by each outer ring, each of said rods having at least one first region of reduced thickness providing means for allowing movement of a tube adjacent said first region in a first position of each of said rods to facilitate assembly of said tube bundle and each of said rods having at least one second region of increased thickness adjacent to a corresponding first region of reduced thickness and providing means for firmly engaging and preventing movement of a tube adjacent said second region in a second position of each of said rods. and at least one tube sheet, comprising the steps of:

a. supporting a first plurality of said rods in a first position across each outer ring in spaced mutually parallel relation;

b. supporting a second plurality of said rods in a first position across each outer ring in spaced mutually parallel relation, the common axis of alignment of said second plurality of rods being substantially normal to the common axis of alignment of said first plurality of rods;

c. inserting a plurality of said tubes through each of said outer rings in spaced mutually parallel relation, the common axis of alignment of said tubes being substantially normal to the common axis of alignment of said first plurality of rods and to the common axis of alignment of said second plurality of rods, each tube being positioned proximate one of said first plurality of rods and one of said second plurality of rods in each outer ring;

d. securing the outer ends of said tubes to a tube sheet; and

e. moving the first and second pluralities of rods in at least one of said outer rings from the respective first positions thereof to respective second positions thereof and thereby firmly engaging the respective tubes proximate thereto.

4,286,367

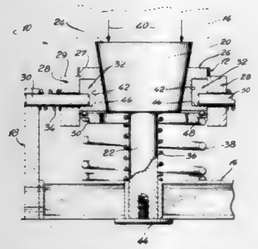
APPARATUS FOR INSERTING A RESILIENT BAND ON A CONTAINER

Wolfgang Geisinger, 180 rue Paradis, Rosemere, Quebec, Canada

Filed Mar. 18, 1980, Ser. No. 131,412

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—235 **6 Claims**



1. In combination with a container and a resilient band, an apparatus for inserting said band on said container adjacent one peripheral end thereof, comprising: a support member adapted to receive thereon said container and adapted to be forced downward by said container, said support member having a tapered side wall and a top wall of a size smaller than that of the peripheral end of said container; a first set of segments arranged circumferentially about said support member, each segment having a top wall extending below said top wall of said support member and an inner wall in sliding contact with said side wall of said support member, said segments being radially displaceable relative to said support member as said support member is forced downward; a second set of segments arranged circumferentially about said first set of segments, each segment of said second set having a top wall extending below the top wall of the segments of said first to define therewith a band-receiving area; means urging said second set of segments exteriorly against said first set of segments; first spring means opposing downward movement of said support member; second spring means opposing downward movement of said first set of segments, said second spring means having a spring modulus higher than that of said first spring means whereby downward movement of said container on said support member causes, first, a radial movement only of said first set of segments to stretch said band located in said band-receiving area until said container contacts said first set of segments whereupon said first set of segments moves downward within said second set of segments and the stretched band moves in engagement with the said container adjacent said peripheral end.

4,286,368

FREEZE PLUG EJECTOR AND INJECTOR

Joseph Magana, 6607 S. Loch Alene Ave., Pico Rivera, Calif. 90660

Filed Dec. 3, 1979, Ser. No. 84,096

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—267 **1 Claim**

1. Apparatus for removing a freeze plug from an automotive engine block mounted within automotive vehicle walls, comprising:

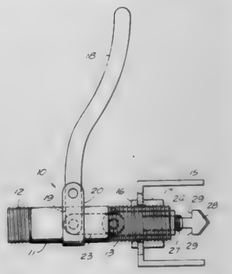
hollow open-ended pipe means having threaded end portions and a slotlike opening in a sidewall;

a generally C-shaped member having a threaded opening received onto one end of the pipe means with both arms of the member extending outwardly of the pipe means end;

a handle having an end portion extending through the slotlike opening in the pipe means with the remainder of the handle extending outwardly thereof;

a strap clamped about the pipe means and pivotally interconnected with the handle;

elongated means pivotally connected to the end of the handle within the pipe means and extending towared the pipe means end carrying the C-shaped member; and



a generally pointed, platelike spear means interconnected with the elongated means and extending outwardly of the pipe means.

4,286,369

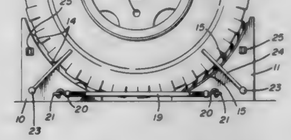
TIRE MOUNTING GUIDES

Andrew Fusco, 52 Winchester Ave., Youngstown, Ohio 44509

Filed Apr. 7, 1980, Ser. No. 137,646

Int. Cl.³ B25B *27/14*

U.S. Cl. 29—273 **4 Claims**



1. A tire mounting guide comprising a pair of oppositely disposed wedged shaped body members, each having a flat base and spaced vertical sides and an outwardly and upwardly curving concave member positioned therebetween so as to form a tire engaging surface, a plurality of rollers positioned transversely in one of said concave members and a plurality of pointed members formed on the other of said concave members, said pointed members being directed upwardly with respect to said concave member on which they are positioned, fasteners on the opposite sides of each of said wedge shaped body members and a pair of resilient cords secured at their opposite ends to said fasteners so as to enable said resilient cords to urge said oppositely disposed wedge shaped body members toward one another in supporting relation to a wheel and tire disposed thereon.

4,286,370

UNIVERSAL JOINT FLEXURE HINGE SUSPENSION SYSTEM, AND METHOD FOR MANUFACTURING THIS SYSTEM

Robert J. G. Craig, Malibu, Calif., assignor to Incosym, Inc., Westlake Village, Calif.

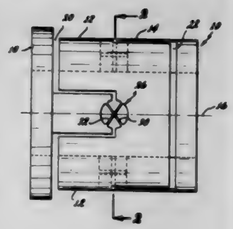
Continuation of Ser. No. 822,384, Aug. 5, 1977, abandoned. This application May 19, 1980, Ser. No. 150,742

Int. Cl.³ B23P *1/00*; G01C *19/18*

U.S. Cl. 29—434 **12 Claims**

1. A method for making a monolithic flexure hinge suspension system for a tuned inertial instrument, comprising the steps of:

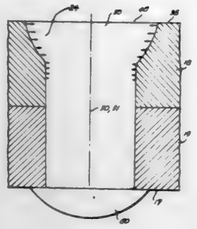
(a) mounting on a mandrel, an axially extended workpiece having an axis and an axial hole extending at least partly therethrough, defining a bounding wall having an interior surface and an outside surface;
(b) forming in said outside surface at each of two diametrically opposite locations of said workpiece an original, two complemental, adjacent depressions separated from each other by a first thin remaining raised bridge having a longitudinal dimension which is skew in relation to the axis of the workpiece;
(c) forming in said interior surface at each of said two diametrically opposite locations, a secondary two complemental adjacent depressions separated from each other by a second thin remaining raised bridge having a longitudinal dimension which is skew relative to, and crosses the



like dimension of said first raised bridge, and which is skew in relation to the axis of the workpiece;
(d) extending at each of said locations a predetermined one of the primary and secondary depressions to meet the corresponding other depressions to form, at each location, an orifice through the tubular wall bridged across by the corresponding first and second raised crossed bridges;
(e) removing in each said orifice the remaining material of the workpiece interconnecting said first raised bridge and its proximate second raised bridge to make the crossed raised bridges in each orifice separate from each other; and
(f) cutting said workpiece between said diametrically opposed orifices to form two substantially co-axial, cylindrical tubes, monolithically and integrally connected only by said separated, skew, raised crossed bridges.

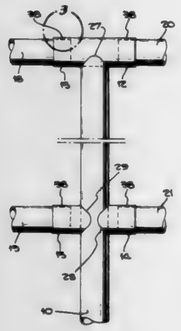
4,286,371
CONTINUOUS CURVE COUNTERSINK AND RIVET HEAD STRUCTURE FOR RIVETED WORK PIECES
Joseph G. Falcioni, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.
Division of Ser. No. 865,933, Dec. 30, 1977, Pat. No. 4,245,921, which is a continuation-in-part of Ser. No. 755,834, Dec. 30, 1976, Pat. No. 4,111,580. This application Mar. 10, 1980, Ser. No. 128,512
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 **7 Claims**

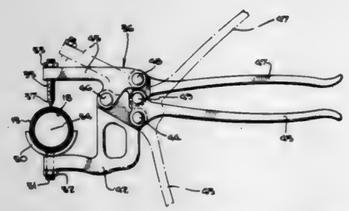
1. A process for riveting workpieces together comprising the steps of:
forming an aperture through said workpieces said aperture including a bore and having a countersink adjacent a first surface of one of said workpieces, said countersink comprising a continuously curved surface extending from said first surface of said workpiece to said bore, said countersink having a concave portion extending from said first surface toward said bore and having a convex portion extending from said concave portion to said bore;
placing a rivet blank to said bore and countersink; and



upsetting said rivet blank into intimate contact with said countersink to form a structural fluid-tight joint.

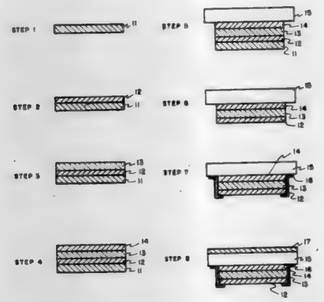
4,286,372
METHOD OF ERECTION OF PIPE RAIL JOINTING SYSTEM
Roy W. Batcheller, West Covina, Calif., assignor to CraneVeyor Corporation, South El Monte, Calif.
Filed Nov. 16, 1979, Ser. No. 94,711
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—516 **1 Claim**





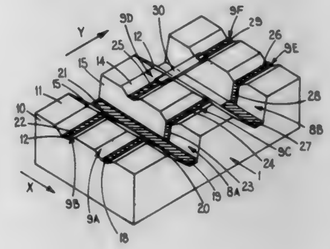
1. A method for erection on the site of a pipe rail jointing system comprising posts for successive vertical attachment to the site at horizontally spaced intervals, said posts having horizontal sleeves extending radially outward from exterior faces of said posts in a horizontal direction, and rails for engagement with said sleeves at respective ends of the rails, said method comprising cutting said rails at the site to respective lengths greater than the distance between respective sleeve ends to provide an overlap in the sleeve of about twice the rail diameter and a length less than the distance between faces of the posts on which the respective sleeves are located, adjusting posts and rails with respect to each other in final position, and attaching each sleeve to the adjacent end of the respective rail by progressively pressing a punch with a pointed end into the sleeve at the overlap portion while supporting the sleeve on the side opposite the punch throughout about one-half the circumference, thereby forming a shallow rounded depression on the outside of the pipe rail receptive of a complementary portion of the sleeve and a sharp depression on the outside of the sleeve in diametrical alignment with said depression and at the location of the punch whereby to anchor the pipe rails to the posts as an assembly at the site.

4,286,373
METHOD OF MAKING NEGATIVE ELECTRON AFFINITY PHOTOCATHODE
William A. Gutierrez; Herbert L. Wilson, both of Woodbridge, and Edward M. Yee, Burke, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 8, 1980, Ser. No. 110,513
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **2 Claims**



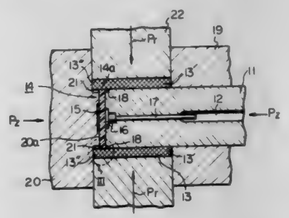
1. A method of making a glass-sealed transmission mode gallium arsenide photocathode comprising the steps of:
(a) preparing a germanium seed crystal for epitaxial growth;
(b) epitaxially growing a p-doped gallium arsenide photoemitting layer onto the prepared germanium crystal using the metal alkyl-hydride vapor-phase process;
(c) epitaxially growing a p-doped gallium aluminum arsenide passivating layer onto said photoemitting layer using the metal alkyl-hydride vapor-phase process;
(d) depositing a suitable antireflection or interface layer onto said passivating layer;
(e) fusion bonding the antireflection or interface layer surface of the structure composed of seed crystal, photoemitting layer, passivating layer, and antireflection or interface layer to a glass faceplate that serves as the input window of the device;
(f) preferentially etching away the exposed germanium seed crystal to expose the photoemitting layer;
(g) applying ohmic contact to the periphery of said photoemitting layer for effecting electrical contact to the photocathode;
(h) applying a suitable glass/air antireflection coating on the exposed photon input side of the glass window; and
(i) activating the photoemitting layer by heat cleaning in vacuum and applying monolayer amounts of cesium and oxygen to the photoemitting layer.

4,286,374
LARGE SCALE INTEGRATED CIRCUIT PRODUCTION
Gerald H. Hantusch, Cheadle, England, assignor to International Computers Limited, Stevenage, England
Filed Feb. 11, 1980, Ser. No. 120,649
Claims priority, application United Kingdom, Feb. 24, 1979, 06622/79
Int. Cl.³ H01L *21/90*
U.S. Cl. 29—580 **10 Claims**



1. A method of forming a connection network for an integrated circuit device, including the steps of providing a substrate of crystalline material having a planar surface, forming in the substrate a first array of grooves of a first depth relative to the planar surface, forming in the substrate a second array of grooves of a second depth relative to the planar surface and such that the grooves of the arrays intersect, and providing conductive strips in the grooves of each said array together with additional conductive strips for selectively electrically interconnecting said conductive strips so that the latter are interconnected according to a desired pattern of interconnections.

4,286,375
METHOD OF MANUFACTURING CORELESS ARMATURE
Yoshimitsu Nakamura, Settsu, and Masami Otada, Shijonawate, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Oct. 1, 1979, Ser. No. 80,678
Claims priority, application Japan, Sep. 29, 1978, 53-120850
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—597 **5 Claims**



1. A method of manufacturing a coreless armature comprising, coupling a cylindrically wound coil having at one of axial end edges a plurality of exposed conductor parts of insulation-coated coil winding wire with an insulative disk member substantially of the same diameter as the inner peripheral diameter of said coil and carrying on one surface a plurality of commutator segments radially extending from the central area to the periphery of said disk member and on the other surface a rotary shaft as secured at one end thereof to the axial center of said disk member while electrically connecting respective said exposed conductor parts to each of said commutator segments,

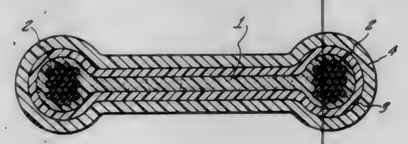
including the steps of inserting said disk member inside said cylindrical coil at a position adjacent said axial end of the coil so as to have respective said commutator segments engaged with each of said exposed conductor parts of the coil, restricting each of said axial end edges of the coil under a pressure applied in axial directions of the coil, defining a ring-shaped space on both of said surfaces of the disk member at the periphery thereof where the disk member abuts the inner periphery of the coil, and applying over the outer periphery of the coil a pressure in all radial inward directions until respective winding turns of the coil partly bulge into said ring-shaped spaces to tightly clamp the peripheral edge of the disk member while other parts of said turns are substantially flatly compressed.

4,286,376

METHOD OF MAKING HEATER CABLE OF SELF-LIMITING CONDUCTIVE EXTRUDATES

Robert Smith-Johannsen, and Jack M. Walker, both of Portola Valley, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 542,592, Jan. 20, 1975, abandoned, which is a division of Ser. No. 287,444, Sep. 8, 1972, Pat. No. 3,861,029. This application Jan. 11, 1978, Ser. No. 868,517
The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.
Int. Cl.³ H05B *03/10*
U.S. Cl. 29—611 **7 Claims**



1. A method of forming an electrically conductive self-regulating article which comprises the steps of (1) extruding onto a pair of elongate parallel electrodes held in spaced-apart relation an electrode-interconnecting web of a composition consisting essentially of (a) a thermoplastic crystalline polymeric material exhibiting overall at least about 20% crystallinity as determined by x-ray diffraction and (b) conductive carbon black, the percentage by weight (L) of carbon black based on the total weight of said composition being not greater than about 15, the resulting extrudate exhibiting room-temperature resistivity (R, ohm-cm) greater than about 10^7, and (2) annealing the extrudate at or above the melting temperature of said crystalline polymeric material for a period of time sufficient to reduce R to at least about 100,000, said annealed extrudate exhibiting a positive temperature coefficient of resistance.

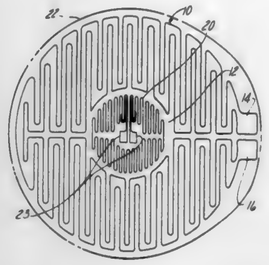
4,286,377

METHOD OF MANUFACTURE FOR A RESISTANCE HEATER AND TEMPERATURE SENSOR

Bohdan Hurko, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Division of Ser. No. 921,418, Jul. 3, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,358
U.S. Cl. 29—612 **3 Claims**

1. A method of manufacturing a heater including a temperature sensor means, comprising the steps of:
- forming a serpentine shaped heater element pattern in a first thin sheet of resistive material, said pattern defining a first electrical current flow path;
- forming a serpentine shaped temperature sensor pattern in a second thin sheet of a material different from said first sheet and having a relatively high coefficient of resistivity, said second sheet substantially circumscribed by said first sheet and said sensor pattern being electrically insulated from said heater element pattern and having portions of a much thinner width than said heater element pattern portions, said temperature sensor pattern defining a second electrical current flow path independent of said first



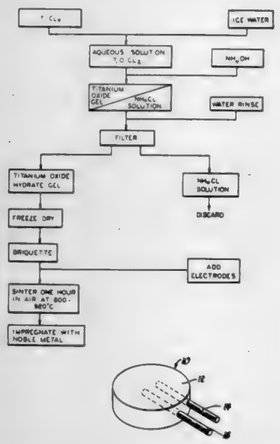
path, said steps being performed simultaneously by photoetching said patterns out of said sheets.

4,286,378

PROCESS FOR PRODUCING A BODY OF SINTERED TiO_3 FOR RESISTIVE GAS SENSOR

Adolph L. Micheli, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 19,276, Mar. 9, 1979, abandoned. This application May 28, 1980, Ser. No. 153,930
Int. Cl.³ H01C *17/28*; C01G *23/047*
U.S. Cl. 29—621 **3 Claims**



1. In a method of making a body of sintered titanium dioxide for a resistive-type exhaust gas oxygen sensor, the improvement comprising:
- precipitating a titanium oxide gel by alkalinizing an aqueous titanium choloride solution;
- mechanically separating the gel from its solution to provide a titanium oxide hydrate residue which retains microstructure attributes imparted by the gel;
- freeze drying the residue to produce unagglomerated minute, highly irregular and interlockable flake-like particles of anatase titanium dioxide;
- forming the particles into a low density, porous body having a high surface area; and
- sintering the particles under conditions sufficient to strongly bond the particles together but insufficient to reduce said high surface area significantly below about 3 square meters per gram, whereby said body has a high strength and

permits said sensor to be operated at lower temperatures without compensation.

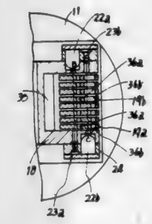
3. In a method of making a body of sintered titanium dioxide for a resistive-type exhaust gas oxygen sensor operating at lower temperatures without recalibration, the improvement comprising:
- precipitating a titanium oxide gel and forming NH_4Cl in solution by adding NH_4OH to an aqueous titanium tetrachloride solution;
- filtering the gel from said NH_4Cl solution to provide a titanium oxide hydrate residue;
- rinsing the residue substantially free of NH_4Cl only with solvents that do not alter the flake-like crystal-forming characteristics of the residue;
- applying liquid nitrogen to the residue to quickly freeze it;
- freeze drying the residue to produce unagglomerated minute highly irregular flake-like particles of anatase titanium dioxide;
- pressing such unagglomerated flake-like particles, without significant prior grinding, into a low density porous body having a high surface area;
- providing electrodes for said body to measure electrical resistance change in said body in response to atmosphere change; and
- sintering the body in an oxidizing atmosphere for a time and at a temperature generally equivalent to about one hour at 800°-920° C. to provide a body of high mechanical strength without decreasing said high surface area significantly below about 3 square meters per gram.

4,286,379

APPARATUS FOR DETECTING LEADS

Hidetoshi Kawa, Ibaraki; Kazuhiro Mori, Katano; Kazuo Watanabe, Hirakata, and Yoshihiko Misawa, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 17, 1979, Ser. No. 76,431
Claims priority, application Japan, Sep. 20, 1978, 53-116434
Int. Cl.³ H05K *3/32*
U.S. Cl. 29—705 **6 Claims**



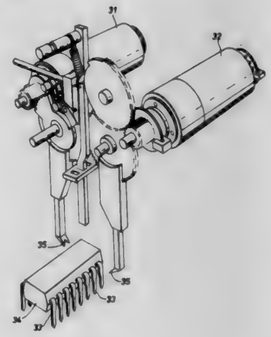
1. An apparatus for detecting leads comprising:
- a pair of lever main bodies movable toward or away from each other, each at least at its one end,
- a plurality of levers corresponding to the leads and pivotably supported on each of the main bodies by a pin intersecting the plane of movement of the end of the lever main body,
- an elastic member provided between each of the lever main bodies and the levers mounted thereon and biasing one end of each of the levers toward one end of the corresponding lever on the other lever main body to bring the lever into contact with a first stopper, the elastic member being elastically deflectable by a force smaller than the force required to clinch the lead,
- a second stopper for restraining each of the levers from turning relative to the lever main body more than a specified amount in a direction opposite to the direction in which the lever is biased by the elastic member, and
- a detector including photoelectric means mounted on the lever main body for detecting whether or not the lever is in contact with the second stopper.

4,286,380

MANIPULATOR MECHANISMS

Eric A. Blount, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Apr. 15, 1980, Ser. No. 140,490
Claims priority, application United Kingdom, May 22, 1979, 17793/79
Int. Cl.³ B66C *1/42*; H05K *13/04*
U.S. Cl. 29—741 **8 Claims**



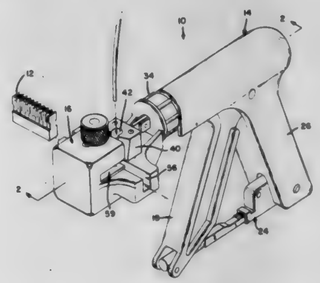
1. A manipulator mechanism including a plurality of pairs of fingers, both fingers of a given pair being capable of movement towards each other in a single plane relative to each other about a datum line lying in said plane, said single planes for all pairs of fingers being parallel to each other and the datum line of all pairs lying in the same plane which is perpendicular to said single planes, each pair of fingers being movable independently of at least some other pairs of fingers; and wherein said movement is produced by means of a pair of engaging wheels one of which drives the other so that rotation of one wheel in one direction produces an opposite rotation of the other wheel, with at least one finger being moved by the action of each wheel; and means for moving fingers of selected pairs towards each other under action of a common drive means.

4,286,381

TERMINATING TOOL

Melvin P. Litchizer, Jr., Millersburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 21, 1979, Ser. No. 106,306
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—751 **6 Claims**



1. A hand tool for crimping wires into a connector of the type having a row of cavities on each side and with terminals

of the type having wire-receiving slotted blades being positioned in the cavities, said tool comprising:

a. a piston-shaped handle having a movable shaft and means for moving the shaft back and forth;

b. wire stuffer means attached to the forward end of the shaft for stuffing wires into the wire-receiving slotted blades in the terminals;

c. a work frame attached to the front end of the handle and having a transversely-extending, connector-receiving notch, a block positioned immediately behind the notch and having a longitudinally extending slot through which the wire stuffer means moves and also having wire guide means on the side facing the notch and which intersects the slot so that as the wire stuffer means moves forwardly through the slot it picks up a wire which may be in the guide means and moves it into the slotted blades in a terminal in a connector which may be in the notch, said frame further having an indexing wheel rotatably positioned in front of the notch, said wheel having means thereon adapted to engage a connector which may be in the notch; and

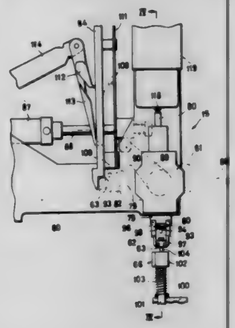
d. indexing means connected to the wire stuffer means at one end and engageable with the indexing wheel at the other end so that as the wire stuffer means moves, it moves the indexing means which engages and rotates the indexing wheel which in turn engages and advances a connector which may be in the notch so as to position a terminal in front of the longitudinally extending slot.

4,286,382

SLIDER APPLICATOR FOR SLIDE FASTENERS

Minoru Ueda, Kurobe, Japan, assignor to Yoshida Kogyo, K.K., Japan

Filed Dec. 26, 1979, Ser. No. 107,382
Claims priority, application Japan, Dec. 29, 1978, 53-162848
Int. Cl.³ B23P *19/00*; A41H *37/06*
U.S. Cl. 29—768 **17 Claims**



1. A slider applicator for a slide fastener stringer traveling along a longitudinal path, comprising:

(a) a frame;

(b) a rocker housing pivotally mounted on said frame for angular movement in a plane transverse of the path of the slide fastener stringer;

(c) a rod extending through said rocker housing in said plane;

(d) a slider holder mounted on said rod for holding a slider thereon; and

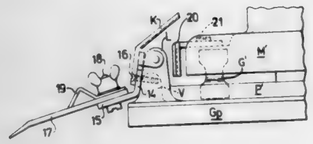
(e) gearing means disposed in said rocker housing for enabling said slider holder to be turned about the axis of said rod so as to orient the slider with respect to the path of the stringer upon the angular movement of said rocker housing.

4,286,383

APPARATUS WITH MOTOR-DRIVEN PEELING DEVICE

Arne S. B. Farden, Harjagersgatan 7, 245 00 Staffanstorp, Sweden

Filed Apr. 25, 1978, Ser. No. 899,812
Claims priority, application Sweden, Apr. 25, 1977, 7704725
Int. Cl.³ A47L *11/12*
U.S. Cl. 30—169 **5 Claims**



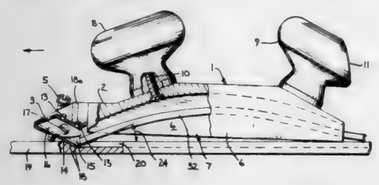
4. A portable peeling apparatus comprising: a portable motor-driven unit and a peeling device with a plate-shaped cutting tool blade having a cutting edge for peeling off remainders of materials on flat surfaces, such as floors, walls and the like, mounted on the motor-driven unit, said motor-driven unit being provided with an oscillatory drive means to which said peeling device with said blade is rigidly connected so that said peeling device, during operation of the unit, performs an oscillatory movement in the plane of the cutting blade so that the cutting edge of the cutting blade undergoes a circulatory cutting movement which is substantially reciprocatory in the longitudinal direction of the cutting edge; rubber dampers mounting said motor unit to said oscillatory drive means which supports said cutting tool blade; an abutment angle being fastened on a portion of the motor unit closely adjacent the cutting tool blade for limiting movement of said oscillatory drive means and hence limiting torsional stresses in the rubber dampers due to movement of the blade.

4,286,384

PANELING CUTTER TOOL

Alan W. Kotchy, 628 Garrison Ave., Nekoosa, Wis. 54457

Filed May 21, 1979, Ser. No. 41,252
Int. Cl.³ B26B *29/00*
U.S. Cl. 30—287 **6 Claims**



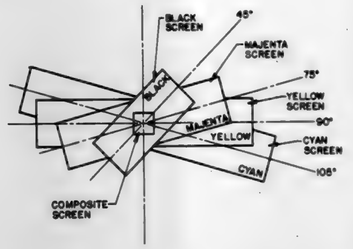
1. A cutting tool for cutting an opening in sheet paneling after the paneling has been secured in place, which comprises a frame having a curvilinear top portion terminating at the forward end of the tool in a downwardly tapered surface having downwardly tapered sides, cutting blades secured to the opposite tapered sides and terminating in sharp overlapping edges, and which face in the direction in which the tool moves and which project in a direction facing the rear of the tool, and laterally spaced side members extending downwardly from the top portion of the tool and disposed to engage the surface of the paneling upon which the tool is used and providing a central channel in the bottom of the frame through which a strip cut from the paneling to form a groove can move for discharge from the rear end of the tool.

4,286,385

COLOR SCREEN INDICATOR

Joseph F. Huck, 904 English St., Irving, Tex. 75061

Filed Dec. 26, 1979, Ser. No. 107,445
Int. Cl.³ G02B *27/0*
U.S. Cl. 33—1 N **8 Claims**



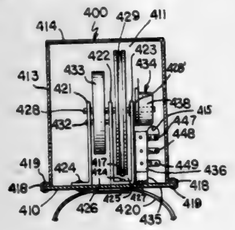
1. An angle indicator for use with overlaying ones of offset color printing screens comprising a unitary composite screen film having a plurality of superimposed rectilinear dot patterns, each arranged as a rectangular array of rows and columns of dots and each defined by a respective one of multiple exposed dot pattern images on said unitary screen film, with each said dot pattern associated with an individual different one of plural process colors, said dot pattern exposed images being respectively relatively angularly oriented, one to the other, each of said dot patterns being formed with predetermined portions thereof within which the dot rows are shifted midway between dot rows of the remainder of that pattern and the dot columns are shifted midway between dot columns of the remainder of that pattern, and with said predetermined portions of each of said dot patterns being respectively distinctively different.

4,286,386

ELECTRO-MECHANICAL DISPLACEMENT MEASURING DEVICE

Irvin E. Long, R.R. 1 Box 175, Wheatfield, Ind. 46392

Continuation-in-part of Ser. No. 830,701, Sep. 6, 1977, abandoned. This application Aug. 28, 1979, Ser. No. 70,485
Int. Cl.³ G01B *7/02*
U.S. Cl. 33—138 **5 Claims**



1. An electro-mechanical displacement measuring assembly for an apparatus having a fixed mechanical member and an elongated mechanical member movable in opposite directions, said assembly comprising a housing provided with a pair of openings and a base, means attached to said base whereby to facilitate connection of said housing to such a fixed member, support means disposed within the confines of said housing and carried by said base and being constructed to provide a pair of spaced formations, a rotatable shaft mounted on said support means and extending transversely into said formations, variable resistance means mounted on said support means and having a portion for varying the effective resistance of said variable resistance means, a pulley disposed in one of said formations and fixedly secured to said shaft for rotation therewith, a flexible element extending through one of said openings having an inner end connected to said pulley and an outer end for connection with such a movable member, means rotatable with said shaft for operating said variable resistance means in response to the movement of such a movable member, a helical spring disposed in the other of said formations having an inner end fixedly secured to said shaft and an outer end connected to said support means for atuomatically causing said flexible element to wrap itself about said pulley after reverse rotation of the latter, an instrument adapted for disposition at a location remote from said housing, and electrical circuitry extending through the outer of said openings in said housing and connecting said variable resistance means and said instrument and for connection with a source of electricity whereby said instrument will provide an indication of the axial displacement of such a movable member.

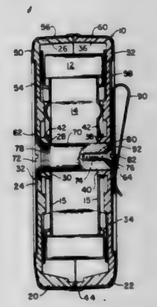
4. An accessory assembly comprising a housing having a base, wall structure secured to said base and provided with a pair of openings, means carried by said housing for fixedly detachably connecting it in relation to a reciprocable member of a power unit, support means disposed within the confines of said housing and affixed to said base, said support means comprising structure providing a pair of formations, bearing means carried by said support means, a shaft rotatable in said bearing means and extending transversely into said formations, a pulley disposed in one of said formations and affixed to said shaft for rotation therewith, a flexible element extending through one of said openings having an inner end attached to said pulley and an outer end for connection to such a reciprocable member, a helical spring disposed in the outer formation and having inner and outer ends respectively fixedly connected to said shaft and to said support means for causing said element to wrap itself about said pulley when such a reciprocable member is operated in one direction and unwrap when operated in an opposite direction, electrical means mounted in said housing and being responsive to the rotation of said pulley, an electrical instrument, and a cable extending through the outer opening in said housing and containing electrical conductors connected to said responsive means and for connection with a source of electricity and to ground whereby said instrument will respond to the operation of said electrical means and indicate the position of said reciprocable member.

4,286,387

COILABLE RULE CASING

Robert Di Diego, Torrance, Calif., assignor to The Stanley Works, New Britain, Conn.

Continuation of Ser. No. 16,925, Mar. 2, 1979, abandoned. This application Apr. 21, 1980, Ser. No. 142,451
Int. Cl.³ G01B *3/10*
U.S. Cl. 33—138 **9 Claims**



1. In a coilable rule having a coilable measuring tape and a coil spring to retract the tape, a casing comprising:

a pair of inner, plastic case members each having a side wall provided with an inwardly extending, peripheral flange

and adapted to fit together to provide a hollow chamber for receiving the measuring tape and coil spring, each inner plastic case member including a central opening in its side wall;

a thin, outer metal case shaped to conform to the exterior configuration of said side walls and flanges of said inner plastic case members and adapted to receive said plastic case members in a close fitting relationship, said outer metal case including a pair of holes formed in its opposite sides in alignment with said openings in said inner plastic case members;

a center post received in said central openings in said plastic case members and extending across the hollow chamber for supporting the measuring tape and coil spring, one end of said post extending through one of said holes in said metal case and having an enlarged head for engaging one side of said metal case adjacent to said one hole to hold said metal case against the adjacent plastic case member and its other end having an inwardly extending axial bore, said post including a knurled surface formed thereon for engaging one of said plastic case members in its central opening to hold said post firmly in place; and

a screw received in said axial bore in said center post and provided with an enlarged headed end for engaging said metal case adjacent to the other hole therein to hold said metal case against the other plastic case member.

4,286,388

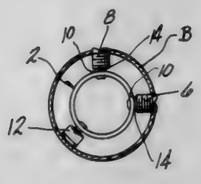
SIGHT WITH REDUCED FRICTION LINE OF SIGHT ADJUSTMENT

Cecil J. Ross, and John F. Thompson, both of El Paso, Tex., assignors to W. R. Weaver Company, El Paso, Tex.

Continuation of Ser. No. 736,661, Oct. 29, 1976, abandoned. This application Dec. 20, 1977, Ser. No. 862,463

Int. Cl.³ F41G 1/38; G02B 27/32

U.S. Cl. 33—246 **2 Claims**



2. In an optical gunsight of the type comprising a barrel; windage and elevation adjustment screws made of a relatively hard metal and threadedly mounted on said barrel, said adjustment screws having inner ends disposed in the interior of said barrel; an erector lens housing disposed for pivotal movement within said barrel, said erector lens housing being biased by spring means disposed within said barrel, the improvement comprising: contact means mounted on said erector lens housing for providing point contact with the inner ends of said adjustment screws and with said spring means, said contact means being made of a material which is at least as hard as the metal from which said adjustment screws are made to minimize wear and increase accuracy and repeatability of the line of sight adjustment of the gunsight.

4,286,389

APPARATUS AND METHOD FOR LYOPHILIZING ASEPTIC SUBSTANCES

Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, South El Monte, Calif.

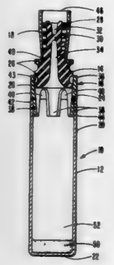
Filed Mar. 3, 1980, Ser. No. 126,198

Int. Cl.³ F27B 5/06

U.S. Cl. 34—5 **13 Claims**

13. The method of lyophilizing a substance within a container having an open end sealable by an imperforate resilient stopper, which comprises:

frictionally retaining the stopper within a support element mounted to the open end of the container such that the stopper is spaced from the open end and fluid communication with the interior of the container is maintained;



lyophilizing the substance within the container while the stopper is retained within the support element; and

driving the stopper from the support element into the open end to seal the container;

whereby communication with the interior of the container is maintained during lyophilization for escape of the vapor produced, and the container is thereafter sealed.

4,286,390

METHOD FOR REMOVAL OF WATER FROM ACTIVATED CARBON

Ronald J. Convers, Ponca City, Okla., and James A. DeBernardi, Sulphur, La., assignors to Conoco, Inc., Ponca City, Okla.

Filed Mar. 20, 1980, Ser. No. 132,006

Int. Cl.³ F26B 7/00

U.S. Cl. 34—9 **12 Claims**

1. A method of removing water from activated carbon wherein the method comprises:

(a) passing about 0.2 to about 4 bed weights of liquid 1,2-dichloroethane through a bed of activated carbon, which contains from about 0.1 to about 70 weight percent water, until from about 60 to about 80 weight percent of the water present in the bed has been removed, and

(b) removing substantially all of the remaining water by use of vacuum or by passing hot air or hot nitrogen through the activated carbon.

4,286,391

CONTROL SYSTEM FOR AN AUTOMATIC CLOTHES DRYER

Otto F. Gerry, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 11, 1980, Ser. No. 120,183

Int. Cl.³ F26B 21/10

U.S. Cl. 34—44 **4 Claims**

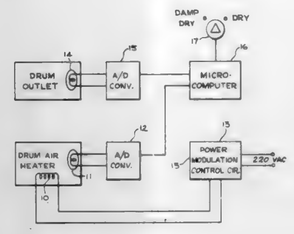
1. A control system for an automatic clothes dryer of the type having a clothes drying drum, an air inlet to the drum, an air outlet from the drum, means for flowing dryer air through the drum and heater means for heating the dryer air at the air inlet side of the drum, the system comprising:

means for sensing the temperature of said dryer air at the inlet side of the drum;

means responsive to the inlet air temperature sensing means for controlling the heater means to maintain the inlet air at a predetermined substantially constant temperature;

means for sensing the temperature of said dryer air at the outlet side of the drum, the outlet temperature having a time-temperture characteristic which is substantially constant over a major portion of the drying cycle at an absolute value dependent on the size of the clothes load and which rises near the end of the drying cycle;

and means responsive to the outlet air temperature for initiating termination of the drying cycle when the sensed



outlet temperature rises above said constant time-temperature value by a predetermined percentage factor, said percentage factor being essentially the same for said dryer irrespective of the absolute value of the sensed constant outlet temperature.

4,286,392

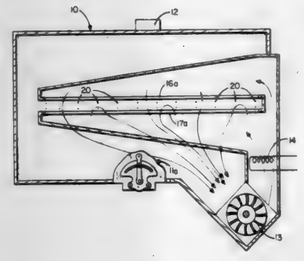
AUTOMATIC LOAD-ADJUSTING VENT CONTROL FOR FILM DRYERS

Michael G. Viland, Bloomington, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Feb. 1, 1980, Ser. No. 117,501

Int. Cl.³ F26B 13/02

U.S. Cl. 34—47 **4 Claims**



1. A dryer for photographic film sheets having a vent for automatically controlling the intake of outside air, said dryer comprising:

a housing defining a film drying chamber with an outside air intake vent and an air discharge opening and also having film entrance and film exit openings,

means defining a film drying path through said chamber with the entrance at one end and the exit at the other,

means for transporting said sheets of film through said film drying path, from the film entrance opening through the film exit opening,

at least two air-distribution heads respectively disposed on opposite sides of said drying path, each head being a hollow chamber having air discharge openings directing air toward the film drying path,

an air blower located within the housing and provided with an air intake to receive the air discharged from said heads,

the air stream following a first flow pattern directly from both heads to the blower intake when the drying chamber is empty and a second flow pattern around the film sheet when the drying chamber contains a sheet of film to be dried, said second flow pattern producing less static pressure at the air vent than the first flow pattern to increase the intake of outside air only when film to be dried is located in said drying chamber,

said chamber air intake vent being positioned in the portion of the air stream located between the drying path and the blower intake,

passage means for delivering the air discharged from said blower into the air-distribution heads, and

heating means located in the flow path of the drying air.

4,286,393

BOTTOM FOR FLUIDIZED BED

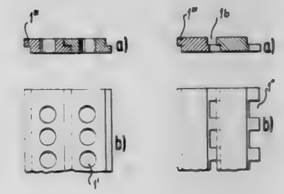
Peter Schulz; Knut Vaupel, both of Essen, and Jürgen Klein, Essen-Überruhr, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,439

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2819704

Int. Cl.³ F26B 17/10

U.S. Cl. 34—57 R **16 Claims**



1. A bottom for a fluidized bed, particularly for a fluidized bed conveyor, comprising a plurality of metal members each provided with a plurality of openings for passing a fluidizing gas therethrough and together forming a substantially elongated shape, said members adjoining each other and contacting with each other at contact points which are gas impermeable at least during operation of the fluidized bed, each of said members being elongated and provided with a lateral projection extending in a direction transverse to the direction of elongation, said projections being in contact with each other and said members being movable relative to one another when said projections are in contact with each other.

4,286,394

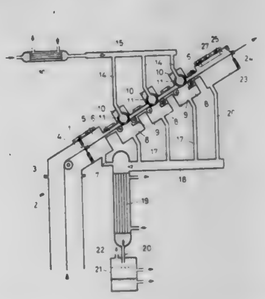
RECOVERY OF SOLVENT RESIDUES FROM TEXTILES

Meinrad Gort, Goldach, Switzerland, assignor to Rudolf Weber, Rorschach, Switzerland, a part interest

Filed Jan. 2, 1980, Ser. No. 109,157

Int. Cl.³ F26B 13/02

U.S. Cl. 34—76 **10 Claims**



1. A system for recovering the residues of solvents which remain in textile material during continuous processing of the textile in a processing chamber with a solvent which is organic and immiscible with water, or with a processing medium which contains same, followed by driving off of the solvent from the textile material being processed by means of a gas

which is heated above the boiling temperature of the solvent and condensation of the gas containing the solvent,

said system comprising a chamber arrangement connected in gas-tight manner to the processing chamber and including at least three chambers equipped with transport means for the textile and separated by locks from each other,

at least one of said chambers which is neither the first nor the last chamber traversed by the textile is provided with nozzle means for propelling heated gas through the textile, and

at least the first traversed chamber being provided with means for evacuating said first traversed chamber.

4,286,395

APPARATUS FOR SURFACE TREATMENT OF AN ENDLESS TEXTILE STRUCTURE

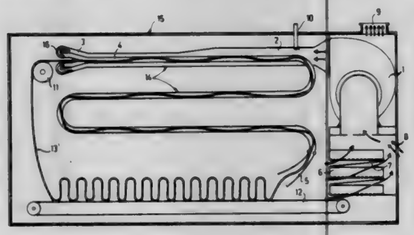
Werner Hoersch, Boisheim, Fed. Rep. of Germany, assignor to Thies GmbH & Co., Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,886

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908888

Int. Cl.³ F26B *13/06*

U.S. Cl. 34—155 **11 Claims**



1. An apparatus for the surface treatment of an endless textile structure comprising

a substantially closed container;

means defining an elongated treatment channel within said container for receiving and guiding the textile structure, the interior of said channel constituting a treatment zone substantially isolated from the remainder of the container interior, said channel having an inlet end and an outlet end within said container,

said inlet end and said outlet end being laterally spaced apart;

nozzle means near the inlet end of said channel for directing a stream of air against the textile therein and away from said inlet end to create a current of air longitudinally through the channel for conveying the textile therethrough;

blower means coupled to said nozzle means for supplying air under pressure to said nozzle means;

conveyor means disposed below said channel for receiving and conveying textile emerging from said outlet end to a location substantially below said inlet end;

winch means adjacent said inlet end for receiving said textile from said conveyor means and delivering textile to said inlet end of said channel; and

means for driving said winch means.

4,286,396

TRACTION DEVICE FOR WALKING ON ICE

Robert H. Deacon, 5054 Laurel Ave., Pennsauken, N.J. 08109

Filed Dec. 13, 1979, Ser. No. 103,102

Int. Cl.³ A43C *15/00*; A43B *3/18*

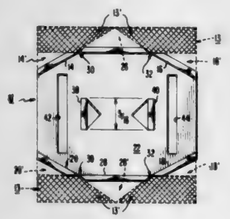
U.S. Cl. 36—62 **3 Claims**

1. A traction device for attachment to shoes to assist in walking on ice, said device comprising:

a metal plate; and means for removably attaching said plate to shoes;

said metal plate being formed as an integral, generally rectangular member and having a generally flat sole-engaging surface, said rectangular plate further having: four triangular portions each bent at one triangle side from a different corner of said plate and with the opposite vertex projecting away from said sole-engaging surface, to form four traction teeth;

two additional triangular traction teeth, one on each of opposite edges of said rectangular plate, each bent at one triangle side from the associated edge of said plate and



with the opposite vertex projecting away from said sole-engaging surface;

said additional teeth being between and spaced from said corner teeth of the associated edge and having respective planes extending transversely to the planes of said corner teeth, said corner and additional teeth being fabricatable together in a single die and stamping operation;

at least one other triangular tooth struck from an intermediate portion of said plate remote from the edges thereof and having a plane extending orthogonally to the planes of said additional teeth and transversely to the planes of said corner teeth and aligned with spaces between said additional and corner teeth.

4,286,397

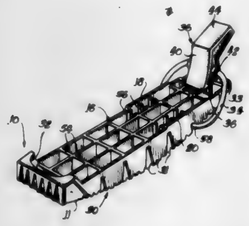
SKI BOOT WALKING ACCESSORY

Donald J. Booty, Frankfort, Ill., assignor to Snow Biz, Inc., Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 113,072

Int. Cl.³ A43B *5/00*; A43D *5/00*

U.S. Cl. 36—132 **11 Claims**



1. Apparatus attachable to an Alpine ski boot for aiding the wearer in walking, said apparatus comprising: auxiliary sole means attachable under the sole of the ski boot and having an upper surface for accommodating the ski boot sole and a lower surface for engaging the ground, means for defining a curvature on the lower surface, rigid pocket means in a leading end portion of said auxiliary sole means for surroundingly engaging a toe portion of the ski boot sole, elastically deformable cord means coupled to said auxiliary sole means and pawl means carried on said elastically deformable cord means for grippingly engaging a heel portion of said ski boot.

4,286,398

APPARATUS FOR EXCAVATING AND TRANSPLANTING TREES AND THE LIKE

Phillip E. Lemond; S. Donald La Shomb, and Oliver R. Rowe, Sr., all of Charlotte, N.C., assignors to Rowe Corporation, Charlotte, N.C.

Filed Sep. 13, 1979, Ser. No. 75,102

Int. Cl.³ A01G *23/04*

U.S. Cl. 37—2 R **13 Claims**



1. An apparatus for excavating and transplanting trees and the like comprising a generally horizontally disposed multi-sided frame defining a substantially enclosed space for overlying and substantially surrounding an area to be excavated, and a plurality of blade assemblies, being mounted on the sides of said frame, each said blade assembly including a housing mounted on said frame, said housing having a downwardly facing opening, a blade disposed in said housing for reciprocation through said downwardly facing opening thereof for penetrating said area to be excavated, operating means associated with said blade for imparting reciprocal movement thereto, and means for guiding and aligning said blade during reciprocation thereof to prevent deviative movement thereof, said guiding and aligning means including a plurality of rollers rotatably mounted in said housing adjacent said downwardly facing opening in rotational engagement with opposite sides of said blade during reciprocation thereof to guide said blade as it penetrates the area to be excavated and to maintain said blade therebetween in a regular and established path of movement while resisting torsional, binding and frictional forces imposed on said blade during penetration of said area to be excavated.

4,286,399

CARD OR BOOK INVOLVING LUMINESCENCE

Masao Funahashi, and Shigeru Maeda, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Kyokuto Electric Co., Ltd., both of Osaka, Japan

Filed Mar. 19, 1980, Ser. No. 131,802

Claims priority, application Japan, Jul. 25, 1979, 54-102784[U]; Jul. 25, 1979, 54-102785[U]

Int. Cl.³ G09F *1/00*

U.S. Cl. 40—124.1 **5 Claims**

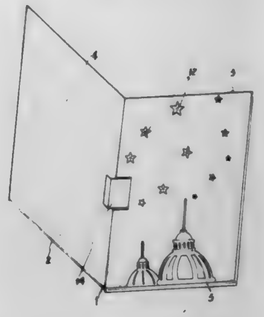
1. A card or book involving luminescence and comprising:

at least two openable leaves;

a thin battery provided in one of the leaves and having on one side thereof electrodes to be brought into conduction with each other;

at least one light-emitting diode lit by the battery and having its light-emitting portion exposed to outside on an inner surface of said one leaf;

a switch assembly comprising a slide plate which has one end attached to the inner surface of the other leaf and a free end provided with a conductor piece, the free end being superposed slidably on the electrode bearing side of the battery in said one leaf and the conductor piece being



engageable with the battery electrodes in response to opening movement of the two leaves.

4,286,400

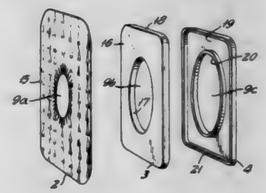
PICTURE FRAME AND MANUFACTURE THEREOF

James A. MacPherson, and Joseph Schwartz, both of New York, N.Y., assignors to Avant Modes, Inc., New York, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,013

Int. Cl.³ G09F *1/12*

U.S. Cl. 40—152 **19 Claims**



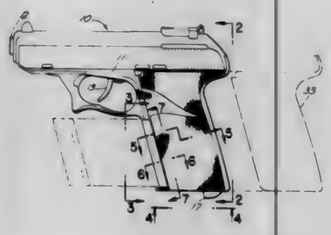
1. A decorative frame assembly for displaying an article, said assembly comprising a front part with a front face having an opening extending therethrough, a back part substantially co-extensive with said front part and having an opening extending therethrough, said last-mentioned opening corresponding in shape to the shape of the opening in the front part but having a size different from the size of the opening in the front part and said back part being mounted adjacent said front part with the opening in the back part aligned with the opening in the front part, said back part having a peripheral shape corresponding to the peripheral shape of said front part but having a size different from the peripheral size of the front part, a sheet of decorative material covering said front face and extending between said front part and said back part both at the peripheries thereof and at the peripheries of the opening therethrough, at least one said part having a rim thereon around the opening therethrough and extending toward the other part and frictionally engaging said sheet material between said rim and the other part and at least one said part having a rim at the periphery thereof and extending toward the other part and frictionally engaging said sheet material between said last-mentioned rim and said last-mentioned other part, whereby said sheet material is clamped between said front part and said back part both at the peripheries of the openings and at the peripheries of the parts and said parts are maintained adjacent to each other, and supporting means secured to one said part for supporting said frame on a support.

4,286,401

CUSHIONED GUN GRIP

Frank A. Pachmayr, Los Angeles, and Jack R. Farrar, Whittier, both of Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Filed Apr. 23, 1979, Ser. No. 32,170
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—71 P **27 Claims**



1. A pistol grip comprising:

a cushioning part to be received about a pistol handle and including a body of elastomeric material and a reinforcing structure embedded therein;

said body of elastomeric material forming a rear portion of the body adapted to extend across the back of said pistol handle and forming two side panels of said elastomeric material projecting forwardly from opposite side edges of said rear portion in spaced relation to be received at opposite sides of the pistol handle;

said reinforcing structure being of generally U-shaped horizontal sectional configuration forming a rear portion extending across the back of the pistol handle within said rear portion of the elastomeric body and forming two side portions projecting forwardly from opposite edges of said rear portion of the reinforcing structure and within said side panels of the elastomeric body in spaced relation and free of attachment to one another forwardly of said rear portion of the reinforcing structure;

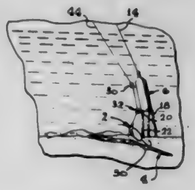
said rear portion and said two side portions of said reinforcing structure all being stiffer than said elastomeric material and being interconnected in a relation maintaining said reinforcing structure by its stiffness in said U-shaped horizontal sectional configuration.

4,286,402

FISHING LURE RETRIEVER

J. Bruce Kuhn, 4931 Coldwater Canyon, Apt. 12, Sherman Oaks, Calif. 91423; Klaus P. Utecht, 833 Lamplight Dr., La Jolla, Calif. 92037, and Ronald K. Harris, 11480 Amanda Dr., Studio City, Calif. 91604

Filed Jul. 13, 1979, Ser. No. 57,337
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—17.2 **2 Claims**



1. A fishing lure retriever comprising:

an elongate body having a fully enclosed interior cavity extending for the length of said body, said body having a leading end and a trailing end, said leading end and said trailing end of said body having a conical shape, the apexes of said conically-shaped ends being directed in opposite directions away from said body;

a plurality of chain members attached at one end thereof to said leading end of said body;

aperture means for permitting a guy line to be attached to said trailing end of said body, said aperture means formed on the trailing end of said body;

a plurality of pellets contained in and partially filling said interior cavity;

guide means for physically associating said body with a fishing line to which a lure being retrieved is connected, said guide means being situated on said body, said guide means including a pair of guides each including a pair of oppositely-directed juxtaposed hook members which are separated by a slot for receiving a fishing line with which said body is physically associated, said guides being aligned along a side surface of said body along a line that is parallel to the longitudinal axis of said body; and

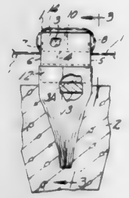
a plurality of ledge members connected to said leading end of said body at the base of said conically-shaped end, each ledge member receiving one of said chain members, said leading end of said body being lower than the trailing end of said body when the retriever is submerged in the course of operation.

4,286,403

ONE WAY FISHING SINKER

Stanley L. Rogers, 3950 Dillard Rd., Eugene, Oreg. 97405

Filed Apr. 25, 1980, Ser. No. 144,164
Int. Cl.³ A01K *95/00*
U.S. Cl. 43—43.12 **18 Claims**



1. A one way disposable sinker for attachment to a fishing line segment, said sinker comprising,

a weight member,

a water soluble assembly including a water soluble member including means for line attachment, an extension in place on said member and at least partially embedded within said weight member, said soluble member dissolvable upon immersion to release the weight member from the line.

4,286,404

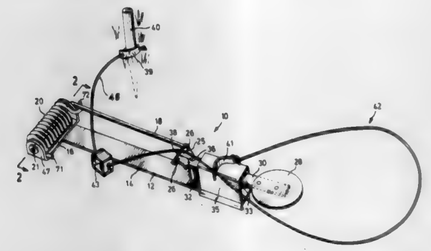
TRAP CONSTRUCTION

Milan Novak, Aurora, and William F. Adams, Barrie, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Natural Resources, Toronto, Canada

Filed Feb. 5, 1980, Ser. No. 118,843
Claims priority, application Canada, Jan. 11, 1980, 343541
Int. Cl.³ A01M *23/34*
U.S. Cl. 43—87 **6 Claims**

1. In an animal trap having a frame and an arm which is adapted to swivel about an axis normal to its longitudinal extent under the urging of a coil spring encircling an axis member joined to the arm and disposed substantially at right angles thereto to define the said axis, the axis member extending through a first bracket member fixed to the frame and toward a second bracket member fixed to the frame, the improvement comprising:

two bushings, one bushing receiving the end of said axis member which is remote from the joined location, said one bushing being configured as a cylinder whose outer diameter is at least 75% of the inner diameter of the spring, the cylinder being received within one end of the coil spring and having a coaxial cylindrical extension at one end which is received within an aperture in said second bracket, the other bushing having a cylindrical body whose outer diameter is at least 75% of the inner diameter



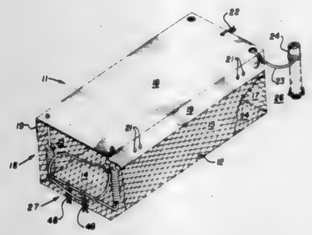
of the spring, said cylindrical body being received within the other end of the coil spring, a flange extending radially outwardly from one end of the cylindrical body, the flange being interposed between said coil spring and said first bracket, said other bushing having a central bore receiving said axis member, and means smaller in diameter than said cylindrical body spacing the cylindrical body from said first bracket.

4,286,405

TRAP FOR PIT VIPER

Walter E. Howard, 24 College Park, Davis, Calif. 95616

Filed Apr. 14, 1980, Ser. No. 140,155
Int. Cl.³ A01M *23/34*
U.S. Cl. 43—87 **6 Claims**



1. Trap for pit viper comprising:

a. an elongated cage including at least a top and a pair of side walls, said cage being open at one end to provide ingress for the head of a pit viper and closed at the other end to prevent egress therefrom; and,

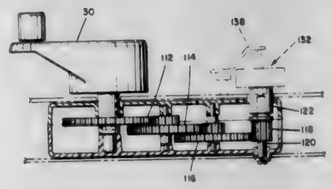
b. noose means located at said one end of said cage for constricting the neck of a pit viper at the junction of the neck and the head following the insertion of the head through said noose means and engagement between the base of the head and the forward side of said noose means as withdrawal of the head is attempted, said noose means including a first wire and a second wire, each having a loop at one end and a bail extending to the other end, said loop of said first wire being slidably disposed on said bail of said second wire and being movable between a first location adjacent said other end of said second wire to a second location removed therefrom, said loop of said second wire being slidably disposed on said bail of said first wire and being movable between a first position adjacent said other end of said first wire and a second position removed therefrom.

4,286,406

SPINNING TOP PINBALL-TYPE GAME

Larry A. Sims, Hermosa Beach; Gerald L. Lambert, Torrance; Raymond J. Gross, Culver City, and Harold B. Collins, Santa Monica, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 965,972, Dec. 4, 1978, Pat. No. 4,248,426.
This application May 19, 1980, Ser. No. 150,880
Int. Cl.³ A63H *1/02*
U.S. Cl. 46—72 **7 Claims**



1. In a toy, the combination comprising:

a top having an enlarged body portion, and a stub base portion with an irregular configuration about the periphery thereof; and

top spinning means including a supporting structure, a shaft mounted within said supporting structure and having axially movable thereon a sleeve member having an aperture keyed for receiving the irregular base portion of said top, means for rotating said sleeve, and release lever means manually operable for sliding said sleeve out of engagement with the base portion of said top, said release lever means having an arm member configured for contacting the body of said top upon movement of said sleeve member for directing the top onto a playing surface.

4,286,407

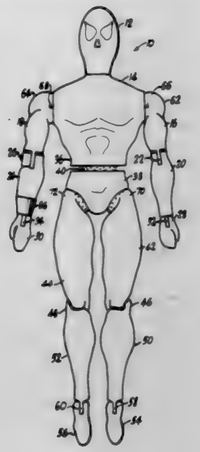
DOLL FOR CONTAINING FILAMENT PRODUCING FLUID

Cecil F. Adickes, Jr., Playa del Rey, Calif., and David R. Berko, Flushing, N.Y., assignors to Mego Corp., New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 131,119
Int. Cl.³ A63H *3/00*
U.S. Cl. 46—163 **9 Claims**

1. In a doll having a plurality of limbs, the improvement comprising an adjustable limb having a hollow forearm section threaded for attachment, a wrist section adapted to connect

with the threaded section, the wrist section having an aperture therethrough therein through which a filament-producing



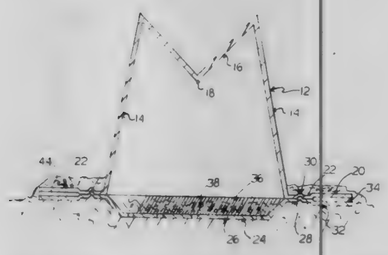
fluid from said hollow forearm section may pass upon activation of the hollow forearm section.

4,286,408

SELF-WATERING SEED PLANTER

Joseph Manno, 2329 Rue de Anne, La Jolla, Calif. 92037

Filed Jul. 20, 1979, Ser. No. 59,226
Int. Cl.³ A01G *27/00, 13/04*
U.S. Cl. 47—27 **3 Claims**



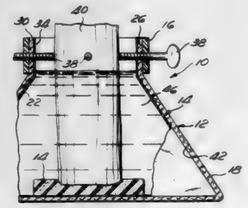
1. A self-watering, weed retarding solar planter, comprising:
(a) a self-supporting elongated hood having similar opposed upstanding sides with co-planar lower edges and a top joining said sides, said top having a re-entrant portion converging downwardly between the sides and defining a drip edge above the level of said co-planar lower edges;
(b) said sides and top including said drip edge being imperforate;
(c) said sides being translucent and having bilaterally outwardly extending horizontal aprons at said level, said aprons being functional as ground covers and as anchors for the planter when soil is mounded upon said aprons;
(d) an open topped seed pan secured to and between said co-planar lower edges and longitudinally coextensive with said hood, with a complement of seeds and mulch in said seed pan;
(e) said seed pan having a perforate bottom whereby, in use, soil moisture may initially enter the hood through said perforate bottom and with said translucent sides create miniature hothouse conditions within the hood and seed pan, while moisture condensing on said re-entrant portion is concentrated to fall onto a small area of the seed pan beneath said drip edge;
(f) said bottom of the seed pan being soluble so that the seed pan disintegrates allowing root growth and eventual removal of the hood without damage to the plant roots; and
(g) said aprons each comprising an upper layer and a lower layer, said upper layer being unitary with said hood and said lower layer being unitary with the seed pan and likewise soluble, and said aprons having weed retardant material between said upper and lower layers.

4,286,409

TREE STAND

Neil J. Taylor, 5492 Cleo St.; A. Robert St. Hilaire, 331 Pearl Dr., both of Livermore, Calif. 94550, and James L. Johnson, 340 N. Civic Dr., Walnut Creek, Calif. 94956

Filed Oct. 22, 1979, Ser. No. 87,260
Int. Cl.³ A47G *33/12*
U.S. Cl. 47—40.5 **8 Claims**



1. A tree stand comprising:
a sheet material housing having a planar base and a plurality of spaced-apart side wall members attached to said base and extending therefrom, each said side wall member including an outermost member, said outermost members to be locatable to form an enclosing area spaced above said base and centrally disposed in relation thereto;
an interior chamber bounded by the inner surface of each of said side wall members and the upper surface of said base, a support ring located about said outermost members, securing means movably mounted on said support ring, said securing means being movable into said enclosing area and adapted to contact the trunk of the supported tree; and
a flexible walled, water tight container located within said interior chamber, said container to be positioned against the inner surface of said side walls and the upper surface of said base, said container being adapted to be filled with a quantity of water causing said container to be tightly pressed against said side walls and said base to make available moisture to the truck of the supported tree and also provide sufficient weight at the base of the tree to keep the tree from tipping.

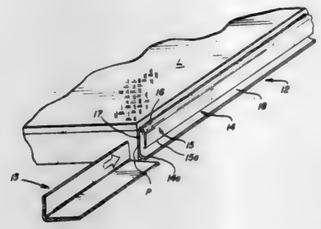
4,286,410

ASSEMBLY FOR WEATHER-SEALING A JOINT

Norbert Hahn, Cudahy, Wis., assignor to Rite-Hite Corporation, Milwaukee, Wis.

Filed Dec. 10, 1979, Ser. No. 101,779
Int. Cl.³ E06B *7/00*
U.S. Cl. 49—33 **7 Claims**

1. An assembly for weather-sealing an elongated joint formed between a first member and a second member when said members assume a predetermined relative position, one of the members being relatively movable in a plane substantially parallel to the joint and transversely of the other member, said assembly comprising an elongated piece having an elongated first section and an elongated resilient flexible second section extending angularly from said first section; and an elongated bracket removably accommodating said piece, said bracket including an elongated inner wall section adapted to be fixedly secured to a side of one of the members defining the joint, an elongated outer wall section disposed in spaced substantially face-to-face relation with said inner wall section, and an elongated bridge section interconnecting a pair of corresponding first elongated edge portions of said wall sections, said inner and outer wall sections and said bridge section coacting to form an elongated pocket having a first opening at one end, corresponding second elongated edge portions of said wall sections being in spaced relation and forming an elongated narrow second opening, one end of said second opening ter-



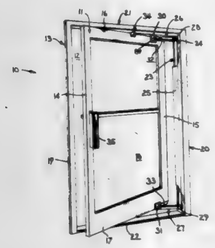
minaing at said first opening; the elongated first section of said elongated piece being disposed within the pocket of said bracket and the elongated second section of said elongated piece extending outwardly from said pocket through said second opening, said piece second section being adapted to span the joint and resiliently and sealingly engage the side of the other member defining the joint when the members assume the predetermined position, said piece first section being inserted into and removed from said pocket only through said first opening.

4,286,411

MANUAL BALANCED DOOR WITH DOOR CLOSER ARM

Lee Wikkerink, Greendale, and James R. Schinschke, Milwaukee, both of Wis., assignors to Wikk Industries, Inc., Greendale, Wis.

Filed Sep. 6, 1979, Ser. No. 73,019
Int. Cl.³ E05D *15/30*
U.S. Cl. 49—252 **11 Claims**



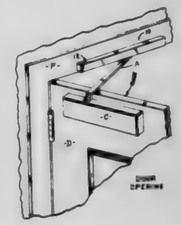
1. A balanced door assembly comprising:
a door frame having a base, a hinge side jamb, a latching side jamb, and a header that define a doorway, the header including a chamber and a guideway which extend transversely above the doorway and which are separated by a transversely extending rib formed by the header, the guideway opening downwardly towards the doorway;
a hinge shaft disposed within the hinge side jamb;
a door with an upper leaf in which a guideway is formed to open upwardly towards the header;
an upper and a lower door pivot arm each having a hinge end pivotably mounted to the hinge shaft and each having a traveling end on which the door is pivotably mounted, the traveling ends being vertically aligned to define a first axis of a door rotation;
a door closer disposed within the header chamber and having an pivotable shaft extending downwardly from the header;
a closer arm having a pivot end mounted on the closer shaft and having a traveling end that swings around its pivot end;
a guide roller mounted to the upper leaf of the door and projecting into the guideway in the header to provide a second axis of door rotation, the second axis being retained within the door frame as the door is pivotably opened and closed;
pivot means mounted on the traveling end of the closer arm and received in the door guideway for providing a third axis of door rotation; and
wherein, the first and third axes of door rotation are displaced from the doorway in opposite directions as the door is opened.

4,286,412

HOLD-OPEN DEVICE FOR USE WITH CONVENTIONAL DOOR CLOSER

William E. Stevens, Monroe, N.C., assignor to Scovill Inc., Waterbury, Conn.

Filed Jul. 25, 1979, Ser. No. 60,825
Int. Cl.³ E05F *1/00*; E05C *17/04*
U.S. Cl. 49—379 **7 Claims**



1. A selectively operable hold-open device for use with a conventional single-arm door closer, mounted on a swinging door comprising:
(a) track means;
(b) shoe means adapted to be connected to the distal end of the door closer arm and to move along the track means, the shoe means having a latch-receiving recess;
(c) a movable frame pivotally mounted adjacent the track means;
(d) a latch pivotally secured to the frame and pivoting about a fixed pivot point on the frame;
(e) power means disposed adjacent the track and adapted to selectively assume a first position to hold the frame with the latch in the path of the shoe in latch position so that when the recess on the shoe passes the latch as the door approaches open condition, the shoe can not pass back the other way without the latch engaging the recess and holding the shoe unless the power means moves or is moved out of the first position.

4,286,413

HOLE GRINDING MACHINE

Holger Axelsson, Bromma, and Lars Siggelin, Tumba, both of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Jan. 16, 1980, Ser. No. 112,385
Int. Cl.³ B24B *7/10*
U.S. Cl. 51—3 **10 Claims**

1. An improved indexing head apparatus for use in grinding machines of the type including a frame, a first grinding means mounted on said frame for internal grinding of an axially ex-

tending hole in a workpiece and a second grinding means mounted on said frame for grinding internal seats or deadend holes, said apparatus comprising:

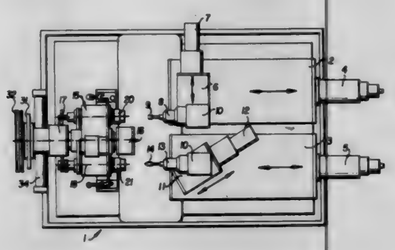
a shaft;

means adapted to be mounted on the frame for supporting said shaft for rotation;

a head element mounted on said shaft for rotation therewith;

a pair of chuck spindles mounted for rotation on said head element, said spindles each having a chuck for holding a workpiece in position to be ground by said grinding means;

means for reciprocating said head element and said shaft between two end positions located one half turn from each



other whereby each chuck spindle with its associated chuck and workpiece is alternatingly positioned for grinding the workpiece first by the one and then by the other of said grinding means;

a pair of stop means fixed relative to said frame for defining said end positions;

means mounted on said head element for contacting one of said stop means at each of said end positions;

means for disengaging said reciprocating means prior to contact of said head element with said stop means; and

means cooperating with said contacting means for completing movement of said contacting means into contact with said stop means and holding said head element in such position while grinding is in process.

4,286,414

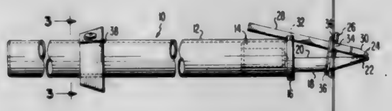
WORK HOLDER

Douglas H. Ziegel, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,214

Int. Cl.³ B24B *19/16*

U.S. Cl. 51—229 **8 Claims**



1. A work holder, comprising:

a handle;

a fixed jaw secured to one end of the handle and projecting therefrom, the fixed jaw having a flat surface extending longitudinally from the end of the handle and the fixed jaw being tapered at one end to provide a pointed tip;

a movable jaw pivotally mounted over the fixed jaw and having a pointed tip at one end which contacts the pointed tip of the fixed jaw, the movable jaw being at an angle with respect to the fixed jaw;

a pin extending through both of said jaws, the pin being fixedly secured to the fixed jaw and the movable jaw being movable along said pin; and

means normally holding said tips of said jaws together while permitting movement of the movable jaw to separate said tips of said jaws to permit a workpiece to be inserted between said tips of said jaws and to permit a workpiece to be removed from between said tips of said jaws.

4,286,415

METHOD OF EDGING LENSES

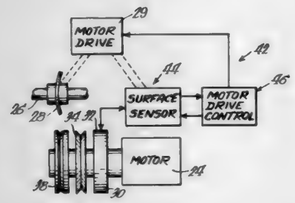
Wilfredo P. Loreto, Hoffman Estates, Ill., assignor to AIT Industries, Inc., Schaumburg, Ill.

Division of Ser. No. 19,767, Mar. 12, 1979, Pat. No. 4,233,784.

This application Apr. 28, 1980, Ser. No. 144,067

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—284 E **13 Claims**



1. In a method of grinding an article with a grinder having a grinding surface and an axis of rotation, comprising the steps of detecting the height of discrete axial positions on the grinding surface between opposite sides thereof and generating signals having values representative thereof; comparing the values of said signals and generating an indication of the grinding surface axial position whereat said signals represent greatest height; and moving the article in accordance with said indication against the axial position of greatest height.

4,286,416

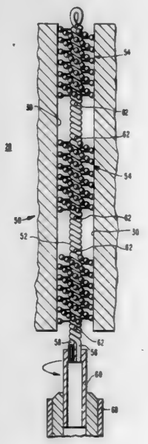
SEGMENTED FLEXIBLE HONE

Frank W. Cooper, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 1, 1978, Ser. No. 930,076

Int. Cl.² B24B *33/02*

U.S. Cl. 51—334 **10 Claims**



1. A segmented flexible hone comprising:

a high pressure helically wound tubular member having holes disposed therein and capable of being disposed in a tubular hole;

a plurality of outwardly extending flexible spirally wound nylon bristles having abrasive globules attached to the outer ends thereof with the inner ends being attached to said tubular member at segments along said tubular member; said tubular member having intervals free of said bristles with said holes being located in said tubular member in the intervals wherein said tubular member is free of said bristles;

a high pressure nozzle attached to said tubular member at one end thereof for conducting a lubricant through said tubular member and through said holes in said tubular member at a pressure between about 80 psi and about 2000 psi; and

a rotational mechanism attached to said nozzle for rotating said tubular member while said lubricant is being conducted therethrough, thereby causing said globules and said lubricant to contact the inside surface of said tubular hole, thus enlarging said tubular hole.

4,286,417

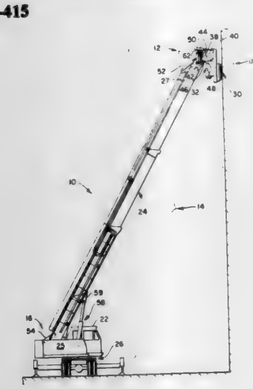
BLASTING MACHINE WITH POSITION SENSING AND ADJUSTMENT

John J. Shelton, Tuttle, Okla., assignor to Robert T. Nelson, Oklahoma City, Okla.

Filed Aug. 8, 1979, Ser. No. 64,753

Int. Cl.³ B24C *3/06*

U.S. Cl. 51—415 **24 Claims**



1. Apparatus for treating a surface comprising a land vehicle including a truck, a boom carried by said truck, said boom having an end portion proximal to said truck and a distal end portion remote from said truck, a blasting member positioned on said distal end portion, means to pivot said boom with respect to said truck to raise or lower said blasting member, means to move said boom transversely, said blasting member having an opening for delivery of an abrasive therethrough to contact an adjacent surface to be treated, said blasting member being pivotally mounted on the distal end of said boom for rotation about two axes one substantially perpendicular to another, sensing means for sensing the position of said opening with respect to said surface, and adjusting means operatively associated with said sensing means for maintaining said opening closely adjacent said surface in response to signals from said sensing means indicating a change in position of said opening with respect to said surface.

4,286,418

SPOUTING ICE PROTECTORS

Ralph C. Snyder, 32830 Arlesford Dr., Solon, Ohio 44139

Filed Jun. 25, 1979, Ser. No. 51,446

Int. Cl.³ E04D *13/02, 13/06*

U.S. Cl. 52—11 **8 Claims**

1. A roof-spouting ice protector comprising in combination:

a plastic protector strip having a plurability of openings therein, longitudinally spaced,

a fastener comprising a strip relatively narrow and short in comparison with the said plastic strip, and having a threaded post perpendicularly secured thereto intermediate the length thereof, and adapted to be passed through holes in said plastic strip from below,



a nut mating the thread of said post adapted to draw said fastener toward said plastic strip for securing the latter against and over spouting.

4,286,419

BUILDING STRUCTURE AND COUPLING PROFILE ASSOCIATED THEREWITH

Willem M. Treffers, No. 34, Jacob van Lenneplaan, Baarn, Netherlands

Continuation of Ser. No. 685,329, May 11, 1976, abandoned.

This application Jan. 9, 1978, Ser. No. 867,944

Claims priority, application Netherlands, May 15, 1975, 7505763

Int. Cl.³ G09F *7/18*

U.S. Cl. 52—39 **7 Claims**



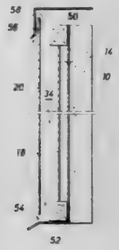
1. In a building structure, a suspended grid system comprising a plurality of elongate, identical coupling profiles, each of substantially channel-shaped section open at the bottom, each coupling profile having a series of spaced openings in its top, an air regulator device freely axially positioned within the length of at least one coupling profile at a desired location and cooperating with the openings at said location to pass conditioned air at said desired location while leaving those openings beyond said location free to pass return air, a conditioned air inlet cabinet mounted on top of said one coupling profile at said desired location, said cabinet being open along its bottom to pass conditioned air through said openings at said desired location to and through said air regulator device, said one coupling profile carrying electric leads adjacent the open bottom thereof, and at least one electrical connection device freely axially positioned along the length of said one coupling profile at a particular location and cooperating with the electrical leads at such particular location to provide electrical outlet connection thereat, the air supply regulator being formed by a roller of sound-insulating material, in which a plurality of air flow channels of circular section is provided, the diameter of said section being so small that the air emerges in the form of a turbulent stream.

4,286,420

HEAT RETENTION WALL SYSTEM

Pansyiotis D. Pharmakidis, 7623 Bonniebrook, Sylvania, Ohio 43560

Filed Apr. 18, 1979, Ser. No. 31,074
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 **35 Claims**



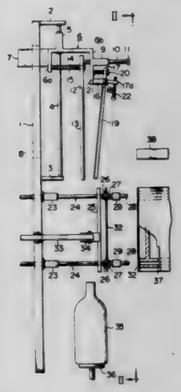
1. A wall, comprising
a vertical interior mass in the range between 20 pounds per square foot and 500 pounds per square foot of wall surface,
an insulation layer positioned opposing the external surface of said interior mass, and
a conductive exterior affixed with respect to said insulation layer so as to have space for air circulation between said conductive exterior and said insulation layer.

4,286,421

METHOD AND MACHINE FOR FITTING A SLEEVE SEAL OF A COLLAPSED FORM OVER A CONTAINER

Masaaki Fujio, Suita, Japan, assignor to Fuji Seal Industry Co., Ltd., Osaka, Japan

Filed Dec. 31, 1979, Ser. No. 108,643
Claims priority, application Japan, Jan. 18, 1979, 54-3363
Int. Cl.³ B65B *13/00, 61/00*
U.S. Cl. 53—399 **4 Claims**



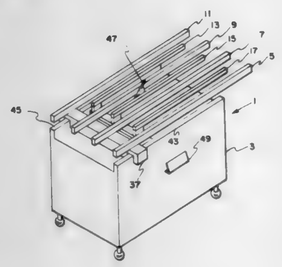
1. A method for fitting a sleeve seal over a container comprising the steps of:
(a) supplying a sleeve seal in a flattened form between opposing suction holding cups, and actuating the suction holding cups to hold the sleeve seal;
(b) moving the suction holding cups apart so as to partly open the sleeve seal;
(c) inserting opening members into the partly opened sleeve seal;
(d) moving the opening members apart to stretch the sleeve seal, in such a manner that in the direction of movement of the opening members the sleeve seal is stretched substantially larger than its final dimension when fitted over the container, and in the direction orthogonal both to the direction of movement of the opening members and to the axis of the sleeve seal it is stretched to substantially less than its final dimension when fitted over the container;
(e) moving the opening members together so that the sleeve seal is relaxed and adopts a shape substantially similar to its required final shape when fitted over the container;
(f) inserting the container into the sleeve seal;
(g) simultaneously holding the sleeve seal in position on the container and extracting the opening members; and
(h) wherein substantially throughout the stretching step (d) the suction holding cups are disengaged from the sleeve seal, and the suction holding cups are reengaged with the sleeve seal during step (e) so as to retain the sleeve seal in position as the container is inserted.

4,286,422

WALKING BEAM BAG LOADER

Milton A. Howe, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Continuation of Ser. No. 865,039, Dec. 27, 1977, abandoned.
This application Dec. 26, 1979, Ser. No. 107,485
Int. Cl.³ B65B *5/04, 67/04*
U.S. Cl. 53—473 **7 Claims**



1. An apparatus for conveying articles in a direction of progression, comprising:
a group of beams movable only horizontally;
a group of beams movable only vertically; and
means for providing reciprocating movement to said vertically movable beams and said horizontally movable beams, and wherein said beams are cantilevered in the direction of article progression and are spaced apart at their respective termini so as to permit insertion of a container both between and beneath said beams at the termini thereof,
said means for providing reciprocating movement being a single rotatable cam for having a cam follower for vertically reciprocating said vertically movably beams, said cam having attached thereto a vertical beam for horizontally reciprocating said horizontally movable beams.

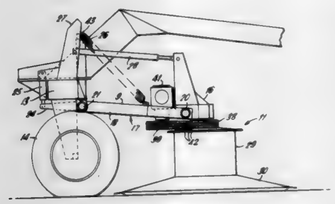
4,286,423

CROP CUTTING APPARATUS

Godfrey P. Caldwell, Oxford, and Nigel W. Meek, Aylesbury, both of England, assignors to Agrimech Engineering Ltd., Aylesbury, England

Filed Sep. 4, 1979, Ser. No. 72,247
Claims priority, application United Kingdom, Sep. 4, 1978, 35446/78; Sep. 29, 1978, 38763/78
Int. Cl.³ A01D *35/264*
U.S. Cl. 56—6 **20 Claims**

1. Crop cutting apparatus, comprising:
a main frame;
at least one pair of rotary cutting devices each for cutting crop by rotary movement of cutting elements of the cutting device about a vertical axis which passes through a ground skid for supporting at least partially the cutting device upon the ground, the vertical axes of the cutting devices being spaced apart transversely relative to the intended direction of forward travel of the apparatus;
each cutting device having a drive device individual thereto spaced from the axis of the cutting device and at least one endless elongate drive member coupling the drive device to the cutting device for driving the cutting device in rotation;
each cutting device having a subframe individual thereto movably mounted upon said main frame so as to allow



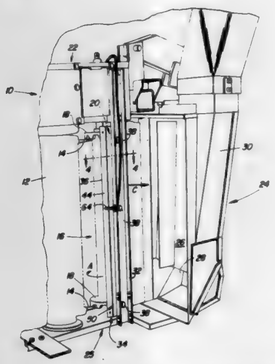
substantially vertical movement of each cutting device with its subframe relative to said main frame independent of vertical movement of said other cutting device or devices, the vertical movement allowed being sufficient to enable each cutting device to follow undulating ground; and
each cutting device being suspended directly from its associated subframe, and each drive device being directly attached to its associated subframe such that each cutting device is mounted together with its associated drive device upon said associated subframe for movement of both said cutting device and said drive device with said subframe during said vertical movement.

4,286,424

BLOCKAGE DETECTOR FOR A COTTON HARVESTER

Arthur L. Hubbard, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 11, 1980, Ser. No. 139,576
Int. Cl.³ A01D *45/18*
U.S. Cl. 56—10.2 **10 Claims**



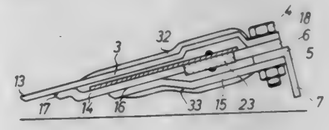
1. In a cotton harvester having a harvesting unit defining an upright discharge opening, a harvesting mechanism carried by the harvesting unit including rotatable doffer means for directing a flow of harvested cotton along a path between the doffer means and the discharge opening, a warning system comprising: a movable flap connected to the harvesting unit adjacent the doffer means and offset from the path, said flap biased toward a first position and shiftable from said first position to a second position by the cotton as the flow deviates from the path and the cotton impinges against the flap; and means responsive to the movement of the flap for providing a signal when the flap is shifted to the second position.

4,286,425

CUTTER FINGER FOR CUTTER BAR MOWERS

Gustav Schumacher, II, Gartenstrasse 8, 5231 Eichelhardt, and Günter Schumacher, Raiffeisenstrasse 10, 5231 Eichelhardt, both of Fed. Rep. of Germany

Filed Dec. 14, 1979, Ser. No. 103,951
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855234
Int. Cl.³ A01D *55/10*
U.S. Cl. 56—307 **9 Claims**



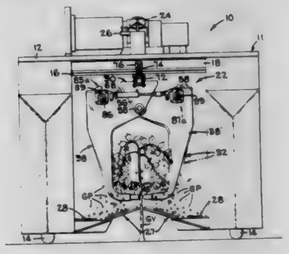
1. In cutter finger apparatus for cutter bar mowers including a lower finger portion fixed to a cutter bar at a rearward end thereof and a separate upper finger portion situated over said lower finger portion and supported by said cutter bar at a rearward end thereof, said upper and lower finger portions defining a slot therebetween adapted to receive a cutter knife therein, said upper and lower finger portions each having forward ends and being fixed to each other at a location forwardly of said knife slit and bolted to each other at a location rearwardly of said knife slit, the improvement comprising: said upper and lower finger portions are each formed by stamped, metallic material; and said upper finger portion includes an end portion projecting in the forward direction beyond said forward end of said lower finger portion so that said forward end of said upper finger portion constitutes a cutter finger tip.

4,286,426

VIBRATORY FRUIT HARVESTER

Franklin P. Orlando, Morgan Hill, and Richard W. Fitzmaurice, Santa Clara, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Nov. 19, 1979, Ser. No. 95,822
Int. Cl.³ A01D *46/26, 46/28*
U.S. Cl. 56—330 **23 Claims**



1. In a harvesting apparatus that includes a vehicle movable to a position adjacent the plant to be harvested, said vehicle including a support frame, a shaker assembly mounted to said vehicle support frame for shaking the trunk of a plant to dislodge crops therefrom comprising: a shaker frame, means connected to said support frame for mounting said shaker

frame for pivoting about a single axis that is overhead the plant to be shaken, said shaker frame including first and second frame sections that extend downwardly of said axis of rotation in substantially fixed relation to each other and that terminate in outer ends, striker members connected to said outer ends in opposing relation, and drive means separate and distinct from said striker members and being connected thereto only through said shaker frame for oscillating said shaker frame as a single unit about said axis to cause said striker members to alternately impact the opposite sides of the trunk of said plant, said drive means being connected to said shaker frame at a height situated generally above said plant.

4,286,427

AGRICULTURAL MACHINE

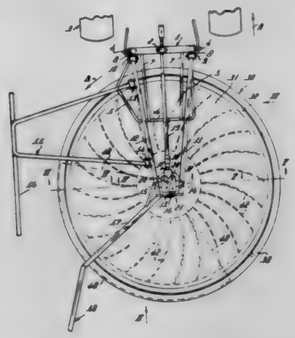
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 749,172, Dec. 9, 1976, Pat. No. 4,208,863. This application Sep. 17, 1979, Ser. No. 75,986

Claims priority, application Netherlands, Dec. 12, 1975, 7514498

Int. Cl.³ A01D *77/06*

U.S. Cl. 56—377 **6 Claims**



1. A mobile agricultural machine for the displacement of crop, said machine comprising a pair of spaced apart air-permeable rotatable screens which each define an interior air chamber, means for rotating said screens in opposite directions towards each other relative to the normal direction of travel of said machine, air evacuation means located in each said chamber for providing that the air pressure in each said chamber is less than the air pressure surrounding said chambers whereby air flows into each chamber through its corresponding permeable screen to draw crop against each said air-permeable screen, said crop being thereafter displaced by the rotation of each of said air-permeable screens.

4,286,428

APPARATUS FOR DETWISTING TEXTILE FABRICS IN ROPE FORM

Mariano Bassani, Via Trento Trieste 7, Arcore (Milan), Italy

Filed May 2, 1980, Ser. No. 145,650

Claims priority, application Italy, May 4, 1979, 67934 A/79

Int. Cl.³ D06C *3/06*

U.S. Cl. 57—1 UN **12 Claims**

1. Improved apparatus for untwisting a textile length which has become gathered together and twisted into the form of a rope, said apparatus comprising:

a main support structure,

a mounting structure carried by the support structure and angularly adjustable in position relative thereto,

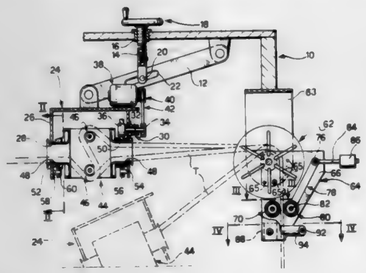
a guide having a textile entry and a textile exit which together define a main axis of guiding for a textile passed through said guide,

means for mounting said guide in said mounting structure for rotation about its guiding axis,

at least one elongate element carried by the guide and arranged to engage a said textile length extending through the guide between said textile entry and exit; said elongate element being disposed transversely to and spaced from the guiding axis of the guide whereby to cause said textile length to follow a sinuous path therethrough,

drive means carried by the mounting structure and arranged to rotate the guide selectively in one or other sense of rotation, and

means for detecting twist in the rope-form textile length, said twist-detecting means being disposed downstream of the guide and being connected to control the operation of said drive means, the twist-detecting means including a pair of rifled rollers arranged for mutual axial displacement and between which the rope-form textile is arranged to pass,



twisting in said textile being effective to cause a mutual displacement of the two rollers in a direction dependent on the sense of twisting; wherein the improvement comprises the provision of said guide mounting means in the form of

respective annular tracks provided on said guide about said textile entry and exits, said tracks being coaxial with said guiding axis, and

respective pluralities of rollers mounted on said mounting structure in correspondence with said tracks, the rollers of each said plurality being rotatable about respective axes parallel to said guiding axis, and being spaced circumferentially around the corresponding said track in contact therewith, one said roller serving as a drive roller and being drivingly coupled to said drive means.

4,286,429

POLYPROPYLENE ENDLESS LOOP AND THE METHOD THEREFOR

Spencer B. T. Lin, No. 12-3, Lane 2, Suei-Duei-Tze, Tamsui, Taipei, Taiwan

Continuation of Ser. No. 896,551, Apr. 14, 1978, abandoned. This application Sep. 25, 1979, Ser. No. 78,841

Int. Cl.³ D02G *3/36;* **B65D** *63/00;* **D02G** *1/20*

U.S. Cl. 57—201 **9 Claims**



1. A polypropylene endless loop having a transverse length of from about 7.5 to 35 cm and exhibiting a tensile strength of at least 6 Kgs obtained by cutting a polypropylene tubular sheet of from about 0.03 to 0.1 mm in thickness and 15 to 50 mm in transverse length into longitudinal lengths of from about 10 to 60 mm, transversely drawing the same at a draw ratio of at least 4 to provide a resulting transverse length of from about 7.5 to 35 cm, then twisting the same to form an endless twisted loop.

3. A method for preparing a polypropylene endless twisted loop suitable for packaging purposes comprising the steps of blow-moulding polypropylene into tubular sheet, having dimensions of from about 15 to 50 mm in transverse length and from about 0.03 to 0.1 mm in thickness, cutting said sheet to form individual endless loops having a longitudinal length of from about 10–60 mm, drawing said loops transversely with respect to the longitudinal axis thereof at a draw ratio of at least 4, and then twisting said drawn loops to form an endless twisted loop.

4,286,430

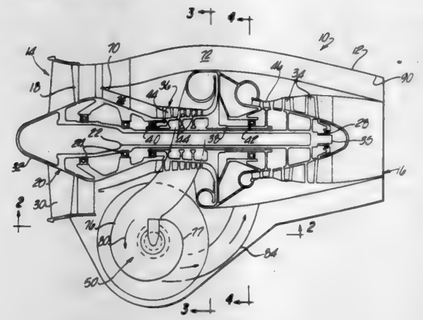
GAS TURBINE ENGINE

Raymond Smith, Monclova, Ohio, assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 17, 1979, Ser. No. 76,391

Int. Cl.³ F02C *3/10*

U.S. Cl. 60—39.16 R **9 Claims**



1. A gas turbine engine comprising:

a housing having an air inlet and an exhaust outlet;

fluid passage means formed through said housing between said inlet and said outlet;

a low pressure spool assembly comprising a first shaft rotatably mounted in the housing, at least one low pressure compressor stage disposed in said fluid passage means and secured adjacent one end of said first shaft, and at least one low pressure turbine stage disposed in said fluid passage means and secured adjacent the other end of the shaft;

an intermediate pressure spool assembly comprising a second shaft rotatably mounted in said housing, at least one intermediate pressure compressor stage disposed in said fluid passage means immediately downstream from said low pressure compressor stage and secured adjacent one end of said second shaft, at least one intermediate pressure turbine stage disposed in said fluid passageway upstream from said low pressure turbine stage and secured to said second shaft adjacent its other end;

a high pressure spool assembly comprising a third shaft rotatably mounted in said housing, at least one high pressure compressor stage disposed in said fluid passage means downstream from said intermediate pressure compressor stage and secured adjacent one end of said third shaft, at least one high pressure turbine stage disposed in said fluid passage means upstream from said intermediate pressure turbine stage and secured to said third shaft adjacent its other end;

combustor means for burning a fuel between said high pressure compressor and turbine stages;

wherein said first and second shafts are coaxial with each other; and

wherein the axis of said third shaft is substantially perpendicular and radially offset with respect to the axis of said first or second shaft so that said high pressure spool assembly straddles the low and intermediate pressure spool assemblies.

4,286,431

IGNITION SYSTEM FOR COMBUSTIBLE GASES OR LIQUIDS

Michel Reichard, Pessac, and Georges Krassoulia, Le Bouscat, both of France, assignors to Societe Europeene de Propulsion, Puteaux, France

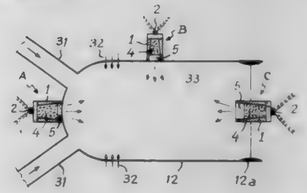
Filed Mar. 28, 1979, Ser. No. 24,676

Claims priority, application France, Mar. 28, 1978, 78 08957

The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.

Int. Cl.³ F02C *7/26*

U.S. Cl. 60—39.82 E **14 Claims**



1. An ignition system comprising an igniter, constituted by a receptacle, an ignition initiator disposed at one end of said receptacle, and a solid charge placed inside the receptacle, the solid charge comprising pyrotechnic compositions and reactive divided metals capable of reacting with one another exothermically, said compositions successively comprising, from the end of the receptacle carrying the initiator, a pyrotechnic ejection composition, a pyrotechnic ignition composition, and reactive divided metals respectively of decreasing activity, wherein;

the igniter is associated with a combustion chamber containing a fluid constituted by liquid products or formed by mixtures of gases and liquids or solid particles, to ensure, by projection of said solid charge within said fluid, the heating or ignition of said fluid.

4,286,432

LOCK VALVE WITH VARIABLE LENGTH PISTON AND HYDRAULIC SYSTEM FOR A WORK IMPLEMENT USING THE SAME

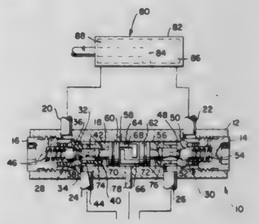
J. W. Burrows, Yates City, and Loyal O. Watts, Mapleton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00664, § 371 Date Aug. 30, 1979, § 102(e) Date Aug. 30, 1979, PCT Pub. No. WO81/00600, PCT Pub. Date Mar. 5, 1981.

This PCT application filed Aug. 30, 1979, Ser. No. 93,072

Int. Cl.³ F16D *31/02*

U.S. Cl. 60—404 **20 Claims**



1. An expandable piston lock valve (10) adapted to operate both as a lock valve and a longstem lock valve comprising a valve housing (12) defining an internal valve chamber (18), a pair of spaced valve inlet ports (24,26) in said valve housing (12) communicating with said valve chamber (18), a pair of spaced valve outlet ports (20,22) in said valve housing (12) communicating with said valve chamber (18), first normally closed check valve means (28) interposed between a first valve inlet and outlet port (24,20) to control the flow of fluid therebetween, second normally closed check valve means (30) inter-

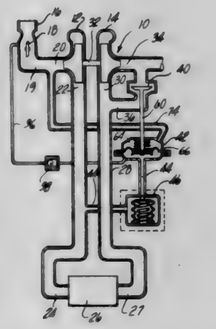
posed between a second valve inlet and outlet port (26,22) to control the flow of fluid therebetween, variable length piston means (58) mounted between said first and second check valve means (28,30) for operation in a first mode to permit both said first and second check valve means (28,30) to close simultaneously in the absence of fluid pressure supplied to either one of said pair of inlet ports (24,26) and in a second mode to prevent said first and second check valve means (28,30) from both closing simultaneously either in the presence or absence of fluid pressure supplied to either one of said pair of inlet ports (24,26), said variable length piston means (58) in said first mode having a first predetermined length and in said second mode expanding to a second predetermined length greater than said first predetermined length, and actuation means (68,78) for causing said variable length piston means (58) to expand from said first predetermined length to said second predetermined length.

4,286,433

CONTROL SYSTEM FOR TURBOCHARGER

Charles A. Detweiler, Durand, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Oct. 11, 1979, Ser. No. 83,860
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—602 **18 Claims**



1. A control system for a turbocharger having a compressor driven by a turbine comprising; valve means movable to alter the volume of exhaust gasses supplied to drive the turbine to control pressure of fluid discharge from the compressor, motor means to move the valve means between open and closed positions, control means disposed in a position to regulate communication between said outlet of said compressor and said motor means including a regulating valve movable between open and closed positions, means biasing said regulating valve to a closed position in response to a predetermined absolute pressure and to an open position in response to pressure from said compressor outlet greater than said predetermined absolute pressure to open said valve means and alter the speed of said turbine.

4,286,434

SOLAR POWER PLANT EQUIPPED WITH HIGH EFFICIENCY HEAT EXCHANGERS

Roger F. Moisdon, 4875 SW. 28th Ave., Fort Lauderdale, Fla. 33312

Filed Dec. 19, 1978, Ser. No. 969,451
Int. Cl.³ F03G *7/04*
U.S. Cl. 60—641 B **1 Claim**

1. A submerged power plant for converting the potential energy of ocean thermoclines to usable energy including a submerged boiler for vaporizing a working fluid as a result of a heat exchange with the relatively warm surrounding surface water, a turbine for work expanding the vaporized working fluid from the boiler, and a submerged condenser for liquifying the exhaust from the turbine as a result of a heat exchange with the relatively cold surrounding subsurface water, the improvement comprising:

wiper means affixed to each of said boiler and condenser for cleaning the outer surfaces of said boiler and condenser so



as to enhance the heat transfer between said outer surfaces and the surrounding ocean water,

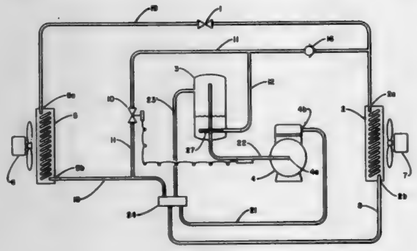
and subsurface means for continously distributing a lubricant film over the outer surfaces of said boiler and condenser so as to inhibit corrosion and marine growth thereon.

4,286,435

HOT GAS DEFROST SYSTEM

Peter L. Cann, Canastota, and Paul S. Sacks, Cazenovia, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 947,980, Oct. 2, 1978, Pat. No. 4,215,555.
This application Dec. 12, 1979, Ser. No. 103,834
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—81 **4 Claims**



1. A method of defrosting a heat exchanger coil in a refrigeration system comprising the steps of:

discharging a portion of the gaseous heat exchange fluid from a compressor outlet into the inlet of a heat exchanger coil having ice accumulated thereon;

circulating the heat exchange fluid through the coil wherein at least a portion of said heat exchange fluid is condensed such that heat is extracted therefrom to melt the ice accumulated on the coil;

passing the condensed heat exchange fluid from the heat exchanger coil outlet into an accumulator which serves as a reservoir for refrigerant during heat transfer operations and a heat interchanger during defrost operations;

by-passing a portion of the gaseous heat exchange fluid discharged from the compressor outlet and introducing said portion in heat exchange relationship with the liquid heat exchange fluid in the accumulator from the step of passing to thereby vaporize at least a portion of the liquid contained therein; and

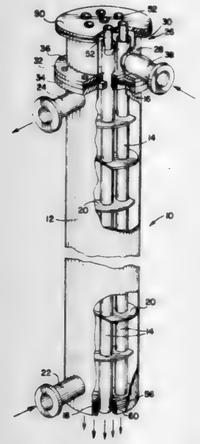
conducting gaseous heat exchange fluid from the accumulator into the compressor inlet.

4,286,436

FALLING FILM FREEZE EXCHANGER

Gerald E. Engdahl, Wheaton; James A. Nail, Carol Stream, and Vincent F. Allo, Warrenville, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jun. 16, 1980, Ser. No. 160,112
Int. Cl.³ B01D *9/04*; C02F *1/22*
U.S. Cl. 62—123 **31 Claims**



1. A falling film freeze exchanger comprising:

a plurality of spaced apart vertical freeze tubes secured in, and penetrating, an upper and a lower tube sheet;

a shell around the tube sheets and connected thereto;

the ends of the freeze tubes extending above the upper tube sheet;

a weir tube telescoping, with clearance, the top portion of each freeze tube;

means to deliver a liquid feed stream into a feed box partially defined by the upper tube sheet; and

means to deliver a cooling fluid around the tubes inside of the shell between the upper and lower tube sheets; and

means to remove cooling fluid therefrom.

4,286,437

ENERGY SAVING REFRIGERATION SYSTEM

Fayez Abraham, and Edward Bowman, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed Jul. 13, 1979, Ser. No. 57,350
Int. Cl.³ F25D *21/06*; F25B *39/04, 47/00*
U.S. Cl. 62—151 **32 Claims**

15. A refrigeration system including a gas defrost mechanism, said system comprising:

compressor means for compressing gaeous refrigerant having a relatively high temperature to a relatively high pressure;

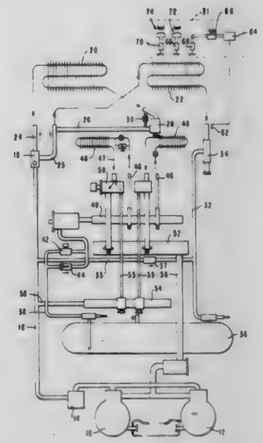
condenser means coupled to said compressor means for condensing the gaseous refrigerant to a liquid;

a plurality of evaporator means coupled in parallel for evaporating the liquid refrigerant at a relatively low pressure;

suction means for returning evaporated refrigerant from said evaporator means to said compressor means;

defrost means coupled to said compressor means for conducting gaseous refrigerant from said compressor means to said evaporator means;

means for selectively connecting the low pressure side of said evaporator means to said suction means and said defrost means in dependence upon whether said evaporator means is selected to be in a regrigeration mode or defrost mode of operation, respectively; and



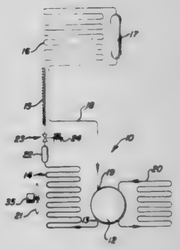
flow period control means for enabling the flow of gaseous refrigerant to said evaporators during a defrost mode of operation, when selected, and after a first time period terminating such flow while preventing said evaporator means from returning to the refrigeration mode of operation for a second set time period of a sufficient duration so as to allow for condensation around said evaporator means to drain.

4,286,438

CONDITION RESPONSIVE LIQUID LINE VALVE FOR REFRIGERATION APPLIANCE

Clarence C. Clarke, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 2, 1980, Ser. No. 146,357
Int. Cl.³ F25B *41/04*
U.S. Cl. 62—216 **17 Claims**



1. In a refrigeration system having a refrigerant fluid compressor having a suction inlet and a high pressure fluid outlet, a condenser connected to said compressor outlet for receiving compressed refrigerant therefrom, and an evaporator connected to said compressor suction inlet, a fluid flow control means connected between said condenser and evaporator comprising:

a fixed restrictor;

a valve for controlling refrigerant fluid flow through the restrictor; and

means for controlling said valve to permit fluid flow therethrough whenever the compressor is running, and when the compressor is not running only in the event the pressure at the outlet of the compressor is above a preselected undesirable pressure, thereby to effect reduction of said pressure to below said preselected pressure to permit subsequent starting of the compressor.

4,286,439

SUIT FOR PROTECTING A PERSON'S BODY FROM HEAT AND GAS

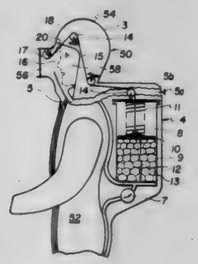
Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Continuation of Ser. No. 858,429, Dec. 7, 1977, abandoned. This application Nov. 20, 1979, Ser. No. 96,245

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2655953

Int. Cl.³ F25D *23/12*; F25B *49/00*

U.S. Cl. 62—259.3 **3 Claims**



1. A protective device for protecting a person's body from heat and gas, comprising a body suit covering the body, having a head portion with a viewing visor in the wearer's field of vision with a refrigeratant storage tank having a consumable refrigerant therein connected to said suit, a refrigerant conduit distributed over said suit, means for circulating refrigerant from said tank through said refrigerant conduit for cooling the body suit and the person's body, and indicator means including a connecting line connected to said tank and having a visual indicator which extends into the field of vision of the wearer and a device for continuously monitoring the amount of refrigerant present including a member in said tank bearing against the refrigerant and movable in response to changes in amount of the refrigerant so that this amount is shown in said visual indicator so as to indicate the state of refrigerant in said storage tank connected to said connecting line.

4,286,440

COMPARTMENT COOLER

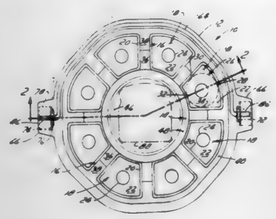
Frank Taylor, 9415 Central Ave., Lasalle, Quebec, Canada (H8R2K4)

Filed Oct. 3, 1979, Ser. No. 81,375

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **9 Claims**

1. A cooler comprising an insulated container, a lid for closing said insulated container, insulated partition means for separating the interior of said container into at least two compartments, one of said compartments being centrally located, said insulated partition means interposed between said two compartments to define a significant portion of a boundary between said compartments and a coolant means defining a further portion of said boundary, said coolant means being supported on the top of said one compartment, a first portion of the surface of said cooling means in communication with said one compartment and a second portion of said cooling means in communication with at least another of said compartments in a manner such that said first portion absorbs heat from



said one compartment and said second portion absorbs heat from said another compartment.

4,286,441

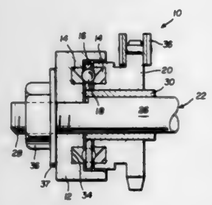
AUTOMATIC SLIP COUPLING ASSEMBLY

Herbert T. Scheneman, Jr., 11333 Oregon Cir., and Karl F. Maggio, 2200 Grove Park Rd., both of Fenton, Mich. 48430

Filed Sep. 4, 1979, Ser. No. 71,969

Int. Cl.³ F16D *7/02*

U.S. Cl. 64—30 C **6 Claims**



1. A slip coupling assembly for coupling drive means to a tubular means, said tubular means including a driving shaft extending therefrom, said coupling assembly comprising:

sprocket means being freely rotatably mounted to said driving shaft of said tubular means, said sprocket means including a resilient portion, said drive means being connected to said sprocket means;

clutch plate means being fixedly mounted to said driving shaft of said tubular means, said clutch plate means including a resilient portion;

said resilient portions of said clutch plate means and said sprocket means being donut-shaped resilient rings, one of said donut-shaped resilient rings being mounted in an annular channel of said sprocket means and the other donut-shaped resilient ring being mounted in an annular channel of said clutch plate means;

a plurality of rollers being mounted to a retainer ring, said rollers and retainer ring being sandwiched between said clutch plate means and said sprocket means, and said rollers being sandwiched between said resilient portions of said clutch plate means and said sprocket means;

said sprocket means being powered for rotative movement by said drive means, and the powered rotative movement of said sprocket means being transmitted through said resilient portions and said rollers to said clutch plate means whereby said tubular means being driven; and

said tubular means being capable of disengagement from said drive means whereby said sprocket means continues to be rotated by said drive means and said clutch plate means being stopped from rotation due to torque-limiting slip which occurs between said rollers and said resilient portions.

4,286,442

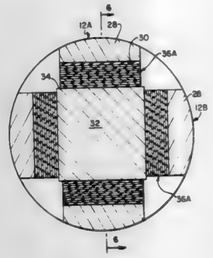
FLEXIBLE COUPLING

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Watertown, Mass.

Filed Feb. 7, 1979, Ser. No. 9,870

Int. Cl.³ F16D *3/04*

U.S. Cl. 64—31 **10 Claims**



1. In a flexible coupling of the type comprising a driving member rotatable about a first axis; a driven member rotatable about a second axis; and an intermediate member; said driving and driven members each including means defining a first pair of spaced apart bearing surfaces; and said intermediate member including means operatively connecting said driving member to said driven member and having second and third pairs of spaced-apart bearing surfaces; each of said second and third pairs being (a) associated with one of said first pairs and (b) disposed with respect to the associated first pair so that each bearing surface of a first pair is disposed adjacent and opposite to a respective bearing surface of the second or third pair, the improvement comprising:

bearing means coupling each of the bearing surfaces of said driving and driven members to a different bearing surface of said intermediate member, said bearing means comprising a plurality of elastomeric laminated bearing units, ech disposed between and engaging one of the bearing surfaces of said second and third pairs and an adjacent bearing surface of one of said first pairs; wherein each of said elastomeric laminated bearing units comprises alternate layers of an elastomeric material and a nonextensible material; and wherein said bearing surfaces of said second and third pairs are cylindrical surfaces and said bearing surfaces of said first pairs are flat surfaces, and each of said bearing units includes a cylindrical section and a flat section engaging respectively the corresponding cylindrical and flat surfaces.

4,286,443

ASSURED SLOW SPEED SPIN FOR FABRIC WASHING MACHINE

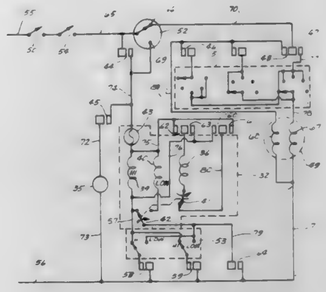
William H. Hunter, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Mar. 31, 1980, Ser. No. 135,473

Int. Cl.³ D06F *33/02*

U.S. Cl. 68—12 R **6 Claims**

1. A control system for a fabric washing apparatus operable through a plurality of cycles and including an agitator within a rotatable fabric-receiving basket and drive means selectively operable for driving each of said agitator and basket at a first relatively low speed and a second relatively high speed, the combination comprising: sequential control means for controlling said apparatus through a predetermined sequence of events defining said plurality of cycles; cycle selection means for selecting a particular one of said plurality of cycles; speed selection means operable independently of said cycle selection means and including switch means for effecting one of the speeds of said drive means; and circuit means associated with said sequential control means and said drive means and actuated during a predetermined portion of said particular one cycle to provide a bypass circuit relative to said switch means for overriding said speed selection means and operating said drive means in the other of said speeds during the predetermined portion of said particular one cycle and permitting operation at the selected speed for the balance of the cycle.



4,286,444

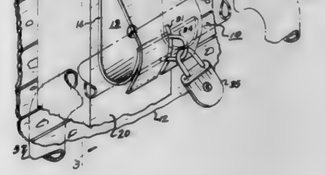
HAND PROPELLED YARD MACHINERY HANG-LOCK DEVICE

Nicholas Grudich, 17285 Meryweather, Mount Clemens, Mich. 48044

Filed Apr. 5, 1979, Ser. No. 27,310

Int. Cl.³ E05B *65/48*

U.S. Cl. 70—13 **1 Claim**



1. A hang-lock device adapted to be fastened to a wall for hanging and locking a hand propelled machine to prevent theft thereof comprising:

walls defining a generally rectangularly outlined, flat, sheet metal bracket portion having a front face and a wall contacting face and side edges;

a cantilevered, jaw-like cavity portion attached to the bottom edge of said bracket portion coterminious therewith width-wise depending downwardly and forwardly in substantially circular cylindrical outline upwardly to a cavity lip disposed horizontally with the bottom of said cavity;

spaced screw openings to fasten the device to such wall extending through said front and rear faces of said bracket portion;

walls defining an elongated sheet metal upper leaf pivotably hinged by a hinge pin to the upper edge of said bracket portion, said hinge pin being capped to prevent removal thereof after installation, said leaf depending downwardly and outwardly from said hinge pin so as to overlap said lip a substantial distance below said lip and jaw cavity, said latch leaf having at its lower portion below said lip a slotted opening for receiving a hasp therethrough; and a U-shaped hasp member having its ends fixedly attached to said jaw-like member below and adjacent said lip so that

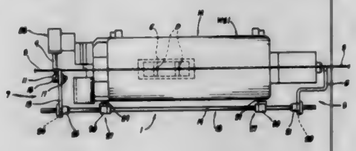
when said leaf is closed the hasp extends through said leaf preventing said leaf from being opened when a locking means is passed through said hasp.

4,286,445
PADLOCK PROTECTIVE COVER
William G. Sills, R.F.D. 2, Medina, N.Y. 14103
Filed Aug. 3, 1979, Ser. No. 63,520
Int. Cl.³ E05B *67/38*
U.S. Cl. 70—55 **1 Claim**



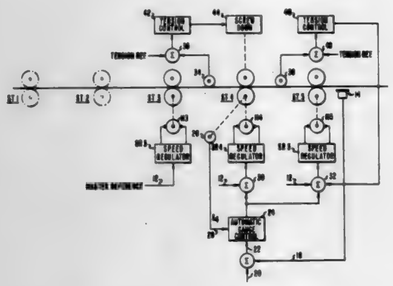
1. A padlock protective cover comprising:
an enclosed housing including a side wall assembly constructed of flexible sheet material, said side wall assembly having an upper access opening and a lower access opening each of which connects with an interior chamber, said interior chamber adapted to contain the body portion of a padlock;
a top hingedly connected by a first "living hinge" assembly to said side wall assembly, said top capable of tightly connecting with said side wall assembly to close said upper access opening, said top having a pair of spaced-apart aperatures, said aperatures to connect with the shackle portion of a padlock, a separate annular protuberance integrally attached to said top and extending outwardly therefrom, a said annular protuberance being located about said aperture, whereby each said annular protuberance is to tightly connect with the shackle portion of the padlock;
a bottom hingedly connected by a second "living hinge" to said side wall assembly, said bottom being movable to close said lower access opening, said bottom being located entirely within said internal chamber and in snug contact with the wall of said internal chamber when said bottom is closing said access opening; and
a tab attached to said bottom and protruding outwardly from said side wall assembly when said bottom is in the closed position, said tab to facilitate manual hinging movement of said bottom.

4,286,446
MACHINE CONTROL APPARATUS
Edgar F. Saffley, Florissant, Mo., assignor to ACF Industries, Inc., New York, N.Y.
Filed Jun. 5, 1979, Ser. No. 45,603
Int. Cl.³ B21B *33/00*; B21D *55/00*; F16D *71/00*
U.S. Cl. 72—5 **4 Claims**



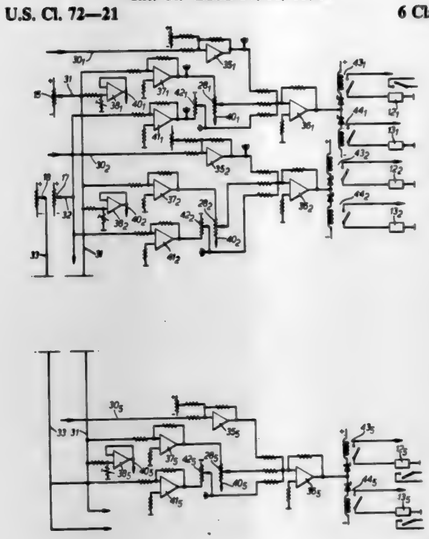
1. Apparatus for controlling a machine drawing stock from a source thereof to a first work station at which a first operation is performed on the stock, the stock being delivered from the first work station to a second work station as the first operation is completed so a second operation may be performed on the stock at the second work station, the machine having an electromechanical system which drives the machine to perform the work at the work station and move the stock, the electromechanical system including a switch for energizing and deenergizing the system, and the switch having a contactor arm extending outwardly from the machine, the apparatus comprising:
a lever arm bearing against the stock as it moves toward the first work station, the lever being held in a first position when engaging the stock and rotatably movable from the first toward a second position when the end of the stock is reached;
a contactor for moving the contactor arm of the switch to turn the switch from "on" to "off" and deactivate the electromechanical system thereby terminating the drawing of stock; and,
a rod rotatably interconnecting the lever and the contactor for transmitting movement of the lever from its first position toward its second position to the contactor, the contactor moving the switch to its "off" position in response to movement of the lever, the lever being attached to one end of the rod, the contactor being attached to the other end of the rod and the rod being positioned substantially parallel to the path of stock through the machine so that said rod is rotatable about an axis extending parallel to said stock path.

4,286,447
METHOD AND APPARATUS FOR AUTOMATIC GAUGE CONTROL SYSTEM FOR TANDEM ROLLING MILLS
Robert S. Peterson, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 12, 1979, Ser. No. 19,530
Int. Cl.³ B21B *37/06*
U.S. Cl. 72—9 **3 Claims**



1. The method of controlling the final output gauge of strip material passing through a tandem rolling mill including 1, 2, . . . n stands, comprising the steps of: varying the speed of the $(n-1)^{th}$ in relation to an inputted thickness into said $(n-1)^{th}$ stand and to a desired delivery gauge at the output of said n^{th} stand; with said n^{th} stand having rolls which have been sand-blasted for effecting rough surfacing treatment of said strip material therethrough; and varying the speed of said n^{th} stand substantially by the same speed percentage as said $(n-1)^{th}$ stand.

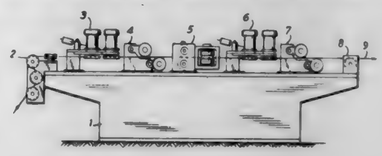
4,286,448
MILL CONTROL
Geoffrey Houghton, Colehill, England, assignor to Loewy Robertson Engineering Co. Ltd., Poole, England
Filed Nov. 13, 1979, Ser. No. 93,187
Int. Cl.³ B21B *37/00, 13/14*
U.S. Cl. 72—21 **6 Claims**

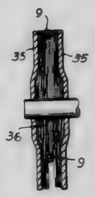


1. Control equipment for at least some of the eccentrically mounted collars of a cluster mill, comprising:
(a) a control circuit for each said controlled collar for setting said collar to a determined displacement;
(b) a control signal generating circuit for each said controlled collar;
(c) means for generating a first magnitude signal proportional to a desired crown magnitude;
(d) means for generating from said first magnitude signal a series of crown datum signals, one for each said controlled collar, said series of crown datum signals being proportional to said first magnitude signal in a preselected ratio;
(e) selection means for preselecting said ratio;
(f) means for supplying a position signal representing the displacement of each said controlled collar;
(g) each of said control signal generating circuits being connected to receive an associated one of said crown datum signals and a corresponding position signal;
(h) whereby each said control signal is dependent on the difference between its said position signal and the associated crown datum signal.

4,286,449
MACHINE FOR MECHANICAL PICKLING OF WIRES WITH THE AID OF ROLLING
Bruno Spreafico, Via Valle Scura 2, Malgrate (Como), Italy
Continuation-in-part of Ser. No. 832,064, Sep. 9, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,596
Claims priority, application Italy, Sep. 21, 1976, 27415/76; Nov. 15, 1976, 29328/76
Int. Cl.³ B21B *45/04, 45/02*
U.S. Cl. 72—40 **4 Claims**

1. An apparatus for rolling and cleaning small diameter metal wires being advanced into said apparatus, said cleaning apparatus being driven by independent means, comprising in combination: a supporting planer on which said apparatus is positioned a first set of rotary brushes arranged in pairs on said apparatus and being disposed at the sides of the advancing wire, said brushes in each pair having axes with the axes of adjacent pair of brushes being substantially perpendicular with respect to one another, each of said rotary brushes being flanged throughout their diameter so as to laterally compress and maintain alignment of the bristles of each of said brushes and being rotated by an independent motor in a direction opposite to wire feed direction, said brushes further defining an enclosed section or arc of about 180° of the wire, said brushes having bristles with tips co-acting in respect of the advancing wire by a flange holding action formed at the interface thereof, wire rolling means downstream of said first set of brushes; a second set of said flanged rotary brushes arranged in pairs on the sides of the wire with each pair of brushes having axes and



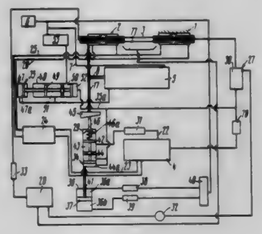


the axes of adjacent pairs of brushes being substantially perpendicular with respect to one another, each of said brushes being rotated by an independent motor in a direction opposite to the wire advance direction to define an enclosed sector or arc of about 180° of the wire, wherein the bristles of said set of brushes coact with surfaces of the advancing wire in response to a restraining action by said flange restraining means formed at the interface thereof to permit a minimum and constant tip bending at a tangent with respect to the bristles; and counterweight pressure means for pressing said brushes against the wire penetrating into the brushes, without substantial spreading of the bristles of the latter as said brush bristles are being worn out.

4,286,450
APPARATUS FOR MANUFACTURING CORRUGATED TUBES
Eduard M. Godin, ulitsa Begovaya, 22, korpus 3, kv. 212; Vladimir A. Anoshko, ulitsa Shosseinaya, 58, korpus 1, kv. 84; Anatoly N. Gavrilov, Kutuzovsky prospekt, 43, kv. 118, all of Moscow; Almas F. Akhmerov, ulitsa Kosmonavtov, 2, kv. 19, Kazan; Garik E. Zverkov, ulitsa Oktyabrskoi revoljutsii, 24, kv. 40; Valentin P. Semenov, prospekt Stroitelei, 8, kv. 40, both of Smolensk; Vladimir V. Grachev, ulitsa Bobruiskaya, 22, kv. 82, Moscow; Valentin M. Chepurin, ulitsa Starodemidovskaya, 8b, kv. 28, Smolensk; Viktor Y. Mikhailov, 4 mikroraion, 29, kv. 226, Angarsk, and Sergei I. Rybnikov, ulitsa Supruna, 3/5, kv. 3, Moscow, all of U.S.S.R.
Filed Dec. 20, 1979, Ser. No. 105,857
Claims priority, application U.S.S.R., Feb. 3, 1978, 2570051
Int. Cl.³ B21D *15/06*
U.S. Cl. 72—59 **7 Claims**

1. An apparatus for manufacturing corrugated tubes from a tubular billet comprising: a bed; a unit for clamping and sealing a tubular billet installed on said bed; a hydraulic drive of said clamping and sealing unit installed on said bed; a liquid source of said hydraulic drive; a compressed gas source; a device for axial compression of the tubular billet communicating with

said compressed gas source and installed on said bed; a source of forming liquid; a device for delivering pressurized liquid from said liquid source into the tubular billet for forming the corrugated tube installed on said bed; a pressure regulator of said forming liquid delivery device; tools installed on said bed symmetrically with relation to the direction of compression of the tubular billet with a provision for reciprocating across said direction of compression for at least partial encompassing of the tubular billet; a drive for reciprocating said tools; a device for programmed pressure control inside the tubular billet,



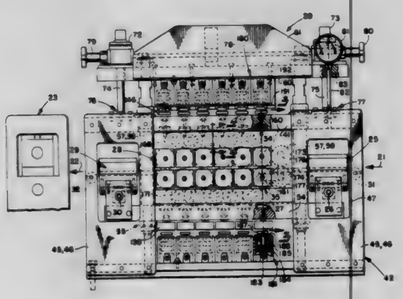
connected by its input to said hydraulic drive and by the output, to the space of the tubular billet; a device for programmed control of axial compression force connected by its input to said compressed gas source and by the output, to said axial compression device for displacing the movable member thereof; said device for programmed pressure control inside the tubular billet and said device programmed control of axial compression force interconnected operationally for synchronous changes of the axial compression force and of pressure inside the tubular billet.

4,286,451

FORMING LEVELLER

William J. H. Chang, Rocky River, Ohio, assignor to The Yoder Company, Cleveland, Ohio

Filed Jun. 18, 1979, Ser. No. 49,491
Int. Cl.³ B21C *1/02, 5/14*
U.S. Cl. 72—161 **51 Claims**



1. A multiple pass forming leveller for shaping variable thickness elongated stock to one or more planes of reference comprising a leveller having upper and lower fixed and floating stock engaging rolls at each pass, each floating roll being opposed to a fixed roll to compensate for variations in stock thickness.

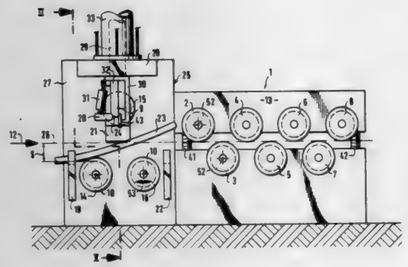
35. A stock leveller comprising a bottom set of stock engaging rolls and a top set of stock engaging rolls, shafts for the rolls of each set, a bottom fixed frame mounting the shafts of the top set of rolls and a top movable frame mounting the shafts of the bottom set for movement with respect to the top set.

4,286,452

MACHINE FOR STRAIGHTENING ELONGATED WORKPIECES

Horst Schneider, Leichlingen, Fed. Rep. of Germany, assignor to Th. Kieserling & Albrecht Werkzeugmaschinenfabrik, Solingen, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,323
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855014
Int. Cl.³ B21C *3/02*
U.S. Cl. 72—164 **10 Claims**



1. A machine for straightening of elongated workpieces, comprising support means; a plurality of driven straightening rolls profiled substantially according to the cross-section of the workpiece to be straightened and being mounted on said support means turnable about axes normal to the direction in which the workpiece passes through the machine, said plurality of rolls including, as considered in said direction a first, a second and a third roll mounted in said support means in such a manner so as to be accessible from one side of the machine; means for adjusting the position of at least some of the other rolls towards the workpiece; means for adjusting the position of said second roll in a plane normal to said passing through direction and including the axis of said second roller, relative to said first and third roll and independent from the adjustment of the position of said other rolls; and at least partly movable means in the region of the first three rolls for centralizing the workpieces relative thereto.

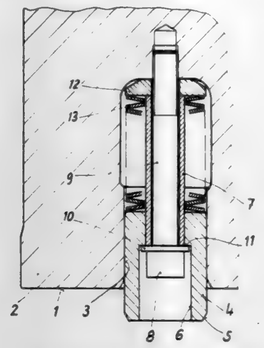
4,286,453

DEVICE FOR SECURING THE DUMMY BLOCK ON THE PRESS STEM OF METAL-EXTRUSION PRESSES

Klaus Exner, Dusseldorf, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 16, 1979, Ser. No. 39,664
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 7815260[U]
Int. Cl.³ B21C *25/00*
U.S. Cl. 72—273 **3 Claims**

1. In a press stem for a metal extrusion press having a dummy block and retainer therefor, the improvement comprising a central blind bore in the end face of the press stem extending only partly through said stem, a dummy block retaining bolt slidable in said blind bore having a chamfered outer edge and a coaxial hole therethrough and a counterbore in the outer end thereof, resilient means in said blind bore for urging said bolt out of said blind bore for engagement in a bore hole in an aligned dummy block to removably support said dummy block on said end face, and adjustable means in said blind bore for retaining said bolt in said blind bore and controlling the amount the bolt projects from said end face while allowing said bolt to retract within said blind bore against the urgining of said resilient means, said adjustable means comprising a threaded bolt having an enlarged head extending through said hole and engaging a correspondingly-threaded bore in the inner end of said blind bore with said threaded bolt head situated in said counterbore, a washer between said bolt head and the shoulder between said hole and said counterbore, said bolt head and washer retaining said dummy block retaining bolt in said blind bore, and a tubular spacer of predetermined length



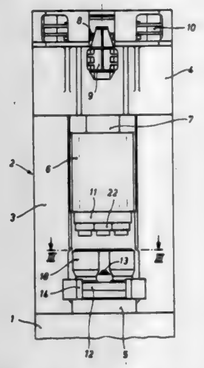
surrounding said threaded bolt and extending between said washer and the inner end of said blind bore, said tubular spacer being interchangeable with other tubular spacers of varying lengths.

4,286,454

APPARATUS FOR FORGING SHAFT FLANGES

Horst Bachmann, Rödental-Waldsachsen, Fed. Rep. of Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,162
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833181
Int. Cl.³ B21D *43/14*
U.S. Cl. 72—356 **7 Claims**



1. Apparatus for forging a shaft flange in one or more preforming operations and a finish-forging operation comprising a forging press having a support stand with a fixed press plate, a moving platen movable relative to said fixed plate, a rotatable table mounted on said fixed plate, an upper finish-forging die on said moving platen, said die being located substantially in alignment with a central axis of said support stand, said rotary table having an axis of rotation spaced from said central axis, a plurality of like lower dies supported in a circle on said table around said axis of rotation, a plurality of upper preforming dies on said moving platen for cooperation with said lower dies and means for indexing said table about said axis of rotation to bring a lower die containing a workpiece to be forged sequentially into register with said upper preforming dies and with said finish-forging die, a first one of said upper preforming dies being positioned on one side of said finish-forging die and a second one of said upper preforming dies being positioned on the other side of said finish-forging die, said indexing means being adapted to rotate a lower die from alignment with said first upper die to alignment with said second upper die past said finish-forging die.

4,286,455

ULTRASOUND PHANTOM

Jonathan Ophir, Overland Park; Nabil F. Maklad, Lenexa, and Paul M. Jaeger, Kansas City, all of Kans., assignors to Acoustic Standards Corporation, Overland Park, Kans.

Filed May 4, 1979, Ser. No. 36,016
Int. Cl.³ G01N *37/00*
U.S. Cl. 73—1 DV **13 Claims**

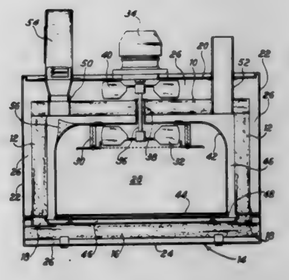
1. An ultrasound phantom comprising:
a substantially air-tight enclosure;
means within said enclosure for altering ultrasonic waves directed therethrough in a manner to yield desired ultrasound characteristics,
said wave-altering means including a quantity of a cellular foam material, and a fluid dispersed throughout said material.

4,286,456

GAS CHROMATOGRAPHIC CHAMBER

Giorgio Sisti, Melzo; Ermete Riva, Merate, and Learco Sala, Monza, all of Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy

Filed Aug. 9, 1979, Ser. No. 65,333
Claims priority, application Italy, Nov. 22, 1978, 30052 A/78
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **9 Claims**

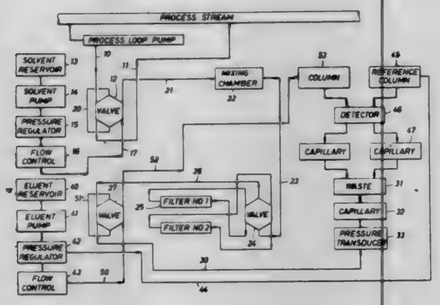


1. A gas chromatographic chamber comprising an outer envelope including insulated wall members defining said chamber which may be closed in an air-tight manner, an inner housing section within said chamber, said inner housing section adapted to include at least one chromatographic column and including inner housing section air distribution means for maintaining a uniform distribution of the air within said inner housing section and inner housing section heating means for heating the air within said inner housing section, non-thermally insulating partition means within said chamber and spaced from said insulated wall members so as to provide a pneumatically insulated space between said insulated wall members and said inner housing section, said non-thermally insulating partition means defining said inner housing section, and circulation means for creating a controlled circulation of fluid within said pneumatically insulated space so as to affect the temperature within said inner housing section.

4,286,457
VISCOSITY MEASUREMENT

Henry W. Johnson, Jr., Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 6, 1980, Ser. No. 127,701
Int. Cl.³ G01N *31/08, 33/44*
U.S. Cl. 73—53 4 Claims



1. A method for determining the solution viscosity of a polymer comprising:

performing a gel partition chromatography analysis of the polymer solution;

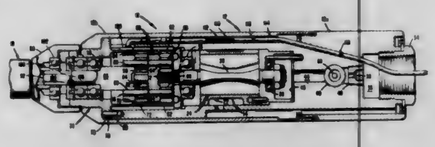
measuring the pressure drop in the flow line to the chromatography column caused by the passage of said polymer solution; and,

recording both said analysis and pressure drop in a correlatable manner.

4,286,458
FASTENER TOOLS

Robert H. Alexander, Columbia, S.C., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 404,689, Oct. 9, 1973, Pat. No. 4,223,555.
This application Jun. 21, 1977, Ser. No. 808,467
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.³ B25B *23/145*
U.S. Cl. 73—862.21 6 Claims

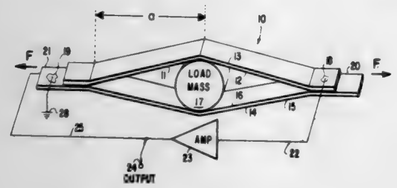


5. A transducer construction for a power tool or the like having a motor, a torque output member, and drive means connecting said motor with said torque output member, said transducer construction comprising an annular member adapted to encircle at least a portion of said drive means and having one end thereof adapted to be fixed against rotation relative to said output member, an internal gear means at the other end thereof for so connecting said annular member to said drive means as to subject said annular member to at least a portion of the torque being transmitted by said drive means, and torsional strain responsive means carried by said annular member and operable to provide a signal proportional to the torsional strain in said annular member and consequently to the torque output at said torque output member.

4,286,459
FORCE SENSOR

William S. N. Trimmer, Morris Plains, N.J., and Mark R. Laser, New York, N.Y., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 30, 1979, Ser. No. 89,670
Int. Cl.³ G01L *1/10*
U.S. Cl. 73—862.59 12 Claims



7. A force measuring device comprising:

a first strip of flexible piezoelectric material;

an electrically conductive coating on opposite sides of said first strip;

a second strip of flexible piezoelectric material;

an electrically conductive coating on opposite sides of said second strip;

said conductive coating on one side of said first strip being electrically coupled to the conductive coating on one side of said second strip adjacent to each end of said first and second strips;

said electrically coupled coatings on said first and second strips connected to a reference potential;

positive electrical feedback means coupled between the other conductive coating on said first strip and the other conductive coating on said second strip;

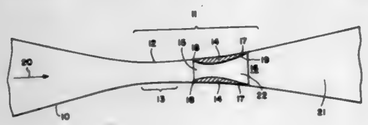
a mass located between said first and second strips intermediate the ends thereof; and

means to enable a force to be applied to at least one end of said strip(s) thereby causing said strips and said mass to oscillate at a frequency determined by the magnitude of said force.

4,286,460
WIND TUNNEL SUPPLEMENTARY MACH NUMBER MINIMUM SECTION INSERT

Lana M. Couch, Mathews, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 135,040
Int. Cl.³ G01M *9/00*
U.S. Cl. 73—147 5 Claims

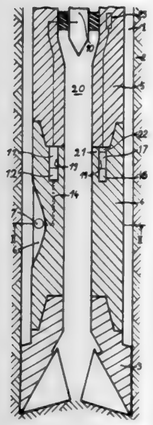


1. In combination with a wind tunnel having a nozzle with a first minimum section and a nozzle expansion area having walls, an apparatus for providing supplementary wind tunnel Mach numbers, said apparatus comprising a second minimum section insert releasably attached to said walls of said nozzle expansion area of said wind tunnel.

4,286,461
METHOD AND DEVICE FOR IN SITU DETECTION OF A MINERAL DEPOSIT FLUID WITHIN A BOREHOLE

Philippe Bres, Billere; Christian Berge, Pau, and Gerard Sassus-Bourda, Poey de Lescar, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Nov. 1, 1979, Ser. No. 90,358
Claims priority, application France, May 23, 1979, 79 13090
Int. Cl.³ E21B *47/10*
U.S. Cl. 73—155 10 Claims



1. A device for in situ detection and measurement of a mineral deposit fluid, of the type comprising an acoustic wave emitter and an acoustic wave receiver which are mounted on a drill collar substantially in the proximity of the drilling bit, means connected to the emitter and capable of generating at least one acoustic wave, means mounted partly on the drill collar and partly at the surface, said means being connected to the receiver and capable of processing the signals received by said receiver, wherein the emitter and the receiver are placed in oppositely-facing relation at a short distance from each other and are mounted on a part of the drill collar which is constituted by an external groove, said emitter and receiver being housed within said groove.

4,286,462
ACOUSTIC DETECTION OF WIND SPEED AND DIRECTION AT VARIOUS ALTITUDES

Ian A. Bourne, Nunawading, Australia, assignor to The University of Melbourne, Parkville, Australia

Filed Aug. 21, 1979, Ser. No. 68,331
Claims priority, application Australia, Aug. 22, 1978, PD5604
Int. Cl.³ G01W *1/02*
U.S. Cl. 73—189 14 Claims

1. Apparatus for the detection of wind speed and direction at various altitudes, comprising:

(a) means for transmitting to the atmosphere an acoustic pulse having a predetermined frequency spectrum;

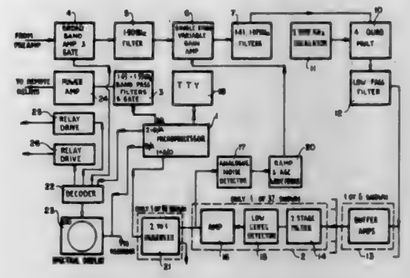
(b) means for receiving the energy of said pulse as scattered by the atmosphere to provide electrical signals;

(c) means for comb filtering said electrical signals to divide said electrical signals into a number of discrete frequency channels;

(d) means for generating a running mean of the output signal from each frequency channel; and means for substracting the mean from each output signal, whereby the influence of background noise and spurious signals is reduced;

(e) means for rejecting the output signals from the discrete frequency channels which do not satisfy predetermined noise criteria;

(f) means for determining the difference between the center frequencies of the transmitted pulse and the respective output signals from said discrete frequency channels which are not rejected to determine a velocity estimate of the wind in the direction of propagation; and

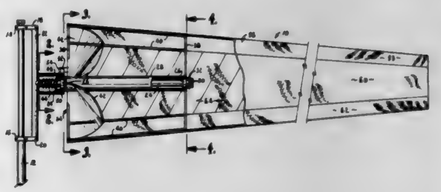


(g) means for assessing the reliability of the estimated velocity, and means for rejecting those velocity estimates falling below a predetermined level of reliability.

4,286,463
AIR SOCK

H. Ray Cole, R.R. 1, Rosendale, Mo. 64483

Filed Nov. 16, 1979, Ser. No. 95,511
Int. Cl.³ G01W *1/02*
U.S. Cl. 73—189 16 Claims



1. An instrument for indicating the speed of the wind, said instrument comprising:

a generally conically shaped member open at at least one end, said member being divided into longitudinally extending sections around its perimeter with each section being characterized by a visible marking distinguishing it from the other sections;

means for mounting said member for pivotal movement about its longitudinal axis;

means for acting on said member for resisting said pivotal movement about said longitudinal axis;

means for mounting said member for pivotal movement about a vertical axis in response to changes in wind direction; and

means for effecting said pivotal movement of said member about said longitudinal axis responsive to wind speed whereby one of said sections will be visible from an overhead position to provide an indication of wind speed.

4,286,464
OPTICAL FLUID LEVEL MONITOR

Thomas E. Tauber, Upper Darby, Pa., and James Magee, Palmyra, N.J., assignors to Technical Development Company, Glenolden, Pa.

Filed Jan. 14, 1980, Ser. No. 112,088
Int. Cl.³ G01F *23/00*
U.S. Cl. 73—293 7 Claims

1. An apparatus for monitoring the level of fluid in a container which comprises:

an array of sensors, each of said sensors being adapted to

provide a signal to indicate if said sensor is immersed in the fluid, said array being positioned in the container so that said array is substantially immersed in the fluid when the container is full, said array being aligned and adapted in a manner so that said signals may substantially indicate the fluid level within the container;

a processor means adapted to receive said signals and present them in a form more suitable for use;

a plurality of transparent conical prisms located so that the apex of each prism protrudes into the interior of said container;

a set of light sources fitted one behind each of said prisms and adapted to direct a beam of light into the base of said prism such that if the prism is below the surface of the contained fluid the beam will be refracted out of said prism and be lost but if the prism is not submerged, the light beam will be internally reflected back out of the base of said prism into the interior of said container;



a set of detectors fitted one behind the base of each prism adapted to receive said reflected beam when it is present and emit an electric signal which will indicate such reception;

a multiplex circuit adapted to energize in sequence each of said light sources while simultaneously testing each of said detectors to determine if it is emitting a signal indicative of a reflected light beam;

a counting circuit means adapted to count the number of detectors indicating reflected light and emit an electrical signal which is proportional to said number, said signal representing the height of the fluid in the container; and

a temperature compensation means adapted to develop a voltage representative of any errors in fluid level introduced by temperature changes in both the fluid and system components, and a summing junction wherein said proportional signal is summed with said error signal to produce a corrected electrical signal representing the true height of the fluid in the container being monitored.

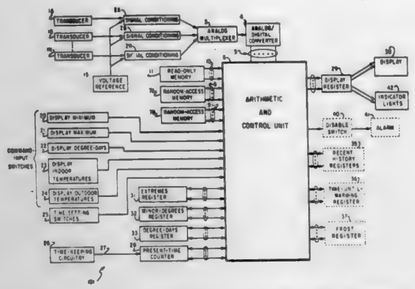
4,286,465

ELECTRONIC DEVICE TO RECORD TEMPERATURES AND THE TIME OF OCCURRENCE

Irving H. Thomae, Norwich, Vt., assignor to Trustees of Dartmouth College, Hanover, N.H.

Filed Sep. 17, 1979, Ser. No. 75,953
Int. Cl.³ G01K *7/16*
U.S. Cl. 73—342 **15 Claims**

1. A digital min-max thermometer that comprises, in combination: temperature transducer means for periodically sensing the temperature in the surrounding environment and for providing a signal representative of that temperature; time keeping means to provide the corresponding time of occurrence of the temperature thus sensed; storage means for storing previously attained minimum and maximum values of temperature and the time of occurrence thereof; means for comparing the most recently sensed temperature with stored values of temperature for a limited subinterval of time to find local minimum and maximum temperatures for that subinterval, there being a set of contiguous subintervals that together form a major time interval, minimum and maximum temperatures and corresponding times of occurrence for each said set being stored; means for reviewing the stored minimum and maximum temperatures of



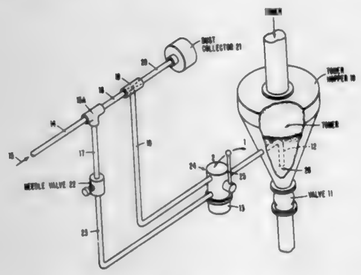
each set of contiguous subintervals to find the greatest and least temperatures recorded during the most recent major time interval terminating at the time of review and the times of occurrence thereof; and means for displaying the most extreme temperatures for said major time interval together with the time of occurrence of each such extreme.

4,286,466

METHOD AND APPARATUS FOR PNEUMATICALLY SAMPLING POWDERS

Ralph J. Stewart, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1979, Ser. No. 83,067
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.83 **11 Claims**



1. A pneumatic sampler of flowable material operable to cause an amount of such material to flow from a material mass to a sample container, comprising:

a fluid restrictor adapted to be connected to a source of positive-pressure fluid such that fluid flow through said restrictor produces a source of negative-pressure;

first pneumatic circuit means, including a first portion, adapted to connect the source of positive-pressure fluid to the material mass to cause flow in a first direction toward the material mass;

second pneumatic circuit means, including a second portion, adapted to connect the sample container to said source of negative pressure to evacuate the sample container by virtue of flow in a first direction toward said source of negative pressure;

third pneumatic circuit means including only said first and second portions series connected between the sample container and the material mass to cause material flow in a direction opposite said first direction through said first and second portion, from the material mass to the sample container; and

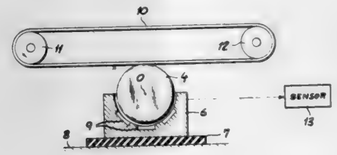
means operable to sequentially effect operation of said first and second pneumatic circuit means, and then operation of said third circuit means.

4,286,467

METHOD OF SELECTING ROLLERS FOR HIGH-SPEED JOURNAL BEARINGS

Hans Köber, Schwebheim, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Jan. 9, 1980, Ser. No. 110,741
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1979, 2900663
Int. Cl.³ G01M *1/16, 13/04*
U.S. Cl. 73—460 **1 Claim**



1. A method of selecting rollers for assembly into high-speed journal bearings, comprising the steps of:

cradling each roller in a generally semicylindrical cup of an air bearing with a horizontal axis;

resiliently mounting said air bearing on a supporting surface;

frictionally entraining each roller at high speed by a horizontal stretch of an overlying endless belt in tangential contact therewith to set the roller in rotation about a spin axis substantially coinciding with said horizontal axis;

measuring rocking motions of said air bearing due to deviations of said spin axis from said horizontal axis; and

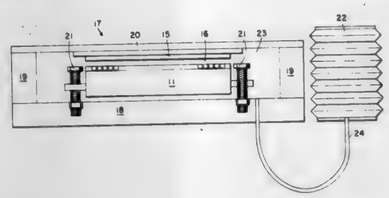
eliminating rollers for which the extent of said rocking motion exceeds a predetermined limit.

4,286,468

FRUSTRATED TOTAL INTERNAL REFLECTION FIBER-OPTIC SMALL-MOTION SENSOR FOR HYDROPHONE USE

Daniel E. Altman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 4, 1979, Ser. No. 72,820
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—655 **10 Claims**



1. An apparatus employing a light signal to detect motion comprising:

means forming a base member;

an optical fiber having a core of a given refractive index covered by a cladding, the optical fiber being cemented in a coiled spiral shape on the base member for transmitting light therethrough, the optical fiber having at least a portion of its cladding removed opposite the side that is cemented to the base member to create an exposed evanescent field;

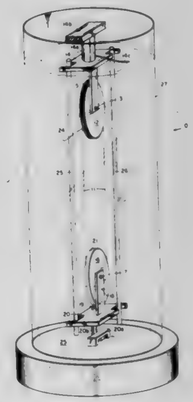
means disposed adjacent to the spiral coiled optical fiber for intercepting at least a portion of the evanescent field when an external stimulus displaces it, the intercepting means having an index of refraction higher than the core to thereby modulate the amplitude of the light signal passing through the spiral coiled optical fiber.

4,286,469

OPTICAL FIBER TEST APPARATUS

John A. Trias, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 6, 1980, Ser. No. 119,058
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—829 **5 Claims**



1. An apparatus for mounting a fiber to determine its tensile strength by a strain gauge in a plurality of environments comprising:

means for providing a rotatable rounded bearing surface being shaped to receive a fiber and being journaled in a fixed support, the rotatable rounded bearing surface providing means is connected to the strain gauge and has a radius of curvature greatly in excess of the fiber's diameter;

means longitudinally aligned with the rotatable rounded bearing surface providing means for defining a fixed rounded bearing surface, the fixed rounded bearing surface defining means has a radius of curvature greatly in excess of the fiber's diameter; and

means disposed on the rotatable rounded bearing surface providing means for adhesively mounting a wrapped length of a fiber to be tested thereon without generating any spurious failure inducing stresses.

4,286,470

CLAMP-ON ULTRASONIC TRANSDUCER

Lawrence C. Lynnworth, Waltham, Mass., assignor to LFE Corporation, Waltham, Mass.

Filed Oct. 19, 1979, Ser. No. 86,330
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—861.18 **6 Claims**

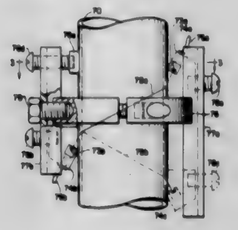
1. An ultrasonic transducer for measuring ultrasonic wave propagation in a medium contained within a generally cylindrical conduit comprising,

a movable clamp having an inner periphery closely fitted to the outer periphery of said conduit in a plane transverse to the axis of said cylinder,

means for securely fastening said clamp to said conduit

thereby defining a plane transverse to said cylinder axis at a fixed point on said axis,

a support member rigidly fixed to said clamp and extending in a direction parallel to said cylinder axis, said support member thereby defining a second plane parallel to said cylinder axis, and



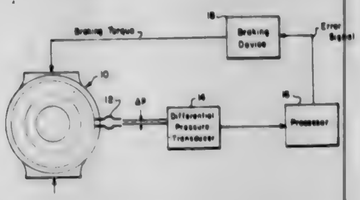
at least one transducer element removably carried on said support member for propagating ultrasonic waves into said conduit along an interrogation path within said medium.

4,286,471

CONSTANT ACCURACY TURBINE METER

Winston F. Z. Lee, Delmont; Raymond V. White, and Felice M. Sciulli, both of Pittsburgh, all of Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 4, 1979, Ser. No. 45,533
Int. Cl.³ G01F *1/08*
U.S. Cl. 73—861.84 15 Claims



1. A turbine meter comprising a metering rotor having blades oriented to form a blade angle with respect to the axis of rotation of said metering rotor, output means actuated by said metering rotor to provide an output representative of the fluid flow through said metering rotor, a sensing rotor downstream of said metering rotor for sensing the exit angle of the fluid leaving said metering rotor having blades oriented to form a blade angle with respect to the axis of rotation of said sensing rotor, said last mentioned blade angle being substantially less than said first mentioned blade angle, means actuated by said sensing rotor for modifying the output from said metering rotor in accordance with changes in said exit angle.

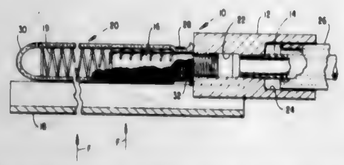
4,286,472

FLEXIBLE FILTER

Robert E. Pocock, Highland Heights, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed May 5, 1980, Ser. No. 146,962
Int. Cl.³ G01N *1/22*
U.S. Cl. 73—863.24 7 Claims

1. In a gas sampling system for analyzing gases within a duct, including a probe for withdrawing a sample of gas from the duct for analysis: a filter assembly attached to said probe and operable to filter the gas drawn into said probe, said filter assembly comprising a longitudinally extending flexible filter element formed of a temperature resistant ceramic material, support means for maintaining said longitudinal configuration of said filter element and a deflector plate substantially V-shaped and attached to said filter assembly to have the legs of the V of said deflector plate located adjacent the filter element of said filter assembly operable to shield said filter element



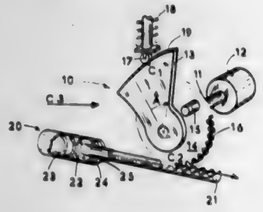
from direct impingement of said gas flow and to provide sufficient gas flow along the sides of the filter element of said filter assembly to set up gas currents causing the filter element to flutter in the gas flow to dislodge any particulate matter trapped in the filter element.

4,286,473

DEVICE FOR THE CONTROL BY CAM OF A MOBILE MECHANISM

Gerard C. H. Dehan, Montgeron, and Jean-Pierre Maulat, Saint Maur, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Mar. 5, 1979, Ser. No. 17,874
Claims priority, application France, Mar. 3, 1978, 78 06120
Int. Cl.³ F16H *53/00*
U.S. Cl. 74—107 10 Claims



1. A device for the control by cam of a mobile mechanism including a motor for effecting the displacement of the cam, a cam follower for the mechanism to be controlled and means to urge said follower against the operating profile of the cam, and further comprising a mobile stop mechanism in the path of movement of said cam, said follower urging the cam toward the stop mechanism, means to urge the stop mechanism toward the cam and means to arrest the stop mechanism in its movement of approach toward the cam to establish a stop position, said means urging said cam follower and said means for urging said stop mechanism being selected so that the cam is able, when actuated by its motor, to move the stop mechanism in order to move it from its stop position, while the stop mechanism is able, when the cam is not being actuated by its motor, to move said cam until the stop position is attained.

4,286,474

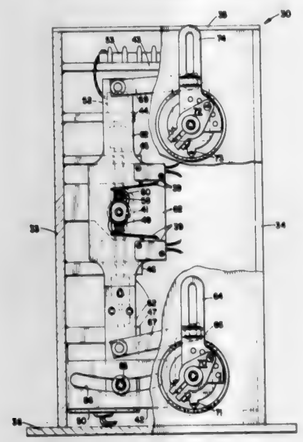
TRIM EXECUTION DEVICE

James F. McMahon, Jr., Gates Mills, Ohio, assignor to Cleveland Controls, Incorporated, Cleveland, Ohio

Filed Dec. 19, 1979, Ser. No. 105,226
Int. Cl.³ G05G *1/04*
U.S. Cl. 74—522 5 Claims

1. In a control system, primary control means for controlling a controlled element along a range of movement via a mechanical linkage and in response to a primary signal, and trim linkage means for trimming the position of the controlled element

in response to a secondary signal with the degree of trim effected by a given secondary signal input being proportional to the degree of advance of said controlled element along said range of movement, the improvement wherein the trim linkage means comprises a fulcrumed lever movable around a central fulcrum through a range of swinging movement of the lever, means responsive to said secondary signal for moving said fulcrum back and forth from a neutral point along a fulcrum path which is lengthwise of the lever when the lever is at the midpoint of said swinging movement, fulcrum-engaging slide-



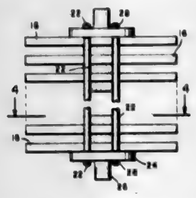
way means on the lever extending in skewed relation to the length of the lever such that at said beginning of said range of swinging movement said fulcrum path and slideway means are parallel but become increasingly skewed as said swinging movement advances through said range, whereby the greater said advance of swinging movement of said lever, the greater the lagging or leading trimming effect, on said advance, of departure of said fulcrum back or forth from said neutral point, and input and output linkages connected to respective ends of said lever.

4,286,475

COMPOSITE MATERIAL FLYWHEEL HUB

Johan A. Friedericy, Palos Verdes Estates, and Dennis A. Towgood, Huntington Beach, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 26, 1979, Ser. No. 78,981
Int. Cl.³ F16C *15/00*
U.S. Cl. 74—572 21 Claims



1. An improved hub for a flywheel having a rim, said hub comprising:

bar means, each being generally flat sided and comprising generally unidirectional filamentary material embedded in a matrix;

a first plurality of said bar means positioned in generally parallel alignment in a first orientation;

a second plurality of said bar means positioned in generally parallel alignment in a second orientation and interdigitated between the bars of said first plurality; and

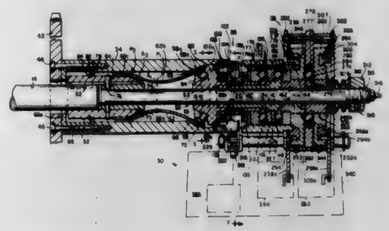
means for securing said first and second pluralities of bar means in a unitary structure with the flat sides of adjacent bar means in engagement and the filamentary material of each of said bar means generally radially aligned.

4,286,476

ROTARY SHAFT CONTROL APPARATUS

Bernard Stiff, 1350 Main St., Lynnfield, Mass. 01940

Filed Dec. 1, 1978, Ser. No. 965,236
Int. Cl.³ F16H *33/04, 15/26, 35/08*
U.S. Cl. 74—640 19 Claims



1. Apparatus for controlling the phase or speed of a rotary shaft relative to another element comprising

A. the strain wave drive including

(1) a rigid ring gear,

(2) a first shaft connected to the rigid gear,

(3) a deformable ring gear,

(4) a second shaft connected to the deformable gear,

(5) a strain wave generator engaging the deformable gear, and

(6) means for rotatively mounting the rigid gear and the deformable gear coaxially to one another so that said gears are in toothed engagement around at least parts of their peripheries;

B. means for rotatively coupling the wave generator to the second one of said shafts so that said gears rotate in unison whereby said shafts are effectively rotatively keyed together, and

C. means for dynamically rotating the wave generator through any selected angle in one direction or the other relative to said one shaft at a first rate so as to cause said one shaft to be advanced or retarded in phase relative to the other shaft at a second rate less than the first rate.

4,286,477

STEPLESSLY ADJUSTABLE VARIABLE-SPEED HYDROSTATIC-MECHANICAL COMPOSITE TRANSMISSION

Michael Meyerle, Meckenbeuren; Anton Otto, Tettnang, and Friedrich Ehrlinger, Friedrichshafen-Berg, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,420
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757300
Int. Cl.³ F16H *47/04*
U.S. Cl. 74—687 9 Claims

1. A stepless hydrostatic-mechanical composite transmission, comprising:

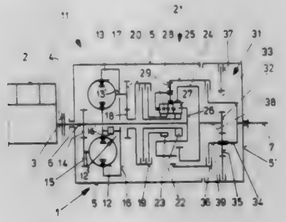
an input shaft and an output shaft connectible respectively to a source of motive power and to a load;

a hydrostatic transmission having two hydraulic machine units connected in a hydraulic circuit and each being provided with a respective shaft, a first of said units being of a variable-displacement type adjustable between a full negative setting and a full positive setting past a zero setting;

a multishaft coaxial summing transmission having a first shaft connected to said input shaft, a second shaft, a third shaft, and gearing connecting said first, second and third shafts;

means connecting a shaft of one of said units to said input shaft, said summing transmission having a pair of output elements;

respective coaxial clutches connecting a shaft of the other of said units selectively to second and third shafts of said



summing transmission, said coaxial clutches being simultaneously actuatable to effect rotation of said first, second and third shafts and said gearing as a unit;

an after transmission having two further input shafts, an output member connected to said output shaft, and gearing connecting said further input shafts with the output member of said after transmission; and

clutch means selectively connecting each of said output elements to a respective one of said further input shafts of said after transmission.

4,286,478

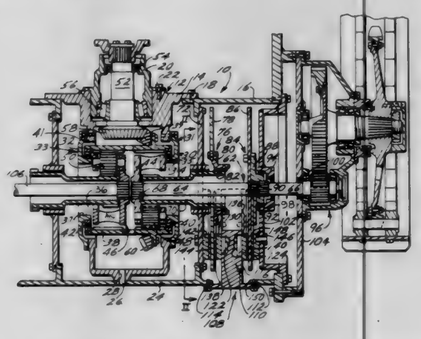
VEHICLE CROSS DRIVE

Orville E. Kessinger, Jr., Blue Grass, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 815,113, Jul. 13, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,233

Int. Cl.³ F16H *37/06, 3/44*

U.S. Cl. 74—705 **4 Claims**



1. A vehicle cross drive having a transverse axis, comprising:

a ring gear (**38**);

a pair of planetary gear assemblies (**44,48,46,50**) individually having a carrier (**44,46**) and a plurality of planetary gears (**48,50**) mounted to mesh radially within the ring gear (**38**);

a pair of stationary annular support members (**30,32**) spaced along the transverse axis; and

a pair of bearings (**40,42**) individually carried by the respective support member (**30,32**) radially within the ring gear (**38**) and rotatably supporting the ring gear (**38**), the support members (**30,32**) being of a construction sufficient for limiting transverse axial movement of the carriers (**44,46**).

4,286,479

DRIVE SYSTEM FOR A WORKPIECE TABLE OF A MACHINE TOOL

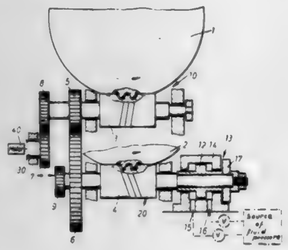
Erich Baumann, Ludwigsburg; Hans-Peter Mente, Hochberg, and Wolfgang Müller, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Hermann Pfauter, Ludwigsburg, Fed. Rep. of Germany

Filed Jun. 12, 1978, Ser. No. 914,494

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726469

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—724 **6 Claims**



1. In combination with a workpiece table of a machine tool, especially of a gear cutting machine, a drive system for said workpiece table stressed free and independent of play with stiffness and rigidity at table turning speeds, which includes: a drive shaft drivingly connectable to a motor, two worm wheel drives of different transmission ratio, each of said worm wheel drives comprising a worm and a worm wheel engageable so as to be stressed free of play at lower speeds, the worms of said worm wheel drives being connected to each other and drivingly connectable to said drive shaft while the transmission ratio of said drivingly interconnected worms equals the reciprocal transmission ratio of said worm wheel drives with regard to each other, the worm wheels of said two worm wheel drives being normally coupled to each other and to said workpiece table and being rotatable in the same direction and at equal speed the latter being dependent on the respective coupled worm wheel drive under stress of play-free driving assured at lower speeds of the workpiece table and also avoiding undue heating-up at higher speeds of the workpiece table.

4,286,480

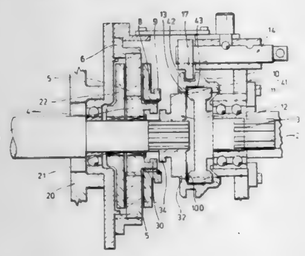
SPEED REDUCER

Ira A. Dickie, Goderich, Canada, assignor to Champion Road Machinery Limited, Goderich, Canada

Filed Sep. 14, 1979, Ser. No. 75,697

Int. Cl.³ F16H *57/10*

U.S. Cl. 74—785 **8 Claims**



1. A speed multiplier or a reducer comprising an input shaft means, an output shaft means, a planetary gear system, and a movable power transfer member adapted to selectively engage either said input and output shaft means whereby said planetary system may freely rotate, or said output shaft means and said planetary gear system, the arrangement being such that the engagement of said transfer member with said planetary gear system causes the engagement of said input shaft means and planetary gear system thereby changing the speed of said output shaft means relative to said input shaft means, and the engagement of said transfer member with said input shaft means causes the disengagement of said input shaft means and said planetary system, providing a non engaged free planetary system.

4,286,481

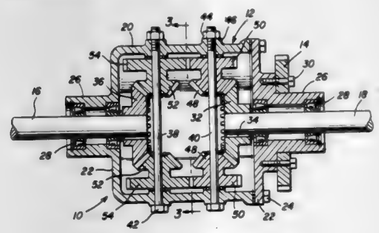
POWER TRANSFER DEVICE

Bernard J. Miller, R.D. #1, Box 133, West Alexander, Pa. 15376

Filed Nov. 30, 1979, Ser. No. 99,210

Int. Cl.³ F16H *1/30*

U.S. Cl. 74—799 **2 Claims**



1. A power transfer device comprising a gear box, means on the gear box for driving connection with a power source to rotate the gear box about an axis of rotation, a stationary shaft extending into and rotatably supporting the gear box and defining its axis of rotation, an output shaft extending into the gear box and journaled therefrom for rotation about the same axis as the gear box, said input and output shafts being in axial alignment with the inner ends spaced apart within the gear box, and gear means interposed between the stationary shaft, gear box and output shaft to drive the output shaft at a predetermined ratio with respect to the gear box and neutralize opposing forces within the gear box, said gear means including a stationary bevel gear on the inner end of the stationary shaft and a driven bevel gear on the inner end of the output shaft, a pair of stationary, parallel shafts extending transversely of the gear box in perpendicular intersecting relation to the axis of rotation thereof, a bevel gear and spur gear journaled on each of said parallel shafts, said bevel gear and spur gear on each parallel shaft being rigid with respect to each other, the bevel gear on one of the parallel shafts being meshed with the bevel gear on the stationary shaft, the bevel gear on the other of the parallel shafts being meshed with the bevel gear on the output shaft, said bevel gears on the parallel shafts being laterally spaced from each other and rigid with the spur gear on the same shaft, said bevel gears and spur gears on the parallel shafts being free to rotate on their shafts, said spur gears being meshed with each other and having different rotational speeds, and a second bevel gear and spur gear journaled on each of said parallel shafts in opposed relation to the first bevel gear and spur gear to equalize forces exerted on the components, said second bevel gear and spur gear on each parallel shaft being rigid with respect to each other.

4,286,482

DEVICE FOR POSITIONING ANCHORAGE MEANS

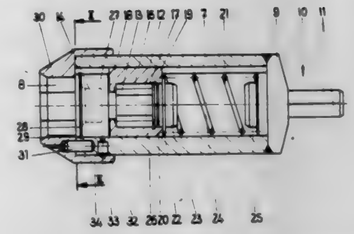
Walter Marsch, Recklinghausen, and Hans Werner, Bottrop, both of Fed. Rep. of Germany, assignors to BWZ Berg-und Industrietechnik GmbH, Bottrop, Fed. Rep. of Germany

Continuation of Ser. No. 899,679, Apr. 24, 1978. This application Dec. 31, 1979, Ser. No. 108,421

Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719922; Oct. 13, 1977, 2746073

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—55 **12 Claims**



1. A device for fixing of an anchor bolt or the like having at its bolt and projecting out of the bore hole a screw thread for a nut for securing a plate and means for transmission of rotational movement of a tool, the device comprising a rotatable casing which has at one end an opening with a cross-section corresponding to the flat-spacing of the nut for reception of the nut and in which casing is secured non-rotatably an axially slideable bush and a rotation-direction locking ratchet mounted in the bush and movable with the bush axially relative to the casing, the ratchet having an outer part, the outer part being fixed in the bush, and the bush and the casing having complementary external and internal cross section, respectively, to prevent relative rotation thereof and the ratchet having an inner part with a recess adapted for insertion and entrainment of the anchor bolt end, the casing having a base plate at an end opposite the opening and a spring between the base plate and the bush which holds the ratchet urging the bush and the ratchet away from the plate toward the opening.

4,286,483

TOOL HOLDING TURRET FOR ROTATING MACHINE

Hasso Henneberg, Hanover; Werner Hesse, Wedemark, and Wilhelm Junike, Hanover, all of Fed. Rep. of Germany, assignors to Gildemeister AG, Bielefeld, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,604

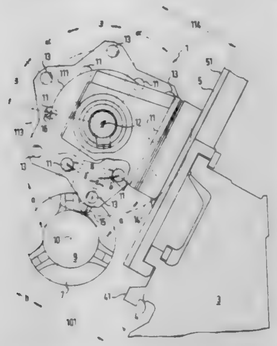
Claims priority, application European Pat. Off., Aug. 10, 1979, 79102916; Fed. Rep. of Germany, May 25, 1979, 2921284

Int. Cl.³ B23B *29/32*

U.S. Cl. 82—2 R **12 Claims**

1. A turret for processing tools on a turning machine, which is disposed on a cross-slide rest displaceable vertically to a spindle axis of the turning machine on a turning carriage, the latter in turn being displaceable parallel to said spindle axis, comprising: a first set of inner turning tools forming processing tools disposed at equidistant spacings on a circle around an operational axis of the turret, extending parallel or substantially parallel to the spindle axis; a second set of processing tools, at least one of which is an outer turning tool, disposed with their cutting tips outside the circle of said first set so that a tool of one set is always disposed between two tools of the other set, the distances of the cutting tip of one outer turning tool and the two adjacent inner turning tools of the first set being equal or substantially equal to the distance of the tips of the two adjacent inner turning tools, the cutting tip of the tool which at a given time is in its operational position being in a plane extending substantially parallel to the bed of said car-

riage; means for supporting said turret so that its said operational axis is at a greater distance from said carriage than said



spindle axis; and means on said turret for shifting it about its operational axis at unequal angles.

4,286,484

MACHINE TOOL

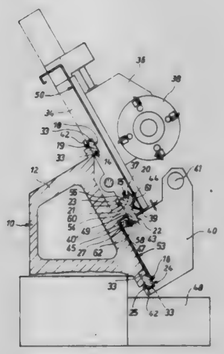
Helmut H. Gatzki, Esslingen, Fed. Rep. of Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Oct. 5, 1979, Ser. No. 82,309

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844247

Int. Cl.³ B23B *17/00*

U.S. Cl. 82—32 **5 Claims**



1. A machine tool comprising a frame, first and second longitudinally extending guides supported on said frame and laterally spaced from one another, a central longitudinally extending guide supported on said frame between said first and second guides and laterally spaced from each of said first and second guides, a first carriage slidably mounted on said first and central guides for movement therealong, and a second carriage slidably mounted on said second and central guides for movement therealong parallel to the direction of movement of said first carriage, said guides having guide faces arranged such that each said carriage is guided both laterally and vertically, wherein the central guide has a first segment on one side thereof, the first segment carrying guide faces arranged to provide complete guidance of the first carriage laterally and vertically, and the central guide has a second segment on the other side thereof, the second segment carrying guide faces arranged to provide complete guidance of the second carriage laterally and vertically, a longitudinally extending holder bar formed on said frame, the central guide being mounted on said holder bar such that said first segment projects laterally of one side of the holder bar and said second segment projects laterally of the other side of the holder bar, each of said central guide segments comprising a salient rail extending in the direction of the length of said central guide for providing said complete guidance of the respective carriages.

4,286,485

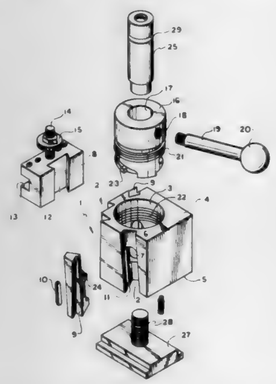
TOOL MOUNTING

Joseph Dezvane, 28 Virginia Ave., Clifton, N.J. 07012, and Vojko Lenac, 19 Putnam Pl., Clifton, N.J. 07011

Filed Feb. 7, 1980, Ser. No. 120,076

Int. Cl.³ B23B *29/26*

U.S. Cl. 82—36 R **4 Claims**



1. A tool mounting, comprising a tool post having a top and a bottom and a bore open at said top and bottom, said post having a slot extending longitudinally of and in angular relation with the longitudinal axis of the bore, said slot opening through a side face of said post and having an inner portion opening into said bore; a slide member arranged in said slot for sliding movement lengthwise of said bore and having an outer wedge-shaped portion provided with a longitudinally extending side face portion, said slide member having an inner part located in said inner portion and provided with a projection which extends into said bore, said post having a longitudinally extending dovetail tongue portion at one side of said slot and with said wedge-shaped portion of said slide member forming a dovetail tongue adapted to receive a tool holder thereon; a tubular hub mounted in said bore for swivel turning movement therein, said hub and said bore having cooperating screwthreads, and said hub also having a helical cam track in which said projection of said slide member is engaged for effecting lengthwise movement of the slide member in said slot and varying the width of said dovetail tongue by turning the hub so as to tighten the tool holder on the dovetail tongue; a handle on said hub for turning the same; a sleeve secured in said bore and about which said hub has swivel turning movement; and means for securing the aforementioned elements of the tool mounting in assembled relation to one another.

4,286,486

FIN COLLECTION AND TRANSPORT APPARATUS

Lawrence A. Franks, Sturgis, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Division of Ser. No. 905,022, May 11, 1978, Pat. No. 4,195,540. This application Sep. 24, 1979, Ser. No. 78,363

Int. Cl.³ B65H *35/06*; B23Q *7/16*; B26D *7/06*

U.S. Cl. 83—23 **2 Claims**

1. A method for forming, collecting and transporting platelike fins, such as apertured fins for heat exchangers, comprising the steps of:

supplying a sheet of thin platelike material to a fin forming apparatus;

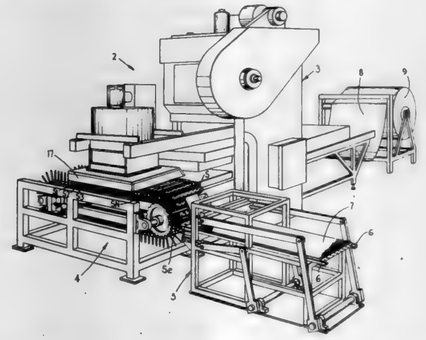
acting on said sheetlike material with said apparatus to simultaneously form, during each cycle, a plurality of similar platelike fins disposed closely adjacent one another in side-by-side relationship;

holding said plurality of formed fins in a row which is elongated in a direction substantially perpendicular to the elongated dimension of the fins, the fins in said row being disposed in adjacent side-by-side relationship;

providing an endless fin collecting and transporting means having a plurality of outwardly projecting fin supports thereon at uniform intervals therealong, which intervals correspond to the centerline-to-centerline spacing between adjacent fins in said row;

positioning said endless device so that a substantially horizontally extending upper reach thereof is disposed below and extends in a direction substantially parallel with said row;

intermittently moving said endless means in an intermittent



steplike manner in synchronism with the cyclic operational rate of said apparatus for causing the upper reach to move stepwise through a predetermined distance along said direction for positioning selected fin supports directly below said row;

releasing said plurality of fins as disposed within said row when said transporting means is stationarily positioned thereunder for causing said plurality of fins to move downwardly and be collected on said endless means by a plurality of said fin supports as disposed adjacent one another;

continuing the intermittent forward advancing of said endless means in synchronization with the forming of fins by said apparatus, and with the release of said fins, so that a stack of fins progressively accumulates at each of said fin supports;

continuing to advance said endless means containing thereon stacks of fins each containing a preselected number until reaching a selected location; and

removing each fin stack from said endless means as each said fin stack is moved into said selected location.

4,286,487

APPARATUS FOR MONITORING THE DELIVERY OF MATERIAL

Laurence P. Rubel, 600 Star St., Ocean Township, Monmouth County, N.J. 07712

Filed Nov. 16, 1979, Ser. No. 94,841

Int. Cl.³ B26D *7/24*

U.S. Cl. 83—58 **7 Claims**

1. A monitoring apparatus for monitoring the unwinding of a length of material from a spool means as said material is drawn therefrom comprising:

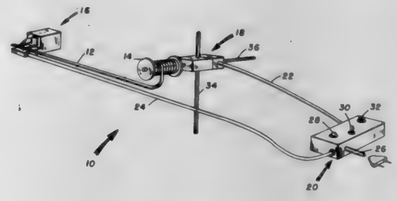
shaft means for accommodating and fixedly securing said spool means thereon;

means for positioning said shaft means at a predetermined location relative to a supporting surface, said positioning means permitting the free rotation of said shaft means about the longitudinal axis thereof;

means for providing a pulsed electrical signal upon rotation of said shaft means, said pulsed electrical signal means having at least one element thereof directly coupled to said shaft means for rotation as a result of the rotation of said shaft means;

means for indicating the output of said electrical signal means;

said indicating means includes a two stage timing means, the



input of the first stage of said timing means being coupled to the output of said pulsed electrical signal means, the output of said first stage of said timing means being coupled to the input of said second stage of said timing means, the output of said first stage of said timing means providing an electrical signal at a first level for a finite interval when said shaft means rotates through a minimum angle, said first stage of said timing means providing at the output thereof an electrical signal at a second level after said finite interval when said shaft means rotates at a speed below a minimum preselected speed or if said shaft means stops, said second stage of said timing means providing a signal at the output thereof if said signal of said first stage at said first level is not received thereby at a preselected interval.

4,286,488

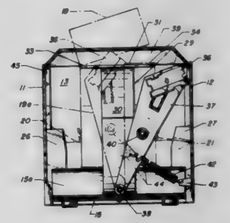
DISPENSING APPARATUS FOR ROLLED SHEET MATERIAL

Joseph E. Mason, Melville, N.Y., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 16, 1980, Ser. No. 112,794

Int. Cl.³ B26D *5/20*

U.S. Cl. 83—205 **11 Claims**



1. A dispensing apparatus for a roll package of sheet material, comprising: a container having side and bottom walls, and a cover affording access thereto; means for supporting a roll of sheet material within said container; means defining a slot between adjacent portions of said cover and one of said side walls, through which a free end portion of said sheet material may be fed from said roll; a feeder for said sheet material movable toward and away from said slot, biased toward said roll, and including an upper surface portion disposed for en-

gagement with a lower surface of said sheet material; means defining an opening in said cover in registry with said upper surface portion of said feeder, the construction and arrangement being such that force applied to urge said sheet material against said upper surface of said feeder toward said slot is operative to move said feeder away from said roll toward said slot while feeding said sheet material from said roll through said slot, removal of said force permitting said feeder to move away from said slot, toward said roll; and means on said container for severing the portion of said sheet material fed through said slot, comprising means defining a recessed groove in said cover aligned with and facing the inner edge of said one side wall, and a cutter bar pivotal on said one side wall and including a cutting edge movable between a retracted position below said top edge, and to an extended position upon pivotation of said cutter bar, wherein said cutting edge moves within said groove to sever said sheet material extending transversely thereof and through said slot.

4,286,489

SHEET MATERIAL DISPENSER HANDWHEEL AND CUTTING KNIFE

Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Apr. 1, 1980, Ser. No. 136,273
Int. Cl.³ A47K *10/36*
U.S. Cl. 83—335 **7 Claims**



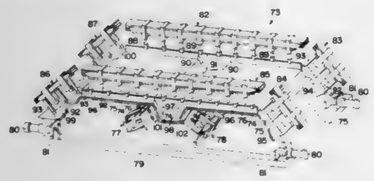
1. A dispenser for sheet material comprising:
a wall mountable chassis having means for supporting a roll of flexible sheet material;
a rotatably mounted feed roller on said chassis to guide a web of material from the roll to be grasped by the user;
cutter mechanism operated by rotation of said roller to divide the web into individual sheets;
a manually engagable handwheel mounted to rotate with said feed roller;
finger engagable notches peripherally spaced around the circumference of said handwheel to facilitate manual forward rotation thereof;
means to prevent reverse rotation of said handwheel through a first circumferential portion of each handwheel revolution; and
biasing means connected to urge rotation of said feed roller toward a predetermined rotational position and cause reverse rotation through a second circumferential portion of handwheel revolution so as to move said cutter mechanism to a protected location within said dispenser when said handwheel is free from manual restraint.

4,286,490

FORCE APPLICATION APPARATUS

Ernst M. Spengler, Heusenstamm, Fed. Rep. of Germany, assignor to Stanztechnik GmbH R & S, Bergen-Enkheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 965,907, Dec. 4, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,937
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824488; Feb. 2, 1979, 2903937; Jul. 17, 1979, 2928785; Aug. 25, 1979, 2934441
Int. Cl.³ B26F *1/40*
U.S. Cl. 83—453 **21 Claims**



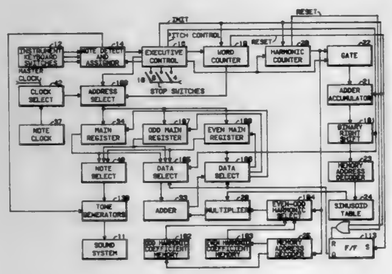
1. A modular force application apparatus, comprising an opensided modular bail having a central axis, pressure expandable hose means (3) extending through said bail substantially along said central axis, a pressure transmission means located in said bail for a back and forth movement substantially perpendicularly to said central axis but restrained by the bail against rotation, said pressure transmission means contacting said hose means whereby said bail takes up a reaction force, guide bushing means rigidly secured to said bail, a guide rod extending into the guide bushing means and rigidly secured to said pressure transmission means for guiding the back and forth movement of said pressure transmission means, reset means operatively interposed between said bail and said pressure transmission means for resetting the pressure transmission means when pressure is released from said hose means and force applying means operatively arranged for movement in the same plane as said guide rod and for cooperation with said pressure transmission means to avoid canting of said pressure transmission means, said bail and said guide means forming a modular unit, whereby a plurality of such bails may be spaced along said expandable hose means.

4,286,491

UNIFIED TONE GENERATION IN A POLYPHONIC TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instruments Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jan. 18, 1980, Ser. No. 113,420
Int. Cl.³ G01H *1/00*
U.S. Cl. 84—1.01 **18 Claims**



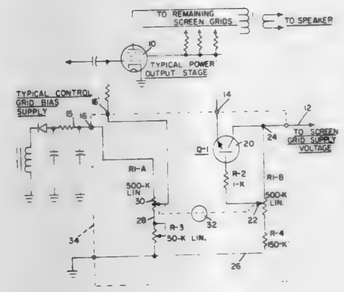
1. In a musical instrument in which successive points of a musical waveshape are computed by means of a discrete Fourier transform using a set of harmonic coefficients stored in numerical order corresponding to the harmonic number of the Fourier transform to form a master data set, apparatus for simultaneously producing a plurality of unified tones at pitches responsive to the setting of a plurality of stop switches comprising;
a means for computing a plurality of master data sets during each of a plurality of computation cycle segments of a sequence of computation cycles wherein a first master data set is computed using the complete stored set of said harmonic coefficients, wherein a second master data set having odd symmetry is computed using the even numbered harmonic coefficients selected from said set of harmonic coefficients, and wherein a third master data set having even symmetry is computed using the odd numbered harmonic coefficients selected from said set of harmonic coefficients,
a first memory means comprising a plurality of master memory means for storing said plurality of master data sets,
a second memory means comprising a plurality of note memory means for storing input data to be thereafter read out,
data transfer means for addressing master data sets out from said plurality of master memory means and for storing said addressed master data sets in said plurality of note memory means in said second memory means,
a means for producing musical waveshapes from master data sets read out of said plurality of note memory means,
a variable frequency clock generator, and
data reconstruction means responsive to said variable frequency clock generator whereby master data sets are read out of said plurality of note memory means in said second memory means and are combined to form a combined data set using combination circuitry responsive to the even symmetry of said third master data set and the odd symmetry of said second master data set and whereby the combined data set is furnished to said means for producing musical waveshapes thereby creating said plurality of unified tones.

4,286,492

CONTROL FOR ELECTRONIC AMPLIFIERS

Guy P. Claret, 211 Main St., Townsend, Mass. 01469

Filed Oct. 2, 1979, Ser. No. 81,097
Int. Cl.³ G10H *1/02*; H03G *3/02*
U.S. Cl. 84—1.27 **2 Claims**



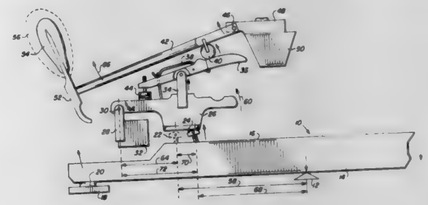
1. In a circuit for an electronic amplifier for musical instruments, the amplifier including an output tube having a control grid and a screen grid and including a bias voltage supply for the control grid and voltage supply for the screen grid, improved means to produce and control distortion in the output tube relative to its input by controlling the clipping point of the tube, the improvement comprising the provision of means for controlling the bias voltage level to the control grid, means for controlling the voltage level to the screen grid, and ganged means simultaneously controlling the voltage supply of the screen grid and the bias voltage supply of the control grid so as to change the voltage applied to said screen and control grids together.

4,286,493

GRADUATED LEVERAGE PIANO ACTION

Keith C. Hardesty, Whittier, Calif., and Gene L. Lukensmeyer, Orlando, Fla., assignors to James R. Wales, Longwood, Fla.

Filed Feb. 7, 1980, Ser. No. 119,489
Int. Cl.³ G10C *3/18*
U.S. Cl. 84—237 **15 Claims**



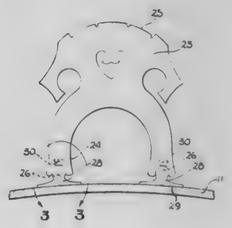
1. A graduated leverage piano action for a grand piano having graduated mass hammers for striking graduated mass string wherein the mass of the hammers and strings is highest for the lowest bass strings and lowest for the highest treble strings, comprising:
a. a plurality of keys pivotable about a balance rail which divides each key into first and second lever arms wherein the length of the second lever arms is defined by the location of a capstan screw which is coupled to each key and wherein the length of the second lever arm decreases as the mass of the hammers increases; and
b. means coupled to each hammer and positioned above each capstan screw for displacing a selected hammer when contacted by one of said capstan screws, said displacing means including a third lever arm having a length defined by the point at which said one capstan screw contacts said third lever arm and being displaceable by said one capstan screw, wherein the length of said third lever arm increases as the length of said second lever arm decreases, whereby the force required to displace a piano key remains substantially constant across the piano keyboard.

4,286,494

SELF ADJUSTING BRIDGE WITH LOCKING PIN FOR ALL VIOL INSTRUMENTS

Douglas Jaquith, Yakima, Wash., assignor to Hope Jaquith, Laguna Niguel, Calif.

Filed May 19, 1980, Ser. No. 150,971
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—309 **6 Claims**



1. In a self-adjusting bridge for a musical instrument of the viol class in which a substantially flat sided and upright standard having a support foot at each end thereof and pivot means connecting each of said support feet to said standard at mating surfaces for the purpose of enabling the lower surface of each

of said support feet to conform to the curvature of the body of said instrument, an improvement comprising:

(a) A pair of slots defined by the lower surface of said standard, each of said slots disposed in the region of said pivot means;

(b) each of said support feet including an aperture extending through said support foot into communication with one of said slots;

(c) a pair of pins, each of said pins extending through one of said apertures into cooperative engagement with one of said slots so as to permit pivoting between said standard and one of said support feet, but restricting lateral movement between said standard and said one of said support feet;

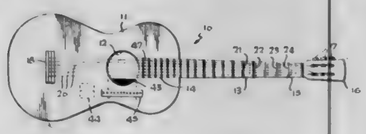
whereby said support feet are each pivotally connected to said standard in a manner preventing the separation of said support feet from said standard by movement parallel to the plane of said standard.

4,286,495

MUSICAL INSTRUMENT TRAINING DEVICE

John K. Roof, 22212 Leadwell St., Canoga Park, Calif. 91303

Filed Sep. 17, 1979, Ser. No. 75,884
Int. Cl.³ C09B *15/00*; G10D *3/06*
U.S. Cl. 84—485 R **6 Claims**



1. A training aid incorporated into the construction of a stringed instrument intended to be finger strummed with one hand and finger depressed strings with the other hand, the combination comprising:

a first group of lights mounted on the fret board of said instrument comprising four transverse rows associated with each of the last four frets respectively;

a second group of lights mounted on the fret board of said instrument comprising a single row of lights immediately adjacent the sounding hole of said instrument;

each of said lights in said first and said second rows lying immediately beneath and in registry with the strings of said instrument;

a diode matrix mounted on said instrument and operably coupled to said first and said second groups of lights whereby selected ones of said lights in said first group display a variety of patterns corresponding to musical chords and whereby selected ones of said lights in said second group display particular strings to be strummed; and

manually operated switch means connected to said diode matrix fo selectively energizing said selected ones of said lights so as to illuminate said musical chord patterns and string strumming pattern.

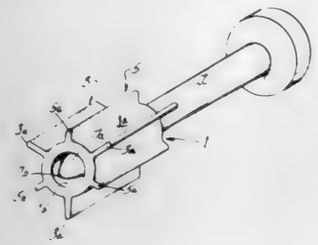
4,286,496

FASTENER GUIDANCE AND RETENTION TIP MEMBER

Frederick J. Harris, Clinton, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 12, 1979, Ser. No. 84,283
Int. Cl.³ F16B *15/00*
U.S. Cl. 411—441 **10 Claims**

1. In a guidance and retention member for use with a nail-like fastener of the type adapted to be driven by a powder-actuated tool, said member consisting of an axially elongate, hollow, cylindrical body portion, adapted for telescopic retention on at least the forward or nose portion of the fastener, and a plurality of flexible, axially elongate fin members integrally formed on the outer cylindrical surface of said body portion and extending radially thereof at regular circumferential intervals, the improvement comprising: said plurality being an even



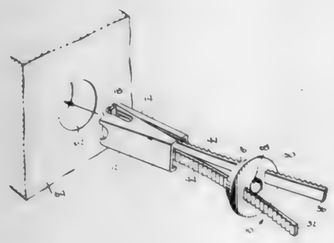
integer not less than six, with alternating ones of said fin members being of substantially greater radial extent than the fin members adjacent thereto.

4,286,497

RATCHET-SECURABLE TOGGLE RETAINER

Alfred A. Shamah, P.O. Box 1589, York, Pa. 17405

Filed Jun. 18, 1979, Ser. No. 49,217
Int. Cl.³ F16B *21/00*
U.S. Cl. 411—342 **4 Claims**



1. A toggle fastener, comprising:

(a) toggle wings,

(b) a trunnion nut, said trunnion nut hingedly securing said toggle wings,

(c) a screw element,

(d) ratchet-retaining means for securing the toggle wings to a wall,

(e) said ratchet-retaining means comprising at least one ratchet-securing member and a retainer,

(f) said ratchet-securing member extending between the trunnion nut and a wall-hole and engaging said trunnion nut to orient said trunnion nut with respect to the wall-hole,

(g) said retainer being adjustably securable to said ratchet-securing member on the opposite side of the wall-hole from said toggle wings,

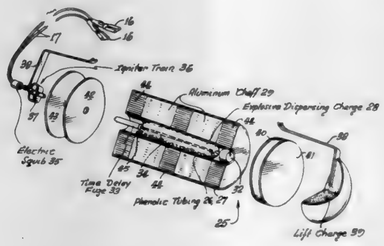
(h) whereby said toggle wings are secured to the wall by said ratchet-securing member and said retainer, and the trunnion nut is axially aligned with the wall-hole by said ratchet-securing member for engagement with the screw element.

4,286,498

DECOY ROUNDS AND THEIR METHOD OF FABRICATION

Kenneth A. Block, Claremont; William M. Carter, and George H. Schillreff, both of Glendora, all of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Dec. 21, 1965, Ser. No. 515,493
Int. Cl.³ F42B *33/10*
U.S. Cl. 86—1 R **9 Claims**



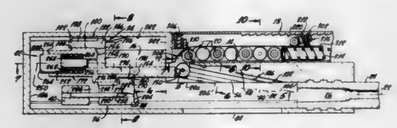
1. A method for producing a line type burst charge adapted for dispersing energy generating material in an effective pattern for confusing energy sensing devices comprising the steps of: screening potassium perchlorate through about a number twenty screen; mixing the screened potassium perchlorate with black aluminum in the ratio of about five parts by weight of potassium perchlorate to about two parts by weight of black aluminum; screening the mixture a predetermined number of times through about a number twenty screen, containing the mixture, and positioning a fusing member therein.

4,286,499

CROSS AXIS SHELL FEEDING APPARATUS FOR FIREARMS

Richard R. Gillum, 1002 Lake St., Marblehead, Ohio 43440

Filed Oct. 24, 1979, Ser. No. 87,786
Int. Cl.³ F41D *10/20*
U.S. Cl. 89—33 B **9 Claims**



1. Cross axis shell feed apparatus for a gun having a barrel with a rearwardly opening firing chamber; which comprises:

(a) shell supply means adapted for containing a plurality of shells in cross axis orientation relative to a bore axis through the barrel;

(b) shell pivoting means for pivoting shells from the supply means through 90 degrees so that longitudinal shell axes are coplanar with said barrel bore axis and the shells are correctly pointing for loading into the firing chamber,

said shell pivoting means having means defining a shell infeed opening positioned to receive shells from the shell supply means and defining a shell outfeed opening at 90 degrees thereto, and having internal camming means for causing 90 degree shell pivoting as a shell is moved from said infeed opening to said outfeed opening;

(c) shell ramming means for pushing shells, one at a time, through said shell pivoting means to thereby cause the 90 degree shell pivoting,

said ramming means including a first stage rammer configured for engaging and pushing shells partially through the shell pivoting means to cause partial 90° shell pivoting, disengaging means for then enabling disengagement of the first stage rammer from the shell, and a second stage rammer configured for then engaging the shells to cause completion of 90° shell pivoting and pushing of the shells on through said shell pivoting means;

(d) means for axially moving said ramming means, in synchronization with firing of the gun, in a reciprocating manner for enabling a sequence of shells to be pushed through the shell rotating means and pivoted 90° for feeding from the shell supply means to the firing chamber; and

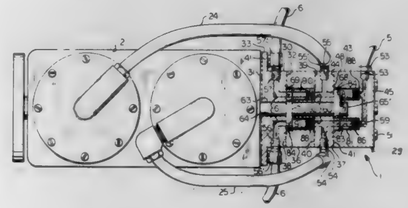
(e) means for moving shells from said outfeed aperture into said firing chamber for firing.

4,286,500

ROTARY CONTROL VALVE FOR EXPANSION FLUID DRIVEN ENGINES

Robert L. Stevenson, Overland Park, Kans., assignor to Havaco Incorporated, Overland Park, Kans.

Filed Aug. 17, 1979, Ser. No. 67,460
Int. Cl.³ F01L *33/02*
U.S. Cl. 91—180 **8 Claims**



1. A rotary valve for an expansion fluid driven engine having a cylinder and a piston reciprocably mounted therein, said valve comprising:

(a) a body having a first end portion mounted to said engine, an intermediate portion and a second end portion;

(b) said body having a fluid inlet port at said second end portion, a distribution port at said intermediate portion for communicating with said cylinder, and a fluid outlet port at said first end portion;

(c) a drive shaft extending into said body and rotatably mounted therein;

(d) first and second disc members positioned within said body and mounted on said drive shaft for rotation therewith, said disc members each having a peripheral rim surface and opposite face surfaces;

(1) said first disc member having a pressure fluid passage extending therethrough and between said opposite face surface and alternately communicating said inlet port with said distribution port;

(2) said second disc member having an exhaust fluid passage extending therethrough and between said opposite face surfaces and alternately communicating said distribution port with said outlet port;

(e) means rotating said drive shaft and said first and second disc members thereon in synchronization with reciprocation of the engine piston;

(f) first and second piston members respectively having passages therethrough and sealing faces and positioned within said body against respective portions of said face surfaces of said first and second disc members; and

(g) spring members in said body urging said piston members against said disc members with said sealing faces and said portions of said face surfaces in sealing engagement, the passage of the first piston member providing communication between said inlet port and said distribution port with portions of said first disc member posed therebetween and rotatable to alternately close and open and route fluid to said cylinder, the passage of the second piston member providing communication between said distribution port

and said outlet port with portions of said second disc member posed therebetween and rotatable to alternately close and open and route fluid from said cylinder.

4,286,501

SERVO BOOSTERS FOR VEHICLE BRAKING SYSTEMS

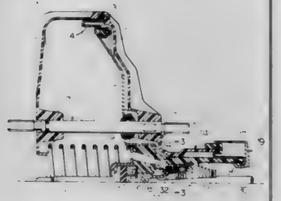
Alfred W. Thomas, Koblenz, and Lutz E. A. op den Camp, Koblenz-Moselweiss, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 6, 1979, Ser. No. 55,484

Claims priority, application United Kingdom, Jul. 8, 1978, 29266/78

Int. Cl.³ F15B *9/10*; F16J *15/18*

U.S. Cl. 91—376 R **4 Claims**



1. A servo booster assembly for a vehicle braking system comprising a housing, a pedal-operated input member, an output member, a movable wall for augmenting the force applied by said input member to said output member, said movable wall dividing the interior of said housing into two chambers, valve means controlling the differential pressure of said chambers, a hollow valve body of said valve means, means connecting said valve body to said movable wall, a guide means located in the rear of said housing, a bore wall of said guide means defining a bore of non-round cross-section, a part of said valve body extending through said guide means, and said valve body, when viewed in cross-section on a plane which is perpendicular to the axis of said bore, comprising a radially inner surface of circular shape and a radially outer surface of non-round shape in non-rotatably sliding contact with said bore wall in said housing whereby said valve body is prevented from turning relative to said housing about said axis, said radially inner and outer surfaces of said valve body defining between them a radially thickened portion of said valve body, and a fluid conduit provided in said radially thickened portion and communicating with one of said chambers.

4,286,502

HYDRAULIC LOAD LIFTING SYSTEM WITH AUTOMATIC BLOCKING VALVE

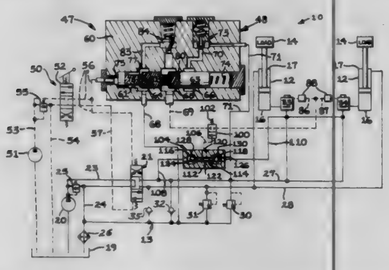
Donald L. Bianchetta, Coal City, and Edward A. Wirtz, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/79/00859, § 371 Date Oct. 15, 1979, § 102(e) Date Oct. 15, 1979, PCT Pub. No. WO81/01034, Pub. Date Apr. 16, 1981.

This PCT application filed Oct. 15, 1979. Ser. No. 118,037

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—445 **7 Claims**



1. In a hydraulic system (10) having a cylinder (12), a check valve means (33) for selectively checking hydraulic fluid flow in a main line (27) to the cylinder (12), wherein hydraulic pressure from said cylinder (12) acts behind said check valve means (33) to close said check valve means (33), and a vent line means (69) for selectively venting behind said check valve means (33) to allow said check valve means (33) to open, the improvement comprising a pressure responsive blocker means (100,104) for closing said vent line means (69) when the pressure in said main line (27) falls below a predetermined level.

4,286,503

MACHINE OF THE AXIAL PISTON PUMP TYPE WHICH CAN BE USED AS A PUMP OR AS A MOTOR

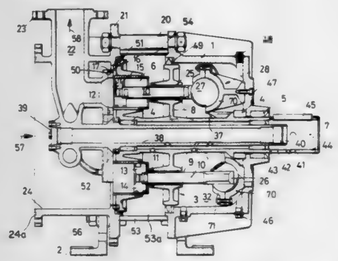
Stefan Fule, Schwalheimer Strasse 23, D-6350 Bad Nauheim, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,363

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2713009

Int. Cl.³ F01B *13/04*

U.S. Cl. 91—507 **17 Claims**



1. In a machine of the axial piston pump type which can be selectively used as a pump or as motor for a fluid medium, which comprises a cylinder drum which is mounted rotatably in a casing and in which working pistons are axially displaceable in working cylinders in axial bores distributed over the periphery of the cylinder drum, wherein piston rods are connected to the working pistons and have ends that run on a control cam which is fastened to the casing, said cam is concentric to a central shaft and extends undulatingly in the axial direction so that a rotary movement in the cylinder drum is converted into a reciprocating movement of the working pistons, or vice versa, and wherein at least one suction opening and one pressure opening are provided which are fixed to the casing and which communicate with said working cylinders, the improvement wherein said casing terminates in a tubular duct coaxial therewith that defines one of said openings and is of a diameter generally about the same as that of said drum to provide for the direct flow of said fluid medium to said working cylinders without undergoing a change in the direction of flow, said tubular duct terminating in a first connecting flange of a diameter generally about the same as that of said drum, and a second duct defines the other of said openings and terminates in a second connecting flange and extends to the side of said tubular duct, said first and second ducts are formed by a common fixed means which forms the inlet and outlet for a rotary barrel pump or motor, and said second duct is located in a radial side of said tubular duct.

4,286,504

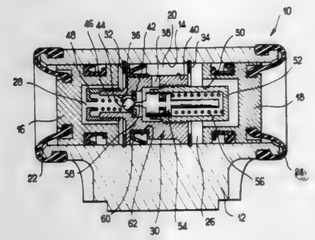
DRUM BRAKE ACTUATING DEVICE

Jean-Jacques Carre, Montreuil, and Roland Levrai, Stains, both of France, assignors to Societe Anonyme D.B.A., Drancy, France

Filed Oct. 4, 1979, Ser. No. 81,720

Int. Cl.³ F15B *11/00*

U.S. Cl. 91—517 **3 Claims**



1. A wheel cylinder for effecting the application of a drum brake, said wheel cylinder comprising:

a housing defining a bore therethrough adapted to receive pressurized fluid from a source of fluid pressure;

a pair of pressure responsive pistons reciprocably received in said bore and sealingly cooperating with said housing to define a pressure chamber;

a core member received in said chamber and dividing said pressure chamber into a pair of compartments, one of said compartments having continuous fluid communication with said source of fluid pressure, said core member including passage means for providing fluid communication between said one compartment and the other compartment;

pressure responsive valve means disposed in said passage means for controlling the flow of pressurized fluid through said passage means as a function of the fluid pressures in said pair of compartments, said pressure responsive valve means including control means for holding said valve means open when the pressure in said one compartment is less than a first predetermined pressure, for closing said valve means when the pressure in said one compartment is greater than said first predetermined pressure and less than a second predetermined pressure, and for opening and closing said valve means to maintain a constant pressure difference between said pair of compartments in response to increasing pressure in said one compartment when the pressure in said one compartment is greater than said second predetermined pressure;

said pressure responsive valve means including an annular valve seat and a pressure responsive valve member in a first position spaced from said valve seat, said valve member being disposed down stream of said valve seat relative to fluid flow toward said other compartment, said valve member in a second position being engageable with said valve seat to close fluid communication through said passage means, first resilient means for urging said valve member toward said second position, said core member defining a bore intersecting said passage means upstream of said valve seat, said bore receiving a cylinder member, said control means including a pressure responsive member, said pressure responsive member including a lug extending through said annular valve seat and engageable with said valve member, second resilient means disposed in said cylinder member for urging said pressure responsive member to a first position in which said lug urges said valve member to the first position thereof to open said valve means, said pressure responsive member moving to a second position retracting said lug into said annular valve seat in response to said first predetermined pressure in said one compartment so that said valve member is engageable with said valve seat to close said valve means, said valve member disengaging from said valve seat responsive to a predetermined pressure difference thereacross to communicate increasing fluid pressure to said other compartment.

4,286,505

OIL COOLED PISTON

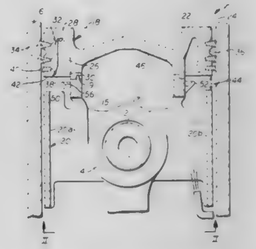
John K. Amdall, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00259, § 371 Date Apr. 23, 1979, 102(e) Date Apr. 23, 1979, PCT Pub. No. WO80/02308, PCT Pub. Date Oct. 30, 1980.

This PCT application filed Apr. 23, 1979, Ser. No. 85,644

Int. Cl.³ F01P *3/08*

U.S. Cl. 92—186 **4 Claims**



1. An oil cooled piston (10) comprising:

a crown portion (18);

inner (22) and outer (24) annular walls connected to said crown portion (18) defining an annular groove (26) including an annular opening (30), said outer wall (24) having an end surface (42) adjacent said opening (30);

means for trapping fluid and for directing trapped fluid into said annular groove (26) in response to reciprocating motion of said piston, said means being a substantially annular ledge (50) extending solely from said inner wall (22) and directed toward said outer wall (24) terminating at a lip (52) spaced from said end surface (42) and having a sloping surface (56) extending from said inner wall (22) to said lip (52), said sloping surface (56) being angularly disposed with the inner wall (22);

means (60) for permitting a pressurized stream of fluid to be directed past said ledge (50) to said annular groove (26), said means for permitting said fluid to be directed past said ledge (50) comprising at least one axially directed slot (60) formed throughout the outermost edge of said lip 52.

4,286,506

AIR VENTILATION APPARATUS FOR VEHICLE

Toshio Yanagida, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 24, 1978, Ser. No. 963,646

Claims priority, application Japan, Mar. 29, 1978, 53/39348[U]

Int. Cl.³ B60H *1/00*

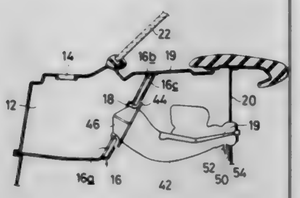
U.S. Cl. 98—2 **7 Claims**

1. An air ventilation apparatus mounted in a vehicle having a partition wall and an instrument panel which are spaced from each other to define therebetween a considerable space, said partition wall being formed with an opening which is communicable with the open air surrounding said vehicle, said ventilation appartaus comprising:

a hollow body having a first open end attached to said partition wall to open to said opening of the same and a second open end supported by said instrument panel; and

means for locating said first open end of said hollow body with respect to said opening of said partition wall while permitting the open air to flow into said hollow body, said locating and permitting means comprising at least two intersecting tapered vanes which are integrally mounted

on the mouth of said first open end of said hollow body and combine to form an arrow head-like configuration with the apex thereof projecting longitudinally outwardly from said mouth, each of said tapered vanes including means defining portions near its base section, inflection



portions which are engaged with the boundary surface defining the opening of said partition wall to allow the combined vanes to be tightly held in said opening wherein said locating and permitting means permits a substantially unobstructed air flow into said hollow body.

4,286,507

SHIPPING CONTAINER CONSTRUCTION

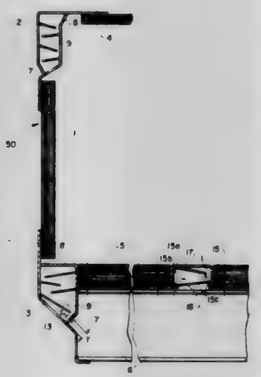
Willi Dörpmund, Elze, Fed. Rep. of Germany, assignor to Graaff Kommanditgesellschaft, Elze, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,200

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2648666

Int. Cl.³ B65J *1/02;* **F24F** *13/00*

U.S. Cl. 98—32 **1 Claim**



1. An improved ventilation arrangement in the bottom wall of a shipping container of the type having top, bottom and side walls, at least one side of said container having upper and lower longitudinally extending hollow tubular chords adjacent the top and bottom of the side wall each having top and bottom openings, a plurality of downwardly inclined and oppositely directed deflectors within each of said upper and lower chords disposed between the openings of respective ones of the chords, the bottom wall connected to the lower chord having a cross-beam, and the bottom opening of the lower chord being directed toward the cross-beam and the top opening of the lower chord being directed toward the interior of the container to establish fluid communication therewith, the improvement comprising, in combination therewith, a continuous U-shaped longitudinally extending beam portion located intermediate the length of the bottom wall, said beam portion opening downwardly toward the cross-beam and having a top with at least one aperture extending therethrough to establish fluid communication between the interior of the container and the cross-beam, said beam portion having first and second spaced apart beam side walls connected to the bottom wall of the container, and one baffle in said beam portion on one of said beam side walls sloping downwardly toward the opposite beam side wall but spaced at its outer end from said opposite beam side wall to allow fluid communication around said one baffle, another baffle extending from said opposite beam side wall towards the first mentioned beam side wall and being adjacent the beam portion opening and arranged to also allow fluid communication therearound.

4,286,508

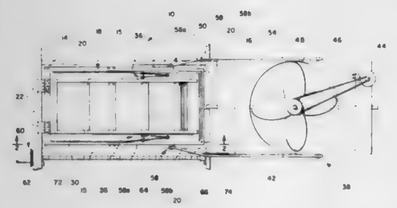
COMBINATION STAIRCASE AND ATTIC FAN MEANS

Thomas C. Seebo, II, 1641 Kildonan Pl., Cary, N.C. 27511

Filed Sep. 8, 1980, Ser. No. 185,019

Int. Cl.³ F24F *7/00;* **E04F** *11/06*

U.S. Cl. 98—43 R **8 Claims**



1. A combination staircase-attic fan assembly adapted to be utilized in conjunction with an attic opening formed within a structure wherein in one mode the attic fan assumes a position in said attic opening and is operative to exhaust air from the attic portion of the structure and in a second mode the staircase is operative to assume a position in said attic opening for providing access to the attic, said combination staircase-attic fan assembly comprising: a staircase assembly; mounting means for movably mounting said staircase assembly about said attic opening for movement between a first operative position within said attic opening wherein the staircase may be lowered for access to said attic, and a second position where said staircase is located remotely from said first operative position; a fan assembly having means for movably mounting the same about said attic opening for movement between a first operative position within said attic opening wherein when actuated said fan assembly is operative to induce air from portions of said structure below said attic, through the attic opening, and on through the attic where the air is exhausted therefrom, and a second position remotely located from said first operative position of said fan assembly; coupling means operatively interconnected between said staircase assembly and said fan assembly for moving the two in unison such that movement of said staircase assembly from said second position to said first operative position results in said fan assembly being moved from its first operative position to its second position and vice versa; and drive means operatively associated with said staircase-fan assembly for driving the staircase assembly and fan assembly between their respective positions.

4,286,509

TOASTING APPARATUS

Dye O. Miller, South Barrington; August J. Antunes, Elmhurst, and Jerome Antunes, Clarendon Hills, all of Ill., assignors to A. J. Antunes & Co., Addison, Ill.

Filed Aug. 28, 1979, Ser. No. 70,483

Int. Cl.³ A47J *27/62*

U.S. Cl. 99—332 **16 Claims**

1. A toasting apparatus comprising

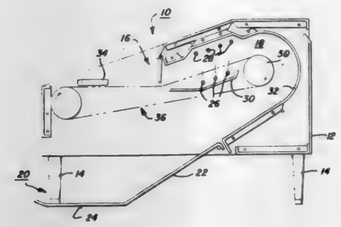
a housing defining a toasting chamber,

a first opening defined in said housing for the introduction of a product into said toasting chamber,

a second opening defined in said housing for the removal of said product after toasting,

means for conveying said product from said first opening to said second opening,

first heating means in said chamber, said first heating means being continuously energized,



second heating means in said chamber, and first switch means mounted adjacent said conveying means so as to be engaged by said product to energize said second heating means for a predetermined period of time.

4,286,510

DEVICE FOR INJECTING A TREATING LIQUID INTO MATERIAL TO BE TREATED

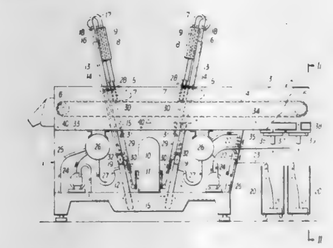
Otto Prosenbauer, Vienna, Austria, assignor to Prosenbauer & Co. Maschinenhandel, Vienna, Austria

Filed Dec. 31, 1979, Ser. No. 108,598

Claims priority, application Austria, Jan. 9, 1979, 156/79

Int. Cl.³ A23L *3/34;* **A23B** *4/00*

U.S. Cl. 99—533 **5 Claims**



1. A machine for injecting a treating liquid into an edible material for the treatment thereof, comprising a frame, conveyor means extending longitudinally of said frame and defining a support surface for said edible material, at least two needle cases spaced from each other and mounted on said frame and being movable in guided relation in an upward and downward direction with respect to said support surface, motor means mounted on said frame and being interconnected to said needle cases for effecting the movement thereof, an injection needle set resiliently mounted on each of said needle cases for movement therewith and being movable into penetrating relation with the edible material as said edible material is transported transversely with respect to the path of said needle cases by said conveyor means, a separate treating liquid supply system associated with each of said needle sets, each of said treating liquid supply systems including a separate treating liquid storage tank that is located adjacent to the bottom of the frame, a conduit extending from each storage tank to the respective needle set for conducting treating liquid thereto, a separate pump interconnected in each treating liquid supply system for directing the treating liquid from the respective storage tank to the needle set thereof, and a separate liquid circuit for each liquid supply system for recycling the treating liquid that is ejected from said needle sets but that fails to be injected into said edible material, each of said circuits including a collecting means for receiving the unused treating liquid that fails to be injected into said edible material and a return conduit communicating with the collecting means and the storage tank of the associated liquid sypply system, the collecting means for said circuits including a vat that is mounted on said frame in surrounding relation with respect to said conveying means, said vat including spaced side walls, end walls and a pair of horizontal and parallel bottom walls that are located in spaced vertical relation between said side walls, the lowermost of said bottom walls extending for the length of said vat, the uppermost of said bottom walls being foreshortened with respect to the lowermost bottom wall and the forwardmost end of said uppermost bottom wall being located between said needle sets, wherein only one of said needle sets directly overlies one of said bottom walls, said bottom walls defining an interspace therebetween that forms a channel that communicates with one of said return conduits, said one return conduit directing unused liquid collected by said lowermost bottom wall to the storage tank in circuit therewith, the other of said return conduits communicating with said uppermost bottom wall for directing unused liquid collected by said uppermost bottom wall to the storage tank in circuit therewith.

4,286,511

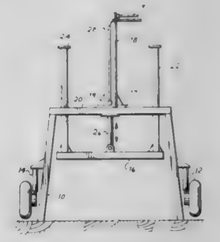
PACKER LATCH FOR MODULE BUILDER

Don R. Johnson, Wolfforth, Tex., assignor to Harris & Thrush Manufacturing Company, Wolfforth, Tex.

Filed Jun. 19, 1980, Ser. No. 161,126

Int. Cl.³ B30B *13/00*

U.S. Cl. 100—35 **4 Claims**



3. The process involving a cotton module builder having

a. side walls,

b. a carriage extending from one side wall to the other,

c. a tramper with a foot mounted for vertical reciprocation to the carriage,

d. a hydraulic cylinder having a lower end on the carriage and having

e. a reciprocating ram telescoped within cylinder and attached to the tramper foot;

wherein the improved method comprises:

f. latching the cylinder in the raised position by

g. holding hooks on the cylinder with bails,

h. raising the bails to a raised position to latch the cylinder in the raised position, and

i. releasing the bails by

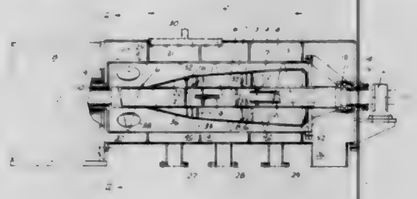
j. relaxing the strain upon the bails by

k. lowering the foot to the full lowered position, and

l. forcing the cylinder up with hydraulic pressure therein and

m. lowering the bails downward and free of the hooks.

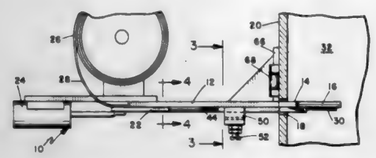
4,286,512
SCREW-PRESS
Torsten L. Berggren, Rosenlidsgatan 13, S-571 00 Nässjö, Sweden
Filed Jun. 6, 1979, Ser. No. 45,951
Claims priority, application Sweden, Jun. 14, 1978, 7806848
Int. Cl.³ B30B *9/12*
U.S. Cl. 100—74 **7 Claims**



1. A screw-press for pressing liquid from fibrous slurries, such as paper pulp, sludge, sedimentation and like material, comprising:
a cylindrical perforated strainer drum;
a press screw arranged within said cylindrical strainer drum with a space therebetween and being rotatable about its longitudinal axis, said material being fed into the press at one end of said press screw and being fed out of the press through a discharge zone located at the other end of said press screw;
said press screw having a core with an outer wall which has a successively increasing diameter along the major part of its length such that a space defined between said core and the wall of said strainer drum gradually decreases in the feed direction of the material;
said strainer drum being rotatable about said longitudinal axis, at least one of the speed of rotation of said strainer drum and the direction of rotation of said strainer drum differing from the speed of rotation and the direction of rotation of said press screw, and wherein the speed of rotation of the strainer drum is so selected to produce a centrifugal force of given magnitude such that as the result of said centrifugal force, there is obtained an effective draining through said perforations of said strainer drum of free liquid present in the slurry and liquid pressed from said slurry due to the action of said press screw; and
means for introducing washing liquid into at least a portion of the space between said press screw and said strainer drum, said portion comprising a stage of said screw press, for the purpose of washing the material introduced into said press, said means for introducing washing liquid including distribution channels in said core for the washing liquid, and peripheral slots in the outer wall of said core, said distribution channels discharging into said peripheral slots, said washing liquid being drained off together with other free liquid present in the slurry through said perforations of said strainer drum.

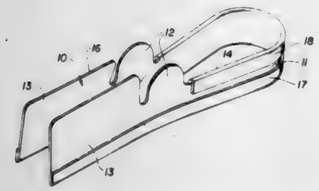
4,286,513
TAGGING APPARATUS FOR HAY BALER
Don Floyd, 4658 El Penon Way, San Diego, Calif. 92117; Lee M. Whittle, 396 W. Keystone Rd., Brawley, Calif. 92227, and Richard R. Ramey, 1409 Farneworth Rd., El Centro, Calif. 92243
Filed Jul. 24, 1980, Ser. No. 172,001
Int. Cl.³ B30B *15/00*
U.S. Cl. 100—102 **10 Claims**

1. A tagging attachment for a baler having a chamber through which materials are formed into a bale, the attachment comprising:
a support member for projecting through the wall of a baler into the baler chamber and having substantially planar support surface parallel to the direction of movement of the bale through the chamber;
guide means for guiding a tag onto said support surface; and



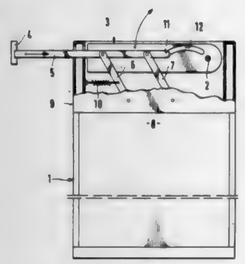
feeding means for selectively feeding tags onto said surface for passage with bale material into a bale.

4,286,514
TEA BAG COMPRESSOR
Reginald D. Wilson, 2601 Roslyn Ave., Baltimore, Md. 21216
Filed Aug. 27, 1980, Ser. No. 181,873
Int. Cl.³ B30B *5/02*
U.S. Cl. 100—211 **4 Claims**



1. A tea bag compressor comprising a one-piece spring member having a rear spring loop sized for convenient holding in one hand, a pair of laterally opposing finger grip tabs on said spring member at the forward end of the spring loop and near the longitudinal center of said member, and a pair of laterally opposing flat plate-like compression jaws on said member forwardly of the finger grip tabs and extending to the forward end of said member and being convergent upwardly in two planes extending from the bottom edge of the spring loop to an elevation substantially above the upper edge of the spring loop.

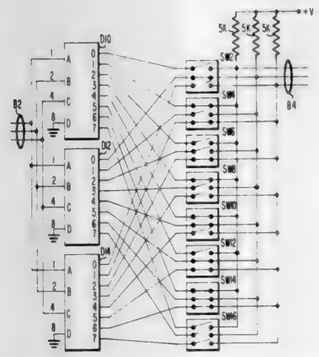
4,286,515
COMPACTING WASTE BASKET
Manfred Baumann, Diepoldsau, Switzerland, and Wolfgang Lohmann, Wiesbaden, Fed. Rep. of Germany, assignors to Apura GmbH & Co., Mainz-Kostheim, Fed. Rep. of Germany
Filed Nov. 21, 1979, Ser. No. 96,271
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 2850959
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—233 **2 Claims**



1. A container for waste paper or the like, comprising:

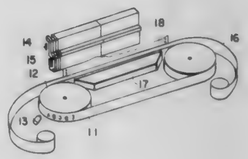
(a) waste compacting means in the form of a pivotally mounted lid which fits into said container and occupies a volume in said container large enough to accommodate individual waste pieces to be deposited and compacted in said container,
(b) means for retaining said lid in the closed position,
(c) a transversely extending and horizontally movable bar (**4**) located on a front side of the container (**1**) and operated by a clothed part of the body,
(d) a pair of horizontal bars (**5**) individually disposed on opposite sides of the container, each horizontal bar extending outwardly at one end from a front wall of the container (**9**), and each horizontal bar being connected at said one end to said movable bar,
(e) at least one articulated swinging arm (**6**, **7**) pivotably connected at one end to a side wall of the container and at the other end to one of the horizontal bars (**5**), and
(f) means connecting the other ends of said horizontal bars to said lid.

4,286,516
ELECTRONIC CONTROL FOR TIMING HAMMERS IN IMPACT PRINTERS
Harry Wertanen, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Oct. 15, 1979, Ser. No. 84,817
Int. Cl.³ B41J *7/92*
U.S. Cl. 101—93.03 **6 Claims**



1. In a system for electronically adjusting the spacing between columns of print on a high speed printer in which the print is produced on a moving surface by operation of an assembly of hammers, each hammer being driven by associated magnetic actuating means in response to high energy pulses:
a multiplexer responsive to selected input pulses for providing firing pulses for energizing the magnetic actuating means and driving selected print hammers;
counter means providing a first group of pulses to said multiplexer to successively enable each of a plurality of input terminals of the multiplexer;
an alterable read only memory providing a second group of pulses to said multiplexer to energize selected inputs of the multiplexer in a manner to determine when printing will occur;
a source of strobe pulses designating columns in which data is to be printed; and
means for applying said strobe pulses to said multiplexer to energize a strobe input of the multiplexer;
whereby said multiplexer is energized to provide firing pulses to operate selected print hammers when pulses from said first and second groups of pulses coincide with the occurence of strobe pulses at the multiplexer.

4,286,517
PRINTER MAGNETIC INTERFERENCE PREVENTION SYSTEM
Shigenobu Katagiri; Hiroshige Nakano, and Kazuo Matsuzaki, all of Katsuta, Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan
Filed Jul. 12, 1979, Ser. No. 57,148
Int. Cl.³ B41J *1/20*
U.S. Cl. 101—93.14 **7 Claims**



5. A magnetic interference prevention system in a printer, said printer comprising a plurality of print hammers having their respective hammering surfaces disposed in a straight line, a plurality of printing magnets arranged adjacent one another to drive respective print hammers and means for energizing said print hammers in response to actuating signals, said printer further comprising signal generating means for generating a first scanning signal, first signals sequentially specifying said print hammers, second signals representing particular hammers which are permitted to be energized and which are displaced in time with respect to said first signals, and signals indicative of confrontation of printing type with a print hammer, said magnetic interference prevention system comprising:
a first flip-flop having set and reset inputs, an output and an inverted output;
a second flip-flop having set and reset inputs and an output;
a first AND gate receiving as inputs said second flip-flop output and said signal indicative of confrontation of printing type with a print hammer, the output of said first AND gate providing said actuating signals and being coupled to the reset input of said first flip-flop;
a first OR gate receiving said scanning signal as a first input and receiving said second signals as a second input and providing an output signal to the set input of said first flip-flop;
a second OR gate receiving said scanning signal as a first input and providing an output signal to the set input of said second flip-flop;
a second AND gate receiving as inputs said first signals and the output of said first flip-flop, the output of said second AND gate being coupled as a second input to said second OR gate; and
a third AND gate receiving as inputs said first signals and the inverted output from said first-flop, the output of said third AND gate being coupled to the reset input of said second flip-flop;
the output of said first AND gate providing said actuating signals and being coupled to the reset input of said first flip-flop whereby said interference prevention system is responsive to said actuating signals for inhibiting the driving of at least one of two adjacent magnets for a predetermined period of time to thereby prevent magnetic interference between simultaneously energized magnets.

4,286,518
PRINT SCREEN STENCIL
Jacob A. Otthofer, Jr., Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Jul. 25, 1979, Ser. No. 60,456
Int. Cl.³ B41N *1/24*
U.S. Cl. 101—128.21 **1 Claim**

1. A print screen stencil for printing with corrosive printing

compositions comprising a screen fabric having open mesh areas in a predetermined pattern adapted to allow the passage of a printing composition to a substrate positioned beneath the fabric and filled or closed mesh areas adapted to prevent the passage of a printing composition, the filled mesh areas comprising a resist coating encasing the mesh in the filled areas, said resist coating comprising cross-linked acrylic polymer intimately dispersed in fused vinyl resin.

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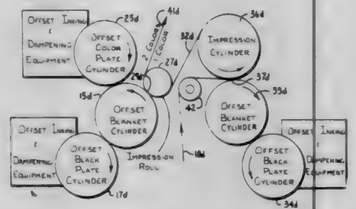
OFFSET LITHO CONVERSION FROM LETTERPRESS EQUIPMENT

Gary R. Smith, Bucyrus, Kans., assignor to Smith R.P.M. Corporation, Overland Park, Kans.

Continuation-in-part of Ser. No. 936,130, Aug. 23, 1978, abandoned. This application Feb. 15, 1979, Ser. No. 12,567

Int. Cl.³ B41F *11/00, 5/18, 13/02*; B41L *17/12*

U.S. Cl. 101—138 **6 Claims**



1. The process of modifying conventional, continuous web and non-interchangeably convertible letterpress newspaper printing equipment, including cooperating first letterpress impression and plate cylinders generally horizontally spaced from and cooperating with second letterpress impression and plate cylinders within a single tower frame, to continuous web offset equipment; which process includes the steps of:

(a) modifying the first letterpress plate cylinder to accept an offset plate and thereby function as a first plate cylinder;

(b) mounting dampening and inking equipment on the tower frame in cooperation with said first offset plate cylinder;

(c) modifying said first letterpress impression cylinder to accept an offset blanket and thereby function as a first offset blanket cylinder;

(d) positioning a first offset impression cylinder in the tower frame so as to cooperate with said first offset blanket cylinder at a first bight removed from said first offset plate cylinder; said first offset impression cylinder not extending outwardly from said tower such that adjacent towers may be placed in close proximity without interference from said first offset impression cylinder;

(e) rotating said first offset impression cylinder; such that the speed of the surfaces of said first offset impression cylinder and said first offset blanket cylinder at said first bight are substantially the same;

(f) modifying a second letterpress plate cylinder to an offset plate cylinder to thereby function as a second offset plate cylinder;

(g) mounting dampening and inking equipment on the tower frame to cooperate with said second offset plate cylinder;

(h) modifying said second letterpress impression cylinder to accept an offset blanket and thereby function as a second offset blanket cylinder;

(i) positioning a second offset impression cylinder on the tower frame so as to cooperate with said second offset blanket cylinder at a second bight removed from said second offset plate cylinder; said second offset impression cylinder not extending outwardly from said tower such that adjacent towers may be placed in close proximity without interference from said second offset impression cylinder;

(j) rotating said second offset impression cylinder, such that the speed of the surfaces of said second impression cylinder and said second offset blanket cylinder at said second bight are substantially the same; and

(k) directing a continuous web between said first offset blanket cylinder and said first offset impression cylinder at said first bight and directing said web between said second impression cylinder and said second offset blanket cylinder at said second bight;

(l) modifying a third letterpress plate cylinder to accept a third offset plate within the tower frame and thereby function as a color third offset plate cylinder; said third offset plate cylinder cooperating with said first offset blanket cylinder and said first offset plate cylinder so as to transfer two colors to said first offset blanket cylinder;

(m) wherein said first impression cylinder is a new cylinder mounted in said letterpress tower frame; and including the steps of:

(n) directing said web to said first bight between said first offset blanket cylinder and said first offset impression cylinder; and

(o) directing said web to said second bight between said second offset blanket cylinder and said second offset impression cylinder, such that at least two colors are printed on one side of said web.

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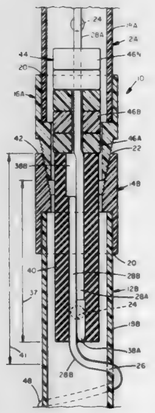
LINEAR EXPLOSIVE CHARGE WITH CONSTANT DETONATION VELOCITY AND SYNCHRONOUS BOOSTER CHARGES

Dallas R. Davis, Tulsa, Okla., assignor to Davis Explosive Sources, Inc., Tulsa, Okla.

Filed Aug. 13, 1979, Ser. No. 65,893

Int. Cl.³ C06C *11/00*

U.S. Cl. 102—317 **8 Claims**



1. A linear explosive charge with constant detonation velocity, comprising;

(a) a plurality of series-connected units, or sticks, and means to colinearly join said sticks together in a long linear substantially rigid assembly;

(b) each stick comprising;

(1) a tubular member of selected length and diameter;

(2) a polarized coupling attached at each end, a female coupling at one end, and a male coupling at the other end;

(3) a helical winding of linear explosive cord on the outside surface of said tubular member, near each end of said stick, said explosive cord inserted through an opening in the wall of said stick, with the ends of said cord extending outwardly through said couplings for selected distances;

(4) at the end having the female coupling, a selected length of thick-walled elastic tube inserted over the end of said explosive cord into the end of said stick; the inner diameter of said tube less than twice the diameter of said explosive cord;

whereby when the end of said cord extending from the male end of a first stick is inserted into said elastic tube inside the female coupling of a second stick, as the joint is made up, said elastic tube will expand and press both ends of the explosive cord together in tight side-by-side contact to facilitate the process of cross-detonation from the cord on one stick to the cord on the other stick.

4,286,521

DEVICE ACTUATED ELECTRICALLY TO TRIGGER A MECHANICAL PERCUSSION DETONATOR

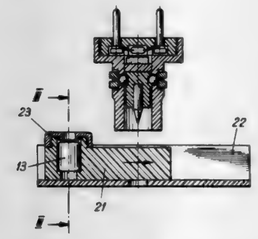
Joseph Marer, Lyss, Switzerland, assignor to Redon Trust, Schaan, Liechtenstein

Filed Jul. 25, 1979, Ser. No. 60,334

Claims priority, application Switzerland, Jul. 27, 1978, 8070/78

Int. Cl.³ F42C *19/06*

U.S. Cl. 102—200 **3 Claims**



1. An igniting device for percussion detonators, comprising

a tubular container;

a percussion striker device located in said container carrying;

a striker pin on one end thereof;

a detent device for detaining said striker device within said container;

an explosive cap located at the other end of said striker device;

a detonator housing;

at least one detonator charge movably mounted in said housing for movement between an operative position in the path of said striker and an inoperative position out of the path of said striker; and

actuating means for applying pressure to said other end of said striker device for igniting that detonator.

4,286,522

LATCH DEVICES

Brian T. Trayner, Stevenage, England, assignor to British Aerospace Public Limited Company, London, England

Filed May 31, 1979, Ser. No. 44,159

Claims priority, application United Kingdom, May 31, 1978, 25704/78

Int. Cl.³ F42C *15/34*

U.S. Cl. 102—255 **4 Claims**

1. A latch device including, in combination:

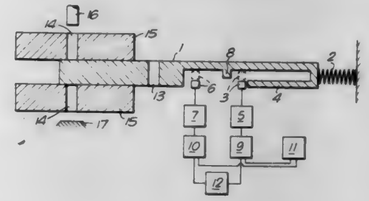
a movable member arranged for movement between first and second positions via fail-safe and intermediate positions successively;

biasing means biasing said member towards said second position;

first and second latch means each movable from an initial position to an activated position;

first abutment means carried by said member and engageable with said first latch means when in its initial position to retain said member in said first position and disengageable from said first latch means when in its activated position to allow movement of said movable member towards said second position, and said first abutment means being engageable with said second latch means when in its initial position to prevent movement of said member past said intermediate position and disengageable from said second latch means when in its activated position to allow movement of said member towards said second position; and

second abutment means carried by said member in spaced relation to said first abutment means and engageable with said second latch means when in its activated position to prevent movement of said member past said fail-safe position if said member is at said first position at the time when said second latch means moves from its initial position to its activated position, whereby said member is allowed to move to said second position only if said member has moved past said fail-safe position at the time when said second latch means moves from its initial to its activated position.



4,286,523

SYSTEM FOR SUPPORTING OVERHEAD TROLLEY RAIL

Neal W. Densmore, Franklin, Pa., assignor to Voy Manufacturing Co., Pittsburgh, Pa.

Filed Sep. 12, 1979, Ser. No. 74,688

Int. Cl.³ E01B *25/24*

U.S. Cl. 104—111 **10 Claims**



1. A system for supporting an overhead trolley rail from a mine roof or the like, comprising a washer-like element having a centrally-disposed opening therein, at least one curved portion depending downwardly from the washer-like element, a bolt extending across said curved portion and supported thereby, two L-shaped keepers at the ends of said bolt each having one leg through which its associated bolt extends and a second leg which underlies a flange on a trolley rail, and a single roof bolt extending through said centrally-disposed opening and into a mine roof or the like, said single roof bolt comprising the only support for said washer-like element.

4,286,524

PRESSURIZED HOPPER CAR INTERIOR SIDE AND ROOF BRACING SUPPORT STRUCTURE

Steve L. Jantzen, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,968

Int. Cl.³ B61D *7/04, 17/08, 17/12, 49/00*

U.S. Cl. 105—248 **13 Claims**

1. A pressurized railway hopper car comprising: trucks supporting the car at opposite ends thereof; side sheets located on opposite sides of the car and extending vertically between transversely spaced side sills located at the lower portion of the

side sheets and transversely spaced side plates located at the upper portion of the side sheets; a roof extending between said side plates; included sheets attached to the lower portion of the side sheets defining at least one hopper in the car; at least one vertical reinforcement located on each side of said hopper; upper connecting means extending between each of said vertical reinforcements and its respective sie plate to anchor said reinforcement at its upper portion; lower connecting means



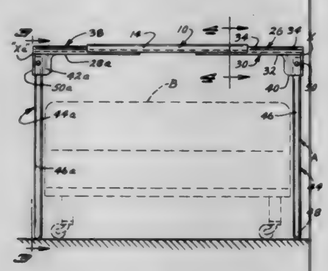
attaching said vertical reinforcement at its lower portion to its respective side sill; horizontally extending reinforcements extending between said upper connecting means at approximately the shear center of each side plate; said vertical reinforcements spaced inwardly from the shear center of its respective side plate a distance such that said vertical and said horizontal reinforcements carry substantially axial loads resulting from membrane pressure loads applied substantially uniformly upon said side sheets and upon said roof.

4,286,525

OVER-THE-BED-TABLE

Kathryn A. Willmore, 6509 Navaho Trail, Edina, Minn. 55424

Filed Feb. 19, 1980, Ser. No. 122,754
Int. Cl.³ A47B *23/00, 1/00*
U.S. Cl. 108—93 **1 Claim**



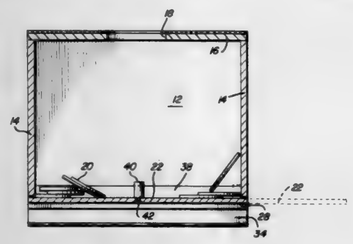
1. An Over-The-Bed table comprising:
(a) a top including a central portion,
(b) a first end portion, and
(c) a second and oppositely disposed end portion,
(d) means slidably mounting said first end portion on said central portion including an upstanding rib formed along each edge of said first end portion and slideably positioned in
(e) a slot formed in the underside of an upstanding rib formed along each edge of said central portion,
(f) means slideably mounting said second end portion on said central portion including an upstanding rib formed along each edge of said second end portion and slideably positioned in said slots of said upstanding ribs of said central portion,
(g) first leg means,
(h) second leg means,
(i) means hingedly mounting said second leg means on said second end portion for extension of said leg means to from said top to a position on a supporting surface for supporting said top above the top surface of a bed,
(j) each of said first and second leg means having a length sufficient to support said top portions extended above the top surface of a bed positioned between said first and second leg means and under said top portions.

4,286,526

COIN BANK

Nicholas A. Rabelos, Jonesboro, Ga., assignor to Charles J. Simpson, Morrow, Ga.

Filed Dec. 12, 1979, Ser. No. 103,511
Int. Cl.³ A45C *1/12*
U.S. Cl. 109—73 **4 Claims**



1. A coin bank comprising a hollow, rectangular parallelepiped receptacle with perpendicularly arranged walls with at least one wall including a coin receiving slot therein, another wall of said receptacle being movable between a closed position and an open position, and a concealed locking device for the movable wall to releasably retain it in closed position to prevent unauthorized removal of coins from the coin bank, said locking device including a small concealed passageway communicating with the exterior of the receptacle enabling insertion of a long narrow tool for disabling the locking device to enable the movable wall to be moved to an open position, said movable wall being the bottom wall of the receptacle, means slidably supporting the bottom wall from the side walls of the receptacle, said locking device being mounted on the side wall of the receptacle and including a locking member movably received in a recess in the slidable bottom wall, said passageway communicating with the bottom of the recess to enable the locking member to be moved out of the recess in the slidable bottom wall to enable sliding movement of the bottom wall, said locking device including a leaf spring member fixedly secured to the side wall at one end and including a laterally extending flange forming said locking member at the other end for movement into and out of the recess in the bottom wall, each side wall including a metal member extending below the bottom wall and terminating in an inturned flange having an upturned flange at its inner edge to define a channel-shaped guide, said bottom wall including longitudinal runners received in the guides to guide the movement of the bottom wall and limit lateral distortion of the side walls, thereby strengthening and rigidifying the receptacle.

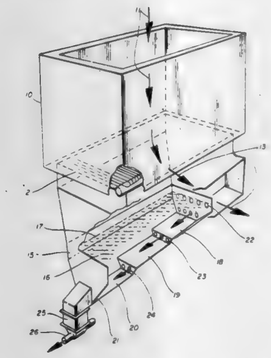
4,286,527

SYSTEM FOR ASH REMOVAL

Storm D. Robinson, Vernon, and Douglas M. Rode, Newington, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 10, 1979, Ser. No. 101,653
Int. Cl.³ F23J *1/02*
U.S. Cl. 110—165 A **3 Claims**

1. A back-pass section of a furnace burning solid fuel which produces fly ash carried into the back-pass by entraining heating gases as products of the combustion, including,
a section of back-pass from a furnace including a first downwardly directed portion and a second portion connected to the first portion at substantially a right angle,
a receptacle positioned below the gas descending in the first portion of the back-pass,
a body of liquid impounded by the receptacle having a surface receiving fly ash from combustion gases flowing from the first back-pass portion into the second back-pass portion as the entraining gases are diverted in their downward path from the first portion into a second path within the second portion,



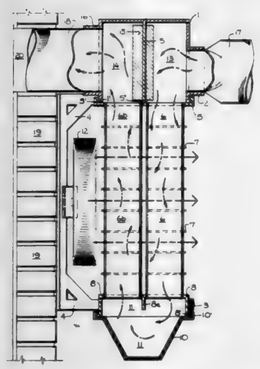
a series of step surfaces beneath the surface of the body of liquid receiving fly ash gravitated through the body of liquid,
an exit from the receptacle located at the lowest of the step surfaces,
a nozzle for each step surface arranged to direct liquid supplied to the nozzle over its step surface in removing ash from the step surface to the exit at the lowest of the step surfaces,
a supply of liquid for each of the nozzles,
and a conduit connected to the exit through which fly ash is continuously removed.

4,286,528

EXHAUST FILTER SYSTEM

Stephen Willard, 45 Elm St., Woodstock, Vt. 05091

Filed Aug. 30, 1979, Ser. No. 71,126
Int. Cl.³ F23J *15/00*
U.S. Cl. 110—203 **16 Claims**



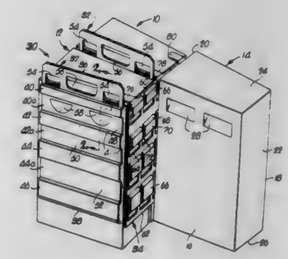
1. An exhaust filter system for filtering a creosote component from exhaust gases of a combustion chamber burning wood, which comprises an airtight filter apparatus arranged between a combustion chamber outlet for the exhaust gases and a flue for removing the filtered exhaust gases, the filter apparatus including a gas distributing chamber in communication with the combustion chamber outlet and receiving hot exhaust gases therefrom, a gas collecting chamber in communication with the flue and delivering filtered exhaust gases thereto, a heat exchange unit airtightly connecting the gas distributing and collecting chambers, the heat exchange unit defining a vertical flow path for the exhaust gases between the gas distributing and collecting chambers and being capable of cooling the gases to a temperature range wherein the creosote component present in the hot exhaust gases in vaporized form is condensed to a liquid, the heat exchange unit being comprised of two rows of heat exchange tubes and two tube plates attached to respective ends of the tubes, the two rows of tubes being arranged back-to-back, a fan means for blowing air transversely across the heat exchange tubes, and a sump mounted to receive the condensed liquid by gravity from the heat exchange unit, the filter apparatus being arranged to provide a natural draft for the exhaust gases from the combustion chamber outlet to the flue.

4,286,529

COMBINATION HANGER AND EXPANSION PLATE FOR ELECTRIC FURNACE ROOF

John J. Musser, Kansas City, Mo., assignor to Geo. P. Reintjes Co., Inc., Kansas City, Mo.

Filed Apr. 13, 1979, Ser. No. 29,932
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—340 **2 Claims**



1. A spacing member for positioning between adjacent refractory bricks, said member comprising an elongated sheet of metallic material having an upper margin and a lower margin and configured to present, on at least one face thereof, a plurality of spaced brick-engaging surfaces along the length of the sheet between said margins, said surfaces comprising elongated, flattened ribs presenting upper and lower rib margins, with channels between adjacent ribs, said ribs being of generally rectangular configuration, only one of said upper and lower ribs margins being connected to said sheet, the connected rib margin being the only connection between the ribs and the sheet.

4,286,530

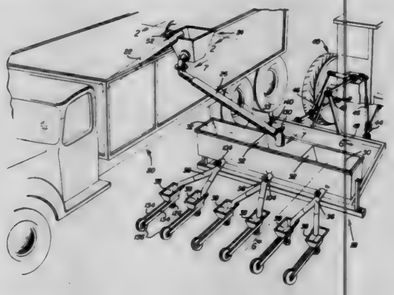
MULTIPLE ROW SEED PLANTER WITH COMMON SEED STORAGE

Richard L. Conley, Rte. 2, Box 210, Blytheville, Ark. 72315

Filed Jul. 26, 1979, Ser. No. 62,153
Int. Cl.³ A01C *5/00;* **B60P** *1/00*
U.S. Cl. 111—1 **9 Claims**

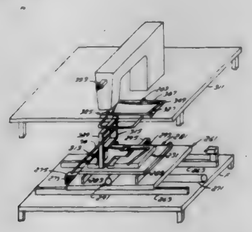
1. An agricultural implement for dispensing grain, seeds or fertilizer from a mobile storage receptacle having an open top and upwardly extending sidewalls comprising receiving bin means mountable on one of said sidewalls and having filling means for transferring seed or fertilizer from the receptacle to the receiving bin means, and connecting means for transfer of said seed or fertilizer from the receiving bin means to a planter

means, said connecting means comprising a telescoping feed pipe having at least one pipe slidable within a second pipe, whereby the longitudinal extent of the feed pipe is adjustable, the planter means comprising a towable frame on which is mounted a common feed tank for receiving seed or fertilizer from the connecting means, the feed tank having distributing means for transfer of seed or fertilizer to a plurality of individual planter hoppers for dispensing the seed or fertilizer into the ground, said telescoping feed pipe being further swivelable about a swivel housing connected by a transition pipe to the receiving bin, whereby the telescoping feed pipe is movable in a horizontal plane by swivelling about the swivel housing, said filling means comprising a powered auger consisting of a spiral auger blade fittingly rotatable in an auger housing for upward



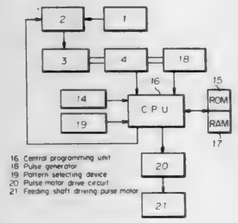
lifting of said seed or fertilizer from the receptacle into the bin, said powered auger being controllable in operation from a location remote from said auger, whereby filling of said bin is facilitated, said location being on the outer pipe of said telescoping feed pipe, said distributing means comprising a Y-shaped feed line having a common segment connected to said common feed tank and a pair of terminal segments connected to the common segment and located between the common segment and a pair of the plurality of plant hoppers, whereby gravity flow of seed or fertilizer from said common feed tank to the hopper is facilitated, and further wherein said telescoping feed pipe is provided with a feed pipe flow control gate, whereby the rate of flow of seed or fertilizer therethrough into the feed tank is adjustably controllable.

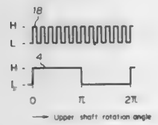
4,286,531
SEWING APPARATUS
Normand Molloy, Arundel, Canada, assignor to Edward A. Shaw, Montreal, Canada
Filed Sep. 10, 1979, Ser. No. 73,607
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.15 **9 Claims**



1. An apparatus for use in substantially automatically sewing articles along a symmetrical, open-ended path comprising means for mounting each article on a support; means for moving the support to sew along the path from either end of the path to the other end, said support moving means including a first platform mounted for movement along a straight line, a second platform mounted for movement, on the first platform, along a straight line which is perpendicular to the first line, the support fixed to the second platform; first and second fluid operated devices to move the first and second platforms respectively in both directions in their straight line movement; and a hydraulic selector valve to sequentially control the operation of the first and second fluid operated devices.

4,286,532
SEWING MACHINE WITH A DEVICE FOR DIRECTLY DRIVING THE FEEDING SHAFT
Yoshinobu Tonomura, Hachioji, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Oct. 25, 1978, Ser. No. 955,478
Claims priority, application Japan, Apr. 6, 1978, 53/39749
Int. Cl.³ D05B *27/00*
U.S. Cl. 112—314 **3 Claims**





1. In a sewing machine with a reciprocating needle, a needle plate and a feed dog, an improvement designed to eliminate loose stitches and needle breakage caused by lack of synchronization between needle movement and fabric feed, comprising: a first drive motor mechanically connected to the needle to vertically reciprocate the needle when the first drive motor is operated; a second drive motor mechanically connected to the feed dog to operate the feed dog when the second drive motor is operated; a microcomputer cooperating with the first and second drive motors to synchronize needle reciprocation and feed dog operation while the first and second drive motors are operated; and a first pulse generator and a second pulse generator, the first pulse generator cooperating with the first drive motor to produce a pulse signal with a first logical state when the needle is moving upwardly and with a second logical state when the needle is moving downwardly, and the second pulse generator cooperating with the first drive motor to produce a pulse train which is in phase with and subdivides the pulse signal into a plurality of subintervals, the first and second pulse generators cooperating with the microcomputer, whereby the microcomputer can synchronize operation of the first drive motor and second drive motor in dependence upon needle position and motion.

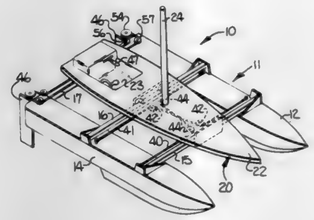
4,286,533
CATAMARAN SAILBOAT
Sidney N. Sanner, P.O. Box 1173, Tryon, N.C. 28782
Filed Aug. 23, 1979, Ser. No. 69,241
Int. Cl.³ B63B *35/00*; B63H *9/00*
U.S. Cl. 114—39 **15 Claims**

1. A catamaran sailboat characterized by the ability to limit heeling under various headings to thereby maximize the effective sail area and speed, and comprising

a hull assembly comprising a pair of separate hulls, and means fixedly interconnecting said hulls in a laterally spaced apart and laterally aligned relationship, and with said hulls being adapted to buoyantly support the full weight of the sailboat,

a deck assembly comprising a deck adapted to support the crew of the sailboat, and a mast fixed to said deck for supporting a sail,

means mounting said deck assembly to said hull assembly to

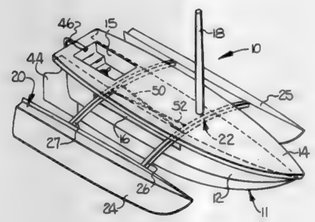


permit relative lateral movement therebetween, and with the deck assembly being at an elevation so as to be free of buoyant contact with the water, and

means for effecting relative lateral movement between said deck assembly and said hulls,

whereby the weight of the deck assembly and crew may be selectively moved laterally toward the windward hull to minimize heeling of the sailboat.

4,286,534
TRIMARAN SAILBOAT
Sidney N. Sanner, P.O. Box 1173, Tryon, N.C. 28782
Filed Aug. 23, 1979, Ser. No. 69,242
Int. Cl.³ B63B *35/00*; B63H *9/00*
U.S. Cl. 114—39 **10 Claims**



1. A trimaran sailboat characterized by the ability to limit heeling under various headings to thereby maximize the effective sail area and speed, and comprising

a central hull,

a mast mounted on said central hull for supporting a sail,

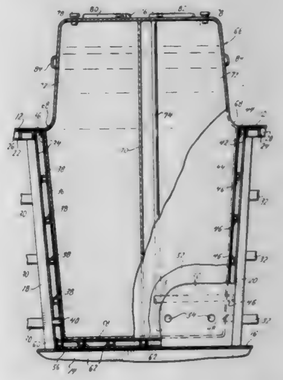
a boom assembly comprising a boom having an arcuate curvature along its length, and an outrigger hull mounted at each end of said boom,

means mounting said boom assembly laterally across said central hull and so as to permit relative lateral movement therebetween, and with the center of curvature of said boom being disposed below said central hull, said mounting means including cable means for limiting canting between said boom assembly and said central hull and comprising first and second cables fixedly interconnected between said outrigger hulls, with the ends of each cable being fixed to opposite hulls at longitudinally spaced points, and pulley means mounted on said central hull and operatively engaging each cable so that each cable includes a medial portion which extends in a direction having a substantial longitudinal component, and

means for selectively moving said boom assembly laterally with respect to said central hull,

whereby lateral movement of the boom assembly in the leeward direction results in the leeward outrigger hull being moved outwardly from the central hull and downwardly with respect thereto, to thereby increase the leverage and buoyancy of the leeward outrigger hull and thus minimize heeling of the sailboat.

4,286,535
SHIP FOR LIGHTER-THAN-WATER FLUIDS
Eugene Lunn, 1217 Gilbert Ave., St. Louis, Mo. 63119
Continuation-in-part of Ser. No. 909,253, May 24, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 74,397
Int. Cl.³ B63B *25/08*
U.S. Cl. 114—74 R **12 Claims**



1. A ship which is adapted to carry fluids and that comprises a plurality of members which are fixedly secured within the hull of said ship to define a plurality of large open-top, transversely-spaced and laterally-spaced recesses which have the lower areas thereof disposed below the water line of said ship, said members being mounted so the horizontal area of the upper portion of each recess is larger than the horizontal area of the lower portion of said recess, a plurality of large, substantially fluid-tight containers that normally are disposed within said recesses, said containers having configurations which enable portions thereof to bear against and to receive support from confronting portions of said recesses, said portions of said containers and said confronting portions of said recesses providing areas of engagement which are substantially greater than line contacts, said containers having partitions therein which subdivide each of said containers into a plurality of substantially fluid-tight compartments, said containers having the lower areas thereof extending below said water line of said ship, said portions of said containers and said confronting portions of said recesses being free of locking members whereby said containers are held within said recesses solely by the force of gravity and by frictional forces, said containers being supported and held within said ship, by gravity and by said frictional forces and the resulting engagements between said portions of said containers and said confronting portions of said recesses, throughout the entire periods of time when fluids are introduced into or removed from said containers, some of said portions of said containers being parts of the sides of said containers which are intermediate said partitions and the ends of said containers and which respond to the weights of the fluid contents of said containers to bow outwardly and apply forces to the sides of said recesses that resist separation of said containers from said recesses while said ship is afloat, said some portions of said containers when said containers are filled with lighter-than-water fluids, responding to any sinking of said ship to automatically bow away from said sides of said

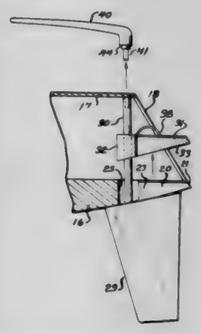
recesses and thereby help said containers float up out of said recesses and rise to the surface of the water being holding and confining the fluid contents thereof to prevent the loss therefrom of the fluid contents thereof, said containers having portions thereof which engage confronting portions of said recesses adjacent the upper edges of said recesses to render said open-top recesses substantially closed-top recesses whenever said containers are disposed within said recesses.

4,286,536

REMOVABLE RUDDER ASSEMBLY

Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, Oceanside, Calif.

Filed Aug. 6, 1979, Ser. No. 63,966
Int. Cl.³ B63H *25/06*
U.S. Cl. 114—165 **10 Claims**



1. A removable rudder assembly for a boat having a hull with a slot extending forwardly from the stern of the boat, the slot having an open rear end at the stern, the rudder assembly comprising a rudder lock member adapted to fit into said slot, a rudder shaft extending through an opening in said rudder lock member and being pivotable therein, a rudder attached to the lower end of the rudder shaft, and a tiller attached to the upper end of the rudder shaft, whereby the rudder and the rudder shaft can be removed from the boat by removing the rudder lock member from the slot and moving the rudder shaft rearwardly within the slot through the open rear end of the slot.

4,286,537

SEAGOING SEPARABLE TUG AND BARGE CONSTRUCTION

J. Erik Hvide, 1900 SE. 17th St., Ft. Lauderdale, Fla. 33316

Filed Jan. 10, 1979, Ser. No. 2,384
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—248 **3 Claims**



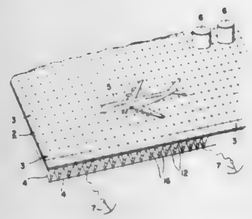
1. In a separable tug and barge assembly having a twin hull tug unit provided with a horizontally disposed shelf element connecting the twin hulls together, a barge unit having a tongue element extending rearwardly from the aft end thereof for engagement with the shelf element of the tug unit to hold one another in tight relationship, the tug unit having a portion of the forward end of each hull shaped to conform with the curvature of a portion of the aft end of the barge unit to insure a substantially tight mating engagement therebetween, wedging means between the tug and barge units to insure a tight engagement therebetween and to eliminate any relative movement therebetween, and means for connecting and disconnecting the tug and barge units to one another, the improvement comprising a tug unit having a pair of twin diverging hulls spaced from one another at the bow end thereof such that the outboard sides are not parallel to the center line of the combined tug and barge, each of said hulls extending outwardly at its bow end forming an angle of divergence from the center line of the tug unit of between about 3.0 degrees to about 5.0 degrees thereby enhancing the flow of water along the outboard side of each hull in a converging direction towards the aft end thereof and improving the wedging effect between the tug and barge units and enhancing the connecting and disconnecting of the tug unit and barge unit to one another, each hull of the tug unit being skewed outboard at the aft end thereof at an angle to the vertical of between 15–30 degrees thereby providing an improved water flow and a reduction in the water drag and a barge shaped to conform in an integrated state with the lines of the tug.

4,286,538

MULTIPURPOSE FLOATING STRUCTURE

Atsushi Matsui, 12, Baban-cho, Shizuoki-shi, Shizuoka-ken, Japan

Filed Jan. 30, 1979, Ser. No. 7,914
Claims priority, application Japan, Feb. 1, 1978, 53-11010
Int. Cl.³ B63B *35/00*
U.S. Cl. 114—266 **5 Claims**



1. A multipurpose floating structure comprising a plurality of flotation units joined together in a coherent, tesselated or reticulated pattern, as viewed in plan view, in at least one horizontal tier, each flotation unit comprising: a flat plate of a geometrical shape in plan view such as to fit snugly with the flat plates of adjacent flotation units to form said pattern; a watertight can structure of inverted conical shape, of a vertex angle of the order of 90 degrees, fixed at the base thereof in a watertight manner to the lower surface of the flat plate; a vertical leg column fixed at the upper end thereof to the lower vertex part of the can structure and having connection means at the lower end thereof; a weight disposed around and supported on the leg column; and connecting means for connecting the flotation unit to adjacent flotation units to form said pattern.

4,286,539

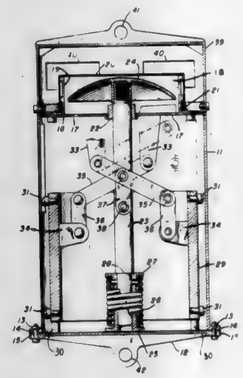
DUAL BUOYANCY DEVICE

Joseph Pignone, 16 Benvenue Ave., West Orange, N.J. 07052

Continuation-in-part of Ser. No. 893,266, Apr. 5, 1978, abandoned. This application Oct. 18, 1979, Ser. No. 86,173
Int. Cl.³ B63G *8/14*
U.S. Cl. 114—331 **7 Claims**

1. A dual buoyancy device alternately having a small and a large external dimension comprising,
(a) a chamber,
(b) an opening in the chamber,
(c) an elastic sheet affixed to and hermetically sealing the opening in the chamber,

(d) a thruster in the chamber normally gravitationally disposed in nondistending relation to the sheet,
(e) the thruster gravitationally movable when the chamber is inverted, to distend the sheet and to enlarge the external dimension of the chamber,
(f) the chamber, in sinking mode, with the sheet undistended,



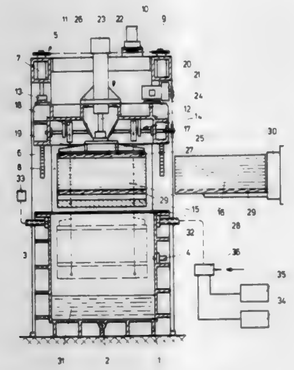
being normally externally dimensioned to displace a weight of liquid in which it is immersed, which weight of liquid is less than the weight of the chamber,
(g) the chamber, in floating mode, with the thruster distending the sheet to enlarge the external dimension of the chamber, being then dimensioned to displace a weight of liquid which is greater than the weight of the chamber.

4,286,540

APPARATUS FOR STRENGTHENING POROUS PLATES BY IMPREGNATION

Oskar Bernath, Umiken, Switzerland, assignor to Georg Fischer Brugg-Oehler AG, Switzerland

Filed Mar. 13, 1979, Ser. No. 20,246
Claims priority, application Switzerland, Apr. 4, 1978, 3595/78
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—50 **11 Claims**



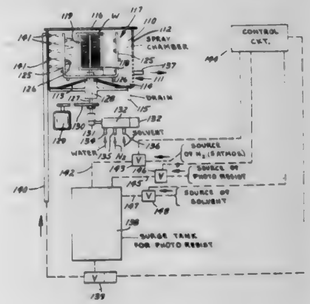
1. An apparatus for impregnating the edge areas of plates made of a porous material with a hardening fluid for strengthening and solidifying the edge areas comprising the combination of
a container for holding a body of hardening fluid;
a cover for said container, said cover being liftable and lowerable away from and toward said container between an open position and a closed position;
means for lifting and lowering said cover;
means for forming an airtight seal between said cover and container when closed;
a support frame attached to said cover for supporting from below a stack of plates to be treated;
means for lifting and lowering said support frame with a stack of plates to be treated supported therein relative to said cover between a first position above the hardening fluid and a second position submerged in the hardening fluid while said cover is sealed and to said container;
means carried by said cover for applying pressure to the top of said stack of plates; and
means coupled to said container for varying the pressure therein from a pressure substantially below atmospheric pressure to a presure at least as great as atmospheric pressure.

4,286,541

APPLYING PHOTORESIST ONTO SILICON WAFERS

Robert S. Blackwood, Chanhassen, Minn., assignor to FSI Corporation, Chaska, Minn.

Filed Jul. 26, 1979, Ser. No. 60,973
Int. Cl.³ B05C *5/00, 11/06, 11/08, 13/02*
U.S. Cl. 118—52 **3 Claims**



1. Apparatus for applying photoresist to silicon wafers in the manufacture of integrated circuit chips, comprising
enclosure means defining a closed chamber, the enclosure means including elongate peripheral walls and end walls traversing the peripheral walls and enclosing the chamber,
an upright rotor in the chamber and revolving about an upright rotation axis extending transversely through the end walls, the rotor having elongate molded plastic carrier means with vertically spaced wafer edge supports for supporting such silicon wafers to lie transversely of the rotation axis in spaced and confronting relation to each other along and substantially concentric of the rotation axis, the carrier means having unobstructed openings at the sides thereof and extending vertically along significant portions of the length of the peripheral walls, each of the openings having a vertical length in excess of the vertical spacing between a plurality of the wafer edge supports and the spaces therebetween and each of the openings having a horizontal width of the same order of magnitude as the horizontal spacing between adjacent wafer edge supports to provide ready access to the wafers carried on the supports, and plurality of vertically spaced and horizontally directed nozzles in the chamber and adjacent the rotor, the nozzles being arranged in an upright row oriented endwise of the rotor, and being directed toward the rotor and rotation axis, and confronting the openings at the sides of the enclosure means to spray directly across and onto the wafers on the rotor, and
a supply of photoresist connected to the nozzles for spraying

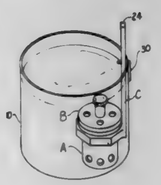
onto the wafers, and the supply of photoresist including a closed measuring tank, and a valved source of high pressure gas under a continuing plurality of atmospheres of pressure and connected to the tank, the valved source being open and applying the continuing plurality of atmospheres to blow the entire measured quantity of photoresist from the tank and through the nozzles for application to the wafers, the high pressure on the gas being significant and substantially in excess of the small variations in pressure in the liquid photoresist at the nozzles caused by the vertical spacing of the nozzles whereby to equalize the quantity of photoresist sprayed from the several nozzles onto various silicon wafers.

4,286,542

LIQUID IMMERSION APPARATUS FOR MINUTE ARTICLES

Jewell G. Belcher, Jr., and Ben R. Hollis, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 18, 1980, Ser. No. 171,933
Int. Cl.³ B05C *3/02*
U.S. Cl. 118—423 **4 Claims**



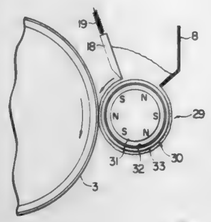
1. Apparatus for immersing minute integrated circuit chips in an etching solution comprising:
- a basket member having an open top and side and bottom walls;
- a plurality of minute fluid passages formed in said side and bottom walls of the said basket member;
- a removable lid member for enclosing said open top of said basket member having a plurality of minute fluid passages formed therein preventing air pockets in said basket during use;
- said fluid passages being dimensioned to retain said minute chips in said container against buoyancy and solution turbulence while allowing complete circulation of fluid through the interior of said basket and outwardly through said lid member;
- said basket and lid members being constructed of a non-corrosive frictional material and being dimensioned relative to one another affording a frictional fitting therebetween to provide a unitary structure whereby said lid member is retained on said basket member against fluid pressure during use;
- a holder member including an upstanding handle portion;
- basket support means carried adjacent one end of said handle portion for supporting and retaining said basket member for immersion; and
- said handle portion including a plurality of vertically spaced attachment means for adjustably securing said holder assembly to associated structure whereby said basket member is supported in said solution at a desired level therein.

4,286,543

APPARATUS FOR DEVELOPING ELECTROSTATIC IMAGE

Teruyuki Ohnuma, Yokohama; Seiichi Miyakawa, Nagareyama, and Hajime Oyama, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 8, 1979, Ser. No. 37,324
Claims priority, application Japan, May 16, 1978, 53-58083
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—657 **13 Claims**



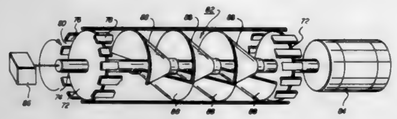
1. A development apparatus for developing a electrostatic image comprising:
- a developer applicator member having a conductive and elastic endless surface which bears a one-component type developer thereon,
- means for moving said developer applicator member at a slightly higher peripheral speed that that of a latent electrostatic image bearing member which bears a latent electrostatic image to be developed,
- a developer container for supplying said developer to said developer applicator member, and
- a blade electrode for charging said developer to a predetermined polarity, which is disposed in pressure contact with said developer on the surface of said developer applicator member.

4,286,544

CROSS-MIXING SYSTEM

John C. Witte, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 2, 1980, Ser. No. 136,625
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—657 **22 Claims**



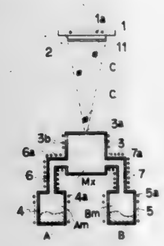
1. An apparatus for developing a latent image with developer material, including:
- a plurality of elongated magnetic members for attracting developer material thereto;
- means for movably supporting said magnetic members with adjacent magnetic members being spaced from one another and the longitudinal axes thereof substantially parallel to one another so that said magnetic members form the exterior circumferential surface of a cylindrical configuration defining an interior chamber with developer material passing between adjacent magnetic members to the interior chamber, said supporting means moving said magnetic members to transport developer material to the latent image so as to deposit developer material thereon; and
- means, mounted on said support means in the interior chamber of the cylindrical configuration defined by said magnetic members to move in unison therewith, for mixing the developer material passing between adjacent magnetic members.

4,286,545

APPARATUS FOR VAPOR DEPOSITING A STOICHIOMETRIC COMPOUND

Toshinori Takagi, Nagaokakyo; Kiyoshi Morimoto, and Hiroshi Watanabe, both of Mobara, all of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Continuation of Ser. No. 877,502, Feb. 13, 1978, abandoned.
This application Oct. 1, 1979, Ser. No. 80,219
Claims priority, application Japan, Mar. 10, 1977, 52-25494
Int. Cl.³ C23C *13/12*
U.S. Cl. 118—723 **2 Claims**



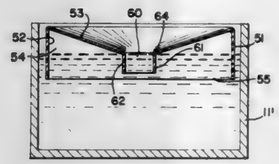
1. An apparatus for producing compounds from at least three substances, said apparatus comprising:
- one crucible for each of said substances, each of said crucibles adapted to hold one said substance;
- means for individually heating each said crucible and vaporizing said substances contained therein;
- a mixing chamber for heating and mixing said vapors to form a mixed vapor, said mixing chamber including heating means therefor;
- at least one injection hole in said mixing chamber for jetting said mixed vapor into a vacuum region;
- communication pipes connecting said mixing chamber to each of said crucibles, each said communication pipe including heating means in the vicinity of said mixing chamber and a nozzle portion having a narrowed diameter at the end of said pipe communicating with the inlet of said mixing chamber; and
- a substrate holder located in the vacuum region and in the path of said jetted vapor and adapted to hold a substrate on which are deposited clusters produced from said mixed vapor.

4,286,546

DOG WATERING DISH

Terry F. Moore, 550 Highland Dr., Danville, Calif. 94526

Filed Jan. 21, 1980, Ser. No. 113,770
Int. Cl.³ A01K *7/00*
U.S. Cl. 119—61 **16 Claims**



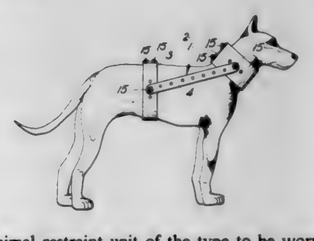
13. An anti-splash container for an animal comprising container means to retain a liquid for consumption by an animal, said container means having an open upper portion,
- a container closure for covering at least a portion of said opening of said container means to prevent splashing of the liquid from the container during consumption by an animal,
- said container closure having an access aperture means formed therein to permit penetration therethrough by an animal for access to the liquid retained in the container means, and
- said container closure having flange means about the outer peripheral edge thereof and said access aperture means which extend downwardly therefrom into a liquid contained within said container means to form an air entrapment chamber between said flange means to float said container closure on the surface of the liquid retained in said container means.

4,286,547

ANIMAL RESTRAINT UNIT

Robert E. Neubauer, 1032 N. Bend Rd., Cincinnati, Ohio 45224, and Gunther B. Niemann, 1136 Hampstead Rd., Cincinnati, Ohio 45231

Filed Jan. 28, 1980, Ser. No. 116,294
Int. Cl.³ A01K *15/04*
U.S. Cl. 119—96 **6 Claims**



1. An animal restraint unit of the type to be worn by the animal, said restraint unit comprising an adjustable collar mountable about the animal's neck, an adjustable waistband mountable about the animal's body just behind the rib cage and a pair of elongated, rectilinear, lateral pieces, said lateral pieces being pivotally and releasably connected at substantially diametric positions to said collar and to said waistband and extending therebetween along the animal's sides, said connections of said lateral pieces to said collar and to said waistband being adjustable to properly fit the animal, these portions of said lateral pieces extending between said collar and said waistband being of such length that said restraint unit prohibits the animal from twisting his body laterally for purposes of licking, biting or gnawing posterior portions thereof or for purposes of pawing or scratching anterior portions thereof with his hind paws.

4,286,548

GAS RECIRCULATION APPARATUS WITH INTEGRAL ASH HOPPERS

Leslie O. Brash, 8810 Concord Dr., Westfield Center, Ohio 44251

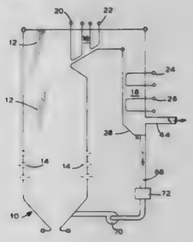
Filed Nov. 19, 1979, Ser. No. 95,918
Int. Cl.³ F22B *33/00*
U.S. Cl. 122—1 R **3 Claims**

1. An apparatus for receiving particulate entrained flue gas from a vapor generator and returning a portion of the flue gas for recirculation through the generator, the apparatus comprising:
- a. a plurality of spaced flow channels in flow communication with the flue gas being discharged from the generator;
- b. a plurality of plate members, each plate member being interposed between adjacent flow channels to define flow

passages therebetween, the plate members causing the flue gas to change direction and flow through the passages;

c. a conduit in flow communication with said flow passages for conducting out of the apparatus that part of the flue gas which is not recirculated, said conduit located on a side of the apparatus which faces away from the generator;

d. a plurality of ash hoppers disposed below the plate members for receiving particulate matter which precipitates out of the flue gas;



e. a flow space disposed so as to receive the flue gas which has passed through the channels and direct said gas to flow between the hoppers;

f. a recirculation duct situated below and on the same side of the apparatus as said conduit thereby facilitating access to the generator, said duct being in flow communication with the gas flowing between the hoppers, said duct providing egress for the recirculated gas out of the apparatus,

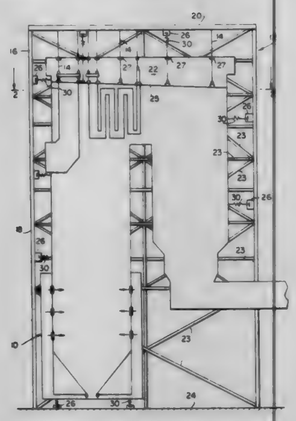
g. a multiplicity of gas turns within the apparatus producing a serpentine gas path between the discharge of flue gas from the generator and the recirculation duct.

4,286,549

STEAM GENERATOR SUPPORT SYSTEM

Frantisek L. Eisinger, Demarest, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Dec. 3, 1979, Ser. No. 99,677
Int. Cl.³ F22B *37/24*
U.S. Cl. 122—510 **7 Claims**



1. An apparatus for top-supporting a steam generator from a base, said steam generator including relatively flexible front, side and rear walls, a roof and a floor and having a low natural frequency, said apparatus comprising:

(a) a frame including a laterally extending member disposed above said steam generator and spaced vertically from said steam generator; and a plurality of upstanding members connected at respective upper ends to said laterally extending member and at respective lower ends to said base;

(b) means for connecting said steam generator to said laterally extending member; and

(c) means for connecting said steam generator to said upstanding members, said means including a plurality of dampers disposed at a plurality of elevations along the height of said steam generator, adapted to react to lateral displacement of said upstanding members and arranged to absorb forces resulting from lateral displacement of said frame, and a plurality of springs, said dampers arranged such that at least one of said springs is serially connected to a respective one of each of said dampers, said springs and dampers together defining combination spring-dampers connected between said steam generator and said upstanding frame members, whereby said spring-dampers absorb and dissipate energy transmitted during displacement of said frame toward said upstanding members such that stressing of said frame and said steam generator due to said displacement is lessened.

6. In a method of top-supporting from a base a steam generator including relatively flexible front, rear and side walls, a floor and a roof and having a low natural frequency, said method being of the type wherein said steam generator is hung from a frame, said frame including a laterally extending member adjacent the top of said steam generator and a plurality of upstanding frame members connected between said base and said laterally extending members, the improvement comprising the steps of:

(a) disposing a plurality of dampers at a plurality of elevations along the height of said steam generator, said dampers being adapted to react to lateral displacement of said upstanding members and located between said steam generator and said upstanding frame members, and

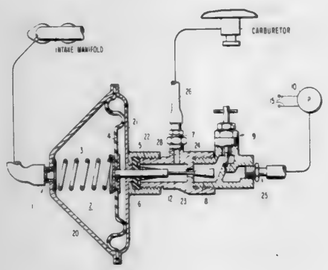
(b) connecting said dampers between said steam generator and said upstanding frame members and connecting springs between said steam generator and said frame members, each of said springs being serially connected to respective ones of said dampers, each spring and damper together forming a combination spring-damper connected between said steam generator and said upstanding frame members, whereby said spring-dampers will absorb and dissipate energy transmitted from said frame through said upstanding members toward said steam generator such that stress of said frame and said steam generator by movement of said frame is lessened.

4,286,550

FUEL ADDITIVE INJECTION DEVICE

Arlin C. Lewis, Box AU, Libby, Mont. 59923

Filed Apr. 13, 1979, Ser. No. 30,047
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—25 L **3 Claims**



1. A device for injecting a fuel additive into the intake system of an automotive engine, the amount of fuel additive injected being dependent upon engine load conditions, comprising in combination:

a vacuum chamber, said chamber being adapted to be operatively connected to a source of vacuum in an intake manifold of said engine;

a movable diaphragm, said diaphragm forming one wall of said chamber such that said diaphragm moves in response to changes in pressure in said chamber;

a bias spring in said chamber urgining said diaphragm in one direction;

a control rod connected to said diaphragm on the side thereof opposite said chamber;

an adjustable inlet passage for supplying a fuel additive fluid;

a pump for delivering said fuel additive under pressure;

a flow control passage in fluid communication with said inlet passage for supplying additive into said intake system;

a tapered valve seat formed within said flow control passage, said control rod extending through an aperture in said valve seat;

a fixed valve control member coupled to said control rod and disposed relative to said valve seat to engage therewith and comprising a flared portion which uniformly increases in diameter in a direction away from said chamber to match the taper of said valve seat, wherein changes in pressure in said chamber move said control rod and said valve control member to control the flow of said additive through said flow control passage;

a second flow control passage connected in series with said first-mentioned flow control passage and joined thereto by a mixing chamber;

a second inlet passage connected to said second flow control passage for supplying a second fuel additive fluid;

a second tapered valve seat formed within said second flow control passage;

a second flared valve control member coupled to said control rod in series with said first flared control member and positioned in said mixing chamber relative said second valve seat;

said first flared control member positioned in said mixing chamber in a back-to-back relationship with said second flared control member;

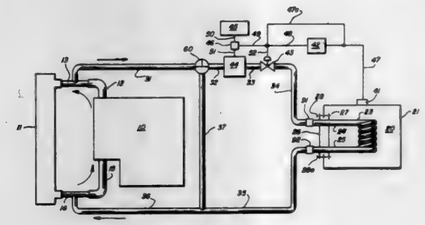
wherein a decrease in pressure in said chamber decreases the flow of said first-mentioned fuel additive fluid while simultaneously increasing the flow of said second fuel additive fluid and an increase in pressure in said chamber increases the flow of said first-mentioned fuel additive fluid while simultaneously decreasing the flow of said second additive fluid.

4,286,551

TEMPERATURE CONTROL SYSTEM FOR AUTOMOTIVE STORAGE COMPONENTS

James E. Blitz, 2832 Ross St., Highland, Ind. 46322

Filed Jan. 28, 1980, Ser. No. 115,996
Int. Cl.³ F01P *1/06, 3/12*
U.S. Cl. 123—41.31 **7 Claims**



1. A system for controlling the temperature of the contents of a storage vessel integral with an automotive transport system, said automotive transport system including a fluid-cooled internal combustion engine, during periods when said internal combustion engine is not in operation, comprising:

(a) a storage tank, having two end sections;

(b) a generally coiled length of pipe, having two end sections, disposed within said tank, each pipe end section sealably inserted through a common tank end section, and fitted, externally to said tank end section, to receive conduit couplings;

(c) two conduit means, each having two ends, each coupled at a first end to a respective pipe end section, the first conduit means having interposed along its length heating and pumping means and coupled at a second end to an inlet fluid coolant line, the second conduit means coupled at a second end to an outlet fluid coolant line, said fluid coolant lines being normally in communication with the internal combustion engine;

(d) temperature sensing means attached to said storage tank;

(e) valve means, inserted in the first conduit means, operable responsively to the temperature sensing means;

(f) an external electrical power source for operating said heating and pumping means and valve means;

(g) a three-way cut-off valve positioned at the junction of said inlet fluid coolant line, and said second end of said first conduit means; and

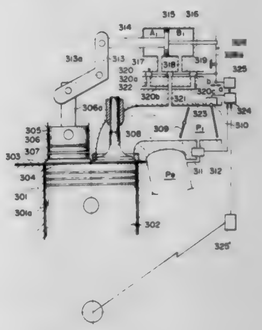
(h) by-pass conduit means connecting the cut-off valve to the outlet fluid coolant line; whereby the fluid coolant can be optionally diverted from passage through the internal combustion engine, heated and pumped in response to the power source and temperature sensing means through at least the respective pipe coils and conduit means, to control and maintain the temperature of the contents of the storage vessel.

4,286,552

VARIABLE COMPRESSION RATIO INTERNAL COMBUSTION ENGINE

Saburo Tsutsumi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 9, 1979, Ser. No. 10,918
Claims priority, application Japan, Feb. 10, 1978, 53-14308
Int. Cl.³ F02B *75/36*
U.S. Cl. 123—48 AA **3 Claims**



1. A reciprocating piston internal combustion engine having an engine cylinder, comprising:

a piston reciprocally movable disposed in the cylinder to define a combustion chamber between a crown of said piston and a cylinder head;

means for varying the clearance volume of the combustion chamber, when actuated; said varying means including a small cylinder formed in the cylinder head, and a small piston in said small cylinder, the crown of said small piston defining a space in the small cylinder, said space forming part of the combustion chamber, said small piston being smaller in diameter than the engine cylinder;

means for detecting the charging efficiency of a charge inducted into the combustion chamber, said detecting means including means for determining the charging efficiency by sensing the amount of fluid to be charged into the combustion chamber and sensing an engine operating parameter, said determining means including an air flow sensor for sensing the flow amount of fluid to be inducted into the combustion chamber, an engine speed sensor for sensing engine speed, and EGR gas flow sensor for sensing the flow amount of EGR gas passing through an EGR passage connecting an intake passage and an exhaust passage through which exhaust gas from the combustion chamber is discharged out of the combustion chamber, and a control circuit for determining the charging efficiency in accordance with the information signals from said air flow sensor, said engine speed sensor and said EGR gas flow sensor to generate command signals,

means for modifying intake vacuum in accordance with the charging efficiency detected by said detecting means, said modifying means being operated in response to the command signals from said control circuit of said detecting means; and

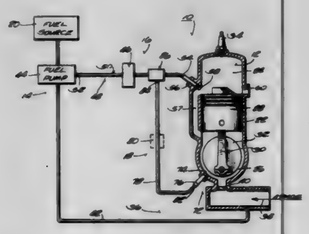
means for controllably actuating said varying means in response to the modified intake vacuum by said modifying means, said actuating means including a hydraulic piston slidably disposed in a cylinder to separate the interior of the cylinder into first and second chambers, the first and second chambers being communicable with an intake passage through which intake air is inducted into the combustion chamber in order that the first and second chambers are selectively supplied with intake vacuum in the intake passage, and a connecting mechanism for so connecting said hydraulic piston with said small piston that the volume of said space in said small cylinder varies with the movement of said hydraulic piston.

4,286,553

INTEGRATED FUEL PRIMER AND CRANKCASE DRAIN SYSTEM FOR INTERNAL COMBUSTION ENGINE

Gene F. Baltz, Lake Villa, and Chester G. DuBois, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 25, 1979, Ser. No. 60,285
Int. Cl.³ F02M *1/16*; F02B *33/04*
U.S. Cl. 123—187.5 R **25 Claims**



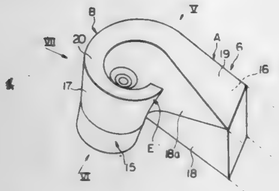
1. An engine comprising a combustion chamber, a crankcase extending from said combustion chamber, first fuel delivery means communicating with said combustion chamber and adapted for connection to a fuel source, said first fuel delivery means being operative for introducing fuel from the fuel source into said combustion chamber, second fuel delivery means communicating with said combustion chamber and adapted for connection to a fuel source, said second fuel delivery means being operative for introducing fuel into said combustion chamber in addition to the fuel introduced by said first fuel delivery means, collector means communicating with said crankcase for accumulating residual fuel from said crankcase, third fuel delivery means communicating with said collector means and said combustion chamber and operative for supplying residual fuel from said collector means to said combustion chamber, first control means connected to said second fuel delivery means for selectively operating said second fuel delivery means to introduce fuel into said combustion chamber, and second control means connected to said second fuel delivery means and said third fuel delivery means for blocking the supply of residual fuel by said third fuel delivery means during operation of said second fuel delivery means to introduce fuel into said combustion chamber.

4,286,554

INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Takamitsu Okamoto, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 30, 1979, Ser. No. 71,372
Claims priority, application Japan, Jun. 25, 1979, 54-79039
Int. Cl.³ F01L *3/00*
U.S. Cl. 123—188 M **10 Claims**



1. An internal combustion engine comprising a cylinder head partially defining a combustion chamber, said cylinder head comprising at least one helically-shaped intake port to direct intake gas to said chamber, said intake port comprising a helical portion having an open outlet end and an intake valve arranged at said outlet end, said helical portion being defined by an upper wall and a peripheral side wall which extends circumferentially about the axis of said intake valve, and a substantially straight inlet passage portion tangentially connected to said helical portion and having an open inlet end, said inlet passage portion being defined by an upper extension of said upper wall, a bottom wall, a first side wall located near the axis of said intake valve, and a second side wall arranged at a position more remote from the axis of said intake valve than the first side wall and connected to the peripheral side wall of said helical portion, said first side wall comprising a portion sloped inwardly toward said second side wall, said side wall increasing in width toward said helical portion and intersecting said upper wall closer to said second side wall in a region closer to said helical portion than in a region closer to said inlet end to reduce the cross-sectional size of the inlet passage portion adjacent to said helical portion and to deflect at least part of said gas toward said combustion chamber; and an intake manifold comprising a manifold inlet portion and a substantially straight manifold outlet portion connected to, and in line with, the inlet end of said inlet passage portion, the ratio of the sum of the length of said inlet passage portion and the length of said manifold outlet portion to the cross-sectional area of said inlet end being above 0.7 cm^{-1}.

4,286,555

ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rte. 2, Box 44, Bandera, Tex. 78003

Continuation-in-part of Ser. No. 956,206, Oct. 30, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 30,993
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—228 **3 Claims**

1. A rotary internal combustion engine having a four-phase cycle of intake, compression, expansion, and exhaust in each revolution of the engine shaft, said engine comprising:

a stator with a cylinder bore enclosed between end walls;

a power shaft in bearings journaled in said end walls and concentric with said cylinder bore;

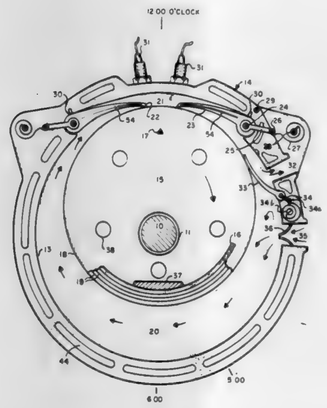
an eccentric annular rotor keyed to said power shaft and positioned approximately midway between said end walls;

an annular piston coextensive with said end walls fitted on said eccentric rotor and concentric therewith, said piston and said rotor having a common eccentric head with said piston head making tangential sealing engagement with said cylinder substantially throughout said cycle;

a first abutment having a first end pivotally secured to said stator near 10:00 o'clock and a second end free to project clockwise into said cylinder space far enough to make tangential, sealing engagement with the face of said piston in all positions of said piston;

a second abutment having a first end pivotally secured to said stator near 2:00 o'clock and a second end free to project counter clockwise into said cylinder space, means for maintaining sealing engagement of said second abutment with the face of said piston and means for removing said sealing engagement when the piston is near the 5:00 o'clock position;

both first and second abutments making sliding, sealing



engagement with both of said end walls and said piston to form a combustion-expansion chamber for confining a fuel charge throughout an expansion stroke and exerting pressure against said piston to cause said eccentric rotor to rotate;

a combustion chamber comprising a shallow arcuate cavity in said stator centered near 12:00 o'clock and opening into and combining with said expansion chamber;

a suction chamber and a compression chamber, said suction chamber being the space behind said traveling piston head and said compression chamber being the space forward of said traveling piston head;

an air inlet port in said stator positioned in the vicinity of 3:00 o'clock, said port fitted with a one-way valve to admit air into said suction chamber as movement of said piston head generates a suction;

means for injecting a charge of fuel into said combustion chamber and means for firing said fuel charge in timed relation to the position of said piston head;

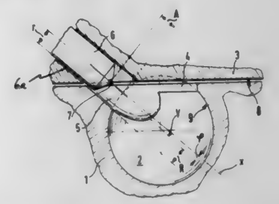
exhaust means for expelling spent gases from said combustion-expansion chamber at the end of the power stroke, said exhaust means positioned after 2:00 o'clock and before 3:00 o'clock in said stator.

4,286,556

ARRANGEMENT FOR AIR-COMPRESSING DIRECT-INJECTION INTERNAL COMBUSTION ENGINES

Alfred Neitz, Röthenbach; Hans Pickel, and Nunzio D'Alfonso, both of Nuremberg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 79,155
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842457
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—279 **2 Claims**



1. An arrangement for air-compressing, direct-injection internal combustion engine having means for the ignition of fuel for said engine, at least one piston and a pertaining cylinder having a pertaining cylinder head, said arrangement comprising:

a combustion chamber provided in said at least one piston, said combustion chamber having the shape of a body of rotation with a predetermined maximum diameter, having a constricted throat, and being adapted to accommodate movement of air therein about its longitudinal central axis;

injector means operatively connectible to said engine for injecting a fuel adapted to form a film on the wall of said combustion chamber in one of the upper speed and load ranges of said combustion engine while at engine idling and in one of the lower speed and load ranges an at least nearly complete direct fuel-air mixing occurs, whereby the fuel injection pressure is maintained at least nearly constant at the injector means fuel outlet over the full operating range of said engine; and

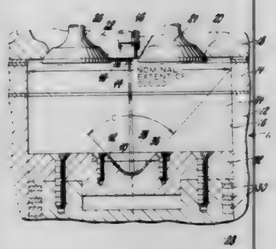
means for communicating said injector means and said combustion chamber with one another, said means including a recess in said at least one piston, the point of intersection of the longitudinal central axis of a stream of fuel being emitted by said injector means with that plane of the pertaining cylinder head which limits the upward movement of said at least one piston being positioned within an imaginary circle the center of which is coincidental, when viewed in plan and when said at least one piston is in its upper to center position, with the center of said greatest diameter of said body of rotation on that plane which contains said greatest diameter and is parallel to said plane of the pertaining cylinder head which limits the upward movement of said at least one piston, said imaginary circle having at most a 10% greater diameter than said greatest diameter of said combustion chamber, with the injector means fuel outlet being adapted to be located at a distance from said combustion chamber in said communicating means, said distance corresponding to up to about 30% of the greatest diameter of said body of rotation, said recess being a semicircular recess arranged in said constricted throat of said combustion chamber, with the longitudinal central axis of said recess extending at an angle of from about 3° to about 15°, with the selected angle having its apex at said injector means fuel outlet, with one line defining said angle being said longitudinal central axis of a jet of fuel and the other line defining said angle being the longitudinal central axis of said recess and having a steeper inclination than that longitudinal central axis of a jet of fuel.

4,286,557

TARGET INJECTION STRATIFIED CHARGE SPARK IGNITION ENGINE

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 21, 1979, Ser. No. 77,842
Int. Cl.³ F02B *17/00*
U.S. Cl. 123—298 **3 Claims**



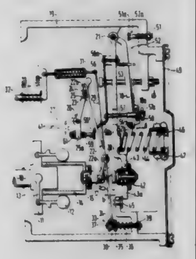
1. A stratified charge spark ignition internal combustion engine having at least one closed end cylinder with a piston reciprocable therein, the piston having a closed end wall opposing and defining with the cylinder closed end a variable volume combustion chamber, intake and exhaust means connecting with the combustion chamber, a fuel injection nozzle carried in the closed end of the cylinder and arranged to spray a jet of fuel against the piston closed end near the cylinder central axis, and a target recess at the piston end wall and forming a surface of revolution about an axis nominally aligned with the fuel spray jet, said target recess being configured to receive the fuel jet centrally thereof and to spread and redirect the fuel around and away from the axis in a spray generally centered within the combustion chamber to form a richcore stratified fuel-air charge upon mixture with an air charge in the chamber, and a spark plug disposed in the combustion chamber within the rich core zone of the stratified charge.

4,286,558

CENTRIFUGAL RPM GOVERNOR FOR FUEL INJECTED INTERNAL COMBUSTION ENGINES, ESPECIALLY AN IDLING AND FINAL RPM GOVERNOR FOR DIESEL VEHICLE ENGINES

Ilija Djordjevic; Ernst Ritter, both of Stuttgart, and Thomas Lang, Schwäbisch Hall, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,584
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1979, 2900198
Int. Cl.³ F02D *1/04*
U.S. Cl. 123—368 **11 Claims**



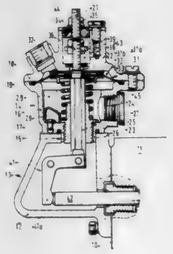
1. A centrifugal rpm governor for fuel injected internal combustion engines including a housing, comprising an intermediate lever which is coupled with the supply quantity adjustment member of the injection pump which is engaged by both a control member moved by means of flyweights in accordance with rpm and a setting member which is pivotable for the purpose of arbitrary variation of the supply quantity, said governor further including a force transmitting lever which contacts a fixed stop attached to the housing, under the prestressing force of a main control spring, with which said force transmitting lever the control member comes into effective contact after covering an idling sleeve path against the force of an idling spring, further wherein said force transmitting lever is provided with an additional idling spring, further wherein the force of said additional idling spring is made partially ineffective by a thrust member that cooperates with said setting member when said setting member is pivoted by means of a service lever about a pivotal axis to advance to a full-load position, said thrust member comprising an adjustable thrust screw that is positioned securely on said setting member at a radial distance (c) from said axis of said service lever.

4,286,559

PNEUMATIC DIAPHRAGM CONTROL MEMBER FOR A FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Ernst Ritter; Reinhard Schwartz; Rolf Müller, and Martin Böhm, all of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,665
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837964
Int. Cl.³ F04B *49/00*
U.S. Cl. 123—383 **4 Claims**



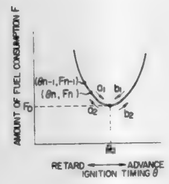
1. An adjustable pneumatic diaphragm control member for a fuel injection device for an internal combustion engine comprising:
- a housing for connection with a fuel injection pump;
- a control member connected with said housing;
- a cover secured to said control member;
- a control diaphragm clamped between said control member and said cover thereby separating the area within said cover from the area within said control member;
- an axially adjustable bushing secured in said control member on the side thereof which is connected to said housing;
- a push rod coaxially secured to said control diaphragm at one end and extending through said adjustable bushing into said housing;
- a resetting spring coaxially with said push rod and said bushing and situated between a shoulder on said bushing and said control diaphragm for forcing said diaphragm upwardly; said resetting spring being adjustable by rotation of said bushing in said control member;
- a push rod extension secured to one end of said push rod in axial alignment with said push rod and extending from said control diaphragm into said cover,
- an axially adjustable stop member adjustably secured in said cover in axial alignment with said push rod extension which coacts with said push rod extension for adjustment of the upward movement of said diaphragm,
- an adjustable counter-stop means coaxially secured on said push rod extension and adjustable axially along said push rod extension,
- an end stop means rigidly mounted in said cover adjacent to said control diaphragm, said end stop means coacting with said adjustable counter stop to stop the downward movement of said diaphragm against said resetting spring when said counter stop contacts said end stop spring,
- inlet means in said cover for admitting pneumatic pressure into said cover above said control diaphragm, and
- a means secured in said housing with one end relative to said push rod for operating a control rod of an injection pump in accordance with pneumatic pressure admitted through said inlet means above said control diaphragm.

4,286,560

METHOD AND APPARATUS FOR CONTROLLING AN IGNITION TIMING

Yasuo Sagisaka, Kariya; Toshio Kondo, Anjo, and Akio Kobayashi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 26, 1980, Ser. No. 134,335
Claims priority, application Japan, Mar. 28, 1979, 54-36470
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—417 **9 Claims**



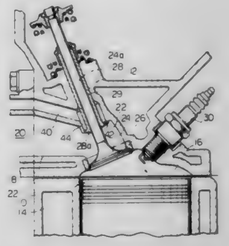
1. An apparatus for controlling a timing of ignition spark to be supplied to ignite a mixture of air and fuel supplied to an internal combustion engine comprising:
- means for sensing operating conditions of said engine;
- means for sensing an amount of fuel supplied to said engine;
- means for storing, in a nonvolatile manner, a group of correction values in respective addressable storage locations;
- means for computing a timing of ignition spark, so that a fuel efficiency relative to the output torque of said engine is maximized, said computing means including:
- means for determining a basic timing of an ignition spark in accordance with said operating conditions sensed currently;
- means for discriminating whether said operating conditions sensed currently are close to or apart from said operating conditions sensed precedingly, said discriminating means providing first and second outputs respectively indicating that the former is close to or apart from the latter;
- means for discriminating, in response to said first output, whether said amount of fuel sensed currently in larger or less than said amount of fuel sensed precedingly,
- means for determining a new correction value in accordance with the discrimination result of said latter discriminating means and with one of said correction values stored in one of said storage locations addressed in correspondence with said operating conditions sensed currently, said new correction value being more effective to maximize said fuel efficiency than said one of said correction values is and being stored in said one of said storage locations in place of said one of said correction values, and
- means for correcting said basic timing of ignition spark by said new correction value, said correcting means correcting the same by another one of said correction values stored in another one of said storage locations addressed in correspondence with said operating conditions sensed currently in response to said second output; and
- means for supplying said engine with an ignition spark at said corrected timing of ignition spark.

4,286,561

INTERNAL COMBUSTION ENGINE INTAKE SYSTEM HAVING JET-PRODUCING NOZZLE IN INTAKE PORT

Saburo Tsutsumi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 20, 1978, Ser. No. 961,924
Claims priority, application Japan, Nov. 21, 1977, 52-155360[U]
Int. Cl.³ F01N *3/10*
U.S. Cl. 123—432 **7 Claims**



1. An intake system of an intenal combustion engine, comprising: an induction passage, an intake port as an endmost portion of said induction passage adjoining a combustion chamber of the engine, a throttle valve installed in said induction passage upstream of said intake port, an intake valve for periodically establishing communication between said intake port and said combustion chamber according to the engine cycle, said intake valve having a stem extending through said intake port and slidably passing through a cylindrical valve guide fixedly inserted into a cylinder head, a fuel nozzle opening into said induction passage at a section upstream of said intake valve, an auxiliary induction passage arranged to induct a gas into said intake port by the action of vacuum created in said intake port, at least a terminal portion of said auxiliary induction passage being formed in said cylinder head, said guide member defining a nozzle which serves as the terminal of said auxiliary induction passage and as a valve member for controlling admission of auxiliary gas and opens into said intake port at a location close to an end of said valve guide to jet said gas into said intake port in a direction towards said combustion chamber, said auxiliary induction passage extending to said nozzle without entering the inside of said valve guide, an endmost portion, which is adjacent said nozzle, of said terminal portion of said auxiliary induction passage being in the form of a generally annular passage the inside of which is defined by a cylindrical outer surface of said valve guide, upstream of said generally annular passage said auxiliary induction passage being distant from said valve guide.

4,286,562

ENGINE CHARGE FORMING APPARATUS

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1979, Ser. No. 18,434
Int. Cl.³ F02M *39/00, 69/04*
U.S. Cl. 123—454 **4 Claims**

1. Charge forming apparatus for an engine having an induction passage, including parallel throttle bore and bypass portions each opening from an air inlet to a manifold and a throttle in said throttle bore portion between said inlet and said manifold for varying the effective area of said induction passage, wherein the rate of air flow for any selected position of said throttle and for an established pressure in said inlet varies substantially uniformly with the pressure in said manifold

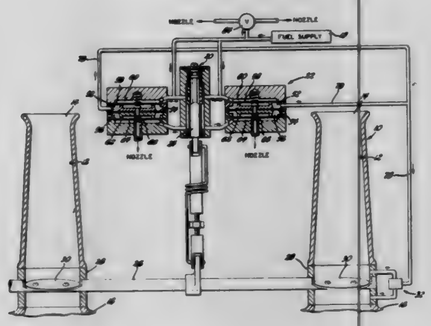
when the manifold pressure is greater than about one-half the inlet pressure and wherein the air flow rate does not vary uniformly with the manifold pressure when the manifold pressure is less than about one-half the inlet pressure, and also having means for delivering fuel through a fuel passage to a pair of fuel nozzles, said apparatus comprising:

means in said bypass portion for creating a pressure signal which varies substantially uniformly with the air flow rate both when the manifold pressure is less than about one-half the inlet pressure and when the manifold pressure is greater than about one-half the inlet pressure,

a hollow cylindrical sleeve having a pair of symmetrically disposed helical slots defining a pair of metering orifices in said fuel passage respectively opening to said nozzles,

a metering rod disposed in said sleeve, said rod having a cylindrical outer surface and a pair of symmetrically disposed beveled end surfaces which intersect said outer surface along curved lines that overlie said slots,

means interconnecting said throttle and said rod for moving said rod axially in said sleeve to traverse said lines along said slots and thereby provide fuel metering orifice areas substantially proportional to the air flow area of said induction passage,



a pressure regulator controlling fuel flow through said fuel passage to said nozzles for maintaining the pressure difference across said metering orifices substantially proportional to said pressure signal,

means adapted for adjusting the position of said rod relative to the position of said throttle and thereby axially adjusting the position of said rod in said sleeve to establish the minimum fuel flow rate through said passage to said nozzles and further adapted for rotationally adjusting the position of said rod in said sleeve to establish the maximum fuel flow rate through said passage to said nozzles,

whereby fuel flow through said fuel induction passage is controlled substantially in proportion to air flow through said air induction passage,

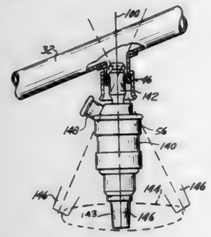
and means for modifying said pressure signal in response to selected engine operating conditions to create a modified pressure signal which differs from the inlet pressure by an amount that also is substantially proportional to the square of the air flow rate both when the manifold pressure is less than about one-half the inlet pressure and when the manifold pressure is greater than about one-half the inlet pressure, whereby the proportion of fuel flow to air flow may be varied during selected engine operating conditions.

4,286,563

FUEL RAIL FOR AN ENGINE

Magdi M. Fahim, Rochester; Victor J. Nowak, Royal Oak, and Nagui R. Matta, Huntington Woods, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 19, 1979, Ser. No. 21,663
Int. Cl.³ F02M *55/00*; B02B *1/14*
U.S. Cl. 123—469 **3 Claims**



1. An apparatus for delivering fuel to at least one fuel injector of an engine comprising:

fuel rail means of unitary construction including a fuel carrying conduit for receiving fuel input thereto and for distributing the fuel to the at least one injector;

a connector affixed directly to and in fluid communication with said fuel rail means and the at least one fuel injector, one associated with each injector having receiving means for telescopically and swivelably receiving a portion of the at least one injector and attachment means for connecting said receiving means to said fuel rail means;

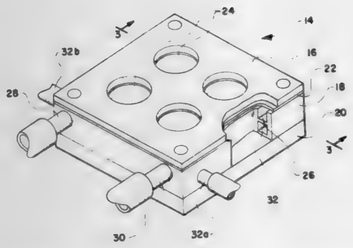
said receiving means including a base end having a passage therein, rigidly affixed to said fuel rail means, an open end opposite thereto and a wall joining said base end to said open end, said receiving means further incuding an o-ring adapted to seat upon said base end, wherein said wall is sized to loosely receive an end of the at least one injector and wherein said o-ring provides a fluid tight seal between said wall and the received end of the at least one injector and provides a vertex for permitting the pivoting motion of the at least one injector relative to said wall.

4,286,564

SYSTEM FOR PREHEATING FUEL

Richard Van Tuyl, Rte. 1, Box 81, Pikeville, N.C. 27863

Filed Nov. 21, 1979, Ser. No. 96,536
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—545 **9 Claims**



1. A system for improving performance and fuel economy of an internal combustion engine having a carburetor for directing an air-fuel mixture to the engine, a fluid cooling system for cooling said engine, and a fuel supply line for directing fuel from the fuel pump to said carburetor, said system comprising: a heat exchanger plate assembly mounted between; said engine and said carburetor and including opening means therein for

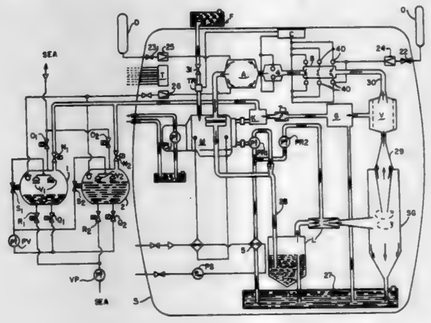
allowing the air-fuel mixture from the carburetor to pass therethrough into the engine; said heat exchanger plate assembly having a wall extending generally around said opening means; a first compartment formed in said exchanger plate assembly and disposed generally exteriorly of said opening means and extending therearound, said first compartment having an inlet and an outlet operatively connected to said engine cooling system for circulating relatively hot coolant fluid through said first compartment, thereby transferring heat from the engine coolant fluid to the exchanger plate assembly and to the air-fuel mixture passing through said opening means formed within said exchanger plate assembly; a second compartment formed in said exchanger plate assembly generally exterior of said opening means and which generally extends around said opening means; said second compartment lying adjacent said first compartment such that heat associated with the coolant fluid passing therethrough may be readily transferred to said second compartment; inlet and outlet means associated with said second compartment and operatively connected to said fuel line for routing fuel through said secondcompartment prior to its entry into said carburetor such that heat associated with said engine coolant fluid passing in said first compartment may be transferred to the gas being routed through said second compartment, whereby the heat from said engine coolant fluid acts to not only heat the gas prior to entry into the carburetor but also heats the final air-fuel mixture passing from the carburetor.

4,286,565

ENGINE CONTROL INSTALLATION

Giunio G. Santi, Milan, Italy, assignor to S.S.O.S. Sub Sea Oil Services S.p.A., Milan, Italy

Filed Jul. 30, 1979, Ser. No. 61,992
Claims priority, application Italy, Aug. 4, 1978, 26473 A/78; Feb. 9, 1979, 20060 A/78 1978.
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **1 Claim**



1. An internal combustion engine installation wherein said engine has an intake for receiving an oxidizible fuel and a gas intake for receiving an oxidizing fuel gas and an exhaust at which the products of combustion, including carbon dioxide gas, are discharged along with some unburned oxidizing fuel gas, said installation including

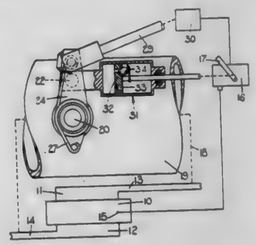
closed circuit conduit means interconnecting said exhaust and said gas intake for receiving said gases at said exhaust and for feeding back a portion of said received gases to said gas intake, said conduit means including centrifugal separator means for dividing said received gases into two partial streams, one of which has a higher concentration of O_2 than did the received gases and the other of which has a higher concentration of CO_2 than did the received gases, said conduit means delivering said one partial stream to said gas intake.

4,286,566

ENGINE SYSTEM

William S. May, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 14, 1980, Ser. No. 139,900
Claims priority, application United Kingdom, Jun. 8, 1979, 19984/79
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **4 Claims**



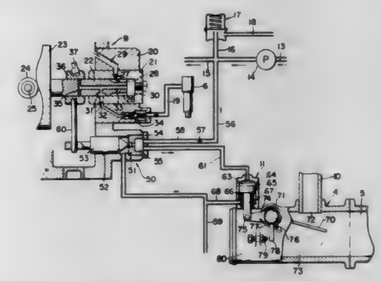
1. An engine system comprising a compression ignition engine, a fuel pump for supplying fuel to the engine in timed relationship therewith, a manually operable control member for controlling the rate at which fuel is supplied by the pump in use, conduit means through which exhaust gases can flow from the engine exhaust to the air inlet thereof, valve means for controlling the flow of exhaust gas through said conduit means, control means for determining the setting of said valve means whereby in use, as the rate at which fuel is supplied to the engine increases the quantity of exhaust gas passing to the air inlet is reduced, and means operable upon movement of said control member in a direction to increase fuel, to effect immediate operation of said valve means to reduce the amount of exhaust gas flowing to the air inlet.

4,286,567

EXHAUST GAS RECIRCULATION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Tatehito Ueda, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 27, 1979, Ser. No. 107,519
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **6 Claims**



1. In a diesel engine, comprising an exhaust system, an inlet system, and an exhaust gas recirculation system, a device which is the combination of:

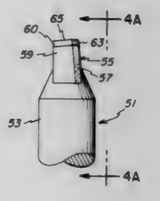
a fuel injection pump which comprises a movable fuel amount determining element, the position of which regulates the amount of fuel provided for injection by the fuel injection pump;

a conversion device, comprising:

a fixed orifice, to the upstream side of which is supplied a substantially constant fluid pressure;

a fluid passage downstream of the fixed orifice;
a pressure takeoff passage branching from the fluid passage; and
a variable orifice downstream of the fluid passage whose effective opening area is varied according to the movement of the fuel amount determining element;
fluid flowing from the upstream side of the fixed orifice through it, through the fluid passage, and through the variable orifice, in that order, the pressure of fluid at the point where the pressure takeoff passage branches from the fluid passage varying according to the position of the fuel amount determining element;
an exhaust gas recirculation control valve, which controls the amount of exhaust gas recirculated from
the exhaust system to the inlet system through the exhaust gas recirculation system; and,
an actuator, which is energized by the fluid pressure supplied through the pressure takeoff passage, and operates the exhaust gas recirculation control valve.

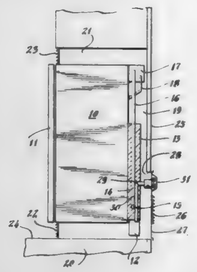
4,286,568
TOOL FOR TRUEING AND DRESSING A GRINDING WHEEL
Rangachary Komandure, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 26, 1979, Ser. No. 78,941
Int. Cl.³ B24B *53/12*
U.S. Cl. 125—11 R **5 Claims**



1. A tool for trueing and dressing a grinding wheel at a negative rake angle, having a dressing edge consisting essentially of a side dressing edge angle ranging between 30° and 75° wherein the side dressing edge is at least about 0.5 millimeter in length, an end dressing edge angle ranging between 5° and 30° wherein the end dressing edge is at least about 0.5 millimeter in length, and a straight secondary dressing edge of at least about one millimeter in length joining said side and end dressing edges, said dressing edge having a lip angle ranging from 90° to 120°, and said dressing tool comprising a tool shank and a polycrystalline compact mounted at one end of said shank, said compact comprising bonded crystals selected from the group consisting of diamond, cubic and wurtzite forms of boron nitride and mixtures thereof.

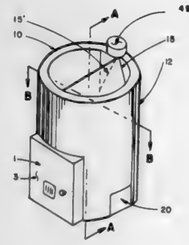
4,286,569
INTAKE AND DISCHARGE DUCT WITH EXTERNAL TERMINAL FOR A BURNER-OPERATED REFRIGERATOR
Ernst L. A. Bergman, Saltsjöbaden; Peter E. Blomberg, Stockholm; Lars S. Enger, Bandhagen; Bengt R. Reistad, Bromma, and Sonny O. Wallgren, Ekerö, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 4, 1980, Ser. No. 118,111
Claims priority, application Sweden, Feb. 2, 1979, 7900914
Int. Cl.³ F24C *3/00*; F25B *15/00*; B60H *3/04*
U.S. Cl. 126—85 B **4 Claims**

1. In an assembly with a burner-operated refrigerator in a house trailer or the like, said trailer being provided with a service door in an external wall of said trailer adjacent to said assembly, control devices for said refrigerator, a sealed combustion system in the interior of said trailer comprising a boiler pipe having insulation at least about a part thereof, an air intake in said trailer wall, an air conduit from said air intake to said burner, a flue pipe connected to said burner and having heat insulation thereabout, said flue pipe having a heat conductive connection for an associated part of the refrigerator in which refrigerant is expelled and conducted to a gas outlet through said wall of said trailer, the improvement comprising: at least a part of said flue pipe located above said connection on a level



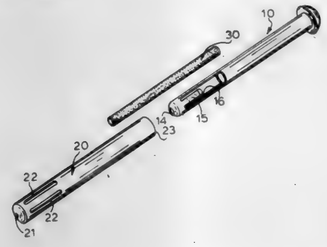
below the upper edge of the door provided with a portion that is bent and directed rearwardly out of said heat insulation and is connected to said gas outlet, an air conduit also located on a level below the upper edge of said door and provided with a bent part directed rearwardly and connected to said air intake, and wherein both said air intake and gas outlet are located in said door, and the top of said service door being below the top of said boiler insulation.

4,286,570
EFFICIENCY HEATER
Vesa M. Kuosmanen, 30 High St., Acton, Mass. 01720
Filed Mar. 30, 1978, Ser. No. 891,904
Int. Cl.³ F24H *3/00*
U.S. Cl. 126—99 R **3 Claims**



1. In a heater: a combustion chamber of tent-shaped configuration, a pair of joined and slanted walls on said combustion chamber, said combustion chamber extending the entire vertical height of heater, an outer jacket defining the outer configuration of said heater, the entire surface of each of said slanted walls presenting a medium of heat exchange throughout their entire exterior surfaces, cut away portions located in the base areas of said outer jacket to provide ingress for clean air at the base edge on each of said slanted walls, said base edges terminating at the lower limit of said outer jacket and adjacent to said openings, thereby presenting to the clean air entering immediate heating and immediate upward convection, additional heating surfaces for transmitting heat to the clean air, said means comprising an inner jacket located inside said outer jacket in the upper area of said heater and forming with said outer jacket a residual burning chamber, means for sealing the interior of said combustion chamber and the interior of said residual burning chamber from the clean air being heated, said last named means comprising: edges on said slanted walls, these edges being designated for convenience, a first edge, a second edge, and third and fourth edges, said first edge being an integral line throughout its length, and being secured throughout its length to the inner surface of said outer jacket and in sealed relationship therewith, said second edge having an upper segment cut away to form a shoulder and a lower segment, said lower segment being secured to the inner surface of said outer jacket and in sealed relationship therewith, each of said third and fourth edges having upper portions cut away, forming upper and lower segments, said last named upper segments being secured to said inner jacket and in sealed relationship therewith, said last named lower segments being secured to the inner surface of said outer jacket and in sealed relationship therewith.

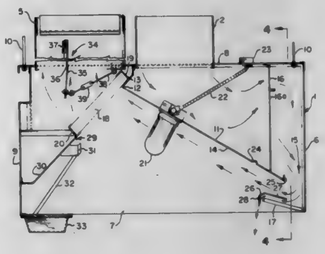
4,286,571
KENSHIN HEATING INSTRUMENT
David P. J. Hung, 229-03 64th Ave., Bayside, N.Y. 11364
Filed Mar. 10, 1980, Ser. No. 128,432
Int. Cl.³ A61F *7/08*
U.S. Cl. 126—206 **9 Claims**



1. A hand-held, non-electrically powered heating instrument, comprising:
a generally cylindrical, hollow, elongated, metallic first element having means for mounting a charge of burnable fuel therein and also having a plurality of air vents at one end thereof and an air inlet opening at the opposite end thereof;
a generally cylindrical, hollow, elongated, metallic second element having a substantially closed end and an opposite open end and a plurality of air vents formed substantially adjacent to said closed end thereof, said second element being configured and dimensioned to permit said first element to be releasably and telescopically received therein through said open end thereof, so that said air vents of both elements may communicate with one another, said first and second elements being slidable relative to one another in both a rotatable and longitudinal manner so as to permit regulation of the amount of air flowing through said air inlet opening and through said vents.

4,286,572
VENTILATING HOOD
James A. Searcy, Florissant; Roger O. Zoellner, Kirkwood, and Ronald C. Hoffmann, Maryland Heights, all of Mo., assignors to Cambridge Engineering, Inc., Chesterfield, Mo.
Filed Mar. 8, 1979, Ser. No. 18,725
Int. Cl.³ F21C *15/08*; F23J *11/00*
U.S. Cl. 126—299 D **9 Claims**

1. A fume ventilating hood for use in conjunction with a heating apparatus or the like for attaining ventilation in the region upwardly of such an apparatus and for removing its generated fumes, comprising, a housing, said housing having at least front and side walls, a top structural means for the housing, said top structural means comprising the top wall of the apparatus, a supply inlet communicating with said housing for conveying fresh air to the same, and an exhaust outlet also communicating with the housing for removing the combined air and fumes from the region above the apparatus, a diverter means for the housing and interconnecting between the said inlet and outlet and being uniformly singularly planar in configuration and useful for directing the incoming fresh air towards the front of the housing, a rear support for the housing and connecting in proximity with the said exhaust outlet, a shallow filter held by the said rear support, said diverter means being inclined in its positioning within the hood, with the upper end of said diverter means being located in proximity with the rear support, while the lower end of said diverter means being disposed proximate the front of the said housing, a diffuser means interconnecting between the top wall of the apparatus and the approximate lower segment of the diverter means, said shallow filter being substantially less than one half of the length of the diverter means, the upper end of the diverter means terminating within the region directly in front of the said filter so as to provide for the unencumbered flow of the accumulated air and fumes directly into the exhaust outlet without any obstruction other than that provided by the said filter, and a deflecting means connecting approximately at the lower front of the housing and spaced from the lower edge of the diverting means and useful for redirecting the diverted incoming air directly towards the outlet disposed filter in

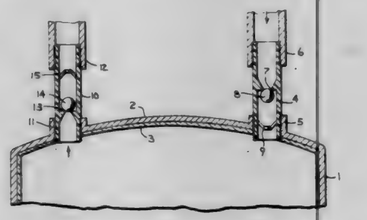


parallel flow with the underside of the uniformity singularly planar diverter means for creation of an air boundary layer therewith without generating any substantial vortexing of said air for its eventual exhausting of the now combined air and fumes from the said hood,
said deflecting means extends rearwardly from its connection with the lower end of the front wall and in a direction inclined substantially approximately towards the said filter, a second deflecting means arranged in proximity with the said first named deflecting means and forming an air space therebetween of substantially small dimensions than the space between the lower edge of the diverter means and said first deflecting means, said second deflecting means including a first part arranged substantially in parallel and upwardly of the first deflecting means, and a second integral part extending substantially downwardly for diverting a minor segment of air flowing therethrough in a direction downwardly of the hood, said second deflecting means being useful for directing said minor segment of the flowing air substantially downwardly for forming an inner shield in the front of the apparatus and for confinement of its heat thereby enhancing its attraction to the exhaust outlet of the hood.

4,286,573
WATER HEATER HEAT TRAP ASSEMBLY
Herbert W. Nickel, Germantown, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Continuation of Ser. No. 930,918, Aug. 4, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,082
Int. Cl.³ F24H *1/00*
U.S. Cl. 126—362 **4 Claims**

1. A heat trap assembly preventing heat loss through thermal circulation in the piping systems connected to a hot water

storage vessel, which comprises a valve seat secured inside that portion of the piping system of the cold water inlet located on the outside of the vessel, a second valve seat secured inside that portion of the piping system of the hot water outlet located on the outside of the vessel, first stop means permitting passage of water therethrough disposed within the piping system of the cold water inlet longitudinally inwardly of the valve seat, and second stop means disposed in the piping system of the hot water outlet longitudinally outwardly of the valve seat, a first sealing member located in the cold water inlet and having a density of 0.95 or less and adapted to float in the water upwardly in engagement with the valve seat when no water is flowing inwardly through the inlet to thereby prevent loss of heat from the stored water outwardly through the cold water inlet, and a second sealing member located in the hot water outlet and having a density of 1.10 or above and adapted to sink in the water into engagement with the valve seat in the hot water outlet when no hot water is being drawn off from the vessel to thereby prevent loss of heat from the stored water outwardly through the hot water outlet, and the stop means preventing discharge of the sealing means from the inlet and outlet passages when water is flowing therethrough.

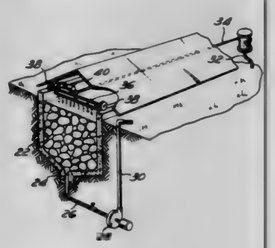


4,286,574

TRICKLE-TYPE THERMAL STORAGE UNIT

John J. Vrolyk, Northridge, and Ronald P. Pauckert, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 3, 1980, Ser. No. 126,634
Int. Cl.³ F24H *7/00*; F24J *3/02*; F28D *13/00*
U.S. Cl. 126—400 **10 Claims**



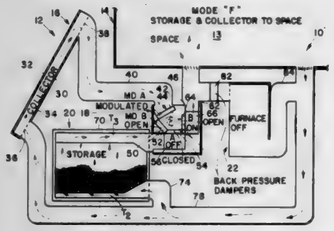
1. A thermal storage unit comprising:
containment means;
a quantity of particulate solid thermal storage medium disposed within said containment means;
a source of thermal transfer fluid;
thermal input means serving to heat said thermal transfer fluid;
distribution means movable to deliver said thermal transfer fluid to the upper surface of said thermal storage medium in a predetermined manner;
drainage means below said thermal storage medium for collecting said thermal transfer fluid;
thermal output means; and
transfer means selectably operable to transfer said thermal transfer fluid from said source through said thermal input means to said distribution means and from said drainage means to said thermal input means or to circulate said fluid through said thermal output means to said distribution means.

4,286,575

SOLAR HEAT SYSTEM

Timothy P. Gates, Cedar Springs, Mich., assignor to Jordan College, Cedar Springs, Mich.

Filed Dec. 4, 1978, Ser. No. 966,320
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **6 Claims**



1. A solar air heating system comprising a collector and a storage unit for a space to be heated;
air propulsion and flow control apparatus comprising a chamber having a first port to be communicant with said space, a second port to be communicant with said storage unit and a third port to be communicant with said collector; a first propulsion unit and a first flow control valve for flow from said chamber to said space, a second propulsion unit and a second flow control valve for flow from said chamber to said storage unit, a third flow control valve for flow from said collector to said chamber, and a fourth flow control valve for flow from said storage unit to said chamber; said first propulsion unit constituting the sole propulsion source for air propelled from said collector and/or said storage unit through said chamber to said space; control means for said apparatus (a) for opening said third valve and activating said first propulsion unit for flow from said collector to said chamber to said space, (b) for opening said third valve and activating said second propulsion unit for flow from said collector to said chamber to said storage, (c) for opening said fourth valve and operating said first propulsion unit for flow from said storage to said chamber to said space, and (d) for opening said third valve and said fourth valve and activating said first propulsion unit for flow from said collector to said chamber and from said storage to said chamber for mixing and flow to said space.

4,286,576

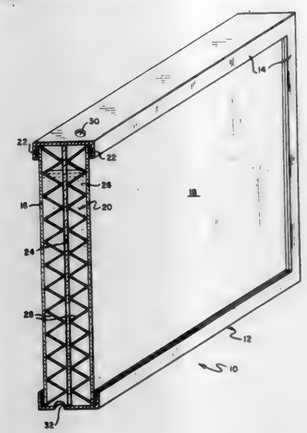
SOLAR ENERGY THERMALIZATION AND STORAGE DEVICE

John F. McClelland, Ames, Iowa, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1979, Ser. No. 61,321
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—428 **7 Claims**

1. A visually transparent, passive solar thermalization and thermal energy storage assembly comprising:
a first transparent substantially planar wall member,
a second transparent substantially planar wall member, the second member being substantially parallel to and spaced apart from the first member,

a semi-transparent substantially planar thermalization plate located between the wall members and substantially parallel to both,
sealing means between the first and second wall members for forming a liquid-tight chamber containing the thermalization plate,



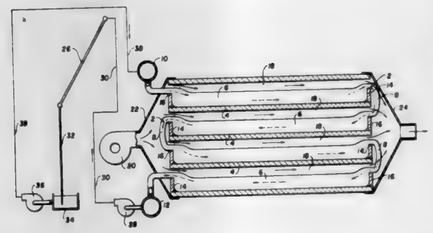
a transparent, thermal energy storage liquid in the chamber and means for preventing convective heat transfer within said liquid, said means for preventing convective heat transfer consisting of a plurality of visually transparent, horizontal accordian pleated baffles positioned between the thermalization plate and each wall member.

4,286,577

APPARATUS FOR CONTAINING LIQUID

Donald L. Spencer, Iowa City, and Patrick J. Melroy, Wellman, both of Iowa, assignors to The University of Iowa Research Foundation, Iowa City, Iowa

Filed Nov. 30, 1978, Ser. No. 965,362
Int. Cl.³ F24H *7/00*
U.S. Cl. 126—429 **11 Claims**



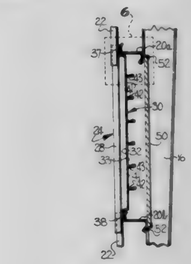
1. Apparatus for containing, storing and providing heat exchange with a body of liquid comprising,
a continuous tube which includes a plurality of vertically spaced reservoir sections for containing quantities of a primary liquid to be heated or cooled, each said reservoir section having at its opposite ends an inlet end and an outlet end,
liquid passages connecting said reservoir sections and extending downwardly from the outlet end of each reservoir section to the inlet end of a lower said reservoir section,
an overflow member at the upper end of each of said liquid passages for releasing liquid which exceeds the height of said overflow member into the liquid passage,
barrier means in intimate contact with and conformable to the upper surface of liquid in each of said reservoir sections, and,
means for flowing a gaseous medium laterally across said barrier means to remove heat from or add heat to the liquid in said reservoir sections.

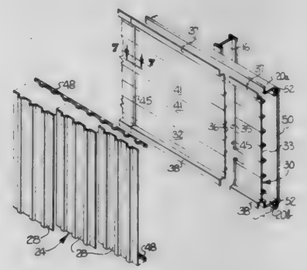
4,286,578

SOLAR ENERGY ABSORBING PANEL

William H. McArthur, P.O. Box 236, Forest City, N.C. 28043

Division of Ser. No. 827,948, Aug. 26, 1977, Pat. No. 4,184,476.
This application Sep. 24, 1979, Ser. No. 78,227
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **7 Claims**





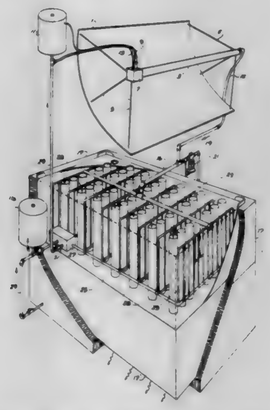
1. A panel adapted for absorbing solar radiation in a solar energy collector or the like and efficiently transferring the absorbed heat energy to an airstream moving thereover, and comprising a generally rectangular sheet of heat conducting material and having a generally planar first surface and an opposite surface, and opposite end edges and opposite side edges, said sheet being composed of a plurality of interconnected side by side sections, with each section extending between said end edges and including a planar medial portion and opposite sides, and with the adjacent sides of adjacent sections extending substantially perpendicularly from said planar medial portion and being contiguous and interconnected to each other to form parallel fins extending outwardly from the opposite surface of the sheet and between said opposite end edges, the outer sides of those sections adjacent each of the opposite side edges of the panel being offset in a common direction, and such that said offset sides are co-planar with each other and parallel to the plane of said first surface, and said panel further comprising slot means mounted along one of said end edges for receiving the other end edge of another like panel therein and such that a plurality of panels may be readily joined in an end-to-end arrangement and with said fins extending in a common direction, whereby the panel is adapted to transfer heat to air passing along said opposite surface in a direction parallel to said fins, and the panel may be readily fabricated from standard sized sections into a desired width.

4,286,579

CLOSED LOOP SOLAR COLLECTOR SYSTEM

Barry Johnston, 1622 Q St., NW., Washington, D.C. 20009

Filed May 30, 1979, Ser. No. 43,799
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **15 Claims**



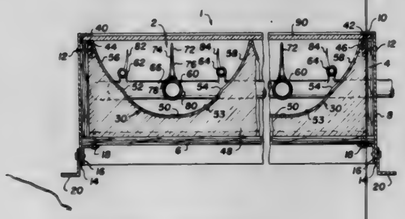
1. A closed loop solar collector system comprising:
a fluid receiver for collecting solar heat;
fluid supply means, connected to said fluid receiver, for supplying a quantity of vaporizable heat transfer fluid to said fluid receiver;
means, attached to said receiver, for precisely metering a quantity of heat transfer fluid in batches into said receiver from said supply means, said metering means including vapor vent means for exposing said fluid supply means to substantially atmospheric pressure during supplying of said fluid to said receiver; and
heat exchanger means, connected to said fluid receiver, for absorbing heat energy from said heat transfer fluid which is vaporized in said receiver, said vaporized heat transfer fluid condensing after releasing its latent heat of vaporization to said heat exchanger, said condensed fluid flowing, under pressure provided by said vaporized fluid entering said heat exchanger means, to said supply means.

4,286,580

SOLAR COLLECTOR

Elmo Sitnam, 2780 Mt. Seymour Pkwy., North Vancouver, British Columbia, Canada (V7H 1E9)

Filed Jun. 11, 1979, Ser. No. 47,064
Int. Cl.³ I24J *3/02*
U.S. Cl. 126—438 **16 Claims**



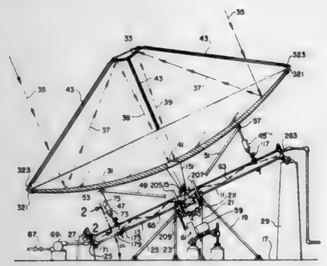
1. A solar collector comprising:
a central, elongate conduit for fluid;
a laterally concave, elongate reflective surface facing the central conduit, the central conduit extending centrally along the laterally concave surface, said surface having a shape to reflect solar radiation onto the channel conduit and two outer, longitudinal edges;
a central, elongate reflective fin connected to the central conduit and extending away from the laterally concave reflective surface, the central fin having a shape to reflect solar radiation striking the central fin onto the central conduit;
two side conduits for fluid, each said side conduit extending longitudinally near one said outer longitudinal edge of said laterally concave surface;
two side reflective surfaces, each said side reflective surface extending away from one said outer edge of the laterally concave surface, facing one said side conduit, and having a concave shape to reflect solar radiation that strikes said each side surface onto one said side conduit; and
two side fins, each said side fin being connected to one said side conduit and extending away from the laterally concave surface, each said side fin having a concave, reflective surface for reflecting solar radiation that strikes each side fin onto said one side conduit.

4,286,581

SOLAR ENERGY CONVERSION SYSTEM

John H. Atkinson, Jr., Laguna Beach, Calif., assignor to Advanced Solar Power Company (ASPCO), Newport Beach, Calif.

Continuation-in-part of Ser. No. 665,369, Mar. 10, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,444
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **59 Claims**



1. Apparatus for converting radiant solar energy, comprising:
means for focusing said radiant energy; and
opaque optically closed black body cavity means containing a transparent or translucent medium and a transparent window positioned near the focal point of said focusing means, the area of said window which admits solar energy to said cavity means being less than one percent of the wall area of said cavity means, said medium directly absorbing substantially all of said focused radiant energy entering said closed cavity means through said window, said cavity including means for repeatedly reflecting said radiant energy from the walls of said cavity to provide repeated transmission of said radiant energy through said medium.

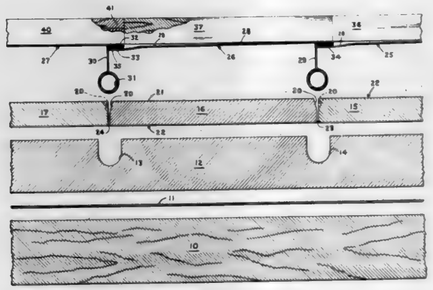
4,286,582

PREVENTION OF THERMAL BUILDUP BY CONTROLLED EXTERIOR MEANS AND SOLAR ENERGY COLLECTORS

Robert L. Nevins, High Point Mountain Rd., West Shokan, N.Y. 12494

Filed Sep. 10, 1979, Ser. No. 74,010
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—446 **2 Claims**

1. A solar energy system for a building comprising, a plurality of interlocked flat solar energy collecting plate portions forming a portion of the building surface, each of said plates having a generally flat solar energy collecting surface, a folded over portion of the plate at one end of said collecting surface, said foled over portion being spaced from and parallel with one side of said flat solar energy collecting surface, a pair of overlapping reentrant folds formed in the plate, said reentrant folds being parallel with and spaced from another side of said flat solar energy collecting surface and at the end thereof that is opposite to said folded over portion, a web integral with said



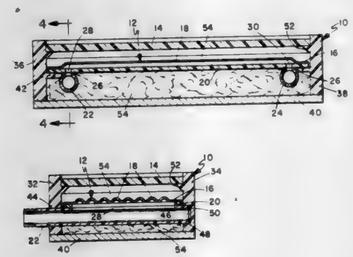
reentrant folds and generally perpendicular thereto to protrude past said flat solar energy collecting surface and said folded over portion, a further portion integral with said web for transferring collected solar heat from the solar energy collecting surface, tubes for removing solar energy from said collecting surfaces being in thermal contact therewith through said webs, a plurality of beams having notches formed therein in order to receive and support said tubes, and generally air-tight sheeting attached to said beams on sides thereof that are opposite to said notched sides in order to form a duct between said plate portions, said beams and said sheeting.

4,286,583

SOLAR HEATER UNIT

David C. Dunn, Santee, and George C. Tweed, Jr., La Mesa, both of Calif., assignors to U.S. Elevator Corporation, Spring Valley, Calif.

Filed Jul. 2, 1979, Ser. No. 53,997
Int. Cl.³ F24J *3/02;* **F28F** *9/02*
U.S. Cl. 126—445 **2 Claims**



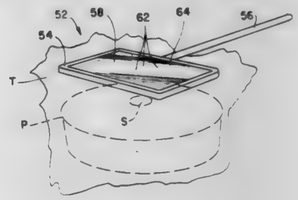
1. A solar heating unit, comprising:
a heater panel having a backing panel;
a channel plate sealed to one face of said backing panel, the channel plate having a plurality of spaced channels formed therein and extending between opposite ends, the channels having closed ends adjacent the opposite ends of the channel plate;
said backing panel having elongated slots therethrough extending perpendicularly to the channels at opposite ends and interconnecting the channels at their closed ends;
an inlet pipe longitudinally sealed to the backing panel along one of said slots and an outlet pipe longitudinally sealed to the backing panel along the other of said slots, said inlet and outlet pipes each having a longitudinal slot communicating with the respective slot in the backing panel and connecting each pipe to all of the channels;
a housing having side walls surrounding the heater panel;
said inlet and outlet pipes having end portions projecting through one of said side walls;
the wall opposite thereto having closed sockets in which the other ends of said inlet and outlet pipes are seated and sealed.

4,286,584

SEPTUM LOCATING APPARATUS

Edward J. Sampson, Concord, and Frank R. Prosl, Duxbury, both of Mass., assignors to Infusaid Corporation, Sharon, Mass.

Division of Ser. No. 916,129, Jun. 16, 1978, Pat. No. 4,222,374. This application Oct. 15, 1979, Ser. No. 85,125
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **2 Claims**



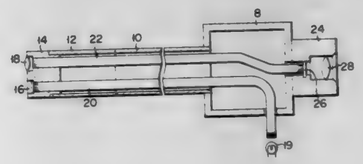
1. Apparatus for locating a septum in a prosthetic device implanted in a body comprising:
A. at least one permanent magnet mounted in the device in selected juxtaposition with the septum for emitting a magnetic field that extends exteriorly of the body and whose pattern defines the location of the septum, and
B. a passive nonelectric detector manipulable exteriorly of the body, said detector including
1. a container, and
2. a multiplicity of ferromagnetic particles in the container, the particles assuming a characteristic disposition in the container that corresponds to the magnetic field pattern produced by the said at least one implanted magnet thereby visually designating the precise location of the patient's body surface under which the septum is implanted.

4,286,585

BEND ANGLE CONTROL FOR ENDOSCOPE

Mototuga Ogawa, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1979, Ser. No. 101,077
Claims priority, application Japan, Dec. 22, 1978, 53-158870
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **5 Claims**



1. An endoscope which comprises:

(a) a distal end portion containing an observation optical system;
(b) a flexible tube;
(c) a freely bendable section for connecting the distal end portion to the flexible tube;
(d) an optical transmission means for conducting an image picked up by the observation optical system to the eyepiece section of the endoscope;
(e) a plurality of photoelectric conversion means spacially arranged on the eyepiece section side to detect the distribution of the brightness of an image picked up by the observation optical system; and
(f) a bend angle control means for controlling the angle through which the freely bendable section is to be bent in accordance with data delivered from the photoelectric conversion means in order to direct the distal end portion to the substantial center of a coeliac tube to be examined.

4,286,586

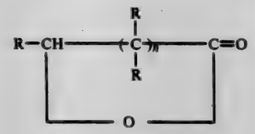
ORTHOPEDIC DEVICES, MATERIALS AND METHODS

James E. Potts, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 24,320, Mar. 27, 1979, Pat. No. 4,226,230, which is a division of Ser. No. 881,138, Feb. 24, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,209
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—90 **25 Claims**



1. Orthopedic device for the fixation and immobilization of a portion of the human or animal body comprising a solid, polymeric material, shaped to the contours of said body portion, said polymeric material comprising crosslinked copolymer which is produced by crosslinking a thermoplastic, crosslinkable copolymer, having a reduced viscosity of from 0.2 to 2.0, at a concentration of 2 grams/ml. in benzene, which thermoplastic, crosslinkable copolymer is produced by reacting, at a temperature of from 25° to 300° C., an active-hydrogen containing initiator with a molar excess of a monomer mixture comprising:
(A) from 90 to 99.5 weight percent of at least one lactone of the formula



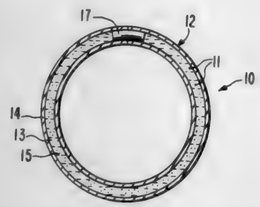
wherein n is an integer having a value of from about 3 to 6, at least n+2 of the R's are hydrogen and the remaining R's are each alkyl of 1 to 10 carbons; and
(B) from 0.5 to 10 weight percent of a polyfunctional acrylate monomer.

4,286,587

VAGINAL DRUG DELIVERY SYSTEM MADE FROM POLYMER

Patrick S. Wong, Kowloon, Hong Kong, assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 950,454, Oct. 11, 1978, Pat. No. 4,215,691, which is a division of Ser. No. 775,718, Mar. 9, 1977, abandoned. This application Jan. 21, 1980, Ser. No. 113,499
Int. Cl.³ A61F *5/46*
U.S. Cl. 128—127 **25 Claims**



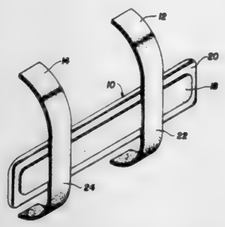
10. A vaginal device for delivering drugs, said device consisting essentially of:
a. a closed, curved body sized and shaped as a platform adapted for easy insertion and comfortable retention in a vagina, said body consisting essentially of:
b. a wall formed of a tubular shaped, non-toxic, thermoplastic, moldable polymeric material united at its ends by a coupling inserted in the tubular wall and having a diameter approximately equivalent to the inside diameter of the tubular wall, to form an essentially liquid impervious union, with the wall surrounding and forming;
c. an internal reservoir;
d. a drug housed in the reservoir;
e. a carrier for the drug in the reservoir; and,
f. wherein, said platform at its maximum dimensions measures from a loci on its curved wall to a loci on its distant curved wall of from 0.4 cm to 16 cm, and when placed in a vagina will provide a preprogrammed, unattended continuous delivery of drug at a controlled rate and in a therapeutically effective amount to a vagina over a prolonged period of time.

4,286,588

MEDICAL SUPPORT BOARD

Paul D. Lovegrove, 2573 Merrywood Ct., Woodbridge, Va. 22192

Filed Jul. 18, 1979, Ser. No. 58,416
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—133 **6 Claims**



1. An IV support board particularly adapted for emergency use comprising a rigid support member, padding covering one side of said rigid support member and adherent material for removably adhering to a cloth or fabric material underlying said rigid support member, said adherent material covering substantially the entire area of the side of the support member

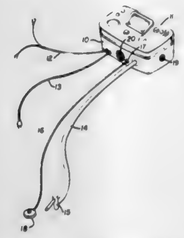
opposite the padded side whereby movement of said support board is inhibited by the adherence of the board to the underlying cloth or fabric material.

4,286,589

EXTENSION LEAD FOR A RESPIRATOR ALARM SYSTEM

Harris A. Thompson, 175 Bellevue Dr., Boulder, Colo. 80302

Filed Nov. 13, 1979, Ser. No. 93,795
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—202.22 **3 Claims**



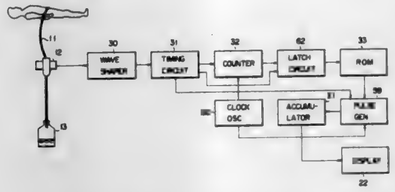
1. In a respirator having: a primary circuit energized by an electrical power source to drive the respirator components; a normally closed alarm-initiator circuit connecting with the primary circuit; means associated with the respirator components to open the alarm-initiator circuit whenever a respirator component fails or the power source fails; a normally open alarm circuit having an alarm means and an independent power source to actuate the alarm means whenever the circuit closes; and means associated with the alarm-initiator circuit to close the alarm circuit whenever the alarm-initiator circuit opens, the improvement comprising:
a disconnectable extension lead extended from the respirator, having a normally-closed, manually-actuatable switch at its extended end adapted to provide a manually actuated alarm function by the patient opening the normally closed manually-actuatable switch, and means in the alarm-initiator circuit adapted to close the circuit at the respirator connection point of the extension lead when disconnection of the extension lead is made, to maintain the alarm-initiator circuit in a closed state, and to open the circuit at the point of connection when connection of the extension lead is made, to place the lead in series with the alarm-initiator circuit.

4,286,590

STACTOMETRIC APPARATUS

Masakazu Murase, Fujinomiya, Japan, assignor to Terumo Corporation, Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 58,932
Claims priority, application Japan, Jul. 24, 1978, 53/90284
Int. Cl.³ A61M *5/16*; G05D *7/03*
U.S. Cl. 128—214 E **8 Claims**



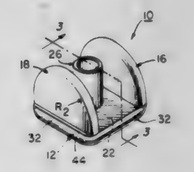
1. A stactometric apparatus comprising:
instilled drop-detecting means for generating a signal each time an instilled drop falls;
a counter coupled to said instilled drop-detecting means for measuring a time interval between falling instilled drops in response to output signals from said instilled drop-detecting means;
memory means having a plurality of memory addresses at which are respectively stored a plurality of drop volume data representing different volumes of drops corresponding to different time intervals between falling instilled drops;
reading means coupled to said memory means and to said counter for reading out the drop volume data from a memory address of said memory means which is specified by the contents of said counter;
moving average measuring means coupled to said memory means for measuring a moving average of at least the drop volume data successively read out by said reading means; and
a display device coupled to said moving average measuring means for displaying the moving average of the drop volume data which has been measured by said moving average measuring means.

4,286,591

SYRINGE CAP

Kenneth Raines, Bethlehem, Pa., assignor to Burron Medical Inc., Bethlehem, Pa.

Filed Jun. 27, 1980, Ser. No. 163,694
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—215 **12 Claims**



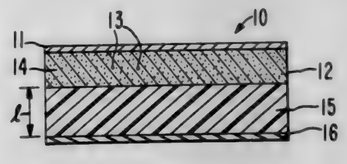
1. A syringe cap comprising:
a base, said base having a polygonal peripheral shape, a planar top, a planar bottom, and arcuate sides connecting said planar top to said planar bottom;
a pair of arcuate wing members mounted on said base top and extending upwardly therefrom; and
a syringe tip coupling element mounted on said base top for releasably capping a syringe.

4,286,592

THERAPEUTIC SYSTEM FOR ADMINISTERING DRUGS TO THE SKIN

Santosh K. Chandrasekaran, Palo Alto, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Filed Feb. 4, 1980, Ser. No. 117,846
Int. Cl.³ A61M *7/00*
U.S. Cl. 128—260 **5 Claims**



1. A bandage for administering a drug to the skin or mucosa for a predetermined time period, with t representing a time, in

hours, in said time period, consisting essentially of a sandwich type laminate of:

(a) a backing lamina that is substantially impermeable to the drug, one face of which forms the top of the bandage;

(b) a drug reservoir lamina adjacent the opposite face of the backing lamina comprising the drug dispersed in a carrier that is permeable to the drug, with the solubility of the drug in the carrier being C_{SDR} mg/cm^3, the diffusion coefficient of drug in the carrier being D_{DR} cm^2/hr, and the concentration of drug in the drug reservoir being C_{DR} mg/cm^3; and

(c) a contact adhesive lamina adjacent and below the drug reservoir lamina comprising a contact adhesive composition that is permeable to the drug, with the thickness of the contact adhesive lamina being l_{CA} cm, the solubility of the drug in the contact adhesive composition being C_{SCA} mg/cm^3, the diffusion coefficient of drug in the contact adhesive composition being D_{CA} cm^2/hr, and the concentration of drug in the contact adhesive composition being C_{CA} mg/cm^3, wherein over at least a substantial portion of said time period

(i) C_{CA} is not greater than C_{SCA}, and

(ii) the ratio

$$\frac{D_{CA} \cdot C_{SCA}}{l_{CA} \cdot \left(\frac{D_{DR} \cdot C_{DR} \cdot C_{SDR}}{t} \right)^{\frac{1}{2}}}$$

is in the range of about 0.01 to about 0.7.

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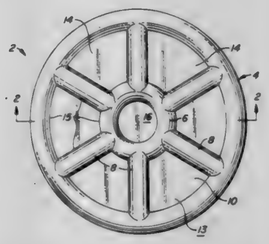
VAGINAL CONTRACEPTIVE SHIELD

Virgil A. Place, 91 Hillbrook Dr., Portola Valley, Calif. 94025, and Harold L. Crow, 25 E. 83rd St., New York, N.Y. 10028

Filed May 5, 1980, Ser. No. 146,834

Int. Cl.^{3} A61M *7/00*

U.S. Cl. 128—260 **20 Claims**



1. A contraceptive vaginal shield comprising:

a circumferential plastic flexible non-elastomeric rod-like supporting member;

a thin non-elastomeric film bound to said supporting member and relatively tautly extending over the area enclosed by said circumferential supporting member;

at least one internal flexible plastic rod-like supporting member bonded to said non-elastomeric film for providing structural support for said non-elastomeric film; and

wherein said supporting member and film define at least one spermicidal reservoir and when said shield is bent into a U-shaped configuration and inserted into the vagina, the restoring forces of said flexible rod-like supporting member maintains said non-elastomeric film in juxtaposition to the vaginal wall.

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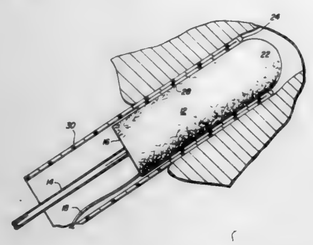
APPLICATOR AND TAMPON

Thomas W. Cunningham, 3580 Emerwood La., Orlando, Fla. 32806

Continuation-in-part of Ser. No. 43,231, May 29, 1979. This application Nov. 21, 1979, Ser. No. 96,431

Int. Cl.^{3} A61F *15/00*

U.S. Cl. 128—263 **14 Claims**



1. An applicator and member comprising:

(a) an oblong member having a longitudinal central axis;

(b) a flexible applicator sleeve surrounding said member and having a longitudinal slit along a portion thereof and substantially parallel with said central axis of said member; and

(c) a convolution along said portion of said sleeve, said portion having a sufficient length to extend rearward from said convolution to the end of said member opposite said convolution, permitting said portion of said sleeve to be grasped and to be rolled at said convolution along a direction substantially parallel with said central axis.

4,286,595

COMPACT TAMPON APPLICATOR ASSEMBLY

David F. Ring, Morganville, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Sep. 27, 1979, Ser. No. 79,609

Int. Cl.^{3} A61F *15/00*

U.S. Cl. 128—263 **1 Claim**



1. In a tampon applicator assembly having a proximal end and a distal end and comprising:

a generally cylindrical outer tube;

a generally cylindrical inner tube having an outside diameter less than the inside diameter of said outer tube, said inner tube being snugly nested, coaxially within said outer tube;

a tampon enclosed coaxially within said inner tube;

a gripping portion affixed to the distal end of said inner tube for gripping said inner tube and reciprocating said tube almost completely out of said distal end of said outer tube;

at least one restraining element in the distal half of the outer tube for restraining said tampon from reciprocating with said inner tube so that the tampon will remain enclosed by said outer tube when said inner tube is reciprocated; and

a deflecting portion at the distal end of said outer tube for deflecting at least a portion of the walls of the proximal end of the inner tube toward the center of the distal end of the tampon;

whereby when said inner tube is so reciprocated, said tampon will be transferred to said outer tube and when said reciprocated inner tube is then urged toward said proximal end of the assembly, the portion of the wall of said inner tube deflected toward the center of the end of the tampon will bear against said end and expel said tampon; the improvement wherein: said restraining element is a T-shaped projection.

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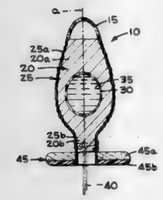
TAMPON CONTAINING A LIQUID MEDICANT

Morton K. Rubinstein, Pacific Palisades, Calif., assignor to Herbert Rubinstein, Santa Cruz, Calif.

Filed Feb. 27, 1978, Ser. No. 881,651

Int. Cl.^{3} A61F *13/20*

U.S. Cl. 128—270 **10 Claims**



1. A tampon with a longitudinal axis for insertion in the longitudinal direction thereof into the cavity of a body in which lips surround the entranceway of the body cavity and walls surround the body cavity inwardly of the lips, said tampon comprising:

(a) a rigid entry end for insertion into the body cavity through the lips surrounding the entranceway of the body cavity;

(b) a liquid absorbable, expansible bulb-shaped tampon body extending from said entry end, said tampon body being constructed to expand radially outward from the longitudinal axis of said tampon after absorbing liquid, said bulb-shaped tampon body being formed with an ovate portion and a neck portion; and

(c) a rupturable container with liquid medicant therein disposed within the ovate portion of said tampon body, said container being rupturable to release the liquid medicant therein to be absorbed by said tampon body for expanding said tampon body radially outward from the longitudinal axis of said tampon, after said tampon is inserted into the body cavity, the lips surrounding the entranceway of said body cavity grasp said neck portion of said tampon body and the expanded ovate portion of said tampon body with absorbed liquid medicant contacts the walls surrounding the body cavity inwardly of the lips surrounding the entranceway of the body cavity to apply liquid medicant to the walls surrounding the body cavity.

4,286,597

BLOOD COMPATIBLE POLYMERS AND MEDICAL DEVICES MADE THEREFROM CONTAINING DIOCTYLADIPATE PLASTICIZER

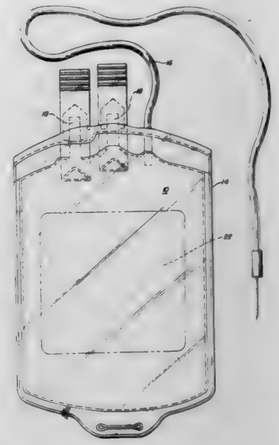
Henry M. Gajewski, Winnetka; Gerald A. Grode, Grayslake; Paul E. Measells, Libertyville, and Jeffrey E. Miripol, Evanston, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 954,970, Oct. 26, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,290

Int. Cl.^{3} A61M *5/00*; A61J *1/00*

U.S. Cl. 128—272 **6 Claims**

1. The method of storing blood which comprises placing said blood for a period of days into a flexible, hemocompatible, sterilizable, chlorine-free plastic material which contains sufficient dioctyladipate to cause a reduced plasma hemoglobin content of blood stored in contact therewith for 21 days, when compared with blood stored in contact with the same blood compatible material free of dioctyladipate.



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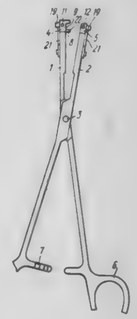
FORCEPS FOR ISOLATION OF PART OF BLOOD VESSEL DURING ANASTOMOSIS

Nikolai N. Kapitanov, ulitsa Iriny Levchenko, 3, kv.9; Natalia P. Petrova, 1 Novokuzminskaya ulitsa, 4, kv. 40, and Vladimir V. Ippolitov, ulitsa Lavochkina, 6, korpus 2, kv. 143, all of Moscow, U.S.S.R.

Filed Nov. 6, 1978, Ser. No. 958,204

Int. Cl.^{3} A61B *17/00, 17/12*

U.S. Cl. 128—303 R **14 Claims**



1. A surgical instrument for treating a tubular body member, vessel, duct, or the like, by clamping portions of the tubular body member at longitudinally spaced regions while providing access to a portion of the body member between the clamped portions comprising:

a pair of jaws;

means for opening and closing said jaws;

a first of said jaws defining a channel for receiving a tubular body member to be clamped, a second of said jaws being shaped to fit into and substantially close the top of said channel to define a longitudinally-extending bounded space within which a tubular body member is to be confined;

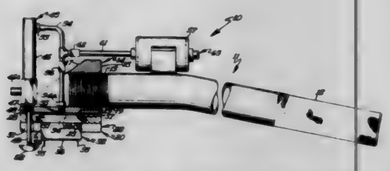
said jaws mutually coacting upon closure to provide clamping action suitable for closing off a tubular body member

at two longitudinally-spaced regions, with at least a portion of the bounded space located between the clamping regions, so that, when a tubular body member is positioned in the bounded space and the jaws are closed, longitudinally spaced portions of the tubular body member are closed off, a portion of one of said jaws located between the clamping regions and partly defining the bounded space being movable with respect to the remainder of said one of said jaws and removable from said bounded space to allow access to the bounded space located between the clamping regions whereby that portion of a tubular body member located between said clamping regionsis accessible for treatment.

4,286,599
MARKING DEVICE

Douglas D. Hahn; Dennis E. Epley, and Kenneth I. Granle, all of Austin, Minn., assignors to Geo. A. Hormel & Company, Austin, Minn.

Filed Jan. 12, 1979, Ser. No. 2,998
Int. Cl.³ A61D 7/00
U.S. Cl. 128—316 **5 Claims**



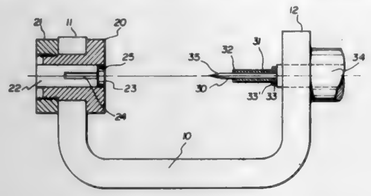
1. A marking device for applying marking indicia to the subcutaneous area of animals prior to slaughter, comprising:
an elongate handle;
a housing secured to one end of said handle;
a needle holder assembly secured to said housing;
a marking unit including a needle support, a plurality of hollow marking needles on said support and being arranged to define a number, said marking unit being mounted on said housing by said holder assembly;
means defining a chamber in said housing communicating with said needles;
ink dispensing means comprising a pump cylinder on said housing containing marking ink and communicating with said needles, a plunger being extensible and retractable in said pump cylinder and projecting outwardly of the latter, said plunger when in the extended position having its outer end extending beyond the needles, said plunger when moved to the retracted position causing ink to flow from the pump housing into and through the needles, whereby when the marking device is applied to the skin of an animal, such as a hog, the actuator will first engage to the animal's skin just prior to penetration of the needles through the skin whereby ink will be dispensed in a predetermined pattern through the needles into the subcutaneous fat layer of the animal.

4,286,600
EAR PIERCING TOOL

Frank J. Judickas, 579 Richmond St., London, Ontario, Canada

Filed Apr. 11, 1979, Ser. No. 29,159
Claims priority, application Canada, Feb. 7, 1979, 321045
Int. Cl.³ A61B 17/00
U.S. Cl. 128—330 **6 Claims**

1. In a tissue piercing apparatus of the type comprising: a first means for supporting a sharp, piercing needle; a second means for supporting an anvil means; means for supportively interconnecting said first and second supporting means in spaced relation and means for shifting said needle towards said anvil means so that tissue interposed between said needle and said anvil means is pierced; the improvement wherein said anvil means comprises a heating member within which is recessed a heating element having an elongated opening for receiving the tip of said needle so that a thermoplastic sleeve having a first boss performed at one end, surrounding said

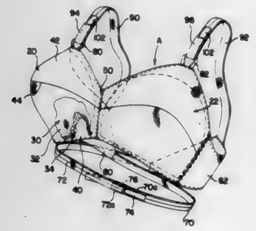


needle, after passing through said tissue, is thermoformed to form a second boss about its other end whereby said sleeve is retained in said tissue.

4,286,601
WEIGHT DISTRIBUTING DEVICE FOR USE UNDER AN X-RAY APRON

Frank G. Farino, 3311 Warrensville Center Rd., Shaker Heights, Ohio 44122

Filed Oct. 4, 1979, Ser. No. 81,764
Int. Cl.³ A41C 3/00
U.S. Cl. 128—486 **12 Claims**



1. A weight distributing device to be worn at the bustline and between the outer garment covering the breasts of a woman and a shielded x-ray protective apron having a given weight to distribute gravity forces caused by said weight of said apron away from said breasts, said weight distributing device comprising: a body encircling band terminating in two spaced straps with free ends, means for connecting said free ends to hold said band about the bustline of said woman, first and second generally rigid, protective domes spaced longitudinally of said band, each of said domes adapted to overlie said outer garment at one of said breasts in a manner to recieve said breast in said dome, each of said protective domes including an outer layer of sheet material, an inner layer of sheet material and a free standing generally conical cup sandwiched between said layers, said domes forming a part of said band and being held by said band over the breasts of a user of said device and said conical cups of said protective domes being generally rigid in a direction axially toward said breasts whereby a force from said apron against said domes will be transmitted away from said breasts under said domes.

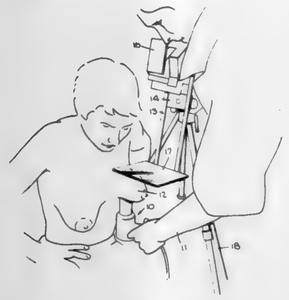
4,286,602
TRANSILLUMINATION DIAGNOSTIC SYSTEM

Robert Guy, 4, rue de la Charite, Lyons, France (69002)

Filed Jun. 20, 1979, Ser. No. 50,329
Int. Cl.³ A61B 5/00, 6/12
U.S. Cl. 128—665 **8 Claims**

1. A transillumination examination system operable by a single operator for observing a selected portion of the human anatomy, such as the breast, without imparting excessive heat

thereto, and for taking pictures of internal regions therein of medical interest, said system comprising:
(A) a light-beam projecting gun having a barrel extending axially from a hollow body section and a grip extending laterally therefrom which is adapted to be held in one hand of the operator, said barrel having a front end and a rear end;
(B) a reflector-type incandescent lamp housed in said body section, the rim of the reflector being sealed to the rear end of the barrel to project light rays through the barrel into the anatomical portion to be transilluminated, the front end of the barrel being covered by a diffuser plate to provide a light beam whose intensity is substantially uniform throughout its cross section, the plate also preventing the flow of convection currents from the barrel which would otherwise tend to heat the anatomical portion, said grip being provided with a trigger-finger switch to activate said lamp;



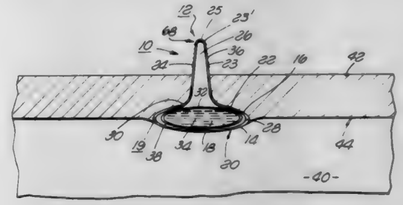
(C) a power-supply connected to said lamp through said switch and including a timer to energize said lamp upon operation of said switch for a predetermined time interval whose duration is sufficient to carry out an examination procedure but not long enough to overheat the anatomical portion being transilluminated; and
(D) a camera assembly constituted by a bracket having at one end thereof a guide fixture adapted to engage the anatomical portion to be examined, and having at the other end thereof a camera whose lens is trained on said guide fixture and is focused on said anatomical portion, said camera having a shutter mechanism which is remotely operated by an actuator whereby the operator who grips the gun in one hand and operates said switch to produce the light beam for transilluminating said anatomical portion, can observe the transilluminated image created at the fixture and take a focused picture thereof by operating the actuator with his other hand or foot.

4,286,603
PRESSURE DETECTION ARRANGEMENT

Lee Marshall, 2808 Oregon Ct., J-3, Torrance, Calif. 90503

Filed Jun. 22, 1979, Ser. No. 51,431
Int. Cl.³ A61B 5/10
U.S. Cl. 128—782 **14 Claims**

1. A pressure detection arrangement for placement intermediate a part of the body and means surrounding the part of the body and comprising, in combination:
a capsule comprising:
a reservoir means having first walls and second walls defining a reservoir cavity, and said first walls further defining a lower portion of said reservoir cavity having a first predetermined flexibility, and said second walls further defining an upper portion of said reservoir cavity having a second predetermined flexibility;
an indicator means having third walls defining an indicator cavity having a third predetermined flexibility having a preselected transmissivity for electromagnetic radiation in the visible portion of the electromagnetic radiation spectrum to allow visual inspection therethrough of said indicator cavity;
said first walls coupled to said second walls;
said second walls further defining a first aperture through said second walls;
said third walls coupled to said second walls adjacent said first aperature;
a flexible, extensible separation means across said first

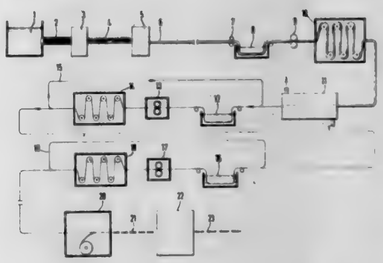


aperture to close communication between said reservoir cavity and said indicator cavity; and
an indicator fluid in said reservoir cavity and said separation means responsive to a predetermined pressure exerted on said indicator fluid in said reservoir cavity to flexibly extend into said indicator cavity to allow said indicator fluid to enter said indicator cavity and said separation means separating it from said third walls of said indicator means by said indicator fluid for the condition of said reservoir cavity subjected to at least said predetermined pressure.

4,286,604
SMOKING MATERIALS

Jacques Ehretsmann, Conches; Robert D. Cowling; Alfred D. Schweizer, both of Geneva, all of Switzerland; William M. Caldwell, Newtownards, Northern Ireland; Dennis F. Boyd, Belfast, Northern Ireland, and Robert J. Boyd, Craigavad, Northern Ireland, assignors to Gallaher Limited, Belfast, Northern Ireland

Filed Oct. 3, 1977, Ser. No. 838,712
Claims priority, application United Kingdom, Oct. 5, 1976, 41271/76; Oct. 5, 1976, 41272/76; Oct. 5, 1976, 41273/76
Int. Cl.³ A24B 15/18; A24D 1/18
U.S. Cl. 131—359 **28 Claims**



1. A method of making a smoking product by subjecting a mass of viscose fibres to a controlled pyrolysis until the organic residue contains at least 90% carbon by weight, and loading the resulting fibrous mass with the ingredients for smoking, wherein at least one additive selected from the group consisting of a catalyst for the pyrolysis, a carrier for a stimulant additive, and a combustion modifying agent or its precursor is added to a bulk viscose mix and said fibres are spun from said

mix whereby the additives are homogeneously dispersed throughout the individual fibres.

4,286,605

TREATING SHEET MATERIAL FOR MAKING CIGAR WRAPPERS

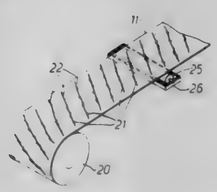
John K. Goslin, Beeston; John H. Bugler, Caunton, and Howard Foster, Long Eaton, all of England, assignors to Imperial Group Limited, London, England

Filed Jul. 6, 1979, Ser. No. 55,143

Claims priority, application United Kingdom, Jul. 27, 1978, 31391/78

Int. Cl.³ A24D *1/18*; A24B *3/14*

U.S. Cl. 131—358 **4 Claims**



1. A method of treating a web of smokeable sheet material to simulate natural tobacco leaf before the web is cut to provide a series of cigar wrapper blanks which comprises printing the web with an ink in a pattern designed to simulate markings of natural tobacco leaf, the ink having a thickened composition which dries to form a ribbed pattern on the web, said ink comprising a filler, a non-water-based solvent, an adhesive, a plasticizer and a powder which produces a desired colouration, said powder comprising ground tobacco dust.

4,286,606

TOBACCO FLAVORANTS

James W. Swain, and Frank H. Crayton, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,361

Int. Cl.³ A24B *15/30*; C08B *37/00, 3/00*

U.S. Cl. 131—276 **14 Claims**

1. A method of preparing a reaction flavor which comprises combining reactants including a reducing sugar, in the presence of ammonium hydroxide with a saturated or unsaturated carboxylic acid or mixtures thereof, said acid having between about 6 and 26 carbon atoms, and heating the reactants in a temperature range between about 70° and 150° C. for a period of time of from about 0.5 hour to about 3 hours.

4,286,607

DEVICE FOR TOBACCO CONSUMPTION AND METHOD OF MAKING IT

Dominique F. Claessens, Hilversum, Netherlands, assignor to D.P.G. Claessens Product-Consultants B.V., Hilversum, Netherlands

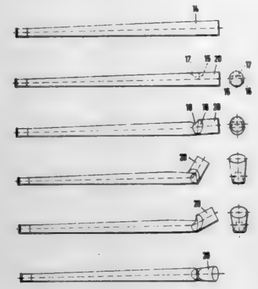
Filed Apr. 6, 1979, Ser. No. 27,931

Claims priority, application Netherlands, Apr. 6, 1978, 7803694

Int. Cl.³ A24F *47/00, 1/28*

U.S. Cl. 131—328 **56 Claims**

1. A method of making a device for tobacco consumption, which comprises forming an elongated hollow member; forming a mouthpiece on one end of said hollow member; forming the other end of the hollow member so that the same can be provided with a tobacco plug; and providing means at least at one position intermediate the two ends of the hollow member for bending said hollow member by making two oppositely-located indents in the wall of the member and a third indent extending transversely to said indents and to the longitudinal



axis of the member, said third indent being retracted somewhat relative to the plane containing the first two indents.

4,286,608

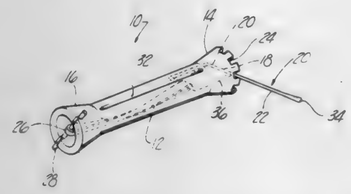
HAIR ROLLER

Charles L. Handley, Dearborn, and James R. Ostheim, Ferndale, both of Mich., assignors to Charade Hair and Skin Care Center, Inc., Dearborn, Mich.

Filed Mar. 14, 1977, Ser. No. 777,170

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **1 Claim**



1. A hair roller comprised of a spindle member adapted to receive a lock of hair to be wound into a curl thereon comprised of a hollow spindle member; anchoring means carried by said spindle, said anchoring means including a radial projection, said anchoring means includes an anchor clip having a closed loop section connected to said radial projection and disposed in one end of said hollow spindle member and adapted to engage the inside thereof to orient said radial projection in a-radially outward orientation with respect to said hollow spindle member; means mounting said anchor clip to said spindle member comprising means resiliently retaining said loop section within said one end of said hollow spindle member including an elastic element passing through said loop section and extending through the interior of said hollow spindle member and further includes means securing said elastic element to said hollow spindle member at the opposite end portion thereof from said one end portion of said hollow spindle member; means allowing said radial projection to be angularly located with respect to said one end of said spindle member without disassembly thereof from said hair roller by pulling said loop section partially out of said hollow spindle end comprising a plurality of notches formed in the said end portion of said hollow spindle member adapted to mate with said radial projection to angularly locate said anchor clip therein, said anchor loop section locating said radial projection with respect to said hollow spindle member one end so as to insure engagement of said radial projection with one of said notches upon release of said loop section; said anchor clip comprising a wire form element having said loop section formed thereof and said radial projection formed by a section of said wire form adapted to extend radially away from said hollow spindle member when said loop section is disposed in said end portion of said hollow spindle member; said hollow spindle member being comprised of flare end portions and wherein said wire form member has an inclined side thereof extending at an angle to said projection at an angle corresponding to said angle of said flare in said end portion of said hollow spindle member.

4,286,609

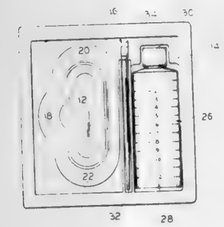
HOT OIL FINGERNAIL AND CUTICLE TREATMENT

Aaron Miller, Northbrook, Ill., assignor to Jovan, Inc., Chicago, Ill.

Filed Oct. 6, 1978, Ser. No. 949,197

Int. Cl.³ A45D *29/20*

U.S. Cl. 132—75 **3 Claims**



1. A hot oil treatment for conditioning fingernails and cuticles comprising the steps of:

a. packaging a kit in a combined soaking basin and shock-absorbing container for a combination of components including a bottle of an oil mixture of components used in a bath;

b. pouring a measured amount of said oil mixture from said bottle into said basin;

c. pouring hot water into said basin to raise the fluid level within said basin to a predetermined depth;

d. soaking the tips of the fingers of each hand in said basin for a substantially predetermined period of time adequate to soften the cuticle; and

e. working the cuticle while it is in the softened state; said oil being a mixture which comprises:

INGREDIENT	PERCENTAGE RANGE
1. Sesame oil	0.1–20.0
2. Olive oil (food grade)	0.1–20.0
3. Mink oil	0.5–20
4. Soybean oil (food grade)	0.5–20
5. Polyoxyethylene (40) sorbitan peroleate	1.0–10.0
6. Polyoxypropylene (15) stearyl ether	1.0–60.0
7. Raw linseed oil	1.0–40.0
8. Cottonseed oil	1.0–75.0
9. Butylated hydroxyanisole	0.05–1.0
10. Propylparaben	0.05–1.0
11. Myristoyl hydrolyzed animal protein	0.10–5.0
12. Vitamin E (dl-Alpha Tocopheryl acetate)	0.5–1.0
13. Vitamin A Palimate	.05–1.0
14. Bronopol (2-Bromo-2-Nitropropane-1,3-Diol)	.01–.5
15. Perfume oil	.05–1.0

4,286,610

PEDICURE IMPLEMENT

John E. Jones, Danville; William G. Fodor, Blairs; James R. Porter, Danville, all of Va., and James E. Edgell, Senatobia, Miss., assignors to Sandvik, Ind., Greensboro, N.C.

Filed Jun. 9, 1980, Ser. No. 157,672

Int. Cl.³ A45D *29/04*

U.S. Cl. 132—76.4 **1 Claim**



1. A pedicure-manicure implement, comprising:

(a) an integral, smooth surfaced, plastic molded elongated body having:

(i) an elongated horizontally disposed handle above a finger grip opening;

(ii) smoothly contoured upright molded handle support portions extending from opposite ends of said handle and located proximate the outer ends of said body; and

(iii) a base portion providing a pair of generally triangular-shaped outer base sections extending outwardly from a generally rectangular smoothly curved and surfaced central base section, said outer base sections each having a rib-recess configuration within and recessed inwardly from the respective plane of surrounding edge portions defining each respective said triangular shape of each said outer base section and with said base section planes being slightly angled upwardly with respect to a horizontal plane when said implement rests thereon supported by said central base section;

(b) a pair of thin, flexible, stainless steel, etched-type abrader strips, one being relatively coarse and the other being relatively fine and being of a generally triangle shape conforming to the said outer base section recesses and respectively mounted therein; and

(c) adhesive means applied to the respective back surfaces of said strips to secure said strips to said ribs.

4,286,611

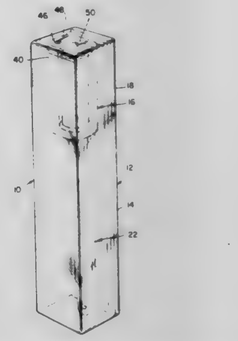
DENTAL FLOSS DISPENSER

Patricia A. Talbot, 44 Fulton St., Norwood, Mass. 02062

Filed Feb. 14, 1980, Ser. No. 121,322

Int. Cl.³ A61C *15/00*

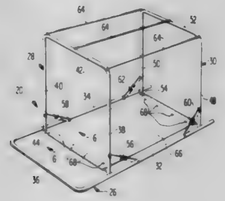
U.S. Cl. 132—91 **4 Claims**



1. In combination, a dental floss dispenser and a container for the same, said dispenser comprising a hollow cylindrical body portion, and a handle detachably secured to one end of the body portion having a removable cover, a spool of dental floss

mounted within the hollow body portion and means in said cover for permitting a length of floss to be withdrawn therefrom and cut off for use.

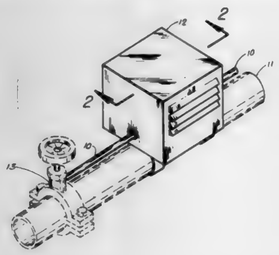
4,286,612
FOLDING TENT
William Neal, and Mary Neal, both of 191 Denise, San Pablo, Calif. 94806
Filed Mar. 7, 1979, Ser. No. 18,341
Int. Cl.³ A45F *1/16*
U.S. Cl. 135—4 R **6 Claims**



1. A folding tent comprising:
a foldable frame including a U-shaped base member having a pair of spaced parallel legs on opposite sides thereof adapted to rest horizontally on the ground and a pair of U-shaped upright support members having apertures through the end portion of the legs thereof;
said U-shaped upright support members having pivotally connected at spaced locations to said legs of said member and pivotable from a folded position wherein said frame is collapsed with the three U-shaped members contained in substantially the same plane to an upright position wherein one of said upright support members extends upwardly across an end portion of said base between the legs thereof and the other member is disposed parallel thereto across the opposite end portion of said base, opposed ends of said upright members being pivotally connected to opposite legs of said U-shaped base member; means connected between the legs of the base and the upright member for locking said members in an upright position;
a pair of spaced stabilizer rods, each rod mounted between opposite legs of said base member and extending through adjacent apertures in the end portions of a respective upright support whereby said rods pivotally connect said uprights to said base;
a set of support rods attachable longitudinally between said upright U-shaped support members in the upright positions thereof;
a cover adapted to fit over said U-shaped upright support members and support rods to provide a protective enclosure, said cover being generally rectangular in cross sectional configuration and being provided with an entrance opening adjacent an end of said base; and
a floor member adapted to be removably attached to said stabilizer rods including a rectangular sheet having a set of snap fasteners at opposite ends thereof whereby said ends may be removably secured to said rods.

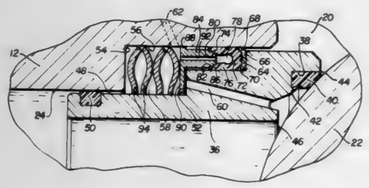
4,286,613
APPARATUS FOR AND METHOD OF FREEZE PROTECTING PLUMBING
Marvin Lacoste, P.O. Box 292, Kiln, Miss. 39556
Filed Jan. 16, 1980, Ser. No. 112,485
Int. Cl.³ E03B *7/12*
U.S. Cl. 137—62 **1 Claim**

1. In a plumbing system subjected to ambient freezing temperatures, includes an apparatus for freeze protecting said plumbing system, said apparatus comprising:
(a) drain pipe connecting means extending parallel to the plumbing system from the warmest ambient environment to the ambient coldest environment thereof and to a drain means;
(b) bleed valve means mounted in said plumbing system in said warmest ambient environment and joined to said connecting means for the bleeding off of liquid from said plumbing system;
(c) gate valve means mounted in said connecting means at said coldest ambient environment for opening and closing said connecting means to said drain;
(d) thermostat means mounted adjacent said gate valve



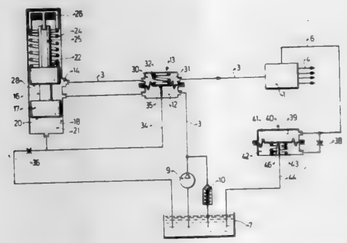
means and operably connected thereto for actuating said gate valve to open before freezing temperature is reached in the coldest ambient environment, and to close at temperatures above said freeze opening temperature for ensuring a liquid flow through said plumbing system before liquid can freeze in any part of said plumbing and drain pipe connecting means;
(e) all said means being detachable from the plumbing system as a single unit and placed at any exterior point along the plumbing system to bleed off liquid from the plumbing system through the gate valve means to the drain means.

4,286,614
HIGH TEMPERATURE BALL VALVE
Gary W. Kacal, Rosenberg, and Charles C. Partridge, Houston, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Sep. 19, 1979, Ser. No. 77,078
Int. Cl.³ F16K *25/00, 5/22*
U.S. Cl. 137—72 **15 Claims**



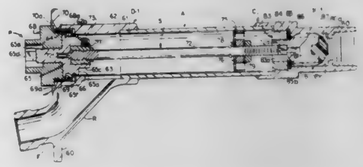
1. A valve comprising:
a valve body having a valve chamber and a fluid flow passage;
a valve member mounted in said valve chamber for movement between an open position and a closed position relative to said flow passage;
an annular valve seat mounted about said flow passage for sealing against the valve member, said valve seat having a lubricant passage therein adapted to receive lubricant for emergency sealing;
a fire destructible packing ring extending around said valve seat to provide a seal between the valve seat and body;
a metal wedge element mounted around said valve seat adjacent said packing ring, said wedge element having a projecting portion thereof normally held away from said lubricant passage by said packing ring but adapted to close off said lubricant passage upon destruction of said packing ring; and
resilient means for urging said wedge element against said packing ring to expand the packing ring against said valve body and valve seat by wedging action, said resilient means acting to force said projecting portion of the wedge element against said valve seat at a location to close off said lubricant passage upon destruction of said packing ring.

4,286,615
APPARATUS FOR MEASURING THE AMOUNT OF FLUID SUPPLIED BY A FLUID SUPPLY DEVICE
Gerhard Stumpp, Stuttgart, and Wolf Wessel, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Mar. 12, 1979, Ser. No. 19,521
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812233
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—117 **1 Claim**



1. A device for detecting and measuring the amount of fluid delivered by a fluid delivery device having a supply line for the fluid under pressure to the delivery device having an apportioning cross-section valve characterized by the fact that a piston means is integrated in the supply line, a pressure comparison valve responsive to spring means for providing a nominal value and for comparing the pressure contrast which appears at said apportioning cross-section valve with said nominal value in said pressure comparison valve and an adjustment device for providing a correcting regulation of said piston means, said adjustment device being activated in accordance with the deviation of said pressure contrast from said nominal value and wherein the position of said piston means provides a measure of the amount of flowing fluid per unit of time,
a fluid tank, a return flow line connected to said fluid tank wherein a part of the apportioned amount of fluid is returned through said return line to the fluid tank characterized by the fact that in said return line a constant flow-through cross-section orifice is provided and a differential pressure valve operatively associated with said flow-through cross-section orifice for the generation of a constant pressure contrast at said flowthrough cross-section orifice,
a relief line having a flowthrough cross-section means characterized by the fact that said differential pressure valve controls an outlet cross-section valve following said flow-through cross-section means in said relief line, and
a displacement-voltage converter connected to said piston means for generating an electrical control value signal directly proportional to the displacement of said piston means.

4,286,616
NON-FREEZE WALL HYDRANT
Irlin H. Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio 44124
Division of Ser. No. 654,866, Feb. 3, 1976, Pat. No. 4,221,233, said Ser. No. 654,866, is a continuation-in-part of Ser. No. 425,503, Dec. 17, 1973, Pat. No. 3,952,770. This application Apr. 16, 1980, Ser. No. 140,723
The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.
Int. Cl.³ F16K *31/50*
U.S. Cl. 137—327 **10 Claims**



1. In a wall hydrant including a building wall penetrating straight tubular conduit element, a water pipe inlet connection element joined on one end of the conduit element as a hydrant inner end, and a hollow open-ended operating and discharge end element with its inner end joined on the other end of the conduit element, as a hydrant outer end to be accessible at the outside of the building wall, the discharge end element having a lateral outlet, said elements constituting a hydrant body, and a water valving member axially shiftable in and out of an inlet passage closing position at a valving bore of said inlet element for opening and closing the hydrant, the structure comprising:
operating shaft means extending through and axially shiftably supported in said body to control axial shift of said valving member in and out of said closing position,
a closure element secured to and sealed in the other, outer, end of said discharge element as a plug and providing an end wall with a threaded central aperture coaxially aligned with the conduit element and said valving bore and having said shaft means threaded therethrough to be rotationally operated to effect axial shifting;
said valving bore interiorly terminates at and opens toward said conduit element through a valving seat structure including an annular male-threaded element screwed into a female thread at the end of the valving bore,
said annular element has a torque tool accepting formation axially accessible from its outer end;
said operating shaft means comprises
a valve operating rod extending coaxially through said conduit element, and
an element having on one end a steam threaded through the end wall threaded aperture and at its other end a coaxial socket,
said rod as a separable element having one rod end set-screw secured in said socket and the other rod end supported coaxially of said conduit for operation of said valving member;
the set screw-secured rod end carrying a torque tool element adapted to rotationally drivingly engage with said accepting formation,
whereby upon extraction of said closure with said operating shaft means from the hydrant body, and release of said rod from its set screw securement and end-for-end reversal, the rod provides a tool for removal of said annular element of the seat structure.

8. In a wall hydrant including a building wall penetrating straight tubular conduit element, a water pipe inlet connection element joined on one end of the conduit element as a hydrant inner end, and a hollow open-ended operating and discharge end element with its inner end joined on the other end of the conduit element, as a hydrant outer end to be accessible at the outside of the building wall, the discharge end element having a lateral outlet, said elements constituting a hydrant body, and

a water valving member axially shiftable in and out of an inlet passage closing position at a valving bore of said inlet element for opening and closing the hydrant, the structure comprising:

operating shaft means extending through and axially shiftably supported in said body to control axial shift of said valving member in and out of said closing position,

a closure element secured to and sealed in the other, outer, end of said discharge element as a plug and providing an end wall with a threaded central aperture coaxially aligned with the conduit element and said valving bore and having said shaft means threaded therethrough to be rotationally operated to effect axial shifting;

the said valving bore opens inwardly toward said conduit element through a shouldered formation of said inlet element surrounding the flow path to the conduit element,

said shoulder formation being provided with an apertured valving seat facing said valving bore;

said valving member comprises a shuttle-like element axially slideable in the valving bore to and from a valve closing position with one end sealingly engaging said valving seat,

said shuttle-like element with a surrounding cylindrical surface of the valving bore defining flow space in the inlet element from the water pipe connection to the apertured seat;

said operating shaft means includes a push-rod extending coaxially through said conduit element and engageable with said one end of the shuttle element to displace it axially from said seat, and to hold it displaced in an open position against forces urging it back to closed position;

said inlet connection element has a radial constriction at the inlet end of said valving bore having a central inlet aperture; and

the other end of said valving member bears a seal element engageable with the said constriction as a seat for closing the central inlet aperture by backward shift of the valving member upon a vacuum condition arising in connected supply piping.

10. In a wall hydrant including a building wall penetrating straight tubular conduit element, a water pipe inlet connection element joined on one end of the conduit element as a hydrant inner end, and a hollow open-ended operating and discharge end element with its inner end joined on the other end of the conduit element, as a hydrant outer end to be accessible at the outside of the building wall, the discharge end element having a lateral outlet, said elements constituting a hydrant body, and a water valving member axially shiftable in and out of an inlet passage closing position at a valving bore of said inlet element for opening and closing the hydrant, the structure comprising:

operating shaft means extending through and axially shiftably supported in said body to control axial shift of said valving member in and out of said closing position,

a closure element secured to and sealed in the other, outer, end of said discharge element as a plug and providing an end wall with a threaded central aperture coaxially aligned with the conduit element and said valving bore and having said shaft means threaded therethrough to be rotationally operated to effect axial shifting;

said shaft means carries

a guide support disk element rotationally and axially slideably engaging an interior cylindrical surface of said tubular conduit element, and having flow apertures therethrough, and

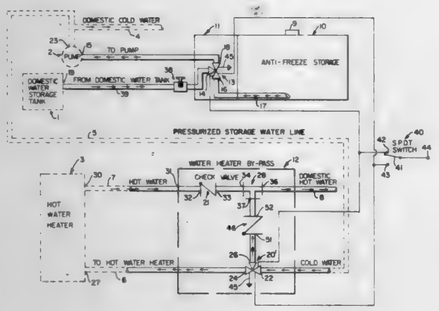
a flexible elastomeric seal disk on the downstream side of the disk element normally having a peripheral light interference with the conduit element and covering said flow apertures whereby back flow is prevented and by flexing of the seal disk away from the disk element forward hydrant discharge flow permitted.

4,286,617

WATER SYSTEM FREEZE PROTECTION APPARATUS

Marvin J. Bedient, Caldwell, Id., assignor to John Swan, Bend, Oreg.

Filed Feb. 8, 1979, Ser. No. 10,395
Int. Cl.³ E03C *1/02*
U.S. Cl. 137—334 **6 Claims**



1. In a recreational vehicle water system including:

(a) a main water storage tank containing a supply of water;

(b) a water pump having an inlet and an outlet, said inlet being in fluid communication with said supply of water in said main water storage tank and said outlet supplying pressurized storage water;

(c) a water heater, said water heater including a water inlet and a hot water outlet, said water inlet receiving pressurized storage water and said hot water outlet supplying hot water to a domestic hot water supply line;

(d) a cold water tap intermediate said water pump outlet and said water heater water inlet for supplying pressurized water to a domestic cold water supply line;

wherein the improvement comprises an improved anti-freeze apparatus for use in the water system comprising:

(e) an anti-freeze storage tank containing a supply of anti-freeze;

(f) a first three-way valve means in fluid communication with said anti-freeze storage tank and interposed between said water storage tank and said water pump;

(g) a second three-way valve means for providing fluid communication between said water pump outlet, said water heater inlet and said domestic hot water line, said second valve means including a check valve positioned between said water heater hot water outlet and said domestic hot water line;

wherein said water system has a normal water supply state and an anti-freeze protection state, in said normal water supply state said first valve means permits water to flow from said storage tank to said water pump and said second valve means permits pressurized storage water to flow to said water heater inlet; and

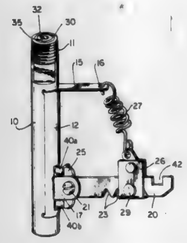
in said anti-freeze protection state said first valve means prevents the flow of storage water from said storage tank and fluidly connects said supply of anti-freeze to said water pump, and said second valve means prevents the flow of pressurized fluid to said water heater water inlet while connecting said pressurized storage water supply line to said domestic hot water supply line, thereby bypassing said water heater inlet, said check valve automatically preventing the flow of anti-freeze into said water heater through said hot water outlet, whereby anti-freeze is supplied to the entire water system except for said hot water heater and said water storage tank.

4,286,618

VALVE

Chang Bang, Stone Mountain, and Scott Row, Marietta, both of Ga., assignors to Korus, Inc., Atlanta, Ga.

Filed May 9, 1980, Ser. No. 148,131
Int. Cl.³ F16K *21/04*; A01K *7/02*
U.S. Cl. 137—408 **1 Claim**



1. An improved liquid control valve comprising in combination:

a valve housing;

a selectively deformable sleeve within said valve housing;

means defining a first orifice and a second orifice extending from the outside to the interior of said valve housing, said first orifice and said second orifice characterized, respectively, by a first orifice longitudinal axis and a second orifice longitudinal axis, said first orifice longitudinal axis and said second orifice longitudinal axis being substantially perpendicular to the longitudinal axis of said valve housing;

first and second piston members for deforming said deformable sleeve and being slidably inserted, respectively, into said first orifice and said second orifice;

a lever means pivotally mounted externally to said valve housing about a lever axis extending between said first and second orifice longitudinal axes including a support location at a distal end for supporting a discharge container and a cross member at a near end extending substantially perpendicular to said lever axis, said first and second orifice longitudinal axes passing through said cross member:

said lever means being rotatable about said lever axis to an open position wherein said first and second piston members are urged equal distances into said valve housing; and

biasing means coupled to said lever means for biasing said lever means toward a cutoff position at which said cross member urges said first piston member into said interior of said valve housing to deform and pinch off said deformable sleeve and at which said deformable sleeve urges said second piston member out of said valve housing toward said cross member.

4,286,619

BALLCOCK ASSEMBLY

Albert E. Straus, Erie, Pa., assignor to Hoover Universal, Inc., Saline, Mich.

Filed May 7, 1979, Ser. No. 36,399
Int. Cl.³ F16K *31/26*
U.S. Cl. 137—426 **17 Claims**

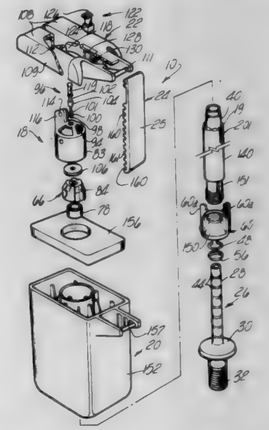
1. A ballcock valve assembly for controlling the supply of liquid to a liquid storage tank comprising,

an upright standpipe for conveying liquid under pressure to said storage tank,

valve means on said standpipe at the upper end thereof operable to control the delivery of liquid to said tank, said valve means including a housing, a valve seat, and a valve element movable in a downward direction to an opened position against the flow of liquid flowing through said standpipe and movable in an upward direction to a closed position abutting said seat against which said valve element is urged by said liquid under pressure,

a float unit surrounding said standpipe and movable vertically in response to changes in the level of liquid in said tank, and

an actuating member being pivotally connected at spaced apart locations thereon to said housing and to said float unit through a linkage means for moving said valve element essentially vertically between its opened and closed positions in response to the vertical movement of said float unit so that a change in the level of liquid in said tank enables the vertical movement of said float unit to be transmitted to said valve element, said actuating member engaging said valve element to translate the downward



movement of said float unit to said valve element to move it downwardly to said opened position when the level of liquid in said tank drops below a predetermined level.

3. The ballcock valve assembly that is defined in claim **1**, wherein said linkage means includes a connector means releasably connected to said valve actuating member and to said float unit, said connector means including a plurality of vertically spaced horizontal C-shaped sockets, said valve actuating member and said float unit having horizontally extending pin means pivotally and releasably connected to selected ones of said C-shaped sockets to establish a selected vertical height between said float unit and said valve actuating member to vary the level of liquid in said tank at which said valve means is actuated and, further, to limit rotation of said float unit with respect to said standpipe.

4,286,620

COMBINATION TORCH AND CHECK VALVE ASSEMBLY

Larry R. Turney, Denton, Tex., assignor to Victor Equipment Company, Denton, Tex.

Filed Jul. 14, 1980, Ser. No. 167,827
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—454.2 **9 Claims**

1. In a torch combination that includes at least a body, barrel and a head that includes at least fuel and oxygen passageways and at least respective fuel and oxygen valves; the improvement comprising:

two respective check valve bodies disposed in fluid communication with said respective fuel and oxygen passageways and connected with said torch handle; each said check valve body having a chamber for receiving a check valve subassembly; each said chamber having a first end having a passageway and having a second end open for receiving said check valve subassembly;

two respective check valve subassemblies inserted within said

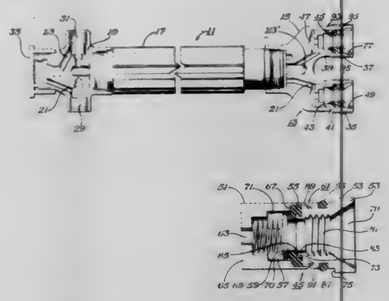
respective chambers; each said check valve subassembly including;

a. a guide having at least one flow passage and a central bore having a first diameter at a first end and a second diameter greater than said first diameter at a second end for receiving a retainer;

b. a retainer disposed with a first end disposed in said second diameter passageway;

c. a seal disposed on said first end of said retainer;

d. a moveable seat disposed in said guide and adjacent said seal;



e. biasing means biasing said moveable seat toward said seal;

f. first means holding said guide and retainer together; and

g. second means holding said check valve subassemblies within said chambers; and

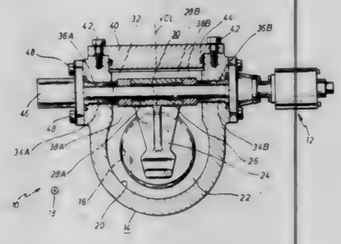
respective hose connectors connected with said check valve bodies adjacent said chamber second ends for connecting respective fuel and oxygen hoses therewith; such that any reverse flow is arrested before it enters a respective hose and regulator and danger of explosion is minimized.

4,286,621

DUAL ACTING CHECK VALVE DAMPENER

Robert J. Glahn, Tulsa, Okla., assignor to Geosource Inc., Houston, Tex.

Filed Dec. 17, 1979, Ser. No. 103,902
Int. Cl.³ F16K *1/20, 21/10*
U.S. Cl. 137—514 **12 Claims**



1. In a valve having a clapper mounted on a valve shaft for opening and closing movement out of and into a flow path defined between an inlet and an outlet port provided in a valve casing, wherein the improvement comprises a dampener arrangement for damping both the opening and closing movement of the clapper, the dampener arrangement comprising:

a fluid-tight housing having a first and a second radially inwardly directed stator member cooperating to subdivide the cavity into a first and a second cavity, each cavity being adapted to receive a damping fluid therein;

a rotor connectable to the valve shaft for movement therewith, the rotor having a first and a second vane extending therefrom, each vane subdividing one of the cavities into a first and a second fluid volume, each vane being displaceable within the cavity in which it is disposed in a first and a second direction in accordance with the opening and closing movement of the clapper, the movement of the clapper being adapted to be retarded by movement of each vane through damping fluid in each cavity increasing the pressure of damping fluid disposed in the fluid volume forward of each vane in the direction of movement thereof; and

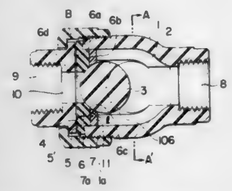
a pressure relief arrangement disposed within the rotor to relieve pressure generated in the fluid in the volumes forward of the vanes in the direction of movement thereof when the fluid pressure exceeds a predetermined pressure, the pressure relief arrangement comprising a first passage disposed in the rotor in fluid communication with each of the first fluid volumes in each cavity to balance the pressures in the two first fluid volumes; a second passage disposed in the rotor in fluid communication with each of the second fluid volumes in each cavity to balance the pressures in the two second fluid volumes; a bore placing; the first and second passages in communication with each other and a relief valve disposed between the first and second passages to cooperate with the bore, the relief valve being biased to a normally closed position, and the relief valve being responsive to a force imposed thereon when the pressure of fluid in one of the passages exceeds the predetermined pressure to open the valve and to communicate the first passage with second passage through the bore.

4,286,622

CHECK VALVE ASSEMBLY

Youichi Ninomiya, 12-1 Yamashita-cho 3-chome, and Kazuhiko Tsuno, 106, Kamaeguchi-cho 2-chome, both of Nobeoka-shi, Miyazaki-ken, Japan

Filed Jan. 21, 1980, Ser. No. 113,524
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—533.11 **6 Claims**



1. A check ball valve assembly comprising:

a main valve body member comprising a hollow cylindrical body element defining a fluid flow path and a first pipe coupling member positioned at a first end of the fluid flow path and integral with the body element;

a ball valve member positioned in said hollow cylindrical body for movement between a blocking position blocking said fluid flow path and an unblocking position spaced from the blocking position, the blocking position being at a second end of the fluid flow path;

a second pipe coupling member detachably connected to said main valve body member at the second end of the fluid flow path;

a resilient sealing member positioned between said second pipe coupling member and said main valve body member, said sealing member having an inner surface contacted by said ball valve member in said blocking position to thereby seal the fluid flow path and having portions thereof forming a seal between said valve body member and said second pipe coupling member; and

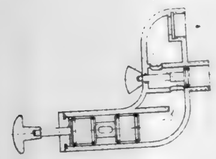
a retainer ring fixedly positioned between said sealing member and said ball valve member, said retainer ring being formed of a material harder than that forming the sealing member and having a central tapered fluid passage allowing bore engageable by said ball valve member in said blocking position to thereby limit movement of said ball valve member and prevent excess pressure contact between said ball valve member and said sealing member.

4,286,623

FAUCET CONTROL DEVICE

Moschoula Spanides, 82a, Themistokleous St., Piraeus, Greece

Filed Nov. 6, 1979, Ser. No. 91,732
Claims priority, application Greece, Nov. 10, 1978, 57630; Dec. 9, 1978, 57826; May 4, 1979, 59005
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—597 **2 Claims**



1. Apparatus comprising a hollow sleeve member having hot and cold water inlets for connection to hot and cold water supplies, and one outlet, and piston means slidably mounted in said sleeve for movement between a first position in which said inlets communicate with said outlet, and a second position in which said inlets are blocked,

said sleeve having a cylindrical bore,

said inlets being axially located at different levels,

said inlets being provided with oblong holes,

said outlet being coaxial and coextensive with said bore,

said piston means in its movement between the first and the second position gradually opening or closing the inlets to increase or reduce the rate of flow through said inlets to said outlet,

said piston means comprising first and second axially spaced piston portions, confined for sealed slidable movement in said cylindrical bore,

said piston portions provided with O-ring seals,

said piston means comprising a stem on which said first and second piston portions are secured,

said stem being of smaller diameter than said first and second piston portions,

said stem having an inlet between said first and second piston portions and a central flow passage bored axially in said stem and communicating with said outlet.

4,286,624

FLUID HANDLING SYSTEMS & MULTI-POSITIONABLE VALVING ARRANGEMENTS FOR THE USE THEREIN

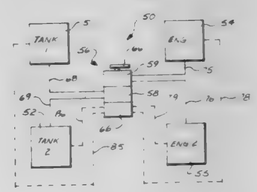
Eivind Clausen, 2614 Kentucky St.; Benton H. Amos, 2427 Vista Dr., and William M. Wood, 231 N. State St., all of Bellingham, Wash. 98225

Filed Feb. 25, 1980, Ser. No. 124,070
Int. Cl.³ F16K *11/02, 11/20*
U.S. Cl. 137—625.19 **23 Claims**

1. A fluid control valve system comprising, in combination:

(a) valve housing means: said valve housing means having a first and x (where "x" is any whole integer less than "3") second coaxial body portions secured together in end-to-end abutting relation; n (where "n" is any whole integer greater than "1") fluid source supply inlet ports and n fluid source return outlet ports formed in one of said first body portion and said x second body portion(s) and adapted to be operatively connected to respective different ones of n fluid source means; m (where "m" is only whole integer greater than "1") fluid utilization supply outlet ports and m fluid utilization return inlet ports formed in the other of said first body portion and said x second body portion(s) and adapted to be operatively connected to respective different ones of m fluid utilization means; longitudinally extending first passageway means formed in said one body portion(s) corresponding in number to, and respectively interconnected in fluid transmitting relationship with respective different ones of each of, said n fluid source supply inlet and return outlet ports; said first passageway means terminating in the end wall(s) of said one body portion(s) secured in end-to-end abutting relation to said other body portion(s) at points equi-distant from an axis extending longitudinally through said first and x second body portions; and, second passageway means formed in said other body portion(s) corresponding in number to, and respectively interconnected in fluid transmitting relationship with respective different ones of each of, said m fluid utilization supply outlet and return inlet ports;

(b) selectively positionable valve control element means mounted in said valve housing means: said valve control element means comprising x rotatable closure disk(s) respectively mounted between said first body portion and each of said x second body portion(s); at least one of said



first body portion and said x second body portion(s) being recessed to receive said disk(s) while permitting said first and said x second body portions to be secured together in end-to-end abutting relation; means formed in one of said x disk(s) and said other body portion(s) for interconnecting all of said second passageway means with one another; and, longitudinally extending third passageway means formed in and extending through said x disk(s); said third passageway means being coupled in fluid transmitting relation with said means interconnecting all of said second passageway means and being equi-distant with said first passageway means from said axis so as to permit selective coupling of one of said first passageway means to all of said second passageway means whereby fluid paths are completed through said fluid control valve system from one of said n fluid source supply inlets to all of said m fluid utilization supply outlets and from all of said m fluid utilization return inlets to one of said n fluid source return outlets; and,

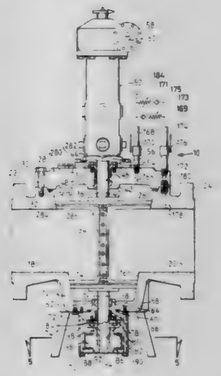
(c) selector means coupled to said x disk(s) for rotating the latter so as to align said third passageway means with selected ones of said first passageway means whereby one of said n fluid source supply inlet ports is operatively connected to supply fluid to all of said m fluid utilization supply outlet ports and all of said m fluid utilization return inlet ports are operatively connected to return fluid to one of said n fluid source return outlet ports.

4,286,625

FOUR-WAY PLUG VALVE

Jerry B. Tomlin, Sugar Land, and Herbert H. Hodgeman, Houston, both of Tex., assignors to Daniel Industries, Inc., Houston, Tex.

Filed Apr. 18, 1979, Ser. No. 31,219
Int. Cl.³ F16K *5/16, 11/083, 39/06*
U.S. Cl. 137—625.43 **19 Claims**



1. A rotary lift-turn type diverter valve mechanism for controlling the flow of fluid, said valve mechanism comprising:

a valve body defining a frusto-conical valve chamber and defining a plurality of flow passages disposed in intersecting relation with said valve chamber;

a bonnet structure being connected to said valve body and defining a closure for said valve chamber;

a generally frusto-conical diverter element being movably positioned within said valve chamber and including a valve stem extending in sealed relation through said bonnet and a trunnion being journaled by said valve body and positioned in coaxial relation with said valve stem, said diverter element cooperating with said valve body to define flow passage means;

adjustable diverter positioning means being provided by said valve mechanism;

diverter positioning means being provided on said diverter element and cooperating with said adjustable diverter positioning means for precisely orienting said plug element with respect to said inlet and outlet passages said adjustable diverter positioning means being selectively positionable to correct for minor misalignment of said diverter element with respect to said flow passage means; and

valve actuator means being connected to said valve body and operatively engaging said valve stem, said valve actuator means being capable of imparting both linear and rotary components of movement to said valve stem during operation for unseating, rotating and reseating said diverter element within said valve chamber.

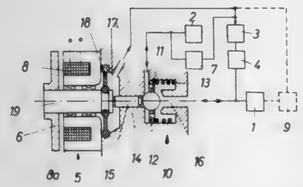
4,286,626

MAGNETIC VALVE

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 39,033
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822142
Int. Cl.³ F16K *31/06*
U.S. Cl. 137—625.65 **8 Claims**

1. A magnetic valve including a housing and an electromagnet having an armature housed in a chamber in said housing which is not infiltrated by a pressure medium to be controlled, a high-pressure chamber arranged to be connected with a source of relatively high pressure and an intermediate-pressure chamber located between said high-pressure chamber and said electromagnet, a wall having a passageway opening between said high-pressure chamber and said intermediate-pressure chamber, a low-pressure chamber subjected to relatively low pressure, said intermediate-pressure chamber communicating with said low-pressure chamber, a rod coupling connected to said armature of the electromagnet, a separate auxiliary rod positioned in said passageway opening in said wall between said rod coupling and said high-pressure chamber, a sealing apparatus for sealing the passageway opening in said wall containing said auxiliary rod from said high-pressure chamber, said passageway opening and said auxiliary rod being so dimensioned that only a small flow of pressure medium flows



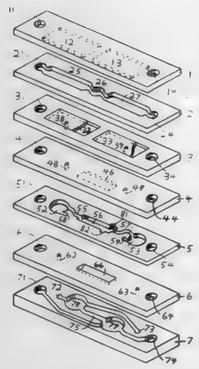
from said high-pressure chamber to said intermediate pressure chamber along the auxiliary rod whereby the pressure drop at said passageway opening between said high-pressure chamber and said intermediate-pressure chamber constitutes the greatest share of the pressure difference between high-pressure chamber and said low-pressure chamber, a membrane secured to said rod coupling and to said valve housing for sealing off the entry of said rod coupling from the electromagnet side into said intermediate-pressure chamber, said sealing apparatus including a closure part arranged to be actuated by said auxiliary rod whereby, in one position of said magnetic valve, said closure part is actuated by said auxiliary rod and permits a flow of pressure medium from the source of relatively high pressure to said intermediate pressure chamber.

4,286,627

VORTEX CHAMBER CONTROLLING COMBINED ENTRANCE EXIT

Ronald E. Graf, Rte. 3, Box 520, Crozet, Va. 22932

Division of Ser. No. 752,983, Dec. 21, 1976, abandoned. This application Oct. 25, 1978, Ser. No. 954,327
Int. Cl.³ F15C *1/16*
U.S. Cl. 137—810 **1 Claim**



1. A device comprising a first component, said first component being a chamber having an axis of substantial circular symmetry,

said chamber having at least one first type fluid connection acting as an exit for working fluid from said chamber and being located on the axis of substantial circular symmetry of said chamber, working fluid being defined as that type of fluid of which some travels through said chamber and out again during operation of said device,

said chamber having at least one second type fluid connection acting as an entrance for working fluid to said chamber, said second type fluid connections each being placed so that working fluid enters at a place away from said axis and being so oriented that working fluid entering at said second type fluid connections and exiting from said chamber at said first type fluid connections will cause a fluid circulation about said axis within said chamber, the circulation and resultant centrifugal forces in turn being the predominant cause of a pressure drop from said second type fluid connections to said first type fluid connections,

said chamber having at least one third type fluid connection acting for working fluid both as an entrance at times to said chamber and as an exit at some other times from said chamber, said third type fluid connections being located substantially away from said axis of substantial circular symmetry, said third type fluid connections being oriented so that, in the absence of other flow, working fluid entering said chamber at said third type fluid connections and exiting from said chamber at said first type fluid connections travels through said chamber without circulation about said axis,

said device further comprising a second component containing a cavity, said second component comprising at least one movable mass, part of the surface of said movable mass comprising one wall of said cavity, the volume of said cavity changing when said movable mass moves, the volume of said cavity being non-zero for most, if not all, positions of said movable mass, which said cavity communicates, through at least one opening in said cavity, whenever its volume is within a given range representing more than half the total range of volumes attained during operation of said device, in the sense of being able to exchange working fluid, with said first component by way of said at least one third type fluid connection, said movable mass being related to the rest of said second component in such a way that said movable mass substantially blocks entrance and exit of working fluid with respect to said cavity at said mass, whenever the volume of said cavity is within said given range, the blocking of working fluid being enough to be effective so that, during normal operation of the device, when the movable mass moves to sufficiently reduce the volume of said cavity within the said given range then working fluid is expelled, by motion of the movable mass, from said cavity at said at least one opening communicating with said third type fluid connection.

4,286,628

CONTROL OF FLUID FLOW USING LONGITUDINALLY MOVABLE DISC

Joseph R. Paradis, Holden, and Edward W. Kaleskas, Jefferson, both of Mass., assignors to Nypro, Inc., Clinton, Mass.

Filed Jun. 21, 1979, Ser. No. 50,823
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—843 **11 Claims**

1. A flow control device comprising

a housing;

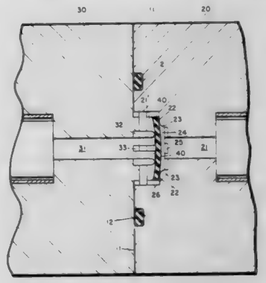
a flow channel in said housing extending to a control channel which is coaxial therewith;

a valve seat in said control channel surrounding a further flow channel extending from said control channel; and

a flexible disc positioned on said valve seat of said control channel,

said control channel having an inside wall surface extending from said valve seat and interrupted by a plurality of peripheral relief channels; and

means for prebiasing said flexible disc comprising a set of prongs for engaging the central portion of said disc within the opening of said valve seat and being separated by passageways which extend to said flow channel;



said valve seat containing a counterbore which extends into said further flow channel, with at least one counterbore channel which is transverse to the axis of flow to insure that said disc will not be pulled into said further flow channel and produce undesired distortion and distension of said disc.

4,286,629

REMOVABLE PLUG

Steven G. Streich, and Lloyd C. Knox, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 7, 1979, Ser. No. 101,377
Int. Cl.³ F16L *55/10;* **E02B** *17/00*
U.S. Cl. 138—89 **10 Claims**

1. A removable plug installed on one end of a pipe comprising:

plug housing means comprising:

annular member means having one end thereof secured on one end of said pipe, having first bore means extending from the end of the annular member means secured to one end of said pipe and terminating at a point intermediate the ends of the annular member means, having annular chamfered seat means at the termination of the first bore means, having second bore means extending from the annular chamfered seat means to the other end of the annular member means, having aperture means in the second bore means of the annular member means, and having conical guide means on the other end of the annular member means;

plug body means retained within said plug housing means, said plug body means comprising:

member means having the outer diameter thereof substantially the same diameter as the second bore means of said plug housing, having annular channel means in the outer periphery thereof containing seal means therein, having additional annular channel means in the outer periphery thereof, having aperture means therein, having attachment means retained within the aperture means extending on each side of said plug body means, and having annular chamfered seat means thereon which mates with the annular chamfered seat means of said plug housing means when said plug body means is installed therein; and

fastening means releasably retaining said plug body means within said plug housing means, said fastening means comprising:

shear type fastening means having a portion thereof retained within the aperture means in the second bore of said plug housing means and having a portion received within the additional annular channel means of said

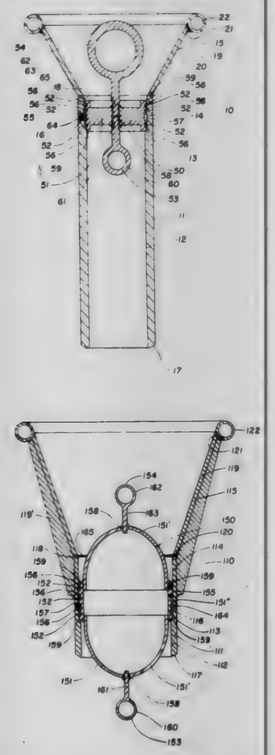
plug body means when said plug body means is installed in said plug housing means.

10. A removable plug installed on one end of a J-tube of an offshore platform or marine structure comprising:

plug housing means, said plug housing means comprising:

annular member means having first bore means extending from the end of the annular member means secured to one end of said end of a J-tube and terminating at a point intermediate the ends of the annular member means, having annular chamfered seat means at the termination of the first bore means, having second bore means extending from the annular chamfered seat means to the other end of the annular member means, and having conical guide means on the other end of the annular member means;

buoyant plug body means retained within said plug housing means, said buoyant plug body means comprising:



buoyant member means including end means interconnected by intermediate member means extending therebetween thereby forming a buoyant member means having a fluid free buoyant chamber therein, the buoyant member means having the outer diameter thereof substantially the same diameter as the second bore means of said plug housing, having annular channel means in the outer periphery thereof containing seal means therein, having additional channel means in the outer periphery thereof, having aperture means therein, having attachment means retained within the aperture means extending on each side of said buoyant plug body means, and having annular chamfered seat means thereon which mate with the annular chamfered seat means of said plug housing means when said buoyant plug body means is installed therein; and

fastening means releasably retaining said buoyant plug body means within said plug housing means, said fastening means comprising:

shear type fastening means having a portion thereof received within the aperture means of the second bore of said plug housing means and having a portion thereof received within the additional channel means of said buoyant plug body means when said buoyant plug body means is installed within said plug housing means.

4,286,630

SURFACE DUCTING

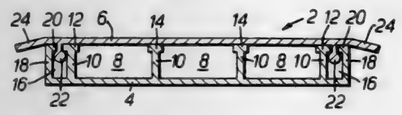
George T. Happer, London, United Kingdom, assignor to Happer Systems Limited, London, England

Filed Jul. 23, 1979, Ser. No. 59,613

Claims priority, application United Kingdom, Jul. 25, 1978, 31017/78

Int. Cl.³ H02G *3/04, 3/28*

U.S. Cl. 138—92 **10 Claims**



1. Surface ducting comprising a body portion and a removable lid, the body portion having a base, first longitudinal channels defined by longitudinally extending ribs which are upstanding from the base, and a pair of second longitudinal channels which are arranged one on each side of the first channels and which are each defined by a side wall of the body portion and one of the ribs, said side wall of the body portion being upstanding from the base and forming an outside of the second longitudinal channels, the first and second longitudinal channels being of the same height, the first channels being for receiving elongate members, the second channels being narrower than the first channels and extending the full distance from the lid to the base so as to be capable of accomodating fixing means extending from the lid to the base for fixing the lid to the base via the second longitudinal channels while not interfering with the first longitudinal channels, and the lid having integrally formed retainer means for clipping in the second longitudinal channels.

4,286,631

METHOD OF PROVIDING A SEAM IN DOUBLE-LAYER FORMING FABRICS

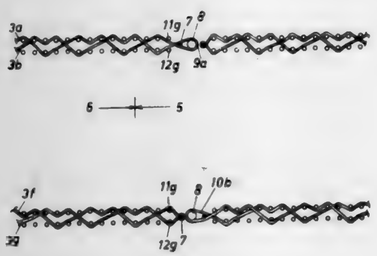
Ingvald Strandly, Brettevillesgate 15, Oslo 4, Norway

Continuation-in-part of Ser. No. 943,118, Sep. 8, 1978, Pat. No. 4,206,787. This application Oct. 23, 1979, Ser. No. 87,695

Claims priority, application Sweden, Jul. 5, 1977, 7707787

Int. Cl.³ D03D *15/00*

U.S. Cl. 139—383 A **3 Claims**



1. A method of providing a row of loops at each end of a weave, said weave comprising two layers of weft threads with the threads positioned in pairs substantially one above the other, warp threads interconnecting said weft layers, and a locking wire intended to interconnect said rows of loops to form an endless fabric web, the method comprising:

removing permanently the weft threads in a first zone closest to one end edge of said weave;

removing temporarily the weft threads in a second zone adjacent said first zone;

arranging said temporarily removed weft threads, alternatively a corresponding number of weft threads, together with one coarse folding wire and also one or several thin folding wires as a warp wherein said coarse wire temporarily replaces said locking wire intended finally to interconnect the two weave ends,

where two warp thread ends in succession in accordance with the pattern repeat weave between the threads of the outermost one of said pairs in said second zone of weft threads, carrying one of said warp thread ends, after having woven said warp thread end into said second zone of weft threads in accordance with the correct weaving pattern, in a loop around said thin folding wire (or wires) as well as around said coarse folding wire and thereafter carrying said warp thread end in the reverse direction in the position of said second warp thread to a pick-up point in said second zone of weft threads, at which point said two warp threads meet,

where at least two of three consecutive warp thread ends according to the pattern repeat weave between the threads of the outermost pair of said second zone of weft threads, one of these warp thread ends after having been woven according to the pattern into said second zone of weft threads is carried in a loop about the thin folding wire (or wires) as well as the coarse folding wire and then back in the place of one of the other warp threads to a pick-up point in the said second zone of weft threads, at which point the two warp threads meet each other whereas the third warp thread after having been woven according to the pattern into said second zone of weft threads is carried to a pick-up point in connection with the outermost pair of weft threads of said second zone of weft threads;

where two subsequent warp thread ends in accordance with the pattern repeat weave over and below, alternatively below, the threads of the outermost one of said pairs in said second zone of weft threads, carrying one of said warp thread ends, after having woven said warp thread end into said second zone of weft threads in accordance with the correct weaving pattern, around said outermost pair of weft threads and the thin folding wire or wires and thereafter carrying said warp thread end in the reverse direction in the position of said second warp thread to a pick-up point in said second zone of weft threads, at which place said two warp threads meet;

where at least two of three succeeding warp thread ends according to the pattern repeat weave over and below, alternatively below, the threads of the outermost pair of said second zone of weft threads, one of these weft threads, after having been woven into said second zone of weft threads in correct pattern, weaves about said outermost pair and the thin folding wire (or wires) and then back in the place of one of the other warp threads to a pick-up point in said second zone of weft threads, at which point the two warp threads meet, whereas the third warp thread end after having been woven into said second zone of weft threads in correct pattern is carried to a pick-up point in connection with the outermost pair of weft threads,

where one warp thread end in accordance with the pattern repeat weaves between, alternatively above or below, the threads of the outermost one of said pairs in said second zone of weft threads without being followed by a warp thread end having the same alternative weaving pattern, carrying said warp thread end, after having woven said warp thread end in accordance with the correct weaving pattern into said second zone of weft threads, around said outermost pair of weft threads and said thin folding wire or wires to a pick-up point adjacent to said outermost pair of weft threads, and

treating said warp thread ends at both edges of said weave in the same manner and preferably simultaneously, said coarse folding wire being common to said warp thread ends of both fabric end edges.

4,286,632

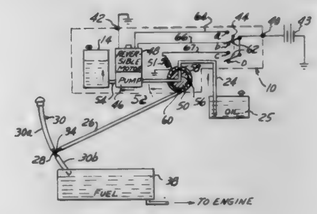
FUEL-LUBRICATING OIL PROPORTIONER AND MIXER

Donald J. Abel, Bradenton, Fla., assignor to David Albert, Tampa, Fla.

Filed Sep. 19, 1979, Ser. No. 76,946

Int. Cl.³ B65B *3/02*

U.S. Cl. 141—18 **8 Claims**



8. A fuel-lubricating proportioner and mixer for discharge into a fuel tank, comprising in combination:

a lubricating oil reservoir;

a graduated lubricating oil measuring container;

a reversible pump connected to said measuring container;

two-way valve means;

first conduit means interconnecting said valve means and said pump;

second conduit means interconnecting said oil reservoir and said valve means;

third conduit means interconnecting said valve means and the fuel tank;

means for controlling the position of said valve means enabling said pump to convey a measured quantity of oil from said oil reservoir to said measuring container when said valve means is in a first position and said reversible pump is moving in a first direction and for enabling said pump to convey said measured quantity of oil from said oil reservoir to the fuel tank when said valve means is in a second position and said reversible pump is moving in a second direction.

4,286,633

DROPPER ASSEMBLY

James E. Herr, East Petersburg, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Sep. 12, 1979, Ser. No. 74,905

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—24 **8 Claims**

8. A combination of a bottle and a child resistant bottle closure-dropper assembly comprising;

a bottle with a hollow interior and a mouth with thread means therearound;

and a closure dropper assembly comprising;

an outer cap with a top end wall and a skirt depending therefrom;

an inner cap concentric with said outer cap with a top end wall and a skirt depending therefrom, thread means on an inside wall of said skirt of said inner cap to engage with said thread means on said bottle;

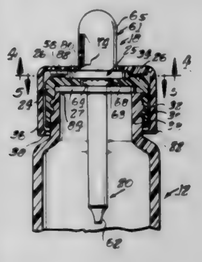
ratchet means on said caps positionable in a driving position for driving engagement to rotate said inner cap with said

outer cap when said outer cap is rotated in an application direction and positionable in a non-driving position to allow said inner cap to remain stationary when said inner cap is engaged with said bottle and said outer cap is rotated in a removal direction;

interlocking members on said caps having driving engagement to rotate said inner cap with said outer cap when said outer cap is rotated in the removal direction;

orifices in the center of each of said top end walls of said caps;

a bulb of resilient material with an opening to receive a syringe therein, a nipple, and a compressible portion, said



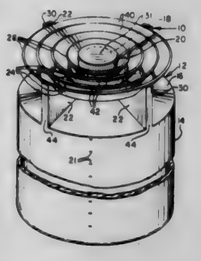
bulb extending through said orifices with said compressible portion disposed between said top ends and spacing said first interlocking member from said second interlocking member when said compressible portion is not compressed but allowing said interlocking members to engage when a downward force is applied to said outer cap compressing said portion, thereby allowing said bottle closure-dropper assembly to be removed from said bottle by applying a simultaneous downward force and rotational torque in the removal direction on said outer cap, compression of said compressed resilient portion biasing said outer cap to shift upwardly to space said interlocking members to prevent closure removal by a child.

4,286,634

SAMPLE CONTAINER WITH COLLAPSIBLE FUNNEL

Elizabeth M. Wisner, P.O. Box 1336, Depot Bay, Oreg. 97341

Filed Oct. 10, 1979, Ser. No. 83,352
Int. Cl.³ B65B *39/02*; B67C *11/02*
U.S. Cl. 141—95 **8 Claims**



1. A sample container, comprising:

(a) a body having a generally horizontal bottom and a side wall connected thereto;

(b) a top connected to said side wall, said top including an upwardly extending neck having an upwardly open mouth, and a sloping top surface extending downward from said neck toward said side wall;

(c) a collapsible funnel attached to said neck for guiding fluid through said mouth into said neck, said funnel comprising a plurality of interlockable, telescopically overlapping frusto-conical rings having respective top edges;

(d) support means attached to said top, for holding said frusto-conical rings; and

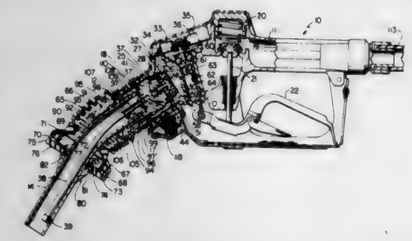
(e) said support means comprising at least three upstanding support members spaced about said top, each of said upstanding support members defining a plurality of notch means therein for receiving and supporting said frusto-conical rings atop said container, wherein the respective top edges of at least some of said rings define a substantially planar horizontal surface for supporting an object such as a similar container stacked thereon when said funnel is in a collapsed configuration.

4,286,635

AUTOMATIC SHUT-OFF NOZZLE HAVING AN ARRANGEMENT FOR CONTROLLING WHEN AUTOMATIC SHUT OFF OCCURS IN RESPONSE TO PRESSURE IN A SEALED TANK

Jack A. McMath, Fort Thomas, Ky., assignor to Dover Corporation, New York, N.Y.

Continuation of Ser. No. 917,911, Jun. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 811,551, Jun. 30, 1977, abandoned. This application Sep. 20, 1979, Ser. No. 77,332
Int. Cl.³ B65B *3/18, 57/14*
U.S. Cl. 141—98 **26 Claims**



1. An automatic shut-off nozzle comprising a body having an inlet and an outlet, a valve in said body controlling flow of liquid from said inlet to said outlet, manual operated means controlling the operation of said valve, a spout communicating with said outlet and having its free end for disposition in an opening of a fill pipe of a vehicle tank or the like, release means to release said manual operated means to allow closing of said valve and stoppage of liquid flow, means to return vapor from the tank being filled, sealing means to form a seal between the fill pipe opening and said vapor return means when said spout is disposed in the fill pipe, responsive means responsive to the pressure in the sealed tank to cause said release means to close said valve to stop liquid flow through said body when the pressure in the sealed tank exceeds a predetermined pressure, means exerting a force on said responsive means in opposition to the pressure in the sealed tank acting on said responsive means, and force control means to control the force exerted by said exerting means on said responsive means to cause said responsive means to respond at the predetermined pressure.

4,286,636

DIP TUBE AND VALVE WITH QUICK-DISCONNECT COUPLING FOR A COLLAPSIBLE CONTAINER

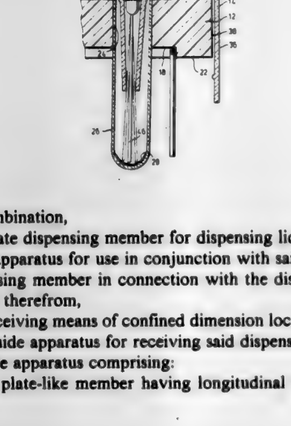
William S. Credle, Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Jul. 19, 1979, Ser. No. 58,866
Int. Cl.³ B67C *5/00*
U.S. Cl. 141—114 **23 Claims**

1. A dip tube for use in combination within a collapsible container and suction means for withdrawing a liquid product from the collapsible container, the improvement comprising:

an elongated dip tube positioned within said collapsible container for permitting a liquid product disposed within said collapsible container to be withdrawn therefrom by said suction means;

said elongated dip tube including at least one substantially straight channel in the peripheral surface thereof extending along substantially the entire length of said dip tube and at least one longitudinal interior passage through the



entire length of said dip tube, said at least one straight channel communicating along the entire length thereof with said at least one longitudinal interior passage;

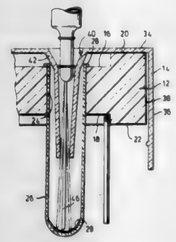
whereby said collapsible container progressively collapses around said dip tube sealing a portion of said channel while the remaining open portion of said channel permits the complete withdrawal of liquid product disposed within said collapsible container.

4,286,637

APPARATUS FOR DISPENSING LIQUIDS INTO TUBES

Strathearn Wilson, King City, Canada, assignor to Connaught Laboratories Limited, Willowdale, Canada

Continuation-in-part of Ser. No. 959,008, Nov. 9, 1978, abandoned. This application Jul. 31, 1980, Ser. No. 174,203
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—374 **8 Claims**



1. In combination,

an elongate dispensing member for dispensing liquids;

a guide apparatus for use in conjunction with said elongate dispensing member in connection with the dispensing of liquids therefrom,

liquid receiving means of confined dimension located below said guide apparatus for receiving said dispensed liquids;

said guide apparatus comprising:

a planar plate-like member having longitudinal and lateral extremities and positioned substantially horizontally in use,

planar wall members depending from each of said longitudinal and lateral extremities and terminating in a plane parallel to and downwardly spaced from said plate-like member,

a plurality of guide means integrally formed with said plate-like member and comprising tubular members extending in tapering fashion from one open end at said plate-like member towards said plane and terminating in another open end at a location upwardly spaced from said plane and from said liquid receiving means,

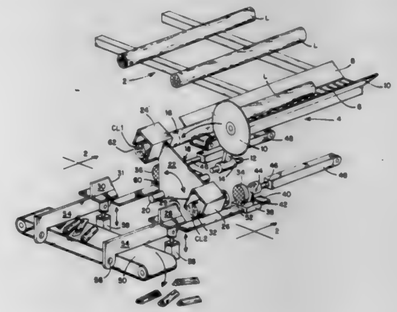
each of said tubular guide means being in substantial alignment with one of said liquid-receiving means and being dimensioned to permit said elongate dispensing member to be supported thereby and to extend through said another open end to permit liquid to be dispensed from said dispensing member to said liquid receiving means.

4,286,638

APPARATUS FOR MEASURING, CUTTING AND SPLITTING LOGS

Bruce Connolly, and J. Bruce Bradicich, both of c/o Forest-All Corporation, Sheep Davis Rd., Concord, N.H. 03301

Filed Feb. 13, 1980, Ser. No. 121,058
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—3 K **13 Claims**



12. A machine for producing short lengths of split lumber, said machine comprising,

means for advancing a log step by step in an axial direction for a predetermined distance,

a transversely movable saw for cutting off a succession of short logs of selected length from the end of said log when said log is stationary,

two laterally spaced log splitters, and

means for receiving the end of said log prior to cutting and for carrying said successively cut short logs alternately to said splitters.

4,286,639

THIN WALLET CARRYING CASE FOR A SANITARY NAPKIN OR TAMPON

Jeannie P. Murphy, 2330 Good Hope Rd. SE., Apt. 904, Washington, D.C. 20020

Filed Apr. 30, 1980, Ser. No. 145,106
Int. Cl.³ B65D *30/24, 39/00*
U.S. Cl. 150—7 **7 Claims**

1. A generally elongated rectangular flexible flat wallet-like carrying case produced from a single sheet comprising:

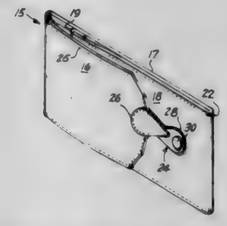
(a) an adjacent single sheet thickness front and back panel formed by folding one end of said single sheet over and adjacent a portion of the remainder of said single sheet, forming two layers in flat contiguous relation,

(b) means securing said panels together at opposing side

edges and open at the top to form a single pocket between said front and back panels,

(c) said back panel being folded adjacent to the open pocket so as to be flat on top of the front panel to define a long flexible closure flap with respect to the width of the carrying case,

(d) releasable fastening means extending beyond and overlying the mid-portion of the pocket for securing said closure flap in closed position,



(e) said open pocket under said closure flap providing means for insertion and withdrawal of a tampon or sanitary napkin held between and by the layers formed by the front and back panels in flat condition, preventing attention being directly called to opening and closing operation of the closure flap as part of the use to which said tampon or sanitary napkin is to be put.

4,286,640

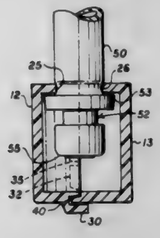
TAMPERPROOF PORT COVER

Kenneth H. Knox, Vernon Hills; Mark E. Larkin, Lindenhurst, and James R. Duffield, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 21, 1980, Ser. No. 113,887

Int. Cl.³ B65D *55/02*

U.S. Cl. 150—8 **13 Claims**



1. A protective cover for the port of a container for medicinal liquids, said port defining flexible side and end walls comprising:

first and second body members defining side and opposing end walls adapted to partially surround said port side and end wall;

hinging means extending between adjacent wall portions of said first and second members to interconnect said members;

said first and second body members defining oppposing end walls presenting port-engaging surfaces at one end of each said member and a closed wall at the other end;

tamperproof frictional engagement means operatively associated with adjacent wall portions of said first and second body members opposite said hinging means providing a snapfit arrangement;

said port engaging surfaces and said frictional engagement means of said first and second body members constructed and arranged so that when said first and second members are placed over said side and end walls of said port and said frictional engagement means are activated, said resilient side wall of said port will exert a biasing force on said port engaging surface to maintain said frictional engagement means under tension.

4,286,641

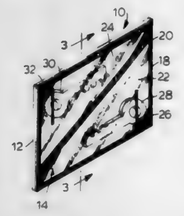
COMBINATION BUSINESS CARD AND KEY STORAGE DEVICE

Joe L. Watson, 4602 Okeechobee, Fort Pierce, Fla. 33450

Filed Nov. 13, 1979, Ser. No. 93,374

Int. Cl.³ A45C *11/42*

U.S. Cl. 150—40 **5 Claims**



1. An improved key holder device, comprising:

an enclosure having a first outer surface and a second outer surface joined together around their periphery, one of said surfaces including a receiving means for inserting a key into said enclosure;

said enclosure including at least two substantially rectangular flexible sheets;

said substantially rectangular flexible sheets including a first seal around the peripheral edges of said substantially rectangular flexible sheets and a second seal along a diagonal of said substantially rectangular flexible sheets dividing said first outer surface into a first substantially triangular compartment and a second substantially triangular compartment;

said first substantially triangular compartment and said second substantially triangular compartment each having a wide end and a narrower end;

said receiving means including a slit formed in the wide end of at least one of said substantially triangular compartments.

4,286,642

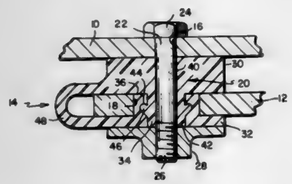
ISOLATION CONNECTION

James Keatley, Granada Hills, Calif., assignor to Barry Wright Corporation, Watertown, Mass.

Filed Apr. 9, 1979, Ser. No. 28,129

Int. Cl.³ F16B *37/04*

U.S. Cl. 411—112 **4 Claims**



1. An isolation connection for minimizing transmission of vibration and noise from one part to another, said isolation connection comprising in combination: first and second parts having opposing surfaces with aligned holes therethrough, an isolation fastener element inserted through the holes with retaining means at its ends and an interposable integrally-constructed system of elastomeric material comprising (A) a first elastomeric body disposed about the portion of the element between the parts, said first elastomeric body being mounted on and between the opposing surfaces of the parts so as to have elastomeric material confronting each of the parts, (b) a second elastomeric body disposed about the element and between the retaining means at one end and the part confronted by the retaining means so as to have elastomeric material confronting said part and said retaining means at one end, and (c) elastomeric protrusions extending from the respective elastomeric bodies into the hole in the part embraced between the elastomeric bodies and about the portion of the element extending through said hole, said protrusions embodying means interlocking one elastomeric body with the other.

4,286,643

PNEUMATIC TIRE HAVING A LINING OF PUNCTURE SEALING PRODUCT

Andre Chemizard, and Max Blanc, both of Clermont-Ferrand, France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed May 1, 1979, Ser. No. 34,965

Claims priority, application France, May 10, 1978, 78 14113

Int. Cl.³ B60C *21/08*

U.S. Cl. 152—347 **3 Claims**



1. A tire whose inner wall is covered, at least in the zone of the crown and of the shoulders, with a self-sealing product which is pasty at the temperature of the tire in service and which, seen in meridian section, is contained between two layers of elastomer and is divided transversely by partitions of elastomer, characterized by the fact that the self-sealing product forms at least one continuous ribbon having a parallelogram cross section, one end of which is located in the region of one shoulder while the other end is located in the region of the other shoulder of the tire, the transverse partitions of elastomer having an angle of inclination of between about 30° and about 50°.

4,286,644

REPLACEABLE TREAD TIRES

James W. Pond, Jr., Doylestown, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 905,252, May 12, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,020

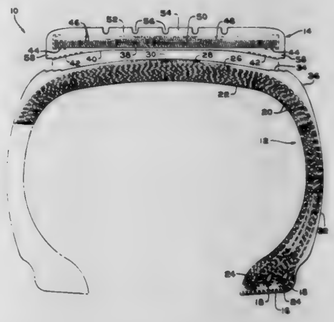
Int. Cl.³ B60C *11/02*

U.S. Cl. 152—354 R **1 Claim**

1. A pneumatic tire assembly including:

a generally toroidal carcass portion having axially spaced beads, radially outwardly extending sidewalls, a crown section and carcass shoulders intermediate the sidewalls and crown section, said carcass shoulders being built-up and enlarged with respect to said crown section, said carcass having high angle bias ply cords of about 75° with respect to the intended direction of tire rotation and extending from bead to bead and defining an ovate cross-sectional configuration with a relatively flat, continuous, upper surface extending entirely across the crown and carcass shoulders to define a tread receiving area, and

a generally cylindrical replaceable tread portion removably mounted upon the upper surface of said carcass portion, said tread portion having a central area and tread shoulders extending from the edges of the tread portion, said tread shoulders being built-up and enlarged with respect to the rest of the tread portion, said tread portion also including a plurality of layers of ply cords extending entirely across said tread portion at 0° from the intended direction of tire rotation, the tread portion defining an axially elongated cross-sectional configuration with a relatively flat, continuous radially inner surface across its entire width to constitute an area for mounting upon the tread receiving area of said carcass portion with the carcass shoulders in overlying contact with said tread shoulders and with the interface of said carcass portion and said tread portion defining in cross-section a radius of curvature of from about 500% to infinity of the inflated carcass section width at its widest dimension whereby said replaceable tread portion is maintained on said carcass portion during use by inflation pressure within said carcass portion.



4,286,645

PNEUMATIC TIRE WITH REINFORCED CARCASS AND TREAD

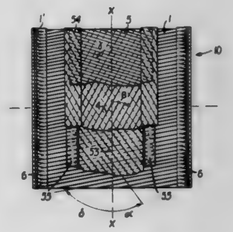
Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation of Ser. No. 748,498, Dec. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 650,665, Jan. 20, 1976, abandoned, which is a continuation of Ser. No. 476,443, Jun. 5, 1974, abandoned. This application Jun. 20, 1979, Ser. No. 50,309

Claims priority, application France, Jun. 12, 1973, 73 21397; Mar. 11, 1976, 76 07055

Int. Cl.³ B60C *9/20, 9/04*

U.S. Cl. 152—360 **10 Claims**



1. A cylindrical blank for the one-step manufacture of a pneumatic tire characterized by the fact that it comprises at least one carcass ply having cords which are continuous from one bead to the other and which form a substantially constant angle of between 70° and 90° with respect to the circumferential direction, as well as a tread reinforcement consisting essentially of three tread plies radially outside the carcass ply adjacently superimposed on one another and on the carcass ply and having cords whose respective cord angles α, β and γ are such

that, α being the angle of the cords of the tread ply nearest the carcass ply,

when the angles β and γ of the other two tread plies are of opposite sign and when in absolute value the angle β is greater than the angle γ, the expression

$$\left|\frac{|\tan\beta| - |\tan\gamma| - 2|\tan\alpha| \cdot |\tan\beta| \cdot |\tan\gamma|}{2|\tan\beta| \cdot |\tan\gamma| + |\tan\alpha|(|\tan\beta| - |\tan\gamma|)}\right| \leqq 0.6$$

is satisfied;

when the angles β and γ of the other two tread plies are of the opposite sign and when, in absolute value, the angle γ is greater than the angle β, the expression

$$\left|\frac{|\tan\gamma| - |\tan\beta| - 2|\tan\alpha| \cdot |\tan\beta| \cdot |\tan\gamma|}{2|\tan\beta| \cdot |\tan\gamma| + |\tan\alpha|(|\tan\gamma| - |\tan\beta|)}\right| \leqq 0.6$$

is satisfied; and

when the angles β and γ of the other two tread plies are of the same sign, the expression

$$\left|\frac{|\tan\beta| + |\tan\gamma| - 2|\tan\alpha| \cdot |\tan\beta| \cdot |\tan\gamma|}{2|\tan\beta| \cdot |\tan\gamma| + |\tan\alpha|(|\tan\beta| + |\tan\gamma|)}\right| \leqq 0.6$$

is satisfied,

whereby said three tread plies can be expanded radially and said cylindrical blank can be reshaped to a substantially toroidal shape, notwithstanding the positioning thereon of said three tread plies.

4,286,646

METHOD FOR INOCULATING OR REFINING METAL MELTS

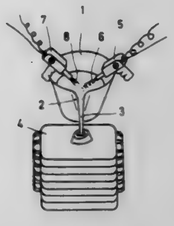
Horst Beyer, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,288

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807527

Int. Cl.³ B22D *27/00*

U.S. Cl. 164—57.1 **4 Claims**



1. In a method for inoculating or refining a metal by introducing an additive into a melt of the metal under high kinetic energy and wherein the melt is poured in the form of a stream from a crucible via a casting spout thereof, the improvement wherein said step of introducing is carried out with a magnesium or a magnesium alloy additive in molten form by blowing the molten additive into the melt stream with a carrier gas while the melt is being poured, at the location of the casting spout, by forming a spray of the molten additive with the carrier gas, which spray is laterally unrestricted, to dissolve the additive immediately into the metal melt in uniform dispersion, said melt being poured from the crucible into a stacked sand casting mold to produce piston rings and the composition of the melt being such as to produce cast iron piston rings containing spheres of graphite.

4,286,647

APPARATUS FOR PREVENTING STEAM EXPLOSION IN WATER DISCHARGE CHANNEL OF SECONDARY COOLING ZONE CAUSED BY MOLTEN METAL BREAKING OUT FROM CAST STRAND IN HORIZONTAL TYPE CONTINUOUS CASTING MACHINE

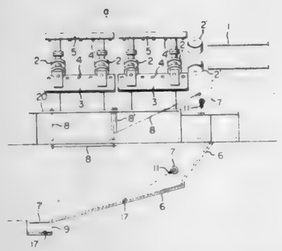
Akira Honda, Kamakura; Kiyomi Taguchi, Fukuyama; Masayuki Hanmyo, Fukuyama; Masaru Ishikawa, Fukuyama, and Minoru Kitamura, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,596

Claims priority, application Japan, Jul. 9, 1979, 54/85844

Int. Cl.³ B22D *11/124*

U.S. Cl. 164—153 **5 Claims**



1. An apparatus for preventing a steam explosion in a water discharge channel of a secondary cooling zone of a horizontal type continuous casting machine, caused by molten metal breaking out from a cast strand, said discharge channel being provided in downward inclination toward the downstream below said secondary cooling zone along said secondary cooling zone, which comprises:

a metal net provided substantially horizontally between said secondary cooling zone and said water discharge channel for granulating said molten metal breaking out from said cast strand;

a water flashing mechanism provided over the entire width of said water discharge channel above said water discharge channel, said water flashing mechanism comprising a plurality of water injection ports for ejecting water on said molten metal granulated through said metal net for rapidly cooling and solidifying said molten metal and washing away the resultant solidified granulated metal toward the downstream of said water discharge channel; and,

a tank provided at the downstream end of said water discharge channel for receiving the water and the granulated metal discharged from said water discharge channel and for separating said granulated metal from said water.

4,286,648

APPARATUS FOR OPERATING AN INJECTION CYLINDER OF A MOLDING MACHINE

Takahiko Takeshima; Motozo Kawashima, and Masayuki Nishimoto, all of Ube, Japan, assignors to Ube Industries, Ube, Japan

Filed Jul. 10, 1980, Ser. No. 168,389

Claims priority, application Japan, Sep. 27, 1979, 54-123166

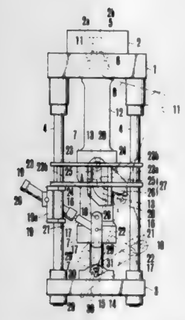
Int. Cl.³ B22D *17/30*

U.S. Cl. 164—312 **8 Claims**

1. In a molding machine of the type comprising spaced apart first and second stationary platens, a stationary die secured to said first platen, a movable die which cooperates with the stationary die to mold molten metal, an injection cylinder disposed between the second stationary platen and the stationary and movable die for driving an injection plunger, and an injection sleeve disposed in front of the injection cylinder, said injection plunger being slidable in said injection sleeve, wherein the molten metal is injected when axes of the injection cylinder and of the molten metal passage align with each other, and the molten metal is teemed into the injection cylinder when the axis of the injection cylinder is out of alignment with the axes of the stationary and movable dies, an apparatus for moving the injection cylinder between the injection position and the teeming position, which comprises:

a drive means (**20**);

a link mechanism (**16,17**) disposed between a first pin (**13**) on the side of the injection cylinder (**7**) and a stationary second pin (**15**) secured to the second platen (**3**) so as to be expanded and collaped by the drive means (**2**);



a cam plate (**24**) secured to oppose the side of the injection cylinder and including a guide slot (**27**) comprised of a longitudinal slot (**25**) parallel with the axis of the injection cylinder when it is in the injection position and an inclined slot (**26**) contiguous with the longitudinal slot;

a first roller (**28**) secured to the side of the injection cylinder (**7**) to be movable along the guide slot (**27**);

a guide member provided with a slot (**30**) for moving the injection cylinder in the axial direction in the injection position; and

a second roller (**31**) positioned in the slot of the guide member to act as a center of swinging motion of the injection cylinder.

4,286,649

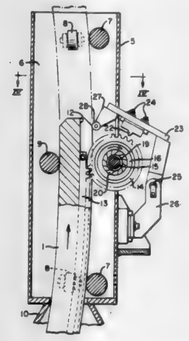
APPARATUS FOR STORING A CONTINUOUS CASTING STARTING BAR IN ELEVATED POSITION

Joseph Rokop, and Nikolaus Rokop, both of Pittsburgh, Pa., assignors to Rokop Corporation, Pittsburgh, Pa.

Filed Jun. 16, 1980, Ser. No. 159,698

Int. Cl.³ B22D *11/08*

U.S. Cl. 164—446 **5 Claims**



1. Apparatus for use with a flow-through continuous casting mold, said apparatus comprising a starting bar curved lengthwise in a vertical plane and having a trailing end for joining to a metal strand issuing from the bottom of such a mold, the leading end portion of said bar being provided with a row of rack teeth extending along the bar for a predetermined distance, a storage housing adapted to be spaced laterally from the mold and having a substantially vertical passage therethrough for receiving said leading end portion of the bar, means for moving the starting bar lengthwise from a strand-receiving position to said storage housing and up into said housing passage, a vertical gear projecting into one side of said housing for engagement by said rack teeth when in said passage, an overrunning clutch operatively connected with said gear permitting the gear to free wheel as said rack teeth move upwardly across the gear a predetermined distance, driving means for controlling rotation of the clutch in the opposite direction when the bar freed from a strand is moving downwardly through said passage and turning said gear, the driving means including means for preventing rotation of the clutch in said opposite direction by said gear while the driving means is idle to thereby support the starting bar from said housing by means of the gear, a latch tooth for meshing with said gear to hold the gear stationary as the downwardly moving uppermost rack tooth leaves the gear, and means supporting said latch tooth and engageable by said leading end of the rising starting bar for disengaging said latch tooth from the gear just before said uppermost rack tooth rising in the housing passage reaches the gear, whereby said uppermost rack tooth will mesh with the gear and start turning it.

4,286,650

METHOD FOR CHARGING OR DISCHARGING A HEAT ACCUMULATOR

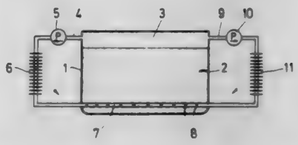
Friedrich Lindner, Stuttgart, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt für Luft- und Roumfabert e.V., Bonn, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,764

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826405

Int. Cl.³ F23D *15/00*

U.S. Cl. 165—1 **5 Claims**



1. A method for charging and discharging a heat accumulator, comprising the steps of

(a) introducing into the accumulator a latent heat-retaining storage medium (**2**) having a first heat condition;

(b) introducing into the accumulator in direct contact with said heat-retaining storage medium a heat exchanger fluid medium having a liquid state; and

(c) introducing a liquid barrier layer between said heat-retaining storage medium and said heat exchanger fluid medium, said liquid barrier layer being immiscible with both said heat-retaining storage and said heat exchange fluid mediums, said barrier layer having a specific weight between the specific weights of said heat-retaining storage medium and said heat exchanger medium, said heat exchanger fluid medium being operable to change said heat-retaining storage medium from said first heat condition to a second heat conditon.

4,286,651

GEOTHERMAL HEATING SYSTEM AND METHOD OF INSTALLING THE SAME

Douglass W. Steiger, and Edward J. Kees, both of Red Lake Falls, Minn., assignors to Environmental Impact Research Group, Red Lake Falls, Minn.

Filed Apr. 28, 1980, Ser. No. 144,257
Int. Cl.[3] F24J *3/02*
U.S. Cl. 165—45 3 Claims



1. A geothermal system including a heat pump through which heat exchange liquid is circulated,

a plurality of elongate pipes vertically embedded in the ground so that the major portion of each pipe is located below the frost line, each pipe being closed at its upper and lower ends,

a plurality of anchoring devices, each being secured to the lower end of one of said pipes, each anchoring device including an upper cylindrical portion and a lower conical portion, the upper cylindrical portion of each anchoring device having a diameter larger than the diameter of the associated pipe receiving the latter therein,

means on the lower end portion of each pipe and on said anchoring device interlocking each pipe with the associated anchoring device,

a plurality of interconnecting conduits, each connecting each pipe with an adjacent pipe,

a supply conduit connecting one of said pipes with said heat pump, a return conduit connecting one of said pipes with said heat pump whereby heat exchange liquid will be circulating through the pipes in the heat pump,

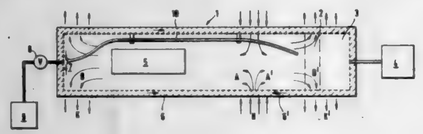
each of said geothermal pipes having an intermediate wall element affixed to the interior thereof to thereby define a geothermal chamber within each geothermal pipe between said intermediate wall element and the closed lower end of the geothermal pipe, each geothermal pipe having an elongate inlet pipe positioned therein having one end thereof connected in communicating relation with a supply conduit and having its other end positioned adjacent the closed lower end of the associated geothermal pipe, and each geothermal pipe having an outlet conduit therein having one end thereof communicating with the upper end of said geothermal chamber and having the other end thereof connected with an interconnecting conduit.

4,286,652

GAS-CONTROLLED HEAT-PIPE THERMOSTAT OF HIGH PRECISION

Claus-Adolf Busse, Arolo di Leggiuno, and Jean-Paul Labrande, Ispra, both of Italy, assignors to Cabinet A. Zewen, Luxembourg-Ville, Luxembourg

Filed Apr. 5, 1976, Ser. No. 673,876
Claims priority, application Luxembourg, Apr. 4, 1975, 72212
Int. Cl.[3] F23D *15/00*
U.S. Cl. 165—96 3 Claims



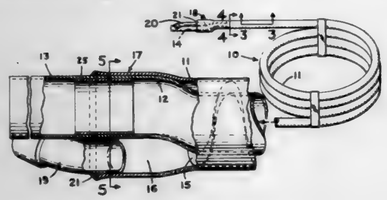
1. A gas-controlled heat-pipe thermostat of high precision comprising a closed pipe interiorly covered with a capillary structure, said pipe defining first and second condensation zones and an intermediate evaporation zone; a gas pressure regulation system containing control gas in communication with said second condensation zone and a working fluid within said pipe which upon reaching said evaporation zone is vaporizable and dividable into two portions, each portion flowable to one of said first and second condensation zones after which it returns to said evaporation zone by way of said capillary structure for recycling, said control gas of said gas pressure regulation system forming a buffer zone, and said positioning of said evaporation zone in relation to said second condensation zone resulting in the evaporation condensation cycle through the first of said condensation zones being separated from the control gas by the evaporation condensation cycle through said second condensation zone.

4,286,653

COAXIAL TUBE IN TUBE HEAT EXCHANGER WITH INNER TUBE SUPPORT

Ray C. Edwards, Kinnelon, N.J., assignor to Edwards Engineering Corporation, Pompton Plains, N.J.

Filed Jul. 21, 1980, Ser. No. 170,547
Int. Cl.[3] F28D *7/14*
U.S. Cl. 165—156 6 Claims



1. In a coaxial tube in tube heat exchanger;

a. an outer tube

b. an inner tube coaxial with the outer tube to form an annular fluid flow passage between the inner tube and the outer tube,

c. at least one terminal connector disposed for communication with said fluid flow passage,

d. at least one fluid tight connection for holding the outer tube, the inner tube and the terminal connector in assembled position,

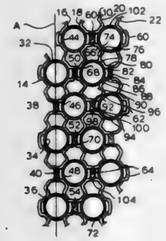
e. at least one support unit in the inner tube operatively aligned with each of the fluid tight connections.

4,286,654

HEAT EXCHANGER TUBE SUPPORTS

Anthony Ruhe, Fonthill, and James H. D. Nickerson, St. Catharines, both of Canada, assignors to Foster Wheeler Limited, Ontario, Canada

Filed Jun. 8, 1979, Ser. No. 46,988
Claims priority, application Canada, Mar. 19, 1979, 323743
Int. Cl.[3] F28F *9/00*
U.S. Cl. 165—172 4 Claims



1. In a heat exchanger a number of heat exchange tubes having a tube support comprising:

a plurality of strips, each of said strips having a plurality of equidistant first contact locations in one plane, a plurality of first portions extending in a given direction away from said plane from an adjacent first contact location to one of a plurality of second contact locations, a plurality of second portions, each extending in another direction from an adjacent second contact location and toward said one plane to one of a plurality of third contact locations, a plurality of third portions, each extending in said direction from an adjacent third contact location to one of a plurality of fourth contact locations; a plurality of fourth portions, each extending from an adjacent fourth contact location in said other direction and toward said plane to one of a plurality of fifth contact locations, a plurality of fifth portions each extending from one of said fifth contact locations in said direction and away from said plane to one of a plurality of sixth contact locations, a plurality of sixth portions each extending away from an adjacent sixth contact location in said other direction to another of said first locations, said fourth contact locations lying equidistant along another plane and joined to the first locations of an adjacent strip; the second contact location engaging over the width of the surface of said strip the surface of a tube extending through said other plane; the third and fifth contact locations engaging over the width of the surface of said strip a tube extending through said one plane and the sixth contact location engaging over the width of the surface of said strip the surface of another tube extending through the other plane.

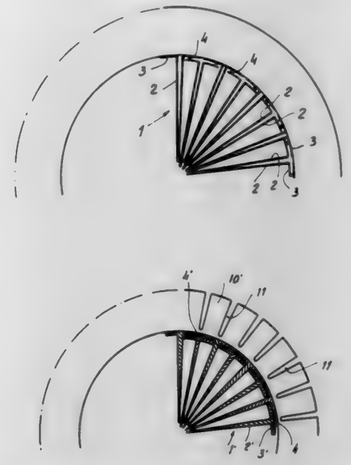
4,286,655

FINNED TUBE FOR HEAT EXCHANGERS

Benito L. Trojani, Via Polar, 8, Lugano, Breganzona, Switzerland

Filed Aug. 14, 1979, Ser. No. 66,434
Claims priority, application Italy, May 21, 1979, 22856 A/79
Int. Cl.[3] F28F *1/42;* B21D *53/00*
U.S. Cl. 165—179 8 Claims

1. A finned tube provided with both external and internal fins, particularly suitable to be used as a heat exchanger, constituted by a plurality of longitudinally extended, circumferentially arranged sections, the base portion of each section being curved according to a circle arc, alternate sections overlapping the adjacent sections thereby forming the outer wall of an extended tube having alternate inner and outer sections in overlapping arrangement, each of said sections having an internal fin which extends both longitudinally and radially inwardly within said tube and terminates in the proximity of the tube circumference center, the internal fin from each of said sections forming with adjacent fins a plurality of small



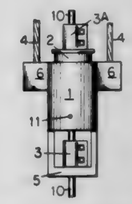
channels for the longitudinal flow without stagnation of fluid through the length of said tube, and a helically arranged, edge wrapped fin disposed on the outer wall of said tube.

4,286,656

COMPOSITE CARRIER BAR DEVICE

Donald W. Felder, 1153A Drennan Park, Fort Campbell, Ky. 42223

Filed Feb. 12, 1979, Ser. No. 11,691
Int. Cl.[3] E21B *17/02*
U.S. Cl. 166—75 R 4 Claims



1. In an oil well pumping unit utilizing a sucker rod, including a polish rod, for operating a bottom hole pump, a composite carrier bar device comprising:

(a) a main body having top and bottom portions and a central ram cavity therein opening through said top portion for receiving a hydraulic ram in upright position,

(b) support means on said main body for supporting said main body in the pumping unit,

(c) a secondary carrier bar fixed to and spaced centrally below said main body a predetermined distance,

(d) said main body and said secondary carrier bar having vertically aligned holes therethrough for slidably receiving the polish rod of the pumping unit,

(e) an upper clamp member above said main body adapted to be releasably clamped to the polish rod in various vertically adjusted fixed positions,

(f) said upper clamp member being adapted to rest upon the top of a hydraulic ram received in said ram cavity while said upper clamp member is clamped to said polish rod in fixed position,

(g) a lower clamp member having a height less than said predetermined distance and positioned within the space

between said secondary carrier bar and said main body, said lower clamp member being adapted to be releasably clamped to the polish rod in various vertically adjusted positions in said space, and

(h) said lower clamp member being adapted to rest on said secondary carrier bar while clamped to said polish rod in an operative position.

4,286,657

ACTUATOR

Gary A. Kohn, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 26, 1979, Ser. No. 106,917
Int. Cl.[3] E21B *23/03*
U.S. Cl. 166—117.5 **9 Claims**



1. A tool comprising,

a body,

an actuator in telescoping relationship with and reciprocable relative to the body,

a dog carrying sleeve in telescoping relationship with and reciprocable relative to the body,

a first closed fluid chamber provided by spaced seals between the actuator and body,

a second closed fluid chamber provided by spaced seals between the sleeve and body,

a flowway between the two chambers transferring fluid between the two chambers with relative reciprocation of the body and sleeve, and

hydraulic fluid filling the two chambers, all of said seals exposed to the exterior of the tool on their sides opposite the pressure chamber,

reciprocation of said sleeve relative to said body resulting in reciprocation of said actuator in response to transfer of fluid between the two chambers.

4,286,658

ISOLATION PACKER AND METHODS OF CEMENTING FROM A FLOATING VESSEL

Eugene E. Baker, and Ernest E. Carter, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

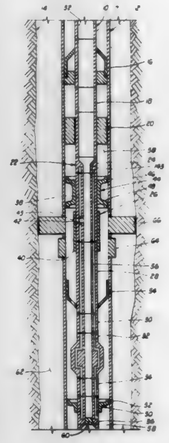
Filed Nov. 8, 1978, Ser. No. 958,706
Int. Cl.[3] E21B *23/00*
U.S. Cl. 166—186 **4 Claims**

1. An isolation packer, comprising:

a tubular body including an upper tubular body assembly, a middle body connected to said upper tubular body assembly, and a lower tubular body assembly, connected to said middle body;

an upper inner mandrel, having an upper and a lower end communicating with an axial bore of said upper tubular body assembly and an axial bore of said middle body, respectively;

a lower inner mandrel, having an upper and a lower end communicating with said axial bore of said middle body and an axial bore of said lower tubular body assembly, respectively;



port means, disposed through one of said mandrels, said port means communicating an inner cavity of said one mandrel with a radially outer surface of said tubular body; and

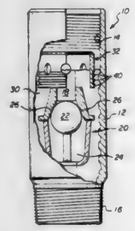
upper and lower packer assemblies connected to said tubular body above and below said port means.

4,286,659

BALL VALVE SAFETY SCREEN

Benson H. Bolding, Jr., St. Martinville, La., assignor to Aztec Tools, Inc., Lafayette, La.

Filed Aug. 28, 1979, Ser. No. 70,430
Int. Cl.[3] E21B *43/08*
U.S. Cl. 166—205 **4 Claims**



1. A float collar for use in well preparation and production of hydrocarbons comprising:

(a) a longitudinal body having a longitudinal passageway therethrough;

(b) a valve assembly positioned in said body, including a float valve positioned in said passageway;

(c) and screen means mounted above said valve assembly and over said passageway for enabling circulation of fluids such as drilling mud, casing cement and the like through said passageway, said screen means preventing unwanted objects from clogging, stopping or otherwise preventing flow of fluid through said float collar assembly, screen means including a flat circular perforated screen portion positioned substantially perpendicular to said body and extending to cover substantially the entire interior of said body and a cylindrical mounting ring attached to and depending downwardly from the edge of said screen portion, said mounting ring including means for rigidly mounting said mounting ring within said body and said mounting ring including a plurality of perforations therein for permitting the flow of fluid therethrough.

4,286,661

EQUALIZING VALVE FOR USE IN A WELL TOOL STRING

Imre I. Gazda, Saginaw, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 40,035, May 17, 1979, abandoned, which is a division of Ser. No. 437, Jan. 2, 1979, abandoned, which is a division of Ser. No. 864,878, Dec. 27, 1977, Pat. No. 4,149,593. This application Jun. 16, 1980, Ser. No. 159,811
Int. Cl.[3] E21B *23/00, 47/06*
U.S. Cl. 166—316 **13 Claims**



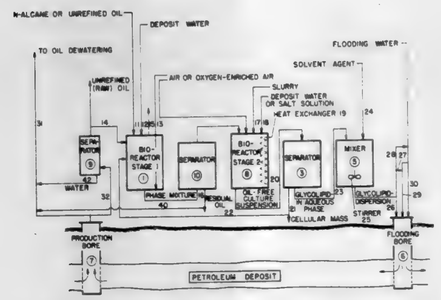
1. An equalizing valve for use in a tool string in a well bore comprising: an outer tubular housing having a head end provided with fluid flow passages for communicating with a well tool connected with said housing; a longitudinally movable valve-mandrel member supported in said housing having a longitudinal bore open at an end opposite to said head end of said housing and having radially opening ports communicating with the other end of said bore through said valve-mandrel member, said valve-mandrel member being movable from a first closed position to a second open position; spaced seal means between said housing and said valve-mandrel member positioned on opposite sides of said radially opening ports in said member when said member is at said first closed position; said housing being provided with a side port communicating with said radial ports of said valve-mandrel member when said member is at said second open position; said housing having flow passage means communicating with said passage means in said head end of said housing for fluid communication from said bore to said valve-mandrel member and said head end passages when said valve member is at said first position; and spring means engaged between said housing and said valve-mandrel member biasing said housing and said valve-mandrel in opposite longitudinal directions; and said valve-mandrel member and said housing being connected to move in telescopic relationship whereby oppositely directioned forces applied to said housing and to said valve-mandrel member move said valve-mandrel member between said first closed position and said second open position.

4,286,660

PROCESS AND INSTALLATION FOR THE FLOODING OF PETROLEUM DEPOSITS AND OIL SHALE

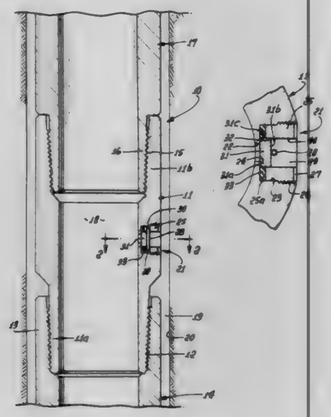
Fritz Wagner, Braunschweig-Stöckheim; Peter Rapp; Hans Bock, both of Brunswick; Walter Lindörfer, Kassel; Walther Schulz, Vechta, and Wilhelm Gebetsberger, Barnstorf, all of Fed. Rep. of Germany, assignors to Gesellschaft für Biotechnologische Forschung GmbH and Wintershall Aktiengesellschaft, both of, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,295
Int. Cl.[3] E21B *43/22*; C12M *1/02*
U.S. Cl. 166—246 **17 Claims**



1. Process for the flooding of petroleum deposits and oil shale by means of dispersions of non-ionogenic, boundary surface active materials in water as flooding medium, through the utilization of a suitable bioreactor with or without mechanical stirring for a first stage for the production of a growing submerged culture of hydrocarbon enriched microorganisms in a semi- or continuous process under aerobic conditions, under the addition of organic C- sources, inorganic nutrients dissolved in water and occasionally growth materials as well as the addition of air or oxygen-enriched air at a predetermined reaction temperature and constant pH value in the region of between 2 and 9, with a second stage in which the formed effective material is separated from the cell material and, with utilization of the aqueous separating phase with the therein dispersed effective material directly as flooding medium or as addition to the flooding water, characterized in that in the first stage there are produced as the effective material glycolipids with the hydrocarbon enriched microorganism under the utilization of a hydrocarbon mixture of 1 to 35% by volume at a reaction temperature in the range of 20° to 50° C. and at a constant pH value in the range of between 3 and 9, and that thereafter in the second stage the formed glycolipids are separated from the cell material in the form of an aqueous phase through a temperature, pH, or osmotic shock or through extraction and a petroleum deposit and oil shale flooding amount of the aqueous phase with the therein dispersed glycolipids are directly used as a flooding medium or added to the flooding water.

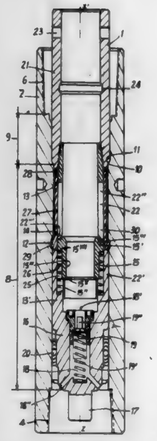
4,286,662
TUBING DRAIN
John S. Page, Jr., 21372 Brookhurst St. No. 312, Huntington Beach, Calif. 92646
Filed Nov. 5, 1979, Ser. No. 91,207
Int. Cl.³ E21B 43/11
U.S. Cl. 166—317 6 Claims



1. In an oil well tubing drain assembly,
(a) a tubing wall containing a bore intersecting the tubing interior and a counterbore intersecting the tubing exterior,
(b) an annular retainer in the counterbore having connection to said wall, the retainer forming a side drain passage,
(c) a retaining member carried by the retainer and projecting into said drain passage, said retaining member comprising a pin extending across said drain passage and received in drilled passages in the retainer,
(d) a closure in alignment with said drain passage and retained by said member with a surface of the closure located at the side of said member closest to the tubing bore interior, the closure closing off said tubing wall bore, the closure adapted to be blown out said drain passage when fluid pressure in the tubing bore transmits sufficient force via said closure to rupture said member, said closure comprising a disc-shaped piston having a diameter approximately the same as the diameter of said drain passage,
(e) and a sealing washer located in said counterbore and extending about said closure to have sealing engagement therewith in response to pressure exerted on the washer by the fluid in said tubing, said washer being elastomeric and located in engagement with the end of said retainer closest to the tubing bore interior.

4,286,663
HYDRAULIC PUMPING ROD CONNECTING AND DISCONNECTING DEVICE
Hubert Miffre, Elancourt, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France
Filed Jul. 23, 1979, Ser. No. 59,339
Claims priority, application France, Jul. 27, 1978, 78 22202
Int. Cl.³ E21B 41/00
U.S. Cl. 166—325 6 Claims

1. A pump rod connecting device for connecting an upper column of pump rods to a lower column of pump rods, and for disconnecting the upper pump rod column from the lower column comprising:
a tubular production tubing connecting piece connected between upper and lower columns of production tubing, said connecting piece comprising a circular upwardly directed seat and an internal annular circular groove;
a connector comprising an upper assembly and a lower assembly;
means for securing said upper assembly to a lower end of the upper column of pump rods;
means for securing said lower assembly to an upper end of the lower column of pump rods;
said lower assembly of said connector means for positioning the lower assembly in said connecting piece, comprising locking means for locking said lower assembly in said connecting piece, and means for blocking said locking means, said lower assembly further having passage means

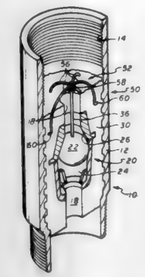


for communicating said upper tubing column with said lower tubing column;
said upper assembly of said connector comprising means for locking said upper assembly to said lower assembly;
means for moving said blocking means to a position in which said locking means of the lower assembly is unlocked from said connecting piece, and
hydraulically operated remotely controlled means for releasing said locking means for connecting said upper assembly to said lower assembly so that the upper column of pump rods and said upper assembly secured thereto can be removed from the lower assembly.

4,286,664
POSITIVE SEAL FLOAT COLLAR
Benson H. Bolding, Jr., St. Martinville, La., assignor to Aztec Tools, Inc., Lafayette, La.
Filed Aug. 28, 1979, Ser. No. 70,348
Int. Cl.³ E21B 34/08; F16K 15/04
U.S. Cl. 166—325 2 Claims

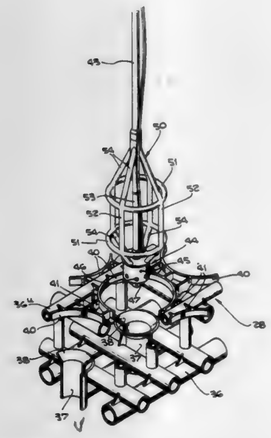
1. A float collar for use in well preparation and production of hydrocarbons, comprising:
(a) a longitudinal body mounted between tubular casing joints, said body having a longitudinal passageway therethrough for enabling communication of said joints;
(b) a valve assembly positioned within said body having a ball valving element in an upper conical valve seat positioned in said passage; and
(c) a resilient strap supported above said valve assembly

permanently connected to said ball valving element for urging said ball valving element in positive sealing en-



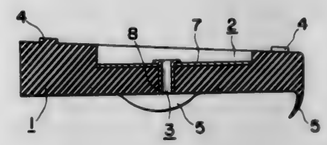
gagement against said conical valve seat to preclude fluid flow in an upward direction.

4,286,665
APPARATUS AND METHOD FOR CONDUCTING OFFSHORE WELL OPERATIONS
Raymond W. Walker, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.
Continuation of Ser. No. 899,112, Apr. 24, 1979, abandoned.
This application Oct. 17, 1979, Ser. No. 85,340
Int. Cl.³ E21B 7/12
U.S. Cl. 166—339 20 Claims



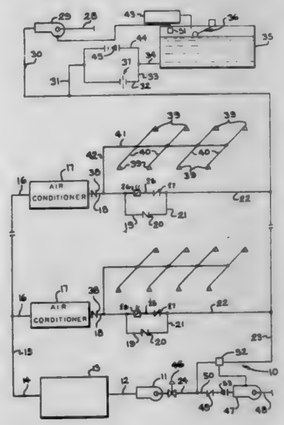
1. In combination:
a sea floor template frame means for one or more wells each having a well axis including
a latch ring member provided with an annular engagement face on said template means arranged coaxial to each well axis;
a retrievable guide line base frame adapted to be lowered in coaxial relation with a selected well axis and freely movable around said selected well axis relative to said ring member for random positioning in any angular relation to said ring member;
and latch means on said guide line base frame cooperably engageable with said annular engagement face on said latch ring member on said template frame means in any random angular position of said guide line base frame about said well axis relative to said ring member.

4,286,666
HORSESHOES
Kisaku Nakanishi, Tokyo, Japan, assignor to Shin Gijutsu Kigyo Kabushiki Kaisha, Yokohama, Japan
Filed Oct. 22, 1979, Ser. No. 87,000
Claims priority, application Japan, Oct. 27, 1978, 53-147097
Int. Cl.³ A01L 5/00
U.S. Cl. 168—4 13 Claims



1. An elastomeric horseshoe comprising:
an elastomeric body portion having a lower surface adapted to face the ground and an upper surface adapted to be fixed in use against the bottom surface of a hoof of a horse;
an elongated recessed area defined by said elastomeric body portion and extending upwardly from said lower surface into the interior of said body portion, said recessed area being of a width and height appropriate to receive the head of at least one relatively short and thin errection nail;
a nail bore area extending from said recessed area to said elastomeric body portion upper surface; and
non-elastomeric reinforcing means disposed at the bottom of said recessed area for securely holding in place a nail extending from said recessed area through said nail bore area and into said hoof.

4,286,667
FLOW CONTROL AND FIRE DETECTION APPARATUS
Donald G. Westenhofer, Brookfield, Conn., and Gershon Meckler, Bethesda, Md., assignors to Gershon Meckler Associates, P.C., Washington, D.C.
Filed Feb. 27, 1979, Ser. No. 15,619
Int. Cl.³ A62C 35/00
U.S. Cl. 169—16 1 Claim



1. Apparatus comprising a system for circulating an aqueous heat transfer fluid from an equipment station, into heat transfer relationship with at least one heat transfer unit and through a conduit which returns the fluid back to the equipment station, a plurality of sprinkler heads, and means operatively connecting the sprinkler heads to receive heat transfer fluid from the circulating system, the improvement wherein the connecting

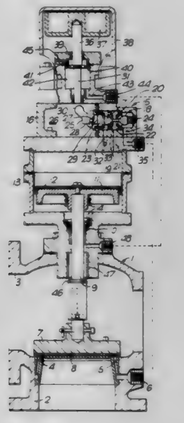
means for the sprinkler heads is connected to the circulating system between a heat transfer unit and the return conduit with no heat transfer unit between said connection and the return conduit, means providing parallel flow paths between said connection and the return conduit, a first check valve in one of said parallel flow paths, said check valve being effective to prevent fluid flow from the return conduit toward said connection, a flow sensor and a second check valve in the other of said parallel flow paths, said second check valve being effective to prevent flow from said connection toward the return conduit, makeup means operatively connected to introduce water into the return conduit, means responsive to a changed condition in the circulating system which changed condition indicates that fluid id flowing from the system and effective in response to the changed condition to activate said makeup means to introduce water into the return conduit whereby, when the apparatus is operating normally, the fluid flows from said connection through said first check valve to the return conduit while, when the apparatus is in a fire mode, fluid flows from the return conduit through said second check valve and said flow sensor to said connection, and then from the system, and a signal from the flow sensor can be used to indicate the location of the fluid flow from the system.

4,286,668

SPRINKLER SYSTEM CONTROL VALVE AND ACTUATOR DEVICE

Derek McCormick, 73 Station St., Misterton, Doncaster, South Yorkshire, England

Filed Mar. 29, 1979, Ser. No. 25,075
Int. Cl.³ A62C *37/06*
U.S. Cl. 169—22 **6 Claims**



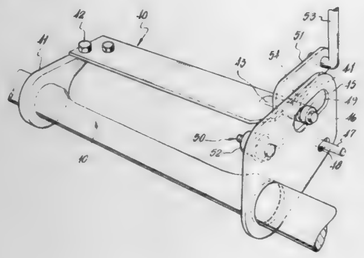
1. A sprinkler system control valve and actuator device comprising a water supply valve having a housing provided with a water inlet for connection to sprinkler heads and a valve seat with which a movable valve member cooperates, a valve actuator attached to the valve housing and operable by the pressure in the water inlet to maintain the valve member sealed against the valve seat cutting off the water inlet from the water outlet, and a trip valve operable when tripped to vent the water pressure from the actuator so as to allow the valve member to lift from the valve seat, and trip means operatively connected to the trip valve to trip the latter in response to a pneumatic signal, said trip means maintaining the trip valve in its tripped condition until manually reset, said valve actuator comprising a piston movable within and sealed relative to a cylinder, the piston having an effective surface area greater than the effective area of the valve member subjected to the water pressure when the valve member is sealed against its valve seat, thereby maintaining the water supply valve closed.

4,286,669

DRAFT SENSING APPARATUS

Jean J. Lasoen, Ville Preux, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed May 24, 1979, Ser. No. 41,976
Claims priority, application United Kingdom, May 30, 1978, 24606/78
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—7 **13 Claims**



1. A tractor draft sensing apparatus including an elongated shaft having spaced apart support portions for mounting in spaced apart fulcrum supports and end portions positioned axially outward of said support portions to receive a pair of draft members for imposing rearwardly extending draft forces on the shaft as a result of which the shaft bends, an elongate member attached at one end to the shaft and arranged to extend generally parallel thereto, a pivotally mounted cam member, a cam follower carried by the other end of the elongate member for pivoting of the cam member, a guidance member provided with a guide surface, and a separate guide surface follower carried by the other end of the elongate member for engagement with the guide surface to limit relative movement between said other end of the elongate member and the shaft generally to a single plane, whereby on the imposition of draft forces on the shaft said cam follower moves generally in said single plane and pivots the cam by an amount proportional to the draft forces imposed on the shaft.

13. A tractor draft sensing apparatus including an elongated shaft having support portions for mounting in spaced fulcrum supports and end portions positioned axially outward of said support portions for mounting a pair of draft members, the arrangement being such that rearwardly extending draft forces imposed on the shaft by the draft members cause the shaft to bend, and sensing means arranged to produce a draft signal proportional to the amount of bending of the shaft, the shaft being shaped so that, considering the shaft in an unloaded condition, the neutral axis of the shaft between the support portions is displaced rearwardly of the centerline of the support portions.

4,286,670

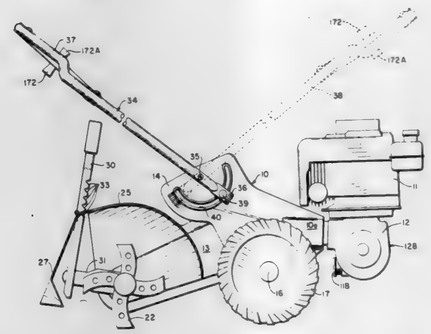
COMBINATION TILLER AND CULTIVATOR AND DRIVE CONTROL THEREFOR

Donald W. Ackerman, East Greenbush, N.Y., assignor to Garden Way Incorporated, Charlotte, Vt.

Filed Dec. 7, 1978, Ser. No. 967,411
Int. Cl.³ A01B *33/02*; **B62D** *51/04*
U.S. Cl. 172—42 **8 Claims**

8. A combination tiller and cultivator machine comprising an engine and rotatable tines mounted on opposite ends of a frame, a pair of drive wheels on opposite sides of the frame, a reversible transmission mounted on the frame for drivingly connecting the engine to the wheels and the tines for rotating the wheels and the tines in selected angular directions, a handle bar with means pivotally supporting the same on the frame for movement about a horizontal transverse axis between a first position overlying one end of the frame and a second position overlying the opposite end of the frame, and a transmission

drive selector including control means mounted on the handle bar and connected to the transmission, the control means being biased into a normally neutral position, disengaging the transmission, and manually movable from neutral to opposite forward and reverse operating positions for respectively actuating the transmission into forward and reverse power modes, first detent means on the handle bar for maintaining the control



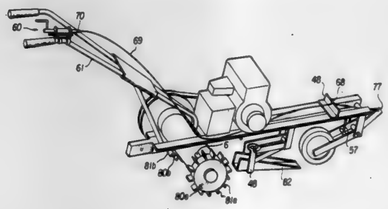
means in said neutral position, the control means being manually movable away from the operator into forward position in both the first and second positions of the handle bar, and second detent means cooperating with the control means for temporarily maintaining the control means in said forward position in both first and second positions of the handle bar in a forward transmission power mode.

4,286,671

KIT FOR CONVERTING A ROTARY TILLER INTO A PLOW

James A. Mays, Birmingham, Ala.

Filed May 10, 1979, Ser. No. 37,884
Int. Cl.³ A01B *3/58*; **B62D** *51/04*
U.S. Cl. 172—253 **8 Claims**



1. A rotary tiller plow attachment for converting into a plow a rotary tiller of the type having a frame, at least one handle bar means extending rearwardly therefrom, and a power driven axle for turning a set of tines, comprising:

(a) a pair of pull wheels detachably mountable onto said power driven axle;

(b) a plow attachment assembly detachably mountable onto the front portion of said frame of said rotary tiller, and

(c) a height adjusting means for continuously adjusting the height of said plow attachment assembly while said power driven axle turns said pair of pull wheels, including:

(i) a height adjustment control mountable onto one of said handle bar means of said rotary tiller, and

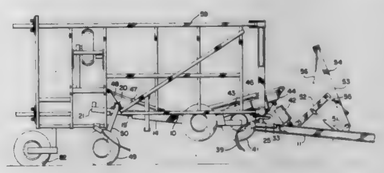
(ii) a detachably connectable control cable for connecting said height adjustment control to said plow attachment assembly.

4,286,672

REARWARDLY FOLDING AGRICULTURAL IMPLEMENT WITH EXTENDABLE TRANSPORT WHEELS

Clark H. Forsyth, Burlington; Anton H. G. Van Hooydonk, St. Catharines, and Harold D. Ralph, Hamilton, all of Canada, assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 18, 1980, Ser. No. 141,449
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—311 **9 Claims**



1. In a pull-type ground working implement of the type having a center frame, a pair of wing frames that are adapted to carry ground working tools, with each said wing frame being pivotally connected to an end of said center frame for movement between an operating position wherein said frames are transversely aligned, to a generally vertical position, and then to a transport position in which the wing frames are pivoted rearwardly, wherein the improvement comprises:

a subframe that is adapted to carry ground working tools, said subframe supporting said center frame and having a front end adapted to be connected to a tractor, the other end of said subframe extending rearwardly of said center frame;

a set of operating wheels swingably mounted on said subframe for selective movement to an extended ground engaging position to support the implement in the operating position and to a retracted position for transport;

an operating wheel swingably mounted on each said wing frame for selective movement to a ground engaging position to support the wing frame thereof in the operating position;

a combination operating and transport wheel mounted on each said wing frame to support the wing frame thereof in the operating position and in movement to, and in the transport position;

latch means for latching said wing frames to said subframe in the transport position;

and a set of transport wheels mounted on said subframe rearward of said subframe operating wheels, said subframe transport wheels being swingably mounted for movement from a retracted position during operating, to an extended position for transport, said subframe transport wheels being located generally adjacent said combination wheels in the transport position and providing with said combination wheels the only ground support for said implement in the transport position, thereby resulting in desirable handling characteristics.

4,286,673

BASKET-SHAPED DUAL-FUNCTION HOE-RAKE

Rudolf J. A. M. van Rooijen, Breda, Netherlands, assignor to Bertha-Maria van Rooijen-Nieuwenhijs, Breda, Netherlands

Filed Jun. 21, 1979, Ser. No. 50,692
Claims priority, application Netherlands, Jun. 26, 1978, 7806870
Int. Cl.³ A01B *1/14*
U.S. Cl. 172—378 **4 Claims**

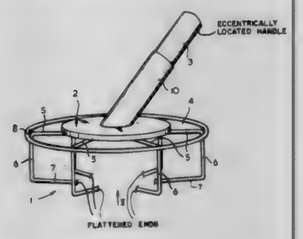
1. A dual-function hoe-rake, which comprises:

a wide-mesh basket-shaped structure having a central axis;

a handle; and

means for operatively connecting said handle and said basket-shaped structure, said wide-mesh basket-shaped struc-

ture having improvement in combination therewith comprising a plurality of first wires which extend directly radially outwardly from said central axis of said structure, a plurality of second wires which are connected substantially at right angles to said first wires belonging therewith and which extend in an axial direction away from said handle, and a plurality of third wires which are connected substantially at right angles to said second wires belonging



therewith and extend in the form of prongs projecting directly radially inwardly only part of the way toward said central axis, said third wires having flattened ends located radially of said central axis, said first and third wires being respectively located in axially spaced planes which are substantially parallel to one another, said second wires extending substantially perpendicular to said axially spaced planes.

4,286,674

REPLACEABLE BEARING ASSEMBLY FOR CONSTRUCTION VEHICLES

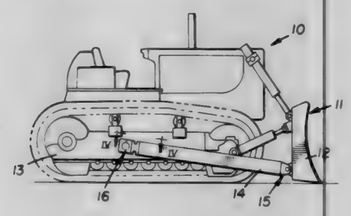
Charles M. Noble, Shorewood, and James A. Olthoff, South Holland, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00763, § 371 Date Sep. 24, 1979, § 102(e) Date Sep. 24, 1979, PCT Pub. No. WO81/00897, PCT Pub. Date Apr. 2, 1981.

This PCT application filed Sep. 24, 1979, Ser. No. 93,077

Int. Cl.³ E02F *3/76;* **F16C** *25/04*

U.S. Cl. 172—811 **11 Claims**



1. A vehicle having a first member (**14**), a second member (**19**), and bearing means (**16**) for pivotally mounting said first member (**14**) on said second member (**19**) and for counteracting thrust loads imposed on said first member (**14**), said bearing means (**16**) including separable first (**17**) and second (**17'**) bearing caps each being separable from each other and from said push arm, fastening means (**28**) for releasably securing said first bearing cap (**17**) to said first member (**14**) and for further releasably securing said first (**17**) and second (**17'**) bearing caps together, and

upper and lower slots (**22**) defined transversely completely through said first member (**14**) and wherein said fastening means (**28**) includes at least two bolts (**26**) extending sequentially through said second bearing cap (**17'**), said first bearing cap (**17**), and said first member (**14**) and into said slots (**22**).

4,286,675

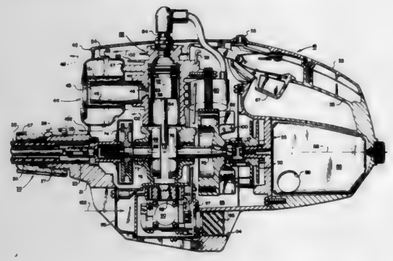
NARROW PROFILE POWER HANDLE FOR LINE TRIMMER AND THE LIKE

Lloyd H. Tuggle, Shreveport, La., assignor to Beaird-Poulan Division of Emerson Electric Co., Shreveport, La.

Filed Jun. 25, 1979, Ser. No. 51,950

Int. Cl.³ E21B *7/22, 3/00*

U.S. Cl. 173—163 **39 Claims**



1. A portable power tool comprising a rotary head coupled to one end of an elongated tubular drive shaft assembly and an internal combustion engine coupled to the opposite end of the drive shaft assembly, an elongated housing enclosing the internal combustion engine, the housing including a rear handle having a hand grip portion disposed above and projecting rearwardly along the top of the housing, a muffler communicating with the exhaust port from the internal combustion engine and disposed along the forward face of the housing for discharging products of combustion forwardly of the housing, and a forward handle attached to the tubular drive shaft assembly having a hand grip portion disposed substantially above the discharge path of the products of combustion.

4,286,676

CRANK CONNECTOR FOR DIRECTIONAL DRILLING

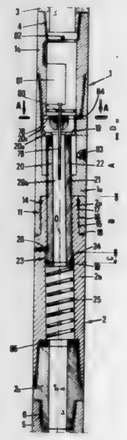
Jean-Paul Nguyen, Rueil Malmaison; Emmanuel Laval, Paris, and Andre Cendre, Cosne sur Loire, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jul. 24, 1979, Ser. No. 60,110

Claims priority, application France, Jul. 24, 1978, 78 22063; Apr. 6, 1979, 79 08803; Apr. 6, 1979, 79 08804

Int. Cl.³ E21B *7/08*

U.S. Cl. 175—74 **17 Claims**



1. A crank connector adapted for having its angle varied by

remote control comprising: a first tubular member adapted for being secured at the lower end of a drill string and having a longitudinal axis, a second tubular member adapted for being connected to a downhole motor for rotating a drill bit and having a longitudinal axis, a rotary fitting having an axis of rotation, said second tubular member being rotatable, with respect to its longitudinal axis, about said axis of rotation of said rotary fitting, said axis of rotation and said longitudinal axes of said first and second tubular members being separated from each other and converging substantially at the same point to define respective acute angles, said rotary fitting comprising a connecting shaft connecting said first and second tubular members together and being slidable therein with said shaft being fixedly rotatably secured to one of said first and second tubular members and movable into a lock position with respect to the other of said first and second tubular members for being rotatably secured thereto, said shaft being axially displaceable with respect to said other of said first and second tubular members for being disengaged therefrom, angle remote control means for varying it will the angular position of said second tubular member with respect to said first tubular member by pivoting said second tubular member, with respect to its longitudinal axis, about said axis of rotation, maintenance means for maintaining said tubular members in a selected angular position with respect to each other, remotely controlled displacing means for axially displacing said connecting shaft, and driving means for transforming an axial displacement of said connecting shaft from its locking position into a rotation of said second tubular member about said axis of rotation.

4,286,677

HELICAL IMPACT BIT FOR DRILLING STONE WITH NARROW GUIDE LIPS

Raymond Guex, Nyon, Switzerland, assignor to Guex and Fils S.A., Nyon, Switzerland

Filed Sep. 27, 1979, Ser. No. 79,541

Claims priority, application Switzerland, Sep. 28, 1978, 10115/78

Int. Cl.³ E21B *10/44*

U.S. Cl. 175—395 **5 Claims**



1. A bit for drilling stone for use in a hammer drill or an electric hammer, comprising a tip having a diameter with a value within the range of 5 to 12 mm, a plate of hard metal provided at the tip of the bit, a cylindrical body defining two helical recesses for the evacuation of waste material produced during drilling, said helical recesses defining an angle of less than 35° to the longitudinal axis of the bit, the body in axial section defining said recesses such that all of the latter have like profiles at least approximately in the form of an arc of a circle with a radius having a value within the range of 8 mm to 15 mm according to the diameter of said cylindrical body, a core defined by said recesses and two guide lips forming a part of said cylindrical body and located between said two recesses, said guide lips defining a surface area which forms a part of the outer cylindrical surface defined by said body, the ratio of the cylindrical surface area of said lips to the total cylindrical surface of said cylindrical body being less than 5%, and the ratio between the minimum diameter of said core and the diameter of said outer cylindrical surface having a value within the range of 0.6 to 0.65.

4,286,678

CARRYING TOWER FOR A METALLURGICAL VESSEL

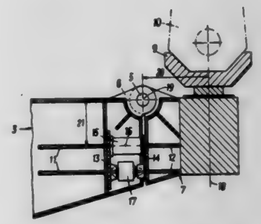
Werner Scheurecker, Linz, and Ernst Drab, Kirchdorf an der Krems, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 10, 1979, Ser. No. 73,865

Claims priority, application Austria, Oct. 4, 1978, 7143/78

Int. Cl.³ G01G *19/52;* **B22D** *39/04*

U.S. Cl. 177—132 **10 Claims**



1. In a carrying tower for a metallurgical vessel for use in a continuous casting plant, including a carrying column, at least one carrying arm projecting from said carrying column for accommodating said metallurgical vessel, weighing means being provided in said at least one carrying arm and said at least one carrying arm being dividedly designed so as to form carrying arm parts, said carrying arm parts being articulately connected with each other about a horizontal axis, the improvement which is characterized in that

said carrying arm parts have supporting faces for support with respect to each other,

said supporting faces are arranged at a distance from the axis connecting said carrying arm parts, and

force measuring means are inserted between said supporting faces.

4,286,679

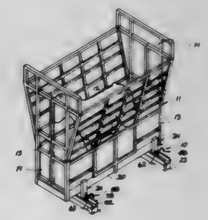
ANIMAL SCALE

H. Allen Schneider, Mead, Wash., assignor to Weigh Right Electronic Systems, Inc., Spokane, Wash.

Filed Sep. 13, 1979, Ser. No. 74,977

Int. Cl.³ G01G *19/52, 23/02, 21/24*

U.S. Cl. 177—132 **6 Claims**



1. An animal weighing scale, comprising:

a support frame;

an elongated weighing platform having a planar surface adapted to receive the animal and adapted to permit the

animal to move over the platform from one end to another;

first horizontal rigid elongated tie bars having opposed ends connecting the support frame and platform about pivot axes parallel to the planar platform surface and transverse to the length thereof to allow slight vertical deflection of the platform and to resist horizontal motion thereof in a longitudinal direction;

second horizontal rigid elongated tie bars having opposed ends connecting the frame and platform about pivot axes parallel to the planar platform surface and oriented longitudinally with respect to the elongated platform to allow slight vertical deflection of the platform and to resist horizontal motion thereof in a transverse direction;

tensile load cell means for generating an analog signal proportional to the magnitude of tensile force applied thereto;

platform suspension means suspending the platform from the frame and mounting the tensile load cell means intermediate the platform and frame, for directly placing the load cell in tension in response to vertical downward deflection of the platform with respect to the frame when the animal is on the platform and for allowing free upward deflection of the platform without loading the cell means in compression; and

isolator means between the weighing platform and frame and selectively operable to transfer complete support of the platform directly to the support frame thereby relieving any load on the load cell means and suspension means.

4,286,680

WEIGHING APPARATUS

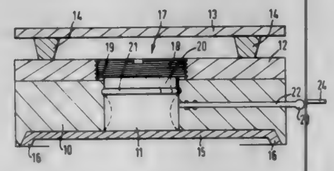
Thomas F. Maltby, The Red House, Selbourne, Hampshire; Robert C. Maltby, Doscombe Cottage, Hawkley, Hampshire, and Alan W. Wakefield, 13 N. Stroud La., Petersfield, Hampshire, all of England

Filed Apr. 17, 1980, Ser. No. 141,159

Claims priority, application United Kingdom, Apr. 25, 1979, 14474/79

Int. Cl.³ G01G *5/04, 21/00*

U.S. Cl. 177—208 **6 Claims**



1. A weighing apparatus comprising a resilient body formed of an elastomeric material, a cavity provided in said body, a fluid contained in said cavity, conduit means connecting the cavity to indicator means for indicating changes in volume of the cavity when the body suffers changes due to compression forces applied thereto by the member being weighed, said body having a resilient metal plate bonded to an upper surface thereof, a resilient metal load support plate mounted on said first mentioned plate and a further resilient metal plate bonded to the body and spaced below the first mentioned plate and to which reaction forces are applied during weighing, said first mentioned plate or said further plate being provided with a screw-threaded bore in communication with the cavity, and a screw-threaded closure plug in scew-threaded engagement with the screw-threaded bore, said closure plug having an inner end portion which engages with part of the wall of the cavity to prevent that part of the wall being deformed when the body suffers changes due to compression forces applied thereto by the member being weighed.

4,286,681

BOTTOM PLATES FOR WALKING MECHANISMS, CONNECTED BY MEANS OF CONNECTION PIECES

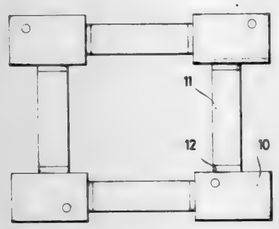
Bernhard Kirchhoff, Ennigerloh, Fed. Rep. of Germany, assignor to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,593

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817046

Int. Cl.³ B62D *57/02*

U.S. Cl. 180—8 R **14 Claims**



1. Bottom plate system for walking mechanisms for the movement of heavy loads, comprising

connection pieces,

bottom plates adapted to contact uneven terrain,

means for elastically connecting said connection pieces with said bottom plates, respectively, such that said bottom plates are elastically connected to each other forming a closed loop structure,

said connection pieces being formed as profile shaped members having an open side in cross-section so as to be torsionally elastic.

4,286,682

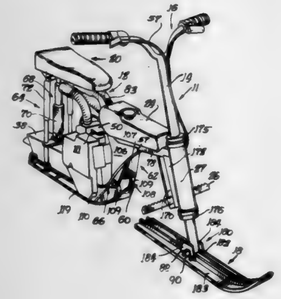
MOTORIZED SKI BOB

Charles Stewart, Bourbonnais, and Richard W. Condon, Frankfort, both of Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed Oct. 4, 1978, Ser. No. 948,583

Int. Cl.³ B62M *27/02*

U.S. Cl. 180—9.24 A **12 Claims**



1. A ski bob driven by a motor and having a frame supported by a front steerable ski and a rear power driven ski and a seat attached to the frame, which seat provides an operator's position, said rear ski having running surfaces which support a substantial portion of the weight of the operator and which slide on the snow and having a continuous driving track, a forward attachment means for pivotally mounting said power ski to said frame at a location longitudinally forward of the operator's position and adjacent a front end of the seat, said continuous driving track extending from adjacent the front end of said seat to a rearward end rearwardly of the rearward end of said seat;

a rearward attachment means for attaching said power ski to said frame at a location longitudinally rearward of the operator's position;

said running surfaces extending from a location rearward of seat forwardly to adjacent the front end of said seat;

the lower surface of said running surfaces defining a plane which is higher relative to the ground at the forward portion of the running surfaces than at the rearward portion of said receiving surfaces; and

biasing means for biasing the rear portion of said power ski downwardly and the operator's weight being located substantially over the rear power driven ski to urge said running surfaces and said driving track of said power driven ski into engagement with the snow when traversing a snow covered terrain.

4,286,683

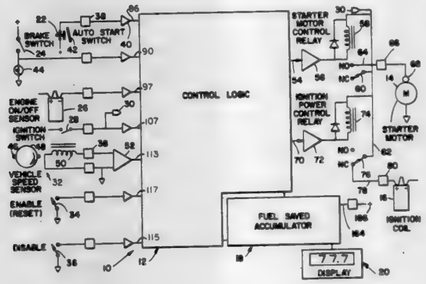
STOP/START CONTROL SYSTEM FOR ENGINE

Willard L. Zeigner, San Ramon, and Peter G. Blaney, Walnut Creek, both of Calif., assignors to Zemco, Inc., San Ramon, Calif.

Filed Aug. 20, 1979, Ser. No. 68,098

Int. Cl.³ B60K *15/00*

U.S. Cl. 180—54 R **4 Claims**



1. For use with a vehicle having an internal combustion engine with a drive shaft, a starter motor, an ignition system with an ignition switch and a battery, a brake means and an accelerator means, a system for automatically controlling the shutdown and restarting of the engine in order to conserve fuel at times when the vehicle would be otherwise stopped with the engine running at idle speed, said system comprising:

an enable switch connected to said battery for turning said system "on";

first control means for producing a first series of input signals when the engine is running and the vehicle is stopped;

a first logic means responsive to said input signals from said first control means to provide an output;

means responsive to the output from said first logic means for disabling the ignition system to thereby stop the engine;

second control means, including a manually operated auto start switch for producing a second series of input signal when the engine is off with the vehicle stopped;

a second logic means responsive to said second control means to provide an output for controlling restarting of the engine;

means responsive to the output of said second logic means for activating the starter motor to start the engine;

means responsive to said output from said first logic means for computing the amount of fuel saved during an engine shutdown period between an automatic engine stop and an engine restart by the system;

means for providing an engine idle fuel flow rate reference;

clock means connected to said reference means and operable at a rate proportional thereto;

counter means driven by said clock means for producing an output proportional to the accumulated fuel saved;

gate means connected between said clock means and said counter means and responsive to the output from said first logic means for controlling said counter means; and

display means for providing a visual representation of the accumulated fuel saved from said counter means.

3. An automatic stop and restart control system for a vehicle provided with an internal combustion engine having an ignition circuit, a battery power supply and a starter motor, comprising:

first control means for automatically causing an engine shutdown when the vehicle is stopped with the engine at idle speed;

second control means for restarting the engine following a period of time after an automatic engine shutdown;

accumulating means for computing the amount of fuel being saved during the engine shutdown time period; and

means for displaying the computed amount of fuel saved after the engine has been restarted.

4,286,684

HYDRAULIC SERVO STEERING SYSTEM

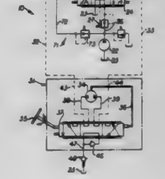
Lawrance F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00228, § 371 Date, Mar. 3, 1980, § 102(e) Date, Mar. 3, 1980.

This PCT application filed Mar. 3, 1980, Ser. No. 189,958

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—133 **4 Claims**



1. In a hydraulic steering system (**10**) having a pilot operated steering valve (**24**), a hand metering unit (**31**) in fluid communication with opposite ends of the steering valve (**24**), a followup servo cylinder (**19**), a pair of lines (**51,52**) connecting opposite ends of the servo cylinder (**19**) to opposite ends of the steering valve (**24**), the improvement comprising:

a pair of pilot operated valves (**53,54**) individually positioned within the pair of lines (**51,52**) each being movable between a closed position at which fluid flow therethrough is blocked and an open position at which fluid can communicate between the servo cylinder (**19**) and the opposite ends of the steering valve (**24**), each of the pilot operated valves (**53,54**) being moved to the open position in response to fluid pressure in the pair of lines (**51,52**) reaching a preselected level and to the closed position in response to the fluid pressure in the lines (**51,52**) between the pilot operated valves (**53,54**) and the opposite ends of the servo cylinder being (**19**) less than the preselected level, and

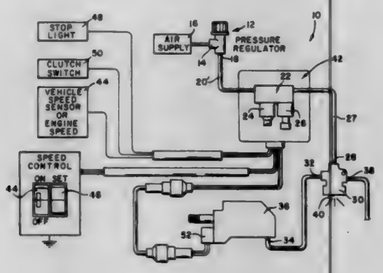
means (**71**) for establishing fluid pressure in the pair of lines (**51,52**) above the preselected level, said means (**71**) being connected to the lines (**51,52**) at a location between the pilot operated valves (**53,54**) and the servo cylinder (**19**).

4,286,685

SPEED CONTROL FOR HEAVY DUTY TRUCKS

Pamela Rudolph, Elyria; Robert D. Krieder, Wellington, and Patrick J. O'Keefe, Jr., Elyria, all of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed May 23, 1979, Ser. No. 41,573
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—176 **14 Claims**



3. In a vehicle having a source of compressed air, a speed control system comprising speed sensing means for generating a speed signal proportional to a vehicle speed parameter, control means for controlling said speed parameter, said control means including memory means for generating a memory signal representing a value of said speed parameter, means for generating a difference signal proportional to the difference between said memory signal and the speed signal, and means for generating an error signal as a function of the difference signal, a throttle control mechanism responsive to compressed air from said source for controlling the position of the vehicle engine throttle, a pair of electrically actuated valves, one of said electrically actuated valves controlling communication between said compressed air source and said throttle control mechanism, the other of said electrically actuated valves controlling communication between said throttle control mechanism and ambient atmosphere, and duty cycle generating means responsive to said error signal for cyclically actuating said electrically actuated valves for varying percentages of the time of each cycle dependent upon the value of said error signal, said throttle control mechanism including a housing, a piston slidable in said housing and connected to the vehicle engine throttle, means for communicating compressed air into said housing, and means for generating a position signal which varies as a function of the position of said piston, said error signal generating means being responsive to said position signal for varying said error signal as a function of the value of said position signal.

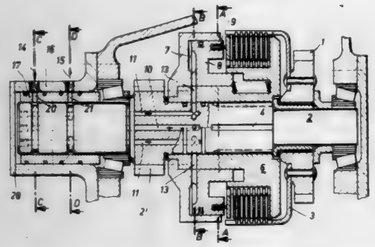
4,286,686

MULTI-PLATE FRICTION CLUTCH

Rudolf Franke, Martinstrasse 31, D-6100 Darmstadt, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,717
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805692; May 11, 1978, 2820582
Int. Cl.³ B60K *23/08*; F16D *25/00*
U.S. Cl. 180—233 **15 Claims**

1. A multi-plate friction clutch for motor vehicles operable by fluid pressure and having an inner plate carrier and an outer plate carrier, wherein the inner plate carrier has a hub swivel-mounted on a shaft between two positions through a control angle α to form a rotary slide valve such that in one position a pressure cylinder for applying pressure to the clutch plates is in communication with a source of fluid pressure through a feed line, and in the other position the pressure cylinder is in communication with a fluid discharge line and is cut off from the feed line, wherein the shaft has at least one radial bore connectable to the feed line and at least one other radial bore connectable to the discharge line, and wherein the inner plate carrier has at least two radial bores leading to the pressure cylinder, the bores in either the shaft or the inner plate carrier being spaced apart by 90° and the bores in the inner plate carrier or the shaft being correspondingly spaced apart by $90°\pm\alpha$, a sleeve on the shaft rotatable with respect to a stationary housing of the clutch through a second control angle β, the sleeve forming a second rotary slide valve such that, in one direction of rotation in the shaft the feed line communicates through the



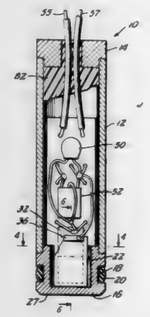
sleeve with a duct in the shaft leading to said one of the radial bores and the discharge line communicates through the sleeve with another duct in the shaft leading to said one other of the radial bores, and in the other direction of rotation by the shaft the feed lines communicate through the sleeve with said one other of the radial bores through its duct and the discharge line communicates through the sleeve with the said one of the radial bores through its duct.

4,286,687

AIR GUN FIRING SENSOR APPARATUS AND SYSTEM

Augustus H. Fiske, Jr., Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed Oct. 24, 1979, Ser. No. 87,659
Int. Cl.³ G01V *1/137*
U.S. Cl. 181—120 **15 Claims**



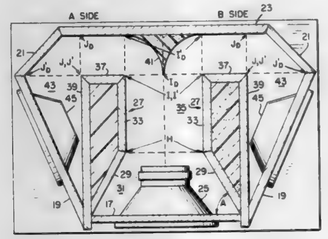
1. A pressure-sensitive transducer assembly for determining the instant of firing of an air gun by sensing pressure changes occurring in the air gun when it is fired comprising:
- a casing,
- a head wall included in one end of said casing,
- recess means positioned in said head wall adapted to communicate with a passage leading into said air gun,
- a pressure-sensitive transducer mounted in said head wall adjacent to said recess means,
- said pressure-sensitive transducer having its neutral axis extending parallel to said recess means,
- whereby pressure variations in said recess means are transmitted through said head wall traverse to the neutral axis of said pressure-sensitive transducer for producing an electrical signal indicative of the instant of firing of the air gun.

4,286,688

LOUDSPEAKER APPARATUS

Arthur L. O'Malley, 26 Grove St., Oneonta, N.Y. 13820

Continuation of Ser. No. 904,147, May 9, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 99,188
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—156 **12 Claims**



1. Loudspeaker apparatus comprising:

(A) an enclosure having parallel top and bottom panels, between which are perpendicularly disposed parallel front and back panels, as well as an opposed pair of identical major side panels which extend rearwardly from the front of said enclosure at equal first obtuse interior angles with respect to said front panel and an opposed pair of identical minor side panels which extend forwardly from the rear of said enclosure at equal second obtuse interior angles with respect to said back panel, said minor side panels respectively having edge-to-edge junctions with said major side panels;

(B) an electrically drivable loudspeaker within said enclosure and centrally mounted on said front panel to project forwardly traveling sound energy directly out of said enclosure when said loudspeaker is electrically driven;

(C) a pair of passive radiators within said enclosure, each being centrally mounted on a respective one of said major side panels to project sound energy directly out of said enclosure when driven by received sound energy; and

(D) means within said enclosure for dividing backwardly traveling sound energy from said loudspeaker into two substantially equal portions and channeling each portion in uniform driving relation to a respective one of said passive radiators, said dividing and channeling means including:

(a) an elongated deflection member extending perpendicularly between said top and bottom panels, said deflection member having, coextensive with its length, a mounting surface disposed against the back panel and two concave arcuate deflection surfaces converging from the back panel toward one another about a vertical plane of symmetry of said enclosure and intersecting to define a linear apex spaced from said loudspeaker and normal to the speaker axis; and

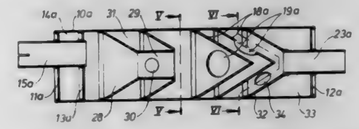
(b) a pair of prismatic divider members extending perpendicularly between said top and bottom panels, each divider member being spaced from said deflection member and spaced from and disposed between said loudspeaker and a respective one of said passive radiators, whereby said backwardly traveling sound energy from said loudspeaker is initially channeled between said divider members to said convergent concave arcuate deflection surfaces of said elongated deflection member and divided thereby into said two substantially equal portions, whereafter each said portion is channeled between a respective one of said prismatic divider members and, successively, said back panel, a respective one of said minor side panels and a respective one of said major side panels.

4,286,689

EXHAUST GAS MUFFLER

Sven O. Malmsten, Raberga, S710 15 Vintrosa, Sweden

Filed Aug. 6, 1979, Ser. No. 63,677
Claims priority, application Sweden, Aug. 15, 1978, 7808659; Jun. 20, 1979, 7905427
Int. Cl.³ F01N *7/02, 1/08*
U.S. Cl. 181—232 **4 Claims**



1. An exhaust gas muffler comprising a tubular envelope, a gas inlet at one end of said envelope, a gas outlet at the other end of said envelope, said ends of the tubular envelope being closed except for said gas inlet and outlet, at least one muffler insert between said ends including at least two spaced cones, the peripheral edge of each of said cones engaging the inner wall of said tubular envelopes at space locations, the axes of symmetry of said spaced apart cones being substantially co-axial to the central axis of said envelope, the apex of the front cone, as seen in the direction of flow, is inserted in the end cone, the latter being frustro-conical and co-axial with the other cone and directed in the same way, the narrowing part of said end cone opening into said gas outlet, and said end cone having at least one port opening into a front chamber defined by said end cone, said tubular envelope and the end wall of said envelope, a single relatively large gas flow passage in each of said cones, each of said gas flow passages having centers which are angularly separated from the centers of gas flow passages in adjacent cones, each of said inserts being disposed in said tubular envelope with the apices of the cones directed toward said outlet, said cones of each of said insert being so arranged with respect to spacing from one another such that the apex of the rearmost cone, as viewed in the direction of the gas flow, lies downstream of a plane perpendicular to the direction of the axis through the surface of abutment to the envelope of said front cone.

4,286,690

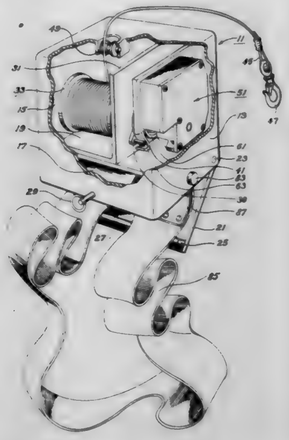
ESCAPE DEVICE

Roland E. Gastine, Bedford, Tex., assignor to Commercial Management Corporation, Fort Worth, Tex.

Filed Mar. 5, 1979, Ser. No. 17,285
Int. Cl.³ A62B *1/06*
U.S. Cl. 182—5 **14 Claims**

1. An escape device for allowing a user to descend from a damaged structure, comprising in combination:
- a housing having a drum compartment and a strap compartment separated from each other by a partition, the strap compartment having a door releasably mounted to the housing;
- a drum rotatably mounted to the housing inside the drum compartment;
- a cable wound around the drum and extending through an opening in the top of the drum compartment, the cable having an end adapted to be secured to a part of the structure;
- a strap having its ends secured to the housing to form a loop for the user to place about his body for descending with the housing, the strap being foldable inside the strap compartment; and

shock absorber means connected between the drum and the retarding means for absorbing shock due to jerking of the



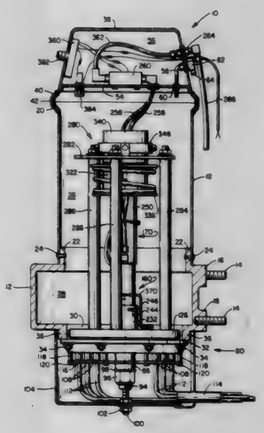
cable to reduce the shock being transmitted to the retarding means.

4,286,691

TRUCK LUBRICATOR

Jack V. Stong, Swanton, Ohio, assignor to Seco Manufacturing, Inc., Toledo, Ohio

Filed Jul. 11, 1979, Ser. No. 56,511
Int. Cl.[3] F16N *7/14, 13/22*
U.S. Cl. 184—7 CR **17 Claims**



1. In apparatus for periodically dispensing lubricant through a plurality of conduits extending to selected sites within a mechanism, said apparatus being of a variety having a housing mountable in the vicinity of said mechanism, said housing including a reservoir for retaining a quantity of said lubricant and distributor means mounted upon said housing and having input means for receiving said lubricant and including selector means actuable to incrementally rotate about a centrally disposed axis between positions effecting a passageway communicating said input means with predetermined ones of said conduits, the improvement comprising:

a pump assembly fixedly mounted upon said housing substantially coaxially with said centrally disposed axis and including:

cylinder means defining a pump chamber having an inlet port communicating with said reservoir;

inlet check valve means for selectively opening and closing said inlet port;

a pump piston actuable to slide reciprocally within said pump chamber and having a metering edge movable therewith between first and second positions along a path spaced a predetermined distance from said inlet port and defining a receiving chamber within said pump chamber when said metering edge is at said first position;

meter valve means mounted upon said cylinder means, positioned a predetermined distance along said path from said first position, communicating between said receiving chamber and said reservoir and having open and closed orientations for selectively effecting the removal of lubricant from said receiving chamber to said reservoir when said pump piston is moved from said first toward said second position;

control means for selectively effecting the opening and closing of said meter valve means;

output valve means communicating between said pump chamber and said distributor means input means; and

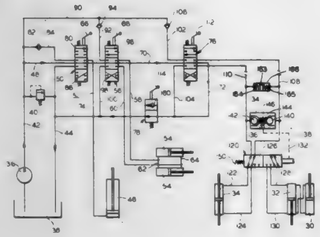
actuator means mounted upon said housing for selectively actuating said selector means to effect said rotation thereof and for actuating said pump piston to move from said second to said first position to load said receiving chamber with a charge of said lubricant through said inlet port and, subsequently, to move from said first to said second position to effect the expression of said lubricant selectively through said meter valve means when in an open orientation and, subsequently, through said output valve means.

4,286,692

HYDRAULIC CONTROL SYSTEM FOR OPERATING MULTIPLE REMOTE DEVICES WITH A MINIMUM NUMBER OF CONNECTING CONDUITS

James J. Bauer, Richland, and Willard L. Chichester, Battle Creek, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Sep. 22, 1978, Ser. No. 944,829
Int. Cl.[3] B66B *9/20*
U.S. Cl. 187—9 R **14 Claims**



1. In a hydraulic system, first and second hydraulic motor means, selector valve means movable to first and second positions in response to first and second respective control pressures present in the low pressure side of the system for operatively connecting said valve means in said first position to said first hydraulic motor means and in said second position to said second hydraulic motor means, operator valve means adapted to select the operation of said first or second motor means and to establish said first or second control pressure, and shuttle valve means continuously responsive to the high pressure side of the system for continuously communicating the low pressure side thereof to said selector valve means when the system is in operation.

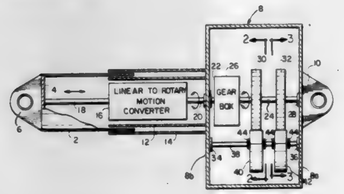
9. In a hydraulic system, first and second hydraulic motor means, selector valve means movable to first and second positions in response to first and second respective control pressures present in the low pressure side of the system for operatively connecting said valve means in said first position to said first hydraulic motor means and in said second position to said second hydraulic motor means, a directional control valve controlling the direction of operation of the first and second motor means and a control pressure selector valve for selection by the operator of the first and second control pressures, said selector valve means and first and second motor being supported from a carriage movable vertically on an upright of a lift truck, or the like, and two hydraulic conduits reeved on the upright connecting the directional control valve to the selector valve means, a shuttle valve connected between said hydraulic conduits and responsive to the pressure in the conduit carrying the highest pressure fluid for communicating to said selector valve means the lower pressure fluid in the other conduit in which is established said first or second control pressure by said control pressure selector valve.

4,286,693

MECHANICAL SNUBBER

Harry E. Sulzer, Telford, Pa., assignor to Anchor/Darling Industries, Inc., Bala Cynwyd, Pa.

Filed Feb. 9, 1979, Ser. No. 10,621
Int. Cl.[3] F16D *63/00*
U.S. Cl. 188—378 **16 Claims**



1. A mechanical force responsive snubber to damp the effects of seismic or other shock and vibration comprising:

a first snubber terminal for securing said snubber to a first external structure;

a second snubber terminal for securing said snubber to a second external structure, said external structures being subject to relative movement, one with respect to the other;

bi-directional toothed escapement means actuated into one of two directions of movement in response to relative movement of said first and second snubber terminals with respect to each other; and

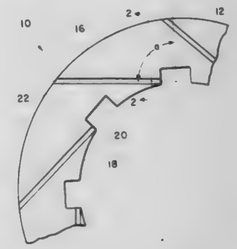
weighted engagement means having an axis, and having a predetermined effective mass, of the eccentric type, said engagement means being engaged with said escapement means for oscillatory rotation about said axis and being responsive to movement of said escapement means in either of the two directions for effecting the oscillatory rotation of said engagement means to have the weighted engagement means limit the movement of the escapement means equally in either of the two directions to limit the velocity and acceleration between said snubber terminals.

4,286,694

GROOVED CARBON BRAKE DISCS

Roy R. Wiseman, Jr., and James J. Kovac, both of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Continuation of Ser. No. 639,391, Dec. 10, 1975, abandoned, which is a continuation of Ser. No. 223,949, Feb. 7, 1972, abandoned. This application May 16, 1979, Ser. No. 39,489
Int. Cl.[3] F16D *55/36*
U.S. Cl. 188—71.5 **6 Claims**



1. A disc brake having a stack of alternate rotating and stationary annular discs having torque transfer notches therein extending across the full width of the disc carried between a backing plate and a pressure plate, said discs operating in the earth's atmosphere, comprising:

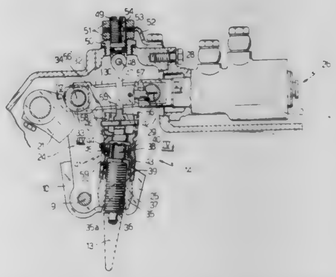
each annular disc being of substantially uniform thickness across their full width and formed of a carbon based material capable of absorbing water and having a plurality of grooves extending across at least one of the rubbing faces of the disc, each groove extending the full distance between the inner and outer peripheries of the disc to transfer water-based steam and vaporized gasses emanating from the disc material from between adjacent discs caused by heating during a braking action, the grooves being located at spaced intervals around the disc, each groove in at least alternating discs extending at a large angle from a radius thereof.

4,286,695

DEVICE FOR AUTOMATICALLY ADJUSTING BRAKE CLEARANCE, IN PARTICULAR FOR AN EARTH MOVING MACHINE

Giorgio Grattapaglia, Turin, Italy, assignor to Fiat-Allis Macchine Movimento Terra S.p.A., Lecce, Italy

Filed Sep. 24, 1979, Ser. No. 78,574
Claims priority, application Italy, Oct. 6, 1978, 69320 A/78
Int. Cl.[3] F16D *65/56*
U.S. Cl. 188—196 BA **13 Claims**



1. A device for automatically adjusting the clearance between braking components of a brake mechanism including actuation means displaceable to effect frictional contact between braking components moveable from a clearance position

relative to each other to a contacting position in a braking mechanism, and wherein

said actuation means includes a moveable member displaceable in a first direction to move the braking components from the clearance position to the contacting position and in a second direction from said contacting position to the clearance position, the device comprising

linkage means coupling displacement of said moveablemember to said movement of said brake components, p1 said linkage means including a first adjustment means and a second adjustment means selectively coupled to permit relative motion therebetween in said first direction of movement of said moveable member and selectively coupled to transmit motion from the first adjustment means to the second adjustment means in said second direction of movement to automatically maintain said clearance position regardless of wear of the braking components,

said first adjustment means including a tubular member mounted for selective rotation and having at least one helically oriented slot formed therein,

said second adjustment means including a rotatably mounted threaded member rotatable upon selective movement of said tubular member in said second direction of movement and having at least one rigidly retained pin operatively coupled in said helically oriented slot of said tubular member, and

clutch means operably connected to said first and second adjustment means permitting said relative motion in said first direction of movement of the moveable member and transmitting said motion in said second direction,

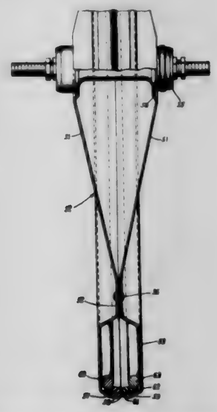
said clutch means including a gear member having a plurality of gear teeth and a plurality of actuating rods circumferentially mounted about the periphery of said gear member to sequentially engage said gear teeth for transmitting motion from said first adjustment means to said second adjustment means when moved in said second direction of motion.

4,286,696

BRAKE FLYWHEEL FOR BICYCLE-TYPE ERGOMETRIC EXERCISER

Eugene J. Szymski, Skokie, and Rene Mraz, Evanston, both of Ill., assignors to Excelsior Fitness Equipment Co., Northbrook, Ill.

Filed Jan. 14, 1980, Ser. No. 111,483
Int. Cl.³ F16D *65/12*
U.S. Cl. 188—218 A **4 Claims**



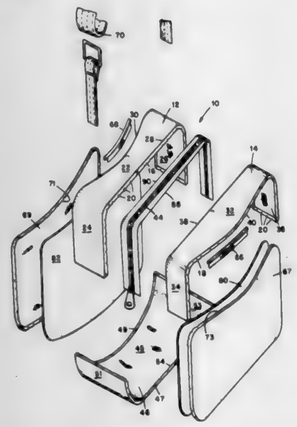
1. A brake flywheel for a bicycle-type ergometric exerciser, comprising two stamped metal discs dished to provide intermediate contacting ring portions and outer spaced-apart marginal portions, means for securing said intermediate portions together, opposed inwardly directed peripheral flanges on said marginal portions, an extruded rubber strip having a flange-receiving slot mounted on each said flange, and a steel ring disposed within the peripheral portion of each said disc for rotation therewith for inertially weighting said flywheel, said rubber strips providing inner peripheral seats for said steel rings to prevent rattling thereof during flywheel movements.

4,286,697

BODY-ATTACHABLE BAG FOR CARRYING CAMERAS OR THE LIKE

Robert A. Baker, Dandridge, Tenn., assignor to Engineered Products, Inc., Dandridge, Tenn.

Filed Jan. 2, 1980, Ser. No. 109,158
Int. Cl.³ A45C *3/10, 13/00, 13/30*
U.S. Cl. 190—48 **1 Claim**



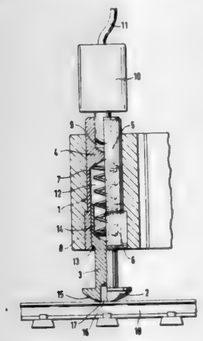
1. A bag particularly suitable for transporting an article in a suspended position alongside of and in substantial wrapping contact with the user's body and having a reduced tendency to swing relative to such user's body during the user's walking or other movements, said bag comprising strap means of suitable length to overwrap the shoulder of a user and having its opposite ends extending downwardly from such shoulder in the direction of a user's waist, first flexible elongated panel means formed into a generally inverted U-shape with its base portion defining a substantial portion of the top of said bag and its leg portions defining substantial portions of the opposite ends of said bag, said ends of said strap being secured to respective ones of said leg portions, second elongated panel means of substantially the same length as and substantially coterminal with said first panel means but of more narrow width disposed in side-by-side relation to said first panel means with one of the side edges of said first panel means being contiguous to one of the side edges of said second panel means, said contiguous side edges being aligned along the aforesaid U-shape to define a top opening in said bag, closure means extending along said contiguous side edges and adapted to releasably join said side edges to one another, third elongated flexible panel means formed into a generally U-shape with its base portion defining the bottom of said bag and its leg portions extending upwardly to respective positions on the opposite ends of said bag, each of said leg portions of said third panel means terminating adjacent the coterminal ends of said first and second panel means, means joining each of said ends of said third panel means to said respective coterminal ends of said first and second panel means, first side panel means, means joining said first side panel means along its perimeter to the outboard side edges of said first and third panel means to close one side of said bag, second side panel means, means joining said second side panel means along its perimeter to the side edges of said second and third panel means to close the opposite side of said bag, said first panel means having one side edge which is outboard and concave with respect to the length dimension of said first panel along that portion thereof which is disposed on the top of said bag, said third panel means having one side edge which is outboard and concave with respect to the length dimension of said third panel in that portion thereof which is disposed on the bottom of said bag whereby said second side panel, when joined to said side edges as aforesaid, is caused to assume a concave geometry, and flexible crease resistant panel means, having greater regidity than said concave side panel, secured in contact with said concave side panel.

4,286,698

SLIDING CONTACT FOR A TOY VEHICLE

Artur Fischer, Weinhalde 34, 7244 Waldachtal 3/Tumlingen, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 93,617
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 7837353[U]
Int. Cl.³ B60L *5/38*
U.S. Cl. 191—49 **5 Claims**



1. A sliding contact for a toy vehicle, particularly for current transmission from a current-conductive rail of a toy railroad to an electric motor of the toy vehicle, the sliding contact comprising a body part which has an axis and a side arranged to face toward the current-conductive rail, said body part having a central portion located adjacent to said axis and provided with a depression which is open at said side, and a peripheral portion which surrounds said central portion has a convex face at said side, said convex face of said peripheral portion and said depression of said central portion intersecting one another to form an edge at the location of intersection, so that when said body part slides on the current-conductive rail, an unobstructed gap is formed between said convex face of said peripheral portion of said body part and the current-conductive rail, which gap is immediately followed by said edge linearly contacting the current-conductive rail, whereby said edge not only provides for contact with the current-conductive rail, but also removes extraneous particles from the latter.

4,286,699

DUAL FUNCTION HANDGRIP CONTROL

Gustav J. Pawelka, Box 612, Sedona, Ariz. 86336

Filed Jan. 7, 1980, Ser. No. 109,783
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—1 **7 Claims**

1. A dual control handgrip device for individually operating a first and a second device, comprising:

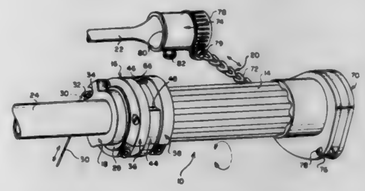
a handgrip, including a gripping portion:

first control means for operating an associated device in response to rotary mechanical forces;

mounting means operable to rotatably mount said handgrip on said first control means; said mounting means comprising a first portion secured to said first control means and operable to rotably drive said first control means, and a second portion mounted on said handgrip; said first and second portions being rotatable with respect to each other; and a lost motion connection connecting said first and second portions for concurrent rotation to rotably drive said first control means when said first and second portions are moved in a first predetermined direction, and permitting relative movement therebetween when said first and second portions are rotated in a second predetermined direction, opposite said first predetermined direction; and

second control means secured to said handgrip and operable to control a second device in response to the relative rotation of said first and second portions in said second predetermined direction;

whereby said first and second control means are individually operated.

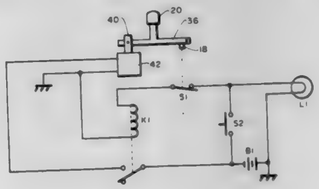


4,286,700

MOTORCYCLE THROTTLE CONTROL

James E. Morris, 18814 Cedar Valley Way, and Bobby J. Myers, 26330 Ridgevale Dr., both of Newhall, Calif. 91321

Filed Nov. 1, 1979, Ser. No. 90,192
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—1 **9 Claims**



1. A motorcycle throttle control apparatus in which a motorcycle has handlebars and a rotatable throttle handle grip;

a locking arm secured to said grip for rotation thereof;

a toothed cog rigidly secured to said handlebars;

means biasing said locking arm into engagement with said cog whereby said grip may be locked at an open position;

release means for releasing said locking arm from engagement with said cog;

latch means for latching said locking arm out of engagement with said cog;

actuating means for actuating said locking arm by disengaging said latch means;

said release means comprising:

a release lever in said housing adapted to engage one end of said pivoted locking arm; and

operating means for operating said release lever whereby said operating means causes said locking arm to be released from said cog and engaged by said latch means;

whereby said grip may rotate to a closed position.

4,286,701

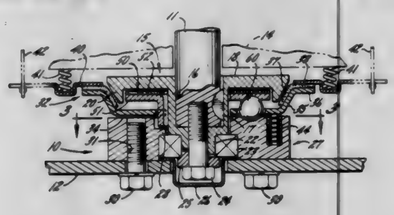
AMPLIFYING CLUTCH

J. G. Fraser MacDonald, Detroit, Mich., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Continuation-in-part of Ser. No. 946,441, Sep. 27, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,038

Int. Cl.³ F16D *13/02, 15/00, 67/02*

U.S. Cl. 192—18 R **10 Claims**



1. A clutch comprising rotatably mounted input and output members, a rotatably mounted first shoe supported to move axially relative to said input member and to turn angularly through a limited distance relative to said output member, coacting friction surfaces on said input member and said first shoe, said friction surfaces engaging one another and causing said first shoe to turn with said input member when said first shoe is moved axially toward said input member, said friction surfaces effectively releasing one another and enabling said input member to turn relative to said first shoe when said first shoe is moved axially away from said input member, selectively operable means for causing said first shoe to move axially toward and away from said input member, a rotatably mounted second shoe supported to move axially relative to said input and output members and coupled to rotate substantially in unison with said output member, coacting friction surfaces on said input member and said second shoe, said latter friction surfaces engaging one another and causing said second shoe to be turned by said input member when said second shoe is moved axially toward said input member, said latter friction surfaces effectively releasing one another and enabling said input member to turn relative to said second shoe when said second shoe is moved axially away from said input member, said clutch being characterized by means located between and engageable with said second shoe and said output member and coupled to said first shoe so as to be moved angularly through a limited distance by said first shoe and relative to said second shoe and said output member when said first shoe is initially turned by said input member, said last-mentioned means being effective upon being moved angularly through said distance to force said second shoe axially toward said input member without producing an axial reaction force against said first shoe.

4,286,702

FEED PIPE FOR CONVEYING STICKY BULK MATERIAL

Peter Langen, Hanrathstrasse 43, 5303 Bornheim-Walberg, Fed. Rep. of Germany

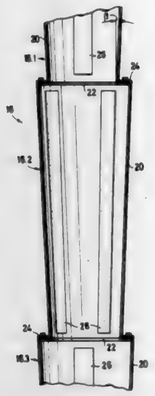
Filed Nov. 20, 1978, Ser. No. 962,007

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827602

Int. Cl.³ B65G *11/02*

U.S. Cl. 193—2 R **3 Claims**

1. A vertically mounted feed pipe for gravity feeding from a bunker outlet into a conveying apparatus bulk material having a tendency to arch, said feed pipe consisting of a plurality of serially connected downwardly tapering tubular members of substantially identical design having a ratio of their axial length to their average diameter which is smaller than that required for arching of the bulk material to occur and at least one of said tubular members having about its inner circumference first and



second surface portions having different coefficients of friction with respect to the bulk material.

4,286,703

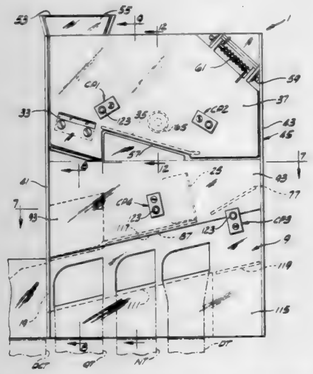
COIN TESTING AND SORTING APPARATUS

James T. Schuller, St. Louis County, and Harry C. Haeusser, High Ridge, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed May 11, 1979, Ser. No. 38,088

Int. Cl.³ G07F *3/00*

U.S. Cl. 194—100 A **25 Claims**



25. Coin apparatus for use in a vendor for handling acceptable coins and rejecting unacceptable items inserted in the coin slot of the vendor and for making change, comprising:

a plurality of change tubes, one for each of a plurality of denominations of acceptable coins that may be inserted in the coin slot of the vendor, each of said tubes being adapted to hold a stack of coins of a respective denomination, and being open at the top for being filled with coins from the top;

a plurality of sensors, one for each change tube, for sensing the filling of each tube with coins of the respective denomination to a predetermined level in the tube;

coin sorting means for sorting coins of said denominations and delivering to each change tube coins of the denomination for that tube, said sorting means having an entrance for coins of the different denominations to be sorted, exits for drop-out of coins of the different denominations into the respective tubes, and a sorting gate for one of said exits,

passage means for travel of acceptable coins and unacceptable items inserted in the coin slot of the vendor toward the coin sorter entrance, means along said passage means for detecting whether an item travelling therein is an acceptable coin or an unacceptable item and, if it is an acceptable coin, determining its denomination; and

means controlled by said detecting means for effecting delivery of coins of each of said denominations inserted in the coin slot of the vendor to the coin sorting means in response to the sensor for the change tube for coins of that denomination detecting the level of coins therein as below the respective predetermined level, for effecting opening of said sorting gate if the coin delivered to the coin sorting means is a coin of said one denomination for drop-out of the coin into the respective change tube, for effecting delivery of a coin inserted in the coin slot of the vendor to an accept system in response to the sensor for the change tube for coins of that denomination detecting the level of coins therein as above the respective predetermined level, and for effecting delivery of an unacceptable item to a return system of the vendor.

4,286,704

COIN-VALIDATING ARRANGEMENT

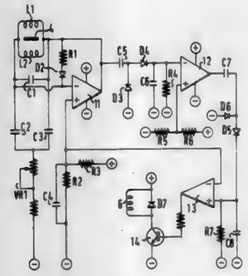
Dennis Wood, Oldham, England, assignor to Coin Controls Limited, Royton, England

Filed Apr. 22, 1980, Ser. No. 142,682

Claims priority, application United Kingdom, Apr. 27, 1979, 14716/79

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—100 A **18 Claims**



1. A coin-validating arrangement, comprising

(a) coin guide means defining a coin guide path (3);

(b) oscillation circuit means including

(1) fixed biased amplifier means (11) having input and output terminals;

(2) tuned circuit means including at least one coil arranged adjacent said coin guide path, said tuned circuit means being connected between said amplifier output and input terminals to define a negative feed back path; and

(3) means including a variable resistor (VR1) for applying to said tuned circuit means a potential normally producing a phase shift sufficient to result in positive feedback in said amplifier means and oscillation of said oscillation circuit means, said oscillation circuit means being operable to a non-oscillating quenched condition when a given coin having predetermined physical characteristics is temporarily positioned adjacent said coil;

(c) normally closed acceptance gate means (7) arranged in said coin path;

(d) detecting means for detecting the quenching of the oscillations of said oscillation circuit means by said given coin; and

(e) means operable by said detecting means when said oscillation circuit means is in the quenched condition for opening said acceptance gate means, thereby to permit the passage of the given coin therethrough.

4,286,705

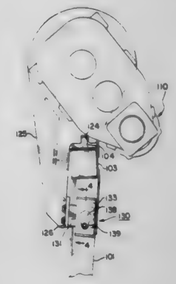
SCRAPER ELEVATOR DRIVE MOUNTING

Richard F. Boersma, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 749,820, Dec. 13, 1976, Pat. No. 4,179,024. This application Sep. 5, 1978, Ser. No. 939,244

Int. Cl.³ B65G *19/00, 23/06*

U.S. Cl. 198—719 **6 Claims**



1. A mounting for a drive gear assembly operatively connected to a drive sprocket assembly of a flight-type elevator for isolating torsional stresses incurred during loading of material comprising

a material loading elevator means including an elevator frame and a plurality of material conveying flights supported thereon for movement in a predetermined endless path of movement for loading materials,

said plurality of material conveying flights being supported by said elevator frame upon a rotatable drive sprocket assembly and rotatable idler wheels carried by said elevator frame,

said drive sprocket assembly having a driven end operatively connected to a drive gear assembly for rotating said drive sprocket assembly to move said plurality of material conveying flights in an endless path of movement,

a cantilevered support arm carried by said elevator frame for supporting said drive means,

said cantilevered support arm being supported by mounting means upon said elevator frame to effect movement in a plane transverse to the rotational axis of said drive sprocket assembly in response to a predetermined force being applied to one of said plurality of material conveying flights during loading of material, said mounting means comprises a bushing block which torsionally rotates about a longitudinal axis through a resilient bushing.

4,286,706

BELT TRACKING SYSTEM

Vittorio Castelli, Scarsdale, and Ralph A. Hamaker, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 19, 1979, Ser. No. 50,271

Int. Cl.³ B65G *39/16*

U.S. Cl. 198—806 **6 Claims**

1. An apparatus for controlling the lateral alignment of a belt arranged to move along a pre-determined path, including:

a tubular member arranged to support the portion of the belt passing thereover;

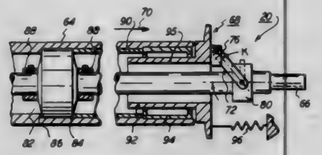
a substantially stationarily mounted shaft member disposed interiorly of and spaced from said tubular member;

means for rotatably and pivotably mounting said tubular member on said shaft member;

a ring extending in an outwardly direction from said tubular member and arranged to have a portion thereof positioned

closely adjacent to the side edge of the belt so that lateral movement of the belt causes the side edge of the belt to contact said ring and translate said ring in the lateral direction;

means for translatably securing said ring on said tubular member; and



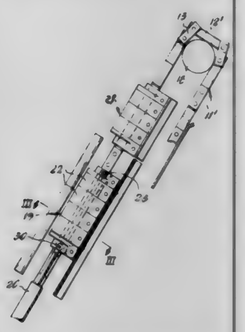
a bracket having one end portion thereof attached pivotably to said ring with the other end portion thereof being attached pivotably to said shaft member so that the translation of said ring pivots said tubular member about an axis substantially normal to the longitudinal axis of said tubular member to return the belt to the pre-determined path.

4,286,707

DEVICE FOR DRIVING AN ENDLESS CHAIN

James D. Menzies, Carlisle, England, assignor to Simonacco Limited, Carlisle, England

Filed Sep. 11, 1979, Ser. No. 74,537
Int. Cl.³ B65G *23/38, 25/04*
U.S. Cl. 198—859 **7 Claims**



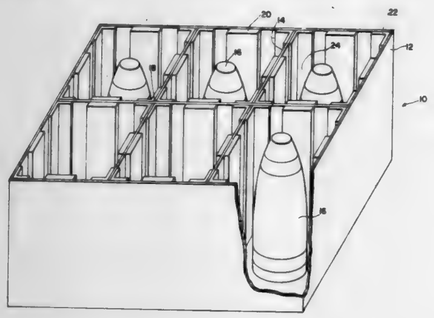
1. A drive system for a pair of laterally spaced parallel endless chains mounting between them one or more load carrying members, each of said chains comprising linearly movable flights, said drive system comprising means movable parallel to the chains in a reciprocating manner, reciprocating drive means for said movable means, and said movable means including one or more slippers adapted to grip at least one chain flight and thus drive at least one of the chains in one direction of movement of said movable means and to permit free movement of the latter relative to the chains in the opposite direction, and means operatively associated with a chain flight for preventing reverse movement of the chains and being of similar construction to said movable means but being fixed, such that at least one of the chain flights may move therethrough in the driven direction but be prevented from movement in the opposite direction, whereby said chains may be advanced intermittently in one direction said one or more slippers being movable on one or more rollers attached thereto and adapted to run along a fixed rail or rails.

4,286,708

MODULE TO PREVENT SYMPATHETIC DETONATIONS IN MUNITIONS

Francis B. Porzel, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1979, Ser. No. 68,355
Int. Cl.³ B65D *81/08, 85/30;* **F42B** *37/00, 39/00*
U.S. Cl. 206—3 **31 Claims**



1. An explosive unit storage means comprising:

at least one storage cell for storing an explosive unit therein;

at least one frangible sympathetic detonation prevention means proximate to said storage cell,

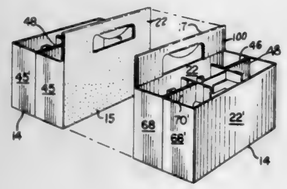
whereby the pressure wave generated by a detonation of an explosive unit contained within said storage cell will be reduced in kinetic energy upon passing through said prevention means and thereby will lack sufficient energy to detonate any adjacently located explosive unit, wherein the detonation prevention means comprises at least one carrier element extending across the opening between explosive units and an energy absorption means supported by the said carrier element.

4,286,709

BOTTLE PACKAGE

Guelfo A. Manizza, Blauvelt, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed May 21, 1979, Ser. No. 40,728
Int. Cl.³ B65D *75/00*
U.S. Cl. 206—144 **3 Claims**



1. A basket type container for packaging a plurality of articles having the general form of beverage bottles, comprising a multiple article accommodating cellular tray structure for a double row of bottles arranged on each side of a multi-panel vertical partition and handle structure, each said tray structure being formed from a single cut and scored paperboard blank each said tray structure comprising a sidewall forming panel and a panel forming member of said partition and handle structure which are hinged at opposite ends to collapsible end wall forming panel members, a pair of hingedly connected collapsible bottom wall forming members which are hinged to the bottom edges of a sidewall forming member and an associated panel member of said partition and handle structure and which are adapted to collapse downwardly into the plane of said associated sidewall and partition panel member, and a collapsible cell structure secured between said sidewall forming member and said partition and handle structure, which, when opened up, is adapted to provide a double row of upwardly opening article receiving cells arranged on each side of said partition and handle structure, said partition and handle structure having the panels thereof adhesively secured together and having top portions with aligned finger accommodating openings therein which top portions extend above the adjoining cell forming structure and constitute a handle for grasping the same so as to enable the package to be conveniently carried, said top portions being secured together and each including an outer reinforcing and facing panel integrally hinged along the top edge to said panel and folded and secured to adjoining depending top portions of said panel which face in the direction of the article receiving cell structure hinged thereto and inner reinforcing panel members hinged to opposite ends of and secured beneath said facing panel, said collapsible cell structures comprising a row separating multi-panel partition structure hinged at opposite ends to the associated collapsible end wall panel members at their hinged connection so as to enable said end wall panel members to collapse in the same direction and into the plane of said row separating partition and cross partition panel members which are cut from panels constituting said row separating partition structure and hinged thereto in cell forming relation and having a hinged connection to opposed faces of the associated sidewall and partition and handle structure for collapse into the plane of said partition and handle structure.

4,286,710

CHRISTMAS CANDLE PACKAGE

Janet D. Higgins, 157 Candlewick La., Bridgewater, N.J. 08807

Filed Nov. 28, 1979, Ser. No. 98,120
Int. Cl.³ B65D *77/00, 85/00*
U.S. Cl. 206—216 **1 Claim**



1. A Christmas candle package comprising: a container having a bottom, sides and a foldable top and containing:

a quantity of sand;

a means for measuring sand into an open bag;

one or more bags having walls of sufficient stiffness so that when a bag is opened and partially filled with sand the walls will remain erect, said bag having an opening in its wall to permit a hook to be inserted and hooked against the inside of the wall;

a tape measure having a hook at one end for engaging said bag wall through said opening to permit the user to measure off the distance between a bag, held in stationary position by the sand in the bag, and another bag;

one or more candles;

one or more matches; and

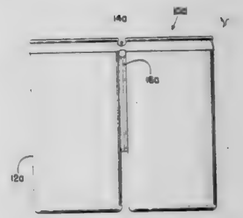
a candle lighter for holding a match to light a candle when the candle is in upright position in the sand in said open bag, said lighter comprising a wire having a bent loop with parallel sides at one end and a slider surrounding the two parallel sides to compress the parellel sides and to permit the sides to engage a match inserted into the loop for lighting the candle in each successive bag to form a row of upright candles held in the sand and protected from the wind by the surrounding walls of the bags.

4,286,711

TWO-WAY CONTAINER PACKAGE

John R. Platt, Wheaton, and Edward L. Benno, Grayslake, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 31,565, Apr. 19, 1979, Pat. No. 4,234,082.
This application Jul. 21, 1980, Ser. No. 170,270
Int. Cl.³ B65D *81/00, 85/62*
U.S. Cl. 206—216 **2 Claims**



1. In a carrier package for containers or the like which includes features permitting the formation of a secondary package of said containers when their contents have been removed, the combination of a plurality of containers and a carrier device retaining said containers in a primary package configuration relative to each other, a plastic bag having a volume capacity not less than the total volume of said plurality of containers and of internal dimension sufficient to accept and retain all of said plurality of containers and to permit said bag to be closed with said plurality of containers retained therein, and said plastic bag in an empty collapsed condition releasably carried in said primary package, wherein the bag is folded in a flat planar condition having predetermined length and width dimensions in said folded condition, said plurality of containers being arranged into an array of rows and ranks, said folded bag being retained in the package beneath the carrier and wedged between containers within the perimeter of the package.

4,286,712

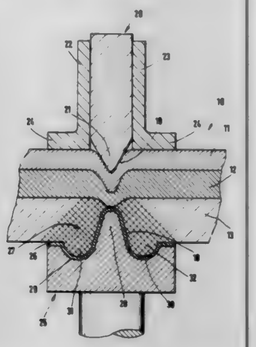
MULTI-LAYERED FOIL CIGARETTE PACK INCLUDING METHOD AND APPARATUS FOR PRODUCING A TEAR LINE IN THE FOIL

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,268
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844238
Int. Cl.³ B65D *85/10, 65/28, 5/54*
U.S. Cl. 206—264 **8 Claims**

1. A cigarette pack made of a multi-layered, composite bonded foil having a moisture and aroma proof layer of metal foil, and an exterior layer of a thermoplastic material, particularly polyethylene, and having a premarked tear line on the foil

defining a removable flap for opening the pack, characterized by: the tear line (**14**) having a reduced thickness formed by the



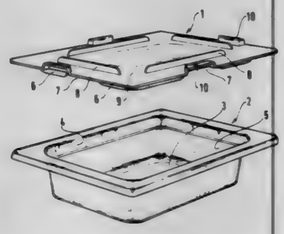
thermal deformation of at least the thermoplastic layer (**13**) and a reduced thickness of said metal foil.

4,286,713

COVER FOR A STANDARD CONTAINER

Jean-Claude Marchais, l'Hay les Roses, France, assignor to CIDELCEM, Paris, France

Filed Jan. 22, 1980, Ser. No. 114,163
Claims priority, application France, Jan. 24, 1979, 79 01788
Int. Cl.³ B65D *21/02*
U.S. Cl. 206—508 **6 Claims**



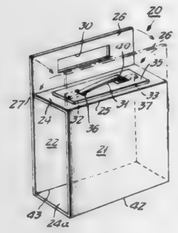
1. A cover for a standard container, said container having a substantially rectangular bottom with rounded corners and side walls that are outwardly flared upwards, the tops of the side walls delimiting a substantially rectangular opening with rounded corners, said cover being constituted by a plate guide made of a thermo-plastic material and provided with upper rib portions which project from its upper surface in a rectangular configuration with gaps therebetween and with lower rib portions which project from its lower surface in a substantially rectangular configuration to fit into the opening; the improvement wherein the upper rib portions (**8**) surround the bottom (**3**) of an underlying container (**2**) placed on the cover (**1**) and wherein said cover (**1**) has only one set of lower rib portions (**6**) which fits inside the opening (**5**) of a container closed by the cover and said set of lower rib portions (**6**) defining a rectangular configuration and being of a slightly different size to that formed by the set of upper rib portions (**8**) so that the bottom (**3**) of the standard container (**2**) placed on the cover (**1**) cannot move sideways, and likewise another cover (**1'**) identical to the cover (**1**) in question and stacked thereon, and wherein said lower rib portions (**6**) being separated by gaps (**7**) which are not adjacent to gaps (**9**) separating the upper ribs (**8**).

4,286,714

SLEEVE WITH PRE-APPLIED HANDLE FOR SETUP BOX OR FOLDING CARTON

Robert C. Zdarsky, Westchester, and Russell Lyons, Franklin Park, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Oct. 19, 1979, Ser. No. 86,467
Int. Cl.³ B65D *5/46*
U.S. Cl. 206—526 **4 Claims**



1. A sleeve and handle for a rectilinear package; said sleeve being adapted to maintain the package in closed position when placed on said package; said handle being connected to and a part of said sleeve;

said sleeve comprising a tubular member having a pair of side walls each connected by hinge lines to a top and bottom wall; said tubular member being erectable and collapsible around said fold lines;

said sleeve when erected comprising a pair of opposed parallel side walls and opposed parallel top and bottom walls; the cross-sectional area of said erected tubular sleeve being of a dimension to match corresponding dimensions of said package;

said sleeve being capable of being slipped on and off said package and being dimensioned to have a substantial frictional fit on said package;

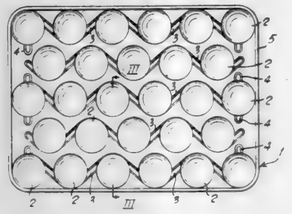
the top wall of said sleeve having a handle formed therein and comprising at least a pair of superimposed upper and lower panels; one of said panels being hingedly connected to one side wall; the other of said panels being hingedly connected to the other side wall; the upper panel of said superimposed panels having a slot therein; a flexible handle member secured between said superimposed panels and extending in said slot; said handle member being depressible into said slot to be wholly within the boundary of said upper panel; said handle being capable of being raised out of said slot for grasping by the hand and comprising a ribbon; the ends of said ribbon being secured to the lower of the two superimposed panels forming the top wall and at least one section of the ribbon adjacent one end of the slot being prefolded to ensure a controlled collapse of said handle within said slot, said top wall further including a reinforcing member for further securing said handle member to said lower panel and to reinforce said slot in said upper panel, said reinforcing member including a single sheet with openings therein, said sheet being adhesively secured to the upper surface of said lower panel with the ends of said ribbon handle being captured through said openings, between said sheet and said lower panel.

4,286,715

RECTANGULAR TRAY FOR PACKING AND CONVEYING SPHEROIDAL FRUIT

Nerio Martelli, and Giuliano Strazzari, both of Bologna, Italy, assignors to Nespak S.p.A. Societa Generale Per l'Imballaggio, Massa Lombarda, Italy

Filed Aug. 31, 1979, Ser. No. 71,677
Claims priority, application Italy, Sep. 12, 1978, 12788 A/78
Int. Cl.³ B65D *1/34*
U.S. Cl. 206—564 **20 Claims**



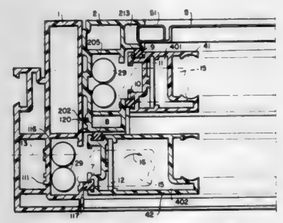
1. A rectangular tray formed of a thin-walled material of essentially uniform thickness for packing and conveying generally spheroidal objects, comprising, depressions for accommodating one object each, and stiffening channels recessed into one major surface of the tray and projecting from the other major surface of the tray, the depressions being concave when viewed from the top of the tray and convex from the bottom of the tray, and being arranged in straight rows which are parallel to one peripheral edge of the tray with the depressions in each row being staggered relative to the depressions in adjacent rows, and wherein in at least some of the rows of depressions the majority of depressions are connected to adjacent depressions by said stiffening channels which are disposed at an oblique angle to the direction of that row, whereby buckling of the tray is resisted along lines parallel to the peripheral edges of the tray.

4,286,716

BUILDING KIT FOR VERTICAL OR HORIZONTAL SLIDING WINDOWS

Wolfgang Budich, and Hans Theissen, both of Troisdorf-Eschmar, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,148
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842884
Int. Cl.³ B65D *71/00*
U.S. Cl. 206—577 **32 Claims**



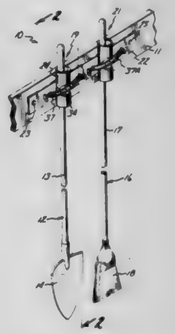
1. A building kit for vertically or horizontally displaceable windows which include a blind frame means and hollow profile sash means, characterized in that the blind frame means is formed of a blind frame profile member and includes a substantially planar wall on a side thereof adapted to face the sash means, a projecting guide strip means is disposed substantially centrally of the planar wall and extends in a longitudinal direction of the blind frame profile member, an undercut guide groove means opens into the planar wall, chamber means arranged on each side and below said guide groove means, a U-shaped end profile means is adapted to be arranged on the blind frame profile member for sealing an inside of the sash means, and in that means are provided for connecting the end profile means to the blind frame profile member, said connecting means are adapted to enable the end profile means to be selectively guided on one of the projecting guide strip means or in an opening of the guide groove means.

4,286,717

HANGER FOR SLENDER ARTICLES

James O. Liesinger, 4543 Snelling Ave. South, Minneapolis, Minn. 55402

Filed Oct. 15, 1979, Ser. No. 84,798
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—60 T **40 Claims**



1. An apparatus for holding an object having an elongated generally cylindrical handle comprising: first means adapted to be attached to a support structure, a tubular member attached to the first means, said tubular member having an inside wall providing a linear passage to accommodate the handle, said tubular member having open opposite ends aligned with the passage whereby the handle can extend through the passage of the tubular member, and said tubular member having edge means providing an opening in the tubular member open to a side of said passage between the open ends of the tubular member, said edge means comprising a first edge and a second edge, said first and second edges diverging outwardly from opposite side portions of the tubular member and surrounding said opening; spring means extended across said opening engageable with the first and second edges, said spring means engageable with the handle when the handle is in the passage to hold the handle in fixed relation to the tubular member; and third means connecting the spring means to the first means.

4,286,718

DISPLAY AND STORAGE RACK

Leonard Flax, New York, N.Y., assignor to The Frame Company, Inc., Jersey City, N.J.

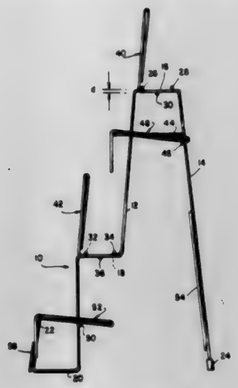
Filed Feb. 4, 1980, Ser. No. 118,400
Int. Cl.³ A47F *5/01*
U.S. Cl. 211—181 **4 Claims**

1. A display and storage rack for picture frames that have a horizontal base member, said rack comprising:

spaced, parallel end pieces;

three spaced parallel display frame support rods extending between said end pieces, the outer two rods being vertically spaced from the inner rod by a distance equal to the

thickness of said frame base member, forming a tripartite support for a picture frame base member; and



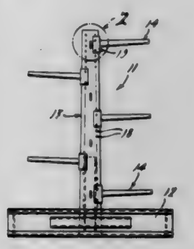
two parallel storage frame support rods extending between said end pieces below said display frame support rods and adapted to support a stack of said frames.

4,286,719

CANTILEVER STORAGE RACK

Lee Z. Hall, Huntington Woods, Mich., assignor to Palmer-Shile Company, Detroit, Mich.

Filed Nov. 27, 1979, Ser. No. 97,682
Int. Cl.³ A47F 5/00
U.S. Cl. 211—193 **5 Claims**



1. In a cantilever storage rack of the type having a column of rectangular cross-sectional shape, pairs of vertically spaced apertures in the sides of the column, a load supporting arm, and a channel shaped bracket secured to the inner end of said arm and adapted to fit around said column, the improvement comprising upper and lower pairs of apertures in the flanges of each bracket aligned with apertures in said column, and a pair of pins passing through the apertures in said bracket and column, the pins and apertures being so shaped and positioned that the web of the said channel shaped bracket will be spaced from said column and both pins will have area load bearing contact with said column and bracket.

4,286,720

COUNTERWEIGHT REMOVAL SYSTEM AND METHOD

John Atkinson, Bishop Auckland, England, assignor to Coles Cranes Limited, Sunderland, England

Filed Aug. 30, 1979, Ser. No. 70,956
Claims priority, application United Kingdom, Sep. 5, 1978, 35701/78
Int. Cl.³ B66C 23/74
U.S. Cl. 212—178 **10 Claims**

1. A method of preparing a mobile crane for travelling from one working site to another, said mobile crane comprising a platform, an upwardly inclined surface on said platform, a jib and superstructure mounted for slewing on said platform, a jib pivoted to said superstructure, an extensible beam assembly carried by said superstructure and a counterweight attached to said beam assembly, said counterweight having an underside inclined at a substantially equal angle to the horizontal as said upwardly inclined surface, in which:

said jib structure is slewed to position said counterweight adjacent said upwardly inclined surface,

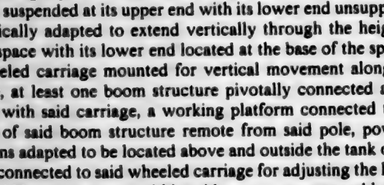
said counterweight is moved by said beam assembly in a direction away from said superstructure to engage said underside of said counterweight and said upwardly inclined surface and cause said counterweight to ride up said upwardly inclined surface so that said counterweight is supported on said surface,

and detaching said counterweight from said beam assembly and tieing it down onto said platform for travelling.

5. A mobile crane comprising:

a platform,

a jib superstructure mounted for slewing on said platform,



an upwardly inclined surface on said platform wherein the elevation of said upwardly inclined surface above said platform increases as the distance from said superstructure increases,

a jib pivoted to said superstructure, an extensible beam assembly carried by said superstructure,

a counterweight attached to said beam assembly to assist in balancing a load on said jib, said counterweight having an underside inclined at a substantially equal angle to the horizontal as said upwardly inclined surface,

said upwardly inclined surface being capable of supporting a counterweight during travelling, and

said upwardly inclined surface being positioned and arranged so as to be able to engage said underside of said counterweight upon movement as said beam assembly after said superstructure has been slewed to an appropriate position, continued movement of said beam assembly causing said counterweight to ride up said inclined surface and be supported thereby.

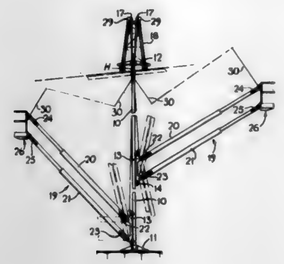
4,286,721

ACCESS EQUIPMENT

Denis H. Ashworth, Dudley, England, assignor to Simon Engineering Dudly Limited, West Midlands, England

Continuation of Ser. No. 826,121, Aug. 19, 1977, abandoned, which is a continuation of Ser. No. 623,632, Oct. 20, 1975, abandoned. This application Nov. 13, 1979, Ser. No. 93,438
Int. Cl.³ E04G 1/36; B66C 23/06
U.S. Cl. 212—199 **11 Claims**

1. Apparatus enabling access to the interior surfaces bounding a large space such as a ship cargo tank comprising a rigid pole suspended at its upper end with its lower end unsupported vertically adapted to extend vertically through the height of the space with its lower end located at the base of the space, a wheeled carriage mounted for vertical movement along said pole, at least one boom structure pivotally connected at one end with said carriage, a working platform connected to the end of said boom structure remote from said pole, powered means adapted to be located above and outside the tank operably connected to said wheeled carriage for adjusting the height of said boom structure within said space, means operable by an operator on said working platform for adjusting the boom structure for moving the working platform vertically and toward or away from said pole, and means whereby said lower



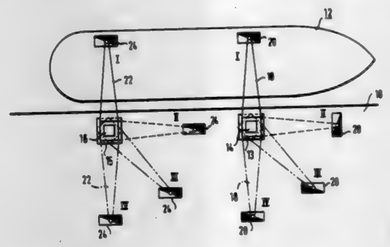
end of the pole is located in a fitting adapted to be mounted in the tank to operatively receive the base of the pole so as to restrain the pole against lateral or rotational movements.

4,286,722

CONTAINER LOADING CRANE WITH ROTATABLE HOISTING FRAME

Hans Tax, Potsdamer Strasse 3, Munich, Fed. Rep. of Germany (8000), and Klaus Hösler, Eichenau, Fed. Rep. of Germany, assignors to Hans Tax, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 810,879, Jun. 28, 1977, abandoned. This application Jun. 13, 1979, Ser. No. 48,048
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1976, 2630182
Int. Cl.³ B66C 23/00
U.S. Cl. 212—242 **14 Claims**



1. In a container loading crane including a a base frame, a boom extending from said base frame and having a free end spaced outwardly from said base frame, a plurality of elongated tension members depending from the free end of said boom, winch means mounted on said base frame and said tension members connected to said winch means and extending therefrom to the free end of said boom for varying the effective depending lengths of said tension members, a horizontally extending, elongated container hoisting frame carrying connector means for rigidly fastening a shipping container to said container hoisting frame, each of said tension members being secured to said container hoisting frame for raising and lowering the frame in response to the varying dependent lengths of the tension member, and turning means for turning said container hoisting frame about a vertically extending axis, the improvement in said turning means which comprises:

(a) a first turntable assembly pivotally mounted about a horizontal pivot axis on the free end of said boom and secured thereto against rotation about the vertically extending axis;

(b) a second turntable assembly mounted on said first turntable assembly for rotation about the vertical extending axis assembly;

(c) drive means for turning said second turntable assembly relative to said first turntable assembly and the free end of said boom about said vertically extending axis,

(1) said turntable assemblies defining respective portions of a vertical passage therethrough,

(2) said tension members extending through said passage;

(d) first securing means on said second turntable assembly and second securing means on said hoisting frame associated with each of said tension members and securing respective, longitudinal parts of the associated tension member to said second turntable assembly and to said hoisting frame;

(e) said first and second turntable assemblies being fixed in the vertical direction with respect to said horizontal pivot axis; and

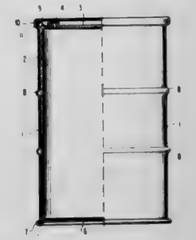
(f) said plurality of tension members being twisted about said vertically extending axis when said second turntable assembly is rotated with respect to said first turntable assembly.

4,286,723

COMPOSITE STEEL-JACKETED PLASTIC BARREL

Udo Schutz, Ruckersteg 4, D-5418 Selters, Westerwald, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,849
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948083
Int. Cl.³ B65D 8/06
U.S. Cl. 220—5 R **1 Claim**



1. A composite barrel comprising a sheet steel shell having a lower sheet steel end wall flanged to the shell, an inner plastics container blow-molded in one piece including a bottom wall, a tubular body, and a top wall, said top wall forming the upper end wall of the composite barrel, said container having a wall thickness which decreases uniformly from the upper end to said bottom wall resting adjacent said lower sheet steel end wall, the upper end wall of the inner plastics container and the upper end of the sheet steel shell each having a radially outwardly projecting peripheral rim, and a clamping ring detachably interconnecting the respective rims.

4,286,724

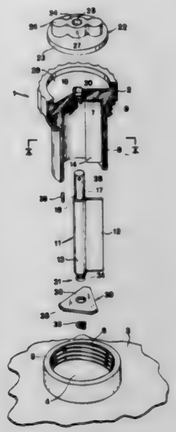
FLUID TANK ARRANGEMENT WITH CLOSURE

Ivan Andersson, Hänavägen 23,, 826 04 Söderhamn, Sweden

PCT No. PCT/SE78/00065, § 371 Date Jun. 28, 1979, § 102(e) Date Jun. 25, 1979, PCT Pub. No. WO79/00241, PCT Pub. Date May 3, 1979.
This PCT application filed Oct. 26, 1978, Ser. No. 117,491
Claims priority, application Sweden, Oct. 28, 1977, 7712169
Int. Cl.³ B65D 1/24, 1/36, 57/00
U.S. Cl. 220—20.5 **11 Claims**

1. A fluid tank arrangement of the kind to deliver a fluid to a consumption unit and comprising a reserve fluid container (16), which is operable to deliver the reserve fluid into the tank (3) when the fluid in the tank has been consumed, said container being arranged to be located in association with a filling hole (4) in the tank, characterized in that said container is combined with a cap (1) for the filling hole in the tank so as to

compulsorily follow the cap when it is removed from and replaced onto the tank and that the container is compressible



and of a dimension smaller than the filling hole so that, when containing said reserve fluid, is adapted to retain the reserve fluid independently of the position of the cap and the tank.

4,286,725

VESSEL FOR COLLECTING AND EXTINGUISHING COMBUSTIBLE LIQUIDS

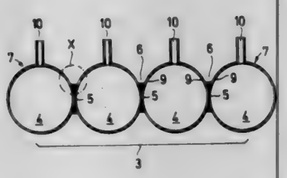
Paul Menzenhauer, Bruchsal, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 946,871

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1977, 2744267

Int. Cl.³ A62C *1/18, 3/06*; G21C *9/04*

U.S. Cl. 220—23.2 **3 Claims**



1. A vessel for collecting liquid, comprising a plurality of hollow bodies each having a length dimension: said hollow bodies being arranged side-by-side parallel to their length dimension and being secured to one another to form an assembly; each said hollow body defining an enclosed inner chamber for accommodating the liquid; the chambers of the respective hollow bodies being separated from one another; each hollow body having an outer upper surface inclined downwardly in a direction transverse to said length dimension; the inclined upper surfaces of any two adjoining hollow bodies together form a trough extending parallel to said length dimension; each trough having a bottom and drainage openings at said bottom for providing passage of the liquid from each trough into said inner chambers underneath the respective troughs; each hollow body further having an external apical portion; and further comprising a vent pipe secured to each hollow body in said apical portion thereof and extending vertically upwardly from said apical portion; each vent pipe defining a vent opening maintaining communication between the respective inner chamber and the ambient atmosphere.

4,286,726

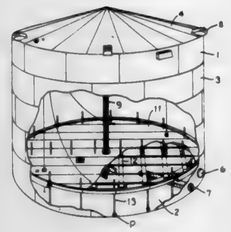
FLOATING DECK LEG BOOTS

Gary J. Madsen, Spring Lake, Mich., assignor to Gary Madsen and Ronald Vargo, both of Spring Lake, Mich.

Filed Oct. 4, 1979, Ser. No. 81,981

Int. Cl.³ B65D *88/40, 88/34*

U.S. Cl. 220—220 **6 Claims**



1. In a liquid containing tank having a bottom, generally vertical side walls and a floating cover for cooperating with said bottom and side walls to enclose liquid contained within said tank, said cover having a plurality of downwardly extending legs for contacting said bottom and holding said cover spaced from said bottom when liquid is at least substantially withdrawn from said tank, the improvement comprising:

means defining a lengthwise opening in each said leg;

a resilient pad fixed to the bottom of each of said legs for engaging the bottom of said tank and preventing direct contact between said bottom and the lower end of each of said legs whereby to eliminate scratching or gouging of said bottom by the lower end of said legs, each said pad having a vertical opening communicating at its upper end with the lengthwise opening in a said leg to which it is attached, and each said pad having a transverse opening communicating between the vertical opening near its lower end and the exterior of said pad, whereby said liquid can seek its level within said legs.

4,286,727

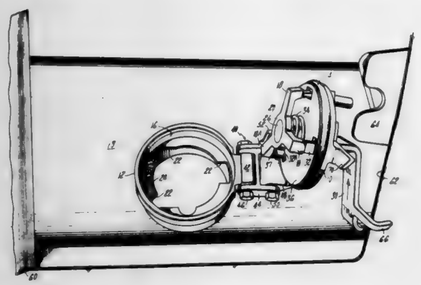
TANK CAP

Anthony F. Limoncelli, Marlborough, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 19, 1980, Ser. No. 179,397

Int. Cl.³ B65D *45/00*

U.S. Cl. 220—244 **6 Claims**



1. In combination, a cap for an oil tank mounted in an aircraft having an access door mounted in proximity to the cap and retractable to allow access to the cap, said cap having a circular body adapted to fit into the neck of the tank, a seal around the periphery of said circular body engaging the wall of the neck for sealing the fluid contained by the tank, a hub having lug elements extending radially and fitting complimentary recesses formed in a lip in said neck, a plunger rod extending through said circular body connected to said hub for rotating said lugs and positioning said lugs relative to said circular body, a handle mounted on one end of said plunger rod remote from said lugs for rotating and positioning said lugs, said cap being hingedly connected to said neck, said hinge connection including a pair of tandem mounted hinges, one of said hinges being connected to said neck and the other of said hinges being connected to said cap, a hinge element disposed between said neck and cap hingedly supporting said cap to said neck for obtaining relative parallel movement of said seal relative to the wall of said neck when said cap is being placed in an open and closed position, an extension element on said handle, a cooperating cam therefor extending from said neck for limiting rotation of said handle in a given direction when the cap is in the fully retracted position, and means on said handle preventing closure of said access door when said cap is in the unsecured condition.

4,286,728

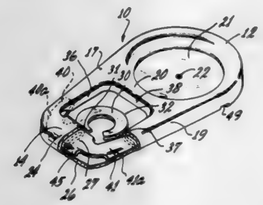
TAB AND ECOLOGY END

Ermal C. Fraze, 355 W. Stroop Rd., Dayton, Ohio 45429, and Omar L. Brown, Dayton, Ohio, assignors to Ermal C. Fraze, Dayton, Ohio

Filed Apr. 11, 1980, Ser. No. 139,248

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **14 Claims**



1. In a tab for use with an easy opening end structure wherein said tab is formed of metal sheet material, and which includes a lifting end and an opening end with an ear therebetween, the ear including an aperture through which a rivet may extend for attachment of said tab to an end wall, spaced side legs formed of a curled double layer of sheet material and extending between the opening end and at least to the rear of said ear, and wherein said opening end is formed of multiple layers of sheet material, the improvement comprising:

one of the multiple layers forming the opening end of said tab including finger means extending towards the lifting end of said tab and positioned within the double layer of said spaced side legs, and

said finger means including flange means extending lengthwise thereof to form ribs stiffing said tab along its length.

4,286,729

TAPE DISPENSER PACKAGE WITH CORE FRICTION RING

Gerald T. Downing, Port Washington, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Nov. 15, 1979, Ser. No. 94,475

Int. Cl.³ B65D *85/672*

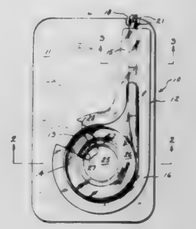
U.S. Cl. 221—70 **3 Claims**

1. In a tape package of the type comprising

(a) a base member, (b) a formed cover element having a housing portion, an exit section and a peripheral flange joined to the base member, and (c) a roll of adhesive tape carried in the housing portion with part of the tape unwound from the roll and extending through the exit section of the cover element, the improvement wherein:

(1) the housing portion of the cover element has a top wall spaced from a bottom wall, and a vertical wall connecting the top and bottom walls; and

(2) a friction ring is supported on the vertical wall and engages the inner surface of the roll of tape to apply restraining force thereagainst as the roll rotates upon removal of



tape from the package, the friction ring being made of compressible felt or plastic foam.

4,286,730

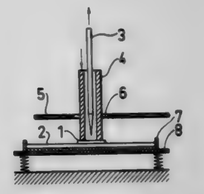
METHOD AND AN APPARATUS FOR APPLYING OBJECTS TO A SURFACE

Magnus Ericsson, 7 Pyramidvägen, Solna, Sweden (S-171 36)

Filed Nov. 27, 1979, Ser. No. 97,831

Int. Cl.³ B65H *3/22*

U.S. Cl. 221—215 **7 Claims**



4. An apparatus for applying objects, such as an antibiotic disc, to a receiving surface, such as the surface of a culture medium, said apparatus comprising supply means holding the objects and means for feeding out the objects from said supply means, characterized by the provision of at least one intermediate surface formed with holes therein, by the provision of at least one pointed needle capable of axial travel from a starting position into a position wherein it will pierce by its point an object lying on said intermediate surface, said intermediate surface being operable to bring one of said holes in alignment with said needle, said needle being further operable to convey said object through said hole down onto the receiving surface, and further by the provision of object retaining means operable to perform a motion cycle independent of that of the needle whereby to keep the object affixed to the receiving surface temporarily during withdrawal of the needle.

4,286,731

SOAP LEAF SHEET DISPENSER

Siebolt Hettinga, De Moines, Iowa, assignor to Parachem Corporation, Des Moines, Iowa

Filed Feb. 7, 1980, Ser. No. 119,639

Int. Cl.³ B65G *59/06*

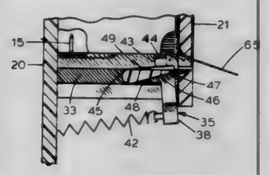
U.S. Cl. 221—259 **5 Claims**

1. A device for manually dispensing soap leaf sheets comprising:

(a) a housing having at least a back wall, a bottom wall with a central opening, a front wall with a dispensing slot adjacent said bottom wall;

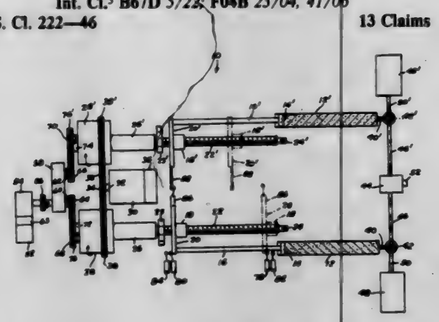
(b) a plurality of soap leaf sheets arranged in a stacked relation within said housing with the lowermost sheet of said stack faced toward the bottom wall of said housing;

(c) guideway means on said bottom wall at opposite sides of said central opening;
(d) dispensing means having a body portion with an upright abutment member,
(e) guide means at opposite sides of said body portion movable in said guideway means for guidable movement of said dispensing means between a rearward rest position, wherein said abutment member is out of engagement with said lowermost sheet, and a forward sheet dispensing position, each of said guide means having a front portion and a rear portion and of a shape in transverse cross section providing for a tiltable movement of said guide means about the rear portion thereof within the transverse di-



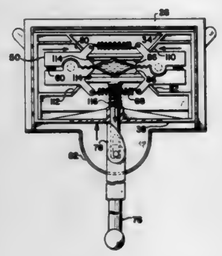
mension of a guideway means, whereby said dispensing means is tiltable upwardly and forwardly in the rest position therefor for engagement of said abutment member with the lowermost one of said sheets,
(f) bias means for normally holding said dispensing means in said rest position, and
(g) manually engageable means on the body portion of said dispensing means for applying a forwardly directed force on said dispensing means to concurrently tilt said dispensing member to move said abutment member into contact engagement with said lowermost sheet and to move said dispensing member to said forward position to dispense said sheet through the slot in said housing front wall.

4,286,732
VARIABLE RATIO DISPENSING APPARATUS
James R. James, Novi, Mich., and Michael P. Neathery, Louisville, Ky., assignors to Accuratio Systems, Inc., Novi, Mich.
Filed Apr. 16, 1979, Ser. No. 30,062
Int. Cl.³ B67D *5/22*; F04B *23/04*, *41/06*
U.S. Cl. 222—46 **13 Claims**



1. In an apparatus having a plurality of cylinder and piston assemblies each operable upon relative movement of its piston at a given rate to dispense a fluid from said cylinder at a predetermined rate, and means for varying the rates of said movement in the respective assemblies for varying the ratio of dispensing fluids from said cylinders, improved structure which comprises,
a differential transmission associated with each of said assemblies and having an output connected for producing said relative movement of its piston, each said differential transmission having a first input and a second input,
first motor means drivingly connected with said first input of each of said differential transmissions,
and second motor means drivingly connected with power transmitting means having a plurality of output means each connected with a separate one of said second inputs of said differential tranmissions for varying the rates at which said differential transmissions drive their respective assemblies,
each said second input being responsive to variations in the direction and rate of operation of said second means.

4,286,733
APPARATUS FOR CONTROLLING FLOW OF FLUENT MATERIAL
Roy J. Weikert, 2000 Schlater Dr., Sidney, Ohio 45365
Filed Feb. 6, 1980, Ser. No. 119,053
Int. Cl.³ B65D *35/56*
U.S. Cl. 222—105 **11 Claims**

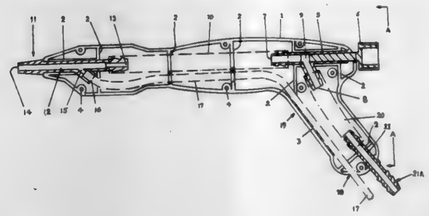


1. Apparatus for controlling gravity flow of a fluent product through an opening in a bag containing said fluent product comprising:
means for gripping opposed portions of a bag adjacent an opening therein,
means for causing relative movement of said gripping means toward and away from each other including
means for separating said gripping means away from each other to a position of maximum spacing wherein edges of a bag adjacent an opening therein are taut to restrict flow therethrough,
means, distinct from said separating means, for urging said gripping means toward each other to a position of relatively closer spacing wherein the edges of the bag adjacent the opening are relaxed to enhance flow therethrough, and
sealing means operating in conjunction with said gripping means for engaging a bag adjacent an opening therethrough when said gripping means are in said position of maximum spacing to seal against flow through the opening.

4,286,734
LIQUID MIX DISPENSING GUN
Donald R. Tonge, 15 Dakota Grove, Totara Park, Upper Hutt, New Zealand
Filed Jul. 17, 1979, Ser. No. 58,176
Int. Cl.³ B05B *7/30*
U.S. Cl. 222—145 **4 Claims**

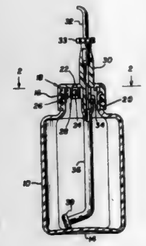
1. A fluid mixing and dispensing gun having the facility to receive and mix prior to dispensing two different liquids comprising;
a molded housing formed in two parts adapted to be assembled together to form a hollow casing in the shape of a gun having a barrel region and a hand grip;
a valve unit separately formed and implaceable in said housing at the hand grip end of said barrel, said valve unit comprising a conduit having an inlet and an outlet, a valve means to control the flow of liquid in said conduit, and a

valve control means external of said housing to control the position of said valve;
a nozzle unit separately formed and implaceable in said housing at the outer end of said barrel, said nozzle unit comprising a main conduit having an inlet at its inner end within said barrel and a nozzle outlet at its other end external of said barrel, a second nozzle unit conduit connected to said main conduit at one end and having a second inlet at its other end;
a first tube member implaceable within said barrel and adapted to be removably connected at its ends in fluid tight engagement with said valve unit conduit outlet and said nozzle main conduit inlet;
a liquid hose connector separately formed and implaceable within the lower portion of said hand grip of said housing comprising a conduit having an inlet at one end external to



said housing and an outlet at its other end within said housing;
a second tube member implaceable within said housing and adapted to be removably connected in fluid tight engagement at its ends to said connector outlet and said valve unit conduit inlet;
flexible tubing removably implaceable at its outlet end portion within said housing and adapted to be connected at its outlet end in fluid tight engagement with said nozzle unit conduit second inlet, said flexible tubing extending through the lower portion of said hand grip; and
said gun when assembled being such that when a first liquid is fed through said hose connector valve unit and nozzle unit and said flexible tubing is connected to a source of second liquid, said second liquid is drawn into and mixed with the stream of first liquid within said nozzle unit.

4,286,735
SQUEEZE DISPENSER WITH FLEXIBLE CONDUIT WITH ATTACHED, WEIGHTED AND GROOVED END
Vincent R. Sneider, 3422 Hampton Hall, Atlanta, Ga. 30319
Filed Aug. 14, 1979, Ser. No. 66,439
Int. Cl.³ B05B *11/04*; B67D *5/60*
U.S. Cl. 222—189 **7 Claims**

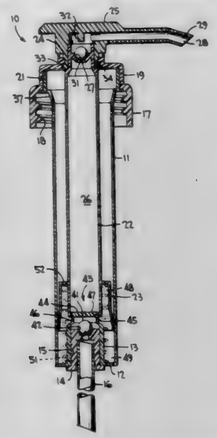


1. A hand held squeeze dispenser for fluid and/or powder which includes:
(a) a flexible container having an outlet at one end and with the sidewall portions thereof longitudinally fluted so as to be readily collapsible by manipulation such as squeezing to reduce the interior volume of the container, said container having the sidewall portion sufficiently stiff to return unassisted to an "as formed" condition and shape after said collapsing actuation;
(b) a closure cap mounted on the outlet of the container, said mounted cap adapted to retain the contents of the container absent spillage and leakage when and while the container is maintained in substantially an upright condition;
(c) an outlet of generally tubular construction formed in and on said cap so as to receive and retain a discharge spout;
(d) a valve carried in said cap and adapted to close under the influence of air being moved from the container as the container is collapsed and to open and pass air into the interior of the container through said valve when the container is relaxed to resume and assume said "as formed" condition;
(e) a conduit retainer of generally tubular configuration and formed on the inner side of the cap, said conduit retainer in flow communication with the outlet of the cap;
(f) a flexible plastic tubing attached to said conduit retainer on the inside of the cap, said flexible tubing providing a flow passageway through said tubing, the conduit retainer and thence to the outlet, said flexible tubing of a length sufficient to bring its unconnected end to at least a proximate relationship with the bottom of the container when and while in a stored condition;
(g) an enlarged end provided on the unconnected end of the flexible tubing, said enlarged end being a molded component with a substantially central passageway extending to the flexible tubing and providing a common conducting flow passageway from the enlarged end to the flexible tubing, said enlarged end and the central passageway including radially disposed grooves formed in an open face portion of the enlarged end, said grooves extending from the outer periphery of the enlarged end to the substantially central passageway, and
(h) a cover member and means for securing said cover to the open end of said enlarged end, said cover so constructed and configured that when secured the grooves are covered except for their outer end portions and providing radial conducting paths, said enlarged end and cover providing sufficient weight to carry the flexible tubing and its connected enlarged end to the bottom of the container when and while in a substantially upright condition.

4,286,736
LIQUID DISPENSER
Douglas F. Corsette, Los Angeles, Calif., assignor to Diamond International Corporation, New York, N.Y.
Filed Feb. 20, 1980, Ser. No. 123,168
Int. Cl.³ G01F *11/04*
U.S. Cl. 222—321 **4 Claims**

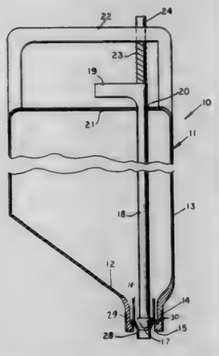
1. A fluid dispensing pump comprising, a pump cylinder having a collar at one end, a plunger reciprocably disposed in said cylinder and having a discharge head at one end outwardly of said collar, said head having a fluid discharge opening, said plunger having a discharge passage extending therethrough and communicating with said opening, check valve means in said cylinder to only permit movement of fluid from an inlet into said cylinder, means acting between said head and said collar for locking said head in a depressed and immobilized position, said valve means including a check valve and a cage surrounding said valve, means on said plunger sealingly engaging a portion of said cage when said head is locked in said depressed and immobilized position, and said cage having an

intake port therein disposed outwardly of said engaging means, whereby flow of fluid beyond said engaging means into said



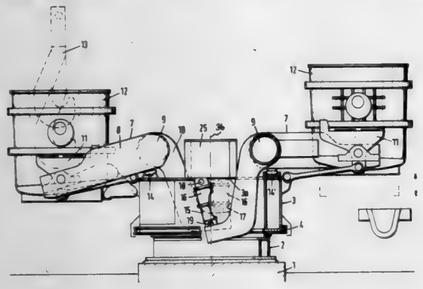
discharge passage is prevented with said plunger head in said depressed and locked position.

4,286,737
FERTILIZER DISPENSER WITH ONE-HANDED ACTUATION
Edward Gallant, R.D. #2, Cambridge Springs, Pa. 16403
Filed Feb. 22, 1980, Ser. No. 123,497
Int. Cl.³ B65D *23/10, 25/48, 83/06*
U.S. Cl. 222—470 **1 Claim**



1. A dispenser comprising a tank having a bottom, a top and sides,
said bottom sloping toward one of said sides and a hollow cylindrical nipple attached to said bottom forming an opening in said bottom,
said hollow nipple having inwardly extending shoulders,
a hollow insert having an outwardly directed flange resting on said shoulders,
spaced first rods attached to said flange and extending upwardly therefrom,
a valve disposed between said first rods and adapted to seat on said insert member,
a second rod attached to said valve and extending upwardly therefrom,
a handle on the upper end of said second rod,
said tank having a second handle disposed generally perpendicuar to said rods said second handle being attached to said tank and a compression spring between said handles urging said valve into engagement with said insert member, said first handle being adapted to be moved toward said second handle for lifting said valve away from said insert to dispense material from said tank.

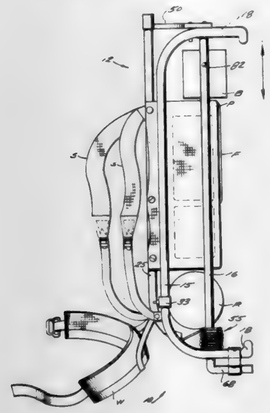
4,286,738
REVOLVING TOWER SUPPORT FOR CASTING LADLES
Wilhelm Blum, Junkerath, Fed. Rep. of Germany, assignor to DeMag Aktiengesellschaft, Duisburg, Fed. Rep. of Germany
Filed Feb. 19, 1980, Ser. No. 122,453
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916042
Int. Cl.³ B22D *41/00*
U.S. Cl. 222—591 **10 Claims**



1. A rotatable support for casting ladles comprising
(a) a base;
(b) a support rotatable on said base;
(c) a pair of oppositely extending support levers mounted for vertical articulation on said support;
(d) a casting ladle receiver mounted in the end of each support lever opposite said rotatable support;
(e) a cross beam forming the inner end of each said support lever;
(f) a power arm fixed on each cross beam;
(g) power means extending between said rotatable support and each said power arm; the improvement characterized by
(h) each said support lever includes a pair of spaced arms extending from their respective cross beam;
(i) bearing means on said rotatable support for the vertical articulation of each of said support levers;
(j) each bearing means being open topped; and
(k) said rotatable support is annular.

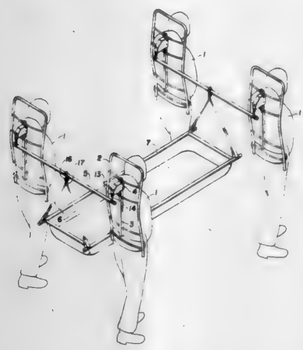
4,286,739
CONVERTIBLE BACK PACK FRAME
Philip B. Silcott, McLean, Va., and James H. Stubbings, Rockville, Md., assignors to Potomac Applied Mechanics, Bethesda, Md.
Filed Jul. 6, 1979, Ser. No. 55,369
Int. Cl.³ A45F *4/00*
U.S. Cl. 224—156 **26 Claims**

1. A back pack frame comprising
(a) a main support structure including a pair of side supports, and a pair of cross-supports extending between said side supports; each said side support including (i) first and (ii) second side support bars, said second bar being substantially straight, and said first bar being straight and substantially parallel to said second bar over the majority of the length thereof, (iii) a pair of interconnecting bars rigidly interconnecting said first and second side support bars and fixing the relationship therebetween, and (iv) a pair of legs extending from said second bar away from said first bar, said legs and interconnecting bars being in fixed position relative to each other disposed in a common plane with said first and second bars; and
(b) a pack supporting structure including shoulder straps for mounting said frame on a person's shoulders; and
(c) means for mounting said pack supporting structure with respect to said main support structure so that said pack



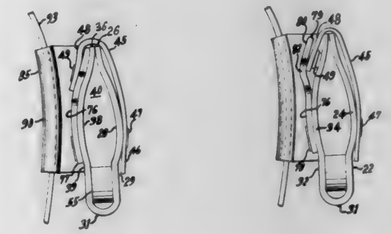
supporting structure is always laterally within said side supports of said main support structure, and so that it is movable from a first position wherein it is generally within the volume defined by said main support structure, to a second position wherein it is primarily without the volume defined by said main support structure, while still connected thereto.

4,286,740
APPARATUS FOR ATTACHING A LOAD TO TWO OR MORE BACKPACK FRAMES
William E. Knight, 5000 Park Pl., Bethesda, Md. 20016
Filed Jan. 14, 1980, Ser. No. 111,682
Int. Cl.³ A45F *3/10*; A61G *1/00*
U.S. Cl. 224—157 **2 Claims**



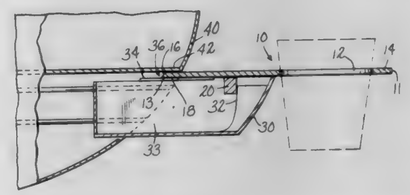
1. For use in the transportation of a load by at least two human bearers wearing backpack frames, each of which backpack frames has at least one rigid support member, an adapter comprising a central body portion and means for releasably connecting and positively securing said central body portion to at least one rigid support member of a backpack frame for a human bearer and further comprising docking means to which may be releasably connected a carrying pole for the transportation of a load, whereby the two said human bearers wearing said backpack frames with said adapters attached, and with the adapters further releasably attached to the two opposite ends of said carrying pole, may cooperate in the transportation of a load attached to said carrying pole.

4,286,741
HANDGUN HOLSTER
William H. Rogers, Jacksonville, Fla., assignor to Alpha Plastics, Inc., Jacksonville, Fla.
Filed Oct. 25, 1978, Ser. No. 954,351
Int. Cl.³ F41B *13/04*
U.S. Cl. 224—193 **12 Claims**



1. In a handgun holster comprising a body including spaced outer and inner sidewalls having outer surfaces and defining an opening therebetween, an elongated element spanning said opening and including one end portion connected to said outer sidewall and a second end portion, a pair of cooperating snap elements, one of said snap elements being attached to said inner sidewall and the other of said snap elements being carried by said second end portion, and operating means movably mounted to said inner sidewall comprising a manually engageable flap projecting upwardly from said inner sidewall and a finger portion integral with said flap, said flap having a passageway therethrough with said passageway being capable of surrounding said engaged snap elements, said finger portion being disposed adjacent said one snap element and between said outer surface of said inner sidewall and said elongated element when said snap elements are engaged, said finger portion when so disposed may be engaged to move inwardly toward the wearer of the holster and cause said snap elements to become disengaged thereby releasing said elongated element whereby a handgun in the holster may be withdrawn through said opening.

4,286,742
CUP HOLDER
Bernard Pellegrino, 100 Ada Dr., Hamden, Conn. 06514
Filed Feb. 29, 1980, Ser. No. 125,914
Int. Cl.³ A47G *29/00*
U.S. Cl. 224—281 **15 Claims**



1. A cup holder adapted to be attached at an ashtray of an automobile comprising:
(a) a plate having front and rear edges, two opposing sides, and a top and bottom surface;
(b) a cup receiving means located between the sides; and

(c) a stop having two opposing ends and extending from at least one surface and being substantially parallel to at least one of said edges, said stop adapted to be positioned against an interior portion of the automobile ashtray.

4,286,743

METHOD OF SOLDERING A FIRST VITREOUS COMPONENT TO A SECOND COMPONENT

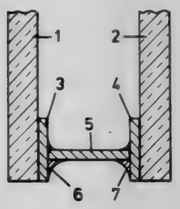
Jean-Pierre Vasseur, Brussels; Michel Laurent, Nivelles; Jean-Joseph Loriau, Fleurus, and Andre Delhaute, Chatelineau, all of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Oct. 17, 1978, Ser. No. 952,129

Claims priority, application United Kingdom, Oct. 25, 1977, 44347/77

Int. Cl.³ B23K *1/08*

U.S. Cl. 228—124 **22 Claims**



1. A method of manufacturing a panel unit comprising the steps of assembling a first, vitreous sheet, and at least one other sheet held in spaced relation by at least one elongated metallic spacer intervening between metallic or metallised portions of each successive pair of sheets thereby forming an elongated joint region between each sheet and said spacer, said spacer comprising a web having a width greater than its thickness, said width of the spacer web governing the extent of sheet separation, and then dipping the elongated joint regions of the thus obtained assembly in a bath of molten solder.

4,286,744

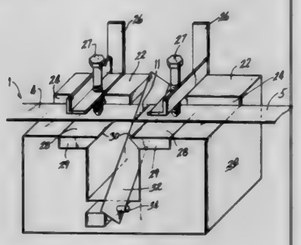
PROCESS FOR JOINING NARROW WIDTH THIN GAGE METAL OR ALLOY STRIP

Damian V. Gullotti, Cheshire; Lloyd E. Damon, Wallingford; Phillip A. Chatfield, West Haven, and Joseph Winter, New Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 21, 1979, Ser. No. 96,464

Int. Cl.³ B21D *31/02*; B23K *1/04*

U.S. Cl. 228—125 **7 Claims**



1. A process for joining the trailing end of a first narrow width thin gage metal or alloy strip segment to the leading end of a second narrow width thin gage metal or alloy strip segment, said first and second strip segments being of approximately the same gage, and being of a width of about 3 in. or less and a gage of about 0.012 in. or less, comprising:

cutting off at least a portion of said leading and trailing ends to produce a trailing edge on said first strip segment and a leading edge on said second strip segment;

aligning said first and second strip segments so that said leading and trailing edges and at least a portion of said leading and trailing ends adjacent said leading and trailing edges are in a single plane, said leading and trailing edges matching in abutting relation and defining a joint therebetween;

applying a braze material to said joint;

applying heat to said joint so as to melt said braze material and join said first strip segment to said second strip segment; and

simultaneously hammering said joint and at least a portion of said leading and trailing ends for a time and at a pressure such that portions of the parent metal or alloy of said first and second strip segments act as a shim; whereby said joint is reduced to approximately the same geometrical cross section as that of the parent metal or alloy of said first and second strip segments with a minimum of metal flow and deformation at said joint and said leading and trailing ends.

4,286,745

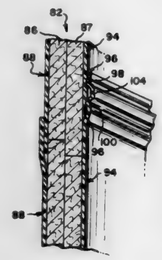
CONTAINER FOR BEVERAGES AND THE LIKE

Kazuaki Fukuoka, Yokohama, Japan, assignor to Norton Simon, Inc., New York, N.Y.

Filed May 23, 1979, Ser. No. 111,464

Int. Cl.³ B65D *3/14, 3/22, 3/28*

U.S. Cl. 229—4.5 **7 Claims**



1. A tubular wall member of a tubular container for flowable materials including liquids such as fruit juice and the like, having a bonded multilayer tubular element comprising a plurality of plies, the innermost ply being formed of a helically wound elongated polymer-containing sheet material having overlapping spiral convolutions, the overlapping portion of said spiral convolutions being provided with a continuous first bond therealong and a second bond adjacent said first bond and defining together with said first bond a slack portion between the first and second bonds extending along the inner overlapping portion of the spiral convolutions of the innermost ply, said slack portion being adapted to be taken up inwardly in response to negative pressure in the container.

4,286,746

FLEXIBLE POUCH

Thomas M. Gorshe, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

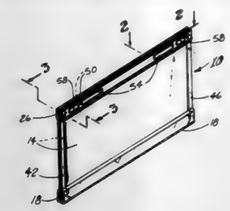
Filed Jan. 14, 1980, Ser. No. 111,922

Int. Cl.³ B65D *33/02*

U.S. Cl. 229—55 **9 Claims**

1. A substantially flat pouch made with flexible sheet material, and susceptible of being opened into a receptacle, said pouch comprising: a pair of opposed side wall panels joined to each other about the periphery thereof, and having a pair of opposed unjoined margins along one edge of the periphery, the combination of said joined side wall panels and said unjoined margins forming a receptacle capable of receiving and holding

product; said margins having predetermined locations thereon for the forming of sharp corners when the pouch is opened, and said margins having reinforcement thereof adjacent each



said predetermined location, whereby said margins are stiffened and rendered more resistant to flexing in said reinforced areas relative to said predetermined locations.

4,286,747

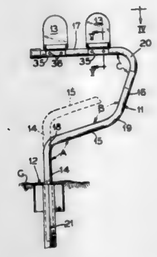
MAIL BOX SUPPORT

Robert F. Deike, Cheyenne, Wyo., assignor to Foresight Industries, Cheyenne, Wyo.

Filed Jan. 17, 1980, Ser. No. 113,025

Int. Cl.³ B65D *91/00*

U.S. Cl. 232—39 **12 Claims**



1. A support for mailboxes and the like devices mounted alongside roadways which protects the occupants of a vehicle crashing into the support which comprises a post having a depending upright leg adapted to be anchored in the ground, a generally horizontal upright sloping leg extending laterally from the top of said upright leg, an outwardly sloping substantially vertical leg extending upwardly from the upper end of said lateral leg and a top horizontal leg extending rearwardly from the top of the sloping vertical leg overlying the lateral leg in spaced superimposed relation, and a ground anchor seating the lower end of the depending upright leg and securing the support in an upright position with the sloping legs parallel to the roadway and facing oncoming traffic on the roadway.

4,286,748

CENTRIFUGAL CONCENTRATOR

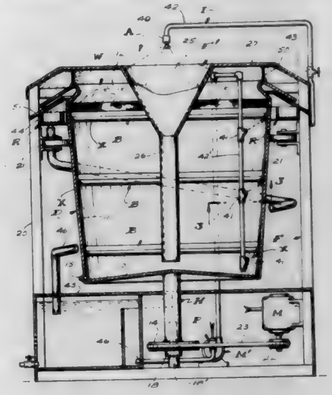
Albert C. Bailey, Box 65, Lolo Park Trailer Ct., Lolo, Mont. 59847

Filed May 19, 1980, Ser. No. 150,895

Int. Cl.³ B04B *15/12, 11/00*

U.S. Cl. 233—1 D **6 Claims**

1. A concentrator comprising an elongate vertical upwardly opening drum with an upwardly and radially outwardly inclined side wall and a substantially horizontal bottom wall, means rotatably supporting the drum on a vertical axis, drive means rotating the drum about said axis, a plurality of vertically spaced annular radially inwardly and downwardly inclined baffles at the inside surface of the side wall and cooperating therewith to define a plurality of vertically spaced annular substantially downwardly opening heavy material collecting recesses, a normally closed drain opening at the lower end of the drum, material supply means to deliver particulate material into the drum adjacent the bottom wall and including a vertical material conductor with open upper and lower ends; and irrigating means including a water supply communicating with the upper end of said conductor and delivering water into



and through the conductor and vertically spaced nozzles connected with the water supply and arranged within the drum and directing streams of water toward the inside surface of the side wall and onto and through particulate materials at said surface of the side wall.

4,286,749

AUTOMATIC FLUID MIXING VALVES

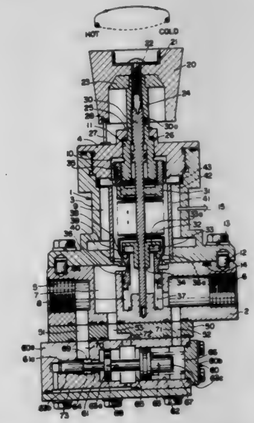
Tomio Oguma, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 27, 1979, Ser. No. 61,414

Claims priority, application Japan, Jul. 28, 1978, 53/93023

Int. Cl.³ G05D *23/00, 11/00*

U.S. Cl. 236—12 A **4 Claims**



1. An automatic fluid mixing valve comprising: a valve body including a chamber therein for mixing high and low temperature fluids, said chamber including first and second gates; temperature sensing means housed in said chamber and responsive to the temperature of the mixed fluid in said chamber for adjusting the openings of said first and second gates; first passage means in said body for communicating a source of low temperature fluid through said first gate into said chamber; second passage means for communicating a source of high

temperature fluid through said second gate into said chamber; and pressure control means for automatically adjusting only the pressure of the low temperature fluid flowing into said chamber in response to a change in the pressure of one of the high temperature and low temperature fluids flowing into said chamber, said pressure control means communicating with said second passage means for maintaining the pressure ratio of the low temperature fluid to the high temperature fluid at a substantially constant level, said body including a valve bore having a port at one end thereof, and said pressure control means including piston means slidably mounted in said bore and having opposed ends, said piston means defining a first cavity in fluid communication with said source of low temperature fluid through said port, a second cavity in fluid communication with said first passage means and said first cavity, and a third cavity for receiving high temperature fluid from said source of high temperature fluid, said pressure control means also including a spring disposed in said bore for biasing said piston means in one direction for enlarging the opening of said port, and a bypass passage for communicating between said second cavity and one end of said piston means for urging said piston means in the other direction against the bias of said spring.

4,286,750

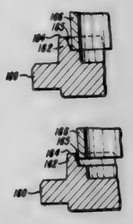
THERMOSTATIC VALVE DEVICE HAVING NON-LINEAR FLOW CHARACTERISTICS

Backman Wong, Wayland, and Earl L. Wilson, Wellesley, both of Mass., assignors to Standard-Thomson Corporation, Waltham, Mass.

Continuation of Ser. No. 22,432, Mar. 21, 1979, abandoned, which is a division of Ser. No. 835,652, Sep. 22, 1977, Pat. No. 4,164,322, which is a division of Ser. No. 587,915, Jun. 18, 1975, Pat. No. 4,053,105, which is a continuation-in-part of Ser. No. 384,519, Aug. 1, 1973, Pat. No. 3,893,618. This application Jun. 16, 1980, Ser. No. 160,063

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—34.5 **3 Claims**



1. A thermally responsive fluid control valve device for the cooling system of an internal combustion engine for elimination of temperature fluctuations in the fluid during initial opening operation of the valve device, comprising:

a stationary valve member including an annular valve seat portion defining a fluid port having an upstream side and a downstream side, the annular valve seat portion forming a flat annular valve seat extending radially at right angles to the direction of fluid flow through the fluid port,

a movable valve member having a closure portion normally in engagement with the valve seat, the movable valve member having a cylindrical outer surface and being movable from the valve seat in a downstream direction,

the stationary valve member including an annular wall extending from the valve seat portion on the downstream side and surrounding the cylindrical outer surface on the closure portion of the movable valve member when the closure portion is in engagement with the flat annular valve seat, the annular wall having an inner surface which slopes outwardly from the flat annular valve seat and the cylindrical outer surface in the downstream direction,

thermally responsive actuator means supported by said stationary valve member, and

means connecting the thermally responsive actuator means to the movable valve member for movement thereof with respect to the stationary valve member,

the closure portion of the movable valve member being movable axially beyond the confines of the annular wall, initial movement of the movable valve member from the flat annular valve seat providing for non-linear fluid flow between the outer cylindrical surface of the movable valve member and the inner surface of the annular wall to provide smooth non-fluctuating operation of the actuator means during initial opening of the movable valve member until the movable valve member moves axially from the confines of the annular wall, and further movement of the movable valve member beyond the confines of the annular wall providing for a linear fluid flow.

4,286,751

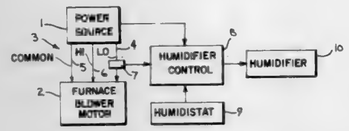
HUMIDIFIER CONTROL

Thomas P. Fowler, Madison, Wis., assignor to Research Products Corp., Madison, Wis.

Filed Mar. 19, 1979, Ser. No. 21,719

Int. Cl.³ B01F *3/02;* **H02H** *3/00*

U.S. Cl. 236—44 R **10 Claims**



1. A control for a humidifier connected to an air movement system operatively receiving electrical energy through an energy conducting circuit for conducting air to a designated area and controlling the moisture in said conducted air, said control comprising energy sensor means including a closed loop flux conducting circuit having a portion selectively movably between a first position establishing said closed loop flux conducting circuit and a second position establishing an open loop for permitting said sensor means to be removably connected to surround in electrical isolation at least one lead of said energy conducting circuit and generating a magnetic flux signal in response to the energy flow through said connecting circuit and providing an output signal occurring at a first time substantially at the start of energy flow through said energy conducting circuit, and time delay means having an input connected to operatively respond to said energy flow indicative output signal and an output connected to operatively energize said humidifier for operation at a second time following said first time by a predetermined time delay in response to said energy flow indicative output signal.

4,286,752

NESTING TRACK SECTION FOR MODEL VEHICLES

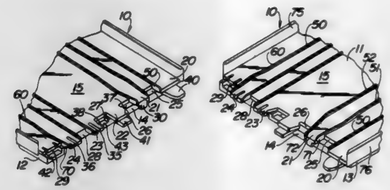
Richard C. M. Cheng, 1001 Genter St., La Jolla, Calif. 92037

Continuation of Ser. No. 857,503, Dec. 5, 1977, Pat. No. 4,231,517. This application Nov. 27, 1979, Ser. No. 97,654

Int. Cl.³ E01B *23/00;* **A63H** *19/28*

U.S. Cl. 238—10 F **1 Claim**

1. A track section for model vehicles, said track section comprising a generally flat bed having end edges and an upper generally horizontal working surface bounded within a pair of spaced generally vertical side edges, a plurality of spaced projections on each end edge, said projections combining to define recesses in the spaces between said projections, said projections and recesses being configured for interdigitation upon end to end aligned engagement with a like track section, and a vertically upstanding wall of generally rectangular cross-section on each side edge of said bed and having its lower edge spaced above the underside of said bed to define a rectangular recess between the lower edge of each upstanding wall and the adjacent side edge of said bed, each of said recesses having a rectangular cross-sectional configuration substantially identical to the rectangular cross-sectional configuration of a respective upstanding wall above said working surface, said upstanding walls each having its upper edge spaced above said working surface a distance approximately equal to the distance the lower edge of each upstanding wall is spaced above the underside of said bed, for nesting superposed engagement with a like track section with the upstanding walls of the lower section closely and conformably entering said recesses of the upper section and the working surface of the lower section substantially engaging the underside of the upper section to define a substantially solid stack of nested sections, said stack having vertical sides defined by the outer sides of said walls for conforming side engagement of stacks in side by side relation for maximum economy of space and minimum relative shifting in storage.



4,286,753

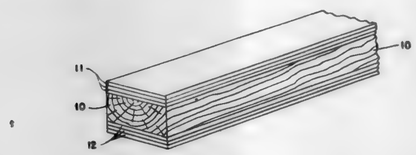
COMBINATION WOOD PLASTIC RAILROAD TIE

Hong Man Lee, White Plains, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 516,586, Oct. 21, 1974, abandoned. This application Feb. 25, 1976, Ser. No. 661,267

Int. Cl.³ E01B *3/10*

U.S. Cl. 238—37 **5 Claims**



1. A railroad tie for supporting railroad track rails on a ballast or concrete roadbed comprising: a main body portion of natural wood made up of two or more wood sections of rectangular cross section, each as wide as the tie, having a rectangular cross section of sufficient size to grippingly receive a rail spike; a plurality of preformed flat plies positioned on and coextensive with the broader surfaces of said body portion in compressive strength reinforcing relationship therewith, each of said plies including a mass of shredded wood fibers or wood chips bound together to form a dense homogeneous mass by a cured thermal setting resin; a further plurality of said preformed flat plies positioned between said wood sections; and bonding means joining the plies to said surface of the main body portion to form a unitary railroad tie structure with sufficient compressive strength to operatively support rails mounted thereon with enhanced surface wear resistance from the protection of said plies overlying the broader surface of said main body portion, said bonding means consisting essentially of a layer of cured thermal setting resin between each of said components for high rail retention strength while imparting resistance against cracking of the main body portion when a rail spike is applied.

4,286,754

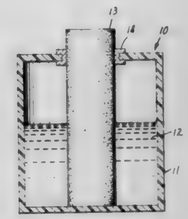
CONTROLLED-RATE LIQUID DISPENSER

Cheryl D. Jones, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 10, 1976, Ser. No. 685,116

Int. Cl.³ A61L *9/00*

U.S. Cl. 239—6 **14 Claims**



1. A method for dispensing liquid comprising wicking said liquid into a wicking structure that comprises a matrix of closely packed, solid, rounded particles adhered together so as to leave an interconnected network of pores that occupies at least 20 volume-percent of the porous structure; the average diameter of said particles in the wicking structure being between 150 and 600 micrometers, and all said particles in the wicking structure having a diameter within plus-or-minus 20 percent of the average diameter of the particles, whereby the pores in the porous structure are uniform in size and the liquid is released from the porous structure at a uniform rate over an extended period of use; and exposing said wicking structure in the environment where it is desired to give off said liquid.

4,286,755

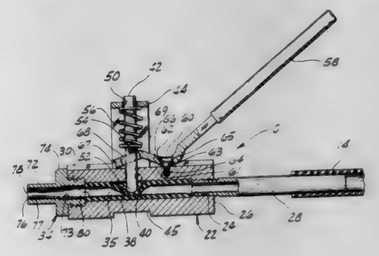
VALVE FOR A SANDBLASTING DEVICE

Ronald L. Shipman, Cape Girardeau County, Mo., assignor to Lenco, Inc., Jackson, Mo.

Filed Oct. 15, 1979, Ser. No. 84,732

Int. Cl.³ B05B *9/08*

U.S. Cl. 239—530 **16 Claims**



1. A valve for use on a blasting and like device comprising a housing structure having first and second end portions and a passageway extending therebetween, said housing structure having an opening therethrough intersecting said passageway at an intermediate location therealong, means associated with the first end portion for operatively attaching said housing structure to a source of blasting material, a nozzle guard assembly having means associated therewith for cooperatively engaging the second housing structure end portion, said nozzle guard assembly having a passageway therethrough which communicates with the passageway in the housing structure, a nozzle element removably insertable in the passageway in the guard assembly communicating with the passageway in said housing structure through which and from which a blasting material can be expelled, an open ended flexible conduit mem-

ber positioned in the passageway in said housing structure and extending therein between said first and second end portions, means mounted on said housing structure for controlling the flow through said flexible conduit member, said last named means including plunger means extending through said housing opening into engagement with said flexible conduit member at an intermediate location therealong, means biasing said plunger means against said flexible conduit member to maintain it in a closed condition, operating means on the housing structure operatively engageable with said plunger means, said operating means being movable to an operating position moving the plunger means outwardly in the housing opening in opposition to said biasing means to permit communication through the flexible conduit member, said flexible conduit member being removable from the passageway for replacement when the operating means are in the operative position.

4,286,756

CONTINUOUS UNCOILER FOR COILS OF WEB LENGTHS

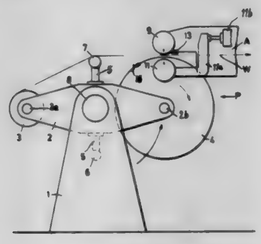
Hilmar Vits, Leichlingen, Fed. Rep. of Germany, assignor to Vits Maschinenbau GmbH, Langenfeld, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,105

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911268

Int. Cl.³ B65H *19/18*

U.S. Cl. 242—58.1 **5 Claims**



1. A continuous uncoiler for coils of web lengths and comprising means for rotatively mounting a first coil so its web length can be continuously pulled forwardly and form a continuously feeding span, means for rotatively mounting a second coil axially parallel to the first coil and so as to be opposite to said span, the front end of the second coil's web length having a transverse strip of adhesive and a rip cord behind and parallel to this strip, and pressing means for pressing said span against the second roll so that by rotation of the second coil the first coil's web length becomes adhesively fixed to the front end of the second coil's web length and pulls this front end forwardly with said trailing end overlapping said front end and having a portion extending behind said adhesive strip and over said rip cord, and pulling means for pulling the rip cord so as to rip off said portion.

4,286,757

METHOD AND APPARATUS FOR CONTROLLING THE BRAKING SYSTEM FOR AN UNWINDER

Hans Wirth, Baldwinsville, N.Y., assignor to The Black Clawson Company, Fulton, N.Y.

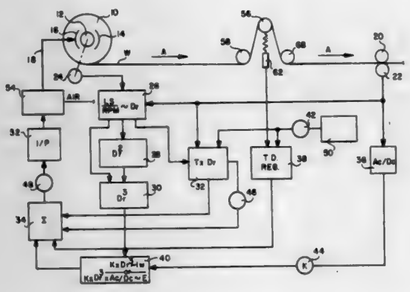
Filed Apr. 3, 1980, Ser. No. 137,041

Int. Cl.³ B65H *25/22*

U.S. Cl. 242—75.44 **5 Claims**

1. In an apparatus for controlling a braking action of a roll of web material supported for rotation on an unwinding device including:

means for continuously measuring line speed and rate of change thereof of said web downstream of said unwinding device and providing an output signal proportional to said line speed, means for continuously measuring rotational speed of said roll of web and providing an output signal proportional to said rotational speed, means receiving said output signals from said line speed and rotational speed measuring means and combining said signals to produce an output signal proportional to the diameter of said roll, means receiving said output signal proportional to said roll diameter and producing an output signal proportional to a predetermined desired web tension downstream of said roll, means receiving said output signal proportional to said line speed and producing an output signal proportional to the acceleration or deceleration of said roll, if any, means receiving said output signals from said line speed and rotational speed measuring means and from said acceleration or deceleration signal producing means and producing an output signal proportional to the energy in said roll, braking means for applying variable braking force to said roll, and brake control means receiving and combining of said output signals proportional to the roll diameter, desired web tension and the energy in said roll



and producing an output signal to said braking means for causing said braking means to apply variable braking force to said roll substantially maintaining said predetermined tension in said web as it is being unwound during acceleration, deceleration and constant web speed conditions,

wherein the improvement comprises:

said means for producing an output signal proportional to the energy in said roll includes, means receiving said output signal proportional to the diameter of said roll and producing an output signal proportional to the cube of the diameter of said roll;

means receiving said output signal proportional to the cube of the diameter and said output signal proportional to said acceleration or deceleration of said roll, if any, and for combining said signals proportional to the cube of the diameter and the acceleration or deceleration of said roll to produce an output signal proportional to the energy in said roll, said last named means including means for manual adjustment to modify said output signal thereof to correspond to the density and width of said roll.

4,286,758

WEBBING RETRACTOR

Mitsuo Inukai, and Hajime Kamiyama, both of Nagoya, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 29, 1980, Ser. No. 116,495

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107 **10 Claims**

1. A webbing retractor for use in a seatbelt system for retaining and protecting an occupant in an emergency of a vehicle, comprising:

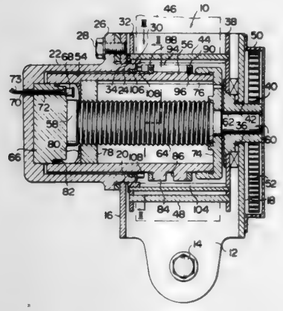
(a) a winding barrel for winding up a webbing for restraining the occupant;

(b) an internal gear ratchet wheel provided on said winding barrel;

(c) a drum journalled coaxially with said winding barrel;

(d) a pawl provided on the outer periphery of said drum;

(e) cam means coupled to a frame and provided adjacent said pawl for moving said pawl in the radial direction of the winding barrel when said pawl is rotated with said drum and for causing said pawl to be meshed with said internal gear ratchet wheel; and



(f) drive means for rotating said drum in the direction of winding up the webbing in an emergency of the vehicle; whereby said drum is adapted to drive the winding barrel to forcedly wind up one end of the webbing around the winding barrel, to thereby closely attach the webbing to the occupant.

4,286,759

WEBBING LOCK MECHANISM

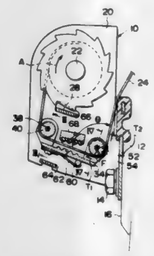
Susumu Usami; Yoshihiro Hayashi; Junichi Nakaho, and Jun Yasumatsu, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Dec. 11, 1979, Ser. No. 102,407

Claims priority, application Japan, Jan. 8, 1979, 54-1525[U]

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.2 **8 Claims**



1. A webbing lock mechanism used in a seatbelt system for locking an occupant restraining webbing to restrain an occupant in an emergency of the vehicle such as a collision, comprising:

(a) a frame secured to the vehicle body;

(b) a lock lever pivotally supported by said frame for pivoting in an emergency of the vehicle;

(c) a roller rotatably supported by said lock lever, around which an intermediate portion of said webbing is guided, said roller being provided with an emergency contact portion for coming into contact with said lock lever to receive resistance in an emergency of the vehicle; and

(d) lock members for clamping the intermediate portion of said webbing to lock same when said lock lever pivots in an emergency of the vehicle thereby restraining the occupant having the webbing fastened thereto.

4,286,760

PHOTOELECTRIC DIRECTION FINDER

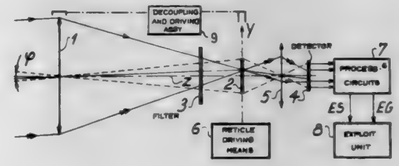
Georges Couderc; Yves Cojan, and Jean-Louis Beck, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 12, 1979, Ser. No. 19,697

Claims priority, application France, Mar. 14, 1978, 78 07276

Int. Cl.³ F41G *7/00*

U.S. Cl. 244—3.16 **17 Claims**



1. A photoelectric direction finder for detection and angular location of a light-radiating target, comprising:

optical reception means for focusing radiation coming from an observed field;

optical filtering means for selection of the radiation received from said target;

reticle means in the form of a revolving disc centered on the optical axis of said optical reception means and having a reticle pattern on one planar surface thereof for modulating and spatial filtering of the focused radiation, the reticle pattern being located substantially in the focal plane of the optical reception means and comprising at least one optical circular track formed of a uniform array of alternate opaque and transparent radially extending sectors to modulate said radiation at a determined modulation frequency;

detection means comprising a four quadrant detector at a distance from said reticle means, and an intermediate optical objective for transposing the focused field image on said detector;

means for relative movement of the assembly comprising said optical reception means and said reticle means with respect to said detection means, by rotation around an instantaneous center of rotation which coincides substantially with the center of said detector; and

circuits for processing and deviation measurement of four reception channels issued from said detection quadrants respectively, to demodulate the signals detected and produce deviation signals representing the angular offset of the target direction with respect to a reference measurement axis.

4,286,761

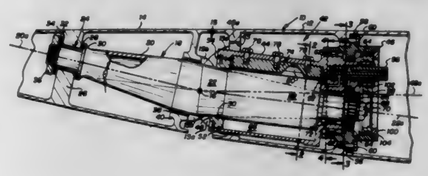
ECCENTRIC ACTUATOR

Robert G. Musgrove, Arlington, Tex., assignor to Vought Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 933,697, Aug. 15, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,970

Int. Cl.³ B64C *13/28*; F16H *33/10*

U.S. Cl. 244—75 R **43 Claims**



1. An actuator for effecting relative movement between two structures about a pivot axis, comprising:

an elongate beam with first and second portions having first

and second longitudinal axes, respectively, said axes intersecting at the pivot axis and being mutually skewed at a predetermined skew angle;

said beam being secured at the first portion to the first structure for rotation about the first axis;

housing means attached to the second structure for supporting the second beam portion for rotation about the second axis and for eccentric revolution about a circle with a centerline intersecting the pivot axis;

means for effecting rotation of said beam about the second axis; and

index means, distinct from said means for effecting rotation of said beam about the second axis, for interconnecting the second portion of said beam with said housing means for effecting eccentric revolution of the second beam portion in an opposite direction responsive to rotation of said beam such that the first beam portion pivots about the pivot axis to cause relative movement between the structures.

37. In combination with an airfoil of the variable camber type having first and second relatively pivotal segments, an improved actuator for effecting relative movement about a pivot axis, which comprises:

an elongate beam with first and second beam portions each having a longitudinal axis, said axes being mutually skewed at a predetermined acute skew angle and intersecting the pivot axis;

said first beam portion being secured to the first segment for rotation about the axis of the first beam portion;

housing means for rotatably securing the second beam portion to the second segment;

said housing means including a support member affixed to the second segment and a carrier member secured at one end to the support member for rotation relative thereto about an axis extending through the pivot axis, with said second beam portion being rotatably secured to the carrier member at an angle approximately equal to the skew angle so that the second beam portion is mounted for eccentric revolution;

means disposed within said housing means for effecting rotation of the beam about the axis of the second beam portion; and

index means interconnecting the second beam portion with the support member of said housing means for effecting rotation of the carrier member in an opposite direction and at substantially the same rate as the rate of rotation effected in the beam so that one portion of the beam is pivoted about the pivot axis to effect relative pivotal movement between the first and second segments of the airfoil.

4,286,762

KITE-LIKE FLYING DEVICE AND ACCESSORIES THEREOF

Jonathan J. Prouty, P.O. Box 3065, Boulder, Colo. 80307

Filed Apr. 27, 1979, Ser. No. 34,032

Int. Cl.³ B64C *31/06*

U.S. Cl. 244—153 R **15 Claims**

1. A kite-like flying device including,

a sail of flexible sheet material,

a keel stick for stiffening the longitudinal centerline of the sail,

wing sticks for stiffening the leading edges of the sail,

a connector for connecting the leading end of the keel stick to the leading ends of the wing sticks, said connector including a longitudinal element and a pair of lateral elements extending outwardly from the longitudinal element, said longitudinal element telescopically fitting over the leading end of the keel stick, said lateral elements being flexible tubular elements located rearwardly of the leading end of the longitudinal element whereby the longitudinal element will receive and absorb the impact in the event of collision, said lateral elements being connected to the leading ends of the wing sticks,

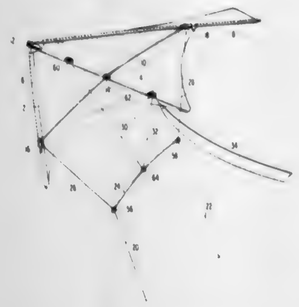
wing connectors slidably mounted on said wing sticks so as to move during flight of the device, said wing connectors having bores which are slightly inclined relative to each other,

a cross stick having its ends located in said bores, said cross stick being resiliently flexed to establish firm frictional engagement of the cross stick within said bores,

a control rod,

a first set of control strings connecting the control rod to the sail, and a second set of strings extending from the control rod to the operator of the device,

said first set of strings including strings connected to the wing connectors so the location of the wing connectors and cross stick will move in response to changes in the



control strings to change the shape and rigidity of the device,

at least one of said strings being connected to the control rod by a connector which has a set of at least three generally parallel bores, said string extending back and forth through said bores to form exposed loops, a portion of said string extending through one of said loops to prevent longitudinal movement of the string relative to the control rod when the string is under tension,

a tail connected to the sail, means for disconnecting one of the strings from the sail when the tail is pulled,

a template provided in a kit with said flying device, said template having markings thereon alignable with the flying device to position the template at a given longitudinal position on the device, and means on the template for designating the location of said control rod.

4,286,763

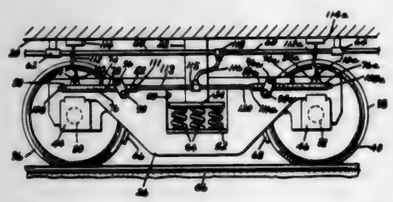
DERAILMENT EMERGENCY VALVE

Harold E. Hayden, Rte. 2, Box 58, Delphi, Ind. 46923

Filed Jun. 25, 1979, Ser. No. 51,369

Int. Cl.³ B60T *7/12*

U.S. Cl. 246—172 **8 Claims**



1. Apparatus for emergency braking of a railway car which includes two parts, one part being an elongated wheel truck and the other part being a car frame, the wheel truck being provided with at least one axle for rotatably supporting a train wheel and having a fluid pressurized brakeline in a wheel braking system, and the wheel truck resiliently supporting said car frame, the improvement comprising:

an elongated tubular break-away valve member;

means for connecting said member in fluid tight relation to said pressurized brake line whereby the fluid pressure is maintained in said line and in said member;

means for rigidly attaching said member at one point thereon to one of said parts, said member extending substantially horizontally on and having a portion extending beyond said point of attachment, a peripheral groove in said member adjacent to said point of attachment, a flexible, substantially inextensible cable having one end attached at a first connection point to said extended portion and the other end attached at a second connection point to the other of said parts; said cable being dimensioned so that during a predetermined separation of said car frame and truck tensional force is produced in said cable causing said valve member to break-away;

said first and second points being on a line substantially vertically and normal to the longitudinal axis of said member so that when said car frame and truck are in relatively separated positions corresponding to an emergency condition, said cable is tensioned and said force is exerted substantially normal to the longitudinal axis of said member to maximize the break-away force on said member at said groove thus providing fluid escape from said line when rupture occurs to reduce the pressure in said line sufficiently to actuate wheel braking during emergency conditions.

4,286,764

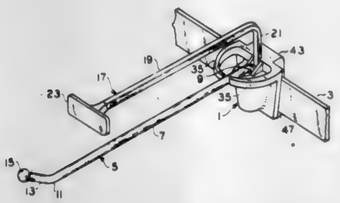
MERCHANDISE HANGER ASSEMBLY

William Pfeifer, 400 Elwyn Ave., Springdale, Pa. 15144

Filed Jul. 9, 1979, Ser. No. 55,828

Int. Cl.³ A47F *5/00*

U.S. Cl. 248—220.3 **8 Claims**



1. In combination, a hanger member comprising an elongated shank and a base portion of circular cross-section depending at substantially a right angle from one end of the shank, a tag support member comprising an elongated shaft having means at one end for displaying information related to merchandise to be hung from the hanger member and having a base portion of noncircular cross-section depending at substantially a right angle from the opposite end of the shaft, and a bracket comprising a body member having a planar rear surface and an upper surface, a first bore of circular cross-section extending vertically downward into said body member from said upper surface for receiving the base portion of said hanger member, resilient centering means integral with said body member bearing against the sides of the shank of the hanger member for returning the hanger member to a center position wherein the shank extends forward at substantially a right angle to the planar rear surface of the body member whenever displaced laterally therefrom, and a second bore having a noncircular cross-section corresponding to that of the base of the tag support member extending vertically downward into said body member from said upper surface between said first bore and said planar rear surface, said second bore being of such a depth that with the base of the tag support member inserted in the second bore, the shaft extends substantially parallel to and spaced above the shank of the hanger member.

4,286,765

VEHICLE SEATS

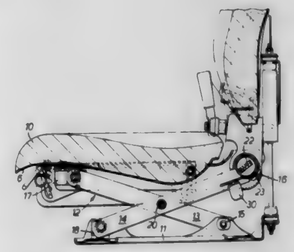
Jean Delgleize, Brussels, and Henri Deleenher, Soignies, both of Belgium, assignors to UOP Inc., Des Plaines, Ill.

Filed May 8, 1979, Ser. No. 37,184

Claims priority, application United Kingdom, May 10, 1978, 18630/78

Int. Cl.³ A47C *3/22*

U.S. Cl. 248—573 **6 Claims**



1. A vehicle seat comprising

a seat part,

a base part,

a suspension interconnecting the seat part and the base part and forming a guide for the upward and downward movement of the seat part relative to the base part,

a seat-supporting spring which acts upwardly on the seat part and, under static load conditions supports the seat part and the seat occupant at a ride position which is adjustable by varying the preload of the spring, the seat having elements which move relatively to one another during rise and fall of the seat part relative to the base part,

an up-stop device and an up-stop abutment mounted respectively on said relatively movable elements of the seat,

a support member fixed to one said element and on which the up-stop device is movably mounted, said up-stop device being movable relative to the support member to vary the up-stop position, namely, the height of the seat part at which further upward movement of the seat part is prevented by mutual engagement of the up-stop device and up-stop abutment, characterised by the improvement that

the up-stop device is compressible, against the force of a first return spring, through a distance corresponding to the distance between the ride position of the seat and the up-stop position, and the seat includes,

a normally engaged, but releasable, locking device for locking the up-stop device to said support member, and,

a second return spring which acts on the up-stop device and, upon release of the locking device, urges the up-stop device against the abutment device with a force substantially weaker than the force of the first return spring.

4,286,766

COLLAPSIBLE MOLD CORE

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Filed Apr. 18, 1980, Ser. No. 141,399

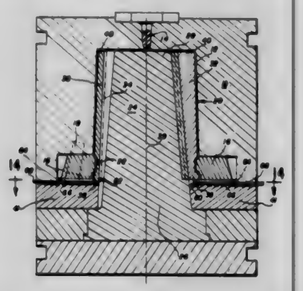
Int. Cl.³ B29C *7/00*

U.S. Cl. 249—144 **11 Claims**

1. A collapsible mold core having cylindrical outer walls in its molding configuration, which comprises:

an inner core member of the general shape of a truncated cone defining opposed first and second ends, said inner core member tapering transversely to a reduced diameter

from said first end to the second end, and a plurality of outer core members, attached to the lateral exterior of said inner core member in longitudinally slidable relation thereto between first and second positions, said outer core members defining first ends and second ends corresponding in position to the first and second ends of the inner core member, said outer core members tapering inwardly in transverse dimension from their second ends to their first ends, to provide an opposite taper to that of the inner core member, key and keyway means providing longitudinally sliding attachment between said inner core member and outer core members, said outer core members including first outer core members defining an arcuate outer surface and converging inner surfaces connected at their edges to lateral edges of the outer surface and defining acute angles thereto, said first outer core members being spaced from each other in the first sliding position and having an inner wall in intimate sliding contact with the inner core member, and second outer core members positioned between said first outer core members, said second outer core members being of generally triangular cross



section and defining a pair of inwardly-angled outer surfaces positioned in sliding relation with inner surfaces of adjacent first outer core members, said second outer core members each defining an arcuate, concave inner surface positioned in sliding relation with said inner core member, said inwardly-angled outer surfaces defining acute angles with the arcuate inner surface, said second outer core members each defining an outer arcuate apex surface positioned between outer edges of the inwardly angled outer surfaces and opposed to the arcuate inner surface, the arcuate outer surfaces of the first outer core members and the arcuate apex surfaces of the second outer core members defining, in the first sliding position, the outer side wall of said mold core, said mold core being substantially free of open interior spaces between said inner and outer core members in the first sliding position whereby said mold core is of lesser transverse diameter in said second sliding position than in the first sliding position, to permit molding of a cylindrical object about the mold core in the first sliding position, and removal of the object from the core in the second sliding position.

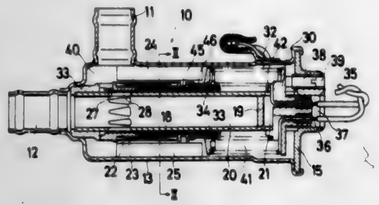
4,286,767

SOLENOID ACTUATED VALVE DEVICE

Kenji Hashimoto, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 18, 1979, Ser. No. 104,921
Claims priority, application Japan, Dec. 27, 1978, 53-162701
Int. Cl.³ F16K *31/08*
U.S. Cl. 251—65 **3 Claims**

1. A solenoid actuated valve device for controlling the flow of fluid comprising a body having an inlet port and an outlet port extending therethrough, a hollow tubular core axially mounted within said body with one end thereof disposed in communication with said outlet port and having at least one radially extending aperture therethrough to provide communication between said inlet port and said outlet port, a bobbin slidably mounted on said core to control the effective open area of said aperture, a solenoid coil wound on said bobbin, permanent magnet means secured in said body so that the magnetic flux thereof intersects the windings of said solenoid coil at right angles thereto, cover means secured to said body in engagement with the other end of said core, said body, said cover member and said core being of magnetic material to define a magnetic circuit with said permanent magnet means to provide a magnetic force causing said bobbin to move relative to said core when an electric current is passed through said



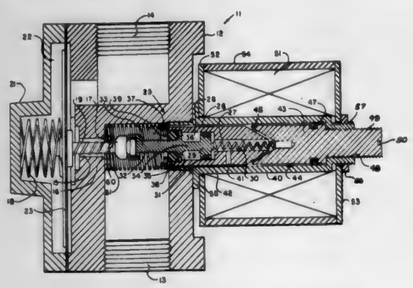
coil, spring means biasing said bobbin to a position closing said aperture, a first chamber located within said body at one end of said permanent magnet means in communication with said inlet port, a second chamber disposed within said housing at the opposite end of said permanent magnet means adjacent said cover means and passage means providing fluid communication between said first and second chambers; said permanent magnet means being comprised of two circumferentially spaced apart permanent magnets secured to said body radially outwardly of said coil with the circumferential spaces between said magnets defining said passage means.

4,286,768

STEPPED PRESSURE GAS VALVE APPARATUS

Frank Fiedler, Jr., Rowland Heights, Calif., assignor to Walter Kidde and Company, Inc., Clifton, N.J.

Filed Dec. 28, 1979, Ser. No. 108,165
Int. Cl.³ F16K *31/02*
U.S. Cl. 251—130 **7 Claims**



1. A pressure responsive shut-off valve comprising:
- a valve housing means defining a fluid inlet and a fluid outlet and a valve seat therebetween;
- a valve closure means movable between a closed position against said valve seat and an open position away therefrom, said closure means preventing fluid flow between said inlet and outlet when in said closed position and permitting said fluid flow when in said open position;
- a valve operator means comprising a pressure responsive piston movable between set and release positions, said operator means coupled to said valve closure means so as to effect location thereof in said open position with said piston in said set position and location thereof in said closed position with said piston in said release position;

- a cylindrical magnetic plunger mounted for reciprocable movement in said housing means and retaining said piston, said plunger defining an activating volume communicating with said inlet and establishing an activating fluid pressure on one face of said piston, said activating fluid pressure forcing said piston toward said release position, said plunger further defining a reference volume communicating with said inlet and establishing a reference volume on the opposite face of said piston;
- a bias spring member disposed in said activating volume and having one end coupled to said piston and an opposite end directly connected to said housing means, said spring member urging said valve operator means in a direction to produce movement of said valve closure means to said closed position;
- a seal means for sealing said inlet from said reference volume with said piston in said set position and providing fluid communication therebetween with said piston in said release position;
- latching means for latching said piston in said set position; and
- manual reset means for moving said piston from said release position to said set position.

4,286,769

VALVE SEAT

Folke H. Hubertson, Säffle, Sweden, assignor to Aktiebolaget Somas Ventiler, Säffle, Sweden

Continuation-in-part of Ser. No. 76,847, Sep. 19, 1979, abandoned. This application Oct. 23, 1979, Ser. No. 87,527
Int. Cl.³ F16K *1/228*
U.S. Cl. 251—174 **9 Claims**



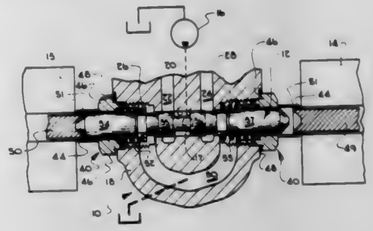
1. In a throttle valve comprising a valve housing having an annular recess therein, a throttle member pivotally movable in the valve housing and having an annular seal face throttle member seal face, the improvement comprising said valve seat including resilient means located in said annular recess and defining an annular groove, and a radially movable seat ring located in said annular groove, said seat ring being made of a stiff material but with sufficient radial direction resiliency such that when subject to a radial load from contact with the throttle member seal face said seat ring may be displaced and/or deformed in the radial direction, said resilient means and said seat ring cooperating so that when said ring moves in a radial direction under said radial load said resilient means sealingly engages said seat ring and when said radial load is removed from said seat ring said resilient means maintains said seat ring substantially in the displaced shape and position, so that wear between said seat ring and said seal face is minimized in that when said seat ring is circular and said seal face is circular, the seat ring is displaceable into alignment with said seal face and is maintained in the aligned position when said radial load is removed therefrom, and when said seat ring is circular and said seal face is elliptical, said seat ring is deformed into an elliptical shape and is maintained in said elliptical shape when said load is removed therefrom.

4,286,770

DEFORMABLE PLUG

Alan D. Jackson, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Mar. 3, 1980, Ser. No. 126,609
Int. Cl.³ F16K *51/00*
U.S. Cl. 251—285 **11 Claims**



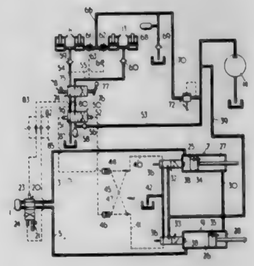
1. In a fluid control valve assembly including a valve element positioned in a bore in a valve body, the improvement comprising:
- a plastically deformable plug means threadably received in said valve body for axial movement with respect to said bore;
- stop means on the plug limiting axial movement of the valve element in said bore; and
- a deformable contact area on said plug means which comes in contact with the valve body as the plug is moved axially in said bore, said area deforming within its plastic range while providing sufficient axial movement of the plug means to set the flow rates of the valve element.

4,286,771

HAULAGE APPARATUS FOR MINING MACHINES

Miltiades Kormendy, Rolleston on Dove, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Sep. 7, 1978, Ser. No. 940,284
Claims priority, application United Kingdom, Sep. 13, 1977, 38071/77
Int. Cl.³ B66F *1/08*
U.S. Cl. 254—108 **11 Claims**



1. A mining machine comprising a body movable along a track extending along a desired machine path, two hydraulically actuated piston and cylinder arrangements each of which is attachable at one end to the machine body and each of which has at its other end means for attaching to hydraulically actuated track-engaging means for releasably engaging the track under action of a hydraulic ram, and control means for simulta-

neously actuating the two piston and cylinder arrangements in an opposite sense with respect to each other, the control means comprising detector means for detecting when at least one of the piston and cylinder arrangements is approaching the end of one stroke and having operational modes indicative of the detected condition of said at least one of the piston and cylinder arrangements, a directional control valve which in use has different operational modes for controlling the supply of pressure fluid to the hydraulic rams of the track-engaging means and which is actuated between its operational modes in accordance with the operational mode of said detector means, and a further directional control valve which in use has different operational modes for controlling the supply of pressure fluid to the piston and cylinder arrangements and which is actuated between its operational modes in accordance with the operational modes of the first mentioned directional control valve.

4,286,772

FENCE SYSTEM

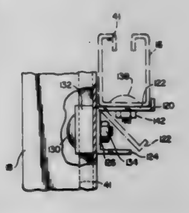
Rudolph E. Parisien, 891 Rainbow St., Ottawa, Canada

Division of Ser. No. 914,759, Jun. 12, 1978, abandoned, which is a division of Ser. No. 743,474, Nov. 19, 1976, Pat. No. 4,114,860, which is a continuation of Ser. No. 523,129, Nov. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 382,116, Jul. 24, 1973, abandoned. This application Sep. 17, 1979, Ser. No. 75,952

Claims priority, application Canada, Jun. 14, 1973, 174105; Nov. 19, 1973, 186172; Feb. 21, 1974, 193180

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—65 **2 Claims**



2. A fence comprising terminal posts or corner posts, spaced-apart line posts therebetween, and a top rail forming a framework for supporting a web of fence material, each said terminal or corner post being in the form of a pair of channels having restricted openings and being disposed at right angles to each other so that the end edges of said web of fence material can be inserted into each said channel and secured therein, the walls of said channels being bent inwardly to provide portions of substantially J-shaped cross-section so as to define said restricted openings, the ends of said top rails being secured to said terminal or corner posts by sliding onto brackets secured in adjacent channels in said corner or terminal posts, each said bracket being secured to said corner or terminal post by a bolt secured to said bracket and passing through said restricted opening and through a channel washer provided with ribs received in said J-shaped portions and fastening means on said bolt for securing said bracket to said corner or terminal post, said top rail being secured to said bracket by fastening means.

4,286,773

METALLURGICAL POURING VESSELS

Jan O. Kristiansen, Olmsted Falls, and Walter A. McCray, Berea, both of Ohio, assignors to Foseco Trading A.G., Switzerland

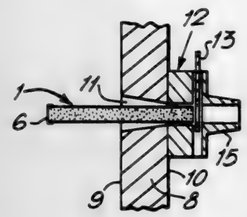
Filed Feb. 19, 1980, Ser. No. 122,758

Claims priority, application United Kingdom, Feb. 17, 1979, 05680/79

Int. Cl.³ C21C *7/00*

U.S. Cl. 266—44 **8 Claims**

1. A method of inhibiting the formation of skull in the nozzle zone of a metallurgical pouring vessel having a closable outlet nozzle comprising placing in the nozzle zone, whilst the vessel is in a generally horizontal, out of use position, an elongated container longer than the length of the nozzle zone and extending into the inside of the vessel, the container being filled with



loose anti-skulling material and having at least one hole in a sidewall, and moving the vessel into an upright position thereby causing or allowing anti-skulling material in the container to pass through the at least one hole into that part of the nozzle zone not occupied by the container.

4,286,774

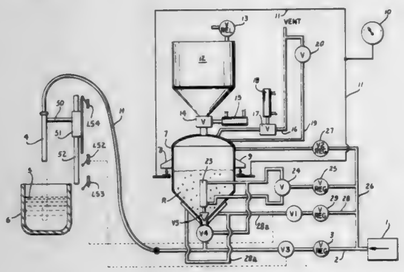
SYSTEM FOR AUTOMATICALLY INJECTING A MEASURED QUANTITY OF POWDERED REAGENT INTO A POOL OF MOLTEN METAL

Victor Benatar, 1191 Hopkins Ter., Atlanta, Ga. 30324

Filed Apr. 22, 1980, Ser. No. 142,648

Int. Cl.³ C21B *5/02*

U.S. Cl. 266—82 **11 Claims**



1. A system for automatically controlling the injection of powdered reagent from a dispenser vessel into a pool of molten metal through a conduit interconnected with said dispenser vessel and with a generally vertically disposed movable tubular lance, said system comprising lance manipulating means for imparting movement to said lance, a convey gas reservoir interconnected with said conduit valve means in said conduit and operable in coordination with movement of the lance toward said pool of molten metal and actuated by convey gas control means which is engageable by a part movable with said lance to initiate the flow of convey gas through said conduit and lance, common control means for controlling the flow of powdered reagent into said conduit and for controlling movement of the lance and actuated in coordination with continued movement of the lance toward the pool of molten metal and effective to arrest such movement of the lance and to initiate the flow of powdered reagent from said dispenser vessel through the lance and into the molten metal when the lance reaches a predetermined level, and measuring control means responsive to reduction in weight of said dispenser vessel and of powdered reagent therein for sensing the injection of a predetermined quantity of powdered reagent into said molten metal for activating said common control means and thereby to cut off the flow of powdered reagent through the lance and

to activate said lance manipulating means so as to lift the lance out of the molten metal.

4,286,775

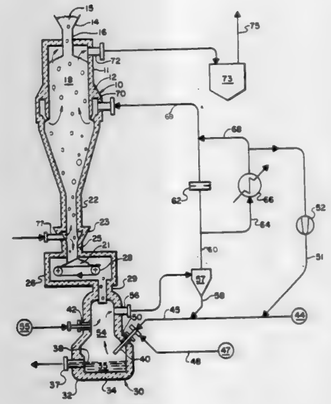
APPARATUS FOR PRODUCING MOLTEN IRON FROM IRON OXIDE WITH COAL AND OXYGEN

John C. Scarlett, Toledo, Ohio, and Charles W. Sanzenbacher, Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Division of Ser. No. 57,933, Jul. 16, 1979, Pat. No. 4,248,626. This application Sep. 19, 1980, Ser. No. 188,441

Int. Cl.³ F27B *15/00*

U.S. Cl. 266—147 **9 Claims**



1. Apparatus for reducing particulate iron oxide and producing molten iron comprising:

(a) a generally vertical shaft furnace having a particle inlet for admitting particulate iron oxide material at the top thereof and an outlet for discharging particulate material from the bottom thereof, a gas inlet intermediate the ends of the furnace for introducing a hot reducing gas to the material therein and a gas outlet for withdrawing spent reducing gas from the top thereof;

(b) a melter-gasifier vessel having a molten metal bath therein, a conduit communicating with the material discharge outlet of said shaft furnace for admitting particulate shaft furnace product of the top of said vessel, means for melting said particulate materials in said vessel, and a tap hole for withdrawing molten product from said vessel, said vessel being in sealed relationship with the discharge end of said shaft furnace;

(c) means for introducing oxygen and fossil fuel into said vessel and for directing said oxygen and fossil fuel against the surface of the molten metal bath wherein said oxygen and fossil fuel will impinge on said surface;

(d) a water injection nozzle for introducing water to the interior of said vessel to humidify the hot gases therein; and

(e) a reducing gas conduit connected to said vessel and to the reducing gas inlet of said shaft furnace for introducing humidified hot gases from said vessel to said shaft furnace as reducing gases.

4,286,776

ARRANGEMENT OF A STEEL-MAKING PLANT FOR CAPTURING AND CONDUCTING AWAY FLUE GASES

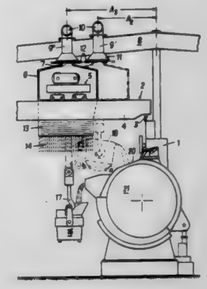
Friedrich Laimer, Perg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed May 14, 1979, Ser. No. 38,534

Claims priority, application Austria, May 30, 1978, 3916/78

Int. Cl.³ C21C *5/38*

U.S. Cl. 266—158 **7 Claims**



1. In an arrangement of a steel-making plant for capturing and conducting away flue gases emerging during charging and pouring off, of the type including a metallurgical vessel having a vessel mouth, a container for accommodating material to be charged and poured off, and a crane for displacing said container into and out of an operating position, the improvement which comprises a discharge chimney having an opening, a crane trolley, and a hood with a draft opening, said crane trolley being disposed completely within said hood and being attached thereto so as to form a unit with said hood such that said crane trolley is only displaceable with, and while within, said hood, said hood, in the operating position, covering said container and said vessel mouth, and the draft opening of said hood bordering on said opening of said chimney so as to form a flow connection therewith.

4,286,777

MOUNT TO ABSORB SHOCKS

William J. Brown, Naperville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00681, § 371 Date Aug. 31, 1979, 102(e) Date Aug. 31, 1979, PCT Pub. No. WO81/00606, PCT Pub. Date Mar. 5, 1981.

This PCT application filed Aug. 31, 1979, Ser. No. 95,193

Int. Cl.³ F16F *3/08*

U.S. Cl. 267—63 R **4 Claims**



1. A shock-absorbing apparatus between a platform (13) and a frame (14), said platform (13) having a fastening means (26) extending through an aperture (22) in said frame (14), support means (30) carried by said fastening means (26) on the opposite side of said frame (14) from said platform (13), the improvement comprising:

a spacer (24) extending between said platform (13) and said support means (30);

a pair of resilient bushings (16,18) encircling said fastening means (26) with one of said resilient bushings (16) being positioned between said frame (14) and said platform (13)

and the other of said resilient bushings (18) being positioned between said frame (14) and said support means (30);

each resilient bushing (16,18) having an radially extending, axially facing surface (54) extending axially beyond a second radially extending, axially facing surface (52) of said resilient bushing, said radially extending, axially facing surfaces (52,54) of each bushing lying in planes substantially parallel to each other and substantially parallel to said platform (13) and said support means (30);

means (28) on said fastening means (26) for urging said support means (30) toward said platform (13) to engage said spacer (24) between said platform (13) and said support means (30) and to compress a portion (60) of said resilient bushings (16,18) aligned with said first-named radially extending, axially facing surfaces (54) between said platform (13) and said support means (30), said second-named radially extending, axially facing surfaces (52) being spaced from said platform (13) and from said support means (30);

at least one of said resilient bushings (16,18) includes a pair of concentric rings (32,34; 36,38), one ring (32,36) of said pair of rings having said two radially extending, axially facing surfaces (52,54) with said first-named radially extending, axially facing surface (54) being axially spaced from the second radially extending, axially facing surface (52) of said one ring (32,36), the compressed portions (60) of said bushings (16,18) being that portion of said one ring axially aligned with said first-named surface (54) and another ring (34,38) of said pair of rings having radially extending, axially facing surfaces (52) coplanar with the second radially extending, axially facing surfaces (52) of said one ring (32,36);

initial compression of said bushing compresses the portion of said one ring (32,36) aligned with said first-named surface (54) creating a shear line with the uncompressed portion of said one ring;

further compression of said bushing contacts said second radially extending, axially facing surfaces (52) of the one ring and of the another ring with the aligned platform and support means to compress both the remaining previously uncompressed portion of said one ring and said another ring; and

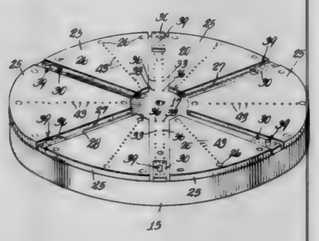
said another ring (34,38) being of a harder resilient material than said one ring (32,34) and being concentrically disposed about the periphery of said one ring, said harder concentrically disposed another ring restricts expansion of said one ring increasing the resistance to compression of said one ring thereby increasing the shock absorbing properties of the apparatus.

4,286,778

MACHINING FIXTURES

Fred R. Follmeyer, 6556 Maplewood Dr., Suite 202, Mayfield Heights, Ohio 44124

Filed Nov. 7, 1979, Ser. No. 92,095
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—91 **7 Claims**



1. A fixture attachable to the table of a machine for holding a workpiece in operative relationship with a tool of the machine, said fixture comprising:

a base plate and means for locating said base plate in predetermined relation on the table of said machine and for holding a surface of said base plate against the upper surface of said table,

a plurality of supporting pads secured to an opposite surface of said base plate and upon which said workpiece is supported, each supporting pad being sector-shaped and said pads being arranged in circular fashion with adjoining margins spaced to expose therebetween passageways formed by portions of said opposite surface and said adjoining margins, said passageways extending radially from a centerpoint of the circular arrangement of said pads,

a locator block for each passageway and adjustable therealong toward and away from said centerpoint, each locator block having an abutment extending outwardly therefrom,

means for holding said locator blocks in a selected adjusted position wherein the abutments of the same engage spaced parts of a peripheral surface of said workpiece to locate the latter and hold it against shifting along said pads, and

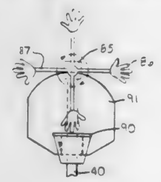
clamp means for holding said workpiece against axial separation from said base plate.

4,286,779

RECREATIONAL BASKETBALL APPARATUS WITH MOVING GOAL BARRIER

Andrew P. Collins, 3926 Dover Rd., Durham, N.C. 27705

Division of Ser. No. 829,987, Sep. 1, 1977, Pat. No. 4,202,543.
This application Feb. 11, 1980, Ser. No. 120,612
Int. Cl.³ A63J *3/00*; A63B *63/00*
U.S. Cl. 272—3 **1 Claim**



1. A commercial basketball recreational facility comprises:

(a) an array of basketball courts grouped in spaced-apart sets on a common land area, each set of courts having a plural number of courts and each court having a goal-backboard support means and appropriate fencing shared with adjacent courts on either side thereof; and

(b) a set of elevated unique goal-backboard structures for the array of courts with one such unique structure being supported in each court on each said support means at an elevation appropriate to the game of basketball and including among the set of unique goal-backboard structures at least one such unique goal-backboard structure having a goal and backboard and structural means mounting a plurality of radially extending simulated hands in front of the backboard and rotatable about a common horizontal axis located centrally and immediately above said backboard and means to rotate said hands sequentially between the goal and the player so as to provide a moving barrier and simulate opposition by such hands to successful passage of the ball through the goal.

4,286,780

OPTICAL ILLUSION-PRODUCING ROTATING DEVICE

William R. Vermeire, 34 Oak Dr., Upper Saddle River, N.J. 07458

Filed Feb. 8, 1979, Ser. No. 10,213
Int. Cl.³ A63J *5/00*
U.S. Cl. 272—8 D **18 Claims**



1. An illusionary device comprising an elongated body of predetermined outlne having at least one portion thereof twisted about the longitudinal axis of said body, the twisted portion of the body including a surface which is modified and adapted so as to have an appearance of an axially moving, sinusoidal optical wave pattern if said body is rotated, said modification to said surface of the twisted portion including a plurality of axially repeating features, any one of said features at a given axial location appearing to the viewer, when said body is rotated, as varying periodically from a point to a maximum for that feature back to a point, etc., the axially successive ones of said features, appearing to vary from a point to a maximum back to a point over the length of said twist and wherein said elongated body includes a center strip extending the length thereof and a plurality of louvered fin members extending radially outward from either side of said center strip, and wherein one axially repeating feature is each of said fin members and wherein a second axially repeating feature comprises the spaces between axially successive ones of said fin members, said device being made of material that is sufficiently rigid such that said fin members retain their radially outward orientation and their respective axial relationship, whereby the combined visual effect is such that the axial movement of said wave pattern is enhanced when said body is rotated.

4,286,781

PLAYGROUND MERRY-GO-ROUND

Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed Oct. 11, 1979, Ser. No. 84,052
Int. Cl.³ A63G *1/14*
U.S. Cl. 272—33 R **10 Claims**

10. A playground merry-go-round comprising,

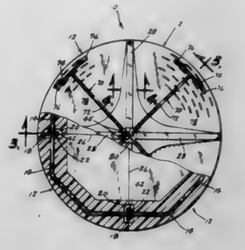
a stationery post,

a merry-go-round body having a center hub assembly being rotatably mounted on said post,

said body including a plurality of pie-shaped body sections having oppositely disposed side edges in abutting engagement with adjacent body sections,

connecting means interconnecting adjacent body sections, and

said body sections including a rigid inter frame member within the body section adjacent the outer periphery thereof, said inter frame member having oppositely disposed end plates positioned in recesses formed in said body sections and said connecting means interconnecting said end plates, and said recesses being shaped to expose said end plates from below said body sections for operation of said connecting means.

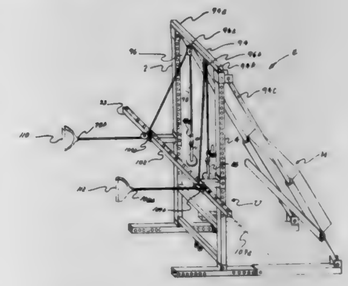


4,286,782

MULTI-PURPOSE EXERCISE ENHANCING DEVICE

Marious P. Fuhrhop, 8007 Greenlawn, Houston, Tex. 77088

Filed Oct. 26, 1978, Ser. No. 955,174
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **1 Claim**



1. A multi-purpose exercise enhancing apparatus which is easily assembled for free standing use on a horizontal support surface and which apparatus may be readily disassembled for storage and ease of transportation, said apparatus comprising:

first and second base members;

first and second vertical support members extending vertically upward from first and second base members, said first first vertical support member extending upwardly from said base member and said second vertical support member extending upwardly from said second base member;

said first and second base members spaced apart a predetermined distance for stabilizing and maintaining said first and said second vertical support members for use in a free standing vertical relationship to a substantially horizontal support surface;

means for releasably connecting said respective base members and said vertical support members to enable disassembly of the exercise enhancing device when desired for storage, ease of transportation, and the like;

a first horizontal member having one end secured with said first vertical support member and the other end secured with said second vertical support member;

a second horizontal member having one end secured with said first vertical support member and the other end secured with said second vertical support member, said second horizontal member disposed a preselected distance from said first and second base members, said first hori-

zontal member located between said second horizontal member and said first and second base members;

said first and second vertical support members when operably connected with said first and second base members forming a stable, self-supporting frame on the horizontal surface for the exercise apparatus;

first and second user back support base members, said first user back support base member connected with said first base member and said second user back support base member connected with said second base member;

first and second user back support frame members, said first user back support frame member connected at a first end to said first vertical support member and at a second end to said first user back support base member, and said second user back support frame member connected at a first end with said second vertical support member and at a second end with said second user back support base member, said first and second user back support frame members forming an inclined guide means which guides a user supporting panel;

a user support panel mounted on said first and second back support frame members for movement on said guide means;

handle means mounted with said back support panel for gripping by a user while performing inclined deep knee bend-type exercises with a portion of the user's weight supported by said back support panel wherein a self-supporting exercise apparatus for use on a horizontal support surface that may be easily disassembled is provided;

a third horizontal member for releasable attachment at a first end with said first vertical support member and for releasable attachment at a second end with said second vertical support member;

first and second cables;

a first cable support pulley means mounted with said third horizontal member for operably supporting said first cable;

a second cable support pulley means mounted with said third horizontal member for operably supporting said second cable, each of said first and second cables having first and second ends and operably supported by said first and second cable support pulley means;

first and second means for holding a preselected magnitude of exercise weights said first weight holding means secured with said first end of said first cable and said second weight holding means secured with said first end of said second cable; and

first and second handles for holding by user, said first handle being secured to said second end of said first cable and said second handle being secured to said second end of said second cable for lifting the exercise weights independently of one another by pulling on said handles to perform cable pull exercises.

4,286,783

PRACTICE BASEBALL

Nelson F. Newcomb, and Nelson F. Newcomb, Jr., both of Mirror Lake, N.H. 03853

Continuation-in-part of Ser. No. 954,629, Oct. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 737,841, Nov. 1, 1976, Pat. No. 4,128,238. This application May 22, 1980, Ser. No. 152,510

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.³ A63B *37/14*

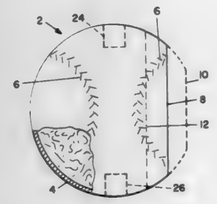
U.S. Cl. 273—26 R **5 Claims**

1. A practice baseball adapted to be thrown by baseball pitchers, said baseball comprising

a. two distinct outer surfaces one of which comprises the major spherical portion of the surface of a sphere and the other surface has a shape other than that of said major spherical surface,

b. the area of said major spherical portion being between 70% and 93% of the area of a sphere of the same major diameter,

c. the annular part of the major spherical portion lying between (1) the juncture of the said major spherical portion and said other surface, and (2) a great circle parallel to said juncture, is large enough to accept at least one finger of the thrower's hand when the ball is held in the ball gripping position required for throwing a conventional baseball as a straight ball,



d. the weight of said practice baseball being between 1¾ and 7 ounces and the major diameter of said practice baseball being between 2 and 4 inches, and

e. the relationship between the weight and diameter of said practice baseball being such that when the said practice baseball is thrown in the manner that a straight ball is thrown by baseball pitchers, it will curve to a controllable degree.

4,286,784

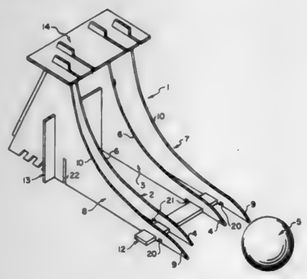
BOWLING PRACTICE DEVICE

Leslie E. Harvey, Mountain View, and Stephan D. Spiva, Sunnyvale, both of Calif., assignors to Carlos Enterprises, Menlo Park, Calif.

Filed Jul. 12, 1979, Ser. No. 56,804

Int. Cl.³ A63B *69/00*

U.S. Cl. 273—54 D **15 Claims**



14. A practice bowling apparatus comprising: means for intercepting a rolling bowling ball and returning it to the roller thereof, said intercepting means comprising a pair of spaced rail members each having a ball receiving surface which is curved rearwardly and upwardly from the forward lower end thereof over substantially its entire length.

4,286,785

TENNIS GAME BOARD

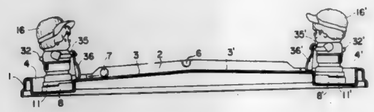
Masatoshi Todokoro, 2-33 Koganehara 2-chome, Matsudo-shi, Chiba-ken 270, Japan

Filed Jun. 11, 1980, Ser. No. 158,471

Claims priority, application Japan, Aug. 16, 1979, 54/112569[U]; Aug. 16, 1979, 54/112570[U]; Aug. 16, 1979, 54/112571[U]; Aug. 16, 1979, 54/112572[U]

Int. Cl.³ A63F *7/06*

U.S. Cl. 273—85 D **13 Claims**



1. A tennis game board mounted with the animated racket-supporting bodies disposed opposedly to each other across the board surface, each of said racket-supporting bodies having provided therein a main shaft and a racket driving shaft to which a racket is secured, said main shaft having mounted thereon a cam plate formed with a curved groove designed to convey to said racket a movement for striking a ball rolling down on the board surface and a windup spring adapted to transmit rotative force to said main shaft, said racket driving shaft having joined thereto an end of a follower whose other end is connected to said cam plate.

4,286,786

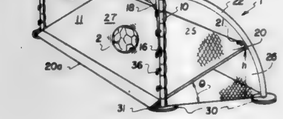
SOCCER TRAINING GOAL

Andreas T. Papadopoulos, 31 E. Edsall Ave., Palisades Park, N.J. 07650

Filed May 18, 1978, Ser. No. 906,935

Int. Cl.² A63B *71/02*

U.S. Cl. 273—396 **9 Claims**



1. A soccer training goal comprising

a goal frame,

a net connected to said goal frame defining a goal space with a goal opening,

an inclined plate connected to said frame at the bottom of said goal space inclined downwardly toward the goal opening, whereby a soccer ball directed through said goal space is deflected by said net so as to initially retain the soccer ball within said goal space and whereby the soccer ball rolls down said inclined plate and out of said goal space back to the practicing kicker,

adjustment means connected between said inclined plate and said goal frame for adjusting the degree of incline of said inclined plate and varying the speed at which the soccer ball leaves said goal space,

said goal frame comprising a pair of uprights, a cross member connected between said uprights defining said goal opening, a pair of quadrantal braces connected to adjacent tops of said uprights adjacent said cross member extending rearwardly and downwardly of said goal opening, said adjustment means comprising a cylinder slideable mounted within each of said quadrantal braces connected to said inclined plate, and a cable connected to each cylinder extending through each of said quadrantal braces and out thereof adjacent said goal opening.

4,286,787

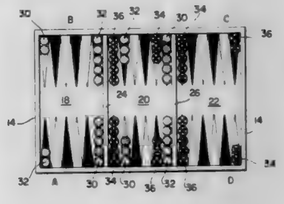
FOUR PLAYER BACKGAMMON

Herbert L. Barber, Liverpool, N.Y., assignor to Double Backgammon Enterprises, Inc., Newport, R.I.

Filed May 12, 1980, Ser. No. 149,651

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—248 **5 Claims**



1. A backgammon game adapted to be played by four persons competing against each other either individually or as opposing two-man teams, said game comprising a generally rectangular playing board having opposed elongated edges connected at their extremities by shorter end edges, a pair of spaced bar portions extending between said opposed elongated edges and dividing said board into three substantially equal sections, each having conventional backgammon points marked thereon whereby the center section in combination with either outer section defines a conventional backgammon playing surface, said game further comprising four sets of playing pieces visually distinguishable from each other, two of said sets of playing pieces being arranged at the outset of game play on one of said outer sections and said center section in conventional backgammon arrangement, and the other two sets being arranged on the other of said outer sections and said center section in conventional backgammon arrangement.

4,286,788

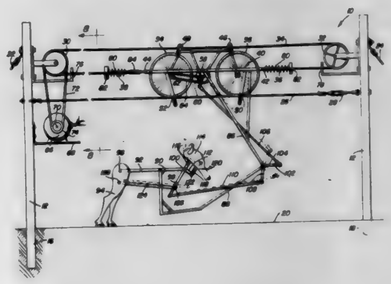
MECHANICAL ROPING STEER

Jack F. Simington, Box 141, Star Rte., and William E. Ray, Box 100, Star Rte., both of Chiloquin, Oreg. 97624

Filed Oct. 24, 1979, Ser. No. 88,070

Int. Cl.³ A63B *69/00*

U.S. Cl. 273—359 **7 Claims**



1. A mechanical roping steer assembly including a pair of elevated horizontally spaced apart mounting structures, a pair of drive and idle pulleys journalled from said mounting structures, an elongated flexible tension member trained about said pulleys and arranged in two generally parallel reaches, an elongated support member extending between and anchored relative to said mounting structures, a wheeled carriage supported from said support member for rolling therealong, a crank journalled from said carriage, drive means drivingly

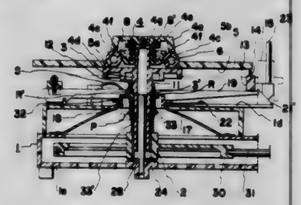
connecting a wheel of said carriage to said crank, said carriage including a depending support structure projecting downwardly below said reaches, said support member and said carriage and including a lower portion, an arm portion projecting horizontally outwardly from said lower portion of said support structure in one direction along said support member and including a free end portion, an animal simulating structure supported from said free end portion and including at least a first oscillatable head simulating body part, connecting structure connecting said crank to said body part for oscillation of the latter in response to rotation of the crank, said head simulating body part disposed at an elevation above said free end of said arm and spaced below said reaches, said support member and said carriage, said animal simulating structure defining front and rear ends spaced along said support member with said head simulating body part defining said front end, said front end facing toward and spaced horizontally rearwardly from said lower portion of said depending support structure, reversible rotary drive motor means drivingly connected to said drive pulley, one of said reaches of said flexible tension member being anchored relative to said frame.

4,286,789

SIMPLIFIED RECORD PLAYER

Katsumi Watanabe, Kawasaki, Japan, assignor to Yugen Kaisha Watanabe Kenkyusho, Kanagawa, Japan

Filed Nov. 19, 1979, Ser. No. 95,157
Claims priority, application Japan, Nov. 9, 1978, 53-147524
Int. Cl.³ G11B *17/00*
U.S. Cl. 369—244 **7 Claims**



1. In a simplified record player of the type which comprises a normally upwardly biased push button which defines means for holding a record disc, the record disc being lowered by depression of the push button such that the lower face of the disc, having reproducing grooves, engages with an upwardly projecting reproduction stylus carried by the record player; a latch shaft having an upwardly facing end face for latching a latch piece, the latch piece being normally biased toward the outer periphery of the latch shaft such that the push button and the record disc are maintained together in a depressed state, and actuating link means which pushes the latch piece so as to release it from engagement with the latch shaft thereby permitting the push button and record disc to return to their initial position, the improvement which comprises:

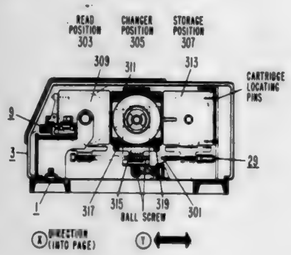
an upwardly extending shaft member assembly including (a) a drive shaft, (b) a tubular shaft telescopically coupled to said drive shaft so as to be rotated integrally with the drive shaft only in a direction of rotation, (c) a latch shaft fitted around the outer periphery of the tubular shaft; the tubular shaft having a downwardly facing stepped portion formed on the outer periphery thereof; the latch shaft having a flange and an upper end face formed at a predetermined space thereon, the flange and upper end face each acting as a latch face, the latch shaft having an upwardly facing stepped portion formed interiorly thereof; a first spring means resiliently biasing the tubular shaft such that the tubular shaft is supported at the downwardly facing stepped portion by the upwardly facing stepped portion of the latch shaft, and a second spring means resiliently biasing the latch shaft such that the latch shaft is supported upwardly under resilient force imparted by the second spring means.

4,286,790

OPTICAL DISC CHANGER APPARATUS

Bohdan W. Siryj, Cinnaminson, and Alan P. Gilson, Collingswood, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 23, 1979, Ser. No. 41,678
Int. Cl.³ G11B *17/00, 5/48*
U.S. Cl. 369—36 **4 Claims**



1. In a data storage system for optically reading information stored on an optical disc, said system having a storage module having a plurality of storage locations for storing said optical disc enclosed in a protective cartridge, the system having a reader for optically reading information stored on said optical disc, a disc changer, comprising:

a carriage having at least two positioning and retracting carriers for supporting said disc enclosed in said protective cartridge during transfer between said storage module and said reader;

means, connected to said carriers, for gripping said protective cartridge during transfer between said storage module and said reader;

first means for driving said carriage in a direction to align said disc enclosed in said protective cartridge with one of said plurality of storage locations;

second means for driving one of said at least two positioning and retracting carriers in a direction normal to the direction in which said carriage is driven by said first means; and

third means for driving another of said at least two positioning and retracting carriers in a direction parallel to the direction in which said second means is driven;

said first driving means being operated simultaneously with said second driving means when said one of said at least two positioning and retracting carriers is not supporting said disc and with said third driving means when said another of said at least two positioning and retracting carriers is not supporting said disc.

4,286,791

PACKING ASSEMBLY FOR A MOVABLE SHAFT

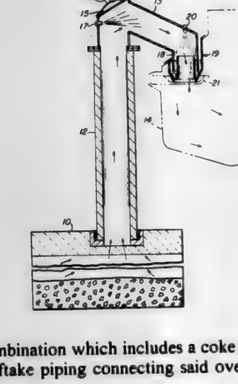
Douglas K. McLean, Dallas, Tex., assignor to Double-E Inc., Dallas, Tex.

Filed Jan. 14, 1980, Ser. No. 111,802
Int. Cl.³ F16J *15/06, 15/18*
U.S. Cl. 277—64 **21 Claims**

1. In a packing assembly for a movable shaft which projects from a housing to be sealed, said packing assembly comprising a gland body having threaded means at its proximal end for sealing attachment to said housing; said body providing a first packing chamber confronting said shaft adjacent to said proximal end, a first annular packing body disposed in said first packing chamber;

an elongated tubular mandrel surrounding said shaft, having its proximal end disposed within said gland body for compressing said first packing body within said first packing chamber;

said gland body providing a second packing chamber, confronting said mandrel adjacent to its proximal end; a second annular packing body disposed in said second packing chamber; means including a packing cap threadedly mounted on the distal end of said gland body for compressing said second packing body within its respective chamber;



said mandrel providing a third packing chamber, adjacent to its distal end, confronting said shaft; a third annular packing body disposed in said third packing chamber; means including a packing cap threadedly mounted on the distal end of said mandrel for compressing said third packing body within its respective chamber;

and means coupling said gland body and said mandrel for effecting axial movement of said mandrel relative to said body, for compressing said first packing body in its respective packing chamber.

4,286,792

SELF-REPLENISHING SEAL FOR THE GAS OFFTAKE PIPING OF A COKE OVEN AND SEALING METHOD

Robert E. Hagedorn, North Huntington Township, Westmoreland County; Alphonse T. Lobue, Elizabeth Forward Township, Allegheny County, both of Pa., and Joseph G. Uhlman, Lone Star, Tex., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 10, 1980, Ser. No. 128,797
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—135 **2 Claims**

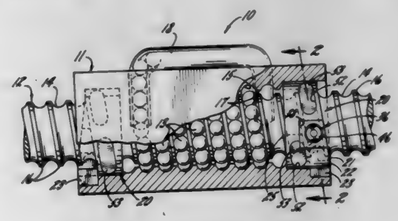
1. In a combination which includes a coke oven, a collector main, gas offtake piping connecting said oven and said main, means in said piping for supplying flushing liquor to said main, and a seal between said piping and said main allowing relative movement, the improvement in which said seal comprises liquid retaining means on said main, said piping extending into said liquid retaining means, said liquid retaining means being located under said means for supplying flushing liquor to catch some of the flushing liquor for automatically replenishing liquid lost therefrom, and means overlying said liquid retaining means to prevent direct impingement of flushing liquor and steam jets on liquid already within said liquid-retaining means, but admitting flushing liquor thereto.

4,286,793

ICE BREAKING AND MUD DEFLECTING DEVICE FOR A BALL SCREW AND NUT ASSEMBLY

Helmut Ploss, Stuttgart, and Alfons Remensperger, Nürtingen, both of Fed. Rep. of Germany, assignors to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Jul. 20, 1979, Ser. No. 59,398
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1978, 2835551
Int. Cl.³ F16J *15/16*; F16H *55/22*
U.S. Cl. 277—165 **7 Claims**



1. An ice breaking and mud deflecting device for a ball screw and nut assembly having a nut and a screw each formed with a helical ball groove, said device comprising a ring adapted to fit non-rotatably into one end portion of said nut, a stripper extending helically around the inside of said ring at a lead angle corresponding to the lead angle of the ball groove of said screw, said device being characterized in that said stripper is formed by a flexible strip secured to said ring and positioned to fit within the ball groove of said screw, said strip having one end located adjacent the outboard edge of said ring, said stripper further comprising an insert formed separately from said strip and made of substantially inelastic material, said insert being located adjacent said one end of said strip and extending over a considerably shorter circumferential angle than said strip, and resiliently yieldable means acting on said insert and urging the latter radially inwardly into the ball groove of said screw.

4,286,794

PROTECTIVE FLEXIBLE SEALED ENCLOSURE FOR A STEERABLE DRIVE WHEEL OF A VEHICLE

Charles W. Milstead, Rte. 6, Box 252, and Larry Ridenour, Rte. 6, Box 8, both of McMinnville, Tenn. 37110

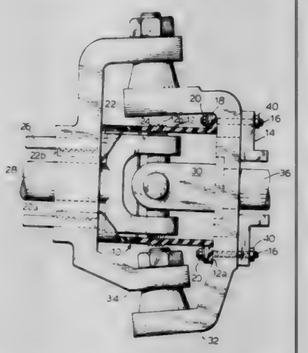
Filed Jun. 20, 1979, Ser. No. 50,471
Int. Cl.³ F16D *3/84*
U.S. Cl. 277—212 FB **2 Claims**

1. A sealed enclosure mounted between a steerable wheel on a vehicle and a drive axle tube, for protecting the universal joint, the wheel housing, and the drive axle opening for a steerable drive wheel of a vehicle, the enclosure comprising:

a substantially cylindrical housing, said housing including a flexible wall portion to allow angular movement of one end of said housing relative to the longitudinal axis of the housing, said flexible wall portion of said housing having spaced apart pre molded pleated wall segments along

opposite lateral sides of the housing, said pleated wall segments being disposed between cylindrical portions of said housing and being expandable and contractable along the lateral sides of the housing to allow angular movement of one end of the housing relative to the longitudinal axis of the housing;

a rigid sleeve adhesively bounded to one end of said housing, said sleeve having first and second connected tubular sections, said first tubular section having a larger diameter than said second tubular section, said first tubular section being sized in diameter at substantially the same diameter of said cylindrical flexible housing and adhesively joined



thereto, said second tubular section being sized for a sealed fit within said axle tube, said second tubular section having exterior concentric peripheral flanges for providing a better seal between the second tubular section and the axle tube; and

means disposed at the other end of said housing for attaching said housing to said steerable wheel including

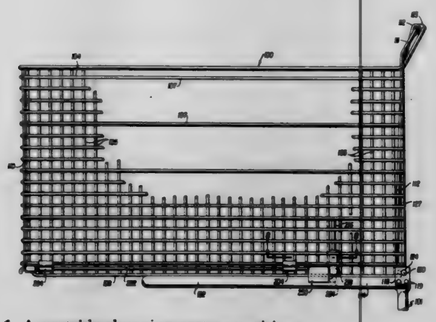
a peripheral lip disposed in a plane perpendicular to the longitudinal axis of said flexible housing at the end opposite the end connected to said rigid sleeve, said peripheral lip being integrally formed with said flexible housing and sized for flush engagement with a rigid ring which is used to attach said housing to said steerable wheel.

4,286,795

TELESCOPING SHOPPING CART

B. Houston Rehrig, 1401 S. Oak Knoll Ave., Pasadena, Calif. 91109

Filed May 7, 1979, Ser. No. 36,647
Int. Cl.³ B62B *1/10*
U.S. Cl. 280—33.99 H **21 Claims**



1. A nestable shopping cart comprising:

a basket having opposed side panels, each side panel having opposed edges which are parallel;

a wheeled frame;

hinging means pivotally coupling said basket to said frame for permitting said basket to be rotated from a horizontal use position to a predetermined upper position for nesting;

latching means releasably coupling said basket to said frame for maintaining said basket in a horizontal use position and for biasing said basket to said predetermined upper position when said basket is uncoupled from said frame; and

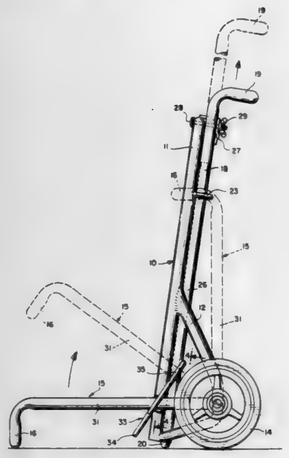
release means coupled to said latching means for releasing the latching means during nesting whereby said basket is rotated to said predetermined upper position.

4,286,796

HAND TRUCK

Patsy Esposito, 350 Clarkson Ave., Brooklyn, N.Y. 11226

Filed Oct. 9, 1979, Ser. No. 82,944
Int. Cl.³ B62B *1/02*
U.S. Cl. 280—47.27 **3 Claims**



1. A collapsible hand truck comprising:

a U-shaped tubular frame having first and second legs;

a handle attached to said frame;

first and second axle supports having aligned holes therein affixed to and extending behind said first and second legs;

an axle extending through said aligned holes;

first and second wheels on said axle, said first and second wheels being disposed outside said first and second legs respectively;

a tubular platform having first and second arms joined together by a lip which is bent at right angles to said first and second arms and includes a cross piece extending therebetween, said first arm being hingeably attached to said axle between said first wheel and said first leg, said second arm being hingeably attached to said axle between said second wheel and said second leg;

a crossbar extending between said first and second legs and having support ends extending therebeyond;

said tubular platform being hingeable on said axle between first and second positions;

said first position being substantially parallel to said frame;

said second position being substantially at right angles to said frame;

said cross piece being restable on a horizontal surface in said second position and is effective to hold said tubular platform substantially horizontal;

said first and second arms being spaced apart to provide an interference fit between said first and second arms and said first and second legs in said first position whereby said tubular platform is held in said first position until forcibly moved from said first position; and

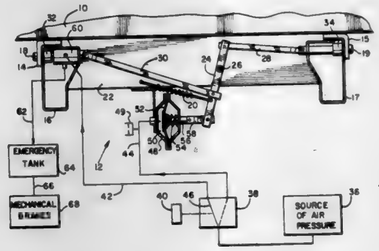
said support ends being positioned below and contiguous to said first and second arms when said platform is in its second position and effective to support said platform and any load thereon when said frame is tilted rearward on said wheels to raise said cross piece from said horizontal surface.

4,286,797

PIN RETRACTING MECHANISM FOR A TRAILER

George Mekosh, Jr., Warrington, and David O. Hulse, Lionville, both of Pa., assignors to The Budd Company, Troy, Mich.

Filed Sep. 24, 1979, Ser. No. 77,898
Int. Cl.³ B60G *5/06*
U.S. Cl. 280—80 B **8 Claims**



1. In combination with a trailer with tracks connected thereto for receiving rails connected to a bogie, with the bogie having structure including a movable pin element disposed to pass from the rails through a selected opening in one of the tracks to lock the bogie in place beneath the trailer during operation, with the pin element being disposed to be removed from the opening in said track when the trailer is being repositioned over the bogie or separated from the bogie when the trailer is not operated,

a power actuated retracting mechanism comprising:

a. spring biasing means connected to normally urge said pin element into a locking position from said rail through an opening in at least one of said tracks;

b. a source of air pressure;

c. means responsive to said air pressure to overcome the bias of said spring biasing means to move said pin element from said locking position out of the opening of said one track of said trailer; and

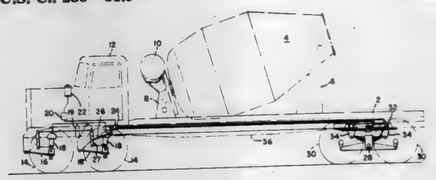
d. means for selectively connecting said source of air pressure to said means responsive to said air pressure.

4,286,798

TRUCK WITH STEERABLE REAR WHEELS

Claude O. Butler, 11270 Chalet Rd., R.R. #1, Sidney, B.C., Canada (V8L 3R9), and Clifford G. Burrows, 9245 E. Saanich Rd., Sidney, B.C., Canada (V8L 1H6)

Filed May 29, 1979, Ser. No. 43,550
Int. Cl.³ B62D *7/04*
U.S. Cl. 280—81.5 **4 Claims**



1. An automatic steering system for use upon a vehicle having a driving position and a unitary frame supported by two or more sets of selectively steerable wheels longitudinally spaced along the frame which may simultaneously be given a complementary orientation by a single control device or alternatively oriented individually, comprising:

a first set of steering wheels functionally interconnected with a control device at the driving position,

a turntable, movable through an arc substantially greater than 2°, to which a second set of wheels are mounted, said wheels being driving wheels and having an orientation entirely controlled by a self-centering hydraulic spool valve movably mounted to the framework and interconnected with the control device at the driving position, said valve means including an intermediate or neutral position and opposing extreme position selectively directing fluid to one of a pair of opposing hydraulic rams interconnected with and controlling the position of the turntable and attached second set of wheels such that when the valve is in the intermediate position, no additional fluid is directed to the rams and when it is in a position other than the intermediate position, additional fluid is directed to one of the rams, selectively urging the rear wheels to turn until the valve is in the intermediate position,

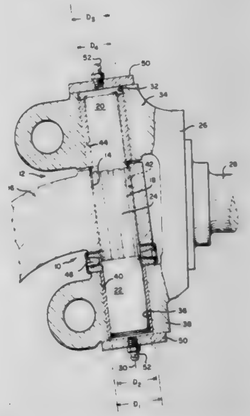
means interconnecting the valve body to one set of wheels and means interconnecting the spool to the other set of wheels such that the condition of the valve depends upon the relative orientation of the two sets of wheels and when the two sets of wheels are properly tracking the valve is in the intermediate position holding the wheels in that orientation until the relative position of the spool is changed, and means to override the control device such that the operator may control the orientation of the second set of wheels independently from the first set.

4,286,799

KINGPIN ASSEMBLY AND METHOD FOR MAKING SAME

Robert L. Ayres, New Wilmington, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 18, 1979, Ser. No. 76,654
Int. Cl.³ B62D *7/18*
U.S. Cl. 280—96.1 **11 Claims**



1. A kingpin assembly for a steering axle of the type which includes an inner axle member having a mounting bore at each end thereof and is capable of supporting said kingpin assembly at said each end which in turn pivotally supports a steering knuckle and spindle extending outwardly therefrom, said steering knuckle including rigid first and second yoke arms having axially aligned first and second cylindrical bores respectively therethrough, said kingpin assembly comprising:

a kingpin having first and second end sections and an intermediate section therebetween;

said first section being cylindrical with a first diameter less

than the diameter of said first cylindrical bore and the diameter of said second cylindrical bore;

said second section being cylindrical with a second diameter less than said diameter of said second cylindrical bore;

said intermediate section being generally cylindrical with a helically splined outer surface and having an outer diameter greater than said first diameter of said first section and less than said diameter of said second cylindrical bore so that said first section and said intermediate section can be axially passed through said second cylindrical bore during assembly;

said mounting bore having a splined inner surface with the splines thereof being parallel with an axis of said mounting bore, said mounting bore having a cross sectional shape generally matching a cross sectional shape of said intermediate section of said kingpin, said mounting bore having a minimum internal diameter greater than said first diameter of said first section of said kingpin so that said first section of said kingpin can be axially passed through said mounting bore during assembly;

said intermediate section of said kingpin being rigidly retained within said mounting bore by an interference fit between said helically splined outer surface and said splined inner surface of said first section and said second section extend outwardly of said mounting bore of said inner axle member;

said first yoke arm being pivotally mounted about said first section of said kingpin; and

said second yoke arm being pivotally mounted about said second section of said kingpin.

4,286,800

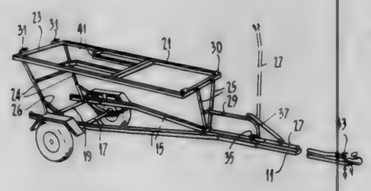
TRAILER

James W. Lomas, 122 Gloucester Crescent, Shoalwaterbay W.A. 6169, Australia

Filed Sep. 6, 1979, Ser. No. 72,995

Int. Cl.³ B60P *3/10*

U.S. Cl. 280—414 B **10 Claims**



1. A trailer comprising a wheeled chassis and a load support frame having a rear end and a forward end, said wheeled chassis being connected to the support frame by a linkage for moving the frame vertically in relation to the wheeled chassis, wherein said linkage includes a rear strut pivotally mounted to the chassis and pivotally mounted to the rear end of the support frame, a forward strut pivotally mounted to the chassis and pivotally mounted to the forward end of the support frame, the rear strut being longer than the forward strut and the pivotal mountings of the rear strut and the forward strut to the chassis being substantially in the plane of the chassis, lever means mounted to and extending from the forward strut for moving the support frame vertically in relation to the chassis between a raised position and lowered position and locking means for locking the lever means in at least the raised position and retaining the support frame in a raised position in relation to the chassis; said rear strut and said forward strut cooperating with said frame and said chassis to maintain the pivotal mounting of the rear strut to the chassis forward of the pivotal mounting of the rear strut to the support frame between the raised and lowered positions.

4,286,801

SAFETY TOE UNIT FOR A SKI BINDING

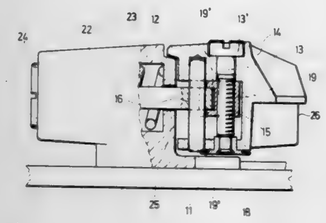
Manfred Richert, Farchant, Fed. Rep. of Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,590

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904660

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—629 **12 Claims**



1. A safety toe unit for a ski binding comprising a binding housing for fastening to a ski, a toe clamp disposed at the rear of the housing and adapted to locate the toe portion of a ski boot, a vertically extending freely rotatable but axially located adjustment screw carried by said toe clamp for adjusting the vertical height thereof, spring means adapted to draw the toe clamp against the housing via a draw rod disposed within the housing and extending through an opening therein said opening being sized to locate the draw rod in the vertical direction but to permit sideways movement thereof, a first pair of complementary abutment surfaces provided between the toe clamp and the housing and located to one side of the draw rod, a second pair of complementary abutment surfaces provided between the toe clamp and the housing and located to the other side of the draw rod, said first and second pairs of complementary abutment surfaces defining respective first and second pivot axes respectively enabling sideways pivotal movement of the sole clamp to a respective side of a housing with simultaneous separation of the pair of complementary abutment surfaces defining the other of said pivot axes and simultaneous movement of said draw rod, there being further provided a pivot pin arranged parallel to said adjustment screw and located in bores in the toe clamp for directly pivotally connecting said toe clamp to said draw rod, said pivot pin being vertically displaceable relative to one of said toe clamp and said draw bar, and said adjustment screw being connected to said draw rod via a screw-threaded connection whereby adjustment of said adjustment screw varies the vertical position of said toe clamp but the force of said spring means does not act on said adjustment screw.

4,286,802

OLEOPNEUMATIC SUSPENSION WITH TELESCOPIC LEG FOR VEHICLES

Alain-Gilbert Roche, Massy, France, assignor to Societe Anonyme Automobiles Citroen, France

Filed Jan. 30, 1980, Ser. No. 116,799

Claims priority, application France, Feb. 2, 1979, 79 02801

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—693 **13 Claims**

1. An oleopneumatic suspension having a substantially vertical telescopic leg for use in a vehicle steering wheel assembly, comprising:

a lower element for supporting a vehicle wheel connected by a substantially transverse articulated lever to the structure of the vehicle,

an upper element articulated to the structure of the vehicle and serving to guide the lower element, these two elements being slidable in relation to each other along an axis, and

means for causing a pressurized liquid to act between said elements in such a way that this liquid tends to separate the two elements one from the other along said axis,

the improvement being that one of the two elements includes

(i) an elongated tubular member having at one end a bore and an elongated piston of no greater diameter throughout its length than said bore, said piston being adapted for sealed sliding in this bore in a direction parallel to its longitudinal axis, the pressurized liquid being contained in the inner volume of this tubular member sealed by the piston,

whereas the other element includes

(ii) a cylinder surrounding the tubular member and coaxial therewith, this cylinder being closed at one end by a bottom against which said piston bears.

4,286,803

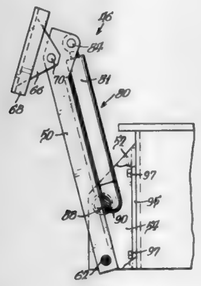
STABILIZER ASSEMBLY

John C. Schulz, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 2, 1978, Ser. No. 947,549

Int. Cl.³ B60R *27/00*

U.S. Cl. 280—764 **4 Claims**



1. A stabilizer assembly for a vehicle having a frame, comprising:

bracket means secured to and extending laterally outward from said frame;

a stabilizer arm having a fixed end nested within and pivoted to said bracket means about a stabilizer pivot and having a moving end extending therefrom for movement between a ground engaging support position and a generally upright transport position, the horizontal axis passing through said stabilizer pivot defining a stabilizer pivot axis;

fluid ram means, connected to said bracket means and said moving end of said stabilizer arm, for moving said stabilizer arm between said support and said transport positions with a ram centerline extending through said connection of said fluid ram means to said moving end; and

connecting means, nested within said bracket means, for eccentrically connecting said fluid ram means to said bracket means, said connecting means being rigidly attached to said fluid ram means and pivotally joined to said bracket means about a ram pivot axis spaced from said stabilizer pivot axis,

said connecting means including a pair of spaced circular journals rotatably supported by said bracket means for rotation about said ram pivot axis, and a ram support portion connected with and extending between said journals and radially offset from said ram pivot axis, said ram support portion being rigidly attached to said fluid ram means for supporting said fluid ram means for eccentric pivoting about said ram pivot axis, said journals and said ram support portion forming a generally U-shaped member,

whereby the moving end of said stabilizer arm is drawn closer to said frame and maintained more upright when it is in the transport position and the moment arm produced by said fluid ram means in rotating said stabilizer arm to the support position is greater relative to a stabilizer assembly whose ram pivot axis is not offset from the ram centerline, and said stabilizer arm and portions of said journals are in overlapping relation when said stabilizer arm is in said transport position.

4,286,804

SEAT-BELT SYSTEM

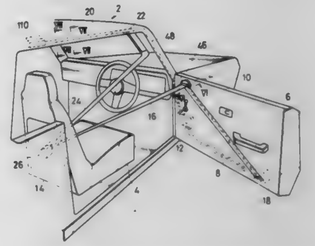
Naozane Maekawa, Toyokawa, and Takeshi Awano, Okazaki, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sep. 10, 1979, Ser. No. 74,123

Claims priority, application Japan, Sep. 12, 1978, 53-111923; Nov. 8, 1978, 53-137476

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—803 **41 Claims**



1. A seat-belt system comprising a first guide provided on a door, the door being on one side of a car seat and the front end thereof being hinged to a car body, so as to extend from the lower rear to the upper front of the door, run-through means having an opening for permitting a belt to pass therethrough and guided by the first guide, a hip-belt anchor fastened to either of the seat and car body so as to rest near the car center side of the seat, a hip-belt retractor fastened to the lower rear of the door, a hip belt with one end thereof connected to the hip-belt anchor and the other end passed through the run-through means and wound around the hip-belt retractor fastened to the lower rear of the door, a second guide attached to a car roof rail on one roof side above the seat so as to extend along the longitudinal axis of the car body, a shoulder-belt anchor guided by the second guide, a shoulder-belt retractor fastened to either of the seat and car body so as to rest near the car center side of the seat, releasing means interposed between the shoulder-belt retractor and either of the seat and car body for releasing the shoulder-belt retractor therefrom, a shoulder belt with one end thereof connected to the shoulder-belt anchor and the other end wound around the shoulder-belt retractor, and driving means responsive to the opening and closing of

the door for moving the run-through means to the upper end of the first guide and the shoulder-belt anchor to the front end of the second guide when the door opens, and for moving the run-through means to the lower end of the first guide and the shoulder-belt anchor to the rear end of the second guide when the door closes.

4,286,805

SEATBELT SYSTEM

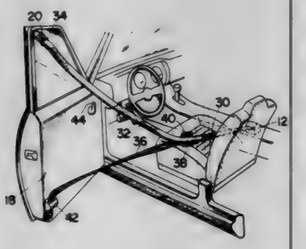
Muneharu Matsunami, Seto; Tatsushi Kubota, Okazaki; Akio Yoshida, and Nobuyuki Inokuchi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Oct. 30, 1979, Ser. No. 89,444

Claims priority, application Japan, Oct. 31, 1978, 53-150088[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—803 **9 Claims**



1. A seatbelt system comprising:

(a) a first retractor secured to the substantially central portion of the vehicle for winding up one end of a lap inner webbing;

(b) a second retractor secured to the lower portion of a vehicle door for winding up one end of a lap outer webbing, the other end of which is secured to the forward end of said lap inner webbing; and

(c) an engageable member for securing to the upper portion of the vehicle door one end of a shoulder webbing, the other end of which is secured to the forward ends of said lap inner webbing and lap outer webbing; whereby the webbings are attached to or separated from a seated occupant by opening or closing the vehicle door, thereby automatically fastening the webbings to or unfastening same from the occupant.

4,286,806

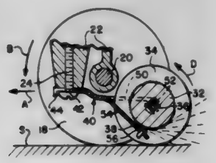
ROLLER SKATING SPARK GENERATOR

David Bergstein, R.R. 3 Indian Hill Rd., Pound Ridge, N.Y. 10576

Filed Mar. 6, 1980, Ser. No. 127,923

Int. Cl.³ A63C *17/26*

U.S. Cl. 280—816 **4 Claims**



1. In combination with a conventional roller skating device having a screw in its wheel support structure, a spark-generating mechanism which comprises:

an axle;

a grindstone wheel, centrally and fixedly mounted on said axle;

a pair of actuating wheels of a diameter larger than the diameter of said grindstone wheel, said actuating wheels being fixedly mounted on said axle on either side of said grindstone wheel;

a spark-producing element held resiliently in contact with the peripheral end surface of said grindstone wheel; and

bracket support means for journalling the ends of said axle for free rotation, for holding said spark-producing element against said grindstone wheel, and for attaching the entire spark-generating mechanism with the screw of the wheel support structure of the roller skating device.

4,286,807

SCREW COUPLING SAFETY MECHANISM

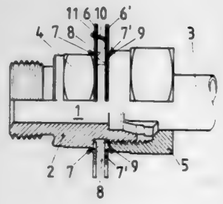
Ernst Bächli, Endingen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sep. 28, 1979, Ser. No. 80,771

Claims priority, application Switzerland, Oct. 20, 1978, 10863/78

Int. Cl.³ F16L *19/08*

U.S. Cl. 285—89 **4 Claims**



1. A screw coupling safety mechanism in combination with a first member and second member which members are to be coupled together comprising:

a first annular disk and a second annular disk, each of the disks having a plurality of teeth projecting from the periphery of the respective disk, said disks being of the same diameter, at least one of said teeth of one disk being bendable into a space between adjacent teeth of the other disk to prevent relative rotation of said disks;

first locking means for selectively locking the first annular disk against rotation relative to the first member;

second locking means for selectively locking the second annular disk against rotation relative to the second member; and

separation means for resiliently maintaining separation between the first disk and the second disk arranged on one of the disks.

4,286,808

SNAP-IN TEE CONNECTOR

James L. Fouss, and John J. Parker, both of Findlay, Ohio, assignors to Hancor, Inc., Findlay, Ohio

Filed Aug. 20, 1979, Ser. No. 67,808

Int. Cl.³ F16L *3/04*

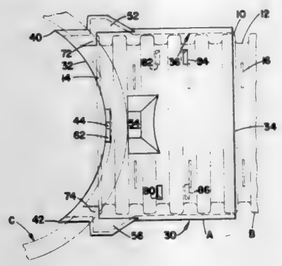
U.S. Cl. 285—158 **15 Claims**

1. A connector comprising:

a sleeve having a first and a second end, said sleeve having a bore extending longitudinally between said first and second ends;

said first end being cylindrical and having a configuration which is generally circular around its periphery and having two generally arcuate longtitudinal recesses separated by two generally arcuate longitudinal protuberances, each arcuate recess having an apex at its maximum longitudinal recession and each arcuate protuberance having an apex at its maximum longitudinal protrusion, the first end is adapted to be received in a circular aperture which is commensurate in size and shape with the circular periphery cut into an arcuate side wall of a corrugated conduit with the longitudinal recesses and protuberances conforming generally with the interior surface of the conduit;

a first circumferentially discontinuous projection projecting radially outward from the periphery of said first end, said first projection being disposed generally contiguous with the apex of one of the arcuate protuberances, such that the projection limits penetration into the aperture and causes



an outward axial cammin force under rotational forces in either rotational direction;

a first tab means projecting radially outward from the periphery of the first end which is adapted to pass yieldingly through the aperture and engage the interior surface, said first tabe means being disposed generally contiguous with the apex of one of said recesses, such that the tab means inhibits removal from an aperture and causes an inward axial force under rotational forces in either rotational direction, whereby under rotational forces the projection and tab means cause opposite axial forces; and

a detent projecting from said sleeve, such that the connector is adapted to receive telescopically and the detent to engage an end of a length of corrugated conduit.

4,286,809

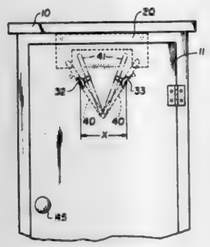
CHILD-PROOF CABINET CLOSURES

Richard H. Godwin, 18 Osborne Rd., Garden City, N.Y. 11535

Filed Jun. 8, 1979, Ser. No. 46,862

Int. Cl.³ E05C *3/14*

U.S. Cl. 292—54 **2 Claims**



1. A child-resistant fastening system for securing a standard door member in closed position over the opening of an associated cabinet comprising: first and second elongated latch means on the inner surface of said door; a single catch means within said cabinet in proximity to one end of each said first and second latch means; each said latch means being pivoted about a common axis at the end remote from engagement with said catch means; common biasing means for holding said latch means into engagement with said catch means when said door is closed; a release means fixed to each latch means between said axis and said one end, each being connected to one of said latch means and extending to the outer surface of said door, said release means being separated by a distance greater than a child's hand span but less than an adult's hand span and being manually operative to overcome said biasing means and effect disengagement of each said latch means from said catch means; and additional means securing said door member in closed position, said additional means being disposed more than one hand span from either of said release means and being manually operative to open said door only when each of said release means are disengaged.

4,286,810

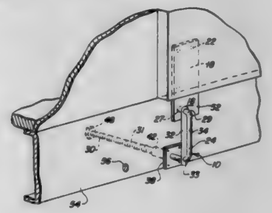
MANUALLY OPERABLE LATCHING DEVICE

Thomas J. Ehmen, 1200 W. 8th Ave., Milan, Ill. 61264

Filed Jun. 5, 1979, Ser. No. 45,601

Int. Cl.³ E05C *1/04*

U.S. Cl. 292—67 **1 Claim**



1. A manually operable latching device for use on a vehicle having a movable cargo door for safely securing said door in an open position comprising:

a latch plate secured to said movable door, said latch plate having a cantilevered portion extending beyond said movable door and said cantilevered portion having an aperture; and

a pinning assembly capable of withstanding shearing forces applied transverse to its longitudinal axis, said pinning assembly secured to said vehicle at a location to facilitate the latching of said pinning assembly with said aperture of said latch plate when said movable door is in an open position, and to facilitate concealment of portions of said pinning assembly to reduce the extent of protuding portions thereof and comprising:

a U-shaped rod having an intermediate segment, a first end segment and a second end segment, said second end segment having threads, said intermediate segment being substantially normal to said first and second end segments and said intermediate segment serving as a handle enabling said first end segment to engage and disengage from said latch plate;

a sleeve, secured to said vehicle, accepting said second end segment of said rod in longitudinal sliding engagement and to restrict the movement of said rod to displacement substantially perpendicular to the plane of said movable door and to rotation about the longitudinal axis of the sleeve;

a compression means connected to said rod for preventing movement of said rod relative to said sleeve until said rod is manually displaced for engaging or disengaging from said latch plate;

a nut engaging said threaded second end segment, said nut being movable along said threaded second end segment for adjusting the compressive force of said compression means; and,

a safety stop means fixed to at least one of said end segments and in spaced relationship to said intermediate segment for limiting the perpendicular displacement of said U-shaped rod and for providing an offset between said safety stop means and said intermediate segment.

4,286,811

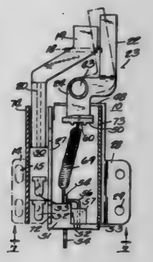
BIMETAL ACTUATED LOCKING DEVICE

Spencer C. Schantz, 5880 Anchorage Rd., Oconomowoc, Wis. 53066

Division of Ser. No. 886,986, Mar. 15, 1978, Pat. No. 4,179,907. This application Aug. 8, 1979, Ser. No. 64,928

Int. Cl.³ E05C *13/10*

U.S. Cl. 292—201 **3 Claims**



1. A safety interlock device comprising a base, a locking lever and pivot means pivotally connecting said locking lever to said base, an insulative coupling fixed to one end of said locking lever, an insulative support block spaced from said pivotal connection of the locking lever, a bimetal element cantilevered from said insulative support block and extending between said support block and said insulative coupling, and cooperating means on said bimetal and said coupling to connect said bimetal to said locking lever to afford rotary displacement of said lever about said pivot upon thermal action of said bimetal and to afford relative movement of the adjacent end of said bimetal relative to said coupling, and wherein said base has two planar wall elements joined at right angles to form an L-shaped support member, a cover member comprised of substantially planar wall elements joined with each other to form a generally U-shaped cover member for engaging with said L-shaped support member in complementary fashion, one of said wall elements of said U-shaped cover member having projections on its edge and the other of said wall elements of said cover having slots corresponding with said projections, one of said wall elements of said L-shaped support member having projections on its edge and the other of said wall elements having slots corresponding with said projections, the projections on one of said members engaging in the slots of the other of said members to secure them together in complementary fashion, said support member having a portion bent to form a foot for securing said support member to an appliance, said cover member having a portion bent to form a foot for securing said cover to the appliance.

4,286,812

SECURITY SCREEN DOOR LOCK

Otto G. G. Sprekeler, Tarragindi, Australia, assignor to Whitco Pty. Ltd., Sherwood, Australia

Filed Oct. 19, 1979, Ser. No. 86,311

Claims priority, application Australia, Oct. 16, 1979, 51837/79

Int. Cl.³ E05C *1/16*

U.S. Cl. 292—245 **8 Claims**

1. A lock including:

a body;

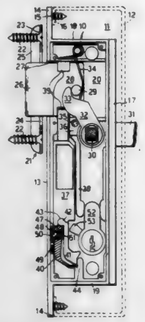
a lock tongue normally extending from the body, said tongue being provided with means projecting from each side thereof to adapt said tongue to reversibility for use with both left and right hand opening doors;

means for retaining said tongue in its selected, reversible position;

a locking block slidably movable in the body between a first position free of the lock tongue and a second position preventing retraction of the lock tongue;

an abutment in the body; and

a stop lever movably mounted on the locking block and



adapted to engage the abutment when the locking body is in the second position to restrain the locking body in the second position.

4,286,813

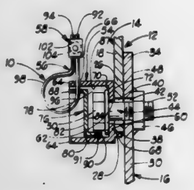
SECURITY LOCKING ASSEMBLY

William H. Wylie, Oklahoma City, Okla., assignor to Metalfab Industries, Inc., Oklahoma City, Okla.

Filed Aug. 13, 1979, Ser. No. 65,929

Int. Cl.³ E05C *13/02*

U.S. Cl. 292—251 **13 Claims**



1. An improved security locking assembly for substantially preventing unauthorized removal of a bolt having a bolthead, the bolt operably engaging a security member for joining two members together, the two members being characterized as a first and second housing wherein one of the housing telescopically receives a portion of the other housing such that one edge portion of the housing telescopically receiving the other housing forms a ridge, each of the first and second housing having an aperture therein such that in a connected position the apertures are aligned for receiving the bolt, the security locking assembly comprising:

a locking assembly housing secured to the first and second housing by the bolt and the securing member such that the bolthead is disposed substantially adjacent one surface of the locking assembly housing, the locking assembly housing comprising:

a base plate having a first side, and opposed second side, and an aperture;

wall means having at least one aperture therein, the wall means extending outwardly from the first side of the base plate;

an orientation member extending outwardly from the opposed second side of the base plate, the orientation member positioned a distance from the aperture of the base plate such that in the connected position the aperture of the base plate is aligned with the aperture of the first and second housing for receiving the bolt, the orientation member engaging the ridge formed by the

edge portion of the housing telescopically receiving the portion of the other housing;

a pin having a first end portion and a second end portion, the pin extending through at least a portion of the locking assembly housing when the pin is in a connected position with the locking assembly housing, the pin being shaped such that in the connected position the first end portion of the pin is disposed near the second end portion of the pin, the pin and the locking assembly housing being shaped such that a portion of one of the locking assembly housing and the pin is disposed near and above at least a portion of the bolthead to substantially prevent access to the bolthead when the pin and the locking assembly housing are in the connected position; and

means for securing the first end portion of the pin to the second end portion of the pin to substantially prevent removal of the pin from the locking assembly housing without destruction of a portion of one of the pin and the locking assembly housing.

4,286,814

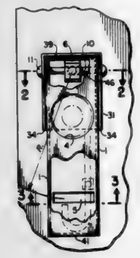
UNIVERSALLY PIVOTAL PADLOCK AND STAPLE SHIELDING HASP

Richard P. Harrington, and Russell J. Harrington, both of P.O. Box #24, Alexandria, La. 71301

Filed Oct. 11, 1977, Ser. No. 840,951

Int. Cl.³ E05C *19/08*

U.S. Cl. 292—281 **23 Claims**



1. A hasp comprising a housing formed so that a padlock may be inserted therein and shielded thereby, a means at one end of the housing for mounting said housing on a surface for pivotal movement both along said surface and away therefrom, access means through said housing for manipulation of a padlock, when inserted therein, and for reception of a staple; and a staple formed to be secured by the shackle of a padlock, when inserted into said access means, and having means for mounting the staple, for entry into said housing through said access means.

4,286,815

LENS INSERTION AND REMOVAL DEVICE

James A. Clark, Honeoye Falls, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 915,842, Jun. 15, 1978, abandoned. This application Dec. 28, 1979, Ser. No. 108,209

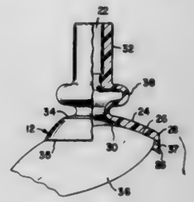
Int. Cl.³ A61F *9/00*

U.S. Cl. 294—1 CA **7 Claims**

6. A device for inserting into and removing from an eye a soft contact lens comprising:

a suction cup having an extension projecting outwardly therefrom for engaging a soft contact lens, said extension being adapted to extend to the edge of the contact lens and having a spiralled passage formed therein for communicating air from outside a soft contact lens to a chamber formed between said suction cup and the soft contact lens; and

vacuum means for applying a vacuum to the chamber between said suction cup and the soft contact lens whereby when a vacuum is applied therebetween the edge of the lens is initially lifted from the eye breaking the surface



tension between the lens and the eye enabling the lens to be removed thereafter from the eye.

4,286,816

DEVICE FOR COLLECTION AND DISPOSAL OF PET WASTE

Emil Tobias, 42 Greenwood La., White Plains, N.Y. 10607

Filed Jun. 23, 1980, Ser. No. 161,939

Int. Cl.³ A01K *29/00*

U.S. Cl. 294—1 BA **2 Claims**



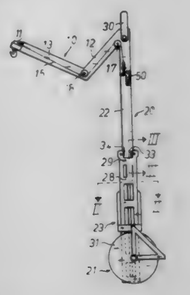
1. A device for the collection and disposal of fecal waste comprising an outer cylindrical body having an outer end thereof open and an inner closed end, an inner cylindrical body having one end thereof open and one end thereof closed, said inner cylindrical body being positioned within said outer cylindrical body, means for moving said inner cylindrical body longitudinally with respect to said outer cylindrical body, means normally biasing said inner cylindrical body towards the closed end of said outer cylindrical body, a first annular ring having an inwardly extending lip engaging the open end of said inner cylindrical body and an outwardly extending lip engaging the outer end of said outer cylindrical body, a second annular ring having an outer diameter substantially the same as the inner diameter of said first annular ring and an outwardly extending lip adapted to engage an outer edge of said first annular ring, and a grid network of ribs in said second annular ring; and a plastic bag extending into the interior of said inner cylindrical body and between said first and second rings, downwardly facing ends of said ribs forming knife edges and said ribs having walls flaring outwardly to a wide flat top surface.

4,286,817

HOISTING ACCESSORY

Kjell F. Moritz, Skördevägen 52, S-230 52 Skanör, Sweden

Filed Dec. 17, 1979, Ser. No. 104,631
Claims priority, application Sweden, Dec. 21, 1978, 7813163
Int. Cl.³ B66C 1/10
U.S. Cl. 294—67 AA **12 Claims**



1. A hoisting accessory for use with a hoisting device for placing a load through openings in walls or the like, comprising:

a support arm, having an essentially horizontal portion, an integral essentially vertical portion, and a lift yoke between its ends for connecting to said hoisting device, said horizontal portion including a downwardly inclined portion and an upwardly inclined end portion;

a load coupling unit arranged at the outer end of said horizontal portion for carrying a load;

a counterweight unit arranged at said vertical portion displaceable between an upper retracted position and a lower extended position; and

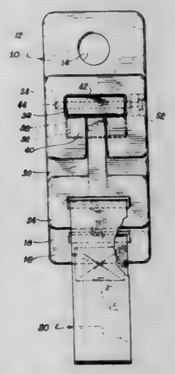
a locking device for locking the counterweight unit in said retracted position and, when the load connected to the load coupling unit exceeds a predetermined weight, releasing said counterweight unit for displacement to said extended position under the influence of gravity.

4,286,818

PURSE SEINE RING TIE

Dominick J. Flammini, 7946 Laurelridge Rd., San Diego, Calif. 92120

Filed Dec. 26, 1979, Ser. No. 107,098
Int. Cl.³ B66C 1/12
U.S. Cl. 294—77 **4 Claims**



1. A ring tie for releasibly attaching pursing rings to a seine net, comprising:

(a) a body member having means for substantially permanent attachment to a seine net;

(b) a clasp member with releasible connector means comprising a receptor in said body member, a portion of said clasp slidably received in said receptor, and a removable holder retaining said portion in said receptor, whereby the clasp member is substantially permanently connected to said body member for regular operation yet capable of easy disconnection for purposes of maintenance and replacement;

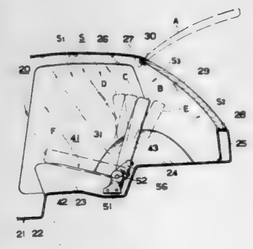
(c) a short strap shackle secured to and between said members and depending therefrom, in the manner of a shackle of an inverted padlock, for connection onto a pursing ring, and said said strap shackle being scissile to permit intentional cutting thereof in emergencies during use.

4,286,819

REAR SEAT FOR CARS

Haruo Inoue, Tokyo; Shigeru Yokota, Fujimi, and Yoshiharu Saito, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1978, Ser. No. 958,405
Claims priority, application Japan, Nov. 7, 1977, 52-149267; Nov. 14, 1977, 52-152524; Nov. 14, 1977, 52-152525
Int. Cl.³ B60N 1/02
U.S. Cl. 296—65 R **8 Claims**



1. A rear seat apparatus for a car of the hatch-back type having a tail gate door arranged at an angle with respect to a vertical plane, said door being pivotally supported by and extending substantially rearwardly downwardly from a rear end portion of the roof panel of the car, comprising:

a rear seat back which normally substantially sections a sitting space and a luggage space of said car, which spaces communicate with each other;

said rear seat back being normally disposed such that said luggage space of said car is substantially triangular in vertical cross-section, said luggage space being defined substantially between said rear seat back, said tail gate door, and a rear floor portion of said car;

said rear seat back is normally substantially aligned with a line extending from said rear end portion of said roof panel of said car;

said rear seat back being provided with reclining means for adjusting the rising angle of said seat back so as to vary the capacity of said luggage space of said car;

said rear seat back being provided with means for operating said reclining means, said operating means being disposed in the upper central part on the back surface of said rear seat back;

right and left control cables disposed within said rear seat back, said control cables being operable by said operating means to lock and release said reclining means;

said operating means comprising a lever provided with receiving parts; and

said apparatus further including:

engaging members provided at tip ends of said control cables, said engaging members being adapted to be received by said receiving parts;

a part to be pulled by the fingers of a user of said apparatus, said pulling part being integrally provided with said receiving parts; and

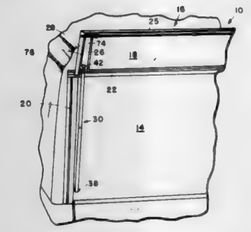
bracket means pivotably supporting said lever and provided integrally with means for holding said control cables.

4,286,820

TRUCK COVER AND DOOR THEREFOR

Donald C. McGaughey, Bristol, Ind., assignor to State Wide Aluminum of Indiana, Inc., Elkhart, Ind.

Filed Jul. 5, 1979, Ser. No. 54,840
Int. Cl.³ B60P 3/00
U.S. Cl. 296—146 **15 Claims**



1. In a truck top cover for use on a vehicle having a rear access opening formed by a frame and a door, said door having opposed faces and edges, said edges extending peripherally between said faces, said door being hingedly mounted to said frame along one edge and swingable between open and closed positions relative to the frame, a telescopic prop member to hold said door in said open position whether the vehicle is moving or at rest, and means mounting the prop to said door;

said mounting means including a bracket member pivotally mounted to said prop and

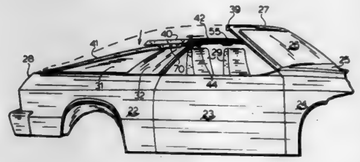
including means defining first and second mounting surfaces positioned substantially at right angles with respect to each other, said first surface being adapted for rigid attachment to one of said faces of said door and said second surface being adapted for rigid attachment to one of said other edges of said door whereby said door is held in a relatively rigid manner in said open position and resists jarring and vibratory forces acting in a direction substantially parallel with the axis of the hinge of said door such that said door is held sufficiently rigid even though the vehicle is in motion.

4,286,821

AUTOMOBILE BODY WITH A RETRACTABLE HARD TOP ROOF

Herbert Cooper, 1 Tom's Point La., Port Washington, N.Y. 11050

Filed Mar. 26, 1980, Ser. No. 134,047
Int. Cl.³ B60J 7/16
U.S. Cl. 296—216 **6 Claims**



1. An automobile body of the type having a front windshield and a passenger compartment which includes a pair of body side panels between which is disposed a front seat section and a rear seat section, the improvement comprising:

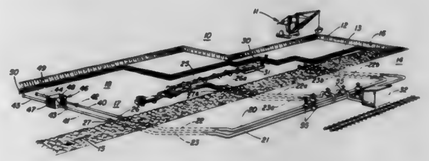
a collapsible, segmented convertible hard top roof mounted for movement between a raised, non-collapsed position, in which said roof extends from an upper edge of said front windshield rearwardly over said front and rear sections of said passenger compartment at a sufficient height so that said body assumes the general configuration of a hard top four passenger sedan body, and a lowered collapsed position, in which said roof extends substantially over only the rear seat section of said passenger compartment at a lower height such that it lies substantially flush with the upper edges of said body side panels so that said body assumes the general configuration of a two-passenger open top roadster, said roof having a front panel and a rear panel which, when said roof is disposed in said raised, non-collapsed position, extends over said front seat section and said rear seat section, respectively, said roof also including means for pivotably mounting said rear panel along a rear edge thereof to a rear portion of said body so as to permit movement thereof between said raised and collapsed positions relative to said rear seat section and means for coupling said front panel to said rear panel for movement between said raised, non-collapsed position in which said front panel lies between said rear panel and said front windshield, and said lower, collapsed position, in which said front panel is slid upwardly and rearwardly such that it is superimposed over said rear panel so as to uncover said front seat section, said roof also including a pair of rear, side window panels disposed on opposite sides of said roof rear panel along one of said body side panels and means for pivotably mounting said rear, side window panels along a lower edge thereof to the associated body side panel for movement between said raised, non-collapsed position, in which said rear, side window panels assume a generally vertical disposition for supporting said rear panel and a lowered collapsed position, in which said rear side window panels are pivoted inwardly towards the interior of said body so that they assume a generally horizontal disposition and lie substantially flush with the upper edge of said body side panels.

4,286,822

UNDERSPOIL SLURRY HAULAGE

Richard E. Doerr, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Dec. 14, 1979, Ser. No. 103,319
Int. Cl.³ E21C 35/20, 41/00
U.S. Cl. 299—18 **3 Claims**



1. A method for underspoil haulage of mineral product from a surface mine wherein the top soil is removed which is covering the mineral layer and the area is continuously reclaimed over the mined out area comprising:

(a) removing a strip of overburden exposing the mineral layer thereunder;

(b) laying a first pair of pipes from the bottom of said mineral layer to a processing location;

(c) connecting a source of fluid to one of said pipes and a slurry processing system at said processing location to said remaining pipe;

(d) connecting a mobile slurry haulage system including a crusher and slurrying means to the termination of the pair of pipes at the bottom of said mineral layer;

(e) removing said mineral and depositing said mineral into

said crusher and slurrying means to the maximum extent of said mobile slurry haulage system;
(f) laying a subsequent pair of pipes in the same manner as said first pair of pipes and reconnecting said slurry haulage system in the same manner as said first system;
(g) extending said first pair of pipes across the mined out strip;
(h) redepositing said strip of removed overburden over said mined out area including said first pair of pipes; and
(j) repeating said steps to the end of said removed overburden.

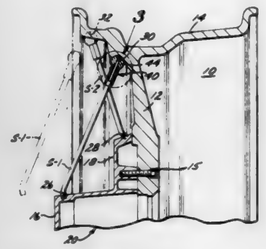
4,286,823
CONVEYOR AND GUIDE ASSEMBLY
Gerhard Merten, Lunen; Wolfgang Peters, Selm; Hans-Dieter Schneider, Lunen, and Willy Heyer, Bochum-Gerthe, all of, Fed. Rep. of Germany assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany
Filed Mar. 6, 1980, Ser. No. 127,716
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908827
Int. Cl.³ E21C *35/12*
U.S. Cl. 299—43 **12 Claims**



1. In a conveyor and guide assembly comprising a conveyor and a plough guide attached to one side of the conveyor, the conveyor comprising a plurality of conveyor sections joined end-to-end, and the guide comprising a plurality of guide sections positioned end-to-end, each guide section being associated with, and extending substantially along, a corresponding conveyor section, the guide having a generally L-shaped guide plate and a ramp-like cover plate which define therebetween upper and lower chain ducts for receiving a plough drive chain, each cover plate section being curved over at the top towards the corresponding guide plate section thereby delimiting the upper portion of the upper chain duct, the improvements comprising overlapping each adjacent pair of cover plate sections in a first zone which extends over at least the curved-over portions thereof, overlapping each pair of adjacent guide plate sections in a second zone which adjoins said first zone, and longitudinally off-setting the gap between each pair of adjacent guide plate sections from the corresponding gap between adjacent conveyor sections in a third zone which is adjacent to said second zone.

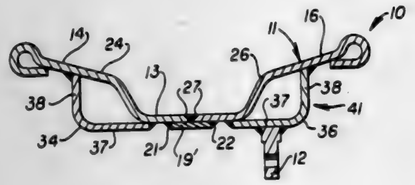
4,286,824
WHEEL WITH REPLACEMENT SPOKES
Raymond C. Brown, Tarzana, Calif., assignor to Superior Industries International, Inc., Van Nuys, Calif.
Filed Dec. 21, 1979, Ser. No. 105,920
Int. Cl.³ B60B *7/00*
U.S. Cl. 301—37 SS **7 Claims**

1. In a vehicle wheel construction having a solid wheel that includes a radially extending bolt-on flange which merges into a tire-receiving rim;
a plurality of replaceable spokes extending between radially inner and outer points on said wheel;
a mounting member carried by each of said spokes that is longitudinally slidable relative to its respective spoke; and
spring means interposed between each spoke and its mounting member biasing such spoke and its mounting member longitudinally apart, with said spokes being releasably retained in place between said inner and outer points by



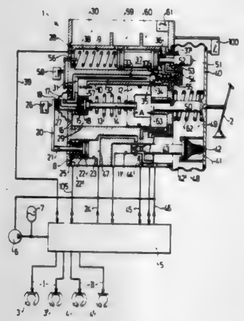
the compressive force exerted by said spring means between such spokes and their mounting members, and with said spokes being ornamental in function in that they do not lend any appreciable strength to said wheel.

4,286,825
FABRICATED HEAVY-DUTY INDUSTRIAL WHEEL
Alfred W. Sieving, Venedy, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 7, 1980, Ser. No. 110,069
Int. Cl.³ B60B *3/02, 21/00*
U.S. Cl. 301—63 R **5 Claims**



1. In a fabricated heavy-duty industrial wheel (10) of the type having a drop center rim (11), said rim (11) having a rim well (13) and a pair of bead seats (14,16) positioned on opposite sides of the rim well, the improvement comprising:
a pair of reinforcing rings (34,36) each having an L-shaped cross sectional configuration with an axially extending portion (37) extending into the inner periphery of the rim well (13) and welded thereto and a radially extending portion (38) having its outer edge (39) welded to the respective bead seat;
an annular mounting flange (12) connected to one of the reinforcing rings (34,36) and extending radially inwardly therefrom; and
wherein said rim (11) is constructed from a backup ring (19) and a pair of identical halves (24,26) seated on said backup ring (19), the halves having inner ends (27) welded to each other and to the backup ring (19), said backup ring (19) having its outer ends (21,22) welded to the rim well (13) of the rim (11).

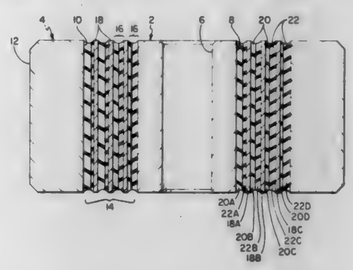
4,286,826
BRAKE BOOSTER FOR THE ANTI-WHEEL LOCKING OF A MOTOR VEHICLE BRAKE SYSTEM
Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 870,784, Jan. 19, 1978, abandoned. This application Mar. 25, 1980, Ser. No. 133,725
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1977, 2702819
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—114 **31 Claims**



1. A brake booster for the anti-wheel locking of a motor vehicle brake system having brake pedal actuation and two hydraulic integral brake circuits, the booster comprising:
a housing within which a booster cylinder is defined;
a booster piston mounted for displacement within the booster cylinder;
a pressure medium supply bore connected to the booster cylinder;
a pressure medium return bore connected to the booster cylinder, both bores forming part of one of the two brake circuits;
a control valve mounted to the housing for controlling the pressure medium flow in the supply and return bores;
connecting means for connection to the brake pedal;
a travel limiting spring located between the control valve and the connecting means for transmitting brake pedal forces to the control valve;
a reservoir;
an auxiliary piston mounted for displacement within the reservoir under the influence of a pressure medium within the reservoir; and
force transmitting means connecting the booster piston and the auxiliary piston, for displacing the booster piston to a predetermined position which allows the brake pedal to execute an idle stroke relative to the booster piston.

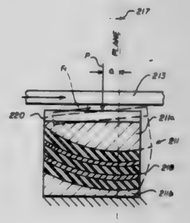
4,286,827
CYLINDRICAL ELASTOMERIC BEARING
Robert R. Peterson, Hudson, and Daniel S. Ventura, Malden, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.
Filed Oct. 11, 1979, Ser. No. 83,598
Int. Cl.³ F16C *27/06*
U.S. Cl. 308—26 **11 Claims**

1. In a cylindrical elastomeric bearing comprising a rigid interior member and a rigid exterior member, wherein said interior and said exterior members are joined together by bonded concentric laminae comprising alternating strata of resilient material and non-extensible material disposed one about the other around a common axis,
the improvement wherein at least some of said resilient strata are formed from two or more bonded cylindrical and concentric substrata disposed about each other and around said common axis, with each substratum within a given resilient stratum comprising a resilient material having a shear modulus of elasticity different from the shear modulus of elasticity of every other substratum within said resilient stratum, and the shear moduli of elasticity of the substrata in each resilient stratum being



selected so that the said resilient strata have effective shear moduli of elasticity such that the torsional shear strains established within each resilient stratum are substantially the same as the strains established within every other resilient stratum for a given range of torsional loads.

4,286,828
OFFSET-PAD BEARING
Nathan T. Sides, Annapolis, and Thomas L. Daugherty, Arnold, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 28, 1979, Ser. No. 98,276
Int. Cl.³ F16C *27/02*
U.S. Cl. 308—26 **1 Claim**

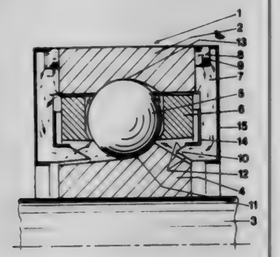


1. A bearing pad for supporting a relatively movable load applying member through a film of lubricating liquid comprising:
a base member;
a face member supported on the base member and including a bearing surface entirely thereover facing the movable member for slidably carrying the load thereof;
means fixedly connecting the face and base members but permitting swinging movement of the face member relative to the base member on a radius having an axis disposed out of the pad and on the opposite side of the bearing surface;
both said face member and said base member being substantially offset laterally from the nadir of the base member to the upstream side thereof;
whereby the load of the movable member on the bearing surface and frictional drag of the movable member moving across the bearing surface both causes the face member to swing about its axis and tilt the bearing surface so that a leading edge thereof is displaced from the movable member for collecting a wedge-shaped film of lubricating liquid therebetween upon movement of the movable member thereacross.

4,286,829
BEARING FOR HIGH ROTATIONAL SPEEDS

Rutgerus S. Heemskerk, Vianen, Netherlands, assignor to SKF Industrial Trading & Development Co. B. V., Nieuwegein, Netherlands

Filed Sep. 28, 1979, Ser. No. 79,837
Claims priority, application Netherlands, Oct. 2, 1978, 7809912
Int. Cl.³ F16C 1/24, 33/78
U.S. Cl. 308—187 11 Claims

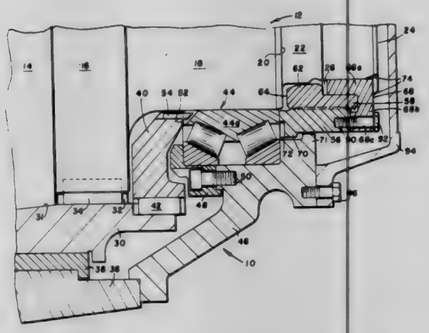


1. A bearing for high rotational speeds, comprising a stationary and a rotatable race ring, a plurality of rolling elements in the annular space between the rings, a cage for spacing the rolling elements, and a lubricating system to supply lubricant to the raceways of the bearing, characterized by a ring made of a porous material fixed in at least one end part of said stationary ring adjoined by a source of lubricant, a part of said ring of porous material extending into the vicinity of the running surface of the rotating raceway such that the lubricant, under the influence of negative pressure generated by high rotation, is drawn out from said end part and moved from said part in a direction to the said stationary race ring and returned to the porous ring once more on the running surfaces of said stationary race ring, and a recess formed in the porous ring and adjoining the stationary race defining a reservoir for lubricant.

4,286,830
COMBINATION ROLL NECK AND BEARING ASSEMBLY

Lowell S. Salter, Jr., Shrewsbury, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Sep. 24, 1979, Ser. No. 78,457
Int. Cl.³ F16C 19/38, 35/06, 43/04
U.S. Cl. 308—207 R 11 Claims



1. In a rolling mill, the combination of a roll having a roll neck rotatably supported in a bearing assembly which includes as an integral component a force exerting means consisting of a nut threaded on a ring, the ring being detachably mounted in a non-rotatable axially confined position on the roll neck, and the nut being engageable with other bearing components and being rotatable relative to the ring to axially force the bearing assembly into and out of its operative position on the roll neck, the improvement comprising:

a circular external groove in the roll neck at a location spaced inwardly from the end thereof;

a plurality of external ribs on the roll neck extending axially from the roll end to said external groove, said external ribs being separated by external slots in the roll neck;

a plurality of internal ribs extending axially along the interior of said ring, said internal ribs being separated by axially extending internal slots in said ring;

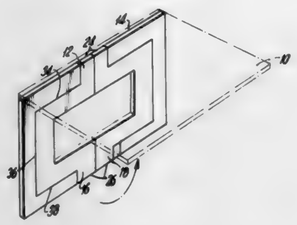
the arrangement of said external groove and said internal and external ribs and slots being such that when said external ribs and slots are in axial alignment respectively with said internal slots and ribs, said bearing assembly is movable axially relative to the roll neck between an inoperative position removed from the roll neck and an intermediate position at which the internal ribs of said ring are located within the external groove on said roll neck, whereupon said ring may be rotated relative to said roll neck between said intermediate position and an interlocked position at which said internal ribs and slots are in alignment respectively with said external ribs and slots; and,

detachable locking means for rotatably fixing said ring relative to said roll neck.

4,286,831
FOLDING FURNITURE

Robert E. Beers, 20 Georgian Rd., Morristown, N.J. 07960

Continuation of Ser. No. 17,850, Mar. 6, 1979. This application Oct. 15, 1980, Ser. No. 197,175
Int. Cl.³ A47B 43/00
U.S. Cl. 312—258 3 Claims

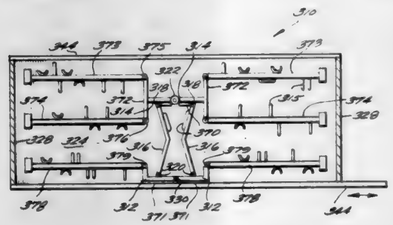


1. A piece of folding furniture comprising two planar members hinged about contiguous edges thereof, one of said members being suitable as a horizontal surface for a piece of furniture, the second said planar member being formed to define two generally C-shaped support elements hingedly attached to said second member and movable from the plane of said second member to a position supporting said first planar member in a horizontal posture, said two support elements being hingedly attached for movement away from the central area beneath said horizontal surface to define an open space for receiving the legs of a person sitting at said piece of folding furniture, at least one of said generally C-shaped support elements being formed to removably receive a file/drawer member, said file/drawer member being formed with means for slidingly removable, mounting engagement within the C-shaped structure of said at least one of said generally C-shaped support elements.

4,286,832
ARTICLE SUPPORTING ASSEMBLY

Stephen T. Spevak, Potomac, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 907,321, May 18, 1978, Pat. No. 4,170,392. This application May 14, 1979, Ser. No. 38,719
The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.
Int. Cl.³ A47B 97/00, 81/00
U.S. Cl. 312—283 23 Claims

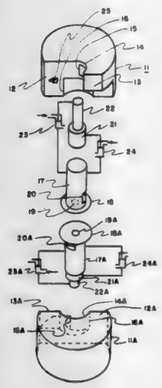


1. An article supporting assembly comprising a base member; a center structure; means for mounting said center structure for rotation with respect to said base member about an axis perpendicular to said base member; at least two cover plates; article supporting structures formed on at least one of the center structure and the cover plates; at least two spanners; first hinges for connecting the cover plates to the spanners so that the cover plates are pivotal with respect to the spanners; and second hinges for connecting the spanners to the center structure so that the spanners are pivotal with respect to the center structure.

4,286,833
METHOD AND APPARATUS TO FABRICATE IMAGE INTENSIFIER TUBES

E. V. Patrick, Lorton; Howard K. Dickson, Alexandria, and Howard L. Dunmire, Stafford, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 930,264, Aug. 2, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 99,056
Int. Cl.³ H01J 9/18, 9/46
U.S. Cl. 316—31 9 Claims



1. An apparatus for fabricating image intensifier tubes and the like, each having at least an anode and a cathode subassembly which are pressed together in a vacuum to form a complete tube, comprising:

first and second generally cylindrical vacuum chambers each large enough to contain a large plurality of said tubes and each having central and radially displaced access ports in at least one circular end wall adapted to receive tube formation, testing and storing devices;

a vacuum lock cylinder structure interconnecting said chambers and having first and second portals at opposite ends thereof, each opening into a different one of said chambers;

a transverse wall structure common to both said chambers separating said portals and defining a center aperture;

first and second ram members on opposite sides of said transverse wall structure, moveable only along an axis through said aperture and normal to said wall structure, each ram adapted to receive a different one of said subassemblies, whereby a complementary set of subassemblies may be pressed together to form a tube and the latter transported through said aperture;

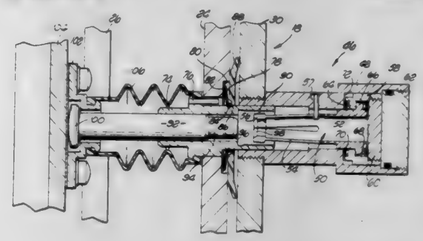
a gate means surrounding and vacuum sealed to said ram means and independently axially moveable relative to said transverse wall structure alternately to seal and open said aperture; and

drive means coupled between an external surface of said circular end wall of said chambers, said gate means and said ram member to produce said relative axial movement therebetween.

4,286,834
INTERCONNECTION SYSTEM

David S. Goodman, Mission Viejo; Gerald J. Selvin, Huntington Beach, both of Calif.; Edward G. Dubell, Phoenix, Ariz.; Donald J. Doty, El Toro, Calif.; Alfred R. Erbe, Phoenix, Ariz., and Robert E. Wilson, Ventura, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,303
Int. Cl.³ H01R 13/629
U.S. Cl. 339—16 R 4 Claims



1. An interconnection system for coupling electrical and fluid conductors carried, for example, by an aircraft and a pylon therefor comprising:

a first mounting plate adapted to be fixedly connected to an aircraft and carrying at least one electrical connector member and fluid coupling element;

a mounting plate assembly adapted to be carried by a pylon which is releasably mounted on the aircraft over said first mounting plate, said assembly including a front plate and a rear mounting plate, said rear plate being movable from a rear position to a forward position closer to said front plate;

said front plate carrying at least one electrical connector member and fluid coupling element arranged to mate with the electrical connector member and fluid coupling element on said first mounting plate;

means biasing said rear plate toward said rear position;

said rear plate being adapted to be fixed to the pylon whereby, when the pylon is being moved forwardly for attachment to the aircraft, during an initial stage of movement of the pylon, and hence the rear plate, the electrical connector member and fluid coupling element on said

front mounting plate will mate with the electrical connector member and fluid coupling element on said first mounting plate and, during a second further stage of movement, said rear plate will reach said forward position;

rapidly releasable positive retaining means for said first mounting plate and said mounting plate assembly for locking said electrical connector members and fluid coupling elements in mated relationship against the separating force of high differential pressures which may exist between said fluid coupling elements;

said retaining means comprising a catch carried by said front plate, a lock member on said rear plate and a spring lock element fixed to said first mounting plate, said spring lock element being normally biased to a release position with respect to said catch; and

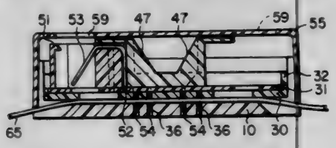
during said initial stage of movement of the pylon toward the aircraft, said catch moving to an overlapping, but spaced apart position relative to said lock element, and during said second stage of movement, said lock member moving forwardly relative to said front plate and said lock element to shift said lock element into locking position with said catch.

4,286,835

MODULAR TELEPHONE CONNECTOR

William J. Adams, Franklin; Jeffrey W. Moorse, Antioch, both of Tenn., and Steve W. Haskins, Corinth, Miss., assignors to Northern Telecom Inc., Ottawa, Canada

Filed Jul. 22, 1980, Ser. No. 171,178
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—17 F **6 Claims**



1. A modular telephone connector comprising a bottom member, a top assembly and a cover;

said top assembly comprising a base;

a recess in an upper surface of said base;

an insert positioned in said recess and carrying circuit patterns on at least one surface thereof;

a top member attached to the base;

at least one modular jack positioned in an aperture in said top member and retained therein, the jack including terminals passing into holes in said insert and connected to said circuit patterns;

and insulation piercing terminals positioned in apertures in said base and extending downward therefrom, the insulation piercing terminals including tail portions extending into holes in said insert and connected to said circuit patterns;

said bottom member including recesses into which said insulation piercing terminals enter, the arrangement being such that a flat cable is gripped between said bottom member and said base of said top assembly and said insulation piercing terminals pierce the cable and make electrical contact with conductors in said cable;

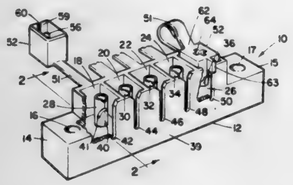
said cover including means for retaining said cover on said bottom member and top assembly.

4,286,836

CONNECTOR BLOCK WITH STRAIN PREVENTION

Norbert A. Rumpa, Norridge, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Jul. 17, 1979, Ser. No. 58,239
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 R **7 Claims**



1. A connector block **10** having an insulation displacement connector **28, 114** for connection to an insulated wire, the connector block **10** is constructed of a material having electrical insulating properties and includes a body **12, 72** having an open first cavity **18, 94** with said connector **28** securely mounted therein, at least a first wall defining said first cavity has an elongated first slot **42, 224** extending from the opening of said first cavity toward the base of said first cavity, the width of said first slot being less than the minimum diameter of the insulated wire for which the connector block **12, 72** is to be used, characterized in that:

a cap defining a projecting member **56, 230** located within said second cavity, said projecting member **52** having a second cavity is attached to said block by a tether **51**, said cap being shaped to engage a wire positioned adjacent said connector **28** and to force the wire into said connector so as to complete an electrical connection to the conductor of a wire,

said cap **52** includes a first wall having a second slot **60** for engaging a wire positioned adjacent said first slot **42, 224** and forcing the wire into said first slot so that when a wire is connected to said connector and forced into said first slot, strain on the conductor of said wire at the connection will be prevented.

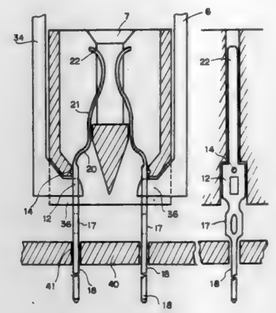
4,286,837

ELECTRICAL CONNECTOR, AN INSULATOR THEREFOR AND A FITTING JIG FOR AN ASSEMBLY OF THESE

Kenichi Yasutake, and Tetsuji Watanabe, both of Yokohama, Japan, assignors to K.K. Elco International, Yokohama, Japan

Filed Dec. 14, 1979, Ser. No. 103,610
Claims priority, application Japan, Dec. 25, 1978, 53-158670
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—176 MP **7 Claims**

7. A connector assembly for attachment to a printed circuit board, said assembly including a number of elongated, sheet metal electrical connectors and an insulator block; said block including a row of connector receiving channels therein each having a connector entrance end; means coacting between said connectors and said channels for securing said connectors in a generally straight path in said block; said block having a plurality of access ports each extending laterally into said block and intersecting a corresponding one of said channels along the entrance end thereof; and each of said connectors having a peripherally closed aligning and driving opening therethrough aligned with the corresponding access port and exposed therethrough to receive a drive member for inserting the connector into said channel in the direction from said entrance end thereof.

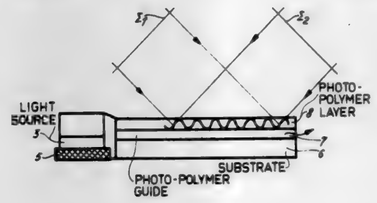


4,286,838

COMPACT OPTICAL STRUCTURE WITH INTEGRATED SOURCE

Jean-Pierre Huignard; Pierre Leclerc; Jean-Claude Carballes, and Armand Nappo, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 23, 1979, Ser. No. 42,602
Claims priority, application France, May 26, 1978, 78 15794
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.11 **13 Claims**



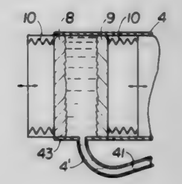
1. Compact optical structure comprising a plate comprising a substrate, an integrated laser diode fixed to said substrate having an emission face designed to emit an optical wave, a plane waveguide layer in contact with a face of said substrate, said layer being formed by a photo-polymer with an index higher than that of the underlying layer of the substrate, and an upper layer above the waveguide layer comprising photoinduced diffraction structures entirely separated from said laser diode, the emission face of the diode being arranged in such a way that the wave is guided in the waveguide layer and deflected by the diffraction structures of the upper layer.

4,286,839

LIGHT DIRECTING CONTROL SYSTEM, PARTICULARLY FOR MEDICAL OPERATING AND DIAGNOSTIC USE

Karl F. Ilzig, Hanau, and Hans Scheidemann, Maintal, both of Fed. Rep. of Germany, assignors to Original Hanau Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,767
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1978, 2854684
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.24 **15 Claims**



1. Light directing and control system, particularly for medical operating and diagnostic use, comprising

a hollow light guide (**4**) having an opaque, flexible tube (**40**);

a light transmitting liquid (**41**) within said tube;

light generating means (**2, 3**) positioned at one end of the tube in light transmitting relation to the liquid therein;

a light emitting terminal (**6**) located at the other end of the tube;

controllable fluid pressure generating means (**19, 20, 21, 22**) in fluid communication with the light transmitting fluid within the tube;

a fluid pressure-controllable optical system (**8, 9, 10; 11; 15, 16, 17**) in light communication with the other end of the tube;

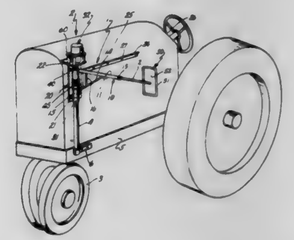
and pressure sensing and transducing means (**8, 9, 10; 11, 18, 18'**) in fluid communication (**4'**) with the light transmitting fluid of the tube, positioned adjacent said other end of the tube and controlling the optical system in accordance with the pressure within the tube to control the transmission of light through said optical system as a function of fluid pressure in the hollow light guide.

4,286,840

RETRACTABLE MIRROR

Stanley R. Covert, 4508 Sayles Rd., Ionia, Mich. 48846

Filed Oct. 5, 1979, Ser. No. 82,291
Int. Cl.³ B60R *1/06*
U.S. Cl. 350—289 **12 Claims**



1. A retractable side view mirror for vehicles, comprising:

mirror means for reflecting an image therein;

an elongate arm having said mirror means mounted on one end thereof;

bracket means adapted for connection with said vehicle, and having the other end of said arm pivotally mounted therein for rotation along a substantially horizontal path;

said arm having an extended position for rear view by a driver of the vehicle, and a retracted position for folding said arm and mirror inwardly toward the body of the vehicle;

means for selectively rotating said arm between said extended and retracted positions;

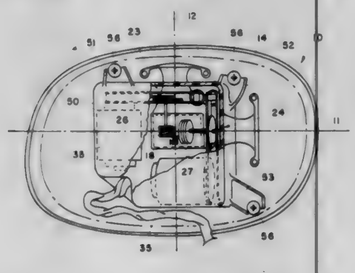
a pawl mounted on said bracket means, shaped for selective reception in a detent disposed in the other end of said arm, and including means for moving said pawl into said detent to positively lock said arm in at least one of said extended and retracted positions, and out of said detent to permit arm rotation therebetween.

4,286,841

ELECTRICALLY OPERATED REMOTE CONTROL REARVIEW MIRROR

Walter R. Deshaw, Sparta, Mich., assignor to Keeler Corporation, Grand Rapids, Mich.

Filed Sep. 6, 1979, Ser. No. 73,069
Int. Cl.³ B60R *1/06*; G02B *5/08*
U.S. Cl. 350—289 **43 Claims**



1. An electrically actuated rearview mirror comprising:

an X axis;

a Y axis, said X axis and said Y axis being mutually orthogonal;

a mirror;

a support for said mirror;

means for pivotally mounting said mirror on said support, said mirror being pivotable about said X and Y axes;

a spherical gear disposed on the back of said mirror, said spherical gear including an X gear section and a Y gear section, said X and Y gear sections having spherical pitch lines;

an X drive means meshing with said X gear section for pivoting said mirror about said X axis when electrical power is applied to said X drive means; and

a Y drive means meshing with said Y gear section for pivoting said mirror about said Y axis when electrical power is applied to said Y drive means.

4,286,842

SOLID STATE CIRCUIT

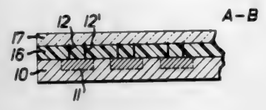
Manfred Börner, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 13, 1976, Ser. No. 722,416
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1975, 2541003; Oct. 16, 1975, 2546272
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—331 R **24 Claims**

1. In combination with a solid state circuit which has a plurality of integrated circuit elements each having at least a pair of connecting terminals, means for determining the operability of said elements, said means comprising

(a) means forming a first, insulating layer on said solid state circuit and having arranged on it the pairs of terminals of said elements, said insulating layer insulating all of the terminals from each other; and

(b) means forming at least one second layer arranged on said insulating layer and covering at least the respective pairs



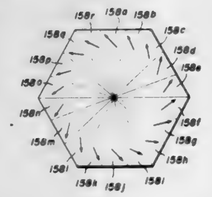
of terminals of said elements, said second layer having, at least in the regions where it covers respective pairs of element terminals, optical characteristics which are selectively variable in dependence on the potential difference between the pair of terminals of each respective element.

4,286,843

POLARISCOPE AND FILTER THEREFOR

Zinovy V. Reytblatt, 3550 N. Lake Shore Dr., Chicago, Ill. 60657

Filed May 14, 1979, Ser. No. 38,575
Int. Cl.³ G02B *5/30, 27/28*
U.S. Cl. 350—396 **29 Claims**



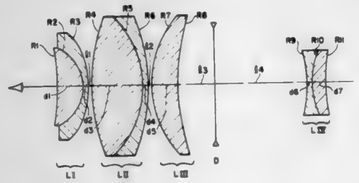
19. In a reflection polariscope for analyzing the stress in a specimen, comprising a polarizer for location adjacent to one side of the specimen and being divided into a multiplicity of sections and having a predetermined point, each of said sections including a number of elongated light polarizing elements extending radially from said point and having radial axes and inducing polarization at an angle of 45° thereto.

4,286,844

ULTRAWIDE ANGLE FLAT FIELD EYEPIECE

Albert Nagler, 15 Green Hill La., Spring Valley, N.Y. 10977

Filed Nov. 7, 1979, Ser. No. 91,972
Int. Cl.³ G02B *25/00*
U.S. Cl. 350—410 **2 Claims**



1. A wide angle eyepiece comprising four lenses, I, II, III, and IV, and a field stop D located between lens III and lens IV, wherein lens II is a bi-convex lens, lenses I and III are meniscus lenses with the strongest curve of each adjacent lens II, and lens IV is a bi-concave lens, said lenses having parameters substantially as set forth in the following table wherein lens curvatures, lens thicknesses, and lens separation distances are given in millimeters, n is the refractive index of a lens element, and v is the Abbe number for a lens element:

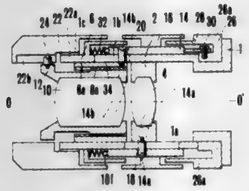
Lens	Radii	Axial Thickness "d"	Lens Separation "l"	n	v
LI	R1 = −75.6	d1 = 8.4		n1 = 1.620	v1 = 60.3
	R2 = −12.7	d2 = 1.5		n2 = 1.717	v1 = 29.5
	R3 = −25.2		l1 = 0.5		
LII	R4 = +52.9	d3 = 16.8		n3 = 1.620	v3 = 60.3
	R5 = −25.2	d4 = 1.5		n4 = 1.717	v4 = 29.5
	R6 = −52.9		l2 = 0.5		
LIII	R7 = +29.9	d5 = 8.4		n5 = 1.620	v5 = 60.3
	R8 = +75.6		l3 = 10.9		
	D		l4 = 29.6		
LIV	R9 = −23.5	d6 = 1.5		n6 = 1.620	v6 = 60.3
	R10 = +14.0	d7 = 3.8		n7 = 1.717	v7 = 29.5
	R11 = +37.6				

4,286,845

ZOOM LENS BARREL CAPABLE OF CLOSE UP PHOTOGRAPHY

Shigeru Kamata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1980, Ser. No. 134,798
Claims priority, application Japan, Apr. 6, 1979, 54-42333
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—430 **4 Claims**



1. A zoom lens barrel for use in zoom and close up photography, comprising:

(a) a generally cylindrical barrel part one end of which is arranged to be mounted to a camera body;

(b) optical means within said barrel part for performing zoom and close up photography, wherein said optical means has an optical axis which is parallel to the axis of said barrel part and said optical means is arranged for sliding movement relative to said barrel part in the direction of said optical axis;

(c) a generally cylindrical guide member coaxially rotatably mounted on said barrel part and having a number of guide slots for engaging said optical means and a guide edge formed on one end of said guide member, said guide member being axially movable between a first position whereat said guide slots axially move said optical means relative to said barrel part so that said optical means zooms on an object to be photographed when said guide member is rotated, and a second position whereat said guide member axially moves said optical means for close up photography of the object; (d) changeover operation means mounted on said barrel part for changing the position of said guide member for selecting one of zoom and close up photography to be performed by said optical means, said changeover operation means comprising:

biasing means mounted on said barrel part for providing a bias force to said guide member in the direction of the optical axis when said guide member is at said first and second positions;

a contact member supported on said barrel part for contacting said guide edge and for providing a holding force to said guide member to counter the bias force provided by said biasing means; and

a changeover operation member mounted on said barrel part for rotation about the optical axis and arranged to be actuated at the exterior of said barrel part, said operation member being coupled to said contact member so that said contact member moves said guide member to a selected one of said first and second positions when said operation member is rotated; and

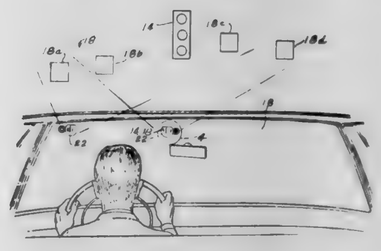
(e) zoom lens operation means connected to said guide member for rotation about the optical axis and arranged to be actuated at the exterior of said barrel part to rotate said guide member so that said guide slots axially move said optical means to perform zoom photography.

4,286,846

SIGNAL VIEWER FOR AUTOMOBILE

Dale E. Bollenbacher, 4304 Apt. 2B, Hickory Rd., Mishawaka, Ind. 46544

Continuation-in-part of Ser. No. 774,893, Mar. 7, 1977, abandoned. This application Mar. 18, 1980, Ser. No. 131,422
Int. Cl.³ G02B *3/00, 5/04*
U.S. Cl. 350—436 **9 Claims**



1. Signal viewer for an automobile, comprising

a pair of lenses and means for mounting them on the windshield of the automobile in transversely spaced positions on opposite sides of a forward line of sight of the driver,

the lenses receiving light rays from overhead objects and deflecting them toward the horizontal within the automobile and thereby toward the driver,

the lenses encompassing fields of vision that are laterally spaced apart but overlapping, both fields constantly including common objects between the lateral limits of the two fields taken together, the lenses forming corresponding images and presenting them to the driver.

4,286,847

LIGHTWEIGHT INVERTED TELEPHOTO TYPE WIDE ANGLE LENS SYSTEM

Akiyoshi Nakamura, Sakai, and Hisashi Tokumaru, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1979, Ser. No. 79,191
Claims priority, application Japan, Oct. 6, 1978, 53-123910
Int. Cl.³ G02B *13/04*
U.S. Cl. 350—459 **10 Claims**

1. An compact lightweight telephoto type wide angle lens

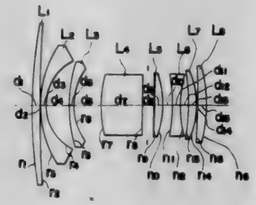
system having eight lens groups and eight lens elements comprising from the object to the image side:

a first lens group consisting of a first positive single lens element;

a second lens group consisting of a second negative meniscus single lens element convex to the object side;

a third lens group constituting of a third negative meniscus single lens element convex to the object side;

a fourth lens group consisting of a fourth positive single lens element;



a fifth lens group consisting of a fifth biconvex single lens element;

a sixth lens group consisting of a sixth biconcave single lens element;

a seventh lens group consisting of a positive meniscus single lens element convex to the image side, and

an eighth lens group consisting of an eighth positive single lens element, in which the lens system fulfills the following conditions:

$0.75f < |f_{1,2,3}| < 1.1f$ $\quad f_{1,2,3} < 0$

$0.89f < f_{1,2,3,4,5} < 2.3f$

$0.5 < d_7/d_6 < 2.0$

$1.0 < d_8/d_{10} < 2.4$

wherein;

$f_{1,2,3}$ represents the total focal length of the first to third single lens element;

$f_{1,2,3,4,5}$ represents the total focal length of the first to fifth single lens element;

f represents the focal length of the entire lens system, and

d_i represents the i-th axial distance numbered consecutively from the front of the lens system.

4,286,848

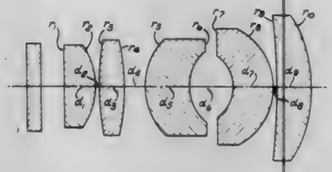
REPRODUCING OBJECTIVE LENS FOR VIDEODISCS

Lee Mickleson, Long Beach, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jan. 25, 1979, Ser. No. 6,327

Int. Cl.³ G02B 9/60

U.S. Cl. 350—467 **1 Claim**



1. A reproducing objective for videodiscs comprising:

a first, second, third, fourth and fifth lens;

said first lens being a positive lens, said second lens being a positive lens, said third lens being a negative meniscus lens with its convex surface positioned toward the object side, said fourth lens being a negative meniscus lens with its convex surface positioned toward the object side, said fifth lens being a positive meniscus lens with its concave surface positioned toward the object side, said reproducing objective lens for videodiscs satisfying the following conditions:

1. $0.30\ \Delta r_6/f \geqq 0.23$
2. $0.27 \geqq d_1/f \geqq 0.15$
3. $1.4 \geqq r_6/|r_7| \geqq 0.9$
4. $6.0 \geqq |f_3|/|f_4| \geqq 2.5$
5. $0.31 \geqq d_5/f \geqq 0.21$

wherein

reference symbol f represents the focal length of the lens system as a whole, reference symbol f_3 represents the focal length of the third lens, reference symbol f_4 represents the focal length of the fourth lens, reference symbol r_6 represents the radius of curvature of the surface on the image side of the third lens, reference symbol r_7 represents the radius of curvature of the surface on the object side of the fourth lens, reference symbol d_1 represents the thickness of the first lens and reference symbol d_5 represents the thickness of the third lens;

and wherein

said reproducing objective for videodiscs has the following numerical data:

$r_1 = \infty$		
$d_1 = 2.7726$	$n_1 = 1.547$	$\nu_1 = 54.0$
$r_2 = -5.6308$		
$d_2 = 0.2500$		
$r_3 = 15.9099$		
$d_3 = 2.2050$	$n_2 = 1.672$	$\nu_2 = 64.0$
$r_4 = -14.0644$		
$d_4 = 1.9386$		
$r_5 = 5.4115$		
$d_5 = 3.7500$	$n_3 = 1.667$	$\nu_3 = 33.0$
$r_6 = 3.4870$		
$d_6 = 3.8136$		
$r_7 = -2.8396$		
$d_7 = 3.5075$	$n_4 = 1.667$	$\nu_4 = 33.0$
$r_8 = -5.2742$		
$d_8 = 0.2500$		
$r_9 = -69.2660$		
$d_9 = 3.0721$	$n_5 = 1.667$	$\nu_5 = 33.0$
$r_{10} = -10.2729$		

$f = 13.1297\ f_3 = -66.667\ f_4 = -21.786$

RMS wavefront errors = .021 l = 2

wherein

reference symbols r_1 through r_{10}, respectively, represent radii of curvature of respective lens surfaces, reference symbols d_1 through d_9, respectively, represent thicknesses of respective lenses and air spaces between respective lenses, reference symbols n_1 through n_5, respectively, represent refractive indices of respective lenses, reference symbols ν_1 through ν_5, respectively, represent Abbe's numbers of respective lenses, reference symbol f represents the focal length of the lens system as a whole, reference symbol f_3 represents the focal length of the third lens, reference symbol f_4 represents the focal length of the fourth lens and reference symbol l represents the working distance of the lens system as a whole.

4,286,849

DIGITAL CAMERA

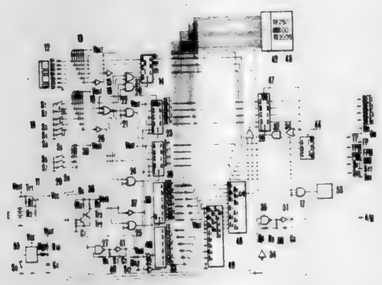
Masanori Uchidoi, Yokohama; Masami Shimizu, Tokyo; Nobuaki Date, and Hiroshi Aizawa, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,806

Claims priority, application Japan, Feb. 9, 1978, 53/14332; Feb. 9, 1978, 53/14333; Feb. 9, 1978, 53/14334; Feb. 20, 1978, 53/18346; Mar. 29, 1978, 53/36379

Int. Cl.³ G03B 7/097

U.S. Cl. 354—23 D **68 Claims**



1. An automatic exposure control apparatus for a camera comprising:

(a) light measuring means for producing an electrical signal proportional to the level of brightness of an object being photographed;

(b) exposure factor setting means for producing electrical signals proportional to preset values of exposure factors;

(c) exposure value computing means responsive to the electrical signals from said light measuring and said factor setting means for producing an output;

(d) shutter control means;

(e) diaphragm control means;

(f) exposure mode selecting means responsive to first and second switch signals for directing the output of said computing means to either of said shutter control means and said diaphragm control means, respectively; and

(g) signal forming means having terminals receptive of one of a number of different mode setting members upon reading of information on said mode setting member for producing either one of said first and second signals to be applied to said mode selecting means.

4,286,850

AUTOMATIC FOCUS INDICATING DEVICE FOR CAMERA

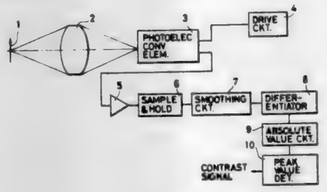
Harumi Aoki, Kiyose, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1980, Ser. No. 117,926

Claims priority, application Japan, Feb. 15, 1979, 54-16446

Int. Cl.³ G03B 3/10

U.S. Cl. 354—25 **7 Claims**



1. A device for detecting and a indicating a focus position in a camera from a single contrast signal produced in response to an image of an object to be photographed with said camera comprising: means for producing said contrast signal in response to said image; means for detecting the directions of movement of a lens; a peak holding circuit for storing the maximum value of said contrast signal; reset pulse generating circuit means for generating a reset pulse for resetting the contents stored in said peak hold circuit; a comparator circuit for comparing a signal stored in said peak holding circuit means and said contrast signal for producing a focus signal when said contrast signal is equal to or greater than said signal stored in said peak holding circuit means; and means for producing an indication in response to said focus signal.

4,286,851

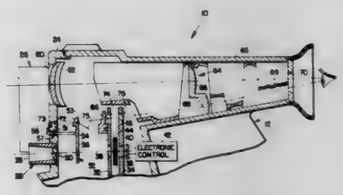
PHOTOGRAPHIC CAMERA APPARATUS FOR VISUALLY INDICATING THE STATUS OF AN EXPOSURE TRIM MECHANISM

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 929,840, Jul. 31, 1978, Pat. No. 4,200,373. This application Apr. 7, 1980, Ser. No. 138,107

Int. Cl.³ G03B 7/08, 17/20

U.S. Cl. 354—53 **18 Claims**



1. Photographic camera apparatus for use in a camera of the automatic type which is adapted to use film having a given speed, said apparatus comprising:

a housing having at least one light-admitting aperture;

viewfinder means mounted in said housing and structured for observing through said aperture a field of view generally coextensive with the camera field of view with which said apparatus will be used so that a camera user can aim the camera to frame the subject matter to be included in a picture and including optical means structured to provide an optical path along which light rays from outside of said housing can be observed within said housing as a visible signal apart from said viewfinder means field of view;

automatic exposure means for controlling the exposure of a film, said automatic exposure means including manually adjustable trim means for selectively varying the control of said automatic exposure means, said trim means being movable between a nominal position at which the exposure delivered to the film is a predetermined value and other positions at which the exposure delivered to the film differs from said predetermined value by predetermined amounts, greater or less than said predetermined value, which depend on the position of said trim means, said trim means including means operative when said trim means is in its said nominal position for intercepting light rays traveling along said optical path and deviating said intercepted rays along a path which is outside of said optical path to thereby prevent said signal from being observed via said optical means and for permitting light rays from outside of said housing to enter said optical means when said trim means is in a position other than its nominal position to provide to a user of the camera a visual indication in said viewfinder means that said trim means is positioned at one of its positions other than its said nominal position so that the user of the camera can at his discretion adjust said trim means for an exposure that will produce a picture which will be either lighter or darker than the one that would be produced if said trim means remained un-

changed or can place said trim means in its said nominal position.

4,286,852

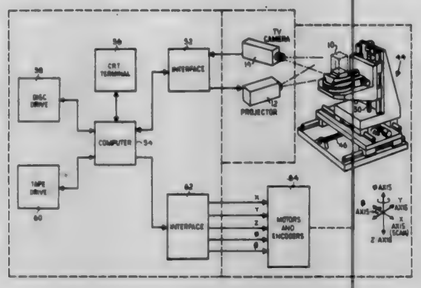
RECORDING IMAGES OF A THREE-DIMENSIONAL SURFACE BY FOCUSING ON A PLANE OF LIGHT IRRADIATING THE SURFACE

Howard Stern, Greenlawn, and Paul DiMatteo, Huntington, both of N.Y., assignors to Solid Photography, Inc., Melville, N.Y.

Continuation-in-part of Ser. No. 41,717, May 23, 1977, Pat. No. 4,238,147. This application Aug. 6, 1980, Ser. No. 175,769

Int. Cl.³ G03B *17/00, 29/00, 35/08*

U.S. Cl. 354—77 **15 Claims**



1. A method for recording surface characteristics of an object, comprising: generating a first plane of electromagnetic energy and directing said first plane of electromagnetic energy against a surface to be recorded for irradiating said surface in a substantially first planar section defined by the intersection of said first plane of energy and said surface; arranging a lens plane and a film plane of a camera so that said first plane of energy, said lens plane and said film plane all intersect in a common line; focusing said camera on said first plane of electromagnetic energy in a region about said surface to be recorded; recording the surface characteristics of said object on said first planar section as viewed by said camera; generating a second plane of electromagnetic energy and directing said second plane against said surface for irradiating said surface in a substantially second planar section defined by the intersection of said second plane and said surface, said second planar section having a thickness substantially less than said first planar section.

4,286,853

MICROFICHE CAMERA HAVING MOTOR CONTROL SYSTEM

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 3, 1980, Ser. No. 136,933

Int. Cl.³ G03B *1/00*

U.S. Cl. 354—123 **14 Claims**

1. A camera for exposing a plurality of image areas on a single card-like film unit, said camera comprising:

means for supporting such a film unit at a film plane for longitudinal movement;

means for defining a laterally extending row of a plurality of image areas on a portion of the film unit supported at said film plane;

an image forming lens;

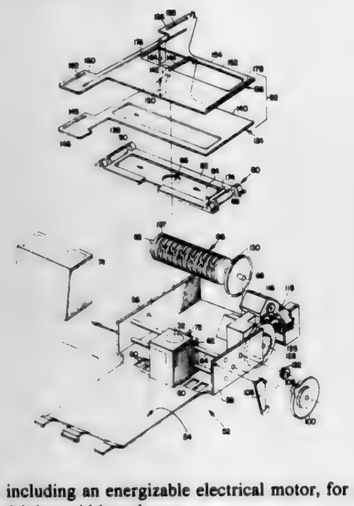
a carriage supporting said lens for incremental movement in linear passes along said row during which said lens is successively located in imaging relation with each of said image areas;

a barrel cam advanceable in predetermined rotational increments for incrementally moving said lens, said barrel cam being configured to move said lens in one direction from a starting position to a terminal position during one linear pass and to move said lens in the opposite direction back to said starting position during the next linear pass;

exposure means, including a shutter, operable for controlling the passage of image forming light through said lens to a corresponding one of said image areas;

means on said barrel cam for normally operating said shutter each time said barrel cam is advanced through one of said rotational increments;

film advancing means for incrementally advancing the film unit longitudinally after each linear pass to present the next portion of the film unit in registration with said image area defining means;



means, including an energizable electrical motor, for rotatably driving said barrel cam;

means for controlling operation of said motor, said motor control means being operable in an exposure cycle mode to effect advancement of said barrel cam through one rotational increment, and in a reset cycle mode to continuously advance said barrel to return said lens to said starting position; and

means for disenabling operation of said shutter by said shutter operating means on said barrel cam during each reset cycle and for enabling such shutter operation during each exposure cycle.

4,286,854

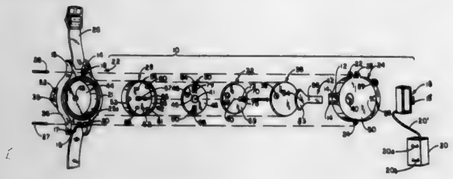
MAGNET-ACTUABLE FLASH APPARATUS

Bernard A. Seckendorf, Flushing, N.Y., assignor to Wrist-A-Matic, Ltd., Elmhurst, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,152

Int. Cl.³ G03B *15/02, 15/03, 9/10*

U.S. Cl. 354—129 **16 Claims**



14. In a flash actuation system for a camera having a first aperture for passing light, a movably mounted shutter having a second aperture in alignment with said first aperture at a first position of the shutter and out of alignment with said aperture at a second position of the shutter, and means for moving the shutter between said first and second positions; the improvement wherein said flash actuation system comprises a switch having contacts adapted to be displaced with respect to one another in a magnetic field, for controlling a flash, and magnet means mounted to be relatively movable with respect to said switch upon movement of said shutter, whereby the contacts of said switch have different relative positions with respect to one another at said first and second positions of said shutter.

4,286,855

ELECTROMAGNETIC RELEASING DEVICE

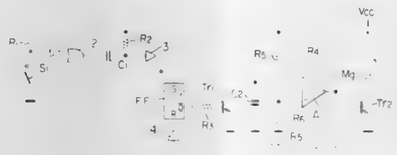
Hiroshi Hasegawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,736

Claims priority, application Japan, Dec. 20, 1977, 52-170611[U]

Int. Cl.³ G03B *17/40*

U.S. Cl. 354—234 **6 Claims**



1. An electromagnetic releasing device for energizing a shutter release magnet, comprising a switch in series with said magnet for energizing said magnet when the switch is conductive, a bistable circuit having a first output connected to said switch for rendering said switch conductive when the bistable circuit is set in a first state, means responsive to actuation of a shutter release button for setting said bistable circuit in said first state, and means independent of whether said button remains actuated for resetting said bistable circuit in a second state a predetermined time after it is set in said first state and for thereby rendering said switch non-conductive, said resetting means comprises a timing circuit connected to a second output of said bistable circuit.

4,286,856

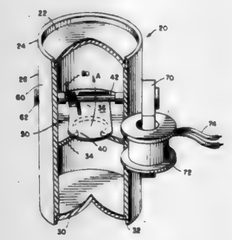
ELECTROMAGNETIC SHUTTER FOR LENS

Neal McGrath, 1223 E. Wilson, Wheaton, Ill. 60187

Filed Feb. 11, 1980, Ser. No. 120,360

Int. Cl.³ G03B *9/10, 1/00*

U.S. Cl. 354—234 **5 Claims**



1. An electromagnet shutter for a photographic lens comprising:

an optical stop mounted at a predetermined distance from the focusing elements of the photographic lens;

a flap mounted for rotating substantially along one side of said stop, said flap having a first position in which it blocks the passage of light through said stop and a second position in which it is removed therefrom;

an electromagnetic means for rotating said flap from its first position to its second position,

wherein said electromagnetic means comprises a permanent magnet mounted on said rotatable shaft and an electromagnet having a horseshoe-shaped core with two poles which surround said permanent magnet whereby, when said electromagnet is energized, the magnetic field produced causes said permanent magnet and attached shaft to rotate, thereby rotating said flap from its first position to its second position.

4,286,857

EXPOSURE CORRECTION WARNING DISPLAY DEVICE

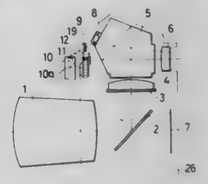
Kunio Mita, Kamifukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

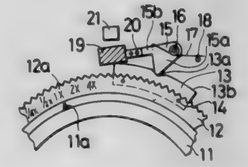
Filed Sep. 6, 1977, Ser. No. 830,961

Claims priority, application Japan, Sep. 8, 1976, 51-120714

Int. Cl.³ G03B *17/00*

U.S. Cl. 354—289 **2 Claims**





1. In an automatic exposure control type camera having a finder through which may be viewed an exposure information display region, and an exposure correcting ring which may be rotated to effect exposure correction, an exposure correction warning display device comprising:

a colored transparent film: and

means operated by said exposure correcting ring for moving said film to a position to that it appears in said exposure information display region when exposure correction is effected by rotating said ring, said means comprising a circumferential cam fixedly secured to said ring and a spring biased lever on one end of which is mounted said film and the other end of which abuts said cam.

4,286,858

VOLTAGE DETECTING DEVICE FOR CAMERA

Masayoshi Kiuchi, Yokohama, and Masaharu Kawamura, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,493

Claims priority, application Japan, Jun. 15, 1979, 54-75215

Int. Cl.³ G03B *7/093, 17/18*

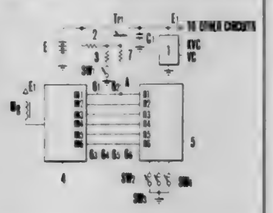
U.S. Cl. 354—289 **12 Claims**

1. A voltage detecting device for a camera provided with an analog-to-digital converter arranged to convert photographic information in an analog form into photographic information in a digital form and with a driving power source, comprising:

(a) switching means for applying the output of said driving power source to the integrator of said analog-to-digital

converter in such a manner that the output of said driving power source is integrated by said integrator, said switching means being arranged to operatively connect the output terminal of said power source to the input terminal of said analog-to-digital converter in response to an operation performed for the purpose of detecting the output of said driving power source;

(b) discharge means for discharging an electric charge stored at said integrator down to a predetermined value



when the level of the output of said integrator reaches a predetermined value;

(c) control means functionally connected to said analog-to-digital converter for causing the integrating and discharging actions of said integrator to be periodically repeated;

(d) annunciating means; and

(e) output condition changing means for changing the output condition of said annunciating means in accordance with the integrating time and the discharging time of said integrator.

4,286,859

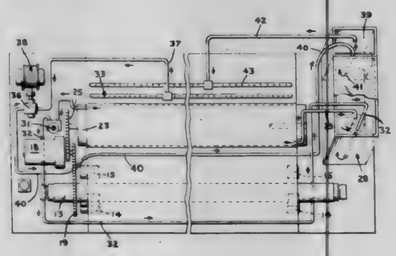
AIR POLLUTION ATTENUATION SYSTEM FOR COPIERS EMPLOYING NOXIOUS GAS IN A DEVELOPING CHAMBER THROUGH WHICH THE COPY PASSES FOR DEVELOPMENT

Clarence Kurek, Scottsdale, Ariz., assignor to Enervest, Inc., Englewood, Colo.

Filed Apr. 9, 1979, Ser. No. 28,055

Int. Cl.³ B01D *50/00, 19/00;* **G03D** *7/00*

U.S. Cl. 354—300 **4 Claims**



1. An air pollution attenuation system for copiers employing a noxious gas in a developing chamber through which a sheet for development passes comprising

(a) a developing chamber having an inlet to receive a sheet and an outlet to discharge the sheet;

(b) a vacuum generating manifold external to the developing chamber, lying proximal to the surface of the sheet and positioned proximal to the outlet of the developing chamber extending generally transversely across said sheet and to its direction of movement for drawing residual noxious gas from the surface of said sheet and entraining the said gas in a contained stream;

(c) means for passing the contained, noxious gas bearing stream through stripping means for removing substantial amounts of said noxious gas from said stream the stripping means emitting a gas capable of attenuating the noxious character of the noxious gas; and (d) means for passing the gas emitted from the stripping means to and discharging it in close proximity to the sheet on the opposite side of the vacuum generating manifold from said outlet.

4,286,860

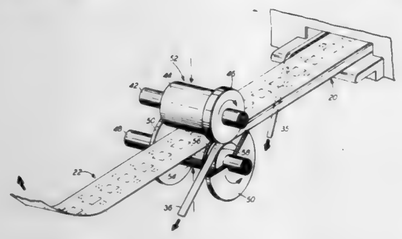
APPARATUS FOR MAKING CARRIER TAPE

Michael T. Gursky, and William W. Pcihoda, both of Lehigh County, Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 8,621, Feb. 1, 1979, Pat. No. 4,227,983. This application Apr. 18, 1980, Ser. No. 141,433

Int. Cl.³ G03D *3/13;* **H05K** *1/04, 3/00*

U.S. Cl. 354—319 **12 Claims**



1. Apparatus for forming a pattern in a strip of metal foil having no substantial resistance to bending, having a substantially unperforated drive margin on the strip and having a latent image of the pattern on the strip comprising:

means for performing a succession of steps to form the pattern in the strip;

means for successively gripping along the drive margin of the strip in a continuous manner and for driving the strip in a lengthwise direction through the succession of forming steps, such gripping and driving being done without disturbing the latent image;

means for guiding the driven strip through the succession of forming steps, each step requiring a separate exposure time interval suitable for such forming step; and

means for shielding the strip at one or more of the forming steps such that the pattern in the strip is exposed for a respective time interval suitable for the said forming step.

4,286,861

ELECTROSTATIC COPYING PROCESS AND APPARATUS

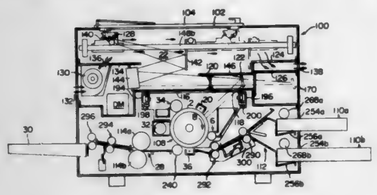
Shoji Matsumoto, Neyagawa; Toshikazu Matsui, Kishiwada; Toshimitsu Ikeda, Higashiosaka; Nobuhiko Kozuka, Suita; Hitoshi Nishihama, Uji, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Division of Ser. No. 895,465, Apr. 11, 1978, Pat. No. 4,254,202. This application Mar. 30, 1979, Ser. No. 25,744

Claims priority, application Japan, Apr. 19, 1977, 52-44162

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **16 Claims**



1. An electrostatic copying apparatus comprising: a housing having on its top surface a transparent plate for supporting an original to be copied; a rotary drum disposed within the housing and having a photosensitive member on its surface; a charging, a developing and a transferring means which are successively arranged around the rotary drum along the moving direction of the surface of the rotary drum; an optical system for projecting an image of the original onto the surface of the rotary drum between the charging means and the developing means and having a lamp for illuminating the original; a receptor sheet conveying system defined between the surface of the rotary drum and the transfer means for conveying a receptor sheet; separator means in said housing for separating the housing into an upper section and a lower section and for substantially preventing any flow of the atmosphere within said housing between said sections, and the upper section having the optical system therein and the lower section having the rotary drum, the charging means, the developing device, the transferring means and the receptor sheet conveying system therein; and a cooling system in said upper section for sucking air from the outside of the housing into the housing for cooling said original illuminating lamp of the optical system and discharging the air out of the housing.

4,286,862

MEANS FOR SEPARATING A COPYING PAPER FROM A SENSITIVE BODY IN AN ELECTRONIC COPYING MACHINE

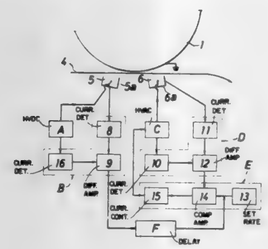
Yukio Akita; Hirotaka Izumi, and Junichi Asano, all of Tokyo, Japan, assignors to Copyer Company Limited, Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,482

Claims priority, application Japan, Nov. 22, 1978, 53-143506

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **1 Claim**



1. Means for separating a copying paper from a sensitive body in an electronic copying machine comprising:

(a) means for detecting electric current for copying, said means for detecting a differential current between electric current flowing to a first electrode of a charged device for copying from a DC high voltage generator and electric current flowing to a shield case of said charged device for copying,

(b) means for detecting electric current for removing electric charges, said means for detecting a differential current between electric current flowing to a second electrode of a charged device for removing electric charges from an AC high voltage generator and electric current flowing to a shield case of said charged device, said electric current for removing electric charges being controlled to a setting rate in accordance with said differential current detected by said means for detecting said electric current for removing electric charges,

(c) means for controlling electric current for removing electric charges by adding to said setting rate said differential current detected by said means for detecting said electric current for copying, whereby the controlled signals are fed to said AC high voltage generator, and

(d) a delay circuit means transmitting signals of said differential current for copying to said AC high voltage generator by delaying said signals for a time corresponding to a time for a point on said sensitive body to move a distance between said first electrode for copying and said second electrode for removing electric charges.

4,286,863

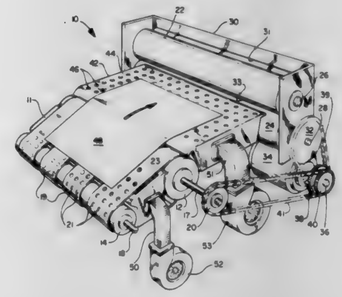
PRESSURE FUSING APPARATUS FOR AN ELECTROSTATIC REPRODUCING MACHINE

Frank H. Cornwall, Fairfield, and William A. Ross, Darien, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 73,837

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 FU **4 Claims**



1. Apparatus for pressure fusing dry toner on a sheet, comprising a plenum having a flat surface with openings therein, said flat surface having an upstream end and a downstream end, means for drawing a vacuum within said plenum, a pair of juxtapositioned rollers nip forming in engagement with one another under sufficient pressure to fuse the toner, said rollers being located immediately adjacent the downstream end of said flat surface, means for rotating at least one of said rollers, and means for conveying a sheet across said surface from said upstream end to said downstream end and into the nip of said rollers, said vacuum means causing a sheet to be held flat against said surface and creating a drag on such sheet as the sheet is driven through said pressure rollers.

4,286,864

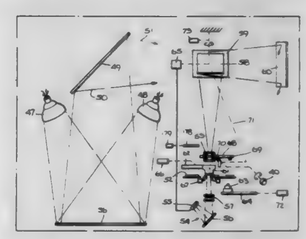
PHOTOPLASTIC FILM RECORDING AND MONITORING APPARATUS

Gordon Lysle, Greenlawn, and Kenneth R. Baur, Halesite, both of N.Y., assignors to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 873,932, Jan. 31, 1978. This application Jan. 31, 1980, Ser. No. 117,205

Int. Cl.³ G03B *13/26, 27/52;* **G03G** *15/00*

U.S. Cl. 355—5 **28 Claims**



1. In photoplastic film recording and monitoring apparatus for selectively producing rippled image patterns in frame areas ofsuch film by image patterned electrostatic charge and heat deformation, the combination of a copy holding station, means

for flood lighting said copy holding station, means for projecting an image from said copy holding station over a first optical path, means for indexably supporting a transmissively readable fiche of photoplastic film in selectable frame positions at an image plane normal to said first optical path, means disposed in said first optical path between said image plane and said copy station for focusing an optical image of copy at said copy station onto the surface of a fiche at said image plane, a projection light source located on the opposite side of said image plane from said focusing means, a viewing screen, a rotatably mounted mirror assembly having one position for completing said first optical path to the exclusion of a second optical path, and a second position for completing said second optical path to the exclusion of said first optical path, said second optical path extending in succession from said projection light source through said image plane and said focusing means to said viewing screen, electrical switch means under the control of said mirror assembly, means interconnecting said switch means with said projection light source for energizing the latter only when said mirror assembly occupies said second position, means for applying an electrostatic charge to a fiche at said image plane within a frame area intersected by said first optical path during a recording cycle, means for applying image forming heat to film in said frame area during said recording cycle, and operator initiated control means for manipulating said mirror assembly.

4,286,865

ELECTROPHOTOGRAPHIC COPYING APPARATUS FOR THE PRODUCTION OF MULTIPLE COPIES FROM A SINGLE LATENT ELECTROSTATIC IMAGE

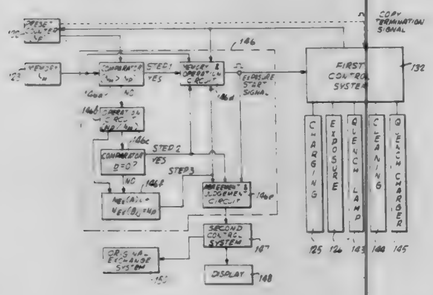
Toyokazu Satomi; Mitsuru Ohminato, both of Yokohama, and Yasuhiro Tabata, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 835,416, Sep. 27, 1977. This application Sep. 4, 1979, Ser. No. 72,453

Claims priority, application Japan, Sep. 29, 1976, 51/116900; Dec. 28, 1976, 51/157815

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 CU **15 Claims**



1. In an electrophotographic copying apparatus of the type having at least

latent electrostatic image formation means for forming a latent electrostatic image by charging a photoconductor and exposing said photoconductor to an image of an original;

development means for developing an electrostatic image with a developer;

image transfer means for transferring a developed image to a recording medium; and

cleaning means for cleaning said photoconductor; wherein a plurality of copies can be made from the same electrostatic image formed by said latent electrostatic image formation means, the improvement comprising:

first means for setting selectively the number of copies to be obtained from the same latent image, wherein a maximum number of copies is practically obtainable from the same latent image;

second means for setting selectively the number of copies to be obtained from the same original;

first control means for making said latent electrostatic image formation means inoperative during the period of time following the formation of the first copy until the formation of the final copy from the same latent image as set by said first means; and

second control means for actuating said cleaning means when the final copy from the same latent image is formed as set by said first means and when the number of copies set by said second means have been are obtained from the same original.

4,286,866

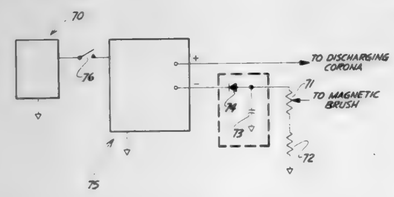
BIAS VOLTAGE CONTROL FOR ELECTROPHOTOCOPIER MAGNETIC BRUSH

John J. Stelben, Greenwich; Kim E. Siladi, Danbury; George A. Herman, Jr., Brookfield, and John E. Vesel, Stratford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 1, 1980, Ser. No. 117,889

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 D **8 Claims**



1. In an electrophotocopying machine utilizing a two component developer material and having a reciprocating carriage for carrying an original document across the illuminating means, an endless re-usable photoconductor, said photoconductor rotating through two cycles for each copy produced of an original document and having a seam across the width thereof and having a total length less than the length to be imaged plus the length required for the physical location of all the photocopying process elements other than the transfer apparatus, a corona device for discharging electrical charge that might remain on the photoconductor after the developed image plus been transferred from the photoconductor, a magnetic brush developing device for developing the latent image on the photoconductor and removing untransferred developer material from the photoconductor, and a common source of internally generated voltage for both the discharging corona and the magnetic brush developing bias voltage, wherein the bias voltage for the magnetic brush developing device is terminated when the voltage to the discharging corona is terminated, an improvement for reducing the non-uniformity of charge deposited on the photoconductor to thereby increase photoconductor life while substantially maintaining the bias voltage during interruption of voltage to the discharging corona, said improvement comprising:

a switch on the input to the common source of internally generated voltage, said switch being opened simultaneously with the disengagement of the clutch controlling the photoconductor motion ot thereby terminate the common source of internally generated voltage;

means operatively connected to the common source of internally generated voltage for providing the bias voltage;

a charge retaining element connected in parallel to the means providing the bias voltage; and

a one way electrical valve operatively connected to the input for the charge retaining element and the bias voltage means, said charge retaining element substantially maintaining the bias voltage when the common source of voltage is terminated.

4,286,867

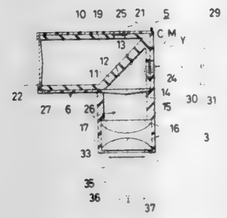
LIGHT SOURCE UNIT ASSEMBLY FOR PHOTOGRAPHIC ENLARGER

Atumi Kashiwagi, Nara, Japan, assignor to Fujimoto Photo Industrial Co., Ltd., Osaka, Japan

Filed Mar. 3, 1980, Ser. No. 126,720

Int. Cl.³ G03B *27/54*

U.S. Cl. 355—67 **7 Claims**



1. In an optical element for use in a photographic enlarger positioned on the optical axis of a light source between the light source and a negative for diffusing the light from the light source and illuminating the negative, a light source unit assembly comprising a frame having a diffusing tube at least in its interior and a partition provided in the frame and dividing the interior of the diffusing tube into a first diffusing chamber and a second diffusing chamber; the first diffusing chamber having a first light diffusing surface on the partition, a first light passing aperture positionable on the optical axis of the light source and opposed to the first diffusing surface, a first diffusing filter disposed across the path of light reflected from the first diffusing surface and a condenser positioned on the optical axis of the first diffusing filter and spaced apart from the filter to provide a first optical system; the second diffusing chamber having a second light diffusing surface on the partition, a second light passing aperture positionable on the optical axis of the light source and opposed to the second diffusing surface and a second diffusing filter disposed across the path of light reflected from the second diffusing surface; the first and second optical systems being alternatively positionable on the optical axis of the light source between the light source and the negative.

4,286,868

PHOTOGRAPHIC PRINTER WITH AUTOMATIC SENSOR CALIBRATION

Ronald C. Laska, Minnetonka, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Division of Ser. No. 862,733, Dec. 21, 1977, Pat. No. 4,172,659. This application Oct. 29, 1979, Ser. No. 89,547

The portion of the term of this patent subsequent to Oct. 30, 1996, has been disclaimed.

Int. Cl.³ G03B *27/80*

U.S. Cl. 355—68 **5 Claims**

1. In a photographic printer system having a first location along a path of advancement of a photographic film original at which light is passed through the photographic film original to expose a photosensitive medium, the improvement comprising:

light source means for providing light to the photographic film original at a second location upstream of the first location along the path of advancement of the photographic film original;

a plurality of light sensors positioned at the second location for providing output signals indicative of light received from defined areas of the photographic film original;

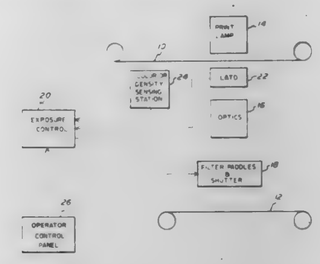
calibration value means for calculating digital calibration values for each of the plurality of light sensors based upon values of the output signals under a reference condition in which a filter of essentially uniform attenuation is placed in the path of the light from the light source means to the plurality of light sensors;

digital storing means for storing the plurality of digital calibration values;

correcting means for correcting the output signals from the plurality of light sensors during normal operation of the printer system based upon the stored plurality of digital calibration values;

and

exposure control means for controlling exposures of the photosensitive medium as a function of the corrected output signals during normal operation of the printer system.



4,286,869

NEGATIVE FILM HANDLING METHOD AND APPARATUS

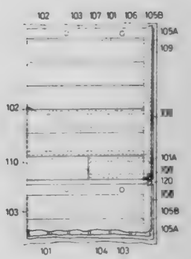
Mikio Kogane, and Seiichi Yamazaki, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 20, 1979, Ser. No. 105,484

Claims priority, application Japan, Jan. 5, 1979, 54/870; Mar. 6, 1979, 54/25748; Jun. 18, 1979, 54/75667

Int. Cl.³ G03B *27/62, 27/32*

U.S. Cl. 355—75 **27 Claims**



1. A negative film handling method comprising the steps of: inserting negative films into inserting and removing openings in negative sheets, positioning said negative sheets and attaching said negative sheets side-by-side on a flexible transparent belt in such a manner that said negative film inserting and removing openings of said negative sheets are aligned with one another perpendicularly to the negative film inserting and removing direction, and opening said negative film inserting and removing openings of said negative sheets including bending at least an edge portion of said flexible transparent belt.

10. An automatic negative film handling apparatus in which negative sheets into which negative films are inserted are attached side-by-side on a flexible transparent belt in such a manner that negative film inserting and removing openings of said negative sheets are aligned with one another perpendicu-

larly to the negative film inserting and removing direction, which apparatus comprises:

(a) negative sheet conveying means for intermittently conveying said negative sheets which contain said negative films and are attached to said flexible transparent belt;

(b) negative sheet opening means for bending upwardly an upper side portion on the negative film inserting and removing opening side of each negative sheet and one edge portion on the negative film inserting and removing opening side of said flexible transparent belt and for bending a lower side portion of each negative sheet downwardly to open said negative film inserting and removing opening thereby to separate the end portion of each negative film from said negative film inserting and removing opening;

(c) negative film conveying path forming means disposed perpendicularly to the direction of conveyance of said negative sheets for conveying each negative film to a printing opening section;

(d) negative film removing position regulating means for, while said negative film inserting and removing opening is opened so as to be separated from the end portion of said negative film, bringing into coincidence the longitudinal center line of said negative film with the longitudinal center line of said negative film conveying path forming means;

(e) negative film removing and inserting means for moving said negative film thus positioned onto said negative film conveying path and inserting said negative film into said negative sheet after printing;

(f) negative film picture detection notch detecting means including means for detecting a picture of said negative film for feeding said negative film as required to said printing opening section; and

(g) negative film feeding means operated in accordance with a signal produced by said negative film picture detection notch detecting means for feeding said negative film uniformly to said printing opening section.

4,286,870

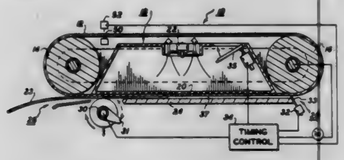
DOCUMENT BELT WITH DISCRETE VACUUM AREAS

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1980, Ser. No. 111,058

Int. Cl.³ G03B *27/62, 27/64*

U.S. Cl. 355—76 **6 Claims**



1. In a document handling system for a copier in which documents to be copied at an exposure station are transported thereto by an apertured vacuum belt transport with a light reflective surface to provide an optical background for different sizes of documents to be copied at said exposure station, the improvement comprising:

at least two discrete minor vacuum aperture patterned areas spaced circumferentially along said surface of said belt in the direction of motion of said belt, said belt being unapertured in the space between said vacuum apertured areas,

each said vacuum apertured area being smaller in area than the smallest document to be transported by said vacuum belt transport;

means to register a document in a loading station against said vacuum belt completely overlying one said vacuum apertured area of said belt; and

means to advance said apertured area of said belt from loading station to said exposure station of said copier;

said spacing between said vacuum apertured areas being sufficiently great that none of the other said vacuum apertured areas are exposed for copying when said one vacuum apertured area is in said exposure station.

4,286,871

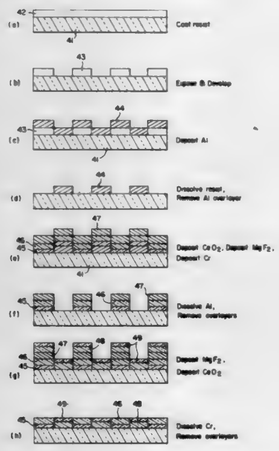
PHOTOGRAMMETRIC MEASURING SYSTEM

Kent E. Erickson, Brookside, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Aug. 11, 1980, Ser. No. 176,886

Int. Cl.³ G03B *27/00;* G01B *11/14;* H01J *3/14*

U.S. Cl. 355—133 **9 Claims**



8. The method of making a reflective phase grating which comprises:

(a) providing a plane-surfaced transparent support;

(b) forming on the plane surface of said support a regular period grating pattern of a first material which exhibits substantial solubility in a first liquid;

(c) depositing over the whole of said patterned support surface to a thickness of about λ/4 a layer of a second material consisting essentially of a dielectric having a given index of refraction, said second material exhibiting no substantial solubility in said first liquid;

(d) depositing over the whole of said second material layer to a thickness of about λ/4 a layer of a third material consisting essentially of a dielectric having an index of refraction significantly different from that of said second material, said third material exhibiting no substantial solubility in said first liquid;

(e) depositing over the whole of said third material layer a layer of a fourth material which exhibits no substantial solubility in said first liquid, but exhibits substantial solubility in a second liquid in which said second and third materials exhibit no substantial solubility;

(f) applying said first liquid to the resulting layered support, thereby dissolving said pattern of first material and effecting removal thereof from said support with overlying, coextensive portions of said deposited layers of second, third, and fourth materials;

(g) depositing over the whole of the resulting patterned support surface a λ/4 layer of said third material;

(h) depositing over the whole of said third material layer a λ/4 layer of said second material;

(i) applying said second liquid to the resulting layered support, thereby dissolving the remaining portions of said fourth material layer and effecting removal thereof from said support with overlying, coextensive portions of the subsequently deposited layers of said second and third materials;

whereby said support is provided with a composite layer of substantially uniform thickness wherein said regular period pattern is reproduced in a first layer of dielectric material the reflecting surface of which is offset from said support surface by a difference of about λ/4 from that of a second, complementary pattern layer of the same dielectric material, thereby to yield in light reflected therefrom a phase difference of about λ/2 according to said pattern.

4,286,872

OPTICAL CORRELATOR

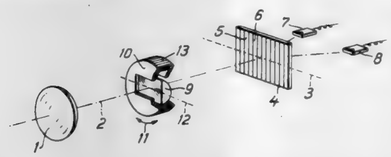
Eckart Schneider, Wetzlar, and Eckart Delingat, Nauborn, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 58,865

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835390

Int. Cl.³ G01P *3/36;* G01C *3/08*

U.S. Cl. 356—28 **5 Claims**



1. An optical correlator having an imagining system for the non-contact measuring of the velocity and/or direction of motion and/or the distance of an object, and comprising at least one grating structure having lines thereon mounted at least in the vicinity of the image plane of said imaging system and at least one photoelectric receiver arranged after the grating structure in the direction of the light, said receiver converting the modulated light fluxes resulting from the grating structure into electrical signals, the improvement comprising a supplemental structural device inserted between said imaging system and said grating structure of said correlator for matching the function of the distribution of the structural elements of the image of said object in said image plane with the function of the distribution of said grating structure by transforming spatial frequencies contained in the image of an object transversely to the direction of the lines of said grating structure; said matching resulting in improved electrical signals.

4,286,873

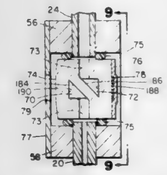
REFRACTOMETER CELL WITH INTEGRAL LENS

William W. Carson, Mendon, Mass., assignor to Waters Associates, Inc., Milford, Mass.

Filed Jun. 25, 1979, Ser. No. 51,811

Int. Cl.³ G01N *21/46*

U.S. Cl. 356—130 **9 Claims**



1. In a refractometer of the type including a cell in which a sample fluid is located and through which a light beam passes, said cell being constructed by fusing together a plurality of glass elements to form a chamber for said sample fluid, said light beam passing through said chamber, the improvement wherein said cell comprises an integral curved surface for acting as a lens to focus said light beam, said curved surface being an exterior surface of one of said fused-together glass elements, and further comprising a reflective coating applied to an exterior surface of one of said fused-together glass elements of said cell, wherein said reflective coating covers a limited area of said surface and thereby reflects only a portion of said light beam passing through said cell, whereby said reflective coating functions as a mask to block portions of said beam.

4,286,874

DIFFRACTOMETER

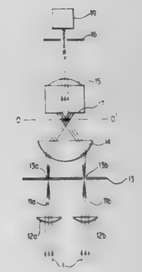
Francis H. Smith, York, and Richard W. Gale, Malton, both of England, assignors to Vickers Limited, London, England

Filed Apr. 11, 1979, Ser. No. 29,124

Claims priority, application United Kingdom, May 31, 1978, 14434/78

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—338 **21 Claims**



1. A diffractometer comprising: means for illuminating a specimen plane at an acute angle thereto, the axis of the or each beam of illuminating light rays lying in a common plane; a positive lens having its principal axis substantially normal to the specimen plane, for converging rays diffracted substantially normally from the specimen plane; a field stop, adjacent the specimen plane, for restricting the light which is converged by the positive lens; an aperture stop, downstream of the positive lens, for limiting the light rays converged by the positive lens to those diffracted substantially normally to the specimen plane; and a photo-electric detection means, downstream of the aperture stop, for detecting light from the positive lens.

4,286,875

DIFFRACTOMETER

Francis H. Smith, York, England, assignor to Vickers Limited, London, England

Filed Apr. 11, 1979, Ser. No. 29,125

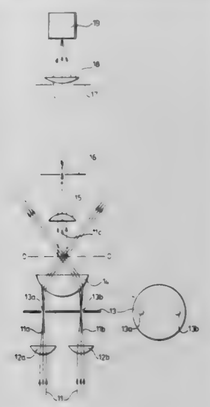
Claims priority, application United Kingdom, Apr. 12, 1978, 14434/78

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—338 **26 Claims**

1. A diffractometer comprising means for illuminating a specimen plane at an acute angle thereto, the axis of the or each

beam of illuminating light rays lying substantially in a common plane, and a positive lens having its principal axis substantially



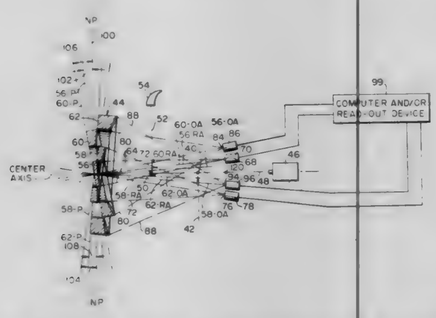
normal to the specimen plane, for converging rays diffracted substantially normally from the specimen plane.

4,286,876

APPARATUS AND METHOD FOR MEASURING SCATTERING OF LIGHT IN PARTICLE DETECTION SYSTEMS

Walter R. Hogg, South Miami, and Albert Brunsting, Miramar, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 2, 1979, Ser. No. 438
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—343 **30 Claims**



18. A composite mirror of multiple reflecting surface elements adapted to receive distributed radiant energy from a source that is directing such radiant energy in a conical solid angle generally along a principal optical axis directed toward the composite mirror, said mirror adapted to reflect at least portions and at most all of the radiant energy it receives back towards said source generally but along reflective axes which diverge from said principal optical axis so that different surface elements will receive different geometric zones of the distributed radiant energy and reflect and cause confluence of the energy in the respective zones at different locations laterally of the principal optical axis where the energy can be measured, said surface elements each being derived from and comprising a portion of a spherical mirror whose individual optical axis is tilted by a first angle relative to said principal optical axis whereby its reflective axis diverges from said principal optical axis at an angle which is twice said first angle.

4,286,877

REFRACTIVELY SCANNED INTERFEROMETER

William L. Clarke, South Laguna, Calif., assignor to Laser Precision Corporation, Irvine, Calif.

Filed Jul. 26, 1979, Ser. No. 61,010
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—346 **12 Claims**



1. A spectral analysis interferometer, of the type having diverging arms along which radiation is directed, comprising:
a beamsplitter for directing radiation from a source in optical paths along the two diverging arms of the interferometer, said beamsplitter including a partially reflecting surface which divides radiation between the interferometer arms, and a supporting substrate for said surface which tends to create an optical imbalance between the arms of the interferometer.
a first stationary reflector at the end of the first interferometer arm;
a second stationary reflector at the end of the second interferometer arm;
a scanning prism in one of the interferometer arms which is movable across that arm to vary the length of the optical paths in that arm; and
compensating means for avoiding aberrations due to the refractive characteristics of both the beamsplitter substrate and the scanning prism, said compensating means providing refractive effects in the other arm of the interferometer which substantially balance the refractive effects of the beamsplitter substrate and of the scanning prism in its centered position.

4,286,878

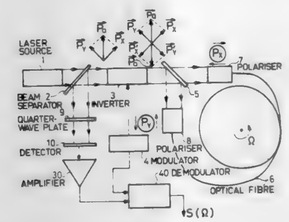
OPTICAL FIBRE INTERFEROMETRIC GYROMETER WITH POLARIZATION SWITCHING

Georges Pircher, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 9, 1979, Ser. No. 56,107
Claims priority, application France, Jul. 10, 1978, 78 20540
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **5 Claims**

1. An optical fiber interferometric gyrometer comprising:
a laser source emitting a linearly polarised monochromatic beam;
an optical fiber wound around the axis of rotation of the gyrometer;
means for separating said beam into two waves, directing said waves for travel through said fiber in opposite directions and recombining the waves after travel through said fiber;
switching means having a first state transmitting the recombined waves without modification and a second state inverting the phase of said recombined waves;
fixed phase shift means for introducing a fixed phase shift equal to $\pi/2$ between the two waves;

modulating means for producing a signal for alternately shifting said switching means between said first and second states;
means for detecting the recombined waves after passage



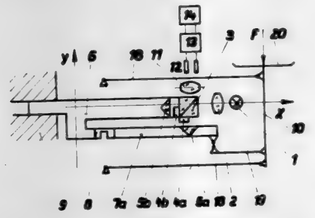
through said switching means and said fixed phase shift means; and
a synchronous demodulator connected to said detector means, and to said modulating means for producing a signal indicating the rotation speed of the gyrometer.

4,286,879

DEVICE, PARTICULARLY FOR THE DIGITAL MEASURING OF FORCE

Gerd Jäger, Leninring 26; Wolfgang Bernuth, Rudolf-Breitscheid-Str. 11, both of 63 Ilmenau; Klaus Irrgang, Mühlgraben 10, 6306 Geraberg; Hans-Joachim Wendt, Thalheimstr. 4a, 8122 Radebeul, and Siegfried Honecker, Pestitzer Weg 14, 8020 Dresden, all of German Democratic Rep.

Filed Jul. 3, 1979, Ser. No. 54,599
Claims priority, application German Democratic Rep., Jul. 11, 1978, 206632
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—358 **84 Claims**



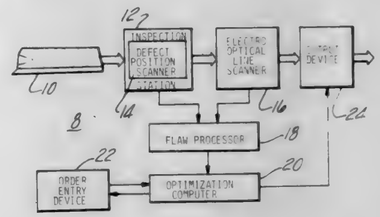
1. A measuring device, particularly for the digital measurement of force, comprising a monochromatic light source; sensing means; a deformable body; at least one diaphragm operatively connected to said body; an optical splitter affixed to said body and adapted to receive light from said source; two interometer mirrors connected to said body; a first tilt-invariant reflector affixed to said body; a second tilt-invariant reflector affixed to said diaphragm; and force-receiving means operatively connected to said diaphragm so that the force to be measured is transmitted to said diaphragm causing the light from said source to be phase-shifted in said optical splitter, said mirrors and said first and second tilt-invariant reflectors in response to the displacement of said diaphragm under action of said force and thereupon detected by said sensing means.

4,286,880

SCANNING LIGHT BEAM LUMBER DEFECT POSITION SYSTEM AND METHOD OF USING SAME

Allen E. Young, Highland, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 30, 1979, Ser. No. 61,977
Int. Cl.³ G01N *21/89*; G06M *7/00*
U.S. Cl. 356—431 **22 Claims**



1. A system for detecting the positions of defects on at least one surface of a board of lumber comprising:
conveyor means for moving the board in a predetermined direction at a predetermined speed;
defect scanning means disposed along the conveyor means for generating a light curtain, having a moving light scan scanning at a predetermined frequency in a direction parallel to the predetermined direction and disposed slightly above and generally parallel to one surface of the board;
encoder means for measuring the distance of the leading edge of the board past a predetermined point within the light curtain and for generating board leading edge position signals representative thereof;
detector means, responsive to the interruption of the light curtain by an indicator indicating the leading edge of a particular defect on the moving board, for generating a position signal representative of the position of the leading edge of the defect within the light curtain and responsive to the removal of the indicator from the light curtain indicating the trailing edge of the defect on the moving board for generating position signals representative of the position of the trailing edge of the defect within the light curtain and;
defect storage means for combining the board leading edge position signal, the defect leading edge and trailing edge position signals to generate defect position information in a defect data buffer containing signals representative of the positions of the leading edge and trailing edge of each particular defect on the board in usable coordinates.

4,286,881

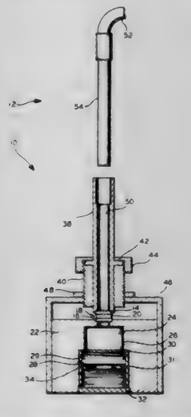
SAMPLE CELL

Jay Janzen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 26, 1979, Ser. No. 15,397
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—440 **7 Claims**

1. Apparatus comprising
(a) a reflecting means,
(b) a first lens;
(c) a second lens;
(d) a block with a passage at least partially therethrough with said second lens being at least partially supported by said block in a position at least partially over one end of said passage and said reflecting means being positioned in said passage;
(e) a superstructure mounted on said block;
(f) a tubular member having a first end and a second end with said first lens being mounted adjacent the second end of said tubular member, the interior of said tubular member being adapted for receiving a fiber optic probe;

(g) a slidable mounting means affixed to said superstructure slidably mounted said tubular member adjacent said superstructure, said first lens, said second lens and said reflecting means being in alignment so that a beam of light emitted from a fiber optic probe when received by the interior of the tubular member passes through the first lens, the second lens and is reflected by the reflecting means back through the second lens and the first lens, in that order, to



the fiber optic probe, and wherein said first lens at least partially protrudes from adjacent said tubular member toward said second lens and said second lens at least partially protrudes from said block towards said first lens;

(h) a sample area having at least one dimension fixed by the distance between said first lens and said second lens; and

(i) squeezing means suitable for squeezing a sample positioned in the sample area between the first lens and the second lens to a predetermined thickness.

4,286,882

APPARATUS FOR THE AUTOMATIC, UNIFORM DRAWING-IN OF ELASTOMERIC MATERIAL INTO WORM EXTRUDERS

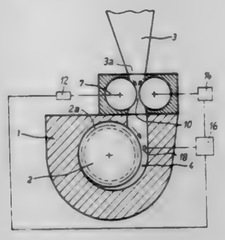
Walter H. Schiesser, Zürich, Switzerland, assignor to Schiesser AG, Switzerland

Filed Aug. 22, 1978, Ser. No. 935,802

Claims priority, application Switzerland, Sep. 2, 1977, 10742/77

Int. Cl.³ B28C *7/04*

U.S. Cl. 366—76 **9 Claims**



1. An apparatus for automatically, substantially uniformly drawing-in elastomeric material into a worm extruder, comprising:

a driven extruder worm;

at least one draw-in roll for mixture material which is to be processed arranged in spaced relationship from and upstream of the extruder worm; variable speed means for driving said draw-in roll independently of said extruder worm;

means defining a material draw-in pocket between the draw-in roll and the extruder worm downstream of the draw-in roll; and

control means for controlling the drive speed of the draw-in roll such that it can transmit only a predetermined maximum adjustable moment as a function of the pressure up to a predetermined maximum pressure in the draw-in pocket between the draw-in roll and the extruder worm wherein the rotational moment is adjusted in response to said pressure.

4,286,883

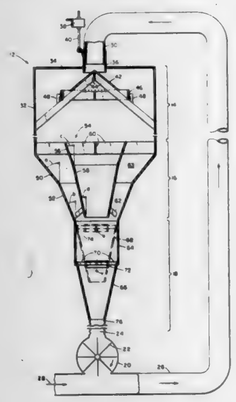
BLENDING APPARATUS FOR BULK SOLIDS

Jerry R. Johanson, Chelmsford, Mass., assignor to Jenike & Johanson, Inc., North Billerica, Mass.

Filed Aug. 20, 1979, Ser. No. 68,163

Int. Cl.³ B01F *5/24*

U.S. Cl. 366—137 **26 Claims**



1. Blending apparatus for bulk solids comprising particles of coarse and fine sizes, including the combination of

a bin having discharge means,

a conical distribution chute with a downwardly and outwardly sloping wall situated within the bin and having a greater coefficient of friction with the fine particles than with the coarse particles,

a deflector plate supported coaxially with the chute and within the bin and having a cylindrical interior surface spaced radially outwardly of the base of the chute, and

a catch cylinder supported coaxially with and above the chute in position to direct said solids falling therefrom on to said sloping wall, whereby the fine particles fall from said sloping wall in a lower trajectory than that of the coarse particles as a result of said different coefficients of friction, the deflector plate having its lowermost extremity above the trajectory of the fine particles and extending vertically from said extremity a sufficient distance to intersect the trajectory of the coarse particles so as to deflect the coarse particles while permitting the fine particles to fall undeflected therebeneath, whereby the coarse and fine particles are caused to collide.

4,286,884

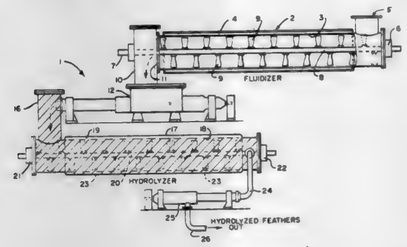
APPARATUS FOR HYDROLYZING KERATINACEOUS MATERIAL

Rowland Retrum, 1226 Wilton La., Kirkwood, Mo. 63122

Division of Ser. No. 968,479, Dec. 11, 1978, Pat. No. 4,231,926. This application Jan. 10, 1980, Ser. No. 110,950

Int. Cl.³ C07G *7/00*; A23J *1/10*; B01F *7/04*

U.S. Cl. 366—149 **9 Claims**



1. An apparatus for continuously hydrolyzing keratinaceous material comprising a first vessel, entry means connected with the said first vessel for continuously delivering the material into the same, agitating means provided in said first vessel for simultaneously violently agitating and moving said material through said vessel, said agitating means being rotational and capable of revolving at speeds of between about 150 to 350 rpm, heating means operatively associated with said first vessel and capable of heating any material traversing therethrough up to a temperature of less than 212° F. and without any significant build up of pressure within said vessel, a second vessel, pump means interconnecting between the said first and second vessels and when operative capable of continuously transferring the fluidized material from the first said vessel into the second said vessel, another agitating means provided in said second vessel and capable of revolving for agitating the material pumped therein, another heating means operatively associated with the said second vessel and capable of heating the material traversing therethrough to a temperature of between 265° F. to 365° F. while creating a pressure therein of between about 25 to 150 psig, said pump means circumventing the passage of any second vessel generated pressure into the first said vessel, and another pump means connecting with the said second vessel and when operative providing for the continuous discharge of the now hydrolyzed material and some pressure from the said second vessel.

4,286,885

FILLER CAP FOR A MIXER

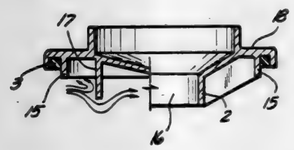
Paul-Ulrich Uibel, Ennepetal, and Manfred Dörr, Bochum, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 112,409

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 7900590[U]

Int. Cl.³ B01F *15/00*

U.S. Cl. 366—347 **7 Claims**



1. A filler cap for a household mixer of the type having rotary blades for mixing the media contained in the filler cap and a locking arrangement, comprising a filler tube to provide a funnel inlet for the media to be mixed, said filler tube having a filling opening positioned concentrically to the axis of rotation of the mixer; and a sealing ring connected to said filler tube, said filler tube including a plurality of ribs formed at the underside thereof and extending between a border of said filling opening and said sealing ring, said ribs being projected tangent to said filling opening so that vertically acting forces exerted by a ring of rotating liquid tending to be thrown upwardly due to rotation of said blades, are substantially negated due to interception and breaking up of the ring of rotating liquid by said ribs.

4,286,886

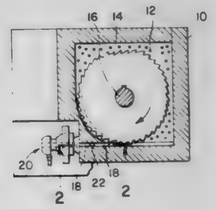
METHOD AND APPARATUS FOR CONTROLLING THE FEED OF PROJECTILES IN A MICROBALLISTIC PRINTER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,823

Int. Cl.³ B41J *3/02*

U.S. Cl. 400—118 **6 Claims**



1. In a microballistic printer in which projectiles are fed at a feeding station from a projectile reservoir to a gun for projection to a printing station and then recycled to the reservoir, a venting duct positioned between the feeding station and the gun, a deflector positioned adjacent the venting duct adapted to deflect projectiles being fed toward the gun into the venting duct before the projectiles reach the gun, a gate in said venting duct adapted to block projectiles from leaving said duct, and means for controlling said gate.

4,286,887

ENDLESS RIBBON CASSETTE

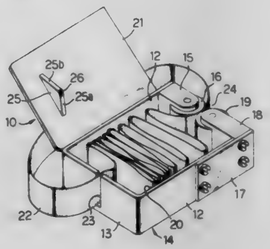
Minoru Hisakawa, and Tsugio Okamoto, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 15, 1979, Ser. No. 85,068

Claims priority, application Japan, Oct. 19, 1978, 53-144036[U]

Int. Cl.³ B41J *33/10*

U.S. Cl. 400—196.1 **5 Claims**



1. A ribbon cassette for an endless-looped ink ribbon of up to a given width, the cassette having a ribbon chamber which has an upper portion, a floor and a wall with a depth slightly larger

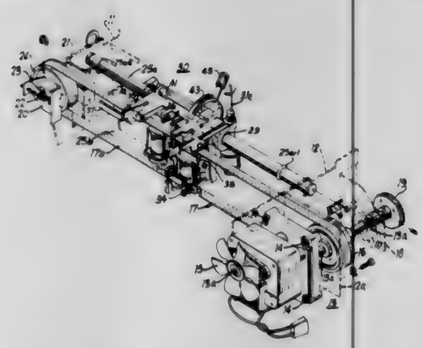
than the given width of the ribbon for storing the ribbon in a stuffed state therein; an inlet opening and an outlet opening formed in said wall; a cover member having a lower surface covering said upper portion of said chamber; and ribbon feed means for feeding the ribbon into said chamber through said inlet opening and drawing out the ribbon from said chamber through said outlet opening, wherein the improvement comprises a depending plate formed on said lower surface of said cover member in a position near said outlet opening, said depending plate being in form of a substantially isosceles triangle which has a substantially roundish tip at its vertex, said depending plate having a base portion which is elongated in a direction perpendicular to that direction in which the ribbon moves from said inlet opening towards said outlet opening along a ribbon path of given width, with length of said base portion smaller than the given width of the ribbon path, and said depending plate depending from said cover member towards the floor such that the distance between said roundish tip at said vertex of said depending plate and the surface of the floor is smaller than the given width of the ribbon, while allowing the ribbon to pass over said roundish tip.

4,286,888

BI-DIRECTIONAL BELT DRIVE, PRINT HEAD MOUNTING MEANS AND PRINTING PLANE ADJUSTMENT MEANS FOR SERIAL PRINTERS

Lewis W. Bennett, Nashua, and Frederik T. Van Namen, Londonderry, both of N.H., assignors to Centronics Data Computer Corp., Hudson, N.H.

Filed Dec. 28, 1978, Ser. No. 974,067
Int. Cl.³ B41J *19/00*
U.S. Cl. 400—320 **14 Claims**



1. Carriage driving means for printers and the like comprising:

a belt having upper and lower belt runs;

means for driving said belt to move the upper and lower belt runs in opposing directions;

a carriage assembly;

means for slidably guiding said carriage assembly along a path arranged substantially parallel to at least one run of said belt;

a pair of jam cleat assemblies pivotally mounted upon said carriage assembly adjacent to and extending generally toward said upper and lower belt runs, respectively, a solenoid assembly operatively associated with each jam cleat assembly;

each of said jam cleat assemblies having a wedge arm portion extending diagonally away from its pivotal mounting and toward its associated belt run;

each jam cleat assembly comprising a first arm extending outwardly from said pivotal mounting and being operable by its associated solenoid assembly for pivoting the jam cleat assembly;

each jam cleat assembly comprising a second arm extending outwardly from said pivotal mounting toward and having a free end for engaging the free end of the second arm of the other jam cleat assembly; and

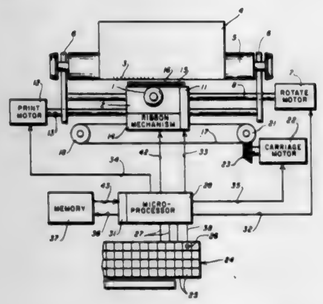
a small, single spring member embracing the free ends of said second arms and urging said second arms together toward a neutral position whereby both wedge arm portions are displaced from engagement with said belt runs when the solenoid assemblies are deenergized.

4,286,889

ERROR CORRECTING TYPEWRITER WITH ELECTRONICALLY CONTROLLED BACKSPACING TO FACILITATE PERFECT OVERSTRIKE OF ERRORS

Hermann Ebert, Nuremberg, and Gunter Bachmann, Zirndorf, both of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,942
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 2831488
Int. Cl.³ B41J *29/16*
U.S. Cl. 400—697.1 **4 Claims**



1. In a typewriter having a carriage and a stepping motor connected to incrementally drive said carriage in escapement direction to print a line of characters and in backspace direction to correct errors,

a backspace correction key, and

control means responsive to operation of said backspace correction key for energizing said stepping motor to move said carriage in backspace direction twice the width of the last character printed and in escapement direction the width of the last character printed thereby to accurately locate said carriage at the last printed character space for correction.

4,286,890

GEL OR WAXY ARTICLES

Heinz H. Dickmann, Bühl; Dieter Hechenberger, Sinsheim-Eschelbach, and Richard Krattner, Bühl-Neusatz, all of Fed. Rep. of Germany, assignors to Lingner & Fischer GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 716,875, Aug. 23, 1976, abandoned.
This application Dec. 1, 1978, Ser. No. 965,693
Claims priority, application United Kingdom, Aug. 15, 1975, 33997/75
Int. Cl.³ B43K *27/02*
U.S. Cl. 401—19 **4 Claims**

1. A shaped solid article for the application to a work surface of a reactive mixture of a curable epoxy resin and curing agent therefor, said article having a configuration about a central axis adapted for hand application and consisting of two discrete contiguous zones, the interface of said zones being aligned coaxially with said central axis, a first of said zones consisting of a solid gel or waxy mass with said curable epoxy resin dispersed therein and the second of said zones consisting of a solid gel or waxy mass with said curing agent dispersed

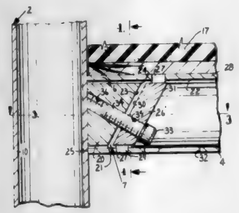
therein, said epoxy resin and said curing agent being held in non-reactive relationship by said gels or waxy masses until mixed upon simultaneous or consecutive frictional transfer of both of said gels or waxy masses from said article to a common area of a work surface.

4,286,891

CONNECTOR FOR AN ELONGATE MEMBER IN FRAME STRUCTURES

James L. Gerner, Shawnee Mission, Kans., and Arde Rameshothom, Kansas City, Mo., assignors to Fixtures Manufacturing Company, Kansas City, Mo.

Filed May 1, 1979, Ser. No. 35,067
Int. Cl.³ F16B *7/18*
U.S. Cl. 403—7 **8 Claims**



1. A structural member comprising in combination first and second elongate members joined by a connector; said combination wherein:

(a) said first member has a lug fixedly attached thereto and extending outwardly therefrom;

(b) said second member has an end portion for connection to said first member, said end portion including an annular axial bore;

(c) a plate member fixedly attached to said bore and having a first and second face; said first face being at an angle with respect to the axis of said bore;

(d) said lug having planar sides and being of a shape and size to fit in said bore; said lug having a plurality of opposed edges for linear engagement with said bore; said lug including an end face substantially parallel to and in opposing relationship with said plate member first face;

(e) elongate fastener means substantially normal to said plate second face; said fastener means extending through said plate member into said lug member for securely positioning said plate member in relationship to said lug member such that said first member is located and maintained in a predetermined position relative to said second member; and wherein

(f) said second member includes an aperture near said plate member so as to provide access in applying and removing said fastener means.

4,286,892

MOUNTING ASSEMBLY FOR AN AGRICULTURAL IMPLEMENT

Thomas W. Wedman, Harper, Kans., assignor to Green Line, Inc., Harper, Kans.

Filed Apr. 9, 1979, Ser. No. 28,454
Int. Cl.³ F16B *2/02*
U.S. Cl. 403—262 **20 Claims**

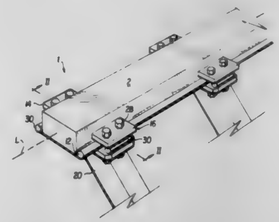
1. A connecting assembly comprising:

a frame member having a first flat surface portion and adjacent opposing side portions;

at least one pair of flange members extending from said opposing side portions adjacent said flat surface;

at least one pair of L-shaped clamp members engaging said at least one pair of flange members, each having apertures formed therein and each having a base and a leg portion extending from said base;

a support member having at least one flat surface portion engaging said first flat surface portion of said frame member and said leg portions of said at least one pair of L-shaped clamp members and including first and second apertures formed therein and disposed opposite said apertures in said at least one pair of L-shaped clamp members; and



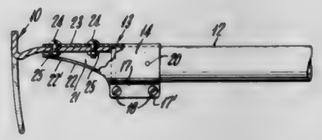
securing means mounted within said apertures of said at least one pair of L-shaped clamp members and said support member and disposed between said at least one pair of flange members and said leg portions of said at least one pair of L-shaped clamp members, respectively, for connecting said support member and said frame member.

4,286,893

HANDLE ATTACHING MEANS FOR RAKES AND THE LIKE

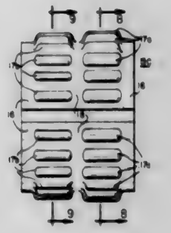
Francis Pomares, 124 Russell St., White Plains, N.Y. 10606

Filed May 12, 1980, Ser. No. 148,767
Int. Cl.³ B25G *3/00*
U.S. Cl. 403—301 **1 Claim**



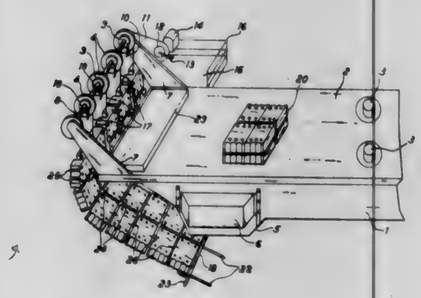
1. Means for attaching an elongated handle to an implement such as a rake or hoe having a narrow elongated metal member extending therefrom, said attaching means comprising a longitudinally slotted cylindrical portion having inwardly extending protrusions for receiving an end of said elongated handle, the edges of said member adjoining said slot having cooperating outwardly extending substantially parallel flanges, means engaging said flanges to move them one toward the other to clamp said cylindrical member tightly about said handle, said attaching means further including a forwardly extending generally arcuate portion having a radius corresponding to the radius of said cylindrical portion and an arcuate width approximately equal to the circumferential length of said cylindrical portion and integrally formed with said cylindrical portion, said forwardly extending portion gradually decreasing in arcuate width forming a tapered portion and terminating in a substantially U-shaped portion having an internal width approximately equal to the width of said narrow elongated member, said U-shaped portion having a flattened portion joining the legs of said U-shaped portion and extending rearwardly to a point spaced from said cylindrical portion, reinforcing beads formed on the legs of said U-shaped portion and extending one toward the other, said flattened portion and said narrow elongated member having cooperating openings, and fastening means engaging said openings to secure the narrow elongated member to said forwardly extending portion of said attaching means.

4,286,894
TOLERANCE RINGS
Raymond A. Rongley, Newtown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.
Filed Mar. 21, 1979, Ser. No. 22,448
Int. Cl.³ F16D *1/06*
U.S. Cl. 403—372 6 Claims



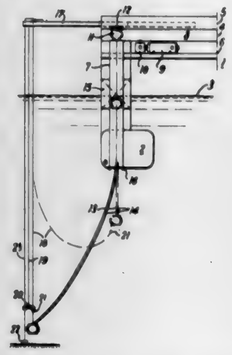
1. A tolerance ring for positioning between two radially spaced annular surfaces comprising
a metallic strip of resilient sheet metal of split ring shape having cylindrical side rims and a plurality of individual resilient corrugations extending from said strip and uniformly spaced around the periphery of the strip,
said corrugations being positioned intermediate said rims and spaced from each other,
the corrugations being of a plurality of heights of different dimensions whereby successively different radial spring actions are exerted upon force application on the corrugations in any individual direction, the corrugations of any specific height providing identical multiple spring actions when positioned between said radially spaced annular surfaces.

4,286,895
UNDERWATER PAVING MACHINE AND CONCRETE BLOCKS THEREFOR
Giovanni Poli, and Vincenzo Poli, both of Via Sacca 1, Colorno (Parma), Italy
Filed Jun. 26, 1979, Ser. No. 52,227
Claims priority, application Italy, Jun. 29, 1978, 42514 A/78
Int. Cl.³ E02B *3/12*
U.S. Cl. 405—17 9 Claims



1. An apparatus for forming and laying an endless, flexible underwater mat consisting of wire and preformed slotted blocks comprising:
a mat laying barge,
a pair of upwardly and outwardly extending arms at the edge of the laying barge,
a rotating shaft supported by the arms,
a plurality of keyed spools mounted along the shaft, whereby, after endless wire is suspended from each of the spools, slotted preformed blocks are placed around the wire and fastened to the wire and adjacent blocks by clipping means thereby forming a mat,
and means for lowering the endless mat in place as at least one row of blocks is clipped into place.

4,286,896
DIVING STRUCTURE AND METHOD OF DEPLOYMENT OF THE STRUCTURE
Daniel T. Mellitz, London; Kenneth L. Searle, Havant, and Brian E. Woodman, Wickham Bishops, all of England, assignors to The British Petroleum Company Limited, London, England
Filed Nov. 21, 1979, Ser. No. 96,400
Claims priority, application United Kingdom, Sep. 15, 1979, 32050/79
Int. Cl.³ B63C *7/02, 11/00, 11/44*
U.S. Cl. 405—185 10 Claims

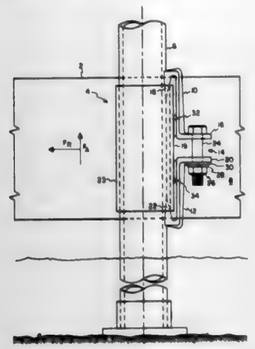


1. A diving bell deployment structure comprising a launch tube capable of launching a diving bell, the bell having a bell hoist wire and means for lowering and raising the bell via said bell hoist wire characterised in that a boom is adapted to be positioned from the structure to a point vertically above the desired underwater deployment position, the boom carrying a boom hoist wire which is capable of connecting to the bell through the base of the launch tube so that differential pay out of the boom hoist wire and bell hoist wire allows exit of the bell from the launch tube and lateral deployment of the bell between the boom and launch tube.

4,286,897
DOCK CLAMP APPARATUS
Philip A. Suskind, 416 Salt Springs Rd., Syracuse, N.Y. 13224
Filed Jan. 7, 1980, Ser. No. 110,127
Int. Cl.³ F16B *2/04*
U.S. Cl. 405—221 10 Claims

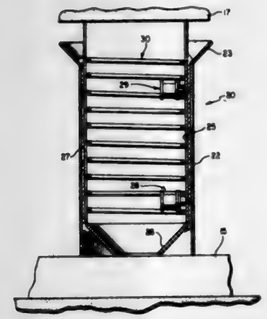
6. A dock clamp assembly for supporting a dock section at an adjusted height, comprising:
(a) at least one pair of sleeve members attached to either side of said dock section for receiving corresponding post members that are slidable in the axial direction within said sleeve members, the outer wall of said post members being in close proximity with the inner wall of said sleeve members when said members are centered on one another,
(b) prong means for insertion at opposing ends and at one side of one of said sleeve members between the inner wall of said sleeve member and the outer wall of a corresponding post member, said prong means being constructed so as to apply a radial force to said inner and outer walls in a direction that drives said walls together at the side opposite to said one side in response to an applied axial force, and

(c) further means for applying an axial force to said prong means, whereby the application of sufficient axial force



provides a fixed frictional coupling between corresponding post and sleeve members.

4,286,898
RELEASABLE CONNECTION
Donald C. Stafford, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Aug. 16, 1979, Ser. No. 66,934
Int. Cl.³ E02B *17/00*; F16L *53/00*
U.S. Cl. 405—224 12 Claims



1. A releasable connection comprising:
a first member removably inserted in a second member with space between adjacent opposing surfaces of the members,
means adapted to retractably extend from the first member to the second member to temporarily hold the first member inside the second member in spaced-apart arrangement,
a solid mass of a material, in the space between the members, which firmly joins the members together,
said solid material having substantial compressive, tensile and shear strength, and being convertible by heat at a sufficiently high temperature to a physical state in which it has much lower compressive, tensile and shear strength, and
means associated with at least one of the members for supplying heat to the material.

4,286,899
PROCESS FOR POSITIONING STRENGTHENING RODS IN MINE LEVELS AND PUBLIC WORKS
Alain Benichou, Pontallier sur Saone, and Raymond J. Perraud, Villeurbanne, both of France, assignors to S.A.E.I. Celite, Cote d'Or and Societe d'Etude et de Construction de Machines pour Toutes Industries SECOMA, Rhone, both of, France
Continuation of Ser. No. 960,647, Nov. 14, 1978, abandoned.
This application Sep. 25, 1980, Ser. No. 190,652
Claims priority, application France, Nov. 14, 1977, 77 34086; Mar. 17, 1978, 78 07763
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—260 13 Claims

1. A process for positioning a strengthening rod in mine levels and public works and the like, which process comprises
storing a previously mixed thermosetting resinous composition which includes a resin, an inhibitor, a catalyst and an abrasive filler in an amount sufficient to cause generation of substantial heat upon rotation of a metal rod at about 800 rpm in contact therewith, said composition not being hardenable at room temperature;
introducing into a long bore made in a wall or other surface to be strengthened, said previously mixed thermosetting resinous composition not hardenable at room temperature, and an unpreheated metal rod of substantially the same length as said bore; and
rotating said rod at a rotation speed of at least 800 rpm and sufficiently great to cause it and said composition to heat up by friction between the rotating rod and the composition, particularly said abrasive filler, to the hardening temperature of said composition so as to initiate hardening of said thermosetting resinous composition and cause said rod to be sealed in said bore by the hardening of said thermosetting resinous composition as a result of heat generated substantially solely by rotation of said unpreheated rod.

4,286,900
INJECTION DEVICE OF CHEMICAL FLUIDS FOR IMPROVEMENTS OF THE GROUND
Akira Sugimoto, Funabashi, and Hiroshi Sugimoto, Chiba, both of Japan, assignors to Tokyo Chika Koji Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 24, 1979, Ser. No. 87,953
Int. Cl.³ C09K *17/00*; E02D *3/12*
U.S. Cl. 405—269 3 Claims



1. An injection device for injecting a mixture of two fluids,

fluid-A and fluid-B, into the ground for hardening the ground, said injection device comprising:

a hollow outer pipe for injecting the fluid-A therethrough, said hollow outer pipe having an inwardly stepped portion on the inside wall for defining an upper greater diameter space and a lower lesser diameter space within the hollow interior thereof said hollow outer pipe having means for sealing closed the lower end thereof and said hollow outer pipe further having an annularly extending recessed portion on the outer surface thereof;

a hollow inner pipe coaxially positioned within said hollow outer pipe within said upper greater diameter space, said hollow inner pipe sealingly connected at the lower end thereof to the inside wall of said hollow outer pipe at said inwardly stepped portion wherein the hollow interior of said hollow inner pipe communicates with said lower lesser diameter space for injecting fluid-B through said hollow inner pipe into said lower lesser diameter space; and ,

resilient seal means located in said angularly extending recessed portion, said hollow outer pipe having first port means for connecting said upper greater diameter space with the exterior at said annularly extending recessed portion for allowing fluid-A to flow therethrough and second port means for connecting said lower lesser diameter space with the exterior at said annularly extending recessed portion for allowing fluid-B to flow therethrough, said resilient seal means for sealing said first and second port means closed when fluid-A and fluid-B are not being injected through said injection device and for defining a mixing chamber for mixing fluid-A and fluid-B and allowing the mixture to flow into the ground by expanding radially away from said annularly extending recessed portion.

4,286,901

CLAMPING DEVICE FOR CLAMPING A TURNABLE CUTTER BLADE ON A TOOL HOLDER

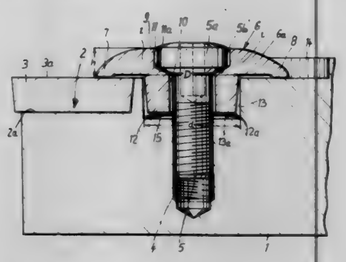
Otto Eckle, Loechgau, Fed. Rep. of Germany, assignor to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,176

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 7831988[U]

Int. Cl.³ B23P *15/30*

U.S. Cl. 407—109 **14 Claims**



1. In a clamping device for clamping a turnable cutter blade on a tool holder with a clamping jaw which has the construction of a two-arm lever, of which a front lever arm is supported on an upper side of said turnable cutter blade and presses same against a support surface on said tool holder and of which a rear lever arm is supported in a centering recess in said tool holder, said clamping jaw having a center part with means defining a hole extending therethrough, and a locking screw extending through said hole in said center part of said clamping jaw, said center part being located between said front and rear lever arms and is screwed into an internally threaded opening in said tool holder, the improvement comprising wherein said clamping jaw has on said center part a projection which is arranged coaxially with respect to the internally threaded opening, said projection having an opening therethrough for said locking screw, wherein a recess which is arranged coaxially with respect to said internally threaded opening is provided in said tool holder, into which recess is received said projection of said clamping jaw, wherein the exterior surface of said projection whose cross section at any point along its length is a circle, and wherein said front and rear lever arms are equally long and said clamping jaw is constructed as a rotationally symmetrical swivel part having two lateral flattened edge portions which extend parallel to the longitudinal axis of said front and rear lever arms and parallel to one another, and which flattened edge portions extend approximately tangentially with respect to said exterior surface of said projection.

4,286,902

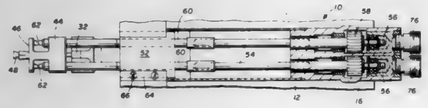
SELF-COLLETING DRILL

Robert L. Gagliano, Glendale, and Herman G. Feuerstein, Hacienda Hts., both of Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 9, 1980, Ser. No. 110,579

Int. Cl.³ B23B *45/14*

U.S. Cl. 408—79 **5 Claims**



1. An improved self-colleting drill including a hollow body, an air motor journaled in the body, a piston reciprocable in the body, a pair of rotatable drive shafts driven by the air motor, valve means in said body arranged to actuate said motor and piston, a foot member mounted on the body for engaging and holding a work piece, the foot member being operably connected to the piston, and a collet carried by the foot member and actuatable by the piston to hold the work piece against the foot member, said improvement comprising:

said drive shafts are flexible

a recess in the exterior of the body adjacent to one end of the drive shafts;

a guide member located in said recess on the body having a pair of spaced holes extending therethrough generally parallel to the direction of movement of the piston;

a drill drive bushing rotatable in each said hole, having one end connected to said drive shafts and arranged on the other end to receive a drill bit; and,

releasable means for removably locating said guide member on the body whereby said guide member can be quickly and easily exchanged to provide preselected spacings between said holes.

4,286,903

TOOL ASSEMBLY FOR REPAIRING AND IN PARTICULAR GRINDING A TAP SEAT

Jean-Pierre Eckendorff, 29 Rue Aristide Briand, 27007 Evreux, France

Filed Nov. 20, 1979, Ser. No. 96,070

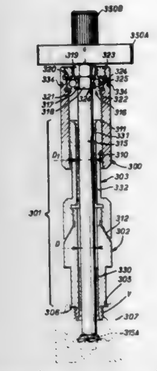
Claims priority, application France, Nov. 21, 1978, 78 32802; Oct. 22, 1979, 79 26120

Int. Cl.³ B23B *41/00*

U.S. Cl. 408—83.5 **17 Claims**

1. A tool assembly for repairing and in particular grinding a tap seat, comprising a cutting tool carrier shaft, a guide carrying said shaft and an adapter carrying said guide, the adapter having an end portion forming a replica of the tap head normally associated with the tap body, with a screwthread which is complementary to that of said tap body, said end portion

having mounted thereon a casing member comprising a screwthread for fixing and forwardly moving the guide, comprising a skirt portion with, at a terminal part, a thrust bearing for the tool carrier shaft, and having in its interior a screwthread capable of co-operating with said fixing and forward feed screwthread, the tool carrier shaft extending beyond the bearing to the operating means provided at its free end, characterised in that the thrust bearing comprises a double-acting ball-



bearing thrust means whose outer race is fixed with respect to the guide while the inner race is fixed with respect to the tool carrier shaft which is arranged for that purpose, thereby to provide for axial fixing without play of the tool carrier shaft with respect to the guide, and further characterised in that at the same time the radial guiding action in respect of the tool carrier shaft is provided by means of at least one anti-friction ring which is broached after being force-fitted into one or other of the end portion-casing member components.

4,286,904

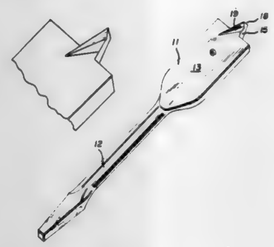
WOOD BIT

L. Steven Porter, Shrewsbury, and Raymond A. Stockley, Dudley, both of Mass., assignors to Parker Manufacturing Company, Worcester, Mass.

Filed Jul. 16, 1979, Ser. No. 57,662

Int. Cl.³ B23B *51/00*; B27G *15/00*

U.S. Cl. 408—225 **5 Claims**



1. A spade-type bit comprising:

(a) a body defined by two parallel broad surfaces and two narrow side surfaces extending between said two broad surfaces,

(b) a spindle extending from a rearward end of said body,

(c) a point extending from a forward end of said body, said point being defined by said two broad surfaces and by two second side surfaces, said second side surfaces converging forwardly and intersecting to form a forward edge, and

(d) a groove formed in one of said broad surfaces along said point and extending generally parallel to one of said second side surfaces and intersecting the other one of said second side surfaces, an edge of said one second side surface adjacent said groove being maintained, said groove forming a positive rake angle, said groove gradually increasing substantially uniformly in depth and width toward said other one of said side second surfaces.

4,286,905

METHOD OF MACHINING STEEL, MALLEABLE OR NODULAR CAST IRON

Shyam K. Samanta, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1980, Ser. No. 145,164

Int. Cl.³ B23C *1/00*; C04B *35/10, 35/58*

U.S. Cl. 409—132 **4 Claims**

1. A method of removing stock from a metal part comprised of steel, malleable cast iron or nodular cast iron, comprising:

(a) establishing a relative motion between said part and a cutting tool formed of a substantially fully dense hot pressed ceramic material consisting essentially of a generally uniform mixture of 50–70% by weight Al_2O_3 and the remainder substantially Si_3N_4;

(b) advancing said tool into the surface of said part at a predetermined depth of cut and feed rate which results in the removal of stock from the part during periods of said relative movement.

4,286,906

ADJUSTABLE BALANCE, EXTENSION BOAT TRAILER

Merrill L. Robertson, 3244 McGraw St., San Diego, Calif. 92117

Continuation-in-part of Ser. No. 862,743, Dec. 21, 1977, abandoned. This application Aug. 27, 1979, Ser. No. 69,727

Int. Cl.³ B60P *3/10*

U.S. Cl. 414—477 **11 Claims**



1. An adjustable balance, extension boat trailer, comprising:

an elongated chassis having a rear frame portion with supporting wheels thereon, and boom extending longitudinally forwardly from the frame with hitch means thereon for attachment to a towing vehicle;

primary support rollers mounted on opposite sides of said frame in substantially vertical alignment, along the longitudinal axis of said chassis, with the center of support of said wheels;

an elongated carriage mounted on said chassis with longitudinal side rails spaced to ride on said primary support rollers;

unloading and loading means on said chassis for respectively extending said carriage rearwardly from and retracting the carriage forwardly on to the chassis;

the forward ends of said side rails having upwardly inclined ramp portions for riding on said primary support rollers and lowering the carriage close to the ground in the rearwardly extended position of the carriage;

said carriage having a rear end portion with a ground engaging rear roller rotatably mounted thereon;

said carriage having a forward portion with a front roller rotatably mounted thereon;

said boom having longitudinal guide means for receiving said front roller;

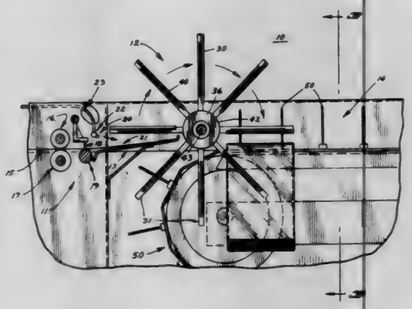
and said carriage having means for supporting and securing a boat thereon.

4,286,907

GRID EXTENSIONS ON A ROTARY STACKER

Philip J. Houle, Smithfield, R.I., and Robert G. Oliver, South Dartmouth, Mass., assignors to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Sep. 17, 1979, Ser. No. 76,384
Int. Cl.³ B65G *57/08*; B65H *29/40*
U.S. Cl. 414—72 **6 Claims**



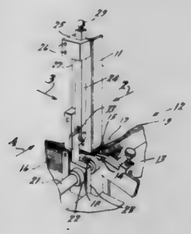
6. Means for reducing turbulence, in a stacking machine for plastic film workpieces in which the pieces are transported sequentially by radial arms rotated jointly about an axis and releasably secured to the ends of said pieces, said means comprising extension means secured to at least one of said arms and extending therefrom in the direction of said axis away from the other arm.

4,286,908

DEVICE FOR FACILITATING SEPARATION OF SHEET GROUPS

Ernst Pfäffle, Neuffen, Fed. Rep. of Germany, assignor to Hans Sickinger Company, Pontiac, Mich.

Filed Dec. 11, 1978, Ser. No. 968,272
Int. Cl.³ B65G *59/06*
U.S. Cl. 414—115 **1 Claim**



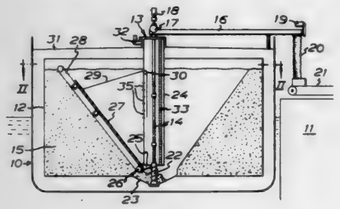
1. A device comprising, in combination, guide means for retaining a stack of sheets, a rotating slotted disk supporting said sheets, a finger and depressor at one corner of said sheets for periodically separating a sheet group at the bottom of the stack for entry into a disk slot, means for maintaining constant downward pressure on said corner of the stack comprising a vertically slidable weight mounted at said corner, a pressure bar movably mounted at the lower end of said weight and engageable with the top of said stack, and means for lifting said weight upwardly, said pressure bar being so shaped as to retract into non-interfering relation with sheets above it when said weight is lifted and move into stack-engaging position after said pressure bar has been lifted above the top of the stack, said pressure bar having a flat lower edge and an inclined inner edge facing said stack, whereby said bar will be cammed into non-interfering relation with the stack when the weight is lifted, said bar being counterweighted, and stop means on said bar and weight whereby the bar will be moved into stack-engaging position after being lifted above the top of the stack.

4,286,909

APPARATUS FOR UNLOADING BULK MATERIAL FROM A STORAGE SPACE

Karl A. L. Tingskog, Helsingborg, Sweden, assignor to AB Siwertell, Bjuv, Sweden

Filed Apr. 11, 1979, Ser. No. 29,090
Claims priority, application Sweden, Apr. 12, 1978, 7804113
Int. Cl.³ B65G *65/38*
U.S. Cl. 414—144 **9 Claims**



1. An apparatus for unloading bulk material from a storage space such as a cargo hold or a silo, the apparatus comprising a vertical conveyor whose inlet end is located proximal the bottom of the storage space, and a scraper device which is operable to scrape the bulk material in a direction towards the inlet end of the vertical conveyor and which is swingable about the vertical axis of the conveyor, said scraper device having one end pivotally journaled proximal the inlet end of the vertical conveyor for movement between a raised position in which the scraper device extends upwardly substantially along the vertical conveyor, and a lowered position in which the scraper device extends along the floor of the storage space, said scraper device being telescopically extensible, a protective tube disposed about the vertical conveyor, said scraper device being pivotally journaled on said protective tube for movement between its raised position and its lowered position, said tube being rotatable about the vertical conveyor for swinging the scraper device around same.

4,286,910

PERISTALTIC VALVE FOR TRANSFERRING MATERIAL BETWEEN ZONES

Lucas J. Conrad, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

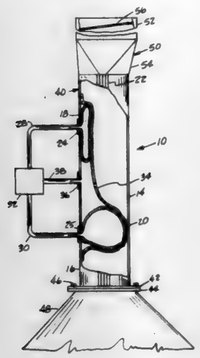
Filed Feb. 28, 1980, Ser. No. 125,730
Int. Cl.³ F16K *7/10*
U.S. Cl. 414—221 **10 Claims**

4. A valve for transferring material between first and second zones having first and second fluid atmospheres, respectively, comprising:

(a) a housing;

(b) first and second sealing means secured in a spaced relationship in said housing for co-acting with the housing to seal the valve and prevent the passage of fluids between said first and second zones; and

(c) envelope means circumscribing said first and second sealing means for forcing the fluid from said space between said sealing members, said envelope means and said first and second sealing means functioning at selected times during the operation of the valve.

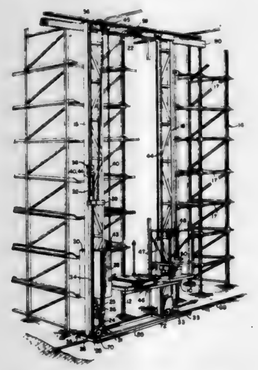


4,286,911

SEMI-AUTOMATED WAREHOUSING SYSTEM

John W. Benjamin, Lancaster, Pa., assignor to Litton Systems, Inc., Florence, Ky.

Division of Ser. No. 882,070, Feb. 28, 1978, Pat. No. 4,252,212.
This application Jun. 6, 1979, Ser. No. 45,956
Int. Cl.³ B65G *65/00, 1/00*
U.S. Cl. 414—273 **13 Claims**



1. A stacker crane with a transfer vehicle disposed thereon for a deep-storage warehousing system comprising in combination,

(I) A stacker crane including

(a) spaced masts,

(b) a headpiece and a base joining said masts together at the top and bottom thereof,

(c) wheels joined to said headpiece and to said base and adapted to ride along tracks located proximate thereto,

(d) an elevator spanning the space between said masts,

(e) a hydraulic cylinder and a piston extensible therefrom,

(f) a movable sheave nest secured to the free end of said piston,

(g) chain means fixed at one end to said masts and fixed at the other end to said elevator with the intermediate length passing about said movable sheave,

(h) guide rails secured to the upper surface of said elevator, and

(i) a hydraulic system for driving said piston relative to said cylinder to shift said movable sheave relative to said chain means and thereby alter the position of said elevator, and

(II) A transfer vehicle including

(a) a box-like body,

(b) a cover plate,

(c) a plurality of wheels secured to the sides of said vehicle so that said vehicle can rest on the guide rails on said elevator,

(d) hydraulic means disposed within the interior of said body for raising and lowering the cover plate, and

(e) motor means and a battery pack for powering said motor means disposed within the interior of said transfer vehicle for driving said wheels so that said vehicle can travel along said guide rails on said elevator;

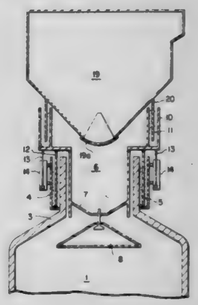
wherein stop members are secured to the opposite edges of the elevator perpendicular to the guide rails, and stop bars are secured to the underside of the transfer vehicle, said bars engaging said members to prevent continued movement of the transfer vehicle relative to the elevator when the transfer vehicle exits the guide rails at an angle to the horizontal.

4,286,912

PROCESS AND APPARATUS FOR CHARGING AND SEALING A CHARGING PORT OF A CHAMBER

Manfred Galow, and Wilhelm Busbach, both of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 24,041
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 2815739
Int. Cl.³ C10B *31/02*
U.S. Cl. 414—287 **24 Claims**



1. An arrangement for closing a charging port of a chamber, particularly of a cooling chamber for dry coke cooling, said arrangement comprising:

a drivable member adapted to be movably mounted adjacent a chamber charging port to be closed;

an outer cover movable between a closed position in sealing engagement with said drivable member and sealingly closing the top thereof and an open position away from said drivable member;

an inner cover supported by said drivable member and movable thereby between a sealing position whereat said inner cover is adapted to seal against a surface of the chamber charging port which faces generally away from said outer cover and an open position spaced from such surface; and

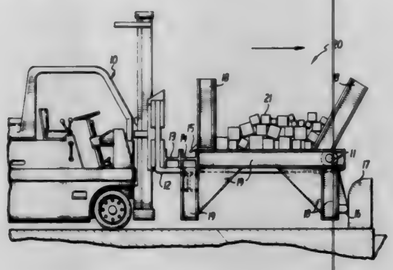
a material supply container movable into position in sealing contact with said drivable member and sealingly closing the top thereof when said outer cover is in said open position away from said drivable member.

4,286,913

DUMPABLE CROP BAR CONTAINER

Joseph R. Rowe, Carrollton, and Eugene T. Sanders, Newnan, both of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Nov. 13, 1979, Ser. No. 93,341
Int. Cl.³ B66F 9/19
U.S. Cl. 414—422 **8 Claims**



1. An apparatus for receiving, transporting and dumping pieces of bar with the assistance of a cooperating forklift truck, having extending fork arms, and adapted to contact a stationary curb which comprises:

rigid receptacle and front stanchion means for holding crop bar pivotally connected to;

yoke and rear stanchion means for pivotally holding said receptacle and front stanchion means; and

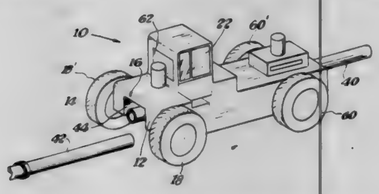
pivot means connecting the front of said receptacle and front stanchion means to the front of said yoke and rear stanchion means whereby bar may be dumped from said apparatus by contacting said receptacle and front stanchion means with said stationary curb forcing said receptacle and front stanchion means to rotate about said pivot means from a receiving position through an arcuate path to a terminal dumping position thereby causing bar to fall from said apparatus.

4,286,914

MEANS AND METHOD FOR CONNECTING LARGE PIPE

Douglas M. Davidson, Jr., 5320 NW. 16 St., Lauderhill, Fla. 33313

Continuation of Ser. No. 861,404, Dec. 16, 1977, abandoned. This application Sep. 20, 1979, Ser. No. 77,311
Int. Cl.³ B66F 11/00
U.S. Cl. 414—460 **7 Claims**



3. A fast method for laying, connecting, disconnecting and removing conduit comprised of the steps of:

arranging a pair of vertically movable conduit holding means to hold a conduit longitudinally below the supporting structure of a motorized vehicle in order to pick up the conduit,

independently moving each said holding means vertically to releasably grasp the conduit and raise each end of said conduit in a vertical plane while said conduit is grasped by said holding means to fix the relative position between said conduit and said vehicle when connecting the conduit to a previously placed conduit, said holding means is moved toward and away from said vehicle, and

moving and steering the motorized vehicle in a colinear direction toward a previously placed conduit, while independently grasping and adjusting the height of the conduit in said holding means to align the center line of the conduit in respect to the center line of the previously placed conduit,

forcibly connecting the grasped conduit into said previously positioned conduit by kinetic energy of the moving vehicle,

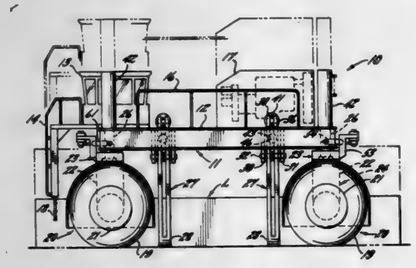
releasing said conduit from said holding means.

4,286,915

STRADDLE CARRIER

William L. LaBerdia, Peoria, Ill., assignor to Kress Corporation, Brimfield, Ill.

Filed Oct. 1, 1979, Ser. No. 80,283
Int. Cl.³ B60P 1/02
U.S. Cl. 414—460 **7 Claims**



1. A straddle carrier for heavy loads comprising:

a plurality of spaced-apart, ground-engaging wheels, the relative positions of the wheels generally defining a load-encompassing area;

a main frame supported by the wheels for vertical movement relative to the wheels;

means for raising and lowering the main frame and the gripping means relative to the wheels;

gripping means mounted on the main frame for gripping a load in the load-encompassing area, the gripping means comprising at least one pair of opposed gripping members each pivotally mounted to the main frame, each of the gripping members having an upwardly extending portion beyond the point of pivotal connection to the main frame and a downwardly extending portion beneath the point of pivotal connection, the gripping means further comprising a selectively extensible hydraulic cylinder and associated rod connected between the upper portions of the pair of opposing members; and

stabilizing means connected between one of the gripping members and the main frame to prevent the pivoting of said one member relative to the main frame and thereby prevent relative movement between the members, a gripped load and the main frame while the carrier is in motion.

4,286,916

POWER OPERATED MECHANISMS FOR ACTUATING SWINGING ARMS

Gerald P. Evans, Dunderhole Farm, Bishopswood, Ross-on-Wye, Herefordshire, England

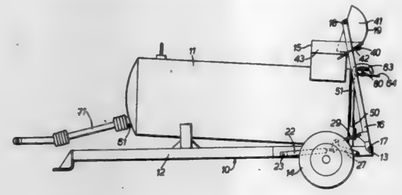
Filed Jul. 17, 1979, Ser. No. 58,200
Int. Cl.³ B60P 1/00; B65F 1/00
U.S. Cl. 414—546 **12 Claims**

1. Apparatus for spreading slurry or liquid manure comprising:

a chassis having wheels that extend below the chassis;

a tank for the slurry or manure defining an upwardly facing slurry or manure input and having means for discharging the slurry or manure;

means for mounting the tank on the chassis; and means for loading the slurry or manure from a sunken pool into the tank, the loading means comprising a main swinging arm having a pivot at one end and a bucket at its outer end, and a power operated mechanism for causing pivotal movements of said swinging arm, the mechanism comprising a reciprocating fluid-actuated ram having one element connected to an anchorage, a pivotal linkage connecting the other element of the ram to a point on the swinging arm displaced from said pivot, and means for guiding a part of said pivot linkage to move in a path remote from the main swinging arm, the arrangement being such that the mechanism can move the swinging arm from a first position in which the outer end of the swinging arm is below the lowermost point of the wheels and a second position in which the bucket discharges its contents into the tank through the input.

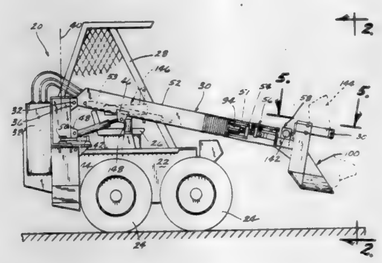


4,286,917

BOOM MOUNTED CARRIER FOR HANDLING BEEF QUARTERS AND THE LIKE

Thomas C. Mehesan, Jr., Hospers, Iowa, assignor to Banner Industries, Inc., Hospers, Iowa

Filed Aug. 20, 1979, Ser. No. 68,202
Int. Cl.³ B66C 1/22, 1/42
U.S. Cl. 414—704 **8 Claims**



1. A carrier apparatus adapted to be mounted on an elongated boom arm for handling beef quarters and like loads, comprising,

an upstanding rear wall structure having forward and rearward surfaces, upper and lower ends and opposite sides,

support means on the rearward side of said wall structure for securing said wall structure to a boom arm,

a load support platform operatively connected to said rear wall structure adjacent the lower end thereof and extended forwardly therefrom,

a side member operatively connected to and extended forwardly from one side of said rear wall structure, and

gate means operatively supported on said rear wall structure for movement between a loading position wherein said gate means is displaced from the forward surface of said wall structure so that a load may be received on said platform in leaning engagement against said rear wall, and a carrying position wherein said gate means is extended forwardly of and laterally across the forward surface of said wall structure for at least partially enclosing a load between said side member, wall structure and gate means,

said rear wall structure being generally arcuate in top cross-section, the forward surface thereof being concave,

said gate means substantially conforming to the rearward surface of said wall structure, and

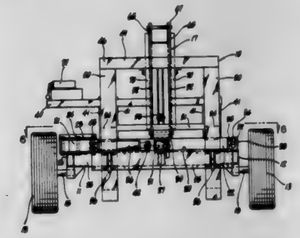
said gate means being circumferentially moved relative to said wall structure between the loading and carrying positions therefor whereby in the loading position, said gate means is positioned substantially rearwardly of said wall structure.

4,286,918

IMPLEMENT TRANSPORTER

Jefferson C. Shannon, P.O. Box 808, Yazoo City, Miss. 39194

Filed Jun. 26, 1979, Ser. No. 52,145
Int. Cl.³ B60P 3/00
U.S. Cl. 414—742 **12 Claims**



1. An implement transporter including a trailer, comprising:

(a) two rear wheels on axes of rotation for carrying the trailer,

(b) a lifting mechanism for lifting an implement carried by the trailer,

(c) an arm carrying the lifting mechanism, the arm having first and second ends, and

(d) pivot means pivotably connecting the first end of the arm to the trailer at one side at the rear of the trailer, the lifting mechanism holding the implement with its center of gravity spaced transversely of the trailer from the pivot means in a direction toward the second arm end when the arm is in a lifting position, the arm being pivotable from the lifting position in which the lifting mechanism holds the implement substantially transverse to the rear of the trailer and to a transport position in which the lifting mechanism holds the implement longitudinally of the trailer with the center of gravity of the implement located forwardly of the pivot means and the axes of said rear wheels.

4,286,919

APPARATUS FOR PUMPING OPERATION OF A HYDRAULIC MACHINE HAVING FRANCIS TYPE RUNNER

Yuzo Yamaguchi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1979, Ser. No. 103,385
Int. Cl.³ F01D 3/00, 11/02
U.S. Cl. 415—112 **5 Claims**

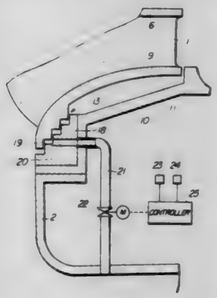
1. An apparatus for pumping operation of a hydraulic machine having a Francis type runner constituted by a crown ring, a shroud ring and a plurality of blades interposed therebetween, characterized by comprising:

a multi-stage seal including a plurality of seal stages defined between the inner peripheral surface of said shroud ring and a stationary part opposing to said inner peripheral surface of said runner;

pressure attenuation chambers disposed between adjacent

seal stages and adapted to attenuate the pressures of water having passed respective seal stages;

a water extracting pipe opening to at least the pressure attenuation chamber second from the final and adapted to release the pressurized water from said attenuation chamber; and



a valve disposed in said water extracting pipe and adapted to be opened and closed to permit and interrupt the water extraction from said attenuation chamber through said water extracting pipe.

4,286,920

PROTECTOR DEVICES FOR DRAINS

Erik O. Vilen, La Grange Park, Ill., assignor to G. S. Blakeslee & Co., Cicero, Ill.

Filed Jun. 25, 1979, Ser. No. 51,619
Int. Cl.³ F01D *25/00*
U.S. Cl. 415—121 G **11 Claims**

4. A protector device for use in a machine embodying a wall having a drain opening therethrough, a pump mounted on the exterior of said wall for pumping liquid from the interior of said machine, said pump having an inlet opening disposed in position to receive fluid from the interior of said machine through said drain opening, said protector device being for the purpose of preventing elongated articles from entering said drain opening from the interior of said machine and comprising

a. an annular member having two axially spaced outer edges,

b. means for supporting said annular member on the interior of said wall in position wherein

(1) said annular member is disposed in substantially axial alignment with said drain opening, and

(2) one of said edges is disposed in outwardly spaced, facing relation to the interior of said wall to define a passageway between said one edge and said wall for the passage of fluid from outwardly of said annular member into said drain opening,

c. said annular member being of greater cross-sectional width, than said drain opening, when said annular member is so disposed on said wall, and

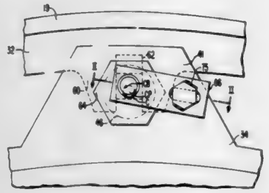
d. a baffle member disposed in said annular member in position to define with said annular member, a passageway through the interior of said annular member, radially outwardly of said drain opening, for the passage of fluid through said annular member from outside the other of said edges for passage between said annular member and said baffle member into said drain opening, when said annular member is so disposed on said wall.

4,286,921

LOCKING STRUCTURE FOR AN ALIGNMENT BUSHING OF A COMBUSTION TURBINE ENGINE

John P. Donlan, Aston, Pa., and Alfred R. Krauss, Oak Valley, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 13, 1979, Ser. No. 103,136
Int. Cl.³ F01D *25/24*
U.S. Cl. 415—136 **5 Claims**



1. In an adjustable mounting arrangement between an axially facing adjacent arcuate seal ring and an inner shroud of a combustion turbine engine to permit concentric alignment of the seal ring with an adjacent rotor, means for locking said adjustable arrangement in a final concentric position, wherein said mounting arrangement includes an axially extending rotatable bushing in said seal ring and a pin, offset from the center of rotation of said bushing, projecting axially through said bushing and having one end slidably received within a radially extending slot in said shroud and wherein said locking means comprises:

means engaging the other end of said projecting pin, said means extending to a position adjacent the face of said seal ring opposite said shroud; and,

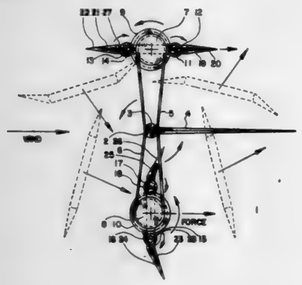
means for securing the engaging means to said sealing face.

4,286,922

VARIABLE CAMBER FLUID POWER MACHINE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 952,471, Oct. 18, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,141
Int. Cl.³ F03D *3/06*
U.S. Cl. 416—17 **5 Claims**



1. A variable camber fluid power machine for converting the kinetic energy of the moving fluid stream to a useful mechanical energy in the form of rotating motion with a torque, said variable camber fluid power machine comprising:

(a) a central shaft having means for indexing the angular position of said central shaft about the axis of said central shaft relative to the fluid stream direction;

(b) a plurality of arms extending axisymmetrically from said central shaft, said plurality of arms being rotatable about said central shaft;

(c) a plurality of oblong blades, each of said plurality of oblong blades rotatably disposed to the extremity of each of said plurality of arms wherein each of said plurality of oblong blades is allowed to revolve about said central shaft and at the same time is rotatable about the center line of each of said plurality of oblong blades, said center line being generally parallel to said central shaft;

(d) a first plurality of mechanical transmission means linking the rotating motion of each of said plurality of oblong blades about the center line of each oblong blade to the revolving motion of said oblong blade about said central shaft relative to said central shaft wherein each of said plurality of oblong blades rotates at an angular velocity equal to one half of the angular velocity of the revolving motion of said oblong blade about said central shaft wherein each of said plurality of oblong blades takes a position generally tangential to the revolving path of said oblong blade at the minimum drag position and takes a position generally perpendicular to said revolving path at the maximum drag position, said maximum drag position being diametrically located to said minimum drag position with respect to said central shaft;

(e) a plurality of pair of flaps, each of said pair of flaps pivotably attached to each edge of each of said plurality of oblong blades, each of said flaps being pivotable about axis parallel to the edge of said oblong blade; and

(f) a second plurality of mechanical transmission means linking the pivoting motion of each pair of said plurality of flaps to the rotating motion of each of said plurality of oblong blades wherein each pair of said flaps generally line up with said oblong blade to which said pair of flaps are attached, at 0 degree, 120 degree and 240 degree revolving positions about said central shaft, said revolving positions measured from said minimum drag position in the direction of the revolving motion of said plurality of oblong blades about said central shaft, and are deflected toward to one another at other revolving positions providing a camber to the blade-flaps assembly creating an additional lift force to generate a torque about said central shaft in the direction of the revolving motion of said blade-flaps assembly about said central shaft wherein the maximum camber is provided at 60 degree, 180 degree and 300 degree revolving positions, said revolving positions measured in said manner.

4,286,923

OVERLOAD PROTECTION DEVICE FOR A PROPELLER DRIVE ENGINE

Harald Gross, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 381
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1978, 2800227
Int. Cl.³ B63H *1/10*
U.S. Cl. 416—43 **10 Claims**

1. A device for controlling the pitch of a propeller that is driven by an engine, wherein the propeller is of the type permitting cycle adjustment of the propeller blades, the device comprising:

a connecting push rod connected to the propeller such that the shifting of the push rod in a first direction changes the pitch of the propeller in a respective first direction of pitch, and shifting of the push rod in the first opposite direction changes the pitch of the propeller in the opposite direction of pitch thereof;

a servomotor including an axially shiftable first piston connected with the push rod for moving the push rod in the first direction and the first opposite direction as the first piston shifts in a second direction and second opposite direction, respectively; the servomotor including first piston shifting means operable for shifting the first piston in its second direction and including second piston shifting means operable for shifting the first piston in its second opposite direction;

a control valve including a control pin and connected with the first and second piston shifting means such that movement of the control pin in a third direction operates the first piston shifting means and movement of the control pin in the third opposite direction operates the second piston shifting means;

an adjustment device connected with the control pin for selectively moving the control pin in the third direction and the third opposite direction thereof; the adjustment device comprising:

means for sensing the load on the engine driving the propeller to rotate and for delivering a signal dependent upon the load on that engine;

a reversing valve connected for receiving the signal from the load sensing and signal delivering means; the reversing valve also being connected with the adjustment device; the reversing valve having a first condition thereof at which the reversing valve is connected to the adjustment device for causing the adjustment device to move the control pin in the third direction and also for transmitting the load dependent signal to the adjustment device for enabling operation of the adjustment device proportional to the load dependent signal; the reversing valve having a second condition thereof at which the reversing valve is connected to the adjustment device for causing the adjustment device to move the control pin in the third opposite direction and also for transmitting the load dependent signal to the adjustment device for enabling operation of the adjustment device proportional to the load dependent signal;

a wedge pathway member connected with the servomotor first piston for moving therewith; the wedge pathway member defining a pathway that is oblique to the pathway traveled by the wedge pathway member as it moves along with the servomotor piston; the reversing valve including an operator thereof which rides along the wedge pathway of the wedge pathway member as the wedge pathway member moves with the servomotor piston with respect to the operator riding thereon; as the operator rides in a fourth direction along the wedge pathway, the operator shifts the reversing valve to the first condition thereof, as the operator rides in the opposite fourth direction along the wedge pathway, the operator shifts the reversing valve to the second condition thereof.

4,286,924

ROTOR BLADE OR STATOR VANE FOR A GAS TURBINE ENGINE

Anthony G. Gale, Wollaton, England, assignor to Rolls-Royce Limited, Loadon, England

Filed Dec. 13, 1978, Ser. No. 968,928
Claims priority, application United Kingdom, Jan. 14, 1978, 01552/78
Int. Cl.³ F01D *5/18*
U.S. Cl. 416—97 R **5 Claims**

1. An aerofoil blade or vane for a gas turbine engine comprising:

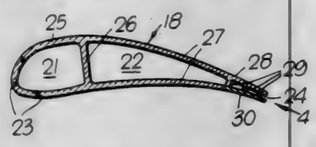
a hollow aerofoil portion fabricated from two separately cast elements and having an interior cooling passage for receiving a supply of cooling fluid, said aerofoil portion having an exit passage of minimum thickness along its

trailing edge communicating with said interior passage for discharge of the cooling fluid therefrom;

one of said separately cast elements including a nose portion, spaced convex and concave side walls extending from said nose portion, and a flank extending from one of said side walls and forming a portion of the trailing edge;

a joint face formed by said flank and by a rear edge of the other of said walls;

said other of said cast elements forming a second flank for



the other of said side walls when attached to said one of said cast elements at said joint face, said second flank being a minor portion of the other of said side walls and forming another portion of said trailing edge and being separated from said first flank to define said exit passage for the cooling fluid along the trailing edge; and

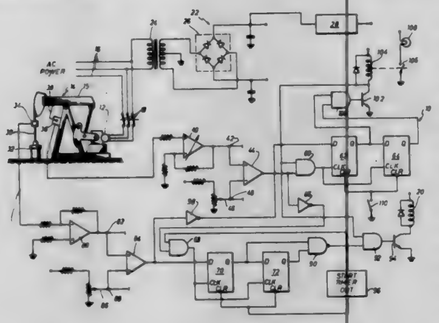
means metallurgically attaching the other of said cast elements to said first cast element to form the aerofoil portion of the blade or vane with said exit passage of the trailing edge being of minimum thickness.

4,286,925

CONTROL CIRCUIT FOR SHUTTING OFF THE ELECTRICAL POWER TO A LIQUID WELL PUMP

Thomas R. Standish, Houston, Tex., assignor to Delta-X Corporation, Houston, Tex.

Filed Oct. 31, 1979, Ser. No. 89,844
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—12 **5 Claims**



4. A control circuit for shutting off the electrical power to the drive motor which reciprocates the polished rod of a liquid well pump comprising,

load measuring means connected to the polished rod measuring the load in the polished rod,

position measuring means for measuring the position of the polished rod in the well,

a first comparator connected to the load measuring means measuring the polished rod load relative to a preset load point,

a second comparator connected to the positioned measuring means measuring the polished rod position relative to a preset position,

switching means controlling the power to the motor and connected to the outputs of said first and second comparators for shutting off the power when the load is greater than the preset load, and the position is equal to the preset position on the downstroke,

said switching means comprises,

an inverter connected to the output of the second comparator,

an AND gate connected to the output of the inverter,

a two-stage D type latch having clock input connected to the output of the AND gate, the D input of the D type latch connected to the output of the first comparator,

a NAND gate connected to the outputs of the D type latch,

a second AND gate connected to the output of the NAND gate,

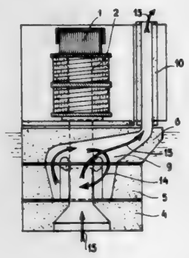
a power switch connected to and controlled by the second AND gate and in turn controlling the power to the motor.

4,286,926

CONDUCTION PUMP FOR LIQUID METAL

Richard Deshais, Paris, and Henri Carbonnel, Antony, both of France, assignors to Novatome, Le Plessis Robinson, France

Filed Oct. 31, 1979, Ser. No. 90,081
Claims priority, application France, Nov. 15, 1978, 78 32279
Int. Cl.³ H02N *4/20*
U.S. Cl. 417—50 **4 Claims**



1. A conduction pump for liquid metal comprising: a part of refractory material immersed in liquid metal defining a circulating pipe for said metal, in which one part is defined by a channel of flat shape where the metal circulates from bottom to top, said circulating pipe forming a vertical coil for liquid metal comprising a member in communication with the liquid metal circulating in said channel; a single magnetic circuit, having an air gap in the interior of which said channel passes and being surrounded at least partially by the coil, at the level of the air gap; at least another coil fed by alternating current creating a magnetic field in a horizontal direction in the air gap and causing circulation in said coil, of an induced current which circulates at the level of said channel in a horizontal direction perpendicular to the magnetic field and a vertical force which is directed toward the top, being produced by the joint action of said field and current, on the metal in said channel.

4,286,927

HYDRAULIC POWER TRANSFER UNIT

Wilfred E. Boehringer, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Lakewood, Calif.

Filed Aug. 14, 1978, Ser. No. 933,558
Int. Cl.³ F04B *1/16, 17/00, 35/00*
U.S. Cl. 417—271 **5 Claims**

1. A reciprocating hydraulic power transfer unit for transferring hydraulic energy between first and second hydraulic systems each having a pressure side and a return side comprising:

a central axis;

a plurality of cylinders spaced about said central axis;

a plurality of first and second pistons connected back to back and mounted for sliding movement within said cylinders;

mechanical piston phase control means operatively connected to said pistons for holding said pistons in a constant relative positional relationship with each other; and

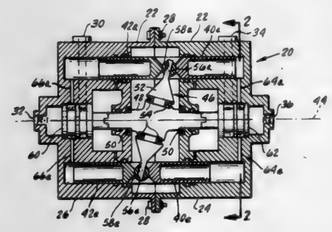
hydraulic valve means coupled to said phase control means and arranged to connect the pressure sides of the first and second systems to act on said back to back pistons in at least one of said cylinders at a time in a cyclic sequence and simultaneously to connect the return sides of the first and second systems to act on said back to back pistons in at least one of said cylinders which are substantially diametrically opposite to said cylinders connected to the pressure side, whereby said unit is capable of operating as a motor and a pump, and fluid from the pressure line of the system with a predetermined greater pressure than the other system is operative to drive successive ones of said pistons in one direction while the connected back to back piston pressurizes the fluid in the pressure side of the other system, while opposite pistons are constrained by said phase control means to return in a reverse direction, said mechanical phase control means including:

a central shaft located on said central axis substantially symmetrically with respect to said pistons;

a connector ring having a plurality of substantially coplanar radial arms;

means for coupling said radial arms with corresponding ones of said pistons; and

bearing means connecting said central shaft to said connector ring in such a way as to maintain the plane of said radial arms at a fixed angle with respect to said central axis but allowing said plane and said connector ring to wobble about said axis, whereby the positions of said pistons are interdependent and movement of one pair of back to back pistons results in corresponding movement



of the others to maintain a constant phase relationship between said pistons, said hydraulic valve means including at least one rotary valve having:

a valve body defining an interior cylindrical surface and an area therewithin;

a pressure port in communication with said cylindrical surface area;

a return port in communication with said cylindrical surface area;

a plurality of flow passageways, each communicating the fluid acted upon by a piston pair to said cylindrical surface area; and

a central valve member connected to said mechanical piston phase control means and mounted for rotation in said cylindrical surface area adapted to cyclically switch said flow passageways to communicate with said pressure and return ports in a preselected order, said central valve member including:

a main pressure chamber in communication with said pressure port;

a main return chamber in communication with said return port; and

a divider portion positioned to communicate generally half of said flow passageways with said main pressure chamber and generally the other flow passageways with said return chamber, said divider portion including:

a pair of vanes positioned to slide over the locations at which said flow passageways terminate at said interior cylindrical surface; and

a pair of orifices defined by said divider portion in which said vanes are mounted, said vanes each including:

a cylindrical main body portion having a vane passageway formed therethrough;

a cylindrical vane portion connected to said cylindrical main body portion at the end thereof which extends toward said interior cylindrical surface and concentric therewith;

a ring shaped surface formed on said cylindrical vane portion whose inner diameter is the same as the diameter of said cylindrical main body portion, said ring shaped surface having a surface contour which matches the contour of said interior cylindrical surface; and

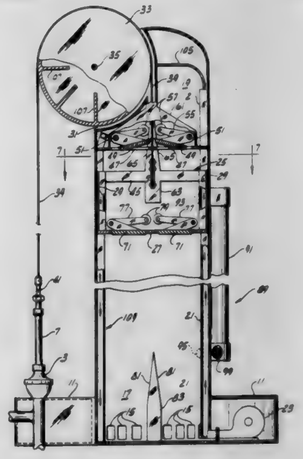
means to apply the pressure in the pressure line beneath said ring shaped surface so that the area thereof determines the force with which said ring shaped surface is held against said interior cylindrical surface.

4,286,928

PUMPING UNIT

Robert A. Clay, Tustin, Calif., assignor to Robert R. Hermann, St. Louis, Mo.

Continuation-in-part of Ser. No. 721,039, Sep. 7, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,179
Int. Cl.³ F04B *17/00;* F03G *3/04*
U.S. Cl. 417—329 **12 Claims**



4. A pumping unit for removing oil or the like from a well, the unit comprising a tower, a sump at the bottom of the tower, a reservoir at an elevation above the sump, conduit means interconnectng the sump and the reservoir, means for pumping a liquid via the conduit means from the sump up to the reservoir, a wheel mounted on the tower for rotation about a generally horizontal axis at an elevation above that of the bottom of the reservoir, a line extending over the wheel for attachment at one end to a polished rod load outside the tower in the well, a receptacle inside the tower attached to the other end of the line and serving as a counterweight for the polished rod load, the receptacle being reciprocally movable up and down in the tower between the reservoir and the sump, the reservoir having an outlet and valve means for the outlet, means for opening said reservoir valve means solely in response to the receptacle, in moving upwardly, reaching a first predetermined intermediate position, said receptacle continuing to move upwardly for an interval during which liquid is transferred from the reservoir to the receptacle in an amount sufficient to make the combined weight of the receptacle and the liquid therein

greater than that of the polished rod load, the receptacle automatically reversing its direction and moving downwardly when said combined weight is greater than that of the polished rod load, said reservoir valve means closing as the receptacle descends, said reservoir valve means and reservoir valve opening means being responsive to change in magnitude of said load from one cycle of pumping operation to another for varying the amount of liquid transferred from the reservoir to the receptacle from said one cycle to the other as needed to effect the downward movement of the receptacle in the tower, and the receptacle having an outlet and valve means for the outlet, means for opening the receptacle valve means solely in response to the receptacle, in moving downwardly, reaching a second predetermined intermediate position below said first predetermined intermediate position, said receptacle continuing to move downwardly for an interval during which liquid is transferred from the receptacle to the sump in an amount sufficient to make the combined weight of the receptacle and any liquid remaining therein less than that of the polished rod load, said receptacle automatically reversing its direction and moving upwardly when said combined weight is less than that of the polished rod load, said receptacle valve means closing as the receptacle ascends, said receptacle valve means and receptacle valve opening means being responsive to change in magnitude of said load from one cycle of pumping operation to another for varying the amount of liquid transferred from the receptacle to the sump from said one cycle to the other as needed to effect the upward movement of the receptacle in the tower.

4,286,929

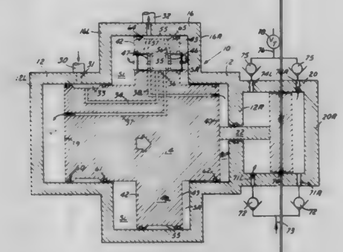
DUAL PRESSURE GAS MOTOR, AND METHOD OF OPERATION

Rodney T. Heath, 4901 E. Main, Farmington, N. Mex. 87401, and C. Richard Gerlach, San Antonio, Tex., assignors to Rodney T. Heath, Farmington, N. Mex.

Continuation-in-part of Ser. No. 780,479, Mar. 23, 1977, abandoned. This application May 7, 1979, Ser. No. 36,839

Int. Cl.³ F04B *17/00*; F01L *21/04*

U.S. Cl. 417—404 **9 Claims**



1. A method of operating a gas motor having a double acting, two stage piston assembly of a primary piston and a centrally mounted secondary piston, and having a single free slide valve freely reciprocably mounted in the secondary piston and arranged to pass gas from an inlet to a first side of the first stage piston and simultaneously passing gas from the second side of the first stage piston to the first side of the secondary piston, while exhausting gas from the second side of the secondary piston, comprising:

(a) completely closing the gas exhaust outlet from the first end of the secondary piston while the piston assembly is moving in a first direction,

(b) exhausting gas from the second end of the secondary piston while the piston assembly is moving in said first direction, and

(c) simultaneously admitting pressurized gas to the first end of the primary piston while exhausting gas from the second end of the secondary piston to product a gas pressure differential sufficient to fully move the slide valve by the gas pressure in the opposite direction while the piston assembly is moving in said first direction.

4,286,930

FUEL INJECTION SYSTEMS

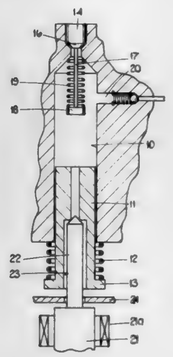
Boaz A. Jarrett, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 16, 1979, Ser. No. 94,902

Claims priority, application United Kingdom, May 11, 1979, 16438/79

Int. Cl.³ F04B *17/04*

U.S. Cl. 417—416 **5 Claims**



1. A fuel injection system comprising a pumping plunger slidable within a cylinder, actuating an outlet from the cylinder and a non-return valve in said outlet, means for effecting movement of the pumping plunger in a direction to displace fuel from the cylinder through said outlet, a fuel inlet to the cylinder and through which fuel can flow into the cylinder during the return motion of the pumping plunger as permitted by movement of said actuating means, a non-return valve in said inlet, valve means defined by the plunger and actuating means, said valve means being maintained closed during movement of the pumping plunger by the actuating means, and the system including a stop to limit the movement of the actuating means whereby in use, the pumping plunger will continue to move after the movement of the actuating means has been halted, so that the valve means will open to cause a reduction in the fuel pressure in said cylinder.

4,286,931

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES, PARTICULARLY FOR DIESEL ENGINES

Walter Häfele, Fellbach, and Bernhard Schenk, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,534

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806477; Feb. 16, 1978, 2806478

Int. Cl.³ F02M *59/44*

U.S. Cl. 417—490 **5 Claims**

1. A fuel injection pump for internal combustion engines, particularly a plug-in pump having a drive side for diesel engines, comprising:

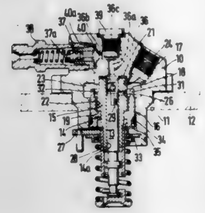
a housing defining a reception bore having a threaded opening to the drive side and a shoulder which is opposite the threaded opening and partly defining a suction chamber;

a cylindrical sleeve secured to the reception bore, said sleeve defining a pump piston bore within which a working chamber is defined, and a top portion of larger diameter within which at least one control bore is defined;

a pump piston mounted within the pump piston bore for

axial and rotational movement therein, said piston having a control edge which serves the purpose of varying the fuel delivery quantity and cooperates with said at least one control bore in said sleeve for varying the communications between the suction chamber and the working chamber; and

an annular screw which engages the reception bore opening such that the annular screw generates a force toward the



reception bore shoulder to clamp the top portion of the sleeve against the reception bore shoulder, wherein:

the annular screw includes a widened bore portion which surrounds a portion of the top portion of the sleeve, said widened bore portion defining an end face, facing the suction chamber, and a pressure shoulder recessed relative to the end face, said pressure shoulder serving to transmit the clamping force to the sleeve.

4,286,932

DIAPHRAGM PUMP

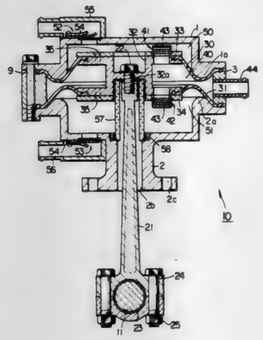
Shojiro Nagano; Naohiro Naganuma, both of Kariya, and Mikiji Ito, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 6, 1979, Ser. No. 9,803

Claims priority, application Japan, Feb. 14, 1978, 53-17824[U]; Mar. 13, 1978, 53-31914[U]; Apr. 20, 1978, 53-53052[U]; Jun. 6, 1978, 53-68075

Int. Cl.³ F04B *21/04*

U.S. Cl. 417—526 **20 Claims**



1. A diaphragm pump comprising:

a pair of generally annular diaphragms;

center disk means having the inner marginal portions of said diaphragms secured thereto and maintaining said diaphragms in spaced relation;

housing means enclosing said diaphragms and disk means and having the outer marginal portions of said diaphragms secured thereto, said housing means defining, with said diaphragms and said disk means, a pair of pumping chambers on opposite sides of said disk means for alternately receiving fluid from outside said housing means through housing means intake port means and alternately compressing the fluid and discharging it to outside said housing means through housing means discharge port means;

suction valve means and discharge valve means for each of said chambers;

connecting rod means extending into said housing means and having one end thereof attached to said disk means and the other end thereof adapted to be attached to rotating drive means for reciprocating said disk means and said diaphragms substantially axially thereof; and

bellows means surrounding a portion of said connecting rod means and having one end thereof sealed to said disk means and the other end thereof to said housing means and defining a part of the wall of one of said pumping chambers.

4,286,933

ROTARY VANE PUMP WITH PAIRS OF END INLET OR OUTLET PORTS

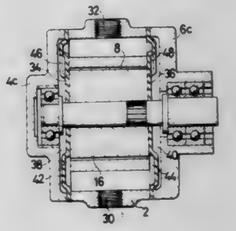
Hiroshi Sakamaki, Utsunomiya; Toshiyuki Maeda, Agoe; Fumihiro Ushijima, and Tadashi Saitou, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 5, 1979, Ser. No. 45,813

Claims priority, application Japan, Jun. 9, 1978, 53/69491

Int. Cl.³ F04C *27/00, 29/00*

U.S. Cl. 418—15 **6 Claims**



1. In a rotary fluid pump, including a housing body, a pair of recessed end heads assembled to opposite ends of the housing; a pair of resilient sealing plates individually disposed between the side of the housing and the recessed end heads to provide a rotor chamber between the sealing plates and a pair of end chambers each defined between the sealing plate and the recessed end head; a rotor supported in the rotor chamber; and a plurality of vanes slidably disposed in vane grooves formed in the rotor, the improvement comprising; fluid inlet and outlet ports adapted to communicate with the rotor chamber, at least one of said fluid inlet port or said outlet port formed symmetrically in each of the resilient sealing plates, to provide a pair of ports, wherein fluid communication between said ports and said end chambers being prevented and, a fluid inlet hole and a fluid outlet hole arranged in said housing body at a position corresponding to the longitudinal center of said rotor.

4,286,934

PRECAST HOUSE MANUFACTURING AND ERECTING PLANT

Mikhail Linetsky, #94-276 Adsum Dr., Winnipeg, Manitoba, Canada (R2P 0W2)

Filed Jan. 14, 1980, Ser. No. 111,933

Int. Cl.³ B28B *1/00*

U.S. Cl. 425—62 **5 Claims**

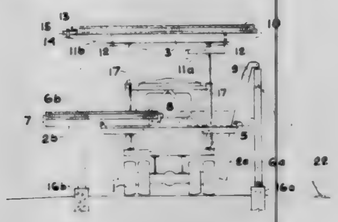
1. A portable plant for on-site horizontal casting and erecting concrete wall panels and roof slabs of bays with variable widths and heights reaching two storeies to form different types of houses and other buildings, said plant comprising:

a wheeled frame, supporting the casting and erecting equipment;

two rotatable and symmetrically set form-erectors for cast-

ing and erecting longitudinal bearing wall panels, said form-erectors being divided by hinges of rotating into two parts, one of which functions during erection as a jib, and the other part being a counterpoise, said form-erectors having the width in the cross direction less than the height of said wall panels and the top in a vertical position lower than the top of said wall panels being erected;

two motionless brackets holding said wall panels during erection, said brackets replacing a detachable edge on each form-erector, which would have become the top edge after rotating;



a lifting form for casting and erecting roof slabs with a flat bottom surface, said form having a hinged part on both longitudinal sides for producing said slabs with extended widths, said parts being folded down before erecting said slab and stripping said form;

a rotatable form-stripper for casting and erecting cross wall panels, said form-stripper having detachable side parts with a movable edge;

a hinged lock bracket for releasing said cross wall panel after fixing, said bracket replacing a detachable edge on said form-stripper, which would have become the bottom edge after rotating; the improvement:

wherein said form-stripper has a hinged part on both sides.

4,286,935

EARTH AND SAND CONVEYOR SYSTEM

Noboru Okuno, Hiratsuka; Takashi Takeuchi, Oiso; Akihiko Tsuzuku, Hiratsuka; Masao Tanazawa, Tokyo; Minoru Nakajima, Isehara, and Haruo Imamura, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,482

Int. Cl.³ B65G *53/04*

U.S. Cl. 425—72 R **3 Claims**



1. In an earth and sand conveyor system including a hopper adapted to receive dumped earth and sand, trough means connected to said hopper, a tapered pipe connected to said trough means, screw conveyor means rotatably mounted within said hopper and said trough means, and drive means for rotating said screw conveyor means, the improvement comprising:

consolidating pipe means for consolidating the earth and sand supplied from said tapered pipe, said consolidating pipe means having an inner diameter d_1 and being connected to said tapered pipe;

molding pipe means for molding the earth and sand supplied from said consolidating pipe means into a predetermined shape while passing therethrough, said molding pipe means having a molding pipe section with an inner diameter d_1 and a lubricating pipe section with an inner diameter d_2 and being connected to said consolidating pipe means;

conveyor pipe means connected to said molding pipe means and adapted for conveying the earth and said therethrough, said conveyor pipe means having the inner diameter d_2 wherein the d_1, d_2, and d_3 are set by a formula $d_1 < d_2 \leqq d_3$;

a plurality of first nozzle means for injecting a lubricant to lubricate the molded earth and sand formed circumferentially in the wall of the lubricating pipe section immediately adjacent to the molding pipe section;

pump means for supplying a lubricant to said first nozzle means;

second nozzle means formed in the wall of the lubricating pipe section of said molding pipe means for injecting compressed fluid into said molding pipe means to cut the molded earth and sand and form a molded earth and sand plug therefrom, said second nozzle means being downstream of said plurality of said first nozzle means;

third nozzle means formed in the wall of said conveyor pipe means and spaced from said second nozzle means for injecting a compressed fluid into said conveyor pipe means to push the molded earth and sand on the cut surface thereof, thereby moving said molded earth and sand plug through said conveyor pipe means;

compressor means connected to said second and third nozzle means for supplying the compressed fluid thereto; and

directional control valve means disposed between said compressor means and said second and third nozzle means for alternately supplying the compressed fluid to said second and third nozzle means.

4,286,936

INJECTION CASTING APPARATUS FOR SHOE SOLES

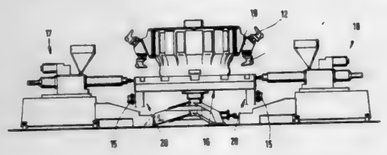
Hans Hustedt, Verden, Fed. Rep. of Germany, assignor to Desma-Werke GmbH, Achim bei Bremen, Fed. Rep. of Germany

Filed Feb. 27, 1980, Ser. No. 125,055

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907751

Int. Cl.³ B29D *9/00*; B29C *1/16*; B29H *7/08*

U.S. Cl. 425—119 **5 Claims**



1. An injection molding apparatus for the manufacture of multi-layer shoe soles, particularly double layer polyurethane shoe soles, comprising:

(a) a first horizontally disposed, rotationally indexable turret,

(b) a second horizontally disposed, rotationally indexable turret positioned above the first turret,

(c) a plurality of selectable shoe lasts mounted on the outer periphery of the second turret in a circumferentially spaced manner,

(d) a plurality of mold assemblies mounted on the outer periphery of the first turret in a circumferentially spaced manner and individually cooperable with the shoe lasts,

(e) at least one sole material injection device fixedly mounted proximate the outer periphery of the first turret and selectively cooperable with an adjacent mold assembly,

(f) each mold assembly including a separable side mold adapted to be closed at its top by a shoe last,

(g) a plurality of rotatable heads individually mounted beneath the mold assemblies and having respective axes of rotation upwardly and outwardly inclined relative to the axis of the first turret,

(h) a pair of support arms extending outwardly from each rotatable head and having intersecting longitudinal axes bisected by the rotatable head axis,

(i) a pair of alternately selectable sole molds individually mounted on the outer ends of the support arms,

(j) pressure cylinder means for raising and lowering each rotatable head to close the bottom of a mold assembly with a selected one of said sole molds and to disengage it therefrom, said pressure cylinder means operating along a vertical axis common to the selected sole mold and its associated support arm to prevent the occurrence of torque moments in the closed mold assembly, and

(k) the support arm of each non-selected sole mold extending radially outwardly from the first turret and each non-selected sole mold havine a generally upright longitudinal axis.

4,286,937

PRODUCTION OF SAND MOULDS

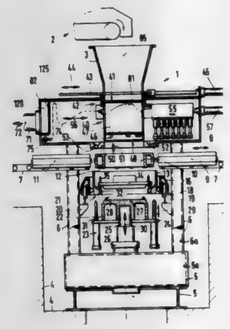
Walter Ahrens, Alfeld, Fed. Rep. of Germany, assignor to Alfelder Maschinen- und Modell-Fabrik Kunkel, Wagner & Co. KG, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,171

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842912

Int. Cl.³ B28B *13/02*

U.S. Cl. 425—125 **9 Claims**



1. An apparatus for producing a mould, comprising means for putting a moulding compound in a buffer zone, means for reducing the pressure in the buffer zone and in a charging chamber over a pattern below atmospheric pressure, and means for transferring the moulding compound from the buffer zone into the charging chamber under gravity while maintaining the vacuum or partial vacuum produced on reducing pressure in the buffer zone and charging chamber below atmospheric pressure.

4,286,938

OVAL DISH FORMER

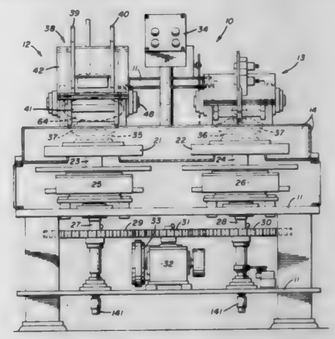
George Ryckman, East Liverpool, Ohio, assignor to Service (Engineers) Limited, Stoke-on-Trent, England

Filed Apr. 12, 1979, Ser. No. 29,288

Int. Cl.³ B28B *1/02*

U.S. Cl. 425—265 **15 Claims**

1. An oval dish forming machine for shaping clay on molds, said machine comprising a pair of spaced rotatable mold supports, means for rotating said mold supports and simultaneously imparting eccentric motion thereto, a pair of spaced work heads pivotally supported on said machine with their free ends movable toward and away from said mold supports in arcuate patterns, a roller shaping tool and means on one of said work heads mounting said roller shaping tool for rotary motion, said means being movable in a rocking action and means for imparting rotary movement to said roller shaping tool, means for imparting rocking motion to said means mounting said roller shaping tool, a second roller shaping tool and means on the other one of said work heads rotatably mounting said second roller shaping tool, means for imparting motion to said work heads arranged to move said work heads on said arcuate patterns, the axis of rotation of the roller shaping tools



being inclined to the vertical with the inclination of the first roller shaping tool being less than that of the second roller shaping tool whereby in use the first roller shaping tool is operative primarily to spread said clay over said rotatable mold support and the second roller shaping tool is operative primarily to finish the surface of the clay spread by the first roller shaping tool.

4,286,939

DOUGH ROUNDER WITH ADJUSTABLE ROUNDING BOWLS

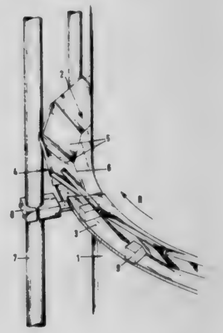
Johan Benier, Vught, Netherlands, assignor to Benier B.V., Ketelaarskampweg, Netherlands

Filed Jul. 10, 1980, Ser. No. 168,391

Claims priority, application Netherlands, Jul. 16, 1979, 7905535

Int. Cl.³ B29B *1/02, 1/04*

U.S. Cl. 425—333 **4 Claims**



1. A dough rounding machine provided with a rounding drum which is rotatable about a substantially vertically oriented axis and furthermore being provided with a trough extending helically or spirally about the drum, said trough consisting of a bottom and a bowl spaced apart from the drum, said bottom comprising plate sections successive in helical direction, abutting the drum and attached to a frame surrounding the drum, while the bowl consists of bowl sections likewise successive in helical direction and fixable on the bottom plate sections with variable distance to the drum, characterized in that each bottom plate section is flat and each bowl section is

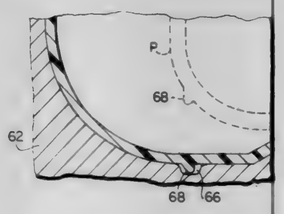
designed as a wall plate which, with a bottom edge completely abutting the bottom plate section, is movable over the bottom plate section towards and away from the drum with maintenance of said abutment.

4,286,940

METHOD AND APPARATUS FOR INJECTION BLOW MOLDING AN ARTICLE WITH IMPROVED DETAIL DEFINITION

Aime J. Gendron, Rehoboth, Mass., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 21, 1979, Ser. No. 40,891
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—533 **10 Claims**



1. Apparatus for forming molded articles with improved raised detail definition comprising:

a parison pin;

a blow mold having an interior mold wall defining a cavity for blowing a parison on the parison pin and also defining the general exterior shape of an article formed by expanding the parison in the cavity at a blowing pressure;

fluid pressure generating means cooperating with the parison pin and the blow mold for expanding the parison outwardly away from the pin and against the wall in the blow mold at the blowing pressure;

an injection mold associated with the parison pin and blow mold, and having an interior mold wall defining a mold cavity in which the pin is inserted and in which a settable material is injected between the pin and the mold wall to form a parison for subsequent transfer to and expansion in the blow mold, the injection mold wall including at least one region defining an expandable part of the parison expanded in the blow mold and said region of the mold wall bearing recess defining means defining raised molding detail of definition and dimension finer than that formable in the blow mold under blowing pressure and conditions;

the interior wall of the blow mold also including recess defining means in a region disposed in confronting relationship with the raised molding detail of the parison during blowing, the recess defining means defining a recess located and dimensioned to receive and preserve the raised molding detail when the parison is expanded in the mold at the blowing pressure; and

injection means connected with the injection mold for injecting settable material into the mold at a pressure greater than the blowing pressure and sufficient to form the parison with the raised molding detail thereon.

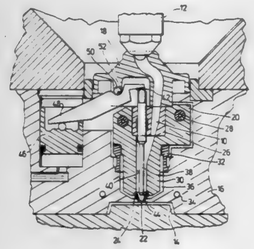
4,286,941

INJECTION MOLDING NOZZLE SEAL

Jobst U. Gellert, 7A Prince St., Glen Williams, Ontario, Canada

Filed Jul. 28, 1980, Ser. No. 173,084
Claims priority, application Canada, Jul. 15, 1980, 356233
Int. Cl.³ B29F *1/03, 1/05*
U.S. Cl. 425—566 **3 Claims**

1. In a valve-gated injection molding system comprising a heated heater cast seated in a cooled cavity plate, the heater cast having a nozzle portion which is separated from the cavity plate by an air space, a gate through the cavity plate leading to a cavity, a melt passage extending through the heater cast for conveying pressurized melt from a molding machine to the gate, an elongated valve pin to reciprocate in a bore in the heater cast between open and closed positions, the valve pin having a driven end and a tip end, and valve pin actuating mechanism, the improvement wherein a hollow nozzle seal having a central bore extends across the air space between the



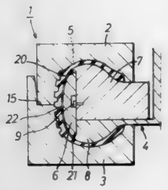
heater cast and the cavity plate with its bore coaxial with the bore of the heater cast and the gate, the nozzle seal having a first end portion received in the nozzle portion of the heater cast and a second end portion which extends into a gate aperture through the cavity plate, whereby the second end portion of the nozzle seal forms the gate which receives the tip end of the valve pin in the closed position.

4,286,942

APPARATUS FOR PRODUCING PNEUMATIC TIRES

Keizi Fuzioka, Kishiwada, and Masami Shinomiya, Izumi-Ohtsu, both of Japan, assignors to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan

Filed Oct. 15, 1980, Ser. No. 197,231
Claims priority, application Japan, Oct. 31, 1979, 54-141696
Int. Cl.³ B29H *3/08, 5/06*; B29F *1/00*; B29H *5/18*
U.S. Cl. 425—577 **7 Claims**



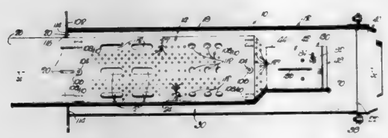
1. An apparatus for producing pneumatic tires comprising at least three fittable mold components of an upper mold element, a lower mold element and a core mold element for defining a cavity having the shape of the tires, and means for feeding rubber or an equivalently elastic molding material to the cavity in an amount sufficient to fill the cavity, the core mold element comprising at least three divided fittable mold segments for forming the inner surfaces of the tire tread and tire sidewalls including a pair of beads, the tread inner surface forming mold segment and at least one of the sidewall inner surface forming mold segments having on their opposed faces nipping portions movable toward or away from each other for holding at least one end of each of tire cords.

4,286,943

AIR HEATER

Joseph J. Petlak, 3 Lincoln Dr., Wallingford, Conn. 06492, and Joseph M. Salafia, Middletown, Conn., assignors to Joseph J. Petlak, Wallingford, Conn.

Filed Aug. 21, 1979, Ser. No. 68,417
Int. Cl.³ F23D *15/02*
U.S. Cl. 431—352 **1 Claim**



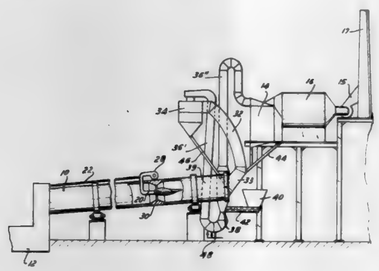
1. An air heater, providing two tubular bodies with a common axis, each having a cylindrical wall and open front and rear ends, of which one body extends in the other body and projects from the front end of the latter and said one body has its rear end formed as a compartment with an opening to said rear end of said other body, with the cylindrical wall of said one body being spaced inwardly from that of said other body to form a manifold therebetween, an oil burner located in said compartment, ports in said cylindrical wall of said one body distributed over the expanse of said manifold, an air blower having its output side connected with the open rear end of said other body to direct an air stream into said manifold, an adjustable shutter mechanism in said opening of said compartment for diverting combustion air from said stream into said compartment, a ring member closing said manifold at said open front end of said other body and provided with a multitude of apertures spaced about said ring member, a substantially continuous gap form between said ring member and the wall of said one body, with the velocity of said air stream being sufficiently high for keeping said manifold under permissible temperature control on setting the burner flame for maximum heat output and maximum spread substantially throughout the interior of said one body.

4,286,944

INSTALLATIONS FOR THE CALCINATION OF ALUMINA AND SIMILAR PRODUCTS

Gilbert Labriot, Marseilles; Robert Bitsch, Aix en Provence; Michel Wattelle, Les Lilas, and Jean Lebesgue, Avon, all of France, assignors to Aluminium Pechiney and Fives-Cail Babcock, both of Paris, France

Filed Nov. 14, 1979, Ser. No. 94,070
Claims priority, application France, Nov. 27, 1978, 78 33390
Int. Cl.³ F27B *15/00, 7/36, 7/02*
U.S. Cl. 432—14 **9 Claims**



1. The method of improving the thermal efficiency of a calcining installation comprising a long rotary kiln having an inlet for raw material to be calcined at an upstream end thereof and an outlet for the calcined material at a downstream end thereof, a burner generating heat in the kiln for calcining the raw material, an air inlet at the downstream end, a flue gas outlet at the upstream end, and a cyclone separator means for separating dust from the flue gas exhausted through the flue gas outlet, the cyclone separator means having an inlet connected to the flue gas outlet and a dust outlet, which comprises the steps of

(a) cycling the raw material through an additional cyclone separator having an inlet for the raw material, a gas outlet and an outlet for the raw material, and from the raw material outlet into the upstream end of the kiln,

(1) the raw material inlet of the additional cyclone separator being connected to the upstream end of the kiln and the gas outlet of the additional cyclone separator being connected to the inlet of the cyclone separator means through a pipe having a vertical portion,

(b) introducing the raw material in a lower part of the vertical pipe portion for preheating the raw material by the flue gas before the raw material passes through the raw material inlet of the additional cyclone separator,

(c) subjecting the raw material cycled into the upstream end of the kiln to the heat generated by the burner in a half of the kiln adjacent the upstream end for calcining the preheated raw material, and

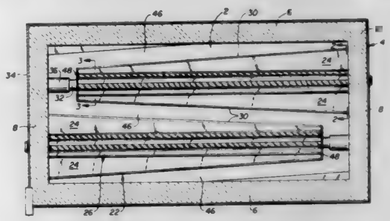
(d) cooling the calcined material in the other half of the kiln adjacent the downstream end thereof.

4,286,945

WALL FIRED DUCT HEATER

Ralph R. Vosper, San Jose, Calif.; Arie W. Spoormaker, Maassluis, Netherlands; Chester S. Binasik, Palo Alto, and Norman E. Harthun, San Carlos, both of Calif., assignors to Coen Company, Inc., Burlingame, Calif.

Filed Sep. 7, 1979, Ser. No. 73,348
Int. Cl.³ F24H *1/00*
U.S. Cl. 432—29 **47 Claims**



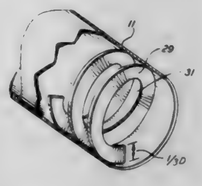
1. Apparatus for heating a gas flowing through a duct defined by opposing duct walls which are generally parallel to the gas flow direction, the apparatus comprising: at least one burner means for producing an elongate, pencil-shaped flame having a diameter near the burner which is larger than the diameter remote from the burner, said burner means including means for mounting the burner means to the wall so that the burner means forms a flame extending into the duct transversely to the gas flow direction; and a means for shielding the flame including means for mounting the shield means to a wall of the duct so that the shield means is positioned upstream of the flame and extends generally parallel to the flame into the duct, the shield having a lateral extent in a direction transverse to the gas flow which is relatively large at a base of the shield proximate the burner and which is relatively small adjacent an end of the shield remote from the burner so that the shield defines a trough protecting the flame from the gas flow through the duct which has a shape approximating the shape of the flame, the shield means having a passage therethrough for directing combustion sustaining oxygen to the flame, said passage being disposed axially along the shield means so that the gas flow impinges along substantially the entire length of the flame.

4,286,946

CALCINER REVERSE FEED DISCHARGE SPIRAL

James N. Christini, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 24, 1980, Ser. No. 143,234
Int. Cl.³ F27B 6/08; F27D 3/00
U.S. Cl. 432—112 11 Claims



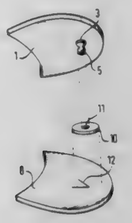
1. A reverse feed spiral for a refractory metal reclaiming calciner having a cylindrical rotatable retort of a given inner diameter with a material-receiving end and a material discharging end separated by a hot zone and coupled to a motor drive source for effecting rotation of said rotatable retort in a given direction to provide material flow in a given direction, said reverse feed spiral characterized by the improvement wherein a spiral having a reverse pitch with respect to said given direction of rotation and of material flow within said rotatable retort is positionally located within said material-discharging end of said rotatable retort whereby the direction of material flow within said material-discharge end of said rotatable retort is reversed by said reverse feed spiral and retention time of said material within said rotatable retort is increased.

4,286,947

INTRA-ORAL ALIGNING ASSEMBLY

Karl Daiberl, Untersbergstrasse 4/II r., 8000 Münich 90, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,498
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825470
Int. Cl.³ A61C 19/04
U.S. Cl. 433—72 33 Claims



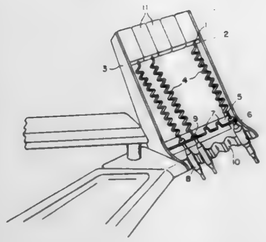
1. An adjusting assembly for use in prosthodontics, occlusion diagnosis and/or occlusion therapy, comprising an upper jaw plate; a lower jaw plate, one of said plates being provided with an opening; and a pin having an externally threaded shaft partly received in one of the plates and having a free end adapted to be partly received in said opening, said free end being configurated as a spherical segment rigid with said shaft and having a spherical surface, said spherical surface being curved rearwardly from a point located on the longitudinal axis of the shaft through at least 100° of arc, said opening having a diameter being smaller than that of said spherical segment, the diameter and length of said opening as well as the diameter of said segment being so coordinated with one another that even at the largest degree of relative skewing to be expected of said bite plates a circumferential edge of said opening will abut said spherical surface along the entire length of said circumferential edge substantially without any freedom of play.

4,286,948

DENTAL TREATMENT APPARATUS

Helmut Pietschmann, Karlsbad, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

PCT No. PCT/DE78/00027, § 371 Date Jun. 15, 1979, § 102(e) Jun. 11, 1979.
This PCT application filed Oct. 16, 1978, Ser. No. 140,772
Int. Cl.³ A61C 1/14
U.S. Cl. 433—77 3 Claims



1. In a dental treatment apparatus including a plurality of dental instruments of the type requiring a utility supply for each instrument, spirally coiled supply lines connecting each of the instruments to a utility supply, and an instrument mount, the improvement comprising:

(a) said utility supply being spaced above said mount and in a substantially straight vertical line from said mount;

(b) each of said utility supply lines being spirally coiled for substantially its full length from one end which is connected to said utility supply, to its other end which is connected to said instrument, each of said supply lines being freely suspended from said utility source to said instrument in a substantially straight vertical line; and

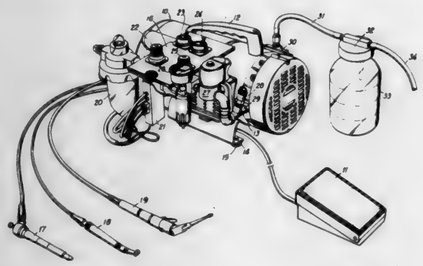
(c) means adjacent the rear end of each instrument and cooperating with said mount for releasably holding said instruments substantially vertically suspended with the front of said instruments pointing downward.

4,286,949

PORTABLE DENTAL APPARATUS

Raleigh A. Holt, Jr., 122 Pinehill Rd. NW., Orangeburg, S.C. 29115

Filed Feb. 15, 1980, Ser. No. 121,823
Int. Cl.³ B05B 9/04
U.S. Cl. 433—103 2 Claims



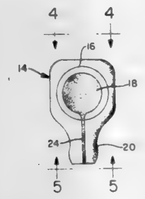
1. A portable dental treatment apparatus comprising a unitized body portion in the form of a horizontal axis motor-compressor unit, a carrying handle fixed on the top of said unit, a supporting base for the apparatus fixed on the bottom of said unit including wide stance feet adjacent to the opposite sides of said unit for the support of the apparatus on a horizontal support surface, a treatment component support and control panel fixed on said unit near the top of the unit in a horizontal plane spaced above and parallel to a plane in which said feet are located, a plurality of conventional dental treatment components bodily mounted on and supported by said panel and being operatively connected with the compressor of said motor-compressor unit, said panel and said treatment components on the panel being disposed adjacent to one side of said unit in cantilevered relationship to the unit, and a vacuum cylinder unit fixed on the other side of said motor-compressor unit in counterbalancing relationship to said platform and the treatment components thereon and adapted for connection to a conventional dental vacuum assembly.

4,286,950

COVER FOR DENTAL HANDPIECE BUR

Gene R. Hawk, 139 Fair Ave., NE., New Philadelphia, Ohio 44663

Filed Mar. 24, 1980, Ser. No. 133,012
Int. Cl.³ A61C 1/16
U.S. Cl. 433—116 4 Claims



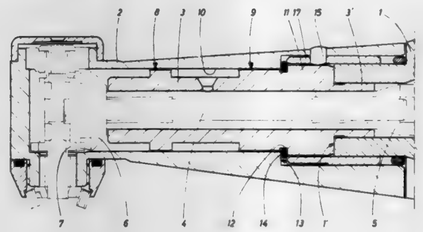
1. A cover for a dental handpiece end and a bur or other tool positioned thereon, which bur extends substantially at a right angle to the longitudinal axis of the handpiece, comprising a tubular boot-like structure of generally L-shape, having an enlarged leg portion with an open end adapted to engage the end of a dental handpiece and an open ended smaller diameter foot portion adapted to encompass the handpiece end and a dental drill or bur positioned thereon, said structure being split on a line extending continuously from the foot portion open end to the enlarged leg open end on the inner surface of the L-shaped structure said structure having some resilience and flexibility to enable it to be sprung into and out of engagement with the handpiece end and tool thereon.

4,286,951

DENTAL HANDPIECE

Henri Leonard, Besancon, France, assignor to Micro Mega, S.A., France

Filed Nov. 29, 1979, Ser. No. 98,617
Claims priority, application France, Dec. 27, 1978, 78 37117
Int. Cl.³ A61C 1/08, 1/12, 1/05
U.S. Cl. 433—126 5 Claims



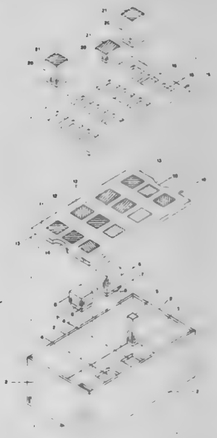
1. A dental handpiece comprising a rear portion or handle and a front portion or head, means comprising a bayonet joint for coupling said handle and head together end-to-end, an internal support fitting freely in said head and having a rear portion extending freely into said handle, a tool-driving shaft rotatably supported in said internal support, said internal support having in the vicinity of the junction between said head and handle an enlargement defining a forwardly facing shoulder and a rearwardly facing shoulder, and an annular groove at the base of said forwardly facing shoulder, an O-ring received in said groove and against said forwardly facing shoulder, said handle having an internal shoulder engageable with said rearwardly facing shoulder of said enlargement, and said head having an internal shoulder engageable with said O-ring, said enlargement and O-ring being clamped between said internal shoulders of said handle and head when said handle and head are coupled by said bayonet joint to position said internal support longitudinally in said head and handle and to restrain it against rotation.

4,286,952

EDUCATIONAL TOY

Mary E. Roche, R.R. #1, Box 435A, Markelville, Ind. 46056

Filed Jan. 2, 1980, Ser. No. 108,977
Int. Cl.³ G09B 1/06
U.S. Cl. 434—259 4 Claims



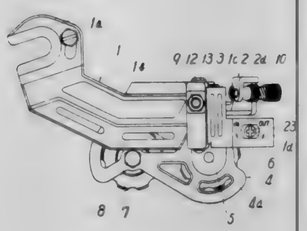
1. An educational toy comprising an open top box having a bottom adapted to receive a plurality of platform blocks removably inserted therein, said box being provided with support means mounted therein which support means are adapted to support a color board and a grate, a plurality of platform blocks adapted to be removably inserted into the said bottom of the said box and adapted to receive a plurality of game blocks removably placed thereon, a plurality of game blocks wherein a portion of each block is provided with a distinctively colored figure corresponding in color to a color of a figure on a surface of a color board, the said game blocks being adapted to be slidably inserted through a plurality of openings in a grate and adapted to be removably placed on the aforesaid plurality of platform blocks and on a surface of a color board, a color board adapted to be removably inserted into the aforesaid top of the aforesaid box and to sit on the aforesaid support means and to receive a grate and the aforesaid plurality of game blocks removably placed thereon, and a grate having a plurality of openings therethrough and adapted to be removably inserted into the aforesaid top of the aforesaid box and to sit on the aforesaid support means and to sit on a color board, wherein the said plurality of openings in the said grate is adapted to receive a plurality of game blocks slidably inserted therethrough.

4,286,953

BICYCLE DERAILLEUR HAVING AN IMPROVED MECHANISM FOR SWINGING A CHAIN GUIDE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 21, 1980, Ser. No. 142,378
Claims priority, application Japan, May 4, 1979, 54-59800[U]
Int. Cl.³ F16H 11/08
U.S. Cl. 474—80 7 Claims



1. A bicycle derailleur for shifting a driving chain to a selected one of a plurality of axially aligned sprockets forming a multistage sprocket assembly, said derailleur comprising:

a fixing member;

a supporting member swingably supported to said fixing member by a first vertical shaft, said supporting member being swingable to move along the direction of the axes of said sprockets around said first vertical shaft;

a return spring interposed between said fixing member and said supporting member for biasing said supporting member relative to said fixing member;

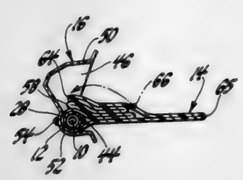
a change-over frame swingably supported to said supporting member by a second horizontal shaft, said second shaft having its axis perpendicularly intersecting the axis of said first shaft and being disposed at the position where an extension line of the axis of said first shaft passes through the axis of said second shaft, said change-over frame being swingable together with said supporting member to move along the direction of the axes of said sprockets around said first shaft with respect to said fixing member and carrying first and second pulleys for guiding a driving chain, said first pulley being supported rotatably to the foremost end of said change-over frame through a third horizontal shaft in parallel with said second shaft.

4,286,954

METHOD OF FOLDING AN INFLATABLE RESTRAINT CUSHION

Donald N. McArthur, Clarkston, and Robert A. Heintz, Northville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,886
Int. Cl.³ B60R 21/06
U.S. Cl. 493—244 2 Claims



1. A method of folding an inflatable restraint cushion for storage in a support housing having a cavity in which a gas generator is located within a diffuser and is fixedly secured in said cavity, said cavity being defined by an upper wall, a lower wall and a pair of side walls, and said inflatable restraint cushion including two overlying flat sheets of flexible material arranged to form a top sheet and a bottom sheet with the sheets being joined together along a front edge, a pair of laterally spaced side edges and a rear edge, said method comprising the steps of:

(a) mounting said front edge of said sheets to said diffuser;

(b) placing said rear edge of said sheets along an imaginary line which is parallel to said front edge and spaced from the latter a distance which causes said top and bottom sheets to be taut;

(c) successively moving a portion of said top sheet towards said diffuser so as to form a series of overlying pleated sections which are progressively shorter in length until the overall fore and aft dimension of said cushion approximates the distance between said top and bottom walls of said cavity;

(d) and rotating said cushion as a unit into said cavity for storing said cushion until the latter is inflated by said gas generator.

4,286,955

FIBER SHRINKING COMPOSITION FOR NYLON PILE FABRIC

Robert D. Lewis, Landisville, Pa., assignor to Armstrong Cork Company, Pa.

Filed Jul. 30, 1979, Ser. No. 62,317
Int. Cl.³ D06P 3/24; B05D 5/00
U.S. Cl. 8—115.6 9 Claims

1. An aqueous-based nylon fiber shrinking composition comprising in weight percent from about 5 to about 50 percent calcium nitrate; from about 5 to about 20 percent benzyl alcohol; from about 2.5 to about 15 percent of a polyhydric alcohol or any oxy derivative of a polyhydric alcohol; from about 1 to about 10 percent of a urea compound selected from the group consisting of urea, thiourea, and 1,3-dimethylurea and at least one carboxylic acid selected from the group consisting of formic, acetic, propionic, butyric, oxalic, malonic, glutaric, maleic, glycolic, lactic, glyceric, malic, tartaric and citric; said carboxylic acid being employed in a total amount of from about 5 to about 45 percent.

4,286,956

FLUID, COLD-STABLE, TWO-COMPONENT WASHING COMPOSITIONS

Wolfgang Bechstedt, Düsseldorf-Garath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,479
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847437
Int. Cl.³ C11D 9/30, 10/04, 10/06, 17/08
U.S. Cl. 8—137 14 Claims

1. A method of washing soiled textiles consisting of the steps of adding a washing agent consisting of two components, A and B wherein component A is an aqueous dispersion of fatty acids consisting essentially of

(a) from 25% to 35% by weight of a C_{12-18} fatty acid having from 60% to 100% of the fatty acids of oleic acid,

(b) from 10% to 16% by weight of a potassium soap of said C_{12-18} fatty acid of (a),

(c) from 15% to 25% by weight of an ethoxylate of from 5 to 12 ethoxylate units onto a primary alcohol selected from the group consisting of linear C_{8-14}-alkanols and C_{8-14}-2-methylated-alkanols,

(d) from 4% to 10% by weight of a sodium C_{10-14}-alkylbenzenesulfonate,

(e) from 0.05% to 1% by weight of an alkali metal salt of substituted stilbenesulfonic acid optical brighteners,

(f) from 1% to 5% by weight of a hyrotrope selected from the group consisting of urea and alkali metal salts of alkylbenzenesulfonates having from 1 to 2 alkyl of groups with a total of 1 to 3 carbon atoms,

(g) from 2% to 10% by weight of alcohols selected from the group consisting of C_{1-3} alkanols and mixtures of C_{1-3} alkanols with up to 50% by weight of the mixture of C_{1-4}-alkoxy-C_{2-3}-alkanols or C_{1-4}-alkoxy-C_{2-3}-alkoxy-C_{2-3}-alkanols, and

(h) from 15% to 30% by weight of water; and component B is an aqueous solution of alkalies consisting essentially of

(i) from 0.5% to 5% by weight of sodium tripolyphosphate,

(j) from 0 to 25% by weight of potassium tripolyphosphate,

(k) from 0 to 10% by weight of a sodium silicate of the composition Na_2—:SiO_2 1:1 to 1:3.5,

(l) from 0.5% to 5% by weight of sodium ethylenediaminetetraacetate,

(m) from 10% to 25% by weight of potassium hydroxide, and

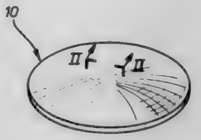
(n) the remainder up to 100% by weight of water, where the amount of water is sufficient to dissolve all the constituents at room temperature; where the ratio of component A to component B in the combination for washing is from 1:1 to 1:4 and where the washing solution has a pH of from 9.5 to 14, to an aqueous wash liquor containing soiled textiles in such amounts that the total amount of all active washing ingredients including wash alkalies is from 5 gm to 30 gm per kg of dry textiles, agitating said textiles in said wash liquor, draining and rinsing said textiles and recovering clean textiles.

4,286,957

PROCESS OF INTEGRATING A PHOTOCHROMIC SUBSTANCE INTO AN OPHTHALMIC LENS AND A PHOTOCHROMIC LENS OF ORGANIC MATERIAL

Lyliane Le Naour-Sene, Vincennes, France, assignor to Essilor International "Cie Generale d'Optique", Creteil, France

Filed Jan. 10, 1979, Ser. No. 2,303
Int. Cl.³ D06P 5/00; G03B 21/46
U.S. Cl. 8—471 17 Claims



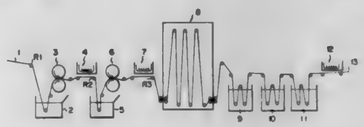
1. A process of integrating a photochromic substance into a transparent substrate of polymerized organic material comprising the steps of placing a photochromic material containing a photochromic substance into contact with the substrate, and heating the photochromic material thus in contact with the substrate thereby thermally transferring the photochromic substance into the substrate.

4,286,958

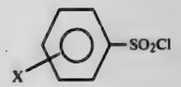
METHOD OF DYEING CELLULOSE FIBER-CONTAINING STRUCTURES

Takahiro Fujiu, Funabashi; Masao Nakajima, Tokyo, and Shigeru Okano, Musashino, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Oct. 25, 1979, Ser. No. 87,923
Claims priority, application Japan, Nov. 1, 1978, 53/135086; Jan. 24, 1979, 54/7525; May 11, 1979, 54/47867; May 15, 1979, 54/59363; Jun. 15, 1979, 54/74269; Aug. 24, 1979, 54/107897
Int. Cl.³ C09B 62/00
U.S. Cl. 8—471 15 Claims



1. A method of dyeing a fiber structure composed of a cellulose fiber or a blend of cellulose fiber and a synthetic fiber which comprises the steps of impregnating the fiber structure with an alkaline compound in an amount of from 1 to 20% by weight based on the weight of the fiber structure and with a modifying agent, the molar ratio of the alkaline compound to the modifying agent being 0.1 to 2.0, and the modifying agent being a compound of the formula



where X is —H, —NO_2, —CH_3, or —SO_2Cl; effecting chemical modification of the impregnated fiber structure by heat-treating it under steaming conditions at a temperature of from about 100° to 180° C. or dry heating conditions at a temperature of from about 60° to 180° C. for a time period not exceeding 20 minutes; and then dyeing the modified fiber structure

with a dye selected from the group consisting of a disperse dye, an oil-soluble dye, a mordant dye, and a basic dye.

4,286,959

DISPERSE DYE FORMULATIONS

Dieter Horn, Heidelberg; Ewald Daubach, Ludwigshafen; Erwin Hahn, Heidelberg; Herbert Uhrig, Worms; Richard Hoene, Heidelberg, and Herbert Naarmann, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,765

Int. Cl.³ C09B *67/00, 67/22, 67/38*

U.S. Cl. 8—524 **12 Claims**

1. A free-flowing formulation of one or more disperse dyes for dyeing hydrophobic fiber material from an aqueous liquor, which formulation comprises

(a) one or more disperse dyes, and

(b) one or more polymers which are soluble, or colloidally soluble, both in water at a pH of from 1 to 9 and in an organic solvent, said polymers being prepared by free radical or ionic polymerization or by a poly-Menschutkin reaction,

(a) being enclosed in a matrix of

(b) in the form of a solid solution in a state of molecular dispersion of extremely find subdivision so that in an X-ray diffraction pattern the dyes appear amorphous, said formulation having been prepared from a solution in said organic solvent which contains (a) and (b), with (a) being present in the solution in a state of molecular dispersion, by removing the solvent.

4,286,960

DYESTUFF COMPOSITIONS CONTAINING ACYLATED ALKOXYLATES OF POLYHYDRIC ALIPHATIC ALCOHOLS

Manfred Schneider, Eppstein; Hubert Kruse, Kelkheim; Konrad Opitz, Liederbach, and Siegfried Billenstein, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

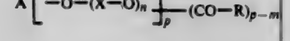
Filed Oct. 28, 1980, Ser. No. 201,443

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943902

Int. Cl.³ D06P *67/00;* **C09B** *67/00*

U.S. Cl. 8—527 **13 Claims**

1. A composition of matter comprising a water-soluble ester of the formula



wherein A is the residue of an aliphatic or cycloaliphatic dihydric to hexahydric alcohol of 2 to 10 carbon atoms, the X's stand for the same or different groups of the formulae

$$-CH_2-CH_2-$$

and

$$-CH_2-CH(CH_3)-,$$

R—CO— is the acyl radical of a carboxylic acid having up to 22 carbon atoms, the n's stand for the numbers of 8 to 150, m is an integer of zero to 4, p is an integer of 2 to 6, with the proviso that p-m is at least 2, and a disperse or vat dyestuff.

4,286,961

REDUCTION CLEARING OF DISPERSE DYES

Rolf Buser, Muttenz, Switzerland; Francis Palacin, Riedisheim, France; Georg Robert, and Franz Somm, both of Riehen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 873,132, Jan. 30, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,054

Claims priority, application Switzerland, Feb. 4, 1977, 1388/77

Int. Cl.³ D06P *5/02, 3/872*

U.S. Cl. 8—532 **23 Claims**

1. A process for treating a synthetic/cellulosic fibre mixed tensile substrate which has been dyed or printed with at least one disperse and at least one reactive dye and which contains no resin protection for the fixed reactive dye comprising, after fixation, reductively treating the dyed or printed substrate at a neutral to alkaline pH with an aqueous solution containing a reducing agent selected from the group consisting of sodium formaldehyde sulphoxylate, sodium hydrogensulphide, sulphides, sulfites (SO_3^{--}), polysulphides, glucose, fructose, lactose and dextrine, the rH value of said solution being selected from a value of from 0 to 30, such as to decompose non-bound disperse dyestuff and render it colourless, decompose it such that it does not re build-up on the substrate, or both whilst leaving the fixed reactive dyestuff substantially unaffected.

4,286,962

PHTHALOCYANINE REACTIVE DYESTUFFS, THEIR PREPARATION AND THEIR USE FOR DYEING MATERIALS CONTAINING HYDROXYL GROUPS OR AMIDE GROUPS

Volker Ehrig, Berg.-Gladbach; Manfred Groll, Cologne, and Klaus Wunderlich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

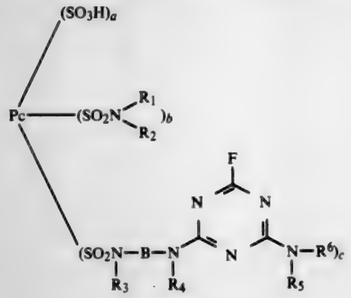
Filed Dec. 31, 1979, Ser. No. 108,312

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1979, 2901481

Int. Cl.³ C09B *62/10*

U.S. Cl. 8—549 **8 Claims**

1. Phthalocyanine reactive dyestuffs of the formula



wherein

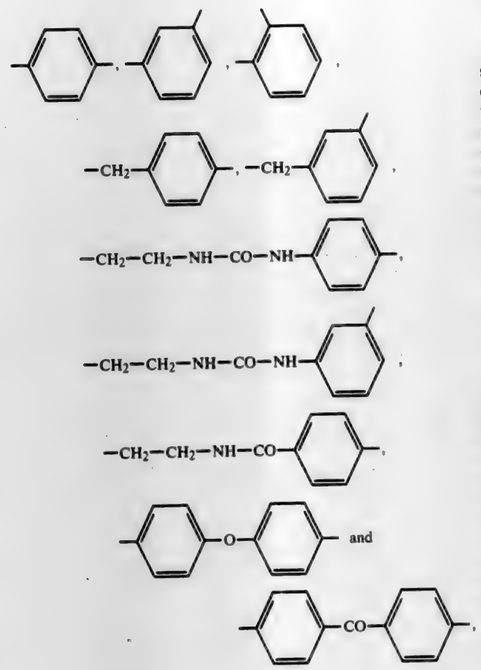
Pc the radical of a copper phthalocyanine or nickel phthalocyanine,

R_1 and R_2 H or optionally substituted alkyl, or R_1 and R_2, together with N, forming a 5-membered or 6-membered heterocyclic ring,

R_3 and R_4 H or optionally substituted alkyl,

R_5 and R_6 hydrogen, optionally substituted alkyl with 1 to 5 C atoms, optionally substituted cycloalkyl or aralkyl or an optionally substituted aryl radical which is free from sulphonic acid groups and carboxylic acid groups, or R_5 and R_6, together with N, a 5-membered or 6-membered heterocyclic ring,

B a bridge member selected from the group consisting of



a=1 to 3,

b=0 to 2,

c=1 or 2 and

a+b+c≦4.

2. Phthalocyanine reactive dyestuffs of the formula

wherein

Pc the radical of a copper phthalocyanine or nickel phthalocyanine;

R_1, R_2, R_3 and R_4 hydrogen, methyl or ethyl,

R_5 and R_6 hydrogen, optionally substituted alkyl with 1 to 5 C atoms, optionally substituted cycloalkyl or aralkyl or an optionally substituted aryl radical which is free from sulphonic acid groups and carboxylic acid groups, or R_5 and R_6, together with N, a 5-membered or 6-membered heterocyclic ring,

B 1,2-phenylene, 1,3-phenylene or 1,4-phenylene optionally substituted by C_1–C_4-alkyl groups, C_1–C_4-alkoxy groups or halogen atoms,

a=1–3,

b=0–2,

c=1 and

a+b+c=2–4.

4,286,963

DIFFERENTIAL LYMPHOID-MYELOID DETERMINATION OF LEUKOCYTES IN WHOLE BLOOD

Stephen L. Ledis, Hialeah; David L. Chastain, Jr., Ft. Lauderdale, and Harold R. Crews, Miami, all of Fla., assignors to Coulter Electronics, Inc., Ill.

Filed Nov. 23, 1979, Ser. No. 96,697

Int. Cl.³ G01N *33/48, 33/72*

U.S. Cl. 23—230 B **17 Claims**

1. A lytic diluent comprising a mixture of ingredients (A) and (B) where

(A) is an aqueous saline solution of at least one quaternary ammonium salt having surface active properties, and

(B) is at least one additive selected from the group consisting of

(1) a short chain alkanol substituted by phenyl or phenoxy; and

(2) a polyhydroxy compound;

said lytic diluent being buffered to an acid pH within the range of 3.5 to 5.0, and each of said ingredients (A) and (B) being present in an amount sufficient to bring about rapid and complete lysing of the red cells in whole blood for making a differential determination of lymphoid and myeloid populations of leukocytes, and also for measuring hemoglobin by chromagen formation.

10. A lytic diluent comprising a mixture of ingredients (A) and (B) where

(A) is an aqueous saline solution of at least one quaternary ammonium salt having surface active properties, and

(B) is at least one additive selected from the group consisting of

(1) a short chain alkanol substituted by phenyl or phenoxy; and

(2) a polyhydroxy compound;

said lytic diluent being buffered to an acid pH within the range of 3.5 to 5.0, and each of said ingredients (A) and (B) being present in an amount sufficient to bring about rapid, but incomplete, lysing of the red cells in whole blood for making a differential determination of lymphoid and myeloid populations of leukocytes, and also for measuring hemoglobin for chromagen formation, wherein said chromagen formation is completed by the addition of an alkaline reagent comprising an aqueous solution of a quaternary ammonium salt and an alkali metal cyanide, the mixture being buffered with a basic buffer in sufficient concentration to allow rapid neutralization of said lytic diluent which is buffered to an acid pH.

4,286,964

POLYFUNCTIONAL EPOXIDES AND HALOHYDRINS USED AS BRIDGING GROUPS TO BIND AROMATIC AMINE GROUP-CONTAINING ALCOHOLS AND THIOLS TO HYDROXYL BEARING SUBSTRATES

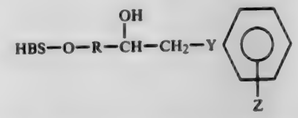
Brian S. Seed, 40 Graham Rd., Scarsdale, N.Y. 10583

Filed Oct. 12, 1979, Ser. No. 84,509

Int. Cl.³ C08B *11/20, 15/06;* **G01N** *31/22, 33/16*

U.S. Cl. 23—230 B **33 Claims**

4. A stable modified hydroxyl bearing sheet comprising substituted phenyl groups having structural units having the general formula:



in which HBS comprises a hydroxyl bearing substrate, R is selected from the group consisting of alkyl groups, hydroxyl bearing groups, aryl groups, alkylaryl groups, alkyl ether groups, hydroxyl bearing alkyl ether groups, aryl ether groups, alkylaryl ether groups, and hydroxyl bearing alkylaryl ether groups; Y is selected from the group consisting of oxygen and sulfur; and in which Z is selected from the group consisting of primary amines, diazo chlorides, diazo fluoborates, and diazo fluorophosphates.

10. A process for preparing a derivative of a hydroxyl bearing substrate comprising the steps of:

reacting a hydroxyl bearing substrate with oxirane bearing molecules to produce an oxirane ring bearing substrate; and

reacting the oxirane ring bearing substrate with a substituted primary aromatic amine selected from the group consisting of primary aromatic amine alcohols and primary aromatic amine thiols.

4,286,965

CONTROL APPARATUS FOR AUTOMATICALLY MAINTAINING BATH COMPONENT CONCENTRATION IN AN ELECTROLESS COPPER PLATING BATH

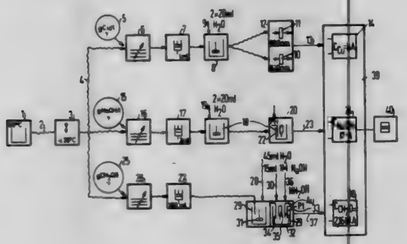
Jacky Vanhumbeeck, Brugge; Hubert De Steur, Drongen; Guido Heyneman, Knokke, and Chris Vandenboesche, Zwijnaarde, all of Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,374

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911073

Int. Cl.³ G01N *31/16*; B05D *3/12*

U.S. Cl. 23—230 A **13 Claims**



9. A method of automatically controlling the concentration of at least main components in an electroless copper plating bath having main components comprised of an aqueous solution of copper ions, an aqueous solution of sodium hydroxide and an aqueous solution of formaldehyde so that said concentration remains relatively constant throughout the operation of said bath, comprising the steps of:

discontinuously withdrawing three separate samples from said bath, each sample being of a predetermined volume;

diluting each of said separate samples with a specific amount of water;

independently determining the concentration of each respective main component in a respective sample and generating a signal corresponding to such concentration; and

adding a fresh amount of each main component to said bath in accordance with said signal.

4,286,966

PROCESS FOR THE MELTING OF SULFUR

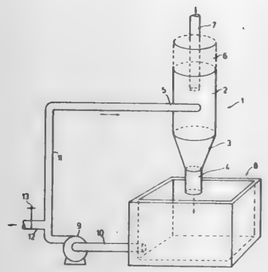
Charles R. Kirby, and Donald R. McKay, both of Rossland, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Apr. 11, 1980, Ser. No. 139,313

Int. Cl.³ B01J *8/00*

U.S. Cl. 23—293 S **15 Claims**

1. A method for separating moisture associated with sulfur at atmospheric pressure which comprises the steps of establishing a source of molten sulfur, said molten sulfur having a temperature of at least about 120° C., circulating molten sulfur at a temperature in the range of about 120° to 160° C. from said source through a mixing device and establishing in said mixing device a substantially spiral flow of circulating molten sulfur having a continuous vortex extending axially through the mixing device by feeding said circulating molten sulfur tangentially to said spiral flow, said spiral flow having a centrifugally accelerated velocity comprising a tangential component, increasing said tangential component of the velocity while maintaining the vortex, feeding sulfur having associated moisture in the range of 0 to 70% by weight into said vortex of circulating molten sulfur, discharging molten sulfur at a temperature of not less than 120° C. from said mixing device into the said source of molten sulfur and recovering molten sulfur having a



temperature of not less than about 120° C. substantially free of associated moisture.

4,286,967

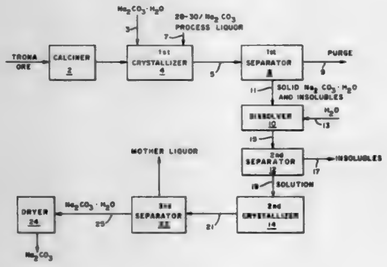
DOUBLE CRYSTALLIZATION PROCESS TO PRODUCE LOW ORGANIC, LOW SILICA SODA ASH

Elwood F. Booth, Jr., Liverpool, and Rustom P. Poncha, Syracuse, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 27, 1980, Ser. No. 163,848

Int. Cl.³ C30B *9/02*

U.S. Cl. 23—298 **17 Claims**



1. A process for the production of low organic, low silica, anhydrous sodium carbonate which comprises:

(a) calcining raw trona ore to produce a crude sodium carbonate containing soluble and insoluble impurities;

(b) admixing said crude sodium carbonate with a substantially saturated aqueous sodium carbonate solution to form sodium carbonate monohydrate crystals, insoluble impurities and a sodium carbonate solution containing soluble impurities;

(c) separating said sodium carbonate monohydrate crystals and insoluble impurities from said sodium carbonate solution;

(d) admixing said sodium carbonate monohydrate crystals and insoluble impurities with water in an amount sufficient to form a substantially saturated sodium carbonate solution and insoluble impurities.

(e) separating said solution from said insoluble impurities;

(f) evaporating said solution to form sodium carbonate monohydrate crystals;

(g) optionally, subjecting the crystals recovered in step (f) to steps (d–f) once, but no more than once;

(h) heating said sodium carbonate monohydrate crystals to obtain low organic, low silica, anhydrous sodium carbonate product particles; and

(i) optionally, repeating the sequence defined by steps (b–h) once, but no more than once.

4,286,968

SOLID FUEL COMPOSITION

Dominic L. Casinelli, Houston, Tex., assignor to James E. Harrell, Houston, Tex., a part interest

Filed Aug. 18, 1980, Ser. No. 179,118

Int. Cl.³ C10L *5/00*

U.S. Cl. 44—1 R **15 Claims**

1. A solid moldable fuel composition which upon combustion produces a flame temperature of from about 750° F. to about 3000° F., comprising:

an acetal resin containing from about 0.5 to about 1.5% by weight fumed silica.

3. The composition of claim 1, further including:

a flame retardant containing an oxide of antimony in an amount of from about 0.05 to about 0.8% by weight of the acetal resin.

6. The composition of claim 3, further including a cellulose ester in an amount of from about 0.1 to about 1.0% by weight of the acetal resin.

8. The composition of claim 6, further including an alkali earth metal carbonate or an alkaline earth metal carbonate in an amount of from about 1.0 to about 3.0% by weight of the acetal resin.

4,286,969

HYDROCARBON FUEL ADDITIVE

Eugene C. Medcalf, Bound Brook, N.J., assignor to BWM Corporation, Mount Vernon, N.Y.

Filed Mar. 20, 1978, Ser. No. 890,552

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 **9 Claims**

1. An additive for use with a hydrocarbon fuel which comprises a solution of a halogenated hydrocarbon containing from about 0.1 to about 10 percent by weight of a hydroperoxide and a compound selected from the group consisting of naphthylene, halogenated naphthylene and alkyl derivatives of naphthylene.

4,286,970

REACTOR WITH PARTICULATE RECYCLING FILTRATION MEANS

Nurettin T. Cankurt, and Anthony H. Furman, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,068

Int. Cl.³ C10J *3/20*; C10K *1/02*

U.S. Cl. 48—87 **9 Claims**

1. In a reactor vessel for generating a product fluid, a particulate recycling filtration means comprising:

a port in said vessel for exhausting product fluid therefrom;

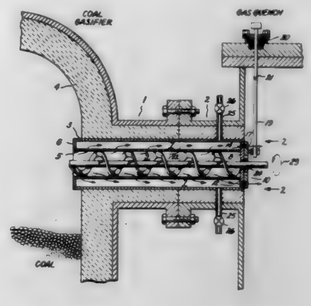
a tubular member positioned within at least a portion of said port in spaced relationship therewith;

a fluid-permeable portion of said tubular member which is substantially impermeable to particulates and which has an inboard and an outboard end;

a fluid barrier disposed intermediate said port and said tubular member adjacent the inboard end of said fluid-permeable portion so as to define a volume between said port and said tubular member;

a means connected to said tubular member adjacent the outboard end of said fluid-permeable portion for restricting the flow of fluid out of the outboard end of said tubular member; and

a means cooperating with said tubular member for removing particulates therefrom; wherein said fluid-permeable portion is a porous tube having pores sufficiently small to filter particulates of interest without unduly restricting the flow of fluid therethrough; and wherein said means for removing particulates from said tubular member is a rib-



bon auger rotatably mounted in said tubular member for recycling the particulates to the reactor vessel.

4,286,971

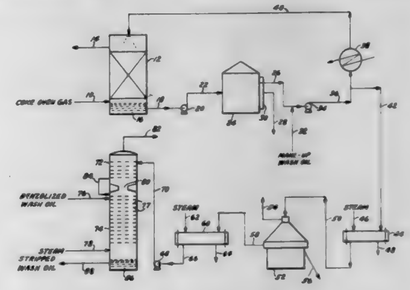
REMOVAL OF NAPHTHALENE FROM RECIRCULATED WASH OIL

Kenneth R. Burcaw, Jr., Easton, and Robert E. Watkins, Jr., Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 5, 1979, Ser. No. 82,372

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—48 **9 Claims**



1. In a method for the final cooling of coke oven gas using a recirculating water immiscible wash solvent in which the coke oven gas is cooled by contact with the wash solvent in a final cooling tower, a naphthalene enriched wash solvent containing condensed water and solid material emerges from the cooling tower as an effluent and the effluent is split into a recirculated naphthalene enriched wash solvent flow which contains water and solids, and a water flow, the improvement comprising:

(a) removing a bleed stream of wash solvent from the naphthalene enriched wash solvent flow,

(b) continually and simultaneously centrifugally separating the wash solvent bleed stream of step (a) into a waste water stream, a sludge stream and a clean, dry wash solvent stream which is substantially free of solids and has a water content less than 0.5% (wt.),

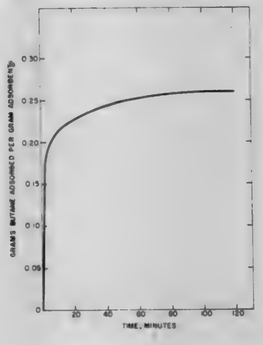
(c) heating the clean, dry wash solvent stream to a temperature of less than about 160° C., and

(d) stripping the naphthalene from the clean, dry wash solvent stream with steam to yield a stripped wash solvent.

4,286,972
VAPOR PHASE ADSORPTION USING NONSTOICHIOMETRIC CARBON-SULFUR COMPOUNDS

David W. Savage, Summit; Chin H. Chang, Edison, and John M. Longo, New Providence, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 3, 1978, Ser. No. 866,211
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—58 21 Claims



1. A process for regenerating a nonstoichiometric carbon-sulfur compound of the formula C_xS, where x ranges from about 4 to about 15, the adsorptive capacity of said compound having become reduced due to the adsorption of organic vapors thereon, which comprises removing at least a portion of said adsorbed vapors from said nonstoichiometric carbon-sulfur compound.

15. A process for removing organic vapors from a gaseous mixture which comprises

(a) contacting said mixture with a nonstoichiometric carbon-sulfur compound of the formula C_xS, where x ranges from 4 to about 15, said compound having a surface area of at least 300 square meters per gram, for a period of time sufficient to adsorb at least a portion of said organic vapors from said mixture onto said compound, thereby reducing the adsorptive capacity of said compound,

(b) regenerating said nonstoichiometric carbon-sulfur compound by removing at least a portion of said organic vapors from said compound.

4,286,973
WET GAS SCRUBBING OF PARTICULATES

Robert N. Hamlin, and William W. Dickinson, both of Duncan, Okla., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Feb. 22, 1980, Ser. No. 123,591
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—92 1 Claim

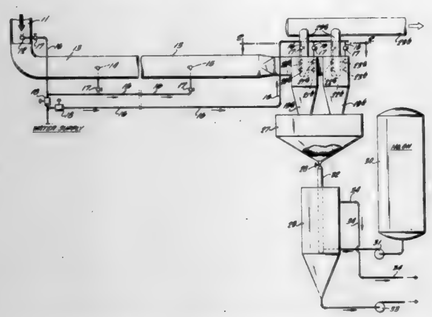
1. A method for removing particulates and acidic gases from flue gases comprising the steps of

(a) contacting said gases passing through a duct leading to a bank of two or more cyclone separators with a multiplicity of water sprays in said duct directed toward the incoming gas stream,

(b) contacting the gases as they enter said cyclones with a plurality of water sprays directed toward the incoming gas stream and in vertical aligment located inside said cyclones and having a spray configuration which ensures that essentially the entire cross-sectional area of the gases entering said cyclones are contacted,

(c) spraying water on the inside wall of said cyclones to flush particulates to the cyclone bottom for separation from said cyclones as a suspension of particulates in water, said flushing water being directed away from the incoming gas stream,

(d) removing off-gases from said cyclone, and

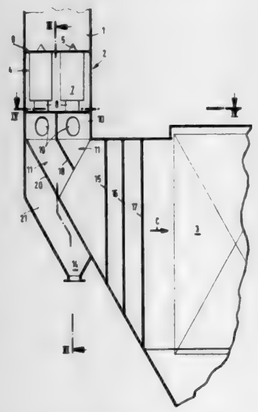


(e) neutralizing the aqueous suspension of particulates separated from said cyclone.

4,286,974
COMPOUND PARTICLE SEPARATOR

Heinz Schminke, Egelsbach, and Josef Schindling, Frankfurt am Main 80, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 5, 1980, Ser. No. 118,794
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907081
Int. Cl.³ B03C *3/01*; B01D *50/00*
U.S. Cl. 55—126 4 Claims



1. A compound dust-collecting plant comprising:

a horizontal-flow electrostatic precipitator having an intake side; and

a centrifugal separator mounted at said intake side of said electrostatic precipitator and including:

a downwardly extending raw gas inlet,

at least one horizontal row of a multiplicity of spaced apart centrifugal-separator cells disposed in said raw gas inlet and traversed downwardly and substantially vertically by a dust entraining raw gas, each of said cells including:

a vertical collecting tube with a respective upper gas inlet opening,

in said vertical tube near said inlet opening vane means for imparting a swirl to the gas traversing same, said inlet openings being disposed above said electrostatic precipitator, and

an outlet tube coaxial with and disposed within said collecting tube proximal to the bottom thereof,

the lower end of each two adjacent outlet tubes being connected to a respective gas well having a pocket-like construction, each of said gas wells having

two vertical triangular side walls,

a roof-shaped top cover, and

an open outlet side near the inlet of the electroatatic precipitator;

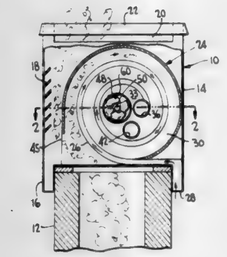
an inclined dust chute disposed below the collecting tubes and between side walls of adjacent gas wells; and

a dust-collecting bin below the dust chutes, the horizontal distance between said wells being approximately equal to the width of each well.

4,286,975
CHIMNEY HEAT EXCHANGER

Isaac C. Whiteley, 422 NE. 165th #24, Portland, Oreg. 97230

Filed Oct. 2, 1979, Ser. No. 81,180
Int. Cl.³ B01D *46/32*; E04F *17/02*; F23J *15/00*; F28D *7/14*
U.S. Cl. 55—269 10 Claims



1. A heat exchanger for installation on the top of a chimney of a building comprising

housing means having a lower end for receiving the top of a chimney having an effluent inlet therein for receiving effluent from the chimney and a fresh air inlet therein for receiving fresh air, a plenum and an upper end with openings therein; and

a heat exchanger assembly disposed in said housing means including a central chamber, duct means defining an effluent spiral path between said effluent inlet in said lower end of said housing means and said central chamber for carrying effluent from the top of the chimney to said central chamber and a fresh air spiral path between said fresh air inlet and said central chamber, effluent outlet means communicating with said effluent spiral path at said central chamber and with said plenum, and fresh air outlet means communicating with said fresh air spiral path at said central chamber, said effluent and fresh air spiral paths being in heat exchange relationship whereby the air passing through said fresh air spiral path is heated by the effluent passing through said effluent spiral path and can be used to heat the building.

4,286,976
COMBINED SOUND DAMPER AND OIL TRAP FOR A COMPRESSED AIR APPARATUS

Gunnar Eriksson, Högbyn, S-890 31, Arnäsvall, Sweden

Filed Jan. 18, 1980, Ser. No. 113,191
Claims priority, application Sweden, Jan. 29, 1979, 7900735
Int. Cl.³ B01D *50/00*; F01N *3/02*
U.S. Cl. 55—276 8 Claims

1. A combined sound damper and oil trap for compressed air apparatus, said sound damper and oil trap comprising:

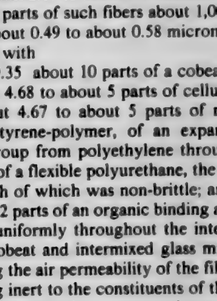
an oil collector housing;

a pressure chamber;

a filter housing;

a hose or tube adapted to be connected to the outlet of the compressed air apparatus and opening into said oil collector housing;

a scraper sleeve having an outer diameter which is less than the inner diameter of the said hose or tube, one end of said scraper sleeve being mounted in said hose or tube substantially centrally thereof so as to provide a narrow axial free space between the tube or hose and the scraper sleeve, and the opposite end of the scraper sleeve opening into said pressure chamber;



said pressure chamber being mounted under sealed condition within the oil collector housing and being connected to and opening into said filter housing, said filter housing being filled with a sound damping filter material and opening into the ambient air;

whereby oil which condensed on the inner surface of the tube or hose is collected and together with a small amount of air flowing through the tube or hose is received in the oil collector housing whereas the main portion of the air flowing the tube or hose passes through the scaper sleeve and is received in the pressure chamber from which the air passes through the sound damping filter material in the filter housing and out into the ambient air.

4,286,977
HIGH EFFICIENCY PARTICULATE AIR FILTER

Max Klein, 257 Riveredge Rd., Tinton Falls, N.J. 07724

Filed Oct. 15, 1979, Ser. No. 84,781
Int. Cl.³ B01D *39/14*
U.S. Cl. 55—524 11 Claims

1. A filter mat effective to filter air, which comprises in the below respectively indicated proportions to one another

(a) about 250 parts of glass micro-fibers admixed together composed of

(i) about 50 parts of such fibers about 6,300 microns long and about 4.3 microns in diameter,

(ii) about 50 parts of such fibers about 1,500 microns long and from about 2.17 to about 3.1 microns in diameter, and

(iii) about 150 parts of such fibers about 1,000 microns long and from about 0.49 to about 0.58 micron in diameter; all intertwined with

(b) from about 9.35 about 10 parts of a cobeat including

(i) from about 4.68 to about 5 parts of cellulose fibers and

(ii) from about 4.67 to about 5 parts of micro-bits of an expanded styrene-polymer, of an expanded polyolefin from the group from polyethylene through polymethylpentene or of a flexible polyurethane, the initial expanded form of each of which was non-brittle; and

(c) from zero to 2 parts of an organic binding agent distributed substantially uniformly throughout the intermixture of the intertwined cobeat and intermixed glass micro-fibers without destroying the air permeability of the filter, said binding agent (i) being inert to the constituents of the filter mat and to the fluid media that is to contact the mat, (ii) having its binding effectiveness initiated by heat, and (iii) being se-

lected from (x) such binder insoluble in cold water and soluble in hot water and (y) any of the aqueous acrylic emulsions and polyvinyl chloride emulsions used as binders, and each of which binders (x) and (y) retains its binding function on cooling.

4,286,978

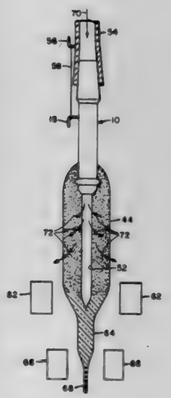
METHOD FOR SUBSTANTIALLY CONTINUOUSLY DRYING, CONSOLIDATING AND DRAWING AN OPTICAL WAVEGUIDE PREFORM

Alan C. Bailey, and Stephen B. Miller, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,651

Int. Cl.³ C03B *37/025, 37/075*

U.S. Cl. 65—3 A **7 Claims**



1. A method of forming an optical waveguide comprising the steps of

providing a porous soot preform suspended from one end of a substantially hollow longitudinal preform handle, said porous soot preform having a longitudinal aperture therein,

connecting the other end of said hollow preform handle to a source of gaseous drying medium,

flowing a quantity of said gaseous drying medium through said hollow handle, said aperture in said porous soot preform, and through the porous wall of said preform thereby drying the preform structure,

heating the extending end of said porous soot preform to the consolidation temperature of the materials thereof to progressively consolidate said preform from the extending end thereof,

heating the consolidated end of said preform to the drawing temperature of the materials thereof, and

drawing a filament from said extending end of the preform while said preform remains suspended from said preform handle.

4,286,979

FABRICATION OF OPTICAL FIBERS USING DIFFERENTIAL MODE-GROUP DELAY MEASUREMENT

Michael J. Buckler, Buford; Raymond B. Kummer, Norcross; Stephen C. Mettler, Decatur, and Calvin M. Miller, Lilburn, all of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 23, 1980, Ser. No. 162,263

Int. Cl.³ C03B *37/07, 37/075;* **G01N** *21/00*

U.S. Cl. 65—3 A **9 Claims**

1. In a method of forming a multimode optical fiber with improved mode dispersion characteristics comprising

thermochemically reacting gaseous glass precursor reactants to form a multimode optical fiber;

measuring the mode dispersion characteristics of the multimode fiber using a differential mode-group delay measurement technique;

altering, in accordance with the results of the measurement, the thermochemical reaction of the gaseous glass precursor reactants to form a multimode optical fiber with optimized mode dispersion characteristics,

the invention CHARACTERIZED IN THAT

the differential mode-group delay measurement technique comprises launching light into the multimode fiber using a single mode fiber which is spliced to the multimode fiber using an adjustable splice comprising an index matching fluid.

4,286,980

METHOD AND APPARATUS FOR FORMING BENT PLATE GLASS

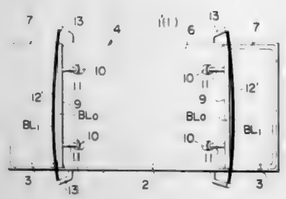
Kiyoto Matsuzaki, and Norimoto Aya, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 16, 1980, Ser. No. 150,529

Claims priority, application Japan, May 23, 1979, 54-63595

Int. Cl.³ C03B *23/027*

U.S. Cl. 65—106 **10 Claims**



1. A method of forming a bent plate glass, comprising in combination the following steps:

(a) positioning a flat glass plate upon a forming bed,

(b) heating said glass plate sufficiently so that said plate softens and conforms to the contour of said forming bed around the periphery thereof and further deforms slightly under its own weight;

(c) locally heating said glass plate along an initially curved heating line disposed outwardly from a desired bending line of said glass plate; and

(d) bending said glass plate along said initially curved heating line as said plate deforms, resulting in said heating line being transposed from its initial curved position to a position coincident with said desired bending line.

6. An apparatus for forming a bent plate glass, comprising:

(a) a fixed frame section;

(b) a moveable frame section rotatably connected to said fixed frame section; and

(c) an elongate curved heating element connected to said fixed frame section to locally heat a glass plate positioned on said apparatus, said heating element being so positioned to heat said glass plate along an initially curved heating line, which heating line results in a desired transposed bending line due to heat deformation of said glass plate resulting in transposition of said initially curved heating line.

4,286,981

MOULD WITH SEPARATING LAYER FOR THE PRODUCTION OF GLASS OBJECTS

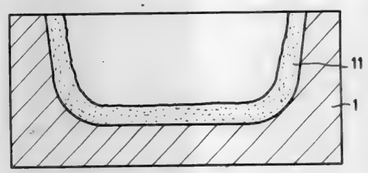
Rolf Clasen, Aachen, and Hans J. Lydtin, Stolberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 34,097

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821871

Int. Cl.³ C03B *9/347*

U.S. Cl. 65—169 **9 Claims**



1. A mould for producing glass objects comprising a mould body for molding a glass blob, and a separating layer formed between said mould body and said glass blob to be formed, said separating layer comprising a defined wear layer of a high melting, corrosion and scale resistant pulverized granular material having a hardness ≧7 Mohs and an organic binder into which said material is embedded, said organic binder being converted into carbon at least at a surface of said layer in contact with said glass blob, and said layer having a thickness ranging from 10 um to 2 cm, whereby on contact said glass blob receives particles of said granular material.

4,286,982

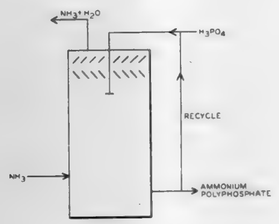
PROCESS OF MANUFACTURING STABLE AMMONIUM POLYPHOSPHATE FERTILIZERS

James S. Bremmer, R.R.#3, Box 561, O'Fallon, Mo. 63366

Filed Jul. 2, 1979, Ser. No. 53,748

Int. Cl.³ C05B *7/00*

U.S. Cl. 71—34 **5 Claims**



1. A process of manufacturing a stable ammonium phosphate fertilizer comprising preheating a feed stream of phosphoric acid, introducing the stream of heated phosphoric acid, at a temperature up to about boiling, to a countercurrent spray reactor having a spray nozzle on the inlet of the phosphoric acid, the spray nozzle being effective to atomize the phosphoric acid and to provide intimate contact between the phosphoric acid and ammonia at the input flow rate of the phosphoric acid; introducing the ammonia to the spray reactor in a preheated countercurrent stream at a temperature of between about 400 and 600 degrees F.; reacting the ammonia and phosphoric acid to form ammonium phosphate, and further heating the phosphoric acid and ammonia to a temperature sufficient to partially dehydrate the phosphoric acid, the phosphoric acid being at least partially dehydrated under the conditions of the spray reactor by the latent heat of the reactants and the heat of the reaction between the phosphoric acid and the ammonia, the spray reactor being operated under a partial vacuum effective to produce a flow through the reactor without entraining substantial phosphoric acid, the phosphoric acid being substantially converted to ammonium phosphate; separating the reactants, the ammonium phosphate product exiting at a temperature between about 300–400 degree F., the heat of the effluent ammonium phosphate being used to at least partially preheat the ammonia feed to the reactor; the resultant ammonium phosphate product containing sufficient ammonium polyphosphate to effectively stabilize the product at ambient temperatures for a time sufficient for storage, transportation and use, and at temperatures as low as 32 degrees F. for up to at least about three weeks and at temperatures as high as 120 degrees F. for up to at least about twenty-four hours; the product having above about 12.84% of the ammonium phosphate present as an ammonium polyphosphate.

4,286,983

ALGICIDAL COMPOSITION AND METHOD OF PREVENTING OR CONTROLLING ALGAE WITH SAID COMPOSITION

Jaap Van Gilse, and Gerard B. Paerels, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Netherlands

Filed Jul. 20, 1979, Ser. No. 59,420

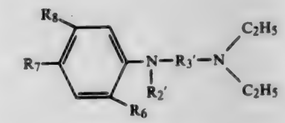
Claims priority, application Netherlands, Jul. 26, 1978, 7807908

Int. Cl.³ A01N *33/06*

U.S. Cl. 71—67 **6 Claims**

1. An algicidal composition comprising

an algically effective amount of a compound of the formula



wherein R_2' is H, methyl, or phenyl,

R_3' is ethylene, trimethylene, or 2-methyl-ethylene,

R_6 and R_8 are identical or different and are H, Cl, or methyl,

R_7 is Cl or methyl, with the provisos that (a) if R_6 and R_8 are both H, R_7 is in addition trifluoromethyl, n-C_2–C_{10}-alkyl, or cyclohexyl, (b) not all R_6, R_7, and R_8 are Cl, and (c) if R_6 and R_8 are H and R_7 is Cl, R_3' is ethylene, or a salt thereof and

a solid or liquid inert material.

4,286,984

COMPOSITIONS AND METHODS OF PRODUCTION OF ALLOY FOR TREATMENT OF LIQUID METALS

Leon A. Luyckx, 226 E. Hazelcroft Ave., New Castle, Pa. 16105

Filed Apr. 3, 1980, Ser. No. 136,885

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 **13 Claims**

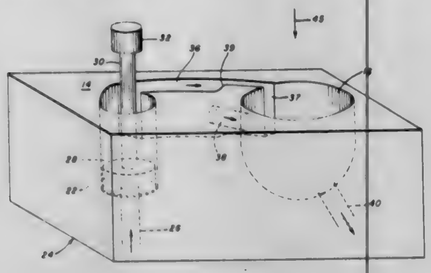
1. An alloy essentially free from silicon and carbon for steel desulfurization and inclusion shape control consisting essentially of calcium and aluminum with iron, manganese, barium and alkali metals being present in amounts sufficient to provide desired characteristics associated with their presence, said aluminum being always present in at least a ratio by weight of Al:Ca=1:4, but not more than in a ratio of Al:Ca=1.5:1.

4,286,985

VORTEX MELTING SYSTEM

Jan H. L. Van Linden, Hamptown Township, Allegheny County, Pa., and Jeffrey B. Gorss, Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 31, 1980, Ser. No. 135,917
Int. Cl.³ C22B *21/00*
U.S. Cl. 75—65 R **2 Claims**



1. An improved method of ingesting and melting metal scrap in a molten melting media, comprising:
providing a supply of the melting media,
directing melting media from the supply to the upper portion of a receptacle having an outlet opening in the lower portion,
directing the media into the receptacle in a manner that provides a free vortex of the media in the receptacle,
maintaining the flow of the media to the receptacle in a manner that provides a predetermined level of the media in the receptacle as the media flows from the receptacle through the opening in the lower portion thereof,
introducing metal scrap into the receptacle and media, and
dividing the media directed to the receptacle into two paths to disrupt the symmetry of the vortex in a manner that enhances the ingestion of the metal scrap into the media.

4,286,986

FERRITIC STAINLESS STEEL AND PROCESSING THEREFOR

Paul R. Borneman, Sarver, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,821
Int. Cl.³ C22C *38/26, 38/48*
U.S. Cl. 75—126 F **15 Claims**

1. A process for producing a creep resistant ferritic stainless steel, which comprises the steps of: preparing a steel melt containing, by weight, up to 0.1% carbon, up to 0.05% nitrogen, from 11 to 20% chromium, up to 5% aluminum, up to 5% molybdenum, up to 1.5% manganese, up to 1.5% silicon, up to 0.5% nickel, up to 0.5% copper, up to 0.6% titanium, and niobium and tantalum in accordance with the following:
(a) 0.63 to 1.15% effective niobium, in the absence of tantalum
(b) effective niobium and tantalum in accordance with the equation

$$\frac{\text{Effective Nb}}{0.9291} + \frac{\text{Effective Ta}}{1.8095} = 0.68 \text{ to } 1.24\%,$$

when both niobium and tantalum are present; casting said steel; working said steel; and annealing said steel at a temperature of at least 1900° F. to provide said steel with a creep life to one percent elongation at 1600° F. under a load of 1200 pounds per square inch, of at least 160 hours; said effective niobium and tantalum being computed in accordance with the following:

$$\frac{\text{weight \% Ti}}{47.90} - \frac{\text{weight \% N}}{14.01} - \frac{\text{weight \% C}}{12.01} = A$$

If A is positive or zero:
Then Effective Nb content = weight % Nb
Effective Ta content = weight % Ta
If A is negative:
Then When Ta is absent
Effective Nb content =

$$92.91\left(\frac{\text{weight \% Nb}}{92.91} + A\right)$$

When Nb and Ta are present together

$$92.91\left(\frac{\text{weight \% Nb}}{92.91} + A\right) = B$$

Then if B is positive or zero:
Effective Nb content = B
Effective Ta content = weight % Ta
If B is negative:
Effective Nb content = 0
Effective Ta content =

$$180.95\left(\frac{\text{weight \% Ta}}{180.95} + \frac{\text{weight \% Nb}}{92.91} + A\right).$$

8. A ferritic stainless steel consisting essentially of, by weight, up to 0.1% carbon, up to 0.05% nitrogen, from 11 to 20% chromium, up to 5% aluminum, up to 5% molybdenum, up to 1.5% manganese, up to 1.5% silicon, up to 0.5% nickel, up to 0.5% copper, up to 0.6% titanium, and niobium and tantalum in accordance with the following:
(a) 0.63 to 1.15% effective niobium, in the absence of tantalum
(b) effective niobium and tantalum in accordance with the equation

$$\frac{\text{Effective Nb}}{0.9291} + \frac{\text{Effective Ta}}{1.8095} = 0.68 \text{ to } 1.24\%,$$

when both niobium and tantalum are present, balance essentially iron; said effective niobium and tantalum being computed in accordance with the following:

$$\frac{\text{weight \% Ti}}{47.90} - \frac{\text{weight \% N}}{14.01} - \frac{\text{weight \% C}}{12.01} = A$$

If A is positive or zero:
Then Effective Nb content = weight % Nb
Effective Ta content = weight % Ta
If A is negative:
Then When Ta is absent
Effective Nb content =

$$92.91\left(\frac{\text{weight \% Nb}}{92.91} + A\right)$$

When Nb and Ta are present together

$$92.91\left(\frac{\text{weight \% Nb}}{92.91} + A\right) = B$$

Then if B is positive:
Effective Nb content = B
Effective Ta content = weight % Ta
If B is negative:
Effective Nb content = 0
Effective Ta content =

$$180.95\left(\frac{\text{weight \% Ta}}{180.95} + \frac{\text{weight \% Nb}}{92.91} + A\right)$$

said steel having a creep life to one percent elongation at 1600° F. under a load of 1200 pounds per square inch, of at least 160 hours.

4,286,987

COMPOSITION FOR IRON POWDER COMPACT INFILTRANT

Paul E. Matthews, Lawrenceville, N.J., assignor to United States Bronze Powders, Inc., Flemington, N.J.

Filed Nov. 28, 1979, Ser. No. 97,904
Int. Cl.³ B22F *1/00*; C23C *3/00*
U.S. Cl. 75—252 **7 Claims**

1. A dry compactible infiltrant composition for impregnating iron and iron base alloy powder compacts, said composition consisting of a copper-iron mixture containing by weight about 97% to 99% copper or copper base alloys having a particle size less than 60 mesh and about 1% to 3% carbonyl iron powder having a particle size finer than 325 mesh, and between about 0.01% to 0.10% by weight of said mixture of aluminum, to effectively reduce residual formation to about 5.5% or less by weight and optionally containing a lubricant.

5. A dry compactible infiltrant composition for impregnating iron and iron base alloy powder compacts, said composition consisting essentially of a copper-iron mixture containing by weight about 97% to 99% copper or copper base alloy and about 1% to 3% carbonyl iron powder by weight having a particle size finer than 325 mesh, and 0.01% to about 0.1% by weight as aluminum of aluminum stearate to effectively reduce residual formation to about 5.5% or less by weight and substantially reduce adhesion after infiltration.

4,286,988

COPPER BASE ANTIFOULING PAINTS WITH PH CONTROL

Vincent J. Castelli, Severna Park, and Eugene C. Fischer, Arnold, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1980, Ser. No. 164,450
Int. Cl.³ C09D *5/14*
U.S. Cl. 106—15.05 **12 Claims**

1. In a copper base antifouling paint containing a film-forming vehicle and a cuprous source as the toxic agent, the improvement comprising 0.001 to 20 weight percent of $(NH_4)_2SO_4$ based upon the weight of the cuprous source.

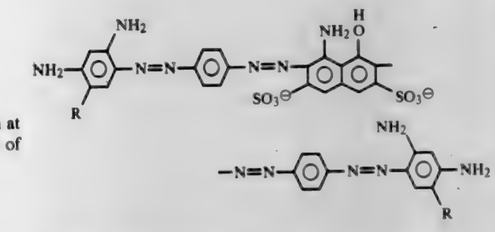
4,286,989

FORMULATIONS FOR INK JET PRINTING

Leo J. Kadehjian, Woodside, Calif.; Harbans S. Sachdev, Wappingers Falls, N.Y., and Clinton D. Snyder, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,270
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—22 **7 Claims**

1. An ink for use in ink jet printing comprising an aqueous solution of a coloring material having the formula



where R is $-OCH_2CO_2^-$, $-CH_2CO_2^-$, $-PO_3^=$ or $-CH_2-PO_3^=$.

4,286,990

TEMPERATURE STABILIZED, PYROGENICALLY PRODUCED ALUMINUM OXIDE-MIXED OXIDE, THE PROCESS FOR ITS PRODUCTION AND USE

Peter Kleinschmit, Hanau, and Rudolf Schwarz, Alzenau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,342
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931585
Int. Cl.³ C04B *35/10*
U.S. Cl. 106—73.4 **16 Claims**



1. Temperature stabilized, pyrogenically produced aluminum oxide-silicon dioxide mixed oxide having a BET surface area of 50 to 200 m^2/g, the silicon dioxide being 0.5 to 20 weight % of the mixed oxide, the balance of the mixed oxide consisting essentially of aluminum oxide.

4,286,991

VERY HIGH EARLY STRENGTH CEMENT

Richard E. Galer, Hanover Park, and Paul C. Webb, Arlington Heights, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Apr. 25, 1980, Ser. No. 143,666
Int. Cl.³ C04B 7/352
U.S. Cl. 106—90 **14 Claims**

1. A hydraulic cement composition comprising from about 3.75% to about 40% of the compound $3CaO.3Al_2O_3.CaSO_4$, from about 0.1% to about 5% of lime and from about 3% to about 35% of calcium sulfate, dicalcium silicate, from about 0.1% to about 2% hydroxy polycarboxylic acid, and from about 0.25% to about 4% of starch hydrolyzate solids from a hydrolyzate having a dextrose equivalent of from about 1 to 100, said amounts being based upon the total dry weight of said composition.

4,286,992

VERY HIGH EARLY STRENGTH CEMENT

Richard E. Galer, Hanover Park, and Paul C. Webb, Arlington Heights, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Apr. 25, 1980, Ser. No. 143,667
Int. Cl.³ C04B 7/352
U.S. Cl. 106—90 **20 Claims**

1. A hydraulic cement composition comprising from about 3.75% to about 40% of $3CaO.3Al_2O_3.CaSO_4$, from about 0.1% to about 5% of lime, from about 3% to about 35% of calcium sulfate, dicalcium silicate, from about 0.1% to about 2% of a hydroxy polycarboxylic acid, and from about 0.25% to about 4% of sucrose, said amounts being based upon the total dry weight of said composition.

4,286,993

METHOD AND INSTALLATION FOR MAKING CEMENT CLINKER

Jean P. Lovichi, and Bernard le Bras, both of Montelimar, France, assignors to LaFarge Conseils et Etudes, Paris, France

Filed Jan. 4, 1980, Ser. No. 109,528
Claims priority, application France, Jan. 9, 1979, 79 00394
Int. Cl.³ C04B 7/02
U.S. Cl. 106—106 **2 Claims**

1. A method of making clinker, which comprises:
introducing previously decarbonated cement-making raw material into the baking zone of a kiln,
baking said raw material under reducing conditions so as to complete the decarbonation of said raw material,
clinkerizing said material in the baking zone whereby a major part of the volatile substances contained in said material are volatilized and carried by the combustion gases,
diverting at least a portion of said gases from said kiln at a location upstream of the said baking zone,
quenching the diverted gases by injecting into the flow of said gases a cool powderous or granular material to remove at least a portion of the volatile substances from the diverted gases and form a heated material loaded with volatile substances,
causing heat exchange to take place between the heated material loaded with volatile substances and a flow of cool air to which said material transfers a major part of its thermal energy while being cooled,
re-introducing at least a portion of the thus cooled material into the flow of combustion gases diverted at said location upstream of the baking zone, and
removing the non re-introduced part of said material from the circuit.

4,286,994

METHOD FOR THE USE OF THE GYPSUM OCCURRING IN FLUE GAS DESULFURIZING INSTALLATIONS, OPERATED ON A LIME BASIS

Rudolf Müller, Friedrichsthal; Hans-Guido Klinkner, St. Ingbert, and Günter Culmann, Neunkirchen, all of Fed. Rep. of Germany, assignors to Saarbergwerke A.G., Saarbrucken, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 62,074
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2833382
Int. Cl.³ C04B 11/00
U.S. Cl. 106—109 **5 Claims**

1. Method for the use of flue gas desulfurizing gypsum occurring in flue gas desulfurizing installations operated on a lime basis, comprising mixing the flue gas desulfurizing gypsum with dehydrated natural gypsum after its partial or complete dehydration.

4,286,995

MICA-FREE JOINT COMPOUND

Richard E. Smith, Williamsville, and William R. Burke, Tonawanda, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Mar. 27, 1980, Ser. No. 134,701
Int. Cl.³ C04B 11/00
U.S. Cl. 106—109 **10 Claims**

1. A joint compound for concealing the joints between wallboards, consisting essentially of a filler, a binder, additives for providing working properties during application to a wallboard when mixed with water, and a special additive for minimizing shrinkage during drying, said special additive consisting of calcium sulfate dihydrate, said calcium sulfate dihydrate comprising a substantial portion of individual crystals having a length to width ratio of about 1.0 to 1.5, with the length being about 50 to 100μ.

4,286,996

BITUMINOUS COMPOSITE REINFORCED WITH A FILLER COATED WITH THE REACTION PRODUCT OF A BITUMEN AND AN ORGANO METALLIC COMPOUND

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 48,220, Jun. 13, 1979, Pat. No. 4,246,314.
This application May 5, 1980, Ser. No. 146,817
Int. Cl.³ B32B 11/00; C08L 95/00
U.S. Cl. 106—282 **3 Claims**

1. A reinforced composite comprising a bitumen as a continuous phase and, as reinforcement in the bitumen, a filler selected from the group consisting of natural and synthetic fillers having a coating thereon, said coating comprising the reaction product of (a) bitumen and (b) an organo metallic compound selected from the group consisting of an orthoester and a borate ester.

4,286,997

BITUMINOUS COMPOSITE REINFORCED WITH A FILLER COATED WITH THE REACTION PRODUCT OF A BITUMEN AND A CHROMIUM COMPLEX

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 55,738, Jul. 9, 1979, Pat. No. 4,251,577.
This application Jun. 19, 1980, Ser. No. 160,885
Int. Cl.³ B32B 11/00; C08L 95/00
U.S. Cl. 106—282 **3 Claims**

1. A reinforced composite comprising a bitumen as a continuous phase and, as reinforcement in the bitumen, a filler selected from the group consisting of natural and synthetic fillers

having a coating thereon, said coating consisting essentially of the reaction product of (a) bitumen and (b) a chromic complex



containing a carboxylato group containing a functional group reactive with the bitumen.

4,286,998

LIGHT STABLE QUINACRIDONEQUINONE YELLOW PIGMENT

Wilfried G. Höltje; George H. Senkler Jr., and Arthur J. Taggi, all of Wilmington, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 70,835, Aug. 29, 1979, which is a continuation-in-part of Ser. No. 969,533, Dec. 14, 1978, abandoned. This application May 27, 1980, Ser. No. 153,208
Claims priority, application Canada, Dec. 3, 1979, 341100
Int. Cl.³ C08H 17/14
U.S. Cl. 106—288 Q **12 Claims**

1. A pigment comprising a solid solution of
(a) 1–20% by weight based on the total of (a) and (b) of a stabilizer selected from the group consisting of 2-anilinoacridone, 5,6,7,8-tetrahydro-2-anilinoacridone, 6-anilinoquinolone, and 2-aminoacridone or mixtures thereof; and
(b) 80–99% by weight of quinacridonequinone.

4,286,999

METHOD OF IMPROVING PROPERTIES OF CERAMIC FIBERS

Jerry Zucker, Charleston, S.C., assignor to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Mar. 4, 1980, Ser. No. 127,235
Int. Cl.³ C04B 31/44
U.S. Cl. 106—308 Q **7 Claims**

1. A process for improving the water dispersibility of ceramic fibers comprising the step of applying a coating to said fibers, said coating comprising a mixture of a coupling agent consisting of hydrolyzable silanes, titanates and mixtures thereof and an ionic surfactant, said coupling agent and surfactant being added in amounts sufficient to render the ceramic fiber water dispersible.

4,287,000

GRINDING OF PIGMENTS

Geoffrey R. Buckwalter, Flemington, N.J., assignor to Eric Simon, Houston, Tex.

Filed Dec. 26, 1979, Ser. No. 106,410
Int. Cl.³ C04B 47/04
U.S. Cl. 106—309 **6 Claims**

1. In salt grinding of pigments, the improvement comprising
(a) milling oversize crude organic pigment with an inorganic salt and an organic conditioner until a predetermined state of pigmentary quality is obtained;
(b) dispersion of the above mixture in a dispersing medium to provide a smooth suspension;
(c) separating the resulting suspension into a liquid phase consisting of properly sized pigment, conditioner, and some salt and a sediment phase comprising the major portion of the salt, conditioner, and a small part of the pigment;
(d) returning the sediment phase to step a for a subsequent batch in a new grinding cycle with new unfinished pigment;
(e) separating the pigment from said liquid phase by filtration after addition of some water and flocculating agent to form press cake;
(f) washing the resulting press cake free of conditioning agent and salt with water; and
(g) combining filtration liquor from step e and wash water from step f and evaporating the water from the conditioning agent leaving a mass of conditioning agent and some salt in the unit;
wherein organic conditioner is used as the dispersing medium in step b.

4,287,001

ESTERIFIED ALUMINOSILICATE ADSORBENT AS FOR RESOLUTION OF SUGAR COMPONENTS

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 25, 1980, Ser. No. 124,397
Int. Cl.³ C13K 3/00, 11/00
U.S. Cl. 127—46 B **10 Claims**

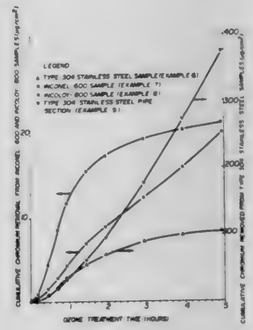
1. In a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components by contacting said solution with an adsorbent comprising a crystalline aluminosilicate exhibiting an adsorptive selectivity towards said component bound with an inorganic oxide binder material, thereby selectively adsorbing said component from said mixture, and thereafter recovering said adsorbed component, the silicon constituent of said crystalline aluminosilicate or said binder material tending to dissolve in said solution resulting in the undesirable disintegration of said crystalline aluminosilicate or said binder material, the improvement which comprises contacting said adsorbent, prior to said contacting with said aqueous solution, with an alcohol at esterification reaction conditions, thereby effecting an esterification reaction between said crystalline aluminosilicate or said binder material and said alcohol which substantially reduces the extent of dissolution of said silicon constituent and the extent of said disintegration of said crystalline aluminosilicate or said binder material.

4,287,002

NUCLEAR REACTOR DECONTAMINATION

John Torok, Deep River, Canada, assignor to Atomic Energy of Canada Ltd., Ottawa, Canada

Filed Apr. 9, 1979, Ser. No. 28,200
Int. Cl.³ B08B 7/04
U.S. Cl. 134—3 **19 Claims**



1. A method of decontaminating and removing corrosion products at least some of which are radioactive, from nuclear reactor surfaces exposed to coolant or moderator, said surfaces containing acid-insoluble metal oxides, including chromium oxide, rendered more soluble by oxidation, comprising:
(a) contacting the contaminated surfaces with ozone to an extent sufficient to oxidize insoluble surface metal oxide or

oxides, oxides of said metals being thereby rendered more soluble in water or acidic decontaminating solutions;
(b) dissolving the solubilized surface metal oxides in an aqueous liquid;
(c) dissolving or detaching the remaining surface oxides into aqueous liquid containing oxide-removing acidic decontaminating reagents;
(d) removing insoluble particulate material from the resulting aqueous liquids;
(e) removing dissolved metals from the resulting aqueous liquids; and
(f) removing both residual dissolved metals and reagents from the reactor system to complete the decontamination.

4,287,003

STABILIZATION OF CHLORINATED ALIPHATIC HYDROCARBONS

Christopher S. Allen, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 18, 1979, Ser. No. 58,443

Claims priority, application United Kingdom, Jul. 27, 1978, 31314/78; Jul. 27, 1978, 31316/78

Int. Cl.³ B08B *3/08;* **C07C** *17/42;* **C11D** *7/50;* **C23G** *5/02*

U.S. Cl. 134—31 **12 Claims**

1. A method of degreasing metal and other articles which comprises bringing the articles into contact with a solvent selected from the group consisting of trichloroethylene, perchloroethylene and methylene chloride in the vapor phase wherein said solvent has been stabilized with a stabilizing amount of an epoxy alkyl ester which is derived from a carboxylic acid containing 5 to 22 carbon atoms and from an alcohol containing 3 to 12 carbon atoms.

6. A method as claimed in claim 1 or claim 5 in which the stabilizer for the solvent is a mixture of epoxy alkyl esters derived from long chain fatty acids and glycerol.

7. A method as claimed in claim 6 in which the stabilizer for the solvent is an epoxidized vegetable oil.

4,287,004

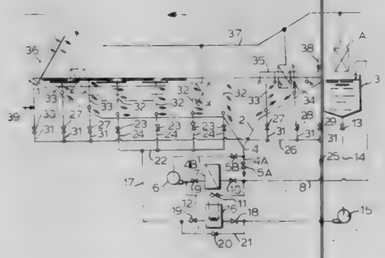
DIP PHOSPHATING PROCESS

Ryoichi Murakami; Hideo Shimizu, and Syuzi Sato, all of Neyagawa, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Dec. 5, 1979, Ser. No. 100,409

Int. Cl.³ C23F *7/08*

U.S. Cl. 148—6.15 R **6 Claims**



1. A dip phosphating process, which comprises introducing a substrate to be phosphated into a bath containing a phosphating solution, while undulating, without splashing, the phosphating solution at the entrance section of the bath, wherein the substrate is washed by spouting a phosphating solution and/or water thereto when the substrate is taken out of the phosphating solution in the bath at the exit section.

4,287,005

INSTANTANEOUS SCARFING BY MEANS OF A PILOT PUDDLE

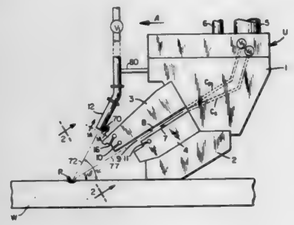
Stephen A. Engel, Granite Springs, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 91,162, Nov. 5, 1979, Pat. No. 4,243,436, which is a continuation of Ser. No. 24,597, Mar. 28, 1979, abandoned. This application Mar. 4, 1980, Ser. No. 121,606

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.³ B23K *7/00*

U.S. Cl. 148—9.5 **23 Claims**



1. A process for spot scarfing the surface of a metal workpiece comprising:
(a) impinging a stream of pilot oxygen gas upon a portion of the workpiece surface which is at least at its oxygen ignition temperature thereby causing a thermochemical rection for providing a pilot puddle of molten metal on the surface of the workpiece;
(b) causing relative motion between said workpiece and said stream of pilot oxygen gas, so as to continuously produce said pilot puddle of molten metal having a width of about 10 to 30 mm along a chosen path on the surface of the workpiece;
(c) contacting said pilot puddle with a stream of oxygen gas having a first intensity higher than the intensity of a stream of scarfing oxygen gas so as to spread the puddle to a preselected width of about 100 to 300 mm when said puddle reaches an area to be spot scarfed on said workpiece;
(d) reducing said first intensity of said stream of oxygen gas of step (c) to a second intensity of up to the intensity of said stream of scarfing oxygen gas upon said puddle being spread to said preselected width; and
(e) scarfing said area by impinging said stream of scarfing oxygen gas on the spread puddle.

8. An apparatus for spot scarfing a metal workpiece comprising:
(a) a scarfing unit comprising:
(i) an upper preheat block having a lower surface;
(ii) a lower preheat block having an upper surface positioned below said lower surface of said upper preheat block and spaced therefrom to form a slot-like nozzle for directing a sheet-like stream of oxygen gas at scarfing intensity at said workpiece surface;
(b) pilot oxygen nozzle means with a central axis directed to intersect said workpiece surface at an acute angle for discharging a stream of pilot oxygen gas at said workpiece surface to form a pilot puddle thereon;
(c) blowpipe means, having a discharge orifice with a shape factor of from 4π to about 25 and with a central axis directed to intersect said workpiece surface at an acute angle, for discharging a stream of oxygen gas having a first intensity higher than said scarfing oxygen intensity and being directed at said pilot puddle on said workpiece surface; and
(d) means for reducing said first intensity of said stream of oxygen gas of (c) to a second intensity of up to said scarfing oxygen intensity.

4,287,006

ANNEALING SEPARATOR FOR GRAIN ORIENTED SILICON STEEL STRIPS

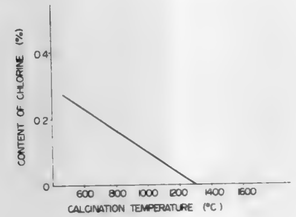
Yoshitaka Hiromae; Kazuo Nakamura, and Hajime Nitto, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 98,118

Claims priority, application Japan, Nov. 28, 1978, 53/146101; Apr. 11, 1979, 54/42961; Jun. 7, 1979, 54/70569; Aug. 22, 1979, 54/106799

Int. Cl.³ C04B *35/04;* **B23K** *35/24*

U.S. Cl. 148—27 **10 Claims**



1. An annealing separator for grain oriented silicon steel strips, comprising (1) non-hydrating magnesium oxide which has been calcined at a temperature of 1300° C. or more and which is in the form of fine particles, 70% by weight or more of which particles have a size of 5 microns or less, and (2) at least one member selected from the group consisting of magnesium hydroxide in an amount of from 1 to 100%, based on the weight of said magnesium oxide, and aluminum compounds in an amount of from 0.05 to 10%, based on the weight of said magnesium oxide.

4,287,007

STEEL COMPOSITION CHIPPER KNIFE

George F. Vander Voort, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 29, 1979, Ser. No. 43,069

Int. Cl.³ C21D *9/18*

U.S. Cl. 148—36 **9 Claims**



1. A quenched and tempered ferrous alloy chipper knife comprising a generally rectangular bar having a beveled cutting edge, said ferrous alloy consisting essentially of, by weight, carbon between about 0.40 and 0.60%, a maximum of about 1.0% manganese, a maximum of about 0.035% phosphorus, a maximum of about 0.035% sulfur, a maximum of about 1.50% silicon, a maximum of about 2.00% nickel, chromium between about 4.0 and 6.0%, molybdenum between about 1.0 and 3.0%, a maximum of about 0.10% aluminum, and the balance essentially iron, said knife characterized by a level of toughness of at least 100 ft-lbs on unnotched specimens, and a hardness of at least 56 HRC.

4,287,008

METHOD OF IMPROVING THE DUCTILITY OF THE COATING OF AN ALUMINUM-ZINC ALLOY COATED FERROUS PRODUCT

Theodore E. Torok, Springtown; Paik W. Shin, Coopersburg, and Angelo R. Borzillo, Norristown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 8, 1979, Ser. No. 92,786

Int. Cl.³ C23C *1/02;* **C22C** *21/10;* **C23F** *17/00*

U.S. Cl. 148—127 **4 Claims**

3. A method of producing an aluminum-zinc alloy coated ferrous product to improve the ductility of the coating, said as-cast coating comprising (1) an alloy overlay of cored aluminum-rich dendrites and zinc-rich interdendritic constituents, and (2) an intermetallic layer intermediate said overlay and the ferrous base, characterized by the steps of thermally treating said coated ferrous product by heating to a temperature between about 400° F. (205° C.) and 800° F. (427° C.) and holding at said temperature for a minimum of time as calculated by the following equation:

$$\log t = \frac{7102.4}{T} - 11.04,$$

where t=time in seconds, and T=heating temperature in °K; cooling from said temperature at a rate no faster than about 1° F./minute down to 400° F. (205° C.), and thereafter cooling to ambient temperature at a rate to precipitate incoherent overaged second phase particles in said overlay.

4,287,009

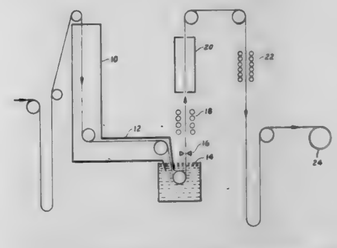
METHOD OF PRODUCING AN ALUMINUM-ZINC ALLOY COATED FERROUS PRODUCT TO IMPROVE CORROSION RESISTANCE

Louis K. Allegra, Bethlehem; Herbert E. Townsend, Center Valley, and Angelo R. Borzillo, Norristown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 8, 1979, Ser. No. 92,787

Int. Cl.³ C22F *1/04;* **C23F** *17/00*

U.S. Cl. 148—127 **9 Claims**



7. A method of producing an aluminum-zinc alloy coated ferrous product to improve the atmospheric corrosion behavior of the coating by altering its corrosion mechanism, characterized by the steps of coating said ferrous product with molten aluminum-zinc alloy comprising, by weight, 25 to 70% aluminum, balance essentially zinc with a small addition of silicon, cooling said aluminum-zinc alloy coating during substantially the entire solidification of said coating at a rate of at least 20° F./sec. (11° C./sec.) to produce an aluminum-zinc alloy coating comprising (1) an alloy overlay of cored aluminum-rich dendrites and zinc-rich interdentritic constituents, and (2) an intermetallic layer intermediate said overlay and the ferrous base, arresting said cooling and holding said coated ferrous product at a temperature within the single phase region for the composition of said aluminum-zinc alloy, defined as α in FIG. 1 in the accompanying drawings, for a sufficient time to cause dissolution of said interdendritic zinc-rich constituents in said alloy coating overlay, and cooling the coated ferrous product

slowly to about 350° F. (177° C.), whereby to produce a coating overlay structure of a fine dispersion of zinc within an aluminum-rich matrix.

4,287,010

EMULSION-TYPE EXPLOSIVE COMPOSITION AND METHOD FOR THE PREPARATION THEREOF

James H. Owen, II, Hagerstown, Md., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Aug. 6, 1979, Ser. No. 64,172
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **23 Claims**

1. A method of producing an emulsion-type blasting composition comprising combining an aqueous solution of an inorganic oxidizing salt and a carbonaceous fuel in the liquid phase with agitation in the presence of a fatty acid and ammonium or alkali metal hydroxide, and incorporating dispersed gas bubbles or voids in the resulting water-in-oil emulsion.

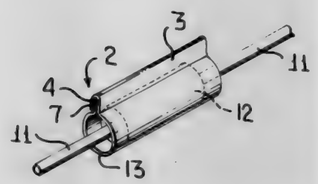
15. An emulsion-type explosive composition comprising:
(a) a carbonaceous fuel forming a continuous emulsion phase;
(b) an aqueous solution of an inorganic oxidizing salt forming a discontinuous emulsion phase dispersed within said continuous phase;
(c) dispersed gas bubbles or voids comprising at least about 5 percent of the volume of said composition;
(d) an ammonium or alkali metal salt of a fatty acid;
(e) a fatty acid; and
(f) an ammonium or alkali metal hydroxide in an amount in excess of that which will form by the hydrolysis of said fatty acid salt in water.

4,287,011

CLOSURE METHOD

Rodney L. Derbyshire, North Port, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

Filed May 11, 1979, Ser. No. 38,070
Int. Cl.³ B32B *1/08*; B29C *27/00*; B29B *27/24*
U.S. Cl. 156—85 **5 Claims**



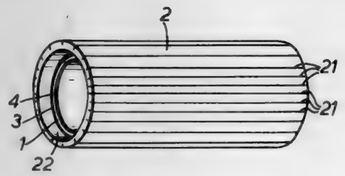
1. The method of forming an enclosure comprising
forming an enclosure about an object from a material that has size memory and which, prior to forming the enclosure, has been heated above its crystalline melt point, expanded and cooled so that the material remains expanded until reheated,
closing at least one side of the enclosure with the enclosure being at least as large as the object prior to reheating of the material and being smaller than the object after contraction,
the closure being formed as a double bond between end regions of the material with one end region having a main region and a flap extending from the main region,
disposing the other of the end regions between the flap and the main region of the one end region,
forming bonds between adjacent surfaces of said end regions one to the other of lesser strength of peel than the strength of the material of the end regions, and
reheating the material of the enclosure above its crystalline melt point whereby the enclosure shrinks to a size smaller than such object to produce at least partial failure of the peel bond.

4,287,012

RECOVERABLE ARTICLES

John A. Midgley, San Carlos, and David D. Nyberg, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 895,064, Apr. 10, 1978, Pat. No. 4,179,320. This application Apr. 6, 1979, Ser. No. 27,780
The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.
Int. Cl.³ B32B *31/00*; F16L *11/00*; B29C *13/00, 27/00*
U.S. Cl. 156—86 **48 Claims**



1. A flexible, shrinkable, hollow article which comprises
(1) a hollow inner member which is composed of an elastomeric material and which is in a radially extended condition; and
(2) a hollow outer restraining means
(a) whose inner surface is secured to the outer surface of said inner member and which maintains said inner member in said radially extended condition, said inner and outer surfaces being secured to each other by a bond whose peel strength is less than 50 lb. per linear inch width at 21° C.;
(b) whose outer surface forms the outer surface of said article and is free of score lines whose depth is 5 to 90% of the thickness of the restraining means; and
(c) is composed of a material which
(i) has a 2% secant modulus at 21° C. of 4,000 to 120,000 psi;
(ii) has an ultimate elongation at 21° C. of at least 20% at a separation speed of 200% per minute and at most 150% at a separation speed of 2,000% per minute; and
(iii) has a notch sensitivity such that when there is formed in the outer surface of the restraining means a score line whose depth is 5 to 90% of the thickness of the restraining means, then by distorting the article so as to exert a bending moment about the axis of the score line, the depth of said score line can be substantially increased.

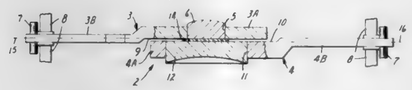
40. A method of covering a substrate which comprises:
(a) forming at least one score line in the outer surface of the restraining means of a flexible, shrinkable hollow article as claimed in any of claims **1**, **11**, **15**, **18**, **19**, or **24**, said score line having a depth of 5 to 90% of the thickness of the restraining means;
(b) after the step of forming, distorting the article to exert a bending moment about the axis of the score line, thereby substantially increasing the depth of said score line;
(c) placing the article around the substrate; and
(d) pulling away from the inner member a section of the restraining means adjacent a score line whose depth has been increased by the step of distorting for recovery of the inner member toward the substrate.

4,287,013

COMFORMABLE, MULTILAYERED TAPE ADHERENT ON ONE SURFACE TO FUSABLE METAL ALLOYS AND ON THE OTHER SURFACE TO OPHTHALMIC LENS BLANKS

Albert J. Ronning, North Oaks, Minn., assignor to Minnesota Mining & Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 36,878, May 8, 1979, abandoned. This application May 1, 1980, Ser. No. 145,588
Int. Cl.³ B32B *31/00, 33/00*; C09J *7/02*
U.S. Cl. 156—242 **25 Claims**



1. A conformable, multilayered tape for bonding fusible metal alloy to an opthalmic lens blank which comprises
a polymer backing layer,
a pressure sensitive adhesive on one major surface of said backing layer, and
a tack-free adhesion-promoting layer on the other major surface of said backing,
wherein, when said tape is interposed between an ophthalmic lens blank and a fusible metal alloy so that said adhesive contacts said lens blank and said adhesion-promoting layer contacts said fusible metal alloy, the bond strength between said alloy and said lens blank is greater than the bond strength between said alloy and said lens blank if said tape were not present; and
wherein said tape has a 2% secant modulus in the range of about 35 kg/cm² to 20,000 kg/cm², a sheer value of at least about 10 minutes, a 180° peel value in the range of about 60 g/cm width to 1400 g/cm width, a percent elongation at break in the range of about 45% to 1,000% and a lap shear value of at least about 5 kg/cm².

25. A method of adhering a fusible metal alloy to a compound surface of an ophthalmic lens blank comprising
applying the pressure-sensitive adhesive portion of a section of the conformable multilayered tape according to claim **1** to the entirety of a compound surface of an ophthalmic lens blank;
conforming said tape to said surface so that said tape is free from wrinkles, air bubbles and other discontinuities in the bond between said tape and said lens blank; and
applying a fusible metal alloy to at least a portion of the adhesion-promoting layer of said tape.

4,287,014

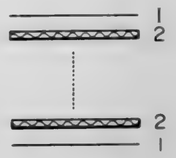
NOVEL CROSSLINKABLE RESIN COMPOSITION AND METHOD FOR PRODUCING A LAMINATE USING SAID COMPOSITION

Morio Gaku, Saitama; Norio Nagai, and Yasunari Osaki, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,614
Claims priority, application Japan, Dec. 27, 1978, 53-163332; Dec. 27, 1978, 53-163333; Dec. 27, 1978, 53-163334; Dec. 27, 1978, 53-163335; Dec. 28, 1978, 53-164298; Dec. 28, 1978, 53-164299
Int. Cl.³ C09J *5/06*
U.S. Cl. 156—306.9 **6 Claims**

1. A crosslinkable resin composition comprising (A) 95 to 5% by weight of a polyethylene homopolymer resin composition containing 0.1 to 10% by weight of a crosslinking agent and (B) 5 to 95% by weight of a cyanate ester thermosetting resin composition.

3. In a method for producing a laminate which comprises consolidating a plurality of layers under heat and pressure, at least one of said layers being a prepreg sheet which is a sheet of a crosslinkable resin composition or a composite sheet obtained by bonding said sheet of said crosslinkable resin composition to a substrate, the improvement wherein said crosslinkable resin composition is a crosslinkable resin composition of claim **1**.

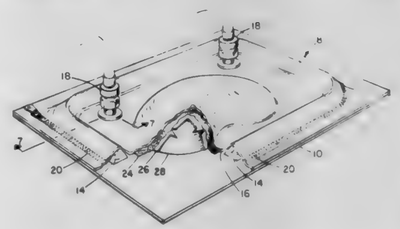


4,287,015

VACUUM BAG USED IN MAKING LAMINATED PRODUCTS

Harold J. Danner, Jr., 2455 F St. S.E., Apt. 106, Auburn, Wash. 98002

Filed Oct. 18, 1976, Ser. No. 733,107
Int. Cl.³ B32B *31/20*
U.S. Cl. 156—382 **5 Claims**



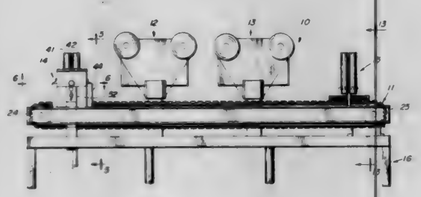
1. A vacuum bag like assembly used in making laminated products in which laminates are adhesively secured together, comprising:
(a) an air tight base plate on which laminations with their applied adhesives are placed;
(b) an air tight upstanding ribbing structure continuously affixed to the air tight base plate and well spaced inwardly from the perimeter of the air tight base plate to surround laminations with their applied adhesives;
(c) a stretchable air tight vacuum bag membrane to be laid across laminations with their applied adhesives and to be extended beyond to completely contact the continuous full length of the air tight upstanding ribbing structure and to be held securely at selected locations along the perimeter of the air tight base plate, while being well stretched into continuous firm air sealing contact with the air tight upstanding ribbing structure, thereby completing a vacuum bag like assembly;
(d) fastening means to secure the stretchable air tight vacuum bag membrane to the air tight base plate along selected portions of the perimeter; and
(e) vacuum means secured in part to the vacuum bag like assembly, whereby a vacuum may be drawn within the vacuum volume determined by the air tight base, the continuous air tight upstanding ribbing structure, and the stretchable air tight vacuum bag membrane, in respect to the continuous air tight seal created along the top of the air tight upstanding ribbing structure.

4,287,016

MACHINE FOR APPLYING INDICIA TO TENNIS BALL FELTS

Daniel Kerwin, Lombard, and Victor Trentadue, Arlington Heights, both of Ill., assignors to The Meyercord Co., Carol Stream, Ill.

Filed Jul. 18, 1978, Ser. No. 925,812
Int. Cl.³ B65C *9/02*; B65H *3/08, 3/34*
U.S. Cl. 156—497 **8 Claims**



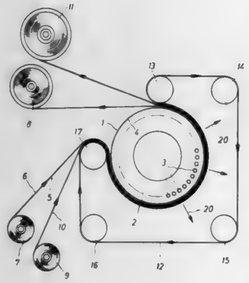
1. A machine for applying indicia to tennis ball felts while the felts are in flat form, each of said felts including a fuzzy side and an opposite side having a mastic coating thereon, said coating tending to adhere adjacent felts of said stack, comprising at least one applicator for applying an indicium to a fuzzy side of a felt, an intermittently moving conveyor for moving a series of felts to and past said applicator in intermittent start and stop movement, a destacking mechanism adjacent one end of said conveyor including a magazine adapted to receive and support said stack of felts, a movable head mounted at the lower open end of the stack, said head including a flat surface and air means for holding a felt on said flat surface, means for moving said head generally vertically between an upper position where said flat surface engages the lower side of the lowermost felt of said stack and supports said stack and said air means attaching said lowermost felt to said head, and a lower position where said head is spaced downwardly from said stack and places said felts on said conveyor during a stop portion of said movement, blade means movably mounted between said head and said stack, means for moving said blade through said stack to separate said lowermost felt from the remainder of said stack and then to retract said blade, said blade further supporting said stack when said head is not in said upper position, said air means producing a partial vacuum to hold a felt while said blade is moving through said stack and while said head is moving from said upper position to said lower position, a restacking mechanism adjacent the other end of said conveyor for removing said felts from said conveyor and restacking said felts during a stop portion of said movement, and means on said conveyor for holding said series of felts at regularly spaced positions during said intermittent movement, said holding means being oriented with said destacking and restacking mechanisms and with said applicator whereby respective holding means are simultaneously adjacent said destacking and restacking mechanisms and said applicator, and said mechanisms and said applicator operating simultaneously during said stop portions of said movement.

4,287,017

ENDLESS PRESSING-ON AND GUIDING BELT FOR TEXTILE TREATING DEVICES, ESPECIALLY TRANSFER PRINTING MACHINES AND STEAMING CALENDERS

Karl-Peter Lopata, Krefeld, and Wolfgang Tschirner, Tönisvorst, both of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 908,272, May 22, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,501
Claims priority, application Fed. Rep. of Germany, May 21, 1977, 2723085
Int. Cl.³ B30B *5/04, 15/34*
U.S. Cl. 156—583.5 **10 Claims**



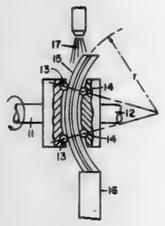
1. In a transfer printing machine which comprises a rotary drum, means for heating said drum and two webs passing together about said drum, the first web of fabric to be printed and the second web carrying material for printing on said first web, and means for heating said drum, an endless belt passing about said two webs and drum and pressing said webs against said drum as said drum rotates, said endless belt being formed of a woven fabric having a warp consisting exclusively of solid bronze threads extending longitudinally of said belt and a weft consisting exclusively of solid metal wires of nickel-alloy.

4,287,018

METHOD FOR FINISHING GLASS-PLASTIC LAMINATED LENS BLANKS

Suresh T. Gulati, Elmira, and Anton A. Spycher, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 7, 1979, Ser. No. 36,607
Int. Cl.³ C03C *15/00, 19/00*
U.S. Cl. 156—645 **6 Claims**



2. A method for edge-finishing a glass-plastic laminated lens blank comprising a relatively thin, compressively stressed sheet glass core element positioned between and adhesively bonded to two relatively thick, tensilely stressed plastic surface layer elements which comprises the steps of:

(a) heating the laminated lens blank to an elevated temperature sufficient to at least partly relieve bond stress present in the glass core element and plastic surface layers;

(b) grinding material from the edge of the laminated lens blank to achieve a selected finished edge configuration while maintaining the lens blank at said elevated temperature; and

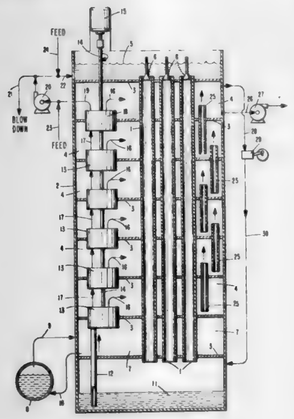
(c) exposing the edge of the glass core element to a glass etching medium for a time at least sufficient to essentially completely eliminate surface flaws present thereon.

4,287,019

APPARATUS AND METHOD FOR ADIABATIC FLASHING OF LIQUIDS

Ferris C. Standiford, 2713 S. North Bluff Rd., Greenbank, Wash. 98253

Continuation-in-part of Ser. No. 612,736, Sep. 12, 1975, abandoned. This application Sep. 26, 1980, Ser. No. 191,446
Int. Cl.³ B01D *1/06*
U.S. Cl. 159—2 MS **9 Claims**



1. In a system adapted to purify impure liquid in a multistage flash evaporator by the sequential heating and flashing thereof, the combination of:

(a) a vertically disposed vessel having a series of horizontal partitions to provide a series of superposed condensing spaces therein, and provided with an upper impure liquid sump chamber and lower sump chamber;

(b) a vertical indirect contact heating surface in said condensing spaces and interconnecting said upper impure liquid chamber with said lower sump chamber whereby impure liquid will be heated and in being heated will condense vapor at successively higher pressures in each successively lower of said condensing spaces as said impure liquid passes downwardly over said heating surface;

(c) a series of vertically superposed coaxial flash chamber means, each possessing successive lower pressure as a result of the flashing of liquid therein to form both a vapor and liquid stream, wherein said vapor stream is passed to said vertical indirect heating surface to raise the temperature of said downwardly passing impure liquid and each one of said flash chamber means being sealed to one of said partitions and including centrifugal means to force liquid toward the periphery of said flash chamber means and to collect vapor near the axis thereof;

(d) a conduit in association with each of said flash chamber means to conduct impure liquid from said liquid sump to the lowermost and then sequentially to the uppermost of said flash chamber means;

(e) means to conduct said vapor from near the axis of each of said flash chamber means to the condensing space laterally adjacent thereto, wherein said vapors are condensed to liquid;

(f) means to remove said condensed vapor as a purified liquid condensate; and

(g) means to supply heat from an external source to said impure liquid, either in the lowermost of said superposed condensing spaces or as the liquid is transferred from said liquid sump to the lowermost of said flash chamber means, whereby said system represents a liquid purification system wherein successive pressure reduction is effected by sequential heating and flashing of said liquids.

4. A flash device for use in multistage flash evaporator systems utilizing a flash tower provided with at least one vapor condensing space therein formed by lateral partitions within said tower, said flash device comprising:

(a) a cylindrical, stationary vessel having an inlet line into the bottom thereof for liquid to be flashed;

(b) an impeller provided with impeller blades within said vessel having means for rotation thereof at a speed to force said liquid to the outer wall to thereby form a vapor-liquid interface;

(c) a skimmer plate near the top of said vessel of a diameter less than the inside diameter of said vessel to permit escape of liquid only therethrough;

(d) a vapor outlet near the axis of rotation of said impeller, said outlet being adapted to lead into said condensing space; and

(e) means for sealing said vessel to one of said partitions.

4,287,020

METHOD OF PREPARATION OF AN ASBESTOS PRODUCT

Irving F. Moore, P.O. Box 805, Coalinga, Calif. 93210

Filed Nov. 29, 1979, Ser. No. 98,893
Int. Cl.³ C03B *37/00*
U.S. Cl. 162—3 **16 Claims**

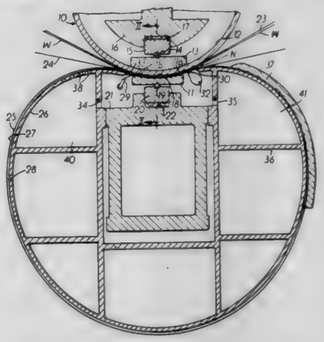
1. A method for producing an asbestos product of increased strength comprising subjecting asbestos ore flakes comprised of a flexible mat of randomly oriented and interwoven chrysotile asbestos fibers to a flattening and spreading out operation for a time sufficient to flatten and spread out said flakes so as to open said fibers but for a time insufficient to effect separation of said flakes into individual asbestos fibers and reduction in the natural length of said fibers.

4,287,021

EXTENDED NIP PRESS

Edgar J. Justus, and Arnold J. Roerig, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Aug. 27, 1979, Ser. No. 69,869
Int. Cl.³ D21F *3/06, 3/08*
U.S. Cl. 162—358 **7 Claims**



1. An extended nip press for removing water from a traveling web in a paper machine comprising in combination:

a press roll;

an elongate shoe forming a press nip with said press roll and

having a concave surface to conform to said roll so that the press nip is formed elongate in the direction of web travel through the nip;

a first endless felt trained over said roll to travel through said nip;

an endless belt trained over said shoe for passing through said nip;

a second endless felt trained over said belt to travel through said nip with the web passing through the nip between said felts;

means for providing a lubricant between said shoe and belt;

and guide means within said belt guiding and supporting the belt on the shoe;

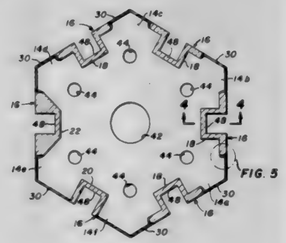
said guide means having an outer smooth curved surface of a circumference slightly smaller than the belt to provide a continual smooth sliding surface for the belt so that the belt operates under zero tension and is self-aligning wherein the belt is guided substantially along the entire circumference of the guide means.

4,287,022

COMPRESSION HUB FOR A FUSION REACTOR SYSTEM

Scott R. Penfield, Jr., Carlsbad, Calif., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1979, Ser. No. 47
Int. Cl.³ G21B *1/00*
U.S. Cl. 176—3 **10 Claims**



1. A compression hub, operable for use in resisting the forces tending to draw the magnets of a fusion reactor together towards a common point comprising:

a. a multiplicity of compression plates, each of said multiplicity of compression plates having rabbet means formed in at least some of the side walls thereof, said multiplicity of compression plates being arranged in stacked relation relative to each other so that said rabbet means are aligned in parallel rows;

b. beam means supported in said rabbet means, said beam means having means formed therein operable for effecting the interengagement of the compression hub with the magnets of the fusion reactor;

c. securing means for fastening said beam means to said multiplicity of compression plates so as to cause said multiplicity of compression plates to be physically spaced one from another thereby establishing between each adjacent pair of said multiplicity of compression plates an open space, substantially co-extensive in dimensions to the dimensions defining the perimeter of one of said multiplicity of compression plates;

d. seal plate means supported in juxtaposed relation to the periphery of said multiplicity of compression plates, said seal plate means cooperating with said beam means to form a closed, fluid tight structure of the compression hub; and

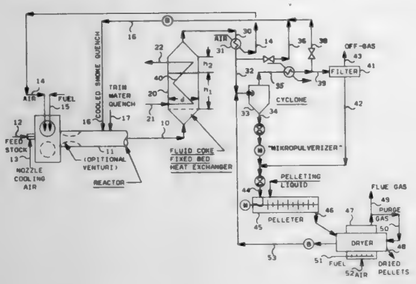
e. fluid flow means embodied in the compression hub, said fluid flow means being operable to provide a fluid flow path for coolant through the compression hub.

4,287,023

WASTE HEAT RECOVERY

William T. Cooper, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Aug. 23, 1979, Ser. No. 69,153
Int. Cl.³ C10B *3/02*
U.S. Cl. 201—31 **9 Claims**



1. A process for conducting indirect heat exchange between a gas stream containing suspended light solids and a heat exchange fluid in an indirect heat exchange zone containing fluidized fixed bed solids which comprises:

(a) introducing a gas stream containing entrained solids into an inlet connected to a lower portion of an enlarged heat exchange zone containing a fluidized fixed bed of particulate carbonaceous solids and a heat exchange coil extending into said fluidized bed and having a heat exchange fluid flowing through said coil, said heat exchange zone being so sized that the actual gas passage space in said enlarged zone occupied by said fluidized fixed bed is substantially the same cross-sectional area as that of the gas inlet and gas outlet which prevents the suspended solids from accumulating in the fluidized bed and allows the suspended solids to flow in an entrained manner in the gas stream,

(b) flowing said gas stream through said fluidized bed of particulate carbonaceous solids at a flow rate sufficient to maintain fluidized conditions and at a rate such that said gas is heated or cooled by the heat exchange fluid in said coil,

(c) removing said gas stream containing suspended solids at a different temperature from an upper portion of said heat exchange zone,

(d) passing said gas stream containing suspended solids to a gas-solids separation zone to separate suspended solids therefrom and recover cooled gas substantially reduced in suspended solids content, and

(e) quenching said gas stream containing entrained solids prior to step (a) with water and at least a portion of said cooled gas recovered in (d).

4,287,024

HIGH-SPEED SMOKELESS COKE OVEN BATTERY

Buster R. Thompson, Rte. No. 1, Lowes Ferry Pike, Louisville, Tenn. 37777

Filed Jun. 22, 1978, Ser. No. 918,054
Int. Cl.³ C10B *5/08, 29/08*
U.S. Cl. 202—134 **36 Claims**

1. A battery of nonrecovery coke ovens comprising,

means defining a plurality of elongated coking chambers constructed in side-by-side relation and each including sidewalls, an oven roof supported on said sidewalls, an oven floor for supporting a charge of coal to be coked in the chamber, and removable door means for opening and closing the chamber to permit charging the chamber with coal and discharging coke therefrom,

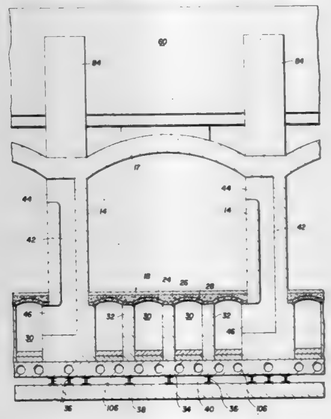
a system of sole flues extending beneath each said oven floor, said sole flues being defined by refractory walls extending between said oven floor and a base slab spaced beneath the floor,

downcomer means formed in said sidewalls and connecting the upper section of each said coking chamber with the sole flue system extending beneath the floor of the chamber,

elongated substantially horizontal combustion tunnel means extending transversely of said plurality of ovens,

chimney means connecting said sole flue system of each of said plurality of ovens with said combustion tunnel means whereby gases from the sole flue systems of said plurality of ovens are discharged into and combined in said combustion tunnel means,

stack means extending above said ovens and said tunnel means and connected in fluid communication with said tunnel means to provide a draft from the upper section of



each said coking chamber through a continuous flow path defined by said downcomer means, said sole flue systems, said chimney means, and said tunnel means through said stack means to the atmosphere,

charging gas bypass means connected between the top of each said coking chamber and said combustion tunnel means through said roof providing a direct gas flow path from the coking chamber into said combustion tunnel means whereby charging gas may be drawn from the coking chamber directly into the combustion tunnel for mixture with and incineration by the hot gases from the sole flues of other ovens, and

valve means connected in said bypass means, said valve means being operable to selectively open and close said direct gas flow path between the respective coking chambers and the combustion tunnel means.

4,287,025

DEVICE FOR SOLID-STATE PYROLYSIS OF ORGANIC POLYMERIC SUBSTANCES

Bernhard Lersmacher, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

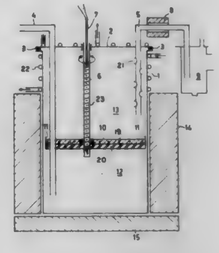
Filed Oct. 5, 1979, Ser. No. 82,395
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843676
Int. Cl.³ C10B *1/04, 27/00, 27/06*
U.S. Cl. 202—222 **13 Claims**

1. A device for converting natural and synthetic organic polymeric substances into carbon bodies by solid state pyrolysis comprising:

(a) a heatable, vertically positioned, elongated reaction vessel suitable for containing the polymeric substance to be pyrolyzed;

(b) cover means for providing a gas-tight seal for said reaction vessel;

(c) at least one solid collecting wall (**10**) positioned horizontally within said reaction vessel above the polymeric substance to be pyrolized, said collecting wall serving to divide said reaction vessel into a lower portion (**12**) containing the polymeric substance and an upper portion **13** wherein volatile decomposition products formed by pyrolysis of said polymeric substance are condensable on the upper surface of said collecting wall (**10**), said collecting wall (**10**) being so positioned as to leave a passage for gases between the lower and the upper portions of said reaction vessel;



(d) an outlet (**5**) extending from the upper portion (**13**) of said reaction vessel for conducting decomposition products formed by pyrolysis of said polymeric substance away from said reaction vessel;

(e) a purging gas inlet (**4**) extending through said reaction vessel into said lower portion (**12**) for introducing a gas into said lower portion (**12**) of said reaction vessel; and

a (f) heating device arranged around said reaction vessel in a manner such that said lower portion (**12**) containing the polymeric substance is heatable under a quasi-isothermal condition with temperatures suitable for causing pyrolysis of the polymeric substance and only a section of said upper portion (**13**) extendingly upwardly in a vertical direction away from said collecting wall is heatable (**10**).

4,287,026

DESALINIZATION METHOD

William A. Wallace, 5515 N. Sagugaro, Paradise Valley, Ariz. 85253

Filed Mar. 29, 1979, Ser. No. 25,097
Int. Cl.³ B01D *3/00*
U.S. Cl. 203—10 **5 Claims**

1. A method for removing dissolved salt and other minerals from water, comprising the steps of:

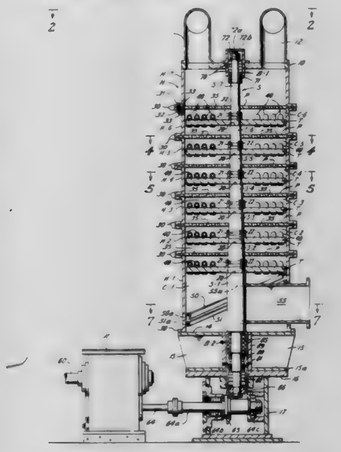
introducing water having dissolved salt and other minerals therewith into a housing;

flowing the water having dissolved salt and other minerals therewith through a series of stages formed of a series of rotatable trays alternately separated by a series of fixed stop plates in the housing;

heating the water in each successive tray and stop plate stage to effect the vaporization of the water to produce water vapor having at least some of the dissolved salt and other minerals separated from and suspended in the water vapor, substantially solely by rotating the trays at a sufficiently high velocity;

swirling the water vapor, salt and minerals to exert a centrifugal force on the water vapor and the salt and minerals to

physically separate the salt and minerals from the water vapor within the housing; and,



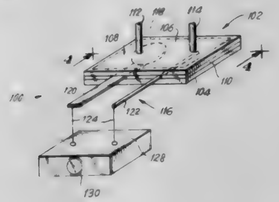
thereafter removing the separated salt and minerals from the housing apart from the water vapor.

4,287,027

METHOD OF DETERMINING THE CONCENTRATION OF REDUCING AGENTS

Jeffrey M. Tosk, 3235 Cambridge Ave., Bronx, N.Y. 10463

Filed May 20, 1980, Ser. No. 151,687
Int. Cl.³ G01N *27/30, 27/52*
U.S. Cl. 204—1 T **8 Claims**



1. A method for determining the concentration of a reducing agent in a fluid, which is capable of reducing platinum oxide to platinum, comprising the steps of fabricating an active electrode from a mixture of platinum and platinum oxide constructed and arranged to retain its structural integrity during use, placing said active electrode proximate to a counter-electrode, bringing said electrodes in contact with said reducing agent in said fluid, and measuring the electrode potential created from an oxidation-reduction reaction occurring between said electrodes and said reducing agent.

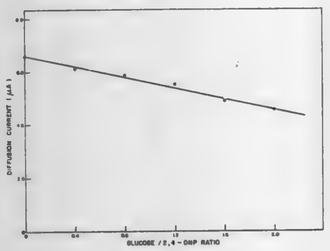
4,287,028

ELECTROCHEMICAL DETECTION PROCEDURE FOR THE DETERMINATION OF GLUCOSE IN BIOLOGICAL FLUIDS

Karl G. Blass, 148 Cardinal Crescent, Regina, Saskatchewan, Canada

Filed Jun. 6, 1980, Ser. No. 157,207
Claims priority, application United Kingdom, Jun. 13, 1979, 20637/79
Int. Cl.³ G01N *27/52*
U.S. Cl. 204—1 T **1 Claim**

1. An electrochemical process to determine the concentration of glucose in serum samples, other fluids or solids brought into solution, whereby glucose is reacted with an aromatic reagent containing one or more nitro groups, and the chemical



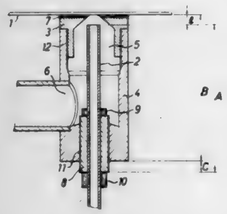
reaction is monitored at electrodes which measure the current produced by the reaction of one or more of the nitro groups.

4,287,029

PLATING PROCESS

Kouichi Shimamura, Yokohama, Japan, assignor to Sonix Limited, Kanagawa, Japan

Filed Mar. 24, 1980, Ser. No. 133,130
Claims priority, application Japan, Aug. 9, 1979, 54-100772
Int. Cl.³ C25D *5/02, 5/08*
U.S. Cl. 204—15 **11 Claims**



1. A process of continuously electroplating of an elongated electroconductive sheet, comprising the steps of enclosing a smaller work surface of the sheet with a mask thereby defining a closed space within said mask and to determine a plating shape and pattern to be produced; introducing an outer air by air induction means having no influence upon the surface of the sheet to be treated to obtain an air curtain within said mask; disposing a nozzle within said closed space; jetting a plating solution through said nozzle to said work surface while supplying electric power to different polarity to said nozzle and said work surface and simultaneously suctioning to and discharging fluid from said closed space; plating the jetted plating solution on said work surface; and discharging said plating solution together with atmosphere from in said closed space by suctioning said solution from said mask, whereby said air-introducing step speeds up said discharging step and prevents said plating solution from permeating outside said mask.

4,287,030

PROCESS FOR PRODUCING HIGH-PURITY INDIUM

Arkady A. Belsky, Komsomolsky prospekt, 48/22, kv. 20; Alexandr V. Eljutin, 3 Frunzenskaya ulitsa, 7, kv. 176, both of Moscow; Valery N. Zubkov, ulitsa V. Dubinina, 6/29, kv. 16, Podolsk Moskovskoi oblasti; Alexandr I. Konjukov, Bolshaya Akademicheskaya ulitsa, 39 "V", kv. 37, Moscow; Lidia I. Krasinskaya, Otkrytoe shosse, 17, korpus 8, kv. 155, Moscow; Elena A. Nekrasova, Novye Cheremushki, kvartal 32-a, korpus 10, kv. 14, Moscow; Konstantin S. Nizharadze, ulitsa Dorozhnaya, 20, korpus 1, kv. 72, Moscow; Larisa F. Markova, ulitsa Shkolnaya, 12, kv. 3, Vidnoe Moskovskoi oblasti; Mirra G. Mirskaya, ulitsa Bolshaya Cherkizovskaya, 9, korpus 1, kv. 171, Moscow; Alexei V. Frolov, ploschad Pobedy, 2, korpus 2, kv. 176, Moscow, and Evgeny A. Judin, ulitsa Medikov, 29, korpus 3, kv. 16, Moscow, all of U.S.S.R.

Filed May 19, 1980, Ser. No. 150,949
Int. Cl.³ C25C *1/22*
U.S. Cl. 204—105 R **2 Claims**

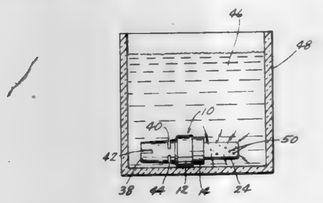
1. A process for producing high-purity indium comprising vacuum melting of the metal in two stages: in the first stage at a temperature ranging from 850° to 940° C. for a period of from 1 to 5 hours; in the second stage at a temperature ranging from 950° to 1,100° C. for 0.5–2 hours, followed by electrochemically refining the metal in a hydrochloric acid solution and remelting of the residue of indium evolved on the cathode by introducing into molten indium at a temperature of from 160° to 400° C.

4,287,031

PORTABLE ELECTROLYSIS UNIT FOR RECOVERY OF PRECIOUS METALS

David L. Good, 3708 Hickman, Des Moines, Iowa 50310, and Dallis L. Good, P.O. Box 1354, Middlesboro, Ky. 40965

Filed May 5, 1980, Ser. No. 146,298
Int. Cl.³ C25C *1/20, 7/00;* C25B *11/04*
U.S. Cl. 204—109 **7 Claims**



7. A method for recovering silver from a waste material solution containing silver ions, said method comprising:

placing a small receptacle in said waste solution, said receptacle having a top closure portion and a bottom closure portion which can be sealingly joined to define an interior cavity, a direct current battery cell having positive and negative terminals resting in said interior cavity, a cathode plate in electrical contact with the negative terminal of said battery and extending through said bottom closure and being in contact with said solution, and an anode in electrical contact with the positive terminal of said battery and extending through said top closure so as to be in contact with said solution;

leaving said receptacle in said solution long enough for silver to collect on said cathode by electrolysis;

removing said receptacle from said solution; and

removing said silver from said cathode.

4,287,032

PROCESS FOR GENERATING A HALOGEN WITH NOVEL ELECTRODES

Alberto Pellegri, Luino, Italy, assignor to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Feb. 14, 1980, Ser. No. 121,414
Claims priority, application Italy, Aug. 1, 1979, 24829 A/79
Int. Cl.³ C25B *1/24, 11/04, 11/08, 11/10*
U.S. Cl. 204—128 **17 Claims**

1. An electrode comprising a pulverulent electroconductive, electrocatalytic material bonded together with a fluoroolefin polymer having a hydrophilic surface.

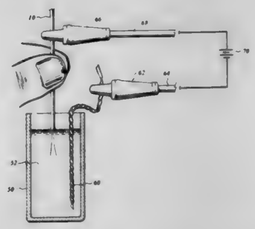
17. A method of generating a halogen comprising electrolyzing an aqueous halide solution in electrolysis cell containing at least one anode and one cathode separated by an ion-permeable membrane in sheet form having an electrode of claim 1 as the anode bonded to one side thereof in layer form, circulating an anolyte and a catholyte through the respective chambers, applying an electrolysis voltage between the anode and the cathode and recovering electrolysis products from said respective chambers, the hydrophilic surface being obtained by exposing the polymer to ionizing radiation from a Cobalt 60 source with a radiation dose from 10 to 400 Megarads in the presence of a precursor substance of hydrophilic groups.

4,287,033

ELECTROCHEMICAL METHOD FOR REMOVING METALLIC SHEATHS

James A. Weibel, Sr., Tonawanda, and Franklin A. Vassallo, Lancaster, both of N.Y., assignors to Calspan Corporation, Columbus, Ind.

Filed Apr. 14, 1980, Ser. No. 139,905
Int. Cl.³ C25F *5/00, 3/14*
U.S. Cl. 204—146 **2 Claims**



1. A method for selectively removing a metallic sheath from an electrically insulated core while leaving the core unaffected and including the steps of:

connecting a suitable cathode to a source of power and inserting the cathode into an acid mixture;

connecting a metal sheath of an element as an anode and connecting the anode to the source of power; and

inserting the sheath into the acid mixture to a depth corresponding to the amount of sheath to be removed whereby an electrical circuit is completed and the immersed portion of the sheath is electrochemically removed.

4,287,034

PROTECTING METAL SUBSTRATES FROM CORROSION

George Pieslak, Alameda; Kathleen A. Erbes-Mrsny, and Elena C. Fritchle, both of San Bruno, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 9, 1979, Ser. No. 92,852
Int. Cl.³ C23F *13/00;* D03D *49/24;* C08L *1/00;* C08K *5/05*
U.S. Cl. 204—147 **72 Claims**

1. An article of a heat shrinkable material having coated on at least a part of the surface thereof an adhesive composition comprising an adhesive component and an aliphatic polyhy-

droxy compound in which hydroxyl groups are bonded to at least 50 percent of the aliphatic carbon atoms in an amount sufficient to impart improved resistance to cathodic disbondment to the adhesive composition, said adhesive component being a hot melt adhesive or a mastic.

16. A pipe having bonded to the surface thereof a polymeric coating, said coating being bonded to said pipe with an adhesive composition comprising an adhesive component and from about 0.01 to about 30 percent by weight, based on the total weight of the adhesive composition, of an aliphatic polyhydroxy compound in which hydroxyl groups are bonded to at least 50 percent of the aliphatic carbon atoms, said adhesive component being a hot melt adhesive or a mastic.

28. A metal pipe which is connected in an electric circuit such that said pipe forms a cathode; said pipe having bonded to the surface thereof a polymeric coating with an intermediate layer of an adhesive comprising an adhesive component and from about 0.01 to about 30 percent by weight, based on the total weight of the composition of an aliphatic polyhydroxy compound in which hydroxyl groups are bonded to at least 50 percent of the carbon atoms, said adhesive component being a hot melt adhesive or a mastic.

40. An adhesive composition comprising an ethylene-ethyl acrylate copolymer hot melt adhesive and from about 0.01 to about 30 percent by weight, based on the total weight of the adhesive composition, of an aliphatic polyhydroxy compound in which hydroxyl groups are bonded to at least 50 percent of the aliphatic carbon atoms.

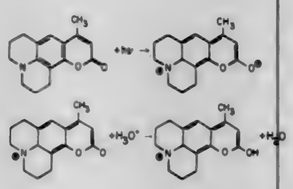
52. A method of improving the resistance to cathodic disbondment of an adhesive which comprises incorporating into a hot melt adhesive or a mastic from about 0.01 to about 30 percent by weight, based on the total weight of the adhesive composition, of an aliphatic polyhydroxy compound in which hydroxyl groups are bonded to at least 50 percent of the aliphatic carbon atoms.

4,287,035

METHOD FOR PRODUCING RAPID PH CHANGES

John H. Clark; Anthony J. Campillo; Stanley L. Shapiro, and Kenneth R. Winn, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 24, 1979, Ser. No. 42,163
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—157.1 R **3 Claims**



3. A method of rapidly initiating an acid or base catalyzed reaction which comprises:

(a) forming a solution of (i) the reactants which undergo said reactions, and (ii) a compound which is substantially non-reactive with said reactants in either its ground state or its excited state and which on electronic excitation exhibits a substantial pK change in the direction required to initiate said reaction,

(b) adjusting the pH of said solution to be near but not at that at which said reaction occurs, and

(c) irradiating said solution with electromagnetic radiation having an appropriate frequency and an intensity sufficient to produce a concentration of excited species from said compound at which the pH of said solution is changed sufficiently to initiate said reaction.

4,287,036

METHOD FOR PRODUCING A REDUCTION PRODUCT USING A PHOTO-REGENERATED TRANSITION METAL CATALYST

Minoru Tsutsui, Bryan, Tex., and Yoshiharu Doi, Tokyo, Japan, assignors to Texas A & M University, College Station, Tex.

Filed May 8, 1980, Ser. No. 148,015
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—157.1 R **16 Claims**

1. A catalytic method of producing a reduction product in solution at ambient temperature and pressure by using a reducing agent which is simultaneously photo-regenerated to its active reducing state following its consumption in the reduction, comprising the steps of:

(a) obtaining a solution of a transition metal alcoholate complex comprising an alcohol, a transition metal salt, and a base;

(b) contacting with said solution a starting chemical selected from the group consisting of molecular nitrogen, oxides of nitrogen, hydrazine, and aliphatic substituted hydrazines; and

(c) while maintaining said contact, irradiating said solution with radiation of sufficient intensity and duration to produce the desired product, wherein said radiation is selected at the charge-transfer band of the transition metal alcoholate complex by reference to the absorption, emission and excitation spectra of said metal alcoholate complex solution so as to

(i) maximize the absorption of said radiation;

(ii) maximize the vibrational degradation process, resulting in fluorescence; and

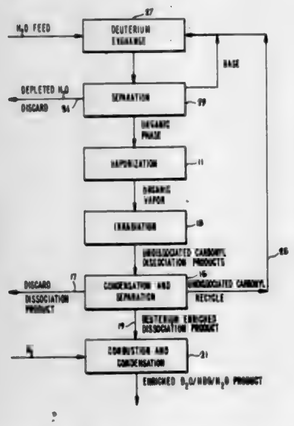
(iii) minimize the dissociation of said complex.

4,287,037

DEUTERIUM ENRICHMENT BY SELECTIVE PHOTO-INDUCED DISSOCIATION OF AN ORGANIC CARBONYL COMPOUND

John B. Marling, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 4, 1978, Ser. No. 893,233
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R **13 Claims**



1. A method for producing a deuterium enriched material by selective photo-induced dissociation which comprises:

providing a gas phase photolytically dissociable organic carbonyl compound containing at least one hydrogen atom bonded to an atom which is adjacent to a carbonyl group and consisting of molecules wherein said hydrogen atom is present as deuterium and molecules wherein said hydrogen atom is present as another isotope of hydrogen;

subjecting the gas phase organic carbonyl compound to infrared radiation at a preselected wavelength and of sufficient intensity to selectively excite and induce dissociation of said deuterium containing molecules, thereby providing a deuterium enriched molecular dissociation product, the non-excited molecules remaining substantially undissociated; and

recovering the deuterium enriched molecular dissociation product.

4,287,038

PURIFICATION OF CHLOROPHENOLIC DERIVED COMPOUNDS

Edward M. Geiser, Downers Grove, and Russell W. Johnson, Villa Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 8, 1980, Ser. No. 147,981
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R **10 Claims**

1. A process for the removal of a contaminant comprising 2,3,-7,8-tetrachlorodibenzo-p-dioxin from a chlorophenolic derived compound which comprises subjecting a solution of said compound dissolved in a protic solvent to the emission from a light source having a wave length in the range of from about 180 to about 350 nanometers, and recovering the purified chlorophenolic derived compound.

4,287,039

RADIATION-CURABLE AQUEOUS BINDER DISPERSIONS, THEIR PREPARATION AND THEIR USE

Ingolf Buethe, Mannheim, and Werner Loch, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,747
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853921
Int. Cl.³ C08L *67/06*
U.S. Cl. 204—159.19 **7 Claims**

1. A radiation-curable aqueous binder dispersion, which essentially comprises

(A) from 20 to 80 percent by weight of water,

(B) from 80 to 20 percent by weight of one or more prepolymers which are dispersed in (A) and contain from 0.01 to 1.0 mole, per 100 g of prepolymer, of polymerizable carbon-carbon double bonds and have a mean molecular weight of not less than 350 and a viscosity, at 23° C., of not less than 600 cp, the sum of the percentages of (A) and (B) being 100, together with

(C) from 3 to 12 percent by weight, based on (B), of one or more dispersants, selected from the group consisting of polyvinylpyrrolidone and a copolymer of vinylpropionate or vinylacetate with vinylpyrrolidone, and

(D) from 0 to 20 percent by weight, based on (B), of one or more photoinitiators.

4,287,040

PRODUCTION OF NITRIC OXIDES

Moshe Alamaro, Hod-Hasharon, Israel, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Apr. 28, 1980, Ser. No. 144,042
Claims priority, application Israel, May 8, 1979, 57239
Int. Cl.³ C01B *21/30, 21/32*
U.S. Cl. 204—179 **10 Claims**

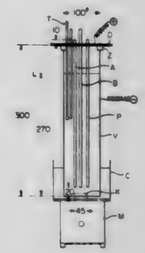
1. A process for the production of nitric oxides which comprises establishing an electrical discharge, passing through such discharge a mixture consisting essentially of air and a seeding amount of nitric oxide as seeding material, and recovering the produced nitric oxides.

4,287,041

PROCESS FOR ELECTRODEPOSITION OF CATIONIC RESINS

Akira Tominaga, and Reijiro Nishida, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Division of Ser. No. 78,909, Sep. 25, 1979. This application Apr. 14, 1980, Ser. No. 142,167
Claims priority, application Japan, Dec. 29, 1978, 53-162280
Int. Cl.³ C25D *13/06*
U.S. Cl. 204—181 C **2 Claims**



1. In a method of electrodeposition coating of an electrically conductive surface serving as a cathode which comprises passing an electric current across said cathode and an anode in contact with an aqueous electrodepositable composition; the improvement wherein said electrodepositable composition consists essentially of

(i) as a film-forming ingredient, the reaction product of (A) an epoxy resin, or an adduct of an epoxy resin with a primary amine and/or a secondary amine, (B) an amino-terminated condensation product between a maleinized fatty acid and a polyamine, and (C) a partially blocked polyisocyanate,

(ii) a water-soluble aqueous inorganic or organic acid as a neutralization agent for said reaction product (i), and

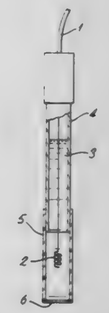
(iii) an aqueous medium.

4,287,042

ION-SELECTIVE ELECTRODE AND METHOD OF MAKING SAID ELECTRODE

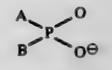
Leslie C. Ebdon; Andrew T. Ellis, and George C. Corfield, all of Sheffield, England, assignors to National Research Development, Corp., London, England

Filed Mar. 6, 1980, Ser. No. 127,749
Claims priority, application United Kingdom, Mar. 9, 1979, 08452/79
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—195 M **26 Claims**



1. An ion-selective electrode comprising a standard solution of the ion and, retaining the solution, a membrane comprising

an unsaturated organic polymer having sensor groups covalently bonded to said polymer, characterized in that the unsaturated organic polymer is cross-linked at least in part through a covalently-bonded sensor group of the formula



where A and B are unsaturated moieties cross-linking the polymer, whereby the electrode is calcium-selective.

8. An ion-selective electrode according to claim 1, characterised in that the sensor group is an organophosphate or an organophosphonate.

9. An ion-selective electrode according to claim 8, characterised in that the sensor group is dialkyl phosphate.

10. A method of making the ion-selective electrode of claim 9, characterised in that the dialkyl phosphate is made directly from a cross-linking reaction of diallyl phosphoric acid with the membrane yielding dialkyl phosphate.

4,287,043

APPARATUS FOR ELECTRODEPOSITING A METALLIC LAYER OF PREDETERMINED THICKNESS

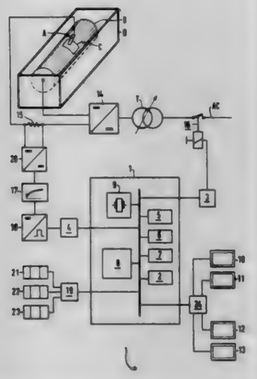
Werner Eckert, and Wolfgang Simon, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,042

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936247

Int. Cl.³ C25D *21/12, 17/00*

U.S. Cl. 204—228 **4 Claims**



1. An apparatus for electrodepositing a metallic layer of predetermined thickness on a correction area of an article in a metal salt solution comprising:

a sacrificial anode;

a source of DC voltage connected to the anode;

means for measuring the current flowing from the DC voltage source to the anode and providing a current measurement signal representing mean current values;

a computer having an anode index parameter, an area factor, the current measurement signal, and the predetermined thickness as inputs, and comprising means for cyclically calculating the actual value of thickness of the layer deposited on the correction area, comparing the calculated thickness so obtained with the predetermined thickness, and generating a disconnect signal when the calculated thickness is equal to the predetermined thickness, the deposited thickness being calculated according to the relationship

$$d(t)=(b\text{-}a)/AEG\text{-}Q(t)\text{-}1/k$$

where:

d(t) is the actual thickness,

(b-a)/AEG is the anode index derived from the current yield factor b, the anode area a, and the deposition equivalent AEG,

Q(t) is the total charge summed from successive mean values of anode current,

k is the area factor; and

means for disconnecting the anode from the source of DC voltage in response to the disconnect signal.

4,287,044

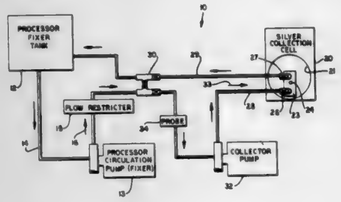
SILVER RECOVERY APPARATUS

Don L. Biles, Chamblee, and A. Alan Richardson, Lilburn, both of Ga., assignors to Silver Systems, Ltd., Chamblee, Ga.

Filed Mar. 31, 1980, Ser. No. 135,674

Int. Cl.³ C25C *7/06, 1/20*

U.S. Cl. 204—231 **5 Claims**



1. An apparatus for recovering a particular ion from a solution containing a plurality of ions of differing decomposition potential, said particular ion having the lowest decomposition potential of said plurality of ions, comprising:

a recovery cell having a positive electrode and a negative electrode;

a receptacle containing said solution;

liquid conduit means connecting said receptacle and said cell;

probe means in contact with said solution in said liquid conduit means for providing a signal in response to presence of said particular ion in said solution adjacent to the one of said electrodes of opposite polarity to said particular ion;

magnetic drive pump means located between said probe means and said cell for pumping said solution between said receptacle and said cell; and

means for repeatedly driving a plating current through said solution in said cell between said electrodes in response to said signal and terminating said plating current after a discrete period of time, until said probe means again provides said signal.

4,287,045

COOLED ELECTRODE ADAPTED TO CONTACT MOLTEN METAL

Christian Lechevallier; Jacques Cordier, and Martine Antoine, all of Metz, France, assignors to Institut de Recherches de la Sidérurgie Française, Saint-Germain-en- Laye, France

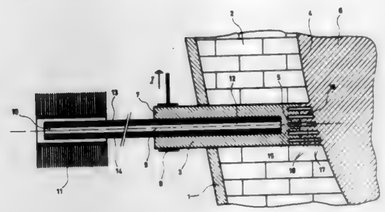
Filed Nov. 13, 1979, Ser. No. 93,710

Claims priority, application France, Nov. 10, 1978, 78 32.208

Int. Cl.³ C25C *7/02, 7/00*; H05B *7/08*

U.S. Cl. 204—243 R **7 Claims**

1. For use in a metallurgical furnace or the like containing a bath of molten material a combination comprising an electrode embedded over a first portion thereof in the wall of the furnace and having an inner end adapted to be in contact with the molten material and an outer end portion projecting beyond the furnace wall; means for cooling the electrode consisting of a heat pipe including a tubular member extending longitudinally partly through the electrode and having a closed inner end adjacent said inner end of said electrode and an outer end portion projecting beyond that of said electrode and provided with a closed outer end, a capillary structure on an inner surface of said tubular element, and an evaporable heat carrier in



said element and subject to evaporation adjacent said inner end and to condensation adjacent to said outer end, so that a continuous closed heat-syphoning circuit is established; and electrical conductor means connected to the outer end portion of said electrode.

4,287,046

PROCESS FOR TREATING ELECTROLYTIC SOLUTION AND APPARATUS THEREFOR

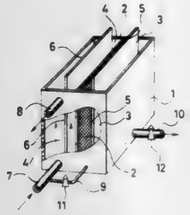
Kenji Ueda, and Akihiro Sakanishi, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 62,531, Jul. 3, 1979. This application Feb. 28, 1980, Ser. No. 125,448

Claims priority, application Japan, Aug. 11, 1978, 53/97995; Jun. 8, 1979, 54/72106

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—266 **2 Claims**



2. An apparatus according to claim 1, characterized in that an absorbent layer is sandwiched between said diaphragm and said electrode in said recovery chamber.

4,287,047

Patent Not Issued For This Number

4,287,048

CRACKING PROCESS WITH CATALYST OF COMBINED ZEOLITES

Elroy M. Gladrow, and William E. Winter, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 44,360, May 31, 1979, Pat. No. 4,242,237. This application Mar. 17, 1980, Ser. No. 131,089

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **12 Claims**

1. A catalytic cracking process which comprises contacting a hydrocarbonaceous feed at catalytic cracking conditions in the absence of added hydrogen with a catalyst comprising:

(a) an ultrastable Y-type crystalline aluminosilicate zeolite having less than about 1 weight percent rare earth metals, calculated as the elemental metal, based on the zeolite;

(b) a small pore crystalline aluminosilicate zeolite selected from the group consisting of erionite, mordenite, zeolite A, chabazite and offretite; and

(c) a catalytic inorganic oxide matrix.

4,287,049

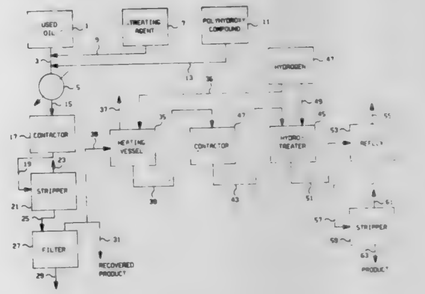
RECLAIMING USED LUBRICATING OILS WITH AMMONIUM SALTS AND POLYHYDROXY COMPOUNDS

Donald C. Tabler, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Feb. 5, 1980, Ser. No. 118,702

Int. Cl.³ C10M *11/00*

U.S. Cl. 208—180 **7 Claims**



4. A method for treating used oil comprising:

(a) contacting said used oil with an aqueous solution of an ammonium salt treating agent in the presence of a polyhydroxy compound at conditions of temperature and pressure sufficient for reaction of the treating agent with ash-forming contaminants of the oil thereby producing a precipitate of reacted contaminants,

(b) removing a major portion of water and light hydrocarbon components from the reaction mixture, and

(c) separating an oil phase from the precipitate by filtration.

6. A method of claim 4 wherein said separated oil phase is subjected to further treatment comprising:

(d) heating said separated oil phase to a temperature in the range of about 200° to about 480° C.,

(e) contacting heated, separated oil phase with an adsorbent,

(f) hydrotreating the oil effluent from the contacting with adsorbent,

(g) stripping the oil effluent from the hydrotreating step, and

(h) recovering the resulting stripped oil as a product.

4,287,050

CATALYTIC HYDRODESULFURIZATION OF ORGANIC COMPOUNDS EMPLOYING ALUMINA PROMOTED WITH ZINC TITANATE, COBALT AND MOLYBDENUM AS THE CATALYTIC AGENT

Alan D. Eastman, and Lloyd E. Gardner, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Feb. 28, 1980, Ser. No. 125,437

Int. Cl.³ C10G *45/04, 45/60*

U.S. Cl. 208—215 **18 Claims**

1. A process for the catalytic hydrodesulfurization of an organic sulfur compound comprising the step of contacting said organic sulfur compound under suitable hydrodesulfurization conditions with a catalyst composition comprising catalytic grade alumina, zinc titanate, cobalt, and molybdenum.

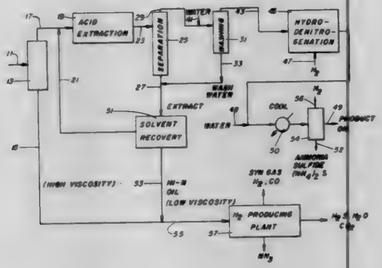
17. A process in accordance with claim 1 wherein said catalyst composition is completely sulfided prior to the step of contacting said organic sulfur compound with said catalyst composition.

4,287,051

DISPOSITION OF A HIGH NITROGEN CONTENT OIL STREAM

Daniel J. Curtin, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 8, 1979, Ser. No. 92,553
Int. Cl.³ C10G 67/04, 45/02
U.S. Cl. 208—254 H **11 Claims**



1. A method of denitrogenating a viscous oil containing a relatively high content of nitrogenous compounds and of disposing of the extract oil stream containing a high concentration of the nitrogenous compounds extracted, comprising:

a. forming a first portion and a remaining portion of the viscous oil stream; said remaining portion comprising a first viscous bottom stream that would not be operably pumpable to a partial oxidation unit without the inclusion of viscosity lowering constitutents;

b. extracting the nitrogenous compounds from said first portion of the viscous oil with an operable acid solvent to produce a raffinate oil having a relatively low concentration of nitrogenous compounds such that said raffinate oil can be hydrodenitrogenated at mild conditions with reduced hydrogen consumption; and an extract stream of high content of nitrogenous compounds;

c. recovering the acid solvent from said extract stream, simultaneously producing a small volume stream of low viscosity oil containing a high concentration of nitrogenous compounds and referred to as a high nitrogen content oil;

d. admixing said low viscosity high nitrogen content oil with the remaining portion of said viscous oil comprising said first viscous bottoms stream to provide a pumpable mixed stream;

e. sending said mixed stream to a partial oxidation unit where hydrogen is produced;

f. employing the hydrogen produced in step e to effect hydrodenitrogenation of the raffinate oil by hydrogenating the raffinate oil at mild conditions to produce an ultimate product oil stream; and

g. recycling said acid solvent to the extracting operation of step b.

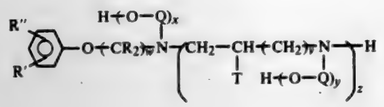
4,287,052

ALKYL-SUBSTITUTED PHENYL ETHER AMINE COLLECTORS IN FLOTATION

Robert E. Hefner, Jr., Lake Jackson, Tex., and Donald A. Tomalia, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

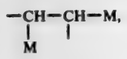
Filed Apr. 7, 1980, Ser. No. 137,663
Int. Cl.³ B03D 1/02
U.S. Cl. 209—166 **9 Claims**

1. In a process for beneficiating a siliceous mineral ore by froth flotation with a collector system for the flotation of siliceous matter, the improvement wherein the collector system comprises an effective amount of a compound represented by the formula I



I

or an acid-neutralized derivative of this compound, wherein R′ is an aliphatic radical having 2 to 22 carbon atoms; R″ is hydrogen or an aliphatic radical having 2 to 22 carbon atoms; each R is independently hydrogen, a C_1–C_4 hydroxyalkyl or C_1–C_4 alkyl; Q is



wherein M at each occurrence is independently hydrogen, methyl or ethyl, with the proviso that Q at each occurrence contains no more than 4 carbon atoms; T is hydrogen or methyl; w is 2 or 3, and v, x, y and z are each independently 0 or 1.

4,287,053

BENEFICIATION OF HIGH CARBONATE PHOSPHATE ORES

James R. Lehr, and Shuang-shii Hsieh, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 146,579, May 5, 1980. This application Dec. 22, 1980, Ser. No. 218,896
Int. Cl.³ B03D 1/06
U.S. Cl. 209—167 **6 Claims**

1. An ore flotation process which comprises the steps of

(1) subjecting a phosphate ore containing carbonate mineral impurities to froth flotation in the presence of a phosphate depressant, said depressant being selected from the group consisting of alkyl phosphonic acids, and a carbonate collector, said collector being a fatty acid;

(2) removing the separated carbonate minerals from the overflow; and

(3) recovering the phosphate values in the underflow.

4,287,054

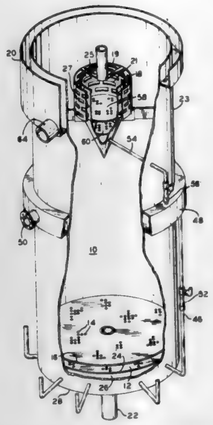
FLOTATION APPARATUS FOR CONCENTRATION OF MINERALS

Clinton A. Hollingsworth, Lakeland, Fla., assignor to The Deister Concentrator Co., Inc., Fort Wayne, Ind.

Filed May 5, 1980, Ser. No. 145,130
Int. Cl.³ B03D 1/24
U.S. Cl. 209—170 **36 Claims**

31. For use in froth flotation apparatus a feed-well device comprising a chamber having an open upper end and a closed bottom, a constriction plate dividing said chamber into upper

and lower compartments, means for introducing aerated water into said lower compartment, the wall of said upper compartment being provided with a plurality of openings for receiving aerated pulp therethrough.

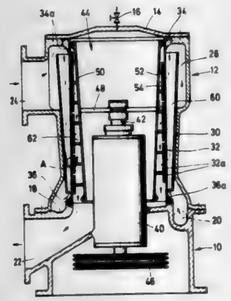


4,287,055

METHOD OF SORTING FIBRE SUSPENSIONS AS WELL AS A PRESSURE SORTER FOR PERFORMING THE METHOD

Emil Holz, Eningen, Fed. Rep. of Germany, assignor to Firma Hermann Finckh Maschinenfabrik GmbH & Co., Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,806
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830386
Int. Cl.³ B07B 1/04
U.S. Cl. 209—240 **9 Claims**



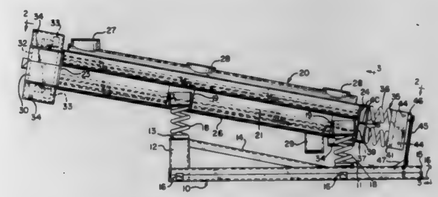
1. In a method of sorting fibrous suspension by feeding the suspension under pressure through an inlet to one side of a screen, flowing the suspension over the screen to sort the suspension into a rejected suspension component flowing along the surface of the screen and an accepted suspension component flowing through the openings of the screen to the other side and generating pressure pulses in the accepted suspension component on said other side of the screen to keep the openings free, the improvement comprising flowing the rejected suspension component along the screen surface in a substantially direct path to an outlet at a velocity having a component directly from the outlet to the inlet which is at least three times the velocity of the accepted suspension component through the screen openings, whereby long fiber contaminations are subtantially prevented from entering the screen openings.

4,287,056

SIFTER STROKE SCREEN

George D. Dumbaugh, and Paul A. Wilson, both of Louisville, Ky., assignors to Kinergy Corporation, Louisville, Ky.

Filed Jun. 16, 1980, Ser. No. 159,762
Int. Cl.³ B07B 1/42
U.S. Cl. 209—332 **9 Claims**



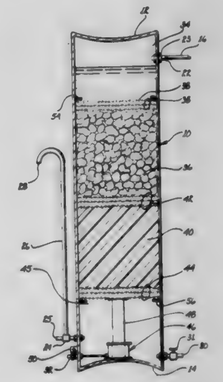
1. A vibratory sifter screen including a sifter trough and screen assembly mounted on spaced isolators supporting the assembly from a base structure, said assembly having an inlet end and a discharge end, an excitor mounted on the assembly adjacent the inlet end adapted to impart a generally lateral vibratory motion to the assembly at this end, and a drive spring and counterbalance mounted at the discharge end adapted to direct the vibratory motion in a linear direction adjacent to the discharge end.

4,287,057

PORTABLE SINK TOP WATER CONDITIONER

Bedford F. Stanley, 4901 E. Sunrise Dr., No. 1614, Tucson, Ariz. 85718

Filed Sep. 2, 1980, Ser. No. 183,320
Int. Cl.³ C02B 1/64
U.S. Cl. 210—85 **10 Claims**



1. A rechargeable portable water conditioner, said conditioner comprising in combination:

(a) a container, said container including an inlet for receiving the water to be filtered and conditioned and an outlet for discharging the filtered and conditioned water;

(b) a first filtering and conditioning media for removing odor and taste from the water;

(c) a second filtering and conditioning media for removing material in suspension from the water;

(d) a first screen for defining a first chamber intermediate said inlet and said first media;

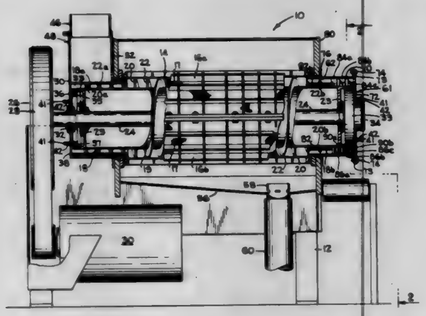
(e) a second screen for segregating said first media from said second media;
(f) a third screen for defining a second chamber intermediate said second media and said outlet;
(g) weight responsive apparatus disposed in said second chamber for sensing a predetermined mass added to said first, second and third screens and said first and second media through the deposition thereon of material filtered from the water;
(h) means for providing an indication of the need to recharge said conditioner as a result of the added mass sensed by said apparatus; and
(i) means for effecting recharge of said first and second media by reverse flow of a fluid through said conditioner.

4,287,058

APPARATUS FOR SEPARATING LIQUID-SOLID MIXTURES

Gregory J. Larsen, Lakeland, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 4, 1979, Ser. No. 100,174
Int. Cl.³ B01D *25/38*
U.S. Cl. 210—112 **7 Claims**



1. An improved apparatus for separating a liquid phase and a particulate solid from a mixture thereof, said apparatus including a support frame, a conveyor screw rotatably mounted to said support frame, means for rotating said conveyor screw, screen means surrounding said conveyor screw for filtering the particulate solid material from the mixture fed to the upstream end of said conveyor screw, and means adjacent the downstream end of the conveyor screw for restricting the flow of solid phase from the space between the screw and the downstream end of said screen means to maintain a selected pressure on the mixture between said screw and said screen means, wherein the improvement comprises: said flow restricting means including an extension on the downstream end of said conveyor screw, a housing that encloses said screw extension, said housing including an imperforate cylindrical wall that is coaxial with the axis of rotation of the screw and an end wall that is secured to the downstream end of the cylindrical wall, said screw extension including a cylindrical wall that is concentric with said cylindrical housing wall to thereby form an annular passageway with said cylindrical housing wall that communicates with the space between the screw and said screen means and that terminates at said end wall, at least two paddles secured to said screw extension wall for propelling the solid phase of the mixture forced into said annular passageway in an annular path about said screw extension wall, said paddles being arranged in longitudinally spaced relationship on said screw extension wall, said cylindrical housing wall having a discharge opening formed therein in alignment with said paddles, said opening having a downstream edge relative to the direction of rotation of said paddles, valve means within the said discharge opening for restricting flow through said opening, and at least one stripper member attached to said cylindrical housing wall adjacent said downstream edge of the discharge opening and at a position aligned in the space between the paddles, whereby the stripper member aids in forcing the solid phase propelled by said paddles into said discharge opening.

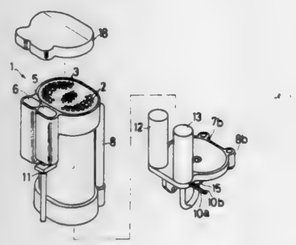
5. An improved apparatus for separating a liquid phase and a particulate solid from a mixture thereof, said apparatus including a support frame, a conveyor screw rotatably mounted to said support frame, means for rotating said conveyor screw, a screen surrounding said conveyor screw for filtering the particulate solid material from the mixture fed to the upstream end of said conveyor screw, and means adjacent the downstream end of the conveyor screw for restricting the flow of solid phase from the space between the screw and the downstream end of said screen to maintain a selected pressure on the mixture between said screw and said screen, wherein the improvement comprises: said flow restricting means including an extension on the downstream end of said conveyor screw, a housing that encloses said extension of the downstream end of the conveyor screw, said housing including an imperforate cylindrical wall that is coaxial with the axis of rotation of the screw and an end wall that is secured to the downstream end of the cylindrical wall, said extension at the downstream end of said screw including a cylindrical wall that is concentric with said cylindrical housing wall to thereby form an annular passageway with said housing wall that communicates with the space between the screw and said screen means and that terminates at said end wall, a paddle secured to said screw extension wall for propelling the solid phase of the mixture forced into said annular passageway in an annular path about said screw extension wall, said cylindrical housing wall having a discharge opening formed therein in alignment with said paddle, said paddle having a face projecting radially from the screw extension and lying in a plane generally parallel to the axis of the screw extension whereby the paddle acts to project the solid phase of the mixture out of said housing through the discharge opening in a path tangential to the path of movement of the paddle.

4,287,059

DIALYZER APPARATUS IN AN ARTIFICIAL KIDNEY SYSTEM

Tadashi Kume, and Isamu Inoh, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1979, Ser. No. 47,999
Claims priority, application Japan, Jun. 15, 1978, 53-71528
Int. Cl.³ B01D *13/00, 19/00*
U.S. Cl. 210—188 **6 Claims**



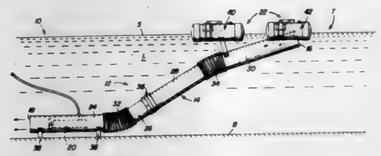
1. A dialyzer apparatus in an artificial kidney system comprising a dialyzer main body having therein a blood flow passage and a dialyzing liquid flow passage, a top cover member mounted on and connected to the upper surface of the dialyzer main body, a dialyzing membrane separating the blood flow passage and the dialyzing liquid flow passage, said blood flow passage and dialyzing liquid flow passage having respective inlets and outlets, said body having upper and lower surfaces and front and rear surfaces, said body being formed integrally at its front surface with (a) an air removal chamber which is in communication with the outlet of said blood flow passage, (b) a liquid level adjusting chamber which is in communication with the air removal chamber, and (c) a pipe passage extending downwards from the air removal chamber, said body being also formed integrally at its rear surface with a pair of further pipe passages which are in communication with the inlet and outlet respectively, of the dialyzing liquid flow passage, and a bottom cover member having a pair of chambers formed integrally therewith mounted on and connected to the lower surface of the main body, said bottom cover member including two connection passages constituting an inlet and outlet respectively for said blood flow passage, said inlet passage communicating with one of said chambers, and said outlet passage communicating with the other of said chambers.

4,287,060

AERATION SYSTEM FOR SOLID BIOLOGICAL WASTE

Everett W. Coggins, Hopedale, Ill., assignor to Confinement Investors, Inc., Hopedale, Ill.

Continuation of Ser. No. 943,743, Sep. 19, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,785
Int. Cl.³ C02F *3/02*; B01F *3/04*
U.S. Cl. 210—194 **5 Claims**



1. An aeration system for treating solid biological wastes, comprising, in combination:
(1) a storage area having a bottom and arranged for holding a slurry of solids and liquids to be treated; and
(2) circulating means disposed in the storage area for drawing air and slurry from the surface of the slurry in the storage area and discharging the surface air and slurry into the slurry adjacent the bottom of the storage area, wherein the circulating means consists essentially of:
(a) a duct means having an inlet and outlet and disposed in the storage area so as to be immersible in the slurry forming a fluid flow path through the slurry, said duct means consisting of a hollow tube means extending from the surface of said slurry to adjacent the bottom of said storage area;
(b) propeller pump means positioned in the duct means and disposed adjacent said outlet for drawing slurry through the duct means from the inlet to the outlet; and
(c) float means connected to the duct means adjacent said inlet for positioning the inlet of the duct means adjacent the surface of the slurry so that a major portion of said inlet is immersed in said slurry.

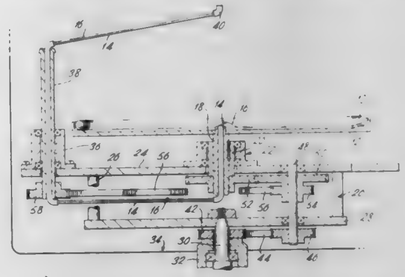
4,287,061

ROTATING COIL CENTRIFUGE

Ian A. Sutherland, Harpenden, England, assignor to National Research Development Corporation, London, England

Filed Oct. 24, 1979, Ser. No. 88,054
Claims priority, application United Kingdom, Oct. 26, 1978, 42034/78
Int. Cl.³ B01N *15/08*
U.S. Cl. 210—198.2 **11 Claims**

11. A centrifuge comprising a centrifuge plate fixed to a hollow central shaft; first rotation means to rotate the hollow central shaft whereby the centrifuge plate rotates about a central axis; a support tube which passes through the hollow central shaft; second rotation means to rotate the support tube at a speed which differs slightly from the speed of rotation of the hollow central shaft; support means for supporting on the centrifuge plate at least one convoluted tube near the periphery of the plate, the tube being convoluted about an axis of convolution which is generally perpendicular to the local direction of the centrifugal force generated by rotation of the centrifuge plate; connection means between the support tube and the at least one convoluted tube whereby the at least one convoluted tube is rotated about an axis parallel to the axis of



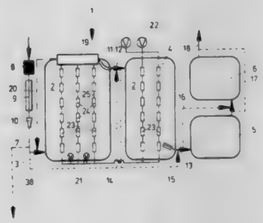
convolution during rotation of the centrifuge plate and at a predetermined speed which is independent of said rotation; and means for supplying inlet and outlet tubes to the at least one convoluted tube in a twist free manner, the inlet and outlet tubes passing through the support tube; and drive means connected to the first and second rotation means.

4,287,062

APPARATUS FOR BIOLOGICAL PURIFICATION OF SEWAGE

Reinhart von Nordenskjöld, Ernst-Heinkel-Ring, D-8011 Hohenbrunn, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,046
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834899
Int. Cl.³ C02F *3/20, 7/00*
U.S. Cl. 210—199 **26 Claims**



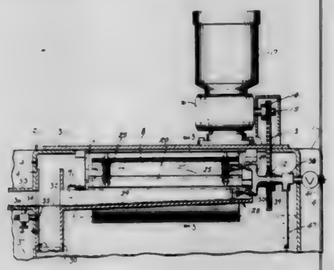
1. Apparatus for the biological purification of sewage by aerobic treatment with active sludge comprising:
at least one basin (3) for receiving the sewage and having an inlet and an outlet; and
aeration means mounted in said basin, said aeration means including at least one elongated flexible carrier (25) extending across said basin, said carrier lying generally proximate the exposed upper surface of the sewage and having a predetermined amount of longitudinal slack therein, and a plurality of bottom aerators (24) suspended at spaced intervals along said carrier into proximity with the bottom of said basin, said aerators being coupled to an air supply conduit for discharging aerobic treatment air into the sewage and propelling said aeration means by the discharge of the air in a reciprocal motion transversely of the extension of said carrier.

4,287,063

APPARATUS FOR SEPARATING LIQUIDS

Wallace I. Stenzel, Thiensville, Wis., assignor to Waukee Engineering Company Inc., Milwaukee, Wis.

Filed Oct. 29, 1979, Ser. No. 88,832
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—402 **1 Claim**



1. An apparatus for separating oil from water, comprising a vessel to contain a body of water, a drum partially submerged in the water and having an outer surface to which a film of a mixture of water and oil adheres during rotation of said drum, a doctor blade to rotate against the outer surface of the drum and remove the mixture from said surface, an inclined trough disposed adjacent the periphery of the drum to receive said mixture from the doctor blade, a conduit located adjacent the low end of the trough and having an upper end disposed above the level of water in the vessel and having an open lower end located beneath the level of water in the vessel, said mixture of water and oil flowing by gravity along the lower surface of the trough into said conduit and said water flowing downwardly through said conduit and being discharged from the lower open end of the conduit into said body of water, said oil collecting as a layer in the upper end portion of the conduit, means for removing the collected oil layer from the conduit, and cleaning means comprising an aspirating unit having an inlet section connected to a source of gas under pressure and having an outlet section and having a throat portion disposed between said inlet and outlet portions, a tube having its upper end communicating with said throat portion and having its lower end extending to a level beneath the level of the body of water whereby air flowing through said aspirating unit will draw water into said throat portion to mix with the gas and the mixture of gas and water will be discharged from said outlet section, and a pair of discharge nozzles communicating with said outlet section, one of said outlet nozzles disposed to discharge said mixture along the bottom surface of said trough for delivery to said conduit and the other of said nozzles disposed to distribute said mixture along a surface of said doctor blade to thereby clean foreign material from said blade.

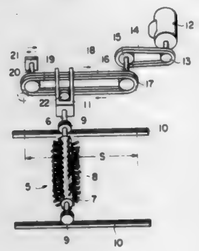
4,287,064

BRUSH DRIVING APPARATUS FOR A SOLID-LIQUID SEPARATION SCREEN

Seiya Ando, Mitaka, and Kozi Inoue, Osaka, both of Japan, assignors to Kabushiki Kaisha Ando Screen Seisakujo, Japan

Filed Jun. 5, 1980, Ser. No. 156,575
Claims priority, application Japan, Jun. 11, 1979, 54-73198
Int. Cl.³ B07B *1/52*
U.S. Cl. 210—413 **4 Claims**

1. A means for cleaning a liquid-solid separation screen having a plurality of parallel wires, a brush having elements capable of passing between said wires to remove solids lodged therein; a shaft mounting said brush and means supporting said shaft for reciprocal movement lengthwise of said wires; said means including elements at opposite ends of said brush rotatably supporting said shaft for reciprocal movement in a single plane parallel with said screen, said elements including a roller on said shaft and an elongated support member therefor, said roller making positive rolling engagement with said support member for rotating said shaft and brush as the same moves lengthwise of said wires and support member; an endless member and a pair of pulleys supporting the same for continuous movement in one direction with advance and return runs parallel with said wires; drive means mounted on and projecting from one side of said endless member; a motion transmitting member mounted on said shaft and engaging said drive



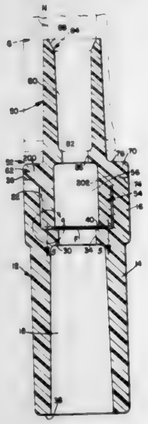
means; said drive means having sliding engagement with said motion transmitting member toward and away from said screen whereby said drive means remains in constant driving engagement with said shaft; means for powering said endless member to reciprocate said shaft back and forth the length of said screen while alternately rotating said brush in opposite directions.

4,287,065

FILTER HUB ASSEMBLY

Kenneth Raines, Bethlehem, Pa., assignor to Burron Medical Inc., Bethlehem, Pa.

Filed Oct. 30, 1979, Ser. No. 89,368
Int. Cl.³ B01D *29/00*
U.S. Cl. 210—445 **2 Claims**



1. A filter hub assembly for use in drug reconstitution procedures comprising:

an elongate female filter hub having a coupling sleeve on one end thereof, a fluid passage defined longitudinally therethrough and an annular support shoulder at one end of said hub, said support shoulder having a fluid passage defined therethrough to be in fluid communication with said filter hub fluid passage;

an elongate male needle accommodating unit having a base on one end thereof and a fluid passage defined longitudinally therethrough, said needle accommodating unit fluid passage being sized and adapted to mount a needle therein, said needle accommodating unit including an energy director element and a sealing shoulder on said base, said base being accommodated in said coupling sleeve and ultrasonically welded thereto with said energy director forming a connecting means between said filter hub and said needle accommodating unit with said base and female filter hub fluid passages being in fluid communication with each other, said energy director element forming a shear joint between said female filter hub unit and said needle accommodating unit;

a filter located between said filter hub fluid passage and said needle accommodating unit base fluid passage for filtering fluid passing through the assembly, said filter being supported on said filter hub support shoulder and having an outer peripheral size smaller than the inner peripheral size of said coupling sleeve so that a gap is defined between said filter outer periphery and the inner periphery of said hub; and

a rim on said base, said rim including a planar portion which contacts said hub support shoulder in said gap outside said filter outer periphery, said rim further including a beveled portion which slopes upwardly from said planar portion to said needle accommodating unit fluid passage, said beveled portion clamping said filter against said hub support shoulder when said rim planar portion contacts said hub support shoulder in said gap outside said filter outer periphery so that said filter is gently clamped against said hub support shoulder without causing any sudden reduction in filter thickness.

4,287,066

SIEVE HAVING SUBSTANTIALLY PLANE SIEVE SHEETS AND A METHOD FOR ITS MANUFACTURE

Albert Greutert, Sachseln, and Ernst Stumvoll, Sarnen, both of Switzerland, assignors to Elfo AG Sachseln, Sachseln, Switzerland

Filed Sep. 8, 1976, Ser. No. 721,632
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1975, 2540532
Int. Cl.³ B01D *35/02, 39/20;* B29F *1/10*
U.S. Cl. 210—464 **11 Claims**



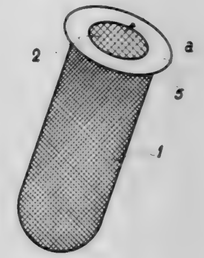
1. A sieve having at least one substantially planar sieve surface comprising: a sieve sheet defining the planar sieve surface and including slots extending through the sheet and dividing the sheet into a plurality of sieve sheet sections, the slots being arranged so that the sections can be deflected out of their common plane; and a plastic material filling the slots, securing to each other portions of the sections adjoining the slots and maintaining the sections deflected out of their common plane by a relatively minor amount.

4,287,067

WATER FILTER FOR RADIATORS

Moises Dyner, Buenos Aires, Argentina, assignor to Marcos Berstein, Buenos Aires, Argentina

Filed Feb. 4, 1980, Ser. No. 118,341
Claims priority, application Argentina, Feb. 2, 1979, 275435
Int. Cl.³ B01D *29/04*
U.S. Cl. 210—487 **1 Claim**



1. An automobile radiator water filter comprising:

a generally cup-shaped external filter screen having a generally cylindrical sidewall and a generally hemispherical base wall and having a relatively fine mesh width and an open end;

a generally cup-shaped internal filter screen having a generally cylindrical sidewall and a generally hemispherical base wall and having a relatively larger mesh width than that of said external filter screen, said internal filter being disposed within said external filter and having an open end;

support means disposed between said screens for maintaining them in a fixed, spaced-apart relationship to one another, said support means including side supports disposed between the sidewalls of said screens and a base support disposed between the base walls of said screens; and

a flat, annular coupling flange disposed across and joining together the open ends of said screens, said flange having an annular lip projecting laterally beyond the open end of said external screen which serves to mount said filter in a radiator inlet.

4,287,068

POWDERED METAL FILTER COMPOSITION AND PROCESSES FOR PRODUCING THE SAME

James G. Bewley, Tinton Falls, N.J., assignor to Metallurgical International, Inc., Tinton Falls, N.J.

Continuation-in-part of Ser. No. 915,383, Jun. 14, 1978, Pat. No. 4,166,736. This application Sep. 4, 1979, Ser. No. 72,415
Int. Cl.³ B01D *39/20;* B22D *23/08;* C22C *38/02*
U.S. Cl. 210—510 **17 Claims**

1. A powdered metal filter composition consisting essentially of

(a) a ferrous based alloy having by weight from approximately 0.60% to approximately 4.0% silicon; from approximately 0.05% to approximately 0.20% Carbon; and up to approximately 2.0% molybdenum; and exhibiting an apparent density of approximately 1.6 to 2.3 gr./cm.³

4,287,069

PROCESS FOR THE IMPROVED WORKING UP OF EFFLUENT

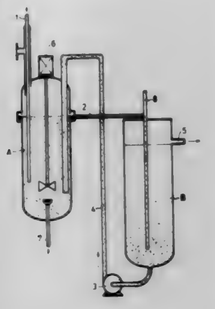
Artur Reischl, Leverkusen; Kurt Mack, Wuppertal, and Friedhelm Sahlmen, Moers, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,919

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920526

Int. Cl.³ C02F *11/14*

U.S. Cl. 210—609 **9 Claims**



1. A process for the separation of aqueous sludges in the purification of effluents in purification plants, comprising:

(a) mixing organic and/or inorganic aqueous sludges with ground monomer-free tolylene diisocyanate (TDI) distillation residues having a mean particle size of less than 2 mm;

(b) removing the water from the resulting purified sludges; and

(c) disposing of the purified sludges.

4,287,070

METHOD MAINTAINING A CONSTANT GAS TO SOLIDS RATIO IN EFFLUENT FROM A LONG VERTICAL SHAFT BIOREACTOR

David C. I. Pollock, Richmond Hill, Canada, assignor to C-I-L Inc., Montreal, Canada

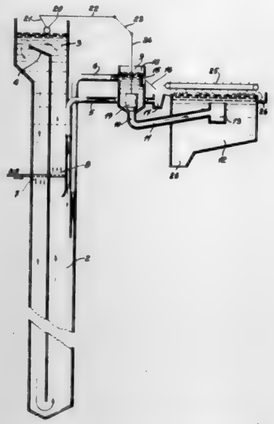
Filed Jun. 13, 1980, Ser. No. 159,352

Claims priority, application Canada, Oct. 26, 1979, 338537

Int. Cl.³ C02F *3/12*

U.S. Cl. 210—626 **4 Claims**

1. In a modified activated sludge waste treatment method wherein an aerobic biological reaction takes place during the continuous circulation of aerated fluid waste in an apparatus including a basin, a long vertical downcomer chamber, a long vertical riser chamber operatively communicating with the downcomer through the basin and at the lower end of the downcomer and a sludge separation means operatively communicating with the riser, an improvement whereby the dispersed and dissolved gas content of the waste fluid can be maintained which comprises removing effluent waste from the said riser chamber and discharging the said effluent waste into a cylindrical vessel positioned between said riser chamber and said sludge separation means, and at a higher elevation than the said sludge separation means, discharging the said effluent waste from the said cylindrical vessel selectively in controlled volumes to said separation means or to return said effluent waste to said riser chamber in response to the level of waste liquor in the said basin the said basin waste level and consequent pressure exerted thereby upon the fluid in the said apparatus being a means to govern the gas content in the said waste.



4,287,071

SIMULTANEOUS EXTRACTION OF MORE THAN ONE ION BY LIQUID MEMBRANE PROCESS

Peter M. DiGiacomo, Mission Viejo, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Oct. 10, 1979, Ser. No. 83,500

Int. Cl.³ B01D *11/04*

U.S. Cl. 210—643 **11 Claims**

1. A liquid membrane process for removing ions from solution which comprises:

(a) contacting a solution comprising a first ion and a second ion with an emulsion, said emulsion comprising an external phase which is immiscible with said solution and comprises a first complexing agent and a second complexing agent, said first complexing agent being capable of forming a first complex with said first ion and said second complexing agent being capable of forming a second complex with said second ion, both of said complexes being soluble in said external phase, and an internal phase, which comprises (1) decomplexing agent, said decomplexing agent being capable of converting said first complex into said first complexing agent and said first ion, and (2) an inhibiting agent which is capable of inhibiting the formation of said first complex;

(b) forming in said external phase a first complex of said first ion and said first complexing agent and a second complex of said second ion and said second complexing agent; and

(c) decomplexing the first complex in said internal phase whereby the first ion remains in said internal phase, and said second ion remains in said external phase in said second complex.

11. A liquid membrane process for removing metallic ionic impurities contained in a phosphoric acid solution, and separating such ionic impurities, which comprises:

(a) contacting the phosphoric acid solution containing a first ionic impurity selected from the group consisting of magnesium, calcium, aluminum, iron and mixtures thereof, and as a second ionic impurity uranium ion with an emulsion comprising an external phase which is immiscible with said phosphoric acid and comprising a first complexing agent which is a sulfonate capable of forming a first complex with said first ionic impurity and a second complexing agent selected from the group consisting of phosphonates and pyrophosphates capable of forming a second complex with uranium ion, said first complexing agent, said second complexing agent, said first complex, and second complex being soluble in said external phase and an internal phase comprising a strong acid;

(b) forming in said external phase a first complex of said first ionic impurity of said first complexing agent and a second complex of uranium with said second complexing agent; and

(c) decomplexing said first complex by action of said strong acid on said first complex in said internal phase whereby said first ionic impurity remains in said internal phase and the uranium remains in said external phase in said second complex.

4,287,072

WATER TREATMENT BY ION EXCHANGE RESIN

Jesse S. Beecher, Morristown, N.J., assignor to Drew Chemical Corporation, Boonton, N.J.

Filed Oct. 18, 1979, Ser. No. 86,049

Int. Cl.³ C02F *5/08, 1/42*

U.S. Cl. 210—668 **9 Claims**

1. In a process for treating water by passing the water through an ion exchange resin, the improvement comprising:

adding a catalyzed hydrazine compound to the water being treated prior to passage through the ion exchange resin in an amount effective to reduce iron fouling of the ion exchange resin; and passing the water containing said catalyzed hydrazine through the ion exchange resin to effect treatment of the water.

4,287,073

WATER-BASED FORGING LUBRICANT

Sulekh C. Jain, Shrewsbury, and Charles A. Morris, Grafton, both of Mass., assignors to Wyman-Gordon Company, Worcester, Mass.

Division of Ser. No. 712,702, Aug. 9, 1976, Pat. No. 4,104,178, which is a continuation of Ser. No. 625,592, Nov. 24, 1975, Pat. No. 3,983,042. This application May 30, 1978, Ser. No. 910,842

Int. Cl.³ C10M *3/14, 3/04, 3/02*

U.S. Cl. 252—30 **9 Claims**

1. A forging lubricant, comprised of a water base and at least a minor effective amount of sodium molybdate.

3. A forging lubricant as recited in claim 1, including at least a minor effective amount of graphite.

4,287,074

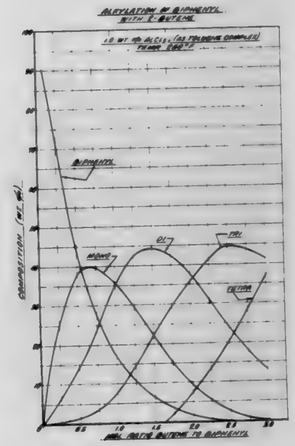
SEC-YLBIPHENYL COMPOSITION AND PROCESS FOR PREPARING THE SAME

Harold W. Earhart, Corpus Christi, Tex., and Donald F. Rugen, Wilmington, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Apr. 28, 1980, Ser. No. 144,490

Int. Cl.³ B01F *1/00*; H01B *3/22*

U.S. Cl. 585—6.3 **6 Claims**



1. A water-white, essentially odorless liquid composition useful as a dielectric oil and as a dye solvent, consisting essentially of about 82% to about 88% by weight of mono-sec-butylbiphenyl and about 12% to about 18% of di-secbutylbiphenyl.

4,287,075

HIGH DIELECTRIC CONSTANT TYPE CERAMIC COMPOSITION CONSISTING ESSENTIALLY OF $Pb(Fe_{1/2}Nb_{1/2})O_3$-$Pb(Mg_{1/3}Nb_{2/3})O_3$-$Pb(Mg_{1/2}W_{1/2})O_3$

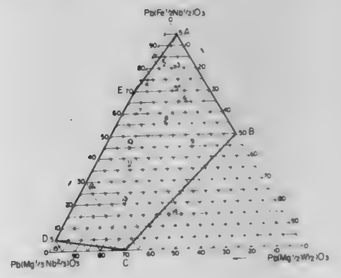
Shinobu Fujiwara; Kiyoshi Furukawa; Nobuaki Kikuchi, all of Akita; Osamu Iizawa, Honjo; Hitoshi Tanaka, Akita, and Hisayoshi Ueoka, Yachiyo, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,384

Claims priority, application Japan, Apr. 17, 1978, 53/44964; May 29, 1978, 53/64130; May 30, 1978, 53/64513; May 30, 1978, 53/64515; May 30, 1978, 53/64516; Jun. 16, 1978, 53/73012; Jun. 22, 1978, 53/75630; Jul. 3, 1978, 53/80651

Int. Cl.³ H01B *3/12*

U.S. Cl. 106—39.5 **41 Claims**



1. A high dielectric constant type-, ceramic composition hereinafter referred to as the basic ceramic composition, which comprises from 64.80 to 68.58% of PbO, from o to 11.46% of

Fe_2O_3, from 0.3 to 3.92% of MgO, from 9.65 to 26.89% of Nb_2O_5 and from 0 to 16.83% of WO_3, all percentages being by weight based on the basic ceramic composition, and wherein the basic composition falls within the area defined by the polygon A-B-C-D-E of FIG. 1 attached to the specification but not including the lines A-B-C-D-E.

4,287,076

PRODUCT SUITABLE FOR THE STORAGE AND CONVEYANCE OF THERMAL ENERGY

Lucien Babin, and Daniele Clausse, both of Pau, France, assignors to Elf France, Paris, France

Filed Sep. 10, 1979, Ser. No. 73,992
Claims priority, application France, Sep. 22, 1978, 78 27166
Int. Cl.[3] C09K *5/02, 5/00*
U.S. Cl. 252—70 **14 Claims**

1. A composition for the storage and conveyance of thermal energy consisting essentially of a water in oil emulsion, said water being in the form of droplets and having dissolved therein sodium sulfate where the weight ratio of said dissolved sodium sulfate in said water is about the same as the weight ratio of sodium sulfate to water in sodium sulfate decahydrate.

11. A method of preparing a product suitable for storage and conveyance of thermal energy comprising the following steps:

dissolving sodium sulfate in water to form a monophasic aqueous solution;

mixing said aqueous solution with a paraffinic oil to form a water in oil emulsion having water droplets with said sodium sulfate dissolved therein;

placing the emulsion in a dry atmosphere at a temperature above the point of change from liquid to solid of sodium sulfate decahydrate until sufficient water has evaporated from said droplets to increase the weight ratio of said sodium sulfate dissolved in said water to about the same ratio of sodium sulfate to water as sodium sulfate decahydrate.

4,287,077

GLYCOL COMPOSITIONS CONTAINING AN ETHER MODIFIED SILICONE TO INHIBIT GELLING

Phillip L. Wing, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

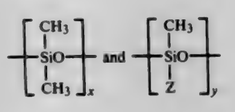
Continuation-in-part of Ser. No. 96,874, Nov. 23, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,798
Int. Cl.[3] C09K *5/00*
U.S. Cl. 252—75 **11 Claims**

1. A gellation resistant aqueous glycol composition comprising

(A) 85 to 98 percent by weight of an alkylene glycol, an alkylene glycol ether, or mixtures thereof,

(B) an effective amount to reduce corrosion of an alkali metal silicate,

(C) an effective amount to improve gellation resistance of a glycol soluble ether modified silicone copolymer comprising the repeating units



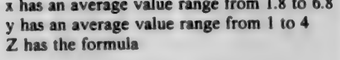
and

wherein

x has an average value range from 1.8 to 6.8

y has an average value range from 1 to 4

Z has the formula



where

n is 2 or 3

m has an average value such that the average molecular weight of the polyoxyalkylene chain is in the range 100–400

R is an alkylene chain of 2–4 carbons and

R_1 is selected from the group consisting of hydrogen and alkyl groups of 1–4 carbons

(E) the remainder being water and an effective amount of one or more other corrosion inhibitors.

4,287,078

SURFACTANTS DERIVED FROM THE REACTION PRODUCT OF POLYOXYALKYLENE POLYOLS AND POLYGLYCIDYL ETHERS AND GLYCOL-BASED ANTIFREEZE USING SAME

William K. Langdon, and Lester G. Lundsted, both of Grosse Ile, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 28, 1980, Ser. No. 115,793
Int. Cl.[3] C09K *5/00;* **C07C** *43/10*
U.S. Cl. 252—76 **18 Claims**

1. A material formed by the reaction of (1) a poly-2-hydroxyalkyl derivative of a polyol having at least 5 hydroxyl groups, with at least 3 of said hydroxyl groups being substituted with 2-hydroxyalkyl groups and (2) a hydrophobic polyglycidyl ether of a polyoxyalkylene polyol said polyoxyalkylene polyol having a molecular weight greater than about 300.

9. An antifreeze composition comprising a glycol freezing point depressant, a corrosion inhibitor system, and a foam suppressing agent present in an amount of from about 0.001% to about 0.1% by weight of the antifreeze composition; said foam suppressing agent comprising the reaction product of (1) a poly-2-hydroxyalkyl derivative of a polyol having at least 5 hydroxyl groups, with at least 3 of said hydroxyl groups being substituted with one or more 2-hydroxyalkyl groups and (2) a hydrophobic polyglycidyl ether of a polyoxyalkylene polyol, said polyoxyalkylene polyol having a molecular weight greater than about 300.

4,287,079

LIQUID CLEANSER FORMULA

Ronald A. Robinson, Garden Grove, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Jun. 2, 1980, Ser. No. 155,571
Int. Cl.[3] C11D *7/54*
U.S. Cl. 252—99 **9 Claims**

1. An aqueous cleaning composition to be applied from a squirt bottle comprising

(a) about 5 up to 20 weight percent of particulate abrasive selected from the group consisting of diatomaceous earth, calcium carbonate, $Ca_3(PO_4)_2$, $Ca(PO_3)_2$, zeolite feldspar, zirconium silicate, calcium silicate, titanium oxide, ZnO_2, CaO, Al_2C_3 and silica;

(b) a two part thickener consisting essentially of a mixture of fumed silicon dioxide and smectite clay, the fumed silicon dioxide being present in weight percent amount between about 1 and 5, the clay being present in weight percent amount between about 4 and 15;

(c) about 18 up to 40 weight percent weak aqueous hypohalite bleach solution, the hypo-halite selected from the group consisting of sodium hypochlorite, potassium hypochlorite, calcium hypochlorite, magnesium hypochlorite, lithium hypochlorite and hypobromite;

(d) about 2 up to 15 weight percent alkaline builder salt selected from the group consisting of potassium carbonate, Na_2CO_3, NaOH, KOH, $Na_4P_2O_7$, $K_4P_2O_7$, $Na_5P_3O_{10}$, $K_4P_3O_{10}$, Na_3PO_4, K_3PO_4, $NaSiO_3$, $Na_2O: 2SiO_2$, and

(e) water in an amount which is in excess of 50% by weight of the composition.

4,287,080

DETERGENT COMPOSITIONS WHICH CONTAIN CERTAIN TERTIARY ALCOHOLS

Michael P. Siklosi, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

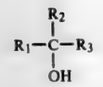
Filed Sep. 17, 1979, Ser. No. 76,002
Int. Cl.[3] C11D *7/54, 7/50*
U.S. Cl. 252—104 **14 Claims**

1. A detergent composition consisting essentially of:

A. 0.05% to 50% of a surfactant selected from the group consisting of anionic, cationic, nonionic, zwitterionic, and amphoteric surfactants; and

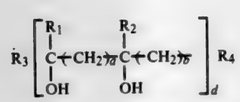
B. 0.5% to 50% of a tertiary alcohol having at least 5 carbon atoms and less than 100 carbon atoms per molecules, said tertiary alcohol being selected from the group consisting of:

(A) heterosubstituted or unsubstituted monohydric alcohols having the following molecular structure:



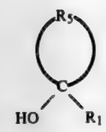
wherein R_1, R_2 and R_3 contain from 1 to about 20 carbon atoms and are selected from a subgroup consisting of alkyl, cycloalkyl, carboxyl, carboxylate salt, ester, carbonyl, ether, nitrile, aryl, aralkyl, alkaryl, and aldehyde moieties, and combinations thereof;

(B) unsubstituted alcohols having the following molecular structure:



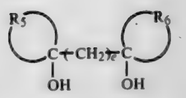
wherein R_1, R_2 and R_3 contain from 1 to about 20 carbon atoms and are selected from a subgroup consisting of alkyl, alkenyl, alkynyl, cycloalkyl, carboxyl, carboxylate salt, ester, carbonyl, ether, nitrile, aryl, aralkyl, alkaryl, and aldehyde moieties, and combinations thereof, R_4 is selected from the same group as R_1, a is from 0 to about 8, b is from 0 to about 8, d is from 1 to about 4, and the values of a and b are separately selected for each repetition of d, if d is greater than 1;

(C) heterosubstituted or unsubstituted alicyclic alcohols having the following molecular structure:



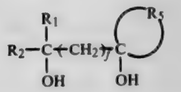
wherein R_1 contains from 1 to about 20 carbon atoms and are selected from a subgroup consisting of alkyl, alkenyl, alkynyl, cycloalkyl, carboxyl, carboxylate salt, ester, carbonyl, ether, nitrile, aryl, aralkyl, alkaryl, and aldehyde moieties, and combinations thereof; R_5 is a substituted or unsubstituted cyclic chain of 2 to 20 carbon atoms;

(D) hetero unsubstituted alicyclic alcohols having the following structure:



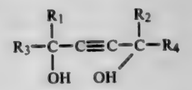
wherein R_5 is as defined above, R_6 is selected from the same group as R_5, and e is 1 to about 8;

(E) heterosubstituted or unsubstituted alcohols having the following structure:



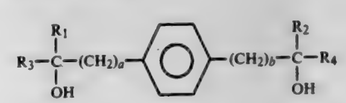
wherein R_1, R_2 contain from 1 to about 20 carbon atoms and are selected from a subgroup consisting of alkyl, alkenyl, alkynyl, cycloalkyl, carboxyl, carboxylate salt, ester, carbonyl, ether, nitrile, aryl, aralkyl, alkaryl, and aldehyde moieties; and combinations thereof; R_5 is as defined above and f is 0 to about 8;

(F) heterosubstituted or unsubstituted alcohols having the following structure:



wherein R_1, R_2, R_3 contain from 1 to about 20 carbon atoms and are selected from a subgroup consisting of alkyl, alkenyl, alkynyl, cycloalkyl, carboxyl, carboxylate salt, ester, carbonyl, ether, nitrile, aryl, aralkyl, alkaryl, and aldehyde moieties, and combinations thereof; R_4 is as defined above; and

(G) heterosubstituted or unsubstituted alcohols having the following structure:



wherein R_1, R_2, R_3 contain from 1 to about 20 carbon atoms and are selected from a subgroup consisting of alkyl, alkenyl, alkynyl, cycloalkyl, carboxyl, carboxylate salt, ester, carbonyl, ether, nitrile, aryl, aralkyl, alkaryl, and the aldehyde moieties, and combinations thereof; R_4, a, and b are defined above.

4,287,081

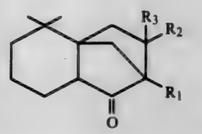
BRIDGED KETONES, PROCESS FOR PREPARING SAME AND USE THEREOF IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF CONSUMABLE MATERIALS

Mark A. Sprecker, Sea Bright; James M. Sanders, Eatontown; William L. Schreiber, Jackson; Hugh Watkins, Lincroft; Joaquin F. Vinals, Red Bank, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Thomas J. O'Rourke, Red Bank, N.J.; Myrna L. Hagedorn, Highland Park, N.J., and Philip Klemarczyk, Old Bridge, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 95,149, Nov. 16, 1979, Pat. No. 4,250,338. This application Oct. 23, 1980, Ser. No. 200,024
Int. Cl.[3] C11D *3/50, 9/44*
U.S. Cl. 252—174.11 **1 Claim**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic or nonionic detergent compris-

ing the step of adding in an aroma augmenting or enhancing quantity to a solid or liquid anionic, cationic or nonionic detergent base at least one substantially pure tricyclic ketone having the structure:



wherein R_1, R_2 and R_3 are the same or different and each represents hydrogen or C_1–C_3 lower alkyl.

4,287,082

HOMOGENEOUS ENZYME-CONTAINING LIQUID DETERGENT COMPOSITIONS CONTAINING SATURATED ACIDS

Flavio Tolfo, Brussels, and Christian R. Barrat, Meise, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 22, 1980, Ser. No. 123,856
Int. Cl.³ C11D *7/42*
U.S. Cl. 252—174.12 **9 Claims**

1. A homogeneous aqueous liquid detergent composition consisting essentially of:

(a) from about 20% to about 50% by weight of organic synthetic surface-active agent selected from the group consisting of anionic and nonionic surfactants;

(b) from about 3% to about 15% by weight of saturated fatty acid having from 12 to 14 carbon atoms in the alkyl chain;

(c) from 0.04% to 0.4% by weight of enzyme selected from the group consisting of proteases and mixtures of proteases and amylases;

(d) from 0.1% to 3% by weight of carboxylic acid or salt thereof selected from the group consisting of acetic acid, formic acid and sodium formate;

(e) from 0.5 to 1.5 millimoles per kilo of the detergent composition of enzyme-accessible calcium; the pH of the composition, measured at 20° C., being from 6.5 to 8.5.

4,287,083

PHOTOINITIATION SYSTEMS FOR FREE RADICAL POLYMERIZATION REACTIONS

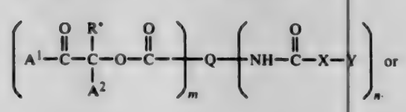
John R. McDowell, Erie; Dennis D. Howard, Girard, and Vincent J. Pascarella, Erie, all of Pa., assignors to Lord Corporation, Erie, Pa.

Division of Ser. No. 950,970, Oct. 13, 1978, Pat. No. 4,224,454. This application Jun. 18, 1979, Ser. No. 49,675
Int. Cl.³ C08K *5/16;* **C08J** *7/00*
U.S. Cl. 252—182 **11 Claims**

1. A photocatalyst system consisting essentially of

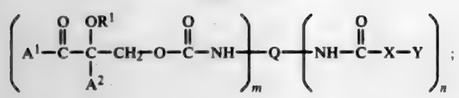
(a) at least one photosensitizer which is effective to promote free radical polymerization through bimolecular photochemical reactions of the energy donor type, the hydrogen abstraction type, or by formation of a donor-acceptor complex with monomers or additives leading to ionic or radical species; and

(b) at least one photoinitiator which promotes free radical polymerization by generating reactive specie by way of unimolecular homolysis resulting from photoexcitation, said photoinitiator having the formula



or

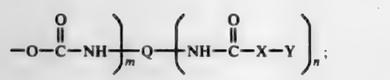
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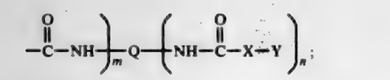
wherein

A^1 and A^2 are the same or different and each is a benzenoid or nonbenzenoid aromatic radical;

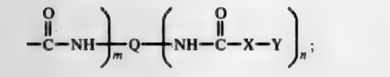
R^0 is hydrogen, or an aliphatic, cycloaliphatic or aromatic radical containing from 1 to 9 carbon atoms, or—OR^2, or



R^1 is hydrogen or an aliphatic, cycloaliphatic or aromatic radical containing from 1 to 9 carbon atoms, or —R-^{3}—O—R^4, or

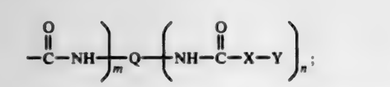


R^2 is hydrogen, or an aliphatic, cycloaliphatic or aromatic radical having from 1 to 9 carbon atoms, or —R-^{3}—O—R^4, or



R^3 is a divalent aliphatic, cycloaliphatic or aromatic radical containing from 1 to 9 carbon atoms;

R^4 is a hydrogen, or an aliphatic, cycloaliphatic or aromatic radical having from 1 to 9 carbon atoms, or



Q is the monovalent or polyvalent residue of a monomeric aliphatic, cycloaliphatic or aromatic isocyanate compound having at least one isocyanate group, which residue remains after reaction of all isocyanate groups of such monomeric compound with at least one saturated or unsaturated compound containing at least one isocyanate-reactive active hydrogen atoms;

X is selected from the group consisting of —O—, —S—, and >N—R^5, wherein R^5 is hydrogen or an alkyl group having from 1 to 9 carbon atoms;

Y is hydrogen or the organic residue of a saturated or unsaturated organic compound containing at least one isocyanate-reactive active hydrogen atom, which residue remains after reaction of at least one such active hydrogen atom with an isocyanate moiety;

m is a number in the range from 1 to f, wherein f is the total number of isocyanate groups per molecule of isocyanate compound; and

n is equal to f-m.

4,287,084

USE OF MIXTURE OF ALIPHATIC C_{10} BRANCHED OLEFINS IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMED ALKALINE METAL HYPOCHLORITE SOLUTIONS

Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Homdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 19, 1980, Ser. No. 160,788
Int. Cl.³ C11D *7/54, 3/395, 3/50*
U.S. Cl. 252—187 H **2 Claims**

1. A process for augmenting or enhancing the aroma of a liquid bleach containing hypochlorite ion comprising the step of adding to a liquid bleach composition one or more diisoamylene-containing compositions produced by the step of reacting 2 moles of diisoamylene in the presence of an acid catalyst, the concentration of said diisoamylene-containing composition being in an organoleptic property modifying amount.

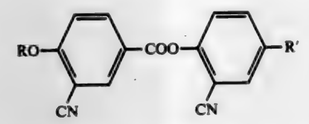
4,287,085

(2'-CYANO-4'-ALKYLPHENYL)-3-CYANO-4-ALKOXYBENZOATES AND LIQUID CRYSTAL COMPOSITION INCLUDING SAME

Katsumori Takei; Sadao Kanbe, and Yoshio Shionozaki, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

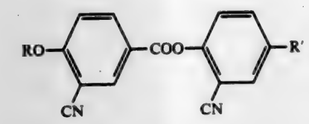
Filed Apr. 29, 1980, Ser. No. 144,809
Claims priority, application Japan, May 1, 1979, 54-53660; Jun. 11, 1979, 54-73295; Oct. 17, 1979, 54-133826
Int. Cl.³ C07C *121/75;* **C09K** *3/34*
U.S. Cl. 252—299.63 **15 Claims**

1. An ester compound represented by the general formula



wherein each R and R′ is selected from the group consisting of straight-chain alkyl groups having from one to eight carbon atoms for defining a (2′-cyano-4′-n-alkylphenyl)-3-cyano-4-n-alkoxybenzoate.

8. A liquid crystal composition comprising liquid crystal material including at least one frequency-dependent liquid crystal compound inducing a dielectric dispersion at lower frequency, admixed with at least one (2′-cyano-4′-alkylphenyl)-3-cyano-4-alkyloxbenzoate represented by the general formula:



wherein each R and R′ is selected from the group consisting of straight-chain alkyl groups having from one to eight carbon atoms for increasing the absolute value of the negative dielectric anisotropy of the liquid crystal compound in the high frequency range.

4,287,086

VISCOUS ORGANIC SYSTEMS CONTAINING AN ORGANOPHILIC CLAY GELLANT WITHOUT AN ORGANIC DISPERSANT THEREFOR

Claude M. Finlayson, and John W. Jordan, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 573,967, May 2, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,323
Int. Cl.³ B01J *13/00;* **C10M** *1/10, 5/04*
U.S. Cl. 252—316 **12 Claims**

1. A method of increasing the viscosity of a liquid organic system in the absence of a polar organic dispersant comprising mixing with said liquid organic system an amount sufficient to effect said viscosity increase of an organophilic clay comprising the reaction product of a methyl benzyl dialkyl ammonium compound and a smectite clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay, wherein said alkyl radicals independently contain from 16 to 18 carbon atoms, and wherein the amount of said ammonium compound is sufficient to impart to the organophilic clay the enhanced dispersion characteristics desired, said amount of the ammonium compound being from 100 to less than 120 milliequivalents per 100 grams of said clay, 100% active clay basis, and from 0% to 1.0% water, wherein no polar organic dispersant for said organophilic clay is added to said organic system.

4,287,087

FIXED-DRIED BLOOD PLATELETS

Kenneth M. Brinkhous, Chapel Hill, and Marjorie S. Read, Durham, both of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Division of Ser. No. 772,228, Feb. 25, 1977, Pat. No. 4,145,185. This application Aug. 2, 1978, Ser. No. 930,162
Int. Cl.³ C09K *3/00;* **G01N** *33/48*
U.S. Cl. 252—408 **6 Claims**

1. A method for the preparation of fixed-dried blood platelets obtained from human or animal blood which comprises fixing said blood platelets and drying the fixed platelets.

4,287,088

MULTI-STAGE FLUIDIZATION AND SEGREGATION OF USED CATALYST FRACTIONS

Amalesh K. Sirkar, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Aug. 21, 1979, Ser. No. 68,370
Int. Cl.³ B01J *23/94, 21/20;* **B03B** *5/28, 5/66*
U.S. Cl. 252—414 **6 Claims**

1. A process for segregating used contaminated catalyst, comprising the steps of:

(a) introducing the used catalyst into a first compartment of a concentric walled container, said first compartment having an upper end which has a cross-sectional area of 10 to 95 percent of that of the lower end of said first compartment;

(b) fluidizing the catalyst in said first compartment with an upflowing liquid to achieve segregation of the used catalyst particles to provide a lower density less contaminated fraction at the compartment upper end, and a greater density more contaminated catalyst fraction at the compartment lower end;

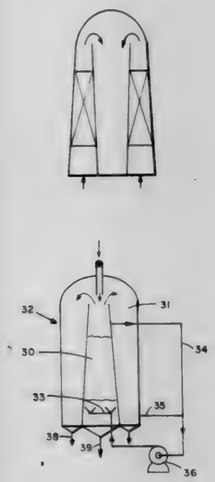
(c) further fluidizing the catalyst bed and transferring the less contaminated upper fraction over the top of the first compartment into a second compartment;

(d) withdrawing the less contaminated catalyst fraction from the second compartment; and

(e) withdrawing the more contaminated catalyst fraction from the first compartment.

2. The process of claim 1 wherein the first compartment is the outer annular space between two concentric walled containers, and the second compartment is the inner compartment.

3. The process of claim 1 in which the lower density catalyst portion transferred into the second compartment is dried



therein by a gas, prior to withdrawal of the dried catalyst therefrom.

4,287,089

METHOD FOR REMOVAL OF WATER FROM ACTIVATED CARBON

Ronald J. Convers; David P. Higley, both of Ponca City, Okla., and James A. DeBernardi, Sulphur, La., assignors to Conoco, Inc., Ponca City, Okla.

Filed Mar. 20, 1980, Ser. No. 131,979
Int. Cl.³ B01D *15/06;* B01J *37/00;* C01B *31/02*
U.S. Cl. 252—414 **10 Claims**

1. A method of removing water from activated carbon wherein the method comprises:

(a) passing about 0.2 to about 4 bed weights of liquid 1,2-dichloroethane through a bed of activated carbon, which contains from about 0.1 to about 70 weight percent water, until a bulk water phase ceases to exit the bed or until from about 60 to about 80 weight percent of the water present in a water-saturated bed has been removed, and

(b) passing vapor phase 1,2-dichloroethane through the bed of activated carbon to remove substantially all of the remaining water.

4,287,090

METHOD OF TREATING FLUE DEPOSITS AND COMPOSITION THEREFOR

William C. Pfefferle, 51 Woodland Dr., Middletown, N.J. 07748

Filed Jul. 30, 1979, Ser. No. 61,869
Int. Cl.³ B01J *31/04*
U.S. Cl. 252—428 **3 Claims**

1. An aqueous catalytic solution for removing tar deposits by spraying the solution into a firebox and its flue during or immediately following normal use of the firebox comprising a solution containing at least 10 grams of a water soluble salt of manganese and at least 5 grams of at least one additional water soluble salt selected from the group consisting of water soluble copper salts and water soluble calcium salts dissolved in a liter of water.

4,287,091

POLYMERIZATION CATALYSTS

Charles M. Selman, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Aug. 3, 1979, Ser. No. 63,879
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **29 Claims**

1. A process comprising:

(a) contacting

(1) magnesium metal,

(2) an organic halide of the formula RX or $R'X_2$ where X represents a halogen, R is selected from alkynyl, alkenyl, alkyl, aryl, cycloalkenyl or cycloalkyl radicals and combinations thereof containing from 1 to 12 carbon atoms per molecule and R' is a saturated divalent aliphatic hydrocarbyl radical,

(3) titanium tetrahalide, and subjecting same to intensive milling in the absence of a complexing diluent;

(b) milling the entire reaction product of (a) with

(4) at least one of tin tetrahalide, vanadium tetrahalide and silicon tetrahalide,

(5) in the presence or absence of a triaryl phosphite, and

(c) thereafter activating the thus produced catalyst component of (b) by contacting same with

(6) an organoaluminum activator.

4,287,092

ACID CATALYSIS OF RESIN FOUNDRY BINDERS

Patrick H. Stewart, and Wayne D. Woodson, both of Danville, Ill., assignors to CL Industries, Inc., Danville, Ill.

Filed Jan. 31, 1980, Ser. No. 117,251
Int. Cl.³ B01J *31/02*
U.S. Cl. 252—429 R **6 Claims**

1. A catalyst composition for the polymerization of acid curable condensation-type resin binders in sand cores or molds, comprising

a mixture consisting essentially of an aromatic sulfonic acid and 0.5–20% wt. of perchloric acid.

4,287,093

PROCESS FOR MAKING ALPHA-OLEFIN POLYMERS OR COPOLYMERS WITH HIGH ISOTACTICITY INDEX

Marie Gilbert, Pau, France, assignor to Ato Chimie, Paris, France

Division of Ser. No. 48,172, Jun. 13, 1979, Pat. No. 4,228,253.
This application Apr. 14, 1980, Ser. No. 139,874
Claims priority, application France, Jun. 21, 1978, 78 18531
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **15 Claims**

1. A composition containing titanium chloride, for use in a catalyst to polymerize alpha-olefins, comprising a titanium chloride selected from the group consisting of titanium tetrachloride and titanium trichloride, and an additive consisting of a cyclic polyether of the crown ether type, in which the molecule is made up of from 0 to 20 p groups of the formula —X—C_nH_{2n}— and from 0 to 4 q groups of the formula —X—R—, with the number of p groups and q groups together being from 3 to 24, arranged in any order to form a cycle in which any two adjacent groups in the cycle are connected by a bond between the element X in one of these adjacent groups and a carbon atom in the other group, where n is an integer from 1 to 6, R, which may be the same or different from one group to the other, represents divalent radicals, selected from the group consisting of divalent radicals of aliphatic hydrocarbons containing 1 to 6 carbon atoms, divalent radicals of cycloaliphatic hydrocarbons containing 4 to 10 carbon atoms, divalent radicals of aromatic hydrocarbons containing 6 to 20 carbon atoms, and the divalent heterocyclic radicals of furane, thiophene and pyridine, in which both free valences are each borne by a carbon atom in the alpha position in relation to the hetero-

atom of these heterocycles, or by a carbon atom of an aliphatic hydrocarbon chain containing 1 to 6 carbon atoms fixed to the said carbon atom in the alpha position, X is either identical in all the groups and represents oxygen atoms, or may be different from one group to the other and represents partly oxygen atoms and partly sulphur atoms, nitrogen-containing radicals of the formula $>N—R_1$, or both, where R_1 is a hydrogen atom or alkyl radical containing 1 to 4 carbon atoms, and the number of oxygen atoms r, sulphur atoms s and nitro radicals t in the cyclic polyether molecule are such that $0 \leqq t \leqq r$, $0 \leqq s \leqq (r+t)$ and $1 \leqq r \leqq 28$.

4,287,094

MONOMERIC, POLYMERIC AND CARRIER-FIXED RHODIUM COMPLEX COMPOUNDS, PROCESS FOR THEIR PRODUCTION AND THEIR USE AS CATALYSTS

Peter Panster, Hanau; Wolfgang Buder, Rodenbach, and Peter Kleinschmit, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,291
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834691
Int. Cl.³ C07F *15/00;* B01J *31/12*
U.S. Cl. 252—431 R **32 Claims**

1. A complex compound of rhodium, comprised of at least one sulfide of the general formula (1)

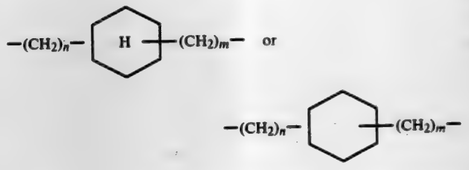
$$R_{3-x}{}^1(R^2O)_xSi—R^3—S—R^4—Si(OR^5)_yR_{3-y}{}^6 \quad (1)$$

coordinatively bound to the central atom, any free valencies are occupied by carbon monoxide, an olefin, amine, phosphine or nitrile and a required charge equalization is accomplished with chloride, bromide or iodide ion, an acetate, trifluoroacetate or trifluoro-propionate ion, complete or partial substitution of such anions by hydride ion, being optional whereby in formula (1)

each of R^1 and R^6 is a straight-chain alkyl or branched alkyl with 1 to 5 C-atoms, a cyclo-alkyl with 5 to 8 C-atoms, benzyl or phenyl, or substituted benzyl or substituted phenyl with methyl, ethyl, propyl, methoxy, ethoxy, NO_2, halide or cyanide; chloride or bromide;

R^2 and R^5 each is a straight-chain alkyl or branched alkyl with 1 to 5 C-atoms, cycloalkyl with 5 to 8 C-atoms, substituted or unsubstituted phenyl or benzyl group or the 2-methoxy or 2-ethoxy-ethyl group, whereby R^2 and R^5 have the same or a different meaning;

R^3 and R^4 each is a straight-chain alkylene or branched alkylene with 1 to 10 C-atoms a phenylene or cycloalkylene group with 5 to 8 C-atoms, unsubstituted or substituted with a methyl, ethyl, propyl or iso-propyl; or a unit of the formula



whereby n or m may be a number from 0 to 5 and H atoms in ring position may be substituted partly by halide, F, Cl, Br, or the cyanide group, and R^3 and R^4 have the same or a different meaning and

whereby x and y may be 1, 2 or 3; but also 0, whenever R^1 R^6 is equal to chlorine or bromine, and x and y have the same or a different meaning.

24. A rhodium complex compound bound by way of inorganic carriers, and showing surface-positioned oxygen atoms having the formula:

RhX_3L_3 or $RhCl(CO)L_2$,

wherein X is chloride, bromide, iodide, acetate, trifluoroacetate or trifluoropropionate and

L represents at least one ligand of the formula (1)

$$R_{d-x}{}^1(R^2O)_xSi—R^3—S—R^4—Si(OR^5)_yR_{3-y}{}^6$$

and carbon monoxide, olefin, amine, phosphine or nitrile, or crystal water bound to any free coordination places, the bond to the carrier is established by reaction of the acid hydrogen with the OR^2, OR^5, R^1 and R^2 groups present, while alcohol, phenol, HCl or HBr is distilled off, wherein any uncoordinated radicals of the sulfide are bound on the carrier and the rhodium: sulfide ratio ranges from 1:1 to $1:10^3$;

said rhodium complex being obtained from a solution of the compound RhX_3L_3 or $RhCl(CO)L_2$, which is treated within the scope of the quantitative limit ratios provided with a suspension of the carrier material in an inert organic solvent at temperatures between room temperature and the reflux temperature of the suspension agent used.

4,287,095

HIGH SURFACE AREA TRANSITION METAL CATALYSTS AND METHOD OF PREPARING SAME

Gary B. Atkinson, Reno; Larry J. Nicks, Fernley, and Donald J. Bauer, Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 24, 1980, Ser. No. 162,542
Int. Cl.³ B01J *27/22, 21/06, 23/12, 23/78*
U.S. Cl. 252—443 **5 Claims**

1. A method of preparing a catalyst which consists essentially of:

providing an alloy of nickel and at least one further metal selected from the group consisting of zirconium, hafnium, calcium and uranium;

reacting said alloy with a gas comprising H_2 and CO at a temperature of about 300° to 600° C. for a time sufficiently long to oxidize said further metal to produce a catalyst consisting essentially of said nickel and an oxide of said further metal.

4,287,096

PROCESS FOR PRODUCING SUPPORTED SKELETAL CATALYTIC MATERIALS

Gerald S. Golden; Franklin D. Lemkey, both of Windsor, and Clyde S. Brooks, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 18, 1980, Ser. No. 131,299
Int. Cl.³ B01J *21/04, 21/08, 21/12, 35/04*
U.S. Cl. 252—455 R **3 Claims**

1. A process for producing a supported skeletal catalytic material including the steps of:

a. providing a starting material which has a microstructure which includes a solid solution matrix based on a material selected from the group consisting of Al and Si, and alloys and mixtures thereof, and which contains discrete intermetallic particles of a compound between the predominant element of the matrix phase and a catalytically active metal or alloy;

b. dissolving the matrix in an aqueous caustic solution to produce a compound between the caustic material cation and the matrix material, with the evolution of hydrogen, with the reaction conditions being such that a substantial amount of excess caustic and water remain at the conclusion of the dissolution step, said dissolving process also being effective to remove at least a portion of the non-catalytic element from the intermetallic particles so as to produce skeletal catalytic particles;

c. adding an acidic material to reduce the pH of the solution

to between about 6 and about 9, with the concurrent formation of salts (based on the cation of the caustic constituent and the anion of the acidic material) and hydroxides (based on matrix material) to produce a hydroxide gel, said gel also containing the skeletal catalytic particles;

d. washing the gel to effectively remove the salt constituent;

e. drying the gel to remove the water;

f. calcining the dried gel in a reducing atmosphere to produce an oxide ceramic based on the original matrix material which contains dispersed skeletal catalytic particles.

4,287,097

CARRIER MATRIX FOR CATALYSTS AND A PROCESS FOR THE PRODUCTION OF SAME

Gerhard Fratzer; Bernhard Beck, both of Rheinfelden; Erwin Dold, Wyhlen, and Hans Klebe, Rheinfelden, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 102,581, Dec. 11, 1979. This application Feb. 29, 1980, Ser. No. 126,153

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2853547

Int. Cl.³ B01J *21/04, 23/10, 23/86, 35/04*

U.S. Cl. 252—462 **22 Claims**

1. In a carrier matrix for catalysts with cross flow effect as well as with an enlarged geometric surface, comprising layers disposed one on top of the other of highly temperature resistant and non-scaling steel, the improvement wherein the layers comprise at least one smooth screen into which at parallel distances and in the direction of the desired flow channels, closed hollow or open supporting profiles of a larger cross section than the screen are woven on or into the screen.

4,287,098

PROCESS FOR THE PRODUCTION OF EXHAUST GAS FILTERS

Frank Farnworth, and Michael H. Clubley, both of Bolton, England, assignors to Texaco Limited, London, England

Filed Feb. 26, 1980, Ser. No. 124,685

Claims priority, application United Kingdom, Feb. 28, 1979, 06972/79

Int. Cl.³ B01J *21/04*

U.S. Cl. 252—463 **19 Claims**

1. A method for the production of exhaust gas filters comprising aluminum oxide produced by the decomposition of alumina hydrate deposited on a substrate contained within a metal casing, in which said alumina hydrate is deposited from an alkali metal aluminate solution, which comprises mounting a plurality of said substrates upon a stand therefor, immersing said stand in said alkali metal aluminate solution, and subjecting said stand to vertical or horizontal reciprocating motion or rotating motion or a vector combination of said motions through said alkali metal aluminate solution whereby said alkali metal aluminate solution is caused to flow over and through said substrates while alumina hydrate is deposited on said substrates.

4,287,099

PREPARATION OF CATALYSTS FOR THE HYDROGENATION OF ACETYLENE-ALCOHOLS

Karl Baer, Weinheim; Wolfgang Reiss, Ludwigshafen; Wolfgang Schroeder, Bad Durkheim, and Dieter Voges, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,486

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917018

Int. Cl.³ B01J *21/04, 23/72, 23/84, 23/88*

U.S. Cl. 252—465 **3 Claims**

1. A process for the preparation of a hydrogenation catalyst containing the oxides of the metals nickel, copper and molybdenum, with or without manganese, by precipitating a solution of salts of the metals with an alkali metal carbonate, filtering the resulting suspension and washing, drying and heating the filter residue, wherein an aluminum salt and/or iron salt is added to the metal salt solution, the precipitation is carried out at from 35° to 95° C. and a pH of from 5 to 9 and the heating is carried out at from 350° to 700° C., and the amount of metal salts is so chosen that, after heating, the catalyst consists of from 5 to 70 percent by weight of aluminum oxide and/or iron oxide, the remainder being principally nickel oxide and, based on nickel oxide, from 20 to 40 percent by weight of copper oxide, from 0.5 to 6 percent by weight of molybdenum oxide and from 0 to 10 percent by weight of manganese oxide.

4,287,100

1,2,3,6-TETRAHYDROBENZYL ALCOHOL ESTERS AND COMPOSITIONS CONTAINING THE SAME

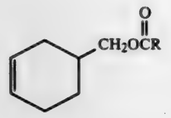
Kurt Kulka, New York; Teodosij Zazula, Rego Park, both of N.Y., and John M. Yurecko, Jr., Bayonne, N.J., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Mar. 14, 1978, Ser. No. 886,401

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **11 Claims**

1. A fragrance composition containing 0.1–60% by weight of one or more compounds having the structure,



wherein R is hydrogen, a saturated or unsaturated aliphatic hydrocarbon group having from 1 to 6 carbon atoms and when unsaturated contains only one double bond, a phenyl group or a cyclopentyl group, and a fragrance carrier therefor.

4,287,101

ENZYME-CONTAINING DETERGENT COMPOSITION

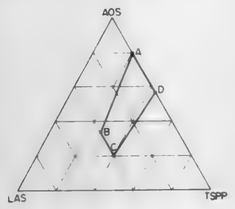
Hiroshi Nishio; Kazuaki Fukano, both of Chiba; Isao Amano, Tokyo, and Osamu Okumura, Funabashi, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,453

Claims priority, application Japan, Oct. 29, 1979, 54-139478

Int. Cl.³ C11D *3/065, 3/386*

U.S. Cl. 252—537 **3 Claims**



1. An enzyme-containing detergent composition comprising (I) (a) at least one α-olefin sulfonate having 10 to 20 carbon atoms, (b) at least one anionic surface active agent having an SO_3 or SO_4 group other than said olefin sulfonate, and (c) at least one pyrophosphate selected from the group consisting of sodium pyrophosphate and potassium pyrophosphate and (II) at least one enzyme selected from the group consisting of proteases, amylases and lipases, wherein the total amount of said components (a), (b) and (c) is at least 25% by weight based on the total amount of the detergent composition and the weight ratio of (a): (b):(c) is within the area enclosed by the points A[(a):(b):(c)=80:0:20], B[(a):(b):(c)=35:40:25], C[(a):(b):(c)=20:40:40] and D[(a):(b):(c)=55:0:45], defined in the triangular diagram of the drawing.

4,287,102

DETERGENT COMPOSITION

Nobuyuki Miyajima, Tokyo; Nobuo Johna, Funabashi; Naoki Mizushima, Ichikawa, and Kazuo Ohbu, Tokyo, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,636

Claims priority, application Japan, Oct. 11, 1979, 54-131198

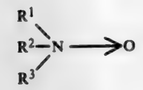
Int. Cl.³ C11D *1/14, 1/83*

U.S. Cl. 252—547 **4 Claims**

1. A detergent composition comprising:

(a) at least one water-soluble salt of olefin sulfonic acid having 12 to 16 carbon atoms and

(b) at least one tertiary amine oxide having the formula



wherein R^1 is an alkyl group of 10 to 14 carbon atoms, and R^2 and R^3 are independently an alkyl or hydroxyalkyl group of 1 to 3 carbon atoms, the content of each of said components (a) and (b) in the composition being within the range of from 2 to 20% by weight, and the mol ratio of the component (a) to the component (b) being within the range of from 1.5/1 to 0.5/1 and the pH of an aqueous solution of the detergent composition at a concentration of about 0.2% by weight being within the range of from 7.3 to 8.0.

4,287,103

JOINT COMPOSITION INCLUDING STARCH

Hubert C. Francis, Aloha, and George W. Green, Portland, both of Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Feb. 11, 1980, Ser. No. 120,680

Int. Cl.³ C08L *1/28*

U.S. Cl. 260—17 R **25 Claims**

1. A powdery composition capable of being combined with water to form a filler composition of the type used to hide the joint of adjoining wallboard panels, said filler composition being a wet coherent paste-like mass of fine-particle solids capable of being spread readily and drying to form a solid mass, said powdery compositions consisting essentially of filler, binder, bulking agent and improved starch-bodying agent.

4,287,104

TACKIFYING COMPOSITION FOR RUBBER

Mitchell S. Dimitri, Charleston, and Carlton G. Force, Mount Pleasant, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Jun. 4, 1980, Ser. No. 156,375

Int. Cl.³ C08L *7/00, 9/00, 21/00*

U.S. Cl. 260—17.5 **11 Claims**

1. A tackifying composition for rubber comprising an alkali lignin coprecipitated with a saponified tall oil pitch from an alkaline solution of the alkali lignin and the saponified tall oil pitch, the amount of the pitch being from about 25% to about 75% of the weight of the lignin.

9. A rubber composition comprising a raw rubber stock and from 1 part to 50 parts by weight of the tackifying composition of claim 1 per 100 parts by weight of the rubber stock.

4,287,105

FLASH RESISTANT EPOXY ENCAPSULATING COMPOSITION AND PROCESS FOR PREPARING SAME

Robert K. Rosler, Toledo; Donald B. Gore, Swanton; Malcolm N. Riddell, Perrysburg, and Earl R. Hunt, Toledo, all of Ohio, assignors to Plaskon Products, Inc., Toledo, Ohio

Filed Jan. 14, 1980, Ser. No. 112,067

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—18 EP **80 Claims**

1. A process for the preparation of a flash resistant epoxy encapsulating composition comprising:

(a) blending a flash retarding composition with at least one each of an epoxy resin, a resin hardener, and a catalyst to obtain at least one resulting blend;

(b) milling each resulting blend between rolls of a differential roll mill which comprises a hot roller and a cold roller spaced between one and six millimeters apart along the lengths thereof, said rollers being rotated in opposite directions toward each other at their upper portions at different surface velocities about their respective longitudinal axes, which are approximately horizontally disposed, the surface temperature of said hot roller being near the melting temperature of said resin for a blend containing resin but at a temperature insufficient to cure said resin within the residence time of the resin on the hot roller of the mill, said mill being further supplied with a series of plows having edges, each of said plows being mounted approximately above the hot roller about a 10° to 50° angle to planes perpendicular to the longitudinal axis of said hot roller, said edges being shaped and said plows being mounted such that each of the edges are within 2 millimeters of the surface of the hot roller for a distance equal to at least 5% of the circumference of the hot roller, said plows being positioned such that each such blend introduced at a feed position of said differential roll mill is forced by said plows along said rotating hot roller to a discharge position of said differential roll mill; and

(c) when more than one blend is made, mixing said milled blends to form the encapsulating composition.

80. A flash resistant epoxy encapsulating composition comprising a blend of from about 15 to about 80 weight percent epoxy resin, from about 9 to about 82 weight percent filler, from about 0.01 to about 2 percent catalyst by weight of resin, from about 10 to about 50 percent resin hardener by weight of resin in the composition, from about 3 to about 12 percent flash retardant by combined weight of resin and hardener; and up to about 1.5 weight percent lubricant wherein the cured composition physically consists essentially of particles intimately and entirely embedded in a matrix.

4,287,106

ADHESIVE OR ADHESIVE COMPONENT CONTAINING CHLOROSULFONATED AMIDE OR IMIDE

Imre Forgo, Birsfelden; Abdul-Cader Zahir, Oberwil, both of Switzerland, and Jacques Francois, Huningue, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

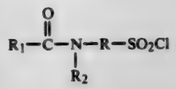
Filed Aug. 13, 1979, Ser. No. 66,355

Claims priority, application Switzerland, Aug. 16, 1978, 8693/78; Nov. 2, 1978, 11293/78; Feb. 8, 1979, 1242/79

Int. Cl.³ C08L *51/04;* **C08F** *279/02*

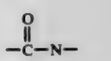
U.S. Cl. 260—28.5 B **15 Claims**

1. An adhesive or adhesive component containing 30 to 80 percent by weight of at least one polymerisable acrylate or methacrylate monomer and 10 to 50 percent by weight of at least one diene-containing vinyl polymer, as well as 0.05 to 10 percent by weight of a compound producing free radicals, which adhesive or adhesive component contains, as adhesion promoter, 0.1 to 15 percent by weight of an acid amide or imide which is substituted on the nitrogen atom by a chlorosulfonated alkyl, aryl or aralkyl group, and which corresponds to the formula I



(I)

in which R is an alkylene group having 1 to 25 carbon atoms, or a substituted or unsubstituted phenylene, naphthylene or phenylenealkylene group having 1 to 4 carbon atoms in the alkylene moiety, R_1 and R_2 are each hydrogen or an alkyl group having 1 to 4 carbon atoms, or R_1 and R_2 together with the



group form a heterocyclic ring which can be saturated or unsaturated and can be substituted by 1 or 2 methyl groups and which, in addition to the N atom given in the formula I, contains no further hetero atom in the ring, with the percentage values being calculated relative to the adhesive or adhesive component.

4,287,107

TRANSPARENT POLYVINYL BUTYRAL SHEET AND PROCESS FOR THE MANUFACTURE THEREOF

Hans D. Hermann, Bad Soden am Taunus, and Albrecht Harreus, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 25, 1979, Ser. No. 87,976

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846837

Int. Cl.³ C08L *91/06*; B32B *17/10, 27/42*

U.S. Cl. 260—28.5 R **20 Claims**

1. An interlayer for laminated glass comprising a plasticizer-containing polyvinyl butyral, and from 0.05 to 1 weight % (relative to the plasticizer-containing polyvinyl butyral) of a montanic acid ester, wherein the ester is a diester or a triester.

9. A process for the manufacture of a an interlayer for laminated glass by thermoplastic processing of a plasticizer-containing polyvinyl butyral in the presence of an anti-blocking agent under conditions know per se, which comprises using a montanic acid diester or triester in an amount of 0.05 to 1 weight %, relative to the plasticizer-containing polyvinyl butyral, as anti-blocking agent.

4,287,108

MIXTURES OF POLYPROPYLENE AND LIQUID SATURATED DIORGANOPOLYSILOXANES

Ulrich Grigo, Krefeld; Leo Morbitzer, Cologne; Klaus-Peter Arlt, Senden; Rudolf Binsack, Krefeld, and Josef Merten, Korschenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,940

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1979, 2905357

Int. Cl.³ C08L *23/12, 83/04*

U.S. Cl. 260—29.1 SB **7 Claims**

1. A homogeneous thermoplastic mixture comprising

(A) from 85 to 99.5% by weight of isotactic polypropylene having an isotactic portion of more than 90% by weight and a melt index of from 0.1 to 20 g/10 min at 230° C. under a load of 5 kg; and

(B) from 15 to 0.5% by weight of a liquid, saturated diorganopolysiloxane having a viscosity of from 30,000 to 80,000 cSt at 20° C.

4,287,109

AQUEOUS SILICONE-POLYESTER RESIN SYSTEMS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Ottfried Schlak, Leverkusen; Hans-Heinrich Moretto, Cologne; Werner Clarenz, Leverkusen; Bernd Peltzer, Krefeld, and Willi Burgmer, Berg. Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 10, 1979, Ser. No. 65,671

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835443; Aug. 12, 1978, 2835495

Int. Cl.³ C08L *83/06, 67/02*

U.S. Cl. 260—29.2 M **10 Claims**

1. An aqueous silicone polyester resin system having a silicone content of at least 30% by weight, based on the solid binder, comprising (a) (i) a polyester resin having an acid number of from 50 to 170 and a silicone precondensate with SiOH or SiOR-functionality or (a) (ii) a silicone-polyester-copolymer resin having an acid number of from 25 to 110; (b) based on the solid binder from 0 to 80% by weight of an organic solvent; (c) from 0 to 10% by weight, based on the solid binder, of an emulsion or dispersion auxiliary; (d) a nitrogen base; and (e) optionally at least one pigment or filler, the polyester of (a) (i) or (a) (ii) being formed by reaction of an acid selected from the group consisting of terephthalic acid, isophthalic acid, phthalic acid, pyromellitic acid or trimellitic acid or an ester or anhydride thereof with a polyhydric alcohol selected from the group consisting of ethylene glycol, butane diol, trimethylol propane, glycerine, pentaerythritol and neopentyl glycol.

4,287,110

PRODUCTION OF AQUEOUS SOLUTIONS OF CATIONIC THERMOSETTING RESINS

Hisso Takagishi, Kyoto, and Norio Kondo, Minoo, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 25, 1979, Ser. No. 78,713

Claims priority, application Japan, Jun. 7, 1978, 53-69281

Int. Cl.³ C08L *63/00*

U.S. Cl. 260—29.2 EP **10 Claims**

1. A process for producing an aqueous solution of a thermosetting resin, consisting essentially of

(i) heating an aliphatic dicarboxylic acid and a polyalkylenepolyamine to obtain a polyamidopolyamine, the molar ratio of the aliphatic dicarboxylic acid to the polyalkylenepolyamine being 1:1.0 to 1.2, and the heating being continued until the viscosity at 25° C. of a 50% aqueous solution of the resulting polyamidopolyamine reaches 400 to 1,000 cps,

(ii) reacting the polyamidopolyamine with epichlorohydrin in an aqueous medium, the amount of epichlorohydrin being 1.6 to 1.7 moles per mole of the secondary amino group present in the polyamidopolyamine, the concentration of said reactants in the aqueous medium being 15 to 50% by weight, and the reaction being continued until the viscosity at 25° C. of a 15% aqueous solution of the reaction product reaches 30 to 150 cps,

(iii) controlling the concentration of the aqueous reaction product solution to 15 to 30% by weight, and

(iv) adjusting the aqueous solution to pH 3 to 5 at 25° C.

4,287,111

COMPOSITIONS USEFUL FOR CONSOLIDATION OF MINING DEPOSITS

Jean-Philippe Rieux, Meyzieu, France, assignor to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 864,709, Dec. 27, 1977, Pat. No. 4,168,614.

This application Nov. 21, 1978, Ser. No. 962,696

Claims priority, application France, Dec. 27, 1976, 76 39802

Int. Cl.³ C08L *33/08*

U.S. Cl. 260—29.6 RW **9 Claims**

1. A composition of matter consisting essentially of (a) from about 75 to 95% by weight of an aqueous dispersion of a vinyl polymer, (b) from about 5 to 25% by weight of at least one water-soluble acrylic monomer, both percentages being based upon the total weight of the components (a) and (b), (c) a curing amount of a polymerization catalyst for the acrylic monomer (b), and (d) up to 5% by weight, based upon the weight of acrylic monomer (b), of a cross-linking monomer.

4,287,112

COATING OF POLY(ARYLENE SULFIDE), FLUOROPOLYMER AND ALUMINUM FLAKE

Jacques M. L. Berghmans, Lint, Belgium, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 10, 1980, Ser. No. 111,039

Claims priority, application PCT Int'l Appl., Nov. 16, 1979, PCT/US79/00985

Int. Cl.³ C08L *27/12*

U.S. Cl. 260—29.6 F **9 Claims**

1. A coating composition comprising, in weight percentage ranges based on the solids content, about:

(a) 95–35% poly(arylene sulfide) resin,

(b) 5–55% fluoropolymer polymerized or copolymerized from monomers selected from one or more monoethylenically unsaturated hydrocarbon monomers and hydrocarbon ether monomers, said monomers being completely substituted with fluorine atoms or a combination of fluorine atoms and chlorine atoms,

(c) 0.5–20% aluminum flake, and

(d) 0–40% titanium dioxide pigment, dispersed in liquid carrier.

4,287,113

COATING COMPOSITION

Naomitsu Takashina, Yokohama; Masahiro Shimoi, Hiratsuka, and Yoshinori Iwamoto, Odawara, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Continuation of Ser. No. 943,794, Sep. 19, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,920

Claims priority, application Japan, Sep. 21, 1977, 52/113743; Apr. 18, 1978, 53/45680

Int. Cl.³ C08K *5/05*

U.S. Cl. 260—33.4 EP **3 Claims**

1. An ambient temperature-curing coating composition which comprises a solution of (1) components reactive with each other to form a film upon curing at ambient temperature and (2) a solvent; said film-forming components (1) being:

(a) copolymers having pendant epoxy groups prepared by copolymerization of 2 to 60% by weight, on the basis of total monomers, of glycidyl acrylate or methacrylate or allylglycidyl ether with at least one other polymerizable monomer and

(b) 0.1 to 2 moles of phosphoric acid per one equivalent of the epoxy groups of the copolymers, and said solvent (2) being

(c) at least 5% by weight based on the weight of the solvent (2) of an alcoholic solvent and

(d) at least one other organic solvent.

4,287,114

PRIMER COMPOSITIONS

Kunio Itoh; Takeshi Fukuda, and Masaaki Matumura, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1979, Ser. No. 91,761

Claims priority, application Japan, Nov. 13, 1978, 53-139686

Int. Cl.³ C08L *83/06*; C08K *3/36*

U.S. Cl. 260—37 SB **11 Claims**

1. A primer composition which comprises

(a) 100 parts by weight of an organopolysiloxane of substantially linear molecular structure represented by the average unit formula

$$R_a^1SiO_{\frac{4-a}{2}},$$

where R^1 is a substituted or unsubstituted monovalent hydrocarbon group substantially free from aliphatic unsaturation and a is a positive number in the range from 0.98 to 2.01, and having a viscosity larger than 100,000 centistokes at 25° C.,

(b) from 5 to 100 parts by weight of a vinyl-containing organopolysiloxane represented by the average unit formula

$$R_b^2SiO_{\frac{4-b}{2}},$$

where R^2 is a substituted or unsubstituted monovalent hydrocarbon group and b is a positive number in the range from 1.9 to 2.3, from 0.03 to 1 of the groups represented by R^2 per silicon atom in a molecule being vinyl groups, and having a viscosity from 5 to 10,000 centistokes at 25° C.,

(c) from 5 to 100 parts by weight of an organopolysiloxane resin represented by the average unit formula

$$R_c^3SiO_{\frac{4-c}{2}},$$

where R^3 is a substituted or unsubstituted monovalent hydrocarbon group and c is a positive number in the range from 0.5 to 1.7,

(d) from 0.5 to 200 parts by weight of an organosilane compound represented by the general formula

$$R^4Si(OR^5)_3,$$

where R^4 is an aliphatically unsaturated monovalent hydrocarbon group and R^5 is a monovalent group selected from the class consisting of alkyl groups having 1 to 5 carbon atoms, 2-methoxyethyl and 2-ethoxyethyl groups,

(e) from 5 to 100 parts by weight of a silica filler having a specific surface area of at least 100 m^2/g,

(f) from 0 to 10 parts by weight of an organic peroxide, and

(g) from 0.5 to 50 parts by weight of a condensation catalyst.

4,287,115

FILLER MIXTURES AND THERMOSET RESINS CONTAINING SAME

Bobby Legler, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1979, Ser. No. 93,769

Int. Cl.³ C08L *63/04*

U.S. Cl. 260—37 EP **25 Claims**

1. A filler mixture comprising

(a) from about 1 to about 20 percent by weight of amorphous-pyrogenic silica and

(b) from about 80 to about 99 percent by weight of a micro or short fiber inorganic filler material.

5. A filled, curable, thermosettable resin composition con-

taining a thermosettable resin, a curing quantity of a curing system therefor and a sufficient quantity of a filler mixture so as to render the composition non-flowable and trowelable, said filler mixture comprising (a) from about 1 to about 20 percent by weight of amorphous-pyrogenic silica and (b) from about 80 to about 99 percent by weight of a micro or short fiber inorganic filler material.

4,287,116

POLYESTER URETHANE-CONTAINING MOLDING COMPOSITIONS

Joseph P. Burns, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 41,369, May 22, 1979. This application Jul. 14, 1980, Ser. No. 168,707

Int. Cl.³ C08L *67/06, 75/06*

U.S. Cl. 260—37 N **21 Claims**

1. A homogeneous solution of a vinylidene monomer and an acrylated polyester urethane resin useful in preparing injection and compression molding compositions by the reaction therewith of polyisocyanates to form polyurethane containing vinyl copolymers which comprises an ethylenically unsaturated monomer solution having dissolved therein:

(A) 30–70% by weight of a resin selected from a vinyl ester urethane having the following general formula:

c-i-(d-n)$_t$d-i-c

wherein d is a radical derived from an organic polyol; n is a radical derived from an unsaturated aliphatic dicarboxylic acid or an anhydride thereof; i is a radical derived from polyisocyanate; c is a carbamyl-linked radical derived from a hydroxy-terminated ester of acrylic or methacrylic acids; t is an integer equal to from 1 to about 5, and

(B) 1.5–30% by weight of at least one organic polyol free of ethylenic unsaturation having 2–6 hydroxyl groups per molecule and which is the essential polyurethane precursor reactive with said polyisocyanate to form polyurethane.

4,287,117

PREPARATION OF FINELY DIVIDED POLYOLEFIN MOLDING MATERIALS CONTAINING CONDUCTIVE CARBON BLACK, AND THEIR USE FOR THE PRODUCTION OF MOLDINGS

Rainer Theysohn, Ludwigshafen; Gerhard Zeitler, Hessheim; Frank Weiss, Mannheim; Hans Willing, Duerkheim, and Erhard Seiler, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 28, 1979, Ser. No. 107,905

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901776

Int. Cl.³ C08K *3/04*

U.S. Cl. 260—42.46 **1 Claim**

1. A process for the preparation of finely divided polyolefin molding materials which contain conductive carbon black and comprise

(a) 100 parts by weight of a finely divided partially crystalline polyolefin which has a mean particle diameter of from 10 to 5,000 μm and an intrinsic viscosity [η], measured in decalin at 130° C., of from 0.5 to 15, and

(b) from 1 to 30 parts by weight of a conductive carbon black which has a mean particle diameter of from 10 to 50 nm,

(c) with or without conventional amounts of other additives or auxiliaries,

wherein components (a) and (b), with or without (c), are mixed, in a first stage (I), in a mixer, with or without supply or removal of heat, during which first stage (I), in a first sub-stage (I.1) the mixture is brought, at a mixing intensity of from 100 to 500 W/l of useful capacity, and within a period of from 2 to 50 minutes, from ambient temperature, which is below the crystallite melting point of the polyolefin (a) and is, in particular, room temperature, to the crystallite melting point of the polyolefin (a), and is immediately thereafter, in the course of a second sub-stage (I.2), subjected to a mixing intensity which is from 0.3 to 0.8 times as great as the mixing intensity in the first sub-stage (I.1) and is brought, within a period of from 0.2 to 20 minutes, from the crystallite melting point of the polyolefin (a) to a temperature which is from 3° to 40° C. above this, and, if appropriate, is immediately thereafter, in a third sub-stage (I.3), subjected to a mixing intensity which is from 0.5 to 1.0 times as great as the mixing intensity in the second sub-stage (I.2) and kept for a period of from 0.2 to 10 minutes at the temperature reached in sub-stage (I.2), and immediately thereafter, in a second stage (II), the mixture is discharged from the mixer within a period of from 0.5 to 30 seconds and is brought, within 120 seconds, to a temperature below the crystallite melting point of the polyolefin (a).

4,287,118

ANTIMONY (V) MERCAPTIDES AS PROCESSING STABILIZERS FOR VINYL HALIDE RESINS AND METHOD OF MANUFACTURING SAME

Charles N. Muldrow, Jr., East Windsor, N.J., assignor to Associated Lead Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 936,120, Aug. 23, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 77,057

Int. Cl.³ C08K *5/59;* **C07F** *9/90*

U.S. Cl. 260—45.75 B **26 Claims**

1. A composition comprising a pentavalent antimony mercaptide having the formula

$$Sb\{S(CH_2)_K(CO)[(CH_2)_MO]_NR\}_5$$

wherein

K is 1 to 4;
M is 1 to 4;
N is 0 to 4;
R is a primary alkyl, alkenyl, alkynyl having from 1 to 18 carbon atoms and combinations thereof.

8. A composition comprising a pentavalent antimony mercaptide having the formula:

$$Sb\{S(CH_2)R\}_5$$

wherein R is a primary alkyl, alkenyl, alkynyl having from 1 to 18 carbon atoms and combinations thereof.

12. A vinyl halide resin composition comprising a pentavalent antimony mercaptide having the formula:

$$Sb\{S(CH_2)_K(CO)[(CH_2)_MO]_NR\}_5$$

wherein

K is 1 to 4;
M is 1 to 4;
N is 0 to 4;
R is primary alkyl, alkenyl, alkynyl having from 1 to 18 carbon atoms and combinations thereof.

4,287,119

3-HYDROXYALKYL PHOSPHINE OXIDE FLAME RETARDANT COMPOSITIONS

Diza P. Braksmayer, and Syed N. Hussain, both of Plainsboro, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 4, 1980, Ser. No. 118,172

Int. Cl.³ C08K *5/53*

U.S. Cl. 260—45.95 L **24 Claims**

1. A polyphenylene oxide composition rendered flame retardant by having combined therewith an effective amount of 3-hydroxyalkyl phosphine oxide having the formula:



wherein R_1 may be the same or a different radical selected from the group consisting of hydrogen, and the methyl radical, R_2 is an alkyl radical of 4 to 8 carbon atoms and n is either zero or one.

4,287,120

DERIVATIVES OF S31794/F-1 NUCLEUS

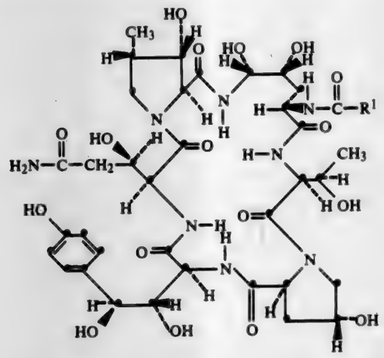
Bernard J. Abbott, Greenwood, and David S. Fukuda, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 103,130, Dec. 13, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,445

Int. Cl.³ C07C *103/52;* **A61K** *37/00;* **C12P** *21/04*

U.S. Cl. 260—112.5 R **28 Claims**

1. A compound of the formula:



wherein R^1 is C_6–C_{24} alkyl or C_6–C_{24} alkenyl, provided that when R^1 is alkyl, R^1 cannot be n-tridecyl.

4,287,121

WATER-SOLUBLE POLYFLUORO ACID AZO DYESTUFFS

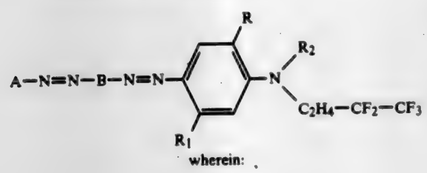
Jacques P. E. Pechmeze, Paris, and Robert F. M. Sureau, Enghien Les Bains, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation-in-part of Ser. No. 428,970, Dec. 27, 1973, abandoned. This application Aug. 3, 1976, Ser. No. 711,187

Int. Cl.³ C09B *29/085, 29/26, 31/043, 31/08;* **D06B** *3/24*

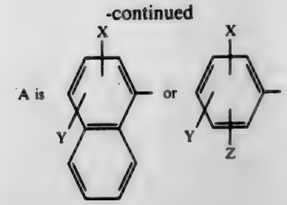
U.S. Cl. 260—186 **4 Claims**

1. A compound having the formula:



wherein:

-continued



X represents a $-SO_3H$ or PO_3H_2
Y represents hydrogen, chlorine, alkyl, alkoxy or nitro;
Z represents hydrogen;
B represents p-phenylene or 1,4-naphthylene unsubstituted or substituted by one or two alkyl or alkoxy groups;
R represents hydrogen, alkyl or alkoxy;
R_1 represents hydrogen, chlorine, alkyl, alkoxy or acetylamino; and
R_2 represents hydrogen, alkyl, cyanethyl or hydroxyalkyl, the alkyl and alkoxy having 1 to 5 carbon atoms.

4,287,122

MONOAZO COMPOUNDS FROM 1-AMINOBENZENE-2-CARBOXYLIC ACID DERIVATIVES AND THEIR USE AS COLORANTS

Klaus Hunger; Ernst Klappert, both of Kelkheim, and Konrad Löhe, Rembrücken, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

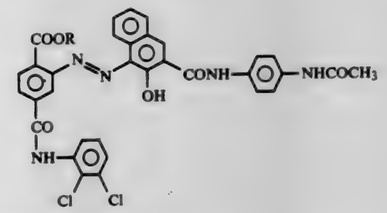
Filed Feb. 25, 1977, Ser. No. 772,268

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2607965

Int. Cl.³ C09B *29/20;* **D06P** *1/44, 1/90*

U.S. Cl. 260—203 **3 Claims**

1. A compound of the formula



in which R is methyl or ethyl.

4,287,123

SYNTHESIS OF THIENAMYCIN VIA (3SR, 4RS)-3-((RS)-1-ACYLOXYETHYL)-2-OXO-4-AZETIDINEACETATE

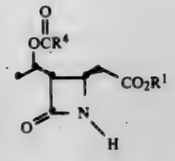
Thomas M. H. Liu, Westfield; David G. Melillo, Scotch Plains; Kenneth M. Ryan, Clark; Ichiro Shinkai, Westfield, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 14, 1980, Ser. No. 112,035

Int. Cl.³ C07D *205/08, 487/04, 309/30;* **C07F** *7/10*

U.S. Cl. 260—239 A **2 Claims**

1. A compound having the structure:



wherein R^1 is hydrogen or a readily removable protecting group selected from alkyl having 1–6 carbon atoms, phenyl and aralkyl having 7–12 carbon atoms; and R^4 is selected from the group consisting of hydrogen loweralkyl having 1–6 carbon atoms, phenyl and phenylloweralkyl.

4,287,124

PROCESS FOR THE PREPARATION OF 4,5-PERFLUORO-1,3-DIOXALANES

Günter Siegemund, Hofheim am Taunus, and Herbert Muffler, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

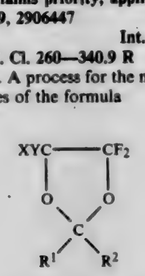
Filed Feb. 19, 1980, Ser. No. 122,691

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906447

Int. Cl.³ C07D *317/10*

U.S. Cl. 260—340.9 R **5 Claims**

1. A process for the manufacture of 4,5-perfluoro-1,3-dioxolanes of the formula



in which X and Y, independent of one another, are fluorine or trifluoromethyl and R^1 and R^2 are hydrogen or methyl, which comprises reacting a 2-(α-chloroalkoxy)-perfluorocarboxylic acid halide of the formula

$$R^1R^2CCl—O—CXY—COZ$$

in which X, Y, R^1 and R^2 are as defined above and Z is chlorine or fluorine, with a fluoride selected from the group consisting of potassium fluoride, cesium fluoride, ammonium fluoride and alkylammonium fluoride, under anhydrous conditions, the reaction being conducted at a temperature in the range of from 0° to 120° C.

4,287,125

PREPARATION OF BENZENOID ETHERS AND THIOETHERS

Gerard Soula, Meyzieu, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jun. 20, 1980, Ser. No. 161,512

Claims priority, application France, Jun. 27, 1979, 79 16544

Int. Cl.³ C07C *41/01, 65/21, 79/35, 121/75*

U.S. Cl. 260—340.9 R **22 Claims**

1. A process for the preparation of a benzenoid ether or thioether, comprising reacting an activated halobenzene with the anionic reactant, RA^-M^+, wherein R is a hydrocarbon, A is oxygen or sulfur, and M is alkali or alkaline earth metal, or ammonium, in the presence of at least one tertiary amine sequestering agent having the formula:

$$N\{CHR_1—CHR_2—O—(CHR_3—CHR_4—O)_nR\}_3 \quad (I)$$

in which n is an integer which is greater than or equal to 0 and less than or equal to about 10, R_1, R_2, R_3 and R_4, which are identical or different, each represent a hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms and R_5 represents an alkyl or cycloalkyl radical having from 1 to 12 carbon atoms, a phenyl radical or a radical $—C_mH_{2m}—\phi$ or $C_mH_{2m+1}—\phi—$, wherein ϕ is phenyl and in which m ranges from 1 to 12.

4,287,126

(2-OXO-2H-1-BENZOPYRAN-3-YL)AMINOOXOACETIC ACIDS AND THEIR DERIVATIVES

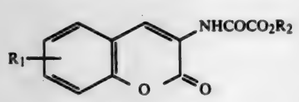
David T. Connor, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 10, 1980, Ser. No. 128,760

Int. Cl.³ C07D *311/12, 311/08*

U.S. Cl. 260—343.45 **11 Claims**

1. A compound of the formula:



I

wherein R_1 is hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl or nitro and R_2 is hydrogen or lower alkyl and their pharmaceutically acceptable salts thereof.

4,287,127

PRODUCTION OF TETRAHYDROFURAN

Norman Harris, Stockton-on-Tees; Alan J. Dennis, Middlesbrough, and George E. Harrison, Billericay, all of England, assignors to Davy McKee (Oil & Chemicals) Limited, London, England

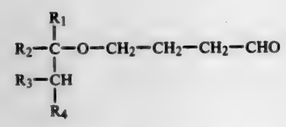
Filed Apr. 11, 1980, Ser. No. 139,568

Claims priority, application United Kingdom, Apr. 11, 1979, 12852/79

Int. Cl.³ C07D *307/08*

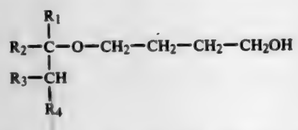
U.S. Cl. 260—346.11 **10 Claims**

1. A process for the production of tetrahydrofuran which comprises reducing an aldehyde-ether of the general formula:



(I)

wherein R_1 and R_2 each, independently of the other, represent a C_1 to C_4 alkyl radical, and R_3 and R_4 each, independently of the other, represent a hydrogen atom or a C_1 to C_3 alkyl radical, or wherein R_1 represents a C_1 to C_4 alkyl radical, R_2 and R_3 together with the carbon atoms to which they are attached form a 5-membered or 6-membered cycloaliphatic ring, and R_4 represents a hydrogen atom or a C_1 to C_3 alkyl radical to form a hydroxy ether of the general formula:



(II)

wherein R_1, R_2, R_3 and R_4 are as defined above, cleaving resulting hydroxy-ether of the general formula (II) under dehydrating conditions to produce tetrahydrofuran, and recovering resulting tetrahydrofuran.

4,287,128

PROCESS FOR PREPARING EPOXIDES

Charles T. Ratcliffe, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 50,585, Jun. 21, 1979, abandoned. This application Apr. 18, 1980, Ser. No. 141,550

Int. Cl.³ C07D *301/03, 273/01*

U.S. Cl. 260—348.23 **3 Claims**

1. A process of epoxidation of perhalo olefins of the formula $R_2C=CFCR_3$ wherein each R is independently fluorine and/or a C_1–C_{10} perhalogenated alkyl radical with the halogen being fluorine, chlorine or mixtures thereof, comprising: contacting said perhalo olefin with at least one member of the group consisting of the carbonates, bicarbonates and oxides of the alkali and alkaline earth metals in presence of elementary chlorine and an effective amount of moisture.

4,287,129

SYNTHESIS OF 1α-HYDROXY-7-DEHYDROSTEROIDS

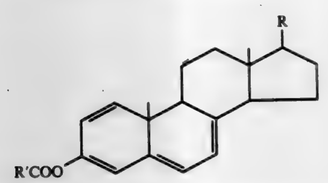
William H. Klausmeier, Elmhurst; Richard L. Johnson, Northlake, and Arnold L. Hirsch, Oak Park, all of Ill., assignors to Diamond Shamrock Corp., Dallas, Tex.

Filed Jul. 28, 1980, Ser. No. 172,925

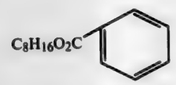
Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.1 **14 Claims**

1. A steroid compound having the structure:



where R is selected from the group consisting of $C_8H_{16}OH$; $C_8H_{16}O_2CCH_3$;



and $C_5H_8O_2CH_3$ and where R'CO— is the residue of an acylating agent.

3. Methyl 3-acetoxychola-1,3,5,7-tetraen-24-oate.

4,287,130

REACTING OLEFINS WITH OZONE IN A CARBOXYLIC ACID MEDIUM

Klaus-Dieter Dohm, Haltern, and Peter Hofmann, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,270

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942279

Int. Cl.³ C07C *75/00*

U.S. Cl. 260—413 **5 Claims**

1. In a method for reacting ozone with olefins in a carboxylic acid medium in an ozonizing stage where an oxygen-containing gas is passed through an ozone production stage to produce said ozone and the oxygen-containing gas leaving said ozonizing stage is recycled, the improvement comprising:
(a) washing said oxygen-containing gas leaving said ozonizing stage with said carboxylic acid;
(b) treating the gas leaving step (a) with an aqueous solution of an alkalinically reacting substance; and
(c) drying the gas leaving step (b) and recycling the dried gas to said ozone production stage.

4,287,131

PREPARATION OF METAL ORGANOPOLYPHOSPHATE COORDINATION OF COMPLEXES

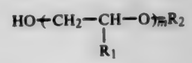
Horst G. Langer, Wayland, and Thomas P. Brady, Holliston, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 28, 1980, Ser. No. 116,134

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 R **6 Claims**

1. A process for preparing metal organopolyphosphate coordination complexes comprising contacting a metal alkoxide selected from the group consisting of the aluminum, beryllium, magnesium, zinc, barium, gallium, indium, thallium, iron, tin and titanium alkoxides of
(a) C_{1-5} alkanols or haloalkanols;
(b) glycol ethers of the formula



where R_1 is independently each occurrence hydrogen, methyl, or halomethyl; R_2 is independently C_{1-4} alkyl or phenyl, and n is a number from 1 to 5; and
(c) C_{1-10} alkanolamines of the formula R_3-N-$(Z)_2$ where R_3 is C_{1-10} hydroxyalkyl, and Z is each occurrence hydrogen, C_{1-3} alkyl or hydroxyalkyl,
with a slurry comprising a mixture of phosphorus pentoxide in an inert liquid organic medium in a ratio of alkoxy-functionality to phosphorus of 0.5:1 to 1:1, at a temperature less than 150° C.

4,287,132

PREPARATION OF POLYISOCYANATES FROM POLYCARBAMATES

Walter A. Mameniskis, Drexel Hill, and Frank W. Melpolder, Wallingford, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 29, 1980, Ser. No. 191,543

Int. Cl.³ C07C *118/00, 125/07*

U.S. Cl. 260—453 P **5 Claims**

1. In the process of producing a diisocyanate comprising
(a) condensing and rearranging formaldehyde and alkyl phenylcarbamate with the alkyl having 1 to 3 carbon atoms under acidic conditions to form alkyl methylene bis(phenylcarbamate) with the alkyl having 1 to 3 carbon atoms and
(b) thermally decomposing the dialkyl methylene bis(phenylcarbamate) to diphenylmethane diisocyanate,
the improvement comprises prior to step (b) treating the reaction product of (a) by first distilling the reaction product of (a) under reduced pressure at a temperature below 120° C. until all solvent is removed and 65 to 85% of the unreacted alkyl phenylcarbamate present is removed, discontinuing the distillation, adding a polar solvent to undistilled distillation residue and selectively crystallizing and separating dialkyl methylene bis(phenylcarbamate) from the distillation residue.

4,287,133

6-HYDROXY-2,6-DIMETHYLHEPTANAL, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING THE SAME

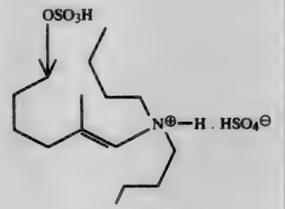
Mark A. Sprecker, Sea Bright; Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 088,519, Oct. 26, 1979, Pat. No. 4,242,281, which is a division of Ser. No. 052,355, Jun. 27, 1979, abandoned, which is a division of Ser. No. 961,685, Nov. 17, 1978, abandoned. This application Jul. 17, 1980, Ser. No. 169,900

Int. Cl.³ C07C *141/10*

U.S. Cl. 260—458 R **1 Claim**

1. The Shiff base having the structure:



4,287,134

PURIFICATION OF ACETONITRILE BY CAUSTIC EXTRACTION

Robert A. Smiley, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 26, 1980, Ser. No. 163,100

Int. Cl.³ C07C *121/18*; G07C *121/14*

U.S. Cl. 260—465.1 **3 Claims**

1. A process for removing water and hydrogen cyanide from a crude solution containing acetonitrile, 16–24% by weight water and 1000–20,000 ppm hydrogen cyanide which comprises thoroughly contacting 1–50 parts by volume of said crude solution with 1 part by volume based upon the volume of said crude solution of an aqueous solution consisting essentially of 25–60% by weight of an alkali metal hydroxide selected from the class consisting of sodium hydroxide, potassium hydroxide and mixtures thereof at a temperature in the range of 25°–82.5° C., permitting the thus formed mixture to form an organic and aqueous phase, and recovering the organic phase comprising acetonitrile containing essentially no hydrogen cyanide and having decreased amount of water relative to said crude solution.

4,287,135

STABILIZED DIPEROXYALKANEDIOIC ACIDS AND AROMATIC PEROXYCARBOXYLIC ACIDS

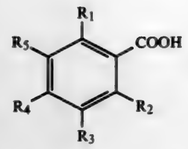
Reinhard Stober, Ludwig Uhlandstr. 7, 6451 Gross-Krotzenburg; Rolf Wirthwein, Fuerstenbergstr. 4, 6450 Hanau 9, and Christian Hase, Millrather Weg 29, 4006 Erkrath 9, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 954,590, Oct. 25, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,654

Int. Cl.³ C07C *179/10*

U.S. Cl. 260—502 R **31 Claims**

1. A process for the production of a peroxy acid which is storage stable and desensitized comprising adding to the mixture resulting from the reaction of an alkanedioic acid having at least five carbon atoms or an aromatic carboxylic acid having the formula



wherein R_1, R_2, R_3, R_4 and R_5 are hydrogen, COOH, 1–4 carbon atom alkyl, 1–4 carbon atom alkoxy or halogen with hydrogen peroxide in sulfuric acid a material which reacts with sulfuric acid to form a sulfate salt as a desensitizing agent, said material being an alkali metal hydroxide, an alkaline earth metal hydroxide or sodium aluminate and being added in an amount to raise the pH to 2–6.

17. The process of claim 1 wherein there is employed the aromatic carboxylic acid.

20. The process of claim 17 wherein the added material is an aqueous solution of sodium hydroxide, aqueous slurry of magnesium hydroxide, aqueous suspension of lithium hydroxide or aqueous solution of sodium aluminate.

4,287,136

PROCESS FOR THE PREPARATION OF O,O-DIALKYLTHIONOPHOSPHORIC ACID CHLORIDES

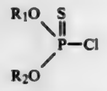
Zdenek Mazour, Lausen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,884

Int. Cl.³ C07F *9/20*

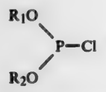
U.S. Cl. 260—985 **14 Claims**

1. A process for the preparation of an O,O-dialkylthionophosphoric acid chloride of the formula I



(I)

in which R_1 and R_2 independently of one another are each an alkyl group having 1–6 carbon atoms, by reacting a dialkyl phosphite-chloride of the formula II



(II)

in which R_1 and R_2 are as defined above, with sulfur, which comprises carrying out the reaction of the dialkyl phosphite-chloride of the formula II with sulfur in an inert solvent in the presence of a catalytic amount of titanium tetrachloride.

4,287,137

VANE-TYPE FLUID IMPELLER AND METHOD OF AERATING A LIQUID

Takayasu Sonoyama, Sakai; Hiroyoshi Tani, Ibaraki, and Kobee Kobayashi, Takatsuki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jan. 8, 1980, Ser. No. 110,444

Claims priority, application Japan, Jan. 8, 1979, 54-5103

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—93 **22 Claims**

1. A vane-type fluid impeller for aerating a fluid by injecting a gaseous fluid therein, said gaseous fluid having gas bubbles disposed therein, comprising:

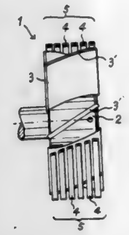
hub means having an axis of rotation, said gaseous fluid initially moving approximately parallel to said axis of rotation;

vane means connected with and arranged circumferentially around said hub means for receiving said gaseous fluid and for forcing at least a portion of said gaseous fluid to move approximately perpendicular to the axis of rotation of said hub means; and

strap means defining a grating substantially surrounding and co-rotating with said vane means for receiving said gaseous fluid from said vane means and for shearing said gas bubbles disposed within said gaseous fluid.

22. A chemical or fermentation process wherein a gas is contacted with a liquid to assist said process, comprising the steps of:

(a) introducing a gas into said liquid thereby forming a gaseous fluid having gas bubbles disposed therein; and



(b) rotating a vane-type fluid impeller in said gaseous fluid, said impeller comprising,

(1) hub means having an axis of rotation,

(2) vane means connected with and arranged circumferentially about said hub means, and

(3) strap means defining a grating substantially surrounding and co-rotating with said vane means;

(c) directing said gaseous fluid into said liquid in close proximity to said fluid impeller and to initially move substantially parallel to said axis of rotation, rotating said vane means to receive said gaseous fluid and to direct said fluid toward said strap means; and

(d) shearing said gas bubbles disposed within said gaseous fluid by means of said strap means.

4,287,138

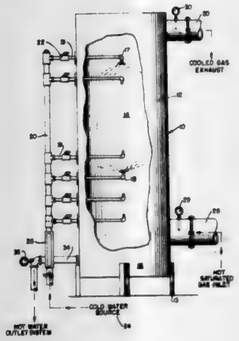
DIRECT CONTACT GASEOUS TO LIQUID HEAT EXCHANGE AND RECOVERY SYSTEM

Lynn A. Buckner, P.O. Box 3326, Burlington, N.C. 27215

Division of Ser. No. 9,172, Feb. 2, 1979. This application Mar. 5, 1980, Ser. No. 127,502

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—128 **8 Claims**



1. In a process which includes the steps of:

providing a plurality of dry cans in a drying process from which vapor-saturated gas at a first elevated temperature emanates, the improvement comprising the procedural combination of steps of:

containing said emanating vapor-saturated gas and directing said gas to an upstanding heat exchanger comprising a means for receiving said contained gas;

directly contacting said vapor saturated gas in a heat exchange zone within said heat exchanger with a relatively cooler spray of liquid, said contacting step occurring as the result of a plurality of spray heads located along a substantial length of said heat exchange zone for dispersing significant amounts of said relatively cooler liquid substantially throughout the direct contact heat exchange zone in said heat exchanger, the dispersing step providing a plurality of liquid phase droplets from a plurality of spray heads in said heat exchange zone to form a repetitive plurality of liquid phase barriers for intimate contact with said substantially saturated vapor within said heat exchange zone;

collecting relatively warm liquid resulting both from the agglomeration of sprayed relatively cool liquid and condensing of at least a portion of the saturated vapor to a receiver zone of said heat exchanger;

exhausting a gas from the heat exchanger which is relatively cool compared to the substantially saturated inlet gas; and

returning the gas exhausted from the heat exchanger to said dry cans as a supplemental source of make-up gas.

4,287,139

DEVICE FOR FORMING A NONWOVEN PRODUCT FROM A FLUID DIELECTRIC SUBSTANCE AND PROCESS

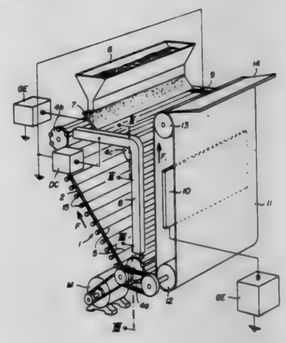
Claude Guignard, St-Genis Pouilly, France, assignor to Battelle Memorial Institute, Carouge, Switzerland

Filed Dec. 14, 1978, Ser. No. 1,254

Claims priority, application Switzerland, Dec. 22, 1977, 15840/77

Int. Cl.³ B29C *6/00*

U.S. Cl. 264—10 **10 Claims**



1. In a device for electrostatically forming filaments of a dielectric material and collecting said filaments as a nonwoven product comprising first and second spaced electrodes defining an elongated fiber-forming zone therebetween, an electrostatic generator operatively connected to one of said electrodes to establish an electrostatic field within said zone, means for supplying said dielectric material to one of said electrodes for conveyance into said zone to permit the electrostatic field within said zone to form filaments therefrom and means for collecting said electrostatically formed filaments as a nonwoven product and for continuously removing said nonwoven product from said zone, the combination wherein said first electrode comprises a plurality of discrete individual wire electrode segments extending transversely of said zone, said segments being aligned for successive movement longitudinally of said zone, said device including electrode transporting

means for sequentially moving said first electrode segments longitudinally of said zone, said transporting means being electrically insulated from said electrode segments.

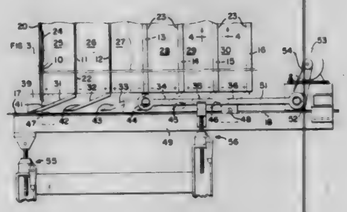
8. A process for the production of a non-woven product from a fluid dielectric substance, comprising forming a coating of the substance on a plurality of electrical conductive wires forming first electrodes stretching transversely between two endless transport bands, driving the bands synchronously to move the coated wires successively past a second electrode whose surface is relatively extensive with regard to the wires and establishing a potential difference between each wire while it passes the second electrode and the second electrode so as to create an electrostatic field which acts on the dielectric substance to form a plurality of fibers which are deposited as a non-woven web on a fiber collecting surface adjacent the second electrode.

4,287,140

METHOD FOR ORIENTATION AND DEPOSITION OF LIGNOCELLULOSIC MATERIAL IN THE MANUFACTURE OF PRESSED COMMINUTED PRODUCTS HAVING DIRECTIONAL PROPERTIES

Thomas E. Peters, and John M. Bateman, both of Boise, Id., assignors to Morrison-Knudsen Forest Products Company, Inc., Boise, Id.

Filed Dec. 26, 1979, Ser. No. 106,686
Int. Cl.³ B06B *6/60*
U.S. Cl. 264—23 **36 Claims**



1. A method of aligning discrete particles of lignocellulosic material, comprising:

depositing a multitude of discrete lignocellulosic particles onto an electrically insulative transfer surface to form a mat thereof;

subjecting the particles of said mat on the transfer surface to a directionally oriented electrical field to align the particles in the direction of the established electrical field; and

transferring the mat of aligned particles to an electrically conductive mat-receiving surface maintained at ground potential.

4,287,141

EMBANKMENTS CONSTRUCTION

Robert C. H. Russell, Wallingford, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 851,197, Nov. 14, 1977, abandoned.
This application May 1, 1979, Ser. No. 34,916
Claims priority, application United Kingdom, Nov. 22, 1976, 48607/76
Int. Cl.³ B28B *13/02*
U.S. Cl. 264—33 **15 Claims**

1. A method for constructing an embankment member or the like out of sand, comprising:

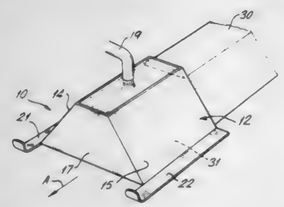
providing resting upon a surface a closed sided, closed front ended, open bottomed and open rear-ended moulding shield trailed by a doctor blade for together defining the required profile and top surface of the embankment member;

gradually moving the shield forwards on said surface along a path while filling and continuing to fill the shield with a water/sand slurry up to the effective upper extent of said closed front end, this movement being controlled to be so gradual that by the time the shield has moved forwards sufficiently to expose each new lengthwise increment of embankment member beyond said shield rear end, said each new increment has become constituted by wet sand that has settled out of said slurry up to the lower extent of said doctor blade.

7. A method for constructing an embankment upon a surface, comprising:

providing a shield having two opposed side walls which slope upwards toward one another, an upward forward end wall joining the two side walls, and a trailing rear end wall joining the two side walls in a required embankment profile, with the side walls and forward end wall extending downwards to the level of what is to be the base of the embankment and upwards at least to the level of what is to be the top surface of a core portion of the embankment and the rear end wall extending downwards to the level of what is to be the top surface of said core portion so that the upper edges of the side walls and end walls frame an upwardly open mouth for the shield;

determining a two-ended growth axis along which said embankment is to be formed and placing said shield so that



it is movably supported upon said surface at one end of said growth axis, forward end wall forwards, for movement along said growth axis to the other end thereof;

forming a hydraulic mixture of water and solid particulate material and pumping that mixture into said shield through said upwardly open mouth at such a rate that the shield becomes and remains full of said mixture, with the solid particulate material settling out of said mixture within said shield and the water tending to flow out of said shield so that said shield gradually becomes full of wet, but settled-out solid particulate material;

while continuing to perform said forming and pumping steps, guiding movement of said shield gradually forwards along said growth axis to said opposite end thereof, so that more room for said mixture within said shield is incrementally being made immediately to the rear of said forward end wall, until said opposite end is reached, the speed at which said shield so moves being controlled to assure that at each point along said growth axis the level of wet, but settled-out particulate material reaches at least up to the lower edge of said trailing rear wall before said lower edge passes such point, so that said lower edge acts as a doctor blade for the top surface of said core portion of the embankment.

4,287,142

PROCESS FOR THE PRODUCTION OF MINERAL WOOL PRODUCTS

Kjeld Holbek, Lejre, Denmark, assignor to Rockwool International A/S, Hedehusene, Denmark

Continuation of Ser. No. 811,829, Jun. 30, 1977, abandoned.
This application Oct. 19, 1978, Ser. No. 952,732
Claims priority, application Denmark, Jul. 2, 1967, 3020/67
Int. Cl.³ C04B *35/14*
U.S. Cl. 264—37 **7 Claims**

1. A process for the production of mineral wool products which comprises the steps of

(1) mixing together the following components: a finely divided mineral-containing material, a hydraulic binder, an inorganic material containing at least 75% by weight of SiO_2 and being in the form of particles having an average size of less than 100 μm, and a waste material recycled from step (4),

(2) moulding the mixed components of step (1) to form briquettes,

(3) heating the briquettes of step (2) to a temperature sufficient to form a melt,

(4) spinning the melt of step (3) to form mineral wool and a waste material mainly consisting of unfiberized particles of mineral wool, and

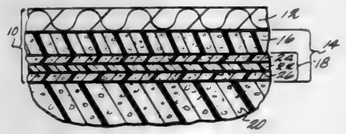
(5) recycling said waste material of step (4) to the mixture of step (1).

4,287,143

CLOTH MOLDING PROCESS

I. Weir Sears, Jr., Davenport, Iowa, and Raoul Quertain, Brussels, Belgium, assignors to Sears Manufacturing Company, Davenport, Iowa

Continuation-in-part of Ser. No. 22,592, Mar. 19, 1979. This application Oct. 10, 1979, Ser. No. 83,537
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—46.8 **14 Claims**



1. A process for molding cloth comprising the steps of:

drawing the cloth into a heated mold, the cloth including a fabric layer having a fiber heat-fixable at a set temperature, and an elastic composition layer bonded to the fabric layer, the temperature of the mold being at least the heat-fixable fiber set temperature;

heating the cloth to at least the heat-fixable fiber set temperature, including the step of transferring energy from the heated mold to the cloth;

transferring the cloth into a mold having a temperature less than the fiber set temperature; and

cooling the cloth, the process heat-fixing the heat-fixable fiber of the cloth to the shape of the mold.

7. A process for forming a cloth-covered item comprising the steps of:

drawing the cloth into a heated mold, the cloth including a fabric layer having a fiber heat-fixable at a set temperature, and an elastic composition layer bonded to the fabric layer, the temperature of the mold being at least the heat-fixable fiber set temperature;

heating the cloth to at least the heat-fixable fiber set temperature, including the step of transferring energy from the heated mold to the cloth;

transferring the cloth into a mold having a temperature less than the heat-fixable fiber set temperature;

cooling the cloth; and

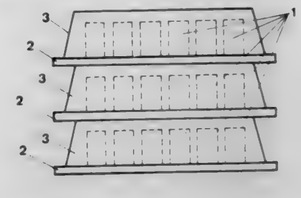
pouring a liquid foam composition into the mold, the process heat-fixing the heat-fixable fiber of the cloth to the shape of the mold and filling the back side of the molded cloth with foam.

4,287,144

METHOD OF MANUFACTURING CEMENTITIOUS ARTICLES AND VARIOUS FORMS OF EQUIPMENT OF PUTTING THIS METHOD INTO PRACTICE

Michel Lerebourg, Marseille en Beauvaisis, France, assignor to Etablissements DEMLER S.A., Crevecoeur Le Grand (Oise), France

Filed Oct. 24, 1979, Ser. No. 88,095
Claims priority, application France, Oct. 24, 1978, 78 30240
Int. Cl.³ B28B *11/00*
U.S. Cl. 264—79 **2 Claims**



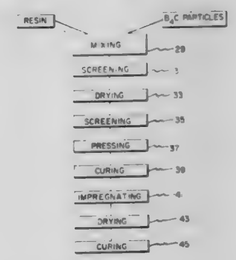
1. A method of manufacturing cementitious articles such as parpens, in which the articles are moulded on a base-plate serving for handling the articles for the curing operation, the method comprising moulding the cementitious articles on a base-plate, placing a self-supporting cover on the plate with said articles under the cover to form a curing unit, successively forming like units in the same manner, placing each successive unit on top of the preceding unit to thereby form a stack of units for the curing operation, and maintaining said stack intact during at least part of the curing period.

4,287,145

METHOD FOR MANUFACTURING NEUTRON ABSORBING ARTICLE

Carl H. McMurtry, Youngstown; Robert G. Naum, Lewiston; Dean P. Owens, and Michael T. Hortman, both of Tonawanda, all of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 854,966, Nov. 25, 1977, Pat. No. 4,225,467.
This application Mar. 24, 1980, Ser. No. 133,182
Int. Cl.³ B29J *5/00*
U.S. Cl. 264—109 **12 Claims**



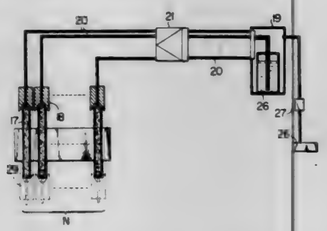
1. A method for manufacturing a neutron absorbing article which comprises mixing together a curable phenolic resin with boron carbide particles, compacting the mixture to an article of desired shape, curing the phenolic resin of the article at elevated temperature, impregnating the cured article with curable phenolic resin in liquid state and curing said article at elevated temperature.

4,287,146

NIB-TYPE WRITING PEN AND METHOD OF MANUFACTURE

Yoshio Midorikawa, 1-8-1 Nishigahara, Kita-ku, Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,040
Claims priority, application Japan, Oct. 11, 1977, 52-120965
Int. Cl.³ D04H *1/64, 1/74;* B43K *1/12;* D04H *3/12*
U.S. Cl. 264—128 **6 Claims**



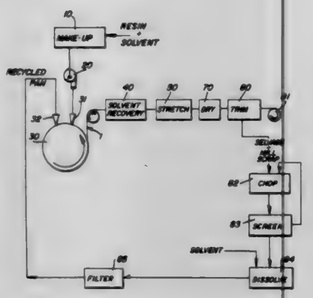
1. A method of manufacturing a writing pen having a completely integral writing nib portion and ink reservoir, comprising the steps of:
passing fibers through a die to compress and form them into a fiber bundle;
extruding a plastic sheath around said fiber bundle;
cutting the sheathed fiber bundle thus formed into a predetermined length;
injecting urethane prepolymer liquid under pressure into either or both ends of the cut and sheathed fiber bundle to impregnate same;
allowing the urethane polymer to harden; and
machining the impregnated end portions to a suitable shape.

4,287,147

MULTILAYER FILM MANUFACTURE UTILIZING SCRAP RESIN

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,581
Int. Cl.³ B29C *29/00*
U.S. Cl. 264—146 **10 Claims**



1. A method for producing multilayer film having at least one layer containing recycled polyacrylonitrile which comprises the steps of
co-extruding a continuous multilayer film from a first supply of substantially homogeneous polyacrylonitrile resin solution and a second supply containing non-homogeneous redissolved polyacrylonitrile resin scrap;
casting said multilayer film onto a smooth cooled drum surface to form substantially continuous adjacent layers from said first supply and said second supply;
stripping said multilayer film from said drum as a self-supporting continuous film strip;
removing at least a portion of the solvent from said multilayer film;
stretching said multilayer film to provide an oriented structure;
trimming excess polyacrylonitrile resin from said stretched film as selvage resin;
comminuting said selvage resin; and
redissolving said comminuted selvage resin in solvent for recycle to said second supply.
7. A film production system comprising
multiple die means for extruding at least two streams of resinous material in laminar flow relationship;
means for soldifiying said resinous materials to form a substantially uniform multilayered film;
means for orienting the soldified resinous materials by stretching the film;
means for drying the oriented film and removing volatile matter;
cutting means for producing a finished film product and producing resin scrap;
means for comminuting the resin scrap;
means for dissolving the resin scrap to form a non-homogeneous resin scrap material;
means for recycling the dissolved scrap material to the multiple die means for re-extrusion as a discrete layer; and
means for feeding a homogeneous resin material to said multiple die means, thereby forming contiguous layers of the non-homogeneous and homogeneous resin materials having good film integrity.

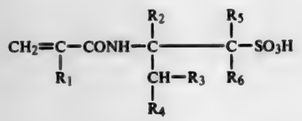
4,287,148

PROCESS FOR PRODUCING GLOSSY FIBRES OF THE MODACRYLIC TYPE HAVING REDUCED INFLAMMABILITY

Giorgio Cazzaro, Saronno; Giancarlo Matera, Monza; Antonino Cavallaro, Cesano Maderno, and Marina Zani, Saronno, all of Italy, assignors to Snia Viscosa, Milan, Italy

Division of Ser. No. 847,746, Nov. 2, 1977, Pat. No. 4,223,108. This application Apr. 23, 1980, Ser. No. 143,100
Claims priority, application Italy, Nov. 3, 1976, 28980 A/76; Sep. 28, 1977, 27997 A/77
Int. Cl.³ C08L *33/20, 41/00*
U.S. Cl. 264—182 **10 Claims**

1. A process for preparation of the modacrylic fibres having reduced inflammability and high glossiness which comprises preparing a viscous solution of a mixture of a binary copolymer A containing from 88% to 98% of monomeric units derived from acrylonitrile and from 2 to 12% of monomeric units derived from a significantly homopolymerizable sulphonic acid monomer of the formula



and salts of said acid, wherein R is hydrogen or a short chain alkyl radical and R_2, R_3, R_4, R_5, and R_6 are each hydrogen or an alkyl, cyloalkyl or aryl radical, and a binary copolymer B containing from 55% to 88% of monomeric units derived from acrylonitrile and from 12% to 45% of monomeric units derived from vinylidene chloride in a spinning solvent, and spinning said viscous solution to form fibres containing from 12% to 40% by weight of copolymer A and 88% to 60% by weight of copolymer B.

4,287,149

PROCESS FOR THE PRODUCTION OF POLYMER MATERIALS

Giancarlo Capaccio, Leeds, and Ian M. Ward, Bramhope, both of England, assignors to National Research Development Corp., London, England

Continuation of Ser. No. 782,225, Mar. 28, 1977, abandoned, which is a continuation of Ser. No. 562,043, Mar. 26, 1975, abandoned, and a continuation-in-part of Ser. No. 508,879, Sep. 24, 1974, abandoned. This application Sep. 19, 1978, Ser. No. 943,857
Claims priority, application United Kingdom, Oct. 3, 1973, 46141/74; Mar. 5, 1974, 9796/74
Int. Cl.³ D01D *5/12*
U.S. Cl. 264—210.7 **15 Claims**



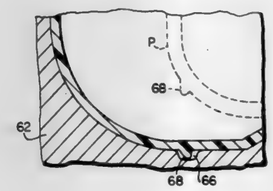
1. A process for the production of a high modulus polymer material which comprises quenching a crystallizable polymer selected from the group consisting of high density polyethylene, ethylene copolymers containing at least 95% by weight of ethylene, and polyoxymethylene having a weight average molecular weight (Mw) of less than 300,000 and a ratio of Mw to number average molecular weight (Mn) less than 30 from a temperature at or above its melting point to a temperature at or close to its crystallization temperature; maintaining the polymer at the temperature for a time sufficient to allow crystallization to occur; and then attenuating the polymer at a temperature below its melting point at a rate such that the deformation ratio (the ratio of the final length to the initial length) is at least 15.

4,287,150

METHOD AND APPARATUS FOR INJECTION BLOW MOLDING AN ARTICLE WITH IMPROVED DETAIL DEFINITION

Aime J. Gendron, Rehoboth, Mass., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 40,891, May 21, 1979. This application Jan. 23, 1980, Ser. No. 114,623
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—538 **8 Claims**



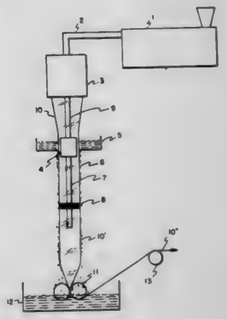
1. A method of molding an article with molding detail of high definition in an injection blow molding machine having an injection mold and cooperating blow mold comprising:
providing in the molding cavity of the injection mold features recessed below the surrounding cavity wall and defining molding detail finer than that obtainable in the blow mold under preselected blowing pressures and temperatures;
injecting settable material into the injection mold cavity at injection pressures and temperatures sufficiently elevated to force the settable material into the recessed features of the mold cavity and thereby produce a parison having the features of finer molding detail raised thereon;
transferring the parison with the molding features thereon from the cavity of the injection mold to the cavity of the blow mold;
blowing the parison in the cavity of the blow mold under the preselected blowing pressures and temperatures to form an article having the general shape defined by the blow mold cavity; and
during the step of blowing preserving the features of finer molding detail raised on the parison by limiting the level of the preselected blowing pressures and temperatures to prevent the raised detail from being deformed by the blow cavity wall.

4,287,151

METHOD AND APPARATUS FOR HIGH SPEED EXTRUSION OF THERMOPLASTIC MATERIALS

Michael D. Esakov, Greer; David C. Hudgens, Jr., Lyman, and Frederick D. Stringer, Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Filed Dec. 13, 1976, Ser. No. 749,861
Int. Cl.³ B29F *3/08*
U.S. Cl. 264—560 **17 Claims**



1. In the process of extruding thermoplastic materials in tubular form without expanding the tubular extrudate radially to a diameter greater than that of the extruder die the improvement which comprises:
(a) disposing support means within said extruded tube, said support means being of larger diameter than said tube at the point of its contact therewith and having a passageway therethrough to equalize air pressure above and below said support means; and,
(b) cooling and solidifying the inner wall of said tube prior to contact between said wall and said support means whereby the contact of said support means and tube wall causes the unsolidified extrudate upstream from said support means to be stable at high extrusion rates.
10. Apparatus for the high speed production of tubular thermoplastic extrudate comprising:
(a) a circular extrusion die;
(b) means for delivering molten thermoplastic material to said die;
(c) interior cooling means located below said die for solidifying the interior wall of said extrudate while not in direct contact therewith, said interior cooling means having a diameter smaller than the tubular extrudate; and,
(d) support means located below said interior cooling means and having an air pressure equalization passageway therethrough, said support means having a diameter greater than that of the tubular extrudate at the point of contact

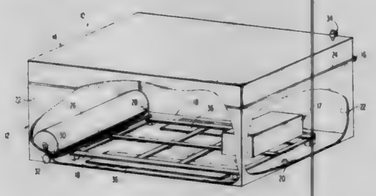
therewith but less than the diameter of the extrusion die and being in contact with the inner periphery of said tubular extrudate thereby causing the unsolidified extrudate upstream of said support means to be stable under high speed operation.

4,287,152

METHOD OF FOR RETARDING DYE FADING DURING ARCHIVAL STORAGE OF DEVELOPED COLOR PHOTOGRAPHIC FILM

Richard B. Hoover, and Charles M. Rhodes, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 7, 1980, Ser. No. 119,340
Int. Cl.³ B01J *19/14, 19/00*
U.S. Cl. 422—40 **6 Claims**



1. A method for retarding dye fading during archival storage of developed color photographic film comprising the steps of:
(a) placing the film in a sealed opaque vault;
(b) venting the vault;
(c) introducing a dry, pressurized inert gas into the vault while the latter is vented; and
(d) sealing the vault after the air in the vault is purged and replaced by the inert gas.

4,287,153

DISPOSABLE ARTICLE WITH NON-LEACHABLE SALINE WATER INDICATOR

Marvin S. Towsend, 1365 Potomac Heights Dr., Oxon Hill, Md. 20022

Continuation-in-part of Ser. No. 943,960, Sep. 20, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 98,914
Int. Cl.³ G01N *33/52;* **A61F** *13/00, 13/16*
U.S. Cl. 422—56 **37 Claims**

1. A disposable article for absorbing bodily excretions, comprising:
a quantity of absorbent material for absorbing the bodily excretions;
a semitransparent water impermeable backsheet for retaining said absorbent material and the absorbed excretions; and
a quantity of non-leachable saline water indicating material placed in contact with said absorbent material and in close proximity to said semitransparent backsheet for indicating the presence of the absorbed excretions.

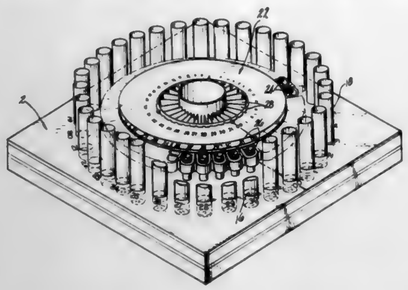
4,287,154

SPECIMEN TRANSFER RACK

Philip B. Sommers, 923 Garden Rd., Orange, Conn. 06477

Filed May 7, 1980, Ser. No. 147,616
Int. Cl.³ G01N *21/01, 1/10*
U.S. Cl. 422—64 **7 Claims**

1. A specimen transfer rack for use in transferring fluid specimens from a plurality of bulk specimen tubes to a plurality of specimen receptacles carried on a part of a specimen analyzing instrument, said rack comprising:
(a) support means for releasably holding and supporting the part of the specimen analyzing instrument; and
(b) a plurality of specimen tube holders equiangularly disposed about said support means whereby each of said tube holders is disposed opposite to and paired with a respective one of the specimen receptacles on the part of the specimen analyzing instrument.

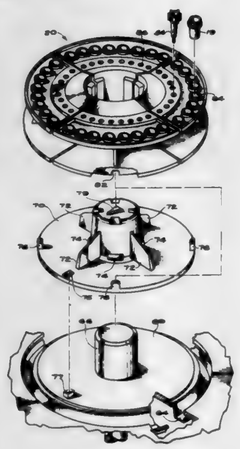


4,287,155

SAMPLE TRAY AND CARRIER FOR CHEMICAL ANALYZER

Glenn E. Tersteeg, Honeoye Falls, and Richard R. Harold, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,554
Int. Cl.³ G01N *35/04*
U.S. Cl. 422—64 **3 Claims**



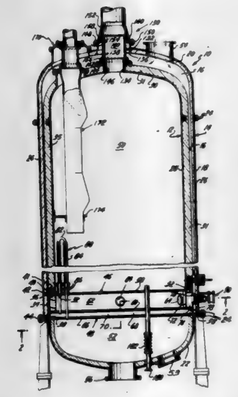
1. A tray and carrier combination, adapted to be rotatably mounted on chemical analysis apparatus and to receive a plurality of metering tips and cups for fluid samples for chemical analysis; said combination comprising:
a circular carrier adapted to be removably mounted on the chemical analysis apparatus for rotation about an axis;
a tray adapted to be mounted on said carrier and having a plurality of discrete arcuate segments independently removable from and replaceable onto said carrier about said axis;
a plurality of angularly spaced first discontinuities on each of said segments, each of said first discontinuities being adapted to receive a fluid sample cup; and
a plurality of second discontinuities on each of said segments for receiving a plurality of metering tips, each of said second discontinuities being associated with a different one of said first discontinuities, whereby one of said segments can be removed from said carrier for restocking with fresh metering tips and fluid sample cups while the analysis apparatus continues to operate on the fluid samples in cups on segments retained on said carrier and whereby said carrier and all the segments may be removed from the analysis apparatus as a unit.

4,287,156

FLUIDIZED BED REACTOR

Angelo De Feo, Totowa Boro, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed May 19, 1980, Ser. No. 151,385
Int. Cl.³ B01J *8/08;* **F27B** *15/08, 15/10, 15/16*
U.S. Cl. 422—143 **15 Claims**



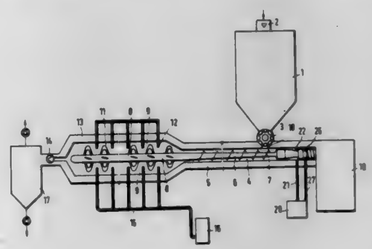
1. In a fluidized bed reactor having inner and outer spaced shells to define therebetween a gaseous fluid inlet passageway for receiving and conducting a gaseous fluid from a source thereof remote from the reactor, a distribution partition having a fluid distributing means to divide the inner shell into a reaction zone and an outlet chamber, a heat exchanger in the reaction zone for conducting gaseous fluid therethrough for the absorption of heat from the reaction zone, inlet connector means for passing particulate materials into the reaction zone for reaction with said gaseous fluid, and outlet connector means for passing products of the reaction from the reaction zone, the improvement comprising
(a) partition means cooperating with the distribution partition to form first and second inlet manifolds;
(b) said first manifold being in communication with said inlet passageway to receive one portion of gaseous fluid therefrom for passage into the reaction zone through said fluid distributing means;
(c) said second manifold being in communication with said inlet passageway to receive from the latter another portion of said gaseous fluid for passage into said heat exchanger; and
(d) valve means within the reactor for modulating the flow of gaseous fluid from said inlet passageway to said first manifold and said second manifold.

4,287,157

COAL HYDROGENATING APPARATUS HAVING MEANS FOR SEALING THE ROTARY DRIVE THEREOF

Klaus Koch, Laatzen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,762
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943538
Int. Cl.³ B01J *3/03, 4/00, 8/10;* **C10G** *1/06*
U.S. Cl. 422—205 **10 Claims**



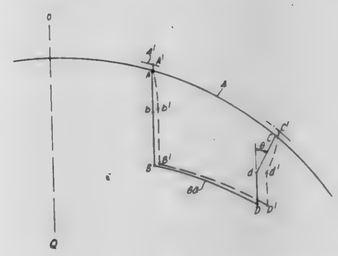
1. Apparatus for hydrogenating coal with hydrogen to form hydrocarbons and for sealing the drive-end of a preparation and hydrogenation chamber comprising a chamber, a hollow cylinder defining said chamber, a rotatable element contained in said chamber to convey particles of coal from a preparation portion of ssid chamber into and through a hydrogenation portion of said chamber, a sealing region at the drive-side of said rotatable element, said sealing region comprising a conical annular gap formed between the wall of said hollow cylinder and said rotatable element adjacent an aperture for feeding the coal into said preparation portion of said chamber, said conical annular gap tapering towards said preparation portion of said chamber, a first annular space on the drive-side of said conical annular gap, a feed passage communicating said first annular space with a storage container and means for recirculating a sealing substance in paste form from said storage container, under pressure, through said feed passage into said first annular space.

4,287,158

SUPPORT SYSTEM FOR INTERNAL STRUCTURE IN A HIGH TEMPERATURE VESSEL

Philip S. Roots, Godalming, England, assignor to Van Tongeren U.K. Limited, Godalming, England

Filed Apr. 28, 1980, Ser. No. 144,569
Int. Cl.³ B01J *8/18;* **F26B** *17/10*
U.S. Cl. 422—241 **8 Claims**



1. A pressure vessel having a vertical axis of symmetry; and further including:
(a) a ceiling of non-horizontal form to said pressure vessel;
(b) means defining an annular plenum chamber within the

pressure vessel, adjacent said ceiling, said annular plenum chamber comprising an annular floor having inner and outer perimeters, inner and outer walls symmetrical about said axis of the pressure vessel, means joining said inner wall to the inner perimeter of said floor and to said ceiling, and means joining said outer wall to the outer perimeter of said floor and to said ceiling;

(c) a plurality of cyclone separators and

(d) means suspending said cyclone separators from the annular floor of said plenum chamber wherein

(e) at least one of said radially inner wall and said radially outer wall of the plenum chamber includes means defining a wall portion of a divergent configuration with respect to the said axis, said divergent portion being dimensioned to compensate for differential radial and axial expansions of the said inner and outer plenum chamber walls and said annular floor of the plenum chamber and of said ceiling of the pressure vessel.

4,287,159

EXTRACTION PROCESS FOR THE RECOVERY OF TUNGSTEN FROM LOW LEVEL SOURCES

Samuel Natansohn, Sharon, and Sophia R. Su, Wellesley, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 59,803, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 18,488, Mar. 8, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 186,948

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—54 **13 Claims**

1. A process for recovering tungsten substantially free of contaminating boron from aqueous media containing tungsten and boron comprising the steps of:

(a) adjusting the pH of said aqueous medium to a value below about pH 8;

(b) contacting the pH-adjusted aqueous medium with an ion exchange resin to load the resin with tungsten and boron values from said aqueous medium;

(c) eluting the loaded resin with an aqueous eluant solution to selectively recover a portion of the tungsten from said loaded resin;

(d) adjusting the pH of the tungsten-containing aqueous eluate solution to a value below about pH 3;

(e) contacting the pH-adjusted aqueous eluate solution with an organic extractant solution comprising o-mercaptobenzoic acid, a quaternary alkylammonium salt, and an inert organic solvent to transfer a portion of the tungsten values to the organic extractant solution;

(f) contacting the tungsten-containing organic extractant solution with an aqueous stripping solution to transfer a portion of the tungsten values to said aqueous stripping solution and to regenerate said organic extractant solution;

(g) recycling the regenerated organic extractant solution to step e; and

(h) recovering tungsten values from the aqueous stripping solution,

whereby the tungsten recovered contains less than 1 mole percent contaminating boron.

4,287,160

PROCESS AND SHAFT KILN FOR THE BURNING OF LIME OR SIMILAR BULK MATERIALS

Hans von Zander, Balduinstein, Fed. Rep. of Germany, assignor to Johann Schaefer Kalkwerke, Diez, Fed. Rep. of Germany

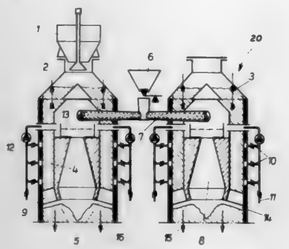
Filed Aug. 9, 1979, Ser. No. 65,208

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834862

Int. Cl.³ C01F *1/00*

U.S. Cl. 423—168 **4 Claims**

1. Process for the burning of lime, cement or another similarly burnable lumpy bulk material in a shaft kiln using coal, which comprises continuously feeding coal dust or dry coal into a gasification chamber positioned in the center of the shaft kiln, partially or fully gasifying the coal dust or dry coal therein by the addition of air in substoichiochiometric proportions, mixing the resultant partially or fully gasified fuel with air at an elevated temperature, and then burning the mixture in the burning zone of the shaft kiln, the flow of the burnt fuel, that is, heating medium, and the flow of the kiln charge being cocurrent within the kiln.



4,287,161

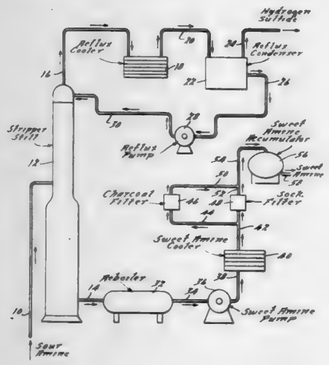
METHOD FOR DEFOAMING IN GAS PURIFICATION SYSTEMS

Jagdish M. Agrawal, Sterling Heights, Mich., assignor to Michigan Consolidated Gas Company, Detroit, Mich.

Filed Mar. 21, 1980, Ser. No. 132,685

Int. Cl.³ B01D *53/34, 19/02*

U.S. Cl. 423—229 **2 Claims**



1. In a method for purifying a gaseous mixture by removing contaminants therefrom with an aqueous ethanolamine scrubbing solution, the method of defoaming and regenerating the scrubbing solution comprising the steps of sequentially:

(a) separating gaseous contaminants from said scrubbing solution by passing said scrubbing solution through a stripper still;

(b) cooling said scrubbing solution;

(c) dividing said scrubbing solution into a major stream and a minor stream, said minor stream comprising from about 10% to about 20% of flow by volume of said scrubbing solution;

(d) passing said minor stream through an activated charcoal filter; and

(e) combining said minor stream and said major stream to provide a regenerated scrubbing solution.

4,287,162

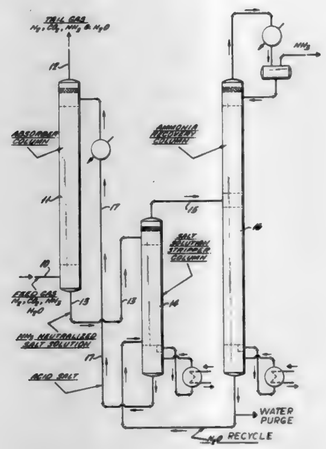
SEPARATION OF AMMONIA FROM AMMONIA CONTAINING GASES

Edward G. Scheibel, Media, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Filed Jul. 18, 1979, Ser. No. 58,695

Int. Cl.³ C01C *3/00*

U.S. Cl. 423—238 **3 Claims**



1. A process for the recovery of ammonia from its admixture with gases which comprises scrubbing said ammonia containing gas at a temperature between about 50° to about 115° C. with an aqueous solution containing a mixture of different cations selected from the group consisting of ammonia and alkali metal cations and a mixture of anions of phosphate and borate, wherein said anions are at a concentration of from about 80% to about 90% of saturation concentration.

4,287,163

PROCESS FOR RECOVERING LITHIUM FROM BRINE BY SALTING OUT LITHIUM SULFATE MONOHYDRATE

Donald E. Garrett, Ojai, Calif., and Martin Laborde, New York, N.Y., assignors to Saline Processors, Inc., Ojai, Calif. and Corporacion de Fomento de la Produccion, Santiago, Chile

Filed May 29, 1979, Ser. No. 43,136

Int. Cl.³ B01D *9/02*; C01B *35/00, 35/14*; C01D *15/06*

U.S. Cl. 423—283 **17 Claims**

1. A process for recovering lithium values from sulfate-containing brines having a lithium ion concentration of at least 0.4 weight percent and at least about 30 moles $MgCl_2$ per 1000 moles H_2O comprising adding to said brines a soluble sulfate salt and recovering therefrom lithium sulfate monohydrate.

4,287,164

PROCESS FOR PRODUCING CUBIC SYSTEM BORON NITRIDE

Tadashi Endo; Osamu Fukunaga, both of Sakura, and Minoru Iwata, Matsudo, all of Japan, assignors to National Institute for Researches in Inorganic Materials, Ibaraki, Japan

Filed Oct. 12, 1979, Ser. No. 84,162

Claims priority, application Japan, Oct. 23, 1978, 53-130292

Int. Cl.³ C01B *21/064*

U.S. Cl. 423—290 **7 Claims**

1. A process for producing cubic system boron nitride which comprises contacting calcium or strontium boron nitride with hexagonal system boron nitride and heating at higher than 1,450° C. under the thermodynamically stable pressure for cubic system boron nitride.

4,287,165

PREPARATION OF HIGH PURITY PHOSPHORUS

Arthur F. Rupp, Oak Ridge, and David V. Woo, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 831,194, Sep. 7, 1977, abandoned. This application Apr. 4, 1980, Ser. No. 137,096

Int. Cl.³ C01B *25/01, 25/02, 25/04, 25/10*

U.S. Cl. 423—323 **3 Claims**

1. A method for preparing phosphorus by the steps comprising:

reducing $Pb_3(PO_4)_2$ in H_2 at a temperature less than about 500° C. and sufficient to form a reaction product upon the evolution of water;

continuing the reduction at said temperature less than about 500° C. until the evolution of water ceases;

reducing the resulting water-free reaction product in H_2 at a temperature in the range of 600°–800° C. to decompose said reaction product and form gaseous phosphorus; and thereafter

condensing the gaseous phosphorus and recovering said phosphorus.

4,287,166

ZEOLITE ZSM-39

Francis G. Dwyer, West Chester, Pa., and Edwin E. Jenkins, Woodstown, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 84,683, Oct. 15, 1979, abandoned. This application Jun. 6, 1980, Ser. No. 156,905

Int. Cl.³ C01B *33/20, 33/28*; C07F *7/02*

U.S. Cl. 423—325 **8 Claims**

1. A porous zeolite having a composition, expressed in terms of moles of anhydrous oxides, per 100 moles of silica, as follows:

$(0–2.5)M_{2/n}O$: $(0–2.5)Al_2O_3$: $(100)SiO_2$

wherein M is at least one cation having a valence n, and wherein said zeolite is characterized by a characteristic X-ray diffraction pattern as set forth in Table 1 of the specification.

4,287,167

NOVEL HARZBURGITE AND PREPARATION THEREOF

Pierre C. Aitcin, Sherbrooke, Canada, assignor to Universite de Sherbrooke, Quebec, Canada

Filed Oct. 26, 1979, Ser. No. 88,352

Int. Cl.³ C01B *33/24*; C04B *35/04, 35/20*

U.S. Cl. 423—331 **8 Claims**

1. Process for preparing harzburgite having Fe_2O_3 content of less than 5% and having a ratio MgO/SiO_2 of from between 1.0 to 1.3 which comprises:

(a) demagnetizing a magnetite-containing serpentinite by a dry process;

(b) recovering the demagnetized serpentinite fraction;

(c) calcining said demagnetized fraction thereby to transform the demagnetized serpentinite to an harzburgite having a Fe_2O_3 content of less than 5% and a ratio MgO/SiO_2 of from between 1.0 to 1.3.

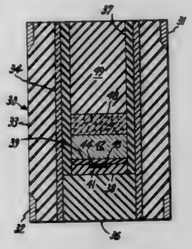
4,287,168
APPARATUS AND METHOD FOR ISOLATION OF DIAMOND SEEDS FOR GROWING DIAMONDS

Robert H. Wentorf, Jr., Schenectady, and William A. Rocco, Scotia, both of N.Y., assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 544,497, Jan. 27, 1975, abandoned, which is a continuation of Ser. No. 412,331, Nov. 2, 1973, abandoned. This application Nov. 22, 1976, Ser. No. 744,169

Int. Cl.³ C01B *31/06*

U.S. Cl. 423—446 **18 Claims**



1. In a diamond synthesis reaction vessel for introduction into the reaction volume of a high pressure, high temperature apparatus, said reaction vessel constituting an assembly of interfitting elements for enclosing diamond seed material and a source of substantially pure carbon, said diamond seed material and said source of carbon being separated by a mass of metallic catalyst-solvent material for the diamond-making reaction disposed therebetween so as to provide a pre-determined temperature gradient between said diamond seed material and said source of carbon under operating conditions of pressure and temperature above the graphite-to-diamond equilibrium line on the phase diagram of carbon, said diamond seed material and said source of carbon being located in separate regions of said reaction vessel such that under said operating conditions said diamond seed material will be heated to a temperature near the minimum value of temperature for said temperature gradient and simultaneously said source of carbon will be heated to a temperature near the maximum value of temperature for said temperature gradient, the combination with said interfitting elements of

(a) a solid barrier separating said diamond seed material from the mass of catalyst-solvent material, said barrier being inert to, and insoluble in, the molten catalyst-solvent material and

(b) at least one restricted diamond growth path extending through said barrier and interconnecting said mass of catalyst-solvent material and a volume containing said diamond seed material, said growth path having a maximum cross-sectional area equivalent to a circular area having a diameter of 0.020 inches.

11. A process for the production of diamond material comprising the steps of: pressurizing a reaction vessel containing a diamond seed material and a source of carbon separated by a mass of catalyst-solvent to a pressure in the diamond stable region of the phase diagram of carbon said seed material, carbon source and catalyst-solvent being positioned in stacked relationship within said reaction vessel; while simultaneously heating said reaction vessel in such a manner to create within said vessel a temperature gradient in said diamond stable region such that the diamond seed material is at a temperature near the minimum temperature of said gradient and said source of carbon is at a temperature near the maximum temperature of said gradient, whereby a temperature gradient is created between said seed material and carbon source; and limiting diamond growth adjacent the diamond seed material until the catalyst-solvent material is saturated with carbon under the operating conditions and until a diamond growth pattern is initiated upon said seed material and established in said carbon saturated mass of catalyst-solvent by interposing an isolation barrier in the reaction vessel between said diamond seed material and said mass of catalyst-solvent prior to said pressurizing and heating step, said isolation barrier being substantially inert to the reaction vessel and its contents at said operating conditions and has at least one opening therein between said diamond seed material and said mass of catalyst-solvent at said operating conditions to define a restricted diamond growth path having an equivalent cross-sectional diameter in the range of 0.001 to 0.020 inches, said diamond growth proceeding freely in said mass of catalyst-solvent, and maintaining said operating conditions until a diamond of at least 14 mgm is grown.

4,287,169
WATER DISSOCIATION METHOD AND MATERIAL

Eugene R. Anderson, Wills Point, Tex., assignor to Horizon Manufacturing Corporation, Wills Point, Tex.

Continuation-in-part of Ser. No. 902,705, May 4, 1978, Pat. No. 4,207,095, and Ser. No. 902,708, May 4, 1978, Pat. No. 4,182,748, and Ser. No. 68,749, Aug. 23, 1979, and Ser. No. 85,374, Oct. 16, 1979. This application Jan. 7, 1980, Ser. No. 110,217

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.³ C01B *1/07, 13/02*

U.S. Cl. 423—579 **28 Claims**

1. A material for the generation of hydrogen and oxygen from water which comprises an amalgam of an alkali metal, mercury and aluminum wherein the atomic ratio of alkali metal to mercury is from about 3:1 to about 1:1.5 and the atomic weight ratio of alkali metal to aluminum is from about 1:1 to about 3:1 combined with an alloy of a metal selected from the platinum metals family and at least one element selected from the group consisting of germanium, antimony, gallium, thallium, indium, cadmium, bismuth, lead, zinc and tin.

14. A process for the generation of hydrogen and oxygen from water which comprises contacting water with an amalgam of an alkali metal, mercury and aluminum wherein the atomic ratio of alkali metal to mercury is from about 3:1 to about 1:1.5 and the atomic weight ratio of alkali metal to aluminum is from about 1:1 to about 3:1 combined with an alloy containing a metal selected from the platinum metal family.

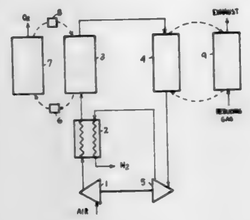
4,287,170
NITROGEN AND OXYGEN VIA CHEMICAL AIR SEPARATION

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Mar. 6, 1980, Ser. No. 127,728

Int. Cl.³ C01B *13/00*

U.S. Cl. 423—579 **9 Claims**



9. A continuous process for the production of nitrogen substantially free of oxygen from a nitrogen and oxygen containing gas comprising:

a. contacting the gas with an oxygen acceptor so as to remove between 60% and 95% of the oxygen from the gas;

b. contacting the oxygen depleted gas from step (a) with an oxygen scavenger so as to remove substantially all remaining oxygen and to generate heat;

c. indirectly transferring said heat to said nitrogen and oxygen containing gas,

d. regenerating the oxidized scavenger by reduction with a reducing gas and recycling it to additional oxygen depleted gas contact;

e. regenerating and recycling the scceptor to additional gas contact.

4,287,171
STORAGE STABLE QUICKLY ACTING TABLETS FOR COMBATTING VERTEBRATES PREPONDERANTLY IN UNDERGROUND STRUCTURES

Angelika Jordy, Bad Homburg, and Wolfgang Kapp, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Degesch GmbH, Frankfurt, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,226

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2825534

Int. Cl.³ A01M *13/00;* **B65D** *75/26;* **A01N** *59/26;* **A01M** *25/00*

U.S. Cl. 424—29 **5 Claims**

1. A process for combatting vertebrate animals living in an underground structure having an opening therein comprising providing a packaged storage stable, quickly acting tablet for combatting said vertebrates, said package consisting essentially of a tablet which consists essentially of a mixture of commercial magnesium phosphide and a mold assistant located in a cavity in a first film which is water vapor and air impermeable, tear and break resistant, said cavity having an open top, and covering the cavity across the open surface thereof a second film which is water vapor and air impermeable, non-tear resistant and non-break resistant, the two films being sealed together at their edges tightly against water vapor and airs so that water vapor and air cannot reach the tablet in the cavity, breaking the tablet and the non-tear resistant, non-break resistant second film without touching the magnesium phosphide and introducing the package with the broken film and tablet into the opening of the underground structure in order to gas the underground structure.

4,287,172
COSMETIC COMPOSITIONS FOR THE HAIR AND THE SKIN, BASED ON POLYMERS WHICH CONTAIN AMINO GROUPS AND RECURRING UNITS HAVING A CYCLIC STRUCTURE

Bernard Jacquet, Antony; Christos Papantoniou, Montmorency, and Jean Mondet, Sevran, all of France, assignors to L'Oreal, Paris, France

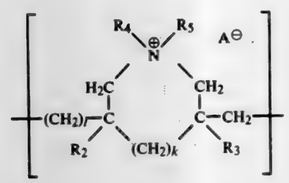
Filed Sep. 20, 1978, Ser. No. 944,140

Claims priority, application Luxembourg, Sep. 23, 1977, 78170

Int. Cl.³ A61K *7/06, 31/74*

U.S. Cl. 424—47 **9 Claims**

1. A cosmetic composition to improve the suppleness and sheen of the hair and to facilitate the hydration and softness of the skin comprising in a cosmetic vehicle suitable for application to the hair or skin from 0.01 to 15% by weight of a polymer comprising recurring units of the formula



(Ib)

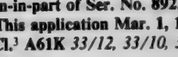
wherein

k is O or 1, and l is 1 if k=O, or is O if K=1, R_2 and R_3 each independently represent hydrogen or methyl,

R_4 represents a radical selected from the group consisting of hydrogen, $-(CH_2)_m-CH_3$ wherein m is 0-21, $-(CH_2)_q-OC_2H_5$ wherein q is 1 or 2, and $-CH_2COOR_6$ wherein R_6 represents alkyl having 1-3 carbon atoms and R_5 represents a radical selected from the group consisting of

(1) $-(CH_2)_q-OC_2H_5$ wherein q is 1 or 2,

(2) $-CH_2-COOR_6$ wherein R_6 has the meaning given above,

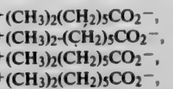


(3)

(4) $-(CH_2)_n-CN$ wherein n is 1 or 2,

(5) $-CH_2-CH=CH_2$,

(6) $-CH_2-CH_2-O-CH=CH_2$, and



(7)

$A'^{\oplus}$ wherein r', r'', and r''' each independently represent alkyl having 1-4 carbon atoms, and A and A' each independently represent Cl, Br, I or $-OSO_3CH_3$, said polymer having a molecular weight ranging from 2,000 to 500,000.

4,287,173
VACCINE FOR DENTAL CARIES

Dennis J. Carlo, Middlesex; Jesse J. Jackson, Marlboro, and Thomas H. Stoudt, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 24, 1979, Ser. No. 77,971

Int. Cl.³ A61K *7/16, 39/00, 31/70*

U.S. Cl. 424—49 **8 Claims**

1. A method of reducing the incidence of dental caries in a susceptible mammalian species comprising administering an effective amount of a capsular polysaccharide of *S. pneumoniae* type 4, 12 or 19.

6. An anti-caries composition consisting essentially of at least two capsular polysaccharides of *S. pneumoniae* types 4, 12 or 19 in an anti-caries effective amount in a physiologically acceptable medium, the total amount of capsular polysaccharide in the anti-caries composition not exceeding about 100μg per type and a pharmaceutically acceptable topical carrier.

4,287,174
ANTI-ULCER COMPOSITION

Robert G. Laughlin, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 892,242, Mar. 31, 1978, abandoned. This application Mar. 1, 1979, Ser. No. 16,655

Int. Cl.³ A61K *33/12, 33/10, 33/08, 31/205*

U.S. Cl. 424—78 **16 Claims**

1. A composition of matter for oral administration comprising:

(a) a safe and effective amount of a conventional antacid; and

(b) a zwitterionic compound selected from the group consisting of

$n\text{-}C_{12}H_{25}N^+(CH_3)_2(CH_2)_5CO_2^-$,

$n\text{-}C_{14}H_{29}N^+(CH_3)_2\text{-}(CH_2)_5CO_2^-$,

$n\text{-}C_{16}H_{33}N^+(CH_3)_2(CH_2)_5CO_2^-$,

$n\text{-}C_{18}H_{37}N^+(CH_3)_2(CH_2)_5CO_2^-$,

$n\text{-}C_{20}H_{41}N^+(CH_3)_2(CH_2)_5CO_2^-$, and

$n\text{-}C_{22}H_{45}N^+(CH_3)_2(CH_2)_5CO_2^-$, and esters and salts thereof in an amounts which is safe and effective for preventing or relieving ulceration of the gastric mucosa.

4,287,175

CONTACT LENS WETTING AGENTS

Irving M. Katz, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 918,121, Jun. 22, 1978, abandoned, which is a continuation of Ser. No. 600,167, Jul. 29, 1975, abandoned. This application Jun. 1, 1979, Ser. No. 44,620

Int. Cl.³ A61K *31/70, 31/74, 31/78, 47/00*

U.S. Cl. 424—78 **5 Claims**

1. A method for improving the comfort and wearing time of contact lenses comprising inserting into the eye of a contact lens wearer an insert consisting essentially of a solid polymer which is soluble in lacrimal fluids having a surface area of from about 5 to about 800 sq. mm., a length of from about 1-30 mm. and a width of height of from about 0.25 mm. to about 30 mm., said polymer being selected from the group consisting of cellulose derivatives, natural gums, starch derivatives, dextrose, polyalkylene glycols, polyvinylmethyl ethers, polyethylene oxide, acrylates, xanthan gums and mixtures thereof.

4,287,176

ANTHELMINTIC LEVAMISOLE AND TETRAMISOLE GEL COMPOSITIONS

Richard J. Demchak, Langhorne, Pa., and Vito Corso, Jr., New Providence, N.J., assignors to American Cyanamid Co., Stamford, Conn.

Filed Oct. 9, 1980, Ser. No. 195,532

Int. Cl.³ A61K *31/74, 31/425*

U.S. Cl. 424—78 **11 Claims**

1. An aqueous composition comprising: 3% to 15% by weight of a pharmaceutically acceptable salt of the anthelmintic compound of the formula:

(dl)

wherein X is hydrogen or —NH—R; R is C_2–C_5 alkanoyl or benzoyl; or the optical isomers thereof; 30% to 50% by weight of water; 1.5% by weight of citric acid; 1.0% by weight of trisodium citrate acid; 14% to 25% by weight of propylene glycol; and 20% to 30% by weight of the gellant α-hydro-Ω-hydroxy-poly(oxyethylene)poly(oxypropylene)poly(oxyethylene) block copolymer, average molecular weight 12,500, specific gravity 1.05; mp 56° C., viscosity 3100 at 77° C.; wherein said compositions are gels in the temperature range of from −20° C. to +60° C.; with the provisos that the water/gellant ratio is from 1.4/1.0 to 2.0/1.0; and that the components of said composition add up to a total of 100% by weight.

4,287,177

WOUND COVERING MATERIAL

Toshihide Nakashima, Kurashiki; Osamu Nakaji, Sakura; Koichi Takakura, Okayama, and Takayoshi Suzuki, Suita, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki and Yamanouchi Pharmaceutical Co., Ltd., Tokyo, both of, Japan

Filed Aug. 15, 1979, Ser. No. 66,699

Claims priority, application Japan, Aug. 18, 1978, 53-101267

Int. Cl.³ A61K *31/78*

U.S. Cl. 424—81 **18 Claims**

1. A protective covering material for forming a film or coat on skin and/or wound surfaces consisting essentially of a hydrophillic, water-insoluble and substantially uncrosslinked polymer in powder form (component A), polyethylene glycol (component B) and an aqueous liquid (component C),

wherein said polymer of component A is derived from a monomer represented by the formula:



wherein R^1 is H or methyl, R^2 is alkylene containing 2–5 carbon atoms, R^3 is H, alkyl containing 1–3 carbon atoms or C_2- or C_3-alkyl substituted by amino or alkoxy of 1–3 carbon atoms and n is 1–30, at least 67% by weight of said polymer being composed of said monomer,

wherein said component A amounts to 20–80% by weight of components A+B+C,

said components B+C together amount to 80–20% by weight of components A+B+C, and

said components C amounts to 20–70% by weight of components B+C.

4,287,178

FELINE RHINOTRACHEITIS VACCINE AND PRODUCTION AND USE THEREOF

James L. Bittle, Doylestown, Pa., assignor to Pitman-Moore, Inc., Washington Crossing, N.J.

Continuation of Ser. No. 454,345, Mar. 25, 1974, abandoned. This application Nov. 2, 1979, Ser. No. 90,849

Int. Cl.³ A61K *39/12, 39/265*

U.S. Cl. 424—89 **20 Claims**

1. A process of attenuating virulent feline viral rhinotracheitis virus which comprises propagating said virus for at least 7 two- to seven-day serial passages through feline tissue cultures in a nutrient fluid at an incubation temperature of about 30°±2° C.

4,287,179

IMMERSION VACCINE FOR ENTERIC REDMOUTH

Donald F. Amend, Lynnwood, Wash., assignor to Tavolek Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 938,604, Aug. 31, 1978, abandoned. This application Jan. 10, 1980, Ser. No. 111,142

Int. Cl.³ A61K *39/02*

U.S. Cl. 424—92 **4 Claims**

1. A method for the immunization of fish weighing at least about one gram against Enteric Redmouth which consists essentially of the non-pressurized immersion without hyperosmotic treatment of the fish in a vaccine comprising an immunologically effective amount of the killed organism *Y. ruckeri* for a period of time sufficient to confer immunity to the fish.

4,287,180

METHOD FOR TREATING BLOOD CLOTTING FACTOR INHIBITORS

William R. Thomas, Laguna Niguel, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 28, 1980, Ser. No. 116,186

Int. Cl.³ A61K *35/14*

U.S. Cl. 424—101 **5 Claims**

1. A method for treating a patient having an inhibitor of a blood clotting factor, which comprises administering to the patient a therapeutically effective dose of an aqueous composition including, in units/ml, factor VIII correctional activity, about from 2–35; prothrombin, about from 1–10; thrombin, less than about 0.003; factor VII, about from 37–190; factor VIIa, about from 8–80; factor IX, about from 15–112; factor IX precursor, 0 to about 30; factor X, about from 1–30; and factor Xa, about from 1–10.

4,287,181

DERIVATIVES OF 6β-HYDROXYALKYLPENICILLANIC ACIDS AS β-LACTAMASE INHIBITORS

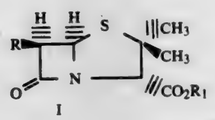
Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,864

Int. Cl.³ C07D *499/00*

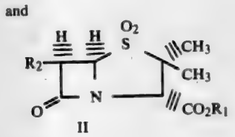
U.S. Cl. 424—114 **37 Claims**

1. A compound selected from the formulae



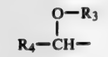
I

and



II

or pharmaceutically acceptable base salt thereof, wherein R is 1-hydroxy-3-phenylpropyl; R_1 is selected from the group consisting of benzyl, hydrogen and ester-forming residues readily hydrolyzable in vivo; R_2 is



wherein R_3 is selected from the group consisting of sulfo, hydrogen, alkoxycarbonyl having from two to four carbon atoms, alkanoyl having from two to eighteen carbon atoms, benzoyl, substituted benzoyl wherein said substituent is selected from the group consisting of amino, methyl, methoxy, fluoro, chloro, bromo and trifluoromethyl, alkylsulfonyl having from one to four carbon atoms, phenylsulfonyl and substituted phenylsulfonyl wherein said substituent is selected from the group consisting of methyl, methoxy, fluoro, chloro, bromo and trifluoromethyl; and R_4 is selected from the group consisting of hydrogen, alkyl having one to four carbon atoms, phenyl, pyridyl, benzyl and β-phenethyl.

4,287,182

ANTIBIOTICS PRODUCED BY A NEW MICROBE, *CATENULOPLANES JAPONICUS*

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; Liang H. Huang, East Lyme; John R. Oscarson, Pawcatuck, all of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,407

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—118 **9 Claims**

1. The antibiotic CP-54,715 which is soluble in methanol and chloroform; insoluble in heptane; has an elemental analysis of C, 49.62%; H, 6.16%; N, 1.04%; and Cl, 5.16%; a decomposition point of 166°–176° C.; an $[\alpha]_D^{20}$ rotation of −8° in methanol; a UV max at 289 nm with an extinction coefficient of 29 at 1% concentration in methanol and an IR spectrum as a suspension in a KBr pellet as shown in FIG. 1.

4,287,183

METHOD OF KILLING RODENTS

John D. Hagerman, and Brenda M. Hagerman, both of 1641 Lancing Dr., Apt. # 269, Salem, Va. 24153

Filed Nov. 5, 1979, Ser. No. 91,653

Int. Cl.³ A61K *33/08*

U.S. Cl. 424—157 **2 Claims**

1. A process for exterminating rodents comprising placing in locations frequented by rodents a rodenticide composition comprised of a substantially dry homogeneous mixture of a first ingredient comprising a carbohydrate, protein, or fat, said first ingredient being a water insoluble comestible solid of natural origin and in the form of a powder capable of passing through a 100 mesh sieve, and a second ingredient comprising a water-insoluble inorganic cementitious powder selected from the group consisting of Portland cement, plaster of paris and calcium oxide, said second ingredient being capable of passing through a 200 mesh screen and capable of reacting with water to undergo hydration with attendant formation of a coherent aggregate structure, said first and second ingredients comprising between about 20% and 60% by volume of said composition.

4,287,184

PROCESS FOR HEALING WOUNDS

David M. Young, Sherborn, Mass., assignor to The Massachusetts General Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 854,194, Nov. 23, 1977, Pat. No. 4,185,095. This application Sep. 19, 1979, Ser. No. 76,998

Int. Cl.³ A61K *35/37, 37/00*

U.S. Cl. 424—177 **4 Claims**

1. The process for accelerating healing of an animal wound which comprises administering to the wound a nerve growth factor having a molecular weight of about 116,000, said composition being derived from mouse submandibular gland or from mouse saliva which composition is free from the components of mouse saliva or mouse gland which degrade the nerve growth factor in an amount effective to accelerate wound healing, said composition being obtained by dissolving either mouse submandibular or mouse saliva in an aqueous salt solution, and passing said salt solution a plurality of times through a chromatographic column comprising a positively charged ion exchange resin and recovering a fraction of said salt solution rich in a composition having nerve growth factor activity and having a molecular weight of about 116,000.

4,287,185

METHOD FOR THE DETECTION OF VIRUSES

Kumao Toyoshima, Suita; Akira Hakura, Toyonaka; Toshihiro Nakanishi, Ibaraki, and Hajime Yoshizumi, Takatsuki, all of Japan, assignors to Suntory Ltd., Osaka, Japan

Filed Oct. 9, 1979, Ser. No. 82,657

Claims priority, application Japan, Oct. 9, 1978, 53-124412

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **9 Claims**

1. A method for the quantitative detection of viruses comprising the steps of:

(a) contacting a virus infected cell culture with a polypeptide having the following formula:

wherein the symbols "Ala", "Arg", "Asn", "Cys", "Gln", "Gly", "Leu", "Lys", "Phe", "Pro", "Ser", "Thr", "Tyr" and "Val" indicate, respectively, the residues of the levo rotatory forms of alanine, arginine, asparagine, l cystine, glutamine, glycine, leucine, lysine, phenylalanine, proline, serine, threonine, tyrosine and valine, and wherein R_1–R_5 indicate (1) the residues of the L-amino acids lysine, asparagine, leucine, threonine and aspartic acid, respectively, or (2) wherein R_1 is arginine, R_2 and R_5 are glycine, R_3 is isoleucine and R_4 is serine, respectively, the symbols " " represent —S—S— bonds and the arabic numerals included in the structural formula near certain amino acid residues constitute the sequence number of said amino acids in turn from the N-terminal and physiologically acceptable salts thereof, said polypeptide and salts thereof being present in an amount sufficient to selectively kill virus infected cells;

(b) incubating said virus infected cell culture for a period for time sufficient to selectively kill cells infected with said virus; and

(c) measuring the number of cells in said cell culture which are killed by said virus.

4,287,186

ANTIBIOTICS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS PLANT PROTECTION AGENTS

Hans Zähner, Tuebingen; Hartwig Holst, Pohlheim; Gerhard Zoebelein, Leverkusen, and Adelinde Keckeisen, Tuebingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,223

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1979, 2900591

Int. Cl.³ A61K *31/71*

U.S. Cl. 424—181 **4 Claims**

1. A method of combating arthropods, comprising applying to the arthropods an arthropodicidally effective amount of an antibiotic which (a) is colorless, very readily soluble in water and in pyridine but insoluble in other customary organic solvents, gives a positive reaction with ninhydrin, sodium metaperiodate/benzidine and potassium permanganate and gives a yellow coloration with iron (III) chloride, (b) has the UV and IR spectra substantially as shown in FIGS. 1 and 2, (c) on chemical degradation yields uracil, an amino-hexuronic acid and an amino-acid containing a pyridine ring, (d) on paper electrophoresis proves to be an amphoteric substance and has an isoelectric point at about pH 6 and (e) consists of the elements carbon, hydrogen, oxygen and nitrogen, or one or more active components of the antibiotic mixture, the active agent being applied alone or in admixture with a diluent or carrier.

4,287,187

METHOD FOR TREATING TUMORS WITH CIS-DIAMMINEPLATINUM(II) ORTHOPHOSPHATE COMPLEXES

James D. Hoeschele, Oakridge, Tenn., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Division of Ser. No. 17,994, Mar. 7, 1979. This application Dec. 26, 1979, Ser. No. 106,436

Int. Cl.³ A61K *31/685, 31/28*

U.S. Cl. 424—199 **4 Claims**

1. A method for treating malignant S180 ascites or lymphocytic leukemia P388 tumors in a mammal afflicted therewith which comprises administering to said mammal an effective amount of a cis-diammineplatinum(II) orthophosphate complex useful in the treatment of tumors, said complex comprising cis-$\{Pt(NH_3)_2\}$ and an orthophosphate moiety of the formula: $\{(H_{2-n}PO_4)\}^{-(1+n)}$ wherein n is 0 or 1 and the atomic ratio of phosphorous to platinum is about 0.5–1 or about 1—1.

4,287,188

PURINE DERIVATIVES

Howard J. Schaeffer, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 771,778, Feb. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,263, Aug. 27, 1975, abandoned, and Ser. No. 662,900, Mar. 1, 1976, Pat. No. 4,199,574, and Ser. No. 718,105, Aug. 27, 1976, abandoned. This application Jun. 29, 1978, Ser. No. 920,625

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.³ A61K *31/52*; C07D *473/18*

U.S. Cl. 424—200 **53 Claims**

1. 9-(2-hydroxyethoxymethyl) guanine monophosphate or a pharmaceutically acceptable salt thereof.

7. A pharmaceutical composition comprising an effective non-toxic antiviral amount of 9-(2-hydroxyethoxymethyl) guanine monophosphate or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

4,287,189

O,S-DIALKYL O-OXYSULFONYLPHENYL PHOSPHOROTHIOLATES AND PHOSPHORODITHIOATES

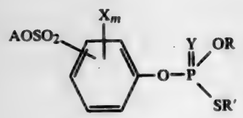
William S. Hurt, Collegeville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 680,330, Apr. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 587,510, Jun. 16, 1975, abandoned. This application Mar. 24, 1980, Ser. No. 133,219

Int. Cl.³ C07D *143/68*; A61K *31/66*

U.S. Cl. 424—210 **17 Claims**

1. A compound of the formula:



wherein

R is a (C_1–C_4) alkyl group;

R′ is a (C_3–C_6) alkyl group;

Y is an oxygen atom or a sulfur atom;

X is a halogen atom, a (C_1–C_5) alkyl group, or a (C_1–C_5) alkoxy group;

m is an integer from 0 to 3; and

A is

(a) a (C_1–C_5) alkyl group substituted with up to three halogen atoms;

(b) a (C_5–C_6) cycloalkyl group;

(c) a (C_7–C_{10}) aralkyl group, the aryl portion of which is optionally substituted with up to three halogen atoms, nitro groups, cyano groups, (C_1–C_5) alkyl groups, (C_1–C_5) alkoxy groups or (C_1–C_5) alkylthio groups; or

(d) an aryl group of the formula:



wherein

X′ is a halogen atom, a nitro group, a cyano group, a (C_1–C_5) alkyl group, a (C_1–C_5) alkoxy group or a (C_1–C_5) alkylthio group, and

m′ is an integer from 0 to 3.

14. A method of controlling pests which comprises applying directly to the pests or to the loci to be freed of or protected from attack by such pests, a pesticidally effective amount of the compound of claim 1.

4,287,190

COMPLEXES OF BIVALENT COPPER

Barry Boettcher, 12 Mahogany Dr., New Lambton, N.S.W.; William R. Walker, 36 Stanley St., Merewether, N.S.W., and Michael W. Whitehouse, Dept. of Experimental Pathology, Australian National University, Canberra, A.C.T., all of Australia

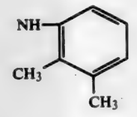
Continuation-in-part of Ser. No. 963,755, Nov. 27, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,344

Claims priority, application Australia, Aug. 15, 1979, PE0041

Int. Cl.³ A61K *31/60*

U.S. Cl. 424—230 **19 Claims**

1. A topical anti-inflammatory therapeutic composition comprising an anti-inflammatory effective amount of a neutral copper complex of the formula $Cu[C_6H_4(X)COO]_2Y$ wherein Y represents dimethylsulfoxide, dimethylformamide or an alkanol, and wherein X can be located in any position and is OH, SH, SeH, NH_2 or



and a pharmaceutically acceptable non-aqueous carrier.

4,287,191

NOVEL SALICYLANILIDES AND MICROBIOCIDAL COMPOSITIONS AND USES THEREOF

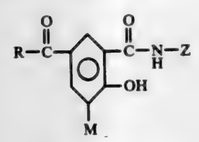
Robert A. Coburn, Williamsville; Richard T. Evans, East Amherst; Robert J. Genco, Amherst, all of N.Y., and Armando Batista, Parque Lefevre, Panama, assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,098

Int. Cl.³ A01N *37/36*; C07C *101/74, 119/02*

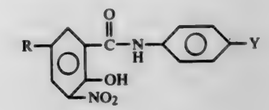
U.S. Cl. 424—230 **37 Claims**

1. A compound having the formula:



where Z is substituted phenyl ring of from 6 to 30 carbon atoms including substituents, R is a substituted or unsubstituted alkyl or phenyl group of from 2 to 30 carbon atoms including substituents and M is a radical selected from the group consisting of —C≡N, —F, —NO_2, —H, lower alkyl and lower haloalkyl, said composition having a partition coefficient greater than 4 and the substituted moieties in the phenyl ring of the Z group having a combined overall electron withdrawing effect on the phenyl ring of the Z group.

27. A compound of the formula:



where R is $CH_3(CH_2)_8C$— and Y is —NO_2.

4,287,192

ANTIGLAUCOMA AGENTS

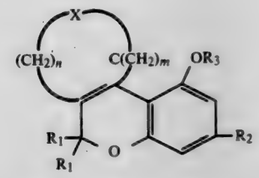
Anthony T. Dren, Waukegan, and Barbara A. Bopp, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 948,058, Oct. 2, 1978, Pat. No. 4,217,351, which is a division of Ser. No. 711,749, Aug. 4, 1976, Pat. No. 4,136,183. This application Jan. 17, 1980, Ser. No. 112,988

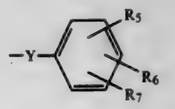
Int. Cl.³ A61K *27/00, 31/54, 31/495, 31/445*

U.S. Cl. 424—248.51 **1 Claim**

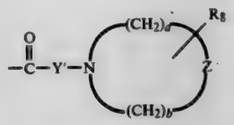
1. A method of reducing intra-ocular pressure in mammalian patients comprising administering to a glaucoma patient a therapeutic effective amount of a compound of the formula



wherein, in the C ring, X is S, n is an integer of 0 to 3 and m is an integer of 0 to 3; each R_1 is loweralkyl and when taken together the substituents R_1R_1 form oxygen; R_2 is a C_1–C_{20} straight or branched chain alkyl, cycloalkyl, or



wherein Y is a straight or branched chain alkylene group having from 1 to 10 carbon atoms, and each R_5, R_6 and R_7 are the same or different members selected from the group consisting of H, halo and loweralkyl; R_3 is



wherein Y′ is a straight or branched chain alkylene group having 1 to 8 carbon atoms, a is an integer from 1 to 4, b is an integer from 1 to 4, Z is CH_2, O, S or NR_9 where R_9 is H or loweralkyl, with the provision that when Z is O, S or NR_9, the

sum of a and b is 3 or 4, and R_8 is H or loweralkyl; and the pharmaceutically acceptable salts thereof.

4,287,193

SYN ISOMERS OF 7-[2-(2-AMINO-4-THIAZOLYL)-2-(CARBOXYMETHYLOXYIMINO)-ACETAMIDO]-CEPH-3-EME-4-CARBOXYLIC ACID COMPOUNDS

Rene Heymes, Romainville, and Andre Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

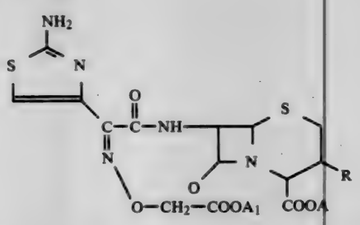
Filed Apr. 3, 1979, Ser. No. 26,767

Claims priority, application France, Apr. 7, 1978, 78 10387

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/56*

U.S. Cl. 424—246 **10 Claims**

1. A compound selected from the group consisting of syn isomers of 7-[2-(2-amino-4-thiazolyl)-2-(carboxymethyloxyimino)-acetamido]-ceph-3-eme-4-carboxylic acid compounds of the formula



wherein R is $-CH_2-S-R_1$, R_1 is a heterocyclic selected from the group consisting of 1-methyl-tetrazolyl, 2-methyl-1,3,4-thiadiazolyl, 3-methyl-1,2,4-thiadiazolyl, 3-methoxy-1,2,4-thiadialzolyl, 1,3,4-thiadiazol-5-yl, 2-amino-1,3,4-thiadiazolyl, 3-hydroxy-carbonylmethyl-1,2,4-thiadiazolyl, 5-methoxy-1,2,4-thiadiazolyl, 4-methyl-5-hydroxycarbonylmethyl-1,3-thiazolyl and 1-dimethylaminoethyl-tetrazol-5-yl A is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, $-NH_4$, an easily cleavable ester selected from the group consisting of methoxymethyl, ethoxymethyl, isopropoxymethyl, α-methoxyethyl, α-ethoxyethyl, methylthiomethyl, ethylthiomethyl, isopropylthiomethyl, pivaloyloxymethyl, acetoxymethyl, propionyloxymethyl, isobutyryloxymethyl, isovaleryloxymethyl, propionyloxyethyl, isovaleryloxyethyl, 1-acetoxyethyl, 1-acetoxypropyl, 1-acetoxybutyl, 1-acetoxyhexyl and 1-acetoxyheptyl and a non-toxic, pharmaceutically acceptable organic amine, A_1 is selected from the group consisting of alkyl of 1 to 3 carbon atoms, hydrogen, alkali metal, alkaline earth metal, $-NH_4$, an easily cleavable ester selected from the group consisting of methoxymethyl, ethoxymethyl, isopropoxymethyl, α-methoxyethyl, α-ethoxyethyl, methylthiomethyl, ethylthiomethyl, isopropylthiomethyl, pivaloyloxymethyl, isobutyryloxymethyl, acetoxymethyl, propionyloxymethyl, isobutyryloxyethyl, isovaleryloxyethyl, propionyloxyethyl, isovaleryloxyethyl, 1-acetoxyethyl, 1-acetoxypropyl, 1-acetoxybutyl, 1-acetoxyhexyl and 1-acetoxyheptyl and a non-toxic, pharmaceutically acceptable organic amine and a non-toxic, pharmaceutically acceptable addition salt thereof.

4,287,194

COMPOSITIONS WITH POTENTIATED HYPOTENSIVE EFFECTS

Edit Kosa; Janos Borvendeg; Zsuzsanna Huszti; Judit Kosary; Geza Szilagyi; Laszlo Tardos; Endre Kasztreiner; Laszlo Nagy; Erzsebet Szuics, and Gabriella Kiss, all of Budapest, Hungary, assignors to Richter Gedeon Vegyészeti Gyár Rt., Budapest, Hungary

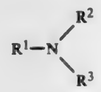
Filed Jul. 6, 1979, Ser. No. 55,263

Claims priority, application Hungary, Jul. 14, 1978, GO 1412

Int. Cl.[3] **A61K** *31/535, 31/495, 31/40, 31/235*

U.S. Cl. 424—248.51 **13 Claims**

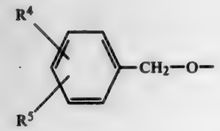
1. A pharmaceutical composition with increased hypotensive effect, comprising a compound of formula (I) or a pharmaceutically acceptable acid addition salt thereof,



(I)

wherein

R^1 is a group of formula (II),



(II)

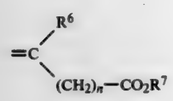
wherein

R^4 and R^5 each are hydrogen, hydroxy, nitro or C_{1-4} alkoxycarbonyl, and at the same time

R^2 and R^3 each are hydrogen, or

R^1 is 3-chloro-6-pyridazinylamino, 3-methyl-6-pyridazinylamino or 3-carbamoyl-6-pyridazinylamino group, and at the same time

R^2 and R^3 form together a group of formula (III),



(III)

wherein

R^6 is C_{1-4} alkyl group,

R^7 is hydrogen or a C_{1-4} alkyl group, and

n is an integer of 1 to 3, or

R^2 and R^3 form together a group of formula (IV),



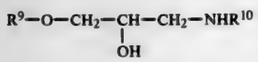
(IV)

wherein

Q is a C_{5-7} cycloaliphatic group, and

R^8 is hydrogen, C_{1-4} alkoxycarbonyl or C_{2-4} alkyl;

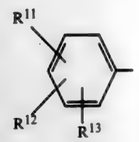
and a β receptor blocking compound of formula (V) or a salt thereof,



(V)

wherein

R^9 stands for naphthyl, 4-indolyl or 4-morpholino-1,2,5-thiadiazol-3-yl group or a group of formula (VI),



(VI)

wherein

R^{11}, R^{12} and R^{13} are the same or different and represent hydrogen, halogen, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, 2-methoxyethyl or acetic amide; but that when two of R^{11}, R^{12} and R^{13} are hydrogen, the third is other than hydrogen, or when two of R^{11}, R^{12} and R^{13} are acetic amide, the third is other than acetic amide, and R^{10} stands for C_{1-4} alkyl, in admixture with at least one conventional pharmaceutical additives, wherein the compound of formula I is a hypotensive potentiating agent present in an effective amount to potentiate the β receptor blocking compound of V.

4,287,195

HETEROCYCLIC DERIVATIVES OF [4-(PIPERAZIN-1-YL-PHENYLOXYMETHYL)-1,3-DIOXOLAN-2-YLMETHYL]-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

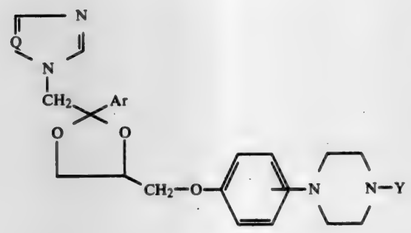
Jan Heeres, Vosselaar, and Robert Hendrickx, Beerse, both of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 924,765, Jul. 14, 1978, abandoned. This application Apr. 4, 1979, Ser. No. 27,178

Int. Cl.[3] **C07D** *419/14;* **A61K** *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A chemical compound selected from the group consisting of an azole derivative having the formula:



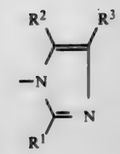
and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is a member selected from the group consisting of CH and N;

Ar is a member selected from the group consisting of phenyl, thienyl, halothienyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl; and

the radical Y is an optionally substituted mono- or binuclear nitrogen-containing heteroaromatic radical selected from the group consisting of:

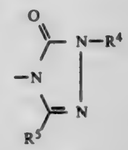
a radical of formula



(a)

wherein R^1 is selected from the group consisting of hydrogen, lower alkylthio, aryl lower alkylthio and arylthio and R^2 and R^3 are each independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl lower alkyl;

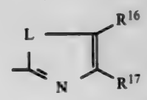
a radical of formula



(b)

wherein each of R^4 and R^5 are independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryllower alkyl;

a radical of formula



(f)

wherein L is a member selected from the group consisting of S and N-R^{18}, said R^{18} being selected from the group consisting of hydrogen, lower alkyl and aryllower alkyl, and R^{16} and R^{17} are each independently selected from the group consisting of hydrogen, lower alkyl, nitro and aryllower alkyl, or R^{16} and R^{17}, when taken together, represent a radical of the formula $-CH=CH-CH=CH-$.

4,287,196

METHOD OF INHIBITING PROLACTIN SECRETION

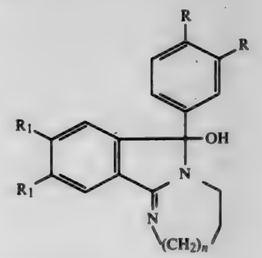
Ronald G. Babington, Denville, N.J.; F. Eugene Harrington, Albuquerque, N. Mex., and William J. Houlihan, Mt. Lakes, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Feb. 26, 1980, Ser. No. 124,810

Int. Cl.[3] **A61K** *31/33, 31/505*

U.S. Cl. 424—251 **7 Claims**

1. A method for inhibiting prolactin secretion which comprises administering to a mammal in need of said treatment an amount sufficient to inhibit prolactin secretion of a compound of the formula



(I)

where n represents 1 or 2,

each R, independently, represents hydrogen or halo of atomic weight about 19–36, and
each R_1, independently, represents hydrogen or said halo, provided that when one R_1 is halo, the other is hydrogen, or
a pharmaceutically acceptable acid addition salt thereof.

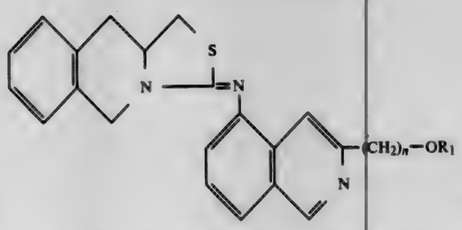
4,287,197

ANTIVIRAL ISOQUINOLINE DERIVATIVES

Daniel Farge, Thiais; Alain Jossin, St-Cloud; Gerard Ponsinet, Sucy-en-Brie, and Daniel Reisdorf, Thiais, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 6, 1980, Ser. No. 147,248
Claims priority, application France, May 9, 1979, 79 11707; Dec. 4, 1979, 79 29752
Int. Cl.³ A61K *31/47*; C07D *513/04*
U.S. Cl. 424—258 **7 Claims**

1. An isoquinoline derivative of the formula:



wherein R_1 represents alkyl of 1 through 8 carbon atoms and n represents 1 or 2, or a non-toxic pharmaceutically acceptable acid addition salt thereof.

7. A pharmaceutical composition useful for the treatment of viral infections which comprises as active ingredient an effective amount of an isoquinoline derivative as claimed in claim 1 in the (S) form, or a non-toxic pharmaceutically acceptable acid addition salt thereof, in association with a significant amount of a pharmaceutically acceptable carrier.

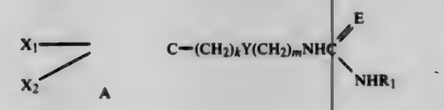
4,287,198

PHARMACOLOGICALLY ACTIVE GUANIDINE COMPOUNDS

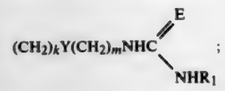
Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 10,105, Feb. 7, 1979, Pat. No. 4,221,802, which is a division of Ser. No. 847,285, Oct. 31, 1977, Pat. No. 4,154,844, which is a division of Ser. No. 765,040, Feb. 2, 1977, Pat. No. 4,070,475, which is a division of Ser. No. 637,499, Dec. 4, 1975, Pat. No. 4,024,171, which is a division of Ser. No. 450,957, Mar. 14, 1974, Pat. No. 3,950,333, which is a continuation-in-part of Ser. No. 290,584, Sep. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Mar. 3, 1980, Ser. No. 126,809
Int. Cl.³ A61K *31/44*
U.S. Cl. 424—263 **9 Claims**

1. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a 3-(5,6,7,8-tetrahydroimidazo[1,5-a]pyridine) ring; X_1 is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or



X_2 is hydrogen or when X_1 is lower alkyl, lower alkyl or halogen; k is 0 to 2 and m is 2 or 3, provided that the sum of k and m is 3 or 4; Y is oxygen, sulphur or NH; E is NR_2; R_1 is hydrogen, lower alkyl or di-lower alkylamino-lower alkyl; and R_2 is hydrogen, nitro or cyano, or a pharmaceutically acceptable addition salt thereof.

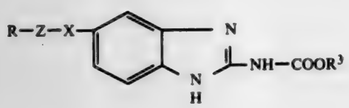
4,287,199

BENZIMIDAZOLYLCARBAMIC ACID ESTERS SUBSTITUTED ON THE BENZENOID NUCLEUS BY AN OXY OR THIO SUBSTITUENT

Hartmund Wollweber, Wuppertal; Heinrich Kölling, Haan; Herbert Thomas, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,883
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845537
Int. Cl.³ A61K *31/445, 31/415*; C07D *235/32, 401/12*
U.S. Cl. 424—267 **10 Claims**

1. A 2-benzimidazolylcarbamic ester of the formula



(I)

or a salt thereof in which
X denotes a sulphur atom, an oxygen atom, an SO group or an SO_2 group,
Z denotes an alkylene group with 1 to 6 carbon atoms in the main chain, which is unsubstituted or C_1–C_4-alkyl substituted,
R denotes an NH_2, NHR^1 or NR^1R^2 group, in which the substituents R^1 and R^2 are identical or different and denote a C_1–C_6-alkyl group which is unsubstituted or substituted by halogen, cyano, C_1–C_4-alkoxy or nitro, a phenyl group which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, trifluoromethyl, nitro or cyano or a phenylalkyl group which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, trifluoromethyl, nitro or cyano in the aryl portion and which is C_1–C_4-alkyl in the alkyl portion,
or in which
R denotes a cycloalkyleneimino, cycloalkenylamino or cycloalkadienyleneimino group which has a total of 4 to 7 ring members and is unsubstituted or substituted by one or two C_1–C_4-alkyl groups, and
R^3 denotes a C_1 to C_4 alkyl group which is unsubstituted or substituted by C_1–C_4-alkoxy, halogen, trifluoromethyl, cyano or nitro or a C_2 to C_6 alkenyl group.

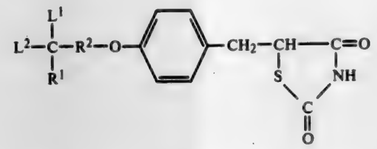
4,287,200

THIAZOLIDINE DERIVATIVES

Yutaka Kawamatsu, Kyoto, and Takeshi Fujita, Takarazuka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 27, 1979, Ser. No. 62,512
Claims priority, application Japan, Aug. 4, 1978, 53-95673
Int. Cl.³ C07D *277/04*
U.S. Cl. 424—270 **8 Claims**

1. A thiazolidine derivative of the general formula:



wherein R^1 is alkyl of 1 to 10 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, phenylalkyl of 7 to 11 carbon atoms, or phenyl; R^2 means a bond or a lower alkylene group; L^1 and L^2 are the same or different and each is lower alkyl or L^1 and L^2 are combined to form an alkylene group, provided that when R^1 is other than alkyl, L^1 and L^2 may further be hydrogen.

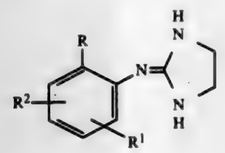
4,287,201

ANOVULATORY METHOD AND CHICKEN FEED COMPOSITIONS

George Olson, Clinton; Richard L. Tolman, Warren, and Roger M. Weppelman, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 3, 1980, Ser. No. 126,743
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R **18 Claims**

11. A method of arresting ovulation in poultry which comprises the administration to the poultry of an effective amount of an anovulatory compound of formula:



or a non-toxic salt thereof, wherein:
R is
(1) C_1-alkyl,
(2) C_2-alkenyl,
(3) chloro,
(4) bromo, or
(5) iodo;
R^1 and R^2 are independently
(1) C_1-alkyl,
(2) C_2-alkenyl,
(3) chloro,
(4) fluoro,
(5) bromo,
(6) iodo,
(7) hydrogen,
(8) nitro,
(9) amino,
(10) C_1-alkylamino,
(11) di(C_1-alkyl)amino,
(12) hydroxy,
(13) carboxy,
(14) C_1-alkoxycarbonyl,
(15) C_1-alkanoyl,
(16) C_1-alkylthio,
(17) trifluoromethylthio,
(18) phenylthio,
(19) C_1-alkylphenylthio,
(20) C_1-alkoxyphenylthio,
(21) chlorophenylthio,
(22) bromophenylthio,
(23) phenoxy,
(24) C_1-alkylphenoxy,
(25) C_1-alkoxyphenoxy,
(26) chlorophenoxy,
(27) bromophenoxy,
(28) amino-C_1-alkyl,
(29) C_1-alkylamino-C_1-alkyl,
(30) di(C_1-alkyl)amino-C_1-alkyl,
(31) hydroxy C_1-alkyl, or
(32) C_1-alkoxy-C_1-alkyl.

4,287,202

TREATMENT AND/OR PROPHYLAXIS OF SPASMS OF CORONARY ARTERIES

David F. Horrobin, 110 Pine Ave., West, Montreal, Canada (H2W 1R7)

Filed May 14, 1979, Ser. No. 38,938
Claims priority, application United Kingdom, May 26, 1978, 23060/78
Int. Cl.³ A61K *31/405, 31/47*
U.S. Cl. 424—274 **2 Claims**

1. A method for the treatment and/or prophylaxis of spasms of coronary arteries causing angina pectoris or myocardial infarction in a subject which method comprises administering to the subject an effective amount therefor of indomethacin.

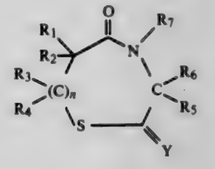
4,287,203

ANTIHYPERTENSIVE 1,4-THIAZEPINE-ONES, 1,4-THIAZONINE-ONES, AND METHOD OF USE THEREOF

John T. Suh, Greenwich, Conn.; Bruce E. Williams, Cottage Grove, Minn.; Jerry W. Skiles, Tuckahoe, and Bernard Loev, Scarsdale, both of N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Apr. 23, 1980, Ser. No. 142,945
Int. Cl.³ A61K *31/55*; C07D *281/04, 281/18*
U.S. Cl. 424—275 **21 Claims**

1. A compound of formula



wherein:
n is an integer from 0 to 2 inclusive,
R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are independently hydrogen, alkyl having from 1 to 6 carbon atoms, alkenyl having from 2 to 6 carbon atoms, alkynyl having from 3 to 6 carbon atoms, cycloalkyl having from 3 to 16 carbon atoms, phenyl, benzyl, tolyl, phenethyl, naphthyl, tetrahydronaphthyl, indanyl, decahydronaphthyl, or substituted alkyl wherein the alkyl group has 1 to 6 carbon atoms and the substituent is selected from the group consisting of hydroxy, amino, carboxy, alkoxy and carbalkoxy, the alkyl group in alkoxy or carbalkoxy having 1 to 6 carbon atoms, and
Y is =O, =S, $=NR_1$, $=NOR_1$ or $=N-NH_2$, R_1 being the same as defined above.

21. A method for reducing blood pressure in mammals having hypertension which comprises administering an anti-hypertensively effective amount of a compound of claim 1.

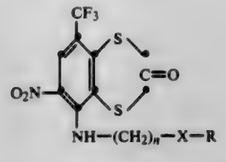
4,287,204

1,3-BENZODITHIOL-2-ONES

Saleem Farooq, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 15, 1980, Ser. No. 140,537
Claims priority, application Switzerland, Apr. 25, 1979, 3888/79; Nov. 21, 1979, 10388/79
Int. Cl.³ A01N *43/28*; C07D *339/06*
U.S. Cl. 424—277 **8 Claims**

1. A compound of the formula I



wherein X is —O— or —S—, R is C_1-C_4alkyl, and n is 2 or 3.

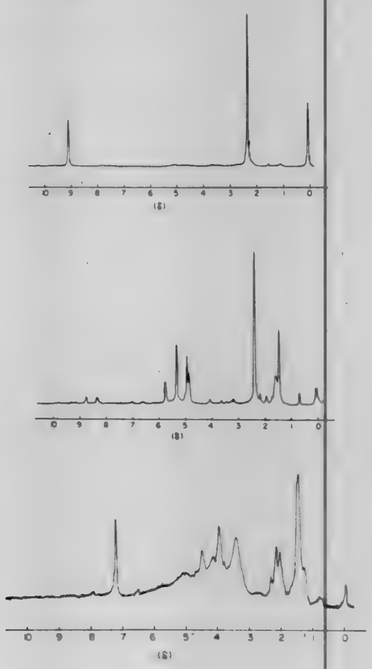
7. A method for controlling insects and acarids which are parasites of plants or animals, which comprises applying to said plants or animals an insecticidally or acaricidally effective amount of a compound according to claim 1.

4,287,205

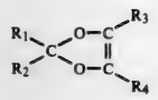
HYPOTENSIVE AND ANALGESIC COMPOUNDS AND COMPOSITIONS AND METHODS FOR USING SAME

Albert Szent-Györgyi, Woods Hole, Mass., and Gabor B. Fodor, Morgantown, W. Va., assignors to National Foundation for Cancer Research, Bethesda, Md.

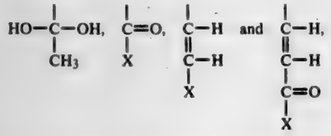
Continuation of Ser. No. 917,327, Jun. 20, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,594
Int. Cl.³ A61K *31/335*; C07D *317/10*
U.S. Cl. 424—278 **17 Claims**



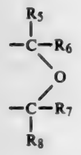
1. A compound of the formula



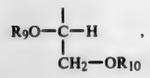
(I) wherein R_1 is selected from the group consisting of



wherein R_2 is selected from the group consisting of hydrogen, alkyl, aryl and R_1, wherein R_3 and R_4 are selected from the group consisting of hydrogen, alkyl, and aryl, or wherein R_3 and R_4 together form



wherein R_5, R_6, R_7, and R_8 are selected from the group consisting of hydrogen, alkyl, and aryl, wherein R_5 and R_6 together may form =O, wherein R_8 may be



and wherein R_9 and R_{10} are selected from the group consisting of hydrogen, alkyl and aryl, and wherein X is selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, hydroxyaryl and arylalkyl.

10. An analgesic composition comprising an effective amount of a compound of claim 1 for treating pain and a pharmaceutical carrier therefor.

11. A hypotensive composition comprising an effective amount of a compound of claim 1 for treating hypertension and a pharmaceutical carrier therefor.

14. A method for treating pain in humans and animals comprising intravenous injection of the composition of claim 12.

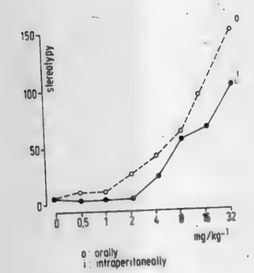
15. A method for treating hypertension in humans and animals comprising intravenous injection of the composition of claim 13.

4,287,206

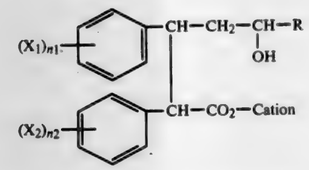
HALOGEN DERIVATIVES OF 8-HYDROXYCARBOXYLIC ACIDS; THE PROCESSES FOR THEIR PREPARATION AND MEDICAMENTS IN WHICH THEY ARE PRESENT

Pierre Simon, Sevres, and Jacques Dreux, Lyons, both of France, assignors to Laboratoires Hoechst, S.A., Puteaux, France

Filed Sep. 4, 1979, Ser. No. 72,411
Claims priority, application France, Sep. 5, 1978, 78 25457
Int. Cl.³ A61K *31/335*; C07D *309/30*; C07C *59/11*
U.S. Cl. 424—279 **6 Claims**

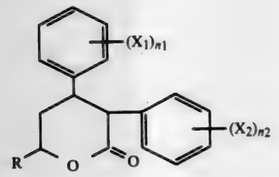


1. A compound of the formula



wherein X_1 and X_2 are chlorine atoms, n_1 and n_2 are integers between 0 and 5, but, if n_1=O, n_2 is different from O, and vice versa, R is hydrogen, alkyl or aryl and Cation represents a pharmaceutically acceptable cation.

2. A compound of the formula



wherein X_1 and X_2 are chlorine atoms, n_1 and n_2 are integers between 0 and 5, but, if n_1=O, n_2 is different from O, and vice versa, and R is hydrogen, aklyl or aryl.

6. A medicinal composition for treating depressions comprising an antidepressively effective amount of a dose between 10 and 500 mg/day of a compound as claimed in any of claims 1, 2, 3, 4, and 5.

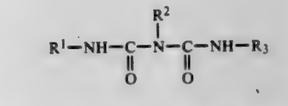
4,287,207

PHARMACEUTICAL COMPOSITION CONTAINING 1,3,5-SUBSTITUTED BIURET COMPOUND

Hajime Fujmura, Kyoto; Yasuzo Hiramatsu, Otsu; Takahiro Yabuuchi, Takarazuka; Masakatu Hisaki, Hikone; Katsuo Takikawa, Naruto; Takaji Honna, Tokushima; Hidekazu Miyake, Tokushima, and Makoto Kajitani, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,411
Claims priority, application Japan, Mar. 31, 1979, 54/38791; Mar. 31, 1979, 54/38793
Int. Cl.³ A61K *31/17, 31/22, 31/145, 31/275*
U.S. Cl. 424—282 **6 Claims**

1. A method of treating a patient requiring analgesia, said method comprising administering to said patient an analgesic amount of a compound of the formula (1):



(1)

wherein R^1 is a hydrogen atom, a lower alkyl group, a substituted lower alkyl group having chlorine atom(s), cyano group(s), dimethylamino group(s), hydroxy group(s), methoxy group(s) or carboxy group(s) as the substituents, a lower alkenyl group, a hydroxy group, a methoxy group, an acetyl group or a phenyl group; R^2 is a hydrogen atom, a lower alkyl group or a phenyl group; R^3 is a phenyl group or a substituted phenyl group having halogen atom(s), trifluoromethyl group(s), methyl group(s), methyoxy group(s), methylenedioxy group(s), hydroxy group(s), dimethylamino group(s), carboxyl group(s) or carboxymethyl group(s) as the substituents(s), or a benzyl group.

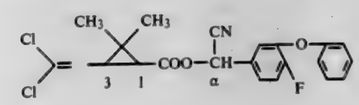
4,287,208

COMBATING ARTHROPODS WITH STEREOISOMERS OF 2,2-DIMETHYL-3-(2,2-DICHLOROVINYL)-CYCLOPROPANE-1-CARBOXYLIC ACID α-CYANO-3-PHENOXY-4-FLUORO-BENZYL ESTER

Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,927
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928986
Int. Cl.³ A01N *53/00*; C07C *121/75*
U.S. Cl. 424—304 **10 Claims**

1. A substantially pure stereoisomer of 2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropane-1-carboxylic acid α-cyano-3-phenoxy-4-fluorobenzyl ester of the formula



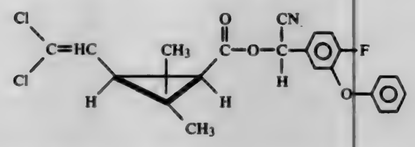
selected from the group consisting of esters in which the asymmetric C atoms 1, 3, and α have the following configuration:

Isomer	Absolute configuration at the center		
	1	3	α
a	R	R	R
b	R	R	S
c	R	S	R

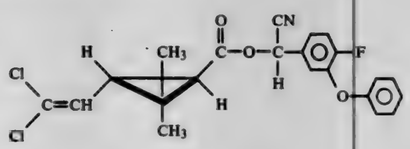
-continued

Isomer	Absolute configuration at the center 1	3	α
d	R	S	S
e	S	S	S
f	S	S	R
g	S	R	S
h	S	R	R,

the diastereomeric mixture of (1R)-cis-2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropane-1-carboxylic acid (R,S)-α-cyano-3-phenoxy-4-fluoro-benzyl esters of the formula



and the diastereomeric mixture of (1R)-trans-2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropane-1-carboxylic acid (R,S)-α-cyano-3-phenoxy-4-fluoro-benzylesters of the formula



9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a substantially pure compound according to claim 1.

4,287,209

DERIVATIVES OF PHENOXYALKYLCARBOXYLIC ACIDS

Bernard Majoie, Dijon, France, assignor to Societe de Recherches Industrielles (S.O.R.I.), France

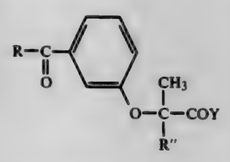
Division of Ser. No. 714,504, Aug. 16, 1976, Pat. No. 4,146,385. This application Jan. 4, 1979, Ser. No. 1,011

Claims priority, application United Kingdom, Aug. 20, 1975, 34689/75

Int. Cl.³ A61K *31/215;* **C07C** *69/66*

U.S. Cl. 424—308 **11 Claims**

1. A compound of the formula:



wherein R is a member selected from the group consisting of 4-chlorophenyl, 3-chlorophenyl, 4-bromophenyl, phenyl, 4-methoxyphenyl, 4-fluorophenyl, and 4-trifluoromethylphenyl; R″ is a member selected from the group consisting of hydrogen and C_1–C_4 alkyl; and Y is a member selected from the group consisting of straight and branched C_1–C_{12} alkoxy.

11. A therapeutic composition for the treatment of cardiovascular illness, comprising a therapeutically effective amount of at least one compound according to claim 1, in association with a physiologically acceptable excipient.

4,287,210

MICROBICIDAL META OXY- AND THIO-SUBSTITUTED PHENYLANILINES

Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany; Walter Kunz, Oberwil, and Adolf Hubele, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

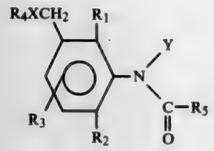
Filed Nov. 21, 1979, Ser. No. 97,026

Claims priority, application Switzerland, Nov. 27, 1978, 12118/78

Int. Cl.³ A01N *37/10;* **C07C** *101/447*

U.S. Cl. 424—309 **8 Claims**

1. A compound of the formula I, including salts and metal complexes thereof



(I)

wherein

R_1 and R_2 independently of one another are each C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen,

R_3 is hydrogen, halogen or methyl, the total number of carbon atoms in R_1, R_2 and R_3 not exceeding 6,

R_4 is C_1–C_6-alkyl which is unsubstituted or substituted by halogen, C_1–C_4-alkoxy or C_1–C_4-alkoxycarbonyl; or R_4 is C_3–C_4 -alkenyl; C_3–C_4-alkynyl which is unsubstituted or substituted by halogen; or it is C_3–C_7-cycloalkyl; or phenyl which is unsubstituted or substituted by halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, nitro or trifluoromethyl; or R_4 is benzyl which is unsubstituted or substituted by halogen, C_1–C_3-alkyl or nitro,

X is oxygen or sulfur,

R_5 is 2-furyl or 2-tetrahydrofuryl each of which is unsubstituted or substituted by halogen; or R_5 is the group CH_2Z, where Z is one of the groups

(a) —OR_6,

(b) —SR_6,

(c) NH—$N(R_7)(R_8)$,

(d) —OSO_2R_9, or

(e) 1,2-pyrazole, 1,2,4-triazole or 1,3-imidazole,

wherein

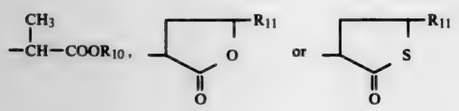
R_6 is C_1–C_6-alkyl, C_3–C_4-alkenyl or C_3–C_4-alkynyl,

R_7 is hydrogen or C_1–C_3-alkyl,

R_8 is C_1–C_3alkyl, or phenyl which is unsubstituted or is substituted by halogen or methyl, and

R_9 is C_1–C_4-alkyl or mono- or di-(C_1–C_3)-alkyl-amino, and

Y is



wherein

R_{10} is C_1–C_4-alkyl which is unsubstituted or is substituted by halogen or C_1–C_2-alkoxy; or R_{10} is C_2–C_4-alkenyl, C_3–C_4-alkynyl or C_3–C_7-cycloalkyl, and

R_{11} is hydrogen or methyl.

6. An insecticidal or fungicidal composition comprising (1) a bactericidally or fungicidally effective amount of compound according to claims 1, 2, 3, 4 or 5, and (2) an inert carrier.

7. A method for controlling or preventing an infection of phytopathogenic bacteria or fungi which comprises applying to plants a bactericidally or fungicidally effective amount of a compound according to claims 1, 2, 3, 4 or 5.

4,287,211

DERIVATIVES OF PHENYLETHYLAMINES, PROCESSES FOR THEIR PREPARATION AND RELATED PHARMACEUTICAL COMPOSITIONS

Giorgio Ferrari, and Vittorio Vecchietti, both of Milan, Italy, assignors to Simes, S.p.A., Milan, Italy

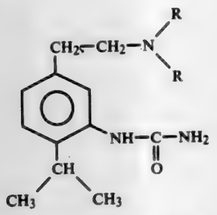
Filed Dec. 28, 1979, Ser. No. 108,157

Claims priority, application Italy, Jan. 23, 1979, 19531 A/79

Int. Cl.³ A61K *31/17;* **C07C** *127/19*

U.S. Cl. 424—322 **15 Claims**

1. A derivative of phenylethylamine, substituted in the aromatic ring and in the amino group of the side chain, having the general formula:



(I)

wherein R is hydrogen or a lower alkyl.

6. A pharmaceutical composition for the therapy of diseases of the digestive apparatus, particularly gastric and/or duodenal ulcers, gastritis, etc., characterized by containing, as the active ingredient an effective amount of a derivative of phenylethylamine according to claim 1 and a suitable pharmaceutical vehicle.

4,287,212

2-ARYL-1,2-DIALKYLCYCLOALKYLAMINES

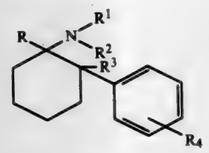
Grover C. Helsley, Pottersville, N.J.; Horst Dornauer, Kelkheim, Fed. Rep. of Germany, and Larry Davis, Flemington, N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation of Ser. No. 682,133, Apr. 30, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,529

Int. Cl.³ A01N *33/02, 37/30;* **C07C** *87/50*

U.S. Cl. 424—330 **8 Claims**

1. A compound of the formula:



where

R, R^1 and R^3 are lower alkyl,

R^2 is alkenyl of three to six carbon atoms,

and R^4 is hydrogen, methoxy or hydroxyl, or a physiologically tolerable acid addition salt of said compound.

4,287,213

DICHLOROACYL DIPHENYL ETHER MITE OVACIDES

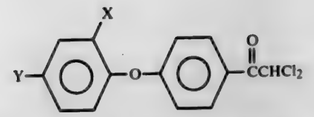
John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 3, 1980, Ser. No. 126,254

Int. Cl.³ A01N *35/00;* **C07C** *49/233*

U.S. Cl. 424—331 **5 Claims**

1. A compound having the formula



wherein one of X or Y is chloro and the other is trifluoromethyl.

4. A mite ovacide composition which comprises an effective amount of the compound of claim 1 and an inert carrier.

4,287,214

DITHRANOL COMPOSITIONS STABILIZED WITH ALPHA HYDROXYACIDS

Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002

Filed Sep. 24, 1979, Ser. No. 78,181

Int. Cl.³ A61K *31/05*

U.S. Cl. 424—346 **24 Claims**

1. In a composition containing a anti-inflammatory effective amount of dithranol in a pharmaceutically acceptable vehicle for topical application, the improvement comprising: a stabilizing effective amount of at least one member selected from the group consisting of: a glyceric acid or a derivative thereof having the formula

$$R(CR_1OH)_n\,COOH$$

wherein

n=2,3,4,5,6, or 7 and

R,R_1=H, CHO, or alkyl having from 1 to 7 carbon atoms, or the lactone or amide thereof; and an alpha hydroxy polycarboxylic or a derivative thereof having the formula

$$(CRX)_m\,(COOH)_n$$

wherein

m=1,2,3,4,5, or 6

n=2,3,4 and

X=OH or H when m≧2 and with one or more than one OH group present.

R=H, CHO, or alkyl having from 1 to 7 carbon atoms, or the lactone, amide or salt thereof.

4,287,215

BRAN BREAD AND METHOD FOR MAKING SAME

Gerard Joulin, 44 rue de Pontoise, 95870 Bezons, France

Filed Oct. 18, 1978, Ser. No. 952,586

Claims priority, application France, Oct. 21, 1977, 77 31711

Int. Cl.³ A21D *13/02*

U.S. Cl. 426—19 **7 Claims**

1. A method for obtaining bran bread by preparation of a dough based on wheat flour, bran and water, which is subjected to baking, after fermentation with yeast, wherein said wheat flour is of the type comprising at least 12% by weight of proteins, the bran being obtained from said wheat flour ground by a millstone and which after grinding, has been sieved to keep only the particles of dimensions between 0.5 and 1 mm.

4,287,216

CHOCOLATE CONFECTION CONTAINING CARBONATED HARD CANDY CRYSTALS DISPERSED THEREIN

Santi F. Mangano, Perugia, Italy, assignor to I.B.P. Industrie Buitoni Perugina S.p.A., Perugia, Italy

Filed Dec. 31, 1979, Ser. No. 108,703
Claims priority, application Italy, Nov. 16, 1979, 50844 A/79
Int. Cl.³ A23G *9/00*
U.S. Cl. 426—93 **7 Claims**

1. A confectionery product, which comprises at least two components, the first component being chocolate, and the second component being a certain number of popping candied crystals, said chocolate and said popping candied crystals having a moisture content between about 0.1 and about 5.0%, said crystals being sugar crystals such as saccharose, glucose, lactose, maltose, and fructose, and containing a gas such as carbon dioxide, hydrogen, air or inert gas, at a pressure of about 1 to about 80 atmospheres and in a quantity between about 0.1 and about 1% in weight, the ratio between the first and second component being between 10:1 and 1:10 by weight.

4,287,217

MULTIPLE-LAYER TUBING

Klaus-Dieter Hammer, Mainz; Martin Schröder, Wiesbaden; Horst Pietruck, Schwabenheim, and Max Bytzek, Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,133
Claims priority, application Luxembourg, Aug. 5, 1977, 77930; May 16, 1978, 79665
Int. Cl.³ F16L *11/00*; A23L *1/31*; B05D *7/22*
U.S. Cl. 426—105 **43 Claims**



1. A multiple layered film in the form of a tubular sausage casing, comprising:

a central layer of a cellulose hydrate-based material;

a first layer on the inside surface of said central layer, said first layer comprising a continuous film of a first polymer comprising thermoplastic synthetic resinous material selected from a vinylidene chloride copolymer having a major proportion of vinylidene chloride, said thermoplastic synthetic resinous film being impermeable to water and water vapor; and

a second layer on the outside surface of said central layer, said second layer comprising a film of a second polymer different from said first polymer and comprising a synthetic elastic copolymer selected from the group consisting of (a) a copolymer comprising a major proportion of an acrylate, a methacrylate or a mixture thereof and a minor portion of acrylic acid, methacrylic acid or a mixture thereof, (b) a copolymer comprising a major proportion of an aliphatic diene, selected from the group of butadiene, isoprene, chloroprene or a mixture thereof, and (c) a blend of chemically different copolymers of said elastic copolymers, said synthetic elastic copolymer film being permeable to water and water vapor.

2. In a sausage product having a filling and a sausage casing, the improvement which comprises said sausage casing comprising the tube as defined by claim 1.

26. A process for producing a multiple layered film in the shape of a tube comprising:

a central layer of a cellulose hydrate-based material;

a first layer of the inside surface of said central layer, said first layer comprising a continuous film of a first polymer comprising thermoplastic synthetic resinous material selected from a vinylidene chloride copolymer having a major proportion of vinylidene chloride, said thermoplastic synthetic resinous film being impermeable to water and water vapor;

a second layer on the outside surface of said central layer, said second layer comprising a film of a second polymer different from said first polymer and comprising a synthetic elastic copolymer selected from the group consisting of (a) a copolymer comprising a major proportion of an acrylate, a methacrylate or a mixture thereof and a minor portion of acrylic acid, methacrylic acid or a mixture thereof, (b) a copolymer comprising a major proportion of an aliphatic diene, selected from the group of butadiene, isoprene, chloroprene or a mixture thereof, and (c) a blend of chemically different copolymers of said elastic copolymers, said synthetic elastic copolymer film being permeable to water and water vapor; said process comprising the steps of

coating a carrier tube of a cellulose hydrate-based material on its inside surface with said first layer of a synthetic thermoplastic polymer;

applying to the outside surface of said carrier tube an aqueous dispersion of said synthetic elastic copolymer, wherein the major proportion of said copolymer comprises particles having a size not larger than about 0.08 μm, to produce on the outside surface of the carrier tube a layer of copolymer having a thickness corresponding to a weight per unit area of from about 0.5 to 8 gram of copolymer per m^2 of carrier tube surface; and

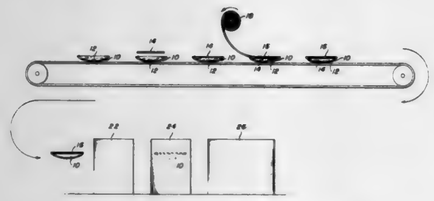
drying the tube to remove the water from said dispersion.

4,287,218

READY-TO-EAT MOLDED MEAT PRODUCT

Norman I. Rich, 3501 15th St. Ct., Rock Island, Ill. 61201, and Martin D. Rich, 6235 Crow Valley Dr., Bettendorf, Iowa 52722

Continuation-in-part of Ser. No. 618,350, Oct. 1, 1975, abandoned. This application Apr. 22, 1976, Ser. No. 679,186
Int. Cl.³ A23L *1/31*; A22C *17/00*
U.S. Cl. 426—272 **19 Claims**



1. A process for preparing a ready-to-eat meat product comprising the steps of:

(a) grinding meat of bovine, ovine, porcine or avian species into small pieces

(b) mixing the ground meat pieces together to draw protein to the surface thereof

(c) mixing the ground meat pieces with a meat broth solution

(d) placing the mixed, ground meat pieces in an open mold

(e) laying a flexible film over the open portion of the mold

(f) applying a sufficient vacuum to the interior of the mold to draw the flexible film into sealing engagement with that part of the mold defining the open portion thereof, such that the air holes and voids between the meat pieces are eliminated and the meat pieces are caused to adhere together, and

(g) cooking the molded meat while under said vacuum.

6. A process for preparing a ready-to-eat meat product comprising the steps of:

(a) grinding meat of the bovine, ovine, porcine or avian species into small pieces,

(b) mixing the ground meat pieces together to draw protein to the surface thereof

(c) mixing the ground meat pieces with turkey broth, a phosphate solution, a spice mix and a meat emulsion

(d) placing the mixed ground meat pieces in an open mold

(e) laying a flexible film over the open portion of the mold

(f) applying a sufficient vacuum to the interior of the mold to draw the flexible film into sealing engagement with that part of the mold defining the open portion thereof, such that the air holes and voids between the meat pieces are eliminated, and

(g) cooking the molded meat while under said vacuum.

15. A process for preparing a ready-to-eat meat product comprising the steps of:

(a) grinding meat of the bovine, ovine, porcine or avian species into small pieces

(b) mixing the ground meat pieces together to draw protein to the surface thereof

(c) placing the mixed, ground meat pieces in an open mold made of a temperature responsive plastic material

(d) laying a flexible film over the open portion of the mold

(e) applying a sufficient vacuum to the interior of the mold to draw the flexible film into sealing engagement with that part of the mold defining the open portion thereof, such that the air holes and voids between the meat pieces are eliminated and the meat pieces are caused to adhere together

(f) subjecting the mold containing ground meat pieces to a hot water bath after air is evacuated from the mold, to effect shrinkage of the mold into tight engagement with the meat pieces for retaining the molded meat shape, and

(g) cooking the molded meat while under said vacuum.

4,287,219

FIBROUS EDIBLE PROTEINS HAVING FAT PARTICLES HOMOGENEOUSLY DISPERSED THERETHROUGH

Albert Fabre, Venissieux, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 876,053, Feb. 8, 1978, abandoned. This application Feb. 22, 1980, Ser. No. 123,917
Claims priority, application France, Feb. 10, 1977, 77 04307
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—276 **23 Claims**

1. A process for preparing a shaped article comprising a spun, filamentary edible protein matrix, said filamentary matrix having uniformly and homogeneously dispersed therein, both in transverse cross-section and along its longitudinal axis, a plurality of fat-containing globules varying in diameter between about 1 to 60 microns, the degree of saponification of the fat-containing material comprising said globules being no greater than 5% and the protein in said matrix being substantially undegraded, which process comprises: admixing a gel of edible protein, prepared and maintained at a temperature of from about 2° to 25° C., with a fat-containing material maintained in liquid state, to form a spinning solution comprising said gel of edible protein and said fat-containing material; extruding said spinning solution through a shaping orifice; and passing the extruded material into a coagulating bath to coagulate the extruded material and thus form the shaped article, the period of time during which said gel of edible protein and said fat-containing material are in contact with each other not exceeding 2 minutes from initial contact up to extrusion through said shaping orifice.

4,287,220

HULL CONTAINING COMPOSITIONS

Clifford J. Pappas, Richardson, Tex., and Albert F. Vickers, Glenville, N.Y., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Feb. 19, 1980, Ser. No. 122,803
Int. Cl.³ A23K *1/14*
U.S. Cl. 426—623 **17 Claims**

1. An essentially solid, blended, flowable composition comprising (a) about 40 to 80% of one or more materials selected from the group consisting of soybean hulls, rice hulls and peanut hulls and (b) about 20 to 60% of waste products from the manufacture of cooked farinaceous food products, or mixtures of such waste products, said percentages of (a) and (b) being based on the total of their weight, said waste products having on a total basis about 20 to 50 percent of undissolved solids derived from said manufacture and about 50 to 80 percent total moisture content based on the total weight of said solids and water, and the total moisture content of said blended composition being about 20 to 50%.

4,287,221

METHOD FOR PROVIDING ENTERIC COATING ON SOLID DOSAGE FORMS

Masayuki Tonedachi, Tokyo; Fujio Sekigawa, Omiya, and Katsuyoshi Minemura, Ageo, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,117
Claims priority, application Japan, Jan. 16, 1979, 54-4114
Int. Cl.³ A61K *9/32*
U.S. Cl. 427—3 **4 Claims**

1. A method for providing an enteric coating on a solid dosage from which comprises

(a) dispersing a hydroxpropylmethylcellulose phtalate having an average particle diameter not exceeding 100 μm in water containing triacetin amount from 5% to 50% by weight based on the amount of the hydroxypropylmethylcellulose phthalate at a temperature of 25° C. or below to form an aqueous coating liquid,

(b) spraying the thus prepared coating liquid on to the surface of the solid dosage form while the coating liquid is kept at a temperature of 25° C. or below to form a coating layer thereon, and

(c) drying the thus coated solid dosage form.

4,287,222

METHOD FOR PRESERVING PLANT MATERIAL

Ruth A. Robinson, 807 S. Warson Rd., St. Louis, Mo. 63124

Filed Oct. 26, 1979, Ser. No. 88,296
Int. Cl.³ A01G *5/06*
U.S. Cl. 427—4 **9 Claims**

1. A method of processing cut plant material comprising immersing the plant material to be processed in a liquid treatment agent comprising a polyol or mixtures thereof and having a specific gravity within the range of 1.10 to 1.16, subjecting the immersed plant material to a pressure within the range of 5 psi. to 40 psi. under ambient temperature for a time interval of between 2 to 7 days for absorption of the agent in the material, then withdrawing the plant material from the pressurized immersed state, and then permitting the withdrawn plant material to dry under ambient pressure and temperature.

4,287,223

COVERING A STEEL PIPE HAVING A WELDING SEAM WITH A THERMOPLASTIC COATING

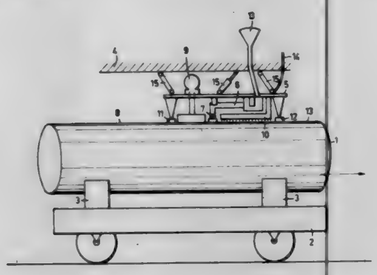
Karl-Heinz Hackert, and Helmut Blume, both of Muehlheim, Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,231

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849814

Int. Cl.³ B05D *1/26*

U.S. Cl. 427—9 **6 Claims**



1. In a method of covering a steel pipe having a welding seam, with a layer of thermoplastic material, the improvement of heating the layer in the region of the welding seam; and

of extruding a strip of the same thermoplastic material as said layer onto the layer in the heated region above the welding seam to reinforce coverage thereof.

4,287,224

METHOD FOR REGULATING THE EVAPORATION RATE OF OXIDIZABLE SUBSTANCES IN REACTIVE VACUUM DEPOSITION

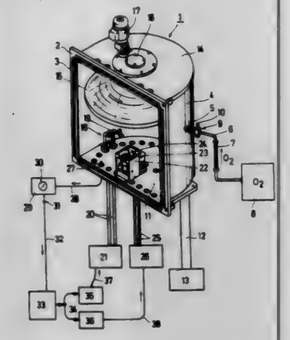
Klaus-Jürgen Heimbach, Hattersheim, and Walter Zültzke, Hanau, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Bonner Strabe, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,013

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834813

Int. Cl.³ B05D *1/00, 5/06*

U.S. Cl. 427—42 **5 Claims**



1. In a process for regulating the evaporation rate of oxidisable substances in reactive vacuum deposition by the metered addition of oxygen to a vacuum deposition chamber during deposition, the improvement comprising: adjusting the addition of oxygen to a predetermined value, measuring the pressure in the vacuum chamber, and regulating the evaporation rate for any pressure changes such that the ratio of pressure to evaporation rate is maintained substantially constant.

4,287,225

PROCESS OF MAKING A MAGNETIC RECORDING MEDIUM

Eckhart Kneller, Herbede; Roland Koenig, Ludwigshafen; Eberhard Koester, Frankenthal; Werner Grau, Bobenheim-Roxheim, and Dieter Mayer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,895

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909891

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—48 **6 Claims**

1. A process for the manufacture of a magnetic recording medium by vacuum-depositing a recording layer of an Sm-Co alloy onto a non-magnetic base which is dimensionally stable at up to 300° C., wherein the recording layer consists of an amorphous Sm-Co_x alloy, where x is from 1 to 20, possesses uniaxial magnetic anisotropy in the plane of the layer and has a coercive force of from 10 to 100 kA/m and a squareness ratio of more than 0.9, and the surface of the base is provided, parallel to the intended uniaxial anisotropy, with groove-shaped depressions having a depth of from 0.03 to 0.4 μm, at a spacing of from 10 to 200 μm.

4,287,226

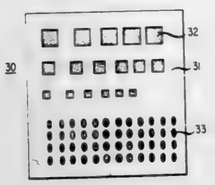
PROCESS FOR PRODUCING COVER COATED ELECTRONIC CIRCUITS

Juris Pirvics, Wayne, Pa., and Hargovind N. Vazirani, Stirling, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 659,943, Feb. 20, 1976, abandoned. This application Aug. 31, 1977, Ser. No. 829,232

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **10 Claims**



1. A process for producing electronic circuits in which an ultraviolet curable coating is used to protect parts of the electronic circuit comprising the steps of:

(a) coating the electronic circuit with ultraviolet curable resin;

(b) positioning a mask so as to exclude ultraviolet light from certain areas of the electronic circuit coated with ultraviolet curable resin;

(c) irradiating the curable resin with ultraviolet light using a source of ultraviolet radiation so as to cure at least part of the resin; CHARACTERIZED IN THAT the ultraviolet radiation is directed toward the curable resin and the mask is mounted on a silk screen.

4,287,227

COATING COMPOSITION AND PROCESS FOR PRODUCING SYNTHETIC RESIN MOLDINGS BY USING THE SAME

Kazumasa Kamada; Isao Sasaki, and Kenji Kushi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,245

Claims priority, application Japan, Jan. 17, 1979, 54-4569; Jun. 18, 1979, 54-77295

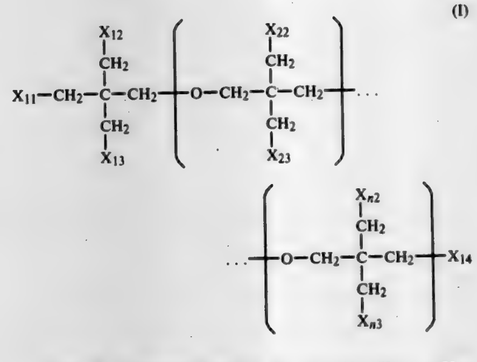
Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **13 Claims**

1. A coating composition comprising

(a) a monomer mixture of 30 to 90% by weight of at least one poly(meth)acrylate of mono or polypentaerythritol having at least three (meth)acryloyloxy groups in one molecule of formula (I)

(I)

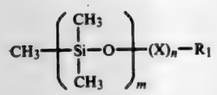


wherein at least three of X_{11}, X_{12}, X_{13}, X_{22}, X_{23}, ... X_{n2}, X_{n3} and X_{14} are CH_2═CR—COO— groups and the rest of them are —OH groups, n is an integer of 1 to 5 and R represents hydrogen or a methyl group, and 70 to 10% by weight of at least one monofunctional acrylate or methacrylate having at least one ether bond in one molecule, a boiling point above 150° C. under normal pressure and a viscosity below 20 centipoises at 20° C.;

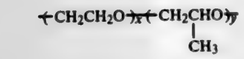
(b) 0.01 to 10 parts by weight of a photosensitizing agent per 100 parts by weight of said monomer mixture;

(c) 0.0001 to 2.0 parts by weight per 100 parts by weight of said monomer mixture of at least one silicon containing surface active agent of the formula (II) or (III):

(II)

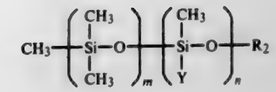


wherein X is

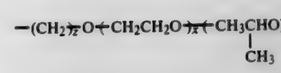


m and n are positive integers being smaller than 200 and x and y represent 0 or positive integers being smaller than 200 and satisfy the formula $0.1 \leqq (xn+yn/2m+n) \leqq 10$, R_1 represents —H or an alkyl, acyl or aryl group having 1 to 6 carbon atoms or

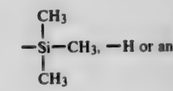
(III)



wherein Y is



m and n represent positive integers being smaller than 200, x and y represent 0 or positive integers being smaller than 200 and z represents 0 or a positive integer of 1 to 5 and satisfy the formula $0.1 \leqq (xn+yn/2m+n) \leqq 10$, R_2 represents



acyl or aryl group having 1 to 6 carbon atoms, and R_3 represents —H or an alkyl, acyl or aryl group having 1 to 6 carbon atoms; and

(d) 10 to 1900 parts by weight per 100 parts by weight of said monomer mixture of at least one organic solvent capable of forming a uniform solution upon mixing with said monomer mixture.

4,287,228

PHOTOPOLYMERIZABLE EPOXIDE COATING COMPOSITIONS CONTAINING TITANIUM DIOXIDE PIGMENT AND METHOD OF POLYMERIZATION USING SAME

Sheldon I. Schlesinger, East Windsor, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Feb. 20, 1980, Ser. No. 122,883

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **15 Claims**

1. In an epoxide coating composition, the combination comprising:

A. 54.7–89.7 percent by weight of a cationically polymerizable material consisting at least principally of an epoxide prepolymer;

B. 10–45 percent by weight of titanium dioxide pigment; and

C. 0.3–10.0 percent based upon the weight of said polymerizable material, of a photoinitiator component relatively stable to ambient white light but readily decomposable upon exposure to ultraviolet light to provide a Lewis acid to effect polymerization of said cationically polymerizable material, said photoinitiator component including: a first photoinitiator compound comprising an aryldiazonium salt wherein the aryldiazonium group is selected from the class consisting of 2,5-diethoxy-4-p-tolylmercaptobenzene diazonium, 4-chloro-2,5-dimethoxybenzene diazonium, 2,5-dimethoxybenzene diazonium, 2,5-dimethoxy-4-p-tolylbenzene diazonium and 2,5-dibutoxy-4-benzamidobenzene diazonium, and mixtures thereof, and wherein the salt group is selected from the class consisting of hexafluorophosphates, fluoroborates, fluoroantimonates and fluoroarsenates, and mixtures thereof; and a second photoinitiator compound relatively stable to ultraviolet radiation having a wavelength of at least 355 nanometers and decomposable by ultraviolet radiation having a wavelength of 200–355 nanometers.

4,287,229
METHOD FOR SURFACE TREATMENT OF PHOSPHOR PARTICLES

Minoru Watanabe, Tokyo; Mitsuhiro Oikawa, Kawasaki; Toshio Nishimura; Masao Asada, both of Yokohama; Masao Tezuka, Tokyo, and Tsurahide Cho, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushikikaisha, Kawasaki, Japan

Filed Nov. 5, 1979, Ser. No. 90,922
Claims priority, application Japan, Nov. 9, 1978, 53/137365
Int. Cl.³ H01J *29/26*
U.S. Cl. 427—64 6 Claims



1. A method for surface treatment of phosphor particles consisting essentially of forming a continuous film of silicon dioxide on the surface of each phosphor particle by treating said phosphor particle with a solution containing an aqueous solution of organic alkali and silicon dioxide dissolved in said aqueous solution.

4,287,230
PROCESS FOR PRODUCING A SCINTILLATOR SCREEN

Jean-Pierre Galves, Paris, and Jean-Marie Gutierrez, Antibes, both of France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 821,217, Aug. 2, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,039
Claims priority, application France, Aug. 3, 1976, 76 23726
Int. Cl.³ H01J *1/62*
U.S. Cl. 427—65 8 Claims

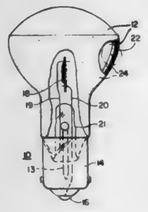


1. A process for the production of a scintillator screen having a substrate and a scintillator layer comprising the steps of keeping the substrate cold, while alternately depositing the vapor condensation cesium iodide doped with sodium and then an oxide and then alternating the deposition of the cesium iodide doped with sodium and the oxide until (a) the desired thickness of the scintillator layer is reached and (b) the deposited layer has a structure of fine needles substantially perpendicular to the substrate and optically independent from one another; and then heat treating the substrate and deposited layer to between 250° to 500° C., said oxide introduced into the crystal lattice of the cesium iodide doped with sodium during the chemical vapor deposition step prevents the needles from coalescing into crystals of larger size during said subsequent heating step.

4,287,231
METHOD OF SPRAY-REFLECTORIZING ELECTRIC LAMP ENVELOPES

Aristide R. DeCaro, Edison; Eugene F. Murphy, Pompton Plains, both of N.J., and Billy A. Maynard, Lexington, Ky., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 542,312, Jan. 20, 1975, abandoned, which is a division of Ser. No. 452,864, Mar. 20, 1974, Pat. No. 3,932,780. This application Apr. 4, 1980, Ser. No. 137,166
Int. Cl.³ H01K *1/32;* B05D *1/12;* G02B *5/10, 1/10*
U.S. Cl. 427—106 6 Claims



1. In the manufacture of electric lamps having envelopes composed of vitreous light-transmitting material, the method of providing selected outer surface portions of the lamp envelopes with reflector coatings of mirror-like quality efficiently and in mass-production quantities, which method comprises;

dispersing a predetermined amount of aluminum flakes of selected minute size in a vaporizable liquid vehicle to form a reflector-coating composition, said aluminum flakes having a particle size in the range of from about 10 200 microns so that the composition can readily be dispensed by spraying means, and the amount of aluminum flakes in the reflector-coating composition relative to the vaporizable liquid vehicle being so correlated that the composition is of a type which permits the aluminum flakes to automatically orient themselves in substantially side-by-side planar relationship and inherently form a thin adherent film of aluminum when said composition is sprayed onto the lamp envelopes,

depositing, by means of a single spraying operation, a layer of the reflector-coating composition on the selected outer surface portions of each of the lamp envelopes, said spraying operation being done in a manner such that the deposited layer of the reflector-coating composition contains a sufficient number of aluminum flakes to form an aluminum film having a thickness of from about 10 to about 630 microns, when the flakes oricnt themselves in substantially planar relationship,

allowing the aluminum flakes in the wet spray-deposited layer of reflector-coating composition to arrange themselves in said planar relationship and thus form, in situ, a thin adherent film of aluminum that has a thickness of from about 10 to about 630 microns and is also specular at the envelope-film interface and thus provides a brilliant mirror-like reflector at said interface,

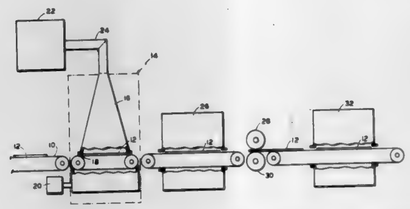
drying the spray-reflectorized portions of the lamp envelopes to set the aluminum reflector films, and then

coating the mirror-like films of aluminum flakes with a protective layer of a material that holds the flakes in their film-forming relationship on the respective lamp envelopes without impairing the light-reflective capability of the aluminum films.

4,287,232
DRY FLOC METHOD FOR MAKING AN ELECTROCHEMICAL CELL ELECTRODE

Glen J. Goller, West Springfield, Mass., and Joseph R. Salonia, Middletown, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 28, 1978, Ser. No. 920,036
Int. Cl.³ H01M *4/96;* B05D *1/30*
U.S. Cl. 427—113 14 Claims



1. A method for making an electrochemical cell electrode comprising the steps of:

applying a uniform layer of dry, powdered, carbon/hydrophobic polymer floc on the surface of a porous electrode substrate with virtually no floc within the pores of the substrate by positioning the substrate under a chamber having a bottom edge wherein the said bottom edge of the chamber fits against the edge of the substrate, dispersing the floc as a cloud of powder in the chamber over said surface of said positioned substrate and pulling the floc onto said surface by drawing a continuous vacuum under the substrate until the desired amount of powder has been deposited, wherein said substrate is graphitized carbon paper made from carbon fibers;

compacting the applied floc layer; and,

sintering the compacted layer.

4,287,233
MANUFACTURE OF ACICULAR COBALT-CONTAINING MAGNETIC IRON OXIDE

Peter Rudolf, Neuhofen; Werner Steck, Mutterstadt; Eberhard Koester; Manfred Ohlinger, both of Frankenthal, and Christof Jaeckh, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1980, Ser. No. 116,543
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1979, 2905352
Int. Cl.³ C01G *49/06*
U.S. Cl. 427—127 4 Claims

1. A process for the manufacture of acicular magnetic iron oxide which consists of a core of gamma-iron (III) oxide surrounded by a ferrite shell containing, based on the amount of magnetic material, from 0.2 to 12% by weight of cobalt (II) ions and from 0.1 to 15% by weight of iron (II) ions, wherein one part by weight of acicular gamma-iron (III) oxide is suspended in not more than four parts by weight of water by vigorous stirring, aqueous solutions containing cobalt (II) ions and iron (II) ions and aqueous bases to bring the pH of the suspension to not less than 10 are added to this suspension at from 20° to 80° C. under an inert gas blanket, with continued stirring, and after the cobalt (II) hydroxide and iron (II) hydroxide precipitate has formed under the inert gas atmosphere the entire solid product is filtered off, washed neutral with water and heated in an inert gas atmosphere for from two to seven hours at from 130° to 180° C.

4,287,234
DESENSITIZING INK FOR THE RECEIVING SURFACE OF A CHEMICAL DUPLICATING SET BY WET OFFSET PRINTING

Albert Amon; Roger Weil, both of Lausanne, and Paul Heinzer, Pully, all of Switzerland, assignors to Sipca Holding S.A., Glarus, Switzerland

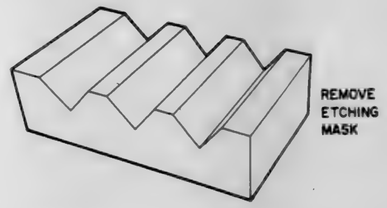
Continuation of Ser. No. 885,218, Mar. 10, 1978, abandoned.
This application Oct. 9, 1979, Ser. No. 82,749
Claims priority, application Switzerland, Jan. 25, 1978, 771/78
Int. Cl.³ B41M *3/12*
U.S. Cl. 427—150 7 Claims

1. A process of desensitizing an acceptor surface of a chemical duplicating set having at least two superimposed sheets one of the facing surfaces of which has an electrophillic acceptor coating and the other a nucleophilic coating capable of producing a chromogenic reaction with the electrophillic acceptor coating, said process comprising printing in wet offset on said acceptor surface an ink coating comprising an alkoxylated nucleophilic compound wherein said compound is alkoxylated to a degree such that the hydrophile-lipophile balance of said ink is from 2 to 9 so as to permit both the continuous transfer of the ink from the inking rollers to the water repellant zones of the wetted impression plate of an offset press and simultaneously the neutralization of the corresponding zones of the acceptor surface of the duplicating set, thus prevent any colored formation in the said zones upon subsequent writing or typing on the said duplicating set.

4,287,235
X-RAY LITHOGRAPHY AT ~100 Å LINEWIDTHS USING X-RAY MASKS FABRICATED BY SHADOWING TECHNIQUES

Dale C. Flanders, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 29, 1979, Ser. No. 43,309
Int. Cl.³ B05D *3/10;* G21K *3/00*
U.S. Cl. 427—160 7 Claims



1. A method for producing X-ray masks with precisely controlled linewidths including the steps of,

forming a relief structure with a predetermined cross section in a plane perpendicular to the surface of said relief structure; and

depositing X-ray absorber material onto said relief structure to form a plurality of interleaved regions of alternating high and low X-ray transmissivity for X-rays incident upon said relief structure from a predetermined shadowing direction that forms an oblique angle relative to said surface.

4,287,236

METHOD OF IMPROVING THE FREEZE RESISTANCE OF PARTICULATE MATERIAL AT LOW TEMPERATURES

Mark O. Kestner, Mendham, and Stephen H. Stoldt, Dover, both of N.J., assignors to Apollo Technologies, Inc., Whippany, N.J.

Filed Aug. 10, 1979, Ser. No. 65,612
Int. Cl.³ C10L *9/00*
U.S. Cl. 427—221 **30 Claims**

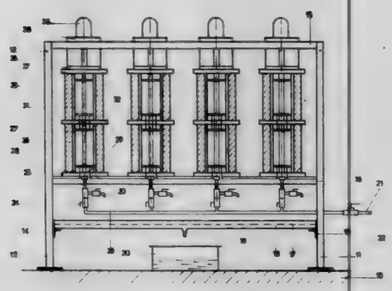
1. A method of improving the flow of particulate material at low temperatures by inhibiting clumping or solidification of large masses of said particles which comprises applying to the particles a coating of a polymer emulsion in water which has the characteristic of drying to form a water-insoluble film, exposing the particles en masse to external watering conditions and to temperatures below the freezing point of water, and then subjecting the particles at low temperatures to an operation in which they are caused to flow from one point to another under conditions such that clumping or solidification of large masses of said particles are deleterious, said coating being applied at the rate of between 2.0–5.0 pints of treatment material per ton of particulate material, the treatment material comprising polymer solids in an amount between 3.5–25% by weight of said treatment material.

4,287,237

PROCESS FOR IMPREGNATING SPOOLS OF TEXTILE WITH A LIQUID COMPOSITION

Pierre Prudhomme, Lozanne; Jean-Jacques Lafaye, Lyons, and Raymond Rey, Villeurbanne, all of France, assignors to Seperef - TMP Societe pour l'Equipment des Reseaux en Canalisations de Matieres Plastiques, Saint-Germain-au-Mont-D'or, France

Filed Aug. 8, 1979, Ser. No. 64,721
Int. Cl.³ B05D *7/22*
U.S. Cl. 427—238 **5 Claims**



1. A process for impregnating at least one reel of thread in the form of a spool with a liquid composition, for instance of crosslinkable resin, comprising;

(a) for each said reel, arranging the thread as a uniform reel in which the total open volume approximately corresponds to the desired volume of resin to be impregnated on a perforated rigid mandrel to form a spool, said mandrel having perforations which are staggered and spaced along the length of said mandrel except at the portions thereof aligned with the ends of each said spool,

(b) gripping each said spool at its ends and completely sealing same against fluid leakage from said ends, and

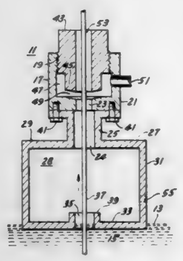
(c) injecting said composition under pressure through said perforated mandrel into each said spool so that there is a homogenous loss of pressure from said mandrel to the spool's exterior curved surface and the desired volume of resin uniformly and homogenously impregnates said spool by filling void-free the spaces between said threads and the interstices within said threads.

4,287,238

PROTECTIVE ATMOSPHERE GAS WIPING APPARATUS AND METHOD OF USING

Anthony J. Stavros, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Apr. 11, 1980, Ser. No. 139,605
Int. Cl.³ C23C *1/00*; B05C *11/06*
U.S. Cl. 427—349 **8 Claims**



1. Improved apparatus for wiping linear material with a heavy wiping gas comprising:

(a) a containment means for a protective gas surrounding the linear material as it passes from a molten metal coating bath,

(b) a gas wiping die surrounding said linear material and having a restricted throat through which the linear material passes, said restricted throat being connected with the interior of the protective gas containment means of (a).

(c) substantially circumferential gas orifice means within the gas wiping die adjacent to the restricted throat of the die said gas orifices being inclined downwardly at an angle with respect to perpendicular to the surface of the linear material of from 5 to 60 degrees, and

(d) orifice means in the containment means of (a) having a cross sectional area less than the cross sectional area of the restricted throat and providing a passage for gas from the interior of the containment means to the exterior.

4,287,239

METHOD FOR WOOD PRESERVATION

Bror O. Hager, Forsetevagen 5, S-182 63 Djursholm, Sweden

Continuation-in-part of Ser. No. 4,449, Jan. 18, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,890
Claims priority, application Sweden, Jan. 27, 1978, 7801013
Int. Cl.³ B05D *3/02, 3/12, 1/18*
U.S. Cl. 427—351 **18 Claims**

1. In a method of preserving foliiferous wood wherein the wood is penetrated by a preservative solution, the improvement comprising:

penetrating the wood with a solution having a wood preservative dissolved therein;

maintaining the wood in an undried condition for a period of time of at least two weeks sufficient for the preservative solution to diffuse through the cell walls of the wood without fixation thereof; and

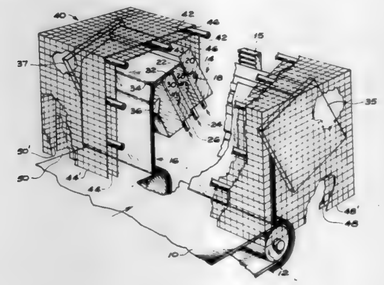
thereafter drying the wood so as to fix the preservative within the wood.

4,287,240

COATING APPARATUS PROVIDED WITH A PROTECTIVE SHIELD

Thomas R. O'Connor, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 11, 1980, Ser. No. 139,506
Int. Cl.³ B05C *3/02, 11/00*; B05D *3/40*
U.S. Cl. 427—402 **32 Claims**



1. Coating apparatus comprising:

means for advancing an object to be coated,

means for forming a flow of coating composition for application to said advancing object, and

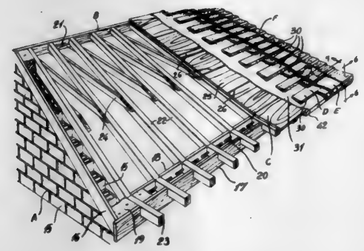
shield means formed of a foraminous material for protecting said flow of coating composition from disturbance by ambient air currents.

4,287,241

ROOF COATING COMPOSITION AND CONSTRUCTION

John H. Kaufmann, Somerset Parish, Bermuda, assignor to Global Coatings Limited, Hamilton, Bermuda

Division of Ser. No. 795,888, May 11, 1977, Pat. No. 4,160,346.
This application May 8, 1979, Ser. No. 37,303
Claims priority, application United Kingdom, May 11, 1976, 19410/76
Int. Cl.³ E04C *1/00*
U.S. Cl. 427—403 **7 Claims**



1. A method of providing a structural surface normally exposed to the elements with a protective load-bearing sheath, comprising,

spreading on said surfce in a continuous layer having a thickness from about 1.5 mm to about 5 mm a flowable cement composition made up of a modified hydraulic cement modified with a minor amount of an acrylic latex cement modifier, dense finely divided aggregate, reinforcing material, and water, allowing the material thus applied to harden to a continuous hard tough load-carrying concrete shell capable of taking up moisture covering said surface and adhering tenaciously to it,

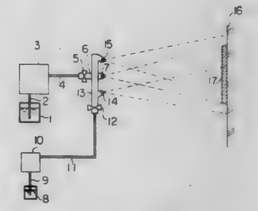
spreading directly on the surface of the hard shell to form a continuous layer having a thickness from about 0.75 mm to about 3 mm a flowable mixture of a binder material of a non-plasticized latex of elastomeric type acrylic polymer filled with finely divided opaque extender, allowing the latex to dry into a rubbery textured protective membrane, having capillary openings to permit escape of moisture from the membrane itself and from the concrete shell, adhering tenaciously to the surface of the shell, whereby the shell and membrane constitute a continuous composite load-bearing weatherproof sheath protecting the structural surface.

4,287,242

SPRAY-COATING PROCESS

Takeshi Monden, Mie; Yoshiro Shiba; Toshiro Momonaka, both of Yokkaichi; Shigeru Kobayashi, Suzuka, and Kazuo Oda, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo and Japan Latex Compounding Co., Ltd., Yokkaichi, both of, Japan

Filed Aug. 8, 1979, Ser. No. 64,760
Claims priority, application Japan, Dec. 16, 1978, 53/154614
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—426 **9 Claims**



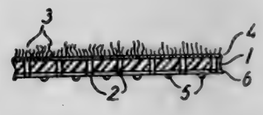
1. A spray-coating process which comprises spraying a rubber-asphalt anionic emulsion having a total solid content of at least 80% by weight and an aqueous solution containing 1–15% by weight of a polyvalent metal salt almost simultaneously by means of separate airless type spraying machines to continuously contact and mix said emulsion with said aqueous solution in the space between the spraying machine and the surface of a substrate to be coated and on the substrate surface, thereby forming a rubber-asphalt solid layer on the substrate surface.

4,287,243

MAT FOR MULTISPECTRAL CAMOUFLAGE OF OBJECTS AND PERMANENT CONSTRUCTIONS

Willi G. Nielsen, Monrovia, Liberia, assignor to Gottlieb Commercial Company A/S, Krusaa, Denmark

Filed Jul. 25, 1979, Ser. No. 60,470
Claims priority, application Denmark, Jul. 28, 1978, 3374/78
Int. Cl.³ F41H *3/00*
U.S. Cl. 428—17 **6 Claims**



1. A multispectral camouflage mat for camouflaging objects and permanent constructions comprising at least one heat insulating and heat reflecting layer containing at least one radar characteristic influencing material, said layer influencing the reflection and emission characteristics of said mat in the thermal infrared range and in the radar range, said layer having on its side which faces away from a camouflaged object or construction a visual diffusely reflecting layer comprising a material permeable to liquids which carries a fiber pile, the

fibers of said pile having free ends projecting from said heat insulating layer.

4,287,244

METHOD FOR REVERSE PRINTING ON COATED TUBE PAPERS AND TUBES PRODUCED FROM THE PAPER

Edward H. McMahon, Jr., and J. B. Abston, both of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 3, 1979, Ser. No. 99,702
Int. Cl.³ B31C *13/00*; B32B *1/06, 27/10*
U.S. Cl. 428—35 **11 Claims**



1. In a method for making a yarn tube or similar article comprising a tube body and an outer ply having indicia visible through an outer polymer lamina, the improvement comprising the steps of:

providing an outer ply comprising a lamina of a relatively porous paper-like substrate with the polymer lamina on one surface;

providing the outer ply with indicia by printing a dye onto at least a portion of the surface of the substrate opposite the polymer lamina under conditions wherein the dye is caused to be visible at an interface between the substrate and the polymer lamina; and

forming the printed outer ply onto the tube body with the polymer lamina comprising an outer surface of the tube.

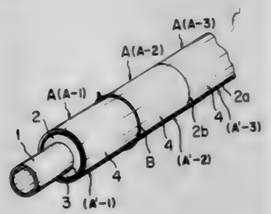
8. The yarn tube produced by the method of claim 1.

4,287,245

HEAT INSULATOR FOR PIPE LINES

Siro Kikuchi, Yokohama, Japan, assignor to Nippon Asbestos Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1979, Ser. No. 34,620
Claims priority, application Japan, Apr. 28, 1978, 53/58272[U]; May 8, 1978, 53/61275[U]; May 30, 1978, 53/73121[U]
Int. Cl.³ B32B *3/30*; F16L *57/00, 59/02*
U.S. Cl. 428—36 **29 Claims**



1. A heat insulator for pipe lines with an outer periphery and used for transporting low-temperature fluids, said insulator comprising in combination:

a plurality of longitudinally divided hollow heat-insulating units assembled to tightly cover the outer periphery of said pipe lines, each heat-insulating unit including:

a heat-insulating panel element made of a rigid foamed synthetic resin with an outer periphery and having a shape of circular cross section to fit the outer periphery of said pipe lines:

a stress-absorbing sheet overlaid on the outer periphery of the rigid foamed synthetic resin and integrally combined with the foamed synthetic resin of said heat-insulating panel element and being capable of absorbing stress caused by shrinkage of said heat-insulating panel element at low temperature to prevent any dimensional difference therewith;

an outermost thin metal plate placed on the outer surface of said stress-absorbing sheet and integrally combined therewith to prevent any dimensional difference between the integrally combined sheet and the outermost thin metal plate against external compression caused by supercooled fluid passing through the pipe lines; and

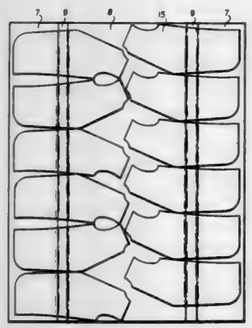
means for holding together adjacent heat-insulating units combining two kinds of heat-insulating materials for higher and lower temperatures as joint sealer.

4,287,246

MULTIZONAL FIBER DISTRIBUTION

Alan Thornton, Halifax, and John S. Uttley, Hebden Bridge, both of England, assignors to Bondina, Ltd., Yorkshire, England

Continuation of Ser. No. 571,887, Apr. 25, 1975, abandoned. This application Nov. 10, 1976, Ser. No. 740,461
Int. Cl.³ B32B *5/12, 5/06*; H41D *27/02*
U.S. Cl. 428—113 **16 Claims**



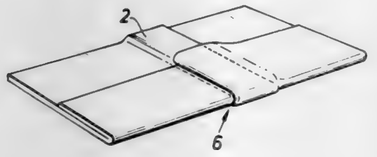
1. A garment interlining material comprising a non-woven web of fibers customarily used for the formation of non-woven garment interlinings wherein the area of said web comprises at least one distinct first zone across its width, said zone having at least 10 cm width and running lengthwise and having substantially uniform fiber amount therein, said zone disposed adjacent a second zone having different fiber amount than said first zone, the fibers of said first zone merging into the fibers of said second zone thereby forming a transitional zone between said first zone and said second zone having a fiber amount intermediate said first zone and said second zone, said transitional zone having a width of at least 3 cm.

4,287,247

PACKING LAMINATE PROVIDED WITH CREASE LINES

Wilhelm Reil, Bensheim-Auerbach, and Jörg Trabitzsch, Seeheim-Jugenheim, both of Fed. Rep. of Germany, assignors to Tetra Pak International AB, Lund, Sweden

Filed Sep. 4, 1979, Ser. No. 72,314
Claims priority, application Sweden, Sep. 4, 1978, 7809268
Int. Cl.³ B32B *3/04*; B29C *17/00*; B29D *3/10*
U.S. Cl. 428—129 **16 Claims**



1. A packing container wall portion, comprising:

at least two portions of a laminate joined together to form a sealing fin which is folded along a first fold line to overlie an adjacent portion of said laminate and which is also folded substantially 180° against itself along a second fold line which extends transversely to the first fold line; and

at least one auxiliary fold line adjacent and substantially parallel to said second fold line, said at least one auxiliary fold line intersecting said first fold line, wherein said at least one auxiliary fold line assists in said folding of said sealing fin along said second fold line.

6. A packing container wall portion, comprising:

at least two portions of a laminate, including a fibrous carrier layer, an aluminum foil layer and at least one thermoplastic outer layer, said at least two portions of said laminate being joined together to form a sealing fin;

a first fold line in said laminate;

a second fold line in said laminate extending transversely from opposing sides of said first fold line; and

an auxiliary fold line in said laminate disposed adjacent to and substantially parallel to said second fold line and intersecting said first fold line such that after a first substantially 180° fold has been made in said sealing fin along said first fold line, the at least one auxiliary fold line assists in making a second substantially 180° fold in said sealing fin along the second fold line.

10. In a method of forming a packing container from a packing laminate wherein two portions of said laminate are joined together to form a sealing fin which is folded down against one of said portions of said laminate along a first fold line and wherein said sealing fin is subsequently folded against itself along a second fold line which extends transversely to said first fold line, the improvement comprising providing at least one auxiliary fold line in said laminate adjacent and substantially parallel to said second fold line and intersecting said first fold line, said at least one auxiliary fold line assisting in said folding of said sealing fin along said second fold line.

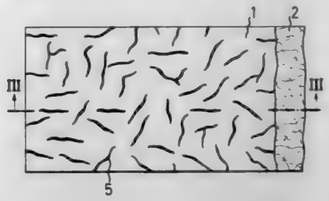
4,287,248

BITUMINIZED ROOF SHEET

Wolfgang Gessner, Kelkheim; Helmut Kuhn, Königstein, and Kurt Plötz, Waldems, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,125
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827136
Int. Cl.³ B32B *3/28, 3/06*
U.S. Cl. 428—137 **21 Claims**

1. A process for the production of a roof sheet, including a fleece, metal foil and bitumen, which comprises attaching the metal foil to the fleece to obtain a composite structure, thereafter shrinking the fleece from 2 to 35 percent by exposing the attached fleece and foil to hot air, whereby the foil becomes



wrinkled, and bituminizing at least one surface of the composite structure.

4,287,249

TEXTURED SURFACE POLYPROPYLENE FILM

John W. Eustance, So. Glens Falls; Stanley Y. Hobbs, Scotia, and Emilie L. Carley, Hartford, all of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 686,831, May 17, 1976, abandoned, which is a division of Ser. No. 554,070, Feb. 28, 1975, abandoned. This application Apr. 16, 1979, Ser. No. 30,236
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—141 **9 Claims**



1. An improved flat film with improved surface impregnation properties for dielectric fluids which comprises a thin polypropylene film having one predetermined textured surface which is coextensively and uniformly covered by an overlapping pattern of fibroid irregularities comprising predominantly a stretched layer of Type I and Type II polypropylene crystal structure, and said film being characterized by a space factor of greater than about 5% and a haze measurement of greater than about 20%.

4,287,250

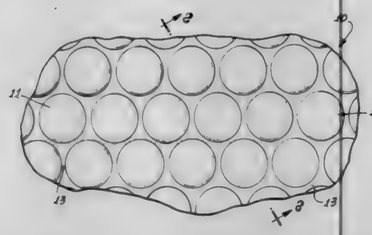
ELASTOMERIC CUSHIONING DEVICES FOR PRODUCTS AND OBJECTS

Marion F. Rudy, Northridge, Calif., assignor to Robert C. Bogert, Woodland Hills, Calif., a part interest

Continuation-in-part of Ser. No. 844,080, Oct. 20, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,358
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.³ B32B *3/12, 3/06*
U.S. Cl. 428—166 **28 Claims**

1. A cushioning device exposed to air at atmospheric pressure, comprising opposed layers of permeable elastomeric sheet material surrounded by air at atmospheric pressure, said layers being sealed to each other at predetermined locations to provide a multiplicity of adjacent chambers of predetermined size and shape between said layers, said chambers being inflated with a gaseous medium to a desired initial value, said gaseous medium in said chambers comprising an inert, nonpolar gas other than air, oxygen or nitrogen having a very low solubility coefficient, said layers of sheet material having char-

acteristics of relatively low permeability with respect to said gas to resist diffusion of said gas from said chambers through said layers of sheet material and of relatively high permeability with respect to the ambient air surrounding said layers to permit diffusion of said ambient air through said layers into said inflated chambers to provide a total pressure in each



chamber which is greater that the initial inflation pressure of said gas and is the sum of the partial pressure of the gas in each chamber and the partial pressure of the air in each chamber, the diffusion rate of said gas through said layers of sheet material being substantially lower than the diffusion rate of nitrogen through said layers of sheet material.

4,287,251

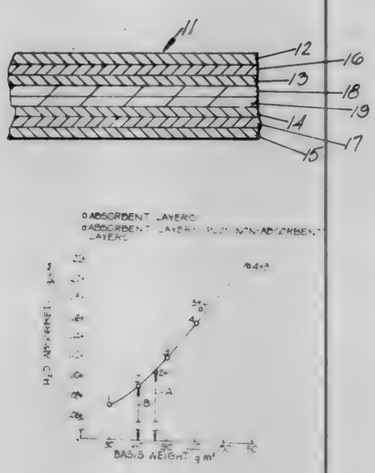
DISPOSABLE ABSORBENT NONWOVEN STRUCTURE

Mary K. King, 301 Leonora Dr., Memphis, Tenn. 38117, and William J. Boyd, 4794 N. Milnor, Memphis, Tenn. 38128

Filed Jun. 16, 1978, Ser. No. 916,298

Int. Cl.³ B32B *27/14*; D04H *1/04*; A61L *15/00*; A61F *13/00*

U.S. Cl. 428—198 **13 Claims**



1. An absorbent nonwoven structure free of added binders comprising alternate layers of nonwoven absorbent material and nonwoven hydrophobic thermoplastic material free of wetting agents, the outermost layers of said structure comprising layers of said nonwoven absorbent material, said structure having a number of said nonwoven absorbent material layers greater by one than the number of said nonwoven hydrophobic thermoplastic material layers, each of said nonwoven thermoplastic layers having a basis weight of from about 5 to about 25 grams per square meter and an open area of at least 40%, said nonwoven absorbent material and thermoplastic material layers of said structure being spot bonded together, each of said alternating thermoplastic layers being of such structure as to provide support for the adjacent ones of said absorbent layers and void volume within itself and between itself and said adjacent ones of said absorbent layers whereby the absorbency of said nonwoven structure is increased.

4,287,252

RECONSTITUTED LEATHER AND METHOD OF MANUFACTURE

Serge Dimiter, Box 341, Poughkeepsie, N.Y. 12602

Continuation-in-part of Ser. No. 80,049, Sep. 28, 1979, abandoned, which is a continuation of Ser. No. 919,474, Jun. 27, 1978, abandoned. This application Sep. 5, 1980, Ser. No. 184,656

Int. Cl.³ C08L *89/06*; B32B *3/26, 9/02, 5/18*

U.S. Cl. 428—316 **14 Claims**

1. A reconstituted leather product comprising pulverized leather particles polarized to form aggregates or groups of particles, said aggregates being at least partially encapsulated and bonded one to the others by a resin binder to form a sheet material, said sheet material having buffed surfaces and forming a structure closely simulating natural leather in feel, odor and appearance.

6. The method of making a reconstituted leather composition comprising the steps of pulverizing leather to form fine particles, polarizing said particles to cause them to adhere to form groups of particles or aggregates, binding said aggregates by a resinous binder to form said reconstituted leather and then buffing the surfaces thereof to expose the natural leather particles.

4,287,253

CATALYTIC FILLER FOR ELECTROLESS METALLIZATION OF HOLE WALLS

Edward J. Leech, Oyster Bay, N.Y., assignor to Photocircuits Division of Kollmorgen Corp., Hartford, Conn.

Filed Apr. 8, 1975, Ser. No. 566,611

Int. Cl.³ C23C *3/02*

U.S. Cl. 428—323 **33 Claims**

1. In a process for making a filler material that is catalytic to the deposition of electroless metal, the improvement which comprises the steps:

a. adsorbing a reducible metal compound from a liquid medium comprising said compound on to the surface of a filler material;

b. rendering said adsorbed compound catalytic to the deposition of electroless metal by contacting said adsorbed compound with hydrazine; and

c. incorporating the catalytic filler so formed into the formation of an insulating article.

4,287,254

CONJUGATE FILAMENTS AND FILMS

Emerick J. Dobo, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 876,975, Feb. 13, 1978, Pat. No. 4,217,399, which is a division of Ser. No. 629,184, Nov. 5, 1975, Pat. No. 4,089,921. This application Jul. 16, 1979, Ser. No. 58,227

Int. Cl.³ B32B *5/16, 27/08*; D02G *3/00*

U.S. Cl. 428—329 **5 Claims**

1. A film comprising a first layer of an organic film-forming polymer containing particles of a first reducible metal oxide; an adhering second layer of an organic film-forming polymer containing particles of a second reducible metal oxide; wherein the metal component of each of said first and second reducible metal oxides is sinterable at a temperature which is below the melting point of the other.

4,287,255

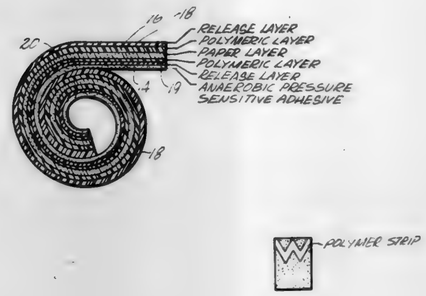
REINFORCED ADHESIVE TAPES

K. Lim Wong, Los Angeles, and Gustav A. Schmidt, South Pasadena, both of Calif., assignors to Avery International Corporation, San Marino, Calif.

Filed Sep. 6, 1979, Ser. No. 73,065

Int. Cl.³ C09U *7/02*; C09J *7/02*

U.S. Cl. 428—343 **9 Claims**



1. A reinforced adhesive stock comprising:

(a) a carrier web;

(b) a release surface on the carrier web;

(c) an adhesive layer comprising an adhesive and a photopolymerizable compound on the release surface; and

(d) at least one radiation-cured polymeric strip of the photopolymerizable compound within the adhesive layer.

4,287,256

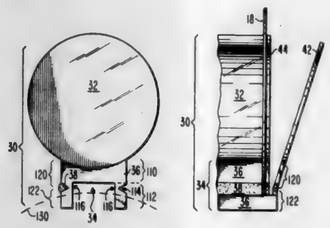
WAFER AND BOULE PROTECTION DURING THE BLADE RETURN STROKE OF A WAFER SAW

Robert R. Demers, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 973,458, Dec. 26, 1978, Pat. No. 4,227,348. This application May 30, 1980, Ser. No. 155,999

Int. Cl.³ B32B *1/04, 7/06, 33/00*

U.S. Cl. 428—375 **7 Claims**



1. An ingot comprising:

a boule of material to be sliced into wafers; and

a support structure bonded to said boule, said support structure having a region of preferential deformation which will preferentially deform when a just-sawn wafer is leaned away from the just-sawn face of said boule.

4,287,257

PHOSPHORS FOR COLOR TELEVISIONS

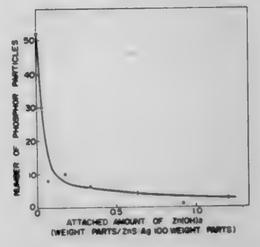
Susumu Ohmatoi, Fujisawa; Hitoshi Tanaka, Ninomiya, and Seiji Murakami, Minami-ashigara, all of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,430

Claims priority, application Japan, Sep. 18, 1978, 53/14365

Int. Cl.³ C09K *11/10*

U.S. Cl. 428—403 **13 Claims**



1. A phosphor comprising a phosphor for color television and zinc hydroxide attached to the phosphor for color television, the amount of said zinc hydroxide being less than 0.7 part by weight per 100 parts by weight of the phosphor for color television.

4,287,258

PARTICULATE STYRENE POLYMERS CONTAINING BLOWING AGENT

Klaus Hahn, Lampertheim; Hans P. Rath, Gruenstaat, and Manfred Walter, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,683

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942182

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—407 **4 Claims**

1. A particulate styrene polymer, containing blowing agent, which is surface-coated with from 0.05 to 1% by weight of a glycerol dialkyl ether.

4,287,259

PREPARATION AND USES OF AMORPHOUS BORON CARBIDE COATED SUBSTRATES

Robert E. Riley; Lawrence R. Newkirk, both of Los Alamos; Flavio A. Valencia, Santa Fe, and Wallace, Sr., Terry C., Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 5, 1979, Ser. No. 100,754

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—408 **10 Claims**

1. A method of coating graphite cloth with a coating of amorphous boron carbide which is substantially uniform on all filaments throughout each yarn bundle of said cloth, said method comprising: contacting said graphite cloth with a mixture of BCl_3, at least one hydrocarbon selected from the group consisting of propene and methane, and hydrogen at a coating temperature within the range from about 850° to about 900° C. and at a total pressure within the range from about 15 torr to about 35 torr.

4,287,260

CORDIERITE CRYSTAL-CONTAINING GLAZE

Paul D. Prall, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation-in-part of Ser. No. 90,469, Nov. 1, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 172,514

Int. Cl.³ B32B *17/06*; C03C *5/00*

U.S. Cl. 428—410 **19 Claims**

1. A low expansion ceramic body having fired thereon a fused glaze which has an oxide composition consisting essentially of

SiO_2	66–75 wt. %
Al_2O_3	13–22
MgO	3–8
B_2O_3	2.5–7
$Na_2O + K_2O$	.4–2.0

the above listed components totaling at least 95% of the composition, and Li_2O is not more than 0.5%, the total of Fe_2O_3 and TiO_2 is not more than 1.5%, and at least one of ZnO and ZnO_2 is included in an amount less than 2%,

said glaze having a ratio $(SiO_2+Al_2O_3+MgO)/(CaO+SrO+BaO+Cs_2O+F_2)$ which is at least about 28:1,

said glaze containing cordierite crystals as the major crystalline phase therein and the exterior of the glaze is richer in SiO_2 than the interior of the glaze.

4,287,261

FABRIC COATING PROCESS AND PRODUCT THEREOF

George C. West, Concord, and William F. Polfus, Rutherfordton, both of N.C., assignors to Reeves Brothers, Inc., Charlotte, N.C.

Continuation of Ser. No. 945,589, Sep. 25, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,557

Int. Cl.³ B05D *3/02*; B32B *9/04*

U.S. Cl. 428—421 **9 Claims**

1. A process for coating a woven fabric comprising the steps of:

(a) depositing on a taut fabric a coating composition having a viscosity up to about 100,000 cps and consisting essentially of:

(1) a polydimethyl siloxane component present in an amount from about 93 to about 99 percent by weight of the composition, and

(2) A tin catalyst present in an amount from about 0.5 to about 1.5 percent by weight of the composition,

(b) uniformly distributing the deposited coating composition on the surface of the fabric,

(c) curing the fabric from b,

(d) padding the fabric with a solution selected from a silicone or a fluorocarbon solution, and

(e) compressing the fabric, whereby it is substantially wind-resistant, water-repellant, and has a good handle.

4,287,262

PROCESS FOR THE PRODUCTION OF LAMINATE SYSTEMS FROM A LOW DENSITY POLYETHYLENE COATING RESIN

Forest Engelhard, Dormagen; Rainer Kuhn, Odenthal; Wichard Pump, Mülheim; Reinhard Riess, Bergisch-Gladbach, and Hugo Streib, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,146

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853069

Int. Cl.³ B32B *15/08*

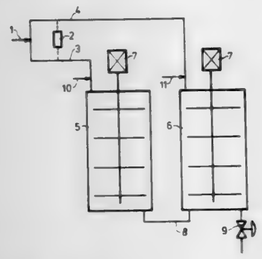
U.S. Cl. 428—461 **6 Claims**

1. Process for the production of laminate systems with improved bond strength by coating flexible substrates using, as the coating resin, low density polyethylene (LDPE) which has been prepared in autoclave reactors with virtually complete back mixing under pressures of 800 to 3,000 bars and in the presence of initiators which form free radicals, characterized in that a low density polyethylene which is obtained if

(a) two autoclaves are connected in series such that all the reaction product of the first reactor is transferred to the second reactor,

(b) a length-/diameter ratio (L/D) of 1:1 to 3:1 is chosen for each autoclave,

(c) The monomer feed stream is distributed between the two reactors such that the monomer feed stream to the first reactor is the same as or greater than the monomer feed stream to the second reactor,



(d) the reaction temperatures in the two autoclaves are adjusted such that the reaction temperature in the first reactor is lower than the reaction temperature in the second reactor,

(e) the initiator chosen for the first reactor is the same as or different from the initiator chosen for the second reactor,

and which has a density of 0.915 to 0.930 g/cm³ and a melt index (190° C./2,16 kp) of 0.2 to 20 g/10 minutes is employed as the coating resin,

and said flexible substrate is coated with a composition consisting essentially of said low density polyethylene.

4,287,263

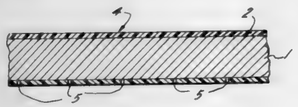
HEAT BONDABLE ASPHALTIC SOUND DEADENER

William J. Woodring, Bound Brook, N.J., and James A. Gulino, Joliet, Ill., assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 905,349, May 12, 1978, abandoned. This application Aug. 15, 1979, Ser. No. 66,612

Int. Cl.³ B32B *11/02, 11/04, 11/08*

U.S. Cl. 428—489 **1 Claim**



1. An automobile heat contouring sound-deadening material made solely of 30% asphalt, 20% mica and 50% limestone composition secured by the composition to the automobile and having on at least one side of said composition a heat deteriorating polyethylene film.

4,287,264

HEAT SENSITIVE COATING

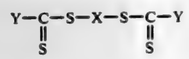
Barry L. Marginean, Scottsville, N.Y., assignor to Labelon Corporation, Canandaigua, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,195

Int. Cl.³ B41M *5/18, 5/22*; C09D *11/10*

U.S. Cl. 428—514 **9 Claims**

1. In a color forming heat sensitive coating composition comprising a color forming amount of a finely divided homogenous basic 3,3'-bisarylphthalane derivative and a color developing amount of a finely divided solid phenyl derivative which at thermal printing temperature is at least partly fluidizable and capable of a color forming reaction with said 3,3-bisarylphthalane compound dispersed in a polyvinyl alcohol carrier, wherein the improvement comprises the presence of an anti-sticking amount of a functional filler of the general formula



wherein X represents a bond or a metal selected from the group consisting of lead, zinc, cadmium and alkaline earth metal metals and Y represents lower alkyloxy or lower dialkylamino—therefor.

4,287,265

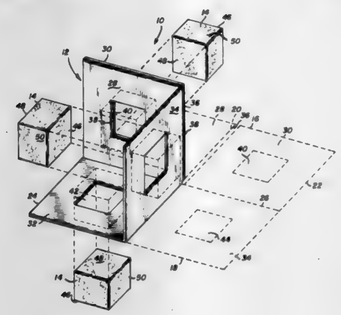
FLOATING CORNER FOR INSERTION INTO A PACKING CONTAINER

Joseph H. McKnight, 2298 Calabazas Blvd., Santa Clara, Calif. 95051

Filed Dec. 2, 1976, Ser. No. 746,701

Int. Cl.³ B65D *81/02*

U.S. Cl. 428—542 **11 Claims**



1. A floating corner which when assembled is for insertion into an outer packing container to protect an object in an inner container, and when disassembled may be stored and shipped compactly, comprising:

a sheet of generally rigid first material having first, second and third intersecting fold lines and a slot substantially linearly aligned with said second fold line, said fold lines and said slot dividing said sheet into first, second, third and fourth portions, each having an opening provided therein, the openings in said first and fourth portions being identical in configuration and positioned so as to be aligned with each other when said sheet is folded along said second fold line, the sheet being adapted to fold so that said third portion may be oriented normal to said second portion and said first and fourth portions may be rotated about said first and third fold lines respectively, into substantially coplanar positions; and

first, second and third blocks of firm, spongy, resilient second material, each having opposed first and second surfaces and a sidewall between said first and second surfaces having a perimeter slightly larger than said openings, each said block being adapted for compressive disposition within one of said openings with said first surface spaced from one surface of said sheet and adapted to contact a wall of an outer container and said second surface spaced from the opposite surface of said sheet and adapted to contact a surface of an inner container, whereby when the corner is assembled by folding said sheet and disposing said blocks through said openings and then is appropriately positioned between an inner container and an outer container, said blocks serve to absorb energy transmitted through the outer container to protect an object carried in the inner container, and when said corner is disassembled for shipment or storage the blocks are separated from the sheet and the sheet is unfolded so that it can be laid flat.

4,287,266

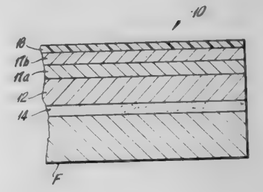
SOLAR SELECTIVE FILM AND PROCESS

James M. Myles, East Northport, N.Y., assignor to Grumman Aerospace Corp., Bethpage, N.Y.

Continuation of Ser. No. 865,298, Dec. 28, 1977, abandoned. This application Nov. 8, 1979, Ser. No. 92,458

Int. Cl.³ F24J *3/02*; B32B *15/04, 15/18, 15/20*

U.S. Cl. 428—596 **5 Claims**



1. A composite, flexible, solar selective film for use with a solar collector comprising:

a metallic substrate selected from the group consisting of copper, nickel, aluminum and steel, said substrate having opposite major surfaces;

a solar selective coating on one of said major surfaces, said coating having a first layer selected from the group consisting of white chromium and white nickel and having a thickness in the range of 1/10 to ¼ mil and a second outer layer of black chromium having a thickness in the range of 800 to 1600 Angstrom units;

a barrier layer on the surface of said selective coating, said barrier layer containing a corrosion inhibitor; and

adhesive means on the other of said major surfaces for affixing said substrate to said solar energy collector, said adhesive means being capable of withstanding temperatures in the range of 500 to 800° F., said film having slots to accommodate thermal expansion, said slots being a tortuous, ladder-like array, oriented perpendicularly to the primary thermal expansion direction.

4,287,267

ZINC-CHLORINE BATTERY PLANT SYSTEM AND METHOD

Curtis C. Whittlesey, Birmingham, and Matthew S. Mashikian, Huntington Woods, both of Mich., assignors to Energy Development Associates, Inc., Madison Heights, Mich.

Filed May 27, 1980, Ser. No. 153,094

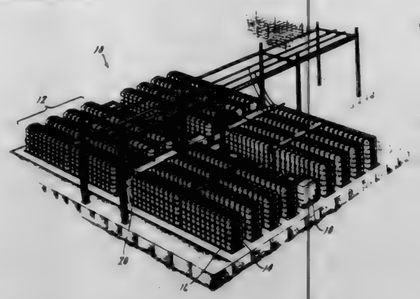
Int. Cl.³ H01M *2/20*

U.S. Cl. 429—49 **35 Claims**

1. A method of discontinuing the electrical current flow through at least one secondary energy storage battery module in a battery plant having a plurality of battery modules connected in series to form a battery string, a plurality of said battery strings connected electrically in parallel, first switching means for controlling the supply of at least one reactant electrochemically transformed in said battery modules, and second switching means for redirecting the electrical current flow through said battery plant, comprising the steps of:

energizing said first switching means so that the supply of

said reactant in at least one of said battery modules is interrupted; and



energizing said second switching means so that the electrical current is discontinued in at least one of said battery modules and redirected through said battery plant.

4,287,268

ELECTRODE FOR AN ELECTROCHEMICAL CELL, AND AN ELECTROCHEMICAL CELL

Johan Coetzer, Pretoria, South Africa, assignor to The South African Inventions Development Corporation, Pretoria, South Africa

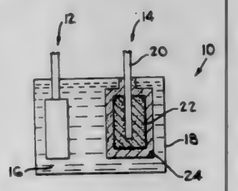
Filed Jul. 17, 1979, Ser. No. 58,145

Claims priority, application South Africa, Jul. 17, 1978, 78/4059; Jul. 17, 1978, 78/4060; Sep. 6, 1978, 78/5064

The portion of the term of this patent subsequent to Aug. 14, 1997, has been disclaimed.

Int. Cl.³ H01M *10/39*

U.S. Cl. 429—103 **35 Claims**



1. An electrochemical cell including a pair of compatible electrodes and a compatible electrolyte, at least one of the electrodes comprising an electrochemically active substance which comprises one or more elements selected from the group consisting of the halogens, the alkali metals, the alkaline earth metals, the first and second series of transition elements, lead, phosphorous, arsenic, antimony, bismuth and aluminium and a zeolite molecular sieve carrier having pore sizes of less than 100 Angtrom units wherein the electrochemically active substance is sorbed and is held in dispersed form in the cavities thereof for effective use in the cell, and the electrochemically active substance being such that any exchangeable cations of the zeolite molecular sieve carrier make a negligible contribution to the cell reaction, and substantially all the power and energy of the cell is provided by the eldctrochemically active substance held in dispersed form in the cavities in the carrier.

4,287,269

ELECTROCHEMICAL CELL AND ANODE FOR AN ELECTROCHEMICAL CELL

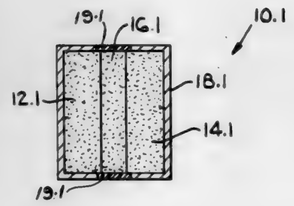
Johan Coetzer, and Michael M. Thackeray, both of Pretoria, South Africa, assignors to The South African Inventions Development Corporation, Pretoria, South Africa

Filed Aug. 29, 1979, Ser. No. 70,898

Claims priority, application South Africa, Sep. 6, 1978, 78/5067

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—103 **19 Claims**



1. An electrochemical cell comprising, in its charged state, an anode, a cathode, and an electrolyte, the anode comprising, as electrochemically active substances, an alkali metal and a chalcogen selected from the group consisting in sulphur and selenium, the alkali metal and chalcogen being combined together to form an alkali metal polysulphide or polyselenide, and being sorbed in a zeolite molecular sieve carrier in finely dispersed form, the chalcogen being held captive in the carrier and the alkali metal being capable of migrating in ionic form from the anode towards the cathode during discharge of the cell.

4,287,270

SALT COMPOSITION USABLE AS A FUSED ELECTROLYTE IN ACCUMULATORS

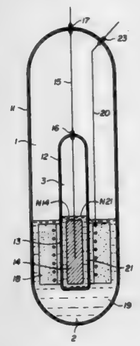
Frederic Breda, Oye Plage; Pierre Jonville, Clermont-Ferrand, both of France; Angelo Bonomi, Onex, and Jack Ambert, Grand-Lancy, both of Switzerland, assignors to Proge Groupement d'Interet Economique, Paris, France

Filed Apr. 24, 1980, Ser. No. 143,289

Claims priority, application France, Apr. 26, 1979, 79 11226

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—103 **8 Claims**



1. An alkali salt composition free from hydroxide, usable in its molten state as an anode electrolyte for accumulators with an alkali metal negative electrode and with an alkali alumina separator, the said composition containing an alkali amide, at least one alkali halide, and an alkali hydride.

5. A secondary electrochemical cell having an alkali metal negative electrode, a positive electrode, an alkali alumina separator between said electrodes, and between the separator and the negative electrode a molten-salt electrolyte composition comprising an alkali amide, at least one alkali halide, and an alkali hydride.

4,287,271

ELECTROLYTE FOR AN ELECTROCHEMICAL CELL, AND AN ELECTROCHEMICAL CELL INCLUDING THE ELECTROLYTE

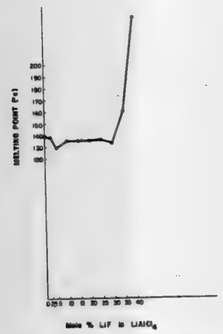
Johan Coetzer; Margaretha J. Nolte, and Annemare de Kock ee Steynberg, all of Pretoria, South Africa, assignors to The South African Inventions Development Corporation, Pretoria, South Africa

Filed Aug. 20, 1980, Ser. No. 179,729

Claims priority, application South Africa, Aug. 22, 1979, 79/4430

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—103 **23 Claims**



1. An electrolyte for use as a molten salt electrolyte in an electrochemical cell, and which comprises:

aluminium cations;

alkali metal cations selected from the group consisting in lithium cations, a mixture of lithium and potassium cations and a mixture of sodium and potassium cations; and

halide anions comprising a mixture of chloride and fluoride anions;

the proportions of the constituents of the electrolyte being selected such that the relative quantities of said aluminium, alkali metal and halide ions conform substantially with the stoichiometric product:

$$MAlX_4$$

wherein:

M represents said alkali metal cations; and

X represents said halide anions,

the proportions of the alkali metal cations and the halide anions making up said stoichiometric product being such that the melting point of the electrolyte at atmospheric pressure is below 140° C.

10. An electrochemical cell having a molten salt electrolyte as claimed in claim 1, coupled together with a compatible anode and a compatible cathode.

4,287,272

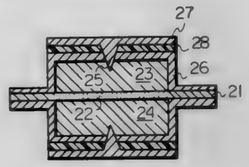
CELL SEPARATOR AND CELL

Sueo Machi, Takasaki; Isao Ishigaki, Maebashi; Takanobu Sugo, Gunma; Toshio Okada, Kadoma; Kazuo Murata, Takatsuki; Shiro Tanso, Takatuski, and Keizi Senoo, Takatsuki, all of Japan, assignors to Japan Atomic Energy Research Inst., Tokyo and Yuasa Battery Co. Ltd., Osaka, both of, Japan

Filed Apr. 21, 1980, Ser. No. 142,621

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—144 **3 Claims**



1. A cell separator made of a grafted membrane comprising a polyethylene film which is graft-copolymerized with a monomer having an ion exchange group, said grafted membrane having an area which is not grafted at all or an area of low degree of grafting.

4,287,273

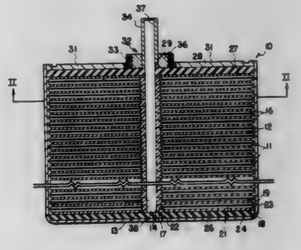
PLURAL CELL BATTERY STRUCTURE

David E. Harney; Marilyn J. Harney, both of Painesville, Ohio, and Matthew O'Boyle, Timonium, Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Apr. 3, 1980, Ser. No. 136,935

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—153 **9 Claims**



1. A primary battery comprising:

A. an electrically conductive encasement means having a base portion, said base portion including a first insulating means;

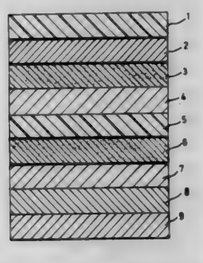
B. a stacked array of cells extending from said first insulating means to the top of the encasement means, each of said cells consisting essentially of an anode and a pelletized depolarizer, said depolarizer being in direct contact without any separating layer, except an in situ formed electrolytic layer, with said anode and the anode of an adjacent cell, said anode and depolarizer of each cell being relatively positioned so that said cell is in electrical contact with the inner surface of said encasement means through said depolarizer of each cell;

C. a second insulator means positioned substantially coextensively over said array;

D. means for electrically connecting each of said anodes in parallel; and

E. an electrically conductive top means sealingly attached to said encasement means and including a terminal electrically insulated therefrom, said terminal being electrically connected to said means for electrically connecting each of said anodes.

4,287,274
COMPOSITE FLEXIBLE FILM LAMINATE
Peter Ibbotson, Wigan; John C. Smith, St. Helens, and Colin Frodsham, Warrington, all of England, assignors to Pakcel Converters Limited, Merseyside, England
Filed Sep. 26, 1979, Ser. No. 79,061
Claims priority, application United Kingdom, Oct. 3, 1978, 39153/78
Int. Cl.³ H01L 31/00
U.S. Cl. 429—156 10 Claims



1. A laminate film comprising a first layer of a plastics material, a second layer of discrete areas of coloured pigments, a third layer of adhesive, a fourth layer of a metallic deposit on the surface of a fifth layer, said fifth layer being of a plastics material, a sixth layer of adhesive, a seventh layer of a clay based coating on an eighth layer, said eighth layer being paper and a ninth layer of uncured adhesive.

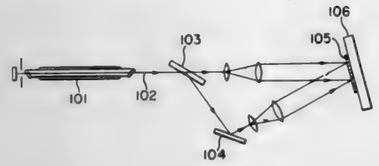
4,287,275
ALKALINE CELL WITH GRAFT POLYMER SEPARATOR
William J. Davis, Wyomissing, Pa., assignor to Sac Membrane Products Corporation, Syosset, N.Y.
Filed Jan. 26, 1979, Ser. No. 6,909
Int. Cl.³ H01M 6/04
U.S. Cl. 429—206 12 Claims

1. An alkaline cell, which comprises a positive electrode, a negative electrode, an aqueous alkaline electrolyte, and a separator between said electrodes, said separator comprising a cast sheet of a crosslinked graft copolymer of a polymeric substrate selected from the group consisting of polyolefins, polyamides and poly(vinylhalides) and an ethylenically unsaturated monomer, said cast sheet having been prepared by solvent removal from a layer of a thixotropic suspension of said crosslinked graft copolymer in an organic solvent.

4,287,276
ALKALINE BATTERY WITH SEPARATOR OF HIGH SURFACE AREA
Joseph T. Lundquist, Jr., Columbia, and Christian B. Lundsager, Ashton, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Jun. 8, 1979, Ser. No. 46,990
Int. Cl.³ H01M 6/04
U.S. Cl. 429—206 13 Claims

1. In an alkaline battery system having positive electrodes, negative electrodes, an alkaline electrolyte and separator membrane positioned between positive and negative electrode pairs, wherein the improvement comprising separator membranes, each having a thickness of less than about 10 mils and formed from an admixture of from 7 to 30 weight percent polyolefin having an average molecular weight of at least 100,000; from 0 to 15 weight percent plasticizer; and from 50 to 93 weight percent of a filler selected from titania, alumina, magnesium hydroxide or calcium hydroxide, said filler having a surface area of from 100 to 385 m^2/cc and a pore volume of at least 0.075 cc/gm.

4,287,277
HOLOGRAM RECORDING MATERIAL
Masakazu Matsumoto, and Katsuhiko Nishide, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 819,584, Jul. 27, 1977, Pat. No. 4,172,724.
This application May 29, 1979, Ser. No. 43,245
Claims priority, application Japan, Jul. 27, 1976, 51-89488
Int. Cl.³ G03C 5/04, 5/00
U.S. Cl. 430—2 7 Claims

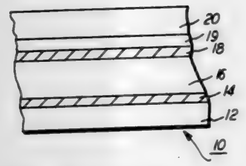


1. A relatively thin member of 2 to 20 microns thick for use as a volume type phase hologram for coherent optical processing adapted to provide enhanced diffraction efficiency, higher resolving power, and, stability against moisture and light consisting essentially of: a crosslinkable composition of:
(a) a polymer containing in its unit structure an aromatic or heterocyclic ring having therein a reactive position capable of being substituted by a radical and;
(b) 0.1 to 200 percent by weight based on the weight of the polymer of a halogen-containing compound for generating radicals when activated by radiation rays having at least one carbon to which two or more halogen atoms are attached, said radicals causing a cross-linking reaction involving said polymer to provide a cross-linked product in response to exposure to said radiation rays, said cross-linked product being responsive to the swelling effect of a first solvent and the shrinking effect of a second solvent, and said halogen containing compound being adapted to be dissolved by said first solvent.

4,287,278
TWO SUPERIMPOSED ION CURRENT FORMED IMAGES USING PHOTOCONDUCTIVE SCREEN GIVES WIDER POTENTIAL RANGE FOR GRADATION CONTROL IN ELECTROPHOTOGRAPHY
Tatsuo Ohta; Sohji Shinozaki; Syusaku Yoshida, and Hideo Ohba, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Mar. 21, 1980, Ser. No. 132,521
Claims priority, application Japan, Mar. 27, 1979, 54-35039
Int. Cl.³ G03G 13/052
U.S. Cl. 430—53 6 Claims

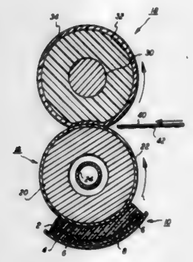
1. A method for forming an electrostatic latent image of an original on an image recording material comprising the steps of:
forming a primary electrostatic latent image on a photoconductive layer of a screen-type photosensitive plate;
forming a secondary electrostatic latent image on the image recording material by irradiating the recording material with a charged particle current passed through the screen-type photosensitive plate carrying the primary latent image; and
correcting the secondary electrostatic latent image on the recording material by irradiating the recording material bearing the secondary latent image with a charged particle current passed through the screen-type photosensitive plate carrying the primary latent image.

4,287,279
OVERCOATED INORGANIC LAYERED PHOTORESPONSIVE DEVICE AND PROCESS OF PREPARATION
George A. Brown, Penfield; Lloyd A. Relyea, Webster; Merlin E. Scharfe, and Heinz W. Pinsler, both of Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 5, 1980, Ser. No. 127,176
Int. Cl.³ G03G 5/082, 5/14
U.S. Cl. 430—58 4 Claims



1. A layered inorganic photoresponsive device comprised of
(a) a substrate having a thickness of from about 5 mils to about 100 mils;
(b) a layer of hole injecting material capable of injecting holes into a layer on its surface, this layer being comprised of trigonal selenium, and ranging in thickness of from about 0.5 microns to about 10 microns;
(c) a hole transport layer in operative contact with the hole injecting layer, this layer beng comprised of a halogen doped selenium arsenic alloy, wherein the percentage by weight of selenium present is from about 99.5 percent to about 99.9 percent, the percentage by weight of arsenic present is from about 0.1 percent to about 0.5 percent, and the halogen is present in an amount of from 10 parts per million to about 200 parts per million, this layer ranging in thickness of from about 5 microns to about 60 microns;
(d) a charge generating layer overcoated on the hole transport layer comprised of an alloy of selenium and tellurium, containing from about 70 percent to about 90 percent by weight of selenium, and from about 10 percent to about 30 percent by weight of tellurium, said layer ranging in thickness of from about 0.1 microns to about 5 microns; and
(e) a layer of electrically insulating organic resin overlaying the charge generating layer, said layer having a thickness of from 5 microns to about 25 microns.

4,287,280
RELEASE AGENT APPLICATORS AND METHOD OF APPLYING RELEASE AGENT EMULSIONS UPON FUSERS IN ELECTROSTATIC COPIERS
Joseph A. Swift, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 27, 1979, Ser. No. 52,385
Int. Cl.³ B44D 1/094; G03G 13/20, 15/20; B05C 11/00
U.S. Cl. 430—99 28 Claims



1. A method for preventing the offset of toner powder to a heated surface used to fix the toner powder to a substrate when the substrate is in pressure engagement with the heated surface comprising applying to the heated surface a high viscosity release agent liquid by continuously replenishable applicator means in contact with the heated surface, said applicator means in contact with a reservoir of a low viscosity emulsion of the high viscosity release agent and an inert vaporizable dispersion liquid for supplying and transporting said high viscosity release agent liquid to the heated surface.

4,287,281
MAGNETIC TONER COMPOSITION AND A METHOD OF MAKING THE SAME
Robert D. Bayley, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 22, 1979, Ser. No. 86,974
Int. Cl.³ G03G 15/08
U.S. Cl. 430—107 8 Claims

1. A magnetic toner composition comprising particles, said particles comprising resin and magnetic particles dispersed within the resin, said magnetic particles being of two types, the first type having hydrophilic surface characteristics and the second type having hydrophobic surface characteristics.

4,287,282
COMPOSITE MAGNETIC DEVELOPER
Nobuhiro Miyakawa, Kobe, and Takashi Teshima, Amagasaki, both of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan
Filed Jan. 10, 1980, Ser. No. 110,821
Claims priority, application Japan, Jan. 11, 1979, 54/1013
Int. Cl.³ G03G 9/00; C04B 35/04
U.S. Cl. 430—107 7 Claims

1. A composite magnetic developer which consists essentially of a homogeneous intimate mixture comprising a plurality of electrically insulating magnetic particulate developers, each developer comprising a binder medium and a finely divided magnetic material dispersed in the binder medium, wherein the difference of the dielectric constant (ϵ), as measured under conditions of an electrode spacing of 0.65 mm, an electrode sectional area of 1.43 cm^2 and an inter-electrode load of 105 g/cm^2, between said developers is in the range of from 0.2 to 0.85.

4,287,283
IRON POWDER DEVELOPING CARRIER AND THE MANUFACTURING METHOD OF THE SAME, DEVELOPER CONTAINING SAID CARRIER AND METHOD OF FORMING VISIBLE IMAGE BY USING SAID DEVELOPER
Shotaro Watanabe, Machida; Makoto Tomono, Hino; Goichi Yamakawa, Hachioji; Takeo Nishimura, Kawaguchi, and Nobuo Takahashi, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1978, Ser. No. 882,101
Claims priority, application Japan, Mar. 9, 1977, 52-25553
Int. Cl.³ G03G 9/10
U.S. Cl. 430—108 2 Claims

1. An iron powder, useful as a developing carrier for developing an electrostatic latent image, having an apparent density of from 1.5 to 2.5 g/cm^3 made by the method comprising the steps of: sintering a raw iron powder, that has been ground to a particle size of not larger than 50 microns in diameter, without using any binder agent at a temperature of from 900°–1200° C. to form a sintered body; grinding and classifying said sintered body into an intermediate iron powder having a particle diameter of from 50 to 200 microns; then treating said intermediate iron powder to oxidize it at a temperature of from 300° to 370° C., so that an oxidized film is coated on the surface of the iron powder; and adjusting the resultant iron powder so as to have an apparent density of from 1.5 to 2.5 g/cm^3.

4,287,284

METHOD OF IMAGINING USING POSITIVE TONERS CONTAINING ALKYL MORPHOLINIUM COMPOUNDS

Chin H. Lu, and Peter F. Erhardt, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 19,693, Mar. 12, 1979, Pat. No. 4,264,702.
This application Apr. 14, 1980, Ser. No. 139,930
Int. Cl.[3] G03G *13/08, 13/14*
U.S. Cl. 430—120 9 Claims

1. A method of imaging comprising forming an electrostatic latent image on a photoreceptor, which photoreceptor has been charged negatively, followed by contacting the image so formed with a developer composition comprising a resin material selected from a styrene butyl methacrylate resin, or a styrene butadiene resin, carbon black, a carrier material consisting of a steel core coated with a polyvinylidene fluoride resin, and a charge control additive selected from N-lauryl N-methyl morpholinium bromide, N-lauryl N-methyl morpholinium chloride, N-cetyl N-methyl morpholinium chloride, N-lauryl N-ethyl morpholinium chloride, or or N-cetyl N-ethyl morpholinium bromide, followed by subsequently transferring the developed latent image to a substrate, and permanently affixing the image thereto.

4,287,285

METHOD AND APPARATUS FOR FABRICATING PERSONAL IDENTIFICATION DOCUMENTS

Michael W. Mosehauer, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 952,423, Oct. 18, 1978, abandoned.
This application Dec. 17, 1979, Ser. No. 104,473
Int. Cl.[3] G03G *13/16, 13/22*
U.S. Cl. 430—124 3 Claims



1. A method of personalizing a core substrate of the type containing general authenticating information, said method comprising the steps of:
(a) electrophotographically forming an electrostatic image of a visually identifiable personal feature on a photoconductive surface of an imaging member;
(b) liquid developing said electrostatic image with toner particles in the size range from about 0.1 micron to about 1.0 micron; and
(c) thermally transferring said developed toner image directly from said photoconductive surface to such a core substrate, said transferring step comprises passing the imaging member and such core substrate between the nip of a pair of transfer rollers with the toner image contacting the transfer member, the roller contacting said photoconductor being heated to a temperature greater than about 40° C. and the roller contacting said core substrate being unheated.

4,287,286

TONER REPELLANT COATING FOR DIELECTRIC FILM

Herman Burwasser, Boonton, N.J., assignor to GAF Corporation, New York, N.Y.

Filed May 25, 1979, Ser. No. 42,433
Int. Cl.[3] G03G *21/00*
U.S. Cl. 430—127 4 Claims

1. A method for substantially preventing unwanted toner pick up on an electroreprographic imaging element having a film support layer, a conductive layer on said support, and a dielectric layer on said conductive layer, said method comprising application to the uncoated side of said film support an antistatic coating capable of substantially eliminating static electrical charges on the antistatically coated side of the film, said antistatic coating comprising a material selected from the group consisting of inorganic salts, resinous polymers of quaternary ammonium salts, homopolymers and copolymers of vinyl organic quaternary ammonium compounds and esters thereof.

4,287,287

ELECTROSTATOGRAPHIC CARRIER COATED WITH THIXOTROPIC COMPOSITIONS

Steven B. Bolte, Webster, and Richard B. Lewis, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1980, Ser. No. 116,066
Int. Cl.[3] G03G *9/00, 9/10*
U.S. Cl. 430—137 4 Claims

1. An improved process for preparing coated electrostatographic carrier particles, for use in developing compositions employed in the development of electrostatic latent images in an electrophotographic imaging device, comprising coating carrier core particles selected from the group consisting of iron, steel, ferrite, magnetite, nickel, and mixtures thereof, which particles have an average diameter of between about 30 microns and about 1,000 microns, by spray drying onto said particles a thixotropic coating lacquer comprised of fumed silica particles, in an amount of from about 0.05 percent to about 3.0 percent by weight based on the weight of the coated carrier particles, whereby the properties of the fumed silica particles cause a reduction in the penetration of such particles into the pores of the carrier core particles, thereby producing particles of a stable triboelectric charge.

4,287,288

LITHOGRAPHIC PLATE OF TIN-PLATED STEEL AND METHOD OF MANUFACTURE

Marcel Pigeon, Neuilly sur Seine, and Yannick de Maquille, Paris, both of France, assignors to Rhone-Poulenc-Graphic, Aubervilliers, France

Filed Feb. 8, 1979, Ser. No. 10,398
Claims priority, application France, Feb. 15, 1978, 78 04213
Int. Cl.[3] G03F *7/08, 7/10;* G03C *1/74;* B41N *1/10*
U.S. Cl. 430—169 12 Claims



1. A continuous method of making a presensitized lithographic plate from a tin-plated steel support wherein the tin-plate is a layer having a thickness in the range of from 1 to 10 microns comprising the steps of:
(a) depassivating the tin layer,
(b) continuously plating the depassivated tin layer of the tin-plated steel support in an electrolytic chromium bath having a temperature in the range of from 20° C. to 45° C. without cutting off the current in the electrolytic chromium bath to thereby obtain a hydrophilic dull chromium layer, and
(c) coating the hydrophilic chromium layer with a photosensitive product capable of being made oleophilic by photoexposure and development.

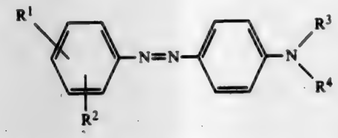
4,287,289

PHOTORESIST CYCLIZED RUBBER AND BISAZIDE COMPOSITIONS CONTAINING A MONOAZO PHOTOEXTINCTION AGENT

Takayuki Sato, Yokosuka, Japan, assignor to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 19, 1979, Ser. No. 49,613
Claims priority, application Japan, Sep. 8, 1978, 53-109814
Int. Cl.[3] G03C *1/70, 1/71*
U.S. Cl. 430—196 9 Claims

1. A photoresist composition which comprises a cyclized rubber and a bisazide compound as the principal ingredients and 0.5 to 15% by weight based on said rubber of a photoextinction agent which is a compound represented by the general formula



in which R^1 is a lower alkoxy group having from 1 to 6 carbon atoms, R^2 is a hydrogen atom or a lower alkyl group having from 1 to 4 carbon atoms and R^3 and R^4 are each a lower alkyl group having at least 2 carbon atoms or an aralkyl group, as a photoextinction agent.

4,287,290

PROCESS FOR PRODUCING POLYMERIC IMAGE BY DIFFUSION STEP

Masayoshi Mizuno, Mishima, and Hiroyuki Tsuchiya, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 31, 1980, Ser. No. 135,842
Claims priority, application Japan, Apr. 5, 1979, 54-41342
Int. Cl.[3] G03C *5/54, 5/00*
U.S. Cl. 430—205 11 Claims

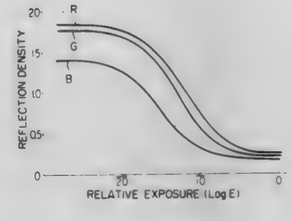
1. A process for producing a polymeric image by selectively polymerizing a layer of an addition-polymerizable material comprising at least one addition-polymerizable unsaturated compound only in predetermined portions of the layer to provide polymerized portions and unpolymerized portions and removing the unpolymerized portions of the layer, which process comprises the steps of:
(1) treating an image-wise light-exposed layer of a photographic silver halide emulsion with a treating solution having a reducing capacity, said treating solution having a capacity for initiating the polymerization of an addition-polymerizable unsaturated compound and a capacity for reducing the silver halide contained in the silver halide emulsion layer into metallic silver and having a property that it loses said capacity for initiating the polymerization of the addition-polymerizable unsaturated compound once it is used for the reduction of the silver halide, wherein said treating solution comprises an aqueous solution containing a developing agent for the photographic silver halide emulsion, an anti-oxidizing agent and an alkali;
(2) transferring or diffusing said treating solution from the silver halide emulsion layer into a layer of an addition-polymerizable material comprising at least one addition-polymerizable unsaturated compound to polymerize the addition-polymerizable material layer selectively in its portions corresponding to the light-unexposed portions of the silver halide emulsion layer in which the treating solution remains unreacted through the step (1), providing polymerized portions and unpolymerized portions; and
(3) removing the unpolymerized portions.

4,287,291

DIFFUSION TRANSFER COLOR PHOTOGRAPHIC FILM UNIT

Kaoru Onodera, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,311
Claims priority, application Japan, Nov. 23, 1978, 53-147692
Int. Cl.[3] G03C *1/40, 1/10, 5/54, 1/28*
U.S. Cl. 430—218 10 Claims



1. In a diffusion transfer color photographic film unit comprising a silver halide developing agent and a fogging agent and, at the same time, containing the following components therein
(a) a support having thereon at least one internal latent image type direct positive photosensitive silver halide emulsion layer in combination with a non-diffusible dye releasing redox compound,
(b) an image receiving layer, and
(c) an alkaline processing composition and a means for spreading said processing composition inside the film unit, the improvement comprising the alkaline processing composition containing an unsubstituted saturated aliphatic or unsubstituted alicyclic monohydric alcohol having 3 to 10 carbon atoms.

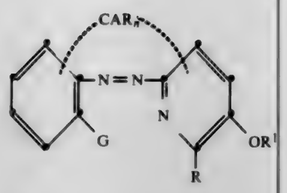
4,287,292

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 6-ARYLAZO-3-PYRIDINOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

Derek D. Chapman, and James A. Reczek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,406
Int. Cl.[3] G03C *1/40, 1/10, 7/00, 5/54*
U.S. Cl. 430—222 31 Claims

17. In a photographic assemblage comprising:
(a) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material; and
(b) a dye image-receiving layer; the improvement wherein said dye image-providing material is a nondiffusible compound having a releasable 6-arylazo-3-pyridinol magenta dye moiety or precursor thereof, said compound having the formula



wherein:

(a) R represents hydroxy or amino;

(b) R^1 represents hydrogen, a hydrolyzable moiety or CAR;

(c) G represents carboxy; a hydrolyzable ester group having the formula $COOR^2$, wherein R^2 is an alkyl or substituted alkyl group having 1 to about 8 carbon atoms or an aryl or substituted aryl group having 6 to about 10 carbon atoms; or a sulfamoyl group having the formula SO_2NHR^3 wherein R^3 represents hydrogen, alkyl or substituted alkyl having 1 to about 8 carbon atoms, aryl or substituted aryl having 6 to about 10 carbon atoms, or an acyl group having 1 to about 8 carbon atoms;

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible 6-arylazo-3-pyridinol magenta dye moiety or precursor thereof as a function of development of said silver halide emulsion layer under alkaline conditions; and

(e) n is 0, 1 or 2, with the proviso that when n is 0, then R^1 is CAR;

and wherein the phenyl ring illustrated above may not be substituted with a nitro group.

4,287,293

PHOTOGRAPHIC ELEMENT

Tamotsu Iwata, and Shigeru Iguchi, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jan. 8, 1980, Ser. No. 110,751

Claims priority, application Japan, Jan. 18, 1979, 54-4250

Int. Cl.³ G03C *5/54, 1/72*

U.S. Cl. 430—232 **12 Claims**

1. A photographic element having a photographic layer containing a conversion mixture of a polyvinyl alcohol having a saponification degree of 98% or more and an ethylene-maleic anhydride copolymer.

5. A photographic element of claim 1, wherein the photographic layer is an image receiving layer of the silver complex diffusion transfer element.

4,287,294

METHOD FOR THE PREPARATION OF RELIEF STRUCTURES BY PHOTOTECHNIQUES

Roland Rubner, Röttenbach; Eberhard Kühn, Hemhofen, and Hellmut Ahne, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,129

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919841

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—306 **6 Claims**

1. In a method for the preparation of relief structures by phototechniques wherein a mixture of (i) a photo-or radiation-reactive olefinically unsaturated polymer and (ii) as a photoinitiator, an azide is applied in the form of a layer or foil to a substrate; the layer or foil is exposed or irradiated through a mask; and the non-exposed or non-irradiated portions of the layer or foil are removed from the substrate to obtain a relief structure, the improvement comprising utilizing as said photoinitiator an aromatic azidomaleinimide.

4,287,295

IMAGE FORMING METHOD AND APPARATUS THEREFOR

Kohei Nonaka, Yokohama; Masahiro Koyama, Kawasaki; Makoto Gonmori, Tokyo; Takeo Kimura, and Tetsuo Shiga, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 2, 1979, Ser. No. 63,306

Claims priority, application Japan, Aug. 11, 1978, 53-98524; Jun. 22, 1979, 54-78688

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—349 **12 Claims**

1. In an image forming method for forming a visible image using an image forming sheet containing at least an organic silver salt oxidizing agent, a reducing agent for silver ion and a binder, which sheet is normally non-photosensitive but can be rendered photosensitive by preheating prior to exposure; and wherein said image forming sheet is preheated to render it photosensitive, is exposed to a light image to form therein a latent image and then is heat-developed to form a visible image; the improvement comprising, after preheating an area of the image forming sheet, the step of cooling said area of the image forming sheet to a temperature below 60° C. prior to exposure.

4,287,296

DIRECT-POSITIVE EMULSION CONTAINING FOGGED, SILVER HALIDE GRAINS OF SILVER IODIDE CONTENT

Willy J. Vanassche, Kontich; Herman A. Pattyn, Kapellen, both of Belgium; Erik Moisar, Köln-Flittard, and Sieghart Klötzer, Cologne, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 20, 1973, Ser. No. 417,497

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1972, 2263246

Int. Cl.³ G03C *5/24, 1/36*

U.S. Cl. 430—411 **14 Claims**

1. Photographic material comprising at least one layer of a direct-positive radiation-sensitive emulsion containing fogged silver halide grains, wherein the silver halide grains are heterodisperse and irregular and have a grain size distribution so that at least 10% by weight of the silver halide grains have a diameter, which deviates for at least 40% from the mean grain diameter and wherein the silver halide of the grains has a silver iodide content of more than 10 mole % and at most about 20 mole % relative to the total amount of silver halide.

4,287,297

LIQUID COMPOSITION FOR TREATING PHOTOSENSITIVE LAMINATES HAVING ALCOHOL-SOLUBLE POLYAMIDE LAYER

Tetsuo Ishihara, Itami, and Keizi Kubo, Amagasaki, both of Japan, assignors to Daicel Chemical Industries Ltd., Osaka, Japan

Filed Mar. 3, 1980, Ser. No. 126,600

Claims priority, application Japan, Mar. 9, 1979, 54-27522

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—435 **7 Claims**

1. A liquid composition for treating photosensitive laminates having an alcohol-soluble polyamide layer formed on a substrate, which comprises 12 to 70 parts by weight of an aromatic neutral salt selected from X,Y,Z-substituted benzenes and X,Y,Z-substituted naphthalenes in which X is a group selected from COONa and SO_3Na, Y is a group selected from H, OH, NH_2 and COONa and Z is a group selected from H, CH_3 and OH, 0.01 to 10 parts by weight of an alkali, 1 to 15 parts by weight of alcohol and 84 to 100 parts by weight of water.

4,287,298

FILM BASE MATERIAL CONTAINING A COMBINATION OF SURFACTANTS

Geoffrey M. Dodwell, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

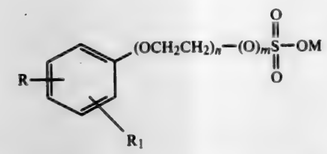
Division of Ser. No. 935,397, Aug. 21, 1978, Pat. No. 4,244,988, which is a continuation of Ser. No. 777,285, Mar. 11, 1977, abandoned. This application Feb. 6, 1980, Ser. No. 119,067

Claims priority, application United Kingdom, Apr. 14, 1976, 15165/76

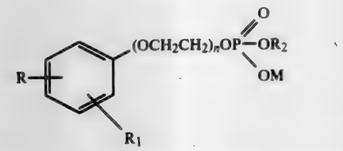
Int. Cl.³ G03C *1/78*

U.S. Cl. 430—533 **8 Claims**

1. A process for the preparation of silver halide photographic material which comprises preparing an uniaxially oriented film of synthetic linear polyester of highly hydrophobic character, coating as a layer on this film an aqueous latex of a copolymer which comprises from 60 to 90 mole % vinylidene chloride, from 7 to 20 mole % alkyl acrylate or methacrylate, from 0 to 3 mole % copolymerisable acid and from 5 to 20 mole % of an allyl, methallyl or vinyl monomer which comprises an active halogen group an active methylene group the copolymerisation taking place in the presence of a mixture of an anionic surfactant which is either an alkyl aryl polyester sulphate or sulphonate of the formula

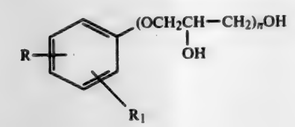


or an alkyl aryl polyether phosphate of the formula

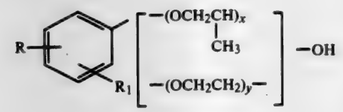


wherein R is alkyl of 6 to 10 carbon atoms, R_1 is hydrogen or alkyl of 1 to 5 carbon atoms, M is hydrogen, an alkali metal or ammonium, R_2 is hydrogen, an alkali metal, ammonium or alkyl of 1 to 5 carbon atoms, m is 0 or 1 and n is 3 to 15,

and a nonionic surfactant which is an alkyl aryl polyalkylene oxide containing at least some polypropylene oxide derived units of the formula



or of the formula



where R is alkyl of 6 to 10 carbon atoms, R_1 is hydrogen or alkyl of 1 to 5 carbon atoms, n is 3 to 15, x is 1 to 4 and y is 3 to 10, the proportions of nonionic to anionic surfactant being from 5 to 50 by weight up to 20 to 50 by weight, the total amount of surfactant present in the aqueous medium being up to 2% W/V of the monomers used, then drying the coated layer and completing the orientation to obtain a biaxially oriented polyester film and then coating on to the dried copolymer layer a gelatino silver halide emulsion layer and drying the silver halide emulsion layer.

4,287,299

PROCESS FOR THE PRODUCTION OF MATTING LAYERS

Wolfgang Himmelmann; Rolf Brück; Wolfgang Sauerteig, all of Leverkusen; Peter Kruck, Cologne; Günter Kolb, and Günter Sackmann, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,496

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919822

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—537 **5 Claims**

1. In a process for producing photographic material having a supported layer containing particles of a narrow grain size distribution, stable in alkaline solutions to provide a matt surface,

the steps of providing a dispersion for the layer comprising,

providing a layer cast as a surface layer of the photographic material, including casting as the surface layer a composition consisting essentially of a hydrophilic colloid and 1–15% by weight of the dispersion polymer particles dispersed in the colloid, said polymer dispersion being obtained by forming a finally divided copolymer suspension of spherical particles of a substantially alternating and equimolecular grouped suspension copolymer of maleic acid anhydride and C_2–C_8 monoolefin having a particle size from 1 to 10μ

dispersing said particles in a aqueous solution of a hydrophilic colloid in a quantity of from 1 to 15% by weight, based on the weight of the dispersion.

4,287,300

CHARGE EFFECTS IN ENZYME IMMUNOASSAYS

Ian Gibbons, Menlo Park; Gerald L. Rowley, Cupertino, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Jul. 26, 1979, Ser. No. 61,099

Int. Cl.³ C12Q *1/70*; G01N *33/54*; C12N *9/96*

U.S. Cl. 435—5 **15 Claims**

1. A method for determining the presence of an analyte in a sample suspected of containing said analyte, said analyte being a member of a specific binding pair consisting of ligand and antiligand, wherein a detectible signal is obtained related to the amount of analyte by employing a signal producing system comprising an enzyme labeled specific binding member and a polyionic charged specific binding member having sufficient charge to attract an oppositely charged macromolecular substrate or cofactor, where the detectible signal level is related to the average proximity of said charged member to said enzyme labeled member, said method comprising:

combining in an aqueous assay medium;

(1) said sample;

(2) said charged specific binding member;

(3) said enzyme labeled specific binding member;

(4) substrates and cofactors for said enzyme wherein at least one substrate or cofactor for said enzyme is a charged macromolecular of opposite charge from said polyionic charged member,

wherein at least one of (1), (2) and (3) is ligand and at least one of the remaining of (1), (2) and (3) is antiliand, so that a complex may be formed between said charged specific binding member and said enzyme labeled specific binding member; and

determining the detectible signal produced by said enzyme

as compared to the signal produced in an assay medium having a known amount of analyte.

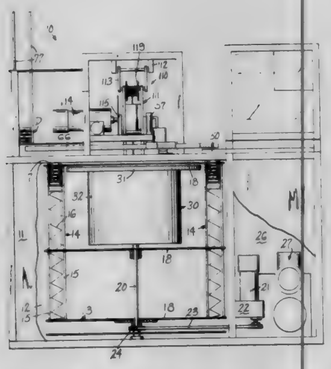
7. A composition useful for the immunoassay of claim 1 comprising, a macromolecular charged substrate or coenzyme and modified members of a specific binding pair consisting of ligand and antiligand, wherein the modified members are an enzyme labeled member and a charged member substituted with a plurality of functionalities which under the conditions of the assay are sufficiently charged opposite to said charged macromolecular substrate or cofactor to attract said charged macromolecular substrate or cofactor, the relative amounts of said charged member and said enzyme-labeled member substantially optimize the response of the detectible signal level to variations in analyte concentration.

4,287,301

METHOD AND APPARATUS FOR STREAKING AGAR

Thomas W. Astle, 607 Harbor View Rd., Orange, Conn. 06477

Filed Apr. 21, 1976, Ser. No. 679,016
Int. Cl.³ C12Q *1/24*; C12M *1/26, 1/32*
U.S. Cl. 435—30 **40 Claims**



1. Apparatus for streaking media with a specimen comprising a magazine for selectively storing plates containing various agar media having lids thereon and movable to present a selected plate to a delivery position, means for delivering a selected plate to a first position, means for removing the lid at said first position, means for streaking a specimen on the media in said plate, means for moving said plate after streaking to another position and replacing the lid thereon, and means for moving said plate from said lid replacing position to a pick-up position, said means for delivering comprising a pushing mechanism arranged to push a plate from a selected stack in said magazine from said delivery position to said first position, and further means for transferring the plate to a second position for streaking prior to transfer to said another position.

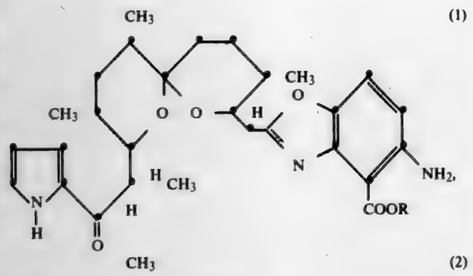
4,287,302

MICROBIOLOGICAL MODIFICATION OF ANTIBIOTIC A23187 ESTERS

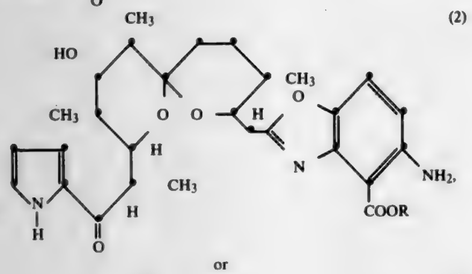
Bernard J. Abbott, Greenwood, and David S. Fukuda, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 971,616, Dec. 30, 1978, Pat. No. 4,247,703. This application Jul. 30, 1980, Ser. No. 173,511
Int. Cl.³ C12P *17/18*; C12R *1/52*
U.S. Cl. 435—119 **5 Claims**

1. A process for preparing a compound of the formula:

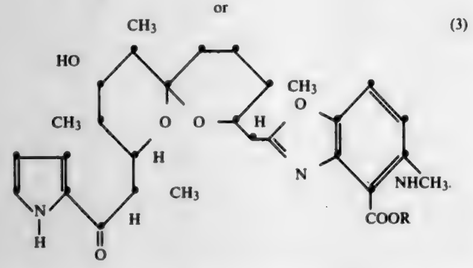


(1)



(2)

or



(3)

wherein R is methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, or t-butyl; which comprises cultivating *Streptomyces chartreusis* NRRL 11407 in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic conditions; adding a (lower) alkyl ester of antibiotic A23187 to the culture medium; and incubating the culture medium until a substantial amount of the compound is produced.

4,287,303

PRODUCTION OF ETHANOL

Bengt I. Dahlberg, Uttran; Lars K. J. Ehnström, Tullinge, both of Sweden, and Carroll R. Keim, Stamford, Conn., assignors to Alfa-Laval AB, Tumba, Sweden

Filed Nov. 13, 1979, Ser. No. 93,068
Int. Cl.³ C12P *7/14*
U.S. Cl. 435—162 **4 Claims**

1. In the method of producing ethanol from a carbohydrate-containing substrate mixed with non-fermentable solids, said method including the steps of continuously separating said substrate and solids into a flow rich in said solids and a substrate flow free from said solids, passing said substrate flow to a fermenter to produce ethanol by fermentation of said carbohydrate in the presence of yeast, withdrawing continuously from the fermenter a discharge stream of fermentation liquor containing yeast and ethanol, centrifugally separating said discharge stream continuously into at least a yeast concentrate flow and a yeast-free ethanol-containing flow, recirculating said yeast concentrate flow to the fermenter, and continuously separating said yeast-free flow into an ethanol-enriched flow and a residual flow, the improvement which comprises contacting at least part of said residual flow with said flow rich in solids to form a mixture, continuously separating said mixture in a plurality of separators into solids from which remaining substrate has been substantially removed and a flow enriched in substrate, and returning said flow enriched in substrate to the fermenter.

4,287,304

FERMENTABLE SUGAR FROM THE HYDROLYSIS OF STARCH DERIVED FROM DRY MILLED CORN

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 112,033
Int. Cl.³ C12P *7/14*
U.S. Cl. 435—162 **13 Claims**

1. A process for converting the starch fraction derived from whole dry milled corn to a sterile aqueous solution of fermentable sugar, said starch containing water insoluble protein and oil and one or more water soluble components selected from the group consisting of sugar, lipid, protein, vitamin and mineral, which comprises:

(a) liquefying an aqueous slurry of the starch by hydrolysis to provide sterile aqueous partial starch hydrolysate slurry containing the water insoluble protein and oil and the water soluble components in substantially unaltered condition;

(b) separating the slurry resulting from liquefying step (a) into an aqueous sterile slurry of partial starch hydrolysate containing a part of the water soluble components and an aqueous slurry of water insoluble protein and oil containing the remaining part of the water soluble components; and,

(c) saccharifying the relatively thin aqueous slurry of partial starch hydrolysate to provide a sterile aqueous solution of fermentable sugar.

4,287,305

MICROORGANISM IMMOBILIZATION

Alicia L. Compere, Knoxville, and William L. Griffith, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 30, 1976, Ser. No. 701,479
Int. Cl.³ C13N *11/14*; C12N *11/08*
U.S. Cl. 435—176 **4 Claims**

1. A process for producing an aggregate support material coated with a crosslinked coating, said coating having live, metabolically active microorganisms attached thereto, comprising the steps of:

contacting a particle of aggregate material with a water dispersible gelatin;

crosslinking said gelatin by reacting it with a glutaraldehyde to provide a crosslinked coating on said particle of aggregate material;

then contacting said coated particle with live microorganisms; and

then incubating said microorganisms in contact with said crosslinked coating to provide a coating having metabolically active microorganisms attached thereto, said microorganisms having continued growth and reproductive functions.

4,287,306

APPARATUS FOR GENERATION OF ANAEROBIC ATMOSPHERE

John H. Brewer, Abilene, Tex., assignor to Becton, Dickinson and Company, Paramus, N.J.

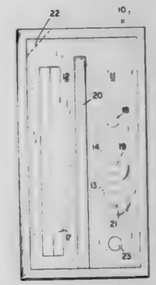
Filed Apr. 2, 1979, Ser. No. 26,337
Int. Cl.³ B01J *7/00, 8/02*; C12M *1/00*
U.S. Cl. 435—287 **10 Claims**

1. A unitary package for generating an anaerobic atmosphere for use in culturing anaerobic microorganisms, characterized by

(a) a flexible sealed package;

(b) material in said package for generating hydrogen;

(c) material in said package for generating carbon dioxide; and



(d) a catalyst coated onto the exterior surface of said flexible sealed package;

(e) whereby when said package is broken and water is inserted to react with said hydrogen generating material said externally coated catalyst catalyzes the reaction between oxygen outside said package and the said generated hydrogen.

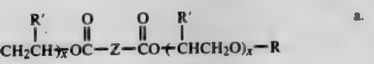
4,287,307

INTEGRAL SKIN MICROCELLULAR POLYESTER BASE POLYURETHANE ELASTOMERS

Fritz Hostettler, Freehold, N.J., assignor to Plastics Technology Associates, Inc., Farmingdale, N.J.

Filed Mar. 5, 1980, Ser. No. 127,791
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—51 **27 Claims**

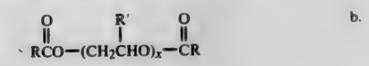
1. In a process of preparing an integral-skin microcellular polyester base polyurethane elastomer, the improvement comprising reacting a hydroxyl-terminated aliphatic polyester, an isocyanate and/or an isocyanate prepolymer of an aliphatic or an aromatic glycol and/or triol, in the presence of a blowing agent and at least one plasticizer of the following formulae:



a.

or mixtures thereof,

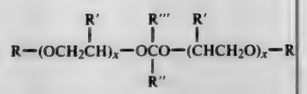
wherein R may be different for each position and is alkyl of from 1 to 12 carbon atoms, aryl, alkylated aralkyl, wherein the alkyl moieties may be up to 4 carbon atoms, R′ may be different in each of the repeating units, and is H or alkyl up to 4 carbon atoms; Z is alkylene of 2 to 10 carbon atoms; arylene and substituted arylene, aralkylene, wherein the alkylene portion thereof is up to 4 carbon atoms; cycloalkylene of 5 to 8 carbon atoms; and x stands for an integer from 1 to 5;



b.

or mixtures thereof,

wherein R may be different for each position and is alkyl from 1 to 12 carbon atoms; aryl; substituted aryl; aralkyl; alkaryl wherein the "alk" or alkyl portion of each is up to 4 carbon atoms; or cycloalkyl of 5 to 8 carbon atoms in the ring; and R may be different in each repeating unit and is hydrogen or alkyl from 1 to 4 carbon atoms; and x stands for an integer from 2 to 10;



c.

or mixtures thereof,
wherein R may be different for each of the positions and is alkyl of from 1 to 12 carbon atoms; aryl; substituted aryl; alkaryl wherein the "alk" moiety is up to 4 carbon atoms; cycloalkyl of 5 to 8 carbon atoms in the ring; R' is H, or alkyl from 1 to 4 carbon atoms in the ring; R'' and R''' are H, or alkyl from 1 to 4 carbon atoms; and x stands for an integer from 1 to 5; or

d.

or mixtures thereof,
wherein R may be different for each position and is alkyl from 1 to 12 carbon atoms; arly; substituted aryl; aralkyl or alkaryl wherein the "alk" or alkyl portion of each is up to 4 carbon atoms; cycloalkyl of 5 to 8 carbon atoms in the ring; and R' is H or alkyl or substituted alkyl of up to 4 carbon atoms; and x stands for an integer from 1 to 10.

4,287,308

PROCESS FOR PREPARING A THERMO-EXPANDABLE MICROSPHERES

Nobukazu Nakayama, and Sueo Kida, both of Nara, Japan, assignors to Matsumoto Yushi-Seiyaku Co., Ltd., Osaka, Japan

Filed Jun. 10, 1980, Ser. No. 158,172
Claims priority, application Japan, Feb. 14, 1980, 55/17372
Int. Cl.³ C08J *9/36*
U.S. Cl. 521—53 **5 Claims**

1. A process for preparing a thermo-expandable microsphere substantially free of acrylonitrile monomer which comprises microencapsulating a blowing agent with a thermoplastic polymer having an acrylonitrile moiety as one of ingredients, wherein the blowing agent becomes gaseous below a softening temperature of the thermoplastic polymer, and subjecting the microencapsulated product to cyanoethylation to eliminate the acrylonitrile monomer remaining in the microencapsulated product.

4,287,309

POLYURETHANE FOAMS CONTAINING BROMINATED DIPHENYL ETHER

David S. Cobbledick, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jul. 2, 1980, Ser. No. 165,315
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—114 **10 Claims**

1. In the method of making a flexible or semiflexible low density polyetherurethane foam using the one-shot or prepolymer process by the reaction of (A) a polyetherpolyol having from two to four hydroxyl groups and having a molecular weight of from about 1,000 to 10,000, (B) an organic polyisocyanate and (C) a blowing agent comprising water in admixture with (D) a surfactant, (E) a catalyst, (F) finely divided zinc oxide in an amount of from about 0.1 to 10 parts by weight per 100 parts by weight of said polyol, and (G) finely divided antimony trioxide in an amount of from about 0.5 to 15 parts by weight per 100 parts by weight of said polyol, the improvement comprising incorporating in the formulation prior to foaming a brominated diphenyl ether having from 4 to 10 bromine atoms in an amount of from about 5 to 25 parts by weight per 100 parts by weight of said polyol.

4,287,310

THERMOSETTING POWDER BASED ON AN UNSATURATED POLYESTER RESIN

Rene L. E. van Gasse, Opglabbeek, Belgium, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 24, 1980, Ser. No. 144,647
Claims priority, application Netherlands, May 2, 1979, 7903429
Int. Cl.³ C08L *67/00*
U.S. Cl. 525—44 **5 Claims**

1. A thermosetting powder based on an unsaturated polyester resin having a softening temperature of at least 50° C. wherein said powder comprises a homogeneous mixture containing 50 to 92% by weight of unsaturated polyester resin, 5 to 30% by weight of a prepolymer of a diallylester of an aromatic dicarboxylic acid, 3 to 20% by weight of high-boiling, crosslinking monomer having a boiling point greater than 200° C. and a vapor pressure less than 10 mm mercury at 150° C., and 0.1 to 5% by weight of hardening catalyst, these weight percentages relating to the overall quantity of the abovementioned polymerizable components.

4,287,311

GLUE FOR WOOD LAMINATING COMPRISING THERMOSETTING CONDENSATION RESIN AND MODIFIED PVA

Yasuo Taniguchi; Toshiharu Ike, and Hideo Nakaya, all of Ohmi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1979, Ser. No. 90,026
Claims priority, application Japan, Oct. 31, 1978, 53-133240
Int. Cl.³ C08L *61/32*
U.S. Cl. 525—58 **5 Claims**

1. A glue for wood laminating which comprises a thermosetting condensation resin and a modified polyvinyl alcohol having a hydrophobic group in the side chain thereof, said modified polyvinyl alcohol being present in an amount 0.2 to 5% by weight based on the thermosetting glue and being produced by copolymerizing vinyl acetate and a monomer having a hydrophobic alkyl group in the side chain thereof and subsequently saponifying the vinyl acetate moiety of the resultant copolymer to a degree of not less than 75 mol percent or by esterifying or etherifying hydroxyl groups of a polyvinyl alcohol, said monomer used for said copolymerization being at least one member selected from the group consisting of vinyl esters of aliphatic acids and alkyl vinyl ethers.

4,287,312

PROCESS FOR PRODUCING A GRAFT-COPOLYMER AND BLENDS THEREWITH

Haruhiko Yusa; Masanori Oota, and Katumi Suzuki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Apr. 10, 1979, Ser. No. 28,798
Claims priority, application Japan, Apr. 13, 1978, 53/43694
Int. Cl.³ C08L *51/04*
U.S. Cl. 525—83 **9 Claims**

1. A process for preparing a thermoplastic resin composition having an improved impact resistance which comprises blending 100 parts by weight of a thermoplastic resin selected from the group consisting of vinyl chloride resins, styrene-methyl methcrylate copolymer resins and styrene-acrylonitrile resins and 1 to 50 parts by weight of a graft-copolymer obtained by a process which comprises adding an aqueous solution of a salt of a strong acid and a monovalent strong base, which solution has been adjusted to a pH value of 8 to 13, to a rubber latex containing diene rubber particles, said latex having a pH of 8.0–10.0 and said diene rubber therein comprising at least 50% butadiene, and a fatty acid soap as an emulsifying agent to coagulate the rubber particles and thereafter adding a vinyl monomer selected from the group consisting of alkyl methacrylates, aromatic vinyl monomers, acrylonitrile, and alkyl acrylates to the latex containing the coagulated rubber particles to graft-polymerize the vinyl monomer.

4,287,313

BLOCK COPOLYMERS OF CONJUGATED DIENES AND LACTONES AS MODIFIERS OF UNSATURATED POLYESTERS

Raymond F. Uber; Clifford W. Childers, and Floyd E. Naylor, all of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Apr. 4, 1979, Ser. No. 27,123
Int. Cl.³ C08L *9/00, 9/06, 67/04, 67/06*
U.S. Cl. 525—91 **29 Claims**

1. A composition comprising:
(a) a block copolymer of the form A-D)$_y$ wherein A is a polymer segment which comprises one or more polymer blocks formed at least in part from one or more conjugated diene monomers, D is a polymer segment which comprises one or more polymer blocks formed from one or more lactone monomers, and y is 1, 2, 3 or 4;
(b) an unsaturated polyester; and
(c) a vinyl monomer.

4,287,314

MALEIMIDE-STYRENE COPOLYMER BLEND WITH POLYURETHANE

Ronald A. Fava, Monroeville, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Sep. 5, 1980, Ser. No. 184,502
Int. Cl.³ C08L *75/04, 75/06*
U.S. Cl. 525—130 **3 Claims**

1. A thermoplastic composition for molding of plastic articles consisting of a blend of
A. polyurethane
B. a resin containing 5 to 35% maleimide and 65 to 95% styrene each of components A and B being present in a weight concentration within a range from 40% to 60%.

4,287,315

POLYAMIDE BLENDS

Rolf-Volker Meyer; Rolf Dhein, and Friedrich Fahnler, all of Krefeld, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 56,247, Jul. 10, 1978, abandoned, which is a continuation of Ser. No. 942,628, Sep. 15, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 68,938
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742177
Int. Cl.³ C08L *77/00*
U.S. Cl. 525—183 **9 Claims**

1. Polymer blends with improved impact strength consisting of:
(I) from 70 to 99% by weight of at least one polyamide and
(II) from 1 to 30% by weight of a high molecular weight olefinic copolymer having a melting point of at least 100° C. and a melt index of from 1–20 g/10 min. at 190° C. measured according to DIN 53 735 consisting of:
(a) from 65 to 98% by weight of at least one α-olefine,
(b) from 1 to 15% by weight of at least one amide of an α-β-unsaturated carboxylic acid and
(c) from 1 to 20% by weight of at least one alkyl or alkenyl ester of an α,β-unsaturated carboxylic acid, the sum of (I) and (II) and the sum of (a)–(c) being in each case always 100% by weight.

4,287,316

TRANSPARENT RESIN COMPOSITION FOR INFORMATION SIGNAL RECORDING DISCS

Akira Kaneko, Tokyo; Masaki Ohya, Iwaki; Masayasu Suzuki, Iwaki, and Akio Kobayashi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 32,928
Claims priority, application Japan, Apr. 24, 1978, 53-47876
Int. Cl.³ C08L *9/02, 33/08*
U.S. Cl. 525—296 **8 Claims**

1. In a transparent resin composition for information signal recording discs each having information pits engraved on one side thereof and a metal coating deposited thereon, information signals recorded on the information pits being reproducible by irradiation with laser rays from the opposite side of said disc, the improvement wherein the resin composition comprises (1) 6 to 100% by weight of a nitrile graft copolymer having a rubber trunk polymer and a branch polymer grafted thereon, which has been obtained by graft-polymerizing onto the rubber trunk polymer a monomer mixture consisting of an unsaturated nitrile and at least one monomer copolymerizable therewith selected from the group consisting of alkyl acrylates, alkyl methacrylates, acrylic acid, methacrylic acid, acryl amides, and alkyl vinyl ethers, and (2) 0 to 94% by weight of a nitrile randon compolymer of an unsaturated nitrile and at least one monomer copolymerizable therewith selected from the group consisting of alkyl acrylates, alkyl methacrylates, acrylic acid, methacrylic acid, acryl amides, vinyl esters and alkyl, the components of the resin composition other than the rubber trunk polymer constituting a matrix resin, wherein:
(a) said rubber trunk polymer has a glass transition temperature of not higher than 0° C. and constitutes 4 to 25% by weight of the resin composition;
(b) the unsaturated nitrile constitutes 25 to 90% by weight of the matrix resin in the resin composition;
(c) the difference in the refractive indexes between the rubber trunk polymer and the matrix resin is not more than 0.008; and
(d) the resin composition, when molded into a 3 mm-thick plate, has a transmittance in diethyl phthalate of not lower than 95% with respect to the laser rays used.

4,287,317

CONTINUOUS PROCESS FOR PRODUCING RUBBER-MODIFIED METHYL METHACRYLATE SYRUPS

Yoshihiko Kitagawa, Toyonaka; Yoshimi Hanamura, Niihama; Masahiro Yuyama, Niihama; Masahiko Moritani, Niihama; Akira Sakuramoto, Niihama, and Mikio Suzuki, Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 22, 1980, Ser. No. 142,638
Claims priority, application Japan, Apr. 27, 1979, 54-52972
Int. Cl.³ C08F *255/06, 263/04, 265/06, 279/02*
U.S. Cl. 525—309 **10 Claims**

1. A continuous process for producing a rubber-modified methyl methacrylate syrup, which comprises continuously supplying a material liquor comprising 1 to 20 parts by weight of a rubbery polymer dissolved in 100 parts by weight of a monomer comprising 60 to 100% by weight of methyl methacrylate and 0 to 40% by weight of an ethylenically unsaturated monomer copolymerizable with methyl methacrylate, and a radical-polymerization initiator having a half life period of 5 seconds or less at 180° C. or lower to the first reaction zone wherein the starting materials are substantially completely mixed, continuously polymerizing at such a stationary conversion that the rubbery polymer is dispersed in the form of particles, while maintaining the temperature and residence time in the range of 0.5 to 30 minutes in the zone so that a steady-state is achieved in the zone and the steady-state concentration of the initiator in the reaction mixture is ½ to 1/1,000 time as much as the concentration of initiator supplied, continuously taking out the resulting reaction mixture from the zone, and passing it

through the second reaction zone having a volume of 0 to 5 times as much as that of the first reaction zone wherein a piston flow is substantially achieved, and thereby the final concentration of the initiator being decreased to obtain a stable syrup comprising a disperse phase and a continuous phase, the former phase being a solution of a major amount of the rubbery polymer and a minor amount of the resinous polymer in the monomer, the latter one being a solution of a major amount of the resinous polymer and a minor amount of the rubbery polymer in the monomer, the average particle diameter of the disperse phase of the syrup being in the range of 0.1 to 20μ and the number average polymerization degree of resinous polymers in the continuous phase of the syrup being within a range of 300 to 6,000, and the conversion of monomer to polymer of 5 to 40% being achieved.

4,287,318

PROCESS FOR PREPARING RUBBER REINFORCED STYRENIC RESINS

William J. I. Bracke, Hamme, and Emmanuel Lanza, Brussels, both of Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed Mar. 27, 1980, Ser. No. 134,474
Int. Cl.³ C08F *291/12, 265/08, 267/08*
U.S. Cl. 525—313 **17 Claims**

1. A process for the continuous production of ABS-type resins which are copolymers of a styrenic compound, acrylonitrile and conjugated diolefinic hydrocarbon compound, which comprises the steps of;

(a) charging continuously a diolefinic compound and a solution of a copolymeric matrix of styrenic compound and acrylonitrile in an inert saturated hydrocarbon solvent having a boiling point ranging between 120° and 175° C., into a polymerization zone comprising at least a first and second reactor,

(b) subjecting the mixture thus formed to mass polymerization in said first reactor at a temperature less than about 100° C.,

(c) thereafter continuously changing subjecting said mixture to mass polymerization in said second reactor at a temperature ranging from about 100° to about 140° C. in the presence of from about 0.02 to about 2.5 weight percent of free radical generating catalyst, based on the total weight of copolymeric matrix and diolefinic compound, whereby there is formed in situ during said mass polymerization in said first and second reactors a rubbery material dispersed in said copolymer matrix,

(d) withdrawing continuously the reaction mixture from said polymerization zone and subjecting it to a heat treatment to remove the residual diolefinic compound and the solvent, and

(e) recovering the ABS resin.

4,287,319

COMPOSITIONS OF POLYVINYLPYRIDINE AND IODINE

Gary M. Phillips, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 6,003, Jan. 24, 1979, abandoned. This application Jan. 23, 1980, Ser. No. 114,730
Int. Cl.³ C08F *8/22*
U.S. Cl. 525—336 **3 Claims**

1. A composition comprising an initial polyvinylpyridine polymer component, selected from the group consisting of P2VP, P4VP and mixtures thereof, and iodine in a predetermined mole ratio of from about 20:1 to about 40:1, the composition having a conductivity measured at 37° C. of at least about 1.5×10^{-3} reciprocal ohm-cm and being formed in a sealed container by mixing the polymer component and at least a portion of the iodine together and by heating the polymer component before or during mixing, or by heating the resultant mixture, to a temperature in excess of about 225° C., and thereafter adding the remaining balance, if any, of the iodine to make-up the predetermined mole ratio.

4,287,320

COMPOSITION OF FLUOROELASTOMER AND DIORGANOSULFUROXIDE

Robert E. Kolb, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 493,537, Aug. 1, 1974, abandoned, which is a continuation of Ser. No. 406,832, Oct. 16, 1973, abandoned. This application Feb. 19, 1980, Ser. No. 122,513
Int. Cl.³ C08F *8/34, 8/00*
U.S. Cl. 525—340 **15 Claims**

1. A curable fluoroelastomer composition consisting essentially of elastomeric co-polymer of vinylidene fluoride and terminally ethylenically unsaturated fluorinated comonomer, and for each hundred parts of said co-polymer:

a. 0.2 to 5 parts diorganosulfur oxide, which contains two like or unlike aliphatic, cycloaliphatic or aromatic groups which are unsubstituted or substituted only with halogen;

b. 0.1 to 5 parts quaternary phosphonium or ammonium compound;

c. a total of 3 to 40 parts consisting of 0 to 25 parts acid acceptor, and 0 to 25 parts optional base; and

d. 0.2 to 5 parts aromatic hydroxy or amino compound.

4,287,321

POLY(PHENYLENE ETHER)POLY(VINYL AROMATIC) COMPOSITIONS

Walter K. Olander, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 10, 1979, Ser. No. 102,280
Int. Cl.³ C08G *65/40, 65/44*
U.S. Cl. 525—392 **12 Claims**

1. A process for the preparation of a composition comprising a polyphenylene ether and a poly(vinyl aromatic) compound, said process comprising the steps of:

(a) oxidatively coupling a phenolic monomer to form a polyphenylene ether in a basic reaction medium comprising a polymerizable vinyl aromatic compound in the presence of a manganese chelate complex of the formula

$$(L)_xMn$$

wherein L is a ligand derived from an ω-hydroxyoxime by conventional means, Mn is the transition metal manganese and x is at least equal to about 0.05;

(b) selectively liquid-liquid extracting from the reaction mixture of step (a) with an immiscible solvent to the base-reactive by-products therein; and

(c) thereafter heating the base-extracted solution of polyphenylene ether in vinyl aromatic compound under polymerization conditions until at least part of said vinyl aromatic compound has been polymerized.

4,287,322

EPICHLOROHYDRIN ELASTOMER COMPOSITIONS

Allan T. Worm, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 23, 1979, Ser. No. 87,503
Int. Cl.³ C08G *65/32*
U.S. Cl. 525—403 **26 Claims**

1. A polyepichlorohydrin gum stock composition, comprising:

(a) polyepichlorohydrin gum;

(b) polyphenol curing agent;

(c) organo-onium cocuring agent selected from compounds of the formulas

$$(R^1)_4Q^{+1}(X^{-m})_{1/m}$$

$$(R^1)_3QR^2Q(R^1)_3{}^{+2}(X^{-m})_{2/m}$$

wherein Q is a nitrogen, arsenic or phosphorus atom; X is an anion of valence m; each R^1 is a monovalent organic radical containing 1 to 20 carbon atoms, is the same as or different from any other R^1, and can combine with another R^1 to form a cyclic structure containing a Q atom; and R^2 is a divalent organic radical containing 2 to 12 carbon atoms;

$$(R^3)_3S^{+1}(X^{-m})_{1/m}$$

or

$$(R^3)_2SR^4S(R^3)_2{}^{+2}(X^{-m})_{2/m}$$

wherein S is sulfur; X is an anion of valence m; each R^3 is a monovalent organic radical containing 1 to 20 carbon atoms, is the same as or different from any other R^3, and can combine with another R^3 to form a cyclic structure containing an S atom; R^4 is a divalent organic radical containing 2 to 12 carbon atoms; and at least one R^3 or R^4 group is aromatic;

which composition in reactive association with an acid acceptor will, upon exposure to heat, cure into an elastomer.

4,287,323

ADDITION POLYMERIZABLE POLYETHERS HAVING PENDANT ETHYLENICALLY UNSATURATED URETHANE GROUPS

Nancy B. Tefertiller; Kenneth A. Burdett, and Robert F. Harris, all of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 961,000, Nov. 15, 1978, Pat. No. 4,233,425. This application Jan. 5, 1979, Ser. No. 1,125
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.³ C08L *75/08*
U.S. Cl. 525—404 **12 Claims**

4. An addition polymerizable composition comprising an addition polymerizable polyether which is represented by the formula:

$$Y[(R'''A)_mR'''-Z]_x$$

wherein each A is individually —O—, —S—,



wherein R_1 is hydrogen or alkyl; Y is hydroxyl, an oxycarbonylamino ester of an α,β-ethylenically unsaturated carboxylic acid or a residue of an active hydrogen initiator suitably employed in preparation of a polyether; each Z is individually hydroxyl, oxyhydrocarbyl, oxycarbonylhydrocarbyl or said oxycarbonylamino ester group provided that the polyether contains at least one of said oxycarboxylamino ester groups, each R''' is individually alkylene or haloalkylene wherein alkylene has at least two carbons; m is a whole number such that $—R'''A)_m—R'''—$ has a number average molecular weight from about 100 to about 100,000, and x is a whole number from 1 to 8 and a copolymerizable monomer(s), said monomer(s) is monoethylenically or polyethylenically unsaturated monomers which undergo addition polymerization upon exposure to actinic radiation and/or chemical initiation.

4,287,324

COMPOSITIONS OF EPICHLOROHYDRIN RUBBER AND POLYESTER

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed May 12, 1980, Ser. No. 149,076
Int. Cl.³ C08L *63/00*
U.S. Cl. 525—408 **22 Claims**

1. A composition comprising a blend of about 5–75 parts by weight of crystalline polyester, and, correspondingly, about 95–25 parts by weight of cured epichlorohydrin rubber.

4,287,325

COPOLYESTERS DERIVED FROM AROMATIC POLYESTERS AND GLYCOL POLYESTERS

Winston J. Jackson, Jr., and Herbert F. Kuhfuss, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,962
Int. Cl.³ C08L *67/02*
U.S. Cl. 525—444 **3 Claims**

1. Copolyesters prepared from 50 to 80 weight percent of an aromatic polyester derived from 20–80 mole percent terephthalic acid, 80–20 mole percent isophthalic acid and 4,4'-isopropylidenediphenol; and 50–20 weight percent of a glycol polyester derived from terephthalic acid, 50–80 mole percent ethylene glycol, and 50–20 mole percent 1,4-cyclohexanedimethanol.

4,287,326

SILOXANE-MODIFIED EPOXY RESIN COMPOSITIONS

Ryuzo Mikami, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,231
Int. Cl.³ C08L *63/02, 83/06*
U.S. Cl. 525—476 **10 Claims**

1. A siloxane-modified epoxy resin composition consisting essentially of (A) 100 parts by weight of a siloxane-modified epoxy resin prepared by reacting (1) 5 to 70 parts by weight of an alkylphenylpolysiloxane of the general unit formula

$$R_aSiX_bO(4-a-b/2)$$

wherein each R is an alkyl or phenyl radical such that the ratio of alkyl radicals to phenyl radicals in the alkylphenylpolysiloxane is 0.3 to 3.0, X is an alkoxy radical or a hydroxyl radical, a is 0.9 to 1.8, and b is 0.01 to 2 with (2) 95 to 30 parts by weight of an epoxy resin having at least two epoxy groups per molecule, (B) 0.01 to 100 parts by weight of an organosilicon compound having attached to silicon an alkoxy radical and a monovalent organic radical containing a functional group selected from the group consisting of an epoxy group, a methacryl group and an amino group and (C) a curing agent for (A).

4,287,327

PROCESS FOR CONTROLLING POLYMER PARTICLE SIZE IN VAPOR PHASE POLYMERIZATION

Glenn O. Michaels, and Michael J. Spangler, both of South Holland, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,854
Int. Cl.³ C08F *2/34*
U.S. Cl. 526—86 **7 Claims**

1. In a process for the continuous vapor phase polymerization of at least one olefin utilizing a polymerization catalyst which is charged to an existing bed of polymer particles the improvement comprising contacting said catalyst with a stream of wetting liquid before said catalyst is dispersed in said bed, said wetting liquid being introduced at a wetting liquid flux density greater than about 20.

4,287,328

METHOD FOR PRODUCING α-OLEFIN POLYMERS

Kazutsune Kikuta; Masami Tachibana, both of Ichiharashi, and Akihiro Sato, Chibaken, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Mar. 21, 1979, Ser. No. 22,613
Claims priority, application Japan, Dec. 1, 1978, 53-148728
Int. Cl.³ C08F *4/02, 10/06*
U.S. Cl. 526—115 **16 Claims**

1. In the method for producing α-olefin polymers by polymerizing α-olefins in the presence of a catalyst, said catalyst being obtained by:

(a) reacting one mol of anhydrous $AlCl_3$ or anhydrous $FeCl_3$ with 0.1 to 20 mols of a compound selected from the group consisting of $Mg(OH)_2$, MgO, $Mg_6Al_2(OH)_{16}CO_3.4H_2O$, $MgCO_3$, $MgAl_2O_4$ or $3MgCO_3.Mg(OH)_2.H_2O$; the reaction being carried out by milling and heating at a temperature between room temperature and 500° C., to thereby produce a solid product (I);

(b) reacting 1–5,000 g of at least one electron donor with 100 g of said solid product (I) in from one to ten steps in a suspension reaction manner or a milling reaction manner and at a temperature of between 0° C. and 500° C.,

(c) reacting 1–5,000 g of at least one electron acceptor with 100 g of said solid product (I) in from one to ten steps, using $TiCl_4$ as an electron acceptor in at least one step, in a suspension reaction manner or a milling reaction manner, and at a temperature of between 0° C. and 500° C., these two kinds of reactions (b) and (c) being carried out separately or simultaneously together to thereby form a solid product (II),

(d) forming catalyst components by combining said solid product (II) with an organoaluminum compound and an electron donor,

said electron donors being selected from the group consisting of compounds having the general formula RCOOR′, ROH, ROR′, RCOR′, and polysiloxanes characterized by the formula



(wherein n = 3 to 10,000 and R_1 and R_2 represent hydrogen or methyl and may be the same or different) and wherein in all of the foregoing formulas R and R′ are alkyl or aryl groups having 1 to 20 carbon atoms,

said electron acceptors being selected from the groups consisting of anhydrous $SiCl_4$, $SnCl_2$, $SnCl_4$ and $TiCl_4$, the improvement which comprises

(1) carrying out a catalyst activation step by either

(A) contacting an α-olefin with said solid product (II) and an organoaluminum compound at a temperature of 20°–100° C. under polymerizing conditions so as to thereby effect a preliminary polymerization, and then adding to this preliminary polymerization product one of the electron donors set forth above so that the total amounts of said organoaluminum compound, said electron donor and said α-olefin are 0.05 to 500 g, 0.05 to 20 g and 0.05 to 1,000 g respectively based on one gram of said solid product (II), or

(B) contacting an α-olefin with said solid product (II), an organoaluminum compound and one of said electron donors at a temperature of 20°–100° C. under polymerizing conditions so as to thereby effect a preliminary polymerization and then adding to this preliminary polymerization product one of the electron donors set forth above so that the total amounts of said organoaluminum compound, said electron donor and said α-olefin are 0.05 to 500 g, 0.05 to 20 g and 0.05 to 1,000 g respectively based on one gram of said solid product (II), and

(2) polymerizing α-olefins in the presence of the catalysts activated in accordance with step (1).

4,287,329

EMULSION PROCESS FOR PREPARING ELASTOMERIC VINYL ACETATE-ETHYLENE COPOLYMER AND HIGH MOONEY VISCOSITY LOW GEL CONTENT ELASTOMER OBTAINED THEREFROM

Manfred Heimberg, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 5,069, Jan. 22, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,946
Int. Cl.³ C08F *2/30, 218/08*
U.S. Cl. 526—202 **13 Claims**

1. In a process for preparing elastomeric vinyl acetate-ethylene copolymers having a Mooney viscosity value greater than about 30 and low gel content wherein vinyl acetate monomer is copolymerized with ethylene monomer in an aqueous emulsion reaction medium containing surface active agent, polymerization catalyst and protective colloid to provide a latex and vinyl acetate-ethylene elastomer is recovered from the latex, the improvement which comprises copolymerizing from about 40% to about 70% by weight of vinyl acetate monomer with from about 60% to about 30% by weight of ethylene monomer in an aqueous emulsion reaction medium to provide a latex, the reaction medium for vinyl acetate-ethylene elastomer containing:

(i) at least one surface active agent having a hydrophilic lipophilic balance value of at least 22 in an amount above about 2.0% by weight of the total monomer,

(ii) a polymerization catalyst, and

(iii) at least one protective colloid in an amount of less than about one part for each part by weight of total surface active agent, with the total weight of the surface active agent and vinyl acetate being present in the reaction medium at the commencement of copolymerization.

4,287,330

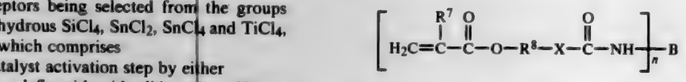
ACCELERATOR FOR CURABLE COMPOSITIONS

Richard D. Rich, Avon, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed May 23, 1975, Ser. No. 580,267
Int. Cl.³ C08F *24/00, 18/20, 26/02*
U.S. Cl. 526—270 **3 Claims**

1. A curable adhesive and sealant composition comprising:

(a) a room temperature polymerizable acrylate ester having the formula



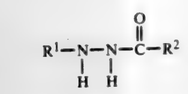
wherein n is an integer from 2 to about 6; B is a polyvalent organic radical selected from the group consisting of alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, aralkyl, alkaryl and heterocyclic radicals both substituted and unsubstituted; R^7 is selected from the class consisting of hydrogen, chlorine and methyl and ethyl radicals; and R^8 is a divalent organic radical selected from the group consisting of lower alkylene of 1 through 8 carbon atoms, phenylene and napthylene, and X is selected from the group consisting of —O— and



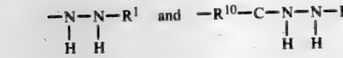
wherein R^9 is selected from the group consisting of hydrogen and lower alkyl of 1 through 7 carbon atoms;

(b) a free radical initiator in an amount sufficient to initiate polymerization of said ester; and,

(c) as a polymerization accelerator, a compound having the formula



wherein R^1 is phenyl substituted with C_1–C_4 alkyl group and R^2 is selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, alkoxy, aryloxy, carbonyl, amino, and the following groups:



wherein R^{10} is selected from the group consisting of alkyl groups containing one to about 10 carbon atoms, alkenyl groups containing two to about 10 carbon atoms, and aryl groups containing up to about 10 carbon atoms, said accelerator being present in an amount sufficient to accelerate the polymerization at room temperature.

4,287,331

IMPROVED METHOD OF PREPARING HIGH MOLECULAR WEIGHT POLYAMINES

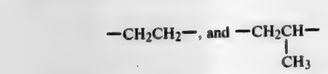
Kenneth G. Phillips, River Forest, and Paul J. Harris, Orland Park, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 29, 1979, Ser. No. 98,454
Int. Cl.³ C08G *73/02*
U.S. Cl. 528—397 **11 Claims**

1. An improved process for making high molecular weight polyamines comprising:

reacting, in the presence of a self-limiting neutralizing agent, an alkylene dihalide selected from the group consisting of ethylene and 1,2-propylene dihalides with a nitrogen containing compound having the structural formula

where x is an integer of 0–5 and R is an alkylene radical selected from the group consisting of



to produce said polyamines and an acid by-product,

said self-limiting agent being present at the outset of the reaction in an amount sufficient to neutralize substantially all of said acid by-product expected from the reaction,

said self-limiting agent being a basic reagent with a sufficiently low aqueous solubility and K_b for neutralizing said acid by-product as it is produced while maintaining the pH of said reaction at a generally constant alkaline value.

4,287,332

PROCESS FOR IMPROVING THE CHEMICAL RESISTANCE OF AROMATIC POLYESTERS

Winston J. Jackson, Jr., and Herbert F. Kuhfuss, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,278
Int. Cl.³ C08G *63/16*
U.S. Cl. 528—176 **4 Claims**

1. Process for improving the chemical resistance of shaped objects made from aromatic polyesters, the process comprising providing a shaped object formed from a copolyester derived from aromatic dicarboxylic acids, aromatic diols, optionally aromatic hydroxy acids, and at least 5 mole percent based on all repeating units of a substituted aromatic diol containing at least one substituent selected from the group of chlorine atoms, bromine atoms, alkyl groups containing one to three carbon atoms, alkoxy groups containing one to three carbon atoms and tolyl, and subjecting said shaped object to a temperature of at least 275° C. in an oxygen-containing atmosphere to raise the surface temperature of said shaped object to at least 275° C. and maintaining said surface temperature for a period sufficient to effect modification of said surface to improve its resistance to solvents.

4,287,333

PROCESS OF PREPARING FINELY DIVIDED THERMOPLASTIC RESINS

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Continuation of Ser. No. 934,646, Aug. 17, 1978, Pat. No. 4,208,528. This application Aug. 27, 1979, Ser. No. 71,155
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.³ C08F *6/24*
U.S. Cl. 528—487 **11 Claims**

1. a process for preparing in finely divided form a solid organic polymeric thermoplastic resin consisting of:

(a) agitating a mixture of the resin while in the molten state, a dispersion-forming amount of water, and a dispersion-forming amount of an alkali metal salt of an organo-phosphate ester dispersing agent, to provide a hot aqueous dispersion of the resin; and,

(b) cooling the dispersion to below about 100° C. to provide solid particles of resin.

4,287,334

PROCESS FOR MANUFACTURING VISCOSE

Heinrich Fauth, Mainz, and Werner Koch, Hochheim-Massenheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,448
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855061
Int. Cl.³ C08B *9/04*
U.S. Cl. 536—60 **9 Claims**

1. A process for manufacturing viscose comprising:

(a) treating cellulose with an excess of alkali metal hydroxide solution in a first alkalization treatment, under conditions such that alkalized cellulose is produced; either

(b1) freeing the alkalized cellulose produced in step (a) from at least part of the excess hydroxide solution without pressing the alkalized cellulose, comprising the step of draining at least part of the excess alkali metal hydroxide solution from the reaction vessel in which step (a) is effected, and treating the drained alkalized cellulose with a second alkali metal hydroxide solution having a lower alkali metal hydroxide concentration than the alkali metal hydroxide solution used in step (a) in a second alkalization treatment while maintaining the temperature of the reaction mixture at not more than 18° C.; or

(b2) treating the alkalized cellulose produced in step (a) with an alkali metal hydroxide solution obtained by diluting the alkali metal hydroxide solution used in step (a) in a second alkalization treatment while keeping the temperature of the reaction mixture at not more than 18° C.;

(c) pressing the twice-alkalized cellulose from step (b1) or (b2) to remove excess hydroxide solution;

(d) shredding the pressed alkali cellulose from step (c);

(e) aging the disintegrated material from step (d) for a period of time to produce a product having a desired average degree of polymerization;

(f) sulfiding the shredded and aged alkali cellulose; and
(g) dissolving the sulfided product to produce a viscose solution.

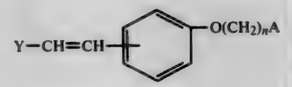
4,287,335

NITROGEN-CONTAINING HETEROCYCLIC COMPOUND HAVING ACETAL GROUP AND METHOD FOR MANUFACTURE THEREOF

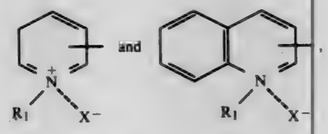
Kunihiro Ichimura, Yokohama, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 162,834
Claims priority, application Japan, Jul. 4, 1979, 54-84817
Int. Cl.³ C07D *213/30, 215/10, 405/10*
U.S. Cl. 542—455 **5 Claims**

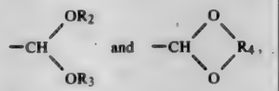
1. A nitrogen-containing heterocyclic compound represented by the formula:



wherein, Y is one member selected from the group consisting of



A is one member selected from the group consisting of



and n is an integer of 1 to 6, providing that in the formulas of Y and A, R_1 is one member selected from the group consisting of alkyl, aryl and aralkyl, R_2 and R_3 are each an alkyl group, R_4 is an alkylene group and X^- is a strongly acidic anionic residue.

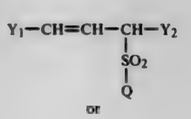
4,287,336

CHROMOGENIC PROPENYLENESULFONE COMPOUNDS

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 10, 1979, Ser. No. 73,758
Claims priority, application Switzerland, Sep. 22, 1978, 9954/78
Int. Cl.³ C07C *401/10, 403/10, 403/06*
U.S. Cl. 542—472 **16 Claims**

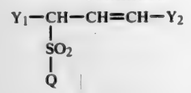
1. A chromogenic propenylenesulfone compound of the formula



(1A)

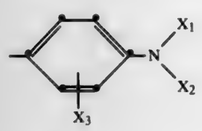
or

-continued



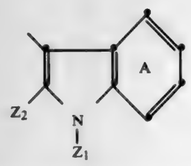
(1B)

wherein each of Y_1 and Y_2 independently represents an amino-substituted phenyl radical of the formula



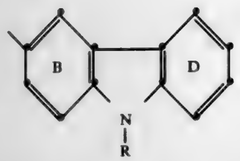
(1a)

a 3-indolyl radical of the formula



(1b)

or a 3-carbazolyl radical of the formula



(1c)

and Q represents alkyl of 1 to 12 carbon atoms or unsubstituted or substituted aryl or aralkyl, whilst each of X_1 and X_2 independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cycloalkyl, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, or X_1 and X_2 together with the nitrogen atom to which they are attached represent a pyrrolidino, piperidino, piperolino, morpholino, thiomorpholino or piperazino group, X_3 represents hydrogen, halogen, nitro, lower alkyl or lower alkoxy, each of R and Z_1 independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents alkenyl containing not more than 12 carbon atoms, acyl of 1 to 12 carbon atoms, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl, lower alkoxy or nitro, and Z_2 represents hydrogen, lower alkyl or phenyl, the rings A and B, each independently of the other, are unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkoxycarbonyl, and ring D is unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy, lower alkoxycarbonyl, unsubstituted or substituted phenyl or a fused benzene ring.

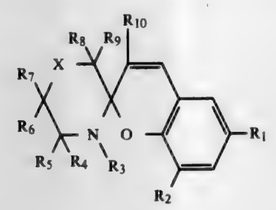
4,287,337

SPIROPYRAN COMPOUNDS OF PIPERIDINE OR THIAZINE RINGS

Robert J. Guglielmetti, Brest; Francis Garnier, Champigny; Yves M. Poirier, Brest, and Gisele M. C. Petillon, Briec, all of France, assignors to Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Nov. 21, 1979, Ser. No. 96,395
Claims priority, application France, Nov. 28, 1978, 78 33512
Int. Cl.³ C07D *515/10, 491/107*
U.S. Cl. 544—6 **6 Claims**

1. A spiropyran compound having the formula (I)



(I)

in which:
X represents a CH_2 group or a sulfur atom,
R_1 and R_2 are selected from the group consisting of NO_2, $-COC_6H_5$, —CN, the halogens, the alkoxy substituents, the hydrogen atom, the alkyl and mercaptoalkyl groups, the ethers of formula $-CH_2OR$, thioethers of the formula CH_2SR and amines of the formula $-CH_2NR_2$ in which R represents an alkyl group,
R_3 is a linear or branched alkyl group comprising from 1 to 18 carbon atoms, a phenylalkl group in which the linear or branched alkyl group has from 1 to 5 carbon atoms, or an alkenyl group having 2 to 10 carbon atoms;
R_4, R_5, R_6, R_7, R_8 and R_9 have one of the meanings indicated for R_3, represent a hydrogen atom, or participate, two by two, in the formation of a saturated homocycle of 5 to 10 carbon atoms, either with the group present on the same carbon atom or with the group in ortho position;
R_{10} represents a hydrogen atom if X=S and if $X=CH_2$ a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a phenylalkyl group in which the alkyl group has 1 to 5 carbon atoms, or an alkenyl group having 2 to 10 carbon atoms.

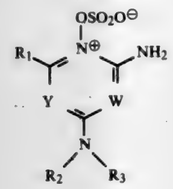
4,287,338

SULFOOXY-PYRIMIDINIUM, -PYRIDINIUM, AND -TRIAZINIUM HYDROXIDE INNER SALTS

John M. McCall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 10, 1980, Ser. No. 128,995
Int. Cl.³ C07D *213/89, 239/48, 251/18, 413/04*
U.S. Cl. 544—123 **8 Claims**

1. A compound of the formula II



II

wherein
(a) R_1 is selected from the group consisting of alkyl of from one to 8 carbon atoms, or NHR_4 wherein R_4 is hydrogen or alkyl of from one to 4 carbon atoms;
(b) R_2 and R_3 are the same or different and are hydrogen, alkyl of from one to 8 carbon atoms, with the proviso that if R_2 is hydrogen, R_3 is not hydrogen or methyl, and vice-versa, alkenyl of from 3 to 8 carbon atoms (excluding unsaturation at the carbon directly bonded to the nitrogen), phenylalkyl wherein the alkyl portion of the moiety is from one to 3 carbon atoms, cycloalkyl of from 3 to 8 carbon atoms, or R_2 and R_3 taken together with nitrogen form a heterocyclic moiety selected from the following: 1-aziridinyl, 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, hexahydro-1H-azepin-1-yl, hexahydro-1(2H)-azocinyl, 4-alkylpiperazinyl (wherein the alkyl portion of the moiety is of one to 3 carbon atoms), 4-morpholinyl, 4-thiomorpholinyl, 3,6-dihydro-1(2H)-pyridinyl, 3-pyrrolin-1-yl, 2,3,4,7-tetrahydro-1H-azepine-1-yl, and 3,4,7,8-tetrahydro-1(2H)-azocinyl,
said heterocyclic moieties optionally being substituted by one to 3 alkyl groups of from one to 3 carbon atoms, and
(c) W and Y are the same or different and are nitrogen or carbon; or the tautomeric or solvated forms thereof.

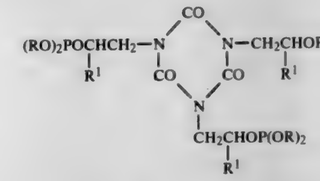
4,287,339

PHOSPHITE-ISOCYANURATES

Leo L. Valdiserri, Belpre, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 29, 1980, Ser. No. 126,142
Int. Cl.³ C07D *251/34*
U.S. Cl. 544—214 **4 Claims**

1. A phosphite-isocyanurate compound having the structural formula



where R is a hydrocarbon radical having 1–14 carbon atoms and R^1 is methyl or hydrogen.

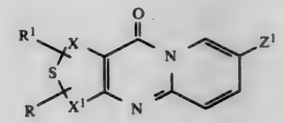
4,287,340

DIHYDRO-OXO-PYRIDO[1,2-A]THIENOPYRIMIDINE COMPOUNDS

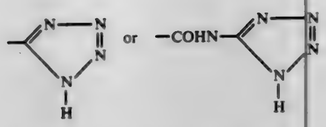
Francis J. Tinney; David T. Connor; Wiaczeslaw A. Cetenko; Joseph J. Kerbleski, and Roderick J. Sorenson, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 70,227, Aug. 27, 1979, Pat. No. 4,230,707.
This application Mar. 21, 1980, Ser. No. 132,603
Int. Cl.³ C07D *495/14*
U.S. Cl. 544—250 **4 Claims**

1. A compound of the formula



and salts thereof, wherein X is $-CH_2-$ and X^1 is $-CH_2-$, X is $-CH_2CH_2-$ and X^1 is a single bond, and X is a single bond and X^1 is $-CH_2CH_2-$; Z^1 is CO_2 lower alkyl, cyclic hydrocarbon, cyano, carboxy,



and R and R^1 are hydrogen, lower alkyl, cyclic hydrocarbon, chloro, bromo, phenyl or x-substituted phenyl were x is lower alkyl, chloro, fluoro, cyclic hydrocarbon-O-, or lower alkyl —O—.

4,287,341

ALKOXY-SUBSTITUTED-6-CHLORO-QUINAZOLINE-2,4-DIONES

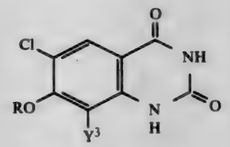
Hans-Jurgen E. Hess, Old Lyme; Jasjit S. Bindra, and Praful K. Shah, both of Groton, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 90,313, Nov. 1, 1979, abandoned. This application Mar. 3, 1980, Ser. No. 126,838

Int. Cl.³ C07D *239/96*

U.S. Cl. 544—285 **3 Claims**

1. A compound of the formula



wherein Y^3 is hydrogen or OR and R is alkyl having from 1 to 3 carbon atoms.

4,287,342

2,4,6-TRIHALO-5-ALKYL-AND 5-ALKENYLSULPHONYLPYRIMIDINES

Karl Hoegerle, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

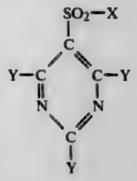
Division of Ser. No. 903,633, May 8, 1978, Pat. No. 4,188,483. This application Aug. 10, 1979, Ser. No. 65,701

Claims priority, application Luxembourg, May 9, 1977, 77288

Int. Cl.³ C07D *239/38*

U.S. Cl. 544—298 **7 Claims**

1. A compound of the formula II



wherein

X represents alkenyl having 2 to 4 carbon atoms or alkyl of 1 to 6 carbon atoms which is unsubstituted or is substituted by substituents selected from the group consisting of 1 to 3 halogen, alkoxy having 1-6 carbon atoms, phenyl and naphthyl,

and each Y represents an identical or different halogen.

4,287,343

PREPARATION OF N-CYANOIMIDATE HERBICIDE INTERMEDIATES

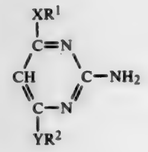
Edward K. W. Wat, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1979, Ser. No. 81,807

Int. Cl.³ C07D *239/52*; C07C *125/08, 119/18*; C07D *239/58*

U.S. Cl. 544—320 **7 Claims**

1. A process for preparing a pyrimidine compound of the formula



where

X and Y are independently oxygen or sulfur;

R^1 and R^2 are independently C_1–C_4 alkyl, $(CH_2)_nOR^3$, CH_2CH_2Cl or CH_2CF_3;

R^3 is C_1–C_4 alkyl; and

n is 1 or 2;

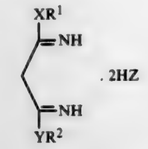
provided that:

(1) when R^1 is CH_2CH_2Cl or CH_2CF_3, then X is 0; and

(2) when R^2 is CH_2CH_2Cl or CH_2CF_3, then Y is 0;

comprising

(a) contacting a dihydrohalide salt of the formula:



where X, Y, R^1 and R^2 are as defined above; and where Z is F, Cl or Br,

with two mole equivalents of a base to produce a bisimidate; and

(b) contacting the bisimidate with cyanogen chloride to product a mixture of an N-cyanoimidate and a monohydrohalide bisimidate salt;

(c) isolating the N-cyanoimidate from the reaction mixture; and

(d) heating the resulting N-cyanoimidate at a temperature sufficient to induce ring closure.

4,287,344

N,N-BIS-(DECAHYDROQUINOLYL-N-METHYL-)IMIDAZOLIN-2-THIONES

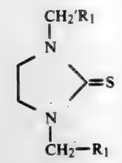
Abidzhan Safaev, "P" Ts-1, 26-a, kv. 28; Abduvasit Kadyrov, ulitsa Vavilova, 11; Zhakhongir G. Saidaliev, ulitsa 1 Sputnik, 7, and Tulyagan F. Faiziev, ulitsa Almazar, Shelkomotalny proezd, 31-a, all of Tashkent, U.S.S.R.

Filed Aug. 3, 1977, Ser. No. 821,560

Int. Cl.³ C07D *401/14*

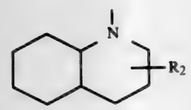
U.S. Cl. 546—164 **6 Claims**

1. N,N'-bis-substituted imidazolin-2-thiones of the formula:



wherein

R_1 is



R_2 is hydrogen, methyl.

4,287,345

POLYFUNCTIONAL DISULFIDE COMPOUNDS HAVING S—S EXCHANGE REACTIVITY

Kikuo Kotani; Kunio Ohyama; Nobuaki Nakagawa, all of Shizuoka; Tadashiro Fujii, Mishima, and Susumu Watanabe, Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

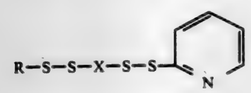
Filed Jan. 11, 1980, Ser. No. 111,482

Claims priority, application Japan, May 4, 1979, 54-41737; Dec. 1, 1979, 54-3507

Int. Cl.³ C07D *213/70*

U.S. Cl. 546—261 **4 Claims**

1. A polyfunctional disulfide compound of the formula



wherein R is 2-benzothiazolyl or 2-pyridyl-N-oxide and X is a $C_{2\text{-}10}$ spacer group which may have hydroxy substituents, amide linkage or ether linkage having an alkylene group directly bonded to each S-S group.

4,287,346

CYANOGUANIDINE DERIVATIVES

Satoru Tanaka, Higashi-Kurume; Katsutoshi Shimada, Tokyo; Kazunori Hashimoto, Matsudo; Kiichi Ema, and Koichiro Udea, both of Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

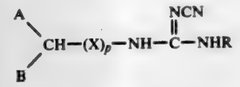
Filed Feb. 12, 1980, Ser. No. 120,876

Claims priority, application Japan, Feb. 16, 1979, 54/15989; Feb. 16, 1979, 54/15990

Int. Cl.³ C07D *213/57, 405/06, 409/06*

U.S. Cl. 546—330 **12 Claims**

1. A cyanoguanidine derivative of the formula:



wherein A represents phenyl; phenyl substituted by lower alkyl, lower alkenyl, halogen, lower alkoxy, lower alkylthio, lower alkylsulfonyl or halo lower alkyl; furyl; thienyl or cycloalkyl of 5 to 6 carbon atoms;

B represents pyridyl or pyridine-N-oxide;

(I)

R represents lower alkyl or lower alkenyl;

X represents lower alkylene or lower alkylene having a terminal sulfur atom; and

p is 0 or 1, with the proviso that (i) when A is unsubstituted phenyl, B is pyridine-N-oxide and (ii) when A is unsubstituted phenyl and B is pyridine-N-oxide, p is 0, or a pharmaceutically acceptable acid addition salt thereof.

4,287,347

PROCESS FOR PRODUCING 2,3,5-TRICHLOROPYRIDINE

Hansjakob Fäh, Ettingen, and Alfred Grieder, Böckten, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 12, 1980, Ser. No. 148,849

Int. Cl.³ C07D *213/02*

U.S. Cl. 546—345 **1 Claim**

1. A process for producing 2,3,5-trichloro-pyridine which comprises suspending in a mixture of toluene and water, 3,5-dichloro-pyridone, the water present is separated by azeotropic distillation, adding 0.05–0.15 mol of N,N-dimethylformamide per mol of 3,5-dichloro-2-pyridone introducing, 1.0–1.3 mols of phosgene per mol of 3,5-dichloro-2-pyridone at 75°–80° C., stirring the reaction mixture further for 1 hour, reacting the excess phosgene with aqueous ammonia, separating the phases, and obtaining from the organic phase, after removal of the solvent by distillation, the formed 2,3,5-trichloro-pyridine in the form of a melt.

4,287,348

PREPARATION OF SULPHOALKYL QUATERNARY SALTS

Rainer Kitzing, Ingatestone; Geoffrey E. Ficken, Ilford, and Victor W. Dolden, Romford, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

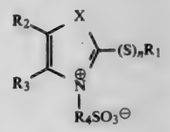
Filed Jun. 5, 1978, Ser. No. 912,702

Claims priority, application United Kingdom, Jun. 10, 1977, 24299/77

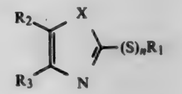
Int. Cl.³ C07D *293/12, 277/62, 263/54, 235/04*

U.S. Cl. 548—121 **8 Claims**

1. A process for the preparation of quaternary salts of the general formula



wherein X is —O—, —Se—, —S—, —NR— or —CR(R)—, wherein R is alkyl of 1 to 4 carbon atoms or hydrogen, R_1 is hydrogen, methyl or ethyl, R_2 and R_3 are each hydrogen, alkyl or hydroxyalkyl of 1 to 4 carbon atoms, phenyl, halogen or halogenated alkyl or together they represent the atoms to complete a benzene ring which is unsubstituted or substituted by methyl, ethyl, trifluoromethyl, chlorine, bromine and or and R_4 is an alkylene chain having 3 or 4 carbon atoms in the chain and n is 1 or 0, except that when n is 1, R_1 cannot be hydrogen, which comprises heating at a temperature above 80° C., a heterocyclic base of the general formula



where X, R_1, R_2 and R_3 and n have the indicated meanings with a hydroxysulphonic acid of the general formula

$HO—R_4—SO_3H$

where R_4 has the indicated meaning under conditions so that the water formed is removed from the reacting mixture.

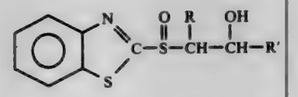
4,287,349

BETA-ALKYL (OR ARYL) BETA-HYDROXYETHYL HETEROCYCLIC SULFOXIDES

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 23, 1979, Ser. No. 32,269
Int. Cl.³ C07D *277/64*; C07G *13/00*
U.S. Cl. 548—166 **5 Claims**

1. A beta-alkyl beta-hydroxyethyl 2-benzothiazolyl sulfoxide of the formula



wherein R is hydrogen and R′ is selected from the group consisting of alkyl groups of 1 to 22 carbon atoms, phenyl and hydrogen.

4,287,350

PROCESS FOR THE PREPARATION OF THIAZOLIDINE-2-THIONES

Dieter Hüllstrung, Leverkusen, and Jürgen Trimbach, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,807
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911661
Int. Cl.³ C07D *277/04*
U.S. Cl. 548—182 **8 Claims**

1. A process for the production of thiazolidine-2-thiones by the reaction of 1 mol of an amino ethanol with from 2 to 2.1 mol of carbon disulphide at from 20° to 200° C. and from 0.1 to 5 bar pressure, characterised in that the liquid phase containing amino ethanol is brought into intimate contact with the gaseous phase containing carbon disulphide in a continuous single stage process in at least two consecutive reaction zones, wherein the liquid phase is introduced continuously into the first reaction zone, conveyed toward the last reaction zone and removed downstream of the last reaction zone and wherein the gaseous phase is introduced continuously into the last reaction zone, conveyed toward the first reaction zone and removed downstream of the first reaction zone.

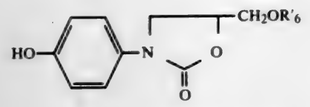
4,287,351

3-PARAHYDROXYPHENYL-5-METHYLETHER-2-OXAZOLIDINONE COMPOUNDS

Guy R. Bourgery, Colombes; Colette A. Douzon, Paris; Jean-Francois R. Ancher, Rueil-Malmaison; Alain P. Lacour, La Varenne; Patrick G. Guerret, Rueil-Malmaison; Michel Langlois, Buc, and Phillippe L. Dostert, Le Vesinet, all of France, assignors to Delalande S.A., Courbevoie, France

Division of Ser. No. 45,143, Jun. 4, 1979. This application Feb. 6, 1980, Ser. No. 119,073
Claims priority, application France, Jun. 9, 1978, 78 178388; Aug. 17, 1978, 78 24024
Int. Cl.³ C07D *263/24*; A61K *31/42*
U.S. Cl. 548—232 **8 Claims**

1. A compound having the formula



wherein R'_6 is a linear or branched alkyl having 1 to 5 carbon atoms, cyclohexyl or methoxymethyl.

4,287,352

PROCESS FOR PREPARING ALPHA-THIENYLACETIC ACID, ESTERS AND SALTS THEREOF

Alessandro Moro, Pernate; Marco Foá, and Luigi Cassar, both of Novara, all of Italy, assignors to Montedison, S.p.A., Milan, Italy

Continuation of Ser. No. 888,396, Mar. 20, 1978, abandoned. This application Jul. 24, 1979, Ser. No. 60,225
Int. Cl.³ C07D *333/16*
U.S. Cl. 549—79 **7 Claims**

1. A process for preparing alpha-thienylacetic acid, alkyl esters and salts thereof by carbonylation of 2-chloromethylthiophene, characterized in that 2-chloromethylthiophene and carbon monoxide are reacted under atmospheric pressure and at a temperature ranging from 0° to 60° C., in an aqueous-alcoholic solution in the presence of a catalyst selected from the class consisting of (a) $Co_2(CO)_8$, (b) $MCo(CO)_4$ where M is selected from the class consisting of Na and K, and (c) a system comprising a cobalt salt, a ferromanganese alloy and at least one sulphur-containing promoter, and in the presence of an inorganic base, and then separating the alpha-thienylacetic acid from the resulting salt and/or ester obtained.

4,287,353

PROCESS FOR SYNTHESIZING SILANOL CHAIN-STOPPED FLUOROSILOXANE FLUIDS

Ben A. Bluestein, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,800
Int. Cl.³ C07P *7/08*
U.S. Cl. 556—459 **11 Claims**

1. A process for producing a silanol chain-stopped fluorosilicone fluid, comprising: reacting at 25° C. to 100° C., 100 parts by weight of a cyclic fluorosiloxane trimer with a mixture of, approximately, 0.02 to 5.0 parts water and, approximately, 0.0050 to 0.10 parts polymerization catalyst and, approximately, 0.010 to 2.0 parts of polyethyleneglycol dimethyl ether promoter and adding an amount of neutralizer effective for stopping the polymerization at the desired viscosity.

4,287,354

TELLURIUM(II) COMPOUNDS AND COMPLEXES HAVING ORGANIC MOIETIES CONTAINING SILICON

Henry J. Gysling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 965,712, Dec. 1, 1978, Pat. No. 4,258,128. This application Oct. 20, 1980, Ser. No. 198,690
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—465 **6 Claims**

1. A tellurium(II) compound represented by the formula:

$$Te[(CH_2)_nSiRR'R'']_2$$

wherein:

n is an integer from 1 to 10 and

R, R′ and R″ are independently selected from the group consisting of alkyl, aryl and heterocyclic radicals.

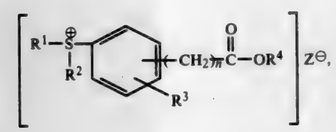
4,287,355

CARBOXYL-(PHENYL OR TOLYL)-SULFONIUM SALTS

Faizulla G. Kathawala, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 88,826, Oct. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 929,424, Jul. 31, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,569
Int. Cl.³ A01N *9/12*; A61K *31/235*
U.S. Cl. 560—18 **27 Claims**

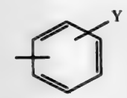
1. A compound of the formula:



wherein

R^1 is alkyl having from 8 to 24 carbon atoms;

R^2 is alkyl having from 1 to 6 carbon atoms or unsubstituted or substituted phenyl of the formula:



wherein

Y is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl of from 1 to 4 carbon atoms, or alkoxy of from 1 to 4 carbon atoms;

R^3 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms or alkoxy having from 1 to 3 carbon atoms;

R^4 is a hydrogen atom, or alkyl having from 1 to 6 carbon atoms;

n is 0 or 1; and

$Z^{\ominus}$ is an anion forming a pharmaceutically acceptable non-toxic salt of the corresponding cation;

provided that R^4 is alkyl when R^2 is other than alkyl.

4,287,356

PREPARATION OF VINYLGLYCOL ESTERS

Hans-Martin Weitz, Bad Durkheim, and Rolf Fischer, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,813
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854154
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—244 **2 Claims**

1. A process for the preparation of vinylglycol esters by reacting butadiene with oxygen and a carboxylic acid selected from the group consisting of formic acid, acetic acid and propionic acid in the liquid phase over a palladium-containing supported catalyst, wherein the catalyst used contains from 0.1 to 20 percent by weight of palladium and from 2.5 to 7 percent by weight of cobalt and has been heated at 400°–900° C. for from 15 minutes to 4 hours.

4,287,357

PROCESS FOR THE PRODUCTION OF 6-HYDROXY-2-NAPHTHOIC ACID

Michael J. Mueller, Parkersburg, W. Va., and Carroll S. Montgomery, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 6, 1980, Ser. No. 127,703
Int. Cl.³ C07C *51/15*
U.S. Cl. 562—425 **7 Claims**

1. In a process for preparing 6-hydroxy-2-naphthoic acid by reacting essentially anhydrous potassium 2-naphthoxide with carbon dioxide at an elevated temperature, and recovering 6-hydroxy-2-naphthoic acid therefrom, the improvement which comprises forming a mixture of 2-hydroxynaphthalene and a potassium base, using about 0.8 to 1.2 moles of 2-hydroxynaphthalene per equivalent of potassium base; dehydrating said mixture; introducing carbon dioxide into said dehydrated mixture at about 20 psi to 90 psi at about 255° C. to 280° C., while agitating said mixture in a pressure reactor; and heating said agitated mixture at said temperature and under said pressure until the ratio of 6-hydroxy-2-naphthoic acid to 3-hydroxy-2-naphthoic acid in the reaction mixture is at least 2, before recovering said 6-hydroxy-2-naphthoic acid.

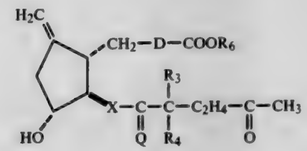
4,287,358

13,14-DIHYDRO-INTER-OXA-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,730
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) $(CH_2)_3—O—CH_2—$,

(2) $(CH_2)_2—O—(CH_2)CH_2—$, or

(3) $—CH_2—O—(CH_2)_3—$,

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH_3,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,

(i) —(p-Ph)—NH—CO—(p-Ph),

(j) —(p-Ph)—NH—CO—CH_3,

(k) —(p-Ph)—NH—CO—NH_2,

(l) —(p-Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) $—CH_2—CO—R_{28}$,

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is $-CH_2CH_2-$.

4,287,359

13,14-DIHYDRO-INTER-OXA-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGF$_1$ COMPOUNDS

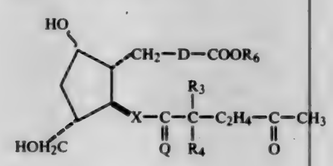
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, abandoned. This application Mar. 20, 1980, Ser. No. 132,001

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3-O-CH_2-$,
(2) $(CH_2)_2-O-(CH_2)CH_2-$, or
(3) $-CH_2-O-(CH_2)_3-$,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β—naphthyl,
(n) $-CH_2-CO-R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is $-CH_2CH_2-$.

4,287,360

13,14-DIHYDRO-INTER-OXA-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGE$_1$ COMPOUNDS

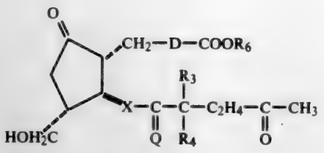
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,002

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3-O-CH_2-$,
(2) $(CH_2)_2-O-(CH_2)CH_2-$, or
(3) $-CH_2-O-(CH_2)_3-$,
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl; wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is $-CH_2CH_2-$.

4,287,361

13,14-DIHYDRO-INTER-OXA-11-DEOXY-19-OXO-PGF$_1$ COMPOUNDS

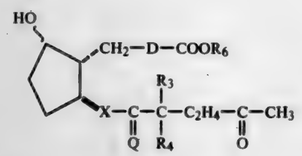
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,004

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3-O-CH_2-$,
(2) $(CH_2)_2-O-(CH_2)CH_2-$, or
(3) $-CH_2-O-(CH_2)_3-$,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is $-CH_2CH_2-$.

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is $-CH_2CH_2-$.

4,287,362

2-OXOPROPIONALDEHYDE BIS(THIOSEMICARBAZONE) DERIVATIVES

Akira Yokoyama, Otsu, and Yasushi Arano, Obatamachi, both of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

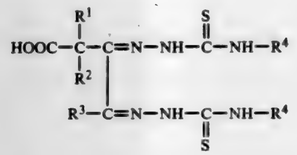
Filed Jan. 18, 1980, Ser. No. 113,341

Claims priority, application Japan, Aug. 29, 1979, 54/110821; Aug. 29, 1979, 54/110822

Int. Cl.^{3} C07C *157/05, 103/52;* A61K *43/00*

U.S. Cl. 562—556 **4 Claims**

1. A bifunctional chelating compound of the formula:



wherein R^1, R^2, R^3 and R^4 are each a hydrogen atom or a C_1–C_3 alkyl group.

4,287,363

PREPARATION OF N-(ALKYLAMINOALKYL)ACRYLAMIDES

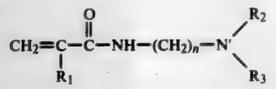
Edward E. McEntire, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,596

Int. Cl.^{3} C07C *102/00*

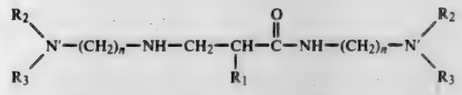
U.S. Cl. 564—205 **6 Claims**

1. An improved catalytic process for the preparation of N-(alkylaminoalkyl)acrylamides of the formula



wherein R_1 is H or methyl; n is an integer from 2 to 6; and R_2 and R_3, taken singly are hydrogen or lower alkyl groups containing 1 to 4 carbon atoms, with at least one occurrence of R_2 and R_3 being lower alkyl, or R_2 and R_3, taken jointly are combined with the N' atom to form a heterocyclic group selected from the group consisting of morpholine, pyrollidine or piperidine ring groups; which process comprises

subjecting a β-aminopropionamide of the formula



wherein R_1, n, R_2 and R_3 are same as above, to a temperature of about 100° C. to about 250° C. in the presence of a catalyst selected from the group consisting of calcium, magnesium and aluminum salts of strong acids; and

separating the resultant product, a N-(alkylaminoalkyl)acrylamide compound.

4,287,364

MOLYBDENUM CATALYST FOR ANILINE-FORMALDEHYDE CONDENSATION

Edward T. Marquis; Robert M. Gipson, and Lewis W. Watts, Jr., all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,531

Int. Cl.^{3} C07C *85/145*

U.S. Cl. 564—332 **3 Claims**

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of an molybdenum aluminide catalyst.

4,287,365

REDUCTION OF AROMATIC NITRO COMPOUNDS WITH RANEY NICKEL CATALYST

Hans-Joachim Becker, Leverkusen, Fed. Rep. of Germany and Walter Schmidt, deceased, late of Leverkusen, Fed. Rep. of Germany, by Hildegard Schmidt, heiress assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 876,808, Feb. 10, 1978, abandoned, which is a division of Ser. No. 806,237, Jun. 13, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,420

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713374

Int. Cl.^{3} C07C *85/11*

U.S. Cl. 564—422 **3 Claims**

1. In a process for the hydrogenation of an organic aromatic nitro compound which comprises hydrogenating said organic compound in the presence of a Raney nickel catalyst, the improvement which comprises using, as the Raney nickel catalyst, one which contains about 12.8 to 25% by weight of iron, relative to the sum of the active components nickel and iron.

4,287,366

PROCESS FOR PREPARING BISPHENOL SULFONE DERIVATIVES

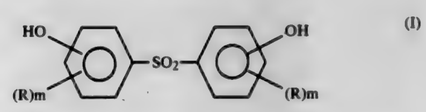
Akihiro Yamaguchi, Yokohama; Keizaburo Yamaguchi, Kawasaki; Hisamichi Murakami, and Tadashi Kobayashi, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,712

Int. Cl.^{3} C07C *147/10*

U.S. Cl. 568—33 **13 Claims**

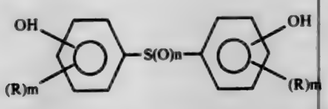
1. A process for preparing a bisphenol sulfone compound represented by the general formula (I)



(I)

where R stands for hydrogen, a halogen, an alkyl group, a cycloalkyl group, an aryl group, an aralkyl group, hydroxyl group, an alkoxy group, allyloxy group, carboxyl group, or a carboalkoxy group, m is an integer of from 1 to 3, and when m

is 2 or more each group represented by R may be identical or different and adjacent Rs may be combined to form a benzene ring, which comprises oxidizing a compound represented by the general formula (II)



(II)

where R and m have the same meanings as defined for the compounds of formula (I), and n is zero or 1, with hydrogen peroxide in the presence of an alkali metal hydroxide, the amount of said alkali metal hydroxide being equimolar relative to said compound of formula (II) in water or in water plus an organic solvent which does not form any organic peracids under reaction conditions to form said bisphenol sulfone compound, said organic solvent being selected from the group consisting of aliphatic, alicyclic and aromatic hydrocarbons, halogenated aliphatic, alicyclic and aromatic hydrocarbons, alcohols, ethers, esters, ketones, aprotic polar solvents, carbon disulfide, and mixtures thereof.

4,287,367

MANUFACTURE OF SYMMETRICAL OR UNSYMMETRICAL MONOACETALS OF AROMATIC 1,2-DIKETONES

Werner Kuesters, and Lucien Thil, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

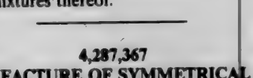
Continuation-in-part of Ser. No. 973,733, Dec. 27, 1978, abandoned, which is a continuation of Ser. No. 787,583, Apr. 14, 1977, abandoned, and a continuation-in-part of Ser. No. 935,623, Aug. 21, 1978, abandoned, which is a division of Ser. No. 787,569, Apr. 14, 1977, Pat. No. 4,144,156. This application Jul. 30, 1980, Ser. No. 173,703

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616382; Apr. 14, 1976, 2616408; Apr. 14, 1976, 2616588

Int. Cl.³ C07C *41/56*

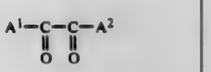
U.S. Cl. 568—43 **28 Claims**

1. A process for the manufacture of monoacetals of aromatic 1,2-diketones, of the formula (I)



(I)

where A^1 and A^2 are identical or different aromatic radicals each of which has 6 to 12 carbon atoms and may or may not bear from one to four hydrocarbon readicals of 1 to 10 carbon atoms, alkoxy radicals of 1 to 10 carbon atoms, alkoxyalkyl radicals of 2 to 10 carbon atoms, alkylthio radicals of 1 to 6 carbon atoms and/or halogen as substituents, and R^1 and R^2 are identical or different hydrocarbon radicals 1 to 12 carbon atoms in which the chain may or may not be interrupted by —O— or —S— or bear a halogen, which comprises reacting aromatic 1,2-diketones of the formula (II)



(II)

in an organic solvent with an acid ester of the formula

$$(R^1)_nX$$

as alkylating agent and an alcoholate

$$(R^2O)_mMe$$

where A^1, A^2, R^1 and R^2 have the above meanings, n and m are integers from 1 to 3, X is a monobasic, dibasic or tribasic acid radical and Me is a metal of main groups 1 to 3 of the periodic table of the elements.

4,287,368

METHOD FOR PREPARING VANILLIN AND COMPOSITION THEREFOR

Garland A. Johnson, Charleston Township, Kalamazoo County, and Jacob D. Peuler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 950,863, Oct. 12, 1978, Pat. No. 4,242,222, which is a division of Ser. No. 681,999, Apr. 30, 1976, abandoned. This application Feb. 26, 1980, Ser. No. 124,825

Int. Cl.³ C07C *45/30*

U.S. Cl. 568—436 **4 Claims**

1. A method for oxidizing metanephrine or normetanephrine to vanillin which comprises contacting the metanephrine or normetanephrine with periodate in the contact presence of silica gel.

4,287,369

HYDROFORMYLATION OF ALKENES TO ALDEHYDES

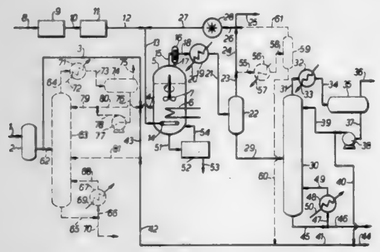
Norman Harris, and Thomas F. Shevels, both of Stockton-on-Tees, England, assignors to Davy McKee (Oil & Chemicals) Limited, London, England

Filed Mar. 20, 1980, Ser. No. 132,291

Claims priority, application United Kingdom, Mar. 21, 1979, 10011/79; European Pat. Off., Nov. 28, 1979, 79302708.7

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **15 Claims**



1. A process for the production of an aldehyde by hydroformylation of an alkene in the presence of a rhodium complex catalyst comprising:

providing a hydroformylation zone containing a liquid charge comprising (a) a rhodium complex catalyst wherein rhodium is in complex combination with carbon monoxide and a triorganophosphine, (b) excess triorganophosphine, (c) liquid aldehyde product, and (d) polymeric aldehyde condensation products;

feeding liquid reactant alkene to the hydroformylation zone;

supplying make up hydrogen and carbon monoxide to the hydroformylation zone;

maintaining in the hydroformylation zone temperature and pressure conditions effective for the hydroformylation of the reactant alkene;

recovering from the hydrofromylation zone an overhead vapour stream containing reactant alkene, hydrogen, carbon monoxide, alkene hydrogenation product(s), aldehyde product and aldehyde condensation products;

subjecting the vapour stream to condensation conditions to condense therefrom condensible components comprising unreacted alkene, aldehyde product, and aldehyde condensation products;

recycling non-condensed components of the vapour stream comprising hydrogen and carbon monoxide to the hydroformylation zone;

recovering aldehyde product; and

recycling unreacted alkene in liquid form to the hydroformylation zone.

4,287,370

HYDROFORMYLATION PROCESS FOR THE PRODUCTION OF N-VALERALDEHYDE

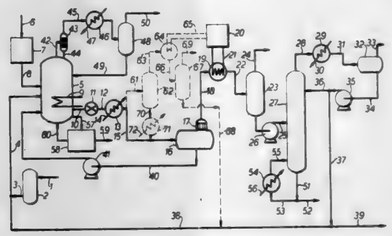
Norman Harris, Stockton-on-Tees; Alan J. Dennis, Acklam, and Thomas F. Shevels, Stockton-on-Tees, all of England, assignors to Davy McKee (Oil & Chemicals) Limited, London, England

Filed Mar. 20, 1980, Ser. No. 132,292

Claims priority, application United Kingdom, Mar. 21, 1979, 10012/79; European Pat. Off., Nov. 28, 1979, 79302709.5

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **14 Claims**



1. A process for the production of n-valeraldehyde by selective hydroformylation of butene-1 in the presence of at least one other C_4-olefin which comprises contacting a C_4-olefin feedstock with carbon monoxide and hydrogen in a hydroformylation zone in the presence of a catalytic quantity of a rhodium complex catalyst, said C_4-olefin feedstock comprising butene-1 and at least one other C_4-olefin selected from cis-butene-2, trans-butene-2, and iso-butylene and said rhodium complex catalyst comprising rhodium in complex combination with carbon monoxide and a triorganophosphine ligand, and in the presence of at least about 100 moles of free triorganophosphine ligand per gram atom of rhodium, at a temperature in the range of from about 80° C. to about 130° C., and at a total pressure of not more than about 50 kg/cm² absolute, the partial pressure of carbon monoxide being less than about 1.5 kg/cm² absolute and the partial pressure of hydrogen being in the range of from about 1.0 to about 7.5 kg/cm² absolute, and recovering from the hydroformylation zone unreacted C_4-olefins and n-valeraldehyde, said unreacted C_4-olefins including substantially all of said at least one other C_4-olefin present in the feedstock.

4,287,371

NOVEL PEROXYKETALS DERIVED FROM ALKOXYACETONES

Wilhelmus M. Beyleveld, Olst, and Lodewijk Roskott, Gorssel, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

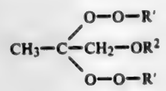
Continuation of Ser. No. 923,505, Jul. 10, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 87,031

Claims priority, application Netherlands, Jul. 15, 1977, 7707887

Int. Cl.³ C07C *179/093*

U.S. Cl. 568—563 **4 Claims**

1. Novel peroxyketals having the general formula:



wherein R' represents a tert.alkyl group having 4–12 carbon atoms and R^2 a branched or non-branched alkyl group having 1–12 carbon atoms or a substituted or unsubstituted cycloalkyl group having 5–12 carbon atoms.

4,287,372

PREPARATION OF NITRO-SUBSTITUTED DIPHENYL ETHERS

Michael D. Tufano, Broadview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 11, 1979, Ser. No. 83,925

Int. Cl.³ C07C *43/275*

U.S. Cl. 568—635 **5 Claims**

1. A method for the preparation of a nitro-substituted diphenyl ether which comprises reacting an alkali metal salt of phenol possessing at least one moiety on the ring of said phenol selected from the group consisting of alkyl, aryl, alkaryl, hydroxy, alkoxy, aryloxy, amino, alkylamino, dialkylamino, nitro and alkylthio moieties with a nitrosubstituted halobenzene having the halo moiety substituted to the aromatic ring of said nitro-substituted halobenzene to effect the arylation of said phenol in the presence of a phase-transfer agent represented by the formula

$$R_1R_2R_3R_4Z^+Y^-$$

wherein R is equal to an alkyl or aralkyl moiety possessing from 1 to 20 carbon atoms, Z is equal to nitrogen or phosphorous and Y is a halide, at a reaction temperature of about 50° to about 200° C. for a period of time equivalent to about 0.5 to about 20 hours.

4,287,373

PERBROMINATION OF PHENOL AND DIPHENYL ETHER AT ELEVATED TEMPERATURE USING BROMINE AS THE REACTION MEDIUM

John A. Garman; Rastko I. Mamuzic; Robert B. McDonald; John L. Sands, all of West Lafayette, and Gregory Thompson, Battleground, all of Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 39,267, May 16, 1979, abandoned, which is a continuation of Ser. No. 858,653, Dec. 8, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 81,035

Int. Cl.³ C07C *41/22, 37/62*

U.S. Cl. 568—639 **12 Claims**

1. A process for substantially perbrominating an aromatic compound selected from the group consisting of phenol and diphenyl ether comprising the steps of:

adding the aromatic compound at an elevated initial temperature of from about 35° C. up to about 55° C. to a mixture of:

at least a 75% excess and not more than about a 400% excess of the stoichiometric amount of bromine; and

a small but catalytically effective amount of a catalyst selected from the group consisting of iron, iron halides, iron compounds which form iron bromides under the conditions of the reaction, aluminum, aluminum halides, and aluminum compounds which form aluminum bromide under the conditions of the reaction; and

continuing the reaction at an elevated temperature at which reflux can occur after addition of the aromatic compound has been completed while maintaining the excess of bromine in order to achieve substantial perbromination of the aromatic compound.

4,287,374
PROCESS FOR THE PRODUCTION OF FLUORONITROBENZENES
Robert A. North, Nottingham, England, assignor to The Boots Company, Nottingham, England
Filed Oct. 1, 1979, Ser. No. 80,616
Claims priority, application United Kingdom, Oct. 5, 1978, 39512/78
Int. Cl.³ C07C 79/12
U.S. Cl. 568—937 13 Claims

1. A process for the production of a mono fluoronitrobenzene in which a mono chloronitrobenzene is heated with an alkali metal fluoride and a phase transfer catalyst at a temperature of no more than 200° C.

4,287,375
PROCESS OF CONVERTING ETHYLBENZENE TO STYRENE BY CATALYTIC DEHYDROGENATION
Friedrich-Wilhelm Möller, Friedrichsdorf; Henning Buchold, Maintal; Helmut Klein, Hanau; Otto-Ludwig Garkisch, Bad Soden; Friedrich Gutlhuber, Metten, and Walter Laber, Deggendorf, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Mar. 11, 1980, Ser. No. 129,460
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909763
Int. Cl.³ C07C 5/333
U.S. Cl. 585—440 3 Claims

1. In a process of converting ethylbenzene to styrene by catalytic dehydrogenation at a temperature about 600° C. in the presence of water vapor in a tubular reactor, the improvement which comprises supplying heat to said tubular reactor in the form of a molten salt bath, consisting essentially of a mixture of sodium carbonate, potassium carbonate and lithium carbonate, effecting dehydrogenation isothermally in said tubular reactor in a single stage under atmospheric pressure or under a subatmospheric pressure and with a water vapor-ethylbenzene ratio of 1.2-1.5 kg steam per kg ethylbenzene, the temperature of the ethylbenzene/water vapor mixture introduced into the tubular reactor being 30° to 100° C. below the temperature of the molten salt bath.

4,287,376
METHOD FOR ARALKYLATION
Isoo Shimizu; Okitsugu Tsuji, both of Yokohama; Eiichi Matsuzaka, and Atsushi Sato, both of Tokyo, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan
Filed Jul. 25, 1979, Ser. No. 60,662
Claims priority, application Japan, Aug. 10, 1978, 53-97537
Int. Cl.³ C07C 2/66
U.S. Cl. 585—458 10 Claims

1. In a method of aralkylation of at least one member selected from the group consisting of benzene and alkylbenzenes each having an alkyl group or groups of 1 to 18 in total carbon atom number by reacting at least one aromatic olefin each having a double bond or double bonds which are conjugated with the benzene ring thereof with said at least one member, the improvement in said method comprising carrying out said aralkylation in the presence of at least one catalyst selected from the group of compounds represented by the general formula:

$$C_nF_{2n+1-m}Cl_mSO_3H,$$

in which the symbol n is an integer from 1 to 5, inclusive, and m is 0 (zero) or 1.

4,287,377
HYDROCARBON CONVERSION
Raymond Maslin, Acklam, and Bodo Linnhoff, Hoole, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Jul. 24, 1979, Ser. No. 60,126
Claims priority, application United Kingdom, Aug. 7, 1978, 32468/78
Int. Cl.³ C07C 2/00, 5/00
U.S. Cl. 585—634 8 Claims

1. A process for hydrocarbon conversion which comprises converting a hydrocarbon feedstock in a heated furnace to produce hydrocarbon process gas wherein the furnace is heated by burning a mixture of fuel and preheated air, the preheated air having been obtained by passing air through successive compression, heating and gas turbine expansion zones, the work thereby obtained from the gas turbine expansion zone being used, at least in part, to compress hydrocarbon process gas produced in the furnace.

4,287,378
CONVERSION OF OLEFINIC COMPOUNDS
Filippo Pennella, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 954,723, Oct. 25, 1978, abandoned.
This application Feb. 11, 1980, Ser. No. 120,223
Int. Cl.³ C07C 6/00
U.S. Cl. 585—643 45 Claims

1. In a process for the redistribution of at least one olefinic bond of at least one reactant olefinic organic compound which comprises reacting said at least one reactant olefinic organic compound in the presence of a solid catalyst comprising a compound selected from the group consisting of transition metal oxides, transition metal compounds convertible to oxides by calcination and mixtures thereof deposited on an essentially inert solid support, at a temperature, at a pressure and for a time sufficient to effect said redistribution of at least one olefinic bond, the improvement comprising; exposing said solid catalyst to electromagnetic radiation having a wavelength of at least about 1000 A in the presence of at least one olefinic organic compound selected from the group consisting of at least one reactant olefinic organic compound, at least one olefinic organic compound other than a reactant olefinic organic compound and mixtures thereof, said exposing of said solid catalyst to electromagnetic radiation being carried out prior to said reacting of said at least one reactant olefinic organic compound, during said reacting of said at least one reactant olefinic organic compound or both prior to and during said reacting of said at least one reactant olefinic organic compound.

2. A process in accordance with claim 1 wherein the process comprises converting at least one reactant olefinic organic compound, having at least 3 carbon atoms per molecule, to at least one product olefinic organic compound having a larger number of carbon atoms per molecule than said reactant olefinic organic compound and at least one product olefinic organic compound having a smaller number of carbon atoms per molecule than said at least one reactant olefinic organic compound.

36. In a process for the isomerization of at least one reactant olefinic organic compound including reacting said at least one reactant olefinic organic compound with a catalyst active for the isomerization of said at least one reactant olefinic organic compound at a temperature, at a pressure and for a time sufficient to effect said isomerization of said at least one reactant olefinic organic compound, the improvement comprising; exposing said catalyst to electromagnetic radiation having a wavelength of at least about 1000 A in the presence of at least one olefinic organic compound selected from the group consisting of at least one reactant olefinic organic compound, at least one olefinic organic compound other than a reactant olefinic organic compound, said exposing of said catalyst to electromagnetic radiation being carried out prior to said reacting of said at least one olefinic organic compound, during said reacting of said at least one reactant olefinic organic compound or both prior to and during said reacting of said at least one reactant olefinic organic compound.

4,287,379
PROCESS FOR OBTAINING ISOBUTENE FROM C4-HYDROCARBON MIXTURES CONTAINING ISOBUTENE
Erwin Brunner; Eckart Schubert, both of Ludwigshafen; Alfred Lindner, Bobenheim-Roxheim; Franz Merger; Klaus Volkamer, both of Frankenthal; Max Strohmeyer, Limburgerhof, and Gerhard Sandrock, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 116,554, Jan. 29, 1980, abandoned, which is a continuation of Ser. No. 1,294, Dec. 29, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,750
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802198
Int. Cl.³ C07C 7/00
U.S. Cl. 585—839 12 Claims

1. A process for obtaining isobutene from a C_4-hydrocarbon mixture containing isobutene, which comprises

(a) reacting the mixture with a primary C_3- or C_4-alcohol in the presence of an ion exchanger in its acid form as a condensing agent to form the corresponding C_3- or C_4-alkyl tert-butyl ether by feeding the primary C_3- or C_4-alcohol and the C_4-hydrocarbon mixture, with or without prior mixing, to an etherification reaction zone which contains the ion exchanger;

(b) distilling the reaction mixture obtained from the etherification reaction zone in a first distillation zone, taking off as the top product without water washing a C_4-hydrocarbon mixture comprising the unconverted hydrocarbons and not more than 1,000 ppm by weight of the primary C_3- or C_4-alcohol and taking off as the bottom product the resulting C_3- or C_4-alkyl tert-butyl ether, which may contain therein primary C_3- or C_4-alcohol which may have been added in excess;

(c) feeding the bottom product to a second reaction zone, containing an acid catalyst, in which the C_3- or C_4-alkyl tert-butyl ether is decomposed at an elevated temperature to give isobutene and primary C_3- and C_4-alcohol;

(d) feeding the mixture of isobutene and primary C_3- and C_4-alcohol produced in step (c) to a second distillation zone, taking off as the top product without a water wash isobutene containing not more than 500 ppm by weight of primary C_3- or C_4-alcohol and taking off as the bottom product the remaining primary C_3- or C_4- alcohol produced in step (c);

and

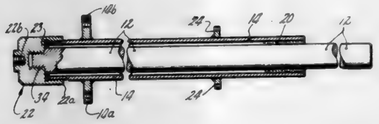
(e) Recycling the primary C_3- or C_4-alcohol which is the bottom product of step (d) to the etherification reaction zone.

4,287,380

ELECTRODE ASSEMBLY FOR MOLTEN GLASS FOREHEARTH

Richard E. Fairbanks, Manchester; James F. Stevenson, West Hartford, and John F. Blumenfeld, Simsbury, all of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 18, 1979, Ser. No. 76,580
Int. Cl.³ C03B 5/02
U.S. Cl. 13—6 **12 Claims**



1. An electrode assembly adapted to be mounted to the framework of a furnace forehearth, and to extend through a stepped aperture defined in the furnace sidewall below the normal level of the molten glass contained therein, said electrode assembly comprising

a tubular sleeve of inert high temperature nickel alloy steel material and having an outside diameter which is less than the diameter of the smaller portion of the stepped aperture in the furnace sidewall,

said sleeve having radially projecting flange means intermediate its ends which flange means is adapted to abut the stepped portion of the aperture in the furnace sidewall, said flange means including a gasket for abutting the shoulder of the stepped aperture in the furnace sidewall,

means for mounting said sleeve to the furnace framework so that the sleeve is clamped axially inwardly of the furnace sidewall aperture to thrust said flange means against the shoulder of the stepped aperture in the furnace sidewall,

an elongated electrode of readily oxidizable material positioned inside said sleeve and having an inner end projecting into the molten glass, said electrode having a diameter significantly less than the inside diameter of said sleeve,

a plug for connecting the outer end of said electrode to the outer end of said sleeve so that the electrode is oriented in spaced coaxial relationship inside said sleeve to define an annular space therebetween, and

non-metallic spacer means between the inner end of said sleeve and said electrode to support the electrode coaxially of said sleeve and to block the flow of molten glass into said annular space by reason of the glass hardening between said electrode said sleeve and said spacer means.

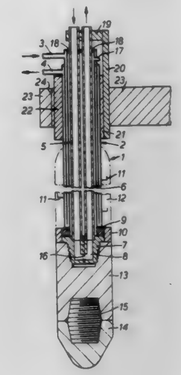
4,287,381

ELECTRIC ARC FURNACE ELECTRODES

Robert W. Montgomery, Sheffield, England, assignor to British Steel Corporation, London, England

Filed Nov. 27, 1979, Ser. No. 97,632
Claims priority, application United Kingdom, Dec. 19, 1978, 49022/78
Int. Cl.³ H05B 7/08
U.S. Cl. 13—18 C **15 Claims**

1. An electrode for an arc furnace comprising a metal column including a pair of bus bars extending centrally through the column and a water cooled tubular structure surrounding and electrically insulated from the bus bars, said bus bars being connected to a conductive screw-threaded member at one end thereof, and a plurality of elongated dependent carbon or graphite sections, one of said sections being secured to the member, and that section, together with the other(s), being



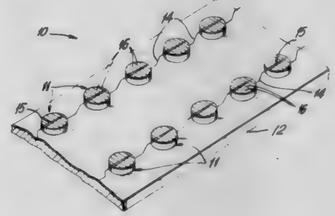
secured to one another through nipples having screw-threads of the same size as that of the said member.

4,287,382

SOLAR CELL ASSEMBLY AND FABRICATION OF SOLAR CELL PANELS UTILIZING SAME

Hollis E. French, North Chelmsford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 9, 1980, Ser. No. 148,268
Int. Cl.³ H01L 31/04, 31/18
U.S. Cl. 136—244 **5 Claims**



1. A solar cell assembly for use in forming a solar cell panel comprising: a sheet of non-woven, heat-actuatable sheet material selected from the group consisting of non-woven synthetic fibers having a thermally activated adhesive thereon and non-woven filaments of thermoplastic adhesive material, said sheet material having a major top surface; and a plurality of solar cells arrayed on and adhesively bonded to the top surface of the sheet material.

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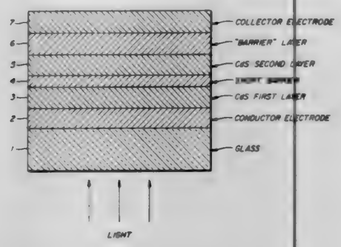
CADMIUM SULFIDE PHOTOVOLTAIC CELL OF IMPROVED EFFICIENCY

Terry M. Peterson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 106,818, Dec. 26, 1979, abandoned. This application May 12, 1980, Ser. No. 148,892
Int. Cl.³ H01L 31/06, 31/18
U.S. Cl. 136—260 **8 Claims**

1. A cadmium sulfide photovoltaic cell of improved efficiency comprising successive layers of a transparent conducting electrode layer, a first cadmium sulfide semi-conductor layer, a short-barrier layer comprising cadmium sulfide, said short-barrier layer containing a minor portion of a metal se-

lected from the group consisting of titanium aluminum, chromium, vanadium, boron, magnesium, beryllium and scandium,



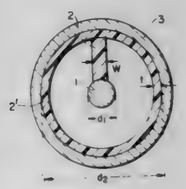
a second cadmium sulfide semi-conductor layer, a barrier layer and a collecting metal electrode layer.

4,287,384

PHASE STABILIZATION TYPE COAXIAL CABLE

Yasunori Saito, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 22, 1980, Ser. No. 114,173
Claims priority, application Japan, Feb. 23, 1979, 54/21003
Int. Cl.³ H01B *11/18*
U.S. Cl. 174—29 **4 Claims**



1. An air dielectric coaxial cable comprising: an inner conductor, and outer conductor, and an insulator disposed between said inner and outer conductors in which the space factor R of said insulator is such that:

Rmin < R < Rmax, where:

$$\frac{1}{Rmin} = -(\epsilon_0 - 1) + \frac{\frac{1}{\epsilon_0}\frac{\partial \epsilon_0}{\partial T} + \left(1 - \frac{1}{\epsilon_0}\right)\left[\alpha_0 - \alpha_1 \frac{1 + (\alpha_2/\alpha_1)(d_2/d_1)}{1 + (d_2/d_1)}\right]}{\frac{\epsilon_0}{2}\left(5 \times 10^{-6} - \alpha_1 \frac{1 + (\alpha_2/\alpha_1)(S_2E_2/S_1E_1)}{1 + (S_2E_2/S_1E_1)}\right)}$$

and

$$\frac{1}{Rmax} = -(\epsilon_0 - 1) + \frac{\frac{1}{\epsilon_0}\frac{\partial \epsilon_0}{\partial T} + \left(1 - \frac{1}{\epsilon_0}\right)\left[\alpha_0 - \alpha_1 \frac{1 + (\alpha_2/\alpha_1)(d_2/d_1)}{1 + (d_2/d)}\right]}{\frac{\epsilon_0}{2}\left(5 \times 10^{-6} + \alpha_1 \frac{1 + (\alpha_2/\alpha_1)(S_2E_2/S_1E_1)}{1 + (S_2E_2/S_1E_1)}\right)}$$

where:

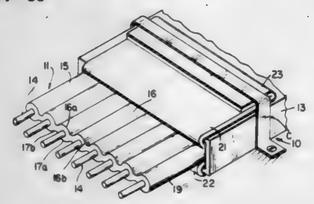
S_1: the cross-sectional area of said inner conductor,
S_2: the cross-sectional area of said outer conductor,
E_1: the Young's modulus of a material forming said inner conductor,
E_2: the Young's modulus of a material forming said outer conductor,
α_0: the coefficient of linear expansion of the insulator material,
α_1: the coefficient of linear expansion of said material forming said inner conductor,
α_2: the coefficient of linear expansion of said material forming said outer conductor,
d_1: the outside diameter of said inner conductor,
d_2: the inside diameter of said outer conductor,
ϵ_0: the dielectric constant of said insulator,
and T: the ambient temperature.

4,287,385

SHIELDED FLAT CABLE

Donald S. Dombrowsky, Spring Valley, N.Y., assignor to Carlisle Corporation, Buchanan, N.Y.

Filed Sep. 12, 1979, Ser. No. 75,154
Int. Cl.³ H01B *7/20*
U.S. Cl. 174—36 **4 Claims**



1. Shielded flat electric cable comprising:
(a) a cable core including;
(i) a plurality of conductors of indefinite length spaced apart and disposed in parallel and coplanar configuration,
(ii) a body of indefinite length of solid dielectric material having a pair of relatively wide parallel faces and a pair of relatively narrow, opposing edges joining said faces, said conductors being embedded lengthwise in said body and thereby retained in said spaced part, parallel and coplanar configuration insulated from each other and from the exterior of said cable core, and
(iii) means defining a plurality of parallel lands and a plurality of parallel grooves alternately disposed in each said face lengthwise thereof with said grooves aligned between adjacent conductor locations in said core and said lands aligned adjacent said conductors; and
(b) an electric shield assembly including
(i) a pair of flat spacer strips of indefinite length of solid dielectric material positioned, one butting against each said face and extending lengthwise thereof thereby trapping air-dielectric in said grooves between said lands and said spacer strip, and
(ii) a sheath of conductive metal enclosing said core and spacer strips, said sheath comprising a pair of thin conductive layers, one adhered to each said spacer strip on the surface thereof facing away from said cable core, and a pair of thin conductive channels, one positioned over each said edge of said body overlying the adjacent portions of said conductive layers on said spacer strips.

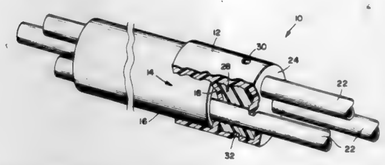
4,287,386

END SEAL FOR CONDUITS

Steven Scahill, 131 Bolinas Rd., Fairfax, Calif. 94930, and Gary M. Burrafato, 224 Humboldt Ave., San Rafael, Calif. 94901

Filed Jul. 27, 1979, Ser. No. 61,301
Int. Cl.³ H02G *15/00*
U.S. Cl. 174—76 **6 Claims**

1. A device for use in forming an end seal for an electrical conduit carrying at least one cable comprising, in integral construction, a cylindrical walled member having an opening at one end dimensioned to receive the conduit and terminating in a first partition having at least one aperture through which the cable may pass in a friction fit, a second partition parallel to and spaced from said first partition and having at least one corresponding aperture through which the cable may pass in a friction fit, said first and second partition forming, together



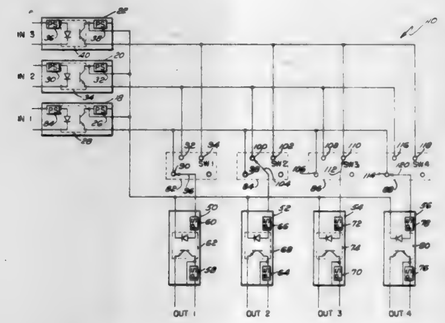
with the cylinder wall, a chamber, said chamber further having at least a first opening communicating from the chamber to the exterior of the end seal.

4,287,387

TELETYPEWRITER LOOP SWITCHING MATRIX

Robert R. Hartley, Niantic, and Joseph A. Konrad, New London, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 101,292
Int. Cl.³ H04L *15/00*
U.S. Cl. 178—2 R **9 Claims**



1. A system for interconnecting and switching teletypewriter signals which comprises:
a first plurality of "IN" loops with each member thereof receiving the teletypewriter signals from a corresponding member of a plurality of sources of the teletypewriter signals;
a second plurality of "INTERNAL" loops with each member thereof having a first half interfaced with a corresponding member of said first plurality of "IN" loops; and
a third plurality of "OUT" loops with each member thereof connected to a plurality of receivers of the teletypewriter signals and each member thereof being interfaced with a second half of a corresponding member of said second plurality of "INTERNAL" loops.

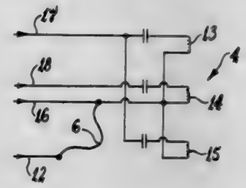
4,287,388

DRIVE-IN THEATRE SOUND DISTRIBUTION SYSTEM

Walter R. Beer, and Margaret Beer, both c/o Grantville P.O., Bass Hwy., Grantville, Victoria, Australia (3984)

Filed Dec. 10, 1979, Ser. No. 101,518
Claims priority, application Australia, Dec. 19, 1978, PD7157
Int. Cl.³ H04R *27/00*
U.S. Cl. 179—1 DD **1 Claim**

1. A drive-in theatre sound distribution system comprising:
means for converting the sound track of a film into an audio information signal;
means for transmitting said signal to at least one sound reproducing apparatus for use with a dual channel magnetic playback apparatus having two playback heads and a cassette or cartridge receiving aperture, said sound reproducing apparatus including:
a transducer having three transfer heads, two of which are connected in parallel;
alignment means comprising a blank cassette or cartridge for receiving said transfer heads and for maintaining the latter in spatial position relative to the blank cassette or cartridge, whereby said sound reproducing apparatus may be inserted into the receiving aperture with either of its sides uppermost or outermost of the playback apparatus to align one of said parallel connected transfer heads and the remaining transfer head opposite respective playback heads of the playback apparatus to function so that dual channel sound may be reproduced by the playback apparatus.

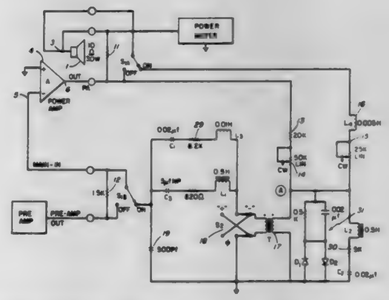


4,287,389

HIGH-FIDELITY SPEAKER SYSTEM

George W. Gamble, One Phlox La., Acton, Mass. 01720

Continuation-in-part of Ser. No. 955,534, Oct. 30, 1978, Pat. No. 4,229,618. This application May 31, 1979, Ser. No. 44,171
Int. Cl.³ H04R *3/00*
U.S. Cl. 179—1 F **3 Claims**



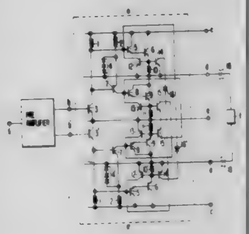
1. High-fidelity speaker system comprising in combination a moving-coil loudspeaker having a voice coil and a coil input terminal
an audio amplifier of high gain associated therewith, said audio amplifier having a signal input and a power output, a low resistance connecting said power output to said voice coil, an impedance network from said power output to said signal input, said impedance network including a dominating high resistance, said high resistance being between said power output and a junction point electrically near said signal input, and a leakage impedance between said junction point and said coil input terminal, said impedance network also including a non-linear element adapted to compensate for the non-linear properties of said loudspeaker.

4,287,390

POWER AMPLIFIER APPARATUS HAVING OVER-CURRENT PROTECTION FUNCTION

Hirokazu Fukaya, and Masashi Shoji, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 31, 1979, Ser. No. 44,136
Claims priority, application Japan, May 31, 1978, 53-66042
Int. Cl.³ H03F *21/00, 3/18*
U.S. Cl. 179—1 A **13 Claims**



1. A power amplifier comprising a first series connection of collector-emitter paths of first and second output transistors connected between power supply terminals; first driving means for driving said first and second output transistors alternatively in response to a first input signal fed through a first input terminal; first over-current detector means provided for said first and second output transistors; first protective means for protecting said first and second output transistors in response to the output of said first over-current detector means; a first output terminal coupled to said first series connection; a second series connection of collector-emitter paths of third and fourth output transistors connected between said power supply terminals; second driving means for driving said third and fourth output transistors alternatively in response to a second input signal fed through a second input terminal, the phase of said first input signal being opposite to that of said second input signal; second over-current detector means provided for said third and fourth output transistors; second protective means for protecting said third and fourth output transistors in response to the output of said second over-current detector means; a second output terminal coupled to said second series connection; a load coupled between said first and second output terminals; first applying means for applying the output from said first over-current detector means to said second protective means; and second applying means for applying the output from said second over-current detector means to said first protective means.

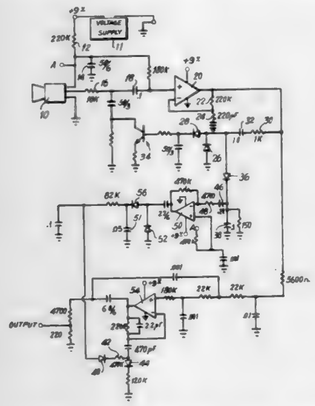
4,287,391

MICROPHONE ASSEMBLY FOR SPEECH RECORDING USING NOISE-ADAPTIVE OUTPUT LEVEL CONTROL

Daniel Queen, Chicago, Ill., assignor to RHR Industries, Ltd., Cliffside Park, N.J.

Filed Jun. 21, 1979, Ser. No. 50,623
Int. Cl.³ H04R *27/00*
U.S. Cl. 179—1 P **12 Claims**

1. A microphone assembly for recording speech characterized by a speech burst rate, with a noise-adaptive automatic output level control for an associated tape recorder having automatic gain control means, said microphone assembly comprising: transducing means for transducing an electrical audio signal with minimal distortion of directional characteristics; input amplifier means connected to said transducing means and including an output; means coupled to said transducing means and to said input amplifier means for attenuating the fundamental and first formant of said signal; automatic gain control means connected to the output of said input amplifier means; output amplifier means connected to the output of said input amplifier means and to said automatic gain control amplifier means and including controllable high-frequency bandwidth limitation means; and speech-noise differentiating means connected to said automatic gain control amplifier means and detecting presence of said speech burst rate with the fundamental and first formant attenuated to derive a control voltage representing percentage of speech, said control voltage being



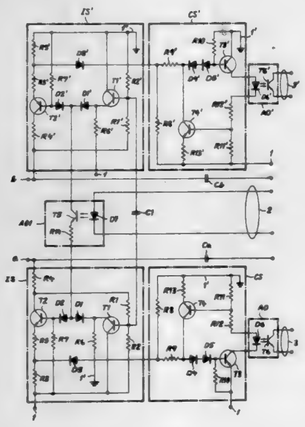
applied as control inputs to both the automatic gain control amplifier means and the bandwidth limitation means resulting in the generation of a constant level for processing by the automatic gain control means of said associated tape recorder.

4,287,392

INTEGRATED CIRCUITRY FOR EXCHANGING SIGNALS BETWEEN TELEPHONE STATION AND CENTRAL OFFICE

Flavio Melindo, Torino, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Torino, Italy

Filed May 30, 1979, Ser. No. 43,848
Claims priority, application Italy, Jun. 2, 1978, 68269 A/78
Int. Cl.³ H04M *3/22*
U.S. Cl. 179—16 AA **9 Claims**



1. In a telephone system including a subscriber station connected to a central office via a line loop with two talking conductors provided with respective blocking capacitors, and signal-transmitting means extending between switching equipment to said central office and points of said talking conductors lying between said blocking capacitors and said subscriber station,

the improvement wherein said signal-transmitting means comprises:

two signal-detecting networks constituted by sets of first integrated-circuit compounds including two semiconductor elements connected between respective talking conductors of said line loop and respective terminals of a direct-current source, said semiconductor elements being provided with a common biasing circuit including resistance means connected across said source in series with a light-responsive device;

a common capacitor connected between said signal-detecting networks for compensating voice-frequency currents propagating in opposite directions over said talking conductors;

two threshold comparators constituted by sets of second integrated-circuit components respectively connected to said signal-detecting networks for translating voltage changes of predetermined minimum magnitudes occurring on said talking conductors into incoming d-c signals detectable by said switching equipment;

a light-emitting device juxtaposed with said light-responsive device and controlled by said switching equipment for translating outgoing d-c signals into conductivity changes of said semiconductor elements resulting in voltage changes on said talking conductors detectable at said subscriber station; and

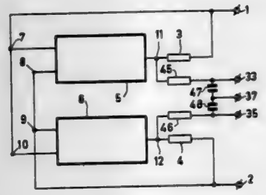
individual coupler circuits respectively inserted between said threshold comparators and said switching equipment for transmitting said incoming d-c signals to the latter.

4,287,393

TRANSMISSION BRIDGE FOR A SUBSCRIBER'S CIRCUIT

Antonius H. J. Reuvekamp, Blantyre, Malawi, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 20, 1979, Ser. No. 77,470
Claims priority, application Netherlands, Oct. 6, 1978, 7810086
Int. Cl.³ H04M *19/08, 3/18*
U.S. Cl. 179—70 **8 Claims**



1. A transmission bridge for a subscriber's circuit comprising:

two input terminals for the connection to a subscriber's line,

two supply resistors each connected on one side to a respective one of said input terminals,

a supply source which is coupled in a polarity independent manner to the opposite sides of each of said supply resistors, and

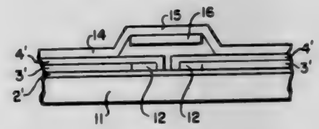
two identical alternating current circuits each connected to a respective one of said input terminals and supply resistors and having complimentary output stages, said alternating current circuits having a high input impedance and a low output impedance and whose output signal is substantially identical to the input signal at the associated input terminal, a first input of each alternating current circuit being connected to the respective associated input terminal, and the output of each alternating current circuit being connected to said opposite side of said associated supply resistor which is not connected to the associated input terminal side.

4,287,394

KEYBOARD SWITCH ASSEMBLY WITH PRINTED CIRCUIT BOARD

Tibor Hargita, Munich; Ingo Berlitz, Putzbrunn, and Herbert Hafner, Höhenkirchen, all of Fed. Rep. of Germany, assignors to Wilhelm Ruf KG, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 802,104, May 31, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,697
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 7624175
Int. Cl.³ H01H *13/70;* H05K *1/00;* G11C *11/00*
U.S. Cl. 200—5 A **8 Claims**



1. A circuit board comprising a substrate of insulating material; an insulating varnish coating applied to at least one side of the substrate; a first set of nonintersecting conductive lines on each varnish coating; a coating of insulating varnish on and around the conductive lines only in the vicinity of desired intersections; a second set of nonintersecting conductive lines which have at least one portion of at least one line thereof superimposed over a portion of at least one other line of the first set of lines and separated therefrom by the insulating varnish coating; a plurality of groups of electrically conducting switch contact pads, wherein each switch contact pad is associated with a particular conductor line; a plurality of actuatable pushbuttons each cooperating electrically with one of the switch contact pads on the circuit board to electrically connect same; and a coating of conductive varnish over the exposed portions of the first and second sets of conductive lines.

5. A circuit board according to claim 1 wherein the pushbuttons comprise an elastic mat disposed upon the circuit board and including integral pushbutton shaped elements and electrically conducting contacts disposed inside the pushbutton elements and in alignment above one group of switch contact pads, wherein each contact is moveable towards its corresponding group of switch contact pads on the circuit board to electrically connect same.

4,287,395

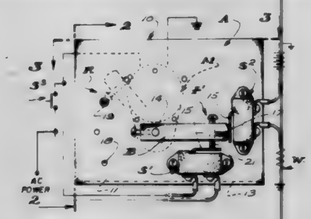
TIMER WITH REVERSIBLE MOTOR

Ernest N. Martin, 1027 E. 5th Ave., Escondido, Calif. 92025

Filed Apr. 13, 1979, Ser. No. 29,621
Int. Cl.³ H01H *43/00*
U.S. Cl. 200—33 R **6 Claims**

1. A timer means comprising reversible repulsion inductive, shaded pole non-directional synchronous clock motor with a drive shaft and connected with an alternating current power supply, an elongate operating arm with an inner end secured to the drive shaft and projecting radially therefrom, a normally closed clock motor control switch controlling the flow of

current between the motor and the power supply and arranged in fixed radial spaced relationship from the shaft and engaged and opened by the arm when said arm is in a normal rotative position to de-energize the motor, stop means spaced circumferentially from the control switch to stop turning of the arm by the motor in a direction away from the control switch when the arm reaches a predetermined rotated position and to cause the motor to reverse and rotate in the opposite direction amd move the arm back to said normal position, a service switch in



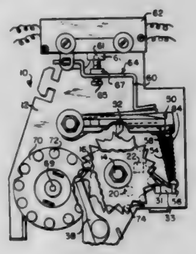
a power line controlling operation of a means controlled by the timer means and positioned relative to the control switch, stop means and arm to be engaged and operated by the arm when said arm is in a predetermined position within its travel between said control switch and stop means and starter means including a normally open switch connected with and between said alternating current power supply and said motor to selectively energize the motor and initiate turning of the arm away from said normal position and out of engagement with the control switch.

4,287,396

CONTROL DEVICE FOR A COIN OPERATED MECHANISM

Harry Greenwald, Whitestone, N.Y., assignor to Greenwald Electro-Mechanical Consultants, Inc., Whitestone, N.Y.

Filed Jan. 16, 1980, Ser. No. 112,461
Int. Cl.³ G07F *15/12*
U.S. Cl. 200—35 R **6 Claims**



1. In a control device for a coin operated mechanism wherein the device includes a ratchet wheel engaged with a ratchet follower, the ratchet wheel being disposed for rotation to displace the ratchet follower to open and close a switch and operate the mechanism, a stepping pawl operable to rotate the ratchet wheel and displace the ratchet follower to close the switch, and a star wheel operatively driven by a timing mechanism into engagement with the ratchet wheel when the switch is in its closed state to rotate the ratchet wheel and displace the ratchet follower to open the switch, wherein the improvement comprises:

(a) said ratchet wheel having a plurality of teeth each having a front and a back face defining a tooth apex therebetween, each said front face including a ratchet follower step, the back face of each tooth and the front face of the next adjacent tooth defining a well therebetween;

(b) said switch being a normally open type switch and being so disposed as to be moved to its closed state by the displacement of said ratchet follower into engagement with the step on one of said ratchet wheel teeth, and to move to its normally open state when said ratchet follower is disposed in one of said wells between adjacent teeth;

(c) said ratchet wheel being disposed, at the end of each stepping operation, to move said ratchet follower into engagement with one of said steps to move said switch to its closed state at the end of each stepping operation; and

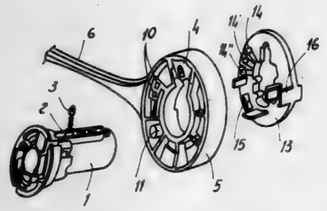
(d) said ratchet follower being displaced out of engagement with the step on a front face of one of said teeth, upon conjoint rotation of said star wheel and said ratchet wheel, to ride up said front face and over said apex and drop down the back face of said tooth wherein said follower is received within the next adjacent well thereby to open said switch.

4,287,397

DIRECTIONAL SIGNALING MECHANISM FOR AUTOMOTIVE VEHICLES

Giuseppe Codrino, Via Stazione, 2, 15028 Quattordio (Alessandria), Italy

Filed Apr. 30, 1979, Ser. No. 34,478
Claims priority, application Italy, May 3, 1978, 22970 A/78
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.27 **5 Claims**



5. In a direction signaling apparatus for a vehicle and having a set of fixed switching contacts disposed for electrically connective cooperation with a set of movable switching contacts carried on a supporting body rotatably movable by a lever, said body being movable in one direction from a neutral position, corresponding to vehicle travel in a straight-ahead direction, to a first limit position, corresponding to vehicle travel in a full right turn direction, and said body being movable in the opposite direction from said neutral position to a second limit position, corresponding to vehicle travel in a full left turn direction, said set of fixed switching contacts and said set of movable switching contacts establishing a right turn indication circuit condition when said body is in said first limit position and establishing a left turn indication circuit condition when said body is in said second limit position, and establishing a non-turn indication circuit condition when said body is in said neutral position; signal cancelation means responsive to the movement of a steering member of the vehicle to return said body to its neutral position when said body is in one of said first and second limit positions and the steering member executes a rotary movement in a direction corresponding to a vehicle turn opposite to the turn indication associated with such limit position, and such rotary movement executed is greater than a predetermined response threshold amplitude, the improvement which comprises in combination: said set of fixed switching contacts and said set of movable switching contacts being of angular extension and positioned in relation to one another such that a respective right turn, left turn indication circuit condition can be established by a corresponding limited rotation of said body by an amount less than the rotation required to move the body from its neutral position to one of said first and second limit positions, and said signal cancelation means has a response threshold greater than the magnitude of such limited rotation whereby said body can be given such limited rotation in a selected direction to establish a corresponding

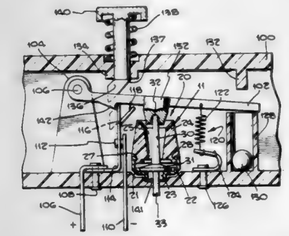
turn indication circuit condition and the body will not be returned to its neutral position to cancel such circuit condition.

4,287,398

INERTIA SWITCHES

Avraham Ziv, Sepulveda; Akira Tanaka, Northridge; William Hollowell, Pacific Palisades; William J. Sieber, Northridge, and Munir J. Ahad, Newhall, all of Calif., assignors to American Safety Equipment Corporation, San Fernando, Calif.

Filed Jul. 30, 1979, Ser. No. 61,695
Int. Cl.³ H01H *35/14*
U.S. Cl. 200—61.45 R **24 Claims**



1. An inertia switch having a switch body, comprising:

(a) inertia sensing pendulum means, mounted to said body, for detecting momentum changes of said body said pendulum means comprising:

(1) a generally hollow and cylindrical tiltable mass;

(2) actuator shaft means, passing centrally through said tiltable mass and moveable linearly upward relative to said mass; and

(3) cam means, disposed within said pendulum means, for moving said shaft means linearly upward when a change in momentum of said switch body causes movement of said mass relative to said shaft means;

(b) electrical switch means including a pair of resilient elements establishing an electrical contact, attached to said body and contacting said shaft means, for resettably interrupting said electrical contact upon said upward movement of said shaft means; and

(c) electrical contact biasing means, disposed between said body and said contact means, for preventing said shaft means from interrupting said electrical contact unless said change in momentum exceeds a predetermined level.

4,287,399

SWITCH DEVICE FOR A RAIL-BOUND TRANSPORT CAR FORMED OF A TRAVELING CARRIAGE AND A TRANSPORT CONTAINER THAT CAN BE PLACED AND LOCKED ONTO THE TRAVELING CARRIAGE

Edelbert Wiechert, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 76,854
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841820
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—153 T **6 Claims**

1. In a switch monitored assembly including a wall (1,13) and a container (24) which can be put in place against said wall in an initial relatively loose condition, and which can also be locked in place, a switch device comprising:

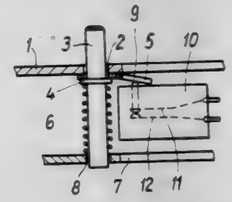
a pivotable two-arm lever (5,15) having a first arm movable from a first position to a second position in a first direction and having a leading surface with respect to said first direction of movement, said lever (5,15) having a second arm for effecting an actuating movement as said first arm moves from said first position to said second position,

a contact device (10,23) having an actuating element actuable in response to said actuating movement of said second arm,

a first spring (6,21), a tappet (3,17) capable of axial excursion against the force of the first spring (6,21), said tappet (3,17) having a projection (4,20) for pressing against the leading surface of said first arm for holding said first arm in said first position, the improvement comprising:

(a) said tappet (3,17) projecting from said wall (1,13) for engagement with said container and being responsive to the application of the container to the wall (1,13) in the initial relatively loose condition to effect an initial travel over an initial distance thereby to release said lever (5,15) for movement from said first position to said second position,

(b) a second spring acting on said lever to urge said first arm toward said second position but having insufficient force to overcome the action of the first spring (6,21),



said lever upon initial travel of said tappet over said initial distance being pivoted under the influence of said second spring to move said first arm to said second position,

(c) stop means (1 or 14) engageable with said lever (5,15) in the second position of said first arm and preventing further pivotal movement of the lever under the impetus of said second spring as said tappet (3,17) is moved beyond said initial distance, and

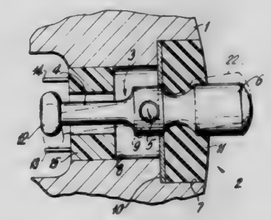
(d) said tappet (3,17) being movable over a substantial distance beyond said initial distance as the container is locked in place relative to said wall (1,13), said projection (4,20) moving away from said leading surface of said first arm during the further travel of said tappet beyond said initial travel and said tappet (3,17) being decoupled from the lever (5,15) during the travel of said tappet beyond said initial travel as the container is locked in place relative to said wall (1,13).

4,287,400

WATER-RESISTANT ROCKER SWITCH

Walter Kitik, Wolcott; Rodney Reder, Waterbury, and Stanley Kurpiewski, Newington, all of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Nov. 1, 1979, Ser. No. 90,203
Int. Cl.³ H01H *9/04*
U.S. Cl. 200—302 **4 Claims**



1. An improved water resistant rocker switch comprising:

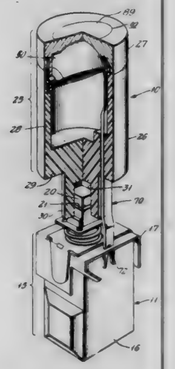
a water-resistant conductive case member defining a bore therethrough, said bore comprising a larger diameter section toward the outside of the case member and a small diameter section toward the inside of the case member,
a rocker arm disposed in said bore having an actuating handle extending on the outside of the case and a contact stem portion extending toward the inside of the case,
electrically conductive support means electrically connected with the case member and pivotably supporting the rocker arm in the bore, said support means comprising a pivot pin on the rocker arm having its ends supported in grooves in said smaller diameter section of the bore,
an adhesive elastomer filling a portion of the bore between and adhered to the rocker arm and the case member and adapted to provide spring action while sealing and to allow pivoting movement of the arm, and
at least one contact terminal insulated from the case member and spaced from the contact stem portion in its normal position and positioned to be contacted by said stem portion when the rocker arm is pivoted by actuation of the actuating handle.

4,287,401

MODE-INDICATING MECHANISMS FOR PUSH-BUTTON OPERATED DEVICES

William R. Rohrbach, Towaco, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 16, 1979, Ser. No. 95,113
Int. Cl.³ G09F *9/00*; H01H *9/00*
U.S. Cl. 200—308 **16 Claims**



1. In combination with a mode-indicating mechanism for a two-position, push-button operated device of the type having a reciprocable operating plunger linearly movable by the push button from an outer position to an inner position and back, the push button including a housing mounted to the plunger for operating the plunger and having an open outer end; an end cap fastened to the open end of the housing and having a transparent viewing area through which an operator can inspect interior portions of the housing adjacent to the viewing area; a mechanical indicator mounted in the housing for linear movement therewith and for rotation about an axis transverse to the line of button movement, the indicator having a curved outer surface positioned adjacent to the viewing area that can be rotated past the viewing area to either of two stable positions I and II, depending on the mode of operation of the device, said outer curved surface having portions that are differently colored or otherwise marked such that the operator can determine at a glance the mode of operation of the device by looking into the viewing window; and linkage means, connected to the indicator and operated by linear movement of the button, for rotating the indicator from position I to position II, and back, in response to movement of the button, the improvement wherein the linkage means comprises:

(a) an elongated connector arm mounted in the housing generally parallel to the line of movement of the button and along an axis spaced from the axis of rotation of the indicator so that an inner segment of the arm is positioned within the housing and an outer segment of the arm projects outwardly from the housing, the inner segment of the arm being resiliently bendable compared to the outer segment;

(b) a fixed base member externally located with respect to the button and adjacent thereto;

(c) means for fixedly securing the outer segment of the arm to the base member so that the outer segment is fixed against movement with the button, the housing having a guideway for slideably receiving an intermediate portion of the arm so that the housing can reciprocate in and out with respect to the arm; and

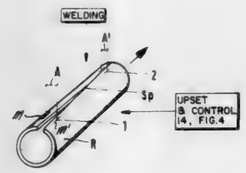
(d) means for mechanically attaching the inner segment of the arm to a peripheral region of the indicator radially offset from the axis of rotation, so that linear movement of the button and indicator therewith with respect to the arm causes the inner segment of the arm to flex and to operate as a resilient crank arm for rotating the indicator from position I to position II, and vice versa.

4,287,402

CONTROLLING UPSETTING DURING WELDING OF A SPLIT TUBE

Erhard Hentzschel, Solingen; Erhard Jaspert, Düsseldorf, and Kurt Niederhoff, Ratingen-Lintorf, all of Fed. Rep. of Germany, assignors to Mannesmann AG., Düsseldorf, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,380
Int. Cl.³ B23K *31/06*
U.S. Cl. 219—61.5 **4 Claims**



1. Method of controlling upsetting pressure during resistance welding of adjoining edges of a split tube having been made from strip or skelp, comprising the steps of

providing markings to both sides of a gap between the not yet welded edges upstream from the welding;

determining the width of the gap in the plane of marking;

measuring the distance between the markings downstream from the welding; and

controlling upsetting by maintaining said distance between prescribed limits.

4,287,403

METHOD AND APPARATUS FOR ADJUSTING THE GAP IN AN ELECTRIC DISCHARGE MACHINE

Kunihiko Sato, Owari-Asahi; Tetsuro Urata, Nagoya; Mitsugi Kawano; Terumasa Jinba, both of Fukuyama; Yukio Kato, Kasugai, and Takeo Uebayashi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

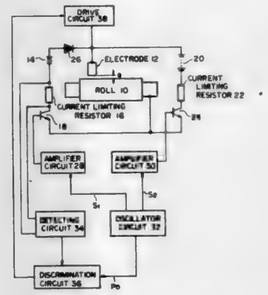
Filed Jul. 31, 1978, Ser. No. 929,438
Claims priority, application Japan, Aug. 1, 1977, 52-92378
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 M **7 Claims**

1. In an electric discharge machining method comprising defining a working gap between an electrode and a work piece, controlling the feed of said electrode to adjust said working gap and moving said electrode and a work part of said work

piece relative to each other thereby giving a satin finish to a surface of said work piece, the improvement comprising the steps of:

applying across said working gap, repeatedly and consecutively, a series of voltage pulse trains, each voltage pulse train consisting of a plurality of high voltage pulses followed by a single low voltage pulse;

detecting in response to the application of said low voltage



pulse a working current across said working gap, comparing the working current for discrimination with a reference value corresponding to a predetermined interelectrode condition, and controlling the feeding of said electrode in accordance with the compared working current and reference value to adjust said working gap; and

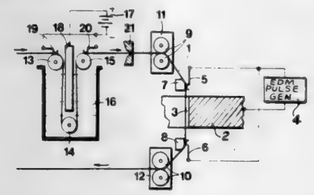
applying said high voltage pulses for a predetermined time to cause discharge and give a satin finish to the surface of said work piece by electric discharge machining.

4,287,404

ELECTRODE FOR ELECTRICAL DISCHARGE MACHINING

Danielle Convers, Geneva; Francois Balleys, Vernier, and Jean Pfau, Geneva, all of Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Feb. 26, 1979, Ser. No. 14,927
Claims priority, application Switzerland, Mar. 3, 1978, 2317/78; May 5, 1978, 4872/78
Int. Cl.³ B23P *1/12*
U.S. Cl. 219—69 W **14 Claims**



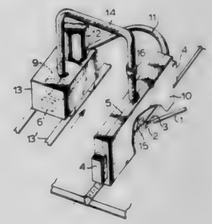
1. In combination with an EDM apparatus, a filament electrode for electrical discharge machining of a workpiece wherein said filament electrode is displaced longitudinally and laterally through the workpiece, said filament electrode comprising a core made of material having a relatively high mechanical strength and a relatively thin metallic surface coating on said core, said metallic surface coating comprising at least 50% of a metal having a low temperature of vaporization selected from the group consisting of zinc, cadmium, tin, lead, antimony, bismuth and an alloy thereof.

4,287,405

PROCESS AND APPARATUS FOR EXHAUSTING FUMES PRODUCED BY ARC WELDING

Takashi Ohmae; Yasuhiro Fukaya; Yasuyuki Yoshida; Tamotu Oka; Masahiko Sato, all of Hiroshima, and Masazumi Nagareda, Saka, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1979, Ser. No. 81,260
Int. Cl.³ B23K *9/32*
U.S. Cl. 219—136 **10 Claims**



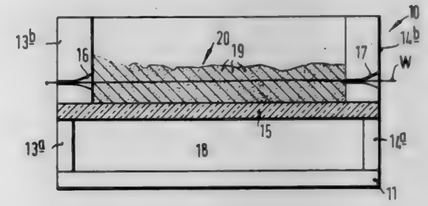
1. A process for exhausting weld fumes, wherein during arc welding, optical radiation emitted from an arc is detected by photelectric means provided on a suction hood, said suction hood is made to travel along a weld line in response to an electric detection signal from said photelectric means which is related to an intensity of illumination of said optical radiation at said suction hood so that said hood may be maintained within a predetermined range of travel, and thereby the weld fumes are exhausted through said suction hood while said suction hood is always covering a weld metal zone.

4,287,406

ELECTRIC CONTACT DEVICE WITH FLUIDIZED METAL PARTICLE BED

Evan J. Davies, Sutton Coldfield, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 939,401, Sep. 5, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,648
Claims priority, application United Kingdom, Sep. 8, 1977, 37481/77
Int. Cl.³ C21D *9/62*
U.S. Cl. 219—155 **8 Claims**



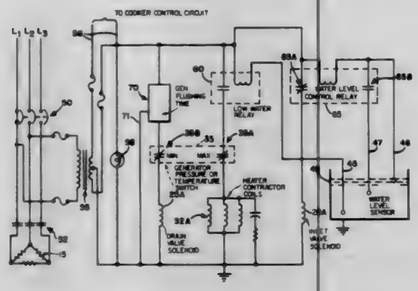
1. An electric contact device, for conveying electric current to an article, comprising a container, a bed of uniformly distributed electrically conductive de-oxidised metal particles in said container, means to fluidize said particles with a non-oxidizing gas, means to provide a non-oxidising environment for said bed of particles, a current feeder member adapted to contact said bed, and means for maintaining a part of the article, spaced from the current for maintaining a part of the article, spaced from the current feeder member, in contact with said bed of particles when fluidized.

4,287,407

TANK FLUSHING DELAY ARRANGEMENT FOR A STEAM GENERATOR

Fritz F. Treiber, Centerville, and Dallas A. Margraf, Spring Valley, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Aug. 17, 1978, Ser. No. 934,532
Int. Cl.³ H05B *1/02*; F22B *1/28, 37/50*
U.S. Cl. 219—273 **7 Claims**



1. In a steam generator adapted for intermittent operation,
a tank having a water inlet, a steam outlet, and a drain,
a heater associated with said tank to heat water therein to the vaporization temperature,
a power operated inlet valve controlling said water inlet,
a power operated normally closed drain valve controlling said drain,
a water level sensor connected to said tank,
means for sensing the pressure of steam in said tank;
the improvement comprising
a control circuit connected to said valves, said heater, said sensing means, and said water level sensor,
said control circuit including
means for opening said inlet valve in response to a low water level sensed by the water level sensor,
means for opening said drain valve for a predetermined time period upon starting said generator to drain water from said tank and for automatically closing said drain valve after expiration of the predetermined period to initiate filling of said tank, said inlet valve being opened in response to a low water level sensed by the water level sensor during said perdetermined period to flush the tank with fresh water,
means energizing said heater and inlet valve under control of said water level sensor and said pressure sensing means to maintain water level in said tank within predetermined limits as steam is generated and used, and
delay means connected in circuit with said drain valve opening means to prevent opening of said drain valve by said drain valve opening means for a predetermined cooling period sufficient to condense residual steam in the tank after said generator has been turned off following a period of operation,
whereby water is retained in said tank at a predetermined level when the generator is turned off and the tank is flushed upon starting only if the generator has been turned off and the predetermined cooling period has elapsed.

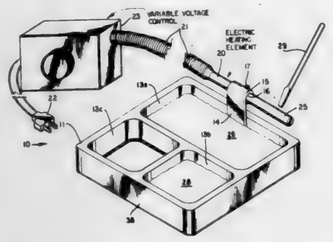
4,287,408

COMBINATION ELECTRICALLY HEATED MATERIAL RECEPTACLE AND INSTRUMENT HEATER

Melvin Wilson, 16 Lanier Dr., Cumming, Ga. 30130

Filed Mar. 10, 1980, Ser. No. 128,509
Int. Cl.³ H05B *1/00, 3/68*; F27B *14/06*
U.S. Cl. 219—475 **4 Claims**

1. A materials heating device comprising:
a receptacle formed of thermoconductive material;
heating means mounted in good heat conducting relationship to said receptacle so as to impart heat to said receptacle and to material received therein;
said heating means being separate from said receptacle and including a portion which is exposed to direct contact by an implement, so that said implement can receive heat from said heating means;
said heating device further comprising conductive connecting means for connecting said heating element to said receptacle and for conducting heat from said heating element to said receptacle to heat said receptacle;



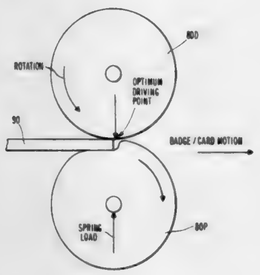
said heating means comprising an elongated heating element, and wherein said connecting means comprises a bracket attached to said receptacle and forming an annular holder which surrounds and holds said elongated heating element in good heat transfer relation thereto and in spaced relationship to said receptacle, said annular holder being shorter in length than said elongated heating element whereby a portion of said elongated heating element is exposed beyond said annular holder for easy contact and access by said implement.

4,287,409

READER WITH SPECIAL MEANS FOR TRANSPORTING CARDS AND BADGES OF VARIABLE THICKNESSES

Richard J. Auchinleck, Norristown, Pa., assignor to Peripheral Dynamics, Inc., Norristown, Pa.

Filed Feb. 12, 1979, Ser. No. 11,197
Int. Cl.³ G06K *13/00*; B65H *5/02*
U.S. Cl. 235—475 **8 Claims**



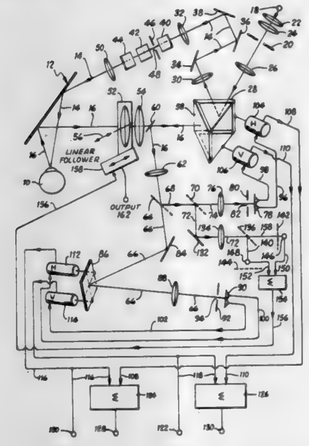
7. In a reader for reading badges or cards of widths within a range of 0.048 inch, a transport drive mechanism comprising a plurality or roller pairs, each roller pair having a drive roller mounted on a fixed shaft and having a durometer of at least 70, a pinch roller normally in contact with said drive roller and movable relative to said drive roller, said pinch roller having a durometer which is at least twice as low as said drive roller durometer, and biasing means for biasing said pinch roller toward said drive roller, whereby a card or badge which is introduced to the nip of each of said roller pairs penetrates said pinch rollers sufficiently to be grabbed and transported by said roller pairs, whereupon said pinch rollers are forced to move against said biasing means sufficiently to accommodate said card or badge between the two rollers of each of said pairs.

4,287,410

DOUBLE PURKINJE EYE TRACKER

Hewitt D. Crane, Portola Valley, and Carroll M. Steele, Los Altos, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Feb. 28, 1979, Ser. No. 15,929
Int. Cl.³ A61B *3/10*; H01J *40/14*
U.S. Cl. 250—201 **26 Claims**



1. In an improved eye tracker for continuously tracking orientation of an optic axis of an eye having a cornea and a lens, where the eye is adapted to move axially, to translate in a horizontal and a vertical direction and to rotate in a horizontal and a vertical direction, comprising light source means for forming a light beam, optical means for directing said light beam into the eye whereby light reflected by the cornea forms a first Purkinje image and light reflected by the rear of the eye lens forms a fourth Purkinje image, optical means to focus the image of at least one of the said first and fourth Purkinje images nominally at a given reference focal distance, first and second light flux density measuring devices that produce an output electrical signal which is a function of light incident thereon, and means to obtain light flux density on the said first and second light flux density measuring devices from equal distances but opposite sides of the said reference focal distance.

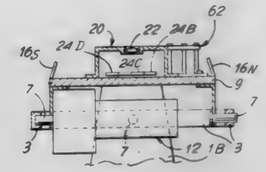
4,287,411

APPARATUS FOR SEEKING AND FOLLOWING A LUMINOUS ZONE, SUCH AS THE SUN

Marcello Beucci, Arezzo, Italy, assignor to Gori & Zucchi S.p.A., Italy

Filed Jun. 19, 1979, Ser. No. 50,115
Claims priority, application Italy, Sep. 1, 1978, 9576 A/78
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **5 Claims**

1. Apparatus for seeking a luminous zone, comprising an angularly movable element, photoelectric transducer means, mounted to said movable element, for generating signals for orientating the element towards the luminous zone, said transducer means comprising at least two first transducers facing in different directions and symmetrically disposed about a plane containing the axis of angular movement of the element, said first transducers having excitation surfaces inclined toward said plane, and servomotor means for moving the element



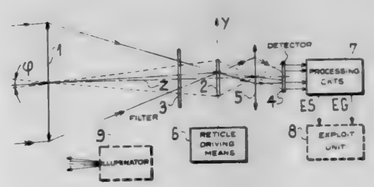
about said axis, said servomotor means being controlled by the signals generated by the transducers.

4,287,412

PHOTOELECTRIC DIRECTION FINDER

Georges Couderc; Yves Cojan, and Denis Bargues, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 20, 1979, Ser. No. 96,112
Claims priority, application France, Nov. 24, 1978, 78 33289
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **10 Claims**



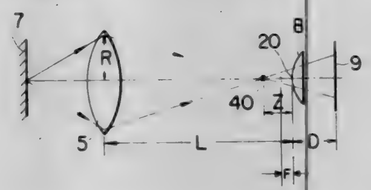
1. A photoelectric direction finder system for the detection and the location of a light radiating target, of the type comprising an optical reception and focussing objective, a revolving disk rotated in the focal plane of the objective and provided with reticles formed from transparent and opaque zones for producing a modulation whose frequency is linked with the rotation speed, an optical filter, a photodetector device for the modulated radiation and circuits for the processing and deviation measurement of the detected signals, comprising demodulating circuits and producing deviation signals which are representative of the angular offsetting of the target relative to a reference axis, and in which an intermediate deviation measurement objective is positioned between the reticles and the detector, the latter being of the four quadrant type for producing the deviation signals from the respective signals of the quadrants and consecutively separating the deviation measurement function from the modulating and spatial filtering function produced by the reticles, wherein the reticles are determined transparent to the radiation produced by an auxiliairy laser illuminator modulated with a modulation which is separate from that produced by the reticles and wherein it comprises additional processing circuits for processing the detected laser signals, as well as circuits for switching and selecting passive and semi-active operating modes for delivering the corresponding deviation measurement data.

4,287,413

AUTOMATIC FOCUS SERVOMECHANISM IN OPTICAL INFORMATION READING DEVICE

Hitoshi Kanamaru, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,421
Claims priority, application Japan, Jun. 16, 1978, 53-73524
Int. Cl.³ G01J 1/36
U.S. Cl. 369—45 **8 Claims**



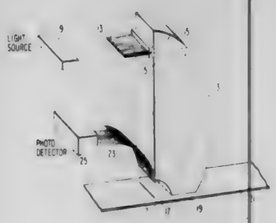
1. In a focus servo apparatus in which an information recording surface of a recording medium is illuminated with light from an illumination source and information recorded on the recording surface is read out by using light reflected from the recording surface, the improvement comprising; a condenser lens for condensing the light from the recording surface, a cylindrical lens for passing the condensed light, light receiving means having a light receiving surface positioned for receiving the light from said cylindrical lens, a distance D between said cylindrical lens and said light receiving means being larger than the focus distance F of said cylindrical lens, and means responsive to an output of said light receiving means moving said condenser lens for condensing the illumination light onto the recording surface of said recording medium.

4,287,414

ILLUMINATION AND PICK UP APPARATUS

Suk S. Soo, Ossining, and Andrew M. Schwartz, Poughkeepsie, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,680
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 **16 Claims**



1. Apparatus for focusing source radiation on a surface and receiving radiation which is reflected from said surface, comprising:

unitary reflecting means having at least one reflecting surface for reflecting source radiation from an input focal line to an output focal line to form an illuminating slit image at said output focal line,

alignment means forming part of said unitary reflecting means abutting said surface for aligning said reflecting means to maintain said output focal line and the associated slit image focused on said surface, and,

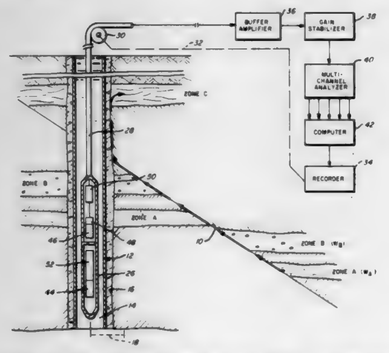
light receiving means mounted in fixed positional relationship to said reflecting means and spaced from said surface when said alignment means aligns said reflecting means, for receiving light which is reflected from said surface.

4,287,415

MEASUREMENT OF FLOWING WATER SALINITY WITHIN OR BEHIND WELLBORE CASING

Dan M. Arnold, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,754
Int. Cl.³ G01V 5/00
U.S. Cl. 250—270 **10 Claims**



1. A method of determining the salinity of a fluid flowing within or behind a casing in a well borehole so that the source of such water may be determined, comprising the steps of:

(a) locating a well tool having a source of high energy neutrons, at least some of which have sufficient energy to cause the nuclear reactions $O^{16}(n,p)N^{16}$ and $Na^{23}(n,\alpha)F^{20}$, and a gamma ray detector longitudinally spaced from the source at, at a position in the well borehole;

(b) irradiating the borehole environs with high energy neutrons from the source;

(c) detecting gamma rays caused by the decay of the unstable isotopes nitrogen-16 and flourine-20 and generating signals respresentative thereof;

(d) obtaining from the detected gamma rays a measure of the relative presence of oxygen and sodium in the fluid in the vicinity of the detector; and

(e) obtaining from the measure of relative presence of oxygen and sodium an indication of the salinity of the fluid.

4,287,416

METHOD OF DETERMINING FATIGUE AND STRESS CORROSION DAMAGE

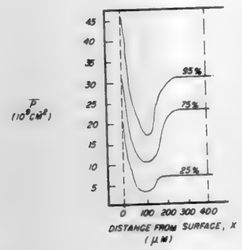
Irvin R. Kramer, Baltimore, Md.; Sigmund Weissman, Metuchen, N.J., and Robert N. Pangborn, State College, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 135,065
Int. Cl.³ G01N 23/20
U.S. Cl. 250—273 **6 Claims**

6. A method of determining the stress-corrosion damage to a structural member comprising the steps of:

making an x-ray diffraction line intensity profile of the member to a depth of about 10 micrometers, said x-ray diffraction line intensity profile providing a measure of the critical excess dislocation density of the member at stress-corrosion failure thereof; and

making a second x-ray diffraction line intensity profile of the member from the surface to beyond the work hardened surface layer, which may extend to a depth of about 200 micrometers, said second profile being determined from x-ray diffraction patterns from sufficient depths to provide an average excess dislocation density of a desired accuracy wherein the x-ray diffraction line intensity profile of this step provides a measure of the average excess dislocation density of the member and wherein the ratio of the average excess dislocation density of the member of this



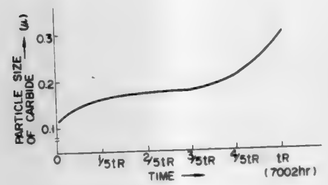
step to the critical excess dislocation density of the member at failure is equivalent to the amount of stress-corrosion damage which has occurred to the member.

4,287,417

METHOD OF DETERMINING THE DETERIORATION OF HEAT-RESISTANT FERRITIC STEEL PARTS

Shuichi Komatsu; Shinichi Nakamura, both of Yokohama; Kazumi Shimotori, Kawasaki, and Yoshio Nakayama, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 28, 1980, Ser. No. 115,884
Claims priority, application Japan, Jan. 31, 1979, 54-9122; Aug. 31, 1979, 54-110303
Int. Cl.³ G01N 23/00
U.S. Cl. 250—307 **3 Claims**



1. A method of determining the degree of deterioration of a Cr-Mo-V ferritic steel part applied in a region of high temperature which comprises the steps of:

measuring the value of at least one of the crystallization factors of vanadium carbide, V_4C_3, crystallized out in the Cr-Mo-V ferritic steel part applied in a region of high temperature, wherein said crystallization factors of vanadium carbide are particle size, interparticle distance, percentage volume or crystallization density, and wherein said crystallization density, and wherein said crystallization factors are measured from the structural image of said crystallized V_4C_3 produced by the dark view field process of an electronic microscope;

applying a previously obtained referential deterioration curve showing the relationship between the length of time for which the Cr-Mo-V steel is applied under test-accelerating conditions and said at elast one of the crystallization factors of vanadium carbide to determine the length of time under test-accelerating conditions necessary to produce the measured value of said at least one crystallization factor of vanadium carbide; and

calculating the length of time for the steel part to be used under practical operating conditions from the length of time for which the steel is applied under test accelerating conditions to achieve the value shown by said at least one crystallization factor by applying the Larson-Miller parameter

$P = T(\log t + 20)$

wherein

P=a constant,

T=absolute temperature, and

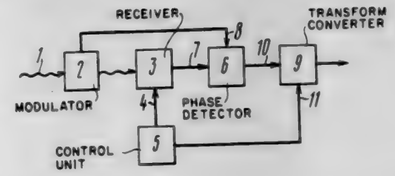
t=time.

4,287,418

METHOD FOR MEASURING THE SPECTRAL DISTRIBUTION OF ELECTROMAGNETIC RADIATION INTENSITY AND SPECTROMETER OF MILLIMETRIC AND FAR-INFRARED RANGES FOR EFFECTING SAME

Jury Y. Divin, ulitsa Narodnogo Opolchenia, 54, kv. 100; Oleg J. Polyansky, ulitsa Malaya Gruzinskaya, 46, kv. 10, and Alexandr Y. Shulman, ulitsa Dubninskaya, 12, korpus 3, kv. 96, all of Moscow, U.S.S.R.

Filed Jun. 27, 1979, Ser. No. 52,688
Claims priority, application U.S.S.R., Jul. 6, 1978, 2639129; Jul. 6, 1978, 2639130
Int. Cl.³ G01J 1/00
U.S. Cl. 250—336 **9 Claims**



1. A method for measuring the spectral distribution of electromagnetic radiation, comprising the following steps:

converting the spectral distribution of electromagnetic radiation to an electric signal by means of a direct integral Hilbert transform in superconducting weak links, by making use of an a.c. Josephson effect in said superconducting weak links, wherein the instrinsic Josephson generation line width is less than the value corresponding to the required resolution,

measuring the electric signal as a function of a direct integral Hilbert transform parameter; and

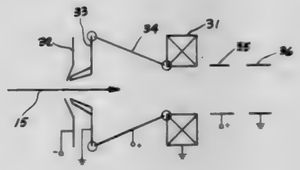
applying an inverse integral Hilbert transform to the measured function to determine the desired spectral distribution of said electromagnetic radiation.

4,287,419

STRONG FOCUS SPACE CHARGE

Rex Booth, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 22, 1978, Ser. No. 908,030
Int. Cl.³ G21K 1/00
U.S. Cl. 250—396 ML **10 Claims**



1. A strong-focus space-charge lens for focusing charged-particle beams passing therethrough comprising: at least one current-carrying coil for creating a magnetic field, and a plurality of spaced charged electrodes positioned in spaced axial

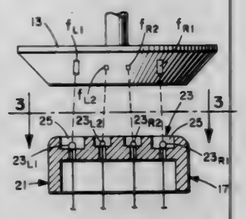
alignment with respect to said current-carrying coil for creating at least one electric field, said electric field being at substantially right angles to said magnetic field to form cross magnetic and electric fields to focus charged-particle beams; said plurality of spaced charged electrodes having an axial length greater than an axial length of said current-carrying coil; said coil and electrodes being constructed such that a charged-particle beam passing therethrough is focused thereby.

4,287,420

STEREOSCOPIC X-RAY DEVICE

Toshio Yamamura, and Takeshi Muraki, both of Yokohama, Japan, assignors to Toshiba Corporation, Kawasaki, Japan

Filed Oct. 2, 1979, Ser. No. 81,127
Claims priority, application Japan, Nov. 2, 1978, 53-134460
Int. Cl.³ H05G *1/00, 1/30*
U.S. Cl. 250—402 **9 Claims**



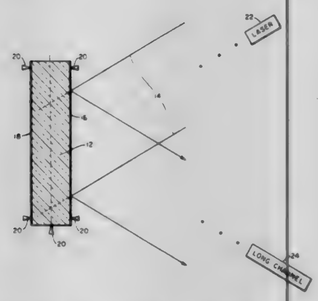
1. A stereoscopic X-ray device comprising:
an evacuated envelope;
a target within said envelope; and
electron beam means within said envelope for directing electron beams on said target to form at least two pairs of focal spots on said target to generate X-rays, said pairs of focal spots being spaced apart on said target, said electron beam means including first and second filament means, said first filament means having a size larger than said second filament means for forming a first pair of focal spots having a larger size than a second pair of focal spots, said second pair of focal spots being formed by said second filament means and positioned between said first pair of focal spots on said target.

4,287,421

COMPENSATION OF THERMAL EXPANSION IN MIRRORS FOR HIGH POWER RADIATION BEAMS

Paul G. DeBaryshe, Lincoln, and Sheldon L. Glickler, Natick, both of Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Jun. 7, 1978, Ser. No. 913,317
Int. Cl.³ G02B *5/08*; H01J *27/00*
U.S. Cl. 250—423 P **13 Claims**



1. A multilayer front reflecting mirror for reflecting electromagnetic radiation provided in a beam from a source of radiation and with the mirror compensated for thermal expansion caused by absorption of incident radiation, said mirror comprising:
a substrate transmissive to the electromagnetic radiation in said beam and having first and second surfaces with said first surface receiving said beam;
a coating on said first surface of said substrate operative to reflect the majority of the radiation in said output beam, absorb a small portion of the incident radiation to produce a thermal change in size along said first surface and to transmit to said second surface a further small portion of the radiation in said beam;
a coating on said second surface of said substrate operating to absorb at least a portion of the radiation transmitted from said first surface to said second surface;
to produce a thermal change in size along said second surface compensatory to the change in size along said first surface.

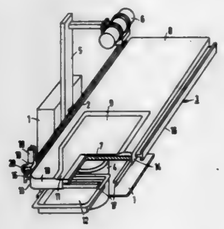
11. A photoexcitation system comprising:
an optically transmissive substrate having first and second surfaces;
a source of radiant energy in the optical frequency range to which said substrate is transmissive and providing an output beam or radiation of said radiant energy;
said output beam being directed toward said first surface;
a coating on said first surface of said substrate operative to reflect the majority of the radiant energy in said output beam to absorb a small portion of the incident radiation to produce a thermal change in size along said first surface and to transmit to said second surface a small portion of the radiant energy in said output beam;
a coating on said second surface of said substrate operating to absorb a portion of the radiant energy transmitted from said first surface to said second surface to produce a thermal change in size along said second surface compensatory to the change is size along said first surface;
said source of radiant energy including means for providing radiant energy of one or more frequencies in which at least one frequency is selected for producing isotopically selective photoexcitation of a material; and
means responsive to radiant energy reflected by said coating on said first surface for producing isotopically selective photoexcitation in response thereto.

4,287,422

EXAMINATION TABLE FOR A UROLOGICAL X-RAY EXAMINATION APPARATUS

Wilko Kuphal, Rueckersdorf, and Heinz Wons, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,320
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759079
Int. Cl.³ G01N *21/00*; A61G *13/00*
U.S. Cl. 250—439 R **8 Claims**



1. An examination table for a urological X-ray examination apparatus comprising a patient support platform capable of shadow-free irradiation, resting on a frame, comprising two

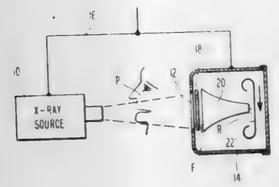
longitudinally extending support rails for the mounting of accessories, and comprising means for collecting contrast medium flowing out, characterized in that there is mounted on the patient support platform (7) a single-piece, smooth, support plate (8) with support rails (15, 16) attached to the longitudinal sides (13, 14), said support plate consisting of readily disinfectible material, completely covering the upper surface and the four lateral edges of the patient support platform adjoining the upper surface.

4,287,423

PANORAMIC DENTAL RADIOGRAPHY IMAGE INTENSIFICATION EMPLOYING MINIFICATION TECHNIQUES

Robert H. Cushman, Princeton, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 9, 1979, Ser. No. 92,883
Int. Cl.³ G01N *23/00*; G01T *1/00*
U.S. Cl. 250—439 P **2 Claims**



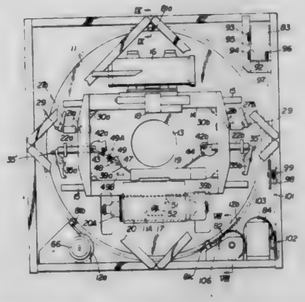
1. An x-ray machine comprising an x-ray source adapted to continuously direct x-radiation through a slot provided in a front panel of a camera assembly containing film controllably movable therewithin for exposing selected portions thereof to x-radiation passing through a patient disposed between said x-ray source and camera assembly to form images of said patient on said film, said x-ray source and said camera assembly orbiting as a unit about head of said patient, said machine comprising intensifying means mounted within said camera assembly immediately after said slot to receive all x-radiations passing therethrough for conversion thereof into light images, said intensifying means comprising a single stationary intensifying screen, input face and output face of said intensifying screen being substantially identical in size with said slot, minifying means mounted within said camera assembly after said intensifying means for receiving said light images from said intensifying means for reducing said light images in size into minified images having increased intensity, said minifying means comprising a fiber optic minifying lens having input face greater in area than its output face, said lens input face having dimensions substantially identical with said input and output faces of said intensifying screen, said input face of said lens being mounted in very close operable proximity to said output face of said intensifying screen, said lens output face having dimensions to provide a ratio of lens input face to lens output face of about 14 to 1, and wherein light intensity of said image leaving said output face of said minification lens has a light intensity at least 10 fold greater than light intensity of image leaving said intensifying screen, and
wherein optical density of a radiographic image of dental enamel obtained through said minification lens which provides a light intensity at its output face at least 10 fold greater than light intensity of image leaving said intensifying screen represents about a 7 to 1 optical density increase when exposure time is set at about 0.3 seconds using an x-ray power supply of about 90 kVp and filtration equivalent to 2.5 mm of aluminum, and said optical density of said radiographic image of said dental enamel is about 0.3, and
wherein said 7 to 1 optical density increase represents a potential of about 10 to 1 dose reduction.

4,287,424

SCANNING DEVICE FOR USE IN AXIAL TRANSVERSE TOMOGRAPHIC APPARATUS

Chuji Tomita; Hiroshi Abe, and Katashi Shimazu, all of Kashiwa, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,430
Claims priority, application Japan, Nov. 24, 1978, 53-160676[U]
Int. Cl.³ G03B *41/16*; G01N *21/00*
U.S. Cl. 230—445 T **4 Claims**



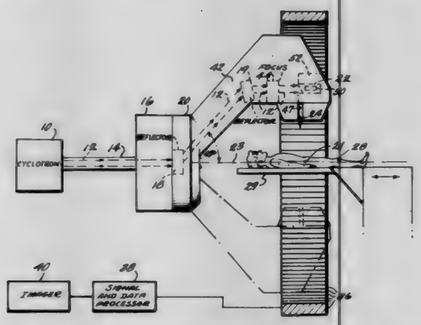
1. A scanning device for use in axial transverse tomographic apparatus, comprising, in combination:
a pedestal;
a rotary member rotatably supported on said pedestal;
means provided in said rotary member in the vicinity of center of rotation thereof for accommodating a subject for examination;
a support mounted on said rotary member for linear movement and supporting an X-ray source and its associated detector which are disposed on opposite sides of said accommodating means to face each other;
drive means for causing reciprocating movements of the support at a plurality of different speeds and for causing the rotary member to rotate through a certain angle at a time for each movement of the support in any one direction;
a plurality of damping means arranged on said rotary member so as to assume positions to work upon the support when said drive means causes the support to move at a plurality of different speeds, and having substantially great repelling forces enough to brake and accelerate this support at each changing of direction of movement thereof where said damping means comprises
a first damper including a cylinder mounted on the rotary member, a member mounted on the rotary member at an end of said cylinder, a slide fit in said cylinder, and a coil spring provided between this slide and said member and being arranged on the rotary member to insure that the slide is moved at any changing of direction of movement of the support, and
a second damper including a cylinder mounted on the rotary member, two slides fit in this cylinder, and a coil spring inserted between these two slides, and being arranged on said rotary member to insure that one of these two slides is moved at any changing of direction of movement of said support; and
change-over means for selectively rendering a part of said damping means to a state of working upon the support and to an inoperative state for the support in accordance with the speed of movement of this support where said change-over means acts to allow free movement of the other one of said two slides of the second damper and also to lock this other slide in accordance with a speed of movement of the support.

4,287,425

CONSTRUCTION OF A CT SCANNER USING HEAVY IONS OR PROTONS

Donald O. Elliott, Jr., Baltimore, Md., assignor to Pfizer, Incorporated, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,831
Int. Cl.³ G01K *1/08*
U.S. Cl. 250—445 T **20 Claims**



1. An apparatus for obtaining a two dimensional display of the X-ray absorption distribution within a cross sectional volume of an object disposed along an axis, comprising

a target;

an X-ray detector spaced opposite said target; and

means for producing a substantially monochromatic X-ray beam extending from said target through said axis to said detector including means for angularly displacing said beam about said axis so as to scan said object in said cross-sectional volume;

said X-ray detector including means for converting said X-ray beam into a corresponding detected electrical signal;

said X-ray beam producing means including a source of high energy substantially monoenergetic ions focusable on said target; and

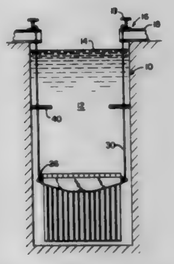
said target including atoms which are ionized by said high energy ions so as to emit substantially monochromatic X-rays.

4,287,426

NUCLEAR FUEL STORAGE APPARATUS FOR SEISMIC AREAS

Andrew J. Anthony, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 10, 1978, Ser. No. 950,103
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—506 **9 Claims**



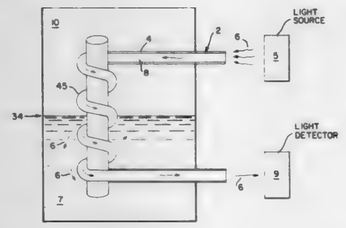
1. An earthquake resistant apparatus for storing nuclear fuel comprising: an earth connected pool formed of watertight material; water within said pool and below the normal water level of said pool; a structural grid for supporting fuel, located within said pool, in spaced relation from the sides thereof; a plurality of earth connected support members; and universally flexible tension members, substantially vertically oriented, attached at the lower end to said structural grid, and at the upper end to said support members.

4,287,427

LIQUID-LEVEL MONITOR

Donald R. Scifres, 1337 Montclair Way, Los Altos, Calif. 94022

Continuation of Ser. No. 842,968, Oct. 17, 1977, abandoned.
This application Jan. 2, 1980, Ser. No. 109,070
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—577 **10 Claims**



1. An apparatus for measuring the level of a liquid confined to a container comprising:

a light guiding medium having an input end and an output end,

means for launching a light wave into said input end of said light guiding medium,

said light guiding medium having at least a portion which, when immersed to a certain degree in said liquid transmits fractionally less of said light wave from said input end to said output end than when said portion is immersed to a lesser degree in said liquid,

said portion extending over a distance which is greater than the cross sectional thickness of said light guiding medium such that a range of liquid levels greater than said cross sectional thickness can be measured, and

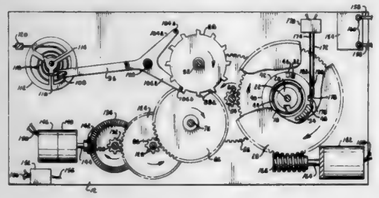
detector means positioned at the output end of said light guiding medium, said detector means measuring the intensity of said light wave which has traversed said light guiding means, said intensity being a function of the extent to which said portion of said light guiding means is immersed in said liquid.

4,287,428

AUTOMATIC SPRING POWERED BATTERY CHARGING DEVICE

James Smith, 2503 Prospect, Kansas City, Mo. 64127

Filed Jul. 27, 1979, Ser. No. 61,274
Int. Cl.³ H02J *7/00*
U.S. Cl. 290—1 E **6 Claims**



1. In a battery charging device of the type having a frame, a coil spring mounted on said frame for coiling and uncoiling movement, a drive gear mounted for rotation on said frame and coupled with said coil spring in a manner to rotate in response to uncoiling of the spring, a mechanical linkage coupled with and driven by said drive gear upon rotation thereof, and battery charging means driven by said linkage and operable to apply charging current to the battery, a shaft supported for rotation on said frame and carrying said drive gear thereon, a spring winding gear mounted on said shaft for rotation relative thereto and coupled with said spring in a manner to effect winding thereof in response to rotation of the spring winding gear, power means for effecting rotation of said winding gear, the improvement comprising:

an actuator ring mounted on said shaft for movement independently thereof, said ring presenting a peripheral notch therein;

lost motion means coupling said drive gear and said actuator ring with one another in a manner providing lost motion therebetween;

a switch mechanism for energizing and deenergizing said power means, said switch mechanism including a switch arm having a free end engageable against the periphery of said actuator ring with said free end of the switch arm entering said notch upon movement of the actuator ring to a preselected rotative position corresponding to an unwound condition of said spring, said switch mechanism being operable to deenergize said power means when said free end is engaged against the periphery of said actuator ring and to energize said power means when said free end is disposed in said notch; and

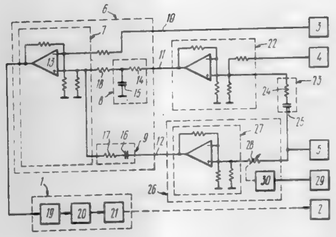
means for removing said free end of the switch arm from said notch in response to rotation of said spring winding gear sufficient to effect a wound condition of the spring.

4,287,429

APPARATUS FOR AUTOMATICALLY CONTROLLING THE ACTIVE POWER PRODUCED BY THE GENERATOR OF A HYDRAULIC TURBINE-GENERATOR UNIT

Oleg I. Bashnin, prospekt Maiorova, 53, kv. 13; Vasily V. Semenov, Moskovsky prospekt, 171, kv. 92; Vasily N. Fedorov, Prazhskaya ulitsa, 23, kv. 61; Evgeny I. Rodionov, prospekt Raevskogo, 8, kv. 21; Boris A. Davidson, prospekt Lunacharskogo, 70, korpus 4, kv. 140, and Gleb S. Schegolev, Sinyavinskaya ulitsa, 12/49, kv. 29, all of Leningrad, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,034
Int. Cl.³ F01D *15/10*; H02P *9/04*
U.S. Cl. 290—40 C **5 Claims**



1. An apparatus for automatically controlling the active power produced by a generator of a unit including a generator and a hydraulic turbine having a gate for controlling water flow to the runner of the hydraulic turbine, said apparatus comprising:

means for providing a reference signal corresponding to a desired power level;

an active power measuring means to measure the power developed by said generator;

a gate opening sensing means responsive to the extent of opening of said gate;

a gate opening control means for adjusting the extent of opening of said gate;

a first summing means having two inputs and an output, a first of said inputs of said first summing means being coupled to said reference signal providing means, and said output of said first summing means being coupled to said gate opening control means;

a second summing means having two inputs and an output, a first of said inputs of said second summing means being coupled to said gate opening sensing means, and said output of said second summing means being coupled to the second of said inputs of said first summing means; and

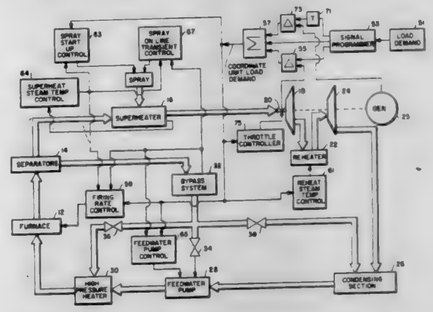
an integrator having two inputs and an output, a first of said inputs and said output of said integrator being coupled, respectively, to said output and second of said inputs of said second summing means so as to form a negative feedback circuit comprising said second summing means, and the second of said inputs of said integrator being coupled to said active power measuring means.

4,287,430

COORDINATED CONTROL SYSTEM FOR AN ELECTRIC POWER PLANT

Paul V. Guido, Cedar Grove, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jan. 18, 1980, Ser. No. 113,165
Int. Cl.³ F01K *13/02*; F22D *5/26*; H02P *9/04*
U.S. Cl. 290—40 C **3 Claims**



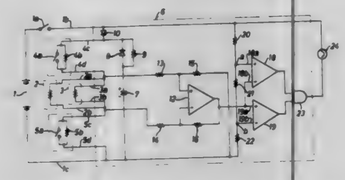
1. In a power plant having a steam turbine driving a generator, a furnace for generating steam to drive the turbine, separators to separate the water from the steam in the output of the furnace, a feedwater pump to pump water to said furnace, and a bypass system to collect the water separated out by said separators and recirculate the water to said furnace, said bypass system operating during start-up to a predetermined load set point and going out of service when the load rises above said predetermined set point; the improvement comprising: means to provide a load demand signal, means to provide a signal representing the pressure at the throttle valves of said steam turbine, control signal generating means operating to provide a signal varying in accordance with the difference between the pressure at said throttle valves and the pressure required at said throttle valves to provide the load represented by said load demand signal with the turbine valves at a predetermined start-up position, means responsive to said control signal to control the firing rate of said furnace in accordance with said control signal, and means responsive to said control signal to control said feedwater pump to pump water to said furnace at a rate corresponding to said control signal only after said bypass system is out of service.

4,287,431

ELECTRIC CONTROL CIRCUIT FOR SAFETY APPARATUS IN AUTOMOTIVE VEHICLES

Toshio Yasui, Obu, and Motoharu Naito, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 15, 1978, Ser. No. 942,816
Claims priority, application Japan, Sep. 20, 1977, 52-113477
Int. Cl.³ B60R *21/08*
U.S. Cl. 307—10 R **4 Claims**



1. In an electric control circuit for a safety apparatus of an automotive vehicle, which control circuit comprises a series connection of an electric power source, a plurality of normally open switch means to be closed in the occurrence of a vehicle collision, and electrically operated actuator means for actuating said safety apparatus upon closure of said switch means, said circuit further comprising a resistor connected in parallel with each of said switch means, said resistor having a predetermined resistance value defining an electric current applied to said actuator means through said resistor to normally maintain said actuator means inoperative,

the improvement comprising:

means in said series connection for directly joining each resistor and each of said switch means to said actuator means,

a differential amplifier connected to the opposite ends of said actuator means for directly amplifying a terminal voltage appearing between the opposite ends of said actuator means to generate an amplified voltage therefrom,

a constant voltage generator connected in series with said power source for generating a constant voltage therefrom,

a comparator for comparing the amplified voltage of said amplifier with the constant voltage to generate an output signal therefrom when the amplified voltage becomes lower or higher than the constant voltage, and

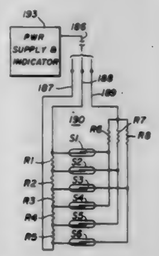
means for informing of malfunction of said control circuit in response to the output signal from said comparator.

4,287,432

VALVE POSITION DETECTING APPARATUS

Ezra Sensibar, Chicago, Ill., assignor to David Sensibar Irrevocable Trust, Chicago, Ill.

Filed Oct. 19, 1979, Ser. No. 86,461
Int. Cl.³ B63B *35/30*
U.S. Cl. 307—116 **16 Claims**



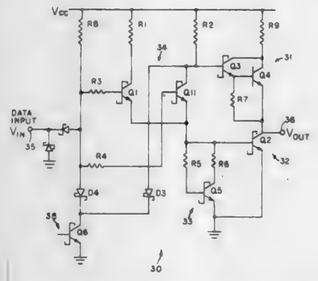
1. Position detecting apparatus for a hopper valve member which is movable between open and closed positions with respect to a hopper outlet at the bottom of a hopper in a hopper dredge vessel provided with power supply and indicator means, said detecting apparatus comprising an elongated transmitter tube disposed in the hopper and fixedly positioned with respect thereto, a plurality of sensing devices disposed in said tube and spaced apart longitudinally thereof respectively to correspond to predetermined positions of the valve member, said sensing devices being operable between two conditions and being adapted for coupling to the associated power supply and indicator means to provide signals indicative of the conditions of said sensing devices, an elongated protective sleeve fixedly secured to the valve member and movable therewith in surrounding telescopic relationship with said transmitter tube, said sleeve having a length sufficient to accommodate therein substantially the entire length of the transmitter tube, and actuator means carried by said sleeve for movement past said sensing devices sequentially to operate same as said sleeve moves with the valve member between the open and closed positions thereof thereby to detect and indicate the position of the valve member.

4,287,433

TRANSISTOR LOGIC TRISTATE OUTPUT WITH REDUCED POWER DISSIPATION

Steven N. Goodspeed, South Portland, Me., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Jan. 24, 1979, Ser. No. 5,929
Int. Cl.³ H03K *19/084, 19/088*
U.S. Cl. 307—473 **12 Claims**



1. In a transistor logic tristate output device of the type comprising an input and an output for binary data signals of high and low level potential, pullup element for sourcing current to the output from high potential, pulldown element for sinking current from the output to low potential, phase splitter element coupled at the input to control the pullup and pulldown elements, and an enable gate for sinking current from the elements of the device to afford a high impedance third state at the output when the enable gate is activated, the improvement comprising:

means defining a relatively high resistance path from high potential through the enable gate to low potential when the enable gate is activated thereby restricting power consumption in the high impedance third state;

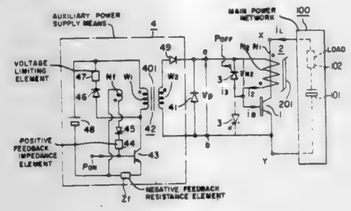
said means defining a relatively low resistance path from high potential for current controlling the pulldown element without providing a route to low potential through said low resistance path when the enable gate is activated.

4,287,434

SEMICONDUCTOR SWITCH DEVICE

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 850,269, Nov. 10, 1977, abandoned, which is a division of Ser. No. 704,491, Jul. 12, 1976, Pat. No. 4,087,703. This application Jul. 17, 1979, Ser. No. 58,329
Claims priority, application Japan, Aug. 28, 1975, 50/104311
Int. Cl.³ H03K *17/60, 17/20, 17/06*
U.S. Cl. 307—253 **6 Claims**



1. A semiconductor switch device comprising:

a power source;

a load;

a semiconductor switch serially disposed in a current path between the power source and the load, the semiconductor switch having a pair of main current electrodes and a control electrode, the semiconductor switch becoming conductive across the main current electrodes when a forward control current is applied to the control electrode;

a current transformer having a core, a primary conductor serially disposed in the current path and a secondary winding connected to the control electrode whereby a current responding to the current passed through the current path is supplied to the conrol electrode; and

an auxiliary power pulse supply means connected in series with the secondary winding of the current transformer for resetting the flux in the core of said transformer set by said primary conductor by applying a forward polarity pulse to the control electrode to turn on the semiconductor switch and thereby reverse the core flux, the auxiliary power pulse supply means comprising a second power source and a pulse supply switch which is controlled by a control signal to supply the forward polarity pulse through the secondary winding of the current transformer to the control electrode;

the forward polarity pulse being applied from said auxiliary power pulse souce means through said secondary winding to said control electrode whereby the forward control current is fed to said control electrode and magnetic flux of the core of said transformer is reset by the forward polarity pulse.

4,287,435

COMPLEMENTARY TRANSISTOR INVERTING EMITTER FOLLOWER CIRCUIT

Joseph R. Cavaliere, Hopewell Junction; Robert A. Henle, Clinton Corners; Richard R. Konian, Poughkeepsie, and James L. Walsh, Hyde Park, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,254
Int. Cl.³ H03K *17/60, 3/26*
U.S. Cl. 307—255 **6 Claims**

1. A complementary transistor, inverting emitter follower circuit comprising:

a series-connected first pair of bipolar complementary transistors,

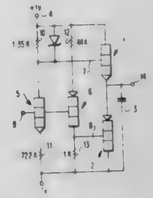
the emitter electrodes of said first pair of transistors being connected together and to an output terminal,

a second pair of complementary bipolar transistors,

the collector electrodes of said second pair of transistors being directly connected to respective bases of said first pair of transistors of similar kind,

one of the remaining electrodes of said second pair of transistors being connected together,

at least one base of said second pair of transistors being connected to an input terminal, and



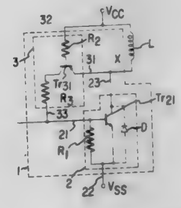
means connected to the collectors and emitters of said second pair of transistors and to the collectors of said first pair of transistors for biasing said first and second pairs of transistors.

4,287,436

ELECTRICAL CIRCUIT FOR DRIVING AN INDUCTIVE LOAD

Hideharu Tezuka, Yokosuka, and Yuuichiro Furukawa, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 18, 1979, Ser. No. 40,143
Claims priority, application Japan, Jun. 7, 1978, 53/68421
Int. Cl.³ H03K *3/26*; **H01H** *47/00*
U.S. Cl. 307—270 **15 Claims**



1. An electrical circuit for driving an inductive load comprising:

a switching circuit having a first terminal to which an input signal is supplied, a second terminal connected to a power source, and a third terminal connected to another power source through the inductive load;

said third terminal connected to the second terminal when the input signal has one voltage potential and disconnected from the second terminal when the input signal has another voltage potential;

a detecting circuit having a first terminal connected to the third terminal of the switching circuit, a second terminal connected to said another power source and a third terminal connected to the first terminal of the switching circuit; and

said detecting circuit operable to switch said switching circuit to connect the second terminal of the switching circuit to the third terminal of the switching circuit in accordance with counter electromotive force induced between both ends of the inductive load when the third terminal of the switching circuit is disconnected from the second terminal of the switching circuit.

3. An electrical circuit for driving an inductive load, comprising:

an output transistor having a base, an emitter connected to a first power source, and a collector connected to a second power source through the inductive load; and

a detector transistor formed of a conductivity type opposite that of said output transistor and having an emitter connected to the collector of the output transistor, and a base connected to the second power source through a first resistor, and a collector connected to the base of the collector of the output transistor through a second resistor.

4,287,437

METHOD AND CIRCUITRY FOR EQUALIZING THE DIFFERING DELAYS OF SEMICONDUCTOR CHIPS

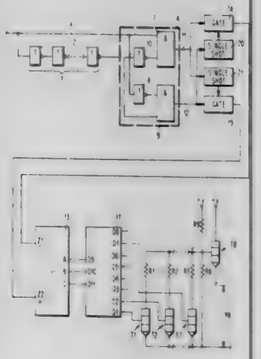
Rudolf Broech, Sindelfingen; Helmut Schettler, Dettenhausen; Hans Schumacher, Schoenaich, and Rainer Zuehlke, Leonberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,439

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855724

Int. Cl.³ H03K *5/159*

U.S. Cl. 307—296 R **4 Claims**



1. The method of regulating the signal delay times of semiconductor chip circuits, characterized by the following steps:
(a) comparing the signal delay of a circuit of the semiconductor chip with a very precisely defined clock interval,
(b) altering the count of an up-down counter on the semiconductor chip in accordance with the comparison result in the one or in the other counting direction,
(c) decoding the count and altering the divider ratio of a voltage divider in accordance with said count, the tap of said voltage divider being connected to the base of an emitter follower providing at its emitter the supply voltage whose value influences the signal delay of the semiconductor chip circuits, and
(d) repeating process steps (a) to (c) until the difference Δt between the arrival of the delayed and of the subsequent undelayed clock pulse approaches zero.

4,287,438

FIELD EFFECT TRANSISTOR CURRENT SOURCE

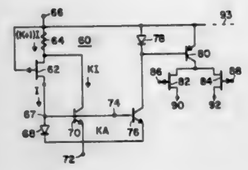
David L. Cave, Phoenix, and Wilson D. Pace, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 925,083, Jul. 17, 1978, Pat. No. 4,207,537. This application Aug. 13, 1979, Ser. No. 66,129

Int. Cl.³ H03K *3/01, 3/26*

U.S. Cl. 307—297 **3 Claims**

1. A current supply circuit including in combination:
current supply field effect transistor means having source, drain and gate electrodes;
negative feedback means having a selected resistance coupled between said source and gate electrodes;
bipolar diode means having one electrode connected to said drain electrode and another electrode connected to a supply terminal,
bipolar transistor means having a control electrode and main electrodes, said control electrode being coupled to said drain electrode and to said one electrode of said bipolar diode means at a circuit node, said main electrodes being connected between said source electrode and said supply terminal, said bipolar transistor means having an emitter-



to-base junction cross-sectional area which is greater than said anode-to-cathode junction area by a predetermined factor, said bipolar transistor means and said bipolar diode means enabling minimization of said selected resistance of said negative feedback means, said circuit node providing the output current of the current supply circuit; and
electrical load means connected to said circuit node.

4,287,439

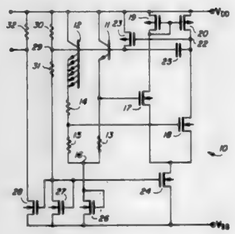
MOS BANDGAP REFERENCE

Horst Leuschner, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1979, Ser. No. 34,513

Int. Cl.³ H01L *31/00*

U.S. Cl. 307—310 **8 Claims**



1. A bandgap reference circuit comprising: a first voltage potential terminal; a second voltage potential terminal; a first transistor having a base, a collector, and an emitter, the collector being coupled to the first voltage potential terminal; a second transistor having a base, a collector, and an emitter, the collector of the second transistor being coupled to the first voltage potential terminal, the emitter current density of the first transistor being larger than the emitter current density of the second transistor; a first resistor coupled between the emitter of the first transistor and the second voltage potential terminal; a second and a third resistor connected in series and forming a node therebetween, the second and third resistors being coupled in series between the emitter of the second transistor and the second voltage potential terminal; an amplifier having field effect transistors and also having a first and a second input and an output, the first input being coupled to the emitter of the first transistor, and the second input being coupled to the node between the second and third resistors, the output of the amplifier providing the bandgap reference voltage, and the output being coupled to the bases of the first and second transistors.

4,287,440

PROXIMITY SWITCHING DEVICE

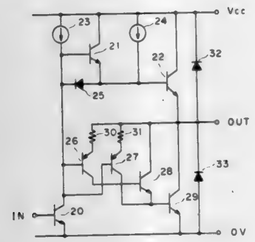
Fumio Kamiya, Kyoto; Hisatoshi Nodera, Kusatsu; Kenji Ueda, Muko, and Hiroyuki Miyamoto, Kameoka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 14, 1979, Ser. No. 66,405

Claims priority, application Japan, Aug. 31, 1978, 53-107141

Int. Cl.³ H03K *3/26*

U.S. Cl. 307—315 **4 Claims**



1. A proximity switching device, comprising:
an oscillating circuit including a detection coil,
a signal producing circuit for producing a detection signal in response to a change in the oscillation amplitude level of said oscillating circuit, and
an output for producing an output signal in response to said detection,
said output circuit comprising a pair of Darlington circuits and a driving transistor for driving said Darlington circuits,
wherein one of said Darlington circuits operates as a NPN transistor and the other operates as a PNP transistor, said Darlington circuits being connected complementary to provide complementary output signals, and
wherein one of said Darlington circuits is provided with a constant-current circuit which provides a constant base-biasing current to at least one of the transistors of the particular Darlington circuits.

4,287,441

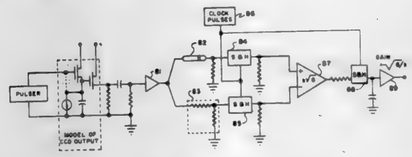
CORRELATED DOUBLE SAMPLING CCD VIDEO PREPROCESSOR-AMPLIFIER

Edwyn D. Smith, Tucson, Ariz., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1979, Ser. No. 25,506

Int. Cl.³ G11C *27/02*

U.S. Cl. 307—353 **6 Claims**



1. In combination with a charged couple device (CCD) having a periodic gated output a low level signal preprocessor comprising:
a source of clock pulses having a preselected sampling frequency;
a pair of sample-and-hold (S&H) circuits, each having a signal input, a clock input, an output and substantially equal signal gain characteristics, with their clock inputs coupled to and synchronized with said source and having their signal inputs each coupled to the output of the CCD;
a delay line means having a specific insertion loss and coupled in series with a first of said S&H circuits to delay the signal therein by a fraction of a cycle of said sampling frequency;
an attenuator means coupled in series with the second of said S&H circuits to attenuate the signal in said second S&H circuit by an amount equal to the insertion loss of said delay line means; and
a single output circuit coupled to the outputs of both of said S&H circuits.

4,287,442

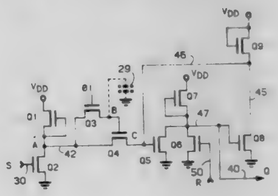
EDGE SENSE LATCH

Brian M. Spinks, Austin, and John R. Dumas, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1979, Ser. No. 14,797

Int. Cl.³ H03K *5/153, 3/356*

U.S. Cl. 307—510 **10 Claims**



1. An MOS edge sense latch comprising:
a first MOS component responsive to an input signal having first and second states;
a second MOS component coupled to said first MOS component and responsive to a clock signal having first and second states, said second MOS component including capacitance means which is charged when said input signal and said clock signal are at their respective first and second states and a gate means, said gate means being conductive when said input signal and said clock signal are at said respective second and first states or when said capacitance means contains a predetermined level of charge; and
a latch circuit having an output terminal normally set to a first state and including third and fourth MOS components each having an input and an output, the input of said third MOS component being coupled to said gate means and to the output of said fourth MOS component, and the input of said fourth MOS component being coupled to said output terminal and to the output of said third MOS component, said output terminal being set to a second state only when said capacitance means contains said predetermined level of charge and said input signal changes to said second state.

4,287,443

LIQUID-METAL MAGNETOHYDRODYNAMIC CONVERTER

Ivan T. Aladiev, ulitsa Marshala Birjuzova, 43, kv. 21, Moscow, and Vazha A. Dzhamardzhashvili, ulitsa Juramishvili, 17, kv. 61, Tbilisi, both of U.S.S.R.

Filed Sep. 20, 1979, Ser. No. 77,313

Int. Cl.³ H02K *45/00*

U.S. Cl. 310—11 **4 Claims**

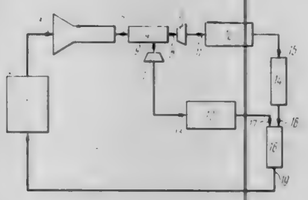
1. A liquid-metal magnetohydrodynamic converter comprising:
a heat source having an inlet and an outlet;
a two-phase nozzle having an inlet and an outlet and hydraulically connected via said inlet thereof to said outlet of said heat source;
a separator having a steam inlet, a first outlet and a second outlet and hydraulically connected via said steam inlet thereof to said outlet of said two-phase nozzle;

a liquid diffuser having an inlet and an outlet and hydraulically connected via said inlet thereof to said first outlet of said separator;

a steam diffuser having an inlet and an outlet and hydraulically connected via said input thereof to said second outlet of said separator;

a liquid metal cooler having an inlet and an outlet and hydraulically connected via said inlet thereof to said outlet of said liquid diffuser;

a condenser having an inlet and an outlet and hydraulically connected via said inlet thereof to said outlet of said steam diffuser;



a magnetohydrodynamic generator having an inlet and an outlet and hydraulically connected via said inlet thereof to said outlet of said liquid metal cooler;

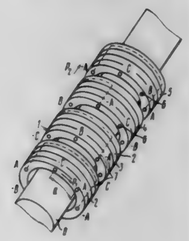
a means for heating and delivering liquid metal supplied from said cooler, having a first inlet, a second inlet and an outlet and hydraulically connected via said first inlet thereof to said oulet of said magnetohydrodynamic generator, via said second inlet thereof to said outlet of said condenser and via said outlet thereof to said inlet of said heat source.

4,287,444

CYLINDRICAL LINEAR INDUCTION MOTOR

Alexandr D. Popov, prospekt Koroleva, 12, kv. 154; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31; Nikolai R. Teptikov, ulitsa petrashevskogo, 48/23, kv. 57, and Jury D. Demchenko, ulitsa Verkhne-Nolnaya, 9, kv. 12, all of Rostov-na-Donu, U.S.S.R.

Filed Feb. 25, 1980, Ser. No. 123,958
Int. Cl.³ H02K *41/02*
U.S. Cl. 310—13 **4 Claims**



1. A cylindrical linear induction motor, comprising: an inductor;

a secondary element made of electrically conductive material and surrounded by said inductor;

a laminated core structure of said inductor;

cores of circular configuration forming said laminated core structure and having slots arranged on the internal surface of said cores;

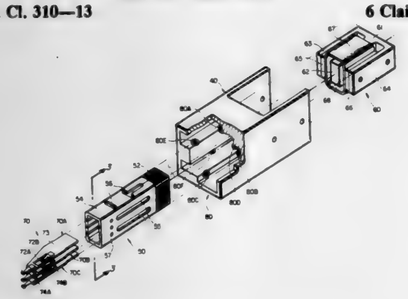
a polyphase winding of said inductor contained in said slots, the slots for like phases of adjacent ones of said cores being displaced by a distance equal to or greater than a distance between adjacent ones of said slots of one of said cores.

4,287,445

HIGH PERFORMANCE DISK DRIVE ACTUATOR

Mark H. Lienau, San Jose, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,579
Int. Cl.³ H02K *41/02*
U.S. Cl. 310—13 **6 Claims**



1. An electromagnetic linear actuator comprising: a coil and cart assembly including a cart having a longitudinal axis and adapted at one end to support an element which is to be positioned along an axis parallel to the longitudinal axis, and a direct current coil mounted at the other end of said cart opposite the end adapted to support the element to be positioned, said coil having a longitudinal axis coincident with the longitudinal axis of the cart and having a cross section in a plane normal to its longitudinal axis which essentially matches the cross section of the end of said cart at which said coil is mounted, and said coil being mounted on said cart so that the center of gravity of the coil and the center of gravity of the cart are each on a line coincident with the cart longitudinal axis; an actuator housing including magnetic means having an air gap for receiving said coil and for passing magnetic flux through said coil normal to the surface of the windings thereof, whereby an electrical excitation in said coil results in movement of said coil and cart assembly along the cart longitudinal axis in a direction dependent upon the polarity of the electrical excitation; and support means affixed to the actuator housing, said support means engaging the the surface of said cart and being symmetrically disposed around the center of gravity of a moving-mass assembly comprising the coil and cart assembly and the element to be positioned when affixed to the coil and cart assembly such that said coil is suspended in the air gap of said magnetic means and said coil and cart assembly is supported to allow lineal movement thereof in either direction along the cart longitudinal axis and inhibit roll, pitch, and yaw movements of the coil and cart assembly.

4,287,446

STATOR FOR STEPPER MOTOR

John F. Lill, Harrisburg, and Nelson E. Neff, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

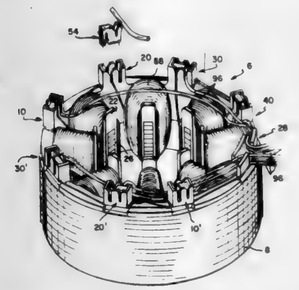
Filed Jun. 27, 1979, Ser. No. 52,719
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—71 **11 Claims**

1. A stepper motor stator of the type comprising a stator core, a plurality of integral coil supports extending inwardly towards the center of said core at equally spaced angular intervals, a coil winding of coil wire on each of said coil supports with the windings on selected coil supports being connected in series by intermediate portions of said coil wires, and lead wires connected to the ends of said coil wires, said stator having:

a plurality of terminal-receiving housings mounted on said stator core, each of said housings being located proximate to an adjacent pair of said coil supports with one housing being proximate to at least every adjacent pair of coil supports excepting at least one adjacent pair,

each of said housings having terminal-receiving cavity means therein, and each housing having a rdially inwardly directed side surface and having a radially outwardly directed side surface, coil wire-admitting slots in said side surfaces communicating with said cavity means,

said ends of said coil wires extending from said windings on said coil supports to an adjacent housing, through said coil



wire-admitting slot in said radially inwardly directed side surface, through said cavity and to said coil wire-admitting slot in said radially outwardly directed side surface, said ends being cut at said coil wire-admitting slot in said radially outwardly directed side surfaces, and

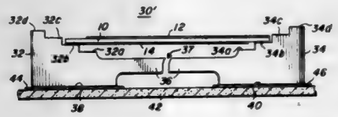
terminals in said cavities, said ends of said windings and said lead wires being electrically connected to said terminals.

4,287,447

CRYSTAL HOLDER FOR DIFFERENT SIZES OF CRYSTAL

William G. Skoda, Oak Park, and Marlin Luff, Glendale Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 17, 1980, Ser. No. 112,880
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—348 **7 Claims**



1. A crystal holder for supporting a piezoelectric crystal comprising:

first and second opposed side portions of selected material, each of said portions having electrically conductive top and bottom surfaces and having at least sufficient electrically conductive external surfaces to provide electrically conductive paths from the respective top surfaces of said first and second side portions to the respective bottom surfaces thereof, the electrically conductive paths of said first side portion being electrically insulated from the electrically conductive paths of said second side portion,

said first side portion including a plurality of steps in the top surface thereof leading upwardly and away from said second side portion in stair step-like fashion, each step having a horizontal portion and a vertical portion, the horizontal portion of each step being situated at a different selected height above the bottom surface of said first side portion,

said second portion including a plurality of steps in the top surface thereof, each step having a horizontal portion and a vertical portion, the steps of said second portion leading upwardly and away from said first side portion in stair step-like fashion and in a direction opposite to that which the steps of said first side portion lead as viewed from above said first and second side portions, the horizontal portion of each step of said second side portion being horizontally aligned with a corresponding horizontal portion of a step of said first side portion,

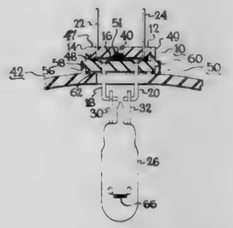
each step of said first side portion and the corresponding horizontally aligned step of said second side portion having a horizontal distance therebetween sufficient to accommodate a crystal of predetermined horizontal dimension between the respective vertical portions of such corresponding steps.

4,287,448

MECHANICAL STOP MEANS FOR A PREFOCUSED PLASTIC PAR LAMP

Irving Bradley, Novelty, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,028
Int. Cl.³ H01K *1/38, 1/42*
U.S. Cl. 313—113 **7 Claims**



1. A reflector lamp with a prefocused light source mount for a light source having two lead wires extending therefrom and joined one each to metal lug members, said prefocused light source mount comprising a plastic block having mating parts defining a cavity for receiving said joined lead wires and with said mating parts comprising an inner container member which is fitted into an outer housing member and with said cavity in said block being filled with an elastomeric polymer to provide a leak-proof seal, wherein said metal lug members have a smooth surface permitting a plug-in receptacle used to supply electrical power to the lamp to be inserted so that the outermost surface of said inner container member in said plastic block provides a mechanical stop means when said plug-in receptacle is connected to said reflector lamp.

4,287,449

LIGHT-ABSORPTION FILM FOR REAR ELECTRODES OF ELECTROLUMINESCENT DISPLAY PANEL

Mikio Takeda; Hiroshi Kishishita, both of Nara; Hiroyuki Kawabata, and Kinichi Isaka, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1979, Ser. No. 8,186
Claims priority, application Japan, Feb. 3, 1978, 53-11592; Feb. 9, 1978, 53-14402; Jun. 2, 1978, 53-67095
Int. Cl.³ H05B *33/14, 33/22*
U.S. Cl. 313—509 **9 Claims**

1. A display divice comprising:

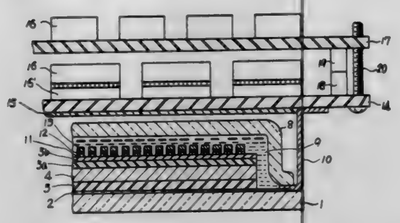
a front electrode;

a counter electrode having reflective properties;

a light emission layer interposed between said front electrode and said counter electrode for providing light emission in response to a voltage applied across the front and counter electrodes;

light-absorption layer means positioned between the light emission layer and the counter electrode, said light-absorption layer means having light-absorption properties for absorbing light applied through the front electrode, said light-absorption layer means including a first thin film and a second thin film formed over said first thin film, said

first thin film being selected from the group consisting of Al_2O_3 or Al_2O_3 -x, said second thin film formed over said



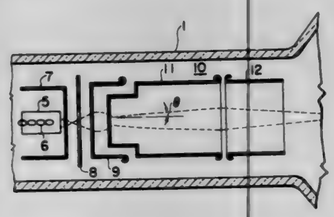
first thin film selected from the group consisting of Mo, Zr, Ti, Y, Ta, or Ni.

4,287,450

ELECTRIC CIRCUIT ARRANGEMENTS INCORPORATING CATHODE RAY TUBES

Nidehiko Kawakami, and Jun Nishida, both of No. 4896, Aza Ohtani, Ikuta, Kawasaki City, Japan

Continuation of Ser. No. 532,161, Dec. 12, 1974, Pat. No. 3,910,498. This application Nov. 9, 1976, Ser. No. 739,868
Claims priority, application Japan, May 20, 1974, 49/57079
Int. Cl.³ H01J *29/46, 29/56*
U.S. Cl. 315—14 **3 Claims**



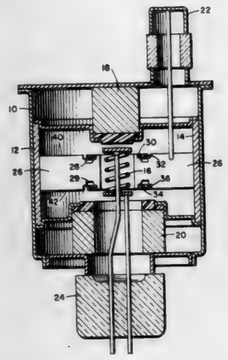
1. An electron gun assembly for a cathode ray tube which comprises, in the order named along the axis of the tube, a cathode for emitting in operation an electron stream, an apertured modulator electrode located close to the cathode for controlling the intensity of the electron stream, a first anode in the form of an apertured metal member located close to the modulator electrode, an apertured second anode located close to the first anode and a third cylindrical focusing anode of a unipotential type adjacent to the second anode, said electrodes being of such configuration, and arranged to be maintained at such potentials in operation of the arrangement, that the electron stream from the cathode is formed into a crossover between the modulator electrode and the first anode, means to effect in operation a ratio of potential applied to the second anode to potential applied to the first anode in the range between 1:1.5 and 1:6.0 and the ratio of potential applied to the third anode and to potential applied to the second anode being in the range between 1:0.006 and 1:0.04 so that said electron stream narrowed at a region adjacent to the third anode by the electric fields established between the first and second anodes and the second and third anodes and is allowed to enter the third anode at a small angle of beam spread and is focused thereby into a narrow beam of electrons whose cross-section on the screen of the tube is small.

4,287,451

MAGNETRON HAVING IMPROVED INTERCONNECTING ANODE VANES

Tokuju Koinuma, and Akira Kousaka, both of Kawasaki, Japan, assignors to Toshiba Corporation, Kawasaki, Japan

Filed Nov. 28, 1979, Ser. No. 97,958
Int. Cl.³ H01J *23/22*
U.S. Cl. 315—39.69 **7 Claims**



1. In a magnetron comprising:
an anode having a cylindrical wall;
a cathode positioned within said anode;
a plurality of metal vanes extending radially inward from said cylindrical wall of said anode, said vanes having a free edge facing said cathode, a top edge and a bottom edge, at least one of said top and bottom edges of each of said vanes having a notch, said notches having an inner side edge nearest said free edge of said vanes, an outer side edge and a bottom edge;
a plurality of metal ring straps comprising an inner ring strap and an outer ring strap connected to said notches, said inner ring strap being connected to alternate ones of said plurality of metal vanes on said inner side edges of said notches of said alternate ones of said vanes and said outer ring strap being connected to different alternate vanes than said alternate ones of said plurality of metal vanes on said outer side edges of said notches of said different alternate vanes, the improvement comprising said metal ring straps being formed of metal having a tensile strength greater than the tensile strength of said vanes and said inner edge of said notches having a slanting edge at an angle less than 90° with said bottom edge of said notches between the connection of said inner ring strap and said bottom edge of said notches.

4,287,452

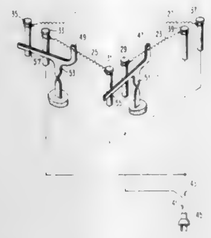
MULTIPLE FILAMENT ELECTRIC LAMP

Leslie U. Fernandez, III, R.D. 3, Box 364, Chippewa Rd., Putnam Valley, N.Y. 10579

Filed Dec. 3, 1979, Ser. No. 99,425
Int. Cl.³ H01J *7/44, 17/34, 19/78;* H01K *1/62*
U.S. Cl. 315—65 **14 Claims**

1. An incandescent electric lightbulb mount comprising:
A. a first filament consisting essentially of conductive material capable of incandescing in a closed electric circuit,
B. one or more alternate filaments consisting essentially of material capable of incandescing in a closed electric circuit,
C. leads placing said first filament in a closed electric circuit,
D. leads placing said alternate filament(s) in an open electric circuit,
E. one or more switching members, the number of switching members being equal to one less than the total number of filaments in said mount, said switching members having as

parts; (i) a projection to contact a filament, (ii) an elastic component to make said member elastically deformable, and (iii) a conductive arm to transfer electric current,
F. a first filament switching member contacting said first filament and a switching member associated with and contacting each but one of said alternate filaments, wherein each of said switching member(s) is held in an



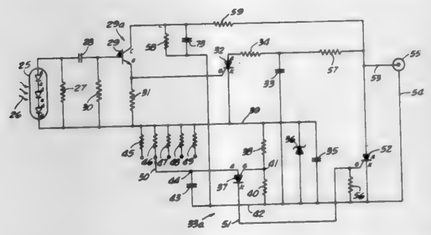
elastically deformed first position by its associated filament, each of said switching members being arranged so that upon rupture of a filament the associated switching member moves to an elastically relaxed second position and thereby places an unused alternate filament in a closed electric circuit,
G. support means for positioning said leads, filaments, and switching member(s).

4,287,453

ELECTRONIC SLAVE FLASH DELAY DEVICE

Jean M. Orban, Santa Monica, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Sep. 6, 1979, Ser. No. 72,896
Int. Cl.³ H05B *41/34*
U.S. Cl. 315—159 **33 Claims**



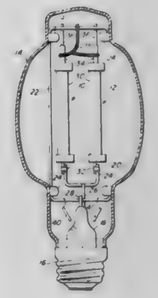
1. A device for activating an electronic slave flash unit including in a circuit
light sensing means adapted to be responsive to a light impulse from a master flash unit to thereby generate a first signal;
delay circuit means including control means for providing different time delays, said delay circuit means being responsive to said first signal and operative, after a predetermined selected time delay, to generate a switching signal; and
switching means responsive to the switching signal and adapted to activate the associated flash unit.

4,287,454

HIGH PRESSURE DISCHARGE LAMPS WITH FAST RESTART

Alfred E. Feuersanger, Framingham; Leslie A. Riseberg, Sudbury, and William H. McNeill, Carlisle, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 17, 1979, Ser. No. 104,334
Int. Cl.³ H05B *35/00, 37/00, 39/00, 41/00*
U.S. Cl. 315—178 **16 Claims**



1. Electromagnetic discharge apparatus comprising:
a plurality of high intensity discharge means adapted for coupling to a source of starting and operating voltage and electrically coupled so that substantially the same voltage is applied to all of said discharge means, said discharge means having the characteristic that discharge cannot be initiated therein by a normal starting voltage when said discharge means is above a predetermined temperature, said discharge means having sufficient thermal isolation therebetween that, when a discharge, previously established in one of said discharge means, is extinguished, at least one other of said discharge means is below said predetermined temperature, whereby discharge is initiated in one other of said plurality of discharge means substantially immediately after said previously established discharge is extinguished and said discharge means having sufficient thermal coupling therebetween that, when said one discharge means is hot, said other discharge means is preheated to a temperature below said predetermined temperature, whereby said other discharge means requires less time after initiation of discharge to reach full output than when said other discharge means is not preheated.

4,287,455

POWER SAVING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

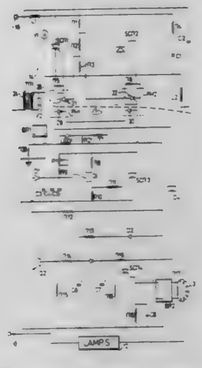
Maurice L. Drieu, Toronto, Canada, assignor to Erin Engineering (Ontario) Ltd., Mississauga, Canada

Filed Dec. 18, 1979, Ser. No. 105,001
Int. Cl.³ H05B *41/36*
U.S. Cl. 315—199 **14 Claims**

1. A power saving circuit for a gaseous discharge lamp comprising,
a power circuit connectable to an AC power supply and to at least one lamp, said power circuit including a bilateral current conducting power switch having control electrode means,
a control circuit including a control switch having control electrode means, and timing means operable to apply a signal to said control electrode means of said control switch to render said control switch conducting at a predetermined time during each half cycle of the AC power supply, said control switch conducting current until zero crossover at the end of each half cycle,
opto-coupler means associated with the control switch on the one hand and with the control electrode means of the

power switch on the other hand to cause actuation of the control electrode means of the power switch and subsequent current conduction by the power switch when the control switch is conducting,

said control electrode means of said power switch being connected through the opto-coupler means to the power



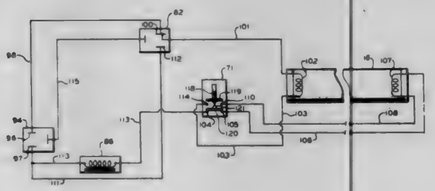
circuit to cause, while the opto-coupler means is actuated by current conduction through the control switch, adequate power switch actuating current to flow therethrough when the power switch is not conducting and substantially reduced or no current to flow therethrough when the power switch is conducting.

4,287,456

PORTABLE FLUORESCENT TUBE ASSEMBLY HAVING LOW VOLTAGE CONVENIENCE OUTLET

James W. Kovacik; James D. Kovacik, both of Parma; Thomas J. Blanch, Aurora, and Paul S. Blanch, Garfield Heights, all of Ohio, assignors to Alert Safety Lite Products Company, Bedford Heights, Ohio

Filed Dec. 6, 1979, Ser. No. 100,998
Int. Cl.³ H05B *41/18*
U.S. Cl. 315—283 **12 Claims**



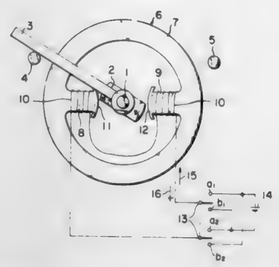
1. In a fluorescent tube assembly having starter switch means and an electric convenience outlet associated with the assembly but apart from terminals of such fluorescent tube, electric circuitry therefor comprising conductors adapted to be connected to a source of electrical energy having a predetermined voltage, one of said conductors being connected in series to said convenience outlet and said starter switch means, another of said conductors being connected to said convenience outlet and in parallel through ballast means to said starter switch means, whereby said predetermined voltage is supplied to said convenience outlet associated with the tube assembly, and another and higher voltage is applied to said starter switch means and fluorescent tube for starting the same.

4,287,457

ELECTROMAGNETIC ROTATING APPARATUS

Yoshihiro Takemura, Ijima, Japan, assignor to Shinano Tokki Corporation, Japan

Filed May 22, 1978, Ser. No. 907,907
Claims priority, application Japan, Aug. 20, 1977, 52/99726
Int. Cl.³ H02K *33/00*
U.S. Cl. 318—133 **16 Claims**



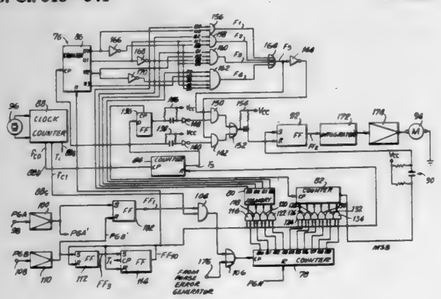
1. Electromagnetic rotating apparatus comprising a rotating shaft, a bipolar permanent magnet fixed to said rotating shaft and radially magnetized, a fixed coil disposed to interlink with the magnetic flux of said permanent magnet, symmetrically with respect to said rotating shaft, the fixed coil providing a magnetic field perpendicular to the axis of said rotating shaft when energized, first and second stoppers to limit the rotation of said permanent magnet within an angular range of less than 180 degrees and stop the rotation thereof before said permanent magnet reaches a position where the number of magnetic flux interlinking with said fixed coil becomes maximum, and an energizing circuit to selectively energize said fixed coil positively or inversely.

4,287,458

DIGITAL SERVO CONTROL CIRCUIT

Tadahiko Nakamura, and Kenji Nakano, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1979, Ser. No. 70,523
Claims priority, application Japan, Aug. 30, 1978, 53-104899
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—341 **1 Claim**



1. A digital servo apparatus for controlling rotation of a rotary member comprising:

means for generating at least one angular position signal related to an angular position of said rotary member;

means for generating at least one reference signal;

means for generating cycles of a clock signal;

means for defining a basic timing interval;

means for storing a plurality of bits corresponding to a number of said cycles associated with a time interval between said reference signal and said at least one angular position signal;

means for generating a predetermined plurality of pulses of a pulse width modulated pulse train in each said basic timing interval, all of said predetermined plurality of pulses being generated with equal ON and OFF times determined in response to at least some of said plurality of bits;

means for modifying said ON times of individual ones of said pulses scattered through said predetermined plurality of pulses in said basic timing interval to produce a total of all of said ON times in said basic timing interval which is responsive to all of said plurality of bits; and

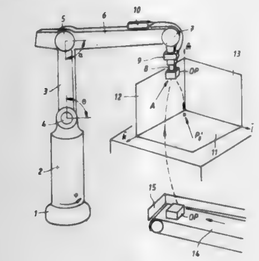
means for controlling rotation of said rotary member in response to said total of all of said ON times in said pulse width modulated pulse train, whereby said angular position signal and said reference signal are maintained in a predetermined relationship.

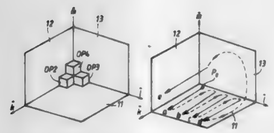
4,287,459

METHOD FOR GENERATING A PATTERN BY MEANS OF AN INDUSTRIAL ROBOT AND INDUSTRIAL ROBOT FOR CARRYING OUT THE METHOD

Lars Dahlström, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Nov. 6, 1979, Ser. No. 92,243
Claims priority, application Sweden, Nov. 27, 1978, 7812165
Int. Cl.³ G05B *19/42*
U.S. Cl. 318—568 **10 Claims**





1. A method for handling workpieces (OP) with an industrial robot (1-10), which are arranged or are to be arranged in a pattern, wherein said robot is provided with sensing members (9) which are arranged to sense the position of the robot or of a workpiece carried by the robot relative to the workpieces positioned in the pattern, comprising the steps of,

controlling the robot or a workpiece carried by the robot to adopt a predetermined preliminary position relative to workpieces already positioned in the pattern,

utilizing said sensing members, controlling said robot or a workpiece carried thereby to assume a final position,

storing said final position,

utilizing said stored final position as a starting value, calculating the preliminary position of an adjacent workpiece in the pattern, and

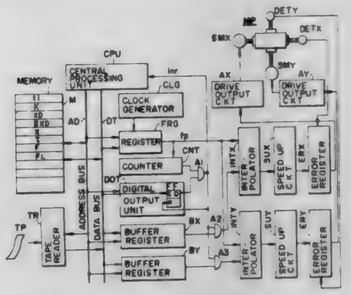
controlling said robot or a workpiece carried thereby to assume said calculated preliminary position.

4,287,460

POSITIONING CONTROL SYSTEM

Ryoichiro Nozawa, Tokyo; Yoichi Amemiya, Hachioji; Mitsuo Matsui, Tokyo; Shigeru Isohata, Hino; Takao Sasaki, Hachioji, and Yoshitaka Takekoshi, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,197
Claims priority, application Japan, Mar. 16, 1978, 53-30412
Int. Cl.³ G05B *19/24*
U.S. Cl. 318—571 **5 Claims**



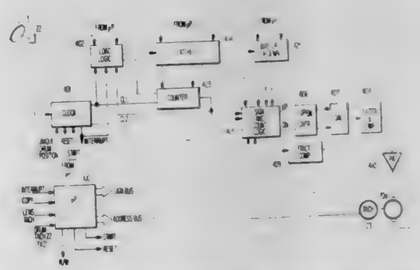
1. A positioning control system for a movable part of a machine under numerical control, said movable part having a known period of vibration, said system comprising means for positioning the machine in a time corresponding to the vibration period and means for controlling the accelerating and decelerating of said machine in predetermined portions of the positioning time to move the movable part to a commanded position in the positioning time.

4,287,461

MOTOR DRIVING SYSTEM

George G. Promis, Arvada; Gerald L. Smith, Broomfield, and John C. Wilson, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1979, Ser. No. 100,773
Int. Cl.³ G05B *24/19*
U.S. Cl. 318—571 **48 Claims**



1. A translation system to produce a controlled and repeatable position and velocity profile of a controlled object with respect to an independent parameter including a single control loop with driving means including a servo motor coupled to and driving said controlled object,

tachometer means (23) responsive to driving means movement for producing an output signal representative of direction of driving means movement and including a series of tachometer pulses, each pulse representing a given increment of driving means movement,

an up/down counter (406),

coupling means (407, 408, 410) coupling said up/down

counter to said driving means for driving said servo motor with a level representative of the contents of said up/-down counter,

driving signal source means (**401, 402, 403, 404, 100**) for producing a driving signal pulse train, each pulse representing a desired increment of driving means movement and a direction signal representative of desired direction of driving means movement,

logic means (**405**) coupling said output signal, said driving signal pulse train and said direction signal to said up/down counter for stepping said up/down counter in one direction for each driving signal pulse and for stepping said up/down counter in another or one direction respectively, for each tachometer pulse which represents a direction which is the same or different from the direction of said direction signal, respectively,

said driving signal source means including,

counter means (**403**) including a counter for producing a driving signal pulse each time a predetermined count is attained in said counter,

modulus means (**404,100**) coupled to said counter for altering the modulus of said counter, said modulus means including storage means for storing representations of a plurality of quantities and means for presenting a predetermined sequence of quantities to said counter means, and

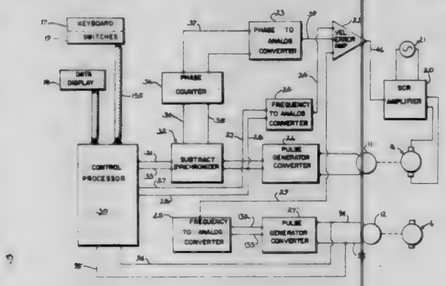
means (**401**) for stepping said counter in accordance with said independent parameter.

4,287,462

VENEER LATHE CONTROL SYSTEM

Thomas L. Beck, Union Grove, and Rick L. Tennessen, Racine, both of Wis., assignors to Unico, Inc., Milwaukee, Wis.

Filed May 13, 1980, Ser. No. 149,527
Int. Cl.³ B27L *5/02*; G05B *19/24*
U.S. Cl. 318—571 **3 Claims**



1. A veneer lathe control system for controlling the motion of a knife with respect to a rotating log, the combination comprising:

means coupled to the veneer lathe for sensing the orientation of the log being cut;

first manually operable switch means for selecting a retract operation;

means responsive to said first switch means for retracting the lathe knife from engagement with the rotating log;

means coupled to said retracting means and said log orientation sensing means for storing data indicative of absolute log orientation at the moment the knife disengages the rotating log during a retract operation;

second manually operable switch means for selecting a peeling operation; and

means responsive to said second manually operable switch for generating position command signals that feed the lathe knife forward into engagement with the rotating log to cut veneer, said means including

(a) first means for generating a position command synchronization signal for feeding the knife forward into engagement with the rotating log at substantially the same point on the log surface at which the knife was disengaged during said retract operation, and

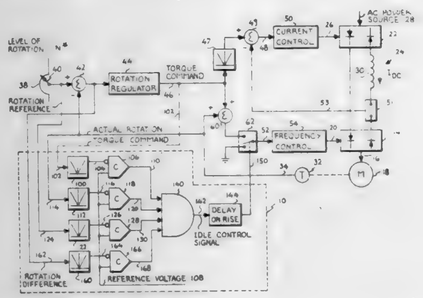
(b) second means for generating a peel position command signal for feeding the knife forward to cut veneer of a predetermined thickness.

4,287,463

ZERO ROTATION AND ZERO TORQUE DETECTOR AND METHOD FOR AN AC ELECTRIC MOTOR DRIVE

Loren H. Walker, Salem, and John H. Cutler, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,855
Int. Cl.³ H02P *5/00*
U.S. Cl. 318—803 **21 Claims**



1. A substantially zero rotation and substantially zero torque apparatus for an AC electric motor drive system having an AC electric motor producing a rotation in response to an outgoing signal of variable magnitude and frequency, said apparatus comprising:

(a) means for establishing a rotation reference signal proportional to a desired level of rotation;

(b) means for generating an actual rotation signal proportional to said rotation;

(c) means for generating a rotation difference signal representative of any difference between said rotation reference signal and said actual rotation signal;

(d) means for supplying a torque command signal as a function of said rotation difference signal and for producing a frequency control signal and a current control signal as functions of said torque command signal;

(e) means for supplying to said motor said outgoing signal at a frequency controlled in response to said frequency control signal and at a magnitude varied in accordance with said current control signal; and

(f) means for furnishing an idle control signal when said torque command signal and at least two of said rotation reference signal, said actual rotation signal, and said rotation difference signal are less than respective predetermined values, whereby said idle control signal indicates that the drive system is in a substantially zero rotation and substantially zero torque state and is effective to control an operation parameter of said drive system.

4,287,464

POWER FACTOR CONTROLLER FOR AN INDUCTION MOTOR USING TRANSISTOR SWITCH MEANS WITH VARIABLE BREAKDOWN VOLTAGE

Maw H. Lee, Broadview Heights, and John E. Keim, Lodi, Both of Ohio, assignors to The Scott & Fetzer Company, Cleveland, Ohio

Filed Dec. 17, 1979, Ser. No. 104,700
Int. Cl.³ H02P *7/36, 7/58*
U.S. Cl. 318—805 **6 Claims**

1. An electronic controller for regulating power applied by an AC supply to an AC induction motor comprising:

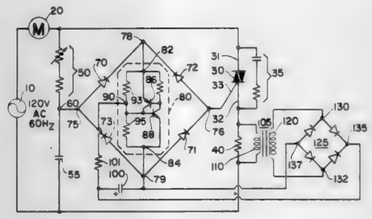
a gate-controlled semiconductor AC switching means connected in electrical series relationship with the AC supply and the induction motor, power being applied to the motor via the AC switching means;

means for detecting alternating direction load current pulses through the motor when the AC switching means is in a conducting state, the means for detecting including a resistor means in series with the motor, the resistor means providing a proportional voltage pulse for each load current pulse;

an RC network including a capacitor charging in alternating voltage polarities from the application of AC supply voltage when the semiconductor switch is in a non-conducting condition;

full wave rectifier means for converting at least a portion of the alternating polarity AC voltage across the capacitor to a single polarity DC voltage;

a unidirectional current transistor switch means configured to function as a trigger diode having a variable breakdown voltage, the transistor switch means being connected to drive the gate electrode of the AC semiconductor switching means, the DC voltage being supplied by the capacitor to the transistor switch means via the rectifier means, the transistor switch means switching to a fully conducting condition at a breakdown voltage attained by the charging capacitor, wherein turn-on current is applied to the gate electrode of the semiconductor switch to trigger it into a conducting condition, the semiconductor switching means switching to a non-conducting state generally at the trailing edge of each load current pulse when the turn-on current is not applied to the gate electrode of the semiconductor switching means; and



control means responsive to the proportional voltage pulses provided by the resistor means, the control means being connected to the transistor switch means to vary its breakdown voltage in accordance with the amplitude of the proportional voltage pulses, an increase in the amplitude of the proportional voltage pulses causing, via the control means, a decrease in the breakdown voltage of the transistor switch means, a decrease in the amplitude of the proportional voltage pulses causing, via the control means, an increase in the breakdown voltage of the transistor switch means.

4,287,465

APPARATUS FOR REGULATING THE CHARGING OF A STORAGE BATTERY

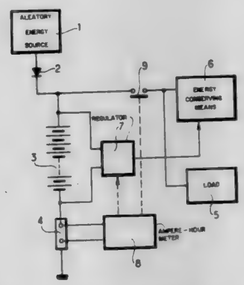
Pierre Godard, Tremblay les Gonesse, and Michel Billot, Drancy, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Oct. 5, 1979, Ser. No. 83,190
Claims priority, application France, Oct. 9, 1978, 78 28752
Int. Cl.³ H02J *3/32, 7/04, 7/34*
U.S. Cl. 320—56 **8 Claims**

1. Apparatus for regulating the charging of a storage battery from an aleatory source of electric energy in an electric energy supply system which includes an aleatory source of electric energy and a storage battery connected to said aleatory source for charging thereby, wherein said regulating apparatus comprises:

a motor-generator set which includes a variable speed motor driving an asynchronous machine for coupling the storage battery and the aleatory source to a load and to an AC mains electric supply grid;

means for diverting electric current being supplied by the



system to said AC mains whenever the charge of the storage battery reaches a given level and the current available from the aleatory source exceeds the load demand; and

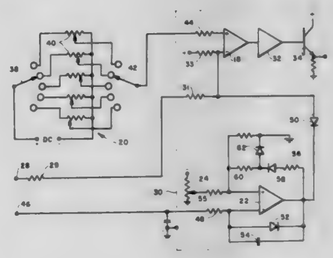
means for controlling the allocation of said excess electric current from the aleatory source to the storage battery and to the AC mains as a function of at least one parameter representing the state of charge of the battery.

4,287,466

CONTROL CIRCUITRY FOR MAINTAINING FORWARD AND REFLECTED TRANSMISSION LINE POWER AT A PREDETERMINED SAFE LEVEL

Donald L. Quick, Mountain View, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 26, 1979, Ser. No. 15,090
Int. Cl.³ G05F *1/66*
U.S. Cl. 323—275 **9 Claims**



1. Power control circuitry for controlling the power produced by an A.C. generator, the control circuitry comprising:

first amplifier circuitry for comparing the level of a first input signal representing the A.C. voltage across the generator load and a second input signal representing one of a plurality of preselected desired output levels of said generator:

power amplifying circuitry coupled to the output of said first amplifier circuitry for producing a power output control signal for said A.C. generator;

second amplifier circuitry for comparing the level of a preselected threshold with a third input signal representing the power reflected from the load toward the A.C. generator; and

switching means coupled to the output of said second amplifier circuitry and to the input of said first amplifier cir-

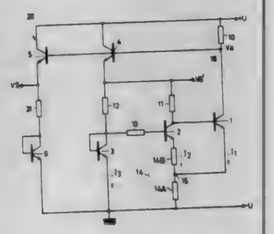
cuitry for removing said first input signal from said first amplifier circuitry whenever said third input signal exceeds the level of said threshold signal.

4,287,467

CONSTANT-VOLTAGE GENERATOR FOR INTEGRATED CIRCUITS

Gilbert Y. M. Gloaguen, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 16, 1980, Ser. No. 140,943
Claims priority, application France, Apr. 20, 1979, 79 10085
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—314 **12 Claims**



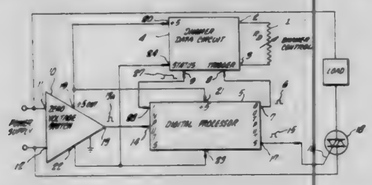
8. A voltage regulator circuit comprising, first and second terminals for receiving operating voltages for the circuit, an output terminal for supplying a stabilized voltage independent of the operating voltages and ambient temperature, first and second transistors each having emitter, collector and base electrodes, a diode, first means coupling the collector of the second transistor to the base of the first transistor, a coupling network including a first resistor for coupling the collector of the first transistor to the base of the second transistor, first means connecting said diode in series with the first resistor between the second terminal and the base of the second transistor, a second resistor connected between the emitter of the second transistor and the second terminal thereby forming an emitter circuit for the second transistor, second means coupling the collector of the first transistor to said first terminal and to said output terminal, and second means connecting the emitter of the first transistor to the emitter circuit of the second transistor so as to produce a negative feedback component in said emitter circuit of the second transistor.

4,287,468

DIMMER CONTROL SYSTEM

Robert Sherman, 1555 Rising Glen Rd., Los Angeles, Calif. 90069

Filed Aug. 28, 1978, Ser. No. 937,258
Int. Cl.³ H05B *37/02*
U.S. Cl. 323—322 **20 Claims**



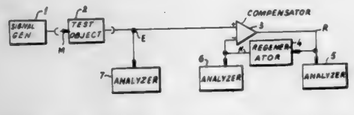
4. A dimmer apparatus for varying the average power dissipation in a load comprising:
(a) a dimmer control;
(b) a dimmer data means connected to said dimmer control for generating a dimmer data signal representing the desired level of power dissipation in said load;
(c) zero crossing means connected to a power supply for determining the times of zero crossings of the power supply voltage waveform and for generating data indicating the times of said zero crossings;
(d) an output means connected to a load and to said power supply for switching complete half cycles of said power supply voltage waveform through said load when triggered by an output trigger pulse; and
(e) a digital processor means connected to said dimmer data means and to said zero crossing means and to said output means for sampling the data generated by said dimmer data means and for performing logic operations on data arriving from said dimmer data means and from said zero crossing means, said logic operations for deriving criteria based on data from said dimmer data means and for sending a complete half cycle from zero crossing to zero crossing of said power supply voltage waveform through said load when the derived criteria for sending such a half cycle is met.

4,287,469

PROCESS AND CIRCUIT ARRANGEMENT FOR THE MEASURING OF COEFFICIENTS OF MESSAGE-TRANSMISSION EQUIPMENT

Peter Harzer, Eningen u. A., Fed. Rep. of Germany, assignor to Wandel & Goltermann, Eningen u. A., Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,927
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827422
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—57 R **28 Claims**



1. A process for measuring transmission characteristics of a test object, comprising the steps of:
(a) generating a measuring signal including at least one predetermined test frequency;
(b) applying said measuring signal to an input of the test object;
(c) extracting a distorted signal from an output of the test object;
(d) generating a compensation signal including at least one local oscillation corresponding to said test frequency;
(e) differentially combining said distorted signal and said compensation signal to produce a residual signal;
(f) varying the relative phase and amplitude of said local oscillation and said distorted signal until said test frequency substantially disappears in said residual signal; and
(g) deriving at least one coefficient representative of a transmission characteristic from at least one of said residual and compensation signals.

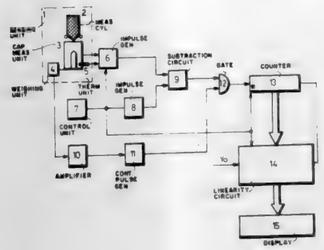
4,287,470

DIGITAL HUMIDIMETER

Zsolt Fabian; Mihaly Samu, both of Gödöllö, and Barnabas Balogh, Budapest, all of Hungary, assignors to Mém Müszaki Intézet, Gödöllö, Hungary

Filed Feb. 12, 1979, Ser. No. 11,094
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **3 Claims**

1. A capacitance and resistance measuring appraratus for the determination of a capacitance value, a resistance value and the difference between two capacitances and two resistances, the apparatus comprising: two RC impulse generators, a control circuit, a subtraction circuit, a gate, a counter, a controllable pulse generator and a display, wherein the resistance or capacitor to be measured is connected to the input of the one pulse generator, the other resistance or capacitor to be measured is connected to the other pulse generator, the output of the control circuit is connected to the triggering inputs of the pulse generators, the outputs of the pulse generators are connected to the input of the subtraction circuit, the output of the subtraction circuit is connected to one input of the gate, the other input of the gate is connected to the output of the controllable pulse generator, a driving signal is connected to the input of the controllable pulse generator, the output of the gate is connected to the input of the counter, the reset input of the counter is connected to the output of the control circuit and the output of the counter is connected to the input of the display.

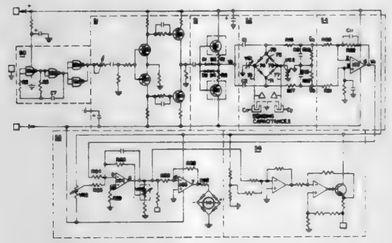


4,287,471

STRIP CENTER LINE SENSOR

Wen H. Ko, Cleveland Heights, and Chih P. Hung, Berea, both of Ohio, assignors to North American Manufacturing Company, Cleveland, Ohio

Filed May 23, 1979, Ser. No. 41,875
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **3 Claims**



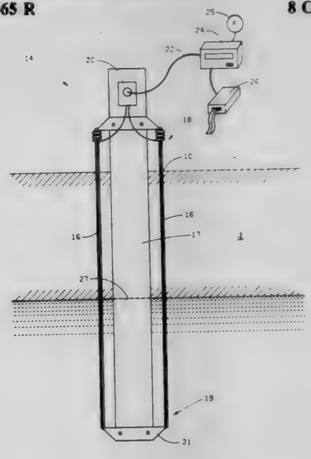
1. In a capacitance type detecting device for the edges of a moving metal strip having first and second capacitor plates each having a segment thereof overlapping an opposite edge of the strip and capacitively coacting with said strip to form a first capacitor and a second capacitor; said strip being at a reference potential; means energizing said capacitor plates with an alternating current referenced to said reference potential and indicating means for producing an output signal indicating movement of the strip laterally relative to the capacitor plates, the improvement which comprises: said indicating means comprising a diode bridge including first, second, third and fourth bridge terminals consecutively coupled together by four diodes polarized in circulating relationship, means connecting said second bridge terminal to said first capacitor plate, means connecting said fourth bridge terminal to said second capacitor plate; said energizing means being comprised of means generating a square wave, means amplifying said square wave to a constant amplitude, means feeding said amplified square wave through a first reactance to said first diode bridge terminal and means feeding said amplified square wave through a second reactance to said third diode bridge terminal; and, said indicating means reading an output voltage between said first diode bridge terminal and said third diode bridge terminal proportional to lateral variations of position of the moving strip.

4,287,472

METHOD FOR MEASURING THE THICKNESS OF AN ICE SHEET

Robert B. Pan, and John S. Templeton, III, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Mar. 3, 1980, Ser. No. 126,587
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 R **8 Claims**



1. A method for measuring the thickness of an ice sheet floating at the surface of a body of water with a circuit whose resistance is a function of the length of the circuit embedded in the ice, said method comprising the steps of:
(a) transmitting an electric current through the circuit;
(b) measuring the electric resistance of the circuit as the current passes through the circuit; and
(c) determining the thickness of the ice sheet by correlating the measured resistance of the circuit with predetermined calibrated ice thickness values.

4,287,473

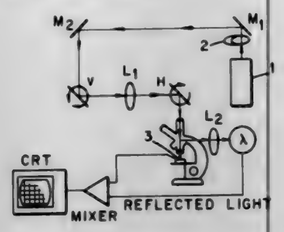
NONDESTRUCTIVE METHOD FOR DETECTING DEFECTS IN PHOTODETECTOR AND SOLAR CELL DEVICES

David E. Sawyer, Rockville, Md., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 25, 1979, Ser. No. 42,462
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 R **12 Claims**

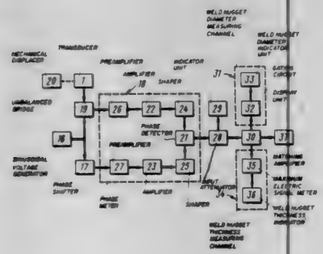
1. A method for detecting defects in semiconductor devices including:
forward-biasing the semiconductor device with an illuminator;

scanning the forward-biased semiconductor with a light spot;
detecting the output voltage;



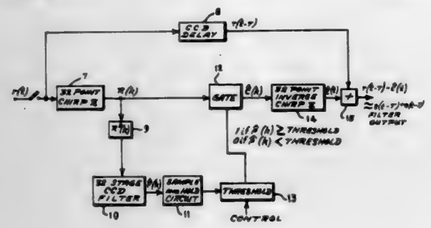
mapping the device topography from the detected output voltage.

4,287,474
METHOD AND APPARATUS FOR NON-DESTRUCTIVE QUALITY TESTING OF SPOT WELDS
Viktor S. Fastritsky, ulitsa Michurina, 27, kv. 14; Pavel S. Fishkin, ulitsa Maskavas, 427, kv. 54, and Evgeny P. Rybalkin, ulitsa Gorkogo, 78, kv. 2, all of Riga, U.S.S.R.
Filed Feb. 12, 1979, Ser. No. 11,546
Int. Cl.³ G01R 33/12
U.S. Cl. 324—233 **5 Claims**



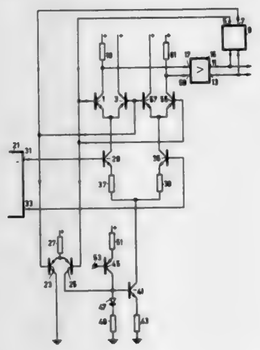
2. An apparatus for non-destructive quality testing of spot welds, comprising:
(a) a sinusoidal voltage generator;
(b) a reference channel having a phase shifter with its input connected to the output of said sinusoidal voltage generator;
(c) a measuring channel having an unbalanced bridge circuit and having its input connected to the output of said sinusoidal voltage generator;
(d) a phase meter having its inputs connected to the outputs of said phase shifter and unbalanced bridge circuit;
(e) an eddy current transducer arranged in one of the branches of said unbalanced bridge circuit;
(f) means for mechanically displacing said eddy current transducer in a plane parallel to the surface of contact of the welded parts;
(g) means connected to said phase meter for measuring the thickness of a weld nugget; and
(h) means connected to said phase meter for measuring the diameter of a weld nugget.

4,287,475
CIRCUIT FOR THE ADAPTIVE SUPPRESSION OF NARROW BAND INTERFERENCE
William G. Eaton, and Allan W. Roeder, both of Whitesboro, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 5, 1979, Ser. No. 82,355
Int. Cl.³ H04B 1/10
U.S. Cl. 328—167 **6 Claims**



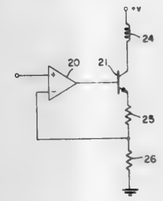
1. A circuit for the adaptive suppression of narrow band interference comprising
means receiving analog signals,
Fourier transform means performing an N point weighted Fourier transform on said received analog signals,
squaring means for squaring the output of said Fourier transform means,
recursive filter means for filtering the output of said squaring means to provide a smoothed power spectral density signal, and
an interference signal cancelling circuit receiving said smoothed power spectral density signal and cancelling interference signals from said received analog input signals in response thereto.

4,287,476
CONTROL CIRCUIT
Adriaan Cense, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 23, 1979, Ser. No. 23,220
Claims priority, application Netherlands, Apr. 4, 1978, 7803561
Int. Cl.³ H03F 3/45; H03G 3/32
U.S. Cl. 330—254 **13 Claims**



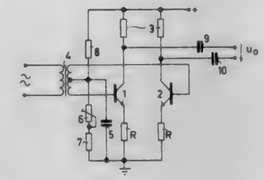
1. A control circuit comprising first and second transistors each having emitter, base and collector electrodes, input means coupling the emitters of the first and second transistors to a signal source, means coupling the bases of the first and second transistors to a control signal source for controlling the gain of the control circuit and further coupling the collector of one of said transistors to an output of the control circuit for obtaining an output signal thereat having an amplitude controllable by the control signal source, said control circuit further comprising a circuit included in the emitter circuit of the first and second transistors through which a direct current only flows and which is responsive to the control signal source for controlling a direct current component in the output signal in a sense opposite to that of the circuit gain.

4,287,477
FEEDBACK ARRANGEMENT
George C. Carlsen, II, Redondo Beach; John C. Crumm, Pacific Palisades, both of Calif., and Koji Matsuda, Kyoto, Japan, assignors to Dynamic Compliance, Incorporated, Santa Monica, Calif.
Filed Feb. 22, 1979, Ser. No. 13,815
Int. Cl.³ H03F 1/34, 3/26
U.S. Cl. 330—255 **3 Claims**



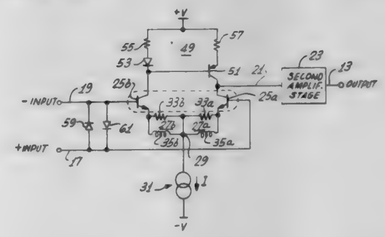
1. A feedback arrangement for correcting distortion in an amplifier system, the distortion resulting from nonlinearities in the amplifier system and a load connected thereto, said feedback arrangement comprising:
a differential amplifier having positive and negative input terminals, and having an output terminal,
a power output transistor having a base, an emitter, and a collector, the base of said transistor being connected to the output terminal of said differential amplifier,
an inductive load connected between the collector of said power output transistor and the positive terminal of a voltage supply,
an emitter bias resistor having one end connected to the emitter of said transistor, and
an error-sensing resistor having one end connected to the other end of said emitter bias resistor and having the other end connected to the negative terminal of said voltage supply,
the negative terminal of said differential amplifier being connected to the junction between said error-sensing resistor and said emitter bias resistor,
the value of said error-sensing resistor being chosen such that the voltage across said error-sensing resistor substantially equals the voltage applied to the positive terminal of said differential amplifier whereby an input signal applied to the positive terminal of said differential amplifier provides 100 percent negative feedback to said differential amplifier resulting in an error-correcting feedback signal which corrects nonlinearities introduced by said amplifier system and said load when processed by said amplifier system.

4,287,478
AMPLIFIER ARRANGEMENT COMPRISING TWO TRANSISTORS
Hermann Berger, Innsbruck, Austria, assignor to U.S. Philips Corp., New York, N.Y.
Filed Apr. 9, 1979, Ser. No. 28,481
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819087
Int. Cl.³ H03F 3/30, 3/45
U.S. Cl. 330—256 **11 Claims**



1. An amplifier arrangement comprising, first and second transistors each having an emitter, base and collector electrode, a pair of input terminals coupled to the base electrodes of the transistors for applying an input signal thereto in phase opposition, a pair of signal output terminals coupled to the collector electrodes of the first and second transistors, and a symmetrical resistor network connecting the emitter electrodes of the transistors to a point of constant potential, said resistor network being proportioned so that the slope of each of said first and second transistors is smaller than the value I_{CO}/U_T by a factor a, where I_{CO} is the collector quiescent current of a transistor, U_T is the thermal voltage, and a is a factor between 0.47 and 0.78.

4,287,479
OPERATIONAL AMPLIFIER CIRCUIT
Deane E. Jensen, 1617 N. Fuller Ave., Hollywood, Calif. 90046
Filed Jun. 22, 1979, Ser. No. 51,230
Int. Cl.³ H03F 3/45
U.S. Cl. 330—260 **9 Claims**



1. For use in an operational amplifier circuit, a first amplification stage comprising:
first and second matched transistors, each transistor having an input terminal, a common terminal, and an output terminal; and
first and second reactive networks coupling the common terminals of said respective first and second transistors to a common node, each of said reactive networks including an inductor and a resistor arranged in a shunt configuration, whereby each network has a relatively low impedance at low frequencies and a relatively high impedance at high frequencies;
wherein an output signal, proportional to the difference between two input signals applied to the input terminals of said respective first and second transistors, is produced at the output terminal of one of the transistors;
wherein at frequencies less than a prescribed frequency

where the impedance of each emitter inductor is equal to the impedance of the corresponding resistor, the open-loop gain of the first amplification stage is substantially increased and substantially less noise is generated; and

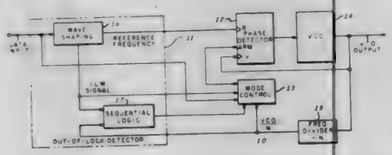
wherein at frequencies greater than the prescribed frequency, the open-loop gain of the circuit is sufficiently low that stability is maintained.

4,287,480

PHASE LOCKED LOOP OUT-OF-LOCK DETECTOR

Billy K. Swift; Anthony F. Zizzo, both of Phoenix, and Willard A. Blevins, Glendale, all of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 10, 1980, Ser. No. 111,134
Int. Cl.³ H03L 7/10
U.S. Cl. 331—1 A **5 Claims**



1. A circuit for detecting an out-of-lock condition of a digital phase locked loop, having a phase detector, a voltage controlled oscillator, and a frequency divider, which comprises:

wave shaping means having input terminal means for receiving an input signal, and output terminal means for providing said digital phase locked loop with a window signal having periodic pulses of a fixed time width and a stable reference signal; and

sequential logic means coupled to the output terminal means of said wave shaping means and coupled to the output terminal means of said digital phase locked loop, for receiving the window signal from said wave shaping means and the voltage controlled oscillator's output signal from said digital phase locked loop, for detecting the occurrence of an edge of the voltage controlled oscillator's output signal wihin a pulse of the window signal during a plurality of states, and for signalling the existence of selected states in which the edge of the voltage controlled oscillator's output signal does not occur within a pulse of the window signal.

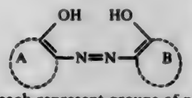
4,287,481

DYE LASERS

Marcos Kleinerman, 24 Jerome St., Southbridge, Mass. 01550

Filed Nov. 22, 1978, Ser. No. 963,157
Int. Cl.³ H01S 3/20
U.S. Cl. 331—94.5 L **7 Claims**

1. A dye laser comprising a laser dye solution and a pumping energy source operably coupled therewith and capable of producing stimulated emission of the dye solution, said dye solution comprising a lasing concentration of a dye in a noninterfering solvent, said dye being selected from the group of Aluminum complexes of organic compounds having the formula



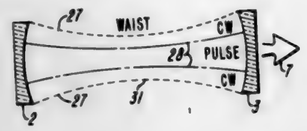
wherein A and B each represent groups of non-metallic atoms necessary to complete an aromatic cyclic structure, said compounds selected from the group consisting of the dyes Lumogallion, CI Mordant Blue 9, CI Mordant Blue 13, Flazo Orange, CI Mordant Violet 5 and CI Mordant Black 3.

4,287,482

CW-PULSED LASER

John C. Wert, III, 3101 Kemp Rd., Dayton, Ohio 45431

Filed Aug. 30, 1979, Ser. No. 70,943
Int. Cl.³ H01S 3/14
U.S. Cl. 331—94.5 F **6 Claims**



1. An apparatus for generating a spatially coherent laser beam having concurrent CW and pulsed modes, comprising:

a. a gain medium;

b. a means for continuously pumping said medium;

c. a first reflective surface at a first end of said gain medium for optically terminating said gain medium, said first reflective surface having distinct areas for CW and pulsed operating modes;

d. a second reflective surface at a second end of said gain medium, in the form of an output coupling having distinct areas for CW and pulsed operating modes, said second reflective surface disposed oppositely to the said first reflective surface and defining an optical resonant cavity with said first reflective surface; and

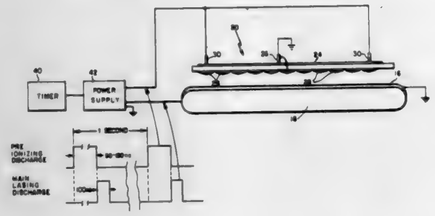
e. a transition material, at one of said ends of said gain medium, having selectively optically reflective and transmissive phases in response to an external stimulus.

4,287,483

TRANSVERSE EXCITATION LASER

Robert I. Rudko, Holliston, and James W. Barnie, Stoughton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 4, 1979, Ser. No. 71,809
Int. Cl.³ H01S 3/09
U.S. Cl. 331—94.5 PE **10 Claims**



1. The method of operating a gaseous laser having a gaseous medium comprising carbon dioxide and helium excited by a discharge transverse to the optical path comprising the steps of:

providing an ionizing discharge in an elongated region adjacent to said optical path and between elongated electrodes positioned on either side of said optical path;

said ionizing discharge being produced between a plurality of copper elements to produce a range of temperatures extending from ambient to several hundred degrees and having a thin layer of copper oxide covering said elements;

producing a high current discharge between said electrodes to produce a lasing beam; and

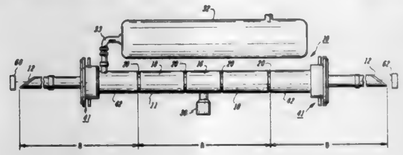
allowing a period of time to elapse to permit portions of the carbon dioxide gas which have broken down into constituent gases of carbon dioxide to reform into carbon dioxide by catalytic action of the copper oxide surface of said copper elements at elevated temperatures.

4,287,484

SEGMENTED HOLLOW CATHODE LASER DEVICE

Shing C. Wang, Temple City, and Randolph W. Hamerdinger, Glendora, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1978, Ser. No. 948,077
The portion of the term of this patent subsequent to Sep. 1, 1978, has been disclaimed.
Int. Cl.³ H01S 3/03
U.S. Cl. 331—94.5 G **15 Claims**



1. A laser device for producing an output laser beam having a plurality of wavelengths comprising:

an envelope having a longitudinal axis,

an anode electrode forming a portion of said envelope, said anode electrode being coaxially disposed with respect to said longitudinal axis, at least two separate hollow cathodes located within said envelope, said hollow cathodes being coaxially disposed with respect to said longitudinal axis,

said hollow cathodes each having a portion thereof coupled to said envelope whereby the heat generated in said hollow cathodes is dissipated to the external environment,

coaxially aligned mirror end members, said mirror end members sealing said envelope thereby providing a resonant cavity and a structure for confining a gaseous medium therein,

means for supplying an active gaseous medium having an absorption band such that it will lase at wavelengths supported by said resonant cavity in said envelope, and

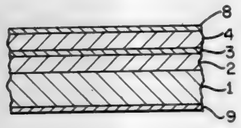
means for applying a voltage between said anode electrode and said hollow-cathodes whereby a discharge between said cathodes and said anode electrode is created causing said gaseous medium to lase, a laser output beam having a plurality of wavelengths thereby being produced, said output beam being abstracted from one of said mirror end members.

4,287,485

GAINASP/INP DOUBLE-HETEROSTRUCTURE LASERS

Jaw J. Hsieh, Burlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 816,402, Jul. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 758,733, Jan. 12, 1977, abandoned. This application Apr. 30, 1979, Ser. No. 34,116
Int. Cl.³ H01S 3/19
U.S. Cl. 331—94.5 H **12 Claims**



1. In a diode laser, the improvement wherein the diode comprises:

a. InP substrate;

b. a buffer layer of InP on said substrate;

c. an active layer of $Ga_xIn_{1-x}As_yP_{1-y}$ on said buffer InP layer, said active layer being substantially lattice-matched to said buffer layer and said active layer having a thickness of less than about 0.5 μm;

d. a barrier layer of InP on said active $Ga_xIn_{1-x}As_yP_{1-y}$ layer; and,

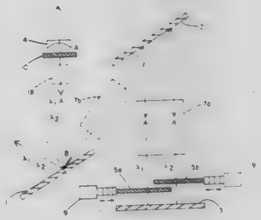
e. first and second ohmic contacts to said substrate and said barrier layer.

4,287,486

LASER RESONATOR CAVITIES WITH WAVELENGTH TUNING ARRANGEMENTS

Ali Javan, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 654,100, Feb. 2, 1976. This application May 14, 1979, Ser. No. 38,540
Int. Cl.³ H01S 3/10
U.S. Cl. 331—94.5 C **23 Claims**



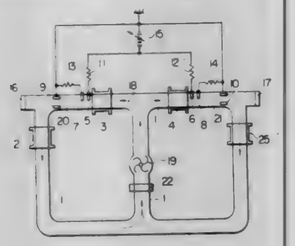
1. In a laser comprising an optical cavity defined by first and second reflecting optics, a first amplifying medium within the cavity and means to excite said medium to produce lasing conditions, said laser including means to restrict the laser beam to a common path for all wavelengths in the region of said first reflecting optics, the improvement comprising means including spectral dispersion apparatus disposed within the optical cavity, positioned to receive a beam of restricted cross section in said common path from said first reflecting optics and to disperse said beam to a plurality of paths in which rays of different wavelength are laterally spaced apart, said paths passing through said first amplifying medium whereby rays differing in wavelength can be subjected to amplification in different spatially separated portions of said first amplifying medium, said second reflecting optics constructed to reflect regeneratively said rays back along said paths, in laterally spaced apart condition through said portions of said first amplifying medium for further amplification, thence from said spectral dispersion apparatus along said common path to said first reflecting optics, said laser including a second amplifying medium disposed in the common beam path between said first reflecting optics and said spectral dispersion apparatus, in which path said rays are in a non-resolved, overlapping relation, and means to excite both said first and said second amplifying medium whereby a given wavelength amplified in a portion of said first amplifying medium can be present in said common beam path to cause excitation of laser oscillation at said wavelength in said second amplifying medium.

4,287,487

GAS LASER GENERATING DEVICE OF THE LONGITUDINAL GAS FLOW TYPE

Kouji Kuwabara; Hiroyuki Sugawara, both of Hitachi; Toshiharu Shirakura, Tokaimura; Kouji Sasaki, and Satoshi Takemori, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,195
Claims priority, application Japan, Jun. 28, 1978, 53/77488
Int. Cl.³ H01S *3/03*
U.S. Cl. 331—94.5 G **6 Claims**



1. A gas laser generating device of the longitudinal gas flow type having at least two glow discharge tubes, each of which has positive and negative electrodes and two ends wherein said discharge tubes are located so that an end of one of said discharge tubes is adjacent an end of said other discharge tube, at least one electric insulating tube which is inserted between said adjacent ends of the two glow discharge tubes in order to insulate therebetween, mirrors which are positioned at at least one end of each glow discharge tube to form a resonant cavity, means for circulating a gas capable of lasing through said discharge tubes, and means for extracting laser energy from said device, wherein the flow of gas is excited to generate gas lasing which is amplified by reflection by said mirrors, and characterized in that there are further provided triggering electrodes located in close proximity with either the positive or the negative electrodes of each of said two glow discharge tubes, respectively, which triggering electrodes are connected to the other of said positive or negative electrodes of said two glow discharge tubes which they are not in close proximity with through triggering resistors, respectively.

4,287,488

RF FEEDBACK FREE ELECTRON LASER

Charles A. Brau; Donald A. Swenson, and Thomas J. Boyd, Jr., all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 2, 1979, Ser. No. 90,846
Int. Cl.³ H01S *3/09, 3/14*
U.S. Cl. 331—94.5 PE **8 Claims**

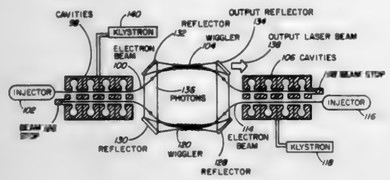
1. An electron beam energy system for a free electron laser comprising:

first cavity means for accelerating a first electron beam;

second cavity means for decelerating said first electron beam and extracting rf energy from said first electron beam;

third cavity means disposed adjacent said second cavity means, said third cavity means for accelerating a second electron beam in response to rf energy generated by said second cavity means by decelerating said first electron beam;

fourth cavity means for decelerating said second electron beam to extract rf energy from said second electron beam, said first cavity means disposed adjacent said fourth cavity means to accelerate said first electron beam in response to



said rf energy extracted from said second electron beam by said fourth cavity means;

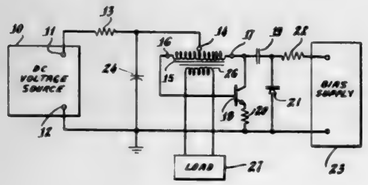
whereby deposition of said first cavity means adjacent said fourth cavity means and said third cavity means adjacent said second cavity means reduces rf feedthrough losses to enhance efficiency of said electron beam energy system.

4,287,489

AMPLITUDE LIMITED VARACTOR TUNED L-C OSCILLATOR

Clinton L. Pinkham, New Hartford, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Sep. 19, 1979, Ser. No. 77,129
Int. Cl.³ H03B *5/12*
U.S. Cl. 331—117 R **6 Claims**



1. A tunable oscillator, comprising:

(a) a DC voltage source having first and second terminals;

(b) a transistor having an emitter electrode, a base electrode and a collector electrode;

(c) a resistor coupled at one end to the emitter electrode and at a second end to the second terminal of the voltage source;

(d) an inductor DC connected between the collector and base electrodes, the inductor having a tap between its ends, the tap being coupled to the first terminal of the voltage source to keep the collector and base electrodes at substantially the same DC potential;

(e) an AC by-pass capacitor coupling the tap to the second terminal of the voltage source; and

(f) a variable capacitor coupled at one end to the collector electrode and at the other of its ends to said second end of the resistor, whereby the oscillator operates with a peak to peak AC potential, between the collector electrode and the second terminal, which is limited to substantially twice the forward bias base to emitter voltage of the transistor.

4,287,490

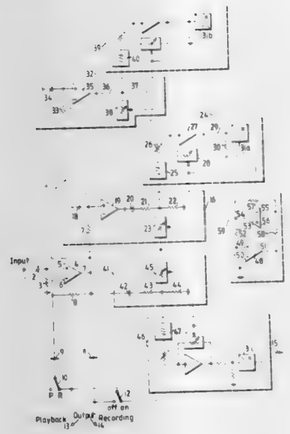
Patent Not Issued For This Number

4,287,491

CIRCUIT FOR SELECTIVELY OBTAINING AUTOMATIC DYNAMIC COMPRESSION OR EXPANSION

Werner Scholz, Gehrden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,160
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856045
Int. Cl.³ H03H *11/36;* H04B *1/64*
U.S. Cl. 333—14 **5 Claims**



1. A circuit, having an input terminal and first and second output terminals, for selectively compressing or expanding a signal having frequency components within a given frequency spectrum, comprising:

amplifier means having first and second inputs and an output, said first input being coupled to said input terminal and said output to said first output terminal;

a summing circuit having an input and an output, the output of said summing circuit being coupled to the second input of said amplifier means when said signal is being compressed and to said second output terminal when said signal is being expanded, the compressed signal being obtained at said first output terminal; and

a plurality of frequency selective channels each capable of transmitting signals having frequencies within a predetermined portion of said frequency spectrum, coupled in parallel between the output of said amplifier means and the input of said summing circuit, one of said frequency selective channels being adapted for transmitting signals in the high frequency range of said frequency spectrum and consisting of only a passive filter and an associated variable impedance, the remaining frequency selective channels each including a passive filter, variable impedance and an impedance converter.

4,287,492

CONCENTRATED CONSTANT TYPE DELAY DEVICE

Yoshio Goshima, and Hisashi Osada, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1979, Ser. No. 69,541
Int. Cl.³ H03H *7/32*
U.S. Cl. 333—140 **4 Claims**

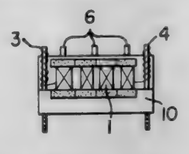
1. A concentrated constant type delay device comprising:

a substrate;

an input terminal, an output terminal and a common terminal mounted on said substrate;

a plurality of coils connected in series between said input terminal and said output terminal and having a joint between adjacent coils;

a plurality of capacitors, equal in number to the number of said joints, each connected between said common terminal and a different one of said joints;



wherein said plurality of capacitors is formed as a composite capacitor having a dielectric with a common electrode on one surface and a plurality of separated electrodes on the opposite surface, said common electrode having two leads extending therefrom in one direction and said separated electrodes each having one lead extending therefrom in the said one direction and each of said leads of said separated electrodes being connected to a joint;

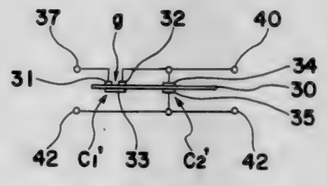
wherein one of said leads of said common electrode is passed through said substrate to form said common terminal.

4,287,493

PIEZOELECTRIC FILTER

Kimio Masaie, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 21, 1980, Ser. No. 113,449
Claims priority, application Japan, Jan. 25, 1979, 54-7869; Aug. 7, 1979, 54-100985
Int. Cl.³ H03H *9/205, 9/56, 9/60*
U.S. Cl. 333—191 **7 Claims**



1. A piezoelectric filter, comprising:

a piezoelectric substrate having first and second main surfaces;

electrode means disposed on said main surfaces and defining at least one set of piezoelectric resonators, said set including an energy-trapping multi-mode resonator and a thickness-vibration, energy-trapping type single resonator; and

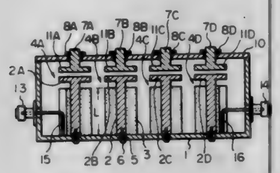
conductive means disposed on said main surfaces of said substrate defining an input terminal, an output terminal and a third terminal and defining conductive paths connecting said energy-trapping multi-mode resonator in series between said input terminal and said output terminal, and connecting said thickness-vibration energy-trapping type single resonator between said third terminal and one of said input terminal and said output terminal.

4,287,494

DISTRIBUTED CONSTANT TYPE FILTER

Tadashi Hashimoto, Ichikawa, and Katsuya Jindou, Kamagaya, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 141,230
Claims priority, application Japan, Apr. 27, 1979, 54-51492
Int. Cl.³ H01P *1/205, 7/06, 7/04*
U.S. Cl. 333—202 **3 Claims**



1. A filter comprising a conductive closed housing having a bottom wall, an upper wall, and side walls between said bottom wall and the upper wall, a plurality of resonators fixed on a straight line on the bottom wall inside of the housing, one end of each resonator being grounded to the bottom wall and the other end of each resonator being free standing, each resonator having at least an elongated center conductor and a dielectric body covering the center conductor at least partially in the longitudinal direction of the center conductor, a pair of connectors mounted at the opposite ends at the side walls for coupling the filter with an external circuit, a pair of loops each connected to the inner conductor of said connector and one end of the loops being grounded to the bottom wall, characterized in that a pair of confronting conductive disks is provided between the free standing end of a each center conductor of a resonator and the upper wall to provide the capacitance between said free standing end and the upper wall, and the length L of the dielectric body covering the center conductor satisfies;

$$L \leq \lambda_o / 5\sqrt{\epsilon_e}$$

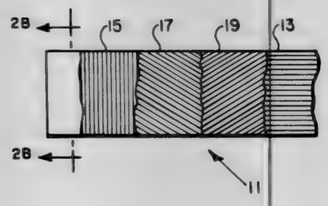
where λ_o is the wavelength in the free space of the center frequency of the filter, and ϵ_e is the effective dielectric constant of the dielectric body.

4,287,495

THERMALLY COMPENSATED PHASE-STABLE WAVEGUIDE

Walter W. Lund, Jr., Seattle; Ervin J. Nalos, Bellevue, and Donald E. Skoumal, Auburn, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 31, 1980, Ser. No. 135,873
Int. Cl.³ H01P *1/30, 3/12*
U.S. Cl. 333—239 **9 Claims**



1. A phase-stable, temperature-compensated waveguide comprising:

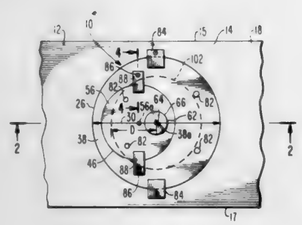
laminate element means formed into a waveguide configuration, said laminate element means comprising a plurality of successive plies of fibrous composite material, one ply having its fiber content aligned generally parallel to the longitudinal dimension of the waveguide, a second ply having its fiber content aligned generally parallel to the transverse dimension of the waveguide, and a first set of third and fourth plies having their fiber content oriented at selected angles relative to the longitudinal dimension of the waveguide, such that the transverse dimension of the waveguide changes sufficiently relative to a change in the longitudinal dimension of the waveguide due to temperature change that the phase of the signal exiting from the waveguide does not change in response to temperature.

4,287,496

ASSEMBLY FOR POSITIONING THE COUPLING PROBE OF A WAVEGUIDE

William C. Young, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 22, 1980, Ser. No. 152,307
Int. Cl.³ H01P *1/00, 5/04*
U.S. Cl. 333—248 **8 Claims**



1. An assembly for positioning a coupling probe within a waveguide having a pair of opposing walls, one of the walls being formed with a circular aperture therein, said assembly comprising:

a first circular cylinder-like member rotatably positioned in said aperture in said wall about a first axis comprising the central axis of said first member; and

means adapted to receive said coupling probe therethrough in a position offset from the central axis of said means, and rotatably positioned in said first cylinder-like member about a second axis displaced from the first axis, for positioning said coupling probe within said waveguide, said second axis comprising said central axis of said means.

4,287,497

INTEGRATED UNIVERSAL RF JOINT AND GIMBAL SYSTEM

Robert A. Johnson, Tempe, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

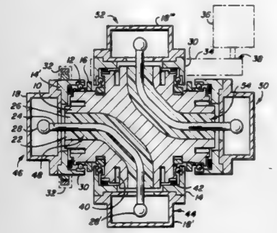
Filed Jun. 12, 1979, Ser. No. 47,832
Int. Cl.³ H01P *1/06, 5/08*
U.S. Cl. 333—261 **10 Claims**

1. An integral universal joint for transmission of radio frequency energy comprising in combination:

a first rotary radio frequency joint;

a second rotary radio frequency joint; and

a coaxial transmission line, said first and second rotary radio frequency joints each having a rotational axis, each of said axes being substantially orthogonal to the other, said coaxial transmission line having two ends thereof, each of said ends having a radio frequency transition to a waveguide of one of said first and second rotary radio frequency joints wherein one of said waveguides is a first terminal of the universal joint and a second of said waveguides is a second terminal of the universal joint.

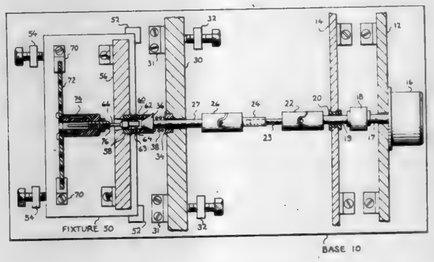


4,287,498

TUNING ARRANGEMENT FOR ELECTRICAL COMPONENTS

Thomas W. Gaddy, Florence, S.C., assignor to General Electric Company, Lynchburg, Va.

Filed Feb. 19, 1980, Ser. No. 123,104
Int. Cl.³ H03J *1/06*
U.S. Cl. 334—74 **14 Claims**



1. An improved arrangement for mechanically tuning electrical components positioned on a chassis, each of said electrical components having a rotatable member which, when rotated, changes the characteristic of its respective component, said arrangement comprising:

a. a base structure;

b. first means positioned on said base structure for receiving and holding said chassis;

c. a tool template positioned on said base structure adjacent said first means, said tool template including at least one bearing having an opening therethrough positioned at a location corresponding to the location of an electrical component on said chassis;

d. an elongated tuning tool having an engaging element at one end for engaging the rotatable member of said electrical component, and having a receptacle at the other end for receiving a rotator;

e. said tuning tool being adapted to be positioned in said opening of said bearing with said engaging element positioned on one side of said tool template for engagement with said rotatable member of said electrical component, and with said receptacle positioned on a second side of said tool template opposite said one side;

f. a rotator template positioned on said base structure adjacent said second side of said tool template, said rotator template having a bearing positioned at a location corresponding to the location of said bearing on said tool template, and a rotator positioned in said bearing on said rotator template on the side thereof adjacent said tool template for engaging said receptacle;

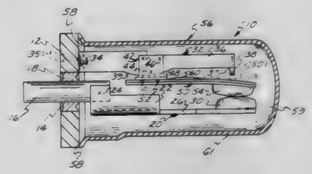
g. and second means positioned on said base structure for rotating said rotator on said rotator template.

4,287,499

CURRENT INTERRUPTING APPARATUS HAVING IMPROVED CONTACT LIFE

Radi Pejouhy, Marshfield, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1978, Ser. No. 974,454
Int. Cl.³ H01H *61/00*
U.S. Cl. 337—97 **14 Claims**



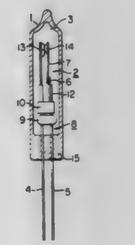
1. Electric current interrupting apparatus adapted for use with a selected impressed voltage level comprising a hermetically sealed housing, first and second electrically conductive contacts disposed in the housing, the contacts being movable relative to one another into and out of engagement with one another, means to cause such relative movement upon the occurrence of a selected condition, electrically conductive terminal means connected to the contacts and connectable to a source of power, and an atmosphere within the housing consisting essentially of a gas having a dielectric strength of between one half and one fifth of the dielectric strength of a nitrogen backfilled atmosphere at one atmosphere of pressure.

4,287,500

THERMAL PROTECTOR

Kensaku Ueda, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 2, 1979, Ser. No. 53,996
Claims priority, application Japan, Jul. 7, 1978, 53/94072[U]
Int. Cl.³ H01H *61/02, 63/013, 71/16*
U.S. Cl. 337—107 **6 Claims**



1. A thermal protector which comprises:

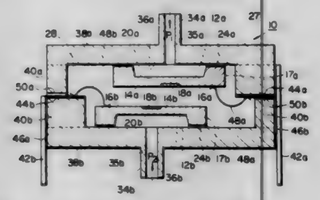
a heat responsive resistor, with a positive thermal coefficient, having two holes extending therethrough, two electrically conductive sleeves inserted into said holes in intimate contact with said heat responsive resistor, a stationary electrode having a lead extending through one of said sleeves in intimate contact with said sleeve, a movable electrode having a heat responsive element disposed in opposed relationship to said stationary electrode and adapted to move away from said stationary electrode and open contact between said electrodes when the enviromental temperature reaches a predetermined level, said movable electrode having a lead extending through said

second sleeve in intimate contact with said second sleeve, said electrodes and heat responsive resistor being disposed within an air tight sealed envelope having the leads extending therefrom.

4,287,501
PRESSURE SENSOR

Tamotsu Tominaga; Teruyoshi Mihara, both of Yokohama; Takeshi Oguro, Yokosuka, and Masami Takeuchi, Kokubunji, all of Japan, assignors to Nissan Motor Company, Limited, Kawagawa, Japan

Filed Jan. 4, 1980, Ser. No. 109,484
Claims priority, application Japan, Jan. 31, 1979, 54-10009[U]
Int. Cl.³ H01L *10/10*
U.S. Cl. 338—42 **5 Claims**

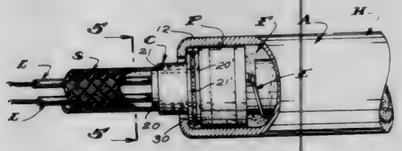


1. A differential pressure sensor comprising:
two parts which are substantially identical to each other and each of which comprises a half-casing in which is formed at least one aperture adapted to admit a fluid pressure, at least one diaphragm disposed adjacent to one said aperture in such a manner that a fluid pressure introduced through the aperture may be applied to one side of the diaphragm, and at least one diffused resistor formed as a pressure-sensitive element on an inner surface of the diaphragm opposite to the side to which a fluid pressure is applied; and
connection means for electrically connecting the diffused resistors to an electric circuit;
wherein the two substantially identical parts are joined together to form a package which is sealed, and which encloses a space which is evacuated.

4,287,502
CARTRIDGE HEATER STRUCTURE

Walter V. Nickmeyer, Redlands, Calif., assignor to Amark Industries, Inc., San Jacinto, Calif.

Filed Jun. 19, 1979, Ser. No. 49,877
Int. Cl.³ H01C *1/02*
U.S. Cl. 338—274 **16 Claims**

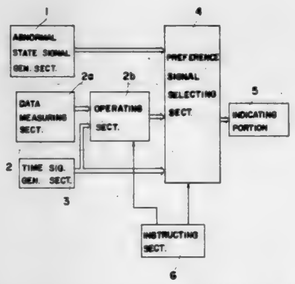


1. A cartridge heater structure comprising an elongate cylindrical metal case with front and rear ends, an elongate heater element supported within the case, a plug of dielectric material within at least the rear portion of the case axially forward of the rear end of the case, elongate flexible jacketed power lines with front end portions extending through the plug and electrically connected with said element and rear end portions extending rearwardly from the case, an elongate tubular flexible braided metal sheath with front and rear ends engaged about and extending longitudinally of the lines and a coupling structure coupling the front end of the sheath with the rear end of the case, said coupling structure including an elongate axially extending inner tube part freely engaged about the lines and within the front portion of the sheath, an elongate axially extending outer tube part engaged about the inner tube part with a forward portion of the sheath held securely therebetween, one tube part has a radially outwardly projecting flange arranged within the rear portion of the case between the rear end of the case and the plug and retaining means between the rear end portion of the case and said flange retaining the flange in the case and against axial rearward displacement therefrom.

4,287,503
RUNNING DATA CENTRAL DISPLAY ARRANGEMENT FOR MOTOR VEHICLES AND THE LIKE

Shizuo Sumida, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 11, 1978, Ser. No. 950,519
Claims priority, application Japan, Oct. 13, 1977, 52/123343
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—52 F **4 Claims**

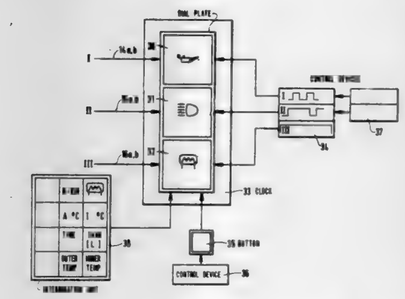


1. A display system for use in a motor vehicle having a plurality of sensors for sensing the operating perameters of said vehicle at preselected locations, said display system comprising:
a time signal generator for generating a signal indicative of the time of day;
a measured data signal generator for receiving the output of at least some of said plurality of sensors and for performing arithmetic manipulation of said outputs of said sensors to generate signals corresponding to predetermined parameters of said motor vehicle, said measured data signal generator including a multiplexer means for selecting one of said outputs of said measured data signal generator in response to a multiplex control signal;
an abnormal state signal generator operatively connected to at least some of said plurality of sensors and to said measured data signal generator for generating a signal when the output of at least one of said sensors is outside its respective predetermined range and for generating a signal when at least one of the outputs of said measured data signal generator is outside its respective predetermined range, said abnormal state signal generator simultaneously generating a code signal corresponding to the sensor having an output outside said respective predetermined range and simultaneously generating a code signal corresponding to said output of said measured data signal generator having an output outside said respective predetermined range;
a preference signal selecting unit operatively connected to said time signal generator, said measured data signal generator, and said abnormal state signal generator for selectively gating, as its output, the output of one of said time signal generator, measured data signal generator, and abnormal state signal generator;
a display unit responsive to the selectively gated output of the preference signal selecting unit;
a manual operator control means operatively connected to said measured data signal generator and said preference signal selecting unit for controlling said multiplexer to control the output of said measured data signal generator inputted to said preference signal selecting unit; wherein said preference signal selecting unit comprises signal selecting means for enabling the display unit to display the output of said abnormal state signal generator when said abnormal state signal generator produces an output, for enabling the display unit to display the output of said measured data signal generator under the simultaneous occurrence of the absence of an output from said abnormal state signal generator and a manually entered control input in said manual input means, and for enabling said display unit to display the output of said time signal generator under the simultaneous occurrence of the absence of outputs from said abnormal state generator and said measured data signal generator.

4,287,504
WARNING DEVICE WITH CENTRAL INDICATION OF OPERATING CONDITIONS TO BE MONITORED IN MOTOR VEHICLES

Ernst-Ulrich Simon, Oberursel, and Horst Ullrich, Schöneck, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,598
Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821344
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—52 F **10 Claims**

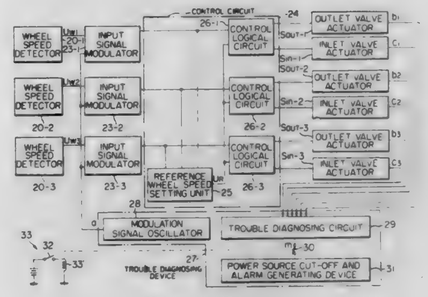


1. A warning device with central indication of operating conditions to be monitored in motor vehicles having an analog time clock with an instrument dial of the clock, and with an indicator device which is controllable by a monitoring device, comprising
an indicator device being arranged in the analog time clock, the instrument dial at several positions being translucent with designations applied at said positions of the monitored operating conditions,
a monitoring means for controlling illumination of the translucent positions from a rear side of the instrument dial so that said designations visibly stand out from its surroundings, whereby information to be indicated is readable from the instrument dial, said indicator display includes at least one field including a light surface means for signaling a trouble situation, an indicator surface means for the designation of the respective operating condition at the time as well as a numeral surface, the latter constituting means for representation of the number of simultaneously occurring trouble operating conditions.

4,287,505
TROUBLE DIAGNOSING DEVICE OF CONTROL CIRCUIT SYSTEM

Taiji Ohmori, Kawagoe; Makoto Sato, Kamifukuoka, and Yoshikazu Tsuchiya, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,376
Claims priority, application Japan, Jul. 21, 1978, 53-89266; Feb. 19, 1979, 54-18082
Int. Cl.³ B60T *17/22*
U.S. Cl. 340—52 B **10 Claims**



1. In a control system, a trouble diagnosing device for diagnosing trouble in a control circuit or in an actuator wherein said control circuit receives an input signal representative of information about a controlled means which is controlled by the actuator and transmits controlling indicia to the actuator for controlling the operation of the controlled means; said trouble diagnosing device comprising:
a modulation signal means for feeding to the input side of the control circuit a trouble diagnosing signal having such a narrow pulse width that the actuator is not able to respond thereto, said trouble diagnosis signal being independent of the input signal related to the controlled means;
input signal modulator means for modulating the input signal related to the controlled means by the trouble diagnosing signal to produce a modulation signal; and
a trouble diagnosing circuit means for producing output signals indicating trouble in the control circuit or in the actuator when the control circuit or the actuator receives the modulation signal from said input signal modulator and in response thereto emits a signal having other than a predetermined waveform.

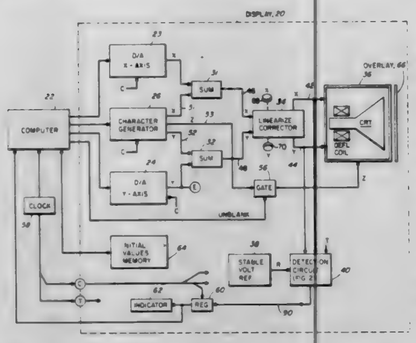
4,287,506
VOLTAGE GENERATOR WITH SELF-CONTAINED PERFORMANCE MONITOR

Gerald P. Richards, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 22, 1978, Ser. No. 972,311
Int. Cl.³ H01J *29/56*; H04N *9/24*
U.S. Cl. 340—146.3 R **13 Claims**

1. A computer driven system having a performance monitoring circuit comprising:
means for generating random coordinate position signals;
a source of reference signals;
means for comparing a predetermined set of said coordinate position signals with said reference signals during a first and second interval of time, said comparing means sensing the relative magnitudes of said coordinate position signals and said reference signals; and
means for detecting drift greater than a predetermined

amount in said predetermined set of coordinate position signals as a function of a change in the relative magnitudes



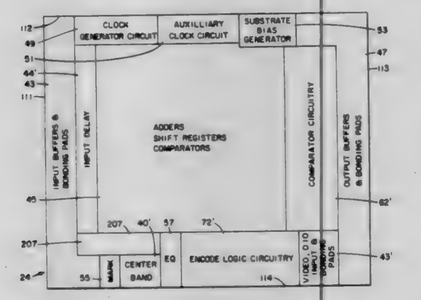
from a comparison made in said first interval to a comparison made in said second interval.

4,287,507

TOPOGRAPHY FOR INTEGRATED CIRCUIT PATTERN RECOGNITION ARRAY

Michael M. Janes, Colorado Springs, and Rodney H. Orgill, Woodland Park, both of Colo., assignors to NCR Corporation, Dayton, Ohio

Filed May 30, 1979, Ser. No. 43,929
Int. Cl.³ G06K *7/14*
U.S. Cl. 340—146.3 Z **7 Claims**



1. An integrated circuit for sequentially receiving a plurality of binary interval numbers each representing the width of a time interval occurring during optical scanning of a bar coded label, the integrated circuit receiving a plurality of signals each representing whether a respective one of the time intervals is a bar or a space, said integrated circuit comprising in combination:

a. first means for receiving and storing said binary interval numbers;

b. second means for adding predetermined ones of said stored binary interval numbers and storing the resulting sums;

c. third means responsive to said first and second means for comparing predetermined ones of said sums and said stored resulting sums to produce a plurality of intermediate logic signals;

d. fourth means responsive to said third means for encoding predetermined ones of said intermediate logic signals to produce a digital character number representing a character scanned on the bar encoded label; and

e. output means for outputting said digital character number;

said integrated circuit having first, second, third and fourth sequentially located edges, said first means being located substantially closer to said first edge than to said third edge to reduce lengths of conductors conducting signals representing said binary interval numbers from respective input pads which are located along said first edge, said third means being located substantially closer to said third edge than to said first edge, said second means being located generally between said first means and said third means to reduce capacitances of clock signal conductors which are distributed through said second means,

said fourth means being located substantially closer to said fourth edge than to said second edge to reduce the lengths of said second and fourth edges, wherein said first means includes a plurality of bonding pads and input buffer means for receiving said binary interval numbers and first delay means coupled to said input buffer means for temporarily storing and delaying binary interval numbers received by said bonding pads, said first delay means being located between said input buffer means and said second means immediately adjacent to said input buffer means in order to avoid degradation of voltage of input signals transmitted from said input buffer means to said delay means,

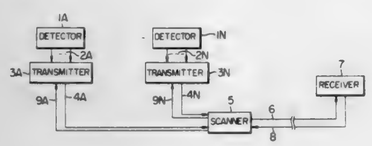
said integrated circuit including clock signal generating means for producing clock signals to be distributed to various portions of said integrated circuit and a metal power bus connected to a bonding pad, said metal power bus extending from a location adjacent to said first edge through said first means to said second means between upper and lower portions of said power means, said clock signals being conducted on metal conductors and diffused crossunders which pass beneath the portion of said metal power bus extending through said first means, the placement of said portion of said metal power bus extending through said first means being selected to avoid delay of certain of said clock signals to circuitry in each upper portion of said first means.

4,287,508

INFORMATION TRANSMITTING AND RECEIVING APPARATUS

Setsuo Arita, Hitachi, and Takao Sato, Tokaimura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,146
Claims priority, application Japan, Sep. 8, 1978, 53-109748
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—150 **12 Claims**



1. An information receiving apparatus for receiving information in the form of sets of sequentially-transmitted information signals, each information signal including synchronizing signal, address signal and data signal portions and representing a segment of an information set, comprising

first means for storing the data signal portion of a currently-received information signal;

second means for separately storing the data signal portions of the previously-received information signals of the immediately-preceding information set;

third means connected to said first means for comparing the data signal portion stored in said first means with a data signal portion stored in said second means;

fourth means responsive to the synchronizing signal portions of said received information signals for reading out to said third means the stored data signal portion in said second means which corresponds to the same segment within an information set as the data signal portion stored in said first means; and

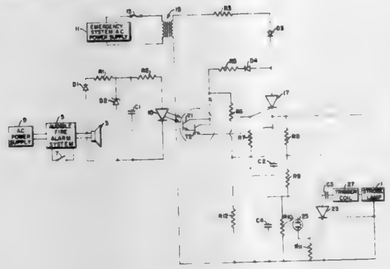
fifth means responsive to said third means for providing a retransmission command signal when lack of comparison between data signal portions is detected by said third means.

4,287,509

SOUND AND LIGHT SIGNALING SYSTEM

Daniel H. Beggs, 191 Dickinson St., Rochester, N.Y. 14621

Filed Mar. 26, 1979, Ser. No. 23,538
Int. Cl.³ G08B *7/00*
U.S. Cl. 340—326 **4 Claims**



1. In a signaling system of the type adapted to produce audible signals in the event of emergency conditions, the improvement comprising:

(a) an opto-electronic isolator for sensing at one location the application of power to the audible signaling system and for providing an output signal in response thereto at a second location physically separated from the audible signaling system;

(b) at least one high intensity lamp of the type producing illumination of such intensity and duration so as to excite the human optic senses;

(c) a source of potential; and

(d) a trigger circuit connected to said lamp, said source of potential and said opto-electronic isolator, said trigger circuit applying enabling potential to said lamp from said source of potential in response to the receipt of an output signal from said opto-electronic isolator.

4,287,510

ELECTRONIC SIGNAL GENERATOR WITH PERIODICALLY VARYING FREQUENCY

Martin Siegwarth, Esslingen, Fed. Rep. of Germany, assignor to Richard Hirschmann Radiotechnisches Werk, Esslingen, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,894
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852196
Int. Cl.³ G08B *3/00*
U.S. Cl. 340—384 E **12 Claims**

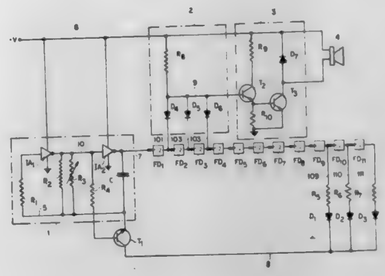
1. A signal generator comprising:

an oscillator provided with electronically adjustable tuning means for varying the operating frequency thereof;

frequency-dividing means connected to said oscillator for generating on an output terminal thereof a periodically varying control signal subharmonically related to said operating frequency;

feedback means extending from said output terminal to said tuning means for periodically modifying said operating frequency in response to said control signal; and

a load circuit connected to said oscillator in parallel with at least part of said frequency-dividing means for tapping off



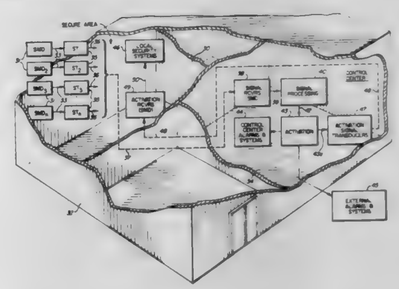
a useful signal whose frequency is substantially higher than that of said control signal.

4,287,511

INTRUSION ALARM SYSTEM UTILIZING STRUCTURAL MOMENT DETECTOR AS INTRUSION SENSOR AND AS RECEIVER FOR MECHANICAL INTRUSION AND COMMAND SIGNALS

David R. Scott, Lancaster, Calif., and Thomas S. Rhoades, Colorado Springs, Colo., assignors to Scott Science and Technology, Inc., Lancaster, Calif.

Filed Oct. 22, 1979, Ser. No. 86,772
Int. Cl.³ G08B *13/10*
U.S. Cl. 340—541 **4 Claims**



1. An intrusion alarm-security system for detecting unauthorized entry of persons into a defined secure area within a building structure, for generating and transmitting signals responsive to such intrusion and for activating security systems in response to such intrusion signals, said system comprising:

(a) at least one structural moment detector carried by a structural member of said building, located within said secure area, said structural moment detector generating intrusion signals responsive to the deflection of said structural member induced by changes of the loading on said member caused by an intrusion and being insensitive to linear distortions of said member;

(b) means for transmitting said intrusion signals to a control center; and

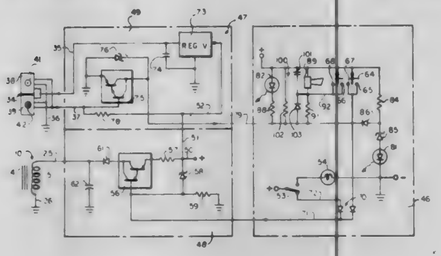
(c) means in said control center for receiving said intrusion signals and for generating security system activation signals in response thereto.

4,287,512

MAGNETIC LOCKING METHODS AND APPARATUS

C. Marlon Combs, Claremont, Calif., assignor to Dynametric, Inc., Pasadena, Calif.

Filed Mar. 31, 1980, Ser. No. 136,012
Int. Cl.³ G08B 13/22
U.S. Cl. 340—542 30 Claims



15. In apparatus for operating a magnetic locking assembly having matching first and second magnetizable components, the improvement comprising in combination:

means for magnetically attracting said first and second components into mating relationship whereby a predetermined magnetic flux is established in one of said components; and

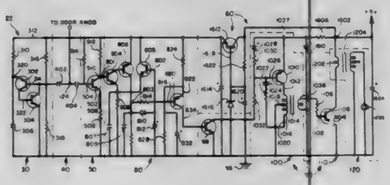
means coupled to said attracting means for monitoring said established predetermined flux to detect locking power diminutions between said components.

4,287,513

DOOR KNOB ALARM DEVICE

Hau C. Lam; Thomas K. P. Lee, and Y. C. Cheng, all of Kowloon, Hong Kong, assignors to International Quartz Ltd., Kowloon, Hong Kong

Filed May 3, 1979, Ser. No. 35,721
Int. Cl.³ G08B 13/22
U.S. Cl. 340—562 19 Claims



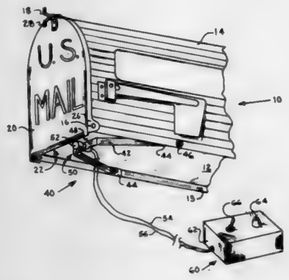
1. A doorknob alarm device comprising a body, means for hanging said device from a doorknob, electronic circuit means within said body including an oscillator circuit, a capacitance network coupled to the output of said oscillator circuit, an amplifier circuit coupled to the output of said capacitance network, means for electrically coupling said capacitance network to the doorknob so as to form an input to said electronic circuit means, self-initializing and self-compensating, oscillatory signal level detecting circuit means without manual sensitivity adjustment coupled to the output of said amplifier for detecting drops in the signal level from said amplifier such as would be caused by the addition of capacitance to said capacitance network when someone's hand comes close to or touches the doorknob on which said device is hung, an alarm circuit coupled to the output of said signal level detecting circuit, said alarm circuit being triggered by said signal level detecting circuit and a regulated D.C. power supply for supplying voltage to said electronic circuit means.

4,287,514

MAILBOX ANNOUNCER

Carl E. Wartman, 29 Colonial Dr., Cocoa Beach, Fla. 32931, and George Dussich, 7007 N. Atlantic Ave., Suite 207, Cape Canaveral, Fla. 32920

Filed Apr. 16, 1980, Ser. No. 140,725
Int. Cl.³ G08B 21/00
U.S. Cl. 340—569 8 Claims



1. A signaling device for being coupled to a mailbox of a type including a generally horizontal base and an upward extending container coupled thereto for defining an entryway and a storage compartment therein, a door for closing over the entryway, a hinge coupled between the base and a section of the door above a lower edge thereof so as to define a lower cantilevered tongue section of the door which rotates toward the base as the door is opened, said signaling device comprising in combination:

switch means mounted adjacent a lower surface of the base and adjacent to the tongue section of the door for generating a first signal responsive to operative communication with the tongue section of the door as the door is opened;

a U-shaped bracket having said switch means coupled to a central deformable section thereof and further having distended ends thereof coupled to the base for support, said central deformable section of said U-shaped bracket being flexible in order to deform responsive to an additional opening displacement of the door beyond that displacement necessary in order to actuate said switch means, whereby said switch means may be located immediately adjacent to the tongue section of the door for sensing small displacements thereof without being damaged by unexpectedly large displacements of the door; and

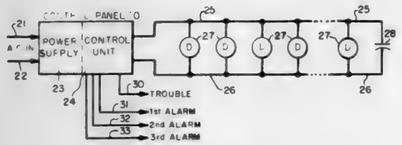
electrical signal means coupled to said switch means for generating a sensory perceptible signal responsive to receiving said first signal.

4,287,515

FIRE DETECTION SYSTEM WITH MULTIPLE OUTPUT SIGNALS

Samuel Raber, Allendale; John M. Wynne, Oak Ridge, and Alan M. Heim, Florham Park, all of N.J., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Apr. 27, 1979, Ser. No. 33,777
Int. Cl.³ G08B 17/06
U.S. Cl. 340—584 9 Claims



1. A fire detection system comprising:

a control unit for providing an energizing potential difference;

a pair of conductors connected to receive the energizing potential difference from the control unit;

a plurality of fire detectors, each connected in parallel across said conductor pair, and each of which signals an alarm in the same manner, by presenting a low impedance across said conductor pair; and

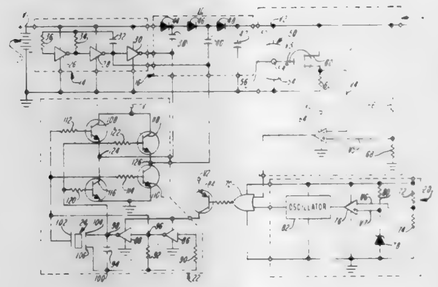
circuit means in said control unit, coupled to said conductor pair to receive status information from the detectors over the same conductor pair which supplies the energizing potential difference to the detectors, which control unit is effective to provide a first alarm output signal when a first one of the detectors is alarmed, and to provide a second alarm output signal when any of the remaining detectors is subsequently alarmed.

4,287,516

MINIMAL ENERGY DISSIPATING DETECTOR

Charles Coleman, Lakewood, Colo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 23, 1979, Ser. No. 68,936
Int. Cl.³ G08B 17/10
U.S. Cl. 340—629 8 Claims



1. A combustion products detection apparatus having a load which minimizes the amount of energy required for proper operation by controlling the magnitude of power delivered to the load of the apparatus, said apparatus comprising:

a source of power;

means for detecting the presence of a predetermined concentration of combustion products;

first power supplying means connected to said power source and said detecting means for delivering power to the load of the apparatus when the predetermined concentration of combustion products is not present, said first power supplying means including oscillator means for outputting a signal having a first predetermined frequency; and

second power supplying means responsive to said detecting means when the predetermined concentration of combustion products is present, said second power supplying means increasing the power supplied to the load of the apparatus when the predetermined concentration of combustion products is present, said second power supplying means outputting a signal having a second predetermined frequency.

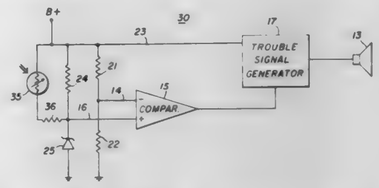
4,287,517

CIRCUIT FOR ELIMINATING LOW BATTERY VOLTAGE ALARM SIGNAL AT NIGHT

Richard A. Nagel, West Chicago, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Jan. 25, 1980, Ser. No. 115,606
Int. Cl.³ G08B 21/00, 17/10
U.S. Cl. 340—636 13 Claims

1. In a battery voltage alarm circuit including means for comparing a first signal which is a function of the battery voltage to a relatively fixed reference signal and indicating means for providing an alarm output when the first signal is less than the reference signal to indicate low battery voltage,



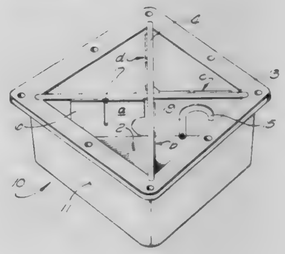
the improvement comprising condition-responsive control means for automatically shifting the level of one of the first and reference signals for varying the difference therebetween thereby to vary the time at which the alarm output can occur.

4,287,518

CAVITY-BACKED, MICRO-STRIP DIPOLE ANTENNA ARRAY

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Haynes Ellis, Jr., Chino, Calif.

Filed Apr. 30, 1980, Ser. No. 145,206
Int. Cl.³ H01Q 1/38
U.S. Cl. 343—700 MS 12 Claims



1. An antenna system particularly adapted for mounting flush with the skin surface of a reentrant air/space vehicle, to generate selectable sum and difference, circularly polarized radiation patterns from an aperture substantially flush with said skin surface comprising: a conductive cavity of substantially square cross-section in a plane parallel to said skin surface and of uniform depth internal to said vehicle, said cavity providing an aperture substantially at said flush mounting at said skin surface; first means within said cavity comprising a pair of dielectric boards each in a plane normal to said cavity cross-sectional plane, said boards each fitting between opposite corners of said cavity and intersecting orthogonally substantially at the center of said cavity; second means comprising a plurality of printed circuit dipoles, located two to the broad surface of each of said boards, one on either side of said board intersection; third means comprising a printed circuit feed trace on the opposite side of said dielectric board from each said dipoles, said traces each feeding a corresponding dipole through said board dielectric; fourth means comprising an external connection for each of said feeds to facilitate independent excitation control for each of said dipoles; and fifth means comprising a first four-port hybrid connected from two orthogonally adjacent dipole feeds of said third means to provide a first combined signal, a second four-port hybrid connected from the two remaining dipole feeds of said third means to produce a second combined signal, and a four-port comparator hybrid connected discretely at two of its ports to said first and second combined signals, said comparator hybrid also having

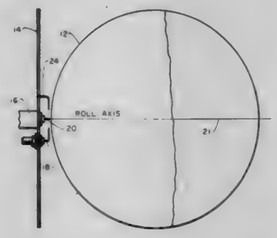
Σ and Δ ports such that selective excitation of one of said Σ and Δ ports produces a corresponding antenna pattern.

4,287,519

MULTI-MODE LUNEBERG LENS ANTENNA

Kazumasa Doi, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1980, Ser. No. 137,177
Int. Cl.³ H01Q *19/06*
U.S. Cl. 343—725 **15 Claims**



1. A multi-mode microwave lens antenna system using a common aperture for use in transmitting and receiving microwave radiation substantially in the direction of the antenna roll axis, comprising:
(a) a metallic ground plane having its center on the antenna roll axis with said roll axis being normal thereto;
(b) a microwave lens mounted with its primary axis along the antenna roll axis with its focal point close to said ground plane;
(c) a plurality of separate antenna feeds mounted about the center of said ground plane and said antenna roll axis;
(d) said plurality of separate antenna feeds including at least two bent-stub coaxial feeds;
(e) said bent-stub coaxial feeds having the ends thereof bent at an angle of 90 degrees with the bent ends being parallel to said ground plane at a selected distance in wavelength above said ground plane; the length of said bent ends being a desired dimension in wavelength;
(f) said bent-stub coaxial feeds being oriented such that the bent ends thereof point at the antenna roll axis;
(g) the orientation and position of said antenna feeds being operable to direct both horizontally-polarized and vertically-polarized antenna radiation through said microwave lens in the general direction of said antenna roll axis;
(h) said microwave lens being operable to focus microwave transmissions to and from said antenna feeds to provide antenna performance with high gain and narrow bandwidth.

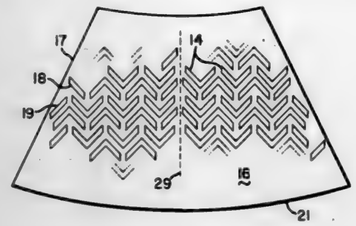
4,287,520

SLOT CHEVRON ELEMENT FOR PERIODIC ANTENNAS AND RADOMES

Robert M. Van Vliet, Greene County, Ohio, and William R. Bushelle, St. Charles, Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 9, 1979, Ser. No. 92,817
Int. Cl.³ H01Q *15/02*
U.S. Cl. 343—909 **4 Claims**

1. A metallic radome, comprising:
a. a curved surface of thin metallic material;
b. a plurality of chevron-shaped slots in said curved surface;
c. said chevron-shaped slots being formed of two linear slot elements connected end-to-end at an angle of substantially 90°;



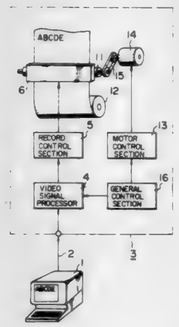
d. said chevron-shaped slots being uniformly distributed on said curved surface in a closely spaced pattern with adjacent linear slot elements parallel to each other.

4,287,521

CRT HARD COPY APPARATUS WITH MULTI-DIRECTIONAL SAMPLING AND PRINTING

Akiyoshi Hakoyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 132,649
Claims priority, application Japan, Mar. 24, 1979, 54-33807
Int. Cl.³ G01D *9/00, 15/10*; H05B *3/00*
U.S. Cl. 346—35 **8 Claims**



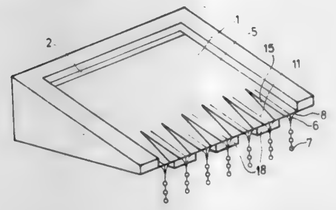
1. A CRT hard copy apparatus for sampling a picture signal from a CRT display and recording the sampled signal on a recording paper, comprising:
a first sampling means for sampling said picture signal in the horizontal scanning line direction to produce a first sampled signal;
a second sampling means for sampling said picture signal in the vertical direction perpendicular to the horizontal scanning lines to produce a second sampled signal;
a switching means for selecting either of said first and second sampled signals;
a record control means for producing a record signal based on a selected sampled signal; and
a record head for recording said sampled picture signal on said recording paper on the basis of said record signal.

4,287,522

APPARATUS AND A METHOD FOR RECORDING INFORMATION

Rudolf Meyer, Leverkusen, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,703
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913219
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



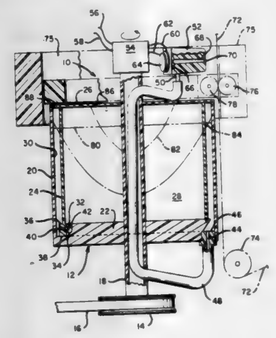
1. A method of producing multiple liquid threads and liquid droplets for recording information on a data carrier, characterised in that
(a) The recording liquid for producing the liquid threads flows out of at least one feed slit in the upper portion of an inclined cascade outlet face,
(b) the liquid flows as a film over the outlet face and, in so doing, homogenises into a film,
(c) the homogeneous liquid film is broken up into liquid threads in the lower region of the entire width of the cascade outlet face,
(d) the liquid threads are broken up into droplets,
(e) the droplets fall vertically downwards in free fall parallel to each other,
(f) the droplets which are unwanted for information are separated and fed to a collector,
(g) and the droplets which are required for information impinge upon a data carrier, the data carrier being moved beneath the curtain of falling droplets.

4,287,523

VALVE FOR INK JET PRINTER

Jacob E. Thomas, and Victor J. Italiano, both of Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 19, 1980, Ser. No. 122,106
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **20 Claims**



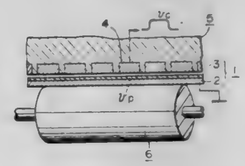
1. A system for controlling the ink supply for a rotary printer having a print head for ejecting ink droplets onto record media, said system comprising a
rotatable ink reservoir having a first cavity and a second cavity, an
ink supply line connected with said second cavity and with said print head, and
valve means positioned to control the flow of ink between said first cavity and said second cavity wherein the ink is free to flow between said cavities when said reservoir is at rest and wherein, responsive to centrifugal force, the ink is prevented from flowing between said cavities upon rotation of said reservoir.

4,287,524

ELECTROSTATIC RECORDING METHOD WITH DELAYED CONTROL VOLTAGE

Masaru Ohnishi, and Kazuhiro Samejima, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,821
Claims priority, application Japan, Jul. 25, 1978, 53-91065
Int. Cl.³ G03G *15/048*
U.S. Cl. 346—154 **2 Claims**



1. An electrostatic recording method for forming an electric charge image on a dielectric layer by (1) contacting a one surface control electrostatic recording head having rows of many recording needle electrodes and control electrodes adjacent to said recording needle electrodes, with the dielectric layer formed on a recording medium having a conductive substrate, and (2) applying a recording voltage to the recording needle electrodes and applying a control voltage having smaller rise time constant than the recording voltage to the control electrodes in the same period; the improvement wherein:
the control voltage is applied to the control electrodes at a time, T_d, later than the application of the recording voltage to the recording needle electrodes, T_d being of a size so that the total voltage induced in the conductive substrate by the control voltage and the recording voltage has reached a potential equal to a large fraction of the maximum potential, and T_d being significantly less than the time necessary for crosstalk voltage attenuation; whereby variations in environmental humidity and temperature do not effect recording density.

4,287,525

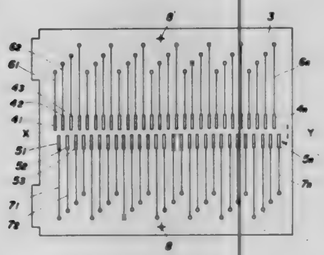
MULTI-PIN RECORD ELECTRODE ASSEMBLY AND DRIVING METHOD OF THE SAME

Takao Tagawa, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 19, 1978, Ser. No. 943,870
Claims priority, application Japan, Sep. 21, 1977, 52-116203; Sep. 22, 1977, 52-129096[U]; Aug. 28, 1978, 53-105325
Int. Cl.³ G01O *15/06*; G03G *13/00*
U.S. Cl. 346—155 **9 Claims**

1. A multi-pin record electrode assembly comprising:
an insulating substrate folded into two substrate portions along a fold line; and
first and second electrode sets formed on said substrate along said fold line, said first electrode set including a plurality of closely spaced electrodes arranged at a predetermined distance from each other along a first side of said fold line,

said second electrode set including a plurality of closely spaced electrodes arranged at said predetermined distance from each other along a second side of said fold line, said second electrode set being offset along said fold line from said first electrode set approximately one half said predetermined distance said electrodes of each set are spaced from each other;



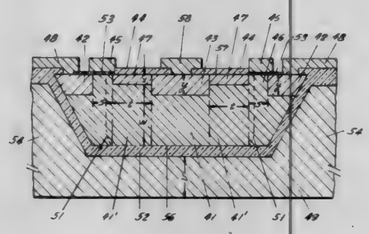
said substrate being folded so as to form a record electrode assembly having an edge formed along said fold line, said first and second electrode sets having alternating electrodes presented along said edge.

4,287,526

INSULATED GATE FIELD EFFECT TRANSISTOR

Hiraku Sakuma, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Japan

Continuation of Ser. No. 903,564, May 8, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,376
Claims priority, application Japan, May 9, 1977, 52/52857
Int. Cl.³ H01L 29/72
U.S. Cl. 357—23 **17 Claims**



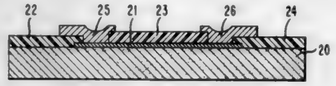
1. An insulated gate field effect transistor, comprising:
an insulator body having a generally planar major surface;
a semiconductor layer of a first conductivity type formed on said insulator body major surface, said semiconductor layer having a generally planar, major surface lying parallel to said insulator body major surface;
a source region of a second conductivity type, opposite of that of said first conductivity type, formed in said semiconductor layer along said major surface of said semiconductor layer;
a drain region of said second conductivity type formed in said semiconductor layer along said major surface of said semiconductor layer and spaced from said source region with a channel region lying therebetween;
an extension region of said second conductivity type formed in said semiconductor layer and extending from one of said source and drain regions to said channel region, said extension region having an impurity concentration lower than that of said one of said source and drain regions, one surface of said extension region being coincident with said major surface of said semiconductor layer, a second surface of said extension region being generally parallel to said insulator body surface and spaced therefrom such that a portion of said semiconductor layer lies between said second surface and said insulator body major surface, the total amount of effective impurity of said second conductivity type contained in said extension region being within a difference of 20 percent of the total amount of effective impurity of said first conductivity type contained in said semiconductor layer portion lying between said extension region and said insulator body;
a first insulating film formed on the entire first surface of said extension region;
a gate insulating film formed on said channel region; and
a gate electrode formed on said gate film.

4,287,527

OPTO-ELECTRONIC DEVICES BASED ON BULK CRYSTALS OF COMPLEX SEMICONDUCTORS

Klaus J. Bachmann, Piscataway, N.J., and Charles T. Ryan, Fishkill, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 937,950, Aug. 30, 1978 abandoned. This application Sep. 7, 1979, Ser. No. 73,206
Int. Cl.³ H01L 27/14
U.S. Cl. 357—30 **4 Claims**



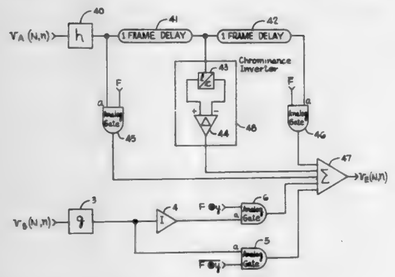
1. A device comprising a rectifying junction between a bulk crystal and an interfacing material characterized in that said bulk crystal has a composition of $Ga_xIn_{1-x}As_yP_{1-y}$ where $0<x\leqq 0.5$ and $0<y<1$, and has a defect density less than 10^6 cm^{-2} whereby current carriers are generated in said bulk crystal by infrared radiation.

4,287,528

TELEVISION SYSTEM

Paul M. Levy, 3 Butternut Ct., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 59,322, Jul. 20, 1979, which is a continuation-in-part of Ser. No. 20,874, Mar. 15, 1979, abandoned. This application Feb. 26, 1980, Ser. No. 124,927
Int. Cl.³ H04N 9/60
U.S. Cl. 358—3 **21 Claims**



1. A television system comprising:
(a) means for providing a first video signal;
(b) means for providing a second video signal in time synchronism with said first video signal;
(c) encoding means for forming a composite video signal of said first video signal and said second video signal, said encoding means including:
(1) means for scaling the amplitude of said first video signal by a first factor;
(2) means for scaling the amplitude of said second video signal by a second factor;

(3) means for alternating the polarity of said scaled second video signal at the line rate;
(4) first means for delaying said scaled first video signal for one frame time;
(5) second means for delaying said delayed first video signal for one frame time;
(6) means for correcting the chrominance phase of said one frame delayed first video signal relative to the chrominance subcarrier reference signal;
(7) multiplexing means for generating a multiplexed first video signal, said multiplexing means including means for time multiplexing said amplitude scaled first video signal and said two frame delayed first video signal such that said amplitude scaled first video signal is passed during odd numbered frames and said two frame delayed first video signal is passed during even numbered frames; and
(8) means for summing said multiplexed first video signal, said chrominance phase corrected video signal and said alternating polarity second video signal to form said composite video signal;
(d) means for transmitting said composite video signal to means for receiving said composite video signal, said receiving means including:
(1) means for recovering said composite video signal from said received composite video signal; and
(2) means for decoding said second video signal from said received composite video signal, said decoding means including:
(a) means for scaling the amplitude of said received composite video signal by the scaling inverse of said second factor;
(b) first means for delaying said scaled composite video signal for one frame time;
(c) second means for delaying said delayed composite video signal for one frame time;
(d) means for correcting the chrominance phase of said one frame delayed composite video signal relative to the chrominance subcarrier reference signal; and
(e) means for forming, during even numbered frames, the absolute difference between said scaled composite video signal and said chrominance phase corrected video signal, and during odd numbered frames, the absolute difference between said chrominance phase corrected video signal and said two frame delayed composite video signal, to recover said second video signal.

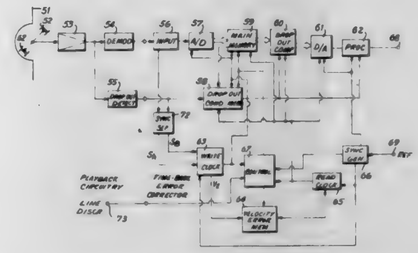
4,287,529

TIME BASE ERROR CORRECTING APPARATUS

Mitsushige Tatami, Ebina, and Kazunobu Tsujikawa, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,508
Claims priority, application Japan, Apr. 28, 1978, 53-51821
Int. Cl.³ H04N 5/76, 5/78, 5/34
U.S. Cl. 358—8 **25 Claims**

1. Time-base error correcting apparatus for correcting time-base errors in a video signal, comprising:
main memory means for storing picture elements in successive line intervals of said video signal;
write-in means for writing the picture elements of each line interval into said main memory means at a write-in clock rate synchronized with the timing information contained in said video signal;
read-out means for reading said stored picture elements of each line interval out of said main memory at a substantially constant reference read-out clock rate;
drop-out detecting means for detecting drop-out conditions in said video signal written into said main memory means, including drop-out conditions in the video information portion and in the synchronizing information portion of said video signal;
drop-out condition memory means for storing representations of detected drop-out conditions in synchronism with the writing in and reading out of said picture elements of each line interval into and from said main memory means, respectively, such that if a picture element is dropped out, a representation that said picture element has dropped out is stored in said drop-out condition memory means, and if synchronizing information is dropped out, a representation that said synchronizing information has dropped out is stored in said drop-out condition memory means; and



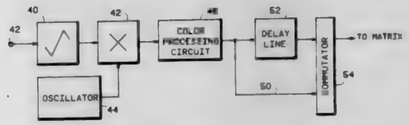
drop-out compensating means coupled to said main memory means for receiving each picture element of each line interval read out from said main memory means and normally operative to transmit each received picture element, said drop-out compensating means being responsive to a stored representation of a drop-out condition read out of said drop-out condition memory means to replace the picture element then received from said main memory means with a picture element disposed in the same relative position of the immediately preceding line interval.

4,287,530

DEMODULATOR SYSTEM INCLUDING A TUNABLE DISCRIMINATOR SUITABLE FOR USE IN A SECAM TELEVISION RECEIVER

Michael J. Gay, Chancy, and Johannes A. Gutmann, Geneva, both of Switzerland, assignors to Motorola Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,347
Int. Cl.³ H04N 9/50
U.S. Cl. 358—23 **4 Claims**



1. A demodulator circuit for demodulation of an applied television chrominance signal, the chrominance signal comprising first and second sequential subcarrier frequencies frequency modulated by respective R-Y and B-Y chroma information signals, including a single frequency discriminator, the improvement comprising:
the discriminator having an electrically tunable center frequency, said center frequency being repetitively tuned to a nominal center frequency during a part of a flyback period in response to a first control signal to produce a zero level output with a known reference frequency being applied thereto, the discriminator being offset by second and third control signals to first and second alternating center frequencies such that a zero output level is provided at the output of the discriminator at each of the two subcarrier frequencies, the zero output levels obtained in response to said subcarrier reference signals being caused

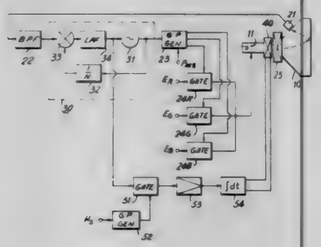
to be the same as said zero output level obtained in response to said known reference frequency.

4,287,531

DEFLECTION CONTROL APPARATUS FOR A BEAM INDEX COLOR CATHODE RAY TUBE

Ichiro Mitamura; Akira Tooyama, both of Tokyo, and Takashi Hosono, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,557
Claims priority, application Japan, Nov. 21, 1978, 53-143760
Int. Cl.³ H04N *9/24*
U.S. Cl. 358—67 **15 Claims**



1. Deflection control apparatus for a beam index color television receiver of the type including a cathode ray tube adapted to display a video picture in response to a received color television signal, said cathode ray tube having index stripes disposed to be scanned by the electron beam of said cathode ray tube; detecting means for detecting when respective index stripes are scanned by said beam to produce an index signal, the frequency of said index signal varying from a predetermined frequency value when the scanning speed of said beam varies; oscillating means for generating an oscillating signal whose frequency is synchronized with said index signal; phase-locked loop means including comparing means for comparing said index signal to said oscillating signal to produce a control signal as a function of the difference therebetween and to adjust the frequency of said oscillating signal in accordance with said control signal; and switching means for switching color information signals to modulate said beam in response to said oscillating signal; said deflection control apparatus comprising deflection means for controlling the deflection of said beam; and integrating means for integrating said control signal to produce an integrated deflection control signal, the integrated deflection control signal being supplied to said deflection means to vary the deflecting speed of said beam and thereby maintain a substantially constant scanning speed thereof.

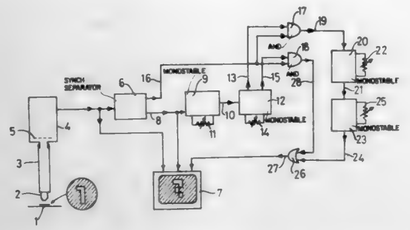
4,287,532

IMAGE-SHEARING APPARATUS

Derek S. Moore, York, England, assignor to Vickers Limited, London, England

Filed Oct. 15, 1979, Ser. No. 85,067
Claims priority, application United Kingdom, Oct. 27, 1978, 42156/78
Int. Cl.³ H04M *7/18*
U.S. Cl. 358—107 **16 Claims**

1. Image-shearing apparatus comprising a television camera tube for receiving an optical image from a microscope objective and producing an output signal representative of the image; electrical circuitry coupled to said camera and responsive to the output signal for providing one or more display signals; and at least one television display unit which has a monitor and is coupled to said electrical circuitry and responsive to the one or more display signals to produce on said television monitor an image corresponding to the optical image in which at least one horizontal band of each frame is uniformly shifted laterally



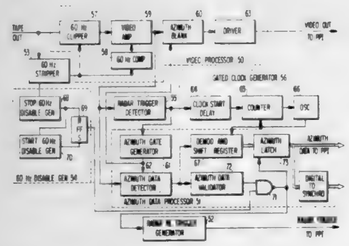
by a selectively variable amount relative to the remainder of the frame.

4,287,533

APPARATUS FOR RECORDING AND PLAYING BACK RADAR VIDEO WITH CONVENTIONAL VIDEO RECORDER

Carl E. Schwab, Huntington Station; Peter Foley, Manhasset, and Charles A. Caputo, Stony Brook, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 783,887, Apr. 1, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,703
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—127 **9 Claims**



1. Apparatus to adapt signals from a radar system for recording on a TV video recorder and to adapt played back signals from said TV video recorder to drive a PPI display, said apparatus including a multiplexer providing to said TV video recorder a signal stream including a radar timing signal, a pulse stream containing azimuth information, a radar video signal, and a head synchronizing pulse stream of pulse rate independent of said radar timing signal and a demultiplexer for adapting said played back signal, comprising a replica of said signal stream, for driving said PPI display, said demultiplexer comprising:

video processor means responsive to said played back signal for outputting only said radar video signal to said PPI display,

disable generator means responsive to said head synchronizing pulse stream for providing a control pulse stream of rate equal to said head synchronizing pulse rate but of width larger than said head synchronizing pulse,

means for demodulating said pulse stream containing azimuth information,

coupling means responsive to said means for demodulating for coupling azimuth information to said PPI display,

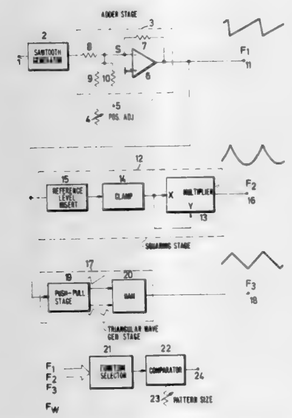
and inhibiting means for inhibiting operation of said coupling means during the duration of any of said control pulses.

4,287,534

METHOD AND SYSTEM FOR CREATING A GEOMETRIC FIGURE AT A SELECTED POSITION ON THE SCREEN OF A CATHODE RAY TUBE

Winfried Pohl, Büttelborn, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,257
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853675
Int. Cl.³ H04N *5/22*
U.S. Cl. 358—183 **17 Claims**



1. In a method for generating control signals for wipe transitions of video signals in the form of a geometric figure at a selectable position on the screen of a cathode ray tube, wherein the shape of said geometric figure is controlled by combination of a plurality of input signal sequences each having a predetermined variation with respect to time, a process for changing said position on said screen of said geometric figure in dependence on the setting of an externally controllable adjustment element, comprising the steps of

adding a DC signal having an adjustable amplitude to at least one of said input signal sequences; and

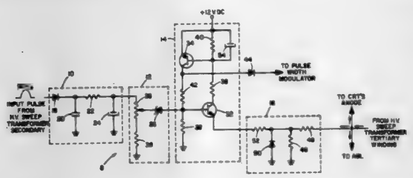
varying said amplitude of said DC signals in dependence upon said setting of said adjustment element, whereby said position on said screen of said geometric figure depends upon said setting of said externally controllable adjustment element.

4,287,535

HIGH VOLTAGE SHUTDOWN CIRCUIT WITH CURRENT FEEDBACK FOR CATHODE RAY TUBE

Bharat N. Vakil, Coral Springs, Fla., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 24, 1979, Ser. No. 87,901
Int. Cl.³ H04N *5/68*
U.S. Cl. 358—243 **9 Claims**



1. In a television receiver having a cathode ray tube display device in which is produced an electron beam current and including an output transformer, said output transformer including a primary winding energized by a high voltage generation network responsive to periodically recurring input voltage pulses from a pulse width modulator, a tertiary winding energized by said primary winding coupled to an ultor of said cathode ray tube for applying a first high voltage to said ultor for initiating electron beam current in said cathode ray tube and coupled to a control grid of said cathode ray tube for applying a second lower voltage to said control grid for regulating electron beam current intensity, and an output pulse secondary winding energized by said primary winding for generating output pulses proportional in magnitude to the high voltage applied to said ultor, a high voltage shutdown circuit comprising:

DC voltage level conversion means for receiving pulses from said output pulse secondary winding and for converting said output pulses to a DC voltage level, said DC voltage level being proportional to the ultor voltage;

DC voltage level threshold detecting means coupled to said DC voltage level conversion means for producing an output proportional in magnitude to said DC voltage level when said DC voltage level corresponding to a predetermined ultor voltage exceeds a predetermined value, with no output produced when said predetermined DC voltage level is not exceeded;

transistor conducting means for coupling said DC voltage level threshold detecting means to said pulse width modulator such that the output of said pulse width modulator to said high voltage generation network is a DC level signal when said predetermined ultor voltage is exceeded, said DC level signal rendering the high voltage generation network inoperative thereby turning off said output transformer and said cathode ray tube; and

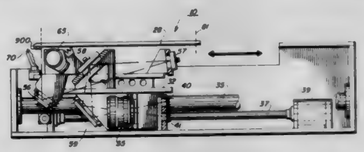
voltage biasing means coupling the second lower voltage output of said tertiary winding to said transistor conducting means for varying said predetermined ultor voltage required for turning on said high voltage shutdown circuit as a function of output transformer tertiary winding current, thus permitting safe cathode ray tube operation at optimum voltage level and electron beam current intensity combinations.

4,287,536

GAIN CONTROL FOR SCANNING ARRAYS

Douglas G. Wiggins, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 12, 1979, Ser. No. 84,201
Int. Cl.³ H04N *1/40, 3/14*
U.S. Cl. 358—282 **8 Claims**



1. In a raster scanner having at least two arrays, each of said arrays having plural image viewing elements for viewing an original to provide video signals representative of the image on the original being viewed, the combination of:

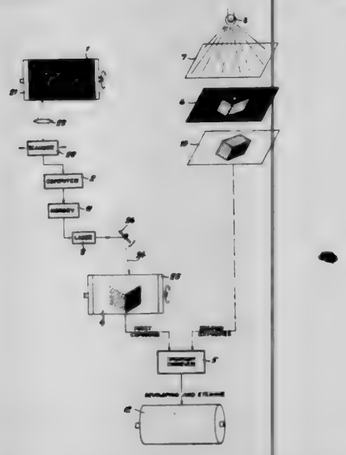
(a) a calibration strip having an image of preset optical density for scanning by said arrays;

(b) comparator means for comparing the signal output of at least one viewing element in each of said arrays from scanning said calibration strip with a preset reference signal to provide at least one corrective signal for each of said arrays;

(c) means for modifying the signal output level of each of said arrays in accordance with the corrective signal for that array,

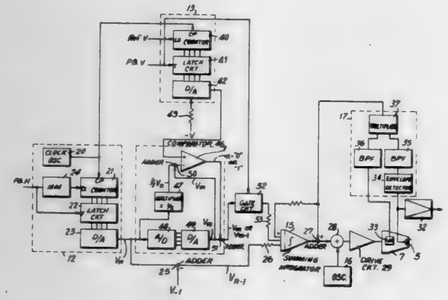
(d) the viewing fields of adjoining arrays overlapping to assure an uninterrupted scan line; and
(e) crossover means effective on readout of the image signals from said arrays to crossover from a viewing element of one array to the next succeeding viewing element of the next array within said overlap;
said one viewing element from each of said arrays consisting of only said array viewing elements in the areas where said arrays overlap whereby to minimize differences between said arrays at the point of crossover.

4,287,537
METHOD OF REPRODUCING GRAPHIC MATERIAL ON AN INTAGLIO FORM
Paul Pfau, Essen; Thomas E. Fausel, and Arthur Grunder, both of Ostfildern, all of Fed. Rep. of Germany, assignors to Simom S.A., Zug, Switzerland
Filed Feb. 9, 1979, Ser. No. 10,994
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805874
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—299 **5 Claims**



1. A method of reproducing copy on a printing surface, comprising the steps of:
preparing a basic planographic halftone image from the copy to be reproduced, said basic image being divided into a multiplicity of disjointed elemental areas of different tonal values;
photoelectrically scanning said basic image to generate a train of analog pulses varying in amplitude with the tonal values of said elemental areas;
transforming said analog pulses into binary pulse codes;
sweeping a laser beam, modulated by said binary pulse codes, across a photosensitive film to form an intermediate dot pattern thereon;
projecting the dot pattern from said film onto a photosensitive pigment carrier to produce thereon a latent image forming a masking layer upon development of said carrier; and
etching said printing surface through said masking layer, thereby producing an array of dots conforming to said pattern.

4,287,538
MAGNETIC HEAD TRACKING CONTROL SYSTEM
Hitoshi Sakamoto, Zama, and Yoshiaki Wakisaka, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 14,764, Feb. 23, 1979. This application Sep. 6, 1979, Ser. No. 73,246
Claims priority, application Japan, Sep. 7, 1978, 53-110174
Int. Cl.³ H04N *5/78*
U.S. Cl. 360—10 **23 Claims**

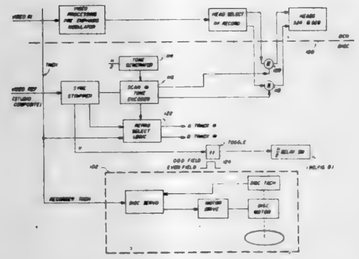


18. An apparatus for reproducing information signals recorded in successive parallel tracks on a record medium while the latter is advanced at a predetermined recording speed in a direction of an angle to the direction along said tracks, said apparatus comprising:
transducer means movable along each of the tracks in a scanning path from a beginning end to a concluding end thereof for reproducing the recorded information signals;
transducer deflecting means for deflecting said transducer means in a direction which is transverse to said direction along the tracks;
means for supplying a drive signal to said transducer deflecting means so as to cause said transducer means to follow a desired one of the tracks in moving from the beginning end to the concluding end of said path;
means for producing a first signal which corresponds to the deflection of said transducer deflecting means needed to cause the transducer means to follow said desired one of the tracks at a predetermined position therealong;
means for producing a continuously variable second signal which corresponds to the value

$$-\frac{1}{2}n+\frac{(1-n)(100-d)}{100}+m$$

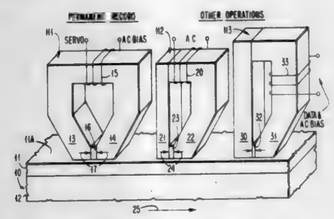
in which n is the ratio of the speed of advancement of the record medium during reproducing to said recording speed, d is the percentage of the distance along each track from said beginning end to said predetermined position therealong, and m is an integer that is no greater than n and no less than n−1;
means for producing a control signal on the basis of the relation of said first and second signals; and
means for applying said control signal to said transducer deflecting means so as to determine the position of said transducer means at said beginning end of the scanning path and, thereby, the next desired track to be followed by the transducer means.

4,287,539
SEGMENTED VIDEO RECORDING WITH SEGMENT IDENTIFICATION CODES
James A. Bixby, San Diego; James U. Lemke, Del Mar, and Robert A. Lentz, Santa Fe, all of Calif., assignors to Spin Physics, Inc., San Diego, Calif.
Division of Ser. No. 780,945, Mar. 24, 1977, Pat. No. 4,193,098. This application Jun. 18, 1979, Ser. No. 49,383
Int. Cl.³ H04N *5/785*
U.S. Cl. 360—18 **2 Claims**



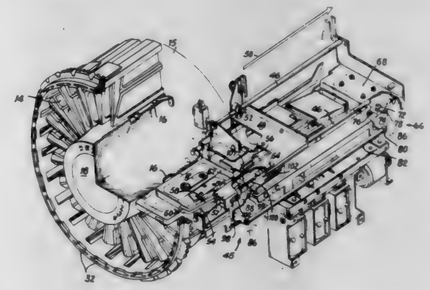
1. Apparatus for use with a recorder of the type adapted to record segmented video field information on a recording medium, comprising
(a) means for producing discrete signals corresponding to the segments of a plurality of video fields each of which fields is comprised of the same number of segments;
(b) means for producing code signals corresponding to and identifying each segment of each field, said code signals
1. for any given field being all different, and
2. for all fields being such that corresponding segments of all such fields have the same identifying code, and
(c) means for combining said code signals with their respective segment signals, thereby to form a composite signal for recording on said recording medium.

4,287,540
STABILIZED RECORDING
Samuel D. Cheatham, Arvada, Colo., and Munro K. Haynes, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 7, 1979, Ser. No. 101,349
Int. Cl.³ G11B *5/02, 5/25*
U.S. Cl. 360—18 **3 Claims**



1. The method of magnetically recording signals in a magnetic record member and for stabilizing such recorded signals, said record member having a unitary magnetic layer, the steps of:
recording a first signal in said magnetic layer using a first transducer by relatively moving said layer and transducer such that said gap scans a given track to record said first signal therein, said first transducer having a given extended gap length and having pole pieces exhibiting high magnetic saturation equal to or greater than the permeability of mu metal, and
AC erasing said magnetic layer along said given track using a second transducer having a given gap length less than said extended gap length thereby partially surface erasing said first signal recorded in said given track to thereby stabilize same for later plural successive magnetic recording operations along said given track and using gap lengths in third transducers less than said extended gap length and selecting said second and third transducers to have lower pole tip magnetic saturation than said first transducer whereby the later magnetic recording operations along said given track do not partially further erase said recorded first signal.

4,287,541
CASSETTE LOADING DEVICE FOR A CASSETTE RECORDING APPARATUS
Makoto Tanahashi, Yokohama; Hisashi Yamauchi, Tokyo, and Takeshi Yamamoto, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 30, 1979, Ser. No. 43,734
Claims priority, application Japan, May 29, 1978, 53-71699[U]
Int. Cl.³ G11B *15/68, 23/04*
U.S. Cl. 360—92 **12 Claims**



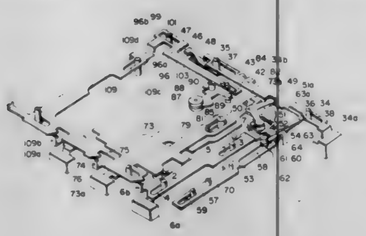
1. A cassette loading device for a cassette recording apparatus, said cassette loading device having cassette magazine with a plurality of cassette receiving sections each adapted to contain a tape cassette and a plurality of slip receiving sections each aligned with a respective one of said cassette receiving sections and communicating with the latter for receiving an information slip with information thereon concerning the recording of a tape cassette in said respective cassette receiving section, drive means for intermittently moving said cassette magazine so as to successively dispose said cassette receiving sections at a cassette loading position, and a cassette loading mechanism adapted to enter the one cassette receiving section at said loading position through the respective slip receiving section for loading a tape cassette from said one cassette receiving section into the cassette recording apparatus; said device further comprising:
means for detecting the presence of an information slip in a slip receiving section which is in immediately trailing relation, considered in the direction of intermittent movement of said cassette magazine, in respect to the slip receiving section corresponding to the cassette receiving section then at said cassette loading position and for generating an output signal in response thereto; and
means responsive to said output signal for preventing further movement of said cassette magazine by said drive means upon detection of an information slip in said slip receiving section which is in said immediately trailing relation.

4,287,542

RECORDING AND REPRODUCING DEVICE

Hiroshi Okuda, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 73,103
Claims priority, application Japan, Sep. 8, 1978, 53-109785
Int. Cl.³ G11B *5/54, 15/10*
U.S. Cl. 360—105 **4 Claims**



1. An operating mode changing assembly for a recording and reproducing apparatus comprising:

a reproduction actuator lever movable from a first inactive position to a second operative position,

a lock lever for holding said reproduction actuator lever in its said second operative position,

a recording actuator lever movable from a first inactive position to a second operative position,

coupling means for operatively coupling said reproduction actuator lever and said recording actuator lever and for moving said reproduction actuator lever from its said first position to its said second position responsive to movement of said recording actuator lever from its said first position to its said second position, and

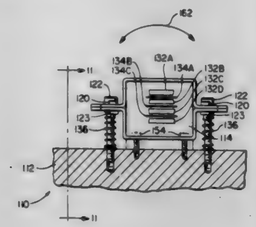
means operatively associated with said recording actuator lever to hold said recording actuator lever in its said second position when said reproducing actuator lever is in its said second position.

4,287,543

TAPE HEAD MOUNT

David Banks, South Hamilton, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,423
Int. Cl.³ G11B *5/56, 21/24*
U.S. Cl. 360—109 **10 Claims**



1. In a magnetic tape head assembly including a head carriage, a tape head having a forward face containing pole piece means, means for adjustably mounting the tape head on the head carriage and means on said head carriage for guiding the tape adjacent the pole piece means at the forward face of the tape head at a particular orientation relative to the head carriage, the improvement wherein said adjustable head mounting means comprises:

head housing means for retaining said tape head, said head housing means comprising an engaging portion for rigidly embracing said tape head, a first mounting portion and a beam portion extending between said first mounting portion and said head-engaging portion, a pair of mounting holes therethrough on transversely opposite sides of a longitudinal midline of said beam portion, and second and third mounting portions each spaced from said first mounting portion by said beam portion and respectively positioned on transversely opposite sides of the longitudinal midline of said beam portion;

biasing means for urging said head housing means relatively upward away from said head carriage; and

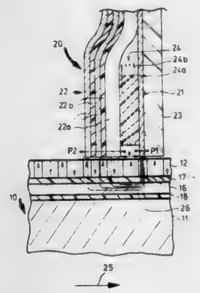
means for supporting said head housing means relative to said head carriage at at least three spaced positions on said head housing means, said supporting means comprising first fastening means fixedly connecting said head housing means to said head carriage at said head housing means first mounting portion, and second and third support means in supportive engagement between said head carriage and said head housing means and respectively spaced from each other and each spaced from said first fastening means by said beam portion, said second and third support means being independently adjustable, whereby motion of said head housing means is constrained to that of the desired adjustment and said second and third support means having respective threaded fastening means each passing clearly through a respective one of said pair of mounting holes and into connecting engagement with said head carriage, each said threaded fastening means including a shoulder portion engaging and acting to displace said head-engaging portion in response to rotation of at least a portion of said fastening means relative to said head carriage and said head-holding means.

4,287,544

MAGNETIC DATA CARRIER FOR PERPENDICULAR RECORDING

Jean-Pierre Lazzari, Montfort-l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Jan. 2, 1979, Ser. No. 10
Claims priority, application France, Jun. 13, 1978, 78 17641
Int. Cl.³ G11B *5/68*
U.S. Cl. 360—131 **19 Claims**



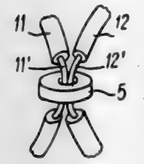
1. A carrier adapted to have data recorded therein by perpendicular magnetic recording comprising a non-magnetic substrate having at least one plane surface and a plurality of magnetic layers on said substrate, said plurality of layers including a first magnetic data layer of anisotropic magnetic material for recording of data having its axis of easy magnetization perpendicular to the said surface and comprising, in the lengthwise direction, successive magnetic cells separated by transitions and an additional magnetic layer of anisotropic magnetic material having its axis of hard magnetization is parallel to the surface, said additional layer being disposed between the substrate and the said first layer, the plane of anisotropy of the first magnetic data layer being perpendicular to the said surface of the substrate, and the plane of anisotropy of the additional layer being parallel to the said surface such that the axis of hard magnetization of the additional layer is substantially parallel to the lengthwise direction of the data layer.

4,287,545

DIFFERENTIAL TRANSFORMER

Ferdy Mayer, 18 rue Thiers, 38000 Grenoble, France

Filed Jun. 6, 1979, Ser. No. 45,867
Claims priority, application France, Jun. 8, 1978, 78 17113
Int. Cl.³ H02H *3/26;* H01F *40/06*
U.S. Cl. 361—44 **6 Claims**



1. A differential current transformer for an electrical installation protecting device, comprising:

a magnetic torus with at least two primary coils having the same number of turns, said magnetic torus including high permeability material, said primary coils being traversed by opposed mains currents, said magnetic torus further including a secondary coil;

wherein each of said primary coils includes one turn;

wherein each of said two primary coils has a thinner section in a portion of each of said coils located in a central aperture of said torus and each of said primary coils includes a larger section in portions adjacent to said thinner section; and

wherein said larger sections of each of said primary coils form thermal masses in view of increasing the dissipation of heat generated in the thinner portion.

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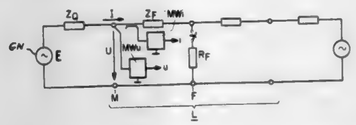
Patent Not Issued For This Number

4,287,547

METHOD AND APPARATUS FOR FAULT AND/OR FAULT DIRECTION DETECTION

Michael Vitins, Zurich, Switzerland, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Aug. 15, 1979, Ser. No. 66,783
Claims priority, application Switzerland, Aug. 29, 1979, 9105/78
Int. Cl.³ H02H *3/40, 7/26*
U.S. Cl. 361—82 **19 Claims**



1. A method for selectively detecting at least faults or fault direction, or both, at electrical lines, comprising the steps of:

generating current surge signals and voltage surge signals, in accordance with the change as a function of time of line current and line voltage, respectively, in relation to the steady state course of the current and voltage, respectively;

comparing the formed current surge signals and voltage surge signals with a threshold value;

said comparison step including comparing at least one of the surge signals with at least one threshold value which is dependent upon the other surge signal; and

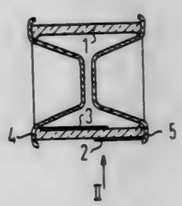
upon exceeding or falling below the threshold value deriving a trip signal or blocking signal for a protective device.

4,287,548

SURGE VOLTAGE ARRESTER WITH REDUCED MINIMUM OPERATING SURGE VOLTAGE

Axel Hahndorff, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,459
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834088
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—120 **12 Claims**



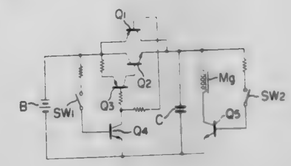
1. A surge voltage arrester, comprising a gas-filled housing incorporating two main electrodes disposed opposite one another, said electrodes being supported in a gastight fashion by the ends of a tubular insulating member, at least one coating of electrically conductive material extending over a portion of the interior length of said insulating member, at least one electrically conductive surface on the exterior of said insulating member which at least partially overlaps said coating, and means adapted to establish an electric field between said coating and said surface.

4,287,549

CIRCUIT FOR CHARGING A RELEASE MAGNET ENERGIZING CAPACITOR IN A CAMERA

Hiroshi Hasegawa, and Osamu Maida, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,829
Claims priority, application Japan, Dec. 20, 1978, 53-173921[U]
Int. Cl.³ G03B *7/08, 9/08*
U.S. Cl. 361—156 **2 Claims**

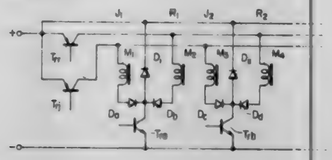


1. A capacitor charging circuit in a camera having switch means series-connected between a DC power source and a release magnet energizing capacitor and in which charging of said capacitor is effected by closing said switch means, the improvement residing in that said switch means comprises a parallel connection of an emitter-grounded transistor for a first switch with said capacitor as the load and a collector-grounded transistor for a second switch with said capacitor as the load.

4,287,550
DRIVING CIRCUIT FOR PRINTING DEVICE IN ELECTRONIC CASH REGISTER

Yasuhiro Wada, Niiza, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,334
Claims priority, application Japan, Mar. 30, 1979, 54-41323[U]
Int. Cl.³ H01H 47/00
U.S. Cl. 361—167 **3 Claims**

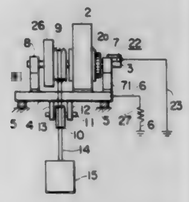


1. A driving circuit for printing devices in an electronic cash register comprising a plurality of pairs of journal printing magnets and receipt printing magnets arranged adjacently and independently of each other, a pair of first diodes which are connected in the normal direction in series respectively to said respective magnets in a pair and are connected with each other, a first switching means connected between the connecting point of said pair of first diodes and one terminal of a current source, a second diode connected in the reverse direction between said connecting point and the other terminal of said current source, a first feeding line connected in common to said plurality of journal printing magnets, a second switching means connected between said first feeding line and said current source, a second feeding line connected in common to said plurality of receipt printing magnets, and a third switching means connected between said second feeding line and said current source.

4,287,551
ELEVATOR TRACTION MACHINE

Eiki Watanabe, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1979, Ser. No. 60,108
Claims priority, application Japan, Jul. 26, 1978, 53-91240
Int. Cl.³ H02H 1/00
U.S. Cl. 361—212 **13 Claims**

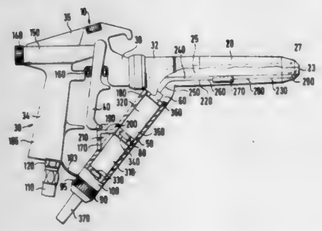


1. An elevator traction machine comprising:
a main rope connecting an elevator cage and a counterweight,
traction sheave having said main rope entrained thereover,
a motor controlled by a semiconductor switching circuit for driving said traction sheave to vertically move said elevator cage and said counter weight in opposite directions,
A brake wheel coupled to a shaft of said motor, said brake wheel being frictionally forced to brake said motor during the stop of the cage,
bearings for supporting said motor shaft,
a current collector in contact with said motor shaft for collecting shaft current,
a first grounding circuit for grounding said shaft through said current collector, and
a second grounding circuit for grounding said shaft through at least one of said bearings,
wherein the impedance of said second grounding circuit is greater than that of said first grounding circuit.

4,287,552
ELECTROSTATIC SPRAY PISTOL

Josef Wagner, Friedrichshafen, Fed. Rep. of Germany, and Willi Huber, Altstätten, Switzerland, assignors to J. Wagner AG, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,417
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818938
Int. Cl.³ B05B 5/02
U.S. Cl. 361—228 **6 Claims**



1. An improved electrostatic manual spray gun having a barrel and a housing with a handle, the barrel being affixed at a proximal end to one end of the housing at an angle with respect to the handle; a distribution system for the material to be sprayed within the housing being operably connected to a boring through the barrel and having a manually operable trigger rotatably affixed to the housing; the trigger being operable to control the flow of material to be applied through the housing and barrel and having further circuitry including a high voltage multiplier circuit mounted on the gun operably connected to a spray electrode located adjacent a distal end of the boring in the barrel; the improvement comprising:
removable connection means interposed between the one end of the housing and the proximal end of the barrel to removably attach the barrel to the housing;
a hollow trigger guard spaced apart from the distribution system and from the boring through the barrel, said trigger guard has a first end fixedly connected to the proximal end of the barrel of the spray gun, and a second end removably affixed to a lower end of the handle of the spray gun; said high voltage multiplier circuit being modular and removably mounted within said trigger guard;
a relatively low voltage input cable affixed to said second end of said trigger guard and connected by electrical means for conduction to said high voltage multiplier module;
switch means cooperating with said electrical means, to selectively apply, under manual control, a selected input signal to a low voltage input end of said high voltage multiplier module, whereby said gun may be used to apply hot material without degrading the electrical characteristics of said high voltage multiplier module.

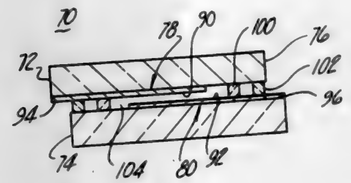
4,287,553
CAPACITIVE PRESSURE TRANSDUCER

Peter F. Braunlich, Pullman, Wash., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 6, 1980, Ser. No. 156,970
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 **10 Claims**

1. A capacitive pressure transducer comprising:
a first diaphragm having a pressure responsive region thereon and deflectable in response to the local pressure;

first means spaced from said first diaphragm defining a gap therebetween;
pressure responsive means applied to the said pressure responsive region of said first diaphragm for transducing said pressure to be measured into measurable signals;

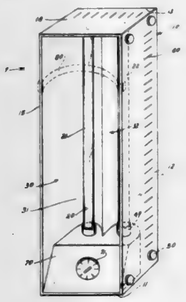


dual sealing means for separating said first diaphragm and said first means, and for forming a plurality of sealed cavities therebetween surrounding said pressure responsive region.

4,287,554
RADIATION APPARATUS

Friedrich Wolff, Lindenring 17, D-6000 Frankfurt 60, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,515
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829117; Oct. 24, 1978, 2846221
Int. Cl.³ F21S 2/00
U.S. Cl. 362—218 **35 Claims**

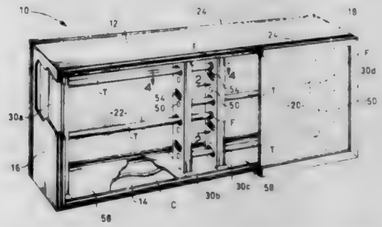


1. Apparatus for producing ultraviolet radiation, particularly a quick-tanning sunlamp, comprising a source of substantially uniform ultraviolet radiation, including at least two spaced-apart tubular low-pressure mercury lamps; means for intercepting at least the major percentage of wavelength bands of ultraviolet radiation below approximately 300 nm; and support means cooperating with said source and defining at least one opening for the escape of ultraviolet radiation consisting essentially of the remaining wavelength band of ultraviolet radiation, said support means including reflector means which includes for each of said lamps a trough-shaped reflector surrounding the respective lamp along at least one arc, at least one intermediate portion between adjacent ones of said lamps, and two lateral portions having zones projecting forwardly beyond said intermediate portion and spaced therefrom across the respective reflectors, said lateral portions having forward edge portions defining said opening and the space between said lateral portions and forwardly of said intermediate portion being substantially unobstructed, said source, in cooperation with said reflector means, thus establishing a high-density radiation field in the vicinity of said opening, the heat output of said lamps being sufficiently low so that the temperature in the region of said radiation field is below the range of discomfort of a person exposed to said radiation field.

4,287,555
STRUT RACEWAYS FOR SIGN BOXES

Johann Stilling, Apt. #A1001, 1141 Royal York Rd., Islington, Ontario, Canada

Filed Mar. 10, 1978, Ser. No. 885,328
Int. Cl.³ F21S 3/00
U.S. Cl. 362—225 **16 Claims**



1. An electrical raceway for incorporation in a double-sided sign box to provide structural reinforcement to such a sign box when incorporated therein so as to extend between spaced apart walls thereof, for the mounting of electrical receptacles for elongated lighting tubes and for housing electrical conductors connected to such receptacles for the supply of electricity thereto and which raceway comprises;
an elongated and hollow structure adapted to be disposed within such a sign box between such spaced apart walls thereof with such electrical conductors disposed therewithin and having mutually spaced apart side walls;
electrical receptacle opening zones formed in said side walls adapted to have electrical lighting fixture receptacles secured therein for the terminal engagement of elongated electrical lighting tubes;
lighting tube openings in said side walls, spaced longitudinally apart from said opening zones along said side walls, said openings being formed in aligned pairs for the free disposition therethrough of other such elongated electrical lighting tubes whereby such a tube may pass completely through such raceway without contacting the same, and,
at least one retaining member adapted to project between said side walls of said raceway adjacent such pairs of openings to retain electrical conductors in position within said raceway transversely outwardly of such lighting tubes extending through said aligned openings.

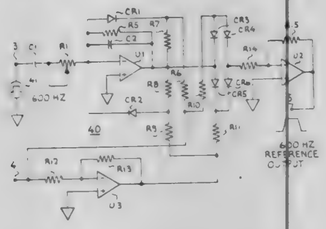
4,287,556
CAPACITIVE CURRENT LIMITING INVERTER

Walter G. Borland, Fort Wayne, Ind., assignor to General Electric Company, Salem, Va.

Filed Dec. 17, 1979, Ser. No. 104,682
Int. Cl.³ H02M 1/08
U.S. Cl. 363—41 **7 Claims**

1. A high voltage AC power supply having means for limiting peak capacitive current into a load having a substantial capacitive component, comprising:
a DC electrical energy source;
a pulse-width modulated (PWM) inverter for converting DC electrical energy to AC electrical energy;
a transformer including a pair of output terminals for connection to the load, the transformer serving to transform the AC electrical energy from the inverter to high voltage AC electrical energy to be delivered to the load and to provide isolation between the DC electrical energy source and the AC electrical energy delivered to the output terminals;

means for providing to the PWM inverter a reference voltage waveform having substantially linear rise and fall times and having a substantially flat top during positive and negative peaks for synthesizing an inverter output voltage waveform having substantially the same shape as



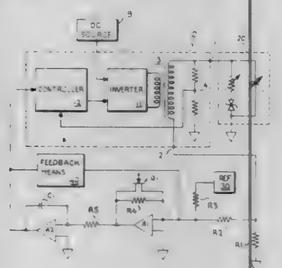
said reference voltage waveform; whereby, peak capacitive current at the transformer output terminals and thus through the switching elements of the inverter is limited during the rise and fall times by the shape of the inverter output voltage waveform to a value substantially less than a waveform with exponential rise and fall times.

4,287,557

INVERTER WITH IMPROVED REGULATION

Robert F. Brehse, Fort Wayne, Ind., assignor to General Electric Company, Salem, Va.

Filed Dec. 17, 1979, Ser. No. 104,572
Int. Cl.³ H02P *13/20*; G05F *1/40*
U.S. Cl. 363—95 **9 Claims**



1. An electrical circuit for supplying high-voltage AC electrical energy to and for regulating resistive current through a complex load having variable resistive and variable shunt capacitive components, the circuit being of the type including: a voltage-controlled inverter having a pair of output terminals, the voltage controlled inverter producing an output voltage waveform at least a portion of each half cycle thereof having a dv/dt approximately equal to zero; means for sensing output current; a reference voltage source; means for comparing a voltage proportional to the sensed current with the reference voltage and for producing an amplified error voltage; means for sampling the amplified error voltage when dv/dt of output voltage is approximately equal to zero; means for obtaining a long-term average of a plurality of samples of the amplified error voltage; and means for applying the long-term average to the inverter to control the amplitude of the high-voltage AC waveform supplied to the complex load; wherein the improvement comprises:

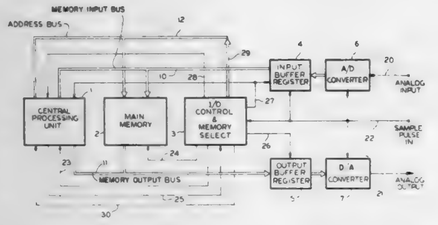
means for compensating for variations in load current resulting when a changing characteristic of the complex load causes variations in the ratio of peak to average rectified resistive current through the complex load so as to provide a substantially constant average rectified resistive output current.

4,287,558

SAMPLED DATA PROCESSING SYSTEM HAVING MEMORY WITH AREAS ALTERNATELY DEDICATED TO DATA I/O AND DATA PROCESSING

Takao Nishitani, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,635
Claims priority, application Japan, Sep. 29, 1977, 52-117611
Int. Cl.³ G06F *3/05, 13/00*
U.S. Cl. 364—200 **2 Claims**



1. A data processing system for processing input data received in a timed relationship with a sampling pulse and for processing output data in said timed relationship, said system having a memory means for storing data used for calculation and input/output, said memory means including a data input-/output memory area and a data processing memory area, a central processing unit with a cycle time which is shorter than the repetition period of said sampling pulse for producing address bits giving access to said memory means and executing an operation on said input data, an input buffer register means for inputting said input data into said central processing unit, an output buffer register means for outputting the data processed by said central processing unit, and an input/output control means for controlling a data-transferring operation between said memory means and either said input or output buffer register means and disposed between said central processing unit and said input and output buffer register means, said input/output control means comprising:

a. an input/output counter means for performing said data-transferring operation and cyclically producing, independently of said central processing unit, address bits to give access to said memory means in order to input and output data to and from said memory means;

b. a memory selection means for adding a specific one bit to the address bits fed from the central processing unit so that said data processing area of the memory means is accessed to transfer data between said central processing unit and the memory means and for adding said specific one bit after logical inversion in response to said sampling pulse and to a signal representative of the absence of an access by said central processing unit to said memory means to the address bits fed from said input/output counter means so that said data input/output area is accessed to transfer from said input/output counter means into said output buffer register means to data stored in the address of said memory means designated by said address bits to which said specific one bit after logical inversion is added, and to transfer the data stored in said input buffer register means into the memory means at the address designated by the address bits to which said specific one bit after logical inversion is added;

c. means responsive to a completion of a cycle of said input-/output counter means by one block of data and to the completion of the input and output to and from said memory means of one block of data for inverting the output signal of said memory selection means, to inform said central processing unit of the completion of the input and

output operations responsive to one block of data, and for resetting said input/output counter means;

d. means responsive to the completion of the data transfer between said memory means and said input and output buffer register means for advancing said input/output counter means by a given number and for inhibiting the input/output operations until the next sampling pulse is given; and

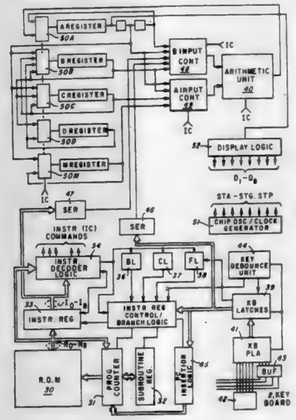
e. wherein the area of said memory means where data stored are subjected to processing by said central processing unit is different from another area of said memory means where data transfer is carried out between said input and output buffer register means, and wherein the data transfer between said input and output buffer register means and said memory means is performed during a time period when said central processing unit does not have access to said memory means, whereby data are transferred one by one every time said sampling pulse is given.

4,287,559

ELECTRONIC MICROPROCESSOR SYSTEM HAVING TWO CYCLE BRANCH LOGIC

Steven J. Easley, Houston, and George L. Brantingham, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 766,998, Feb. 9, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 970,080
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **8 Claims**



1. An electronic data processing system comprising:

(a) an instruction memory for storing a plurality of instruction words in sequential memory locations, said plurality of instruction words having at least one set of a branch instruction word followed by a branch address instruction word in the next sequential memory location, said branch address instruction word being solely indicative of one of said memory locations, said instruction memory further for outputting a particular instruction word upon reception of a memory address indicative of said memory location of said particular instruction word;

(b) a program counter for storing therein a memory address solely indicative of a particular memory location of said instruction memory including means for applying said memory address to said instruction memory;

(c) an instruction decoder logic means, responsive to instruction words outputted from said instruction memory, for decoding said instruction words, said decoder logic means including a branch instruction detection means for detecting when one of said instruction words is a branch instruction word; and

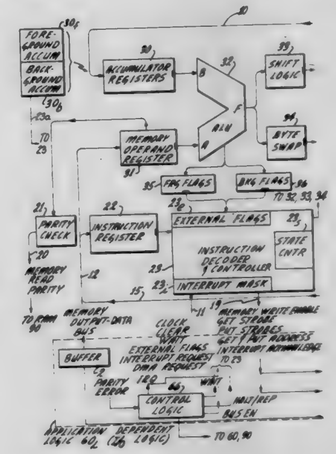
(d) a branch logic system for setting said program counter to the address indicated by the instruction word stored in the sequential memory location immediately following the memory location wherein said detected branch instruction word is stored in response to the detection of said branch instruction word by said branch instruction detection means.

4,287,560

DUAL MODE MICROPROCESSOR SYSTEM

Brian K. Forbes, Huntington Beach, and Robert D. Catiller, Garden Grove, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 27, 1979, Ser. No. 52,479
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **10 Claims**



1. A universal-type microprocessor system which cooperates with an application-dependent logic module to form a peripheral-controller capable of handling data transfers between main memory of a host computer and a plurality of peripheral terminal units which can be either "word-oriented" or "byte-oriented", and wherein said application-dependent logic module provides external register means having bus connections to said plurality of peripheral terminal units and to said host computer, and wherein said application-dependent logic module further includes an external memory for storage of programs related to control of said peripheral terminal units and for temporary storage of data undergoing transfer, and wherein said application-dependent logic module further includes control logic means for communicating with and controlling said external register means, said external memory and communicating with a decoder-controller in said microprocessor system, the said microprocessor system comprising:

(a) data processing means including:

(a1) an Arithmetic Logic Unit providing an output to a shift logic circuit and to a byte-swap circuit;

(a2) said shift logic circuit providing output to an I/O bus, said shift logic circuit functioning to rotate one or more bits of a word being processed, to the right or to the left;

(a3) said byte-swap circuit providing output to said I/O bus, said byte-swap circuit functioning to exchange the sequential positions of the higher order byte and the lower order byte of a received two-byte word;

(b) said I/O bus providing connecting lines from said data processing means to said external registers, to said external memory, to an accumulator register means, and to an addressing means;

(c) said addressing means receiving input data from said I/O bus and storing addresses useful for accessing data from an

internal memory or said external memory, said addressing means including:

(c1) a program counter storing consecutive addresses of data located in said internal program memory;

(c2) a memory reference register for storing addresses of data located in said external memory, and including:

(c2-1) a memory address bus which connects to said external memory;

(c2-2) and wherein a dedicated non-address bit in each location in said memory reference being set to signal said decoder-controller to initiate a byte-swap operation in said byte-swap circuit, or when not-set, to pass data without a byte-swap operation;

(c2-3) a bus connection from said memory reference register to said decoder-controller;

(c3) an address register in said decoder-controller connecting by means of an address bus to accumulator register means which include a plurality of accumulator registers for selection of data from/to an one of said addressed accumulator registers;

(d) said internal program memory for storing program instructions and data words, said internal memory being addressed from said program counter and providing instruction words and data, via an instruction bus, to an instruction register and memory operand register, said program memory including:

(d1) instruction words wherein each word includes a field (M) which signals said decoder-controller to select either said program counter or memory reference register as source of the next address;

(e) register means for temporary storage of data, said register means including:

(e1) said plurality of addressable accumulator registers which provide an output to the input of said Arithmetic Logic Unit, said accumulator registers receiving input data words from said I/O bus;

(e2) said memory operand register for receiving operand data from said internal program memory via an instruction bus or from said external memory via a memory data bus;

(e3) said instruction register for receiving instruction words from said internal program memory via said instruction bus or from said external memory via said memory data bus, and providing instruction words to said decoder-controller;

(f) said instruction decoder-controller receiving instruction signals from said instruction register, and including incoming and outgoing control signal lines connected to said data processing means, to said addressing means, to said register means, to said internal and external memory means, to said external registers and said control logic means, said decoder-controller further including:

(f1) means for setting operations into one of two modes wherein a first mode, designated foreground mode, is for normal operations and a second mode, designated background mode, is for interrupt operations;

(g) an external memory data bus for carrying data from said external memory to said instruction register and said memory operand register;

(h) and wherein said plurality of addressable accumulator registers includes:

(h1) a first set of accumulator registers, designated as foreground accumulator registers, for use during normal operations; and

(h2) a second set of accumulator registers, designated as background accumulator registers, for use during interrupt operations;

(i) and wherein said decoder-controller includes: means to select an accumulator register in said first set or said second set according to whether the foreground mode or background mode is operating.

4,287,561

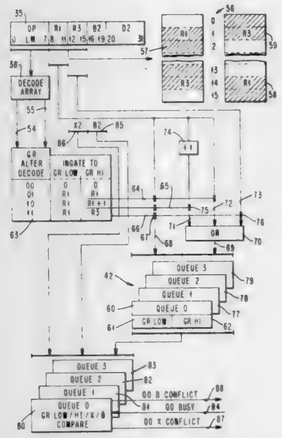
ADDRESS FORMULATION INTERLOCK MECHANISM

John S. Liptay, Rhinebeck, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 887,093, Mar. 16, 1978. This application Jul. 30, 1979, Ser. No. 62,200

Int. Cl.³ G06F *9/00*

U.S. Cl. 364—200 **4 Claims**



1. In a data processing system having overlapped instruction execution and instruction decoding including: (1) a memory having a plurality of addressable locations, each location adapted to store either instructions or data; (2) an instruction preprocessing unit; (3) a plurality of addressable general registers; (4) an execution unit and; (5) means interconnecting said various units, said instruction preprocessing unit including, a program counter connected to the memory for addressing the memory, said memory connected to an instruction register, to access instructions in sequence for transfer to the instruction register, a normally operative decoder connected to the instruction register for decoding various fields of an instruction, each instruction including an OP code field specifying an operation to be performed, at least two general register address fields providing designation of, and access to, the general registers, with certain of the instructions including a data address field providing part of the address information required to address a memory location of data, the decoding process for a data accessing instruction including the combining of the data address field in an instruction with the information content of one or more general registers identified by one or more general register address fields of the instruction, an instruction which may be of the type called a general register modifying instruction when executed by the execution unit would include the transfer of new data to at least one general register, and a plurality of queue registers in the preprocessing unit comprising a first-in/first-out buffer connected to the output of the decoder, wherein as the decoding of each instruction in the instruction register is completed, signals, partially developed from the OP code field of the instruction, representing execution control information required by the execution unit are stored in one of said queue registers, and execution control information is transferred from the queue registers to the execution unit, one at a time, and on demand by the execution unit, each queue register having an associated busy trigger which is set when execution control information is received, and reset when the execution unit completes execution of the instruction represented by the execution control information,

improved interlock logic in associated with the instruction preprocessing unit for blocking operation of the instruction decoder comprising:

first **(61)** and second **(62)** general register identifying fields included as part of, and completing the development of execution control information in, each of said plurality of queue registers **(60, 77, 78, 79)**;

gate means **(63 through 76)**, operative at the completion of decoding of a general register modifying instruction, for transferring the one or more general register address fields identifying said at least one general register from said instruction register to said first and second general register identifying fields of the queue register which is associated with the execution control information developed in conjunction with that particular instruction, and having a busy trigger reset, as part of the execution control information,

a plurality of compare means **(80, 81, 82, 83)** one for each of said first and second general register identifying fields of each of said queue registers;

means **(85, 86)** connecting the one or more general register address fields of a data accessing instruction from the instruction register to all of said plurality of compare means; and

correspondence signalling means **(104)**, connected and responsive to all said compare means for signalling **(105)** correspondence between a general register address field in a data accessing instruction and said first and second general register identifying fields in any of said queue registers, thereby indicating that the execution unit has not yet received from said queue registers, and executed, the execution control information of a previously decoded general register modifying instruction, said correspondence signalling means being connected to the normally operative decoder to inhibit further operation of the decoder.

4,287,562

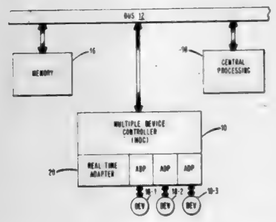
REAL TIME ADAPTER UNIT FOR USE IN A DATA PROCESSING SYSTEM

Boyd E. Darden, St. Petersburg, Fla., and Henry F. Hartley, Lowell, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 6, 1979, Ser. No. 73,058

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **31 Claims**



23. A data processing system including a central processing unit and a controller coupled in common to a bus, said controller having a number of ports for connecting a corresponding number of adapter units and including means for generating commands to said adapter units, one of said adapter units comprising:

a microprocessing section coupled to said controller for transferring and receiving signals from said controller, said section including:

a data bus;

an address bus;

a microprocessing unit coupled to said data bus and to said address bus;

random access memory having a plurality of storage locations, a number of said plurality of storage locations providing a transfer buffer, said random access memory being coupled to said data and address buses;

a programmable read only memory coupled to said address and data buses having a plurality of storage locations for storing a number of instruction control sequences;

a clock circuit coupled to said controller for receiving timing signals from said controller and being coupled to said microprocessing section, said clock circuit for generating timing signals for synchronizing at a microsecond rate the operations of said microprocessing section within said adapter;

a peripheral interface adapter circuit coupled to said data bus and to first and second bidirectional peripheral data buses, said peripheral interface adapter circuit including a pair of control registers, each coupled to said data bus and a different one of said first and second peripheral buses, each of said registers storing control information for separately controlling the direction of data for each line of the corresponding one of said peripheral data buses;

a time of day counter section coupled to said microprocessing section, said time of day counter section including:

a binary counter coupled to said first peripheral bus, said counter for storing a time of day value;

a free running clock circuit coupled to said binary counter for generating clock signals for updating said time of day value at a millisecond rate;

an output latching register coupled to said counter and to said data bus; and,

a decoder circuit coupled to said second peripheral bus and to said output latch register; and,

a selector circuit coupled to said address bus, to said output latch register and to an enable input terminal of said peripheral interface adapter circuit;

said microprocessing unit being operative in response to a command from said controller requesting the time of day to read out a predetermined one of said instruction sequences from said read only memory for generating a succession of address and data signals on said address bus and data bus respectively, said selector circuit being operative in response to said address signals to apply a signal on said enable input terminal of said peripheral interface adapter circuit for applying said data signals on said second peripheral bus to said decoder circuit, said decoder circuit in response to said data signals generating a series of output pulses for storing a predetermined number of time of day values read from said counter in said output latching register and said selector circuit being operative in response to other address signals generated by said microprocessing unit to generate a series of output pulse signals to condition said output latch register to transfer a predetermined byte of each predetermined number of said time of day values to said microprocessing unit for comparison to select the latest time of day value read from said binary counter not during an update operation for storage in said transfer buffer of said memory for subsequent transfer to said central processing unit in response to said read command.

4,287,563

VERSATILE MICROPROCESSOR BUS INTERFACE

William D. Huston, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

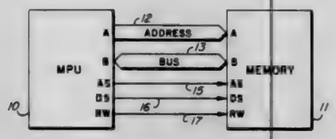
Filed Nov. 13, 1979, Ser. No. 93,408

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **2 Claims**

1. A versatile microprocessor bus interface for interfacing an external memory/peripheral to a first microprocessor or to a second microprocessor wherein the first microprocessor provides a first bus carrying high order address bits, a multiplexed bus alternately carrying data or lower order address bits, an address strobe signal which indicates when the multiplexed bus is carrying the lower order address, a data strobe signal which controls reading and writing data from the external memo-

ry/peripheral, and a read/write signal which indicates whether the mutliplexed bus is carrying read data or write data, and wherein the second microprocessor provides a second bus carrying high order address bits, a multiplexed bus alternately carrying data or lower order address bits, an address latch enable signal which indicates when the multiplexed bus is carrying the lower order address, a read signal which indicates by its complement when the multiplexed bus is to carry read data from the memory/peripheral, and a write signal which indicates by its complement when the multiplexed bus is carrying write data, the interface comprises: a



latch for receiving the data strobe signal or the read signal and being clocked by the address strobe signal or the address latch enable signal, the latch providing an output control signal; a first logic means providing a read enable signal when the data strobe and the read/write signals are both logic level highs or when the read signal is a logic level low, the read enable signal being gated through the first logic means by a control output of the latch; and a second logic means providing a write enable signal when the data strobe is a logic level high and the read/write signal is a logic level low or when the write signal is a logic level low, the write enable signal being gated through the second logic means by the output control of the latch.

4,287,564

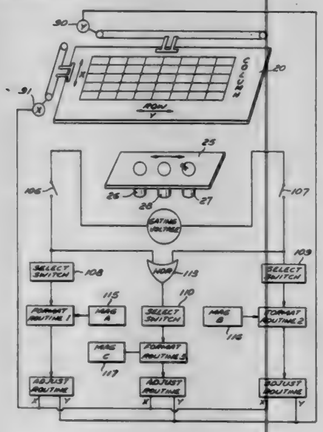
METHOD OF CORRECTING FOR MISALIGNMENT OF MICROFICHE FRAMES

William R. Swift, Placentia; Don W. Herrod, Walnut, and James M. Marsh, Yorba Linda, all of Calif., assignors to AM International, Inc., Los Angeles, Calif.

Division of Ser. No. 939,445, Sep. 5, 1978. This application Apr. 2, 1979, Ser. No. 25,974

Int. Cl.³ G05D *3/18;* **G06F** *15/40;* **G03B** *27/48*

U.S. Cl. 364—525 **1 Claim**



1. The method of correcting for out of tolerance placement of frames in an array, the array having generally regularly spaced rows and columns, wherein a first stepper motor moves the array columnwise along a first axis, and a second stepper motor moves the array rowwise along a second axis, the frames of a correctly produced array being separated from each other by a nominal distance along each axis, the method comprising the steps of:

positioning the array such that a predetermined frame occupies a predetermined position, moving the array a distance corresponding to a number of steps made by one of the motors along one of the axes such that a frame farthest from said predetermined frame along the one of said axes occupies the predetermined position, dividing the number of steps made by the one of said motors during the preceding move by one less than the number of frames moved to obtain a quotient and adding the quotient to the nominal distance between frames along the axis moved to yield an average actual distance between frames along the axis moved, whereby the average actual distance is thereafter used in future positioning of selected frames of the array.

4,287,565

MONITORING SYSTEM FOR PROGRAM CONTROLLED APPARATUS

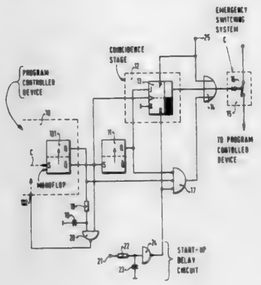
Georg Haubner, Berg; Jürgen Wesemeyer, Nurenberg; Hans Schrumpf, Oberasbach; Jörg Birmelin, Bretten; Manfred Schwab, Gerlingen; Günter Hönig, Ditzingen; Uwe Kiencke, Ludwigsburg; Alfred Schulz, Oberriexingen, and Werner Meier, Rednitzhembach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,520

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842392; Jan. 31, 1979, 2903638

Int. Cl.³ G06F *11/04*

U.S. Cl. 364—580 **21 Claims**



1. Monitoring system for a program controlled device for operating systems in an automotive vehicle, the automotive vehicle having electronically program controlled devices which repetitively, cyclically control and cause operating events for the engine of the vehicle including at least one of ignition and fuel injection, in which the program control is effected by electrical program signals having characteristics defining the program, and said signals are subject to spurious noise and erroneous disturbance signals occurring in an automotive vehicle

in which the program controlled signals include cyclically recurring signal sequences which further include supervisory or monitoring check pulses,

said program controlled device (10) having a check pulse line or bus (C) on which the monitoring or check pulses appear, and said program controlled device controlling the repetitive occurrence of said at least one event,

comprising, in accordance with the invention,

a source of operating power for the program controlled device,

monitor means connected to said check pulse line or bus (C) and sensing regular recurrence of said check pulse, said monitor means being connected to and controlling the program controlled device to reset the program and commence a new program cycle upon failure to sense occurrence of the monitor or check pulse by said monitor means subsequent to a previously sensed check pulse, and

an emergency switching system (15, 16) coupling said operating power source to the program controlled device and having an input which, when energized, causes said emergency switching system to disconnect the operating power source from the program controlled device to disable the program controlled device.

4,287,566

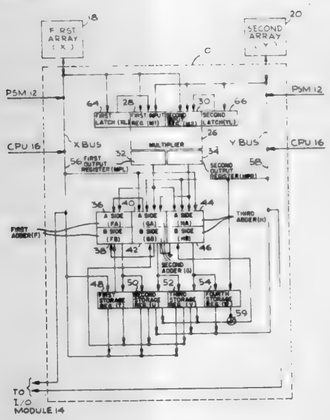
ARRAY PROCESSOR WITH PARALLEL OPERATIONS PER INSTRUCTION

Glenn J. Culler, Santa Barbara, Calif., assignor to Culler-Harrison Inc., Goleta, Calif.

Filed Sep. 28, 1979, Ser. No. 80,032

Int. Cl.³ G06F *9/28, 15/16, 7/52*

U.S. Cl. 364—754 **11 Claims**



1. An array processor comprising:

multiplication means;

multiplication input means to said multiplication means, said multiplication input means comprising first and second input registers;

first and second latch means each of which is operatively connected to at least one of said input registers;

output means from said multiplication means;

storage means;

addition and subtraction means responsive to contents of said multiplication output means and said storage means;

first and second arrays;

means for providing signal inputs from said first and second arrays to said multiplication input means, said storage means, and said addition and subtraction means; and

interconnection means allowing selected multiplication, storage, addition and subtraction, and transfer operations to occur in parallel in response to predetermined input instructions, said interconnection means comprising means for connecting said first latch means to said first array and said second latch means to said second array.

4,287,567

HIGH SPEED CENTRAL OFFICE SCANNER

James R. Lumsden, Edmonton, Canada, assignor to Universal Industrial Control Devices Ltd., Edmonton, Canada

Continuation-in-part of Ser. No. 911,670, Jun. 1, 1978, abandoned. This application Jul. 31, 1979, Ser. No. 62,529

Int. Cl.³ G06F *15/16;* **H04Q** *3/54*

U.S. Cl. 364—900 **9 Claims**

1. A high speed central office scanner for communicating with a plurality of transponding units connected by telephone lines; said scanner is comprised of:

A. N, I/O means, where N is a positive integer, each I/O means comprising:

(a) multiplex means for connecting said I/O means to M telephone lines, each telephone line being connected to at least one transponder, where M is a positive integer;

(b) a microprocessor;

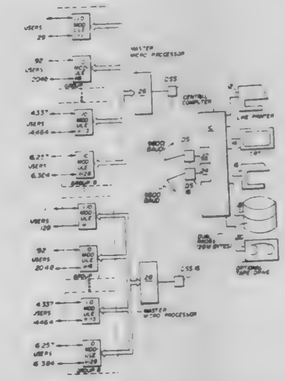
(c) multiplex logic means, controlled by said microprocessor for sequentially selecting one of said M telephone lines;

(d) a bush detect means for checking said selected line and producing a signal when said selected line is busy;

(e) transmitting-receiving means connected to said selected line, controlled by said microprocessor for transmitting an instruction code to a transponder connected thereto when said signal is absent, and receiving data from said transponder in response to said instruction code;

(f) storage means; and

(g) I/O interface logic means,



wherein said microprocessor analyzes the received data and enters the received data in said storage means if the received data satisfies a predetermined criterion;

B. master microprocessor means comprising:

(a) interface logic means connected with said I/O interface logic means of each of said N, I/O means;

(b) a main microprocessor for sequentially selecting one of said N, I/O means and for generating an interrogation code for transmission to each selected I/O means to enquire if said selected I/O means has received data stored therein;

(c) main storage means for storing received data from said selected I/O means; and

(d) main transmitting-receiving means for transmitting said received data stored in said main storage means upon receipt of a further interrogation code;

wherein each said N, I/O means scan said M telephone lines independently and asynchronously with respect to each other of said N, I/O means and said master microprocessor means.

4,287,568

SOLID STATE MUSIC PLAYER USING SIGNALS FROM A BUBBLE-MEMORY STORAGE DEVICE

Robert W. Lester, 46 Abbey Rd., Munsey Park, Manhasset, N.Y. 11030

Continuation-in-part of Ser. No. 801,945, May 31, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 64,454

Int. Cl.³ G06F *15/20;* **G11C** *19/08, 5/02;* **G10H** *1/00*

U.S. Cl. 364—900 **10 Claims**

1. A solid state music player for reproducing and playing stored digital information from a magnetic bubble-memory device having exposed terminals, comprising:

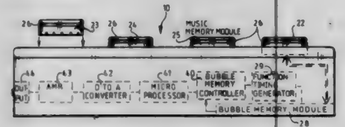
a bubble-memory module for receiving the bubble-memory device, which contains the stored program;

a function-timing generator, which is coupled to said bubble-

memory module for generating control and timing signals for said module;

a bubble-memory controller coupled to said function-timing generator and said bubble-memory module;

a microprocessor coupled to said bubble-memory controller the bubble-memory controller responding to commands from the microprocessor, to send control signals to the function-timing generator, necessary to access the digital data stored in the module, and reading stored digital information from said bubble-memory module, the controller performing a serial-to-parallel conversion of the stored data as the data is transmitted from said module to said microprocessor;



a digital-to-analog converter coupled to said microprocessor for converting the stream of digital information from the microprocessor into the analog signals;

amplifier means coupled to said converter for amplifying the converted analog signals;

a housing having a plurality of receptacles disposed in its top surface; and

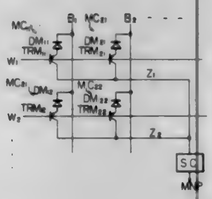
a plurality of electrical contacts coupled to said bubble-memory module and disposed in each of said receptacles along its peripheral walls, for contact with corresponding terminals on the bubble-memory device.

4,287,569

SEMICONDUCTOR MEMORY DEVICE

Toshitaka Fukushima, Yokohama, Japan, assignor to Fujitsu Limited, Japan

Filed Sep. 7, 1979, Ser. No. 73,486
Claims priority, application Japan, Sep. 8, 1978, 53-110503
Int. Cl.³ G11C *11/36, 17/06*
U.S. Cl. 365—96 **10 Claims**



1. A semiconductor memory device comprising:

a plurality of bit lines;

a plurality of word lines;

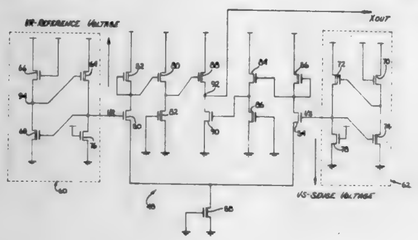
a plurality of memory cells operatively connected to and located at a cross position of said plurality of bit lines and said plurality of word lines, wherein each of said memory cells comprises an information storing element having a first terminal and a PNP type transistor connected in series with said information storing element, wherein said PNP type transistor comprises a P type semiconductor substrate, having a surface, forming the collector region; an N type epitaxial layer, formed on the surface of said P type semiconductor substrate, forming the base region; and a P type region, formed in said N type epitaxial layer, forming the emitter region, wherein said first terminal of said information storing element is operatively connected to one of said plurality of bit lines, wherein the base region of said PNP type transistor is operatively connected to one of said plurality of word lines, and wherein the collectors of the PNP type transistor of each of said plurality of memory cells are operatively connected at a node.

4,287,570

MULTIPLE BIT READ-ONLY MEMORY CELL AND ITS SENSE AMPLIFIER

Moshe Stark, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 1, 1979, Ser. No. 44,762
Int. Cl.³ G11C *17/00, 7/06*
U.S. Cl. 365—104 **1 Claim**



1. A memory circuit comprising:

characterizing source-to-drain width assuming a selected one of a discrete plurality of values;

comparator means coupled to said circuit device for comparing said selected one value of said width of said transistor against at least one predetermined value; and

logic means coupled to said comparator means for decoding the output of said comparator means into a number, said number having maximum magnitude equal to said discrete plurality of values of said width of said transistor, wherein said comparator means has a plurality of outputs one less in number than said discrete plurality of values of said transistor wherein each said output corresponds to a predetermined value, each said predetermined value being nested between two of said discrete plurality of values of said width of said transistor; and

wherein said comparator means includes a differential amplifier to compare said selected one of said discrete plurality of values of said width of said transistor against said predetermined value wherein said sense amplifier is comprised of a biased reference inverter, a biased sense inverter, a reference voltage source, a sense voltage source coupled to said field effect transistor, and an output amplifier, said sense voltage and reference voltage sources being substantially identical in circuit design and coupled to said biased inverters, said sense inverter coupled to said sense voltage source and said reference inverter coupled to said reference voltage source, said sense and reference inverters being coupled to the inputs of said output amplifier whereby analog voltages are analyzed by said comparator means to reliably produce digital voltage levels independent and self-compensating for changes in temperature, voltage, dimension and process variations;

whereby a memory circuit may be devised having more than two states for each memory cell.

4,287,571

HIGH DENSITY TRANSISTOR ARRAYS

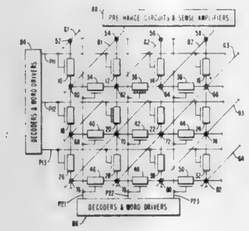
Satya N. Chakravarti, Troy, N.Y., and John A. Hiltebeitel, South Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1979, Ser. No. 74,272
Int. Cl.³ G11C *17/00, 11/40*
U.S. Cl. 365—104 **24 Claims**

1. A transistor array comprising:

a semiconductor substrate of a first conductivity having a given surface region and a plurality of surface regions of a second conductivity opposite to that of said first conductivity,

a plurality of first conductivity lines insulated from said substrate and arranged to define said given surface region and said plurality of surface regions, said given surface region being formed within an area defined on all sides by said plurality of conductive lines, and



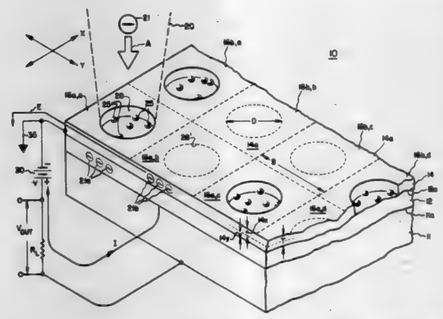
a plurality of second conductive lines, one of said second conductive lines being connected to said given surface region and the remaining lines of said plurality of second lines being connected to said plurality of surface regions, whereby a plurality of transistors is formed having a common current carrying electrode.

4,287,572

METHOD FOR WRITING ON ARCHIVAL TARGET AND TARGET PRODUCED THEREBY

Harold F. Webster, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,680
Int. Cl.³ G11C *11/26*
U.S. Cl. 365—128 **17 Claims**



1. A method for archival memory recording of data, comprising the steps of:

(a) providing a semiconductor substrate having a surface;

(b) fabricating a layer of insulative material upon said semiconductor substrate surface;

(c) selecting a conductive material which does not, when molten, wet the surface of the insulative layer;

(d) fabricating a layer of the selected non-wetting material upon the insulative material layer surface furthest from the substrate;

(e) assigning a two-dimentional array of potential data storage sites upon the surface of the masking layer furthest from said insulative layer;

(f) directing a beam of electrons sequentially to each of at least a portion of the array of potential data storage sites;

(g) imparting sufficient energy to the electrons of said beam to melt the material of said masking layer when said beam impinges at each data storage at which a first binary value of data is to be stored; and

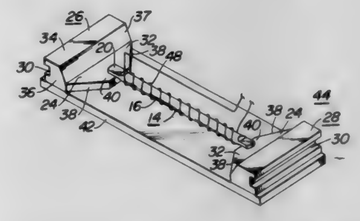
(h) imparting another value of energy to the electrons of said beam, insufficient to melt the material of said masking layer, when said beam impinges at others of the potential data storage sites of said array at which a remaining value of binary data is to be stored.

4,287,573

METHOD AND MEANS FOR COUPLING AN ELONGATED MAGNETIC DEVICE

Richard A. Lathlaen, Hatfield, Pa., assignor to TRW, Inc., Cleveland, Ohio

Filed Aug. 7, 1978, Ser. No. 931,924
Int. Cl.³ G11C *11/155*
U.S. Cl. 365—133 **42 Claims**



1. A method for coupling an elongated magnetic device to a magnetic circuit comprising the steps of

shaping the ends of an elongated magnetic device to provide a high ratio of surface area to volume and a contact surface at each end,

positioning and spacing the ends of a pair of members of a flux conductive means with respect to each other and securing them with a supporting means, and

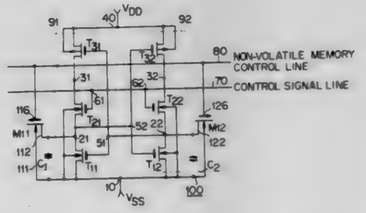
connecting the contact surface of each end of said magnetic device to a conforming portion of a respective one of the pair of spaced ends of the flux conductive means to provide a magnetic path through said conductive means and magnetic device and connections of high permeability and low coercivity therebetween.

4,287,574

MEMORY CELL WITH NON-VOLATILE MEMORY ELEMENTS

Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 28, 1979, Ser. No. 70,394
Claims priority, application Japan, Sep. 20, 1978, 53-114577
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—156 **26 Claims**



1. A memory circuit having non-volatile memory cells each with a bistable circuit including a couple of series each connected in such a way that first and second insulated gates transistors of the first channel type and a third gate transistor of the second channel type are connected in series fashion, a common connection part is provided commonly connecting the gates of the first and third insulated gate transistors, a control signal is applied to the gate of the second insulated gate

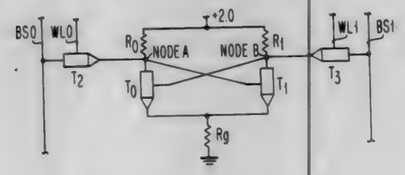
transistor through a control signal line, separate from said common part, and an output part is provided which is a connection part connecting the first or third insulating gate transistor and the second insulated gate transistor, the connection part of one of the series circuit being connected to the output part of the other series circuit while the output part of the former, to the connection part of the latter, wherein a non-volatile memory element is connected to the connection part of said first and second insulated gate transistors of one of said series circuits.

4,287,575

HIGH SPEED HIGH DENSITY, MULTI-PORT RANDOM ACCESS MEMORY CELL

David B. Eardley, Stanfordville, and Richard E. Matick, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,070
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—174 **5 Claims**



1. In a random access memory system comprising a plurality of bit storage cells any two of which are individually addressable during a reading operation to simultaneously provide to first and second sense amplifiers, signals corresponding to the binary value of the data stored in said cells at said two addressed locations, said locations being defined by two separate address signals;

each of said cells comprising a first pair of cross-coupled transistors having their respective emitters connected to ground through a common resistor and their respective collectors connected to a predetermined voltage source through associated resistors, whereby two control nodes are established for controlling which of said transistors is placed in a conducting state, the improvement comprising in combination:

first and second input/output transistors each having its emitter connected to a different control node,

a pair of word lines for each row of said matrix and a pair of sense lines for each column of said matrix,

means connecting one of said pair of said word lines associated with each row to the base of each said first input/output transistor in said row, and the other word line of said pair of word lines to the base of each of said second input-/output transistors in said row,

means connecting one of said pair of sense lines associated with each column to the collector of each of said first input/output transducers in said column, and the other one of said pair of sense lines associated with said column to the collector of each said second input/output transistor in said column,

means for pulsing one of said word lines connected to the base of said first input/output transistor and means for simultaneously pulsing one of said word lines connected to the base of said second input/output transistor whereby each cell in the row associated with said pulsed word line connected to the base of said first input/output transistors causes a change in signal level on the sense line associated with said first input/output transistor if said cell contained one binary value and no change in signal level if said cell contained the other binary value, and each cell in the row associated with said pulsed word line connected to said second input/output transistor causes a change in signal level of the sense line associated with said second input-/output transducer if said cell contains said other binary value and no change in signal level if said cell contained said one binary value, and if said cell contained said one binary value, and

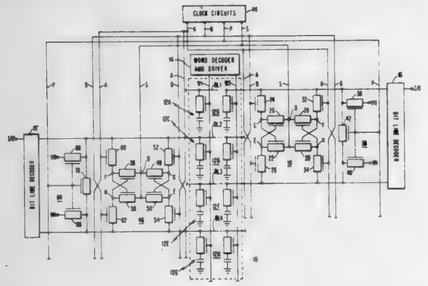
means responsive to said first and second address signals for selecting one first and second sense line to be sensed.

4,287,576

SENSE AMPLIFYING SYSTEM FOR MEMORIES WITH SMALL CELLS

Wilbur D. Pricer, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,259
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **10 Claims**



9. A memory comprising;

an array including;

first, second, third and fourth consecutively and parallelly arranged bit lines, a plurality of parallel word lines arranged orthogonal to said bit lines and a cell disposed at the intersection of each of said bit and word lines,

a first sense amplifying system;

first and second tandemly arranged differential amplifiers connected to the ends of said first and third bit lines at one edge of said array,

first means including a first pair of isolation devices for selectively coupling said first differential amplifier to said first and third bit lines,

second means including a second pair of isolation devices for selectively coupling said second differential amplifier to said first and third bit lines, and

third means for establishing a reference potential coupled to said first and third bit lines, and

a second sense amplifying system including;

third and fourth tandemly arranged differential amplifiers connected to the ends of said second and fourth bit lines at an edge of said array opposite to that of said one edge,

fourth means including a third pair of isolation devices for selectively coupling said third differential amplifier to said second and fourth bit lines,

fifth means including a fourth pair of isolation devices for selectively coupling said fourth differential amplifiers to said second and fourth bit lines, and

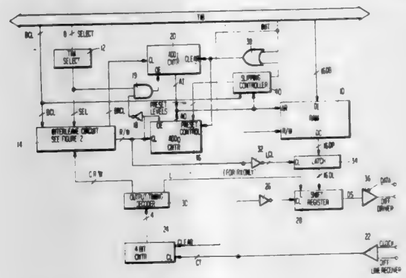
sixth means for establishing said reference potential coupled to said second and fourth bit lines.

4,287,577

INTERLEAVED TDMA TERRESTRIAL INTERFACE BUFFER

Joseph H. Deal, Jr., Clarksburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,681
Int. Cl.³ G11C *8/00*
U.S. Cl. 365—233 **19 Claims**



1. A buffer memory system comprising:

a Random Access Memory (RAM) having a data input terminal for receiving input data to said RAM, a data output terminal for providing output data from said RAM, an address input terminal for receiving signals indicative of address locations within said RAM and a read/write input terminal for receiving read and write signals, said memory storing said input data at an input address location in response to a write signal and an input address signal and providing output data from an output address location in response to an output address signal and a read signal;

input address means for providing an input address to said address input terminal in response to an enabling signal;

output address means for providing an output address to said address input terminal in response to an enabling signal;

enabling means for providing nonoverlapping enabling signals to said input and output address means to thereby multiplex said input and output address signals onto said address input terminal; and

read/write means synchronized with said enabling means for providing non-overlapping read and write signals to said read/write terminal.

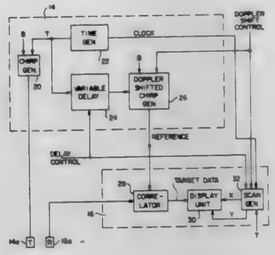
4,287,578

METHOD FOR SHAPING AND AIMING NARROW BEAMS

Richard C. Heyser, Tujunga, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 7, 1979, Ser. No. 92,143
Int. Cl.³ G01S *15/04, 15/89*
U.S. Cl. 367—88 **12 Claims**

1. In a process for transmitting a beam of frequency chirped wave energy, and for both receiving chirped wave energy from targets having relative motion and for correlating time delayed chirped wave energy with received chirped wave energy, a method of synthesizing a narrow beam from otherwise broadbeam wave energy by so controlling the frequency bandwidth, B, and the time, T, of transmitted chirps that for a narrower beamwidth under given conditions the time-bandwidth product, TB, is increased, and producing time delayed



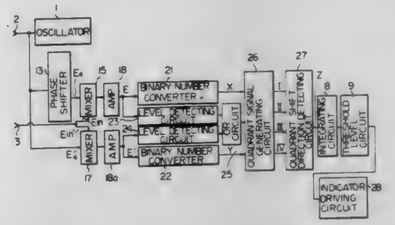
replicas of transmitted chirps for correlation with received chirps.

4,287,579

MOVING OBJECT DETECTING DEVICE

Hiromitsu Inoue, Kyoto; Hiroshi Ohashi, Hirakata, and Mikio Kondo, Tsu, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 8, 1979, Ser. No. 92,487
Claims priority, application Japan, Aug. 11, 1978, 53-137454
Int. Cl.³ G01S *15/04*
U.S. Cl. 367—94 **6 Claims**



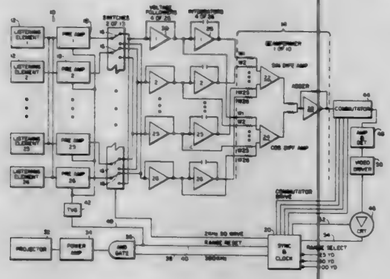
1. A moving object detecting device comprising an oscillator, a radiating-wave transducer, a received-wave transducer receiving reflected waves from a moving object and converting said reflected waves to a received-wave signal, a mixing means for converting said received-wave signal to a pair of vector signals, a pair of binary number converters converting said pair of vector signals to a pair of binary numbers, a quadrant signal generating circuit generating a quadrant signal depending on said pair of binary numbers, a quadrant shift direction detecting circuit generating one of shift direction signals of positive and negative voltages corresponding to a vector shifting direction based on a pair of signals including informations on said quadrant signal, an integrating circuit integrating said shift direction signal, a threshold level circuit detecting output levels of said integrating circuit, and an indicator driving circuit driven by an output of said threshold level circuit, the presence of said moving object being detected by judging shifting direction of respective quadrants through which the vector of the received-wave signals pass.

4,287,580

MINIATURIZED SCAN WITHIN A PULSE SONAR

Jack E. Holzschuh, Kailua, Hi., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 4, 1980, Ser. No. 109,940
Int. Cl.³ G01S *15/42, 3/84*
U.S. Cl. 367—105 **9 Claims**



1. In a scanning sonar the improvement comprising:
a line array of N listening transducer elements, each listening element being capable of receiving an acoustic signal and outputting a corresponding electrical signal;
a plurality of beamformers, each beamformer having an input and an output, the input of each beamformer receiving the outputs of the listening elements; and
switch means interconnected between the listening elements and the beamformers for alternately switching the outputs of the listening elements to each beamformer between two modes, one mode being a predetermined order and the other mode being an inversion of said predetermined order.

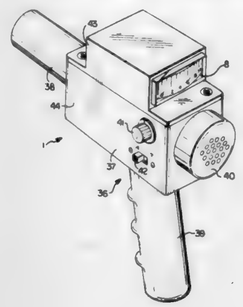
4,287,581

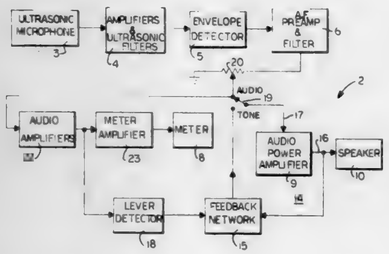
ULTRASONIC FLUID LEAK DETECTOR

Dory J. Neale, Sr., 3710 Shore Acres Blvd., St. Petersburg, Fla. 33703

Filed Feb. 19, 1980, Ser. No. 122,584
Int. Cl.³ G01M *3/24*
U.S. Cl. 367—135 **14 Claims**

1. In a device for detecting ultrasonic noise including a microphone responsive to ultrasonic frequencies, ultrasonic amplifier means connected to said microphone and including filter means responsive to a selected range of ultrasonic frequencies, audio frequency signal means providing an audio frequency envelope signal having characteristics of the ultrasonic noise received, an audio power amplifier connected to said audio frequency signal means, and speaker means connected to said audio power amplifier to convert the amplified audio frequency signal to sound, the improvement comprising:
(a) level detector means operatively connected to said audio frequency signal means and operative to provide a control signal having a level proportional to the amplitude of said audio frequency envelope signal; and
(b) alarm means connected to said audio power amplifier and said level detector means and operable upon said control signal exceeding a selected level and in cooperation with said audio power amplifier to trigger an alarm signal and





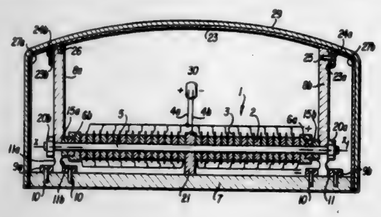
emit an audible indication of the detection of said ultrasonic noise.

4,287,582

PIEZO TRANSDUCERS WITH MECHANICAL AMPLIFICATION FOR VERY LOW FREQUENCIES, AND ACOUSTIC ANTENNAS

Bernard Tocquet, Sanary-sur-Mer, France, assignor to Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed May 8, 1979, Ser. No. 37,055
Claims priority, application France, May 8, 1978, 78 13466
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—163 **9 Claims**



1. A low frequency piezoelectric transducer for receiving and transmitting acoustic waves in water comprising:
at least one stack of piezoelectric elements having two axially opposite ends;
two levers placed on opposite sides of said stacks so that each of the two ends of each stack rests against one of the two levers near a point of support of one end of each of said levers;
a rigid base plate on which said one end of the two levers are supported;

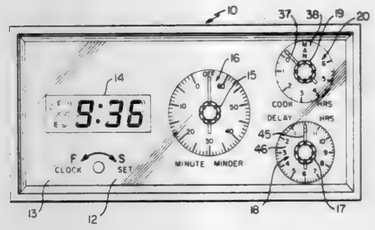
and a horn formed of a flexible elastic diaphragm connecting together the remaining ends of the two levers.

4,287,583

CONTROL PANEL UNIT AND TIMER UNIT AND METHOD THEREFOR

Robert Strachan, Walcott, and Carl J. Goodhouse, Litchfield, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 872,610, Jan. 26, 1978, Pat. No. 4,182,112. This application Jul. 20, 1979, Ser. No. 59,244
The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.
Int. Cl.³ G04B *47/00*; G04F *8/00*
U.S. Cl. 368—10 **14 Claims**



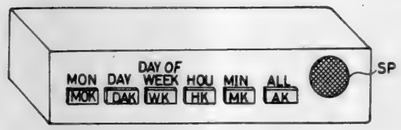
1. A method of operating a control panel unit for a cooking apparatus or the like and having a clock construction for indicating the time of day and a timer control means for selecting a delay time period and a cooking time period for causing said apparatus to provide a cooking operation for said cooking time period following the elapsing of said delay time period, said clock construction comprising an electronic clock means that has a liquid crystal time of day indicating means, said timer control means comprising electromechanical means that operate independently of said electronic clock means, said method comprising the steps of setting said timer control means to a desired delay time interval from the observed actual time of day on said clock construction based upon a selection of a number of increments of time from said observed actual time that the cooking operation is to begin, and, thereafter, setting said timer control means to a desired cooking time interval based upon a selection of a number of increments of time that the cooking operation is to last from the elapsing of said delay time period.

4,287,584

SPEECH-SYNTHESIZER TIMEPIECE

Akira Tanimoto, Kashihara, and Mituhiro Saizi, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1979, Ser. No. 18,174
Claims priority, application Japan, Mar. 25, 1978, 53-34681
Int. Cl.³ G04B *21/08*
U.S. Cl. 368—63 **5 Claims**



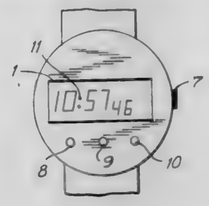
1. A speech synthesizer timepiece capable of producing audible sounds indicative of updated time and updated calender information, comprising,
means for producing said updated time and updated calendar information and for developing time information output signals and calender information output signals indicative, respectively, of said updated time information and said updated calender information;
input means for selecting desired time information or desired calender information for audible sound producing purposes;
memory means for storing a plurality of sound-related codes therein;
a first voice initial address circuit means responsive to said time information output signals and said calender information output signals and to the selection made via said input means for developing a first set of voice initial addresses representative of the location in said memory means storing the sound-related codes indicative of at least a portion of the desired time or calender information selected via said input means;
a second voice initial address circuit means responsive to the selection made via said input means for developing a second set of voice initial addresses representative of the location in said memory means storing the sound related codes indicative of an adjective phrase describing the body of the desired time or calendar information;
locating means responsive to said first and second set of voice initial addresses from said voice initial address circuit means for locating selected ones of said sound-related codes in said memory means, said memory means generating first and second output signals in a predetermined order in response thereto, said first output signals from said memory means representing said desired time or calendar information, each of said second output signals from said memory means being developed subsequent to the development of a corresponding one of said first output signals and representing said adjective phrase describing the body of said desired time or calendar information represented by said corresponding one of said first output signals; and
audible sound generation means responsive to said first and second output signals from said memory means for developing audible sounds in accordance with said first output signals from said memory means and for developing audible sounds in accordance with said second output signals from said memory means, each said audible sounds corresponding to said second output signls being developed subsequent to a corresponding one of the audible sounds developed from said first output signals.

4,287,585

CHRONOGRAPH WRISTWATCH

Hitomi Numabe, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 404,452, Oct. 9, 1973, Pat. No. 3,992,871. This application Nov. 22, 1976, Ser. No. 744,056
Claims priority, application Japan, Oct. 9, 1972, 49/101231
Int. Cl.³ G04C *19/00*; G04F *8/00*
U.S. Cl. 368—82 **1 Claim**



1. An electronic timepiece comprising oscillator means for generating relatively high frequency time standard signals; chronographic divider means coupled to said oscillator means and adapted to produce low frequency chronographic signals representative of elapsed time in response to said time standard signals; timekeeping divider means coupled to said oscillator

means and adapted to produce low frequency timekeeping signals representative of present time in response to said time standard signals; selector circuit means coupled to said chronographic divider means for receiving said chronographic signals and to said timekeeping divider means for receiving said timekeeping signals, said selector circuit means having an output to which one of said chronographic signals and timekeeping signals are selectively applied; and digital display means coupled to the output of said selector circuit means, said digital display means including display elements for displaying one of an elapsed time and lap time in response to said chronographic signal being supplied by said selector circuit means and present time in response to said timekeeping signals supplied by said selector circuit means, said display means including further visual indication means, said further visual indication means being selectively disposed to a preselected visual mode representative of the selective coupling of said chronographic divider means output to said digital display means to display lap time and the continued counting of elapsed time of said chronographic divider means, said further visual indication means including at least one dot in the region of, but not forming a part of, the digital display of time, said dot being flickered when said display means is selectively coupled to the chronographic divider means.

4,287,586

SIGNALING TIME DETECTING DEVICE FOR LEAF TYPE DIGITAL CLOCK

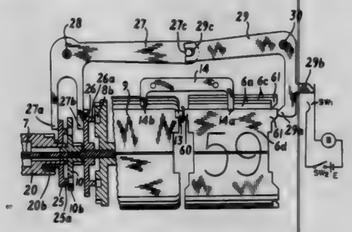
Masuo Ogihara; Kozo Chimura; Nobuo Shinozaki, and Yoichi Seki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,517

Claims priority, application Japan, Dec. 28, 1978, 53/163740; Dec. 28, 1978, 53/163741

Int. Cl.³ G04B *19/02*; G04C *21/16*

U.S. Cl. 368—222 **8 Claims**



1. In a signaling time detecting device for a leaf type digital clock, including a hour time wheel and a detection plate which corresponds to said hour time wheel and whose phase changes in accordance with the setting of an alarm signaling time so as to move said detection plate in order to actuate an alarm device when said hour time wheel and detection plate are brought into coincidence in phase with each other, said time detecting device comprising: a first detecting lever adapted to cooperate with said detection plate; a projection provided on each of some of a plurality of minute leaves, said some leaves occurring at a constant interval; a second detecting lever adapted to cooperate with any one of the projections and to be driven by said first detecting lever; and a switch adapted for rendering the alarm device operable in response to the action of either said first or second detecting lever.

4,287,587

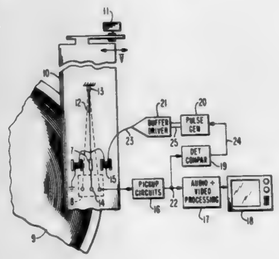
SIGNAL LOSS DECTECTOR FOR VIDEO DISC

Elvin D. Simshauser, Columbus, and Richard W. Nosker, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,235

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—50 **7 Claims**



1. In a video disc player having apparatus for recovering prerecorded signals from a disc record, circuitry for generating a control signal responsive to degradation in the recovered signal comprising:

signal amplitude detector means having an input terminal connected for receiving said recovered signal, and having an output terminal, wherein the time constant at the output terminal thereof is long compared with cyclical changes of the recovered signal;

divider means connected to the output terminal of the detector means for proportioning the signal thereat, the rate of change of the proportioned signal being long compared to the rate of change of the detector means output signal;

comparator means having a first input terminal connected for receiving the proportioned signal and a second input terminal connected for receiving the detector means output signal, and having an output terminal for providing a control signal, said control signal from the comparator means being normally at a first output signal level but changing to a second level when the signal level at its second input terminal falls below the signal level at its first input terminal.

4,287,588

MULTIPLE ACCESS, TIME-DIVISION MULTIPLEX, SATELLITE COMMUNICATIONS SYSTEM

Samuel M. Segner, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1979, Ser. No. 29,182

Int. Cl.³ H04L *5/14*; H04B *7/26*

U.S. Cl. 370—29 **8 Claims**

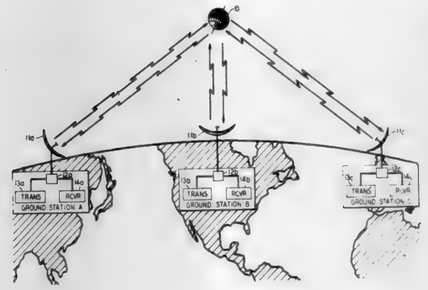
1. A time-division, multiple access satellite communications system comprising at least one orbiting satellite repeater and n ground stations, $n \geq 2$, communicating with each other via said satellite, each of said ground stations including a transmitter, a receiver and an antenna connected thereto, characterized in that:

said transmitter and receiver operate in full duplex mode on the same uplink and downlink frequency, and each of said ground stations further comprises:

(a) means for processing a plurality of information channels for transmission as a compressed pulse sequence to the remaining (n-1) ground stations in said system, each of said information channels having priorly been sampled and digitized;

(b) first means for multiplexing said plurality of information channels into a sequence of digital samples for transmission in the one or more time slots allocated to that ground station in a transmission frame or epoch having a duration, on the average, n times greater than the duration of said sequence, the sequence generated by each multiplexing means in said system occupying a unique, non-overlapping segment of said transmission frame or epoch;

(c) means for modulating said transmitter with the output of said multiplexing means; and



(d) means interposed between said antenna and the output of said transmitter, for enabling said transmitter for transmission to said satellite only during the time duration of the corresponding sequence of digital samples.

4,287,589

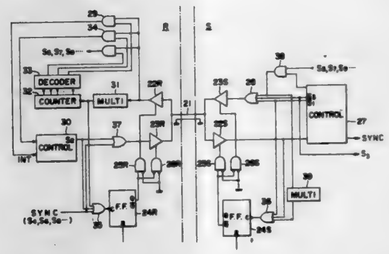
TRANSMISSION-RECEPTION APPARATUS

Hiroya Nakamura, Kunitachi, and Yasuhide Nishida, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1979, Ser. No. 66,528

Int. Cl.³ H04L *5/16*

U.S. Cl. 370—31 **3 Claims**



1. Transmission-reception apparatus comprising a pair of stations connected by a single transmission channel, each of said stations being capable of operating in a receiving mode in which it accepts inputs from the other and in a transmitting mode in which it emits inputs to the other, at least one of said stations being capable of receiving and processing information signals transmitted to it by the other station, said apparatus being characterized by:

A. said one of said stations having control means for emitting successive synchronizing pulses at regular intervals;

B. said one station further having means comprising gate means for transiently converting said one station from its receiving mode to its transmitting mode during the emission of each synchronizing pulse;

C. said other station having means comprising a monostable multi-vibrator and gate means

(1) for maintaining said other station in its transmitting mode for a period which begins upon receipt by said other station of each synchronizing pulse and which has a predetermined duration that is not longer than the interval between successive synchronizing pulses,

(2) for converting said other station to its receiving mode upon termination of each said period, and

(3) for emitting an information signal during each said period.

4,287,590

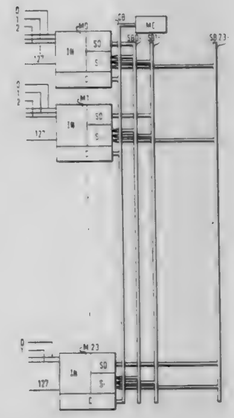
TIME DIVISION MULTIPLEX COMMUNICATION SYSTEM

Raymond T. G. Boute, Antwerp; Wilfried L. J. De Kinder, Kalmthout; Gustaaf W. T. Neutjens, Hoboken; Andre G. G. Pochet; Jan P. M. Vanderschoot, both of Antwerp, and Jacques D. A. Van Remortel, Bazel, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,767

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—59 **12 Claims**



3. Time Division Multiplex (TDM) communication system including a plurality of TDM busses able to exchange signals through time slots on said busses and each time slot being divided into a number of time intervals, the invention in which the system is comprised of a plurality of modular units interconnected by said busses, each bus being connected to a plurality of terminal circuits, each unit including a signal processor, a space switch and a time switch, the space switch including means for forwarding during successive time intervals of a time slot, successive communication samples from distinct busses towards a time switch for shifting all said samples to another time slot and under the control of the signal processor individual to the unit, and wherein said signal processors are interconnected through a common control bus via which control information is interchanged between said processors.

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COMMUNICATIONS TRANSMISSION SYSTEM

Herbert Strehl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,327

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2827040

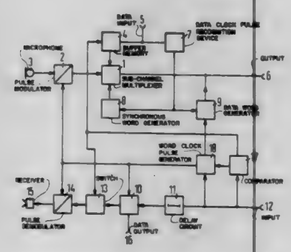
Int. Cl.³ H04J *3/16*

U.S. Cl. 370—83 **1 Claim**

1. In a communications transmission system of the type in which pulse modulated analog signals and digital signals are transmitted between subscriber stations over a transmission medium, the improvement therein in which a subscriber station comprises:

a speech microphone

a speech receiver;
a data input for receiving data;
a data output for emitting data;
a station output for connection to the transmission medium;
a station input for connection to the transmission medium;
a pulse modulator having a first input connected to said microphone, a second input and an output;
a sub-channel multiplexer having a first input connected to said pulse modulator, a second input, a third input, and an output connected to said station output;
a buffer memory having a first input connected to said data input, a second input and an output connected to said second input of said sub-channel multiplexer;
a data clock pulse recognition circuit having an input connected to said data input, and an output;
a synchronous word generator having an input connected to said output of said data clock pulse recognition circuit, and an output connected to said third input of said sub-channel multiplexer;
a data word generator having a first input connected to said output of said data clock pulse recognition circuit, a second input and an output connected to said station output;



a delay circuit connection to said station input;
a sub-channel demultiplexer having a first input connected to said station input via said delay circuit, a second input, a first output connected to said data output, and a second output;
a switch having a first input connected to said second output of said sub-channel demultiplexer, a second input, and an output;
a pulse demodulator having a first input connected to said output of said switch, a second input, and an output connected to said speech receiver;
a data word comparator including an input connected to said station input, a first output connected to said second input of said switch and said second input of said buffer memory, and a second output;
and a bit and word clock pulse generator including a first input connected to said station input, a second input connected to said second output of said data word comparator, a first output connected to said second input of said data word generator, and a second output connected to said second inputs of said pulse modulator and said pulse demodulator.

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METHOD AND APPARATUS FOR INTERFACING STATIONS IN A MULTILOOP COMMUNICATIONS SYSTEM

Daniel J. Paulish, Downingtown; Albert J. Meyerhoff, Wynnewood, and George R. Nickett, Warrington, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 23, 1979, Ser. No. 41,870
Int. Cl.³ G08B *5/00*
U.S. Cl. 370—88 **41 Claims**

1. A method of transmitting data from a first station of a communications system to a second station of said communications system, said communications system including a plurality of interconnected communications loops, each of said loops including a ring-connected set of nodes providing data flow unidirectionally from one node to the next, each of said nodes being capable of passing data through itself along its loop, extracting data from its loop or injecting data into its loop, a first subset of each of said loop's set of nodes being local nodes which interface a station to said loop, a second subset of each of said loop's set of nodes being gateway nodes which interface to another of said gateway nodes, each of said stations having associated with it a logical address unique within said communications system, each of said nodes having associated with it a functional address unique within each of said node's respective loop, said method of comprising the steps of:

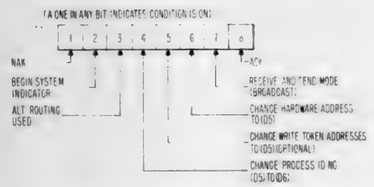
a. translating the logical address of said second station into a second station functional address, said second station functional address specifying the functional address of the local node j to which said second station interfaces if said local node j is on the same loop as the local node i to which said first station interfaces, otherwise said second station functional address specifying the functional address of a gateway node r on the loop node i is on;

a (1). forming a packet of data at the local node i, said packet including an address field and at least one information field, said address field including said second station functional address, said information fields including the logical address of said second station;

b. transmitting to the loop connected to the current packet forming node said formed packet;

c. receiving said formed packet at the node on said loop downline from the current transmitting node;

d. accepting said received packet at said receiving node if



the received packet's second station functional address matches the functional address associated with said receiving node and said receiving node is a local node;

e. if the received packet's second station functional address matches the functional address of the receiving node and the receiving node is one of said loops gateway nodes, transmitting the information fields of said received packet to the gateway node connected to said receiving node and

h. receiving the information fields of said received packet at the gateway node connected to said receiving node,

h (1). translating the received information field corresponding to the logical address of said second station into a corresponding functional address, said corresponding functional address specifying the functional address of the local node j to which said second station interfaces if said local node j is on the same loop as said connected gateway node, otherwise said corresponding functional address specifying the functional address of one of said gateway nodes on the loop connected to said connected gateway node,

i. forming a second packet at the connected gateway node, said second packet including an address field and at least one information field, the address field of said second packet including as its second station functional address the corresponding functional address, the information fields of said second packet including the logical address of said second station, and

j. repeating steps b through f; and

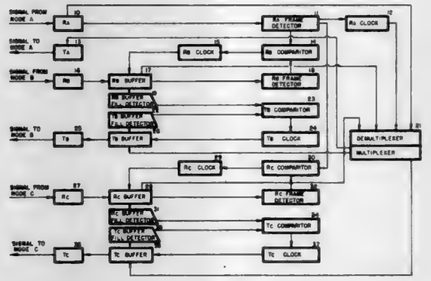
f. repeating steps b through e if the received packet's functional address does not match the functional address of the receiving node.

4,287,593

PRESERVATION OF EQUAL TIME DELAYS FOR DIFFERENT PATHS THROUGH DIGITAL COMMUNICATIONS REPEATERS

Harris A. Stover, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 808,010, Jun. 20, 1977, Pat. No. 4,142,069. This application Feb. 9, 1979, Ser. No. 10,765
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—103 **5 Claims**



1. A time reference distribution system for distributing an accurate time reference to a plurality of nodes of an electronic network wherein each node of said network comprises:

a. a local clock;

b. means for measuring the local clock's time error relative to a system master clock;

c. means for weighting (where such weighting may include a selection function) the paths connecting the nodes over which the time reference is distributed through the network; and

d. means for correcting the time error, of the local clock so that said means for measuring the local clock's time error is not affected by the correction of the clock error at any other node and so that the time reference distribution system does not contain any closed distribution paths; paths connecting each node to one or more neighboring nodes, which distribution system can also be used to synchronize the network and which network contains means for preserving essentially the same signal transit time in both directions of transmission on a duplex transmission path through said means which comprises:

(1) a plurality of receivers, each of which receives an incoming signal from a different node of an electronic network;

(2) a plurality of transmitters, paired with the corresponding receivers, each of which transmits an outgoing signal to a node of the electronic network from which a signal is received;

(3) a demultiplexer/multiplexer, which provides demultiplexing of each received signal and reassignment of each demultiplexed channel to establish new combinations which are multiplexed for transmission, thus permitting duplex communications among all of the nodes which interface with one another through the apparatus;

(4) a first set of variable storage buffers between the receivers and the demultiplexer/multiplexer, which insures through appropriate control means that the incoming signals are in synchronism as they arrive at the demultiplexer/multiplexer;

(5) a second set of variable storage buffers, each buffer interposed between the demultiplexer/multiplexer and a transmitter; and

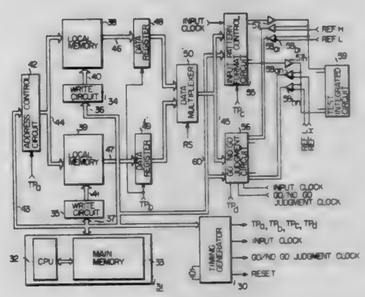
(6) means for controlling the second set of variable storage buffers in such manner that they add delays to signals transmitted to nodes that are essentially the same as delays that the first set of variable storage buffers put in the signals received from those same nodes.

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FUNCTION TEST EVALUATION APPARATUS FOR EVALUATING A FUNCTION TEST OF A LOGICAL CIRCUIT

Hisatoshi Shirasaka, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 12, 1979, Ser. No. 102,835
Claims priority, application Japan, Dec. 23, 1978, 53-160709
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—25 **1 Claim**



1. A function test evaluation apparatus for evaluating the functioning of an integrated logic circuit comprising:

a control section including a main memory for storing input test information to be supplied to an integrated circuit to be tested and expected value information to be compared with real value information outputted from the integrated circuit after testing, a central processing element for performing various controls;

a plurality of memory means for addressably storing the input test information supplied from said main memory of said control section and the expected value information and for outputting said input test information and said expected value information when addressed;

a plurality of write circuit means for addressably writing the input test information and the expected value information outputted from said main memory into said plurality of memory means;

an address control circuit means for simultaneously supplying the same address information through a plurality of said memory means;

a plurality of data register means for storing said input test information and said expected value information outputted from said memory means when said memory means are addressed by said control circuit and for outputting said stored information in parallel;

parallel-to-serial converting means for receiving said information outputted by said data register means and for converting said received information into serial data;

a pattern format control circuit for receiving and shaping said serial data and supplying said shaped data to said integrated circuit to be tested; and

judgment circuit means for comparing the expected value information outputted serially from said parallel-to-serial converting circuit with the information outputted from said integrated circuit after said integrated circuit has been supplied with said input test information.

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ADAPTIVE DELTA-MODULATION NETWORK

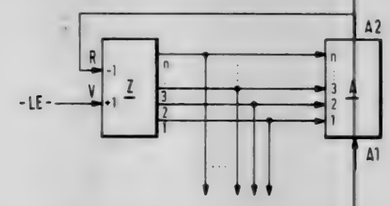
Charles Meyers, Herten, Luxembourg, assignor to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Oct. 29, 1979, Ser. No. 88,867

Claims priority, application Luxembourg, Nov. 11, 1978, 2849001

Int. Cl.³ H03K *7/00*

U.S. Cl. 375—28 **12 Claims**



1. A circuit operative for developing a signal which is proportional to the number of pulses appearing per unit time in a pulse train, the circuit comprising a forwards-backwards counter having a forwards input and a backwards input, said forwards input of the counter receiving the pulses of a first pulse train; means responsive to the count on the counter and applying to said backwards input of the counter a second pulse train, the number of pulses contained in the second pulse train per unit time varying in proportion to the count on the counter; and digital-to-analog converter means receiving the count on the counter and converting the count into a corresponding analog signal whose value indicates the number of pulses appearing per unit time in the first pulse train.

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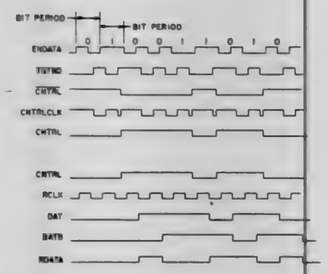
DATA RECOVERY SYSTEM FOR USE WITH A HIGH SPEED SERIAL LINK BETWEEN TWO SUBSYSTEMS IN A DATA PROCESSING SYSTEM

Venu Chari, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 26, 1979, Ser. No. 98,019

Int. Cl.³ H04L *27/10*

U.S. Cl. 375—49 **11 Claims**



1. A data processing system, comprising:
at least two subsystems;
a bit serial line for transmitting data between said two subsystems;
a data encoder at each subsystem for encoding the data into a signal having the form of phase encoded pulses, with a first transition at the beginning of each bit period of the phase encoded pulses, a second transition before the next bit period in order to indicate one of two data values, and a lack of the second transition before the next bit period in order to indicate the other of two data values; and
a data recovery circuit at each subsystem for receiving the phase encoded pulses from the bit serial line and decoding the phase encoded pulses to recover the data, said data recovery circuit including means for sampling the phase encoded pulses at a point after the midpoint of each bit period but before the end of that bit period and storing the sampled signal, so that the sampled signal has a transition indicating whether there is a second transition during each bit period of the phase encoded pulses;
said means for sampling including means for delaying the phase encoded pulses by a period between a one-half bit period and a bit period, so that the delayed signal has a transition occurring between the midpoint and end of each bit period of the phase encoded pulses and can be used to sample the phase encoded pulses.

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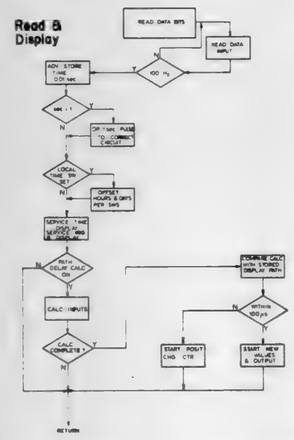
SATELLITE CONTROLLED CLOCK

Donald A. Paynter, and Lee Burpee, both of Goleta, Calif., assignors to Arbiter Systems Incorporated, Goleta, Calif.

Filed Sep. 5, 1978, Ser. No. 939,849

Int. Cl.² H04L *7/00*

U.S. Cl. 455—12 **24 Claims**



1. A receiver from satellite transmitted radio frequency carrier modulated signals in the form of pulse coded information of time values and satellite position having a known pulse rate, comprising:
a variable frequency radio frequency stage;
means for scanning said radio frequency stage over a range including the frequency of said radio frequency carrier;
means for detecting said radio frequency carrier;
means responsive to the detection of said radio frequency carrier to terminate frequency scanning and for tracking said carrier thereafter;
a clock having a nominal frequency related to the pulse rate of said time value signals from said satellite;
means responsive to the termination of scanning of said radio frequency stage for synchronizing said clock with the pulse rate of said time value signals from said satellite;
a delay path calculator;
means responsive to a detection of synchronization of said clock with the pulses of said time signals for enabling said delay path calculator for calculating the transmission path delay time to said satellite;
said delay path calculator including;
means for introducing actual receiver location information into said delay path calculator, means for calculating the path delay from satellite position received from said satellite and receiver position data;
means responsive to the delay path calculation for shifting said clock time value corrected by said delay path calculation; and
means for displaying path delay corrected decoded local time code signals.

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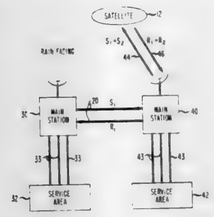
COOPERATING ARRANGEMENT FOR DIVERSITY STATIONS

Rollin E. Langseth, Colts Neck, and Yu S. Yeh, Freehold Township, Monmouth County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1979, Ser. No. 104,190

Int. Cl.³ H04B *7/02*

U.S. Cl. 455—52 **8 Claims**



5. A transmitting and receiving cooperating diversity station (**30** or **40**) for use in a space diversity arrangement wherein a pair of such stations are spaced-apart and interconnected by a communication link (**20**) and wherein each station is capable of providing two-way communication with a distant point (**12**), the station comprising:
fade detecting means (**100**) capable of detecting a fade condition occurring in transmissions between the station and the distant point and for generating a control signal representative of such fade condition characterized in that
the station further comprises:
means (74_1–74_n, **76**, **94**, 95_1–95_n) capable of handling two-way traffic with an associated service region (**32** or **42**) via an associated distribution network (**33** or **43**); and
diversity switching means (**70**, **102**, **104**, **105**, **108**, **110**, **116**, 118_1–118_{N+1}, 120_1–120_{N+1}) capable of (a) being responsive to control signals from the fade detecting means for generating a take-over control signal which is applied to an input to the communication link for transmission to the other station of the pair of spaced-apart interconnected stations and for switching normal two-way communications with the distant point directly to the input to the communication link to permit such two-way communications to be transmitted via the communication link and the other station of the pair of spaced-apart interconnected stations to the distant point, and (b) being responsive to a take-over control signal received from the other station of the pair of spaced-apart interconnected stations at an output from the communication link for providing the capability of two-way communications between the transmitting and receiving cooperating diversity station and the distant point for both normal two-way communications associated with the related service region and two-way communications received on the communication link that would normally be sent by the other station of the pair of spaced-apart interconnected stations to the distant point.

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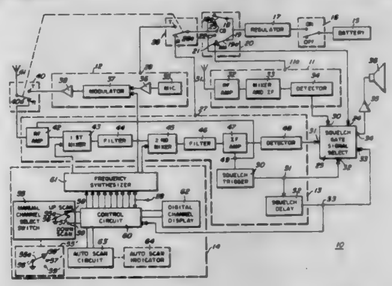
MULTI-CHANNEL COMMUNICATION DEVICE WITH MANUAL AND AUTOMATIC SCANNING ELECTRONIC CHANNEL SELECTION

Nikolai Goncharoff, Hoffman Estates, and Dennis M. Puntil, Melrose Park, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 711,036, Aug. 2, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,544

Int. Cl.³ H04B *1/44*; H03J *7/32*

U.S. Cl. 455—77 **30 Claims**



6. A multi-channel communication device operable on a plurality of predetermined channels, said communication device comprising:
at least one receiver means manually tunable by a first manual actuator for receiving signals on any selected one of a predetermined plurality of discrete channels, and receiver means producing audible signals related to the signals received on said selected channel;
means coupled to said receiver means for implementing an automatic scan tuning mode which comprises continuously automatically tuning, in discrete steps, said receiver means to each of said discrete channels in a predetermined sequence, said automatic tuning mode being implemented in response to the existence of a scan enable signal, said automatic tuning means including switch means having a second manual actuator with at least a first and second position, said switch means producing and maintaining said scan enable signal in response to an initial manual movement of said second actuator from said first to second position;
said automatic scan tune mode implementing means including means coupled to said receiver means for automatically producing, as part of said automatic scan tuning mode, a first inhibit signal for temporarily inhibiting, during the existence of said automatic scan tuning mode, further automatic channel tuning during and in response to the reception of a received channel signal by said receiver means of said channel that said receiver means is tuned to and automatically reinstating said automatic scan tuning sequence subsequent to and in response to the termination of the reception of the channel signal; and
transmitter means for selectively transmitting signals on a selected channel corresponding to the selected channel that said receiver means is tuned to, said transmitter means coupled to said receiver means for producing a second inhibit signal for terminating said automatic scan tuning mode in response to actuation of said transmitter means, wherein said automatic scan tuning mode is terminated by said second inhibit signal transmitting said scan enable signal, and subsequent continuous automatic tuning in said automatic scan tuning mode is thereby prevented until said scan enable signal is recreated by again moving said switch means second actuator, whereby the transmission of signals will terminate the automatic scan tuning mode and prevent the automatic resumption of scan tuning thereafter.

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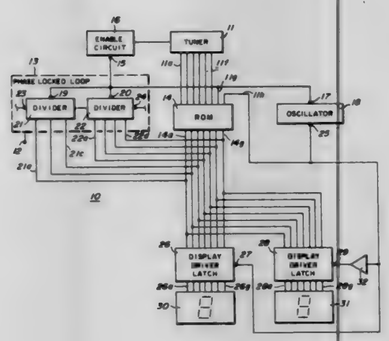
FREQUENCY SYNTHESIZER WITH ROM CONTROLLED DIVIDER AND DISPLAY

Robert M. Beckmann, Hanover Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 883,109, Mar. 3, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,708

Int. Cl.³ H04B *1/06*

U.S. Cl. 455—158 **19 Claims**



1. Digital control apparatus comprising: memory means for receiving a plurality of digital coded input signals and producing different corresponding pluralities of digital coded output signals in response to each different received plurality of coded input signals;

programmable divider means coupled to said memory means for receiving said plurality of coded output signals and producing, when enabled, different predetermined divisions in response to each different received plurality of coded output signals, wherein said programmable divider means, when disabled, produces the predetermined division corresponding to the coded output signals received by said divider means when said divider means was last enabled;

display means coupled to said memory means for receiving said plurality of coded output signals and producing, when enabled, different corresponding predetermined displays in response to each different received plurality of coded output signals, wherein said display means comprises display modules controllable latch means for receiving signals when enabled and storing those received signals when disabled while providing those stored signals as drive signals to said display modules; and

control means coupled to said memory means, said divider means, and said display means for alternately enabling each of said divider and display means while the other means is disabled while also correspondingly alternately changing at least one of said plurality of coded input signals to said memory means, wherein said control means utilizes the memory means to alternately produce different output control signals to sequentially control both said divider means and said display means to produce a display related to the division implemented by said divider means, said control means utilizing said memory means to provide one of said plurality of coded output signals to an enabled one of said divider and display means and then to provide a different related one of said plurality of coded output signals to an enable other one of said divider and display means.

4,287,601

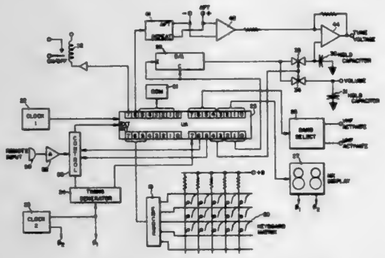
SELF-PROGRAMING MEMORY TUNING SYSTEM

Arthur N. Borg, Fort Wayne; Jerry D. Trostel, Avilla, and Daniel A. Heuer, Fort Wayne, all of Ind., assignors to The Magnavox Company, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,899

Int. Cl.³ H04B *1/16, 1/26*

U.S. Cl. 455—186 **9 Claims**



1. A broadcast receiver tuning system comprising:

memory means simultaneously storing information identifying the frequencies of a plurality of broadcast stations;

storage means storing information identifying a predetermined frequency and information identifying an incremental frequency;

generating means receiving the information identifying said predetermined frequency and the information identifying the incremental frequency and generating from said received information information identifying the approximate frequencies of each of said plurality of broadcast stations; and

conducting means conducting said information identifying said approximate frequencies from said generating means to said memory means.

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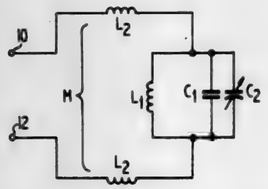
REJECTION FILTER TO REMOVE TV CHANNEL 6 AND FM RADIO INTERFERENCE

William J. Kessler, Gainesville, Fla., assignor to Corporation for Public Broadcasting, Washington, D.C.

Continuation of Ser. No. 310,110, Nov. 28, 1972, abandoned. This application Oct. 8, 1974, Ser. No. 513,087

Int. Cl.³ H03H *5/00*

U.S. Cl. 455—286 **5 Claims**



1. A two terminal notch filter network for connection in shunt across two signal input terminals of a signal utilization circuit having a predetermined load impedance and receiving a signal from two output terminals of a signal source having a predetermined source impedance, said network having a low impedance at a desired frequency f_n comprising the series resonant frequency of the network and a rapid change of impedance to a relatively high impedance for frequency bands in the immediate vicinity of f_n with respect to said source and load impedance, whereby said network exhibits a sharp frequency rejection characteristic of a desired, relatively high attenuation level at the desired frequency f_n, comprising the series resonant frequency of the network, and a desired, relatively low attenuation level for frequency bands adjacent to f_n, comprising:

a parallel LC circuit parallel resonant at a frequency f_p displaced from the resonant frequency f_n of the network and having an equivalent series circuit impedance, the reactance value of which is a function of frequency and is predominately inductive for frequencies below f_p and predominately capacitive for frequencies above f_p, and which is resistive at a frequency equal to f_p,

further reactance means connected in series with said parallel LC circuit between said two terminals of said filter network and having a reactance value selected with respect to the equivalent series reactance value of said parallel LC circuit to establish said series resonant frequency f_n of said filter network, the displacement of said frequency f_p relatively to the frequency f_n being selected to provide optimum sharpness of the said change in impedance of the network while affording adequate attenuation at the desired frequency f_n,

said further reactance means comprising first and second inductors connected in a series circuit of said first inductor, said parallel LC circuit, and said second inductor between said two terminals of said filter network, and

said first and second inductors being mutually coupled.

4,287,603

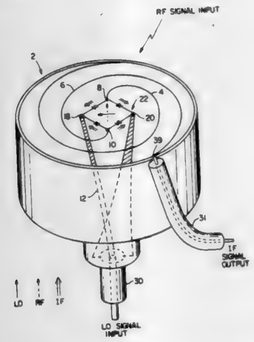
RADIATED INPUT MIXER

Kenneth R. Moser, South Bend, Ind., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Aug. 23, 1979, Ser. No. 69,197

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—293 **13 Claims**



1. A mixer for converting a radiated radio frequency input signal into an intermediate frequency output signal with the aid of a local oscillator signal, comprising:

an antenna including a pair of arms and a pair of balanced feed terminals each of which is connected to a corresponding arm, with the antenna receiving the radiated radio frequency input signal;

a balun including a pair of conductors and a pair of balanced feed terminals orthogonally disposed with respect to the antenna terminals, and each of the conductors connected to a corresponding balun terminal, with the balun carrying the local oscillator signal;

a balanced diode quad disposed at an end of the balun and connected to the antenna terminals and the balun terminals;

the diode quad providing broad band isolation between the radio frequency and local oscillator signals, and providing a phase relationship between said signals so that the intermediate frequency output signal is present on a selected combination of the antenna arms and the balun conductors;

the balun and the antenna arms being arranged so that the plane of the antenna arms and the plane of the balun are perpendicular, whereby the local oscillator and radio frequency signals vector polarizations are in space quadrature; and

the space quadrature of the signal vector polarizations and the balance of the diodes in the diode quad being determinative of the isolation between the radio frequency and local oscillator signals.

4,287,604

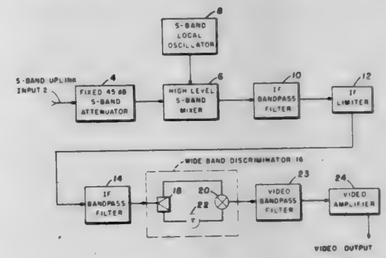
RF AND IF CIRCUITRY OF AN UPLINK RECEIVER

Robert C. Gipe, Cheverly, and William E. Engelkemier, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1979, Ser. No. 31,265

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—323 **7 Claims**



1. Apparatus for converting an FM mark-and-space RF signal in the S-band to an intermediate frequency mark-and-space signal comprising:

means for attenuating the RF S-Band signal,

a local oscillator producing a signal at a fixed level, and

a high-level mixer means, having linear and saturation modes, for mixing the attenuated S-Band signal with the signal produced by the local oscillator and for limiting while the mixer means is in the saturation mode.

4,287,605

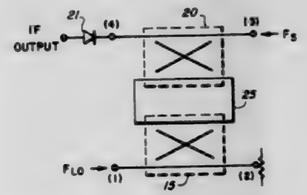
DIRECTIONAL FILTER FOR MIXERS, CONVERTERS AND THE LIKE

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 16, 1979, Ser. No. 58,236

Int. Cl.³ H04B *1/26*; H01P *1/207, 5/18*

U.S. Cl. 455—330 **9 Claims**



1. A directional filter comprising:

(a) a first transmission line having an input for signals of a first frequency, f_1;

(b) a second transmission line having an input for signals of a second frequency, f_2, and an output; and

(c) coupling means formed of a third transmission line in a closed loop of a length determined by

$$L = \frac{\lambda_{g/1/2}}{1 \pm \frac{\lambda_{g/1}}{\lambda_{g/2}}}$$

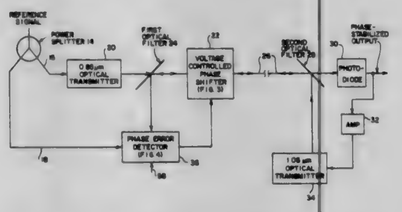
coupled to said first and second transmission lines and tuned to provide substantially maximum coupling of the first frequency signals from the first to the second transmission lines and substantially minimum coupling of the second frequency signals from the second to the first transmission lines.

4,287,606

FIBER OPTIC TRANSMISSION LINE STABILIZATION APPARATUS AND METHOD

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; George F. Lutes, Jr., Glendale, and Kam Y. Lau, Pasadena, both of Calif.

Filed Sep. 17, 1980, Ser. No. 188,160
Int. Cl.³ H04B 9/00
U.S. Cl. 455—617 **21 Claims**



1. A fiber optic transmission line stabilizer for providing a phase-stabilized signal at a receiving end of a fiber optic transmission line with respect to a first reference signal at a transmitting end of said fiber optic transmission line so that said phase-stabilized signal will have a predetermined phase relationship with respect to said first reference signal, said stabilizer comprising:

a first optical transmitter having a first optical output signal at a first optical wavelength, said first optical output signal being modulated by said first reference signal;

a voltage controlled phase shifter responsive to a phase-shift control signal for shifting the phase of said first reference signal modulation on said first optical output signal, the phase-shifted output signal of said voltage controlled phase shifter being provided to said fiber optic transmission line transmitting end;

means for generating a second reference signal at the receiving end of said fiber optic transmission line, said second reference signal being derived from modulation on the phase-shifted output signal of said voltage controlled phase shifter;

a second optical transmitter having a second optical output signal at a second optical wavelength, said second optical output signal being modulated by a signal related to said second reference signal;

means for providing said second optical output signal to said fiber optic transmitting line receiving end;

a phase-error detector for generating said phase-shift control signal, said control signal being related to a phase difference between two input signals;

means for providing a signal related to the modulation on said second optical output signal as received at the transmitting end of said fiber optic transmission line to said phase-error detector;

means for providing said first reference signal to said phase-error detector, said first reference signal and said signal related to the modulation on said second optical output signal comprising said phase-error detector two input signals; and

means for providing said phase-shift control signal to said voltage controlled phase shifter thereby causing the phase of the modulation on said first optical output signal to be altered until the phase of said second reference signal has a predetermined relationship with respect to the phase of said first reference signal, said second reference signal then defining said phase stabilized signal.

DESIGN PATENTS

GRANTED SEP. 1, 1981

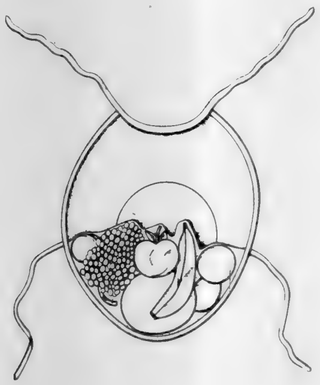
ERRATA

For CLASS	See PATENT NO.
D06-228	260,446

260,445
ATHLETIC SHIRT
Hinda Schreiber, and Eugenie Z. Lindahl, both of Burlington, Vt., assignors to Jogbra Inc., Burlington, Vt.
Filed Dec. 31, 1979, Ser. No. 108,633
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—210



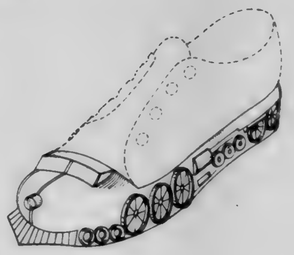
260,446
BIB OR SIMILAR ARTICLE
Deborah A. Bragg, 13918 Castle Blvd., Apt. 304, Silver Spring, Md. 20904
Filed Oct. 30, 1978, Ser. No. 956,004
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—228



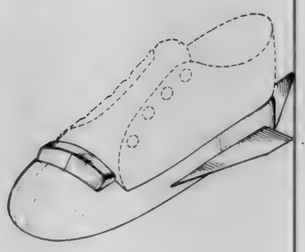
260,447
SOLE AND TOE PORTIONS OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to Amfesco Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 35,855
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



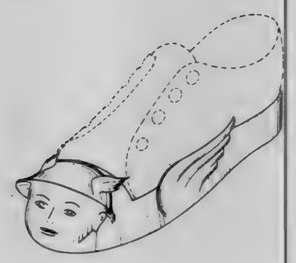
260,448
SOLE AND TOE PORTIONS OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to Amfesco Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 35,856
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



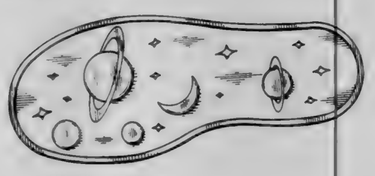
260,449
SOLE AND TOE PORTIONS OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to Amfesco Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 35,857
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



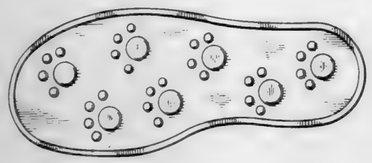
260,450
SOLE AND TOE PORTIONS OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to Amfesco Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 35,858
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



260,451
SOLE OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to Amfesco Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 35,859
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321



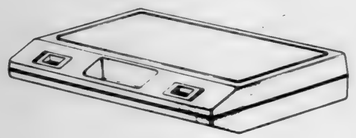
260,452
SOLE OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to Amfesco Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 36,046
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321



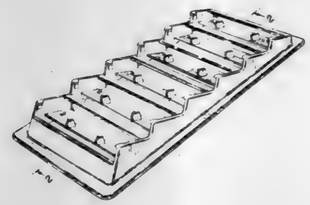
260,453
CLASP FOR BABY DIAPERS
Ronald Carlson, 9833 McNerney Ave., Apt. B, South Gate, Calif. 90280
Filed Aug. 27, 1979, Ser. No. 69,899
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—422



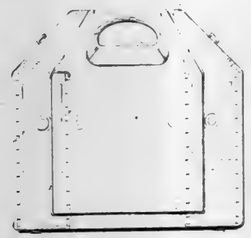
260,454
CASSETTE CARRYING CASE
Pasquale L. Pepicelli, Jr., Chelmsford, Mass.; David Roche, Nashua, N.H.; Gregory Mathus, Concord, and Alan B. Lowry, Canton, both of Mass., assignors to Data Packaging Corporation, Cambridge, Mass.
Filed Jun. 20, 1979, Ser. No. 37,489
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



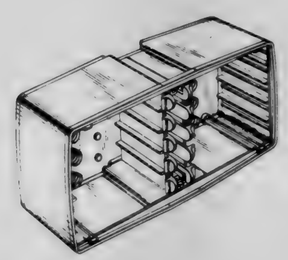
260,455
TAPE CASSETTE HOLDER
Robert F. Haswell, Has-A-Well, Oldfield Rd., Bickley, Bromley, Kent, England
Filed Jul. 24, 1979, Ser. No. 60,208
Claims priority, application United Kingdom, Dec. 21, 1978, 98777/78
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



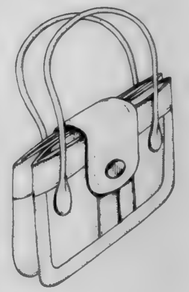
260,456
CARRYING CASE FOR CASSETTES AND CASSETTE PLAYER
Frederick S. Davies, 7801 SE. 75th Pl., Mercer Island, Wash. 98040, and Stephen J. Carrier, 1836 Westlake Ave. N., #302, Seattle, Wash. 98109
Filed Sep. 19, 1979, Ser. No. 76,997
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



260,457
STORAGE UNIT FOR TAPE CASSETTES AND CARTRIDGES
Clive S. Rumble, Apt. 2106, 330 Spadina Rd., Toronto, Canada
Filed Nov. 23, 1979, Ser. No. 96,677
Claims priority, application United Kingdom, May 24, 1979, 990,061
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



260,458
HANDBAG
Milton I. Siegel, Scottsdale, Ariz., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed Sep. 18, 1978, Ser. No. 943,439
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48



260,459
LOUNGE CHAIR
Thomas Lamb, 9180 Weston Rd., Woodbridge, Ontario, Canada
Filed Oct. 30, 1978, Ser. No. 956,146
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—41



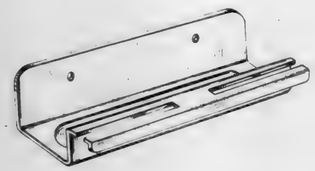
260,460
HANGING CHAIR
Louis D. Osterman, 1003 Rosehill Dr., Boulder, Colo. 80302
Filed May 4, 1979, Ser. No. 36,218
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



260,461
SUPPORT STAND FOR A LOUDSPEAKER
Steve J. Cohen, 175 Maribeau Sq. NW., Atlanta, Ga. 30327, and Cory W. Hillebrand, 1562 Beechcliff Dr., Atlanta, Ga. 30329
Filed Sep. 10, 1979, Ser. No. 74,108
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



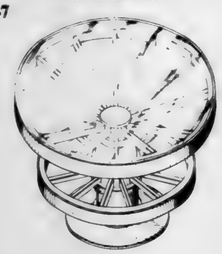
260,462
TOILET ARTICLE CADDY
Stephen Melamed, 2109 N. Kenmore, Chicago, Ill. 60614, and Samuel Sonshine, 4863 E. Carol St., Skokie, Ill. 60077
Filed Sep. 6, 1979, Ser. No. 73,123
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—86



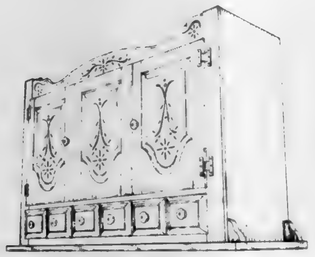
260,463
WINE RACK
Keith N. Imus, 1011 Stitch Rd., Lake Stevens, Wash. 98258
Continuation-in-part of Ser. No. 921,600, Jul. 3, 1978, abandoned. This application Jan. 10, 1979, Ser. No. 2,404
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—113



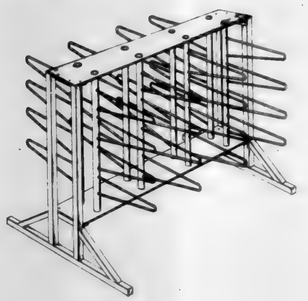
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TABLE
David Alexander, Stoney Creek, Canada, assignor to Jack E. Alexander, Bracebridge, Canada
Filed Jan. 18, 1979, Ser. No. 4,561
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—147



260,465
BUFFET
Melbourne F. Smith, Jr., Hickory, N.C., assignor to Broyhill Furniture Industries, Inc., Lenoir, N.C.
Filed Oct. 12, 1978, Ser. No. 950,706
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154



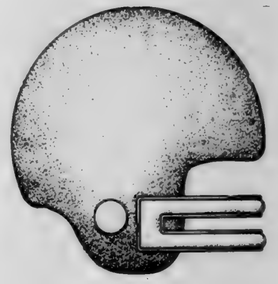
260,466
FABRIC DISPLAY RACK
Donald A. Butcher, Box 394, Rte. 10, Burlington, and Marvin L. Barbee, P.O. Box 4235, Glen Raven, both of N.C. 27215
Filed Dec. 8, 1978, Ser. No. 967,720
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—157



260,467
BALL RACK
David A. Rhine, 21437 Mulholland Dr., Woodland Hills, Calif. 91364
Filed Sep. 24, 1979, Ser. No. 78,374
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—188

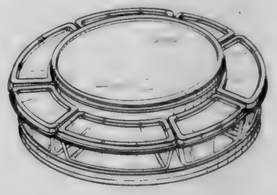


260,468
PILLOW
Donna L. Huebner, 188 Massachusetts Ave., Bayshore, N.Y. 11706
Filed Feb. 27, 1980, Ser. No. 125,148
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—202





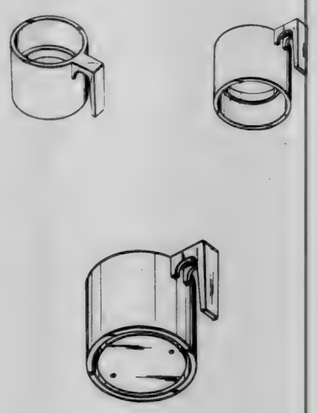
260,469
ROTATABLE FOOD SERVING ASSEMBLY
Joseph W. Blake, South Salem, N.Y., and Anne W. Allen, Albany, Ga., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jun. 22, 1979, Ser. No. 51,277
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—2



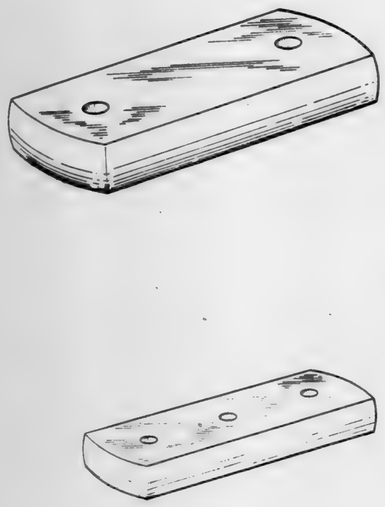
260,470
DESIGN FOR AN ALCOHOLIC BEVERAGE CHILLER
Nicholas P. Angelakos, Staten Island, N.Y., assignor to Lancaster Colony Corporation, New York, N.Y.
Filed Dec. 3, 1979, Ser. No. 99,443
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—3



260,471
CUP HOLDER
Jack Douglas, 11645 Montana Ave., Los Angeles, Calif. 90049
Filed Jul. 9, 1979, Ser. No. 55,516
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—70



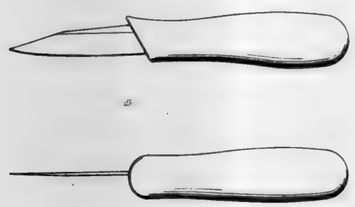
260,472
STAND FOR DRINKING GLASSES
Sidney J. E. Turcotte, Jr., 115 Main St. E., Hamilton, Ontario, Canada (L8N 1G5)
Filed Jul. 30, 1979, Ser. No. 62,182
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—71



260,473
COVERED BUTTER DISH
Peter Christiani, Anaheim, Calif., assignor to Gourmet-Topf, Inc., Gardena, Calif.
Filed Aug. 17, 1979, Ser. No. 67,290
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—84



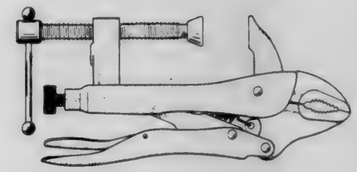
260,474
KITCHEN PARING KNIFE
Donna L. Smith, 1240 Henderson Ave. #4, Sunnyvale, Calif. 94086
Filed Dec. 26, 1979, Ser. No. 106,825
Term of patent 14 years
Int. Cl. D07—*04, 03*
U.S. Cl. D7—147



260,475
ADJUSTABLE TRASH BAG HOLDER
Charles D. Hall, 5719 Forest Ave., Des Moines, Iowa 50311
Filed Jun. 1, 1979, Ser. No. 44,707
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—193



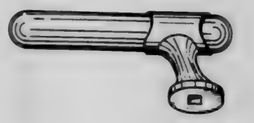
260,476
COMBINED LOCKING PLIERS CLAMP
Gregory J. Knaus, Rte. 1, Box 1858, Wetmore, Tex. 78163
Filed Apr. 2, 1979, Ser. No. 26,006
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—55



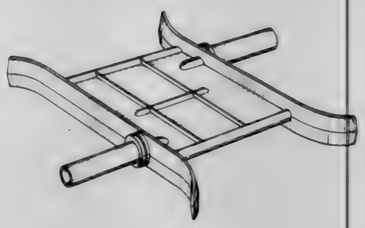
260,477
FISHHOOK HONE
Jack L. Jones, Colorado Springs, Colo., assignor to Kaman Sciences Corporation, Colorado Springs, Colo.
Filed Mar. 22, 1979, Ser. No. 22,810
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—98



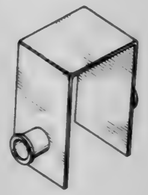
260,478
DOOR HANDLE
Serge Belaiche, Vitry, France, assignor to Serdaneli, France
Filed Aug. 9, 1979, Ser. No. 65,056
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—308



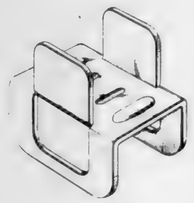
260,479
REEL
Roy E. Carey, 7671 North Ave., Lemon Grove, Calif. 92045
Filed Aug. 3, 1979, Ser. No. 63,590
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D8—359



260,480
WALL OR PARTITION HUNG COAT HOOK
Donald A. DeMars, Canoga Park, Calif., assignor to LeRoy M. Lefkowitz, Van Nuys, Calif.
Filed Nov. 30, 1978, Ser. No. 965,445
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



260,481
H-CLIP OR SIMILAR ARTICLE
David R. Norcross, Bethesda, and George W. Kingston, Chevy Chase, both of Md., assignors to TECO Products & Testing Corporation, Washington, D.C.
Filed Aug. 6, 1979, Ser. No. 63,915
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—394



260,482
BOTTLE
Peter T. Agee, Rte. 1, Box 45, Magnolia, Ala. 36754
Filed Aug. 13, 1979, Ser. No. 65,978
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—352



260,483
BOTTLE
Herbert C. Weiland, San Pedro, Calif., assignor to Gould and Associates, Inc., Los Angeles, Calif.
Filed Dec. 26, 1978, Ser. No. 974,139
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—374



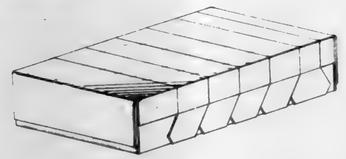
260,484
BOTTLE
Michael K. Goettner, Sylvania, and James E. Plummer, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Jun. 21, 1979, Ser. No. 50,832
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378



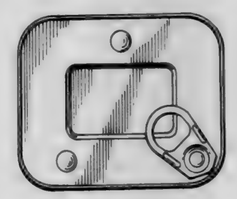
260,485
BOTTLE
Raymond Ortal, Louveciennes, France, assignor to Societe Stendhal, Paris, France
Filed Aug. 17, 1979, Ser. No. 68,325
Claims priority, application France, Feb. 26, 1979, 79 42207
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—406



260,486
TEAR STRIP PACKAGING CONTAINER
Robert G. McMullan, Oakville, Canada, assignor to SCM (Canada) Limited, Don Mills, Canada
Filed Feb. 8, 1979, Ser. No. 10,327
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416



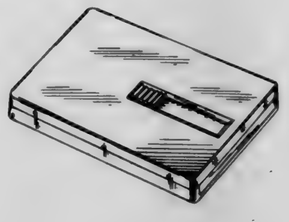
260,487
CAN OR THE LIKE
Alan A. Grubman, and Gary K. Hasegawa, both of Chicago, Ill., assignors to The Continental Group, Inc., Stamford, Conn.
Filed Aug. 24, 1979, Ser. No. 69,669
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416



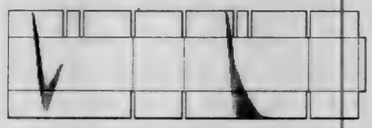
260,488
GOLF BALL PACKAGE
Robert P. Kinneary, 3014 Alpine Ter., Cincinnati, Ohio 45208
Filed Jul. 5, 1979, Ser. No. 54,950
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418



260,489
SOAP DISPENSER
William F. Pritchard, 220 Metcalf, Maxwell, Iowa 50161
Filed Feb. 5, 1979, Ser. No. 9,112
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432



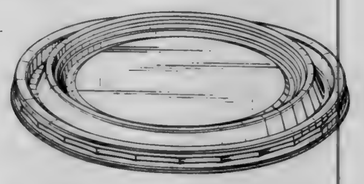
260,490
CARTON BLANK
Brian G. Baker, 32, Shaftsbury Clr., South Harrow, Middlesex, England
Filed Nov. 17, 1978, Ser. No. 961,601
Claims priority, application United Kingdom, Jun. 2, 1978, 984897
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433

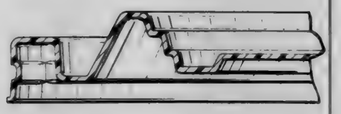


260,491
CARTON
Gregory P. Maclin, Stone Mountain, Ga., assignor to Container Corporation of America, Chicago, Ill.
Filed Sep. 6, 1979, Ser. No. 73,125
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433

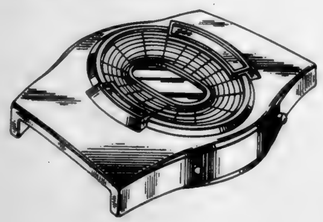


260,492
CONTAINER CLOSURE OR THE LIKE
Kenneth E. Scott, Phoenix, Ariz., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jun. 18, 1979, Ser. No. 49,263
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—452





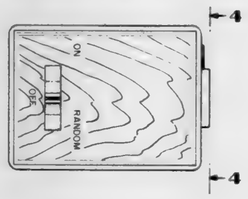
260,493
WATCH CASE
Cabanne H. Link, 725 Pleasant Valley La., Richardson, Tex. 75080
Filed Jun. 18, 1979, Ser. No. 49,945
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



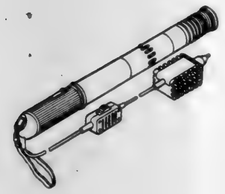
260,494
WRISTWATCH
Jean Dinh Van, 15, Place Gaillon, 75002 Paris, France
Filed Mar. 19, 1979, Ser. No. 21,681
Claims priority, application Switzerland, Sep. 19, 1978, 67543/78
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



260,495
TIMER
Lee L. Von Gunten, P.O. Box 28, Prospect Heights, Ill. 60070
Filed Feb. 5, 1979, Ser. No. 9,344
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



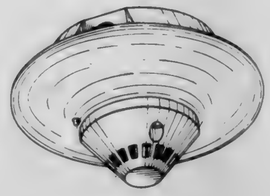
260,496
PORTABLE RADAR-TYPE SPEED METER
Viktor A. Petrovsky, ulitsa Pugacheva, 19a, kv. 45; Lev G. Gassanov, ulitsa Uritskogo, 25, kv. 65, both of Kiev; Sergei M. Belyaev, ulitsa Magnitogorskaya, 3, kv. 97; Lev A. Kochetov, ulitsa Khersonskaya, 3, kv. 30, both of Moscow; Vitaly L. Kryzhanovsky, ulitsa Transheinaya, 11, kv. 1, Kiev; Andrei A. Palamarchuk, ulitsa Saratovskaya, 49, kv. 18, Kiev; Viktor D. Ushakov, ulitsa D.Bednogo, 25, kv. 52, Kiev; Rafail J. Timraleev, ulitsa Levanevskogo, 4, kv. 43-2, Kiev; Vitaly M. Parfenjuk, ulitsa Geroev Sevastopolya, 33, kv. 55, Kiev; Alexandr S. Pilipenko, ulitsa Kablukova, 3, kv. 29, Kiev; Petr A. Goncharov, ulitsa Artema, 10, kv. 1, Kiev, and Anatoly I. Ponomarenko, poselok Bucha, ulitsa Kochubeya, 8, Kievskaya oblast, all of U.S.S.R.
Filed Mar. 23, 1979, Ser. No. 23,260
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



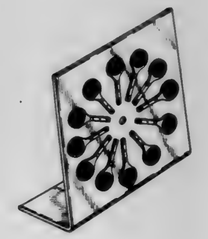
260,497
WIND CHILL INDICATOR
Charlie J. Howard, Asheville, and Edward L. Peart, Arden, both of N.C., assignors to Sybron Corporation, Rochester, N.Y.
Filed Aug. 20, 1979, Ser. No. 68,186
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



260,498
SMOKE DETECTOR HOUSING
John M. Macmillan, Deep River, and Hilario S. Costa, Old Saybrook, both of Conn., assignors to Conrac Corporation, Stamford, Conn.
Filed Feb. 9, 1979, Ser. No. 10,984
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



260,499
COMBINED CLOCK FACE AND SUPPORT
Gloria Cheshaek, 11595 S. Stelling Rd., Cupertino, Calif. 95014
Filed Apr. 3, 1978, Ser. No. 893,173
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125



260,500
JEWELED BRACELET
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 16, 1979, Ser. No. 67,129
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6



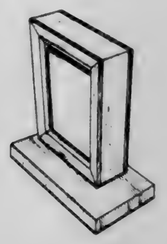
260,501
BRACELET OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 12, 1979, Ser. No. 74,795
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6



260,502
TALISMAN
Houshang Vafi, Rte. 1, Box 669, Glencoe, Mo. 63028
Filed Apr. 6, 1979, Ser. No. 27,741
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—75



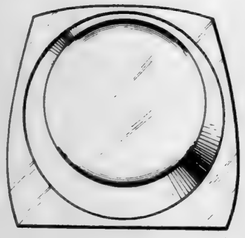
260,503
ILLUMINATED DISPLAY
Nickolas G. Stangarone, 1644 McGovern, Highland Park, Ill. 60035
Filed Aug. 23, 1978, Ser. No. 935,934
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—132



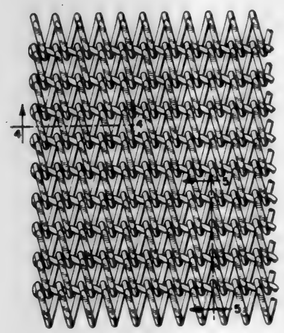
260,504
STANDING PLAQUE
Leo F. Wildgen, Minneapolis, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
Filed Apr. 30, 1979, Ser. No. 34,482
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—140



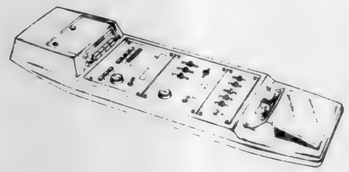
260,505
STANDING PLAQUE
Leo F. Wildgen, Minneapolis, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
Filed Apr. 30, 1979, Ser. No. 34,483
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—140



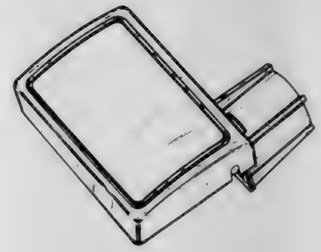
260,506
CONVEYOR BELT
Gerald C. Roinestad, Winchester, Va., assignor to Ashworth Bros., Inc., Fall River, Mass.
Filed Sep. 28, 1978, Ser. No. 946,846
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



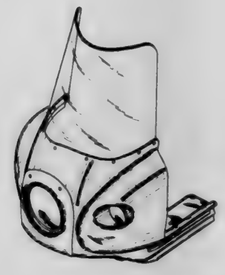
260,507
AUTOMOBILE OVERHEAD COMBINED RADIO AND CASSETTE PLAYER CONSOLE OR SIMILAR ARTICLE
Kanji Kosugi, Hirakata, and Benito Mishiro, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Nov. 30, 1979, Ser. No. 99,129
Claims priority, application Japan, May 31, 1979, 54-22466
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



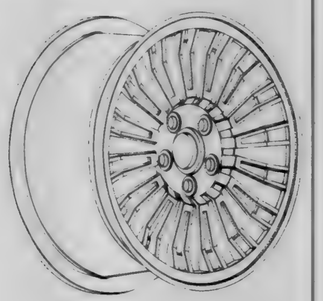
260,508
TOW VEHICLE BRAKE PEDAL ATTACHMENT FOR AN ELECTRIC TRAILER BRAKE SYSTEM
Paul Weiner, Pinckney, Mich., assignor to Kelsey Hayes Co., Romulus, Mich.
Filed Aug. 17, 1978, Ser. No. 934,558
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—174



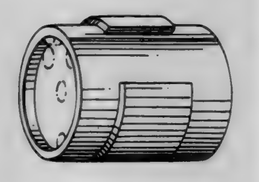
260,509
MOTORCYCLE FAIRING
Matthew P. Guzzetta, 10425 Loma Rancho Dr., Spring Valley, Calif. 92077
Filed Sep. 24, 1979, Ser. No. 78,164
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182



260,510
AUTOMOBILE WHEEL
James R. Powers, Los Angeles, Calif., assignor to DeLorean Motor Company, Bloomfield Hills, Mich.
Filed May 10, 1978, Ser. No. 904,722
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



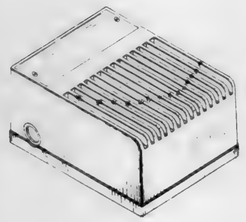
260,511
ELECTRICAL CONNECTOR HOUSING
Radosav Avramovich, Libertyville, Ill., assignor to Daniel Woodhead, Inc., Northbrook, Ill.
Filed Aug. 3, 1978, Ser. No. 930,728
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



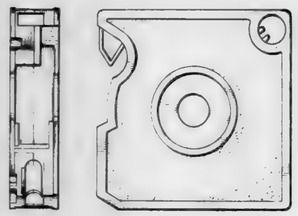
260,512
ELECTRIC PLUG
Marijan Djurinec, Acton, Canada, assignor to Smith & Stone Limited, Toronto, Canada
Filed Aug. 28, 1978, Ser. No. 937,193
Claims priority, application Canada, Mar. 3, 1978, 0303781
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—28



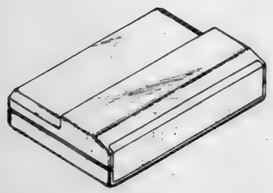
260,513
HOUSING FOR ELECTRICAL CIRCUITS
Kenneth C. Comstock, 161 W. Washington, Murray, Utah 84070
Filed Mar. 15, 1979, Ser. No. 20,815
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40



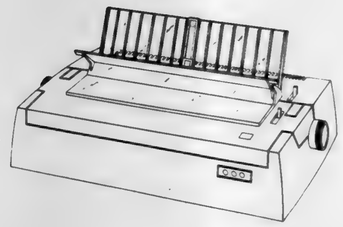
260,514
MAGNETIC TAPE CASSETTE
Peter Gell, Redfern, Australia, assignor to Tuscan Industries Pty. Limited, Redfern, Australia
Filed May 15, 1978, Ser. No. 905,844
Claims priority, application Australia, Mar. 22, 1978, 74310/78
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11



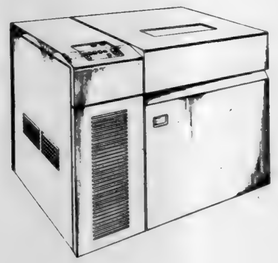
260,515
CASE FOR INTERCHANGEABLE PROGRAM MODULE FOR A PERSONAL COMPUTER OR THE LIKE
Robert A. Welch, and Arthur W. Chin, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 13, 1978, Ser. No. 960,493
Term of patent 14 years
Int. Cl. D14—*00*
U.S. Cl. D14—11



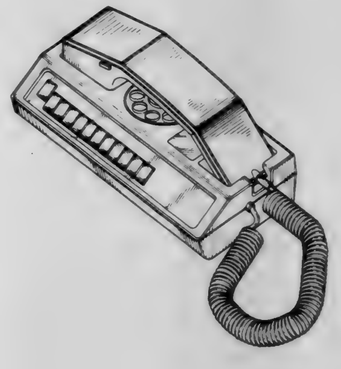
260,516
TERMINAL PRINTER COVER
Vincent Giannotti, Jr., Austin, Tex.; Henry Kapper, Raleigh, N.C., and Edward J. Sabella, Georgetown, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1978, Ser. No. 973,055
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111



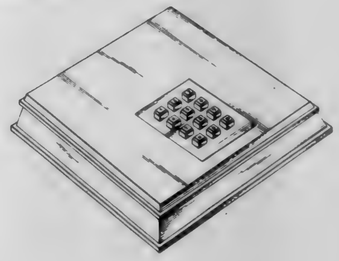
260,517
PRINTER
Tommy R. Hardy, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 16, 1979, Ser. No. 57,627
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111



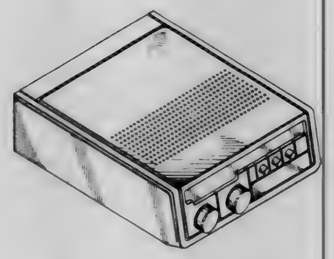
260,518
VEHICULAR TWO-WAY RADIO CONTROL UNIT OR SIMILAR ARTICLE
Kenneth W. Larson, Elmhurst, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 29, 1979, Ser. No. 53,608
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



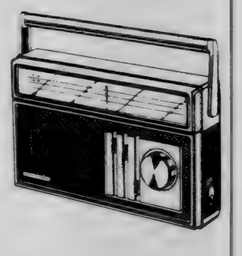
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TELEPHONE KEY BASE
Hans G. Thames, Bandhagen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Nov. 22, 1978, Ser. No. 962,874
Claims priority, application Sweden, May 31, 1978, 78001424
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



260,520
VEHICULAR TWO-WAY RADIO OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 16, 1979, Ser. No. 21,031
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



260,521
RADIO RECEIVER
Teruyuki Nishimoto, Hirakata; Kunio Hoshino, Katano; Kikuo Ohta, Ikoma; Benito Mishiro, Sakai; Katsutoshi Kido, Kyoto, and Kanji Kosugi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Nov. 27, 1979, Ser. No. 97,930
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



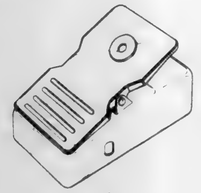
260,522
MULTI-J ANTENNA
Harold Guretzky, 56-05 Clearview Expwy., Bayside, N.Y. 11364
Filed Oct. 2, 1978, Ser. No. 947,427
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86



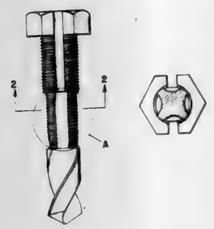
260,523
TROLLING MOTOR CONTROL
Harold C. Rains, III, 22 Ferndale, and Jerry Blankenship, Rte. 3, Box 286A, both of Ft. Smith, Ark. 72901
Filed Feb. 22, 1979, Ser. No. 14,052
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—4



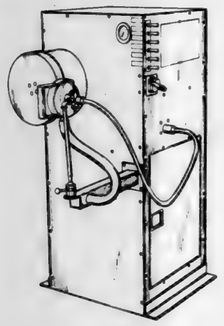
260,524
FOOT OPERATED CONTROLLER FOR SEWING MACHINE
Yoshitoshi Satoh, Sukagawa, Japan, assignor to Yamamoto Electric Industrial Co., Ltd., Japan
Filed Feb. 28, 1979, Ser. No. 16,349
Term of patent 14 years
Int. Cl. D15—*99*; D13—*99*
U.S. Cl. D15—72



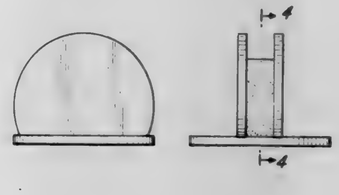
260,525
CHANNEL DRILL AND BOLT COMBINATION
Will M. Lassiter, High Point, N.C.
Filed Dec. 4, 1978, Ser. No. 966,479
Term of patent 14 years
Int. Cl. D15—*09*; D8—*08*
U.S. Cl. D15—139



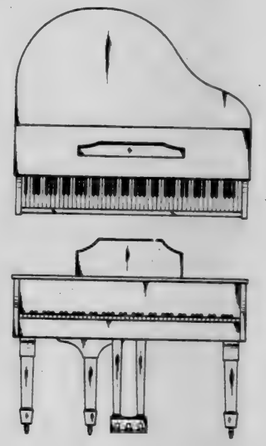
260,526
TIRE REFINISHING MACHINE
James C. Satterfield, Dallas, Tex., assignor to Tire Cosmotology, Inc., Dallas, Tex.
Filed Apr. 16, 1979, Ser. No. 30,027
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D15—199



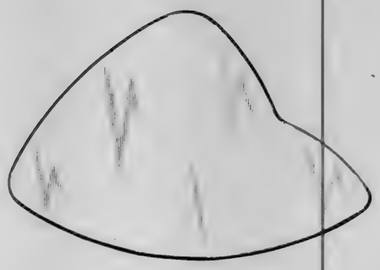
260,527
SPECTACLE HOLDER
Stefan Engelmann, 61-38 164th St., Flushing, N.Y. 11365
Filed Mar. 2, 1979, Ser. No. 16,952
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—82



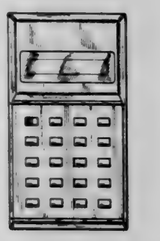
260,528
ELECTRONIC BABY GRAND PIANO
Wil Decker, 212 Woodlawn Ave., St. James, N.Y. 11780
Filed Jun. 12, 1979, Ser. No. 47,815
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—8



260,529
GUITAR PICK
John Pearse, R.D. 1, Bethlehem, Pa. 18017
Filed Aug. 10, 1979, Ser. No. 65,598
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



260,530
ELECTRONIC CALCULATING MACHINE
Tsutomu Yamasaki, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 11, 1979, Ser. No. 83,845
Claims priority, application Japan, Apr. 12, 1979, 54-15206
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



260,531
WRITING INSTRUMENT
Giorgio Della Beffa, Strada Givoletto 1, San Gillio, Italy
Filed Mar. 15, 1979, Ser. No. 20,699
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—47



260,532
CASING FOR AN ERASER OR THE LIKE
Gouji Sakaoka, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 11, 1979, Ser. No. 74,312
Claims priority, application Japan, Mar. 29, 1979, 54-12789
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—53



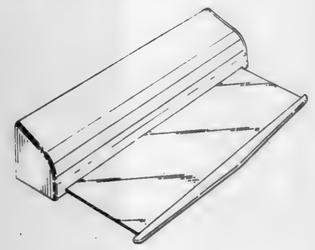
260,533
PENPOINT OR SIMILAR ARTICLE
Daisaburo Azuma, Soka, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1979, Ser. No. 103,295
Claims priority, application Japan, Jun. 29, 1979, 54-27186
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—55



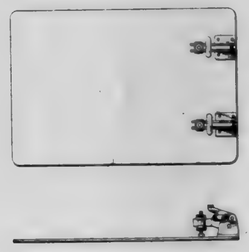
260,534
TELEPHONE REGISTER
Hans Halm, Herne, Fed. Rep. of Germany, assignor to Ariac-Werk Heiko Ippen, Hamburg, Fed. Rep. of Germany
Filed May 2, 1979, Ser. No. 35,232
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



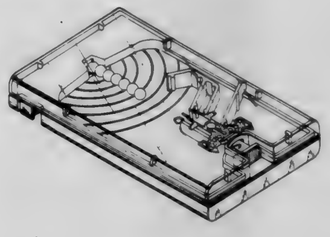
260,535
INDEX
Thomas Bovet, Hong Kong, Hong Kong, assignor to Uptrend Products Limited, Hong Kong, Hong Kong
Filed Aug. 1, 1979, Ser. No. 62,654
Claims priority, application United Kingdom, Feb. 26, 1979, 988730/79
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



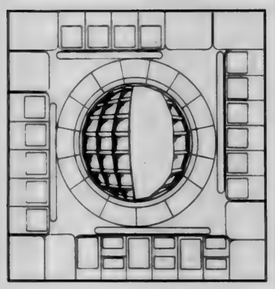
260,536
CLIPBOARD
Samir N. Saaty, 250 High Plains Dr., Orange, Conn. 06477
Filed Sep. 18, 1978, Ser. No. 944,329
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—88



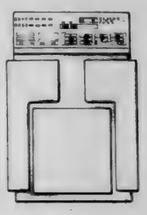
260,537
POCKET GAME HOUSING
Masaki Mayuzumi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 13, 1979, Ser. No. 75,129
Claims priority, application Japan, Mar. 19, 1979, 54-10845
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—10



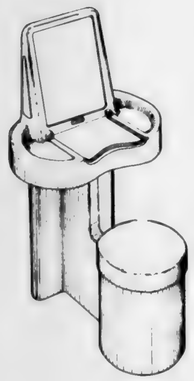
260,538
GAME BOARD
James G. Alex, Park Ridge, Ill., assignor to J.G.A. Enterprises, Inc., Chicago, Ill.
Filed Jun. 22, 1979, Ser. No. 51,044
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—35



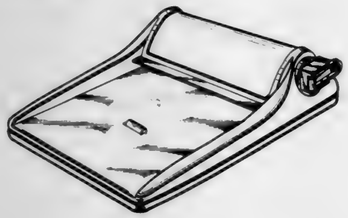
260,539
TOY CONSOLE
Richard M. Rubin, Hollywood, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed Apr. 10, 1979, Ser. No. 28,838
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—111



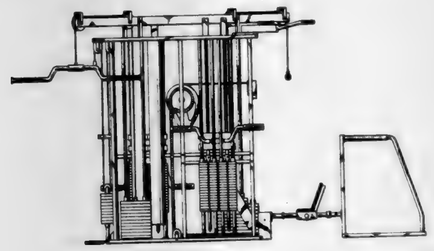
260,540
TOY DRESSING TABLE OR SIMILAR ARTICLE
John R. Nottingham, 2997 Washington Blvd., Cleveland Heights, Ohio 44118, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106
Filed Nov. 20, 1978, Ser. No. 962,297
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121



260,541
TOY PRINTER
Ng C. Sun, 138 Wing Lok St., 10th Floor, Hong Kong, Hong Kong
Filed Dec. 12, 1979, Ser. No. 102,640
Claims priority, application United Kingdom, Jun. 28, 1979, 990502/79
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—127



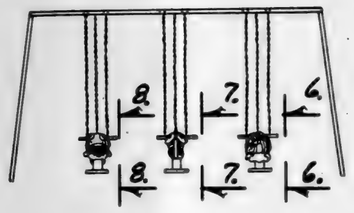
260,542
MULTI STATION PHYSICAL EXERCISER
Lloyd J. Lambert, Jr., 1538 College Ave., South Houston, Tex. 77587
Filed Oct. 4, 1978, Ser. No. 948,636
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



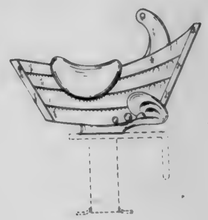
260,543
PLAYGROUND SLIDE
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,365
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



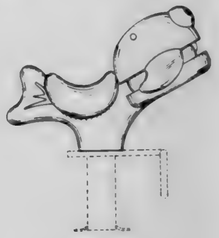
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PLAYGROUND SWING
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,359
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246



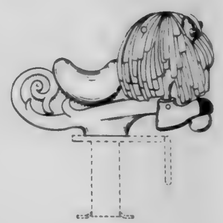
260,545
RIDER SEAT FOR PLAYGROUND APPARATUS
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,357
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—247



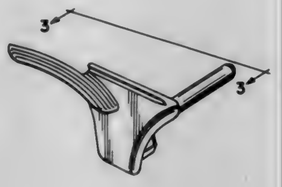
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RIDER SEAT FOR PLAYGROUND APPARATUS
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,358
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—247



260,547
RIDER SEAT FOR PLAYGROUND APPARATUS
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,360
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—247



260,548
SAFETY LOCK FOR HAND GUN
Darrell E. Holland, 455 "A" Ave., Coronado, Calif. 92118
Filed Nov. 26, 1979, Ser. No. 97,726
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



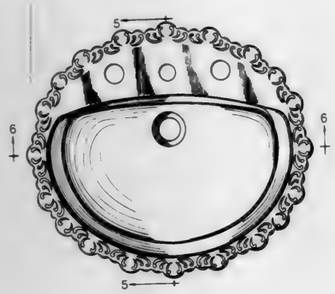
260,549
FISHING LURE
Paul W. Lee, 2424 Quimby Rd., San Jose, Calif. 95148
Filed Mar. 21, 1980, Ser. No. 131,949
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

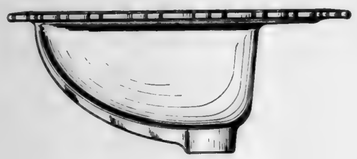


260,550
WASH STAND
Jack L. Hetzler, Corona Del Mar, and John L. Carpenter, Mission Viejo, both of Calif., assignors to Bristol Corporation, Newport Beach, Calif.
Filed Jun. 18, 1979, Ser. No. 49,576
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—54

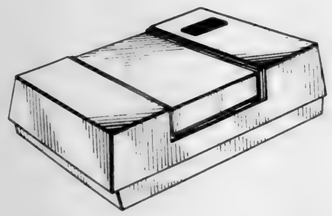


260,551
LAVATORY OR THE LIKE
Myra Tang, Bound Brook, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 6, 1979, Ser. No. 64,341
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

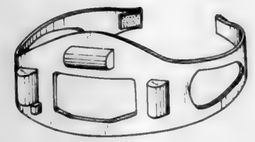




260,552
CONTACT LENS STERILIZER UNIT
Michael D. Thomas, Arab, Ala., and Francis E. Ryder, Barrington, Ill., assignors to Ryder International Corporation, Arab, Ala.
Filed Aug. 9, 1978, Ser. No. 932,689
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9



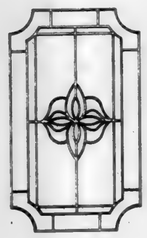
260,553
VIBRATING MASSAGING MASK
An C. Wu, No. 118-3, Hsin-Yi Rd., Section 3, Taipei, Taiwan
Filed Feb. 3, 1978, Ser. No. 874,839
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—40



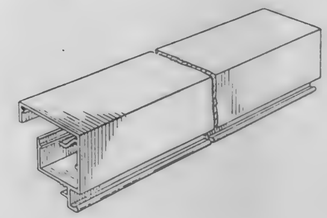
260,554
MICROPIPETTING DEVICE
William J. Roach, 12933 Lakeshore No., Auburn, Calif. 95603
Filed Apr. 9, 1979, Ser. No. 28,086
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55



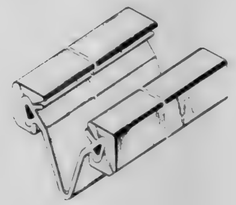
260,555
DECORATIVE WINDOW PANEL FOR DOORS
Lawrence R. Martinelli, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed Jun. 12, 1978, Ser. No. 914,261
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



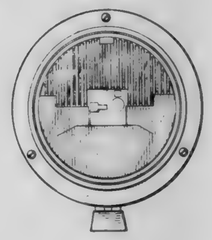
260,556
EXTRUDED FRAME ELEMENT
Werner Kloke, Whitby, Canada, assignor to Prem Gandy, Downsview, Canada
Filed Jun. 20, 1979, Ser. No. 50,363
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



260,557
EXPANSION JOINT SEALING STRIP ASSEMBLY FOR ROADWAYS
William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.
Filed Nov. 30, 1979, Ser. No. 98,809
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



260,558
HEADLIGHT
Pierre Catte, Sevres, France, assignor to Cibie Projecteurs, Bobigny, France
Filed Jul. 12, 1979, Ser. No. 57,144
Claims priority, application France, Jun. 1, 1979, 79 42152
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—29



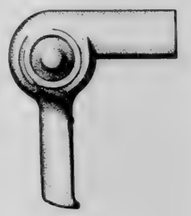
260,559
COMBINED COSMETIC PENCIL AND BRUSH
John J. Scalice, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Aug. 27, 1979, Ser. No. 69,718
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



260,560
EYE MAKEUP APPLICATOR
Milton O. Flower, Van Nuys, Calif., assignor to Max Factor & Co., Hollywood, Calif.
Filed Mar. 27, 1980, Ser. No. 134,919
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



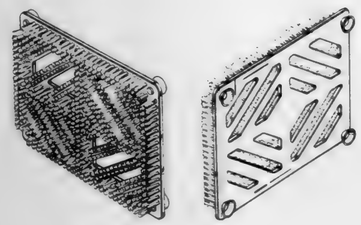
260,561
HAIR DRYER
Matthew L. Andis, Racine, Wis., assignor to Andis Clipper Company, Racine, Wis.
Filed Nov. 23, 1979, Ser. No. 96,785
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



260,562
HAIR TRIMMER
William Mack, Comack, N.Y., and Meyrick K. Rogers, Lancaster, Pa., assignors to Clairol Incorporated, New York, N.Y.
Filed Jul. 20, 1979, Ser. No. 58,965
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—53



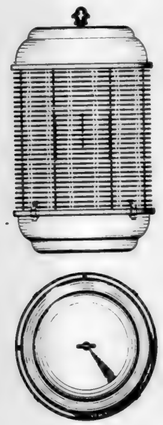
260,563
WALL BRUSH
Stephen W. Walsh, Jr., 26 Kienia Rd. R.R. 3, Hudson, N.H. 03051
Continuation-in-part of Ser. No. 910,641, May 30, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,622
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D28—63



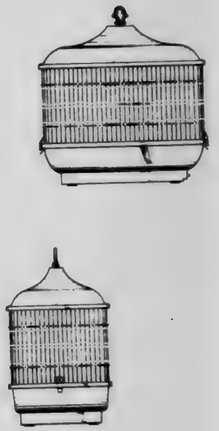
260,564
COMBINED COSMETIC STICK AND A CASE THEREFOR
John E. Jedzinak, Suffern, N.Y.; Eustace Fotiu, Mahwah, N.J., and Fred Markrow, Bronx, N.Y., assignors to Revlon, Inc., New York, N.Y.
Filed Sep. 17, 1979, Ser. No. 76,419
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—89



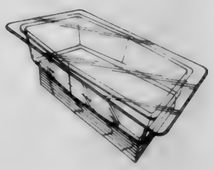
260,565
COMBINED BIRD CAGE ROOF AND BOTTOM TRAY
Michael Biro, and Hans Muckenfuss, both of Montreal, Canada, assignors to Rolf C. Hagen Ltd., Montreal, Canada
Filed Oct. 16, 1979, Ser. No. 85,196
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—4



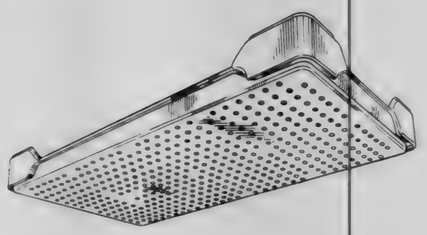
260,566
COMBINED BIRD CAGE ROOF AND BOTTOM TRAY
Michael Biro, and Hans Muckenfuss, both of Montreal, Canada, assignors to Rolf C. Hagen Ltd., Montreal, Canada
Filed Oct. 16, 1979, Ser. No. 85,245
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—4



260,567
COMBINED TABLE AND AQUARIUM OR THE LIKE
Lubomir Holec, 5220 Outer Dr., Windsor, Ontario, Canada (N9A 6J3)
Filed Mar. 13, 1980, Ser. No. 130,012
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—11



260,568
STACKABLE TRAY
Richard S. Cherry, Don Mills, Canada, assignor to Phillips-Parkway Corporation, Toronto, Canada
Filed Feb. 26, 1979, Ser. No. 15,320
Claims priority, application Canada, Oct. 13, 1978, 1310786
Term of patent 14 years
Int. Cl. D03—*99*; D09—*04*
U.S. Cl. D99—44



260,569
DRUM
Seymour Zilbert, Demarest, N.J., assignor to Bergen Barrel & Drum Co., Demarest, N.J.
Filed Apr. 4, 1978, Ser. No. 893,514
Term of patent 14 years
Int. Cl. D99—*99*
U.S. Cl. D99—51



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TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF SEPTEMBER, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Antunes & Co.: *See—*
Miller, Dye O.; Antunes, August J.; and Antunes, Jerome, 4,286,509, Cl. 99-332.000.
A. O. Smith Corporation: *See—*
Nickel, Herbert W., 4,286,573, Cl. 126-362.000.
AB Siwertell: *See—*
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Abbott, Bernard J.; and Fukuda, David S., to Eli Lilly and Company. Derivatives of S31794/F-1 nucleus. 4,287,120, Cl. 260-112.50R.
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Abbott Laboratories: *See—*
Dren, Anthony T.; and Bopp, Barbara A., 4,287,192, Cl. 424-248.510.
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Abe, Hiroshi: *See—*
Tomita, Chuji; Abe, Hiroshi; and Shimazu, Katashi, 4,287,424, Cl. 250-445.00T.
Abel, Donald J., to Albert, David. Fuel-lubricating oil proportioner and mixer. 4,286,632, Cl. 141-18.000.
Abraham, Fayez; and Bowman, Edward, to Tyler Refrigeration Corporation. Energy saving refrigeration system. 4,286,437, Cl. 62-151.000.
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McMahon, Edward H., Jr.; and Abston, J. B., 4,287,244, Cl. 428-35.000.
Accuratio Systems, Inc.: *See—*
James, James R.; and Neathery, Michael P., 4,286,732, Cl. 222-46.000.
ACF Industries, Inc.: *See—*
Jantzen, Steve L., 4,286,524, Cl. 105-248.000.
Kacal, Gary W.; and Partridge, Charles C., 4,286,614, Cl. 137-72.000.
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Ackerman, Donald W., to Garden Way Incorporated. Combination tiller and cultivator and drive control therefor. 4,286,670, Cl. 172-42.000.
Acoustic Standards Corporation: *See—*
Ophir, Jonathan; Maklad, Nabil F.; and Jaeger, Paul M., 4,286,455, Cl. 73-1.0DV.
Adams, William F.: *See—*
Novak, Milan; and Adams, William F., 4,286,404, Cl. 43-87.000.
Adams, William J.; Moorse, Jeffrey W.; and Haskins, Steve W., to Northern Telecom Inc. Modular telephone connector. 4,286,835, Cl. 339-17.00F.
Adickes, Cecil F., Jr.; and Berko, David R., to Mego Corp. Doll for containing filament producing fluid. 4,286,407, Cl. 46-163.000.
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Atkinson, John H., Jr., 4,286,581, Cl. 126-439.000.
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Ichimura, Kunihiro, 4,287,335, Cl. 542-455.000.
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Himmelmann, Wolfgang; Bruck, Rolf; Sauerteig, Wolfgang; Kruck, Peter; Kolb, Gunter; and Sackmann, Gunter, 4,287,299, Cl. 430-537.000.
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Meyer, Rudolf, 4,287,522, Cl. 346-75.000.
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Vanassche, Willy J.; Pattyn, Herman A.; Moisar, Erik; and Klotzer, Sieghart, 4,287,296, Cl. 430-411.000.
Agrawal, Jagdish M., to Michigan Consolidated Gas Company. Method for defoaming in gas purification systems. 4,287,161, Cl. 423-229.000.
Agrimech Engineering Ltd.: *See—*
Caldwell, Godfrey P.; and Meek, Nigel W., 4,286,423, Cl. 56-6.000.
Ahad, Munir J.: *See—*
Ziv, Avraham; Tanaka, Akira; Hollowell, William; Sieber, William J.; and Ahad, Munir J., 4,287,398, Cl. 200-61.45R.
Ahne, Hellmut: *See—*
Rubner, Roland; Kuhn, Eberhard; and Ahne, Hellmut, 4,287,294, Cl. 430-306.000.
Ahrens, Paul W., to Miracle Recreation Equipment Company. Playground merry-go-round. 4,286,781, Cl. 272-33.00R.
Ahrens, Walter, to Alfelder Maschinen- und Modell-Fabrik Kunkel, Wagner & Co. KG. Production of sand moulds. 4,286,937, Cl. 425-125.000.
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Hashimoto, Kenji, 4,286,767, Cl. 251-65.000.
Oguma, Tomio, 4,286,749, Cl. 236-12.00A.
AIT Industries, Inc.: *See—*
Loreto, Wilfredo P., 4,286,415, Cl. 51-284.00E.
Aitcin, Pierre C., to Universite de Sherbrooke. Novel harzburgite and preparation thereof. 4,287,167, Cl. 423-331.000.
Aizawa, Hiroshi: *See—*
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Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,286,861, Cl. 355-3.00R.
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Axelsson, Holger; and Siggelin, Lars, 4,286,413, Cl. 51-3.000.
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Akzona Incorporated: *See—*
Beyleveld, Wilhelmus M.; and Roskott, Lodewijk, 4,287,371, Cl. 568-563.000.
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Borneman, Paul R., 4,286,986, Cl. 75-126.00F.
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Allen, Christopher S., to Imperial Chemical Industries Limited. Stabilization of chlorinated aliphatic hydrocarbons. 4,287,003, Cl. 134-31.000.
Allied Chemical Corporation: *See—*
Booth, Elwood F., Jr.; and Poncha, Rustom P., 4,286,967, Cl. 23-298.000.
Allied Corporation: *See—*
Ratcliffe, Charles T., 4,287,128, Cl. 260-348.230.
Allo, Vincent F.: *See—*
Engdahl, Gerald E.; Nail, James A.; and Allo, Vincent F., 4,286,436, Cl. 62-123.000.
Alpha Plastics, Inc.: *See—*
Rogers, William H., 4,286,741, Cl. 224-193.000.
Alter, Hobart L., to Coast Catamaran Corporation. Removable rudder assembly. 4,286,536, Cl. 114-165.000.
Altman, Daniel E., to United States of America, Navy. Frustrated total internal reflection fiber-optic small-motion sensor for hydrophone use. 4,286,468, Cl. 73-655.000.
Aluminium Pechiney: *See—*
Labriot, Gilbert; Bitsch, Robert; Wattelle, Michel; and Lebesue, Jean, 4,286,944, Cl. 432-14.000.
Aluminum Company of America: *See—*
Van Linden, Jan H. L.; and Gorsa, Jeffrey B., 4,286,985, Cl. 75-65.00R.
ALZA Corporation: *See—*
Chandrasekaran, Santosh K., 4,286,592, Cl. 128-260.000.
Wong, Patrick S., 4,286,587, Cl. 128-127.000.
AM International, Inc.: *See—*
Swift, William R.; Herrod, Don W.; and Marsh, James M., 4,287,564, Cl. 364-525.000.

Amano, Isao: *See—*
Nishio, Hiroshi; Fukano, Kazuaki; Amano, Isao; and Okumura, Osamu, 4,287,101, Cl. 252-537.000.

Amark Industries, Inc.: *See—*
Nickmeyer, Walter V., 4,287,502, Cl. 338-274.000.

Ambert, Jack: *See—*
Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, 4,287,270, Cl. 429-103.000.

Amdall, John K., to Caterpillar Tractor Co. Oil cooled piston. 4,286,505, Cl. 92-186.000.

Amemiya, Yoichi: *See—*
Nozawa, Ryoichiro; Amemiya, Yoichi; Kawamata, Mitsuo; Isohata, Shigeru; Sasaki, Takao; and Takekoshi, Yoshitaka, 4,287,460, Cl. 318-571.000.

Amend, Donald F., to Tavolek Inc. Immersion vaccine for enteric redmouth. 4,287,179, Cl. 424-92.000.

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Gorshe, Thomas M., 4,286,746, Cl. 229-55.000.
Mason, Joseph E., 4,286,488, Cl. 83-205.000.
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American Cyanamid Co.: *See—*
Demchak, Richard J.; and Corso, Vito, Jr., 4,287,176, Cl. 424-78.000.
Mueller, Michael J.; and Montgomery, Carroll S., 4,287,357, Cl. 562-425.000.

American Hoechst Corporation: *See—*
Helsley, Grover C.; Dornauer, Horst; and Davis, Larry, 4,287,212, Cl. 424-330.000.

American Optical Corporation: *See—*
Banks, David, 4,287,543, Cl. 360-109.000.

American Safety Equipment Corporation: *See—*
Ziv, Avraham; Tanaka, Akira; Hollowell, William, Sieber, William J.; and Ahad, Munir J., 4,287,398, Cl. 200-61.45R.

Amon, Albert; Weil, Roger; and Heinzer, Paul, to Sipca Holding S.A. Desensitizing ink for the receiving surface of a chemical duplicating set by wet offset printing. 4,287,234, Cl. 427-150.000.

Amos, Benton H.: *See—*
Clausen, Eivind; Amos, Benton H.; and Wood, William M., 4,286,624, Cl. 137-625.190.

AMP Incorporated: *See—*
Lill, John F.; and Neff, Nelson E., 4,287,446, Cl. 310-71.000.
Litehizer, Melvin P., Jr., 4,286,381, Cl. 29-751.000.

Ancher, Jean-Francois R.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,287,351, Cl. 548-232.000.

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Sulzer, Harry E., 4,286,693, Cl. 188-378.000.

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Prall, Paul D., 4,287,260, Cl. 428-410.000.

Anderson, Eugene R., to Horizon Manufacturing Corporation. Water dissociation method and material. 4,287,169, Cl. 423-579.000.

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Ando, Seiya; and Inoue, Kozi, to Kabushiki Kaisha Ando Screen Seisakujo. Brush driving apparatus for a solid-liquid separation screen. 4,287,064, Cl. 210-413.000.

Andrews, Peter: *See—*
Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,287,199, Cl. 424-267.000.

Anoshko, Vladimir A.: *See—*
Godin, Eduard M.; Anoshko, Vladimir A.; Gavrilov, Anatoly N.; Akhmerov, Almas F.; Zverkov, Garik E.; Semenov, Valentin P.; Grachev, Vladimir V.; Cheparin, Valentin M.; Mikhailov, Viktor Y.; and Rybnikov, Sergei I., 4,286,450, Cl. 72-59.000.

Anthony, Alain. Toilet installation. 4,286,342, Cl. 4-321.000.

Anthony, Andrew J., to Combustion Engineering, Inc. Nuclear fuel storage apparatus for seismic areas. 4,287,426, Cl. 250-506.000.

Antoine, Martine: *See—*
Lechevallier, Christian; Cordier, Jacques; and Antoine, Martine, 4,287,045, Cl. 204-243.00R.

Anton, Otto: *See—*
Meyerle, Michael; Anton, Otto; and Ehrlinger, Friedrich, 4,286,477, Cl. 74-687.000.

Antunes, August J.: *See—*
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Antunes, Jerome: *See—*
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Aoki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focus indicating device for camera. 4,286,850, Cl. 354-25.000.

Apollo Technologies, Inc.: *See—*
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Fava, Ronald A., 4,287,314, Cl. 525-130.000.

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Mizuno, Masayoshi; and Tsuchiya, Hiroyuki, 4,287,290, Cl. 430-205.000.
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, 4,287,295, Cl. 430-349.000.

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Aoki, Harumi, 4,286,850, Cl. 354-25.000.
Mita, Kunio, 4,286,857, Cl. 354-289.000.

Asano, Junichi: *See—*
Akita, Yukio; Izumi, Hirotaka; and Asano, Junichi, 4,286,862, Cl. 355-3.0SH.

ASEA Aktiebolag: *See—*
Dahlstrom, Lars, 4,287,459, Cl. 318-568.000.

Ashworth, Denis H., to Simon Engineering Dudly Limited. Access equipment. 4,286,721, Cl. 212-199.000.

Associated Lead Inc.: *See—*
Muldrow, Charles N., Jr., 4,287,118, Cl. 260-45.75B.

Astle, Thomas W. Method and apparatus for streaking agar. 4,287,301, Cl. 435-30.000.

Ateliers des Charmilles, S.A.: *See—*
Convers, Danielle; Balleys, Francois; and Pfau, Jean, 4,287,404, Cl. 219-69.00W.

Atkinson, Gary B.; Nicks, Larry J.; and Bauer, Donald J., to United States of America, Interior. High surface area transition metal catalysts and method of preparing same. 4,287,095, Cl. 252-443.000.

Atkinson, John, to Coles Cranes Limited. Counterweight removal system and method. 4,286,720, Cl. 212-178.000.

Atkinson, John H., Jr., to Advanced Solar Power Company (ASPCO). Solar energy conversion system. 4,286,581, Cl. 126-439.000.

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Curtin, Daniel J., 4,287,051, Cl. 208-254.00H.
Mameniskis, Walter A.; and Melpolder, Frank W., 4,287,132, Cl. 260-453.00P.

Ato Chimie: *See—*
Gilbert, Marie, 4,287,093, Cl. 252-429.00B.

Atomic Energy of Canada Ltd.: *See—*
Torok, John, 4,287,002, Cl. 134-3.000.

Auchinleck, Richard J., to Peripheral Dynamics, Inc. Reader with special means for transporting cards and badges of variable thicknesses. 4,287,409, Cl. 235-475.000.

Avant Modes, Inc.: *See—*
MacPherson, James A.; and Schwartz, Joseph, 4,286,400, Cl. 40-152.000.

Avery International Corporation: *See—*
Wong, K. Lim; and Schmidt, Gustav A., 4,287,255, Cl. 428-343.000.

Awano, Takeshi: *See—*
Maekawa, Naozane; and Awano, Takeshi, 4,286,804, Cl. 280-803.000.

Axelsson, Holger; and Siggelin, Lars, to Aktiebolaget Bofors. Hole grinding machine. 4,286,413, Cl. 51-3.000.

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Matsuzaki, Kiyoto; and Aya, Norimoto, 4,286,980, Cl. 65-106.000.

Ayres, Robert L., to Rockwell International Corporation. Kingpin assembly and method for making same. 4,286,799, Cl. 280-96.100.

Aztec Tools, Inc.: *See—*
Bolding, Benson H., Jr., 4,286,659, Cl. 166-205.000.
Bolding, Benson H., Jr., 4,286,664, Cl. 166-325.000.

B. F. Goodrich Company, The: *See—*
Pond, James W., Jr., 4,286,644, Cl. 152-354.00R.

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Pocock, Robert E., 4,286,472, Cl. 73-863.240.

Babin, Lucien; and Clausse, Daniele, to Elf France. Product suitable for the storage and conveyance of thermal energy. 4,287,076, Cl. 252-70.000.

Babington, Ronald G.; Harrington, F. Eugene; and Houlihan, William J., to Sandoz, Inc. Method of inhibiting prolactin secretion. 4,287,196, Cl. 424-251.000.

Bachli, Ernst, to BBC Brown, Boveri & Company Limited. Screw coupling safety mechanism. 4,286,807, Cl. 285-89.000.

Bachmann, Gunter: *See—*
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Bachmann, Horst, to Langenstein & Schemann Aktiengesellschaft. Apparatus for forging shaft flanges. 4,286,454, Cl. 72-356.000.

Bachmann, Klaus J.; and Ryan, Charles T., to Bell Telephone Laboratories, Incorporated. Opto-electronic devices based on bulk crystals of complex semiconductors. 4,287,527, Cl. 357-30.000.

Baer, Karl; Reiss, Wolfgang; Schroeder, Wolfgang; and Voges, Dieter, to BASF Aktiengesellschaft. Preparation of catalysts for the hydrogenation of acetylene-alcohols. 4,287,099, Cl. 252-465.000.

Bailey, Alan C.; and Miller, Stephen B., to Corning Glass Works. Method for substantially continuously drying, consolidating and drawing an optical waveguide preform. 4,286,978, Cl. 65-3.00A.

Bailey, Albert C. Centrifugal concentrator. 4,286,748, Cl. 233-1.00D.

Baker, Eugene E.; and Carter, Ernest E., Jr., to Halliburton Company. Isolation packer and methods of cementing from a floating vessel. 4,286,658, Cl. 166-186.000.

Baker Industries, Inc.: *See—*
Raber, Samuel; Wynne, John M.; and Heim, Alan M., 4,287,515, Cl. 340-584.000.

Baker, Robert A., to Engineered Products, Inc. Body-attachable bag for carrying cameras or the like. 4,286,697, Cl. 190-48.000.

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Balogh, Barnabas: *See—*
Fabian, Zsolt; Samu, Mihaly; and Balogh, Barnabas, 4,287,470, Cl. 324-61.00R.

Baltz, Gene F.; and DuBois, Chester G., to Outboard Marine Corporation. Integrated fuel primer and crankcase drain system for internal combustion engine. 4,286,553, Cl. 123-187.50R.

Bang, Chang; and Row, Scott, to Korus, Inc. Valve. 4,286,618, Cl. 137-408.000.

Banks, David, to American Optical Corporation. Tape head mount. 4,287,543, Cl. 360-109.000.

Banner Industries, Inc.: *See—*
Mehesan, Thomas C., Jr., 4,286,917, Cl. 414-704.000.

Barber, Herbert L., to Double Backgammon Enterprises, Inc. Four player backgammon. 4,286,787, Cl. 273-248.000.

Bargues, Denis: *See—*
Couderc, Georges; Cojan, Yves; and Bargues, Denis, 4,287,412, Cl. 250-203.00R.

Barnie, James W.: *See—*
Rudko, Robert I.; and Barnie, James W., 4,287,483, Cl. 331-94.5PE.

Barrat, Christian R.: *See—*
Tolfo, Flavio; and Barrat, Christian R., 4,287,082, Cl. 252-174.120.

Barry Wright Corporation: *See—*
Keatley, James, 4,286,642, Cl. 411-112.000.
Peterson, Robert R., 4,286,442, Cl. 64-31.000.
Peterson, Robert R.; and Ventura, Daniel S., 4,286,827, Cl. 308-26.000.

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Baer, Karl; Reiss, Wolfgang; Schroeder, Wolfgang; and Voges, Dieter, 4,287,099, Cl. 252-465.000.
Brunner, Erwin; Schubert, Eckart; Lindner, Alfred; Merger, Franz; Volkamer, Klaus; Strohmeyer, Max; and Sandrock, Gerhard, 4,287,379, Cl. 585-839.000.
Buethe, Ingolf; and Loch, Werner, 4,287,039, Cl. 204-159.190.
Hahn, Klaus; Rath, Hans P.; and Walter, Manfred, 4,287,258, Cl. 428-407.000.
Horn, Dieter; Daubach, Ewald; Hahn, Erwin; Uhrig, Herbert; Hoene, Richard; and Naarmann, Herbert, 4,286,959, Cl. 8-524.000.
Kneller, Eckhart; Koenig, Roland; Koester, Eberhard; Grau, Werner; and Mayer, Dieter, 4,287,225, Cl. 427-48.000.
Kuesters, Werner; and Thil, Lucien, 4,287,367, Cl. 568-43.000.
Rudolf, Peter; Steck, Werner; Koester, Eberhard; Ohlinger, Manfred; and Jaeckh, Christof, 4,287,233, Cl. 427-127.000.
Theysohn, Rainer; Zeitler, Gerhard; Weiss, Frank; Willing, Hans; and Seiler, Erhard, 4,287,117, Cl. 260-42.460.
Weitz, Hans-Martin; and Fischer, Rolf, 4,287,356, Cl. 560-244.000.

BASF Wyandotte Corporation: *See—*
Langdon, William K.; and Lundsted, Lester G., 4,287,078, Cl. 252-76.000.

Bashnin, Oleg I.; Semenov, Vasily V.; Fedorov, Vasily N.; Rodionov, Evgeny I.; Davidson, Boris A.; and Schegolev, Gleb S. Apparatus for automatically controlling the active power produced by the generator of a hydraulic turbine-generator unit. 4,287,429, Cl. 290-40.00C.

Bassani, Mariano. Apparatus for detwisting textile fabrics in rope form. 4,286,428, Cl. 57-1.0UN.

Batcheller, Roy W., to CraneVeyor Corporation. Method of erection of pipe rail jointing system. 4,286,372, Cl. 29-516.000.

Bateman, John M.: *See—*
Peters, Thomas E.; and Bateman, John M., 4,287,140, Cl. 264-23.000.

Batista, Armando: *See—*
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,287,191, Cl. 424-230.000.

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Guignard, Claude, 4,287,139, Cl. 264-10.000.

Bauer, Donald J.: *See—*
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Bauer, James J.; and Chichester, Willard L., to Clark Equipment Company. Hydraulic control system for operating multiple remote devices with a minimum number of connecting conduits. 4,286,692, Cl. 187-9.00R.

Baumann, Erich; Mente, Hans-Peter; and Muller, Wolfgang, to Pfauter, Hermann. Drive system for a workpiece table of a machine tool. 4,286,479, Cl. 74-724.000.

Baumann, Manfred; and Lohmann, Wolfgang, to Apura GmbH & Co. Compacting waste basket. 4,286,515, Cl. 100-233.000.

Baur, Kenneth R.: *See—*
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Bausch & Lomb Incorporated: *See—*
Clark, James A., 4,286,815, Cl. 294-1.0CA.

Baxter Travenol Laboratories, Inc.: *See—*
Gajewski, Henry M.; Grode, Gerald A.; Measells, Paul E.; and Miripol, Jeffrey E., 4,286,597, Cl. 128-272.000.
Thomas, William R., 4,287,180, Cl. 424-101.000.

Bayer Aktiengesellschaft: *See—*
Becker, Hans-Joachim; and Schmidt, Walter, 4,287,365, Cl. 564-422.000.
Ehrig, Volker; Groll, Manfred; and Wunderlich, Klaus, 4,286,962, Cl. 8-549.000.
Engelhard, Forest; Kuhn, Rainer; Pump, Wichard; Riess, Reinhard; and Streib, Hugo, 4,287,262, Cl. 428-461.000.
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,287,208, Cl. 424-304.000.
Grigo, Ulrich; Morbitzer, Leo; Arlt, Klaus-Peter; Binsack, Rudolf; and Merten, Josef, 4,287,108, Cl. 260-29.1SB.
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Schlak, Ottfried; Moretto, Hans-Heinrich; Clarenz, Werner; Peltzer, Bernd; and Burgmer, Willi, 4,287,109, Cl. 260-29.20M.
Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,287,199, Cl. 424-267.000.
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, 4,287,186, Cl. 424-181.000.

Bayley, Robert D., to Xerox Corporation. Magnetic toner composition and a method of making the same. 4,287,281, Cl. 430-107.000.

BBC Brown, Boveri & Company Limited: *See—*
Bachli, Ernst, 4,286,807, Cl. 285-89.000.
Vitins, Michael, 4,287,547, Cl. 361-82.000.

Beaird-Poulan Division of Emerson Electric Co.: *See—*
Tuggle, Lloyd H., 4,286,675, Cl. 173-163.000.

Bechstedt, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Fluid, cold-stable, two-component washing compositions. 4,286,956, Cl. 8-137.000.

Beck, Bernhard: *See—*
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Beck, Jean-Louis: *See—*
Couderc, Georges; Cojan, Yves; and Beck, Jean-Louis, 4,286,760, Cl. 244-3.160.

Beck, Thomas L.; and Tennessen, Rick L., to Unico, Inc. Veneer lathe control system. 4,287,462, Cl. 318-571.000.

Becker, Hans-Joachim; and Schmidt, Walter, to Bayer Aktiengesellschaft. Reduction of aromatic nitro compounds with Raney nickel catalyst. 4,287,365, Cl. 564-422.000.

Beckmann, Robert M., to Motorola, Inc. Frequency synthesizer with ROM controlled divider and display. 4,287,600, Cl. 455-158.000.

Becton, Dickinson and Company: *See—*
Brewer, John H., 4,287,306, Cl. 435-287.000.

Bedient, Marvin J., to Swan, John. Water system freeze protection apparatus. 4,286,617, Cl. 137-334.000.

Beecher, Jesse S., to Drew Chemical Corporation. Water treatment by ion exchange resin. 4,287,072, Cl. 210-668.000.

Beer, Margaret: *See—*
Beer, Walter R.; and Beer, Margaret, 4,287,388, Cl. 179-1.0DD.

Beer, Walter R.; and Beer, Margaret. Drive-in theatre sound distribution system. 4,287,388, Cl. 179-1.0DD.

Beers, Robert E. Folding furniture. 4,286,831, Cl. 312-258.000.

Beggs, Daniel H. Sound and light signaling system. 4,287,509, Cl. 340-326.000.

Behrenz, Wolfgang: *See—*
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,287,208, Cl. 424-304.000.

Belcher, Jewell G., Jr.; and Hollis, Ben R., Jr., to United States of America, National Aeronautics and Space Administration. Liquid immersion apparatus for minute articles. 4,286,542, Cl. 118-423.000.

Bell & Howell Company: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Buckler, Michael J.; Kummer, Raymond B.; Mettler, Stephen C.; and Miller, Calvin M., 4,286,979, Cl. 65-3.00A.
Langseth, Rollin E.; and Yeh, Yu S., 4,287,598, Cl. 455-52.000.
Pirvics, Juris; and Vazirani, Hargovind N., 4,287,226, Cl. 427-54.100.

Beloit Corporation: *See—*
Justus, Edgar J.; and Roerig, Arnold J., 4,287,021, Cl. 162-358.000.

Belsky, Arkady A.; Eljutin, Alexandr V.; Zubkov, Valery N.; Konjukov, Alexandr I.; Krasinskaya, Lidia I.; Nekrasova, Elena A.; Nizharadze, Konstantin S.; Markova, Larisa F.; Mirskaya, Mirra G.; Frolov, Alexei V.; and Judin, Evgeny A. Process for producing high-purity indium. 4,287,030, Cl. 204-105.00R.

Benatar, Victor. System for automatically injecting a measured quantity of powdered reagent into a pool of molten metal. 4,286,774, Cl. 266-82.000.

Bendix Corporation, The: *See—*
Braunlich, Peter F., 4,287,553, Cl. 361-283.000.
Fahim, Magdi M.; Nowak, Victor J.; and Matta, Nagui R., 4,286,563, Cl. 123-469.000.
Moser, Kenneth R., 4,287,603, Cl. 455-293.000.
Rudolph, Pamela; Krieder, Robert D.; and O'Keefe, Patrick J., Jr., 4,286,685, Cl. 180-176.000.
Young, Allen E., 4,286,880, Cl. 356-431.000.

Benichou, Alain; and Perraud, Raymond J., to S.A.E.I. Celite; and Societe d'Etude et de Construction de Machines pour Toutes Industries SECOMA. Process for positioning strengthening rods in mine levels and public works. 4,286,899, Cl. 405-260.000.

Benier B.V.: *See—*
Benier, Johan, 4,286,939, Cl. 425-333.000.

Benier, Johan, to Benier B.V. Dough rounder with adjustable rounding bowls. 4,286,939, Cl. 425-333.000.

Benjamin, John W., to Litton Systems, Inc. Semi-automated warehousing system. 4,286,911, Cl. 414-273.000.

Bennett, Lewis W.; and Van Namen, Frederik T., to Centronics Data Computer Corp. Bi-directional belt drive, print head mounting means and printing plane adjustment means for serial printers. 4,286,888, Cl. 400-320.000.

Benno, Edward L.: *See—*
Platt, John R.; and Benno, Edward L., 4,286,711, Cl. 206-216.000.

Berg, Lawrance F., to Caterpillar Tractor Co. Hydraulic servo steering system. 4,286,684, Cl. 180-133.000.

Berge, Christian: *See—*
Bres, Philippe; Berge, Christian; and Sassus-Bourda, Gerard, 4,286,461, Cl. 73-155.000.

Berger, Hermann, to U.S. Philips Corp. Amplifier arrangement comprising two transistors. 4,287,478, Cl. 330-256.000.

Berggren, Torsten L. Screw-press. 4,286,512, Cl. 100-74.000.

Berghmans, Jacques M. L., to Du Pont de Nemours, E. I., and Company. Coating of poly(arylene sulfide), fluoropolymer and aluminum flake. 4,287,112, Cl. 260-29.60F.

Bergman, Ernst L. A.; Blomberg, Peter E.; Enger, Lars S.; Reistad, Bengt R.; and Wallgren, Sonny O., to Aktiebolaget Electrolux. Intake and discharge duct with external terminal for a burner-operated refrigerator. 4,286,569, Cl. 126-85.00B.

Bergstein, David. Roller skating spark generator. 4,286,806, Cl. 280-816.000.

Bergwerksverband GmbH: *See—*
Schulz, Peter; Vaupel, Knut; and Klein, Jurgen, 4,286,393, Cl. 34-57.00R.

Berko, David R.: *See—*
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Berlitz, Ingo: *See—*
Hargita, Tibor; Berlitz, Ingo; and Hafner, Herbert, 4,287,394, Cl. 200-5.00A.

Bernath, Oskar, to Georg Fischer Brugg-Oehler AG. Apparatus for strengthening porous plates by impregnation. 4,286,540, Cl. 118-50.000.

Bernuth, Wolfgang: *See—*
Jager, Gerd; Bernuth, Wolfgang; Irrgang, Klaus; Wendt, Hans-Joachim; and Honecker, Siegfried, 4,286,879, Cl. 356-358.000.

Berstein, Marcos: *See—*
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Bethlehem Steel Corporation: *See—*
Allegra, Louis K.; Townsend, Herbert E.; and Borzillo, Angelo R., 4,287,009, Cl. 148-127.000.
Burcaw, Kenneth R., Jr.; and Watkins, Robert E., Jr., 4,286,971, Cl. 55-48.000.
Stavros, Anthony J., 4,287,238, Cl. 427-349.000.
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., 4,287,008, Cl. 148-127.000.
Vander Voort, George F., 4,287,007, Cl. 148-36.000.

Beucci, Marcello, to Gori & Zucchi S.p.A. Apparatus for seeking and following a luminous zone, such as the sun. 4,287,411, Cl. 250-203.00R.

Bewley, James G., to Metallurgical International, Inc. Powdered metal filter composition and processes for producing the same. 4,287,068, Cl. 210-510.000.

Beyer, Horst, to Goetze AG. Method for inoculating or refining metal melts. 4,286,646, Cl. 164-57.100.

Beyleveld, Wilhelmus M.; and Roskott, Lodewijk, to Akzona Incorporated. Novel peroxyketals derived from alkoxyacetones. 4,287,371, Cl. 568-563.000.

BFG Glassgroup: *See—*
Vasseur, Jean-Pierre; Laurent, Michel; Loriau, Jean-Joseph; and Delhaute, Andre, 4,286,743, Cl. 228-124.000.

Bianchetta, Donald L.; and Wirtz, Edward A., to Caterpillar Tractor Co. Hydraulic load lifting system with automatic blocking valve. 4,286,502, Cl. 91-445.000.

Biles, Don L.; and Richardson, A. Alan, to Silver Systems, Ltd. Silver recovery apparatus. 4,287,044, Cl. 204-231.000.

Billenstein, Siegfried: *See—*
Schneider, Manfred; Kruse, Hubert; Opitz, Konrad; and Billenstein, Siegfried, 4,286,960, Cl. 8-527.000.

Billot, Michel: *See—*
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Binasik, Chester S.: *See—*
Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., 4,286,945, Cl. 432-29.000.

Bindra, Jasjit S.: *See—*
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Binsack, Rudolf: *See—*
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Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, 4,287,565, Cl. 364-580.000.

Bitsch, Robert: *See—*
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Bittle, James L., to Pitman-Moore, Inc. Feline rhinotracheitis vaccine and production and use thereof. 4,287,178, Cl. 424-89.000.

Bixby, James A.; Lemke, James U.; and Lentz, Robert A., to Spin Physics, Inc. Segmented video recording with segment identification codes. 4,287,539, Cl. 360-18.000.

Black Clawson Company, The: *See—*
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Blackwood, Robert S., to FSI Corporation. Applying photoresist onto silicon wafers. 4,286,541, Cl. 118-52.000.

Blanc, Max: *See—*
Chemizard, Andre; and Blanc, Max, 4,286,643, Cl. 152-347.000.

Blanch, Paul S.: *See—*
Kovacik, James W.; Kovacik, James D.; Blanch, Thomas J.; and Blanch, Paul S., 4,287,456, Cl. 315-283.000.

Blanch, Thomas J.: *See—*
Kovacik, James W.; Kovacik, James D.; Blanch, Thomas J.; and Blanch, Paul S., 4,287,456, Cl. 315-283.000.

Blaney, Peter G.: *See—*
Zeigner, Willard L.; and Blaney, Peter G., 4,286,683, Cl. 180-54.00R.

Blass, Karl G. Electrochemical detection procedure for the determination of glucose in biological fluids. 4,287,028, Cl. 204-1.00T.

Blevins, Willard A.: *See—*
Swift, Billy K.; Zizzo, Anthony F.; and Blevins, Willard A., 4,287,480, Cl. 331-1.00A.

Blitz, James E. Temperature control system for automotive storage components. 4,286,551, Cl. 123-41.310.

Block, Kenneth A.; Carter, William M.; and Schillreff, George H., to General Dynamics, Pomona Division. Decoy rounds and their method of fabrication. 4,286,498, Cl. 86-1.00R.

Blomberg, Peter E.: *See—*
Bergman, Ernst L. A.; Blomberg, Peter E.; Enger, Lars S.; Reistad, Bengt R.; and Wallgren, Sonny O., 4,286,569, Cl. 126-85.00B.

Blount, Eric A., to Marconi Company Limited, The. Manipulator mechanisms. 4,286,380, Cl. 29-741.000.

Bluestein, Ben A., to General Electric Company. Process for synthesizing silanol chain-stopped fluorosiloxane fluids. 4,287,353, Cl. 556-459.000.

Blum, Wilhelm, to DeMag Aktiengesellschaft. Revolving tower support for casting ladles. 4,286,738, Cl. 222-591.000.

Blume, Helmut: *See—*
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Blumenfeld, John F.: *See—*
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Bock, Hans: *See—*
Wagner, Fritz; Rapp, Peter; Bock, Hans; Lindorfer, Walter; Schulz, Walther; and Gebetsberger, Wilhelm, 4,286,660, Cl. 166-246.000.

Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Use of mixture of aliphatic C_{10} branched olefins in augmenting or enhancing the aroma of perfumed alkaline metal hypochlorite solutions. 4,287,084, Cl. 252-187.00H.

Boehringer, Wilfred E., to McDonnell Douglas Corporation. Hydraulic power transfer unit. 4,286,927, Cl. 417-271.000.

Boeing Company, The: *See—*
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Lund, Walter W., Jr.; Nalos, Ervin J.; and Skoumal, Donald E., 4,287,495, Cl. 333-239.000.

Boersma, Richard F., to Fiat-Allis Construction Machinery, Inc. Scraper elevator drive mounting. 4,286,705, Cl. 198-719.000.

Boettcher, Barry; Walker, William R.; and Whitehouse, Michael W. Complexes of bivalent copper. 4,287,190, Cl. 424-230.000.

Bogert, Robert C.: *See—*
Rudy, Marion F., 4,287,250, Cl. 428-166.000.

Bohm, Martin: *See—*
Ritter, Ernst; Schwartz, Reinhard; Muller, Rolf; and Bohm, Martin, 4,286,559, Cl. 123-383.000.

Boileau, Jacques, to Compagnie Generale des Etablissements Michelin. Pneumatic tire with reinforced carcass and tread. 4,286,645, Cl. 152-360.000.

Bolding, Benson H., Jr., to Aztec Tools, Inc. Ball valve safety screen. 4,286,659, Cl. 166-205.000.

Bolding, Benson H., Jr., to Aztec Tools, Inc. Positive seal float collar. 4,286,664, Cl. 166-325.000.

Bolen, Charles E.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,286,996, Cl. 106-282.000.
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Bollenbacher, Dale E. Signal viewer for automobile. 4,286,846, Cl. 350-436.000.

Bolt Associates, Inc.: *See—*
Fiske, Augustus H., Jr., 4,286,687, Cl. 181-120.000.

Bolte, Steven B.; and Lewis, Richard B., to Xerox Corporation. Electrostatographic carrier coated with thixotropic compositions. 4,287,287, Cl. 430-137.000.

Bondina, Ltd.: *See—*
Thornton, Alan; and Uttley, John S., 4,287,246, Cl. 428-113.000.

Bonomi, Angelo: *See—*
Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, 4,287,270, Cl. 429-103.000.

Booth, Elwood F., Jr.; and Poncha, Rustom P., to Allied Chemical Corporation. Double crystallization process to produce low organic, low silica soda ash. 4,286,967, Cl. 23-298.000.

Booth, Rex, to United States of America, Energy. Strong focus space charge. 4,287,419, Cl. 250-396.0ML.

Boots Company, The: *See—*
North, Robert A., 4,287,374, Cl. 568-937.000.

Booty, Donald J., to Snow Biz, Inc. Ski boot walking accessory. 4,286,397, Cl. 36-132.000.

Bopp, Barbara A.: *See—*
Dren, Anthony T.; and Bopp, Barbara A., 4,287,192, Cl. 424-248.510.

Borg, Arthur N.; Trostel, Jerry D.; and Heuer, Daniel A., to Magnavox Company, The. Self-programing memory tuning system. 4,287,601, Cl. 455-186.000.

Borg-Warner Corporation: *See—*
Valdiserri, Leo L., 4,287,339, Cl. 544-214.000.

Borland, Walter G., to General Electric Company. Capacitive current limiting inverter. 4,287,556, Cl. 363-41.000.

Borneman, Paul R., to Allegheny Ludlum Steel Corporation. Ferritic stainless steel and processing therefor. 4,286,986, Cl. 75-126.00F.

Borner, Manfred, to Licentia Patent-Verwaltungs-G.m.b.H. Solid state circuit. 4,286,842, Cl. 350-331.00R.

Borvendeg, Janos: *See—*
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Laszlo; Szuucs, Erzsebet; and Kiss, Gabriella, 4,287,194, Cl. 424-248.510.

Borzillo, Angelo R.: *See—*
Allegra, Louis K.; Townsend, Herbert E.; and Borzillo, Angelo R., 4,287,009, Cl. 148-127.000.
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., 4,287,008, Cl. 148-127.000.

Botnick, Irlin H. Non-freeze wall hydrant. 4,286,616, Cl. 137-327.000.

Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., to Delalande S.A. 3-Parahydroxyphenyl-5-methylether-2-oxazolidinone compounds. 4,287,351, Cl. 548-232.000.

Bourne, Ian A., to University of Melbourne, The. Acoustic detection of wind speed and direction at various altitudes. 4,286,462, Cl. 73-189.000.

Boute, Raymond T. G.; De Kinder, Wilfried L. J.; Neutjens, Gustaaf W. T.; Pochet, Andre G. G.; Vanderschoot, Jan P. M.; and Van Remortel, Jacques D. A., to International Standard Electric Corporation. Time division multiplex communication system. 4,287,590, Cl. 370-59.000.

Bowman, Edward: *See—*
Abraham, Fayez; and Bowman, Edward, 4,286,437, Cl. 62-131.000.

Boyd, Dennis F.: *See—*
Ehretsmann, Jacques; Cowling, Robert D.; Schweizer, Alfred D.; Caldwell, William M.; Boyd, Dennis F.; and Boyd, Robert J., 4,286,604, Cl. 131-359.000.

Boyd, Robert J.: *See—*
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Boyd, Thomas J., Jr.: *See—*
Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., 4,287,488, Cl. 331-94.5PE.

Boyd, William J.: *See—*
King, Mary K.; and Boyd, William J., 4,287,251, Cl. 428-198.000.

Bracke, William J. I.; and Lanza, Emmanuel, to Labofina S.A. Process for preparing rubber reinforced styrenic resins. 4,287,318, Cl. 525-313.000.

Bradicich, J. Bruce: *See—*
Connolly, Bruce; and Bradicich, J. Bruce, 4,286,638, Cl. 144-3.00K.

Bradley, Irving, to General Electric Company. Mechanical stop means for a prefocused plastic PAR lamp. 4,287,448, Cl. 313-113.000.

Brady, Thomas P.: *See—*
Langer, Horst G.; and Brady, Thomas P., 4,287,131, Cl. 260-448.00R.

Braeger, Horst K. H., to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Method of filleting fish and a filleting machine for performing this method. 4,286,355, Cl. 17-46.000.

Braksmayer, Diza P.; and Hussain, Syed N., to FMC Corporation. 3-Hydroxyalkyl phosphine oxide flame retardant compositions. 4,287,119, Cl. 260-45.95L.

Brantingham, George L.: *See—*
Easley, Steven J.; and Brantingham, George L., 4,287,559, Cl. 364-200.000.

Brash, Leslie O. Gas recirculation apparatus with integral ash hoppers. 4,286,548, Cl. 122-1.00R.

Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., to United States of America, Energy. Rf Feedback free electron laser. 4,287,488, Cl. 331-94.5PE.

Braunlich, Peter F., to Bendix Corporation, The. Capacitive pressure transducer. 4,287,553, Cl. 361-283.000.

Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, to Proge Groupement d'Interet Economique. Salt composition usable as a fused electrolyte in accumulators. 4,287,270, Cl. 429-103.000.

Brehse, Robert F., to General Electric Company. Inverter with improved regulation. 4,287,557, Cl. 363-95.000.

Breitschwerdt, Werner: *See—*
Scherenberg, Hans O.; Breitschwerdt, Werner; Klein, Wilhelm; and Jahn, Walter, 4,286,359, Cl. 24-230.00R.

Bremmer, James S. Process of manufacturing stable ammonium polyphosphate fertilizers. 4,286,982, Cl. 71-34.000.

Bres, Philippe; Berge, Christian; and Sassus-Bourda, Gerard, to Societe Nationale Elf Aquitaine (Production). Method and device for in situ detection of a mineral deposit fluid within a borehole. 4,286,461, Cl. 73-155.000.

Brewer, John H., to Becton, Dickinson and Company. Apparatus for generation of anaerobic atmosphere. 4,287,306, Cl. 435-287.000.

Brinkhous, Kenneth M.; and Read, Marjorie S., to Research Triangle Institute. Fixed-dried blood platelets. 4,287,087, Cl. 252-408.000.

British Aerospace Public Limited Company: *See—*
Trayner, Brian T., 4,286,522, Cl. 102-255.000.

British Petroleum Company Limited, The: *See—*
Melitz, Daniel T.; Searle, Kenneth L.; and Woodman, Brian E., 4,286,896, Cl. 405-185.000.

British Steel Corporation: *See—*
Montgomery, Robert W., 4,287,381, Cl. 13-18.00C.

Brooks, Clyde S.: *See—*
Golden, Gerald S.; Lemkey, Franklin D.; and Brooks, Clyde S., 4,287,096, Cl. 252-455.00R.

Brosch, Rudolf; Schettler, Helmut; Schumacher, Hans; and Zuehlke, Rainer, to International Business Machines Corp. Method and circuitry for equalizing the differing delays of semiconductor chips. 4,287,437, Cl. 307-296.00R.

Brother Kogyo Kabushiki Kaisha: *See—*
Hisakawa, Minoru; and Okamoto, Tsugio, 4,286,887, Cl. 400-196.100.

Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., to Xerox Corporation. Overcoated inorganic layered photoresponsive device and process of preparation. 4,287,279, Cl. 430-58.000.

Brown, Omar L.: *See—*
Fraze, Ermal C.; and Brown, Omar L., 4,286,728, Cl. 220-270.000.

Brown, Raymond C., to Superior Industries International, Inc. Wheel with replacement spokes. 4,286,824, Cl. 301-37.0SS.

Brown, William J., to Caterpillar Tractor Co. Mount to absorb shocks. 4,286,777, Cl. 267-63.00R.

Bruck, Rolf: *See—*
Himmelmann, Wolfgang; Bruck, Rolf; Sauerteig, Wolfgang; Kruck, Peter; Kolb, Gunter; and Sackmann, Gunter, 4,287,299, Cl. 430-537.000.

Brunner, Erwin; Schubert, Eckart; Lindner, Alfred; Merger, Franz; Volkamer, Klaus; Strohmeyer, Max; and Sandrock, Gerhard, to BASF Aktiengesellschaft. Process for obtaining isobutene from C_4-hydrocarbon mixtures containing isobutene. 4,287,379, Cl. 585-839.000.

Brunsting, Albert: *See—*
Hogg, Walter R.; and Brunsting, Albert, 4,286,876, Cl. 356-343.000.

Buchold, Henning: *See—*
Moller, Friedrich-Wilhelm; Buchold, Henning; Klein, Helmut; Garkisch, Otto-Ludwig; Gutlhuber, Friedrich; and Laber, Walter, 4,287,375, Cl. 585-440.000.

Buckler, Michael J.; Kummer, Raymond B.; Mettler, Stephen C.; and Miller, Calvin M., to Bell Telephone Laboratories, Incorporated. Fabrication of optical fibers using differential mode-group delay measurement. 4,286,979, Cl. 65-3.00A.

Buckner, Lynn A. Direct contact gaseous to liquid heat exchange and recovery system. 4,287,138, Cl. 261-128.000.

Buckwalter, Geoffrey R., to Simon, Eric. Grinding of pigments. 4,287,000, Cl. 106-309.000.

Budd Company, The: *See—*
Mekosh, George, Jr.; and Hulse, David O., 4,286,797, Cl. 280-80.00B.

Buder, Wolfgang: *See—*
Panster, Peter; Buder, Wolfgang; and Kleinschmit, Peter, 4,287,094, Cl. 252-431.00R.

Budich, Wolfgang; and Theissen, Hans, to Dynamit Nobel Aktiengesellschaft. Building kit for vertical or horizontal sliding windows. 4,286,716, Cl. 206-577.000.

Buethe, Ingolf; and Loch, Werner, to BASF Aktiengesellschaft. Radiation-curable aqueous binder dispersions, their preparation and their use. 4,287,039, Cl. 204-159.190.

Bugler, John H.: *See—*
Goslin, John K.; Bugler, John H.; and Foster, Howard, 4,286,605, Cl. 131-358.000.

Burcaw, Kenneth R., Jr.; and Watkins, Robert E., Jr., to Bethlehem Steel Corporation. Removal of naphthalene from recirculated wash oil. 4,286,971, Cl. 55-48.000.

Burdett, Kenneth A.: *See—*
Tefertiller, Nancy B.; Burdett, Kenneth A.; and Harris, Robert F., 4,287,323, Cl. 525-404.000.

Burgmer, Willi: *See—*
Schlak, Ottfried; Moretto, Hans-Heinrich; Clarenz, Werner; Peltzer, Bernd; and Burgmer, Willi, 4,287,109, Cl. 260-29.20M.

Burke, William R.: *See—*
Smith, Richard E.; and Burke, William R., 4,286,995, Cl. 106-109.000.

Burns, Joseph P., to ICI Americas Inc. Polyester urethane-containing molding compositions. 4,287,116, Cl. 260-37.00N.

Burpee, Lee: *See—*
Paynter, Donald A.; and Burpee, Lee, 4,287,597, Cl. 455-12.000.

Burr Oak Tool & Gauge Company: *See—*
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Burrafato, Gary M.: *See—*
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Burron Medical Inc.: *See—*
Raines, Kenneth, 4,286,591, Cl. 128-215.000.
Raines, Kenneth, 4,287,065, Cl. 210-445.000.

Burroughs Corporation: *See—*
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Paulish, Daniel J.; Meyerhoff, Albert J.; and Nichett, George R., 4,287,592, Cl. 370-88.000.
Wertanen, Harry, 4,286,516, Cl. 101-93.030.
Burroughs Wellcome Co.: *See—*
Schaeffer, Howard J., 4,287,188, Cl. 424-200.000.
Burrows, Clifford G.: *See—*
Butler, Claude O.; and Burrows, Clifford G., 4,286,798, Cl. 280-81.500.
Burrows, J. W.; and Watts, Loyal O., to Caterpillar Tractor Co. Lock valve with variable length piston and hydraulic system for a work implement using the same. 4,286,432, Cl. 60-404.000.
Burwasser, Herman, to GAF Corporation. Toner repellant coating for dielectric film. 4,287,286, Cl. 430-127.000.
Busbach, Wilhelm: *See—*
Galow, Manfred; and Busbach, Wilhelm, 4,286,912, Cl. 414-287.000.
Buser, Rolf; Palacin, Francis; Robert, Georg; and Somm, Franz, to Sandoz Ltd. Reduction clearing of disperse dyes. 4,286,961, Cl. 8-532.000.
Bushelle, William R.: *See—*
Van Vliet, Robert M.; and Bushelle, William R., 4,287,520, Cl. 343-909.000.
Busse, Claus-Adolf; and Labrande, Jean-Paul, to Zewen, Cabinet A. Gas-controlled heat-pipe thermostat of high precision. 4,286,652, Cl. 165-96.000.
Butler, Claude O.; and Burrows, Clifford G. Truck with steerable rear wheels. 4,286,798, Cl. 280-81.500.
BWM Corporation: *See—*
Medcalf, Eugene C., 4,286,969, Cl. 44-53.000.
BWZ Berg-und Industrietechnik GmbH: *See—*
Marsch, Walter; and Werner, Hans, 4,286,482, Cl. 81-55.000.
Bytzek, Max: *See—*
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C-I-L Inc.: *See—*
Pollock, David C. I., 4,287,070, Cl. 210-626.000.
Caldwell, Godfrey P.; and Meek, Nigel W., to Agrimech Engineering Ltd. Crop cutting apparatus. 4,286,423, Cl. 56-6.000.
Caldwell, William M.: *See—*
Ehretsmann, Jacques; Cowling, Robert D.; Schweizer, Alfred D.; Caldwell, William M.; Boyd, Dennis F.; and Boyd, Robert J., 4,286,604, Cl. 131-359.000.
Calspan Corporation: *See—*
Weibel, James A., Sr.; and Vassallo, Franklin A., 4,287,033, Cl. 204-146.000.
Cambridge Engineering, Inc.: *See—*
Searcy, James A.; Zoellner, Roger O.; and Hoffmann, Ronald C., 4,286,572, Cl. 126-299.00D.
Campillo, Anthony J.: *See—*
Clark, John H.; Campillo, Anthony J.; Shapiro, Stanley L.; and Winn, Kenneth R., 4,287,035, Cl. 204-157.10R.
Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources: *See—*
Novak, Milan; and Adams, William F., 4,286,404, Cl. 43-87.000.
Cankurt, Nurettin T.; and Furman, Anthony H., to General Electric Company. Reactor with particulate recycling filtration means. 4,286,970, Cl. 48-87.000.
Cann, Peter L.; and Sacks, Paul S., to Carrier Corporation. Hot gas defrost system. 4,286,435, Cl. 62-81.000.
Canon Kabushiki Kaisha: *See—*
Kamata, Shigeru, 4,286,845, Cl. 350-430.000.
Kiuchi, Masayoshi; and Kawamura, Masaharu, 4,286,858, Cl. 354-289.000.
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Uchidoi, Masanori; Shimizu, Masami; Date, Nobuaki; and Aizawa, Hiroshi, 4,286,849, Cl. 354-23.00D.
Capaccio, Giancarlo; and Ward, Ian M., to National Research Development Corp. Process for the production of polymer materials. 4,287,149, Cl. 264-210.700.
Caputo, Charles A.: *See—*
Schwab, Carl E.; Foley, Peter; and Caputo, Charles A., 4,287,533, Cl. 358-127.000.
Carballes, Jean-Claude: *See—*
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Carley, Emilie L.: *See—*
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Carlisle Corporation: *See—*
Dombrowsky, Donald S., 4,287,385, Cl. 174-36.000.
Carlo, Dennis J.; Jackson, Jesse J.; and Stoudt, Thomas H., to Merck & Co., Inc. Vaccine for dental caries. 4,287,173, Cl. 424-49.000.
Carlo Erba Strumentazione S.p.A.: *See—*
Sisti, Giorgio; Riva, Ermete; and Sala, Learco, 4,286,456, Cl. 73-23.100.
Carlos Enterprises: *See—*
Harvey, Leslie E.; and Spiva, Stephan D., 4,286,784, Cl. 273-54.00D.
Carlsen, George C., II; Crumm, John C.; and Matsuda, Koji, to Dynamic Compliance, Incorporated. Feedback arrangement. 4,287,477, Cl. 330-255.000.
Carre, Jean-Jacques; and Levrai, Roland, to Societe Anonyme D.B.A. Drum brake actuating device. 4,286,504, Cl. 91-517.000.
Carrier Corporation: *See—*
Cann, Peter L.; and Sacks, Paul S., 4,286,435, Cl. 62-81.000.
Carson, William W., to Waters Associates, Inc. Refractometer cell with integral lens. 4,286,873, Cl. 356-130.000.
Carter, Ernest E., Jr.: *See—*
Baker, Eugene E.; and Carter, Ernest E., Jr., 4,286,658, Cl. 166-186.000.
Carter, William M.: *See—*
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Casinelli, Dominic L., to Harrell, James E., a part interest. Solid fuel composition. 4,286,968, Cl. 44-1.00R.
Cassar, Luigi: *See—*
Moro, Alessandro; Foa, Marco; and Cassar, Luigi, 4,287,352, Cl. 549-79.000.
Castelli, Vincent J.; and Fischer, Eugene C., to United States of America, Navy. Copper base antifouling paints with pH control. 4,286,988, Cl. 106-15.050.
Castelli, Vittorio; and Hamaker, Ralph A., to Xerox Corporation. Belt tracking system. 4,286,706, Cl. 198-806.000.
Catalyst Research Corporation: *See—*
Harney, David E.; Harney, Marilyn J.; and O'Boyle, Matthew, 4,287,273, Cl. 429-153.000.
Caterpillar Tractor Co.: *See—*
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Bianchetta, Donald L.; and Wirtz, Edward A., 4,286,502, Cl. 91-445.000.
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Kessinger, Orville E., Jr., 4,286,478, Cl. 74-705.000.
Noble, Charles M.; and Olthoff, James A., 4,286,674, Cl. 172-811.000.
Sieving, Alfred W., 4,286,825, Cl. 301-63.00R.
Catiller, Robert D.: *See—*
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Cavaliere, Joseph R.; Henle, Robert A.; Konian, Richard R.; and Walsh, James L., to International Business Machines Corp. Complementary transistor inverting emitter follower circuit. 4,287,435, Cl. 307-255.000.
Cavallaro, Antonino: *See—*
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Cave, David L.; and Pace, Wilson D., to Motorola, Inc. Field effect transistor current source. 4,287,438, Cl. 307-297.000.
Cazzaro, Giorgio; Matera, Giancarlo; Cavallaro, Antonino; and Zani, Marina, to Snia Viscosa. Process for producing glossy fibres of the modacrylic type having reduced inflammability. 4,287,148, Cl. 264-182.000.
Celmer, Walter D.; Cullen, Walter P.; Huang, Liang H.; Oscarson, John R.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Antibiotics produced by a new microbe, *Catenuloplanes japonicus*. 4,287,182, Cl. 424-118.000.
Cendre, Andre: *See—*
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Centronics Data Computer Corp.: *See—*
Bennett, Lewis W.; and Van Namen, Frederik T., 4,286,888, Cl. 400-320.000.
Cessna Aircraft Company, The: *See—*
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Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,287,340, Cl. 544-250.000.
Chakravarti, Satya N.; and Hiltebeitel, John A., to International Business Machines Corporation. High density transistor arrays. 4,287,571, Cl. 365-104.000.
Champion International Corporation: *See—*
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Zdarsky, Robert C.; and Lyons, Russell, 4,286,714, Cl. 206-526.000.
Champion Road Machinery Limited: *See—*
Dickie, Ira A., 4,286,480, Cl. 74-785.000.
Chandrasekaran, Santosh K., to ALZA Corporation. Therapeutic system for administering drugs to the skin. 4,286,592, Cl. 128-260.000.
Chang, Chin H.: *See—*
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,286,972, Cl. 55-58.000.
Chang, William J. H., to Yoder Company, The. Forming leveller. 4,286,451, Cl. 72-161.000.
Chapman, Derek D.; and Reczek, James A., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible 6-arylazo-3-pyridinol magenta dye-releasing compounds and precursors thereof. 4,287,292, Cl. 430-222.000.
Charade Hair and Skin Care Center, Inc.: *See—*
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Chari, Venu, to NCR Corporation. Data recovery system for use with a high speed serial link between two subsystems in a data processing system. 4,287,596, Cl. 375-49.000.
Chastain, David L., Jr.: *See—*
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Chatfield, Phillip A.: *See—*
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Cheatham, Samuel D.; and Haynes, Munro K., to International Business Machines Corporation. Stabilized recording. 4,287,540, Cl. 360-18.000.
Chemische Werke Huls A.G.: *See—*
Dohm, Klaus-Dieter; and Hofmann, Peter, 4,287,130, Cl. 260-413.000.
Chemizard, Andre; and Blanc, Max, to Compagnie Generale des Etablissements Michelin. Pneumatic tire having a lining of puncture sealing product. 4,286,643, Cl. 152-347.000.
Cheng, Richard C. M. Nesting track section for model vehicles. 4,286,752, Cl. 238-10.00F.
Cheng, Y. C.: *See—*
Lam, Hau C.; Lee, Thomas K. P.; and Cheng, Y. C., 4,287,513, Cl. 340-562.000.
Chepurin, Valentin M.: *See—*
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Chevron Research Company: *See—*
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Chicago Bridge & Iron Company: *See—*
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Chisso Corporation: *See—*
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Watanabe, Minoru; Oikawa, Mitsuhiro; Nishimura, Toshio; Asada, Masao; Tezuka, Masao; and Cho, Tsurahide, 4,287,229, Cl. 427-64.000.
Christini, James N., to GTE Products Corporation. Calciner reverse feed discharge spiral. 4,286,946, Cl. 432-112.000.
Ciba-Geigy AG: *See—*
Dodwell, Geoffrey M., 4,287,298, Cl. 430-533.000.
Kitzing, Rainer; Ficken, Geoffrey E.; and Dolden, Victor W., 4,287,348, Cl. 548-121.000.
Ciba-Geigy Corporation: *See—*
Creighton, Gordon R., 4,286,365, Cl. 29-157.30V.
Eckhardt, Wolfgang; Kunz, Walter; and Hubele, Adolf, 4,287,210, Cl. 424-309.000.
Fah, Hansjakob; and Grieder, Alfred, 4,287,347, Cl. 546-345.000.
Farooq, Saleem, 4,287,204, Cl. 424-277.000.
Forgo, Imre; Zahir, Abdul-Cader; and Francois, Jacques, 4,287,106, Cl. 260-28.50B.
Hoegerle, Karl, 4,287,342, Cl. 544-298.000.
Mazour, Zdenek, 4,287,136, Cl. 260-985.000.
Petitpierre, Jean C., 4,287,336, Cl. 542-472.000.
CIDELCEM: *See—*
Marchais, Jean-Claude, 4,286,713, Cl. 206-508.000.
CL Industries, Inc.: *See—*
Stewart, Patrick H.; and Woodson, Wayne D., 4,287,092, Cl. 252-429.00R.
Claessens, Dominique F., to D.P.G. Claessens Product-Consultants B.V. Device for tobacco consumption and method of making it. 4,286,607, Cl. 131-328.000.
Clarenz, Werner: *See—*
Schlak, Ottfried; Moretto, Hans-Heinrich; Clarenz, Werner; Peltzer, Bernd; and Burgmer, Willi, 4,287,109, Cl. 260-29.20M.
Claret, Guy P. Control for electronic amplifiers. 4,286,492, Cl. 84-1.270.
Clark Equipment Company: *See—*
Bauer, James J.; and Chichester, Willard L., 4,286,692, Cl. 187-9.00R.
Clark, James A., to Bausch & Lomb Incorporated. Lens insertion and removal device. 4,286,815, Cl. 294-1.0CA.
Clark, John H.; Campillo, Anthony J.; Shapiro, Stanley L.; and Winn, Kenneth R., to United States of America, Energy. Method for producing rapid pH changes. 4,287,035, Cl. 204-157.10R.
Clarke, Clarence C., to Whirlpool Corporation. Condition responsive liquid line valve for refrigeration appliance. 4,286,438, Cl. 62-216.000.
Clarke, William L., to Laser Precision Corporation. Refractively scanned interferometer. 4,286,877, Cl. 356-346.000.
Clasen, Rolf; and Lydtin, Hans J., to U.S. Philips Corporation. Mould with separating layer for the production of glass objects. 4,286,981, Cl. 65-169.000.
Clausen, Eivind; Amos, Benton H.; and Wood, William M. Fluid handling systems & multi-positionable valving arrangements for the use therein. 4,286,624, Cl. 137-625.190.
Clausse, Daniele: *See—*
Babin, Lucien; and Clausse, Daniele, 4,287,076, Cl. 252-70.000.
Clay, Robert A., to Hermann, Robert R. Pumping unit. 4,286,928, Cl. 417-329.000.
Cleveland Controls, Incorporated: *See—*
McMahon, James F., Jr., 4,286,474, Cl. 74-522.000.
Clubley, Michael H.: *See—*
Farnworth, Frank; and Clubley, Michael H., 4,287,098, Cl. 252-463.000.
Coal Industry (Patents) Limited: *See—*
Kormendy, Miltiades, 4,286,771, Cl. 254-108.000.
Coast Catamaran Corporation: *See—*
Alter, Hobart L., 4,286,536, Cl. 114-165.000.
Cobbledick, David S., to General Tire & Rubber Company, The. Polyurethane foams containing brominated diphenyl ether. 4,287,309, Cl. 521-114.000.
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, to Research Foundation of State University of New York, The. Novel salicylanilides and microbiocidal compositions and uses thereof. 4,287,191, Cl. 424-230.000.
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Credle, William S., 4,286,636, Cl. 141-114.000.
Codrino, Giuseppe. Directional signaling mechanism for automotive vehicles. 4,287,397, Cl. 200-61.270.
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Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., 4,286,945, Cl. 432-29.000.
Coetzer, Johan, to South African Inventions Development Corporation, The. Electrode for an electrochemical cell, and an electrochemical cell. 4,287,268, Cl. 429-103.000.
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Coggins, Everett W., to Confinement Investors, Inc. Aeration system for solid biological waste. 4,287,060, Cl. 210-194.000.
Coin Controls Limited: *See—*
Wood, Dennis, 4,286,704, Cl. 194-100.00A.
Cojan, Yves: *See—*
Couderc, Georges; Cojan, Yves; and Beck, Jean-Louis, 4,286,760, Cl. 244-3.160.
Couderc, Georges; Cojan, Yves; and Bargues, Denis, 4,287,412, Cl. 250-203.00R.
Cole, H. Ray. Air sock. 4,286,463, Cl. 73-189.000.
Coleman, Charles, to Emerson Electric Co. Minimal energy dissipating detector. 4,287,516, Cl. 340-629.000.
Coles Cranes Limited: *See—*
Atkinson, John, 4,286,720, Cl. 212-178.000.
Collins, Andrew P. Recreational basketball apparatus with moving goal barrier. 4,286,779, Cl. 272-3.000.
Collins, Harold B.: *See—*
Sims, Larry A.; Lambert, Gerald L.; Gross, Raymond J.; and Collins, Harold B., 4,286,406, Cl. 46-72.000.
Combs, C. Marlon, to Dynametric, Inc. Magnetic locking methods and apparatus. 4,287,512, Cl. 340-542.000.
Combustion Engineering, Inc.: *See—*
Anthony, Andrew J., 4,287,426, Cl. 250-506.000.
Penfield, Scott R., Jr., 4,287,022, Cl. 176-3.000.
Robinson, Storm D.; and Rode, Douglas M., 4,286,527, Cl. 110-165.00A.
Cominco Ltd.: *See—*
Kirby, Charles R.; and McKay, Donald R., 4,286,966, Cl. 23-293.00S.
Commercial Management Corporation: *See—*
Gastine, Roland E., 4,286,690, Cl. 182-5.000.
Communications Satellite Corporation: *See—*
Deal, Joseph H., Jr., 4,287,577, Cl. 365-233.000.
Compagnie Generale des Etablissements Michelin: *See—*
Boileau, Jacques, 4,286,645, Cl. 152-360.000.
Chemizard, Andre; and Blanc, Max, 4,286,643, Cl. 152-347.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Lazzari, Jean-Pierre, 4,287,544, Cl. 360-131.000.
Compere, Alicia L.; and Griffith, William L., to United States of America, Energy. Microorganism immobilization. 4,287,305, Cl. 435-176.000.
Condon, Richard W.: *See—*
Stewart, Charles; and Condon, Richard W., 4,286,682, Cl. 180-9.24A.
Confinement Investors, Inc.: *See—*
Coggins, Everett W., 4,287,060, Cl. 210-194.000.
Conley, Richard L. Multiple row seed planter with common seed storage. 4,286,530, Cl. 111-1.000.
Connaught Laboratories Limited: *See—*
Wilson, Strathearn, 4,286,637, Cl. 141-374.000.
Connolly, Bruce; and Bradicich, J. Bruce. Apparatus for measuring, cutting and splitting logs. 4,286,638, Cl. 144-3.00K.
Connolly, Walter L. Method of orifice fitting mechanism for pipelines. 4,286,364, Cl. 29-157.10R.

Connor, David T., to Warner-Lambert Company. (2-Oxo-2H-1-benzopyran-3-yl)aminooxoacetic acids and their derivatives. 4,287,126, Cl. 260-343.450.

Connor, David T.: *See—*
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,287,340, Cl. 544-250.000.

Conoco, Inc.: *See—*
Convers, Ronald J.; and DeBernardi, James A., 4,286,390, Cl. 34-9.000.
Convers, Ronald J.; Higley, David P.; and DeBernardi, James A., 4,287,089, Cl. 252-414.000.
Doerr, Richard E., 4,286,822, Cl. 299-18.000.

Conrad, Lucas J., to R. J. Reynolds Tobacco Company. Peristaltic valve for transferring material between zones. 4,286,910, Cl. 414-221.000.

Convers, Danielle; Balleys, Francois; and Pfau, Jean, to Ateliers des Charmilles, S.A. Electrode for electrical discharge machining. 4,287,404, Cl. 219-69.00W.

Convers, Ronald J.; and DeBernardi, James A., to Conoco, Inc. Method for removal of water from activated carbon. 4,286,390, Cl. 34-9.000.

Convers, Ronald J.; Higley, David P.; and DeBernardi, James A., to Conoco, Inc. Method for removal of water from activated carbon. 4,287,089, Cl. 252-414.000.

Coombs, Peter A. Fireman's helmet with energy absorbing liner. 4,286,339, Cl. 2-414.000.

Cooper, Frank W., Jr., to Westinghouse Electric Corp. Segmented flexible hone. 4,286,416, Cl. 51-334.000.

Cooper, Herbert. Automobile body with a retractable hard top roof. 4,286,821, Cl. 296-216.000.

Cooper, William T., to Phillips Petroleum Co. Waste heat recovery. 4,287,023, Cl. 201-31.000.

Copal Company Limited: *See—*
Wada, Yasuhiro, 4,287,550, Cl. 361-167.000.

Copyer Company Limited: *See—*
Akita, Yukio; Izumi, Hirotaka; and Asano, Junichi, 4,286,862, Cl. 355-3.0SH.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Compositions of epichlorohydrin rubber and polyester. 4,287,324, Cl. 525-408.000.

Cordier, Jacques: *See—*
Lechevallier, Christian; Cordier, Jacques; and Antoine, Martine, 4,287,045, Cl. 204-243.00R.

Corfield, George C.: *See—*
Ebdon, Leslie C.; Ellis, Andrew T.; and Corfield, George C., 4,287,042, Cl. 204-195.00M.

Corning Glass Works: *See—*
Bailey, Alan C.; and Miller, Stephen B., 4,286,978, Cl. 65-3.00A.
Gulati, Suresh T.; and Spycher, Anton A., 4,287,018, Cl. 156-645.000.

Cornwall, Frank H.; and Ross, William A., to Pitney Bowes Inc. Pressure fusing apparatus for an electrostatic reproducing machine. 4,286,863, Cl. 355-3.0FU.

Corporacion de Fomento de la Produccion: *See—*
Garrett, Donald E.; and Laborde, Martin, 4,287,163, Cl. 423-283.000.

Corporation for Public Broadcasting: *See—*
Kessler, William J., 4,287,602, Cl. 455-286.000.

Corsette, Douglas F., to Diamond International Corporation. Liquid Dispenser. 4,286,736, Cl. 222-321.000.

Corso, Vito, Jr.: *See—*
Demchak, Richard J.; and Corso, Vito, Jr., 4,287,176, Cl. 424-78.000.

Couch, Lana M., to United States of America, National Aeronautics and Space Administration. Wind tunnel supplementary Mach number minimum section insert. 4,286,460, Cl. 73-147.000.

Couderc, Georges; Cojan, Yves; and Beck, Jean-Louis, to Thomson-CSF. Photoelectric direction finder. 4,286,760, Cl. 244-3.160.

Couderc, Georges; Cojan, Yves; and Bargues, Denis, to Thomson-CSF. Photoelectric direction finder. 4,287,412, Cl. 250-203.00R.

Coulter Electronics, Inc.: *See—*
Hogg, Walter R.; and Brunsting, Albert, 4,286,876, Cl. 356-343.000.
Ledis, Stephen L.; Chastain, David L., Jr.; and Crews, Harold R., 4,286,963, Cl. 23-230.00B.

Covert, Stanley R. Retractable mirror. 4,286,840, Cl. 350-289.000.

Cowling, Robert D.: *See—*
Ehretsmann, Jacques; Cowling, Robert D.; Schweitzer, Alfred D.; Caldwell, William M.; Boyd, Dennis F.; and Boyd, Robert J., 4,286,604, Cl. 131-359.000.

Craig, Robert J. G., to Incosym, Inc. Universal joint flexure hinge suspension system, and method for manufacturing this system. 4,286,370, Cl. 29-434.000.

Crane, Hewitt D.; and Steele, Carroll M., to SRI International. Double Purkinje eye tracker. 4,287,410, Cl. 250-201.000.

CraneVeyor Corporation: *See—*
Batcheller, Roy W., 4,286,372, Cl. 29-516.000.

Crayton, Frank H.: *See—*
Swain, James W.; and Crayton, Frank H., 4,286,606, Cl. 131-276.000.

Credle, William S., to Coca-Cola Company, The. Dip tube and valve with quick-disconnect coupling for a collapsible container. 4,286,636, Cl. 141-114.000.

Creighton, Gordon R., to Ciba-Geigy Corporation. Heat exchangers. 4,286,365, Cl. 29-157.30V.

Crews, Harold R.: *See—*
Ledis, Stephen L.; Chastain, David L., Jr.; and Crews, Harold R., 4,286,963, Cl. 23-230.00B.

Crow, Harold L.: *See—*
Place, Virgil A.; and Crow, Harold L., 4,286,593, Cl. 128-260.000.

Crumm, John C.: *See—*
Carlsen, George C., II; Crumm, John C.; and Matsuda, Koji, 4,287,477, Cl. 330-255.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Melindo, Flavio, 4,287,392, Cl. 179-16.0AA.

Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Huang, Liang H.; Oscarson, John R.; Shibakawa, Riichiro; and Tone, Junsuke, 4,287,182, Cl. 424-118.000.

Culler, Glenn J., to Culler-Harrison Inc. Array processor with parallel operations per instruction. 4,287,566, Cl. 364-754.000.

Culler-Harrison Inc.: *See—*
Culler, Glenn J., 4,287,566, Cl. 364-754.000.

Culmann, Gunter: *See—*
Muller, Rudolf; Klinkner, Hans-Guido; and Culmann, Gunter, 4,286,994, Cl. 106-109.000.

Cunningham, Thomas W. Applicator and tampon. 4,286,594, Cl. 128-263.000.

Curtin, Daniel J., to Atlantic Richfield Company. Disposition of a high nitrogen content oil stream. 4,287,051, Cl. 208-254.00H.

Curtiss-Wright Corporation: *See—*
De Feo, Angelo, 4,287,156, Cl. 422-143.000.

Cushman, Robert H., to Pennwalt Corporation. Panoramic dental radiography image intensification employing minification techniques. 4,287,423, Cl. 250-439.00P.

Cutler, John H.: *See—*
Walker, Loren H.; and Cutler, John H., 4,287,463, Cl. 318-803.000.

D.P.G. Claessens Product-Consultants B.V.: *See—*
Claessens, Dominique F., 4,286,607, Cl. 131-328.000.

Dahlberg, Bengt I.; Ehnstrom, Lars K. J.; and Keim, Carroll R., to Alfa-Laval AB. Production of ethanol. 4,287,303, Cl. 435-162.000.

Dahlstrom, Lars, to ASEA Aktiebolag. Method for generating a pattern by means of an industrial robot and industrial robot for carrying out the method. 4,287,459, Cl. 318-568.000.

Daiberl, Karl. Intra-oral aligning assembly. 4,286,947, Cl. 433-72.000.

Daicel Chemical Industries Ltd.: *See—*
Ishihara, Tetsuo; and Kubo, Keizi, 4,287,297, Cl. 430-435.000.

Daimler-Benz Aktiengesellschaft: *See—*
Scherenberg, Hans O.; Breitschwerdt, Werner; Klein, Wilhelm; and Jahn, Walter, 4,286,359, Cl. 24-230.00R.

D'Alfonso, Nunzio: *See—*
Neitz, Alfred; Pickel, Hans; and D'Alfonso, Nunzio, 4,286,556, Cl. 123-279.000.

Damon, Lloyd E.: *See—*
Gullotti, Damian V.; Damon, Lloyd E.; Chatfield, Phillip A.; and Winter, Joseph, 4,286,744, Cl. 228-125.000.

Daniel Industries, Inc.: *See—*
Tomlin, Jerry B.; and Hodgeman, Herbert H., 4,286,625, Cl. 137-625.430.

Danner, Harold J., Jr. Vacuum bag used in making laminated products. 4,287,015, Cl. 156-382.000.

Darden, Boyd E.; and Hartley, Henry F., to Honeywell Information Systems Inc. Real time adapter unit for use in a data processing system. 4,287,562, Cl. 364-200.000.

Dartmouth College, Trustees of: *See—*
Thomae, Irving H., 4,286,465, Cl. 73-342.000.

Date, Nobuaki: *See—*
Uchidoi, Masanori; Shimizu, Masami; Date, Nobuaki; and Aizawa, Hiroshi, 4,286,849, Cl. 354-23.00D.

Daubach, Ewald: *See—*
Horn, Dieter; Daubach, Ewald; Hahn, Erwin; Uhrig. Herbert; Hoene, Richard; and Naarmann, Herbert, 4,286,959, Cl. 8-524.000.

Daugherty, Thomas L.: *See—*
Sides, Nathan T.; and Daugherty, Thomas L., 4,286,828, Cl. 308-26.000.

David Sensibar Irrevocable Trust: *See—*
Sensibar, Ezra, 4,287,432, Cl. 307-116.000.

Davidson, Boris A.: *See—*
Bashnin, Oleg I.; Semenov, Vasily V.; Fedorov, Vasily N.; Rodionov, Evgeny I.; Davidson, Boris A.; and Schegolev, Gleb S., 4,287,429, Cl. 290-40.00C.

Davidson, Douglas M., Jr. Means and method for connecting large pipe. 4,286,914, Cl. 414-460.000.

Davies, Evan J., to National Research Development Corporation. Electric contact device with fluidized metal particle bed. 4,287,406, Cl. 219-155.000.

Davis, Dallas R., to Davis Explosive Sources, Inc. Linear explosive charge with constant detonation velocity and synchronous booster charges. 4,286,520, Cl. 102-317.000.

Davis Explosive Sources, Inc.: *See—*
Davis, Dallas R., 4,286,520, Cl. 102-317.000.

Davis, Larry: *See—*
Helsley, Grover C.; Dornauer, Horst; and Davis, Larry, 4,287,212, Cl. 424-330.000.

Davis, William J., to Sac Membrane Products Corporation. Alkaline cell with graft polymer separator. 4,287,275, Cl. 429-206.000.

Davy McKee (Oil & Chemicals) Limited: *See—*
Harris, Norman; Dennis, Alan J.; and Harrison, George E., 4,287,127, Cl. 260-346.110.

Harris, Norman; and Shevels, Thomas F., 4,287,369, Cl. 568-454.000.
Harris, Norman; Dennis, Alan J.; and Shevels, Thomas F., 4,287,370, Cl. 568-454.000.

Deacon, Robert H. Traction device for walking on ice. 4,286,396, Cl. 36-62.000.

Deal, Joseph H., Jr., to Communications Satellite Corporation. Interleaved TDMA terrestrial interface buffer. 4,287,577, Cl. 365-233.000.

DeBaryshe, Paul G.; and Glickler, Sheldon L., to Jersey Nuclear-Avco Isotopes, Inc. Compensation of thermal expansion in mirrors for high power radiation beams. 4,287,421, Cl. 250-423.00P.

DeBernardi, James A.: *See—*
Convers, Ronald J.; and DeBernardi, James A., 4,286,390, Cl. 34-9.000.
Convers, Ronald J.; Higley, David P.; and DeBernardi, James A., 4,287,089, Cl. 252-414.000.

DeCaro, Aristide R.; Murphy, Eugene F.; and Maynard, Billy A., to Westinghouse Electric Corp. Method of spray-reflectorizing electric lamp envelopes. 4,287,231, Cl. 427-106.000.

Deep Oil Technology, Inc.: *See—*
Walker, Raymond W., 4,286,665, Cl. 166-339.000.

Deere & Company: *See—*
Hubbard, Arthur L., 4,286,424, Cl. 56-10.200.

De Feo, Angelo, to Curtiss-Wright Corporation. Fluidized bed reactor. 4,287,156, Cl. 422-143.000.

Degesch GmbH: *See—*
Jordy, Angelika; and Kapp, Wolfgang, 4,287,171, Cl. 424-29.000.

Degussa Aktiengesellschaft: *See—*
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,287,097, Cl. 252-462.000.
Kleinschmit, Peter; and Schwarz, Rudolf, 4,286,990, Cl. 106-73.400.

Dehan, Gerard C. H.; and Maulat, Jean-Pierre, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device for the control by cam of a mobile mechanism. 4,286,473, Cl. 74-107.000.

Deike, Robert F., to Foresight Industries. Mail box support. 4,286,747, Cl. 232-39.000.

Deister Concentrator Co., Inc., The: *See—*
Hollingsworth, Clinton A., 4,287,054, Cl. 209-170.000.

De Kinder, Wilfried L. J.: *See—*
Boute, Raymond T. G.; De Kinder, Wilfried L. J.; Neutjens, Gustaaf W. T.; Pochet, Andre G. G.; Vanderschoot, Jan P. M.; and Van Remortel, Jacques D. A., 4,287,590, Cl. 370-59.000.

Dekker, Lambert: *See—*
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de Kocknee Steynberg, Annemare: *See—*
Coetzer, Johan; Nolte, Margaretha J.; and de Kocknee Steynberg, Annemare, 4,287,271, Cl. 429-103.000.

Delalande S.A.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,287,351, Cl. 548-232.000.

Deleenher, Henri: *See—*
Delgleize, Jean; and Deleenher, Henri, 4,286,765, Cl. 248-573.000.

Delgleize, Jean; and Deleenher, Henri, to UOP Inc. Vehicle seats. 4,286,765, Cl. 248-573.000.

Delhaute, Andre: *See—*
Vasseur, Jean-Pierre; Laurent, Michel; Loriau, Jean-Joseph; and Delhaute, Andre, 4,286,743, Cl. 228-124.000.

Delingat, Eckart: *See—*
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Delta-X Corporation: *See—*
Standish, Thomas R., 4,286,925, Cl. 417-12.000.

DeLuca, Raymond F., to Georgia-Pacific Corporation. Sheet material dispenser handwheel and cutting knife. 4,286,489, Cl. 83-335.000.

DeMag Aktiengesellschaft: *See—*
Blum, Wilhelm, 4,286,738, Cl. 222-591.000.

de Maquille, Yannick: *See—*
Pigeon, Marcel; and de Maquille, Yannick, 4,287,288, Cl. 430-169.000.

Demchak, Richard J.; and Corso, Vito, Jr., to American Cyanamid Co. Anthelmintic levamisole and tetramisole gel compositions. 4,287,176, Cl. 424-78.000.

Demchenko, Jury D.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Teptikov, Nikolai R.; and Demchenko, Jury D., 4,287,444, Cl. 310-13.000.

Demers, Robert R., to RCA Corporation. Wafer and boule protection during the blade return stroke of a wafer saw. 4,287,256, Cl. 428-375.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Taniguchi, Yasuo; Ike, Toshiharu; and Nakaya, Hideo, 4,287,311, Cl. 525-58.000.

Dennis, Alan J.: *See—*
Harris, Norman; Dennis, Alan J.; and Harrison, George E., 4,287,127, Cl. 260-346.110.
Harris, Norman; Dennis, Alan J.; and Shevels, Thomas F., 4,287,370, Cl. 568-454.000.

Densmore, Neal W., to Voy Manufacturing Co. System for supporting overhead trolley rail. 4,286,523, Cl. 104-111.000.

Derbyshire, Rodney L., to Radiation Dynamics, Inc. Closure method. 4,287,011, Cl. 156-85.000.

Deshais, Richard; and Carbonnel, Henri, to Novatome. Conduction pump for liquid metal. 4,286,926, Cl. 417-50.000.

Deshaw, Walter R., to Keeler Corporation. Electrically operated remote control rearview mirror. 4,286,841, Cl. 350-289.000.

Desma-Werke GmbH: *See—*
Hustedt, Hans, 4,286,936, Cl. 425-119.000.

De Steur, Hubert: *See—*
Vanhumbeeck, Jacky; De Steur, Hubert; Heyneman, Guido; and Vandenbossche, Chris, 4,286,965, Cl. 23-230.00A.

Detweiler, Charles A., to Schmelzer Corporation. Control system for turbocharger. 4,286,433, Cl. 60-602.000.

Deutsch, Ralph, to Kawai Musical Instruments Mfg. Co., Ltd. Unified tone generation in a polyphonic tone synthesizer. 4,286,491, Cl. 84-1.010.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Roumfabert e.V.: *See—*
Lindner, Friedrich, 4,286,650, Cl. 165-1.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Panster, Peter; Buder, Wolfgang; and Kleinschmit, Peter, 4,287,094, Cl. 252-431.00R.

Dezvane, Joseph; and Lenac, Vojko. Tool mounting. 4,286,485, Cl. 82-36.00R.

Dhein, Rolf: *See—*
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,287,315, Cl. 525-183.000.

Diamond International Corporation: *See—*
Corsette, Douglas F., 4,286,736, Cl. 222-321.000.

Diamond Shamrock Corp.: *See—*
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Dickie, Ira A., to Champion Road Machinery Limited. Speed reducer. 4,286,480, Cl. 74-785.000.

Dickinson, William W.: *See—*
Hamlin, Robert N.; and Dickinson, William W., 4,286,973, Cl. 55-92.000.

Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, to Lingner & Fischer GmbH. Gel or waxy articles. 4,286,890, Cl. 401-19.000.

Dickson, Howard K.: *See—*
Patrick, E. V.; Dickson, Howard K.; and Dunmire, Howard L., 4,286,833, Cl. 316-31.000.

Di Diego, Robert, to Stanley Works, The. Coilable rule casing. 4,286,387, Cl. 33-138.000.

Didier Engineering GmbH: *See—*
Galow, Manfred; and Busbach, Wilhelm, 4,286,912, Cl. 414-287.000.

DiGiacomo, Peter M., to Occidental Research Corporation. Simultaneous extraction of more than one ion by liquid membrane process. 4,287,071, Cl. 210-643.000.

Dills, Raymond L.: *See—*
Hurko, Bohdan; and Dills, Raymond L., 4,286,377, Cl. 29-612.000.

DiMatteo, Paul: *See—*
Stern, Howard; and DiMatteo, Paul, 4,286,852, Cl. 354-77.000.

Dimiter, Serge. Reconstituted leather and method of manufacture. 4,287,252, Cl. 428-316.000.

Dimitri, Mitchell S.; and Force, Carlton G., to Westvaco Corporation. Tackifying composition for rubber. 4,287,104, Cl. 260-17.500.

Discovision Associates: *See—*
Mickleson, Lee, 4,286,848, Cl. 350-467.000.

Divin, Jury Y.; Polyansky, Oleg J.; and Shulman, Alexandr Y. Method for measuring the spectral distribution of electromagnetic radiation intensity and spectrometer of millimetric and far-infrared ranges for effecting same. 4,287,418, Cl. 250-336.000.

Djordjevic, Ilija; Ritter, Ernst; and Lang, Thomas, to Robert Bosch GmbH. Centrifugal rpm governor for fuel injected internal combustion engines, especially an idling and final rpm governor for diesel vehicle engines. 4,286,558, Cl. 123-368.000.

Dobo, Emerick J., to Monsanto Company. Conjugate filaments and films. 4,287,254, Cl. 428-329.000.

Dodwell, Geoffrey M., to Ciba-Geigy AG. Film base material containing a combination of surfactants. 4,287,298, Cl. 430-533.000.

Doerr, Richard E., to Conoco, Inc. Underspoil slurry haulage. 4,286,822, Cl. 299-18.000.

Dohm, Klaus-Dieter; and Hofmann, Peter, to Chemische Werke Huls A.G. Reacting olefins with ozone in a carboxylic acid medium. 4,287,130, Cl. 260-413.000.

Doi, Kazumasa, to United States of America, Navy. Multi-mode Luneberg lens antenna. 4,287,519, Cl. 343-725.000.

Doi, Yoshiharu: *See—*
Tsutsui, Minoru; and Doi, Yoshiharu, 4,287,036, Cl. 204-157.10R.

Dold, Erwin: *See—*
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,287,097, Cl. 252-462.000.

Dolden, Victor W.: *See—*
Kitzing, Rainer; Ficken, Geoffrey E.; and Dolden, Victor W., 4,287,348, Cl. 548-121.000.

Dombrowsky, Donald S., to Carlisle Corporation. Shielded flat cable. 4,287,385, Cl. 174-36.000.

Donlan, John P.; and Krauss, Alfred R., to Westinghouse Electric Corp. Locking structure for an alignment bushing of a combustion turbine engine. 4,286,921, Cl. 415-136.000.

Dornauer, Horst: *See—*
Helsley, Grover C.; Dornauer, Horst; and Davis, Larry, 4,287,212, Cl. 424-330.000.

Dorpmund, Willi, to Graaff Kommanditgesellschaft. Shipping container construction. 4,286,507, Cl. 98-32.000.

Dorr, Manfred: *See—*
Uibel, Paul-Ulrich; and Dorr, Manfred, 4,286,885, Cl. 366-347.000.

Dostert, Phillippe L.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,287,351, Cl. 548-232.000.

Doty, Donald J.: *See—*
Goodman, David S.; Selvin, Gerald J.; Dubell, Edward G.; Doty, Donald J.; Erbe, Alfred R.; and Wilson, Robert E., 4,286,834, Cl. 339-16.00R.

Double Backgammon Enterprises, Inc.: *See—*
Barber, Herbert L., 4,286,787, Cl. 273-248.000.

Double-E Inc.: *See—*
McLean, Douglas K., 4,286,791, Cl. 277-64.000.

Douzon, Colette A.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,287,351, Cl. 548-232.000.

Dover Corporation: *See—*
McMath, Jack A., 4,286,635, Cl. 141-98.000.

Dow Chemical Company, The: *See—*
Hefner, Robert E., Jr.; and Tomalia, Donald A., 4,287,052, Cl. 209-166.000.
Langer, Horst G.; and Brady, Thomas P., 4,287,131, Cl. 260-448.00R.
Legler, Bobby, 4,287,115, Cl. 260-37.0EP.
Tefertiller, Nancy B.; Burdett, Kenneth A.; and Harris, Robert F., 4,287,323, Cl. 525-404.000.
Wing, Phillip L., 4,287,077, Cl. 252-75.000.

Downing, Gerald T., to W. H. Brady Co. Tape dispenser package with core friction ring. 4,286,729, Cl. 221-70.000.

Drab, Ernst: *See—*
Scheurecker, Werner; and Drab, Ernst, 4,286,678, Cl. 177-132.000.

Dragerwerk Aktiengesellschaft: *See—*
Pasternack, Adalbert, 4,286,439, Cl. 62-259.300.

Dren, Anthony T.; and Bopp, Barbara A., to Abbott Laboratories. Antiglaucoma agents. 4,287,192, Cl. 424-248.510.

Dresser Industries, Inc.: *See—*
Gagliano, Robert L.; and Feuerstein, Herman G., 4,286,902, Cl. 408-79.000.

Dreux, Jacques: *See—*
Simon, Pierre; and Dreux, Jacques, 4,287,206, Cl. 424-279.000.

Drew Chemical Corporation: *See—*
Beecher, Jesse S., 4,287,072, Cl. 210-668.000.

Drieu, Maurice L., to Erin Engineering (Ontario) Ltd. Power saving circuit for gaseous discharge lamps. 4,287,455, Cl. 315-199.000.

Dubell, Edward G.: *See—*
Goodman, David S.; Selvin, Gerald J.; Dubell, Edward G.; Doty, Donald J.; Erbe, Alfred R.; and Wilson, Robert E., 4,286,834, Cl. 339-16.00R.

DuBois, Chester G.: *See—*
Baltz, Gene F.; and DuBois, Chester G., 4,286,553, Cl. 123-187.50R.

Duffield, James R.: *See—*
Knox, Kenneth H.; Larkin, Mark E.; and Duffield, James R., 4,286,640, Cl. 150-8.000.

Dugrenier, Ernest. Broiler grill cleaning brush. 4,286,349, Cl. 15-111.000.

Dumas, John R.: *See—*
Spinks, Brian M.; and Dumas, John R., 4,287,442, Cl. 307-510.000.

Dumbaugh, George D.; and Wilson, Paul A., to Kinergy Corporation. Sifter stroke screen. 4,287,056, Cl. 209-332.000.

Dunmire, Howard L.: *See—*
Patrick, E. V.; Dickson, Howard K.; and Dunmire, Howard L., 4,286,833, Cl. 316-31.000.

Dunn, David C.; and Tweed, George C., Jr., to U.S. Elevator Corporation. Solar heater unit. 4,286,583, Cl. 126-445.000.

Duphar International Research B.V.: *See—*
Van Gilse, Jaap; and Paerels, Gerard B., 4,286,983, Cl. 71-67.000.

Du Pont de Nemours, E. I., and Company: *See—*
Berghmans, Jacques M. L., 4,287,112, Cl. 260-29.6DF.
Holtje, Wilfried G.; Senkler, George H.; and Taggi, Arthur J., 4,286,998, Cl. 106-288.00Q.
Owen, James H., II, 4,287,010, Cl. 149-2.000.
Smiley, Robert A., 4,287,134, Cl. 260-465.100.
Wat, Edward K. W., 4,287,343, Cl. 544-320.000.

Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active guanidine compounds. 4,287,198, Cl. 424-263.000.

Dussich, George: *See—*
Wartman, Carl E.; and Dussich, George, 4,287,514, Cl. 340-569.000.

Dwyer, Francis G.; and Jenkins, Edwin E., to Mobil Oil Corporation. Zeolite ZSM-39. 4,287,166, Cl. 423-325.000.

Dydyk, Michael, to Motorola Inc. Directional filter for mixers, converters and the like. 4,287,605, Cl. 455-330.000.

Dynametric, Inc.: *See—*
Combs, C. Marlon, 4,287,512, Cl. 340-542.000.

Dynamic Compliance, Incorporated: *See—*
Carlsen, George C., II; Crumm, John C.; and Matsuda, Koji, 4,287,477, Cl. 330-255.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Budich, Wolfgang; and Theissen, Hans, 4,286,716, Cl. 206-577.000.

Dyner, Moises, to Berstein, Marcos. Water filter for radiators. 4,287,067, Cl. 210-487.000.

Dzhamardzhashvili, Vazha A.: *See—*
Aladiev, Ivan T.; and Dzhamardzhashvili, Vazha A., 4,287,443, Cl. 310-11.000.

Eardley, David B.; and Matick, Richard E., to International Business Machines Corporation. High speed high density, multi-port random access memory cell. 4,287,575, Cl. 365-174.000.

Earhart, Harold W.; and Rugen, Donald F., to Sun Oil Company of Pennsylvania. Sec-ylbiphenyl composition and process for preparing the same. 4,287,074, Cl. 585-6.300.

Easley, Steven J.; and Brantingham, George L., to Texas Instruments Incorporated. Electronic microprocessor system having two cycle branch logic. 4,287,559, Cl. 364-200.000.

Eastman, Alan D.; and Gardner, Lloyd E., to Phillips Petroleum Co. Catalytic hydrodesulfurization of organic compounds employing alumina promoted with zinc titanate, cobalt and molybdenum as the catalytic agent. 4,287,050, Cl. 208-215.000.

Eastman Kodak Company: *See—*
Chapman, Derek D.; and Reczek, James A., 4,287,292, Cl. 430-222.000.
Gysling, Henry J., 4,287,354, Cl. 556-465.000.
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,287,325, Cl. 525-444.000.
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,287,332, Cl. 528-176.000.
Mosehauer, Michael W., 4,287,285, Cl. 430-124.000.
O'Connor, Thomas R., 4,287,240, Cl. 427-402.000.
Tersteeg, Glenn E.; and Harold, Richard R., 4,287,155, Cl. 422-64.000.

Eaton, William G.; and Roeder, Allan W., to United States of America, Air Force. Circuit for the adaptive suppression of narrow band interference. 4,287,475, Cl. 328-167.000.

Ebdon, Leslie C.; Ellis, Andrew T.; and Corfield, George C., to National Research Development, Corp. Ion-selective electrode and method of making said electrode. 4,287,042, Cl. 204-195.00M.

Ebert, Hermann; and Bachmann, Gunter, to Triumph Werke Nurnberg A.G. Error correcting typewriter with electronically controlled backspacing to facilitate perfect overstrike of errors. 4,286,889, Cl. 400-697.100.

Eckendorff, Jean-Pierre. Tool assembly for repairing and in particular grinding a tap seat. 4,286,903, Cl. 408-83.500.

Eckert, Werner; and Simon, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for electrodepositing a metallic layer of predetermined thickness. 4,287,043, Cl. 204-228.000.

Eckhardt, Wolfgang; Kunz, Walter; and Hubele, Adolf, to Ciba-Geigy Corporation. Microbicidal meta oxy- and thio-substituted phenylanilines. 4,287,210, Cl. 424-309.000.

Eckle, Otto, to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH. Clamping device for clamping a turnable cutter blade on a tool holder. 4,286,901, Cl. 407-109.000.

Edgell, James E.: *See—*
Jones, John E.; Fodor, William G.; Porter, James R.; and Edgell, James E., 4,286,610, Cl. 132-76.400.

Edwards Engineering Corporation: *See—*
Edwards, Ray C., 4,286,653, Cl. 165-156.000.

Edwards, Ray C., to Edwards Engineering Corporation. Coaxial tube in tube heat exchanger with inner tube support. 4,286,653, Cl. 165-156.000.

Ehmen, Thomas J. Manually operable latching device. 4,286,810, Cl. 292-67.000.

Ehnstrom, Lars K. J.: *See—*
Dahlberg, Bengt I.; Ehnstrom, Lars K. J.; and Keim, Carroll R., 4,287,303, Cl. 435-162.000.

Ehretsmann, Jacques; Cowling, Robert D.; Schweizer, Alfred D.; Caldwell, William M.; Boyd, Dennis F.; and Boyd, Robert J., to Gallaher Limited. Smoking materials. 4,286,604, Cl. 131-359.000.

Ehrig, Volker; Groll, Manfred; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Phthalocyanine reactive dyestuffs, their preparation and their use for dyeing materials containing hydroxyl groups or amide groups. 4,286,962, Cl. 8-549.000.

Ehrlinger, Friedrich: *See—*
Meyerle, Michael; Anton, Otto; and Ehrlinger, Friedrich, 4,286,477, Cl. 74-687.000.

Eisai Co., Ltd.: *See—*
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Udea, Koichiro, 4,287,346, Cl. 546-330.000.

Eisinger, Frantisek L., to Foster Wheeler Energy Corporation. Steam generator support system. 4,286,549, Cl. 122-510.000.

Elf France: *See—*
Babin, Lucien; and Clausse, Daniele, 4,287,076, Cl. 252-70.000.

Elfo AG Sachseln: *See—*
Greutert, Albert; and Stumvoll, Ernst, 4,287,066, Cl. 210-464.000.

Eli Lilly and Company: *See—*
Abbott, Bernard J.; and Fukuda, David S., 4,287,120, Cl. 260-112.50R.
Abbott, Bernard J.; and Fukuda, David S., 4,287,302, Cl. 435-119.000.

Eljutin, Alexandr V.: *See—*
Belsky, Arkady A.; Eljutin, Alexandr V.; Zubkov, Valery N.; Konjukov, Alexandr I.; Krasinskaya, Lidia I.; Nekrasova, Elena A.; Nizharadze, Konstantin S.; Markova, Larisa F.; Mirskaya, Mirra G.; Frolov, Alexei V.; and Judin, Evgeny A., 4,287,030, Cl. 204-105.00R.

Elliott, Donald O., Jr., to Pfizer, Incorporated. Construction of a CT scanner using heavy ions or protons. 4,287,425, Cl. 250-445.00T.

Ellis, Andrew T.: *See—*
Ebdon, Leslie C.; Ellis, Andrew T.; and Corfield, George C., 4,287,042, Cl. 204-195.00M.

Ellis, Haynes, Jr.: *See—*
United States of America, National Aeronautics and Space Administration; and Ellis, Haynes, Jr., 4,287,518, Cl. 343-700.0MS.

Ema, Kiichi: *See—*
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Udea, Koichiro, 4,287,346, Cl. 546-330.000.

Emerson Electric Co.: *See—*
Coleman, Charles, 4,287,516, Cl. 340-629.000.

Emhart Industries, Inc.: *See—*
Fairbanks, Richard E.; Stevenson, James F.; and Blumenfeld, John F., 4,287,380, Cl. 13-6.000.

Emmett, John C.: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,287,198, Cl. 424-263.000.

Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, to National Institute for Researches in Inorganic Materials. Process for producing cubic system boron nitride. 4,287,164, Cl. 423-290.000.

Energy Development Associates, Inc.: *See—*
Whittlesey, Curtis C.; and Mashikian, Matthew S., 4,287,267, Cl. 429-49.000.

Enervest, Inc.: *See—*
Kurek, Clarence, 4,286,859, Cl. 354-300.000.

Engdahl, Gerald E.; Nail, James A.; and Allo, Vincent F., to Chicago Bridge & Iron Company. Falling film freeze exchanger. 4,286,436, Cl. 62-123.000.

Engel, Stephen A., to Union Carbide Corporation. Instantaneous scarfing by means of a pilot puddle. 4,287,005, Cl. 148-9.500.

Engelhard, Forest; Kuhn, Rainer; Pump, Wichard; Riess, Reinhard; and Streib, Hugo, to Bayer Aktiengesellschaft. Process for the production of laminate systems from a low density polyethylene coating resin. 4,287,262, Cl. 428-461.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Hoeschele, James D., 4,287,187, Cl. 424-199.000.

Engelkemier, William E.: *See—*
Gipe, Robert C.; and Engelkemier, William E., 4,287,604, Cl. 455-323.000.

Enger, Lars S.: *See—*
Bergman, Ernst L. A.; Blomberg, Peter E.; Enger, Lars S.; Reistad, Bengt R.; and Wallgren, Sonny O., 4,286,569, Cl. 126-85.00B.

Engineered Products, Inc.: *See—*
Baker, Robert A., 4,286,697, Cl. 190-48.000.

Environmental Impact Research Group: *See—*
Steiger, Douglass W.; and Kees, Edward J., 4,286,651, Cl. 165-45.000.

Epley, Dennis E.: *See—*
Hahn, Douglas D.; Epley, Dennis E.; and Granle, Kenneth I., 4,286,599, Cl. 128-316.000.

Erbe, Alfred R.: *See—*
Goodman, David S.; Selvin, Gerald J.; Dubell, Edward G.; Doty, Donald J.; Erbe, Alfred R.; and Wilson, Robert E., 4,286,834, Cl. 339-16.00R.

Erbes-Mrsny, Kathleen A.: *See—*
Pieslak, George; Erbes-Mrsny, Kathleen A.; and Fritchle, Elena C., 4,287,034, Cl. 204-147.000.

Erhardt, Peter F.: *See—*
Lu, Chin H.; and Erhardt, Peter F., 4,287,284, Cl. 430-120.000.

Erickson, Donald C. Nitrogen and oxygen via chemical air separation. 4,287,170, Cl. 423-579.000.

Erickson, Kent E., to Keuffel & Esser Company. Photogrammetric measuring system. 4,286,871, Cl. 355-133.000.

Ericsson, Magnus. Method and an apparatus for applying objects to a surface. 4,286,730, Cl. 221-215.000.

Eriksson, Gunnar. Combined sound damper and oil trap for a compressed air apparatus. 4,286,976, Cl. 55-276.000.

Erin Engineering (Ontario) Ltd.: *See—*
Drieu, Maurice L., 4,287,455, Cl. 315-199.000.

Ernst Leitz Wetzlar GmbH: *See—*
Schneider, Eckart; and Delingat, Eckart, 4,286,872, Cl. 356-28.000.

Esakov, Michael D.; Hudgens, David C., Jr.; and Stringer, Frederick D., to W. R. Grace & Co. Method and apparatus for high speed extrusion of thermoplastic materials. 4,287,151, Cl. 264-560.000.

Esposito, Patsy. Hand truck. 4,286,796, Cl. 280-47.270.

Essilor International "Cie Generale d'Optique": *See—*
Le Naour-Sene, Lyliane, 4,286,957, Cl. 8-471.000.

Etablissements DEMLER S.A.: *See—*
Lerebourg, Michel, 4,287,144, Cl. 264-79.000.

Etat Francais represente par le Delegue General pour l'Armement: *See—*
Guglielmetti, Robert J.; Garnier, Francis; Poirier, Yves M.; and Petillon, Gisele M. C., 4,287,337, Cl. 544-6.000.
Tocquet, Bernard, 4,287,582, Cl. 367-163.000.

Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., to General Electric Company. Textured surface polypropylene film. 4,287,249, Cl. 428-141.000.

Evans, Gerald P. Power operated mechanisms for actuating swinging arms. 4,286,916, Cl. 414-546.000.

Evans, Richard T.: *See—*
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,287,191, Cl. 424-230.000.

Excelsior Fitness Equipment Co.: *See—*
Szymski, Eugene J.; and Mraz, Rene, 4,286,696, Cl. 188-218.00A.

Exner, Klaus, to Schloemann-Siemag Aktiengesellschaft. Device for securing the dummy block on the press stem of metal-extrusion presses. 4,286,453, Cl. 72-273.000.

Exxon Production Research Company: *See—*
Pan, Robert B.; and Templeton, John S., III, 4,287,472, Cl. 324-65.00R.

Exxon Research & Engineering Co.: *See—*
French, Hollis E., 4,287,382, Cl. 136-244.000.
Gladrow, Elroy M.; and Winter, William E., 4,287,048, Cl. 208-120.000.
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,286,972, Cl. 55-58.000.

Fabian, Zsolt; Samu, Mihaly; and Balogh, Barnabas, to Mem Muszaki Intezet. Digital humidimeter. 4,287,470, Cl. 324-61.00R.

Fabre, Albert, to Rhone-Poulenc Industries. Fibrous edible proteins having fat particles homogeneously dispersed therethrough. 4,287,219, Cl. 426-276.000.

FAG Kugelfischer Georg Schafer & Co.: *See—*
Kober, Hans, 4,286,467, Cl. 73-460.000.

Fah, Hansjakob; and Grieder, Alfred, to Ciba-Geigy Corporation. Process for producing 2,3,5-trichloropyridine. 4,287,347, Cl. 546-345.000.

Fahim, Magdi M.; Nowak, Victor J.; and Matta, Nagui R., to Bendix Corporation, The. Fuel rail for an engine. 4,286,563, Cl. 123-469.000.

Fahnler, Friedrich: *See—*
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,287,315, Cl. 525-183.000.

Fairbanks, Richard E.; Stevenson, James F.; and Blumenfeld, John F., to Emhart Industries, Inc. Electrode assembly for molten glass forehearth. 4,287,380, Cl. 13-6.000.

Fairchild Camera & Instrument Corp.: *See—*
Goodspeed, Steven N., 4,287,433, Cl. 307-473.000.

Faiziev, Tulyagan F.: *See—*
Safaev, Abidzhan; Kadyrov, Abduvasit; Saidaliev, Zhakhongir G.; and Faiziev, Tulyagan F., 4,287,344, Cl. 546-164.000.

Falcioni, Joseph G., to Boeing Company, The. Continuous curve countersink and rivet head structure for riveted work pieces. 4,286,371, Cl. 29-509.000.

Farden, Arne S. B. Apparatus with motor-driven peeling device. 4,286,383, Cl. 30-169.000.

Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, to Rhone-Poulenc Industries. Antiviral isoquinoline derivatives. 4,287,197, Cl. 424-258.000.

Farino, Frank G. Weight distributing device for use under an x-ray apron. 4,286,601, Cl. 128-486.000.

Farnworth, Frank; and Clubley, Michael H., to Texaco Limited. Process for the production of exhaust gas filters. 4,287,098, Cl. 252-463.000.

Farooq, Saleem, to Ciba-Geigy Corporation. 1,3-Benzodithiol-2-ones. 4,287,204, Cl. 424-277.000.

Farrar, Jack R.: *See—*
Pachmayr, Frank A.; and Farrar, Jack R., 4,286,401, Cl. 42-71.00P.

Fastritsky, Viktor S.; Fishkin, Pavel S.; and Rybalkin, Evgeny P. Method and apparatus for non-destructive quality testing of spot welds. 4,287,474, Cl. 324-233.000.

Fausel, Thomas E.: *See—*
Pfau, Paul; Fausel, Thomas E.; and Grunder, Arthur, 4,287,537, Cl. 358-299.000.

Fauth, Heinrich; and Koch, Werner, to Hoechst Aktiengesellschaft. Process for manufacturing viscose. 4,287,334, Cl. 536-60.000.

Fava, Ronald A., to Arco Polymers, Inc. Maleimide-styrene copolymer blend with polyurethane. 4,287,314, Cl. 525-130.000.

Federal Paper Board Company, Inc.: *See—*
Manizza, Guelfo A., 4,286,709, Cl. 206-144.000.

Fedorov, Vasily N.: *See—*
Bashnin, Oleg I.; Semenov, Vasily V.; Fedorov, Vasily N.; Rodionov, Evgeny I.; Davidson, Boris A.; and Schegolev, Gleb S., 4,287,429, Cl. 290-40.00C.

Felder, Donald W. Composite carrier bar device. 4,286,656, Cl. 166-75.00R.

Fernandez, Leslie U., III. Multiple filament electric lamp. 4,287,452, Cl. 315-65.000.

Ferrari, Giorgio; and Vecchietti, Vittorio, to Simes, S.p.A. Derivatives of phenylethylamines, processes for their preparation and related pharmaceutical compositions. 4,287,211, Cl. 424-322.000.

Feuersanger, Alfred E.; Riseberg, Leslie A.; and McNeill, William H., to GTE Laboratories Incorporated. High pressure discharge lamps with fast restart. 4,287,454, Cl. 315-178.000.

Feuerstein, Herman G.: *See—*
Gagliano, Robert L.; and Feuerstein, Herman G., 4,286,902, Cl. 408-79.000.

Fiat-Allis Construction Machinery, Inc.: *See—*
Boersma, Richard F., 4,286,705, Cl. 198-719.000.

Fiat-Allis Macchine Movimento Terra S.p.A.: *See—*
Grattapaglia, Giorgio, 4,286,695, Cl. 188-196.0BA.

Ficken, Geoffrey E.: *See—*
Kitzing, Rainer; Ficken, Geoffrey E.; and Dolden, Victor W., 4,287,348, Cl. 548-121.000.

Fiedler, Frank, Jr., to Walter Kidde and Company, Inc. Stepped pressure gas valve apparatus. 4,286,768, Cl. 251-130.000.

Fields, Ellis K., to Standard Oil Company (Indiana). Beta-alkyl (or aryl) beta-hydroxyethyl heterocyclic sulfoxides. 4,287,349, Cl. 548-166.000.

Finlayson, Claude M.; and Jordan, John W., to NL Industries, Inc. Viscous organic systems containing an organophilic clay gellant without an organic dispersant therefor. 4,287,086, Cl. 252-316.000.

Fischer, Artur. Sliding contact for a toy vehicle. 4,286,698, Cl. 191-49.000.

Fischer, Eugene C.: *See—*
Castelli, Vincent J.; and Fischer, Eugene C., 4,286,988, Cl. 106-15.050.
Fischer, Rolf: *See—*
Weitz, Hans-Martin; and Fischer, Rolf, 4,287,356, Cl. 560-244.000.
Fishkin, Pavel S.: *See—*
Fastritsky, Viktor S.; Fishkin, Pavel S.; and Ryballkin, Evgeny P., 4,287,474, Cl. 324-233.000.
Fiske, Augustus H., Jr., to Bolt Associates, Inc. Air gun firing sensor apparatus and system. 4,286,687, Cl. 181-120.000.
Fitzmaurice, Richard W.: *See—*
Orlando, Franklin P.; and Fitzmaurice, Richard W., 4,286,426, Cl. 56-330.000.
Fives-Cail Babcock: *See—*
Labriot, Gilbert; Bitsch, Robert; Wattelle, Michel and Lebesue, Jean, 4,286,944, Cl. 432-14.000.
Fixtures Manufacturing Company: *See—*
Gerner, James L.; and Ramesbothom, Arde, 4,286,891, Cl. 403-7.000.
Flammini, Dominick J. Purse seine ring tie. 4,286,818, Cl. 294-77.000.
Flanders, Dale C., to Massachusetts Institute of Technology. X-ray lithography at ~ 100 A linewidths using X-ray masks fabricated by shadowing techniques. 4,287,235, Cl. 427-160.000.
Flax, Leonard, to Frame Company, Inc., The. Display and storage rack. 4,286,718, Cl. 211-181.000.
Floyd, Don; Whittle, Lee M.; and Ramey, Richard R. Tagging apparatus for hay baler. 4,286,513, Cl. 100-102.000.
FMC Corporation: *See—*
Braksmayer, Diza P.; and Hussain, Syed N., 4,287,119, Cl. 260-45.95L.
Larsen, Gregory J., 4,287,058, Cl. 210-112.000.
Orlando, Franklin P.; and Fitzmaurice, Richard W., 4,286,426, Cl. 56-330.000.
Foa, Marco: *See—*
Moro, Alessandro; Foa, Marco; and Cassar, Luigi, 4,287,352, Cl. 549-79.000.
Focke & Co.: *See—*
Focke, Heinz, 4,286,712, Cl. 206-264.000.
Focke, Heinz, to Focke & Co. Multi-layered foil cigarette pack including method and apparatus for producing a tear line in the foil. 4,286,712, Cl. 206-264.000.
Fodor, Gabor B.: *See—*
Szent-Gyorgyi, Albert; and Fodor, Gabor B., 4,287,205, Cl. 424-278.000.
Fodor, William G.: *See—*
Jones, John E.; Fodor, William G.; Porter, James R.; and Edgell, James E., 4,286,610, Cl. 132-76.400.
Foley, Peter: *See—*
Schwab, Carl E.; Foley, Peter; and Caputo, Charles A., 4,287,533, Cl. 358-127.000.
Follmeyer, Fred R. Machining fixtures. 4,286,778, Cl. 269-91.000.
Forbes, Brian K.; and Catiller, Robert D., to Burroughs Corporation. Dual mode microprocessor system. 4,287,560, Cl. 364-200.000.
Force, Carlton G.: *See—*
Dimitri, Mitchell S.; and Force, Carlton G., 4,287,104, Cl. 260-17.500.
Ford Motor Company: *See—*
Samanta, Shyam K., 4,286,905, Cl. 409-132.000.
Foresight Industries: *See—*
Deike, Robert F., 4,286,747, Cl. 232-39.000.
Forgo, Imre; Zahir, Abdul-Cader; and Francois, Jacques, to Ciba-Geigy Corporation. Adhesive or adhesive component containing chlorosulfonated amide or imide. 4,287,106, Cl. 260-28.50B.
Forsyth, Clark H.; Van Hooydonk, Anton H. G.; and Ralph, Harold D., to International Harvester Company. Rearwardly folding agricultural implement with extendable transport wheels. 4,286,672, Cl. 172-311.000.
Foseco Trading A.G.: *See—*
Kristiansen, Jan O.; and McCray, Walter A., 4,286,773, Cl. 266-44.000.
Foster, Howard: *See—*
Goslin, John K.; Bugler, John H.; and Foster, Howard, 4,286,605, Cl. 131-358.000.
Foster Wheeler Energy Corporation: *See—*
Eisinger, Frantisek L., 4,286,549, Cl. 122-510.000.
Guido, Paul V., 4,287,430, Cl. 290-40.00C.
Foster Wheeler Limited: *See—*
Ruhe, Anthony; and Nickerson, James H. D., 4,286,654, Cl. 165-172.000.
Fouss, James L.; and Parker, John J., to Hancor, Inc. Snap-in tee connector. 4,286,808, Cl. 285-158.000.
Fowler, Thomas P., to Research Products Corp. Humidifier control. 4,286,751, Cl. 236-44.00R.
Frame Company, Inc., The: *See—*
Flax, Leonard, 4,286,718, Cl. 211-181.000.
France Bed Co., Ltd.: *See—*
Ikeda, Minoru, 4,286,344, Cl. 5-424.000.
Francis, Hubert C.: *See—*
Green, George W.; and Francis, Hubert C., 4,287,103, Cl. 260-17.00R.
Francois, Jacques: *See—*
Forgo, Imre; Zahir, Abdul-Cader; and Francois, Jacques, 4,287,106, Cl. 260-28.50B.
Franke, Rudolf. Multi-plate friction clutch. 4,286,686, Cl. 180-233.000.
Franks, Lawrence A., to Burr Oak Tool & Gauge Company. Fin collection and transport apparatus. 4,286,486, Cl. 83-23.000.
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, to Degussa Aktiengesellschaft. Carrier matrix for catalysts and a process for the production of same. 4,287,097, Cl. 252-462.000.
Fraze, Ermal C.; and Brown, Omar L., to Fraze, Ermal C. Tab and ecology end. 4,286,728, Cl. 220-270.000.
French, Hollis E., to Exxon Research & Engineering Co. Solar cell assembly and fabrication of solar cell panels utilizing same. 4,287,382, Cl. 136-244.000.
Friedericy, Johan A.; and Towgood, Dennis A., to Garrett Corporation, The. Composite material flywheel hub. 4,286,475, Cl. 74-572.000.
Fritchle, Elena C.: *See—*
Pieslak, George; Erbes-Mrsny, Kathleen A.; and Fritchle, Elena C., 4,287,034, Cl. 204-147.000.
Frito-Lay, Inc.: *See—*
Pappas, Clifford J.; and Vickers, Albert F., 4,287,220, Cl. 426-623.000.
Fritzsche Dodge & Olcott Inc.: *See—*
Kulka, Kurt; Zazula, Teodosij; and Yurecko, John M., Jr., 4,287,100, Cl. 252-522.00R.
Frodsham, Colin: *See—*
Ibbotson, Peter; Smith, John C.; and Frodsham, Colin, 4,287,274, Cl. 429-156.000.
Frolov, Alexei V.: *See—*
Belsky, Arkady A.; Eljutin, Alexandr V.; Zubkov, Valery N.; Konjukov, Alexandr I.; Krasinskaya, Lidia I.; Nekrasova, Elena A.; Nizharadze, Konstantin S.; Markova, Larisa F.; Mirskaya, Mirra G.; Frolov, Alexei V.; and Judin, Evgeny A., 4,287,030, Cl. 204-105.00R.
FSI Corporation: *See—*
Blackwood, Robert S., 4,286,541, Cl. 118-52.000.
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating arthropods with stereoisomers of 2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropane-1-carboxylic acid α-cyano-3-phenoxy-4-fluoro-benzyl ester. 4,287,208, Cl. 424-304.000.
Fuhrhop, Marious P. Multi-purpose exercise enhancing device. 4,286,782, Cl. 272-117.000.
Fuji Photo Film Co., Ltd.: *See—*
Kogane, Mikio; and Yamazaki, Seiichi, 4,286,869, Cl. 355-75.000.
Fuji Seal Industry Co., Ltd.: *See—*
Fujio, Masaaki, 4,286,421, Cl. 53-399.000.
Fujii, Tadashiro: *See—*
Kotani, Kikuo; Ohyama, Kunio; Nakagawa, Nobuaki; Fujii, Tadashiro; and Watanabe, Susumu, 4,287,345, Cl. 546-261.000.
Fujimoto Photo Industrial Co., Ltd.: *See—*
Kashiwagi, Atumi, 4,286,867, Cl. 355-67.000.
Fujio, Masaaki, to Fuji Seal Industry Co., Ltd. Method and machine for fitting a sleeve seal of a collapsed form over a container. 4,286,421, Cl. 53-399.000.
Fujita, Takeshi: *See—*
Kawamatsu, Yutaka; and Fujita, Takeshi, 4,287,200, Cl. 424-270.000.
Fujitsu Fanuc Limited: *See—*
Nozawa, Ryoichiro; Amemiya, Yoichi; Kawamata, Mitsuo; Isohata, Shigeru; Sasaki, Takao; and Takekoshi, Yoshitaka, 4,287,460, Cl. 318-571.000.
Fujitsu Limited: *See—*
Fukushima, Toshitaka, 4,287,569, Cl. 365-96.000.
Fujiu, Takahiro; Nakajima, Masao; and Okano, Shigeru, to Toppan Printing Co., Ltd. Method of dyeing cellulose fiber-containing structures. 4,286,958, Cl. 8-471.000.
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; Tanaka, Hitoshi; and Ueoka, Hisayoshi, to TDK Electronics Co., Ltd. High dielectric constant type ceramic composition consisting essentially of $Pb(Fe_{1/2}Nb_{1/2})O_3$-$Pb(Mg_{1/3}Nb_{2/3})O_3$-$Pb(Mg_{1/2}W_{1/2})O_3$. 4,287,075, Cl. 106-39.500.
Fujmura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, to Taiho Pharmaceutical Company, Limited. Pharmaceutical composition containing 1,3,5-substituted biuret compound. 4,287,207, Cl. 424-282.000.
Fukano, Kazuaki: *See—*
Nishio, Hiroshi; Fukano, Kazuaki; Amano, Isao; and Okumura, Osamu, 4,287,101, Cl. 252-537.000.
Fukaya, Hirokazu; and Shoji, Masashi, to Nippon Electric Co., Ltd. Power amplifier apparatus having over-current protection function. 4,287,390, Cl. 179-1.00A.
Fukaya, Yasuhiro: *See—*
Ohmae, Takashi; Fukaya, Yasuhiro; Yoshida, Yasuyuki; Oka, Tamotu; Sato, Masahiko; and Nagareda, Masazumi, 4,287,405, Cl. 219-136.000.
Fukuda, David S.: *See—*
Abbott, Bernard J.; and Fukuda, David S., 4,287,120, Cl. 260-112.50R.
Abbott, Bernard J.; and Fukuda, David S., 4,287,302, Cl. 435-119.000.
Fukuda, Takeshi: *See—*
Itoh, Kunio; Fukuda, Takeshi; and Matumura, Masaaki, 4,287,114, Cl. 260-37.0SB.
Fukunaga, Osamu: *See—*
Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, 4,287,164, Cl. 423-290.000.
Fukuoka, Kazuaki, to Norton Simon, Inc. Container for beverages and the like. 4,286,745, Cl. 229-4.500.

Fukushima, Toshitaka, to Fujitsu Limited. Semiconductor memory device. 4,287,569, Cl. 365-96.000.
Fule, Stefan. Machine of the axial piston pump type which can be used as a pump or as a motor. 4,286,503, Cl. 91-507.000.
Funahashi, Masao; and Maeda, Shigeru, to Matsushita Electric Industrial Co., Ltd.; and Kyokuto Electric Co., Ltd. Card or book involving luminescence. 4,286,399, Cl. 40-124.100.
Furman, Anthony H.: *See—*
Cankurt, Nurettin T.; and Furman, Anthony H., 4,286,970, Cl. 48-87.000.
Furukawa, Kiyoshi: *See—*
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; Tanaka, Hitoshi; and Ueoka, Hisayoshi, 4,287,075, Cl. 106-39.500.
Furukawa, Yuuichiro: *See—*
Tezuka, Hideharu; and Furukawa, Yuuichiro, 4,287,436, Cl. 307-270.000.
Fusco, Andrew. Tire mounting guides. 4,286,369, Cl. 29-273.000.
Futaba Denshi Kogyo K.K.: *See—*
Takagi, Toshinori; Morimoto, Kiyoshi; and Watanabe, Hiroshi, 4,286,545, Cl. 118-723.000.
Fuzioka, Keizi; and Shinomiya, Masami, to Ohtsu Tire & Rubber Co., Ltd., The. Apparatus for producing pneumatic tires. 4,286,942, Cl. 425-577.000.
G.D. Societa per Azioni: *See—*
Alamaro, Moshe, 4,287,040, Cl. 204-179.000.
G. S. Blakeslee & Co.: *See—*
Vilen, Erik O., 4,286,920, Cl. 415-121.00G.
Gadd, John H.: *See—*
Mower, Peter; and Gadd, John H., 4,286,351, Cl. 15-250.420.
Gaddy, Thomas W., to General Electric Company. Tuning arrangement for electrical components. 4,287,498, Cl. 334-74.000.
GAF Corporation: *See—*
Burwasser, Herman, 4,287,286, Cl. 430-127.000.
Woodring, William J.; and Gulino, James A., 4,287,263, Cl. 428-489.000.
Gagliano, Robert L.; and Feuerstein, Herman G., to Dresser Industries, Inc. Self-colleting drill. 4,286,902, Cl. 408-79.000.
Gajewski, Henry M.; Grode, Gerald A.; Measells, Paul E.; and Miripol, Jeffrey E., to Baxter Travenol Laboratories, Inc. Blood compatible polymers and medical devices made therefrom containing dioctyladipate plasticizer. 4,286,597, Cl. 128-272.000.
Gaku, Morio; Nagai, Norio; and Osaki, Yasunari, to Mitsubishi Gas Chemical Company, Inc. Novel crosslinkable resin composition and method for producing a laminate using said composition. 4,287,014, Cl. 156-306.900.
Gale, Anthony G., to Rolls-Royce Limited. Rotor blade or stator vane for a gas turbine engine. 4,286,924, Cl. 416-97.00R.
Gale, Richard W.: *See—*
Smith, Francis H.; and Gale, Richard W., 4,286,874, Cl. 356-338.000.
Galer, Richard E.; and Webb, Paul C., to United States Gypsum Company. Very high early strength cement. 4,286,991, Cl. 106-90.000.
Galer, Richard E.; and Webb, Paul C., to United States Gypsum Company. Very high early strength cement. 4,286,992, Cl. 106-90.000.
Gallaher Limited: *See—*
Ehretsmann, Jacques; Cowling, Robert D.; Schweizer, Alfred D.; Caldwell, William M.; Boyd, Dennis F.; and Boyd, Robert J., 4,286,604, Cl. 131-359.000.
Gallant, Edward. Fertilizer dispenser with one-handed actuation. 4,286,737, Cl. 222-470.000.
Galow, Manfred; and Busbach, Wilhelm, to Didier Engineering GmbH. Process and apparatus for charging and sealing a charging port of a chamber. 4,286,912, Cl. 414-287.000.
Galves, Jean-Pierre; and Gutierrez, Jean-Marie, to Thomson-CSF. Process for producing a scintillator screen. 4,287,230, Cl. 427-65.000.
Gamble, George W. High-fidelity speaker system. 4,287,389, Cl. 179-1.00F.
Ganellin, Charon R.: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,287,198, Cl. 424-263.000.
Garden Way Incorporated: *See—*
Ackerman, Donald W., 4,286,670, Cl. 172-42.000.
Gardner, Lloyd E.: *See—*
Eastman, Alan D.; and Gardner, Lloyd E., 4,287,050, Cl. 208-215.000.
Garkisch, Otto-Ludwig: *See—*
Moller, Friedrich-Wilhelm; Buchold, Henning; Klein, Helmut; Garkisch, Otto-Ludwig; Gutlhuber, Friedrich; and Laber, Walter, 4,287,375, Cl. 585-440.000.
Garman, John A.; Mamuzic, Rastko I.; McDonald, Robert B.; Sands, John L.; and Thompson, Gregory, to Great Lakes Chemical Corporation. Perbromination of phenol and diphenyl ether at elevated temperature using bromine as the reaction medium. 4,287,373, Cl. 568-639.000.
Garnier, Francis: *See—*
Guglielmetti, Robert J.; Garnier, Francis; Poirier, Yves M.; and Petillon, Gisele M. C., 4,287,337, Cl. 544-6.000.
Garrett Corporation, The: *See—*
Friedericy, Johan A.; and Towgood, Dennis A., 4,286,475, Cl. 74-572.000.
Garrett, Donald E.; and Laborde, Martin, to Saline Processors, Inc.; and Corporacion de Fomento de la Produccion. Process for recovering lithium from brine by salting out lithium sulfate monohydrate. 4,287,163, Cl. 423-283.000.
Gastine, Roland E., to Commercial Management Corporation. Escape device. 4,286,690, Cl. 182-5.000.
Gates, Timothy P., to Jordan College. Solar heat system. 4,286,575, Cl. 126-422.000.
Gatzki, Helmut H., to Index-Werke KG Hahn & Tessky. Machine tool. 4,286,484, Cl. 82-32.000.
Gavrilov, Anatoly N.: *See—*
Godin, Eduard M.; Anoshko, Vladimir A.; Gavrilov, Anatoly N.; Akhmerov, Almas F.; Zverkov, Garik E.; Semenov, Valentin P.; Grachev, Vladimir V.; Chepurin, Valentin M.; Mikhailov, Viktor Y.; and Rybnikov, Sergei I., 4,286,450, Cl. 72-59.000.
Gay, Michael J.; and Gutmann, Johannes A., to Motorola Inc. Demodulator system including a tunable discriminator suitable for use in a secam television receiver. 4,287,530, Cl. 358-23.000.
Gazda, Imre I., to Otis Engineering Corporation. Equalizing valve for use in a well tool string. 4,286,661, Cl. 166-316.000.
Gebetsberger, Wilhelm: *See—*
Wagner, Fritz; Rapp, Peter; Bock, Hans; Lindorfer, Walter; Schulz, Walther; and Gebetsberger, Wilhelm, 4,286,660, Cl. 166-246.000.
Geiser, Edward M.; and Johnson, Russell W., to UOP Inc. Purification of chlorophenolic derived compounds. 4,287,038, Cl. 204-158.00R.
Geisinger, Wolfgang. Apparatus for inserting a resilient band on a container. 4,286,367, Cl. 29-235.000.
Gellert, Jobst U. Injection molding nozzle seal. 4,286,941, Cl. 425-566.000.
Genco, Robert J.: *See—*
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,287,191, Cl. 424-230.000.
Gendron, Aime J., to Hercules Incorporated. Method and apparatus for injection blow molding an article with improved detail definition. 4,286,940, Cl. 425-533.000.
Gendron, Aime J., to Hercules Incorporated. Method and apparatus for injection blow molding an article with improved detail definition. 4,287,150, Cl. 264-538.000.
General Dynamics, Pomona Division: *See—*
Block, Kenneth A.; Carter, William M.; and Schillreff, George H., 4,286,498, Cl. 86-1.00R.
General Electric Company: *See—*
Bluestein, Ben A., 4,287,353, Cl. 556-459.000.
Borland, Walter G., 4,287,556, Cl. 363-41.000.
Bradley, Irving, 4,287,448, Cl. 313-113.000.
Brehse, Robert F., 4,287,557, Cl. 363-95.000.
Cankurt, Nurettin T.; and Furman, Anthony H., 4,286,970, Cl. 48-87.000.
Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., 4,287,249, Cl. 428-141.000.
Gaddy, Thomas W., 4,287,498, Cl. 334-74.000.
Gerry, Otto F., 4,286,391, Cl. 34-44.000.
Hurko, Bohdan; and Dills, Raymond L., 4,286,377, Cl. 29-612.000.
Komandure, Rangachary, 4,286,568, Cl. 125-11.00R.
Olander, Walter K., 4,287,321, Cl. 525-392.000.
Pinkham, Clinton L., 4,287,489, Cl. 331-117.00R.
Walker, Loren H.; and Cutler, John H., 4,287,463, Cl. 318-803.000.
Webster, Harold F., 4,287,572, Cl. 365-128.000.
Wentorf, Robert H., Jr.; and Rocco, William A., 4,287,168, Cl. 423-446.000.
General Motors Corporation: *See—*
Hammar, Richard H.; and Harvey, Douglas J., 4,286,362, Cl. 29-2.000.
Klomp, Edward D., 4,286,557, Cl. 123-298.000.
McArthur, Donald N.; and Heintz, Robert A., 4,286,954, Cl. 493-244.000.
Micheli, Adolph L., 4,286,378, Cl. 29-621.000.
Stoltman, Donald D., 4,286,562, Cl. 123-454.000.
General Signal Corporation: *See—*
Schwab, Carl E.; Foley, Peter; and Caputo, Charles A., 4,287,533, Cl. 358-127.000.
General Tire & Rubber Company, The: *See—*
Cobbledick, David S., 4,287,309, Cl. 521-114.000.
Georg Fischer Brugg-Oehler AG: *See—*
Bernath, Oskar, 4,286,540, Cl. 118-50.000.
Geo. A. Hormel & Company: *See—*
Hahn, Douglas D.; Epley, Dennis E.; and Granle, Kenneth I., 4,286,599, Cl. 128-316.000.
Geo. P. Reintjes Co., Inc.: *See—*
Musser, John J., 4,286,529, Cl. 110-340.000.
Georgia-Pacific Corporation: *See—*
DeLuca, Raymond F., 4,286,489, Cl. 83-335.000.
Green, George W.; and Francis, Hubert C., 4,287,103, Cl. 260-17.00R.
Geosource Inc.: *See—*
Glahn, Robert J., 4,286,621, Cl. 137-514.000.
Gerlach, C. Richard: *See—*
Heath, Rodney T.; and Gerlach, C. Richard, 4,286,929, Cl. 417-404.000.
Gerner, James L.; and Ramesbothom, Arde, to Fixtures Manufacturing Company. Connector for an elongate member in frame structures. 4,286,891, Cl. 403-7.000.
Gerry, Otto F., to General Electric Company. Control system for an automatic clothes dryer. 4,286,391, Cl. 34-44.000.
Gershon Meckler Associates, P.C.: *See—*
Westenhofer, Donald G.; and Meckler, Gershon, 4,286,667, Cl. 169-16.000.

Gesellschaft fur Biotechnologische Forschung GmbH: *See—*
Wagner, Fritz; Rapp, Peter; Bock, Hans; Lindorfer, Walter; Schulz, Walther; and Gebetsberger, Wilhelm, 4,286,660, Cl. 166-246.000.
Gessner, Wolfgang; Kuhn, Helmut; and Plotz, Kurt, to Hoechst Aktiengesellschaft. Bituminized roof sheet. 4,287,248, Cl. 428-137.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Merten, Gerhard; Peters, Wolfgang; Schneider, Hans-Dieter; and Heyer, Willy, 4,286,823, Cl. 299-43.000.
Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., to Syva Company. Charge effects in enzyme immunoassays. 4,287,300, Cl. 435-5.000.
Gilbert, Marie, to Ato Chimie. Process for making alpha-olefin polymers or copolymers with high isotacticity index. 4,287,093, Cl. 252-429.00B.
Gildemeister AG: *See—*
Henneberg, Hasso; Hesse, Werner; and Junike, Wilhelm, 4,286,483, Cl. 82-2.00R.
Gillum, Richard R. Cross axis shell feeding apparatus for firearms. 4,286,499, Cl. 89-33.00B.
Gilson, Alan P.: *See—*
Siryj, Bohdan W.; and Gilson, Alan P., 4,286,790, Cl. 369-36.000.
Gipe, Robert C.; and Engelkemier, William E., to United States of America, Navy. RF and IF Circuitry of an uplink receiver. 4,287,604, Cl. 455-323.000.
Gipson, Robert M.: *See—*
Marquis, Edward T.; Gipson, Robert M.; and Watts, Lewis W., Jr., 4,287,364, Cl. 564-332.000.
Gladrow, Elroy M.; and Winter, William E., to Exxon Research & Engineering Co. Cracking process with catalyst of combined zeolites. 4,287,048, Cl. 208-120.000.
Glahn, Robert J., to Geosource Inc. Dual acting check valve dampener. 4,286,621, Cl. 137-514.000.
Glickler, Sheldon L.: *See—*
DeBaryshe, Paul G.; and Glickler, Sheldon L., 4,287,421, Cl. 250-423.00P.
Gloaguen, Gilbert Y. M., to U.S. Philips Corporation. Constant-voltage generator for integrated circuits. 4,287,467, Cl. 323-314.000.
Global Coatings Limited: *See—*
Kaufmann, John H., 4,287,241, Cl. 427-403.000.
Gloucester Engineering Co., Inc.: *See—*
Houle, Philip J.; and Oliver, Robert G., 4,286,907, Cl. 414-72.000.
Godard, Pierre; and Billot, Michel, to Saft-Societe des Accumulateurs Fixes et de Traction. Apparatus for regulating the charging of a storage battery. 4,287,465, Cl. 320-56.000.
Godin, Eduard M.; Anoshko, Vladimir A.; Gavrilov, Anatoly N.; Akhmerov, Almas F.; Zverkov, Garik E.; Semenov, Valentin P.; Grachev, Vladimir V.; Chepurin, Valentin M.; Mikhailov, Viktor Y.; and Rybnikov, Sergei I. Apparatus for manufacturing corrugated tubes. 4,286,450, Cl. 72-59.000.
Godwin, Richard H. Child-proof cabinet closures. 4,286,809, Cl. 292-54.000.
Goetze AG: *See—*
Beyer, Horst, 4,286,646, Cl. 164-57.100.
Golden, Gerald S.; Lemkey, Franklin D.; and Brooks, Clyde S., to United Technologies Corporation. Process for producing supported skeletal catalytic materials. 4,287,096, Cl. 252-455.00R.
Goller, Glen J.; and Salonia, Joseph R., to United Technologies Corporation. Dry floc method for making an electrochemical cell electrode. 4,287,232, Cl. 427-113.000.
Goncharoff, Nikolai; and Puntil, Dennis M., to Motorola, Inc. Multichannel communication device with manual and automatic scanning electronic channel selection. 4,287,599, Cl. 455-77.000.
Gonmori, Makoto: *See—*
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, 4,287,295, Cl. 430-349.000.
Good, Dallis L.: *See—*
Good, David L.; and Good, Dallis L., 4,287,031, Cl. 204-109.000.
Good, David L.; and Good, Dallis L. Portable electrolysis unit for recovery of precious metals. 4,287,031, Cl. 204-109.000.
Goodhouse, Carl J.: *See—*
Strachan, Robert; and Goodhouse, Carl J., 4,287,583, Cl. 368-10.000.
Goodman, David S.; Selvin, Gerald J.; Dubell, Edward G.; Doty, Donald J.; Erbe, Alfred R.; and Wilson, Robert E., to International Telephone and Telegraph Corporation. Interconnection system. 4,286,834, Cl. 339-16.00R.
Goodspeed, Steven N., to Fairchild Camera & Instrument Corp. Transistor logic tristate output with reduced power dissipation. 4,287,433, Cl. 307-473.000.
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Gori & Zucchi S.p.A.: *See—*
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Gorshe, Thomas M., to American Can Company. Flexible pouch. 4,286,746, Cl. 229-55.000.
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Graaff Kommanditgesellschaft: *See—*
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Graf, Ronald E. Vortex chamber controlling combined entrance exit. 4,286,627, Cl. 137-810.000.
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Grattapaglia, Giorgio, to Fiat-Allis Macchine Movimento Terra S.p.A. Device for automatically adjusting brake clearance, in particular for an earth moving machine. 4,286,695, Cl. 188-196.0BA.
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Great Lakes Chemical Corporation: *See—*
Garman, John A.; Mamuzic, Rastko I.; McDonald, Robert B.; Sands, John L.; and Thompson, Gregory, 4,287,373, Cl. 568-639.000.
Green, George W.; and Francis, Hubert C., to Georgia-Pacific Corporation. Joint composition including starch. 4,287,103, Cl. 260-17.00R.
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Greutert, Albert; and Stumvoll, Ernst, to Elfo AG Sachseln. Sieve having substantially plane sieve sheets and a method for its manufacture. 4,287,066, Cl. 210-464.000.
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Griffith, William L.: *See—*
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Grigo, Ulrich; Morbitzer, Leo; Arlt, Klaus-Peter; Binsack, Rudolf; and Merten, Josef, to Bayer Aktiengesellschaft. Mixtures of polypropylene and liquid saturated diorganopolysiloxanes. 4,287,108, Cl. 260-29.1SB.
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Gross, Raymond J.: *See—*
Sims, Larry A.; Lambert, Gerald L.; Gross, Raymond J.; and Collins, Harold B., 4,286,406, Cl. 46-72.000.
Grudich, Nicholas. Hand propelled yard machinery hang-lock device. 4,286,444, Cl. 70-13.000.
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Myles, James M., 4,287,266, Cl. 428-596.000.
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GTE Laboratories Incorporated: *See—*
Feuersanger, Alfred E.; Riseberg, Leslie A.; and McNeill, William H., 4,287,454, Cl. 315-178.000.
Natansohn, Samuel; and Su, Sophia R., 4,287,159, Cl. 423-54.000.
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Guglielmetti, Robert J.; Garnier, Francis; Poirier, Yves M.; and Petillon, Gisele M. C., to Etat Francais represente par le Delegue General pour l'Armement. Spiropyran compounds of piperidine or thiazine rings. 4,287,337, Cl. 544-6.000.
Guido, Paul V., to Foster Wheeler Energy Corporation. Coordinated control system for an electric power plant. 4,287,430, Cl. 290-40.00C.
Guignard, Claude, to Battelle Memorial Institute. Device for forming a nonwoven product from a fluid dielectric substance and process. 4,287,139, Cl. 264-10.000.

Gulati, Suresh T.; and Spycher, Anton A., to Corning Glass Works. Method for finishing glass-plastic laminated lens blanks. 4,287,018, Cl. 156-645.000.
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Gullotti, Damian V.; Damon, Lloyd E.; Chatfield, Phillip A.; and Winter, Joseph, to Olin Corporation. Process for joining narrow width thin gage metal or alloy strip. 4,286,744, Cl. 228-125.000.
Gursky, Michael T.; and Pcihoda, William W., to Western Electric Co., Inc. Apparatus for making carrier tape. 4,286,860, Cl. 354-319.000.
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Guy, Robert. Transillumination diagnostic system. 4,286,602, Cl. 128-665.000.
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Hackert, Karl-Heinz; and Blume, Helmut, to Mannesmann Aktiengesellschaft. Covering a steel pipe having a welding seam with a thermoplastic coating. 4,287,223, Cl. 427-9.000.
Haeusser, Harry C.: *See—*
Schuller, James T.; and Haeusser, Harry C., 4,286,703, Cl. 194-100.00A.
Hafele, Walter; and Schenk, Bernhard, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines, particularly for diesel engines. 4,286,931, Cl. 417-490.000.
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Hagedorn, Robert E.; Lobue, Alphonse T.; and Uhlman, Joseph G., to United States Steel Corporation. Self-replenishing seal for the gas offtake piping of a coke oven and sealing method. 4,286,792, Cl. 277-135.000.
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Hahn, Norbert, to Rite-Hite Corporation. Assembly for weather-sealing a joint. 4,286,410, Cl. 49-33.000.
Hahndorff, Axel, to Siemens Aktiengesellschaft. Surge voltage arrester with reduced minimum operating surge voltage. 4,287,548, Cl. 361-120.000.
Hakoyama, Akiyoshi, to Hitachi, Ltd. CRT Hard copy apparatus with multi-directional sampling and printing. 4,287,521, Cl. 346-35.000.
Hakura, Akira: *See—*
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Hardesty, Keith C.; and Lukensmeyer, Gene L., to Wales, James R. Graduated leverage piano action. 4,286,493, Cl. 84-237.000.
Hargita, Tibor; Berlitz, Ingo; and Hafner, Herbert, to Wilhelm Ruf KG. Keyboard switch assembly with printed circuit board. 4,287,394, Cl. 200-5.00A.
Harney, David E.; Harney, Marilyn J.; and O'Boyle, Matthew, to Catalyst Research Corporation. Plural cell battery structure. 4,287,273, Cl. 429-153.000.
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Hartley, Henry F.: *See—*
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Hartley, Robert R.; and Konrad, Joseph A., to United States of America, Navy. Teletypewriter loop switching matrix. 4,287,387, Cl. 178-2.00R.
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Harzer, Peter, to Wandel & Goltermann. Process and circuit arrangement for the measuring of coefficients of message-transmission equipment. 4,287,469, Cl. 324-57.00R.
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Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, to Robert Bosch GmbH. Monitoring system for program controlled apparatus. 4,287,565, Cl. 364-580.000.
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Heeres, Jan; and Hendrickx, Robert, to Janssen Pharmaceutica, N.V. Heterocyclic derivatives of [4-(piperazin-1-yl-phenyloxymethyl)-1,3-dioxolan-2-ylmethyl]-1H-imidazoles and 1H-1,2,4-triazoles. 4,287,195, Cl. 424-250.000.
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Henneberg, Hasso; Hesse, Werner; and Junike, Wilhelm, to Gildemeister AG. Tool holding turret for rotating machine. 4,286,483, Cl. 82-2.00R.
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Hermann, Hans D.; and Harreus, Albrecht, to Hoechst Aktiengesellschaft. Transparent polyvinyl butyral sheet and process for the manufacture thereof. 4,287,107, Cl. 260-28.50R.
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Heyer, Willy: *See—*
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Heyser, Richard C., to United States of America, National Aeronautics and Space Administration. Method for shaping and aiming narrow beams. 4,287,578, Cl. 367-88.000.
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Hisakawa, Minoru; and Okamoto, Tsugio, to Brother Kogyo Kabushiki Kaisha. Endless ribbon cassette. 4,286,887, Cl. 400-196.100.
Hisaki, Masakatu: *See—*
Fujmura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,287,207, Cl. 424-282.000.
Hitachi Koki Company Limited: *See—*
Katagiri, Shigenobu; Nakano, Hiroshige; and Matsuzaki, Kazuo, 4,286,517, Cl. 101-93.140.
Hitachi, Ltd.: *See—*
Arita, Setsuo; and Sato, Takao, 4,287,508, Cl. 340-150.000.
Hakoyama, Akiyoshi, 4,287,521, Cl. 346-35.000.
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,287,487, Cl. 331-94.50G.
Yamaguchi, Yuzo, 4,286,919, Cl. 415-112.000.
Hitachi Medical Corporation: *See—*
Tomita, Chuji; Abe, Hiroshi; and Shimazu, Katashi, 4,287,424, Cl. 250-445.00T.
Hobart Corporation: *See—*
Treiber, Fritz F.; and Margraf, Dallas A., 4,287,407, Cl. 219-273.000.
Hobbs, Stanley Y.: *See—*
Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., 4,287,249, Cl. 428-141.000.
Hodgeman, Herbert H.: *See—*
Tomlin, Jerry B.; and Hodgeman, Herbert H., 4,286,625, Cl. 137-625.430.
Hoechst Aktiengesellschaft: *See—*
Fauth, Heinrich; and Koch, Werner, 4,287,334, Cl. 536-60.000.
Gessner, Wolfgang; Kuhn, Helmut; and Plotz, Kurt, 4,287,248, Cl. 428-137.000.
Hammer, Klaus-Dieter; Schroder, Martin; Pietruck, Horst; and Bytzek, Max, 4,287,217, Cl. 426-105.000.
Hermann, Hans D.; and Harreus, Albrecht, 4,287,107, Cl. 260-28.50R.
Hunger, Klaus; Klappert, Ernst; and Lohe, Konrad, 4,287,122, Cl. 260-203.000.
Schneider, Manfred; Kruse, Hubert; Opitz, Konrad; and Billenstein, Siegfried, 4,286,960, Cl. 8-527.000.
Siegemund, Gunter; and Muffler, Herbert, 4,287,124, Cl. 260-340.90R.

Hoegerle, Karl, to Ciba-Geigy Corporation. 2,4,6-Trihalo-5-alkyl-and 5-alkenylsulphonylpyrimidines. 4,287,342, Cl. 544-298.000.
Hoene, Richard: *See—*
Horn, Dieter; Daubach, Ewald; Hahn, Erwin; Uhrig, Herbert; Hoene, Richard; and Naarmann, Herbert, 4,286,959, Cl. 8-524.000.
Hoersch, Werner, to Thies GmbH & Co. Apparatus for surface treatment of an endless textile structure. 4,286,395, Cl. 34-155.000.
Hoeschele, James D., to Engelhard Minerals & Chemicals Corporation. Method for treating tumors with cis-diammineplatinum(II) orthophosphate complexes. 4,287,187, Cl. 424-199.000.
Hoffmann, Ronald C.: *See—*
Searcy, James A.; Zoellner, Roger O.; and Hoffmann, Ronald C., 4,286,572, Cl. 126-299.00D.
Hofmann, Peter: *See—*
Dohm, Klaus-Dieter; and Hofmann, Peter, 4,287,130, Cl. 260-413.000.
Hogg, Walter R.; and Brunsting, Albert, to Coulter Electronics, Inc. Apparatus and method for measuring scattering of light in particle detection systems. 4,286,876, Cl. 356-343.000.
Holbek, Kjeld, to Rockwool International A/S. Process for the production of mineral wool products. 4,287,142, Cl. 264-37.000.
Hollingsworth, Clinton A., to Deister Concentrator Co., Inc., The. Flotation apparatus for concentration of minerals. 4,287,054, Cl. 209-170.000.
Hollis, Ben R., Jr.: *See—*
Belcher, Jewell G., Jr.; and Hollis, Ben R., Jr., 4,286,542, Cl. 118-423.000.
Hollowell, William: *See—*
Ziv, Avraham; Tanaka, Akira; Hollowell, William; Sieber, William J.; and Ahad, Munir J., 4,287,398, Cl. 200-61.45R.
Holst, Hartwig: *See—*
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, 4,287,186, Cl. 424-181.000.
Holt, Raleigh A., Jr. Portable dental apparatus. 4,286,949, Cl. 433-103.000.
Holtje, Wilfried G.; Senkler, George H.; and Taggi, Arthur J., to Du Pont de Nemours, E. I., and Company. Light stable quinacridonequinone yellow pigment. 4,286,998, Cl. 106-288.00Q.
Holz, Emil, to Hermann Finckh Maschinenfabrik GmbH & Co., Firma. Method of sorting fibre suspensions as well as a pressure sorter for performing the method. 4,287,055, Cl. 209-240.000.
Holzschuh, Jack E., to United States of America, Navy. Miniaturized scan within a pulse sonar. 4,287,580, Cl. 367-105.000.
Homeyer, Bernhard: *See—*
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,287,208, Cl. 424-304.000.
Honda, Akira; Taguchi, Kiyomi; Hanmyo, Masayuki; Ishikawa, Masaru; and Kitamura, Minoru, to Nippon Kokan Kabushiki Kaisha. Apparatus for preventing steam explosion in water discharge channel of secondary cooling zone caused by molten metal breaking out from cast strand in horizontal type continuous casting machine. 4,286,647, Cl. 164-153.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Inoue, Haruo; Yokota, Shigeru; and Saito, Yoshiharu, 4,286,819, Cl. 296-65.00R.
Kume, Tadashi; and Inoh, Isamu, 4,287,059, Cl. 210-188.000.
Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, 4,287,505, Cl. 340-52.00B.
Honecker, Siegfried: *See—*
Jager, Gerd; Bernuth, Wolfgang; Irrgang, Klaus; Wendt, Hans-Joachim; and Honecker, Siegfried, 4,286,879, Cl. 356-358.000.
Honeywell Information Systems Inc.: *See—*
Darden, Boyd E.; and Hartley, Henry F., 4,287,562, Cl. 364-200.000.
Honig, Gunter: *See—*
Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, 4,287,565, Cl. 364-580.000.
Honna, Takaji: *See—*
Fujmura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,287,207, Cl. 424-282.000.
Hoover, Richard B.; and Rhodes, Charles M., to United States of America, National Aeronautics and Space Administration. Method of for retarding dye fading during archival storage of developed color photographic film. 4,287,152, Cl. 422-40.000.
Hoover Universal, Inc.: *See—*
Straus, Albert E., 4,286,619, Cl. 137-426.000.
Horizon Manufacturing Corporation: *See—*
Anderson, Eugene R., 4,287,169, Cl. 423-579.000.
Horn, Dieter; Daubach, Ewald; Hahn, Erwin; Uhrig, Herbert; Hoene, Richard; and Naarmann, Herbert, to BASF Aktiengesellschaft. Disperse dye formulations. 4,286,959, Cl. 8-524.000.
Horrobin, David F. Treatment and/or prophylaxis of spasms of coronary arteries. 4,287,202, Cl. 424-274.000.
Hortman, Michael T.: *See—*
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., 4,287,145, Cl. 264-109.000.
Hosler, Klaus: *See—*
Tax, Hans; and Hosler, Klaus, 4,286,722, Cl. 212-242.000.
Hosono, Takashi: *See—*
Mitamura, Ichiro; Tooyama, Akira; and Hosono, Takashi, 4,287,531, Cl. 358-67.000.
Hostettler, Fritz, to Plastics Technology Associates, Inc. Integral skin microcellular polyester base polyurethane elastomers. 4,287,307, Cl. 521-51.000.
Houghton, Geoffrey, to Loewy Robertson Engineering Co. Ltd. Mill control. 4,286,448, Cl. 72-21.000.
Houle, Philip J.; and Oliver, Robert G., to Gloucester Engineering Co., Inc. Grid extensions on a rotary stacker. 4,286,907, Cl. 414-72.000.
Houlihan, William J.: *See—*
Babington, Ronald G.; Harrington, F. Eugene; and Houlihan, William J., 4,287,196, Cl. 424-251.000.
Howard, Dennis D.: *See—*
McDowell, John R.; Howard, Dennis D.; and Pascarella, Vincent J., 4,287,083, Cl. 252-182.000.
Howard, Walter E. Trap for pit viper. 4,286,405, Cl. 43-87.000.
Howe, Milton A., Jr., to W. R. Grace & Co., Cryovac Division. Walking beam bag loader. 4,286,422, Cl. 53-473.000.
Hsieh, Jaw J., to Massachusetts Institute of Technology. GaInAsP/InP Double-heterostructure lasers. 4,287,485, Cl. 331-94.50H.
Hsieh, Shuang-shii: *See—*
Lehr, James R.; and Hsieh, Shuang-shii, 4,287,053, Cl. 209-167.000.
Huang, Liang H.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Huang, Liang H.; Oscarson, John R.; Shibakawa, Riichiro; and Tone, Junsuke, 4,287,182, Cl. 424-118.000.
Hubbard, Arthur L., to Deere & Company. Blockage detector for a cotton harvester. 4,286,424, Cl. 56-10.200.
Hubele, Adolf: *See—*
Eckhardt, Wolfgang; Kunz, Walter; and Hubele, Adolf, 4,287,210, Cl. 424-309.000.
Huber, Willi: *See—*
Wagner, Josef; and Huber, Willi, 4,287,552, Cl. 361-228.000.
Hubertson, Folke H., to Aktiebolaget Somas Ventiler. Valve seat. 4,286,769, Cl. 251-174.000.
Huck, Joseph F. Color screen indicator. 4,286,385, Cl. 33-1.00N.
Hudgens, David C., Jr.: *See—*
Esakov, Michael D.; Hudgens, David C., Jr.; and Stringer, Frederick D., 4,287,151, Cl. 264-560.000.
Huignard, Jean-Pierre; Leclerc, Pierre; Carballes, Jean-Claude; and Nappo, Armand, to Thomson-CSF. Compact optical structure with integrated source. 4,286,838, Cl. 350-96.110.
Hullstrung, Dieter; and Trimbach, Jurgen, to Bayer Aktiengesellschaft. Process for the preparation of thiazolidine-2-thiones. 4,287,350, Cl. 548-182.000.
Hulse, David O.: *See—*
Mekosh, George, Jr.; and Hulse, David O., 4,286,797, Cl. 280-80.00B.
Hung, Chih P.: *See—*
Ko, Wen H.; and Hung, Chih P., 4,287,471, Cl. 324-61.00R.
Hung, David P. J. Kenshin heating instrument. 4,286,571, Cl. 126-206.000.
Hunger, Klaus; Klappert, Ernst; and Lohe, Konrad, to Hoechst Aktiengesellschaft. Monoazo compounds from 1-aminobenzene-2-carboxylic acid derivatives and their use as colorants. 4,287,122, Cl. 260-203.000.
Hungerford, Gordon P., to Mobil Oil Corporation. Multilayer film manufacture utilizing scrap resin. 4,287,147, Cl. 264-146.000.
Hunt, Earl R.: *See—*
Rosler, Robert K.; Gore, Donald B.; Riddell, Malcolm N.; and Hunt, Earl R., 4,287,105, Cl. 260-18.0EP.
Hunter, William H., to Maytag Company, The. Assured slow speed spin for fabric washing machine. 4,286,443, Cl. 68-12.00R.
Hurko, Bohdan; and Dills, Raymond L., to General Electric Company. Method of manufacture for a resistance heater and temperature sensor. 4,286,377, Cl. 29-612.000.
Hurt, William S., to Rohm and Haas Company. O,S-Dialkyl O-oxysulfonylphenyl phosphorothiolates and phosphorodithioates. 4,287,189, Cl. 424-210.000.
Hussain, Syed N.: *See—*
Braksmayer, Diza P.; and Hussain, Syed N., 4,287,119, Cl. 260-45.95L.
Hustedt, Hans, to Desma-Werke GmbH. Injection casting apparatus for shoe soles. 4,286,936, Cl. 425-119.000.
Huston, William D., Jr., to Motorola, Inc. Versatile microprocessor bus interface. 4,287,563, Cl. 364-200.000.
Huszti, Zsuzsanna: *See—*
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Laszlo; Szuucs, Erzsebet; and Kiss, Gabriella, 4,287,194, Cl. 424-248.510.
Hvide, J. Erik. Seagoing separable tug and barge construction. 4,286,537, Cl. 114-248.000.
Hydrocarbon Research, Inc.: *See—*
Sirkar, Amalesh K., 4,287,088, Cl. 252-414.000.
I.B.P. Industrie Buitoni Perugina S.p.A.: *See—*
Mangano, Santi F., 4,287,216, Cl. 426-93.000.
Ibbotson, Peter; Smith, John C.; and Frodsham, Colin, to Pakcel Converters Limited. Composite flexible film laminate. 4,287,274, Cl. 429-156.000.
Ichimura, Kunihiro, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Nitrogen-containing heterocyclic compound having acetal group and method for manufacture thereof. 4,287,335, Cl. 542-455.000.
Ichise, Yoshiju, to Nippon Wiper Blade Co., Ltd. Windscreen wiper blade. 4,286,350, Cl. 15-250.320.
ICI Americas Inc.: *See—*
Burns, Joseph P., 4,287,116, Cl. 260-37.00N.

Iguchi, Shigeru: *See—*
Iwata, Tamotsu; and Iguchi, Shigeru, 4,287,293, Cl. 430-232.000.

Iizawa, Osamu: *See—*
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; Tanaka, Hitoshi; and Ueoka, Hisayoshi, 4,287,075, Cl. 106-39.500.

Ike, Toshiharu: *See—*
Taniguchi, Yasuo; Ike, Toshiharu; and Nakaya, Hideo, 4,287,311, Cl. 525-58.000.

Ikeda, Minoru, to France Bed Co., Ltd. Mattress. 4,286,344, Cl. 5-424.000.

Ikeda, Toshimitsu: *See—*
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,286,861, Cl. 355-3.00R.

Illinois Tool Works Inc.: *See—*
Platt, John R.; and Benno, Edward L., 4,286,711, Cl. 206-216.000.

Ilzig, Karl F.; and Scheidemann, Hans, to Original Hanau Heraeus GmbH. Light directing control system, particularly for medical operating and diagnostic use. 4,286,839, Cl. 350-96.240.

Imamura, Haruo: *See—*
Okuno, Noboru; Takeuchi, Takashi; Tsuzuku, Akihiko; Tanazawa, Masao; Nakajima, Minoru; and Imamura, Haruo, 4,286,935, Cl. 425-72.00R.

Imperial Chemical Industries Limited: *See—*
Allen, Christopher S., 4,287,003, Cl. 134-31.000.
Maslin, Raymond; and Linnhoff, Bodo, 4,287,377, Cl. 585-634.000.

Imperial Group Limited: *See—*
Goslin, John K.; Bugler, John H.; and Foster, Howard, 4,286,605, Cl. 131-358.000.

IMS Limited: *See—*
Ogle, Robert W., 4,286,389, Cl. 34-5.000.

Incosym, Inc.: *See—*
Craig, Robert J. G., 4,286,370, Cl. 29-434.000.

Index-Werke KG Hahn & Tessky: *See—*
Gatzki, Helmut H., 4,286,484, Cl. 82-32.000.

Infusaid Corporation: *See—*
Sampson, Edward J.; and Prosl, Frank R., 4,286,584, Cl. 128-1.00R.

Inoh, Isamu: *See—*
Kume, Tadashi; and Inoh, Isamu, 4,287,059, Cl. 210-188.000.

Inokuchi, Nobuyuki: *See—*
Matsunami, Muneharu; Kubota, Tatsushi; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,286,805, Cl. 280-803.000.

Inoue, Haruo; Yokota, Shigeru; and Saito, Yoshiharu, to Honda Giken Kogyo Kabushiki Kaisha. Rear seat for cars. 4,286,819, Cl. 296-65.00R.

Inoue, Hiromitsu; Ohashi, Hiroshi; and Kondo, Mikio, to Matsushita Electric Works, Ltd. Moving object detecting device. 4,287,579, Cl. 367-94.000.

Inoue, Kozi: *See—*
Ando, Seiya; and Inoue, Kozi, 4,287,064, Cl. 210-413.000.

Institut de Recherches de la Siderurgie Francaise: *See—*
Lechevallier, Christian; Cordier, Jacques; and Antoine, Martine, 4,287,045, Cl. 204-243.00R.

Institut Francais du Petrole: *See—*
Nguyen, Jean-Paul; Laval, Emmanuel; and Cendre, Andre, 4,286,676, Cl. 175-74.000.

Intel Corporation: *See—*
Stark, Moshe, 4,287,570, Cl. 365-104.000.

International Business Machines Corp.: *See—*
Brosch, Rudolf; Schettler, Helmut; Schumacher, Hans; and Zuehlke, Rainer, 4,287,437, Cl. 307-296.00R.
Cavaliere, Joseph R.; Henle, Robert A.; Konian, Richard R.; and Walsh, James L., 4,287,435, Cl. 307-255.000.
Chakravarti, Satya N.; and Hiltebeitel, John A., 4,287,571, Cl. 365-104.000.
Cheatham, Samuel D.; and Haynes, Munro K., 4,287,540, Cl. 360-18.000.
Eardley, David B.; and Matick, Richard E., 4,287,575, Cl. 365-174.000.
Kadehjian, Leo J.; Sachdev, Harbans S.; and Snyder, Clinton D., 4,286,989, Cl. 106-22.000.
Liptay, John S., 4,287,561, Cl. 364-200.000.
Pricer, Wilbur D., 4,287,576, Cl. 365-203.000.
Promis, George G.; Smith, Gerald L.; and Wilson, John C., 4,287,461, Cl. 318-571.000.
Soo, Suk S.; and Schwartz, Andrew M., 4,287,414, Cl. 250-227.000.
Stewart, Ralph J., 4,286,466, Cl. 73-863.830.

International Computers Limited: *See—*
Hantusch, Gerald H., 4,286,374, Cl. 29-580.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,287,084, Cl. 252-187.00H.
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,287,081, Cl. 252-174.110.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,287,133, Cl. 260-458.00R.

International Harvester Company: *See—*
Forsyth, Clark H.; Van Hooydonk, Anton H. G.; and Ralph, Harold D., 4,286,672, Cl. 172-311.000.

International Quartz Ltd.: *See—*
Lam, Hau C.; Lee, Thomas K. P.; and Cheng, Y. C., 4,287,513, Cl. 340-562.000.

International Standard Electric Corporation: *See—*
Boute, Raymond T. G.; De Kinder, Wilfried L. J.; Neutjens, Gustaaf W. T.; Pochet, Andre G. G.; Vanderschoot, Jan P. M.; and Van Remortel, Jacques D. A., 4,287,590, Cl. 370-59.000.

International Telephone and Telegraph Corporation: *See—*
Goodman, David S.; Selvin, Gerald J.; Dubell, Edward G.; Doty, Donald J.; Erbe, Alfred R.; and Wilson, Robert E., 4,286,834, Cl. 339-16.00R.

Inukai, Mitsuo; and Kamiyama, Hajime, to Toyota Jidosha Kogyo Kabushiki Kaisha. Webbing retractor. 4,286,758, Cl. 242-107.000.

Iowa State University Research Foundation, Inc.: *See—*
Greer, Raymond T.; Vale, Bradley H.; and Knoll, Randall L., 4,286,341, Cl. 3-1.400.

Ippolitov, Vladimir V.: *See—*
Kapitanov, Nikolai N.; Petrova, Natalia P.; and Ippolitov, Vladimir V., 4,286,598, Cl. 128-303.00R.

Irrgang, Klaus: *See—*
Jager, Gerd; Bernuth, Wolfgang; Irrgang, Klaus; Wendt, Hans-Joachim; and Honecker, Siegfried, 4,286,879, Cl. 356-358.000.

Isaka, Kinichi: *See—*
Takeda, Mikio; Kishishita, Hiroshi; Kawabata, Hiroyuki; and Isaka, Kinichi, 4,287,449, Cl. 313-509.000.

Ishigaki, Isao: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Okada, Toshio; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,287,272, Cl. 429-144.000.

Ishihara, Tetsuo; and Kubo, Keizi, to Daicel Chemical Industries Ltd. Liquid composition for treating photosensitive laminates having alcohol-soluble polyamide layer. 4,287,297, Cl. 430-435.000.

Ishikawa, Masaru: *See—*
Honda, Akira; Taguchi, Kiyomi; Hanmyo, Masayuki; Ishikawa, Masaru; and Kitamura, Minoru, 4,286,647, Cl. 164-153.000.

Isohata, Shigeru: *See—*
Nozawa, Ryoichiro; Amemiya, Yoichi; Kawamata, Mitsuo; Isohata, Shigeru; Sasaki, Takao; and Takekoshi, Yoshitaka, 4,287,460, Cl. 318-571.000.

Italiano, Victor J.: *See—*
Thomas, Jacob E.; and Italiano, Victor J., 4,287,523, Cl. 346-140.00R.

Ito, Mikiji: *See—*
Nagano, Shojiro; Naganuma, Naohiro; and Ito, Mikiji, 4,286,932, Cl. 417-526.000.

Itoh, Kunio; Fukuda, Takeshi; and Matumura, Masaaki, to Shin-Etsu Chemical Co., Ltd. Primer compositions. 4,287,114, Cl. 260-37.0SB.

Iwamoto, Yoshinori: *See—*
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,287,113, Cl. 260-33.4EP.

Iwata, Minoru: *See—*
Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, 4,287,164, Cl. 423-290.000.

Iwata, Tamotsu; and Iguchi, Shigeru, to Mitsubishi Paper Mills, Ltd. Photographic element. 4,287,293, Cl. 430-232.000.

Izumi, Hirotaka: *See—*
Akita, Yukio; Izumi, Hirotaka; and Asano, Junichi, 4,286,862, Cl. 355-3.0SH.

J. I. Case Company: *See—*
Schulz, John C., 4,286,803, Cl. 280-764.000.

J. M. Voith GmbH: *See—*
Gross, Harald, 4,286,923, Cl. 416-43.000.

J. Wagner AG: *See—*
Wagner, Josef; and Huber, Willi, 4,287,552, Cl. 361-228.000.

Jackson, Alan D., to Cessna Aircraft Company, The. Deformable plug. 4,286,770, Cl. 251-285.000.

Jackson, Jesse J.: *See—*
Carlo, Dennis J.; Jackson, Jesse J.; and Stoudt, Thomas H., 4,287,173, Cl. 424-49.000.

Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., to Eastman Kodak Company. Copolyesters derived from aromatic polyesters and glycol polyesters. 4,287,325, Cl. 525-444.000.

Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., to Eastman Kodak Company. Process for improving the chemical resistance of aromatic polyesters. 4,287,332, Cl. 528-176.000.

Jacquet, Bernard; Papantoniou, Christos; and Mondet, Jean, to L'Oreal. Cosmetic compositions for the hair and the skin, based on polymers which contain amino groups and recurring units having a cyclic structure. 4,287,172, Cl. 424-47.000.

Jaeckh, Christof: *See—*
Rudolf, Peter; Steck, Werner; Koester, Eberhard; Ohlinger, Manfred; and Jaeckh, Christof, 4,287,233, Cl. 427-127.000.

Jaeger, Paul M.: *See—*
Ophir, Jonathan; Maklad, Nabil F.; and Jaeger, Paul M., 4,286,455, Cl. 73-1.0DV.

Jager, Gerd; Bernuth, Wolfgang; Irrgang, Klaus; Wendt, Hans-Joachim; and Honecker, Siegfried. Device, particularly for the digital measuring of force. 4,286,879, Cl. 356-358.000.

Jahn, Walter: *See—*
Scherenberg, Hans O.; Breitschwerdt, Werner; Klein, Wilhelm; and Jahn, Walter, 4,286,359, Cl. 24-230.00R.

Jain, Sulekh C.; and Morris, Charles A., to Wyman-Gordon Company. Water-based forging lubricant. 4,287,073, Cl. 252-30.000.

James, James R.; and Neathery, Michael P., to Accuratio Systems, Inc. Variable ratio dispensing apparatus. 4,286,732, Cl. 222-46.000.

Janes, Michael M.; and Orgill, Rodney H., to NCR Corporation. Topography for integrated circuit pattern recognition array. 4,287,507, Cl. 340-146.30Z.

Janome Sewing Machine Co., Ltd.: *See—*
Tonomura, Yoshinobu, 4,286,532, Cl. 112-314.000.

Janssen Pharmaceutica, N.V.: *See—*
Heeres, Jan; and Hendrickx, Robert, 4,287,195, Cl. 424-250.000.

Jantzen, Steve L., to ACF Industries, Inc. Pressurized hopper car interior side and roof bracing support structure. 4,286,524, Cl. 105-248.000.

Janzen, Jay, to Phillips Petroleum Company. Sample cell. 4,286,881, Cl. 356-440.000.

Japan Atomic Energy Research Inst.: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Okada, Toshio; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,287,272, Cl. 429-144.000.

Japan Latex Compounding Co., Ltd.: *See—*
Monden, Takeshi; Shiba, Yoshiro; Momonaka, Toshihiro; Kobayashi, Shigeru; and Oda, Kazuo, 4,287,242, Cl. 427-426.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Monden, Takeshi; Shiba, Yoshiro; Momonaka, Toshihiro; Kobayashi, Shigeru; and Oda, Kazuo, 4,287,242, Cl. 427-426.000.

Jaquith, Douglas, to Jaquith, Hope. Self adjusting bridge with locking pin for all viol instruments. 4,286,494, Cl. 84-309.000.

Jaquith, Hope: *See—*
Jaquith, Douglas, 4,286,494, Cl. 84-309.000.

Jarrett, Boaz A., to Lucas Industries Limited. Fuel injection systems. 4,286,930, Cl. 417-416.000.

Jaspert, Erhard: *See—*
Hentzschel, Erhard; Jaspert, Erhard; and Niederhoff, Kurt, 4,287,402, Cl. 219-61.500.

Javan, Ali, to Massachusetts Institute of Technology. Laser resonator cavities with wavelength tuning arrangements. 4,287,486, Cl. 331-94.50C.

Jenike & Johanson, Inc.: *See—*
Johanson, Jerry R., 4,286,883, Cl. 366-137.000.

Jenkins, Edwin E.: *See—*
Dwyer, Francis G.; and Jenkins, Edwin E., 4,287,166, Cl. 423-325.000.

Jensen, Deane E. Operational amplifier circuit. 4,287,479, Cl. 330-260.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
DeBaryshe, Paul G.; and Glickler, Sheldon L., 4,287,421, Cl. 250-423.00P.

Jinba, Terumasa: *See—*
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,287,403, Cl. 219-69.00M.

Jindou, Katsuya: *See—*
Hashimoto, Tadashi; and Jindou, Katsuya, 4,287,494, Cl. 333-202.000.

Johann Schaefer Kalkwerke: *See—*
von Zander, Hans, 4,287,160, Cl. 423-168.000.

Johanson, Jerry R., to Jenike & Johanson, Inc. Blending apparatus for bulk solids. 4,286,883, Cl. 366-137.000.

John D. Hollingsworth on Wheels, Inc.: *See—*
Harrison, John E., Sr., 4,286,357, Cl. 19-98.000.

Johna, Nobuo: *See—*
Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, 4,287,102, Cl. 252-547.000.

Johnson, Bruce K., to Polaroid Corporation. Photographic camera apparatus for visually indicating the status of an exposure trim mechanism. 4,286,851, Cl. 354-53.000.

Johnson, Don R., to Harris & Thrush Manufacturing Company. Packer latch for module builder. 4,286,511, Cl. 100-35.000.

Johnson, Garland A.; and Peuler, Jacob D., to Upjohn Company, The. Method for preparing vanillin and composition therefor. 4,287,368, Cl. 568-436.000.

Johnson, Henry W., Jr., to Shell Oil Company. Viscosity measurement. 4,286,457, Cl. 73-53.000.

Johnson, James L.: *See—*
Taylor, Neil J.; St. Hilaire, A. Robert; and Johnson, James L., 4,286,409, Cl. 47-40.500.

Johnson & Johnson: *See—*
Trimmer, William S. N.; and Laser, Mark R., 4,286,459, Cl. 73-862.590.

Johnson & Johnson Products, Inc.: *See—*
Ring, David F., 4,286,595, Cl. 128-263.000.

Johnson, Marvin M.: *See—*
Tabler, Donald C.; and Johnson, Marvin M., 4,287,049, Cl. 208-180.000.

Johnson, Richard L.: *See—*
Klausmeier, William H.; Johnson, Richard L.; and Hirsch, Arnold L., 4,287,129, Cl. 260-397.100.

Johnson, Robert A., to Motorola Inc. Integrated universal RF joint and gimbal system. 4,287,497, Cl. 333-261.000.

Johnson, Russell W.: *See—*
Geiser, Edward M.; and Johnson, Russell W., 4,287,038, Cl. 204-158.00R.

Johnston, Barry. Closed loop solar collector system. 4,286,579, Cl. 126-438.000.

Jones, Cheryl D., to Minnesota Mining and Manufacturing Company. Controlled-rate liquid dispenser. 4,286,754, Cl. 239-6.000.

Jones, John E.; Fodor, William G.; Porter, James R.; and Edgell, James E., to Sandvik, Ind. Pedicure implement. 4,286,610, Cl. 132-76.400.

Jonville, Pierre: *See—*
Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, 4,287,270, Cl. 429-103.000.

Jordan College: *See—*
Gates, Timothy P., 4,286,575, Cl. 126-422.000.

Jordan, John W.: *See—*
Finlayson, Claude M.; and Jordan, John W., 4,287,086, Cl. 252-316.000.

Jordy, Angelika; and Kapp, Wolfgang, to Degesch GmbH. Storage stable quickly acting tablets for combatting vertebrates preponderantly in underground structures. 4,287,171, Cl. 424-29.000.

Jossin, Alain: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,287,197, Cl. 424-258.000.

Joulin, Gerard. Bran bread and method for making same. 4,287,215, Cl. 426-19.000.

Jovan, Inc.: *See—*
Miller, Aaron, 4,286,609, Cl. 132-75.000.

Judickas, Frank J. Ear piercing tool. 4,286,600, Cl. 128-330.000.

Judin, Evgeny A.: *See—*
Belsky, Arkady A.; Eljutin, Alexandr V.; Zubkov, Valery N.; Konjukov, Alexandr I.; Krasinskaya, Lidia I.; Nekrasova, Elena A.; Nizharadze, Konstantin S.; Markova, Larisa F.; Mirskaya, Mirra G.; Frolov, Alexei V.; and Judin, Evgeny A., 4,287,030, Cl. 204-105.00R.

Junike, Wilhelm: *See—*
Henneberg, Hasso; Hesse, Werner; and Junike, Wilhelm, 4,286,483, Cl. 82-2.00R.

Justus, Edgar J.; and Roerig, Arnold J., to Beloit Corporation. Extended nip press. 4,287,021, Cl. 162-358.000.

K.K. Elco International: *See—*
Yasutake, Kenichi; and Watanabe, Tetsuji, 4,286,837, Cl. 339-176.0MP.

Kabushiki Kaisha Ando Screen Seisakujo: *See—*
Ando, Seiya; and Inoue, Kozi, 4,287,064, Cl. 210-413.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Okuno, Noboru; Takeuchi, Takashi; Tsuzuku, Akihiko; Tanazawa, Masao; Nakajima, Minoru; and Imamura, Haruo, 4,286,935, Cl. 425-72.00R.

Kabushiki Kaisha Suwa Seikosha: *See—*
Numabe, Hitomi, 4,287,585, Cl. 368-82.000.
Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, 4,287,085, Cl. 252-299.630.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Matsunami, Muneharu; Kubota, Tatsushi; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,286,805, Cl. 280-803.000.
Usami, Susumu; Hayashi, Yoshihiro; Nakaho, Junichi; and Yasumatsu, Jun, 4,286,759, Cl. 242-107.200.

Kacal, Gary W.; and Partridge, Charles C., to ACF Industries, Incorporated. High temperature ball valve. 4,286,614, Cl. 137-72.000.

Kadehjian, Leo J.; Sachdev, Harbans S.; and Snyder, Clinton D., to International Business Machines Corporation. Formulations for ink jet printing. 4,286,989, Cl. 106-22.000.

Kadyrov, Abduvasit: *See—*
Safaev, Abidzhan; Kadyrov, Abduvasit; Saidaliev, Zhakhongir G.; and Faiziev, Tulyagan F., 4,287,344, Cl. 546-164.000.

Kajitani, Makoto: *See—*
Fujmura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,287,207, Cl. 424-282.000.

Kaleskas, Edward W.: *See—*
Paradis, Joseph R.; and Kaleskas, Edward W., 4,286,628, Cl. 137-843.000.

Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, to Mitsubishi Rayon Co., Ltd. Coating composition and process for producing synthetic resin moldings by using the same. 4,287,227, Cl. 427-54.100.

Kamata, Shigeru, to Canon Kabushiki Kaisha. Zoom lens barrel capable of close up photography. 4,286,845, Cl. 350-430.000.

Kamiya, Fumio; Nodera, Hisatoshi; Ueda, Kenji; and Miyamoto, Hiroyuki, to Omron Tateisi Electronics Co. Proximity switching device. 4,287,440, Cl. 307-315.000.

Kamiyama, Hajime: *See—*
Inukai, Mitsuo; and Kamiyama, Hajime, 4,286,758, Cl. 242-107.000.

Kanamaru, Hitoshi, to Universal Pioneer Corporation. Automatic focus servomechanism in optical information reading device. 4,287,413, Cl. 369-45.000.

Kanbe, Sadao: *See—*
Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, 4,287,085, Cl. 252-299.630.

Kaneko, Akira; Ohya, Masaki; Suzuki, Masayasu; and Kobayashi, Akio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Transparent resin composition for information signal recording discs. 4,287,316, Cl. 525-296.000.

Kansai Paint Co., Ltd.: *See—*
Tominaga, Akira; and Nishida, Reijiro, 4,287,041, Cl. 204-181.00C.

Kapitanov, Nikolai N.; Petrova, Natalia P.; and Ippolitov, Vladimir V. Forceps for isolation of part of blood vessel during anastomosis. 4,286,598, Cl. 128-303.00R.

Kapp, Wolfgang: *See—*
Jordy, Angelika; and Kapp, Wolfgang, 4,287,171, Cl. 424-29.000.

Kasei Optonix, Ltd.: *See—*
Ohmatoi, Susumu; Tanaka, Hitoshi; and Murakami, Seiji, 4,287,257, Cl. 428-403.000.

Kashiwagi, Atumi, to Fujimoto Photo Industrial Co., Ltd. Light source unit assembly for photographic enlarger. 4,286,867, Cl. 355-67.000.

Kasztreiner, Endre: *See—*
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Las-

zlo; Szuucs, Erzsebet; and Kiss, Gabriella, 4,287,194, Cl. 424-248.510.
Katagiri, Shigenobu; Nakano, Hiroshige; and Matsuzaki, Kazuo, to Hitachi Koki Company Limited. Printer magnetic interference prevention system. 4,286,517, Cl. 101-93.140.
Kathawala, Faizulla G., to Sandoz, Inc. Carboxyl-(phenyl or tolyl)-sulfonium salts. 4,287,355, Cl. 560-18.000.
Kato, Yukio: *See*—
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,287,403, Cl. 219-69.00M.
Katz, Irving M., to Merck & Co., Inc. Contact lens wetting agents. 4,287,175, Cl. 424-78.000.
Kaufmann, John H., to Global Coatings Limited. Roof coating composition and construction. 4,287,241, Cl. 427-403.000.
Kawa, Hidetoshi; Mori, Kazuhiro; Watanabe, Kazuo; and Misawa, Yoshihiko, to Matsushita Electric Industrial Co., Ltd. Apparatus for detecting leads. 4,286,379, Cl. 29-705.000.
Kawabata, Hiroyuki: *See*—
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Kawai Musical Instruments Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,286,491, Cl. 84-1.010.
Kawakami, Nidehiko; and Nishida, Jun. Electric circuit arrangements incorporating cathode ray tubes. 4,287,450, Cl. 315-14.000.
Kawamata, Mitsuo: *See*—
Nozawa, Ryoichiro; Amemiya, Yoichi; Kawamata, Mitsuo; Isohata, Shigeru; Sasaki, Takao; and Takekoshi, Yoshitaka, 4,287,460, Cl. 318-571.000.
Kawamatsu, Yutaka; and Fujita, Takeshi, to Takeda Chemical Industries, Ltd. Thiazolidine derivatives. 4,287,200, Cl. 424-270.000.
Kawamura, Masaharu: *See*—
Kiuchi, Masayoshi; and Kawamura, Masaharu, 4,286,858, Cl. 354-289.000.
Kawano, Mitsugi: *See*—
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Kawashima, Motozo: *See*—
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Keatley, James, to Barry Wright Corporation. Isolation connection. 4,286,642, Cl. 411-112.000.
Keckeisen, Adelinde: *See*—
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, 4,287,186, Cl. 424-181.000.
Keeler Corporation: *See*—
Deshaw, Walter R., 4,286,841, Cl. 350-289.000.
Kees, Edward J.: *See*—
Steiger, Douglass W.; and Kees, Edward J., 4,286,651, Cl. 165-45.000.
Keim, Carroll R.: *See*—
Dahlberg, Bengt I.; Ehnstrom, Lars K. J.; and Keim, Carroll R., 4,287,303, Cl. 435-162.000.
Keim, John E.: *See*—
Lee, Maw H.; and Keim, John E., 4,287,464, Cl. 318-805.000.
Kellogg, Michael S., to Pfizer Inc. Derivatives of 6β-hydroxyalkylpenicillanic acids as β-lactamase inhibitors. 4,287,181, Cl. 424-114.000.
Kennecott Corporation: *See*—
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., 4,287,145, Cl. 264-109.000.
Kerbleski, Joseph J.: *See*—
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,287,340, Cl. 544-250.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Menzenhauer, Paul, 4,286,725, Cl. 220-23.200.
Kerr Glass Manufacturing Corporation: *See*—
Herr, James E., 4,286,633, Cl. 141-24.000.
Kerwin, Daniel; and Trentadue, Victor, to Meyercord Co., The. Machine for applying indicia to tennis ball felts. 4,287,016, Cl. 156-497.000.
Kessinger, Orville E., Jr., to Caterpillar Tractor Co. Vehicle cross drive. 4,286,478, Cl. 74-705.000.
Kessler, William J., to Corporation for Public Broadcasting. Rejection filter to remove TV channel 6 and FM radio interference. 4,287,602, Cl. 455-286.000.
Kestner, Mark O.; and Stoldt, Stephen H., to Apollo Technologies, Inc. Method of improving the freeze resistance of particulate material at low temperatures. 4,287,236, Cl. 427-221.000.
Keuffel & Esser Company: *See*—
Erickson, Kent E., 4,286,871, Cl. 355-133.000.
Kida, Sueo: *See*—
Nakayama, Nobukazu; and Kida, Sueo, 4,287,308, Cl. 521-53.000.
Kiencke, Uwe: *See*—
Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, 4,287,565, Cl. 364-580.000.
Kikuchi, Nobuaki: *See*—
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; Tanaka, Hitoshi; and Ueoka, Hisayoshi, 4,287,075, Cl. 106-39.500.
Kikuchi, Siro, to Nippon Asbestos Co., Ltd. Heat insulator for pipe lines. 4,287,245, Cl. 428-36.000.
Kikuta, Kazutsune; Tachibana, Masami; and Sato, Akihiro, to Chisso Corporation. Method for producing α-olefin polymers. 4,287,328, Cl. 526-115.000.
Kimura, Takeo: *See*—
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, 4,287,295, Cl. 430-349.000.
Kinergy Corporation: *See*—
Dumbaugh, George D.; and Wilson, Paul A., 4,287,056, Cl. 209-332.000.
King, Mary K.; and Boyd, William J. Disposable absorbent nonwoven structure. 4,287,251, Cl. 428-198.000.
Kirby, Charles R.; and McKay, Donald R., to Cominco Ltd. Process for the melting of sulfur. 4,286,966, Cl. 23-293.00S.
Kirchhoff, Bernhard, to O & K Orenstein & Koppel Aktiengesellschaft. Bottom plates for walking mechanisms, connected by means of connection pieces. 4,286,681, Cl. 180-8.00R.
Kishishita, Hiroshi: *See*—
Takeda, Mikio; Kishishita, Hiroshi; Kawabata, Hiroyuki; and Isaka, Kinichi, 4,287,449, Cl. 313-509.000.
Kiss, Gabriella: *See*—
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Kitagawa, Yoshihiko; Hanamura, Yoshimi; Yuyama, Masahiro; Moritani, Masahiko; Sakuramoto, Akira; and Suzuki, Mikio, to Sumitomo Chemical Company, Limited. Continuous process for producing rubber-modified methyl methacrylate syrups. 4,287,317, Cl. 525-309.000.
Kitamura, Minoru: *See*—
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Kitik, Walter; Reder, Rodney; and Kurpiewski, Stanley, to Timex Corporation. Water-resistant rocker switch. 4,287,400, Cl. 200-302.000.
Kitzing, Rainer; Ficken, Geoffrey E.; and Dolden, Victor W., to Ciba-Geigy AG. Preparation of sulphoalkyl quaternary salts. 4,287,348, Cl. 548-121.000.
Kiuchi, Masayoshi; and Kawamura, Masaharu, to Canon Kabushiki Kaisha. Voltage detecting device for camera. 4,286,858, Cl. 354-289.000.
Kiwala, Jacob: *See*—
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,287,133, Cl. 260-458.00R.
Klappert, Ernst: *See*—
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Klausmeier, William H.; Johnson, Richard L.; and Hirsch, Arnold L., to Diamond Shamrock Corp. Synthesis of 1α-hydroxy-7-dehydrosteroids. 4,287,129, Cl. 260-397.100.
Klebe, Hans: *See*—
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Klein, Helmut: *See*—
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Klein, Jurgen: *See*—
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Klein, Max. High efficiency particulate air filter. 4,286,977, Cl. 55-524.000.
Klein, Wilhelm: *See*—
Scherenberg, Hans O.; Breitschwerdt, Werner; Klein, Wilhelm; and Jahn, Walter, 4,286,359, Cl. 24-230.00R.
Kleinerman, Marcos. Dye lasers. 4,287,481, Cl. 331-94.50L.
Kleinewefers GmbH: *See*—
Lopata, Karl-Peter; and Tschirner, Wolfgang, 4,287,017, Cl. 156-583.500.
Kleinschmit, Peter; and Schwarz, Rudolf, to Degussa Aktiengesellschaft. Temperature stabilized, pyrogenically produced aluminum oxide-mixed oxide, the process for its production and use. 4,286,990, Cl. 106-73.400.
Kleinschmit, Peter: *See*—
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Klemarczyk, Philip: *See*—
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Klinkner, Hans-Guido: *See*—
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Klomp, Edward D., to General Motors Corporation. Target injection stratified charge spark ignition engine. 4,286,557, Cl. 123-298.000.
Klotzer, Sieghart: *See*—
Vanassche, Willy J.; Pattyn, Herman A.; Moisar, Erik; and Klotzer, Sieghart, 4,287,296, Cl. 430-411.000.
Kneller, Eckhart; Koenig, Roland; Koester, Eberhard; Grau, Werner; and Mayer, Dieter, to BASF Aktiengesellschaft. Process of making a magnetic recording medium. 4,287,225, Cl. 427-48.000.
Knight, William E. Apparatus for attaching a load to two or more backpack frames. 4,286,740, Cl. 224-157.000.

Knoll, Randall L.: *See*—
Greer, Raymond T.; Vale, Bradley H.; and Knoll, Randall L., 4,286,341, Cl. 3-1.400.
Knox, Kenneth H.; Larkin, Mark E.; and Duffield, James R., to Abbott Laboratories. Tamperproof port cover. 4,286,640, Cl. 150-8.000.
Knox, Lloyd C.: *See*—
Streich, Steven G.; and Knox, Lloyd C., 4,286,629, Cl. 138-89.000.
Ko, Wen H.; and Hung, Chih P., to North American Manufacturing Company. Strip center line sensor. 4,287,471, Cl. 324-61.00R.
Kobayashi, Akio: *See*—
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Kobayashi, Shigeru: *See*—
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Kobayashi, Tadashi: *See*—
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Kober, Hans, to FAG Kugelfischer Georg Schafer & Co. Method of selecting rollers for high-speed journal bearings. 4,286,467, Cl. 73-460.000.
Kobzina, John W., to Chevron Research Company. Dichloroacyl diphenyl ether mite ovacides. 4,287,213, Cl. 424-331.000.
Koch, Klaus, to Hermann Berstorff Maschinenbau GmbH. Coal hydrogenating apparatus having means for sealing the rotary drive thereof. 4,287,157, Cl. 422-205.000.
Koch, Werner: *See*—
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Koester, Eberhard: *See*—
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Rudolf, Peter; Steck, Werner; Koester, Eberhard; Ohlinger, Manfred; and Jaeckh, Christof, 4,287,233, Cl. 427-127.000.
Kogane, Mikio; and Yamazaki, Seiichi, to Fuji Photo Film Co., Ltd. Negative film handling method and apparatus. 4,286,869, Cl. 355-75.000.
Kohn, Gary A., to Otis Engineering Corporation. Actuator. 4,286,657, Cl. 166-117.500.
Koinuma, Tokuju; and Kousaka, Akira, to Toshiba Corporation. Magnetron having improved interconnecting anode vanes. 4,287,451, Cl. 315-39.690.
Kolb, Gunter: *See*—
Himmelmann, Wolfgang; Bruck, Rolf; Sauerteig, Wolfgang; Kruck, Peter; Kolb, Gunter; and Sackmann, Gunter, 4,287,299, Cl. 430-537.000.
Kolb, Robert E., to Minnesota Mining and Manufacturing Company. Composition of fluoroelastomer and diorganosulfuroxide. 4,287,320, Cl. 525-340.000.
Kolling, Heinrich: *See*—
Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,287,199, Cl. 424-267.000.
Komandure, Rangachary, to General Electric Company. Tool for trueing and dressing a grinding wheel. 4,286,568, Cl. 125-11.00R.
Komatsu, Shuichi; Nakamura, Shinichi; Shimotori, Kazumi; and Nakayama, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of determining the deterioration of heat-resistant ferritic steel parts. 4,287,417, Cl. 250-307.000.
Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: *See*—
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Kondo, Mikio: *See*—
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Kondo, Norio: *See*—
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Konian, Richard R.: *See*—
Cavaliere, Joseph R.; Henle, Robert A.; Konian, Richard R.; and Walsh, James L., 4,287,435, Cl. 307-255.000.
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Hartley, Robert R.; and Konrad, Joseph A., 4,287,387, Cl. 178-2.00R.
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Korus, Inc.: *See*—
Bang, Chang; and Row, Scott, 4,286,618, Cl. 137-408.000.
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Laszlo; Szuucs, Erzsebet; and Kiss, Gabriella, to Richter Gedeon Vegyeszeti Gyar Rt. Compositions with potentiated hypotensive effects. 4,287,194, Cl. 424-248.510.
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Reichard, Michel; and Krassoulia, Georges, 4,286,431, Cl. 60-39.82E.
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Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,286,890, Cl. 401-19.000.
Krauss, Alfred R.: *See*—
Donlan, John P.; and Krauss, Alfred R., 4,286,921, Cl. 415-136.000.
Kress Corporation: *See*—
LaBerdia, William L., 4,286,915, Cl. 414-460.000.
Krieder, Robert D.: *See*—
Rudolph, Pamela; Krieder, Robert D.; and O'Keefe, Patrick J., Jr., 4,286,685, Cl. 180-176.000.
Kristiansen, Jan O.; and McCray, Walter A., to Foseco Trading A.G. Metallurgical pouring vessels. 4,286,773, Cl. 266-44.000.
Kruck, Peter: *See*—
Himmelmann, Wolfgang; Bruck, Rolf; Sauerteig, Wolfgang; Kruck, Peter; Kolb, Gunter; and Sackmann, Gunter, 4,287,299, Cl. 430-537.000.
Kruse, Hubert: *See*—
Schneider, Manfred; Kruse, Hubert; Opitz, Konrad; and Billenstein, Siegfried, 4,286,960, Cl. 8-527.000.
Kubo, Keizi: *See*—
Ishihara, Tetsuo; and Kubo, Keizi, 4,287,297, Cl. 430-435.000.
Kubota, Tatsushi: *See*—
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Kuesters, Werner; and Thil, Lucien, to BASF Aktiengesellschaft. Manufacture of symmetrical or unsymmetrical monoacetals of aromatic 1,2-diketones. 4,287,367, Cl. 568-43.000.
Kuhfuss, Herbert F.: *See*—
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,287,325, Cl. 525-444.000.
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Kuhn, Eberhard: *See*—
Rubner, Roland; Kuhn, Eberhard; and Ahne, Hellmut, 4,287,294, Cl. 430-306.000.
Kuhn, Helmut: *See*—
Gessner, Wolfgang; Kuhn, Helmut; and Plotz, Kurt, 4,287,248, Cl. 428-137.000.
Kuhn, J. Bruce; Utecht, Klaus P.; and Harris, Ronald K. Fishing lure retriever. 4,286,402, Cl. 43-17.200.
Kuhn, Rainer: *See*—
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Kulka, Kurt; Zazula, Teodosij; and Yurecko, John M., Jr., to Fritzsche Dodge & Olcott Inc. 1,2,3,6-Tetrahydrobenzyl alcohol esters and compositions containing the same. 4,287,100, Cl. 252-522.00R.

Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Esterified aluminosilicate adsorbent as for resolution of sugar components. 4,287,001, Cl. 127-46.00B.

Kume, Tadashi; and Inoh, Isamu, to Honda Giken Kogyo Kabushiki Kaisha. Dialyzer apparatus in an artificial kidney system. 4,287,059, Cl. 210-188.000.

Kummer, Raymond B.: *See—*
Buckler, Michael J.; Kummer, Raymond B.; Mettler, Stephen C.; and Miller, Calvin M., 4,286,979, Cl. 65-3.00A.

Kunz, Walter: *See—*
Eckhardt, Wolfgang; Kunz, Walter; and Hubele, Adolf, 4,287,210, Cl. 424-309.000.

Kuosmanen, Vesa M. Efficiency heater. 4,286,570, Cl. 126-99.00R.

Kuphal, Wilko; and Wons, Heinz, to Siemens Aktiengesellschaft. Examination table for a urological X-ray examination apparatus. 4,287,422, Cl. 250-439.00R.

Kuraray Co., Ltd.: *See—*
Nakashima, Toshihide; Nakaji, Osamu; Takakura, Koichi; and Suzuki, Takayoshi, 4,287,177, Cl. 424-81.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Kaneko, Akira; Ohya, Masaki; Suzuki, Masayasu; and Kobayashi, Akio, 4,287,316, Cl. 525-296.000.
Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katumi, 4,287,312, Cl. 525-83.000.

Kurek, Clarence, to Enervest, Inc. Air pollution attenuation system for copiers employing noxious gas in a developing chamber through which the copy passes for development. 4,286,859, Cl. 354-300.000.

Kurpiewski, Stanley: *See—*
Kitik, Walter; Reder, Rodney; and Kurpiewski, Stanley, 4,287,400, Cl. 200-302.000.

Kushi, Kenji: *See—*
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,287,227, Cl. 427-54.100.

Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, to Hitachi, Ltd. Gas laser generating device of the longitudinal gas flow type. 4,287,487, Cl. 331-94.50G.

Kyokuto Electric Co., Ltd.: *See—*
Funahashi, Masao; and Maeda, Shigeru, 4,286,399, Cl. 40-124.100.

Labelon Corporation: *See—*
Marginean, Barry L., 4,287,264, Cl. 428-514.000.

Laber, Walter: *See—*
Moller, Friedrich-Wilhelm; Buchold, Henning; Klein, Helmut; Garkisch, Otto-Ludwig; Gutlhuber, Friedrich; and Laber, Walter, 4,287,375, Cl. 585-440.000.

LaBerdia, William L., to Kress Corporation. Straddle carrier. 4,286,915, Cl. 414-460.000.

Labofina S.A.: *See—*
Bracke, William J. I.; and Lanza, Emmanuel, 4,287,318, Cl. 525-313.000.

Laboratoires Hoechst, S.A.: *See—*
Simon, Pierre; and Dreux, Jacques, 4,287,206, Cl. 424-279.000.

Laborde, Martin: *See—*
Garrett, Donald E.; and Laborde, Martin, 4,287,163, Cl. 423-283.000.

Labrande, Jean-Paul: *See—*
Busse, Claus-Adolf; and Labrande, Jean-Paul, 4,286,652, Cl. 165-96.000.

Labriot, Gilbert; Bitsch, Robert; Wattelle, Michel; and Lebesue, Jean, to Aluminium Pechiney; and Fives-Cail Babcock. Installations for the calcination of alumina and similar products. 4,286,944, Cl. 432-14.000.

Lacoste, Marvin. Apparatus for and method of freeze protecting plumbing. 4,286,613, Cl. 137-62.000.

Lacour, Alain P.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,287,351, Cl. 548-232.000.

LaFarge Conseils et Etudes: *See—*
Lovichi, Jean P.; and le Bras, Bernard, 4,286,993, Cl. 106-106.000.

Lafaye, Jean-Jacques: *See—*
Prudhomme, Pierre; Lafaye, Jean-Jacques; and Rey, Raymond, 4,287,237, Cl. 427-238.000.

Laimer, Friedrich, to Voest-Alpine Aktiengesellschaft. Arrangement of a steel-making plant for capturing and conducting away flue gases. 4,286,776, Cl. 266-158.000.

Lam, Hau C.; Lee, Thomas K. P.; and Cheng, Y. C., to International Quartz Ltd. Door knob alarm device. 4,287,513, Cl. 340-562.000.

Lambert, Gerald L.: *See—*
Sims, Larry A.; Lambert, Gerald L.; Gross, Raymond J.; and Collins, Harold B., 4,286,406, Cl. 46-72.000.

Lampka, Bruno. Partition-wall arrangement. 4,286,343, Cl. 4-596.000.

Landa, Benzion, to Savin Corporation. Method and apparatus for controlling the feed of projectiles in a microballistic printer. 4,286,886, Cl. 400-118.000.

Lang, Thomas: *See—*
Djordjevic, Ilija; Ritter, Ernst; and Lang, Thomas, 4,286,558, Cl. 123-368.000.

Langdon, William K.; and Lundsted, Lester G., to BASF Wyandotte Corporation. Surfactants derived from the reaction product of polyoxyalkylene polyols and polyglycidyl ethers and glycol-based antifreeze using same. 4,287,078, Cl. 252-76.000.

Langen, Peter. Feed pipe for conveying sticky bulk material. 4,286,702, Cl. 193-2.00R.

Langenstein & Schemann Aktiengesellschaft: *See—*
Bachmann, Horst, 4,286,454, Cl. 72-356.000.

Langer, Horst G.; and Brady, Thomas P., to Dow Chemical Company, The. Preparation of metal organopolyphosphate coordination of complexes. 4,287,131, Cl. 260-448.00R.

Langlois, Michel: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,287,351, Cl. 548-232.000.

Langseth, Rollin E.; and Yeh, Yu S., to Bell Telephone Laboratories, Incorporated. Cooperating arrangement for diversity stations. 4,287,598, Cl. 455-52.000.

Lanza, Emmanuel: *See—*
Bracke, William J. I.; and Lanza, Emmanuel, 4,287,318, Cl. 525-313.000.

Larkin, Mark E.: *See—*
Knox, Kenneth H.; Larkin, Mark E.; and Duffield, James R., 4,286,640, Cl. 150-8.000.

Larsen, Gregory J., to FMC Corporation. Apparatus for separating liquid-solid mixtures. 4,287,058, Cl. 210-112.000.

Laser, Mark R.: *See—*
Trimmer, William S. N.; and Laser, Mark R., 4,286,459, Cl. 73-862.590.

Laser Precision Corporation: *See—*
Clarke, William L., 4,286,877, Cl. 356-346.000.

La Shomb, S. Donald: *See—*
Lemond, Phillip E.; La Shomb, S. Donald; and Rowe, Oliver R., Sr., 4,286,398, Cl. 37-2.00R.

Laska, Ronald C., to Pako Corporation. Photographic printer with automatic sensor calibration. 4,286,868, Cl. 355-68.000.

Lasoen, Jean J., to Massey-Ferguson Services N.V. Draft sensing apparatus. 4,286,669, Cl. 172-7.000.

Lathlaen, Richard A., to TRW, Inc. Method and means for coupling an elongated magnetic device. 4,287,573, Cl. 365-133.000.

Lathrop, Kim N. Swim goggles. 4,286,340, Cl. 2-430.000.

Lau, Kam Y.: *See—*
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Laughlin, Robert G., to Proctor & Gamble Company, The. Anti-ulcer composition. 4,287,174, Cl. 424-78.000.

Laurel Enterprises: *See—*
Skobel, Max, 4,286,360, Cl. 24-230.00R.

Laurent, Michel: *See—*
Vasseur, Jean-Pierre; Laurent, Michel; Loriau, Jean-Joseph; and Delhaute, Andre, 4,286,743, Cl. 228-124.000.

Laval, Emmanuel: *See—*
Nguyen, Jean-Paul; Laval, Emmanuel; and Cendre, Andre, 4,286,676, Cl. 175-74.000.

Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Magnetic data carrier for perpendicular recording. 4,287,544, Cl. 360-131.000.

Lebesue, Jean: *See—*
Labriot, Gilbert; Bitsch, Robert; Wattelle, Michel; and Lebesue, Jean, 4,286,944, Cl. 432-14.000.

le Bras, Bernard: *See—*
Lovichi, Jean P.; and le Bras, Bernard, 4,286,993, Cl. 106-106.000.

Lechevallier, Christian; Cordier, Jacques; and Antoine, Martine, to Institut de Recherches de la Siderurgie Francaise. Cooled electrode adapted to contact molten metal. 4,287,045, Cl. 204-243.00R.

Leclerc, Pierre: *See—*
Huignard, Jean-Pierre; Leclerc, Pierre; Carballes, Jean-Claude; and Nappo, Armand, 4,286,838, Cl. 350-96.110.

Ledis, Stephen L.; Chastain, David L., Jr.; and Crews, Harold R., to Coulter Electronics, Inc. Differential lymphoid-myeloid determination of leukocytes in whole blood. 4,286,963, Cl. 23-230.00B.

Lee, Hong Man, to Champion International Corporation. Combination wood plastic railroad tie. 4,286,753, Cl. 238-37.000.

Lee, Maw H.; and Keim, John E., to Scott & Fetzer Company, The. Power factor controller for an induction motor using transistor switch means with variable breakdown voltage. 4,287,464, Cl. 318-805.000.

Lee, Thomas K. P.: *See—*
Lam, Hau C.; Lee, Thomas K. P.; and Cheng, Y. C., 4,287,513, Cl. 340-562.000.

Lee, Winston F. Z.; White, Raymond V.; and Sciulli, Felice M., to Rockwell International Corporation. Constant accuracy turbine meter. 4,286,471, Cl. 73-861.840.

Leech, Edward J., to Photocircuits Division of Kollmorgen Corp. Catalytic filler for electroless metallization of hole walls. 4,287,253, Cl. 428-323.000.

Legler, Bobby, to Dow Chemical Company, The. Filler mixtures and thermoset resins containing same. 4,287,115, Cl. 260-37.0EP.

Lehr, James R.; and Hsieh, Shuang-shii, to Tennessee Valley Authority. Beneficiation of high carbonate phosphate ores. 4,287,053, Cl. 209-167.000.

Leiber, Heinz, to Robert Bosch GmbH. Magnetic valve. 4,286,626, Cl. 137-625.650.

Leiber, Heinz, to Robert Bosch GmbH. Brake booster for the anti-wheel locking of a motor vehicle brake system. 4,286,826, Cl. 303-114.000.

Lemke, James U.: *See—*
Bixby, James A.; Lemke, James U.; and Lentz, Robert A., 4,287,539, Cl. 360-18.000.

Lemkey, Franklin D.: *See—*
Golden, Gerald S.; Lemkey, Franklin D.; and Brooks, Clyde S., 4,287,096, Cl. 252-455.00R.

Lemond, Phillip E.; La Shomb, S. Donald; and Rowe, Oliver R., Sr., to Rowe Corporation. Apparatus for excavating and transplanting trees and the like. 4,286,398, Cl. 37-2.00R.

Lenac, Vojko: *See—*
Dezvane, Joseph; and Lenac, Vojko, 4,286,485, Cl. 82-36.00R.

Le Naour-Sene, Lyliane, to Essilor International "Cie Generale d'Optique". Process of integrating a photochromic substance into an ophthalmic lens and a photochromic lens of organic material. 4,286,957, Cl. 8-471.000.

Lenco, Inc.: *See—*
Shipman, Ronald L., 4,286,755, Cl. 239-530.000.

Lentz, Robert A.: *See—*
Bixby, James A.; Lemke, James U.; and Lentz, Robert A., 4,287,539, Cl. 360-18.000.

Leonard, Henri, to Micro Mega, S.A. Dental handpiece. 4,286,951, Cl. 433-126.000.

Lerebourg, Michel, to Etablissements DEMLER S.A. Method of manufacturing cementitious articles and various forms of equipment of putting this method into practice. 4,287,144, Cl. 264-79.000.

Lersmacher, Bernhard, to U.S. Philips Corporation. Device for solid-state pyrolysis of organic polymeric substances. 4,287,025, Cl. 202-222.000.

Lester, Robert W. Solid state music player using signals from a bubble-memory storage device. 4,287,568, Cl. 364-900.000.

Leuschner, Horst, to Motorola, Inc. MOS Bandgap reference. 4,287,439, Cl. 307-310.000.

Levin, Gary M. Paper clip. 4,286,358, Cl. 24-67.00R.

Levrai, Roland: *See—*
Carre, Jean-Jacques; and Levrai, Roland, 4,286,504, Cl. 91-517.000.

Levy, Paul M. Television system. 4,287,528, Cl. 358-3.000.

Lew, Hyok S. Variable camber fluid power machine. 4,286,922, Cl. 416-17.000.

Lewis, Arlin C. Fuel additive injection device. 4,286,550, Cl. 123-25.00L.

Lewis, Richard B.: *See—*
Bolte, Steven B.; and Lewis, Richard B., 4,287,287, Cl. 430-137.000.

Lewis, Robert D., to Armstrong Cork Company. Fiber shrinking composition for nylon pile fabric. 4,286,955, Cl. 8-115.600.

Leybold-Heraeus GmbH: *See—*
Heimbach, Klaus-Jurgen; and Zultzke, Walter, 4,287,224, Cl. 427-42.000.

LFE Corporation: *See—*
Lynnworth, Lawrence C., 4,286,470, Cl. 73-861.180.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Borner, Manfred, 4,286,842, Cl. 350-331.00R.
Scholz, Werner, 4,287,491, Cl. 333-14.000.

Lienau, Mark H., to Sperry Corporation. High performance disk drive actuator. 4,287,445, Cl. 310-13.000.

Liesinger, James O. Hanger for slender articles. 4,286,717, Cl. 211-60.00T.

Lill, John F.; and Neff, Nelson E., to AMP Incorporated. Stator for stepper motor. 4,287,446, Cl. 310-71.000.

Limoncelli, Anthony F., to United Technologies Corporation. Tank cap. 4,286,727, Cl. 220-244.000.

Lin, Spencer B. T. Polypropylene endless loop and the method therefor. 4,286,429, Cl. 57-201.000.

Lindner, Alfred: *See—*
Brunner, Erwin; Schubert, Eckart; Lindner, Alfred; Merger, Franz; Volkamer, Klaus; Strohmeyer, Max; and Sandrock, Gerhard, 4,287,379, Cl. 585-839.000.

Lindner, Friedrich, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Roumfabert e.V. Method for charging or discharging a heat accumulator. 4,286,650, Cl. 165-1.000.

Lindorfer, Walter: *See—*
Wagner, Fritz; Rapp, Peter; Bock, Hans; Lindorfer, Walter; Schulz, Walther; and Gebetsberger, Wilhelm, 4,286,660, Cl. 166-246.000.

Linetsky, Mikhail. Precast house manufacturing and erecting plant. 4,286,934, Cl. 425-62.000.

Lingner & Fischer GmbH: *See—*
Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,286,890, Cl. 401-19.000.

Linnhoff, Bodo: *See—*
Maslin, Raymond; and Linnhoff, Bodo, 4,287,377, Cl. 585-634.000.

Lion Fat & Oil Co., Ltd., The: *See—*
Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, 4,287,102, Cl. 252-547.000.
Nishio, Hiroshi; Fukano, Kazuaki; Amano, Isao; and Okumura, Osamu, 4,287,101, Cl. 252-537.000.

Liptay, John S., to International Business Machines Corporation. Address formulation interlock mechanism. 4,287,561, Cl. 364-200.000.

Litehizer, Melvin P., Jr., to AMP Incorporated. Terminating tool. 4,286,381, Cl. 29-751.000.

Litton Systems, Inc.: *See—*
Benjamin, John W., 4,286,911, Cl. 414-273.000.

Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, to Merck & Co., Inc. Synthesis of thienamycin via (3SR, 4RS)-3-((RS)-1-acyloxyethyl)-2-oxo-4-azetidineacetate. 4,287,123, Cl. 260-239.00A.

Lobue, Alphonse T.: *See—*
Hagedorn, Robert E.; Lobue, Alphonse T.; and Uhlman, Joseph G., 4,286,792, Cl. 277-135.000.

Loch, Werner: *See—*
Buethe, Ingolf; and Loch, Werner, 4,287,039, Cl. 204-159.190.

Loctite Corporation: *See—*
Rich, Richard D., 4,287,330, Cl. 526-270.000.

Loev, Bernard: *See—*
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,287,203, Cl. 424-275.000.

Loewy Robertson Engineering Co. Ltd.: *See—*
Houghton, Geoffrey, 4,286,448, Cl. 72-21.000.

Lohe, Konrad: *See—*
Hunger, Klaus; Klappert, Ernst; and Lohe, Konrad, 4,287,122, Cl. 260-203.000.

Lohmann, Wolfgang: *See—*
Baumann, Manfred; and Lohmann, Wolfgang, 4,286,515, Cl. 100-233.000.

Lomas, James W. Trailer. 4,286,800, Cl. 280-414.00B.

Long, Irvin E. Electro-mechanical displacement measuring device. 4,286,386, Cl. 33-138.000.

Longo, John M.: *See—*
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,286,972, Cl. 55-58.000.

Lopata, Karl-Peter; and Tschirner, Wolfgang, to Kleinewefers GmbH. Endless pressing-on and guiding belt for textile treating devices, especially transfer printing machines and steaming calenders. 4,287,017, Cl. 156-583.500.

Lord Corporation: *See—*
McDowell, John R.; Howard, Dennis D.; and Pascarella, Vincent J., 4,287,083, Cl. 252-182.000.

L'Oreal: *See—*
Jacquet, Bernard; Papantoniou, Christos; and Mondet, Jean, 4,287,172, Cl. 424-47.000.

Loreto, Wilfredo P., to AIT Industries, Inc. Method of edging lenses. 4,286,415, Cl. 51-284.00E.

Loriau, Jean-Joseph: *See—*
Vasseur, Jean-Pierre; Laurent, Michel; Loriau, Jean-Joseph; and Delhaute, Andre, 4,286,743, Cl. 228-124.000.

Lovegrove, Paul D. Medical support board. 4,286,588, Cl. 128-133.000.

Lovichi, Jean P.; and le Bras, Bernard, to LaFarge Conseils et Etudes. Method and installation for making cement clinker. 4,286,993, Cl. 106-106.000.

Lu, Chin H.; and Erhardt, Peter F., to Xerox Corporation. Method of imagining using positive toners containing alkyl morpholinium compounds. 4,287,284, Cl. 430-120.000.

Lucas Industries Limited: *See—*
Jarrett, Boaz A., 4,286,930, Cl. 417-416.000.
May, William S., 4,286,566, Cl. 123-569.000.
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Clasen, Rolf; and Lydtin, Hans J., 4,286,981, Cl. 65-169.000.

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Magana, Joseph. Freeze plug ejector and injector. 4,286,368, Cl. 29-267.000.
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Malmsten, Sven O. Exhaust gas muffler. 4,286,689, Cl. 181-232.000.
Malouf, Edmond A., Jr. Shape retaining collar devices and articles of wearing apparel using same. 4,286,337, Cl. 2-116.000.
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Maney, Thomas P. Adjustable paper cap. 4,286,338, Cl. 2-197.000.
Mangano, Santi F., to I.B.P. Industrie Buitoni Perugina S.p.A. Chocolate confection containing carbonated hard candy crystals dispersed therein. 4,287,216, Cl. 426-93.000.
Manizza, Guelfo A., to Federal Paper Board Company, Inc. Bottle package. 4,286,709, Cl. 206-144.000.
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Manno, Joseph. Self-watering seed planter. 4,286,408, Cl. 47-27.000.
Marchais, Jean-Claude, to CIDELCEM. Cover for a standard container. 4,286,713, Cl. 206-508.000.
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Blount, Eric A., 4,286,380, Cl. 29-741.000.
Marer, Joseph, to Redon Trust. Device actuated electrically to trigger a mechanical percussion detonator. 4,286,521, Cl. 102-200.000.
Marginean, Barry L., to Labelon Corporation. Heat sensitive coating. 4,287,264, Cl. 428-514.000.
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Marling, John B., to United States of America, Energy. Deuterium enrichment by selective photo-induced dissociation of an organic carbonyl compound. 4,287,037, Cl. 204-158.00R.
Marquis, Edward T.; Gipson, Robert M.; and Watts, Lewis W., Jr., to Texaco Inc. Molybdenum catalyst for aniline-formaldehyde condensation. 4,287,364, Cl. 564-332.000.
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Swift, William R.; Herrod, Don W.; and Marsh, James M., 4,287,564, Cl. 364-525.000.
Marshall, Lee. Pressure detection arrangement. 4,286,603, Cl. 128-782.000.
Martelli, Nerio; and Strazzari, Giuliano, to Nespak S.p.A. Societa Generale Per l'Imballaggio. Rectangular tray for packing and conveying spheroidal fruit. 4,286,715, Cl. 206-564.000.
Martin, Ernest N. Timer with reversible motor. 4,287,395, Cl. 200-33.00R.
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Masaie, Kimio, to Murata Manufacturing Co., Ltd. Piezoelectric filter. 4,287,493, Cl. 333-191.000.
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Mashikian, Matthew S.: *See—*
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Maslin, Raymond; and Linnhoff, Bodo, to Imperial Chemical Industries Limited. Hydrocarbon conversion. 4,287,377, Cl. 585-634.000.
Mason, Joseph E., to American Can Company. Dispensing apparatus for rolled sheet material. 4,286,488, Cl. 83-205.000.
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Young, David M., 4,287,184, Cl. 424-177.000.
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Flanders, Dale C., 4,287,235, Cl. 427-160.000.
Hsieh, Jaw J., 4,287,485, Cl. 331-94.50H.
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Matsumoto, Masakazu; and Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Hologram recording material. 4,287,277, Cl. 430-2.000.
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Matsunami, Muneharu; Kubota, Tatsushi; Yoshida, Akio; and Inokuchi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Seatbelt system. 4,286,805, Cl. 280-803.000.
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Kawa, Hidetoshi; Mori, Kazuhiro; Watanabe, Kazuo; and Misawa, Yoshihiko, 4,286,379, Cl. 29-705.000.
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Matthews, Paul E., to United States Bronze Powders, Inc. Composition for iron powder compact infiltrant. 4,286,987, Cl. 75-252.000.
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Maulat, Jean-Pierre: *See—*
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May, William S., to Lucas Industries Limited. Engine system. 4,286,566, Cl. 123-569.000.
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Mayer, Ferdy. Differential transformer. 4,287,545, Cl. 361-44.000.

Maynard, Billy A.: *See—*
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Mays, James A. Kit for converting a rotary tiller into a plow. 4,286,671, Cl. 172-253.000.
Maytag Company, The: *See—*
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Mazour, Zdenek, to Ciba-Geigy Corporation. Process for the preparation of O,O-dialkylthionophosphoric acid chlorides. 4,287,136, Cl. 260-985.000.
McArthur, Donald N.; and Heintz, Robert A., to General Motors Corporation. Method of folding an inflatable restraint cushion. 4,286,954, Cl. 493-244.000.
McArthur, William H. Solar energy absorbing panel. 4,286,578, Cl. 126-429.000.
McCall, John M., to Upjohn Company, The. Sulfooxy-pyrimidinium, -pyridinium, and -triazinium hydroxide inner salts. 4,287,338, Cl. 544-123.000.
McClain, Dorothee M., to National Distillers and Chemical Corp. Process of preparing finely divided thermoplastic resins. 4,287,333, Cl. 528-487.000.
McClelland, John F., to United States of America, Energy. Solar energy thermalization and storage device. 4,286,576, Cl. 126-428.000.
McCormick, Derek. Sprinkler system control valve and actuator device. 4,286,668, Cl. 169-22.000.
McCray, Walter A.: *See—*
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McDowell, John R.; Howard, Dennis D.; and Pascarella, Vincent J., to Lord Corporation. Photoinitiation systems for free radical polymerization reactions. 4,287,083, Cl. 252-182.000.
McEntire, Edward E., to Texaco Inc. Preparation of N-(alkylaminoalkyl)acrylamides. 4,287,363, Cl. 564-205.000.
McGaughey, Donald C., to State Wide Aluminum of Indiana, Inc. Truck cover and door therefor. 4,286,820, Cl. 296-146.000.
McGrath, Neal. Electromagnetic shutter for lens. 4,286,856, Cl. 354-234.000.
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McKnight, Joseph H. Floating corner for insertion into a packing container. 4,287,265, Cl. 428-542.000.
McLean, Douglas K., to Double-E Inc. Packing assembly for a movable shaft. 4,286,791, Cl. 277-64.000.
McMahon, Edward H., Jr.; and Abston, J. B., to Sonoco Products Company. Method for reverse printing on coated tube papers and tubes produced from the paper. 4,287,244, Cl. 428-35.000.
McMahon, James F., Jr., to Cleveland Controls, Incorporated. Trim execution device. 4,286,474, Cl. 74-522.000.
McMath, Jack A., to Dover Corporation. Automatic shut-off nozzle having an arrangement for controlling when automatic shut off occurs in response to pressure in a sealed tank. 4,286,635, Cl. 141-98.000.
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., to Kennecott Corporation. Method for manufacturing neutron absorbing article. 4,287,145, Cl. 264-109.000.
McNeill, William H.: *See—*
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Meckler, Gershon: *See—*
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Medcalf, Eugene C., to BWM Corporation. Hydrocarbon fuel additive. 4,286,969, Cl. 44-53.000.
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Mehesan, Thomas C., Jr., to Banner Industries, Inc. Boom mounted carrier for handling beef quarters and the like. 4,286,917, Cl. 414-704.000.
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Melindo, Flavio, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Integrated circuitry for exchanging signals between telephone station and central office. 4,287,392, Cl. 179-16.0AA.
Melitz, Daniel T.; Searle, Kenneth L.; and Woodman, Brian E., to British Petroleum Company Limited, The. Diving structure and method of deployment of the structure. 4,286,896, Cl. 405-185.000.
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Menzenhauer, Paul, to Kernforschungszentrum Karlsruhe GmbH. Vessel for collecting and extinguishing combustible liquids. 4,286,725, Cl. 220-23.200.
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Merck & Co., Inc.: *See—*
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Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich. Polyamide blends. 4,287,315, Cl. 525-183.000.
Meyer, Rudolf, to Agfa-Gevaert Aktiengesellschaft. Apparatus and a method for recording information. 4,287,522, Cl. 346-75.000.
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Meyerhoff, Albert J.: *See—*
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Meyerle, Michael; Anton, Otto; and Ehrlinger, Friedrich, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Steplessly adjustable variable-speed hydrostatic-mechanical composite transmission. 4,286,477, Cl. 74-687.000.
Meyers, Charles, to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH. Adaptive delta-modulation network. 4,287,595, Cl. 375-28.000.
Michaels, Glenn O.; and Spangler, Michael J., to Standard Oil Company (Indiana). Process for controlling polymer particle size in vapor phase polymerization. 4,287,327, Cl. 526-86.000.
Micheli, Adolph L., to General Motors Corporation. Process for producing a body of sintered TiO_2 for resistive gas sensor. 4,286,378, Cl. 29-621.000.
Michigan Consolidated Gas Company: *See—*
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Miffre, Hubert, to Societe Nationale Elf Aquitaine (Production). Hydraulic pumping rod connecting and disconnecting device. 4,286,663, Cl. 166-325.000.
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Mikami, Ryuzo, to Toray Silicone Company, Ltd. Siloxane-modified epoxy resin compositions. 4,287,326, Cl. 525-476.000.
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Grachev, Vladimir V.; Chepurin, Valentin M.; Mikhailov, Viktor Y.; and Rybnikov, Sergei I., 4,286,450, Cl. 72-59.000.
Miller, Aaron, to Jovan, Inc. Hot oil fingernail and cuticle treatment. 4,286,609, Cl. 132-75.000.
Miller, Bernard J. Power transfer device. 4,286,481, Cl. 74-799.000.
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Miller, Stephen B.: *See—*
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Milstead, Charles W.; and Ridenour, Larry. Protective flexible sealed enclosure for a steerable drive wheel of a vehicle. 4,286,794, Cl. 277-212.0FB.
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Kolb, Robert E., 4,287,320, Cl. 525-340.000.
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Miyakawa, Nobuhiro; and Teshima, Takashi, 4,287,282, Cl. 430-107.000.
Mita, Kunio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure correction warning display device. 4,286,857, Cl. 354-289.000.
Mitamura, Ichiro; Tooyama, Akira; and Hosono, Takashi, to Sony Corporation. Deflection control apparatus for a beam index color cathode ray tube. 4,287,531, Cl. 358-67.000.
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Akamatsu, Masahiko, 4,287,434, Cl. 307-253.000.
Ohnishi, Masaru; and Samejima, Kazuhiro, 4,287,524, Cl. 346-154.000.
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Miyakawa, Nobuhiro; and Teshima, Takashi, to Mita Industrial Company Limited. Composite magnetic developer. 4,287,282, Cl. 430-107.000.
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Moisdon, Roger F. Solar power plant equipped with high efficiency heat exchangers. 4,286,434, Cl. 60-641.00B.
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Monden, Takeshi; Shiba, Yoshiro; Momonaka, Toshihiro; Kobayashi, Shigeru; and Oda, Kazuo, to Japan Synthetic Rubber Co., Ltd.; and Japan Latex Compounding Co., Ltd. Spray-coating process. 4,287,242, Cl. 427-426.000.
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Moore, Derek S., to Vickers Limited. Image-shearing apparatus. 4,287,532, Cl. 358-107.000.
Moore, Irving F. Method of preparation of an asbestos product. 4,287,020, Cl. 162-3.000.
Moore, Terry F. Dog watering dish. 4,286,546, Cl. 119-61.000.
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Moro, Alessandro; Foa, Marco; and Cassar, Luigi, to Montedison, S.p.A. Process for preparing alpha-thienylacetic acid, esters and salts thereof. 4,287,352, Cl. 549-79.000.
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Mosehauer, Michael W., to Eastman Kodak Company. Method and apparatus for fabricating personal identification documents. 4,287,285, Cl. 430-124.000.
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Johnson, Robert A., 4,287,497, Cl. 333-261.000.
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Skoda, William G.; and Luff, Marlin, 4,287,447, Cl. 310-348.000.
Spinks, Brian M.; and Dumas, John R., 4,287,442, Cl. 307-510.000.
Mower, Peter; and Gadd, John H., to Trico Products Corporation. Wiper blades for vehicles. 4,286,351, Cl. 15-250.420.
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Musgrove, Robert G., to Vought Corporation. Eccentric actuator. 4,286,761, Cl. 244-75.00R.
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Nagel, Richard A., to Pittway Corporation. Circuit for eliminating low battery voltage alarm signal at night. 4,287,517, Cl. 340-636.000.
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Nakamura, Akiyoshi; and Tokumaru, Hisashi, to Minolta Camera Kabushiki Kaisha. Lightweight inverted telephoto type wide angle lens system. 4,286,847, Cl. 350-459.000.
Nakamura, Hiroya; and Nishida, Yasunide, to Konishiroku Photo Industry Co., Ltd. Transmission-reception apparatus. 4,287,589, Cl. 370-31.000.
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Nakamura, Yoshimitsu; and Otada, Masami, to Matsushita Electric Works, Ltd. Method of manufacturing coreless armature. 4,286,375, Cl. 29-597.000.
Nakanishi, Kisaku, to Shin Gijutsu Kigyo Kabushiki Kaisha. Horseshoes. 4,286,666, Cl. 168-4.000.
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McClain, Dorothee M., 4,287,333, Cl. 528-487.000.
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National Foundation for Cancer Research: *See—*
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National Institute for Researches in Inorganic Materials: *See—*
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Neal, William; and Neal, Mary. Folding tent. 4,286,612, Cl. 135-4.00R.

Neale, Dory J., Sr. Ultrasonic fluid leak detector. 4,287,581, Cl. 367-135.000.

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Neitz, Alfred; Pickel, Hans; and D'Alfonso, Nunzio, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Arrangement for air-compressing direct-injection internal combustion engines. 4,286,556, Cl. 123-279.000.

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Neuzil, Richard W.: *See—*
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Nevins, Robert L. Prevention of thermal buildup by controlled exterior means and solar energy collectors. 4,286,582, Cl. 126-446.000.

Newbauer, Robert E.; and Niemann, Gunther B. Animal restraint unit. 4,286,547, Cl. 119-96.000.

Newcomb, Nelson F.; and Newcomb, Nelson F., Jr. Practice baseball. 4,286,783, Cl. 273-26.00R.

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Nguyen, Jean-Paul; Laval, Emmanuel; and Cendre, Andre, to Institut Francais du Petrole. Crank connector for directional drilling. 4,286,676, Cl. 175-74.000.

Nickel, Herbert W., to A. O. Smith Corporation. Water heater heat trap assembly. 4,286,573, Cl. 126-362.000.

Nickerson, James H. D.: *See—*
Ruhe, Anthony; and Nickerson, James H. D., 4,286,654, Cl. 165-172.000.

Nickett, George R.: *See—*
Paulish, Daniel J.; Meyerhoff, Albert J.; and Nickett, George R., 4,287,592, Cl. 370-88.000.

Nickmeyer, Walter V., to Amark Industries, Inc. Cartridge heater structure. 4,287,502, Cl. 338-274.000.

Nicks, Larry J.: *See—*
Atkinson, Gary B.; Nicks, Larry J.; and Bauer, Donald J., 4,287,095, Cl. 252-443.000.

Niederhoff, Kurt: *See—*
Hentzschel, Erhard; Jaspert, Erhard; and Niederhoff, Kurt, 4,287,402, Cl. 219-61.500.

Nielsen, Willi G., to Gottlieb Commercial Company A/S. Mat for multispectral camouflage of objects and permanent constructions. 4,287,243, Cl. 428-17.000.

Niemann, Gunther B.: *See—*
Newbauer, Robert E.; and Niemann, Gunther B., 4,286,547, Cl. 119-96.000.

Nihon Medi-Physics Co., Ltd.: *See—*
Yokoyama, Akira; and Arano, Yasushi, 4,287,362, Cl. 562-556.000.

Ninomiya, Youichi; and Tsuno, Kazuhiko. Check valve assembly. 4,286,622, Cl. 137-533.110.

Nippon Asbestos Co., Ltd.: *See—*
Kikuchi, Siro, 4,287,245, Cl. 428-36.000.

Nippon Electric Co., Ltd.: *See—*
Fukaya, Hirokazu; and Shoji, Masashi, 4,287,390, Cl. 179-1.00A.
Nishitani, Takao, 4,287,558, Cl. 364-200.000.
Sakuma, Hiraku, 4,287,526, Cl. 357-23.000.

Nippon Kogaku K.K.: *See—*
Hasegawa, Hiroshi, 4,286,855, Cl. 354-234.000.
Hasegawa, Hiroshi; and Maida, Osamu, 4,287,549, Cl. 361-156.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Honda, Akira; Taguchi, Kiyomi; Hanmyo, Masayuki; Ishikawa, Masaru; and Kitamura, Minoru, 4,286,647, Cl. 164-153.000.
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,287,403, Cl. 219-69.00M.

Nippon Paint Co., Ltd.: *See—*
Murakami, Ryoichi; Shimizu, Hideo; and Sato, Syuzi, 4,287,004, Cl. 148-6.15R.

Nippon Petrochemicals Co., Ltd.: *See—*
Shimizu, Isoo; Tsuji, Okitsugu; Matsuzaka, Eiichi; and Sato, Atsushi, 4,287,376, Cl. 585-458.000.

Nippon Steel Corporation: *See—*
Hiromae, Yoshitaka; Nakamura, Kazuo; and Nitto, Hajime, 4,287,006, Cl. 148-27.000.

Nippon Wiper Blade Co., Ltd.: *See—*
Ichise, Yoshiju, 4,286,350, Cl. 15-250.320.

Nippondenso Co., Ltd.: *See—*
Nagano, Shojiro; Naganuma, Naohiro; and Ito, Mikiji, 4,286,932, Cl. 417-526.000.
Sagisaka, Yasuo; Kondo, Toshio; and Kobayashi, Akio, 4,286,560, Cl. 123-417.000.
Yasui, Toshio; and Naito, Motoharu, 4,287,431, Cl. 307-10.00R.

Nishida, Jun: *See—*
Kawakami, Nidehiko; and Nishida, Jun, 4,287,450, Cl. 315-14.000.

Nishida, Reijiro: *See—*
Tominaga, Akira; and Nishida, Reijiro, 4,287,041, Cl. 204-181.00C.

Nishida, Yasuhide: *See—*
Nakamura, Hiroya; and Nishida, Yasuhide, 4,287,589, Cl. 370-31.000.

Nishide, Katsuhiko: *See—*
Matsumoto, Masakazu; and Nishide, Katsuhiko, 4,287,277, Cl. 430-2.000.

Nishihama, Hitoshi: *See—*
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,286,861, Cl. 355-3.00R.

Nishimoto, Masayuki: *See—*
Takeshima, Takahiko; Kawashima, Motozo; and Nishimoto, Masayuki, 4,286,648, Cl. 164-312.000.

Nishimura, Takeo: *See—*
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,287,283, Cl. 430-108.000.

Nishimura, Toshio: *See—*
Watanabe, Minoru; Oikawa, Mitsuhiro; Nishimura, Toshio; Asada, Masao; Tezuka, Masao; and Cho, Tsurahide, 4,287,229, Cl. 427-64.000.

Nishio, Hiroshi; Fukano, Kazuaki; Amano, Isao; and Okumura, Osamu, to Lion Fat & Oil Co., Ltd., The. Enzyme-containing detergent composition. 4,287,101, Cl. 252-537.000.

Nishitani, Takao, to Nippon Electric Co., Ltd. Sampled data processing system having memory with areas alternately dedicated to data I/O and data processing. 4,287,558, Cl. 364-200.000.

Nissan Motor Co., Ltd.: *See—*
Matsuzaki, Kiyoto; and Aya, Norimoto, 4,286,980, Cl. 65-106.000.
Tominaga, Tamotsu; Mihara, Teruyoshi; Oguro, Takeshi; and Takeuchi, Masami, 4,287,501, Cl. 338-42.000.
Tsutsumi, Saburo, 4,286,552, Cl. 123-48.0AA.
Tsutsumi, Saburo, 4,286,561, Cl. 123-432.000.
Yanagida, Toshio, 4,286,506, Cl. 98-2.000.

Nitto, Hajime: *See—*
Hiromae, Yoshitaka; Nakamura, Kazuo; and Nitto, Hajime, 4,287,006, Cl. 148-27.000.

Nizharadze, Konstantin S.: *See—*
Belsky, Arkady A.; Eljutin, Alexandr V.; Zubkov, Valery N.; Konjukov, Alexandr I.; Krasinskaya, Lidia I.; Nekrasova, Elena A.; Nizharadze, Konstantin S.; Markova, Larisa F.; Mirskaya, Mirra G.; Frolov, Alexei V.; and Judin, Evgeny A., 4,287,030, Cl. 204-105.00R.

NL Industries, Inc.: *See—*
Finlayson, Claude M.; and Jordan, John W., 4,287,086, Cl. 252-316.000.

Noble, Charles M.; and Olthoff, James A., to Caterpillar Tractor Co. Replaceable bearing assembly for construction vehicles. 4,286,674, Cl. 172-811.000.

Nodera, Hisatoshi: *See—*
Kamiya, Fumio; Nodera, Hisatoshi; Ueda, Kenji; and Miyamoto, Hiroyuki, 4,287,440, Cl. 307-315.000.

Nolte, Margaretha J.: *See—*
Coetzer, Johan; Nolte, Margaretha J.; and de Kocknee Steynberg, Annemare, 4,287,271, Cl. 429-103.000.

Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Image forming method and apparatus therefor. 4,287,295, Cl. 430-349.000.

Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See—*
Braeger, Horst K. H., 4,286,355, Cl. 17-46.000.

Norris, Philip R., to Polaroid Corporation. Microfiche camera having motor control system. 4,286,853, Cl. 354-123.000.

North American Manufacturing Company: *See—*
Ko, Wen H.; and Hung, Chih P., 4,287,471, Cl. 324-61.00R.

North, Robert A., to Boots Company, The. Process for the production of fluoronitrobenzenes. 4,287,374, Cl. 568-937.000.

Northern Telecom Inc.: *See—*
Adams, William J.; Moorse, Jeffrey W.; and Haskins, Steve W., 4,286,835, Cl. 339-17.00F.

Norton Simon, Inc.: *See—*
Fukuoka, Kazuaki, 4,286,745, Cl. 229-4.500.

Nosker, Richard W.: *See—*
Simshauser, Elvin D.; and Nosker, Richard W., 4,287,587, Cl. 369-50.000.

Novak, Milan; and Adams, William F., to Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources. Trap construction. 4,286,404, Cl. 43-87.000.

Novatome: *See—*
Deshais, Richard; and Carbonnel, Henri, 4,286,926, Cl. 417-50.000.

Nowak, Victor J.: *See—*
Fahim, Magdi M.; Nowak, Victor J.; and Matta, Nagui R., 4,286,563, Cl. 123-469.000.

Nozawa, Ryoichiro; Amemiya, Yoichi; Kawamata, Mitsuo; Isohata, Shigeru; Sasaki, Takao; and Takekoshi, Yoshitaka, to Fujitsu Fanuc Limited. Positioning control system. 4,287,460, Cl. 318-571.000.

Numabe, Hitomi, to Kabushiki Kaisha Suwa Seikosha. Chronograph wristwatch. 4,287,585, Cl. 368-82.000.

Nyberg, David D.: *See—*
Midgley, John A.; and Nyberg, David D., 4,287,012, Cl. 156-86.000.

Nypro, Inc.: *See—*
Paradis, Joseph R.; and Kaleskas, Edward W., 4,286,628, Cl. 137-843.000.

O & K Orenstein & Koppel Aktiengesellschaft: *See—*
Kirchhoff, Bernhard, 4,286,681, Cl. 180-8.00R.

O'Boyle, Matthew: *See—*
Harney, David E.; Harney, Marilyn J.; and O'Boyle, Matthew, 4,287,273, Cl. 429-153.000.

Occidental Research Corporation: *See—*
DiGiacomo, Peter M., 4,287,071, Cl. 210-643.000.

O'Connor, Thomas R., to Eastman Kodak Company. Coating apparatus provided with a protective shield. 4,287,240, Cl. 427-402.000.

Oda, Kazuo: *See—*
Monden, Takeshi; Shiba, Yoshiro; Momonaka, Toshihiro; Kobayashi, Shigeru; and Oda, Kazuo, 4,287,242, Cl. 427-426.000.

Ogawa, Mototuga, to Olympus Optical Co., Ltd. Bend angle control for endoscope. 4,286,585, Cl. 128-6.000.

Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, to Seiko Koki Kabushiki Kaisha. Signaling time detecting device for leaf type digital clock. 4,287,586, Cl. 368-222.000.

Ogle, Robert W., to IMS Limited. Apparatus and method for lyophilizing aseptic substances. 4,286,389, Cl. 34-5.000.

Oguma, Tomio, to Aisin Seiki Kabushiki Kaisha. Automatic fluid mixing valves. 4,286,749, Cl. 236-12.00A.

Oguro, Takeshi: *See—*
Tominaga, Tamotsu; Mihara, Teruyoshi; Oguro, Takeshi; and Takeuchi, Masami, 4,287,501, Cl. 338-42.000.

Ohashi, Hiroshi: *See—*
Inoue, Hiromitsu; Ohashi, Hiroshi; and Kondo, Mikio, 4,287,579, Cl. 367-94.000.

Ohba, Hideo: *See—*
Ohta, Tatsuo; Shinozaki, Sohji; Yoshida, Syûsaku; and Ohba, Hideo, 4,287,278, Cl. 430-53.000.

Ohbu, Kazuo: *See—*
Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, 4,287,102, Cl. 252-547.000.

Ohlinger, Manfred: *See—*
Rudolf, Peter; Steck, Werner; Koester, Eberhard; Ohlinger, Manfred; and Jaeckh, Christof, 4,287,233, Cl. 427-127.000.

Ohmae, Takashi; Fukaya, Yasuhiro; Yoshida, Yasuyuki; Oka, Tamotu; Sato, Masahiko; and Nagareda, Masazumi, to Mitsubishi Jukogyo Kabushiki Kaisha. Process and apparatus for exhausting fumes produced by arc welding. 4,287,405, Cl. 219-136.000.

Ohmatoi, Susumu; Tanaka, Hitoshi; and Murakami, Seiji, to Kasei Optonix, Ltd. Phosphors for color televisions. 4,287,257, Cl. 428-403.000.

Ohminato, Mitsuru: *See—*
Satomi, Toyokazu; Ohminato, Mitsuru; and Tabata, Yasuhiro, 4,286,865, Cl. 355-14.0CU.

Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Trouble diagnosing device of control circuit system. 4,287,505, Cl. 340-52.00B.

Ohnishi, Masaru; and Samejima, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. Electrostatic recording method with delayed control voltage. 4,287,524, Cl. 346-154.000.

Ohnuma, Teruyuki; Miyakawa, Seiichi; and Oyama, Hajime, to Ricoh Company, Ltd. Apparatus for developing electrostatic image. 4,286,543, Cl. 118-657.000.

Ohta, Tatsuo; Shinozaki, Sohji; Yoshida, Syusaku; and Ohba, Hideo, to Konishiroku Photo Industry Co., Ltd. Two superimposed ion current formed images using photoconductive screen gives wider potential range for gradation control in electrophotography. 4,287,278, Cl. 430-53.000.

Ohtsu Tire & Rubber Co., Ltd., The: *See—*
Fuzioka, Keizi; and Shinomiya, Masami, 4,286,942, Cl. 425-577.000.

Ohya, Masaki: *See—*
Kaneko, Akira; Ohya, Masaki; Suzuki, Masayasu; and Kobayashi, Akio, 4,287,316, Cl. 525-296.000.

Ohyama, Kunio: *See—*
Kotani, Kikuo; Ohyama, Kunio; Nakagawa, Nobuaki; Fujii, Tadashiro; and Watanabe, Susumu, 4,287,345, Cl. 546-261.000.

Oikawa, Mitsuhiro: *See—*
Watanabe, Minoru; Oikawa, Mitsuhiro; Nishimura, Toshio; Asada, Masao; Tezuka, Masao; and Cho, Tsurahide, 4,287,229, Cl. 427-64.000.

Oka, Tamotu: *See—*
Ohmae, Takashi; Fukaya, Yasuhiro; Yoshida, Yasuyuki; Oka, Tamotu; Sato, Masahiko; and Nagareda, Masazumi, 4,287,405, Cl. 219-136.000.

Okada, Toshio: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Okada, Toshio; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,287,272, Cl. 429-144.000.

Okamoto, Takamitsu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of an internal combustion engine. 4,286,554, Cl. 123-188.00M.

Okamoto, Tsugio: *See—*
Hisakawa, Minoru; and Okamoto, Tsugio, 4,286,887, Cl. 400-196.100.

Okano, Shigeru: *See—*
Fujiu, Takahiro; Nakajima, Masao; and Okano, Shigeru, 4,286,958, Cl. 8-471.000.

O'Keefe, Patrick J., Jr.: *See—*
Rudolph, Pamela; Krieder, Robert D.; and O'Keefe, Patrick J., Jr., 4,286,685, Cl. 180-176.000.

Okuda, Hiroshi, to Sony Corporation. Recording and reproducing device. 4,287,542, Cl. 360-105.000.

Okumura, Osamu: *See—*
Nishio, Hiroshi; Fukano, Kazuaki; Amano, Isao; and Okumura, Osamu, 4,287,101, Cl. 252-537.000.

Okuno, Noboru; Takeuchi, Takashi; Tsuzuku, Akihiko; Tanazawa, Masao; Nakajima, Minoru; and Imamura, Haruo, to Kabushiki Kaisha Komatsu Seisakusho. Earth and sand conveyor system. 4,286,935, Cl. 425-72.00R.

Olander, Walter K., to General Electric Company. Poly(phenylene ether)poly(vinyl aromatic) compositions. 4,287,321, Cl. 525-392.000.

Olin Corporation: *See—*
Gullotti, Damian V.; Damon, Lloyd E.; Chatfield, Phillip A.; and Winter, Joseph, 4,286,744, Cl. 228-125.000.
Harris, Frederick J., 4,286,496, Cl. 411-441.000.

Oliver, Robert G.: *See—*
Houle, Philip J.; and Oliver, Robert G., 4,286,907, Cl. 414-72.000.

Olson, George; Tolman, Richard L.; and Weppelman, Roger M., to Merck & Co., Inc. Anovulatory method and chicken feed compositions. 4,287,201, Cl. 424-273.00R.

Olthoff, James A.: *See—*
Noble, Charles M.; and Olthoff, James A., 4,286,674, Cl. 172-811.000.

Olympus Optical Co., Ltd.: *See—*
Ogawa, Mototuga, 4,286,585, Cl. 128-6.000.

O'Malley, Arthur L. Loudspeaker apparatus. 4,286,688, Cl. 181-156.000.

Omron Tateisi Electronics Co.: *See—*
Kamiya, Fumio; Nodera, Hisatoshi; Ueda, Kenji; and Miyamoto, Hiroyuki, 4,287,440, Cl. 307-315.000.

Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Diffusion transfer color photographic film unit. 4,287,291, Cl. 430-218.000.

Oota, Masanori: *See—*
Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katumi, 4,287,312, Cl. 525-83.000.

op den Camp, Lutz E. A.: *See—*
Thomas, Alfred W.; and op den Camp, Lutz E. A., 4,286,501, Cl. 91-376.00R.

Ophir, Jonathan; Maklad, Nabil F.; and Jaeger, Paul M., to Acoustic Standards Corporation. Ultrasound phantom. 4,286,455, Cl. 73-1.0DV.

Opitz, Konrad: *See—*
Schneider, Manfred; Kruse, Hubert; Opitz, Konrad; and Billenstein, Siegfried, 4,286,960, Cl. 8-527.000.

Orban, Jean M., to Vivitar Corporation. Electronic slave flash delay device. 4,287,453, Cl. 315-159.000.

Orgill, Rodney H.: *See—*
Janes, Michael M.; and Orgill, Rodney H., 4,287,507, Cl. 340-146.30Z.

Original Hanau Heraeus GmbH: *See—*
Ilzig, Karl F.; and Scheidemann, Hans, 4,286,839, Cl. 350-96.240.

Orlando, Franklin P.; and Fitzmaurice, Richard W., to FMC Corporation. Vibratory fruit harvester. 4,286,426, Cl. 56-330.000.

Oronzio deNora Impianti Elettrochimici S.p.A.: *See—*
Pellegri, Alberto, 4,287,032, Cl. 204-128.000.

O'Rourke, Thomas J.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,287,081, Cl. 252-174.110.

Osada, Hisashi: *See—*
Goshima, Yoshio; and Osada, Hisashi, 4,287,492, Cl. 333-140.000.

Osaki, Yasunari: *See—*
Gaku, Morio; Nagai, Norio; and Osaki, Yasunari, 4,287,014, Cl. 156-306.900.

Oscarson, John R.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Huang, Liang H.; Oscarson, John R.; Shibakawa, Riichiro; and Tone, Junsuke, 4,287,182, Cl. 424-118.000.

Ostheim, James R.: *See—*
Handley, Charles L.; and Ostheim, James R., 4,286,608, Cl. 132-40.000.

Otada, Masami: *See—*
Nakamura, Yoshimitsu; and Otada, Masami, 4,286,375, Cl. 29-597.000.
Otis Engineering Corporation: *See—*
Gazda, Imre I., 4,286,661, Cl. 166-316.000.
Kohn, Gary A., 4,286,657, Cl. 166-117.500.
Otthofer, Jacob A., Jr., to Armstrong World Industries, Inc. Print screen stencil. 4,286,518, Cl. 101-128.210.
Outboard Marine Corporation: *See—*
Baltz, Gene F.; and DuBois, Chester G., 4,286,553, Cl. 123-187.50R.
Owen, James H., II, to Du Pont de Nemours, E. I., and Company. Emulsion-type explosive composition and method for the preparation thereof. 4,287,010, Cl. 149-2.000.
Owens-Corning Fiberglas Corporation: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,286,996, Cl. 106-282.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,286,997, Cl. 106-282.000.
Owens, Dean P.: *See—*
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., 4,287,145, Cl. 264-109.000.
Oyama, Hajime: *See—*
Ohnuma, Teruyuki; Miyakawa, Seiichi; and Oyama, Hajime, 4,286,543, Cl. 118-657.000.
Pace, Wilson D.: *See—*
Cave, David L.; and Pace, Wilson D., 4,287,438, Cl. 307-297.000.
Pachmayr, Frank A.; and Farrar, Jack R., to Pachmayr Gun Works, Inc. Cushioned gun grip. 4,286,401, Cl. 42-71.00P.
Pachmayr Gun Works, Inc.: *See—*
Pachmayr, Frank A.; and Farrar, Jack R., 4,286,401, Cl. 42-71.00P.
Paerels, Gerard B.: *See—*
Van Gilse, Jaap; and Paerels, Gerard B., 4,286,983, Cl. 71-67.000.
Page, John S., Jr. Tubing drain. 4,286,662, Cl. 166-317.000.
Pakcel Converters Limited: *See—*
Ibbotson, Peter; Smith, John C.; and Frodsham, Colin, 4,287,274, Cl. 429-156.000.
Pako Corporation: *See—*
Laska, Ronald C., 4,286,868, Cl. 355-68.000.
Viland, Michael G., 4,286,392, Cl. 34-47.000.
Palacin, Francis: *See—*
Buser, Rolf; Palacin, Francis; Robert, Georg; and Somm, Franz, 4,286,961, Cl. 8-532.000.
Palmer-Shile Company: *See—*
Hall, Lee Z., 4,286,719, Cl. 211-193.000.
Pan, Robert B.; and Templeton, John S., III, to Exxon Production Research Company. Method for measuring the thickness of an ice sheet. 4,287,472, Cl. 324-65.00R.
Pangborn, Robert N.: *See—*
Kramer, Irvin R.; Weissman, Sigmund; and Pangborn, Robert N., 4,287,416, Cl. 250-273.000.
Panster, Peter; Buder, Wolfgang; and Kleinschmit, Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Monomeric, polymeric and carrier-fixed rhodium complex compounds, process for their production and their use as catalysts. 4,287,094, Cl. 252-431.00R.
Papadopoulos, Andreas T. Soccer training goal. 4,286,786, Cl. 273-396.000.
Papantoniou, Christos: *See—*
Jacquet, Bernard; Papantoniou, Christos; and Mondet, Jean, 4,287,172, Cl. 424-47.000.
Pappas, Clifford J.; and Vickers, Albert F., to Frito-Lay, Inc. Hull containing compositions. 4,287,220, Cl. 426-623.000.
Parachem Corporation: *See—*
Hettinga, Siebolt, 4,286,731, Cl. 221-259.000.
Paradis, Joseph R.; and Kaleskas, Edward W., to Nypro, Inc. Control of fluid flow using longitudinally movable disc. 4,286,628, Cl. 137-843.000.
Parisien, Rudolph E. Fence system. 4,286,772, Cl. 256-65.000.
Parker, John J.: *See—*
Fouss, James L.; and Parker, John J., 4,286,808, Cl. 285-158.000.
Parker Manufacturing Company: *See—*
Porter, L. Steven; and Stockley, Raymond A., 4,286,904, Cl. 408-225.000.
Partridge, Charles C.: *See—*
Kacal, Gary W.; and Partridge, Charles C., 4,286,614, Cl. 137-72.000.
Pascarella, Vincent J.: *See—*
McDowell, John R.; Howard, Dennis D.; and Pascarella, Vincent J., 4,287,083, Cl. 252-182.000.
Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Suit for protecting a person's body from heat and gas. 4,286,439, Cl. 62-259.300.
Patel, Raman: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,287,324, Cl. 525-408.000.
Patrick, E. V.; Dickson, Howard K.; and Dunmire, Howard L., to United States of America, Army. Method and apparatus to fabricate image intensifier tubes. 4,286,833, Cl. 316-31.000.
Pattyn, Herman A.: *See—*
Vanassche, Willy J.; Pattyn, Herman A.; Moisar, Erik; and Klotzer, Sieghart, 4,287,296, Cl. 430-411.000.
Pauckert, Ronald P.: *See—*
Vrolyk, John J.; and Pauckert, Ronald P., 4,286,574, Cl. 126-400.000.
Paulish, Daniel J.; Meyerhoff, Albert J.; and Nickett, George R., to Burroughs Corporation. Method and apparatus for interfacing stations in a multiloop communications system. 4,287,592, Cl. 370-88.000.
Pawelka, Gustav J. Dual function handgrip control. 4,286,699, Cl. 192-1.000.
Paynter, Donald A.; and Burpee, Lee, to Arbiter Systems Incorporated. Satellite controlled clock. 4,287,597, Cl. 455-12.000.
Pcihoda, William W.: *See—*
Gursky, Michael T.; and Pcihoda, William W., 4,286,860, Cl. 354-319.000.
Pechmeze, Jacques P. E.; and Sureau, Robert F. M., to Produits Chimiques Ugine Kuhlmann. Water-soluble polyfluoro acid azo dyestuffs. 4,287,121, Cl. 260-186.000.
Pejouhy, Radi, to Texas Instruments Incorporated. Current interrupting apparatus having improved contact life. 4,287,499, Cl. 337-97.000.
Pellegri, Alberto, to Oronzio deNora Impianti Elettrochimici S.p.A. Process for generating a halogen with novel electrodes. 4,287,032, Cl. 204-128.000.
Pellegrino, Bernard. Cup holder. 4,286,742, Cl. 224-281.000.
Peltzer, Bernd: *See—*
Schlak, Ottfried; Moretto, Hans-Heinrich; Clarenz, Werner; Peltzer, Bernd; and Burgmer, Willi, 4,287,109, Cl. 260-29.20M.
Penfield, Scott R., Jr., to Combustion Engineering, Inc. Compression hub for a fusion reactor system. 4,287,022, Cl. 176-3.000.
Pennella, Filippo, to Phillips Petroleum Company. Conversion of olefinic compounds. 4,287,378, Cl. 585-643.000.
Pennwalt Corporation: *See—*
Cushman, Robert H., 4,287,423, Cl. 250-439.00P.
Peripheral Dynamics, Inc.: *See—*
Auchinleck, Richard J., 4,287,409, Cl. 235-475.000.
Perkin-Elmer Corporation, The: *See—*
Quick, Donald L., 4,287,466, Cl. 323-275.000.
Perraud, Raymond J.: *See—*
Benichou, Alain; and Perraud, Raymond J., 4,286,899, Cl. 405-260.000.
Peters, Thomas E.; and Bateman, John M., to Morrison-Knudsen Forest Products Company, Inc. Method for orientation and deposition of lignocellulosic material in the manufacture of pressed comminuted products having directional properties. 4,287,140, Cl. 264-23.000.
Peters, Wolfgang: *See—*
Merten, Gerhard; Peters, Wolfgang; Schneider, Hans-Dieter; and Heyer, Willy, 4,286,823, Cl. 299-43.000.
Peterson, Robert R., to Barry Wright Corporation. Flexible coupling. 4,286,442, Cl. 64-31.000.
Peterson, Robert R.; and Ventura, Daniel S., to Barry Wright Corporation. Cylindrical elastomeric bearing. 4,286,827, Cl. 308-26.000.
Peterson, Robert S., to Westinghouse Electric Corp. Method and apparatus for automatic gauge control system for tandem rolling mills. 4,286,447, Cl. 72-9.000.
Peterson, Terry M., to Chevron Research Company. Cadmium sulfide photovoltaic cell of improved efficiency. 4,287,383, Cl. 136-260.000.
Petillon, Gisele M. C.: *See—*
Guglielmetti, Robert J.; Garnier, Francis; Poirier, Yves M.; and Petillon, Gisele M. C., 4,287,337, Cl. 544-6.000.
Petitpierre, Jean C., to Ciba-Geigy Corporation. Chromogenic propenylenesulfone compounds. 4,287,336, Cl. 542-472.000.
Petlak, Joseph J.; and Salafia, Joseph M., to Petlak, Joseph J. Air heater. 4,286,943, Cl. 431-352.000.
Petrova, Natalia P.: *See—*
Kapitanov, Nikolai N.; Petrova, Natalia P.; and Ippolitov, Vladimir V., 4,286,598, Cl. 128-303.00R.
Peuler, Jacob D.: *See—*
Johnson, Garland A.; and Peuler, Jacob D., 4,287,368, Cl. 568-436.000.
Pfaffle, Ernst, to Hans Sickinger Company. Device for facilitating separation of sheet groups. 4,286,908, Cl. 414-115.000.
Pfau, Jean: *See—*
Convers, Danielle; Balleys, Francois; and Pfau, Jean, 4,287,404, Cl. 219-69.00W.
Pfau, Paul; Fausel, Thomas E.; and Grunder, Arthur, to Simom S.A. Method of reproducing graphic material on an intaglio form. 4,287,537, Cl. 358-299.000.
Pfauter, Hermann: *See—*
Baumann, Erich; Mente, Hans-Peter; and Muller, Wolfgang, 4,286,479, Cl. 74-724.000.
Pfefferle, William C. Method of treating flue deposits and composition therefor. 4,287,090, Cl. 252-428.000.
Pfeifer, William. Merchandise hanger assembly. 4,286,764, Cl. 248-220.300.
Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Huang, Liang H.; Oscarson, John R.; Shibakawa, Riichiro; and Tone, Junsuke, 4,287,182, Cl. 424-118.000.
Elliott, Donald O., Jr., 4,287,425, Cl. 250-445.00T.
Hess, Hans-Jurgen E.; Bindra, Jasjit S.; and Shah, Praful K., 4,287,341, Cl. 544-285.000.
Kellogg, Michael S., 4,287,181, Cl. 424-114.000.
Pharmakidis, Panayiotis D. Heat retention wall system. 4,286,420, Cl. 52-404.000.
Philip Morris Incorporated: *See—*
Swain, James W.; and Crayton, Frank H., 4,286,606, Cl. 131-276.000.
Phillips, Gary M., to Medtronic, Inc. Compositions of polyvinylpyridine and iodine. 4,287,319, Cl. 525-336.000.
Phillips, Kenneth G.; and Harris, Paul J., to Nalco Chemical Company. Improved method of preparing high molecular weight polyamines. 4,287,331, Cl. 528-397.000.

Phillips Petroleum Co.: *See—*
Cooper, William T., 4,287,023, Cl. 201-31.000.
Eastman, Alan D.; and Gardner, Lloyd E., 4,287,050, Cl. 208-215.000.
Janzen, Jay, 4,286,881, Cl. 356-440.000.
Pennella, Filippo, 4,287,378, Cl. 585-643.000.
Selman, Charles M., 4,287,091, Cl. 252-429.00B.
Tabler, Donald C.; and Johnson, Marvin M., 4,287,049, Cl. 208-180.000.
Uber, Raymond F.; Childers, Clifford W.; and Naylor, Floyd E., 4,287,313, Cl. 525-91.000.
Vinyard, Roy E., 4,286,366, Cl. 29-157.400.
Photocircuits Division of Kollmorgen Corp.: *See—*
Leech, Edward J., 4,287,253, Cl. 428-323.000.
Pickel, Hans: *See—*
Neitz, Alfred; Pickel, Hans; and D'Alfonso, Nunzio, 4,286,556, Cl. 123-279.000.
Pieslak, George; Erbes-Mrsny, Kathleen A.; and Fritchle, Elena C., to Raychem Corporation. Protecting metal substrates from corrosion. 4,287,034, Cl. 204-147.000.
Pietruck, Horst: *See—*
Hammer, Klaus-Dieter; Schroder, Martin; Pietruck, Horst; and Bytzek, Max, 4,287,217, Cl. 426-105.000.
Pietschmann, Helmut, to Sybron Corporation. Dental treatment apparatus. 4,286,948, Cl. 433-77.000.
Pigeon, Marcel; and de Maquille, Yannick, to Rhone-Poulenc-Graphic. Lithographic plate of tin-plated steel and method of manufacture. 4,287,288, Cl. 430-169.000.
Pignone, Joseph. Dual buoyancy device. 4,286,539, Cl. 114-331.000.
Pinkham, Clinton L., to General Electric Company. Amplitude limited varactor tuned L-C oscillator. 4,287,489, Cl. 331-117.00R.
Pinsler, Heinz W.: *See—*
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,287,279, Cl. 430-58.000.
Pircher, Georges, to Thomson-CSF. Optical fibre interferometric gyrometer with polarization switching. 4,286,878, Cl. 356-350.000.
Pirvics, Juris; and Vazirani, Hargovind N., to Bell Telephone Laboratories, Incorporated. Process for producing cover coated electronic circuits. 4,287,226, Cl. 427-54.100.
Pitman-Moore, Inc.: *See—*
Bittle, James L., 4,287,178, Cl. 424-89.000.
Pitney Bowes Inc.: *See—*
Cornwall, Frank H.; and Ross, William A., 4,286,863, Cl. 355-3.0FU.
Stelben, John J.; Siladi, Kim E.; Herman, George A., Jr.; and Vesel, John E., 4,286,866, Cl. 355-14.00D.
Pittasch, Willi, to Richard Heinze GmbH & Co. KG. Furniture hinge. 4,286,352, Cl. 16-130.000.
Pittway Corporation: *See—*
Nagel, Richard A., 4,287,517, Cl. 340-636.000.
Place, Virgil A.; and Crow, Harold L. Vaginal contraceptive shield. 4,286,593, Cl. 128-260.000.
Plaskon Products, Inc.: *See—*
Rosler, Robert K.; Gore, Donald B.; Riddell, Malcolm N.; and Hunt, Earl R., 4,287,105, Cl. 260-18.0EP.
Plastics Technology Associates, Inc.: *See—*
Hostettler, Fritz, 4,287,307, Cl. 521-51.000.
Platt, John R.; and Benno, Edward L., to Illinois Tool Works Inc. Two-way container package. 4,286,711, Cl. 206-216.000.
Ploss, Helmut; and Remensperger, Alfons, to Warner Electric Brake & Clutch Company. Ice breaking and mud deflecting device for a ball screw and nut assembly. 4,286,793, Cl. 277-165.000.
Plotz, Kurt: *See—*
Gessner, Wolfgang; Kuhn, Helmut; and Plotz, Kurt, 4,287,248, Cl. 428-137.000.
Pochet, Andre G. G.: *See—*
Boute, Raymond T. G.; De Kinder, Wilfried L. J.; Neutjens, Gustaaf W. T.; Pochet, Andre G. G.; Vanderschoot, Jan P. M.; and Van Remortel, Jacques D. A., 4,287,590, Cl. 370-59.000.
Pocock, Robert E., to Babcock & Wilcox Company, The. Flexible filter. 4,286,472, Cl. 73-863.240.
Pohl, Winfried, to Robert Bosch GmbH. Method and system for creating a geometric figure at a selected position on the screen of a cathode ray tube. 4,287,534, Cl. 358-183.000.
Poirier, Yves M.: *See—*
Guglielmetti, Robert J.; Garnier, Francis; Poirier, Yves M.; and Petillon, Gisele M. C., 4,287,337, Cl. 544-6.000.
Polaroid Corporation: *See—*
Johnson, Bruce K., 4,286,851, Cl. 354-53.000.
Norris, Philip R., 4,286,853, Cl. 354-123.000.
Polfus, William F.: *See—*
West, George C.; and Polfus, William F., 4,287,261, Cl. 428-421.000.
Poli, Giovanni; and Poli, Vincenzo. Underwater paving machine and concrete blocks therefor. 4,286,895, Cl. 405-17.000.
Poli, Vincenzo: *See—*
Poli, Giovanni; and Poli, Vincenzo, 4,286,895, Cl. 405-17.000.
Pollock, David C. I., to C-I-L Inc. Method maintaining a constant gas to solids ratio in effluent from a long vertical shaft bioreactor. 4,287,070, Cl. 210-626.000.
Polyansky, Oleg J.: *See—*
Divin, Jury Y.; Polyansky, Oleg J.; and Shulman, Alexandr Y., 4,287,418, Cl. 250-336.000.
Pomares, Francis. Handle attaching means for rakes and the like. 4,286,893, Cl. 403-301.000.
Poncha, Rustom P.: *See—*
Booth, Elwood F., Jr.; and Poncha, Rustom P., 4,286,967, Cl. 23-298.000.
Pond, James W., Jr., to B. F. Goodrich Company, The. Replaceable tread tires. 4,286,644, Cl. 152-354.00R.
Ponsinet, Gerard: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,287,197, Cl. 424-258.000.
Popov, Alexandr D.; Solomin, Vladimir A.; Teptikov, Nikolai R.; and Demchenko, Jury D. Cylindrical linear induction motor. 4,287,444, Cl. 310-13.000.
Porter, James R.: *See—*
Jones, John E.; Fodor, William G.; Porter, James R.; and Edgell, James E., 4,286,610, Cl. 132-76.400.
Porter, L. Steven; and Stockley, Raymond A., to Parker Manufacturing Company. Wood bit. 4,286,904, Cl. 408-225.000.
Porzel, Francis B., to United States of America, Navy. Module to prevent sympathetic detonations in munitions. 4,286,708, Cl. 206-3.000.
Potomac Applied Mechanics: *See—*
Silcott, Philip B.; and Stubbings, James H., 4,286,739, Cl. 224-156.000.
Potomac Applied Mechanics, Inc.: *See—*
Spevak, Stephen T., 4,286,832, Cl. 312-283.000.
Potts, James E., to Union Carbide Corporation. Orthopedic devices, materials and methods. 4,286,586, Cl. 128-90.000.
Prall, Paul D., to Anchor Hocking Corporation. Cordierite crystal-containing glaze. 4,287,260, Cl. 428-410.000.
Pricer, Wilbur D., to International Business Machines Corporation. Sense amplifying system for memories with small cells. 4,287,576, Cl. 365-203.000.
Procter & Gamble Company, The: *See—*
Siklosi, Michael P., 4,287,080, Cl. 252-104.000.
Tolfo, Flavio; and Barrat, Christian R., 4,287,082, Cl. 252-174.120.
Proctor & Gamble Company, The: *See—*
Laughlin, Robert G., 4,287,174, Cl. 424-78.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Pechmeze, Jacques P. E.; and Sureau, Robert F. M., 4,287,121, Cl. 260-186.000.
Proge Groupement d'Interet Economique: *See—*
Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, 4,287,270, Cl. 429-103.000.
Promis, George G.; Smith, Gerald L.; and Wilson, John C., to International Business Machines Corporation. Motor driving system. 4,287,461, Cl. 318-571.000.
Prosenbauer & Co. Maschinenhandel: *See—*
Prosenbauer, Otto, 4,286,510, Cl. 99-533.000.
Prosenbauer, Otto, to Prosenbauer & Co. Maschinenhandel. Device for injecting a treating liquid into material to be treated. 4,286,510, Cl. 99-533.000.
Prosl, Frank R.: *See—*
Sampson, Edward J.; and Prosl, Frank R., 4,286,584, Cl. 128-1.00R.
Prouty, Jonathan J. Kite-like flying device and accessories thereof. 4,286,762, Cl. 244-153.00R.
Prudhomme, Pierre; Lafaye, Jean-Jacques; and Rey, Raymond, to Seperef - TMP Societe pour l'Equipment des Reseaux en Canalisations de Matieres Plastiques. Process for impregnating spools of textile with a liquid composition. 4,287,237, Cl. 427-238.000.
Pump, Wichard: *See—*
Engelhard, Forest; Kuhn, Rainer; Pump, Wichard; Riess, Reinhard; and Streib, Hugo, 4,287,262, Cl. 428-461.000.
Puntil, Dennis M.: *See—*
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Purex Corporation: *See—*
Robinson, Ronald A., 4,287,079, Cl. 252-99.000.
Queen, Daniel, to RHR Industries, Ltd. Microphone assembly for speech recording using noise-adaptive output level control. 4,287,391, Cl. 179-1.00P.
Quertain, Raoul: *See—*
Sears, I. Weir, Jr.; and Quertain, Raoul, 4,287,143, Cl. 264-46.800.
Quick, Donald L., to Perkin-Elmer Corporation, The. Control circuitry for maintaining forward and reflected transmission line power at a predetermined safe level. 4,287,466, Cl. 323-275.000.
R. D. Werner Co., Inc.: *See—*
Roche, John N., 4,286,353, Cl. 16-143.000.
R. J. Reynolds Tobacco Company: *See—*
Conrad, Lucas J., 4,286,910, Cl. 414-221.000.
Rabelos, Nicholas A., to Simpson, Charles J. Coin bank. 4,286,526, Cl. 109-73.000.
Raber, Samuel; Wynne, John M.; and Heim, Alan M., to Baker Industries, Inc. Fire detection system with multiple output signals. 4,287,515, Cl. 340-584.000.
Radiation Dynamics, Inc.: *See—*
Derbyshire, Rodney L., 4,287,011, Cl. 156-85.000.
Raines, Kenneth, to Burron Medical Inc. Syringe cap. 4,286,591, Cl. 128-215.000.
Raines, Kenneth, to Burron Medical Inc. Filter hub assembly. 4,287,065, Cl. 210-445.000.
Ralph, Harold D.: *See—*
Forsyth, Clark H.; Van Hooydonk, Anton H. G.; and Ralph, Harold D., 4,286,672, Cl. 172-311.000.
Ramesbothom, Arde: *See—*
Gerner, James L.; and Ramesbothom, Arde, 4,286,891, Cl. 403-7.000.

Ramey, Richard R.: *See—*
Floyd, Don; Whittle, Lee M.; and Ramey, Richard R., 4,286,513, Cl. 100-102.000.

Rapp, Peter: *See—*
Wagner, Fritz; Rapp, Peter; Bock, Hans; Lindorfer, Walter; Schulz, Walther; and Gebetsberger, Wilhelm, 4,286,660, Cl. 166-246.000.

Ratcliffe, Charles T./to Allied Corporation. Process for preparing epoxides. 4,287,128, Cl. 260-348.230.

Rath, Hans P.: *See—*
Hahn, Klaus; Rath, Hans P.; and Walter, Manfred, 4,287,258, Cl. 428-407.000.

Ray, William E.: *See—*
Simington, Jack F.; and Ray, William E., 4,286,788, Cl. 273-359.000.

Raybestos-Manhattan, Inc.: *See—*
Zucker, Jerry, 4,286,999, Cl. 106-308.00Q.

Raychem Corporation: *See—*
Midgley, John A.; and Nyberg, David D., 4,287,012, Cl. 156-86.000.
Pieslak, George; Erbes-Mrsny, Kathleen A.; and Fritchle, Elena C., 4,287,034, Cl. 204-147.000.
Smith-Johannsen, Robert; and Walker, Jack M., 4,286,376, Cl. 29-611.000.

Raytheon Company: *See—*
Richards, Gerald P., 4,287,506, Cl. 340-146.30R.
Rudko, Robert I.; and Barnie, James W., 4,287,483, Cl. 331-94.5PE.

RCA Corporation: *See—*
Demers, Robert R., 4,287,256, Cl. 428-375.000.
Simshauser, Elvin D.; and Nosker, Richard W., 4,287,587, Cl. 369-50.000.
Siryj, Bohdan W.; and Gilson, Alan P., 4,286,790, Cl. 369-36.000.
Young, William C., 4,287,496, Cl. 333-248.000.
Ziegel, Douglas H., 4,286,414, Cl. 51-229.000.

Read, Marjorie S.: *See—*
Brinkhous, Kenneth M.; and Read, Marjorie S., 4,287,087, Cl. 252-408.000.

Reczek, James A.: *See—*
Chapman, Derek D.; and Reczek, James A., 4,287,292, Cl. 430-222.000.

Reder, Rodney: *See—*
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Redon Trust: *See—*
Marer, Joseph, 4,286,521, Cl. 102-200.000.

Reeves Brothers, Inc.: *See—*
West, George C.; and Polfus, William F., 4,287,261, Cl. 428-421.000.

Rehrig, B. Houston. Telescoping shopping cart. 4,286,795, Cl. 280-33.99H.

Reichard, Michel; and Krassoulia, Georges, to Societe Europeene de Propulsion. Ignition system for combustible gases or liquids. 4,286,431, Cl. 60-39.82E.

Reil, Wilhelm; and Trabitzsch, Jorg, to Tetra Pak International AB. Packing laminate provided with crease lines. 4,287,247, Cl. 428-129.000.

Reischl, Artur; Mack, Kurt; and Sahlmen, Friedhelm, to Bayer Aktiengesellschaft. Process for the improved working up of effluent. 4,287,069, Cl. 210-609.000.

Reisdorf, Daniel: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,287,197, Cl. 424-258.000.

Reiss, Wolfgang: *See—*
Baer, Karl; Reiss, Wolfgang; Schroeder, Wolfgang; and Voges, Dieter, 4,287,099, Cl. 252-465.000.

Reistad, Bengt R.: *See—*
Bergman, Ernst L. A.; Blomberg, Peter E.; Enger, Lars S.; Reistad, Bengt R.; and Wallgren, Sonny O., 4,286,569, Cl. 126-85.00B.

Relyea, Lloyd A.: *See—*
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,287,279, Cl. 430-58.000.

Remensperger, Alfons: *See—*
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Research Foundation of State University of New York, The: *See—*
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,287,191, Cl. 424-230.000.

Research Products Corp.: *See—*
Fowler, Thomas P., 4,286,751, Cl. 236-44.00R.

Research Triangle Institute: *See—*
Brinkhous, Kenneth M.; and Read, Marjorie S., 4,287,087, Cl. 252-408.000.

Retrum, Rowland. Apparatus for hydrolyzing keratinaceous material. 4,286,884, Cl. 366-149.000.

Reuvekamp, Antonius H. J., to U.S. Philips Corporation. Transmission bridge for a subscriber's circuit. 4,287,393, Cl. 179-70.000.

Rey, Raymond: *See—*
Prudhomme, Pierre; Lafaye, Jean-Jacques; and Rey, Raymond, 4,287,237, Cl. 427-238.000.

Reytblatt, Zinovy V. Polariscope and filter therefor. 4,286,843, Cl. 350-396.000.

Rhoades, Thomas S.: *See—*
Scott, David R.; and Rhoades, Thomas S., 4,287,511, Cl. 340-541.000.

Rhodes, Charles M.: *See—*
Hoover, Richard B.; and Rhodes, Charles M., 4,287,152, Cl. 422-40.000.

Rhone-Poulenc-Graphic: *See—*
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Rhone-Poulenc Industries: *See—*
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Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,287,197, Cl. 424-258.000.
Rieux, Jean-Philippe, 4,287,111, Cl. 260-29.6RW.
Soula, Gerard, 4,287,125, Cl. 260-340.90R.

RHR Industries, Ltd.: *See—*
Queen, Daniel, 4,287,391, Cl. 179-1.00P.

Rich, Martin D.: *See—*
Rich, Norman I.; and Rich, Martin D., 4,287,218, Cl. 426-272.000.

Rich, Norman I.; and Rich, Martin D. Ready-to-eat molded meat product. 4,287,218, Cl. 426-272.000.

Rich, Richard D., to Loctite Corporation. Accelerator for curable compositions. 4,287,330, Cl. 526-270.000.

Richard Heinze GmbH & Co. KG: *See—*
Pittasch, Willi, 4,286,352, Cl. 16-130.000.

Richard Hirschmann Radiotechnisches Werk: *See—*
Siegwarth, Martin, 4,287,510, Cl. 340-384.00E.

Richards, Gerald P., to Raytheon Company. Voltage generator with self-contained performance monitor. 4,287,506, Cl. 340-146.30R.

Richardson, A. Alan: *See—*
Biles, Don L.; and Richardson, A. Alan, 4,287,044, Cl. 204-231.000.

Richert, Manfred, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Safety toe unit for a ski binding. 4,286,801, Cl. 280-629.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Laszlo; Szuucs, Erzsebet; and Kiss, Gabriella, 4,287,194, Cl. 424-248.510.

Ricoh Company, Ltd.: *See—*
Ohnuma, Teruyuki; Miyakawa, Seiichi; and Oyama, Hajime, 4,286,543, Cl. 118-657.000.
Satomi, Toyokazu; Ohminato, Mitsuru; and Tabata, Yasuhiro, 4,286,865, Cl. 355-14.0CU.

Riddell, Malcolm N.: *See—*
Rosler, Robert K.; Gore, Donald B.; Riddell, Malcolm N.; and Hunt, Earl R., 4,287,105, Cl. 260-18.0EP.

Ridenour, Larry: *See—*
Milstead, Charles W.; and Ridenour, Larry, 4,286,794, Cl. 277-212.0FB.

Riess, Reinhard: *See—*
Engelhard, Forest; Kuhn, Rainer; Pump, Wichard; Riess, Reinhard; and Streib, Hugo, 4,287,262, Cl. 428-461.000.

Rieux, Jean-Philippe, to Rhone-Poulenc Industries. Compositions useful for consolidation of mining deposits. 4,287,111, Cl. 260-29.6RW.

Riley, Robert E.; Newkirk, Lawrence R.; Valencia, Flavio A.; and Wallace, Sr., Terry C., to United States of America, Energy. Preparation and uses of amorphous boron carbide coated substrates. 4,287,259, Cl. 428-408.000.

Ring, David F., to Johnson & Johnson Products, Inc. Compact tampon applicator assembly. 4,286,595, Cl. 128-263.000.

Riseberg, Leslie A.: *See—*
Feuersanger, Alfred E.; Riseberg, Leslie A.; and McNeill, William H., 4,287,454, Cl. 315-178.000.

Rite-Hite Corporation: *See—*
Hahn, Norbert, 4,286,410, Cl. 49-33.000.

Ritter, Ernst; Schwartz, Reinhard; Muller, Rolf; and Bohm, Martin, to Robert Bosch GmbH. Pneumatic diaphragm control member for a fuel injection device for internal combustion engines. 4,286,559, Cl. 123-383.000.

Ritter, Ernst: *See—*
Djordjevic, Ilija; Ritter, Ernst; and Lang, Thomas, 4,286,558, Cl. 123-368.000.

Riva, Ermete: *See—*
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Robert Bosch GmbH: *See—*
Djordjevic, Ilija; Ritter, Ernst; and Lang, Thomas, 4,286,558, Cl. 123-368.000.
Hafele, Walter; and Schenk, Bernhard, 4,286,931, Cl. 417-490.000.
Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, 4,287,565, Cl. 364-580.000.
Leiber, Heinz, 4,286,626, Cl. 137-625.650.
Leiber, Heinz, 4,286,826, Cl. 303-114.000.
Pohl, Winfried, 4,287,534, Cl. 358-183.000.
Ritter, Ernst; Schwartz, Reinhard; Muller, Rolf; and Bohm, Martin, 4,286,559, Cl. 123-383.000.
Stumpp, Gerhard; and Wessel, Wolf, 4,286,615, Cl. 137-117.000.

Robert, Georg: *See—*
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Roberts, Michael G.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,286,996, Cl. 106-282.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,286,997, Cl. 106-282.000.

Robertshaw Controls Company: *See—*
Strachan, Robert; and Goodhouse, Carl J., 4,287,583, Cl. 368-10.000.

Robertson, Merrill L. Adjustable balance, extension boat trailer. 4,286,906, Cl. 414-477.000.

Robinson, Ronald A., to Purex Corporation. Liquid cleanser formula. 4,287,079, Cl. 252-99.000.

Robinson, Ruth A. Method for preserving plant material. 4,287,222, Cl. 427-4.000.

Robinson, Storm D.; and Rode, Douglas M., to Combustion Engineering, Inc. System for ash removal. 4,286,527, Cl. 110-165.00A.

Rocco, William A.: *See—*
Wentorf, Robert H., Jr.; and Rocco, William A., 4,287,168, Cl. 423-446.000.

Roche, Alain-Gilbert, to Societe Anonyme Automobiles Citroen. Oleopneumatic suspension with telescopic leg for vehicles. 4,286,802, Cl. 280-693.000.

Roche, John N., to R. D. Werner Co., Inc. Multi-element connection for structural members. 4,286,353, Cl. 16-143.000.

Roche, Mary E. Educational toy. 4,286,952, Cl. 434-259.000.

Rockwell International Corporation: *See—*
Alexander, Robert H., 4,286,458, Cl. 73-862.210.
Ayres, Robert L., 4,286,799, Cl. 280-96.100.
Lee, Winston F. Z.; White, Raymond V.; and Sciulli, Felice M., 4,286,471, Cl. 73-861.840.
Vrolyk, John J.; and Pauckert, Ronald P., 4,286,574, Cl. 126-400.000.

Rockwool International A/S: *See—*
Holbek, Kjeld, 4,287,142, Cl. 264-37.000.

Rode, Douglas M.: *See—*
Robinson, Storm D.; and Rode, Douglas M., 4,286,527, Cl. 110-165.00A.

Rodionov, Evgeny I.: *See—*
Bashnin, Oleg I.; Semenov, Vasily V.; Fedorov, Vasily N.; Rodionov, Evgeny I.; Davidson, Boris A.; and Schegolev, Gleb S., 4,287,429, Cl. 290-40.00C.

Roeder, Allan W.: *See—*
Eaton, William G.; and Roeder, Allan W., 4,287,475, Cl. 328-167.000.

Roerig, Arnold J.: *See—*
Justus, Edgar J.; and Roerig, Arnold J., 4,287,021, Cl. 162-358.000.

Rogers, Stanley L. One way fishing sinker. 4,286,403, Cl. 43-43.120.

Rogers, William H., to Alpha Plastics, Inc. Handgun holster. 4,286,741, Cl. 224-193.000.

Rohm and Haas Company: *See—*
Hurt, William S., 4,287,189, Cl. 424-210.000.

Rohrbach, William R., to Western Electric Company, Inc. Mode-indicating mechanisms for push-button operated devices. 4,287,401, Cl. 200-308.000.

Rokop Corporation: *See—*
Rokop, Joseph; and Rokop, Nikolaus, 4,286,649, Cl. 164-446.000.

Rokop, Joseph; and Rokop, Nikolaus, to Rokop Corporation. Apparatus for storing a continuous casting starting bar in elevated position. 4,286,649, Cl. 164-446.000.

Rokop, Nikolaus: *See—*
Rokop, Joseph; and Rokop, Nikolaus, 4,286,649, Cl. 164-446.000.

Roller Bearing Company of America: *See—*
Rongley, Raymond A., 4,286,894, Cl. 403-372.000.

Rolls-Royce Limited: *See—*
Gale, Anthony G., 4,286,924, Cl. 416-97.00R.

Rongley, Raymond A., to Roller Bearing Company of America. Tolerance rings. 4,286,894, Cl. 403-372.000.

Ronning, Albert J., to Minnesota Mining & Manufacturing Company. Comformable, multilayered tape adherent on one surface to fusable metal alloys and on the other surface to ophthalmic lens blanks. 4,287,013, Cl. 156-242.000.

Roof, John K. Musical instrument training device. 4,286,495, Cl. 84-485.00R.

Roots, Philip S., to Van Tongeren U.K. Limited. Support system for internal structure in a high temperature vessel. 4,287,158, Cl. 422-241.000.

Roper Corporation: *See—*
Stewart, Charles; and Condon, Richard W., 4,286,682, Cl. 180-9.24A.

Roskott, Lodewijk: *See—*
Beyleveld, Wilhelmus M.; and Roskott, Lodewijk, 4,287,371, Cl. 568-563.000.

Rosler, Robert K.; Gore, Donald B.; Riddell, Malcolm N.; and Hunt, Earl R., to Plaskon Products, Inc. Flash resistant epoxy encapsulating composition and process for preparing same. 4,287,105, Cl. 260-18.0EP.

Ross, Cecil J.; and Thompson, John F., to W. R. Weaver Company. Sight with reduced friction line of sight adjustment. 4,286,388, Cl. 33-246.000.

Ross, William A.: *See—*
Cornwall, Frank H.; and Ross, William A., 4,286,863, Cl. 355-3.0FU.

Roussel Uclaf: *See—*
Heymes, Rene; and Lutz, Andre, 4,287,193, Cl. 424-246.000.

Row, Scott: *See—*
Bang, Chang; and Row, Scott, 4,286,618, Cl. 137-408.000.

Rowe Corporation: *See—*
Lemond, Phillip E.; La Shomb, S. Donald; and Rowe, Oliver R., Sr., 4,286,398, Cl. 37-2.00R.

Rowe, Joseph R.; and Sanders, Eugene T., to Southwire Company. Dumpable crop bar container. 4,286,913, Cl. 414-422.000.

Rowe, Oliver R., Sr.: *See—*
Lemond, Phillip E.; La Shomb, S. Donald; and Rowe, Oliver R., Sr., 4,286,398, Cl. 37-2.00R.

Rowley, Gerald L.: *See—*
Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., 4,287,300, Cl. 435-5.000.

Rubel, Laurence P. Apparatus for monitoring the delivery of material. 4,286,487, Cl. 83-58.000.

Rubinstein, Herbert: *See—*
Rubinstein, Morton K., 4,286,596, Cl. 128-270.000.

Rubinstein, Morton K., to Rubinstein, Herbert. Tampon containing a liquid medicant. 4,286,596, Cl. 128-270.000.

Rubner, Roland; Kuhn, Eberhard; and Ahne, Hellmut, to Siemens Aktiengesellschaft. Method for the preparation of relief structures by phototechniques. 4,287,294, Cl. 430-306.000.

Rudko, Robert I.; and Barnie, James W., to Raytheon Company. Transverse excitation laser. 4,287,483, Cl. 331-94.5PE.

Rudolf, Peter; Steck, Werner; Koester, Eberhard; Ohlinger, Manfred; and Jaeckh, Christof, to BASF Aktiengesellschaft. Manufacture of acicular cobalt-containing magnetic iron oxide. 4,287,233, Cl. 427-127.000.

Rudolph, Pamela; Krieder, Robert D.; and O'Keefe, Patrick J., Jr., to Bendix Corporation, The. Speed control for heavy duty trucks. 4,286,685, Cl. 180-176.000.

Rudy, Marion F., to Bogert, Robert C., a part interest. Elastomeric cushioning devices for products and objects. 4,287,250, Cl. 428-166.000.

Rugen, Donald F.: *See—*
Earhart, Harold W.; and Rugen, Donald F., 4,287,074, Cl. 585-6.300.

Ruhe, Anthony; and Nickerson, James H. D., to Foster Wheeler Limited. Heat exchanger tube supports. 4,286,654, Cl. 165-172.000.

Rumps, Norbert A., to Teletype Corporation. Connector block with strain prevention. 4,286,836, Cl. 339-97.00R.

Rupp, Arthur F.; and Woo, David V., to United States of America, Energy. Preparation of high purity phosphorus. 4,287,165, Cl. 423-323.000.

Russell, Robert C. H., to National Research Development Corporation. Embankments construction. 4,287,141, Cl. 264-33.000.

Ryan, Charles T.: *See—*
Bachmann, Klaus J.; and Ryan, Charles T., 4,287,527, Cl. 357-30.000.

Ryan, Kenneth M.: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,287,123, Cl. 260-239.00A.

Rybalkin, Evgeny P.: *See—*
Fastritsky, Viktor S.; Fishkin, Pavel S.; and Rybalkin, Evgeny P., 4,287,474, Cl. 324-233.000.

Rybnikov, Sergei I.: *See—*
Godin, Eduard M.; Anoshko, Vladimir A.; Gavrilov, Anatoly N.; Akhmerov, Almas F.; Zverkov, Garik E.; Semenov, Valentin P.; Grachev, Vladimir V.; Chepurin, Valentin M.; Mikhailov, Viktor Y.; and Rybnikov, Sergei I., 4,286,450, Cl. 72-59.000.

Ryckman, George, to Service (Engineers) Limited. Oval dish former. 4,286,938, Cl. 425-265.000.

S.A.E.I. Celite: *See—*
Benichou, Alain; and Perraud, Raymond J., 4,286,899, Cl. 405-260.000.

S.S.O.S. Sub Sea Oil Services S.p.A.: *See—*
Santi, Giunio G., 4,286,565, Cl. 123-568.000.

Saarbergwerke A.G.: *See—*
Muller, Rudolf; Klinkner, Hans-Guido; and Culmann, Gunter, 4,286,994, Cl. 106-109.000.

Sac Membrane Products Corporation: *See—*
Davis, William J., 4,287,275, Cl. 429-206.000.

Sachdev, Harbans S.: *See—*
Kadehjian, Leo J.; Sachdev, Harbans S.; and Snyder, Clinton D., 4,286,989, Cl. 106-22.000.

Sackmann, Gunter: *See—*
Himmelmann, Wolfgang; Bruck, Rolf; Sauerteig, Wolfgang; Kruck, Peter; Kolb, Gunter; and Sackmann, Gunter, 4,287,299, Cl. 430-537.000.

Sacks, Paul S.: *See—*
Cann, Peter L.; and Sacks, Paul S., 4,286,435, Cl. 62-81.000.

Safaev, Abidzhan; Kadyrov, Abduvasit; Saidaliev, Zhakhongir G.; and Faiziev, Tulyagan F. N,N-bis-(decahydroquinolyl-N-methyl-)imidazolin-2-thiones. 4,287,344, Cl. 546-164.000.

Saffley, Edgar F., to ACF Industries, Inc. Machine control apparatus. 4,286,446, Cl. 72-5.000.

Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Godard, Pierre; and Billot, Michel, 4,287,465, Cl. 320-56.000.

Sagisaka, Yasuo; Kondo, Toshio; and Kobayashi, Akio, to Nippondenso Co., Ltd. Method and apparatus for controlling an ignition timing. 4,286,560, Cl. 123-417.000.

Sahlmen, Friedhelm: *See—*
Reischl, Artur; Mack, Kurt; and Schlmen, Friedhelm, 4,287,069, Cl. 210-609.000.

Saidaliev, Zhakhongir G.: *See—*
Safaev, Abidzhan; Kadyrov, Abduvasit; Saidaliev, Zhakhongir G.; and Faiziev, Tulyagan F., 4,287,344, Cl. 546-164.000.

St. Hilaire, A. Robert: *See—*
Taylor, Neil J.; St. Hilaire, A. Robert; and Johnson, James L., 4,286,409, Cl. 47-40.500.

Saito, Yasunori, to Sumitomo Electric Industries, Ltd. Phase stabilization type coaxial cable. 4,287,384, Cl. 174-29.000.

Saito, Yoshiharu: *See—*
Inoue, Haruo; Yokota, Shigeru; and Saito, Yoshiharu, 4,286,819, Cl. 296-65.00R.

Saitou, Tadashi: *See—*
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,286,933, Cl. 418-15.000.

Saizi, Mituhiro: *See—*
Tanimoto, Akira; and Saizi, Mituhiro, 4,287,584, Cl. 368-63.000.

Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary vane pump with pairs of end inlet or outlet ports. 4,286,933, Cl. 418-15.000.

Sakamoto, Hitoshi; and Wakisaka, Yoshiaki, to Sony Corporation. Magnetic head tracking control system. 4,287,538, Cl. 360-10.000.

Sakanishi, Akihiro: *See—*
Ueda, Kenji; and Sakanishi, Akihiro, 4,287,046, Cl. 204-266.000.

Sakuma, Hiraku, to Nippon Electric Co., Ltd. Insulated gate field effect transistor. 4,287,526, Cl. 357-23.000.

Sakuramoto, Akira: *See—*
Kitagawa, Yoshihiko; Hanamura, Yoshimi; Yuyama, Masahiro; Moritani, Masahiko; Sakuramoto, Akira; and Suzuki, Mikio, 4,287,317, Cl. 525-309.000.

Sala, Learco: *See—*
Sisti, Giorgio; Riva, Ermete; and Sala, Learco, 4,286,456, Cl. 73-23.100.

Salafia, Joseph M.: *See—*
Petlak, Joseph J.; and Salafia, Joseph M., 4,286,943, Cl. 431-352.000.

Saline Processors, Inc.: *See—*
Garrett, Donald E.; and Laborde, Martin, 4,287,163, Cl. 423-283.000.

Salonia, Joseph R.: *See—*
Goller, Glen J.; and Salonia, Joseph R., 4,287,232, Cl. 427-113.000.

Salter, Lowell S., Jr., to Morgan Construction Company. Combination roll neck and bearing assembly. 4,286,830, Cl. 308-207.00R.

Samanta, Shyam K., to Ford Motor Company. Method of machining steel, malleable or nodular cast iron. 4,286,905, Cl. 409-132.000.

Samejima, Kazuhiro: *See—*
Ohnishi, Masaru; and Samejima, Kazuhiro, 4,287,524, Cl. 346-154.000.

Sampson, Edward J.; and Prosl, Frank R., to Infusaid Corporation. Septum locating apparatus. 4,286,584, Cl. 128-1.00R.

Samu, Mihaly: *See—*
Fabian, Zsolt; Samu, Mihaly; and Balogh, Barnabas, 4,287,470, Cl. 324-61.00R.

Sanders, Eugene T.: *See—*
Rowe, Joseph R.; and Sanders, Eugene T., 4,286,913, Cl. 414-422.000.

Sanders, James M.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,287,081, Cl. 252-174.110.

Sandoz, Inc.: *See—*
Babington, Ronald G.; Harrington, F. Eugene; and Houlihan, William J., 4,287,196, Cl. 424-251.000.
Kathawala, Faizulla G., 4,287,355, Cl. 560-18.000.

Sandoz Ltd.: *See—*
Buser, Rolf; Palacin, Francis; Robert, Georg; and Somm, Franz, 4,286,961, Cl. 8-532.000.

Sandrock, Gerhard: *See—*
Brunner, Erwin; Schubert, Eckart; Lindner, Alfred; Merger, Franz; Volkamer, Klaus; Strohmeyer, Max; and Sandrock, Gerhard, 4,287,379, Cl. 585-839.000.

Sands, John L.: *See—*
Garman, John A.; Mamuzic, Rastko I.; McDonald, Robert B.; Sands, John L.; and Thompson, Gregory, 4,287,373, Cl. 568-639.000.

Sandvik, Ind.: *See—*
Jones, John E.; Fodor, William G.; Porter, James R.; and Edgell, James E., 4,286,610, Cl. 132-76.400.

Sanner, Sidney N. Catamaran sailboat. 4,286,533, Cl. 114-39.000.

Sanner, Sidney N. Trimaran sailboat. 4,286,534, Cl. 114-39.000.

Santi, Giunio G., to S.S.O.S. Sub Sea Oil Services S.p.A. Engine control installation. 4,286,565, Cl. 123-568.000.

Sanzenbacher, Charles W.: *See—*
Scarlett, John C.; and Sanzenbacher, Charles W., 4,286,775, Cl. 266-147.000.

Sasaki, Isao: *See—*
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,287,227, Cl. 427-54.100.

Sasaki, Kouji: *See—*
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,287,487, Cl. 331-94.50G.

Sasaki, Takao: *See—*
Nozawa, Ryoichiro; Amemiya, Yoichi; Kawamata, Mitsuo; Isohata, Shigeru; Sasaki, Takao; and Takekoshi, Yoshitaka, 4,287,460, Cl. 318-571.000.

Sassus-Bourda, Gerard: *See—*
Bres, Philippe; Berge, Christian; and Sassus-Bourda, Gerard, 4,286,461, Cl. 73-155.000.

Sato, Akihiro: *See—*
Kikuta, Kazutsune; Tachibana, Masami; and Sato, Akihiro, 4,287,328, Cl. 526-115.000.

Sato, Atsushi: *See—*
Shimizu, Isoo; Tsuji, Okitsugu; Matsuzaka, Eiichi; and Sato, Atsushi, 4,287,376, Cl. 585-458.000.

Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Method and apparatus for adjusting the gap in an electric discharge machine. 4,287,403, Cl. 219-69.00M.

Sato, Makoto: *See—*
Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, 4,287,505, Cl. 340-52.00B.

Sato, Masahiko: *See—*
Ohmae, Takashi; Fukaya, Yasuhiro; Yoshida, Yasuyuki; Oka, Tamotu; Sato, Masahiko; and Nagareda, Masazumi, 4,287,405, Cl. 219-136.000.

Sato, Syuzi: *See—*
Murakami, Ryoichi; Shimizu, Hideo; and Sato, Syuzi, 4,287,004, Cl. 148-6.15R.

Sato, Takao: *See—*
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Sato, Takayuki, to Tokyo Ohka Kogyo Kabushiki Kaisha. Photoresist cyclized rubber and bisazide compositions containing a monoazo photoextinction agent. 4,287,289, Cl. 430-196.000.

Satomi, Toyokazu; Ohminato, Mitsuru; and Tabata, Yasuhiro, to Ricoh Company, Ltd. Electrophotographic copying apparatus for the production of multiple copies from a single latent electrostatic image. 4,286,865, Cl. 355-14.0CU.

Sauerteig, Wolfgang: *See—*
Himmelmann, Wolfgang; Bruck, Rolf; Sauerteig, Wolfgang; Kruck, Peter; Kolb, Gunter; and Sackmann, Gunter, 4,287,299, Cl. 430-537.000.

Savage, David W.; Chang, Chin H.; and Longo, John M., to Exxon Research & Engineering Co. Vapor phase adsorption using nonstoichiometric carbon-sulfur compounds. 4,286,972, Cl. 55-58.000.

Savin Corporation: *See—*
Landa, Benzion, 4,286,886, Cl. 400-118.000.

Sawyer, David E., to United States of America, Energy. Nondestructive method for detecting defects in photodetector and solar cell devices. 4,287,473, Cl. 324-158.00R.

Scahill, Steven; and Burrafato, Gary M. End seal for conduits. 4,287,386, Cl. 174-76.000.

Scarlett, John C.; and Sanzenbacher, Charles W., to Midrex Corporation. Apparatus for producing molten iron from iron oxide with coal and oxygen. 4,286,775, Cl. 266-147.000.

Schaeffer, Howard J., to Burroughs Wellcome Co. Purine derivatives. 4,287,188, Cl. 424-200.000.

Schantz, Spencer C. Bimetal actuated locking device. 4,286,811, Cl. 292-201.000.

Scharfe, Merlin E.: *See—*
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,287,279, Cl. 430-58.000.

Schegolev, Gleb S.: *See—*
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Scheibel, Edward G., to Suntech, Inc. Separation of ammonia from ammonia containing gases. 4,287,162, Cl. 423-238.000.

Scheidemann, Hans: *See—*
Ilzig, Karl F.; and Scheidemann, Hans, 4,286,839, Cl. 350-96.240.

Scheneman, Herbert T., Jr.; and Maggio, Karl F. Automatic slip coupling assembly. 4,286,441, Cl. 64-30.00C.

Schenk, Bernhard: *See—*
Hafele, Walter; and Schenk, Bernhard, 4,286,931, Cl. 417-490.000.

Scherenberg, Hans O.; Breitschwerdt, Werner; Klein, Wilhelm; and Jahn, Walter, to Daimler-Benz Aktiengesellschaft. Push button, especially for locks of safety belts. 4,286,359, Cl. 24-230.00R.

Schettler, Helmut: *See—*
Brosch, Rudolf; Schettler, Helmut; Schumacher, Hans; and Zuehlke, Rainer, 4,287,437, Cl. 307-296.00R.

Scheurecker, Werner; and Drab, Ernst, to Voest-Alpine Aktiengesellschaft. Carrying tower for a metallurgical vessel. 4,286,678, Cl. 177-132.000.

Schiesser AG: *See—*
Schiesser, Walter H., 4,286,882, Cl. 366-76.000.

Schiesser, Walter H., to Schiesser AG. Apparatus for the automatic, uniform drawing-in of elastomeric material into worm extruders. 4,286,882, Cl. 366-76.000.

Schillreff, George H.: *See—*
Block, Kenneth A.; Carter, William M.; and Schillreff, George H., 4,286,498, Cl. 86-1.00R.

Schindling, Josef: *See—*
Schminke, Heinz; and Schindling, Josef, 4,286,974, Cl. 55-126.000.

Schinschke, James R.: *See—*
Wikkerink, Lee; and Schinschke, James R., 4,286,411, Cl. 49-252.000.

Schlak, Ottfried; Moretto, Hans-Heinrich; Clarenz, Werner; Peltzer, Bernd; and Burgmer, Willi, to Bayer Aktiengesellschaft. Aqueous silicone-polyester resin systems, a process for their production and their use. 4,287,109, Cl. 260-29.20M.

Schlesinger, Sheldon I., to American Can Company. Photopolymerizable epoxide coating compositions containing titanium dioxide pigment and method of polymerization using same. 4,287,228, Cl. 427-54.100.

Schloemann-Siemag Aktiengesellschaft: *See—*
Exner, Klaus, 4,286,453, Cl. 72-273.000.

Schmelzer Corporation: *See—*
Detweiler, Charles A., 4,286,433, Cl. 60-602.000.

Schmidt, Gustav A.: *See—*
Wong, K. Lim; and Schmidt, Gustav A., 4,287,255, Cl. 428-343.000.

Schmidt, Walter: *See—*
Becker, Hans-Joachim; and Schmidt, Walter, 4,287,365, Cl. 564-422.000.

Schminke, Heinz; and Schindling, Josef, to Metallgesellschaft Aktiengesellschaft. Compound particle separator. 4,286,974, Cl. 55-126.000.

Schmitt, Frederick L.: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,287,084, Cl. 252-187.00H.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,287,133, Cl. 260-458.00R.

Schneider, Eckart; and Delingat, Eckart, to Ernst Leitz Wetzlar GmbH. Optical correlator. 4,286,872, Cl. 356-28.000.

Schneider, H. Allen, to Weigh Right Electronic Systems, Inc. Animal scale. 4,286,679, Cl. 177-132.000.

Schneider, Hans-Dieter: *See—*
Merten, Gerhard; Peters, Wolfgang; Schneider, Hans-Dieter; and Heyer, Willy, 4,286,823, Cl. 299-43.000.

Schneider, Horst, to Th. Kieserling & Albrecht Werkzeugmaschinenfabrik. Machine for straightening elongated workpieces. 4,286,452, Cl. 72-164.000.

Schneider, Manfred; Kruse, Hubert; Opitz, Konrad; and Billenstein, Siegfried, to Hoechst Aktiengesellschaft. Dyestuff compositions containing acylated alkoxylates of polyhydric aliphatic alcohols. 4,286,960, Cl. 8-527.000.

Scholz, Werner, to Licentia Patent-Verwaltungs-GmbH. Circuit for selectively obtaining automatic dynamic compression or expansion. 4,287,491, Cl. 333-14.000.

Schreiber, William L.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,287,081, Cl. 252-174.110.

Schroder, Martin: *See—*
Hammer, Klaus-Dieter; Schroder, Martin; Pietruck, Horst; and Bytzek, Max, 4,287,217, Cl. 426-105.000.

Schroeder, Wolfgang: *See—*
Baer, Karl; Reiss, Wolfgang; Schroeder, Wolfgang; and Voges, Dieter, 4,287,099, Cl. 252-465.000.

Schrumpf, Hans: *See—*
Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, 4,287,565, Cl. 364-580.000.

Schubert, Eckart: *See—*
Brunner, Erwin; Schubert, Eckart; Lindner, Alfred; Merger, Franz; Volkamer, Klaus; Strohmeyer, Max; and Sandrock, Gerhard, 4,287,379, Cl. 585-839.000.

Schuller, James T.; and Haeusser, Harry C., to UMC Industries, Inc. Coin testing and sorting apparatus. 4,286,703, Cl. 194-100.00A.

Schulz, Alfred: *See—*
Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, 4,287,565, Cl. 364-580.000.

Schulz, John C., to J. I. Case Company. Stabilizer assembly. 4,286,803, Cl. 280-764.000.

Schulz, Peter; Vaupel, Knut; and Klein, Jurgen, to Bergwerksverband GmbH. Bottom for fluidized bed. 4,286,393, Cl. 34-57.00R.

Schulz, Walther: *See—*
Wagner, Fritz; Rapp, Peter; Bock, Hans; Lindorfer, Walter; Schulz, Walther; and Gebetsberger, Wilhelm, 4,286,660, Cl. 166-246.000.

Schumacher, Gunter: *See—*
Schumacher, Gustav, II; and Schumacher, Gunter, 4,286,425, Cl. 56-307.000.

Schumacher, Gustav, II; and Schumacher, Gunter. Cutter finger for cutter bar mowers. 4,286,425, Cl. 56-307.000.

Schumacher, Hans: *See—*
Brosch, Rudolf; Schettler, Helmut; Schumacher, Hans; and Zuehlke, Rainer, 4,287,437, Cl. 307-296.00R.

Schutz, Udo. Composite steel-jacketed plastic barrel. 4,286,723, Cl. 220-5.00R.

Schwab, Carl E.; Foley, Peter; and Caputo, Charles A., to General Signal Corporation. Apparatus for recording and playing back radar video with conventional video recorder. 4,287,533, Cl. 358-127.000.

Schwab, Manfred: *See—*
Haubner, Georg; Wesemeyer, Jurgen; Schrumpf, Hans; Birmelin, Jorg; Schwab, Manfred; Honig, Gunter; Kiencke, Uwe; Schulz, Alfred; and Meier, Werner, 4,287,565, Cl. 364-580.000.

Schwartz, Andrew M.: *See—*
Soo, Suk S.; and Schwartz, Andrew M., 4,287,414, Cl. 250-227.000.

Schwartz, Joseph: *See—*
MacPherson, James A.; and Schwartz, Joseph, 4,286,400, Cl. 40-152.000.

Schwartz, Reinhard: *See—*
Ritter, Ernst; Schwartz, Reinhard; Muller, Rolf; and Bohm, Martin, 4,286,559, Cl. 123-383.000.

Schwarz, Rudolf: *See—*
Kleinschmit, Peter; and Schwarz, Rudolf, 4,286,990, Cl. 106-73.400.

Schweizer, Alfred D.: *See—*
Ehretsmann, Jacques; Cowling, Robert D.; Schweizer, Alfred D.; Caldwell, William M.; Boyd, Dennis F.; and Boyd, Robert J., 4,286,604, Cl. 131-359.000.

Scifres, Donald R. Liquid-level monitor. 4,287,427, Cl. 250-577.000.

Sciulli, Felice M.: *See—*
Lee, Winston F. Z.; White, Raymond V.; and Sciulli, Felice M., 4,286,471, Cl. 73-861.840.

Scott, David R.; and Rhoades, Thomas S., to Scott Science and Technology, Inc. Intrusion alarm system utilizing structural moment detector as intrusion sensor and as receiver for mechanical intrusion and command signals. 4,287,511, Cl. 340-541.000.

Scott & Fetzer Company, The: *See—*
Lee, Maw H.; and Keim, John E., 4,287,464, Cl. 318-805.000.

Scott Science and Technology, Inc.: *See—*
Scott, David R.; and Rhoades, Thomas S., 4,287,511, Cl. 340-541.000.

Scovill Inc.: *See—*
Stevens, William E., 4,286,412, Cl. 49-379.000.

Sea Savory, Inc.: *See—*
Wenstrom, Richard T., 4,286,356, Cl. 17-46.000.

Searcy, James A.; Zoellner, Roger O.; and Hoffmann, Ronald C., to Cambridge Engineering, Inc. Ventilating hood. 4,286,572, Cl. 126-299.00D.

Searle, Kenneth L.: *See—*
Melitz, Daniel T.; Searle, Kenneth L.; and Woodman, Brian E., 4,286,896, Cl. 405-185.000.

Sears, I. Weir, Jr.; and Quertain, Raoul, to Sears Manufacturing Company. Cloth molding process. 4,287,143, Cl. 264-46.800.

Sears Manufacturing Company: *See—*
Sears, I. Weir, Jr.; and Quertain, Raoul, 4,287,143, Cl. 264-46.800.

Seckendorf, Bernard A., to Wrist-A-Matic, Ltd. Magnet-actuable flash apparatus. 4,286,854, Cl. 354-129.000.

Seco Manufacturing, Inc.: *See—*
Stong, Jack V., 4,286,691, Cl. 184-7.0CR.

Seebo, Thomas C., II. Combination staircase and attic fan means. 4,286,508, Cl. 98-43.00R.

Seed, Brian S. Polyfunctional epoxides and halohydrins used as bridging groups to bind aromatic amine group-containing alcohols and thiols to hydroxyl bearing substrates. 4,286,964, Cl. 23-230.00B.

Segner, Samuel M., to United States of America, Army. Multiple access, time-division multiplex, satellite communications system. 4,287,588, Cl. 370-29.000.

Seiko Koki Kabushki Kaisha: *See—*
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, 4,287,586, Cl. 368-222.000.

Seiler, Erhard: *See—*
Theysohn, Rainer; Zeitler, Gerhard; Weiss, Frank; Willing, Hans; and Seiler, Erhard, 4,287,117, Cl. 260-42.460.

Seki, Yoichi: *See—*
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, 4,287,586, Cl. 368-222.000.

Sekigawa, Fujio: *See—*
Tonedachi, Masayuki; Sekigawa, Fujio; and Minemura, Katsuyoshi, 4,287,221, Cl. 427-3.000.

Selman, Charles M., to Phillips Petroleum Co. Polymerization catalysts. 4,287,091, Cl. 252-429.00B.

Selvin, Gerald J.: *See—*
Goodman, David S.; Selvin, Gerald J.; Dubell, Edward G.; Doty, Donald J.; Erbe, Alfred R.; and Wilson, Robert E., 4,286,834, Cl. 339-16.00R.

Semenov, Valentin P.: *See—*
Godin, Eduard M.; Anoshko, Vladimir A.; Gavrilov, Anatoly N.; Akhmerov, Almas F.; Zverkov, Garik E.; Semenov, Valentin P.; Grachev, Vladimir V.; Chepurin, Valentin M.; Mikhailov, Viktor Y.; and Rybnikov, Sergei I., 4,286,450, Cl. 72-59.000.

Semenov, Vasily V.: *See—*
Bashnin, Oleg I.; Semenov, Vasily V.; Fedorov, Vasily N.; Rodionov, Evgeny I.; Davidson, Boris A.; and Schegolev, Gleb S., 4,287,429, Cl. 290-40.00C.

Senkler, George H.: *See—*
Holtje, Wilfried G.; Senkler, George H.; and Taggi, Arthur J., 4,286,998, Cl. 106-288.00Q.

Senoo, Keizi: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Okada, Toshio; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,287,272, Cl. 429-144.000.

Sensibar, Ezra, to David Sensibar Irrevocable Trust. Valve position detecting apparatus. 4,287,432, Cl. 307-116.000.

Seperef - TMP Societe pour l'Equipment des Reseaux en Canalisations de Matieres Plastiques: *See—*
Prudhomme, Pierre; Lafaye, Jean-Jacques; and Rey, Raymond, 4,287,237, Cl. 427-238.000.

Service (Engineers) Limited: *See—*
Ryckman, George, 4,286,938, Cl. 425-265.000.

Shah, Praful K.: *See—*
Hess, Hans-Jurgen E.; Bindra, Jasjit S.; and Shah, Praful K., 4,287,341, Cl. 544-285.000.

Shamah, Alfred A. Ratchet-securable toggle retainer. 4,286,497, Cl. 411-342.000.

Shannon, Jefferson C. Implement transporter. 4,286,918, Cl. 414-742.000.

Shapiro, Stanley L.: *See—*
Clark, John H.; Campillo, Anthony J.; Shapiro, Stanley L.; and Winn, Kenneth R., 4,287,035, Cl. 204-157.10R.

Sharp Kabushiki Kaisha: *See—*
Tagawa, Takao, 4,287,525, Cl. 346-155.000.
Takeda, Mikio; Kishishita, Hiroshi; Kawabata, Hiroyuki; and Isaka, Kinichi, 4,287,449, Cl. 313-509.000.
Tanimoto, Akira; and Saizi, Mituhiro, 4,287,584, Cl. 368-63.000.

Shaw, Edward A.: *See—*
Molloy, Normand, 4,286,531, Cl. 112-121.150.

Shell Oil Company: *See—*
Johnson, Henry W., Jr., 4,286,457, Cl. 73-53.000.

Shelton, John J., to Nelson, Robert T. Blasting machine with position sensing and adjustment. 4,286,417, Cl. 51-415.000.

Sherman, Robert. Dimmer control system. 4,287,468, Cl. 323-322.000.
Shevels, Thomas F.: *See—*
Harris, Norman; and Shevels, Thomas F., 4,287,369, Cl. 568-454.000.
Harris, Norman; Dennis, Alan J.; and Shevels, Thomas F., 4,287,370, Cl. 568-454.000.
Shiba, Yoshiro: *See—*
Monden, Takeshi; Shiba, Yoshiro; Momonaka, Toshihiro; Kobayashi, Shigeru; and Oda, Kazuo, 4,287,242, Cl. 427-426.000.
Shibakawa, Riichiro: *See—*
Celmer, Walter D.; Cullen, Walter P.; Huang, Liang H.; Oscarson, John R.; Shibakawa, Riichiro; and Tone, Junsuke, 4,287,182, Cl. 424-118.000.
Shiga, Tetsuo: *See—*
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, 4,287,295, Cl. 430-349.000.
Shimada, Katsutoshi: *See—*
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Udea, Koichiro, 4,287,346, Cl. 546-330.000.
Shimamura, Kouichi, to Sonix Limited. Plating process. 4,287,029, Cl. 204-15.000.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,286,953, Cl. 474-80.000.
Shimano, Keizo, to Shimano Industrial Company Limited. Bicycle derailleur having an improved mechanism for swinging a chain guide. 4,286,953, Cl. 474-80.000.
Shimazu, Katashi: *See—*
Tomita, Chuji; Abe, Hiroshi; and Shimazu, Katashi, 4,287,424, Cl. 250-445.00T.
Shimizu, Hideo: *See—*
Murakami, Ryoichi; Shimizu, Hideo; and Sato, Syuzi, 4,287,004, Cl. 148-6.15R.
Shimizu, Isoo; Tsuji, Okitsugu; Matsuzaka, Eiichi; and Sato, Atsushi, to Nippon Petrochemicals Co., Ltd. Method for aralkylation. 4,287,376, Cl. 585-458.000.
Shimizu, Masami: *See—*
Uchidoi, Masanori; Shimizu, Masami; Date, Nobuaki; and Aizawa, Hiroshi, 4,286,849, Cl. 354-23.00D.
Shimoi, Masahiro: *See—*
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,287,113, Cl. 260-33.4EP.
Shimotori, Kazumi: *See—*
Komatsu, Shuichi; Nakamura, Shinichi; Shimotori, Kazumi; and Nakayama, Yoshio, 4,287,417, Cl. 250-307.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Itoh, Kunio; Fukuda, Takeshi; and Matumura, Masaaki, 4,287,114, Cl. 260-37.0SB.
Tonedachi, Masayuki; Sekigawa, Fujio; and Minemura, Katsuyoshi, 4,287,221, Cl. 427-3.000.
Shin Gijutsu Kigyo Kabushiki Kaisha: *See—*
Nakanishi, Kisaku, 4,286,666, Cl. 168-4.000.
Shin, Paik W.: *See—*
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., 4,287,008, Cl. 148-127.000.
Shinano Tokki Corporation: *See—*
Takemura, Yoshihiro, 4,287,457, Cl. 318-133.000.
Shinkai, Ichiro: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,287,123, Cl. 260-239.00A.
Shinomiya, Masami: *See—*
Fuzioka, Keizi; and Shinomiya, Masami, 4,286,942, Cl. 425-577.000.
Shinozaki, Nobuo: *See—*
Ogihara, Masuo; Chimura, Kozo; Shinozaki, Nobuo; and Seki, Yoichi, 4,287,586, Cl. 368-222.000.
Shinozaki, Sohji: *See—*
Ohta, Tatsuo; Shinozaki, Sohji; Yoshida, Syusaku; and Ohba, Hideo, 4,287,278, Cl. 430-53.000.
Shionogi & Co., Ltd.: *See—*
Sonoyama, Takayasu; Tani, Hiroyoshi; and Kobayashi, Kobee, 4,287,137, Cl. 261-93.000.
Shionozaki, Yoshio: *See—*
Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, 4,287,085, Cl. 252-299.630.
Shipman, Ronald L., to Lenco, Inc. Valve for a sandblasting device. 4,286,755, Cl. 239-530.000.
Shirakura, Toshiharu: *See—*
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,287,487, Cl. 331-94.50G.
Shirasaka, Hisatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Function test evaluation apparatus for evaluating a function test of a logical circuit. 4,287,594, Cl. 371-25.000.
Shoji, Masashi: *See—*
Fukaya, Hirokazu; and Shoji, Masashi, 4,287,390, Cl. 179-1.00A.
Shulman, Alexandr Y.: *See—*
Divin, Jury Y.; Polyansky, Oleg J.; and Shulman, Alexandr Y., 4,287,418, Cl. 250-336.000.
Shuster, Edward J.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,287,081, Cl. 252-174.110.
Sides, Nathan T.; and Daugherty, Thomas L., to United States of America, Navy. Offset-pad bearing. 4,286,828, Cl. 308-26.000.
Sieber, William J.: *See—*
Ziv, Avraham; Tanaka, Akira; Hollowell, William; Sieber, William J.; and Ahad, Munir J., 4,287,398, Cl. 200-61.45R.
Siegemund, Gunter; and Muffler, Herbert, to Hoechst Aktiengesellschaft. Process for the preparation of 4,5-perfluoro-1,3-dioxalanes. 4,287,124, Cl. 260-340.90R.
Siegwarth, Martin, to Richard Hirschmann Radiotechnisches Werk. Electronic signal generator with periodically varying frequency. 4,287,510, Cl. 340-384.00E.
Siemens Aktiengesellschaft: *See—*
Eckert, Werner; and Simon, Wolfgang, 4,287,043, Cl. 204-228.000.
Hahndorff, Axel, 4,287,548, Cl. 361-120.000.
Kuphal, Wilko; and Wons, Heinz, 4,287,422, Cl. 250-439.00R.
Rubner, Roland; Kuhn, Eberhard; and Ahne, Hellmut, 4,287,294, Cl. 430-306.000.
Strehl, Herbert, 4,287,591, Cl. 370-83.000.
Vanhumbeeck, Jacky; De Steur, Hubert; Heyneman, Guido; and Vandenbossche, Chris, 4,286,965, Cl. 23-230.00A.
Wiechert, Edelbert, 4,287,399, Cl. 200-153.00T.
Sieving, Alfred W., to Caterpillar Tractor Co. Fabricated heavy-duty industrial wheel. 4,286,825, Cl. 301-63.00R.
Siggelin, Lars: *See—*
Axelsson, Holger; and Siggelin, Lars, 4,286,413, Cl. 51-3.000.
Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-oxa-9-deoxy-9-methylene-19-oxo-PGF$_1$ compounds. 4,287,358, Cl. 562-503.000.
Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-oxa-11-deoxy-11-hydroxymethyl-19-oxo-PGF$_1$ compounds. 4,287,359, Cl. 562-503.000.
Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-oxa-11-deoxy-11-hydroxymethyl-19-oxo-PGE$_1$ compounds. 4,287,360, Cl. 562-503.000.
Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-oxa-11-deoxy-19-oxo-PGF$_1$ compounds. 4,287,361, Cl. 562-503.000.
Siklosi, Michael P., to Procter & Gamble Company, The. Detergent compositions which contain certain tertiary alcohols. 4,287,080, Cl. 252-104.000.
Siladi, Kim E.: *See—*
Stelben, John J.; Siladi, Kim E.; Herman, George A., Jr.; and Vesel, John E., 4,286,866, Cl. 355-14.00D.
Silcott, Philip B.; and Stubbings, James H., to Potomac Applied Mechanics. Convertible back pack frame. 4,286,739, Cl. 224-156.000.
Sills, William G. Padlock protective cover. 4,286,445, Cl. 70-55.000.
Silver Systems, Ltd.: *See—*
Biles, Don L.; and Richardson, A. Alan, 4,287,044, Cl. 204-231.000.
Silverberg, Morton, to Xerox Corporation. Document belt with discrete vacuum areas. 4,286,870, Cl. 355-76.000.
Simes, S.p.A.: *See—*
Ferrari, Giorgio; and Vecchietti, Vittorio, 4,287,211, Cl. 424-322.000.
Simington, Jack F.; and Ray, William E. Mechanical roping steer. 4,286,788, Cl. 273-359.000.
Simom S.A.: *See—*
Pfau, Paul; Fausel, Thomas E.; and Grunder, Arthur, 4,287,537, Cl. 358-299.000.
Simon Engineering Dudly Limited: *See—*
Ashworth, Denis H., 4,286,721, Cl. 212-199.000.
Simon, Eric: *See—*
Buckwalter, Geoffrey R., 4,287,000, Cl. 106-309.000.
Simon, Ernst-Ulrich; and Ullrich, Horst, to VDO Adolf Schindling AG. Warning device with central indication of operating conditions to be monitored in motor vehicles. 4,287,504, Cl. 340-52.00F.
Simon, Pierre; and Dreux, Jacques, to Laboratoires Hoechst, S.A. Halogen derivatives of 8-hydroxycarboxylic acids; the processes for their preparation and medicaments in which they are present. 4,287,206, Cl. 424-279.000.
Simon, Wolfgang: *See—*
Eckert, Werner; and Simon, Wolfgang, 4,287,043, Cl. 204-228.000.
Simonacco Limited: *See—*
Menzies, James D., 4,286,707, Cl. 198-859.000.
Simpson, Charles J.: *See—*
Rabelos, Nicholas A., 4,286,526, Cl. 109-73.000.
Sims, Larry A.; Lambert, Gerald L.; Gross, Raymond J.; and Collins, Harold B., to Mattel, Inc. Spinning top pinball-type game. 4,286,406, Cl. 46-72.000.
Simshauser, Elvin D.; and Nosker, Richard W., to RCA Corporation. Signal loss dectector for video disc. 4,287,587, Cl. 369-50.000.
Sipca Holding S.A.: *See—*
Amon, Albert; Weil, Roger; and Heinzer, Paul, 4,287,234, Cl. 427-150.000.
Sirkar, Amalesh K., to Hydrocarbon Research, Inc. Multi-stage fluidization and segregation of used catalyst fractions. 4,287,088, Cl. 252-414.000.
Siryj, Bohdan W.; and Gilson, Alan P., to RCA Corporation. Optical disc changer apparatus. 4,286,790, Cl. 369-36.000.
Sisti, Giorgio; Riva, Ermete; and Sala, Learco, to Carlo Erba Strumentazione S.p.A. Gas chromatographic chamber. 4,286,456, Cl. 73-23.100.
Sitnam, Elmo. Solar collector. 4,286,580, Cl. 126-438.000.
SKF Industrial Trading & Development Co. B. V.: *See—*
Heemskerk, Rutgerus S., 4,286,829, Cl. 308-187.000.
Skiles, Jerry W.: *See—*
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,287,203, Cl. 424-275.000.
Skobel, Max, to Laurel Enterprises. Jewelry clasp. 4,286,360, Cl. 24-230.00R.
Skoda, William G.; and Luff, Marlin, to Motorola, Inc. Crystal holder for different sizes of crystal. 4,287,447, Cl. 310-348.000.

Skoumal, Donald E.: *See—*
Lund, Walter W., Jr.; Nalos, Ervin J.; and Skoumal, Donald E., 4,287,495, Cl. 333-239.000.
Sletzinger, Meyer: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,287,123, Cl. 260-239.00A.
Smiley, Robert A., to Du Pont de Nemours, E. I., and Company. Purification of acetonitrile by caustic extraction. 4,287,134, Cl. 260-465.100.
Smith, Edwyn D., to United States of America, Army. Correlated double sampling CCD video preprocessor-amplifier. 4,287,441, Cl. 307-353.000.
Smith, Francis H.; and Gale, Richard W., to Vickers Limited. Diffractometer. 4,286,874, Cl. 356-338.000.
Smith, Francis H., to Vickers Limited. Diffractometer. 4,286,875, Cl. 356-338.000.
Smith, Gary R., to Smith R.P.M. Corporation. Offset litho conversion from letterpress equipment. 4,286,519, Cl. 101-138.000.
Smith, Gerald L.: *See—*
Promis, George G.; Smith, Gerald L.; and Wilson, John C., 4,287,461, Cl. 318-571.000.
Smith, James. Automatic spring powered battery charging device. 4,287,428, Cl. 290-1.00E.
Smith-Johannsen, Robert; and Walker, Jack M., to Raychem Corporation. Method of making heater cable of self-limiting conductive extrudates. 4,286,376, Cl. 29-611.000.
Smith, John C.: *See—*
Ibbotson, Peter; Smith, John C.; and Frodsham, Colin, 4,287,274, Cl. 429-156.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,287,198, Cl. 424-263.000.
Smith R.P.M. Corporation: *See—*
Smith, Gary R., 4,286,519, Cl. 101-138.000.
Smith, Raymond, to Teledyne Industries, Inc. Gas turbine engine. 4,286,430, Cl. 60-39.16R.
Smith, Richard E.; and Burke, William R., to National Gypsum Company. Mica-free joint compound. 4,286,995, Cl. 106-109.000.
Sneider, Vincent R. Squeeze dispenser with flexible conduit with attached, weighted and grooved end. 4,286,735, Cl. 222-189.000.
Snia Viscosa: *See—*
Cazzaro, Giorgio; Matera, Giancarlo; Cavallaro, Antonino; and Zani, Marina, 4,287,148, Cl. 264-182.000.
Snow Biz, Inc.: *See—*
Booty, Donald J., 4,286,397, Cl. 36-132.000.
Snyder, Clinton D.: *See—*
Kadehjian, Leo J.; Sachdev, Harbans S.; and Snyder, Clinton D., 4,286,989, Cl. 106-22.000.
Snyder, Ralph C. Spouting ice protectors. 4,286,418, Cl. 52-11.000.
Societe Anonyme Automobiles Citroen: *See—*
Roche, Alain-Gilbert, 4,286,802, Cl. 280-693.000.
Societe Anonyme D.B.A.: *See—*
Carre, Jean-Jacques; and Levrai, Roland, 4,286,504, Cl. 91-517.000.
Morin, Gerard, 4,286,363, Cl. 29-149.50B.
Societe de Recherches Industrielles (S.O.R.I.): *See—*
Majoie, Bernard, 4,287,209, Cl. 424-308.000.
Societe d'Etude et de Construction de Machines pour Toutes Industries SECOMA: *See—*
Benichou, Alain; and Perraud, Raymond J., 4,286,899, Cl. 405-260.000.
Societe Europeene de Propulsion: *See—*
Reichard, Michel; and Krassoulia, Georges, 4,286,431, Cl. 60-39.82E.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Dehan, Gerard C. H.; and Maulat, Jean-Pierre, 4,286,473, Cl. 74-107.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Bres, Philippe; Berge, Christian; and Sassus-Bourda, Gerard, 4,286,461, Cl. 73-155.000.
Miffre, Hubert, 4,286,663, Cl. 166-325.000.
Solid Photography, Inc.: *See—*
Stern, Howard; and DiMatteo, Paul, 4,286,852, Cl. 354-77.000.
Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Teptikov, Nikolai R.; and Demchenko, Jury D., 4,287,444, Cl. 310-13.000.
Somm, Franz: *See—*
Buser, Rolf; Palacin, Francis; Robert, Georg; and Somm, Franz, 4,286,961, Cl. 8-532.000.
Sommers, Philip B. Specimen transfer rack. 4,287,154, Cl. 422-64.000.
Sonix Limited: *See—*
Shimamura, Kouichi, 4,287,029, Cl. 204-15.000.
Sonoco Products Company: *See—*
McMahon, Edward H., Jr.; and Abston, J. B., 4,287,244, Cl. 428-35.000.
Sonoyama, Takayasu; Tani, Hiroyoshi; and Kobayashi, Kobee, to Shionogi & Co., Ltd. Vane-type fluid impeller and method of aerating a liquid. 4,287,137, Cl. 261-93.000.
Sony Corporation: *See—*
Mitamura, Ichiro; Tooyama, Akira; and Hosono, Takashi, 4,287,531, Cl. 358-67.000.
Nakamura, Tadahiko; and Nakano, Kenji, 4,287,458, Cl. 318-341.000.
Okuda, Hiroshi, 4,287,542, Cl. 360-105.000.
Sakamoto, Hitoshi; and Wakisaka, Yoshiaki, 4,287,538, Cl. 360-10.000.
Tanahashi, Makoto; Yamauchi, Hisashi; and Yamamoto, Takeshi, 4,287,541, Cl. 360-92.000.
Tatami, Mitsushige; and Tsujikawa, Kazunobu, 4,287,529, Cl. 358-8.000.
Soo, Suk S.; and Schwartz, Andrew M., to International Business Machines Corp. Illumination and pick up apparatus. 4,287,414, Cl. 250-227.000.
Sorenson, Roderick J.: *See—*
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,287,340, Cl. 544-250.000.
Soula, Gerard, to Rhone-Poulenc Industries. Preparation of benzenoid ethers and thioethers. 4,287,125, Cl. 260-340.90R.
South African Inventions Development Corporation, The: *See—*
Coetzer, Johan, 4,287,268, Cl. 429-103.000.
Coetzer, Johan; and Thackeray, Michael M., 4,287,269, Cl. 429-103.000.
Coetzer, Johan; Nolte, Margaretha J.; and de Kocknee Steynberg, Annemare, 4,287,271, Cl. 429-103.000.
Southwire Company: *See—*
Rowe, Joseph R.; and Sanders, Eugene T., 4,286,913, Cl. 414-422.000.
Spangler, Michael J.: *See—*
Michaels, Glenn O.; and Spangler, Michael J., 4,287,327, Cl. 526-86.000.
Spanides, Moschoula. Faucet control device. 4,286,623, Cl. 137-597.000.
Spencer, Donald L.; and Melroy, Patrick J., to University of Iowa Research Foundation, The. Apparatus for containing liquid. 4,286,577, Cl. 126-429.000.
Spengler, Ernst M., to Stanztechnik GmbH R & S. Force application apparatus. 4,286,490, Cl. 83-453.000.
Sperry Corporation: *See—*
Lienau, Mark H., 4,287,445, Cl. 310-13.000.
Swift, Billy K.; Zizzo, Anthony F.; and Blevins, Willard A., 4,287,480, Cl. 331-1.00A.
Spevak, Stephen T., to Potomac Applied Mechanics, Inc. Article supporting assembly. 4,286,832, Cl. 312-283.000.
Spin Physics, Inc.: *See—*
Bixby, James A.; Lemke, James U.; and Lentz, Robert A., 4,287,539, Cl. 360-18.000.
Spinks, Brian M.; and Dumas, John R., to Motorola, Inc. Edge sense latch. 4,287,442, Cl. 307-510.000.
Spiva, Stephan D.: *See—*
Harvey, Leslie E.; and Spiva, Stephan D., 4,286,784, Cl. 273-54.00D.
Spoormaker, Arie W.: *See—*
Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., 4,286,945, Cl. 432-29.000.
Spreafico, Bruno. Machine for mechanical pickling of wires with the aid of rolling. 4,286,449, Cl. 72-40.000.
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, to International Flavors & Fragrances Inc. Bridged ketones, process for preparing same and use thereof in augmenting or enhancing the organoleptic properties of consumable materials. 4,287,081, Cl. 252-174.110.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 6-Hydroxy-2,6-dimethylheptanal, organoleptic uses thereof and processes for preparing the same. 4,287,133, Cl. 260-458.00R.
Sprekeler, Otto G. G., to Whitco Pty. Ltd. Security screen door lock. 4,286,812, Cl. 292-245.000.
Spycher, Anton A.: *See—*
Gulati, Suresh T.; and Spycher, Anton A., 4,287,018, Cl. 156-645.000.
SRI International: *See—*
Crane, Hewitt D.; and Steele, Carroll M., 4,287,410, Cl. 250-201.000.
Stafford, Donald C., to Chicago Bridge & Iron Company. Releasable connection. 4,286,898, Cl. 405-224.000.
Stamicarbon, B.V.: *See—*
van Gasse, Rene L. E., 4,287,310, Cl. 525-44.000.
Standard Oil Company (Indiana): *See—*
Fields, Ellis K., 4,287,349, Cl. 548-166.000.
Michaels, Glenn O.; and Spangler, Michael J., 4,287,327, Cl. 526-86.000.
Standard-Thomson Corporation: *See—*
Wong, Backman; and Wilson, Earl L., 4,286,750, Cl. 236-34.500.
Standiford, Ferris C. Apparatus and method for adiabatic flashing of liquids. 4,287,019, Cl. 159-2.0MS.
Standish, Thomas R., to Delta-X Corporation. Control circuit for shutting off the electrical power to a liquid well pump. 4,286,925, Cl. 417-12.000.
Stanley, Bedford F. Portable sink top water conditioner. 4,287,057, Cl. 210-85.000.
Stanley Works, The: *See—*
Di Diego, Robert, 4,286,387, Cl. 33-138.000.
Stanztechnik GmbH R & S: *See—*
Spengler, Ernst M., 4,286,490, Cl. 83-453.000.
Stark, Moshe, to Intel Corporation. Multiple bit read-only memory cell and its sense amplifier. 4,287,570, Cl. 365-104.000.
State Wide Aluminum of Indiana, Inc.: *See—*
McGaughey, Donald C., 4,286,820, Cl. 296-146.000.

Stavros, Anthony J., to Bethlehem Steel Corporation. Protective atmosphere gas wiping apparatus and method of using. 4,287,238, Cl. 427-349.000.
Steck, Werner: *See*—
Rudolf, Peter; Steck, Werner; Koester, Eberhard; Ohlinger, Manfred; and Jaeckh, Christof, 4,287,233, Cl. 427-121.000.
Steele, Carroll M.: *See*—
Crane, Hewitt D.; and Steele, Carroll M., 4,287,410, Cl. 250-201.000.
Steiger, Douglass W.; and Kees, Edward J., to Environmental Impact Research Group. Geothermal heating system and method of installing the same. 4,286,651, Cl. 165-45.000.
Stelben, John J.; Siladi, Kim E.; Herman, George A., Jr.; and Vesel, John E., to Pitney Bowes Inc. Bias voltage control for electrophotocopier magnetic brush. 4,286,866, Cl. 355-14.00D.
Stendel, Wilhelm: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,287,208, Cl. 424-304.000.
Stenzel, Wallace I., to Waukee Engineering Company Inc. Apparatus for separating liquids. 4,287,063, Cl. 210-402.000.
Stern, Howard; and DiMatteo, Paul, to Solid Photography, Inc. Recording images of a three-dimensional surface by focusing on a plane of light irradiating the surface. 4,286,852, Cl. 354-77.000.
Stevens, William E., to Scovill Inc. Hold-open device for use with conventional door closer. 4,286,412, Cl. 49-379.000.
Stevenson, James F.: *See*—
Fairbanks, Richard E.; Stevenson, James F.; and Blumenfeld, John F., 4,287,380, Cl. 13-6.000.
Stevenson, Robert L., to Havaco Incorporated. Rotary control valve for expansion fluid driven engines. 4,286,500, Cl. 91-180.000.
Stewart, Charles; and Condon, Richard W., to Roper Corporation. Motorized ski bob. 4,286,682, Cl. 180-9.24A.
Stewart, Patrick H.; and Woodson, Wayne D., to CL Industries, Inc. Acid catalysis of resin foundry binders. 4,287,092, Cl. 252-429.00R.
Stewart, Ralph J., to International Business Machines Corporation. Method and apparatus for pneumatically sampling powders. 4,286,466, Cl. 73-863.830.
Stiff, Bernard. Rotary shaft control apparatus. 4,286,476, Cl. 74-640.000.
Stilling, Johann. Strut raceways for sign boxes. 4,287,555, Cl. 362-225.000.
Stober, Reinhard; Wirthwein, Rolf; and Hase, Christian. Stabilized diperoxyalkanedioic acids and aromatic peroxycarboxylic acids. 4,287,135, Cl. 260-502.00R.
Stockley, Raymond A.: *See*—
Porter, L. Steven; and Stockley, Raymond A., 4,286,904, Cl. 408-225.000.
Stoldt, Stephen H.: *See*—
Kestner, Mark O.; and Stoldt, Stephen H., 4,287,236, Cl. 427-221.000.
Stoltman, Donald D., to General Motors Corporation. Engine charge forming apparatus. 4,286,562, Cl. 123-454.000.
Stong, Jack V., to Seco Manufacturing, Inc. Truck lubricator. 4,286,691, Cl. 184-7.0CR.
Stoudt, Thomas H.: *See*—
Carlo, Dennis J.; Jackson, Jesse J.; and Stoudt, Thomas H., 4,287,173, Cl. 424-49.000.
Stover, Harris A., to United States of America, Army. Preservation of equal time delays for different paths through digital communications repeaters. 4,287,593, Cl. 370-103.000.
Strachan, Robert; and Goodhouse, Carl J., to Robertshaw Controls Company. Control panel unit and timer unit and method therefor. 4,287,583, Cl. 368-10.000.
Strandly, Ingvald. Method of providing a seam in double-layer forming fabrics. 4,286,631, Cl. 139-383.00A.
Straus, Albert E., to Hoover Universal, Inc. Ballcock assembly. 4,286,619, Cl. 137-426.000.
Strazzari, Giuliano: *See*—
Martelli, Nerio; and Strazzari, Giuliano, 4,286,715, Cl. 206-564.000.
Strehl, Herbert, to Siemens Aktiengesellschaft. Communications transmission system. 4,287,591, Cl. 370-83.000.
Streib, Hugo: *See*—
Engelhard, Forest; Kuhn, Rainer; Pump, Wichard; Riess, Reinhard; and Streib, Hugo, 4,287,262, Cl. 428-461.000.
Streich, Steven G.; and Knox, Lloyd C., to Halliburton Company. Removable plug. 4,286,629, Cl. 138-89.000.
Stringer, Frederick D.: *See*—
Esakov, Michael D.; Hudgens, David C., Jr.; and Stringer, Frederick D., 4,287,151, Cl. 264-560.000.
Strohmeyer, Max: *See*—
Brunner, Erwin; Schubert, Eckart; Lindner, Alfred; Merger, Franz; Volkamer, Klaus; Strohmeyer, Max; and Sandrock, Gerhard, 4,287,379, Cl. 585-839.000.
Stubbings, James H.: *See*—
Silcott, Philip B.; and Stubbings, James H., 4,286,739, Cl. 224-156.000.
Stumpp, Gerhard; and Wessel, Wolf, to Robert Bosch GmbH. Apparatus for measuring the amount of fluid supplied by a fluid supply device. 4,286,615, Cl. 137-117.000.
Stumvoll, Ernst: *See*—
Greutert, Albert; and Stumvoll, Ernst, 4,287,066, Cl. 210-464.000.
Su, Sophia R.: *See*—
Natansohn, Samuel; and Su, Sophia R., 4,287,159, Cl. 423-54.000.
Sugawara, Hiroyuki: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,287,487, Cl. 331-94.50G.
Sugimoto, Akira; and Sugimoto, Hiroshi, to Tokyo Chika Koji Kabushiki Kaisha. Injection device of chemical fluids for improvements of the ground. 4,286,900, Cl. 405-269.000.
Sugimoto, Hiroshi: *See*—
Sugimoto, Akira; and Sugimoto, Hiroshi, 4,286,900, Cl. 405-269.000.
Sugo, Takanobu: *See*—
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Okada, Toshio; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,287,272, Cl. 429-144.000.
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, to USV Pharmaceutical Corporation. Antihypertensive 1,4-thiazepine-ones, 1,4-thiazonine-ones, and method of use thereof. 4,287,203, Cl. 424-275.000.
Sulzer, Harry E., to Anchor/Darling Industries, Inc. Mechanical snubber. 4,286,693, Cl. 188-378.000.
Sumida, Shizuo, to Toyo Kogyo Co., Ltd. Running data central display arrangement for motor vehicles and the like. 4,287,503, Cl. 340-52.00F.
Sumitomo Chemical Company, Limited: *See*—
Kitagawa, Yoshihiko; Hanamura, Yoshimi; Yuyama, Masahiro; Moritani, Masahiko; Sakuramoto, Akira; and Suzuki, Mikio, 4,287,317, Cl. 525-309.000.
Takagishi, Hisao; and Kondo, Norio, 4,287,110, Cl. 260-29.2EP.
Sumitomo Electric Industries, Ltd.: *See*—
Saito, Yasunori, 4,287,384, Cl. 174-29.000.
Sun Oil Company of Pennsylvania: *See*—
Earhart, Harold W.; and Rugen, Donald F., 4,287,074, Cl. 585-6.300.
Hamlin, Robert N.; and Dickinson, William W., 4,286,973, Cl. 55-92.000.
Suntech, Inc.: *See*—
Scheibel, Edward G., 4,287,162, Cl. 423-238.000.
Suntory Ltd.: *See*—
Toyoshima, Kumao; Hakura, Akira; Nakanishi, Toshihiro; and Yoshizumi, Hajime, 4,287,185, Cl. 424-177.000.
Superior Industries International, Inc.: *See*—
Brown, Raymond C., 4,286,824, Cl. 301-37.0SS.
Sureau, Robert F. M.: *See*—
Pechmeze, Jacques P. E.; and Sureau, Robert F. M., 4,287,121, Cl. 260-186.000.
Suskind, Philip A. Dock clamp apparatus. 4,286,897, Cl. 405-221.000.
Sutherland, Ian A., to National Research Development Corporation. Rotating coil centrifuge. 4,287,061, Cl. 210-198.200.
Suzuki, Katumi: *See*—
Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katumi, 4,287,312, Cl. 525-83.000.
Suzuki, Masayasu: *See*—
Kaneko, Akira; Ohya, Masaki; Suzuki, Masayasu; and Kobayashi, Akio, 4,287,316, Cl. 525-296.000.
Suzuki, Mikio: *See*—
Kitagawa, Yoshihiko; Hanamura, Yoshimi; Yuyama, Masahiro; Moritani, Masahiko; Sakuramoto, Akira; and Suzuki, Mikio, 4,287,317, Cl. 525-309.000.
Suzuki, Takayoshi: *See*—
Nakashima, Toshihide; Nakaji, Osamu; Takakura, Koichi; and Suzuki, Takayoshi, 4,287,177, Cl. 424-81.000.
Swain, James W.; and Crayton, Frank H., to Philip Morris Incorporated. Tobacco flavorants. 4,286,606, Cl. 131-276.000.
Swan, John: *See*—
Bedient, Marvin J., 4,286,617, Cl. 137-334.000.
Swenson, Donald A.: *See*—
Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., 4,287,488, Cl. 331-94.5PE.
Swift, Billy K.; Zizzo, Anthony F.; and Blevins, Willard A., to Sperry Corporation. Phase locked loop out-of-lock detector. 4,287,480, Cl. 331-1.00A.
Swift, Joseph A., to Xerox Corporation. Release agent applicators and method of applying release agent emulsions upon fusers in electrostatic copiers. 4,287,280, Cl. 430-99.000.
Swift, William R.; Herrod, Don W.; and Marsh, James M., to AM International, Inc. Method of correcting for misalignment of microfiche frames. 4,287,564, Cl. 364-525.000.
Sybron Corporation: *See*—
Pietschmann, Helmut, 4,286,948, Cl. 433-77.000.
Syva Company: *See*—
Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., 4,287,300, Cl. 435-5.000.
Szent-Gyorgyi, Albert; and Fodor, Gabor B., to National Foundation for Cancer Research. Hypotensive and analgesic compounds and compositions and methods for using same. 4,287,205, Cl. 424-278.000.
Szilagyi, Geza: *See*—
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Laszlo; Szuucs, Erzsebet; and Kiss, Gabriella, 4,287,194, Cl. 424-248.510.
Szuucs, Erzsebet: *See*—
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Laszlo; Szuucs, Erzsebet; and Kiss, Gabriella, 4,287,194, Cl. 424-248.510.
Szymski, Eugene J.; and Mraz, Rene, to Excelsior Fitness Equipment Co. Brake flywheel for bicycle-type ergometric exerciser. 4,286,696, Cl. 188-218.00A.

Tabata, Yasuhiro: *See*—
Satomi, Toyokazu; Ohminato, Mitsuru; and Tabata, Yasuhiro, 4,286,865, Cl. 355-14.0CU.
Tabler, Donald C.; and Johnson, Marvin M., to Phillips Petroleum Co. Reclaiming used lubricating oils with ammonium salts and polyhydroxy compounds. 4,287,049, Cl. 208-180.000.
Tachibana, Masami: *See*—
Kikuta, Kazutsune; Tachibana, Masami; and Sato, Akihiro, 4,287,328, Cl. 526-115.000.
Tagawa, Takao, to Sharp Kabushiki Kaisha. Multi-pin record electrode assembly and driving method of the same. 4,287,525, Cl. 346-155.000.
Taggi, Arthur J.: *See*—
Holtje, Wilfried G.; Senkler, George H.; and Taggi, Arthur J., 4,286,998, Cl. 106-288.00Q.
Taguchi, Kiyomi: *See*—
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Taiho Pharmaceutical Company, Limited: *See*—
Fujmura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,287,207, Cl. 424-282.000.
Takagi, Toshinori; Morimoto, Kiyoshi; and Watanabe, Hiroshi, to Futaba Denshi Kogyo K.K. Apparatus for vapor depositing a stoichiometric compound. 4,286,545, Cl. 118-723.000.
Takagishi, Hisao; and Kondo, Norio, to Sumitomo Chemical Company, Limited. Production of aqueous solutions of cationic thermosetting resins. 4,287,110, Cl. 260-29.2EP. .
Takahashi, Nobuo: *See*—
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,287,283, Cl. 430-108.000.
Takakura, Koichi: *See*—
Nakashima, Toshihide; Nakaji, Osamu; Takakura, Koichi; and Suzuki, Takayoshi, 4,287,177, Cl. 424-81.000.
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, to Mitsubishi Gas Chemical Co., Inc. Coating composition. 4,287,113, Cl. 260-33.4EP.
Takeda Chemical Industries, Ltd.: *See*—
Kawamatsu, Yutaka; and Fujita, Takeshi, 4,287,200, Cl. 424-270.000.
Takeda, Mikio; Kishishita, Hiroshi; Kawabata, Hiroyuki; and Isaka, Kinichi, to Sharp Kabushiki Kaisha. Light-absorption film for rear electrodes of electroluminescent display panel. 4,287,449, Cl. 313-509.000.
Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, to Kabushiki Kaisha Suwa Seikosha. (2'-Cyano-4'-alkylphenyl)-3-cyano-4-alkoxybenzoates and liquid crystal composition including same. 4,287,085, Cl.,252-299.630.
Takekoshi, Yoshitaka: *See*—
Nozawa, Ryoichiro; Amemiya, Yoichi; Kawamata, Mitsuo; Isohata, Shigeru; Sasaki, Takao; and Takekoshi, Yoshitaka, 4,287,460, Cl. 318-571.000.
Takemori, Satoshi: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Sasaki, Kouji; and Takemori, Satoshi, 4,287,487, Cl. 331-94.50G.
Takemura, Yoshihiro, to Shinano Tokki Corporation. Electromagnetic rotating apparatus. 4,287,457, Cl. 318-133.000.
Takeshima, Takahiko; Kawashima, Motozo; and Nishimoto, Masayuki, to Ube Industries. Apparatus for operating an injection cylinder of a molding machine. 4,286,648, Cl. 164-312.000.
Takeuchi, Masami: *See*—
Tominaga, Tamotsu; Mihara, Teruyoshi; Oguro, Takeshi; and Takeuchi, Masami, 4,287,501, Cl. 338-42.000.
Takeuchi, Takashi: *See*—
Okuno, Noboru; Takeuchi, Takashi; Tsuzuku, Akihiko; Tanazawa, Masao; Nakajima, Minoru; and Imamura, Haruo, 4,286,935, Cl. 425-72.00R.
Takikawa, Katsuo: *See*—
Fujmura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,287,207, Cl. 424-282.000.
Talbot, Patricia A. Dental floss dispenser. 4,286,611, Cl. 132-91.000.
Tanahashi, Makoto; Yamauchi, Hisashi; and Yamamoto, Takeshi, to Sony Corporation. Cassette loading device for a cassette recording apparatus. 4,287,541, Cl. 360-92.000.
Tanaka, Akira: *See*—
Ziv, Avraham; Tanaka, Akira; Hollowell, William; Sieber, William J.; and Ahad, Munir J., 4,287,398, Cl. 200-61.45R.
Tanaka, Hitoshi: *See*—
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; Tanaka, Hitoshi; and Ueoka, Hisayoshi, 4,287,075, Cl. 106-39.500.
Ohmatoi, Susumu; Tanaka, Hitoshi; and Murakami, Seiji, 4,287,257, Cl. 428-403.000.
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Udea, Koichiro, to Eisai Co., Ltd. Cyanoguanidine derivatives. 4,287,346, Cl. 546-330.000.
Tanazawa, Masao: *See*—
Okuno, Noboru; Takeuchi, Takashi; Tsuzuku, Akihiko; Tanazawa, Masao; Nakajima, Minoru; and Imamura, Haruo, 4,286,935, Cl. 425-72.00R.
Tani, Hiroyoshi: *See*—
Sonoyama, Takayasu; Tani, Hiroyoshi; and Kobayashi, Kobee, 4,287,137, Cl. 261-93.000.
Taniguchi, Yasuo; Ike, Toshiharu; and Nakaya, Hideo, to Denki Kagaku Kogyo Kabushiki Kaisha. Glue for wood laminating comprising thermosetting condensation resin and modified PVA. 4,287,311, Cl. 525-58.000.
Tanimoto, Akira; and Saizi, Mituhiro, to Sharp Kabushiki Kaisha. Speech-synthesizer timepiece. 4,287,584, Cl. 368-63.000.
Tanso, Shiro: *See*—
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Okada, Toshio; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,287,272, Cl. 429-144.000.
Tardos, Laszlo: *See*—
Kosa, Edit; Borvendeg, Janos; Huszti, Zsuzsanna; Kosary, Judit; Szilagyi, Geza; Tardos, Laszlo; Kasztreiner, Endre; Nagy, Laszlo; Szuucs, Erzsebet; and Kiss, Gabriella, 4,287,194, Cl. 424-248.510.
Tatami, Mitsushige; and Tsujikawa, Kazunobu, to Sony Corporation. Time base error correcting apparatus. 4,287,529, Cl. 358-8.000.
Tauber, Thomas E.; and Magee, James, to Technical Development Company. Optical fluid level monitor. 4,286,464, Cl. 73-293.000.
Tavolek Inc.: *See*—
Amend, Donald F., 4,287,179, Cl. 424-92.000.
Tax, Hans; and Hosler, Klaus, to Tax, Hans. Container loading crane with rotatable hoisting frame. 4,286,722, Cl. 212-242.000.
Taylor, Frank. Compartment cooler. 4,286,440, Cl. 62-457.000.
Taylor, Neil J.; St. Hilaire, A. Robert; and Johnson, James L. Tree stand. 4,286,409, Cl. 47-40.500.
TDK Electronics Co., Ltd.: *See*—
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; Tanaka, Hitoshi; and Ueoka, Hisayoshi, 4,287,075, Cl. 106-39.500.
Goshima, Yoshio; and Osada, Hisashi, 4,287,492, Cl. 333-140.000.
Hashimoto, Tadashi; and Jindou, Katsuya, 4,287,494, Cl. 333-202.000.
Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Meyers, Charles, 4,287,595, Cl. 375-28.000.
Technical Development Company: *See*—
Tauber, Thomas E.; and Magee, James, 4,286,464, Cl. 73-293.000.
Tefertiller, Nancy B.; Burdett, Kenneth A.; and Harris, Robert F., to Dow Chemical Co., The. Addition polymerizable polyethers having pendant ethylenically unsaturated urethane groups. 4,287,323, Cl. 525-404.000.
Teledyne Industries, Inc.: *See*—
Smith, Raymond, 4,286,430, Cl. 60-39.16R.
Teletype Corporation: *See*—
Rumps, Norbert A., 4,286,836, Cl. 339-97.00R.
Templeton, John S., III: *See*—
Pan, Robert B.; and Templeton, John S., III, 4,287,472, Cl. 324-65.00R.
Tennessee Valley Authority: *See*—
Lehr, James R.; and Hsieh, Shuang-shii, 4,287,053, Cl. 209-167.000.
Tennessen, Rick L.: *See*—
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Teptikov, Nikolai R.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; Teptikov, Nikolai R.; and Demchenko, Jury D., 4,287,444, Cl. 310-13.000.
Tersteeg, Glenn E.; and Harold, Richard R., to Eastman Kodak Company. Sample tray and carrier for chemical analyzer. 4,287,155, Cl. 422-64.000.
Terumo Corporation: *See*—
Murase, Masakazu, 4,286,590, Cl. 128-214.00E.
Teshima, Takashi: *See*—
Miyakawa, Nobuhiro; and Teshima, Takashi, 4,287,282, Cl. 430-107.000.
Tetra Pak International AB: *See*—
Reil, Wilhelm; and Trabitzsch, Jorg, 4,287,247, Cl. 428-129.000.
Texaco Inc.: *See*—
Arnold, Dan M., 4,287,415, Cl. 250-270.000.
Marquis, Edward T.; Gipson, Robert M.; and Watts, Lewis W., Jr., 4,287,364, Cl. 564-332.000.
McEntire, Edward E., 4,287,363, Cl. 564-205.000.
Texaco Limited: *See*—
Farnworth, Frank; and Clubley, Michael H., 4,287,098, Cl. 252-463.000.
Texas A & M University: *See*—
Tsutsui, Minoru; and Doi, Yoshiharu, 4,287,036, Cl. 204-157.10R.
Texas Instruments Incorporated: *See*—
Easley, Steven J.; and Brantingham, George L., 4,287,559, Cl. 364-200.000.
Pejouhy, Radi, 4,287,499, Cl. 337-97.000.
Tezuka, Hideharu; and Furukawa, Yuuichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrical circuit for driving an inductive load. 4,287,436, Cl. 307-270.000.
Tezuka, Masao: *See*—
Watanabe, Minoru; Oikawa, Mitsuhiro; Nishimura, Toshio; Asada, Masao; Tezuka, Masao; and Cho, Tsurahide, 4,287,229, Cl. 427-64.000.
Th. Kieserling & Albrecht Werkzeugmaschinenfabrik: *See*—
Schneider, Horst, 4,286,452, Cl. 72-164.000.
Thackeray, Michael M.: *See*—
Coetzer, Johan; and Thackeray, Michael M., 4,287,269, Cl. 429-103.000.
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Budich, Wolfgang; and Theissen, Hans, 4,286,716, Cl. 206-577.000.
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black, and their use for the production of moldings. 4,287,117, Cl. 260-42.460.
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Hoersch, Werner, 4,286,395, Cl. 34-155.000.
Thil, Lucien: *See—*
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Thomae, Irving H., to Dartmouth College, Trustees of. Electronic device to record temperatures and the time of occurrence. 4,286,465, Cl. 73-342.000.
Thomas, Alfred W.; and op den Camp, Lutz E. A., to Lucas Industries Limited. Servo boosters for vehicle braking systems. 4,286,501, Cl. 91-376.00R.
Thomas, Herbert: *See—*
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Thomas, Jacob E.; and Italiano, Victor J., to NCR Corporation. Valve for ink jet printer. 4,287,523, Cl. 346-140.00R.
Thomas, William R., to Baxter Travenol Laboratories, Inc. Method for treating blood clotting factor inhibitors. 4,287,180, Cl. 424-101.000.
Thompson, Buster R. High-speed smokeless coke oven battery. 4,287,024, Cl. 202-134.000.
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Garman, John A.; Mamuzic, Rastko I.; McDonald, Robert B.; Sands, John L.; and Thompson, Gregory, 4,287,373, Cl. 568-639.000.
Thompson, Harris A. Extension lead for a respirator alarm system. 4,286,589, Cl. 128-202.220.
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Ross, Cecil J.; and Thompson, John F., 4,286,388, Cl. 33-246.000.
Thomson-CSF: *See—*
Couderc, Georges; Cojan, Yves; and Beck, Jean-Louis, 4,286,760, Cl. 244-3.160.
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Galves, Jean-Pierre; and Gutierrez, Jean-Marie, 4,287,230, Cl. 427-65.000.
Huignard, Jean-Pierre; Leclerc, Pierre; Carballes, Jean-Claude; and Nappo, Armand, 4,286,838, Cl. 350-96.110.
Pircher, Georges, 4,286,878, Cl. 356-350.000.
Thornton, Alan; and Uttley, John S., to Bondina, Ltd. Multizonal fiber distribution. 4,287,246, Cl. 428-113.000.
Tideland Signal Corporation: *See—*
Modisette, Jerry L., 4,286,347, Cl. 9-8.00R.
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Kitik, Walter; Reder, Rodney; and Kurpiewski, Stanley, 4,287,400, Cl. 200-302.000.
Tingskog, Karl A. L., to AB Siwertell. Apparatus for unloading bulk material from a storage space. 4,286,909, Cl. 414-144.000.
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., to Warner-Lambert Company. Dihydro-oxo-pyrido[1,2-a]thienopyrimidine compounds. 4,287,340, Cl. 544-250.000.
Tobias, Emil. Device for collection and disposal of pet waste. 4,286,816, Cl. 294-1.0BA.
Tocquet, Bernard, to Etat Francais represente par le Delegue General pour l'Armement. Piezo transducers with mechanical amplification for very low frequencies, and acoustic antennas. 4,287,582, Cl. 367-163.000.
Todokoro, Masatoshi. Tennis game board. 4,286,785, Cl. 273-85.00D.
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Nakamura, Akiyoshi; and Tokumaru, Hisashi, 4,286,847, Cl. 350-459.000.
Tokyo Chika Koji Kabushiki Kaisha: *See—*
Sugimoto, Akira; and Sugimoto, Hiroshi, 4,286,900, Cl. 405-269.000.
Tokyo Ohka Kogyo Kabushiki Kaisha: *See—*
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Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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Shirasaka, Hisatoshi, 4,287,594, Cl. 371-25.000.
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Tolfo, Flavio; and Barrat, Christian R., to Procter & Gamble Company, The. Homogeneous enzyme-containing liquid detergent compositions containing saturated acids. 4,287,082, Cl. 252-174.120.
Tolman, Richard L.: *See—*
Olson, George; Tolman, Richard L.; and Weppelman, Roger M., 4,287,201, Cl. 424-273.00R.
Tomalia, Donald A.: *See—*
Hefner, Robert E., Jr.; and Tomalia, Donald A., 4,287,052, Cl. 209-166.000.
Tominaga, Akira; and Nishida, Reijiro, to Kansai Paint Co., Ltd. Process for electrodeposition of cationic resins. 4,287,041, Cl. 204-181.00C.
Tominaga, Tamotsu; Mihara, Teruyoshi; Oguro, Takeshi; and Takeuchi, Masami, to Nissan Motor Company, Limited. Pressure sensor. 4,287,501, Cl. 338-42.000.
Tomita, Chuji; Abe, Hiroshi; and Shimazu, Katashi, to Hitachi Medical Corporation. Scanning device for use in axial transverse tomographic apparatus. 4,287,424, Cl. 250-445.00T.
Tomlin, Jerry B.; and Hodgeman, Herbert H., to Daniel Industries, Inc. Four-way plug valve. 4,286,625, Cl. 137-625.430.
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Tonedachi, Masayuki; Sekigawa, Fujio; and Minemura, Katsuyoshi, to Shin-Etsu Chemical Co., Ltd. Method for providing enteric coating on solid dosage forms. 4,287,221, Cl. 427-3.000.
Tonge, Donald R. Liquid mix dispensing gun. 4,286,734, Cl. 222-145.000.
Tonomura, Yoshinobu, to Janome Sewing Machine Co., Ltd. Sewing machine with a device for directly driving the feeding shaft. 4,286,532, Cl. 112-314.000.
Tooyama, Akira: *See—*
Mitamura, Ichiro; Tooyama, Akira; and Hosono, Takashi, 4,287,531, Cl. 358-67.000.
Toppan Printing Co., Ltd.: *See—*
Fujiu, Takahiro; Nakajima, Masao; and Okano, Shigeru, 4,286,958, Cl. 8-471.000.
Toray Silicone Company, Ltd.: *See—*
Mikami, Ryuzo, 4,287,326, Cl. 525-476.000.
Torok, John, to Atomic Energy of Canada Ltd. Nuclear reactor decontamination. 4,287,002, Cl. 134-3.000.
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., to Bethlehem Steel Corporation. Method of improving the ductility of the coating of an aluminum-zinc alloy coated ferrous product. 4,287,008, Cl. 148-127.000.
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Koinuma, Tokuju; and Kousaka, Akira, 4,287,451, Cl. 315-39.690.
Yamamura, Toshio; and Muraki, Takeshi, 4,287,420, Cl. 250-402.000.
Tosk, Jeffrey M. Method of determining the concentration of reducing agents. 4,287,027, Cl. 204-1.00T.
Towgood, Dennis A.: *See—*
Friedericy, Johan A.; and Towgood, Dennis A., 4,286,475, Cl. 74-572.000.
Townsend, Herbert E.: *See—*
Allegra, Louis K.; Townsend, Herbert E.; and Borzillo, Angelo R., 4,287,009, Cl. 148-127.000.
Towsend, Marvin S. Disposable article with non-leachable saline water indicator. 4,287,153, Cl. 422-56.000.
Toyo Jozo Kabushiki Kaisha: *See—*
Kotani, Kikuo; Ohyama, Kunio; Nakagawa, Nobuaki; Fujii, Tadashiro; and Watanabe, Susumu, 4,287,345, Cl. 546-261.000.
Toyo Kogyo Co., Ltd.: *See—*
Sumida, Shizuo, 4,287,503, Cl. 340-52.00F.
Toyoshima, Kumao; Hakura, Akira; Nakanishi, Toshihiro; and Yoshizumi, Hajime, to Suntory Ltd. Method for the detection of viruses. 4,287,185, Cl. 424-177.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Inukai, Mitsuo; and Kamiyama, Hajime, 4,286,758, Cl. 242-107.000.
Matsunami, Muneharu; Kubota, Tatsushi; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,286,805, Cl. 280-803.000.
Okamoto, Takamitsu, 4,286,554, Cl. 123-188.00M.
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,286,933, Cl. 418-15.000.
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Usami, Susumu; Hayashi, Yoshihiro; Nakaho, Junichi; and Yasumatsu, Jun, 4,286,759, Cl. 242-107.200.
Trabitzsch, Jorg: *See—*
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Trayner, Brian T., to British Aerospace Public Limited Company. Latch devices. 4,286,522, Cl. 102-255.000.
Treffers, Willem M. Building structure and coupling profile associated therewith. 4,286,419, Cl. 52-39.000.
Treiber, Fritz F.; and Margraf, Dallas A., to Hobart Corporation. Tank flushing delay arrangement for a steam generator. 4,287,407, Cl. 219-273.000.
Trenkle, Robert W.: *See—*
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,287,133, Cl. 260-458.00R.
Trentadue, Victor: *See—*
Kerwin, Daniel; and Trentadue, Victor, 4,287,016, Cl. 156-497.000.
Trias, John A., to United States of America, Navy. Optical fiber test apparatus. 4,286,469, Cl. 73-829.000.
Trico Products Corporation: *See—*
Mower, Peter; and Gadd, John H., 4,286,351, Cl. 15-250.420.
Trimbach, Jurgen: *See—*
Hullstrung, Dieter; and Trimbach, Jurgen, 4,287,350, Cl. 548-182.000.
Trimmer, William S. N.; and Laser, Mark R., to Johnson & Johnson. Force sensor. 4,286,459, Cl. 73-862.590.
Triumph Werke Nurnberg A.G.: *See—*
Ebert, Hermann; and Bachmann, Gunter, 4,286,889, Cl. 400-697.100.
Trojani, Benito L. Finned tube for heat exchangers. 4,286,655, Cl. 165-179.000.
Trostel, Jerry D.: *See—*
Borg, Arthur N.; Trostel, Jerry D.; and Heuer, Daniel A., 4,287,601, Cl. 455-186.000.

TRW, Inc.: *See—*
Lathlaen, Richard A., 4,287,573, Cl. 365-133.000.
Tschirner, Wolfgang: *See—*
Lopata, Karl-Peter; and Tschirner, Wolfgang, 4,287,017, Cl. 156-583.500.
Tsuchiya, Hiroyuki: *See—*
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Tsuchiya, Yoshikazu: *See—*
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Tsuno, Kazuhiko: *See—*
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Tsutsui, Minoru; and Doi, Yoshiharu, to Texas A & M University. Method for producing a reduction product using a photo-regenerated transition metal catalyst. 4,287,036, Cl. 204-157.10R.
Tsutsumi, Saburo, to Nissan Motor Company, Limited. Variable compression ratio internal combustion engine. 4,286,552, Cl. 123-48.0AA.
Tsutsumi, Saburo, to Nissan Motor Company, Limited. Internal combustion engine intake system having jet-producing nozzle in intake port. 4,286,561, Cl. 123-432.000.
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Okuno, Noboru; Takeuchi, Takashi; Tsuzuku, Akihiko; Tanazawa, Masao; Nakajima, Minoru; and Imamura, Haruo, 4,286,935, Cl. 425-72.00R.
Tufano, Michael D., to UOP Inc. Preparation of nitro-substituted diphenyl ethers. 4,287,372, Cl. 568-635.000.
Tuggle, Lloyd H., to Beaird-Poulan Division of Emerson Electric Co. Narrow profile power handle for line trimmer and the like. 4,286,675, Cl. 173-163.000.
Turney, Larry R., to Victor Equipment Company. Combination torch and check valve assembly. 4,286,620, Cl. 137-454.200.
Tweed, George C., Jr.: *See—*
Dunn, David C.; and Tweed, George C., Jr., 4,286,583, Cl. 126-445.000.
Tyler Refrigeration Corporation: *See—*
Abraham, Fayez; and Bowman, Edward, 4,286,437, Cl. 62-151.000.
Ube Industries: *See—*
Takeshima, Takahiko; Kawashima, Motozo; and Nishimoto, Masayuki, 4,286,648, Cl. 164-312.000.
Uber, Raymond F.; Childers, Clifford W.; and Naylor, Floyd E., to Phillips Petroleum Co. Block copolymers of conjugated dienes and lactones as modifiers of unsaturated polyesters. 4,287,313, Cl. 525-91.000.
Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Memory cell with non-volatile memory elements. 4,287,574, Cl. 365-156.000.
Uchidoi, Masanori; Shimizu, Masami; Date, Nobuaki; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Digital camera. 4,286,849, Cl. 354-23.00D.
Udea, Koichiro: *See—*
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Udea, Koichiro, 4,287,346, Cl. 546-330.000.
Uebayashi, Takeo: *See—*
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Ueda, Kenji; and Sakanishi, Akihiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for treating electrolytic solution and apparatus therefor. 4,287,046, Cl. 204-266.000.
Ueda, Kenji: *See—*
Kamiya, Fumio; Nodera, Hisatoshi; Ueda, Kenji; and Miyamoto, Hiroyuki, 4,287,440, Cl. 307-315.000.
Ueda, Kensaku, to Matsushita Electric Industrial Co., Ltd. Thermal protector. 4,287,500, Cl. 337-107.000.
Ueda, Minoru, to Yoshida Kogyo, K.K. Slider applicator for slide fasteners. 4,286,382, Cl. 29-768.000.
Ueda, Tatehito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation control system for an internal combustion engine. 4,286,567, Cl. 123-569.000.
Ueoka, Hisayoshi: *See—*
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; Tanaka, Hitoshi; and Ueoka, Hisayoshi, 4,287,075, Cl. 106-39.500.
Uhlman, Joseph G.: *See—*
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Ullrich, Horst: *See—*
Simon, Ernst-Ulrich; and Ullrich, Horst, 4,287,504, Cl. 340-52.00F.
UMC Industries, Inc.: *See—*
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Unico, Inc.: *See—*
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Union Carbide Corporation: *See—*
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Potts, James E., 4,286,586, Cl. 128-90.000.
United States Bronze Powders, Inc.: *See—*
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U.S. Elevator Corporation: *See—*
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Galer, Richard E.; and Webb, Paul C., 4,286,992, Cl. 106-90.000.
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Air Force: *See—*
Eaton, William G.; and Roeder, Allan W., 4,287,475, Cl. 328-167.000.
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Army: *See—*
Gutierrez, William A.; Wilson, Herbert L.; and Yee, Edward M., 4,286,373, Cl. 29-572.000.
Patrick, E. V.; Dickson, Howard K.; and Dunmire, Howard L., 4,286,833, Cl. 316-31.000.
Segner, Samuel M., 4,287,588, Cl. 370-29.000.
Smith, Edwyn D., 4,287,441, Cl. 307-353.000.
Stover, Harris A., 4,287,593, Cl. 370-103.000.
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Booth, Rex, 4,287,419, Cl. 250-396.0ML.
Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., 4,287,488, Cl. 331-94.5PE.
Clark, John H.; Campillo, Anthony J.; Shapiro, Stanley L.; and Winn, Kenneth R., 4,287,035, Cl. 204-157.10R.
Compere, Alicia L.; and Griffith, William L., 4,287,305, Cl. 435-176.000.
Marling, John B., 4,287,037, Cl. 204-158.00R.
McClelland, John F., 4,286,576, Cl. 126-428.000.
Riley, Robert E.; Newkirk, Lawrence R.; Valencia, Flavio A.; and Wallace, Sr., Terry C., 4,287,259, Cl. 428-408.000.
Rupp, Arthur F.; and Woo, David V., 4,287,165, Cl. 423-323.000.
Sawyer, David E., 4,287,473, Cl. 324-158.00R.
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Atkinson, Gary B.; Nicks, Larry J.; and Bauer, Donald J., 4,287,095, Cl. 252-443.000.
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Ellis, Haynes, Jr. Cavity-backed, micro-strip dipole antenna array. 4,287,518, Cl. 343-700.0MS.
Lutes, George F., Jr.; and Lau, Kam Y. Fiber optic transmission line stabilization apparatus and method. 4,287,606, Cl. 455-617.000.
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Belcher, Jewell G., Jr.; and Hollis, Ben R., Jr., 4,286,542, Cl. 118-423.000.
Couch, Lana M., 4,286,460, Cl. 73-147.000.
Heyser, Richard C., 4,287,578, Cl. 367-88.000.
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Altman, Daniel E., 4,286,468, Cl. 73-655.000.
Castelli, Vincent J.; and Fischer, Eugene C., 4,286,988, Cl. 106-15.050.
Doi, Kazumasa, 4,287,519, Cl. 343-725.000.
Gipe, Robert C.; and Engelkemier, William E., 4,287,604, Cl. 455-323.000.
Hartley, Robert R.; and Konrad, Joseph A., 4,287,387, Cl. 178-2.00R.
Holzschuh, Jack E., 4,287,580, Cl. 367-105.000.
Kramer, Irvin R.; Weissman, Sigmund; and Pangborn, Robert N., 4,287,416, Cl. 250-273.000.
Porzel, Francis B., 4,286,708, Cl. 206-3.000.
Sides, Nathan T.; and Daugherty, Thomas L., 4,286,828, Cl. 308-26.000.
Trias, John A., 4,286,469, Cl. 73-829.000.
U.S. Philips Corp.: *See—*
Berger, Hermann, 4,287,478, Cl. 330-256.000.
Cense, Adriaan, 4,287,476, Cl. 330-254.000.
Clasen, Rolf; and Lydtin, Hans J., 4,286,981, Cl. 65-169.000.
Gloaguen, Gilbert Y. M., 4,287,467, Cl. 323-314.000.
Lersmacher, Bernhard, 4,287,025, Cl. 202-222.000.
Reuvekamp, Antonius H. J., 4,287,393, Cl. 179-70.000.
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Golden, Gerald S.; Lemkey, Franklin D.; and Brooks, Clyde S., 4,287,096, Cl. 252-455.00R.
Goller, Glen J.; and Salonia, Joseph R., 4,287,232, Cl. 427-113.000.
Limoncelli, Anthony F., 4,286,727, Cl. 220-244.000.
Universal Industrial Control Devices Ltd.: *See—*
Lumsden, James R., 4,287,567, Cl. 364-900.000.

Universal Pioneer Corporation: *See—*
Kanamaru, Hitoshi, 4,287,413, Cl. 369-45.000.
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Aitcin, Pierre C., 4,287,167, Cl. 423-331.000.
University of Iowa Research Foundation, The: *See—*
Spencer, Donald L.; and Melroy, Patrick J., 4,286,577, Cl. 126-429.000.
University of Melbourne, The: *See—*
Bourne, Ian A., 4,286,462, Cl. 73-189.000.
UOP Inc.: *See—*
Delgleize, Jean; and Deleenher, Henri, 4,286,765, Cl. 248-573.000.
Geiser, Edward M.; and Johnson, Russell W., 4,287,038, Cl. 204-158.00R.
Kulprathipanja, Santi; and Neuzil, Richard W., 4,287,001, Cl. 127-46.00B.
Tufano, Michael D., 4,287,372, Cl. 568-635.000.
Upjohn Company, The: *See—*
Johnson, Garland A.; and Peuler, Jacob D., 4,287,368, Cl. 568-436.000.
McCall, John M., 4,287,338, Cl. 544-123.000.
Sih, John C., 4,287,358, Cl. 562-503.000.
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Usami, Susumu; Hayashi, Yoshihiro; Nakaho, Junichi; and Yasumatsu, Jun, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Webbing lock mechanism. 4,286,759, Cl. 242-107.200.
Ushijima, Fumihiro: *See—*
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,286,933, Cl. 418-15.000.
USV Pharmaceutical Corporation: *See—*
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,287,203, Cl. 424-275.000.
Utecht, Klaus P.: *See—*
Kuhn, J. Bruce; Utecht, Klaus P.; and Harris, Ronald K., 4,286,402, Cl. 43-17.200.
Uttley, John S.: *See—*
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Vakil, Bharat N., to Zenith Radio Corporation. High voltage shutdown circuit with current feedback for cathode ray tube. 4,287,535, Cl. 358-243.000.
Valdiserri, Leo L., to Borg-Warner Corporation. Phosphite-isocyanurates. 4,287,339, Cl. 544-214.000.
Vale, Bradley H.: *See—*
Greer, Raymond T.; Vale, Bradley H.; and Knoll, Randall L., 4,286,341, Cl. 3-1.400.
Valencia, Flavio A.: *See—*
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Van Tongeren U.K. Limited: *See—*
Roots, Philip S., 4,287,158, Cl. 422-241.000.
Vanassche, Willy J.; Pattyn, Herman A.; Moisar, Erik; and Klotzer, Sieghart, to Agfa-Gevaert, N.V. Direct-positive emulsion containing fogged, silver halide grains of silver iodide content. 4,287,296, Cl. 430-411.000.
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van der Lely, Cornelis. Agricultural machine. 4,286,427, Cl. 56-377.000.
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Vander Voort, George F., to Bethlehem Steel Corporation. Steel composition chipper knife. 4,287,007, Cl. 148-36.000.
van Gasse, Rene L. E., to Stamicarbon, B.V. Thermosetting powder based on an unsaturated polyester resin. 4,287,310, Cl. 525-44.000.
Van Gilse, Jaap; and Paerels, Gerard B., to Duphar International Research B.V. Algicidal composition and method of preventing or controlling algae with said composition. 4,286,983, Cl. 71-67.000.
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Vanhumbeeck, Jacky; De Steur, Hubert; Heyneman, Guido; and Vandenbossche, Chris, to Siemens Aktiengesellschaft. Control apparatus for automatically maintaining bath component concentration in an electroless copper plating bath. 4,286,965, Cl. 23-230.00A.
Van Linden, Jan H. L.; and Gorss, Jeffrey B., to Aluminum Company of America. Vortex melting system. 4,286,985, Cl. 75-65.00R.
Van Loveren, Augustinus G.: *See—*
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van Rooijen, Rudolf J. A. M., to van Rooijen-Nieuwenhijs, Bertha-Maria. Basket-shaped dual function hoe-rake. 4,286,673, Cl. 172-378.000.
Van Scott, Eugene J.; and Yu, Ruey J. Dithranol compositions stabilized with alpha hydroxyacids. 4,287,214, Cl. 424-346.000.
Van Tuyl, Richard. System for preheating fuel. 4,286,564, Cl. 123-545.000.
Van Vliet, Robert M.; and Bushelle, William R., to United States of America, Air Force. Slot chevron element for periodic antennas and radomes. 4,287,520, Cl. 343-909.000.
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Vermeire, William R. Optical illusion-producing rotating device. 4,286,780, Cl. 272-8.00D.
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Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,287,133, Cl. 260-458.00R.
Vinyard, Roy E., to Phillips Petroleum Company. Method for the construction of a baffled heat exchanger. 4,286,366, Cl. 29-157.400.
Vitins, Michael, to BBC Brown, Boveri & Co. Ltd. Method and apparatus for fault and/or fault direction detection. 4,287,547, Cl. 361-82.000.
Vits, Hilmar, to Vits Maschinenbau GmbH. Continuous uncoiler for coils of web lengths. 4,286,756, Cl. 242-58.100.
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Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., to Coen Company, Inc. Wall fired duct heater. 4,286,945, Cl. 432-29.000.
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Wada, Yasuhiro, to Copal Company Limited. Driving circuit for printing device in electronic cash register. 4,287,550, Cl. 361-167.000.
Wagner, Fritz; Rapp, Peter; Bock, Hans; Lindorfer, Walter; Schulz, Walther; and Gebetsberger, Wilhelm, to Gesellschaft fur Biotechnologische Forschung GmbH; and Wintershall Aktiengesellschaft. Process and installation for the flooding of petroleum deposits and oil shale. 4,286,660, Cl. 166-246.000.
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Galer, Richard E.; and Webb, Paul C., 4,286,992, Cl. 106-90.000.
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Weibel, James A., Sr.; and Vassallo, Franklin A., to Calspan Corporation. Electrochemical method for removing metallic sheaths. 4,287,033, Cl. 204-146.000.
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Wiechert, Edelbert, to Siemens Aktiengesellschaft. Switch device for a rail-bound transport car formed of a traveling carriage and a transport container that can be placed and locked onto the traveling carriage. 4,287,399, Cl. 200-153.00T.
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Wisner, Elizabeth M. Sample container with collapsible funnel. 4,286,634, Cl. 141-95.000.
Witte, John C., to Xerox Corporation. Cross-mixing system. 4,286,544, Cl. 118-657.000.
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Wong, Backman; and Wilson, Earl L., to Standard-Thomson Corporation. Thermostatic valve device having non-linear flow characteristics. 4,286,750, Cl. 236-34.500.
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Wong, Patrick S., to ALZA Corporation. Vaginal drug delivery system made from polymer. 4,286,587, Cl. 128-127.000.
Wons, Heinz: *See—*
Kuphal, Wilko; and Wons, Heinz, 4,287,422, Cl. 250-439.00R.
Woo, David V.: *See—*
Rupp, Arthur F.; and Woo, David V., 4,287,165, Cl. 423-323.000.
Wood, Dennis, to Coin Controls Limited. Coin-validating arrangement. 4,286,704, Cl. 194-100.00A.
Wood, William M.: *See—*
Clausen, Eivind; Amos, Benton H.; and Wood, William M., 4,286,624, Cl. 137-625.190.
Woodman, Brian E.: *See—*
Melitz, Daniel T.; Searle, Kenneth L.; and Woodman, Brian E., 4,286,896, Cl. 405-185.000.
Woodring, William J.; and Gulino, James A., to GAF Corporation. Heat bondable asphaltic sound deadener. 4,287,263, Cl. 428-489.000.
Woodson, Wayne D.: *See—*
Stewart, Patrick H.; and Woodson, Wayne D., 4,287,092, Cl. 252-429.00R.
Worm, Allan T., to Minnesota Mining and Manufacturing Company. Epichlorohydrin elastomer compositions. 4,287,322, Cl. 525-403.000.
Wrist-A-Matic, Ltd.: *See—*
Seckendorf, Bernard A., 4,286,854, Cl. 354-129.000.
Wunderlich, Klaus: *See—*
Ehrig, Volker; Groll, Manfred; and Wunderlich, Klaus, 4,286,962, Cl. 8-549.000.
Wylie, William H., to Metalfab Industries, Inc. Security locking assembly. 4,286,813, Cl. 292-251.000.
Wyman-Gordon Company: *See—*
Jain, Sulekh C.; and Morris, Charles A., 4,287,073, Cl. 252-30.000.
Wynne, John M.: *See—*
Raber, Samuel; Wynne, John M.; and Heim, Alan M., 4,287,515, Cl. 340-584.000.
Xerox Corporation: *See—*
Bayley, Robert D., 4,287,281, Cl. 430-107.000.
Bolte, Steven B.; and Lewis, Richard B., 4,287,287, Cl. 430-137.000.
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,287,279, Cl. 430-58.000.
Castelli, Vittorio; and Hamaker, Ralph A., 4,286,706, Cl. 198-806.000.
Lu, Chin H.; and Erhardt, Peter F., 4,287,284, Cl. 430-120.000.
Silverberg, Morton, 4,286,870, Cl. 355-76.000.
Swift, Joseph A., 4,287,280, Cl. 430-99.000.
Wang, Shing C.; and Hamerdinger, Randolph W., 4,287,484, Cl. 331-94.50G.
Wiggins, Douglas G., 4,287,536, Cl. 358-282.000.
Witte, John C., 4,286,544, Cl. 118-657.000.
Yabuuchi, Takahiro: *See—*
Fujmura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,287,207, Cl. 424-282.000.
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Murakami, Hisamichi; and Kobayashi, Tadashi, to Mitsui Toatsu Chemicals, Inc. Process for preparing bisphenol sulfone derivatives. 4,287,366, Cl. 568-33.000.
Yamaguchi, Keizaburo: *See—*
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Murakami, Hisamichi; and Kobayashi, Tadashi, 4,287,366, Cl. 568-33.000.
Yamaguchi, Yuzo, to Hitachi, Ltd. Apparatus for pumping operation of a hydraulic machine having Francis type runner. 4,286,919, Cl. 415-112.000.
Yamakawa, Goichi: *See—*
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,287,283, Cl. 430-108.000.
Yamamoto, Takeshi: *See—*
Tanahashi, Makoto; Yamauchi, Hisashi; and Yamamoto, Takeshi, 4,287,541, Cl. 360-92.000.

Yamamura, Toshio; and Muraki, Takeshi, to Toshiba Corporation. Stereoscopic X-ray device. 4,287,420, Cl. 250-402.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Nakashima, Toshihide; Nakaji, Osamu; Takakura, Koichi; and Suzuki, Takayoshi, 4,287,177, Cl. 424-81.000.
Yamauchi, Hisashi: *See—*
Tanahashi, Makoto; Yamauchi, Hisashi; and Yamamoto, Takeshi, 4,287,541, Cl. 360-92.000.
Yamazaki, Seiichi: *See—*
Kogane, Mikio; and Yamazaki, Seiichi, 4,286,869, Cl. 355-75.000.
Yanagida, Toshio, to Nissan Motor Company, Limited. Air ventilation apparatus for vehicle. 4,286,506, Cl. 98-2.000.
Yasui, Toshio; and Naito, Motoharu, to Nippondenso Co., Ltd. Electric control circuit for safety apparatus in automotive vehicles. 4,287,431, Cl. 307-10.00R.
Yasumatsu, Jun: *See—*
Usami, Susumu; Hayashi, Yoshihiro; Nakaho, Junichi; and Yasumatsu, Jun, 4,286,759, Cl. 242-107.200.
Yasutake, Kenichi; and Watanabe, Tetsuji, to K.K. Elco International. Electrical connector, an insulator therefor and a fitting jig for an assembly of these. 4,286,837, Cl. 339-176.0MP.
Yee, Edward M.: *See—*
Gutierrez, William A.; Wilson, Herbert L.; and Yee, Edward M., 4,286,373, Cl. 29-572.000.
Yeh, Yu S.: *See—*
Langseth, Rollin E.; and Yeh, Yu S., 4,287,598, Cl. 455-52.000.
Yoder Company, The: *See—*
Chang, William J. H., 4,286,451, Cl. 72-161.000.
Yokota, Shigeru: *See—*
Inoue, Haruo; Yokota, Shigeru; and Saito, Yoshiharu, 4,286,819, Cl. 296-65.00R.
Yokoyama, Akira; and Arano, Yasushi, to Nihon Medi-Physics Co., Ltd. 2-Oxopropionaldehyde bis(thiosemicarbazone) derivatives. 4,287,362, Cl. 562-556.000.
Yoshida, Akio: *See—*
Matsunami, Muneharu; Kubota, Tatsushi; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,286,805, Cl. 280-803.000.
Yoshida Kogyo, K.K.: *See—*
Ueda, Minoru, 4,286,382, Cl. 29-768.000.
Yoshida, Syusaku: *See—*
Ohta, Tatsuo; Shinozaki, Sohji; Yoshida, Syusaku; and Ohba, Hideo, 4,287,278, Cl. 430-53.000.
Yoshida, Yasuyuki: *See—*
Ohmae, Takashi; Fukaya, Yasuhiro; Yoshida, Yasuyuki; Oka, Tamotu; Sato, Masahiko; and Nagareda, Masazumi, 4,287,405, Cl. 219-136.000.
Yoshizumi, Hajime: *See—*
Toyoshima, Kumao; Hakura, Akira; Nakanishi, Toshihiro; and Yoshizumi, Hajime, 4,287,185, Cl. 424-177.000.
Young, Allen E., to Bendix Corporation, The. Scanning light beam lumber defect position system and method of using same. 4,286,880, Cl. 356-431.000.
Young, David M., to Massachusetts General Hospital, The. Process for healing wounds. 4,287,184, Cl. 424-177.000.
Young, William C., to RCA Corporation. Assembly for positioning the coupling probe of a waveguide. 4,287,496, Cl. 333-248.000.
Yu, Ruey J.: *See—*
Van Scott, Eugene J.; and Yu, Ruey J., 4,287,214, Cl. 424-346.000.
Yuasa Battery Co. Ltd.: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Okada, Toshio; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,287,272, Cl. 429-144.000.
Yugen Kaisha Watanabe Kenkyusho: *See—*
Watanabe, Katsumi, 4,286,789, Cl. 369-244.000.
Yurecko, John M., Jr.: *See—*
Kulka, Kurt; Zazula, Teodosij; and Yurecko, John M., Jr., 4,287,100, Cl. 252-522.00R.
Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katumi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing a graft-copolymer and blends therewith. 4,287,312, Cl. 525-83.000.
Yuyama, Masahiro: *See—*
Kitagawa, Yoshihiko; Hanamura, Yoshimi; Yuyama, Masahiro; Moritani, Masahiko; Sakuramoto, Akira; and Suzuki, Mikio, 4,287,317, Cl. 525-309.000.
Zahir, Abdul-Cader: *See—*
Forgo, Imre; Zahir, Abdul-Cader; and Francois, Jacques, 4,287,106, Cl. 260-28.50B.
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, to Bayer Aktiengesellschaft. Antibiotics, a process for their preparation and their use as plant protection agents. 4,287,186, Cl. 424-181.000.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Meyerle, Michael; Anton, Otto; and Ehrlinger, Friedrich, 4,286,477, Cl. 74-687.000.
Zani, Marina: *See—*
Cazzaro, Giorgio; Matera, Giancarlo; Cavallaro, Antonino; and Zani, Marina, 4,287,148, Cl. 264-182.000.
Zazula, Teodosij: *See—*
Kulka, Kurt; Zazula, Teodosij; and Yurecko, John M., Jr., 4,287,100, Cl. 252-522.00R.
Zdarsky, Robert C.; and Lyons, Russell, to Champion International Corporation. Sleeve with pre-applied handle for setup box or folding carton. 4,286,714, Cl. 206-526.000.
Zeigner, Willard L.; and Blaney, Peter G., to Zemco, Inc. Stop/start control system for engine. 4,286,683, Cl. 180-54.00R.
Zeitler, Gerhard: *See—*
Theysohn, Rainer; Zeitler, Gerhard; Weiss, Frank; Willing, Hans; and Seiler, Erhard, 4,287,117, Cl. 260-42.460.
Zemco, Inc.: *See—*
Zeigner, Willard L.; and Blaney, Peter G., 4,286,683, Cl. 180-54.00R.
Zenith Radio Corporation: *See—*
Vakil, Bharat N., 4,287,535, Cl. 358-243.000.
Zewen, Cabinet A.: *See—*
Busse, Claus-Adolf; and Labrande, Jean-Paul, 4,286,652, Cl. 165-96.000.
Ziegel, Douglas H., to RCA Corporation. Work holder. 4,286,414, Cl. 51-229.000.
Ziv, Avraham; Tanaka, Akira; Hollowell, William; Sieber, William J.; and Ahad, Munir J., to American Safety Equipment Corporation. Inertia switches. 4,287,398, Cl. 200-61.45R.
Zizzo, Anthony F.: *See—*
Swift, Billy K.; Zizzo, Anthony F.; and Blevins, Willard A., 4,287,480, Cl. 331-1.00A.
Zoebelein, Gerhard: *See—*
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, 4,287,186, Cl. 424-181.000.
Zoellner, Roger O.: *See—*
Searcy, James A.; Zoellner, Roger O.; and Hoffmann, Ronald C., 4,286,572, Cl. 126-299.00D.
Zubkov, Valery N.: *See—*
Belsky, Arkady A.; Eljutin, Alexandr V.; Zubkov, Valery N.; Konjukov, Alexandr I.; Krasinskaya, Lidia I.; Nekrasova, Elena A.; Nizharadze, Konstantin S.; Markova, Larisa F.; Mirskaya, Mirra G.; Frolov, Alexei V.; and Judin, Evgeny A., 4,287,030, Cl. 204-105.00R.
Zucker, Jerry, to Raybestos-Manhattan, Inc. Method of improving properties of ceramic fibers. 4,286,999, Cl. 106-308.00Q.
Zuehlke, Rainer: *See—*
Brosch, Rudolf; Schettler, Helmut; Schumacher, Hans; and Zuehlke, Rainer, 4,287,437, Cl. 307-296.00R.
Zultzke, Walter: *See—*
Heimbach, Klaus-Jurgen; and Zultzke, Walter, 4,287,224, Cl. 427-42.000.
Zverkov, Garik E.: *See—*
Godin, Eduard M.; Anoshko, Vladimir A.; Gavrilov, Anatoly N.; Akhmerov, Almas F.; Zverkov, Garik E.; Semenov, Valentin P.; Grachev, Vladimir V.; Chepurin, Valentin M.; Mikhailov, Viktor Y.; and Rybnikov, Sergei I., 4,286,450, Cl. 72-59.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF SEPTEMBER, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bianchi, Ralph A.: *See—*
Farrell, James H.; Bianchi, Ralph A.; and Johanson, Edward E., Re. 30,729, Cl. 210-801.000.

Canon Kabushiki Kaisha: *See—*
Yokota, Hideo, Re. 30,728, Cl. 350-464.000.

Chong, Robert S. Y. Cable dispenser. Re. 30,727, Cl. 242-85.000.

Duff, Ian D., to National Research Development Corporation. Apparatus for use in investigating specimens. Re. 30,730, Cl. 422-64.000.

Farrell, James H.; Bianchi, Ralph A.; and Johanson, Edward E., to JBF Scientific Corporation. Floatage collecting apparatus and method. Re. 30,729, Cl. 210-801.000.

Gergis, Isoris S. Consecutive bit access of magnetic bubble domain memory devices. Re. 30,732, Cl. 365-15.000.

Hudson, Derek; Sharpe, Robert; and Szelke, Michael. Enkephalin analogues. Re. 30,731, Cl. 424-177.000.

JBF Scientific Corporation: *See—*
Farrell, James H.; Bianchi, Ralph A.; and Johanson, Edward E., Re. 30,729, Cl. 210-801.000.

Johanson, Edward E.: *See—*
Farrell, James H.; Bianchi, Ralph A.; and Johanson, Edward E., Re. 30,729, Cl. 210-801.000.

Meeker, John G. Fireplace grate. Re. 30,725, Cl. 126-164.000.

National Research Development Corporation: *See—*
Duff, Ian D., Re. 30,730, Cl. 422-64.000.

Otten, Norman J.; and Presnell, Eldrige H., to Tower Products, Inc. Polymer film having linear tear properties. Re. 30,726, Cl. 206-601.000.

Presnell, Eldrige H.: *See—*
Otten, Norman J.; and Presnell, Eldrige H., Re. 30,726, Cl. 206-601.000.

Sharpe, Robert: *See—*
Hudson, Derek; Sharpe, Robert; and Szelke, Michael, Re. 30,731, Cl. 424-177.000.

Szelke, Michael: *See—*
Hudson, Derek; Sharpe, Robert; and Szelke, Michael, Re. 30,731, Cl. 424-177.000.

Tower Products, Inc.: *See—*
Otten, Norman J.; and Presnell, Eldrige H., Re. 30,726, Cl. 206-601.000.

Yokota, Hideo, to Canon Kabushiki Kaisha. High speed focusing telephoto lens. Re. 30,728, Cl. 350-464.000.

LIST OF DESIGN PATENTEES

Agee, Peter T. Bottle. 260,482, 9-1-81, Cl. D9-352.000.

Alex, James G., to J.G.A. Enterprises, Inc. Game board. 260,538, 9-1-81, Cl. D21-35.000.

Alexander, David, to Alexander, Jack E. Table. 260,464, 9-1-81, Cl. D6-147.000.

Alexander, Jack E.: *See—*
Alexander, David, 260,464, Cl. D6-147.000.

Allen, Anne W.: *See—*
Blake, Joseph W.; and Allen, Anne W., 260,469, Cl. D7-2.000.

AMBA Marketing Systems, Inc.: *See—*
Siegel, Milton I., 260,458, Cl. D3-48.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground slide. 260,543, 9-1-81, Cl. D21-244.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground swing. 260,544, 9-1-81, Cl. D21-246.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Rider seat for playground apparatus. 260,545, 9-1-81, Cl. D21-247.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Rider seat for playground apparatus. 260,546, 9-1-81, Cl. D21-247.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Rider seat for playground apparatus. 260,547, 9-1-81, Cl. D21-247.000.

Ament, Duane S.: *See—*
Ament, Donald S.; and Ament, Duane S., 260,543, Cl. D21-244.000.
Ament, Donald S.; and Ament, Duane S., 260,544, Cl. D21-246.000.
Ament, Donald S.; and Ament, Duane S., 260,545, Cl. D21-247.000.
Ament, Donald S.; and Ament, Duane S., 260,546, Cl. D21-247.000.
Ament, Donald S.; and Ament, Duane S., 260,547, Cl. D21-247.000.

American Standard Inc.: *See—*
Tang, Myra, 260,551, Cl. D23-58.000.

Amfesco Industries, Inc.: *See—*
Greenblatt, David; and Spinoza, Rick, 260,447, Cl. D2-319.000.
Greenblatt, David; and Spinoza, Rick, 260,448, Cl. D2-319.000.
Greenblatt, David; and Spinoza, Rick, 260,449, Cl. D2-319.000.
Greenblatt, David; and Spinoza, Rick, 260,450, Cl. D2-319.000.
Greenblatt, David; and Spinoza, Rick, 260,451, Cl. D2-321.000.
Greenblatt, David; and Spinoza, Rick, 260,452, Cl. D2-321.000.

Andis Clipper Company: *See—*
Andis, Matthew L., 260,561, Cl. D28-13.000.

Andis, Matthew L., to Andis Clipper Company. Hair dryer. 260,561, 9-1-81, Cl. D28-13.000.

Angelakos, Nicholas P., to Lancaster Colony Corporation. Design for an alcoholic beverage chiller. 260,470, 9-1-81, Cl. D7-3.000.

Arlac-Werk Heiko Ippen: *See—*
Halm, Hans, 260,534, Cl. D19-76.000.

Ashworth Bros., Inc.: *See—*
Roinestad, Gerald C., 260,506, Cl. D12-60.000.

Avramovich, Radosav, to Daniel Woodhead, Inc. Electrical connector housing. 260,511, 9-1-81, Cl. D13-24.000.

Azuma, Daisaburo, to Pentel Kabushiki Kaisha. Penpoint or similar article. 260,533, 9-1-81, Cl. D19-55.000.

Baker, Brian G. Carton blank. 260,490, 9-1-81, Cl. D9-433.000.

Barbee, Marvin L.: *See—*
Butcher, Donald A.; and Barbee, Marvin L., 260,466, Cl. D6-157.000.

Barr, Josef J. Jeweled bracelet. 260,500, 9-1-81, Cl. D11-6.000.

Barr, Josef J. Bracelet or similar article. 260,501, 9-1-81, Cl. D11-6.000.

Belaiche, Serge, to Serdaneli. Door handle. 260,478, 9-1-81, Cl. D8-308.000.

Belyaev, Sergei M.: *See—*
Petrovsky, Viktor A.; Gassanov, Lev G.; Belyaev, Sergei M.; Kochetov, Lev A.; Kryzhanovsky, Vitaly L.; Palamarchuk, Andrei A.; Ushakov, Viktor D.; Timraleev, Rafail J.; Parfenjuk, Vitaly M.; Pilipenko, Alexandr S.; Goncharov, Petr A.; and Ponomarenko, Anatoly I., 260,496, Cl. D10-46.000.

Bergen Barrel & Drum Co.: *See—*
Zilbert, Seymour, 260,569, Cl. D99-51.000.

Biro, Michael; and Muckenfuss, Hans, to Rolf C. Hagen Ltd. Combined bird cage roof and bottom tray. 260,565, 9-1-81, Cl. D30-4.000.

Biro, Michael; and Muckenfuss, Hans, to Rolf C. Hagen Ltd. Combined bird cage roof and bottom tray. 260,566, 9-1-81, Cl. D30-4.000.

Blake, Joseph W.; and Allen, Anne W., to Dart Industries Inc. Rotatable food serving assembly. 260,469, 9-1-81, Cl. D7-2.000.

Blankenship, Jerry: *See—*
Rains, Harold C., III; and Blankenship, Jerry, 260,523, Cl. D15-4.000.

Bovet, Thomas, to Uptrend Products Limited. Index. 260,535, 9-1-81, Cl. D19-76.000.

Bowman Construction Supply, Inc.: *See—*
Bowman, William E., 260,557, Cl. D25-74.000.

Bowman, William E., to Bowman Construction Supply, Inc. Expansion joint sealing strip assembly for roadways. 260,557, 9-1-81, Cl. D25-74.000.

Bragg, Deborah A. Bib or similar article. 260,446, 9-1-81, Cl. D2-228.000.

Bristol Corporation: *See—*
Hetzler, Jack L.; and Carpenter, John L., 260,550, Cl. D23-54.000.

Broyhill Furniture Industries, Inc.: *See—*
Smith, Melbourne F., Jr., 260,465, Cl. D6-154.000.

Butcher, Donald A.; and Barbee, Marvin L. Fabric display rack. 260,466, 9-1-81, Cl. D6-157.000.

Carey, Roy E. Reel. 260,479, 9-1-81, Cl. D8-359.000.

Carlson, Ronald. Clasp for baby diapers. 260,453, 9-1-81, Cl. D2-422.000.

Carpenter, John L.: *See—*
Hetzler, Jack L.; and Carpenter, John L., 260,550, Cl. D23-54.000.

Carrier, Stephen J.: *See—*
Davies, Frederick S.; and Carrier, Stephen J., 260,456, Cl. D3-35.000.

Catte, Pierre, to Cibie Projecteurs. Headlight. 260,558, 9-1-81, Cl. D26-29.000.

Cherry, Richard S., to Phillips-Parkway Corporation. Stackable tray. 260,568, 9-1-81, Cl. D99-44.000.

Cheshaek, Gloria. Combined clock face and support. 260,499, 9-1-81, Cl. D10-125.000.

Chin, Arthur W.: *See—*
Welch, Robert A.; and Chin, Arthur W., 260,515, Cl. D14-11.000.

Christiani, Peter, to Gourmet-Topf, Inc. Covered butter dish. 260,473, 9-1-81, Cl. D7-84.000.

Cibie Projecteurs: *See—*
Catte, Pierre, 260,558, Cl. D26-29.000.

Clairol Incorporated: *See—*
Mack, William; and Rogers, Meyrick K., 260,562, Cl. D28-53.000.

Cohen, Steve J.; and Hillebrand, Cory W. Support stand for a loudspeaker. 260,461, 9-1-81, Cl. D6-85.000.

Comstock, Kenneth C. Housing for electrical circuits. 260,513, 9-1-81, Cl. D13-40.000.

Conrac Corporation: *See—*
Macmillan, John M.; and Costa, Hilario S., 260,498, Cl. D10-106.000.

Container Corporation of America: *See—*
Maclin, Gregory P., 260,491, Cl. D9-433.000.

Continental Group, Inc., The: *See—*
Grubman, Alan A.; and Hasegawa, Gary K., 260,487, Cl. D9-416.000.

Costa, Hilario S.: *See—*
Macmillan, John M.; and Costa, Hilario S., 260,498, Cl. D10-106.000.

Daniel Woodhead, Inc.: *See—*
Avramovich, Radosav, 260,511, Cl. D13-24.000.

Dart Industries Inc.: *See—*
Blake, Joseph W.; and Allen, Anne W., 260,469, Cl. D7-2.000.
Scott, Kenneth E., 260,492, Cl. D9-452.000.

Data Packaging Corporation: *See—*
Pepicelli, Pasquale L., Jr.; Roche, David; Mathus, Gregory; and Lowry, Alan B., 260,454, Cl. D3-35.000.

Davies, Frederick S.; and Carrier, Stephen J. Carrying case for cassettes and cassette player. 260,456, 9-1-81, Cl. D3-35.000.

Decker, Wil. Electronic baby grand piano. 260,528, 9-1-81, Cl. D17-8.000.

Della Beffa, Giorgio. Writing instrument. 260,531, 9-1-81, Cl. D19-47.000.

DeLorean Motor Company: *See—*
Powers, James R., 260,510, Cl. D12-211.000.

DeMars, Donald A., to Lefkowitz, LeRoy M. Wall or partition hung coat hook. 260,480, 9-1-81, Cl. D8-367.000.

Dinh Van, Jean. Wristwatch. 260,494, 9-1-81, Cl. D10-39.000.

Djurinec, Marijan, to Smith & Stone Limited. Electric plug. 260,512, 9-1-81, Cl. D13-28.000.

Douglas, Jack. Cup holder. 260,471, 9-1-81, Cl. D7-70.000.

Engelmann, Stefan. Spectacle holder. 260,527, 9-1-81, Cl. D16-82.000.

Flower, Milton O., to Max Factor & Co. Eye makeup applicator. 260,560, 9-1-81, Cl. D28-7.000.

Fotiu, Eustace: *See—*
Jedzinak, John E.; Fotiu, Eustace; and Markrow, Fred, 260,564, Cl. D28-89.000.

Gassanov, Lev G.: *See—*
Petrovsky, Viktor A.; Gassanov, Lev G.; Belyaev, Sergei M.; Kochetov, Lev A.; Kryzhanovsky, Vitaly L.; Palamarchuk, Andrei A.; Ushakov, Viktor D.; Timraleev, Rafail J.; Parfenjuk, Vitaly M.; Pilipenko, Alexandr S.; Goncharov, Petr A.; and Ponomarenko, Anatoly I., 260,496, Cl. D10-46.000.

Gell, Peter, to Tuscan Industries Pty. Limited. Magnetic tape cassette. 260,514, 9-1-81, Cl. D14-11.000.

Giannotti, Vincent, Jr.; Kapper, Henry; and Sabella, Edward J., to International Business Machines Corporation. Terminal printer cover. 260,516, 9-1-81, Cl. D14-111.000.

Goettner, Michael K.; and Plummer, James E., to Owens-Illinois, Inc. Bottle. 260,484, 9-1-81, Cl. D9-378.000.

Goncharov, Petr A.: *See—*
Petrovsky, Viktor A.; Gassanov, Lev G.; Belyaev, Sergei M.; Kochetov, Lev A.; Kryzhanovsky, Vitaly L.; Palamarchuk, Andrei A.; Ushakov, Viktor D.; Timraleev, Rafail J.; Parfenjuk, Vitaly M.; Pilipenko, Alexandr S.; Goncharov, Petr A.; and Ponomarenko, Anatoly I., 260,496, Cl. D10-46.000.

Gould and Associates, Inc.: *See—*
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

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ISSUED SEPTEMBER 1, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

116 4,286,337
197 4,286,338
414 4,286,339
430 4,286,340

CLASS 3

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CLASS 4

321 4,286,342
596 4,286,343

CLASS 5

424 4,286,344
434 4,286,345

CLASS 8

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CLASS 9

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CLASS 12

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CLASS 24

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CLASS 29

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157.3 V 4,286,365
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267 4,286,368
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768 4,286,382

CLASS 30

169 4,286,383
287 4,286,384

CLASS 33

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246 4,286,388

CLASS 34

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57 R 4,286,393
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155 4,286,395

CLASS 36

62 4,286,396
132 4,286,397

CLASS 37

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CLASS 40

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152 4,286,400

CLASS 42

71 P 4,286,401

CLASS 43

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CLASS 44

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53 4,286,969

CLASS 46

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163 4,286,407

CLASS 47

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CLASS 48

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CLASS 49

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CLASS 51

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284 E 4,286,415
334 4,286,416
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CLASS 52

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CLASS 53

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473 4,286,422

CLASS 55

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CLASS 56

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CLASS 57

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602 4,286,433
641 B 4,286,434

CLASS 62

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259.3 4,286,439
457 4,286,440

CLASS 64

30 C 4,286,441
31 4,286,442

CLASS 65

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106 4,286,980
169 4,286,981

CLASS 68

12 R 4,286,443

CLASS 70

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CLASS 71

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67 4,286,983

CLASS 72

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164 4,286,452
273 4,286,453
356 4,286,454

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861.18 4,286,470
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863.24 4,286,472
863.83 4,286,466

CLASS 74

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572 4,286,475
640 4,286,476
687 4,286,477
705 4,286,478
724 4,286,479
785 4,286,480
799 4,286,481

CLASS 75

58 4,286,984
65 R 4,286,985
126 F 4,286,986
252 4,286,987

CLASS 81

55 4,286,482

CLASS 82

2 R 4,286,483
32 4,286,484
36 R 4,286,485

CLASS 83

23 4,286,486
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335 4,286,489
453 4,286,490

CLASS 84

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1.27 4,286,492
237 4,286,493
309 4,286,494
485 R 4,286,495

CLASS 86

1 R 4,286,498

CLASS 89

33 B 4,286,499

CLASS 91

180 4,286,500
376 R 4,286,501
445 4,286,502
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517 4,286,504

CLASS 92

186 4,286,505

CLASS 98

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32 4,286,507
43 R 4,286,508

CLASS 99

332 4,286,509
533 4,286,510

CLASS 100

35 4,286,511
74 4,286,512
102 4,286,513
211 4,286,514
233 4,286,515

CLASS 101

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128.21 4,286,518
138 4,286,519

CLASS 102

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CLASS 105

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CLASS 106

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288 Q 4,286,998
308 Q 4,286,999
309 4,287,000

CLASS 108

93 4,286,525

CLASS 109

73 4,286,526

CLASS 110

165 A 4,286,527
203 4,286,528
340 4,286,529

CLASS 111

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CLASS 112

121.15 4,286,531
314 4,286,532

CLASS 114

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74 R 4,286,535
165 4,286,536
248 4,286,537
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CLASS 118

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657 4,286,543
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CLASS 119

61 4,286,546
96 4,286,547

CLASS 122

1 R 4,286,548
510 4,286,549

CLASS 123

25 L 4,286,550
41.31 4,286,551
48 AA 4,286,552
187.5 R 4,286,553
188 M 4,286,554
228 4,286,555
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CLASS 125

11 R 4,286,568

CLASS 126

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299 D 4,286,572
362 4,286,573
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446 4,286,582

CLASS 127

46 B 4,287,001

CLASS 128

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263 4,286,594
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CLASS 131

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359 4,286,604

CLASS 132

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91 4,286,611

CLASS 134

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31 4,287,003

CLASS 135

4 R 4,286,612

CLASS 136

244 4,287,382
260 4,287,383

CLASS 137

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327 4,286,616
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625.65 4,286,626
H10 4,286,627
H43 4,286,628

CLASS 138

89 4,286,629
92 4,286,630

CLASS 139

383 A 4,286,631

CLASS 141

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98 4,286,635
114 4,286,636
374 4,286,637

CLASS 144

3 K 4,286,638

CLASS 148

6.15 R 4,287,004
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127 4,287,008
4,287,009

CLASS 149

2 4,287,010

CLASS 150

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8 4,286,640
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CLASS 152

347 4,286,643
354 R 4,286,644
360 4,286,645

CLASS 156

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86 4,287,012
242 4,287,013
306.9 4,287,014
382 4,287,015
497 4,287,016
583.5 4,287,017
645 4,287,018

CLASS 159

2 MS 4,287,019

CLASS 162

3 4,287,020
358 4,287,021

CLASS 164

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312 4,286,648
446 4,286,649

CLASS 165
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172 4,286,654
179 4,286,655

CLASS 166
75 R 4,286,656
117.5 4,286,657
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205 4,286,659
246 4,286,660
316 4,286,661
317 4,286,662
325 4,286,663
4,286,664
339 4,286,665

CLASS 168
4 4,286,666

CLASS 169
16 4,286,667
22 4,286,668

CLASS 172
7 4,286,669
42 4,286,670
253 4,286,671
311 4,286,672
378 4,286,673
811 4,286,674

CLASS 173
163 4,286,675

CLASS 174
29 4,287,384
36 4,287,385
76 4,287,386

CLASS 175
74 4,286,676
395 4,286,677

CLASS 176
3 4,287,022

CLASS 177
132 4,286,678
4,286,679
208 4,286,680

CLASS 178
2 R 4,287,387

CLASS 179
1 A 4,287,390
1 DD 4,287,388
1 F 4,287,389
1 P 4,287,391
16 AA 4,287,392
70 4,287,393

CLASS 180
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9.24 A 4,286,682
54 R 4,286,683
133 4,286,684
176 4,286,685
233 4,286,686

CLASS 181
120 4,286,687
156 4,286,688
232 4,286,689

CLASS 182
5 4,286,690

CLASS 184
7 CR 4,286,691

CLASS 187
9 R 4,286,692

CLASS 188
71.5 4,286,694
196 BA 4,286,695
218 A 4,286,696
378 4,286,693

CLASS 190
48 4,286,697

CLASS 191
49 4,286,698

CLASS 192
1 4,286,699
4,286,700
18 R 4,286,701

CLASS 193
2 R 4,286,702

CLASS 194
100 A 4,286,703
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CLASS 198
719 4,286,705
806 4,286,706
859 4,286,707

CLASS 200
5 A 4,287,394
33 R 4,287,395
35 R 4,287,396
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61.45 R 4,287,398
153 T 4,287,399
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308 4,287,401

CLASS 201
31 4,287,023

CLASS 202
134 4,287,024
222 4,287,025

CLASS 203
10 4,287,026

CLASS 204
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15 4,287,029
105 R 4,287,030
109 4,287,031
128 4,287,032
146 4,287,033
147 4,287,034
157.1 R 4,287,035
4,287,036
158 R 4,287,037
4,287,038
159.19 4,287,039
179 4,287,040
181 C 4,287,041
195 M 4,287,042
228 4,287,043
231 4,287,044
243 R 4,287,045
266 4,287,046

CLASS 206
3 4,286,708
144 4,286,709
216 4,286,710
4,286,711
264 4,286,712
508 4,286,713
526 4,286,714
564 4,286,715
577 4,286,716
601 Re.30,726

CLASS 208
120 4,287,048
180 4,287,049
215 4,287,050
254 H 4,287,051

CLASS 209
166 4,287,052
167 4,287,053
170 4,287,054
240 4,287,055
332 4,287,056

CLASS 210
85 4,287,057
112 4,287,058
188 4,287,059
194 4,287,060
198.2 4,287,061
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402 4,287,063
413 4,287,064
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464 4,287,066
487 4,287,067
510 4,287,068
609 4,287,069
626 4,287,070
643 4,287,071
668 4,287,072
801 Re.30,729

CLASS 211
60 T 4,286,717
181 4,286,718
193 4,286,719

CLASS 212
178 4,286,720
199 4,286,721
242 4,286,722

CLASS 219
61.5 4,287,402
69 M 4,287,403
69 W 4,287,404
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CLASS 220
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CLASS 221
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CLASS 222
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CLASS 224
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CLASS 228
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CLASS 232
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CLASS 233
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CLASS 235
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CLASS 248
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CLASS 252
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CLASS 254
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CLASS 256
4,286,772

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CLASS 315
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CLASS 320
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CLASS 334
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CLASS 363
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CLASS 365
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CLASS 368
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CLASS 369
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CLASS 370
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CLASS 371
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CLASS 375
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CLASS 400
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CLASS 401
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CLASS 403
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CLASS 434
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CLASS 455
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CLASS 585
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CLASSIFICATION OF DESIGNS

D2—	210	260,445		157	260,466			260,487		174	260,508		20	260,529	D23—	54	260,550
	228	260,446		188	260,467		418	260,488		182	260,509	D18—	7	260,530		58	260,551
	319	260,447		202	260,468		432	260,489		211	260,510	D19—	47	260,531	D24—	9	260,552
		260,448	D7—	2	260,469		433	260,490	D13—	24	260,511		53	260,532		40	260,553
		260,449		3	260,470			260,491		28	260,512		55	260,533		55	260,554
		260,450		70	260,471		452	260,492		40	260,513		76	260,534	D25—	72	260,555
	321	260,451		71	260,472	D10—	38	260,493	D14—	11	260,514			260,535		74	260,556
		260,452		84	260,473		39	260,494			260,515		88	260,536			260,557
	422	260,453		147	260,474		40	260,495		53	260,518	D21—	10	260,537	D26—	29	260,558
D3—	35	260,454		193	260,475		46	260,496		60	260,519		35	260,538	D28—	7	260,559
		260,455	D8—	55	260,476		57	260,497		68	260,520		111	260,539			260,560
		260,456		98	260,477		106	260,498		70	260,521		121	260,540		13	260,561
		260,457		308	260,478		125	260,499		86	260,522		127	260,541		53	260,562
	48	260,458		359	260,479	D11—	6	260,500		111	260,516		195	260,542		63	260,563
D6—	41	260,459		367	260,480			260,501			260,517		244	260,543		89	260,564
	47	260,460		394	260,481		75	260,502	D15—	4	260,523		246	260,544	D30—	4	260,565
	85	260,461	D9—	352	260,482		132	260,503		72	260,524		247	260,545			260,566
	86	260,462		374	260,483		140	260,504		139	260,525			260,546		11	260,567
	113	260,463		378	260,484			260,505		199	260,526			260,547	D99—	44	260,568
	147	260,464		406	260,485	D12—	60	260,506	D16—	82	260,527	D22—	7	260,548		51	260,569
	154	260,465		416	260,486		155	260,507	D17—	8	260,528		27	260,549			

CLASSIFICATION OF PLANTS

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29—	747	T101,002	D10—	70	T101,001	424—	319	T101,003	548—	373	T101,004						

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PATENTS

6 :	4,286,409	4,286,642		4,287,519		4,286,914		4,287,001		4,286,391
	4,286,536	4,286,662		4,287,539		4,286,963		4,287,016		4,286,635
9 :	4,286,667	4,286,665		4,287,560		4,287,054		4,287,038		4,286,656
01 :	4,286,542	4,286,683		4,287,564		4,287,058		4,287,060		4,287,056
	4,286,671	4,286,700		4,287,566		4,287,514		4,287,092	22 :	4,286,659
	4,287,053	4,286,736		4,287,578		4,287,535		4,287,129		4,286,664
	4,287,152	4,286,752		4,287,596		4,287,562		4,287,192		4,286,675
04 :	4,286,699	4,286,768		4,287,597		4,287,581		4,287,218		4,286,814
	4,286,859	4,286,784		4,287,606		4,287,602		4,287,327		4,287,048
	4,287,026	4,286,795	08 :	4,286,466	13 :	4,286,526		4,287,331	23 :	4,286,356
	4,287,057	4,286,818		4,286,589		4,286,618		4,287,349		4,287,433
	4,287,438	4,286,824		4,286,762		4,286,636		4,287,372	24 :	4,286,514
	4,287,441	4,286,834		4,286,922		4,286,735		4,287,391		4,286,740
	4,287,480	4,286,848		4,287,461		4,286,774		4,287,432		4,286,828
	4,287,497	4,286,877		4,287,507		4,286,913		4,287,447		4,286,832
	4,287,605	4,286,902		4,287,516		4,286,979		4,287,517		4,286,988
05 :	4,286,530	4,286,906		4,287,540		4,287,044		4,287,599		4,287,010
06 :	Re.30,732	4,286,927	09 :	4,286,489		4,287,408		4,287,600		4,287,153
	4,286,337	4,286,928		4,286,496	15 :	Re.30,727	18 :	4,286,386		4,287,170
	4,286,345	4,286,945		4,286,527		4,287,580		4,286,414		4,287,276
	4,286,349	4,286,989		4,286,687	16 :	4,286,617		4,286,438		4,287,416
	4,286,361	4,287,012		4,286,727		4,287,140		4,286,551		4,287,425
	4,286,364	4,287,020		4,286,742	17 :	Re.30,726		4,286,763		4,287,473
	4,286,368	4,287,022		4,286,744		4,286,397		4,286,820		4,287,577
	4,286,370	4,287,034		4,286,863		4,286,415		4,286,846		4,287,604
	4,286,372	4,287,037		4,286,866		4,286,432		4,286,952	25 :	Re.30,729
	4,286,376	4,287,071		4,286,943		4,286,436		4,287,120		4,286,442
	4,286,387	4,287,079		4,287,096		4,286,502		4,287,302		4,286,470
	4,286,389	4,287,163		4,287,154		4,286,505		4,287,321		4,286,476
	4,286,401	4,287,180		4,287,181		4,286,509		4,287,373		4,286,492
	4,286,402	4,287,213		4,287,182		4,286,553		4,287,556		4,286,570
	4,286,405	4,287,250		4,287,203		4,286,597		4,287,557		4,286,584
	4,286,406	4,287,255		4,287,301		4,286,609		4,287,601		4,286,611
	4,286,407	4,287,265		4,287,330		4,286,640		4,287,603		4,286,628
	4,286,408	4,287,300		4,287,341		4,286,674	19 :	4,286,341		4,286,750
	4,286,426	4,287,383		4,287,380		4,286,682		4,286,424		4,286,827
	4,286,468	4,287,386		4,287,387		4,286,684		4,286,443		4,286,830
	4,286,469	4,287,395		4,287,400		4,286,696		4,286,478		4,286,851
	4,286,475	4,287,398		4,287,426		4,286,705		4,286,576		4,286,853
	4,286,491	4,287,410		4,287,583		4,286,711		4,286,577		4,286,873
	4,286,493	4,287,419	10 :	4,286,998		4,286,714		4,286,731		4,286,883
	4,286,495	4,287,427		4,287,116		4,286,766		4,286,781		4,286,904
	4,286,498	4,287,445		4,287,134		4,286,777		4,286,803		4,286,940
	4,286,513	4,287,453		4,287,343		4,286,810		4,286,917		4,287,073
	4,286,546	4,287,466	11 :	4,286,579		4,286,825		4,287,031		4,287,131
	4,286,574	4,287,468		4,286,639		4,286,836		4,287,143		4,287,150
	4,286,581	4,287,477	12 :	4,286,434		4,286,843	20 :	4,286,455		4,287,159
	4,286,583	4,287,479		4,286,537		4,286,856		4,286,500		4,287,184
	4,286,592	4,287,484		4,286,594		4,286,898		4,286,519		4,287,205
	4,286,593	4,287,502		4,286,632		4,286,915		4,286,770		4,287,232
	4,286,596	4,287,511		4,286,641		4,286,920		4,286,891		4,287,235
	4,286,603	4,287,512		4,286,741		4,286,991		4,286,892		4,287,382
	4,286,612	4,287,518		4,286,876		4,286,992	21 :	4,286,377		4,287,389

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6 : 4,763
06 : 4,762

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

17 : T101,002
36 : T101,004
47 : T101,001

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OFFICIAL GAZETTE

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September 8, 1981

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

September 8, 1981 Volume 1010 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,819,468, Re. S.N. 257,995, Filed Apr. 27, 1981, Cl. 428/99, HIGH TEMPERATURE INSULATION MODULE, Robert A. Sauder, et al., Owner of Record: *Sauder Industries, Inc., Emporia, Kan.,* Attorney or Agent: Sydney Leach, Ex. Gp.: 164

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 27,401, Reexam. No. 90/000,052, Requested: Aug. 12, 1981, Cl. 521/142, CROSS-LINKED HYDROPHILIC POLYMERS AND ARTICLES MADE THEREFROM, Otto Wichterle & Drahoslav Lim, Owner of Record: *Flexible Contact Lens (Nev.), Inc.,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 140, Requester: Continuous Curve Contact Lenses, Inc. & Soft Lenses, Inc., San Diego, Calif.

3,361,858, Reexam. No. 90/000,053, Requested: Aug. 12, 1981, Cl. 264/2.6, RESHAPING A XEROGEL BY MECHANICAL REMOVAL AND SWELLING TO FORM A HYDROGEL CONTACT LENS, Otto Wichterle, Owner of Record: *Flexible Contact Lens (Nev.), Inc.,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 140, Requester: Continuous Curve Contact Lenses, Inc. & Soft Lenses, Inc., San Diego, Calif.

3,543,073, Reexam. No. 90/000,044, Requested: Aug. 4, 1981, Cl. 313/421, VACUUM TUBES OF TELEVISION TYPE FOR X-RAY PROTECTION, Edward E. Sheldon, Owner of Record: *Inventor,* Attorney or Agent: Polachek & Saulsbury, Ex. Gp.: 250, Requester: Oblon, Fisher, Spivak, McClelland & Maier, Arlington Va.

3,822,089, Reexam. No. 90/000,054, Requested: Aug. 12, 1981, Cl. 351/160, CONTACT LENS BLANK OR REPLICA MADE FROM ANHYDROUS, SPARINGLY CROSS-LINKED HYDROPHILIC COPOLYMERS, Otto Wichterle, Owner of Record: *Flexible Contact Lens (Nev.), Inc.,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 257, Requester: Continuous Curve Contact Lenses, & Soft Lenses Inc., San Diego, Calif.

3,956,540, Reexam. No. 90/000,051, Requested: Aug. 10, 1981, Cl. 427/443.2, METHOD OF COATING ARTICLES, Albert J. Laliberte, et al., Owner of Record: *Omnitech, Inc.,* Attorney or Agent: Shenier & O'Connor, Ex. Gp.: 162, Requester: Brumbaugh, Graves, Donohue & Raymond, New York, N.Y.

4,081,757, Reexam. No. 90/000,048, Requested: Aug. 7, 1981, Cl. 330/124, PARALLEL POWER AMPLIFIER CIRCUITS, Paul S. Rumbaugh, Owner of Record: *Altec Corp.,* Attorney or Agent: Edward A. Sokolski, Ex. Gp.: 250, Requester: Ray Ivie, Orem, Utah

4,122,508, Reexam. No. 90/000,049, Requested: Aug. 7, 1981, Cl. 361/384, MODULAR PRINTED CIRCUIT BOARD ASSEMBLY HAVING COOLING MEANS INCORPORATED THEREIN, Paul S. Rumbaugh, Owner of Record: *Altec Corp.,* Attorney or Agent: Edward A. Sokolski, Ex. Gp.: 210, Requester: Ray Ivie, Orem, Utah

4,180,780, Reexam. No. 90/000,050, Requested: Aug. 7, 1981, Cl. 330/252, INPUT DECOUPLING CIRCUIT FOR TRANSISTOR DIFFERENTIAL AMPLIFIER, Paul S. Rumbaugh, Owner of Record: *Altec Corp.,* Attorney or Agent: Edward A. Sokolski, Ex. Gp.: 250, Requester: Ray Ivie Orem, Utah

Vacancy Announcement
Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of $50,113 per annum, which is the current statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

Qualifications: Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;
2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Crystal Plaza 2, Room 9C05
2011 Jefferson Davis Hwy.
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

MARGARET M. LAURENCE
July 27, 1981 *Assistant Commissioner for Trademarks.*

Availability of U.S. Patent Classification Microfilms

The Patent and Trademark Office is discontinuing publication of two patent classification microfilms previously offered to the public through the National Technical Information Service. These microfilms are the U.S. Patent Classification—Numeric Listing, which provides users with the original and all cross-reference classifications for individual patents in ascending patent number sequence, and the U.S. Patent Classification—Subclass Listing, which consists of listings of all patent numbers classified into each of the classes and subclasses of the U.S. patent classification, both as original and cross-reference entries. Updated editions of these microfilms will in the future be published by Research Publications, Inc., 12 Lunar Drive, Woodbridge, CT 06525, Telephone (203) 397-2600. Persons interested in obtaining new editions of either of these microfilms may contact that company.

RENE D. TEGTMEYER
Aug. 14, 1981. *Assistant Commissioner for Patents*

PATENT NOTICES

Certificates of Correction for the Week of Sept. 8, 1981

Re. 30,603	4,243,049	4,259,359	4,268,836
3,193,248	4,243,722	4,259,462	4,269,216
3,928,537	4,244,971	4,259,529	4,269,264
3,932,661	4,244,972	4,260,306	4,269,852
3,994,872	4,245,537	4,260,651	4,269,864
4,057,595	4,246,186	4,260,751	4,269,944
4,057,633	4,246,278	4,260,873	4,270,210
4,100,192	4,247,801	4,261,180	4,270,553
4,102,895	4,248,408	4,261,224	4,270,790
4,133,985	4,248,795	4,261,498	4,270,883
4,134,892	4,249,102	4,261,749	4,271,199
4,154,950	4,250,013	4,261,827	4,271,259
4,156,916	4,250,730	4,262,188	4,271,418
4,167,501	4,250,918	4,262,371	4,271,566
4,174,512	4,251,478	4,262,871	4,271,609
4,181,893	4,252,050	4,263,273	4,271,959
4,188,209	4,252,300	4,263,319	4,272,560
4,188,342	4,252,434	4,263,484	4,272,610
4,198,138	4,252,683	4,263,879	4,272,983
4,200,800	4,252,800	4,263,915	4,273,789
4,204,767	4,253,374	4,264,224	4,273,891
4,211,702	4,255,007	4,264,367	4,274,023
4,217,489	4,255,474	4,264,564	4,274,050
4,219,744	4,255,590	4,264,584	4,274,750
4,220,522	4,255,713	4,264,877	4,274,853
4,222,793	4,255,883	4,265,439	4,274,861
4,229,563	4,256,332	4,265,878	4,275,008
4,232,366	4,256,669	4,266,062	4,275,010
4,232,370	4,256,739	4,266,348	4,275,195
4,232,924	4,257,705	4,266,460	4,275,306
4,234,283	4,257,952	4,266,512	4,275,442
4,234,530	4,257,986	4,266,565	4,276,149
4,234,610	4,258,027	4,266,815	4,276,155
4,238,809	4,258,104	4,267,352	4,276,185
4,239,235	4,258,724	4,267,574	4,277,240
4,239,780	4,258,898	4,268,275	4,277,487
4,242,416	4,259,106	4,268,645	4,277,593
4,242,531	4,259,319	4,268,718	

National Technical Information Service

U.S. GOVERNMENT OWNED IINVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

Copies of patents cited are available for the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications icited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to:

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Springfield, Va. 22151

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Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG
Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6-194,192. Process for the Recovery of Carborane from Reject Propellant. Filed Oct. 6, 1980.

Patent application 6-194,646. Lightweight One Piece Side Rack with Stakes for Flatbed Semitrailers. Filed Oct. 6, 1980.

Patent application 6-198,577. Homodyne Radar System. Filed Oct. 20, 1980.

Patent application 6-205,359. Pulse Width Spectrum Analyzer. Filed Nov. 10, 1980.

Patent application 6-209,809. Hemispherical Coverage Microstrip Antenna. Filed Nov. 24, 1980.

Patent application 6-214,367. Priority Circuit for Service Request Signals. Filed Dec. 8, 1980.

Patent application 6-218,235. Glass Lead Seal Test Apparatus. Filed Dec. 19, 1980.

Patent application 6-218,400. Cure Rate Inhibitors for Ferrocene-Containing Propellants. Filed Dec. 19, 1980.

Patent application 6-219,056. Stable NF_4^+ Salt of High Flourine Content. Filed Dec. 22, 1980.

Patent application 6-221,737. Combined Side Lobe Canceller and Frequency Selective Limiter. Filed Dec. 31, 1980.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent application 6-100,320. Fiber Optic Rotation Sensing Interferometer. Filed Dec. 5, 1979.

Patent application 6-179,597. Troposcatter System Antenna Alignment. Filed Aug. 19, 1980.

Patent application 6-216,103. Automatically Sequenced Signaling System. Filed Dec. 15, 1980.

Patent application 6-219,396. Polyaromatic Amides. Filed Dec. 22, 1980.

Patent application 6-225,546. Grease Compositions. Filed Jan. 16, 1981.

Patent 4,254,688. Low Friction Servo Valve. Filed May 3, 1979. Patented Mar. 10, 1981. Not available NTIS.

Patent 4,257,164. Optical Protractor. Filed Nov. 9, 1978. Patented Mar. 24, 1981. Not available NTIS.

Patent 4,258,965. Adjustable Electronic Circuit Card Supporter. Filed Aug. 3, 1979. Patented Mar. 31, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
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Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-230,984. Low Sidelobe Pulse Compressor. Filed Feb. 3, 1981.

Patent application 6-236,948. 360 Degree Closed Circuit Television System. Filed Feb. 23, 1981.

Patent 4,207,450. Continuous Oil Concentration Monitor. Filed June 14, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,243,935. Adaptive Detector. Filed May 18, 1979. Patented Jan. 16, 1981. Not available NTIS.

Patent 4,243,949. Frequency Stabilization Technique for Microstrip Oscillators. Filed Nov. 17, 1978. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,243,991. Antenna Feed for Scan-with-Compensation Tracking. Filed May 30, 1978. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,249,143. Xenon Fluoride and Mercury Chloride Photodissociation Lasers. Filed Apr. 25, 1979. Patented Feb. 3, 1981. Not available NTIS.

Patent 4,249,257. Radio Frequency Signals Analyzer. Filed Sept. 1, 1977. Patented Feb. 3, 1981. Not available NTIS.

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	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 25, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-11-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-03-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-07-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-31-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	11-01-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,139,622 to 3,142,840, inclusive

Plant Patents ..... Numbers 2,416 to 2,430, inclusive

REISSUES

SEPTEMBER 8, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,733

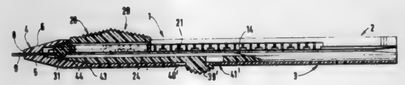
BLADE-HOLDING CUTTING DEVICE

Michel Quenot, Ornans, France, assignor to Stanley-Mabo S.A., Besancon, France

Original No. 4,103,421, dated Aug. 1, 1978, Ser. No. 792,194, Apr. 29, 1977. Application for reissue Mar. 5, 1980, Ser. No. 127,480

Int. Cl.[3] **B26B** *3/06*

U.S. Cl. 30—162 **8 Claims**



1. In a cutting blade holding handle having a segmented removable blade comprising a unitary generally rectangular hollow body formed of a molded plastics material and having a longitudinal slot extending through one side wall from one end thereof, a pair of facing longitudinal grooves within said hollow body terminating in an end slot through the other end of said body to slidably mount the blade to advance and retract the blade through said end slot, a series of notches formed along one edge of said longitudinal slot, and a unitary slider adapted to control the longitudinal movement of the blade, the improvement comprising a wedging member engageable with one side of the blade, said hollow body having an inclined interior wall adjacent said end slot, and said wedging member having a bevelled end engageable therewith to frictionally engage and apply a lateral pressure against the blade and means to slide said wedging member from an inactive position in which the wedging member does not apply lateral pressure to the blade to an active position wherein the wedging member is slid up the inclined interior wall adjacent said end slot and the bevelled end of said wedging member frictionally engages and applies a lateral pressure against the blade to lock the blade in position.

Re. 30,734

REVOLVING SELF-SERVICE DISPLAY STAND

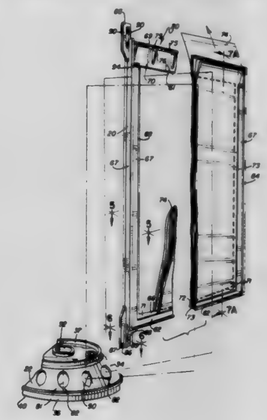
Ronald P. Eckert, Northbrook, Ill., assignor to DLM, Inc., Niles, Ill.

Original No. 4,102,069, dated Jul. 25, 1978, Ser. No. 703,958, Jul. 9, 1976. Application for reissue Oct. 26, 1978, Ser. No. 955,275

Int. Cl.[3] **G09F** *11/02*

U.S. Cl. 40—497 **22 Claims**

1. A revolving self-service poster display stand having a base, an upstanding pedestal mounted on said base for revolving about a vertical axis, a plurality of frames radially projecting from said pedestal, each frame having one side wall with upper and lower pivot members carried thereby, said upper and lower pivot members being cruciform in cross section and extending into elliptical openings formed in spaced conically sloping surfaces of said pedestal, and means on said lower pivot member for engaging with means on the edge of one of said



elliptical openings for positioning said frame in a radially oriented position under the influence of the weight of said frame.

Re. 30,735

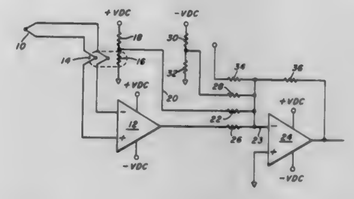
AUTOMATIC THERMOCOUPLE REFERENCE JUNCTION COMPENSATOR

Eugene T. Ihlenfeldt, Enumclaw, and David E. Marshall, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Original No. 4,157,663, dated Jun. 12, 1979, Ser. No. 899,957, Apr. 25, 1978. Application for reissue Jun. 9, 1980, Ser. No. 157,771

Int. Cl.[3] **G01K** *7/12*

U.S. Cl. 73—361 **4 Claims**



1. Temperature measuring apparatus comprising a measuring thermocouple adapted to be placed in contact with an object whose temperature is to be measured, thermocouple reference junction means connected in series-opposition with said measuring thermocouple, [a] temperature compensation [resistor] *means* whose [resistivity] *output signal* varies as a function of ambient temperature, first and second differential amplifiers each having a pair of input terminals, ungrounded conductors connecting said measuring thermocouple and said reference junction means across the input terminals of said first differential amplifier, a source of bias voltage, and means [connecting said source of] *for applying said* bias voltage, the output *signal* of said first differential amplifier, said *output signal of said* compensation [resistor] *means* and a temperature command signal to one of the input terminals of said second differential amplifier, the other input terminal of said

second differential amplifier[, said source of bias voltage and said compensation resistor] being connected to ground.

Re. 30,736

TONE WAVE GENERATOR IN ELECTRONIC MUSICAL INSTRUMENT

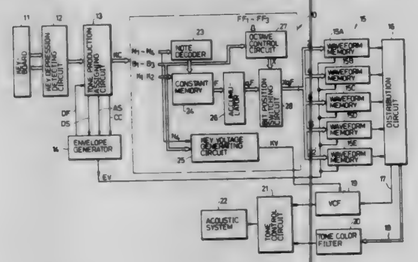
Teruo Hiyoshi; Akira Nakada, both of Hamamatsu; Tsutomu Suzuki, Shizuoka; Eiichiro Aoki, and Takatoshi Okumura, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,179,972, dated Dec. 25, 1979, Ser. No. 841,716, Oct. 13, 1977. Application for reissue May 30, 1980, Ser. No. 154,994

Claims priority, application Japan, Oct. 18, 1976, 51-124529

Int. Cl.³ G10H *7/00*

U.S. Cl. 84—1.11 **20 Claims**



11. A tone wave generator in an electronic musical instrument, which comprises:

a keyboard including playing keys,

key code generating means for producing a key code which includes a note data portion and an octave data portion thereby identifying a key operated in the keyboard,

constant memory means for storing constants corresponding to musical tone frequencies to be generated in correspondence to notes included in one out of a plurality of groups into which keys of a keyboard are divided separately on the octave basis,

readout means for reading out a constant from said constant memory means according to the note data portion of said key code,

operation means responsive to the constant read out from said constant memory means and to the octave portion of said key code for producing an address signal which varies progressively at a rate according to both the note data portion and octave data portion of said key code, and

waveform memory means for storing waveform information in each address thereof and being accessed by said address signal thereby producing a tone wave signal corresponding to said key code.

Re. 30,737

ELECTRONIC CIRCUIT FOR USE IN A VARIETY OF ENGINE CONTROL SYSTEMS

La Verne A. Caron, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Original No. 4,102,310, dated Jul. 25, 1978, Ser. No. 752,493, Dec. 20, 1976. Application for reissue Apr. 2, 1979, Ser. No. 26,490

Int. Cl.² F02P *1/00, 5/04*

U.S. Cl. 123—415 **16 Claims**

1. In an internal combustion engine, an electronic engine timing control circuit for providing control of an engine function comprising:

an output stage which is switched from one state to another state for producing an output signal;

an output terminal connected with said output stage at which said output signal is given;

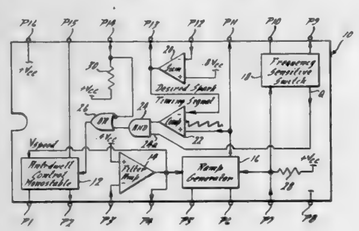
a first input terminal receiving a variable frequency trigger signal representative of engine speed;

a second input terminal receiving a variable frequency trigger signal representative of engine speed;

a third input terminal receiving a desired timing signal derived from at least one parameter useful in controlling said engine function and representing desired timing of said output signal; and

circuit means coupling said three input terminals and said output stage such that the trigger signal at said first input terminal always causes said output stage to produce said output signal so long as said output stage is in its one state at the time that the effect of the trigger signal received at said first input terminal is felt by said output stage, and when the trigger signal at said second input terminal has a frequency greater than a selected frequency, the desired timing signal controls, at least in part, the time at which said output stage produces said output signal;

said circuit means comprising a frequency sensitive switch circuit having an input coupled with said second input terminal to receive the variable frequency trigger signal which is received at said second input terminal, said frequency sensitive switch circuit comprising means providing at an output thereof a logic signal having a first logic level when the frequency of the trigger signal received at said second input terminal is below said selected frequency and a second logic level when the frequency of the last-mentioned signal exceeds said selected frequency;



said circuit means further comprising an OR logic gate having a pair of inputs and an output, means coupling said first input terminal with one input of said OR logic gate to always couple the variable frequency trigger signal received at said first input terminal to said one input of said OR logic gate regardless of the level of the logic signal of said frequency sensitive switch circuit, and means coupling the output of said frequency sensitive switch circuit and said third input terminal with the other input of said OR logic gate such that said desired timing signal is coupled to said other input of said OR logic gate only when the logic signal of said frequency sensitive switch circuit is at its second logic level; and

utilization means coupled to said output terminal for providing control of said engine function by said output signal.

Re. 30,738

APPARATUS AND METHOD FOR IN SITU HEAT PROCESSING OF HYDROCARBONACEOUS FORMATIONS

Jack Bridges, Park Ridge, and Allen Taflove, Wilmette, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Original No. 4,144,935, dated Mar. 20, 1979, Ser. No. 828,621, Aug. 29, 1977. Application for reissue Feb. 6, 1980, Ser. No. 118,957

Int. Cl.³ E21B *43/24, 43/30*

U.S. Cl. 166—248 **97 Claims**

83. A system for in situ heat processing of hydrocarbonaceous earth formations, comprising

a waveguide structure comprising a plurality of electrodes bounding a particular volume of earth formations as a dielectric medium bounded therein; and

means for supplying electromagnetic energy to said waveguide structure at a frequency selected to dissipate said electromagnetic energy substantially only to said bounded medium thereby to substantially uniformly heat said bounded volume.

92. A method for in situ heat processing of hydrocarbonaceous earth formations comprising the steps of:

bounding a particular volume of earth formations with a waveguide structure comprising elongate electrodes having outer electrodes which are at approximately the same potential as the adjacent unbounded earth formations; and

propagating electromagnetic energy through the waveguide structure in an aggregate mode of propagation generally parallel to the direction of an elongate axis of said electrodes, thereby substantially confining the electromagnetic energy in the waveguide structure and uniformly heating the bounded volume of earth formations.

Re. 30,739

ANOREXIC CHROMANS

Derek V. Gardner, Stortford, England, assignor to Beecham Group Limited, England

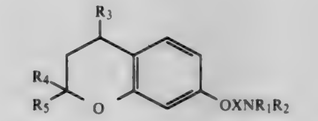
Original No. 4,080,335, dated Mar. 21, 1978, Ser. No. 652,041, Jan. 26, 1976. Continuation-in-part of Ser. No. 599,694, Jul. 28, 1975, abandoned. Application for reissue May 14, 1979, Ser. No. 38,737

Claims priority, application United Kingdom, Jul. 30, 1974, 33549/74

Int. Cl.³ C07D *311/02, 207/04;* **A61K** *31/35, 31/40*

U.S. Cl. 260—345.2 **8 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof wherein

X is alkylene of 2–4 carbon atoms;

R_1 is hydrogen or alkyl of 1–6 carbon atoms;

R_2 is hydrogen, alkyl of 1–6 carbon atoms or benzyl;

R_3 is 1-naphthyl or 2-naphthyl;

R_4 is hydrogen or alkyl of 1–4 carbon atoms; and

R_5 is hydrogen or alkyl of 1–4 carbon atoms.

Re. 30,740

INSECTICIDAL COMPOSITION FOR ULTRA LOW VOLUME APPLICATION

Heinz Frensch, Frankfurt am Main; Konrad Albrecht, Fischbach, and Norbert Taubel, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Original No. 3,952,102, dated Apr. 20, 1976, Ser. No. 536,363, Dec. 26, 1974. Application for reissue Jan. 12, 1979, Ser. No. 3,001

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1973, 2364892

Int. Cl.³ A01N *43/24*

U.S. Cl. 424—276 **3 Claims**

1. An insecticidal composition for ultra low volume application, which comprises

a. from 15 to 35 weight % of 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepine-3-oxide,

b. from 60 to 84.5 weight % of a solvent mixture of 1.5 to 2.5 parts by weight of a vegetable oil consisting of rapeseed, cottonseed, peanut, sunflower, or safflower oil, and from 0.5 to 1.5 parts by weight of an aromatic hydrocarbon having a boiling range of from 170° to 250° C. consisting of one or more alkyl benzenes having 9 to 11 carbon atoms; or 1-or 2-methyl naphthalene; and

c. from 0.5 to 6 weight % of an epoxide selected from the group consisting of epichlorohydrin, epoxypropane, styrene oxide, phenylepoxy propane, and an expoxide of an unsaturated vegetable oil.

PLANT PATENTS

GRANTED SEPTEMBER 8, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,764

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 18, 1980, Ser. No. 160,825

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name Pert, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; dark yellow ray floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform eight week photoperiodic flowering response to short days; short plant height when grown as a pinched spray pot, and semi-spreading branching pattern.

4,765

CHRYSANTHEMUM PLANT

Lawrence A. Weber, Milwaukie, Oreg., assignor to Weber's Riverside Greenhouses, Milwaukie, Oreg.

Filed Sep. 12, 1979, Ser. No. 75,151

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., known by the cultivar name Golden Bowl, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of decorative capitulum type; informal incurved form; golden yellow ray floret color; diameter across face of capitulum from 125 to 150 mm. at maturity; uniform ten week flowering response to photoperiodic short-day control; medium plant height, and spreading branching pattern.

PATENTS

GRANTED SEP. 8, 1981

ERRATA

For CLASS	See PATENT NO.
256-001	4,287,637
411-042	4,287,807
081-429	4,287,923
294-143	4,288,012
294-087	4,288,013
493-420	4,288,067
501-078	4,288,250
501-105	4,288,251

PATENTS

GRANTED SEPTEMBER 8, 1981

GENERAL AND MECHANICAL

4,287,607
BALLISTIC VESTS
Jack Leach, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed May 17, 1979, Ser. No. 39,780
Int. Cl.[3] F41H *1/02*
U.S. Cl. 2—2.5 **15 Claims**



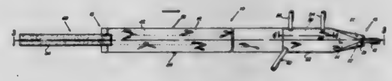
1. A ballistic vest comprising a plurality of double cloth layers of loosely woven aramid fiber, the layers of double woven cloth being stitched together at predetermined spaced intervals by selected yarns passing from one cloth sheet to the other;
means for providing elongation to the vest and providing surfaces on which said layers of double woven cloth can slide in response to projectile impact; and
means for loosely maintaining said layers of double woven cloth and elongation providing means together so that shape and flexibility are maintained.

4,287,608
APIARIAN PROTECTOR
Michael S. Meyer, Rte. 1, Box 175, Monmouth, Oreg. 97361
Filed May 29, 1979, Ser. No. 42,806
Int. Cl.[3] A41D *13/08*
U.S. Cl. 2—16 **5 Claims**



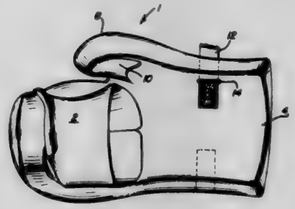
1. Apiarian hand and arm protector comprising
a sleeve formed of a solid-weave, closed-texture fabric woven from synthetic filament yarn, said sleeve being designed to fit loosely about the wearer's forearm, and extend thereon adjacent the wearer's elbow, at one sleeve end to the wearer's wrist, at the other sleeve end,
means for securing said one sleeve end to the wearer's arm, adjacent the elbow, and
means for binding the other sleeve end adjacent the wearer's wrist, to prevent bees from penetrating therebetween.

4,287,609
PROTECTIVE HAND WRAP FOR ATHLETES
James M. Amadeo, 821 23, West Des Moines, Iowa 50265
Filed May 31, 1979, Ser. No. 44,119
Int. Cl.[3] A41D *13/08*
U.S. Cl. 2—16 **23 Claims**



1. A protective hand wrap for athletes, comprising:
an elongated strip of flexible material sufficient in length for multiple windings about the hand, knuckles and wrist of the user,
said strip having a starting end and a fastening end,
means on said starting end for engaging the thumb of a hand from which said strip is trained in multiple windings about the hand, knuckles and wrist to terminate in windings about the wrist,
fastening means on said fastening end to secure said windings against accidental release, and
independent finger encircling means on said strip between the ends.

4,287,610
PROTECTIVE DEVICE WITH SHAPE DEVELOPING AND SECURING MEMBER
Jhoon G. Rhee, 2000 L St., NW., Washington, D.C. 20036
Filed Sep. 27, 1979, Ser. No. 79,417
Int. Cl.[3] A41D *13/10*
U.S. Cl. 2—18 **16 Claims**



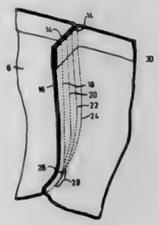
1. A protective device for wearing on a body member of a user comprising a resilient cushion-like sheet protective member and a flexible sheet-like shape developing member bonded to an inside of the protective member; wherein the shape developing member has a portion which is not bonded to the protective member and which extends across the inward curvature of the protective member whereby forming a securing means for securing the protective device to the body of the wearer.

4,287,611

ADJUSTABLE GARMENT

Linda Lundstrom, 9 Phoebe St., Toronto, Ontario, Canada (M5T 1A8)

Filed Apr. 29, 1980, Ser. No. 144,814
Int. Cl.³ A41F *9/00*; A41D *1/06*
U.S. Cl. 2—237 **1 Claim**



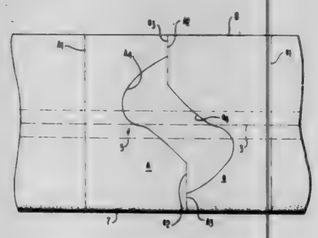
1. In a pair of slacks having a seat portion having an upper edge and a crotch, a central rear seam structure for permitting enlargement of the garment, said seam structure comprising: first and second fabric edge portions overlapping each other and forming a double thickness of said fabric extending from said upper edge to said crotch, said fabric edge portions each having a free edge and each extending outwardly from said free edge into the remainder of said seat portion, a first seam centrally located in said seat portion and extending along said fabric edge portions adjacent said free edge from said upper edge to said crotch and fixing said fabric edge portions together adjacent said free edge, a second seam joining said fabric edge portion together outwardly of said free edge, said second seam extending from said upper edge to said crotch and being spaced from said first seam at said upper edge and converging to join said first seam at said crotch, said second seam being removable to permit enlargement of said garment, and a plurality of successive further seams, each extending from said upper edge to said crotch and each spaced outwardly from the preceeding seam and each converging toward said first seam and joining said first seam at said crotch, said second seam and each further seam after joining said first seam having an overlapping portion overlying said first seam, said first seam being formed by a first thread, said second seam and each further seam being formed by a discreet additional thread.

4,287,612

METHOD OF MAKING AND ORNAMENTING SHIRTS AND SHORTS

Minoru Tanaka, 419-banchi Hatanosho Taharamotomachi, Shiki-gun Nara-pref., Japan

Filed May 9, 1979, Ser. No. 37,369
Claims priority, application Japan, Jul. 19, 1978, 53-88848; Aug. 18, 1978, 53-101031
Int. Cl.³ A41D *17/02*
U.S. Cl. 2—243 R **11 Claims**



1. Method of producing body garments having a generally symmetrical profile when viewed from the front or back and a profile when viewed from the side which is assymmetrical comprising the steps of:

laying out a length of tubular material sufficient to make an even number of garments to provide two plies of said material collapsed into a flat plane in which the elongated center line of said collapsed material defines a vertical line disposed along the respective sides of the finished garment;

applying a design to the longitudinally extending central surface of said collapsed material, said design being intended to cover an area at the side of a finished garment;

severing said two plies of collapsed material transversely along two longitudinally spaced lines which define the waist lines of two oppositely disposed garments, and;

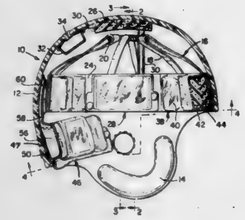
severing said two plies of collapsed material transversely at a location medial of said first two lines and removing superposed pieces of material having identical outlines from both of said plies to provide openings for the extremities of the body remote from the waist.

4,287,613

HEADGEAR WITH ENERGY ABSORBING AND SIZING MEANS

Arthur M. Schulz, Roselle, Ill., assignor to Riddell, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 56,273, Jul. 9, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,351
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—413 **9 Claims**





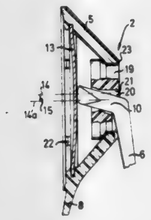
1. In a headgear construction comprising a helmet shell, and a plurality of sizing and energy-absorbing means mounted on the inside surface of the shell for engaging the wearer's head, the combination of the sizing and energy absorbing means comprising a crown-engaging means including means for varying the distance between a head engaging portion of the crown-engaging means and said shell surface for thereby controlling the fit of the heargear, energy-absorbing means associated with the crown-engaging means whereby high impact forces do not result in contact between the shell and the wearer's head, and the combination including energy absorbing and sizing means located on the front and back, the sides, and the lower rear inside shell surfaces, the energy absorbing and sizing means on the side surfaces including air-inflatable means defining a side-to-side fitting dimension for the headgear, and first means for controlling the inflation of the air-inflatable means to control the side-to-side fitting dimension, said first means operating independently of said means for varying the distance between said head engaging portion and said shell, and second means for controlling the fit of the energy absorbing and sizing means on the lower rear surface operating independently of said first means, and also independently of said means for varying the distance between said head engaging means and said shell, the improvement wherein the sizing and energy-absorbing means located on the front and back surfaces of the shell comprise pad structures defining a fixed, non-inflatable front-to-back fitting dimension by said headgear, said pad structures being curved to thereby embrace the forehead and back of the wearer's head whereby the helmet is centered relative to the long axis of the head prior to inflation of said air inflatable means, and means releasibly retaining said pad structures on said front and back surfaces whereby pad structures of different dimensions may be located thereon, and whereby the fit of the helmet may thereby be varied.

4,287,614

FASTENING MEANS FOR FITTING AN ACCESSORY, ESPECIALLY AN EAR MUFF, TO A SAFETY HELMET

Bo G. Lönnstedt, Kvarnbergsvägen 23, S-14145 Huddinge, Sweden

Filed May 20, 1980, Ser. No. 151,595
Claims priority, application Sweden, May 28, 1979, 7904611
Int. Cl.³ A42B *3/00, 1/24*
U.S. Cl. 2—423 **9 Claims**



1. A fastening means for fitting an accessory, e.g. an ear muff, on a safety helmet or the like, where an arm, intended for an accessory, is supported at a pivoting end portion in a housing intended for attaching to the helmet, the arm thus forming a two-armed lever, the pivoting end portion of which, situated in the housing, being acted on by a spring means having a convex side, said spring means arranged in the housing, to urge the opposite, free end of the arm, situated outside the housing, in a direction towards the head of the wearer, characterized in that the pivoting end portion of the arm has a contact portion for bearing against the central portion of the convex side of the spring means, which is of the disc type and which is retained at its periphery to the side of the housing intended to face towards the outside of the helmet, the force of the spring means having a line of action essentially perpendicular to the intended plane of contact between the helmet and the housing.

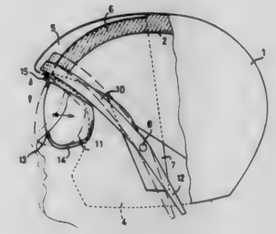
4,287,615

HELMET HAVING A WITHDRAWABLE SHIELD

Claude P. Morin, 16 bis Rue A. PRO,, 77 Vaux Le Penil, France

Filed Mar. 3, 1980, Ser. No. 126,755
Claims priority, application France, Mar. 2, 1979, 79 05445
Int. Cl.³ A42B *3/02*; A61F *9/04*
U.S. Cl. 2—424 **7 Claims**

1. A helmet structure comprising an outer shell, a shield which is movable between a position of use in front of the eyes of the wearer of the helmet and a withdrawn position and has a lower notch adapted to rest on the nose of the wearer, a support for the shield and comprising a bow member which is mounted in two diametrically opposed lateral portions of the bow member on the outer shell to pivot relative to the shell substantially forwardly and downwardly to bring the shield to said position of use and substantially rearwardly and upwardly to bring the shield to said withdrawn position, and which has an intermediate portion intermediate said lateral portions, and elastically yieldable connecting means connecting the shield to



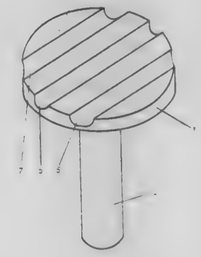
said intermediate portion of the bow member and being operative to bias the shield relative to the bow member inwardly of the shell in said position of use of the shield, in which position of use the shield is free to be moved by the biasing action of the elastically yieldable means.

4,287,616

AUDITORY OSSICLE PROSTHESIS

Gunther Heimke, Weinheim; Dietrich Plester, and Klaus Jahnke, both of Tubingen, all of Fed. Rep. of Germany, assignors to Friedrichsfeld GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 6, 1980, Ser. No. 118,910
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905183; Sep. 19, 1979, 2937842
Int. Cl.³ A61F *1/24*
U.S. Cl. 3—1.9 **5 Claims**



1. Auditory ossicle prosthesis comprising a rigid plate and a depending tubular shaft formed integrally as a one-piece construction from a biologically inert ceramic material, the surface of the plate on the side away from the shaft being provided with a plurality of grooves.

4,287,617

FEMORAL PIN FOR HIP PROSTHESIS

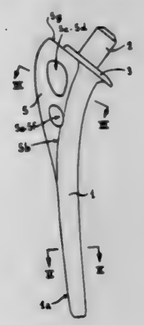
Alain Tornier, Le Brocey-Crolles, France, assignor to Etablissements Tornier, Saint Ismier, France

Filed Oct. 2, 1979, Ser. No. 81,229
Claims priority, application France, Oct. 11, 1978, 78 29595
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.913 **4 Claims**

1. In a hip prosthesis of the type having a hilt member for engaging the end of a femur and having a pivot member extending from the hilt member in one direction and having a pin member extending longitudinally from the hilt member in the

other direction and the pin member having a contour curved as viewed in a plane parallel to its longitudinal axis and shaped to fit into the medullary cavity of the femur, the improvement wherein the pin member comprises:

(a) a generally C-shaped member having two opposed similar curved sides lying parallel to said plane, and having first and second sides disposed generally at right angles to said plane, the first side being open to provide a slot ex-



tending longitudinally from the hilt member to provide the pin with elasticity transversely of said plane; and

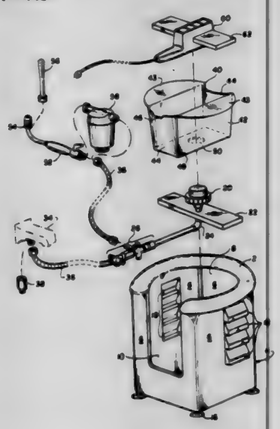
(b) a crest member which is U-shaped in cross section and extends partway along the second side of the C-shaped member from the hilt member and has its free edges joined to the second side of the C-shaped member, said second side of the C-shaped member having a shorter longitudinal slot between said free edges opposite the slot in the first side.

4,287,618

PORTABLE THERAPEUTIC SITZ-BATH, SHOWER AND BIDET COMBINATION

Louis Silver, 5825 Collins Ave., Apt. 15B, Miami Beach, Fla. 33139

Filed Apr. 26, 1979, Ser. No. 33,456
Int. Cl.³ A47K *7/08, 3/12*
U.S. Cl. 4—443 **4 Claims**



1. A therapeutic device, comprising,

a toilet-type seat,

rigid means for supporting said seat at a comfortable sitting height upwardly of a support surface,

said rigid support means comprising a hollow, open-topped support structure,

a shower head interposed between said seat and said support surface and aligned to discharge water in a substantially vertical direction,

means for bringing said shower head into fluid communication with a source of water under pressure,

open-topped container means removably fitted about said shower head for collecting water flowing therefrom,

said container means having flange means to overlie said toilet seat,

whereby said container means, when filled with water, provides a static sitz bath, and,

whereby said flange engages said toilet seat thereby providing additional support for said container means,

a weir formed on the uppermost portion of said container means to allow overflow of water collected therein so that said water source may continually supply water to said basin thereby providing a dynamic sitz bath,

said support means having an open bottom construction for allowing water discharging from said shower head to flow toward a drain,

said support means having a non-slip interface with said support surface,

whereby the user of said portable device safely employs the same in a bathtub or shower stall environment,

valve means for diverting the flow of water from said shower head to a discharge spout so that the temperature of the water can be adjusted prior to use of said device,

hand held bidet means connected between said water source and said shower head by flexible piping means,

valve means for diverting the flow of water from said water supply to said bidet means,

pressure control means between said water source and said shower head and said bidet means,

whereby the pressure of water flowing into either said shower head or said bidet means is adjustable by the user as desired

said rigid support means having columnar side walls collectively defining an enclosed area,

said toilet-type seat having a generally U-shaped configuration,

one of said sidewalls having an elongate generally U-shaped, in elevational view, cut out portion in registration with the open portion of said U-shaped toilet-type seat so that said cut out portion provides an access opening to facilitate assembly, dissembly, and adjustability of the device whereby a portable sitz shower is provided.

4,287,619

MULTI-PURPOSE CHAIR FOR THE PARTIALLY DISABLED

William R. Brewer, 9100 Bartee Ave., Arleta, Calif. 91331, and Hamilton C. de Jong, 254 S. Berkeley Ave., Pasadena, Calif. 91107

Filed Mar. 19, 1979, Ser. No. 21,919
Int. Cl.³ A47K *11/04;* **A47C** *7/42, 7/62*
U.S. Cl. 4—483 **13 Claims**

1. A multi-purpose chair for an invalid, comprising

a main chair frame including a seat and left and right pairs of front and rear legs,

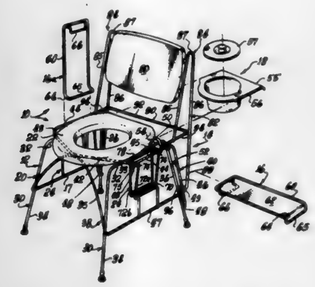
guide means forming a vertical guideway between and substantially in the plane of the legs of at least one said pair, such guideway extending downward from substantially the level of the seat,

an elongated transfer board slidable in the guideway,

means defining a normal lower position of the transfer board in the guideway such that the upper end of the board projects above the level of the seat and forms an arm rest,

stop means for limiting upward sliding movement of the transfer board,

said stop means including hinge means engageable in said upper board position for defining a hinge axis about which the board is swingable laterally outward about its lower



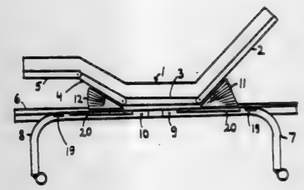
end to a generally horizontal bridge position for forming a transfer bridge extending laterally from the seat.

4,287,620

MULTI-FEATURE AND VARIABLE FUNCTION BODY SUPPORTING ASSEMBLY AND SIDEGUARDS

Henry C. Zur, 10 W. Griswold Ave., Phoenix, Ariz. 85021

Filed Jun. 2, 1978, Ser. No. 911,749
Int. Cl.³ A61G *7/10;* **F01B** *21/00*
U.S. Cl. 5—68 **26 Claims**



1. A adjustable body support assembly composed of six or more pivotally connected support panels, adjustable in relation to each other and provided with power means and or locking mechanisms such as pivotally mounted rotating bars serving to hold two or more supports support panels in fixed relationship, and wherein said body support panels form a body support area serving for the adjustable positioning with the support panels forming into transverse divisions and or longitudinal division and wherein alternatively raised portions of the subdivided transverse divisions formed by two or more support panels can provide longitudinal divided supports and serve for other purposes such as providing a turning movement to an occupants body or such as restraining the sideward movement of body portions.

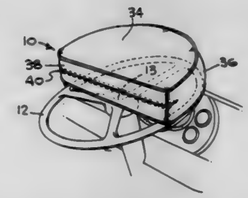
4,287,621

STEERING WHEEL ATTACHMENT

Charles A. Kertz, Egg Harbor, N.J., assignor to Susanna A. Kertz, Egg Habor, N.J.

Filed Jan. 31, 1980, Ser. No. 117,298
Int. Cl.³ A47C *70/02;* **B60R** *21/00*
U.S. Cl. 5—440 **3 Claims**

1. A steering wheel attachment comprising a cushion body shaped to overlie a portion of a steering wheel of a vehicle, a cover enclosing said cushion body and a mounting means on said cover dimensioned to snugly fit over a steering wheel for mounting and restraining said cover and cushion body on the upper face of such steering wheel, wherein said cushion body comprises a foam pad having periphery formed of a cylindrical surface of approximately 180° degrees peripheral extent and a planar diameter surface extending between the end terminations of said cylindrical surface, an upper planar surface and a lower planar surface and additionally including a stiffener panel having a periphery contiguous with the periphery of said foam pad, said stiffener panel being positioned adjacent said



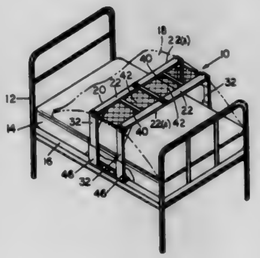
lower planar surface inside said cover for preventing deflection of said foam pad beyond the plane of the upper surface of said steering wheel and wherein said stiffener panel periphery additionally includes a cut-out portion for precluding the application of force to the horn button of said steering wheel by said stiffener panel.

4,287,622

BED COVER HOLDER AND SERVING TRAY COMBINATION

Emma J. Lane, 1430 Ocean Ave., Brooklyn, N.Y. 11230

Filed May 29, 1980, Ser. No. 154,299
Int. Cl.³ A47C *21/02*
U.S. Cl. 5—505 **6 Claims**



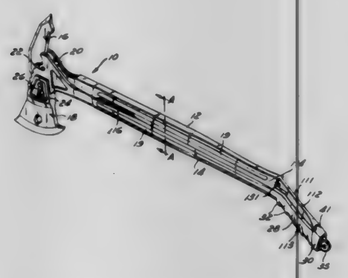
1. Combination bedcover holder and upright serving tray comprising an openable, adjustable frame adapted to be removably attached to the sides of a bed wherein said frame further comprises a pair of elongated, longitudinal, parallel opposing flat top members, each said top member in turn being further divided into substantially equal halves forming a pair of sub-members, each said pair of sub-members being adapted to be openably closeable by means of associated pivoting hook and slot therefor in each respective sub-member, said top members being hingedly connected at each longitudinal end thereof to a vertically extending flat support member having the same width as its top member counterpart, a pivoting truncated triangular stop being provided on the inside of each corner formable by the hinged connection of said top members and vertically extending support members, said stops being pivotally joined along one edge thereof to the underside of its respective sub-member, said stops acting to support said top members, said top members being further supported by the provision of a pair of parallel opposing flat struts, one strut each between each said pair of sub-members.

4,287,623

EMERGENCY RESCUE AXE DEVICE

Phil K. Tarran, Oceanside, Calif.

Filed Mar. 23, 1979, Ser. No. 23,318
Int. Cl.³ B25F *1/02*
U.S. Cl. 7—158 **80 Claims**



1. In a combination tool kit, including an axe head mounted upon an elongated axe handle and a pick head mounted upon an elonged pick handle, wherein said pick head is mountable to said axe head by means permitting said axe head and axe handle and said pick head and pick handle to be used (a) independently of each other, (b) as a composite structure (c) sissored relative to one another and (d) oriented in an end-for-end, substantially linear, configuration, said combination tool kit comprising:

(a) a recess in said axe head having a fixed pivot pin for releasably pivotally mounting said pick head;

(b) a lock means rotatably mounted upon said axe head for movement wherein a portion of said lock means selectively extends within said recess so that said lock means locks said axe head and axe handle and said pick head and pick handle together when said pick head is pivotally mounted on said axe head; and

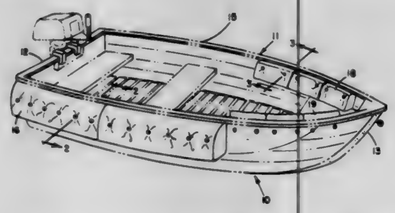
(c) lock apperture means formed on said pick head, having a shape complimentary to said portion of said lock means, said portion of said lock means engaging said lock apperture means when said portion extends within said recess when said pick head is pivotally mounted on said axe head so that said pick head and pick handle are securely locked to said axe head and axe handle without the use of auxiliary tools or mounting bolts or screw fastners.

4,287,624

AUXILIARY FLOTATION GEAR FOR FISHING BOATS

Lou Y. Lowther, San Antonio, Tex.

Filed Feb. 14, 1979, Ser. No. 11,797
Int. Cl.³ B63B *35/00*
U.S. Cl. 9—1.1 **1 Claim**



1. Auxiliary floating gear for a fishing boat having a hull comprising:

a. right and left elongated stern flotation wings adapted to be securely attached exteriorly adjacent the stern of said boat, said wings comprising rigid expanded plastic foam inner filler and a fabric float cover encasing said rigid foam filler;

b. right and left bow flotation members adapted to be securely attached interior and adjacent the bow of said boat, said bow flotation members comprising rigid expanded plastic foam inner filler and a fabric float cover encasing said rigid foam filler;

c. securing means for rigidly attaching said stern flotation wings and bow flotation members to said boat, said securing means comprising:

(1) an adhesive to be positioned between said wings and said flotation members and said boat;

(2) a grommet secured to said fabric float cover;

(3) a float sleeve projecting through said expanded rigid foam filler;

(4) a bolt projecting through said grommet and said float sleeve;

(5) means for rigidly affixing said bolt to said boat comprising a bolt shoulder adjacent said boat, a sealing bushing encircling said bolt adjacent said bolt shoulder, a washer encircling said bolt adjacent said boat hull, and a nut threadably engaging said bolt thereby securely affixing said bolt to the structure of said boat;

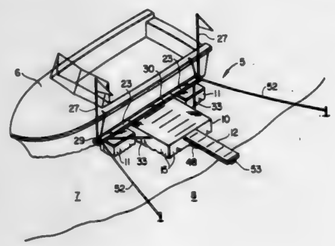
said right and left stern flotation wings being a substantially triangular construction, the height of said triangle following the contour of the hull of the boat adjacent the stern of the boat, the base of said substantially triangular float wings projecting substantially normal to the hull of said boat, and said right and left stern flotation wings being secured above the normal water line of the boat and projecting outward substantially normal to the hull of said boat.

4,287,625

PORTABLE BOAT DOCK

Max Dawson, 120 Hidden Valley Rd., Bayside, Calif. 95524

Filed May 11, 1979, Ser. No. 38,071
Int. Cl.³ B63B *17/00*
U.S. Cl. 9—1.6 **4 Claims**



1. A boat dock assembly comprising:

(a) a main dock structure having a top side, an underside and a block of rigid foam material mounted to said underside for providing buoyancy to the dock structure;

(b) a pair of elongated outrigger arrangements adapted to float in water for stabilizing said main dock structure, each of said outrigger arrangements including an elongated rigid arm, means for disengagably connecting one end of said arm with said dock structure, a float removably connected to said arm, and an elongated cushion serving as a bumper guard fixedly connected to and extending along one side of said arm, said outrigger arrangements being located on opposite sides of said main dock structure and each of said connecting means including a hinge mechanism which operates in a first way for fixedly connecting its associated arm in an operating position with said dock structure and a second way for pivotally connecting its associated arm with said dock structure such that said arm is pivotally movable about a given axis between its operating position and a folded-away stored position, each of the said hinge mechanisms also operating in a third way for pivotally supporting its associated arm to said dock structure about a second axis perpendicular to said first-mentioned axis such that its arm is movable between said operating position and a second folded-away stored position;

(c) means disengagably connected between said dock structure and each of said outrigger arrangements for providing reinforcement between the latter and said dock structure; and

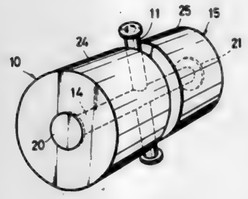
(d) a plank arrangement including an elongated plank and means for disengageably connecting one end thereof to said main dock structure.

4,287,626

FLEXIBLE ANCHOR BUOY

Jun Mito, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Japan

Filed Feb. 12, 1979, Ser. No. 11,563
Int. Cl.³ B63B *21/52*
U.S. Cl. 9—8 R **10 Claims**



1. A flexible anchor buoy comprising:

a tube for the passage therethrough of a chain connected to an anchor,

an elongate core means fixed at a substantially central position thereof to said tube and extending substantially perpendicularly to said tube, and

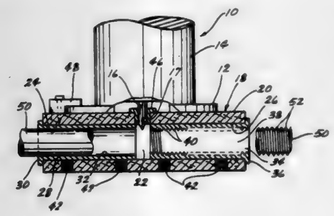
a pair of thick resilient buoyant bodies mounted on and around said elongate core means at opposite sides respectively of said tube and extending substantially from said tube to the respective ends of said elongate core means, said buoyant bodies having axial bores to receive said elongate core means to mount said buoyant bodies on said core means and being separated from said tube for flexing independently of said tube.

4,287,627

METHOD AND MEANS FOR THREADING DOWELS

Bruce J. Chambers, 437-26th St. S.E., Cedar Rapids, Iowa 52403

Filed Mar. 19, 1980, Ser. No. 131,700
Int. Cl.³ B23G *1/00*
U.S. Cl. 10—88 **6 Claims**



1. A dowel threading device, comprising the combination of a router having a horizontal base, a power means on said base, and a vertically disposed sharp cutting bit connected to said power means and with a lower end thereof protruding through an aperature in said base, and a dowel threading attachment, comprising,

a base member detachably secured underneath the base of said router, said base member having a vertically disposed bore adapted to receive the lower end of said cutting bit,

first and second longitudinally aligned horizontal bores extending inwardly into said base member and communicating with said vertically disposed bore,

said first bore being of uniform diameter and being adapted to receive an elongated dowel having an outer diameter substantially the same as the inner diameter of said bore,

said second bore having a diameter slightly less than the diameter of said first bore, with threads being imposed in said second bore,

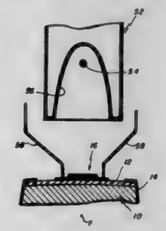
said cutting bit having its lower end terminating at the level of said threads so that a rotating dowel having threads imposed therein by said cutting bit can be threadably received by said threads in said second bore.

4,287,628

APPARATUS FOR STIFFENING SHOE INSOLES

Leo F. Stanton, Newburyport, Mass., assignor to Bush Universal, Inc., Woburn, Mass.

Filed Dec. 12, 1978, Ser. No. 968,830
Int. Cl.³ A43D *31/00*; A43B *13/42*
U.S. Cl. 12—40.5 **12 Claims**



1. An apparatus for applying a strip of activatable, curable material to a surface of a shoe assembly to form a stiffener in situ on the surface, the strip being flexible and deformable prior to curing thereof, said material being curable in response to radiation of a predetermined character, said apparatus comprising:

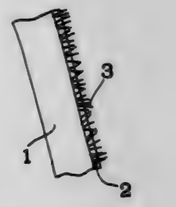
means for retaining the strip in a predetermined position on said surface of said shoe assembly and for urging the strip into engagement with the surface, said retaining means being constructed and arranged so as to expose a substantial portion of the strip thereby to enable the strip to be exposed to said radiation;

radiant energy means for generating said radiation for activating the strip while the strip is retained in said position on said surface;

presser means engageable with a selected portion of the strip for overlapping an edge portion of the strip and an adjacent region of said surface to press the edge portion of the strip into a tapered, feathered configuration while said strip is retained in said position on said surface; and

said presser means being constructed and arranged so as not to interfere with the activation or curing of the material.

4,287,629
PROCESS AND APPARATUS FOR THE PRODUCTION OF SYNTHETIC CHAMOIS LEATHER FOOTWEAR
Franco Stalteri, Via Francesco Crispi 44, 91025 Marsala, Italy
Filed Nov. 14, 1979, Ser. No. 94,164
Claims priority, application Italy, Jul. 31, 1979, 68588 A/79
Int. Cl.[3] A43D *9/00*; A43B *23/16*
U.S. Cl. 12—142 R 5 Claims



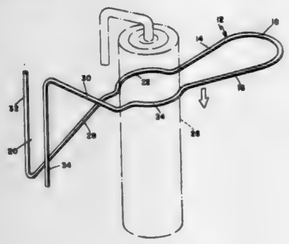
1. In a process for the production of synthetic chamois leather footwear, wherein uppers are produced by injection molding or pouring and a sole is attached to the uppers, the improvement comprising, after attachment of the sole, coating the uppers with a thin layer of adhesive and then flocking the uppers with rayon flock of a count of less than 1 denier and a fiber length of less than 1 mm.

4,287,630
PIPE CLEANING APPARATUS
Thomas Perez, 3310 NW. 9 Ct., Miami, Fla. 33127
Continuation of Ser. No. 906,241, May 15, 1978, abandoned.
This application Oct. 22, 1979, Ser. No. 86,991
Int. Cl.[3] B08B *9/02*
U.S. Cl. 15—104.3 SN 1 Claim



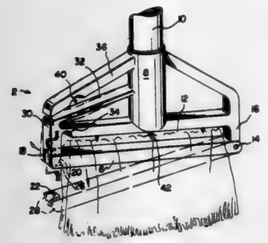
1. An attachment for the chuck of a drill comprising:
a reaming tool, the reaming tool including
a housing defining an interior chamber, the interior chamber having an upper portion and a lower portion,
the upper portion including means exterior of the housing for attaching to the chuck for rotation therewith, and
the lower portion including an open cylindrical axially extending tubular portion of a first predetermined axial length in open communication with the interior chamber, and of a first predetermined inside diameter,
a snake having a first end, an intermediate portion in the interior chamber and a second end extending through the cylindrical tubular portion; the snake being loose in the interior housing and the cylindrical portion, and being of an outside diameter slightly less than said first prediameter, said second end comprising a reaming coil, sleeve means arranged circumferentially about the cylindrical tubular portion having a radially extending hand grip handle; the sleeve means being a shorter length than the cylindrical tubular portion with a portion of the cylindrical tubular portion extending beyond the sleeve means at all times in use, and fastening means to connect the snake axially within the tubular portion for rotation of the snake with the housing and said fastening means being adapted to release the snake for relative axial advancement of the snake relative to the tubular cylindrical portion,
said fastening means comprising a hole in the extending length of said cylindrical member and a screw in threaded engagement in said hole, said screw having an exteriorly accessible portion and said screw having an inner end in engagement with the snake to constrain the snake to rotation with the cylindrical portion on rotation of the housing and being adapted to be withdrawn for axial movement of advancement of the snake relative to the housing,
said upper portion comprising a frustoconical top being in open communication with the interior chamber, and
said frustoconical top including an upper portion having means for attachment of said upper portion for rotation with the chuck.

4,287,631
PAINT REMOVER FOR PAINT ROLLERS AND PAINT BRUSHES
Carl Marrs, 1831 Bonus Dr., San Diego, Calif. 92110
Filed Dec. 31, 1979, Ser. No. 108,505
Int. Cl.[3] A46B *17/06*
U.S. Cl. 15—105 3 Claims



1. A paint remover for paint rollers and paint brushes comprising:
a unitary spring metal rod which is bent in the general shape of an elongated U to define a handle at the closed end of the U-shape, having opposed concave curves in opposite sides of the U-shape for gripping a paint roller inserted within the curves, and having outwardly inclined sides in the open portion of the U-shape with inwardly bent end bars which oppose each other for gripping the bristles of a paint brush;
whereby upon squeezing the handle, the rod squeezes a gripped brush or roller to enhance removal of paint from said bristles or said roller when said brush is pulled from the end bars or when said roller is pulled between the curves of the squeezed rod.

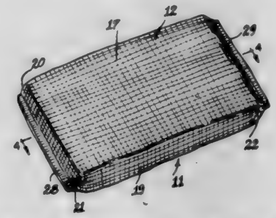
4,287,632
RETAINING MEANS FOR MOP HEAD
Dennis A. Hammond, Ottawa, Canada, assignor to Dustbane Enterprises Limited, Ottawa, Canada
Filed Apr. 3, 1980, Ser. No. 136,499
Claims priority, application Canada, Jan. 18, 1980, 343939
Int. Cl.[3] A47L *13/258*
U.S. Cl. 15—150 12 Claims



11. In a pivoting jaw retaining means for a yarn-type wet mop head, having a shank for connection to a mop handle, an elongated body secured at its middle to the shank, and a jaw cooperating with and pivoting with respect to the body to releasably grip and retain the mop head yarn between the jaw and the body and release it therefrom, the improvement wherein: the elongated body is provided with opposite, spaced first and second terminal extensions downwardly extending from the ends of the body, one end of the jaw being pivotally secured to the lower free end of the first extension, the other free end of the jaw and the inside surface of the lower end of the second extension being provided with co-operating engagement means releasable upon spacing apart of the lower end of the second extension and the free end of the jaw in a direction generally normal to the direction of rotation of the latter at its closed position, so that, when in engaged position the jaw and the body are in spaced parallel orientation; the second terminal extension also extending upwardly from the corresponding end of the body and being pivotally associated between its ends with the body for outward movement of the lower free end of the second terminal extension away from the jaw, the second terminal extension being associated with the body at a point nearer the upper end of the terminal extension than the lower end thereof, the body narrowing in depth about where it is secured to the second terminal extension to permit the required pivoting of that extension; the retaining means being further provided with a semi-rigid release bar, one end of which bar is attached to the shank at a point spaced from the body, the other end of which bar is attached to the upper end of the second terminal extension,
whereby downward pressure on a part of the release bar between its ends causes deflection of the release bar to pivot the second terminal extension and consequently move the lower end of that terminal extension away from the jaw to release the engagement means when in closed position and permit the jaw to open, and removal of that downward pressure causes the release bar and the second terminal extension to return to original positions to permit re-engagement of the engagement means when the jaw is to be closed.

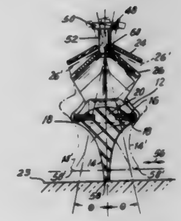
4,287,633
CLEANING PAD
George Gropper, 45-55 Peason St., Long Island City, N.Y. 11101
Filed Nov. 19, 1979, Ser. No. 95,336
Int. Cl.[3] A47L *13/16*, *17/04*
U.S. Cl. 15—209 B 5 Claims

1. A yieldable, compact, unitary, pervious, shape-retaining and flexible abrading pad comprising: a main compressed and resilient plastic sponge core body, said body being compressed throughout the full area thereof, and a pervious and abrasive plastic cover forming a tight-fitting against the walls of the said compressed and resilient sponge throughout the full respective areas thereof, said compressed and resilient sponge core body and said tight-fitting cover having corresponding transverse edge areas connected and reduced into strip form for anchorage connection to prevent shifting at such areas between said



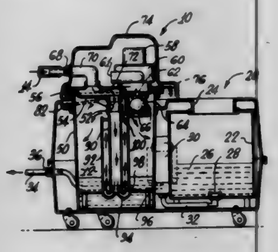
sponge core body and the cover when the pad is in use, the frictional connection between other areas of said sponge core body and said cover also preventing separation thereabout, said cover having top and bottom walls and connecting longitudinal edge areas formed of a continuous knit.

4,287,634
WINDSHIELD WIPER BLADE ASSEMBLY
Peter J. Speth, 239-25 88th Ave., Bellerose, N.Y. 11426
Filed Jul. 28, 1980, Ser. No. 172,881
Int. Cl.[3] B60S *1/38*
U.S. Cl. 15—250.42 8 Claims



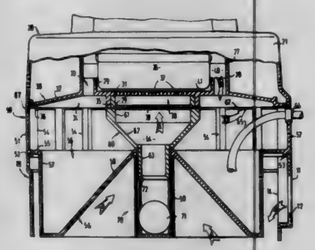
7. A windshield wiper blade assembly including a flexible wiper blade element of extended length and having a flexible support, a pair of secondary yokes connected to said flexible wiper element and support, a primary yoke extended between said pair of secondary yokes, said primary yoke being connectable to an arm for driving said windshield wiper blade assembly across a windshield, the improvement therein comprising:
means for connecting said primary yoke to said pair of secondary yokes, said means for connecting including a portion wherein said primary yoke moves relative to said secondary yokes without disengagement, and another portion wherein said primary yoke is separable from said secondary yoke, said primary yoke remaining engaged with said secondary yokes when said flexible wiper blade element and said flexible support are flexed toward said primary yoke, said primary yoke and said secondary yokes moving relative to one another to permit disengagement of said primary and said secondary yokes when said flexible wiper blade element and said flexible support are flexed away from said primary yoke, said yokes including a V-shaped cross-section, the V-cross-section of said secondary yokes including smaller angles then said primary yoke and nesting within said primary yoke, the apex of each said secondary yoke contacting and pivoting on the apex of said primary yoke, whereby symmetrical pivoting about the apexes is provided during sweeps over said windshield.

4,287,635
WET AND DRY VACUUM CLEANER
Paul G. Jacobs, 9958 Amestoy Ave., Northridge, Calif. 91325
Filed May 7, 1979, Ser. No. 36,295
Int. Cl.³ A47L *7/00*
U.S. Cl. 15—321 **6 Claims**



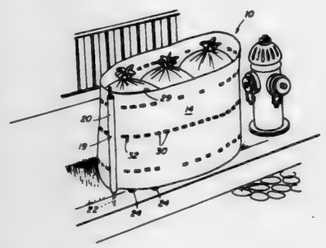
1. A vacuum cleaner for vacuum cleaning wet or dry surfaces, said vacuum cleaner comprising:
a support structure;
an open top recovery tank for receiving soiled material removed from said surface, said tank being releasably mounted in said structure;
a cover on said tank hinged to said support structure and having a seal for cooperating with the periphery of said open top and forming a vacuum chamber in said tank;
a fan mounted on said cover, said fan having an air inlet and an air outlet;
a first passage through said cover placing said inlet of said fan in communication with said vacuum chamber; and
a second passage through said cover, said second passage at one end opening into said vacuum chamber above and geometrically centered over said vacuum chamber and having a means at its other end for connecting to a vacuum conduit through which material removed from said surface moves toward said recovery tank.

4,287,636
APPARATUS FOR CLEANING FLOOR, CARPETS AND THE LIKE
Alan J. Brazier, Birmingham, England, assignor to Vax Appliances Limited, Droitwich, England
Filed Dec. 10, 1979, Ser. No. 101,542
Claims priority, application United Kingdom, Dec. 19, 1978, 49174/78
Int. Cl.³ A47L *7/00*
U.S. Cl. 15—321 **6 Claims**



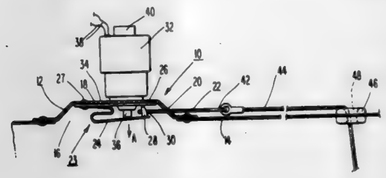
1. Suction cleaning apparatus comprising:
(a) container means for the collection of both wet and dry matter and having an intake inlet for connection with a cleaning head;
(b) motor driven air suction means with an air exhaust outlet and an air inlet;
(c) detachable reservoir means for storing cleaning liquid;
(d) delivery means for delivering said liquid from said reservoir means to said cleaning head in response to the establishment of air pressure within said reservoir means so as to enable the apparatus to be used for wet cleaning;
(e) detachable connector means for connecting said suction means to said container means, said reservoir means and said connector means being interchangeably assembled with said container means and suction means so that the connector means is used in the absence of said reservoir means and vice-versa;
(f) filter means for assembly with said container means when said connector means is assembled therewith so as to enable the apparatus to be used alternatively for dry suction cleaning;
(g) an air passageway in said reservoir means extending, when said reservoir means is assembled with said container means and said suction means, from the interior of said container means to the air inlet of said suction means so as to apply suction to the interior of said container means whilst isolating said air exhaust outlet of the suction means from said container means so that air delivered from said air exhaust outlet enters the reservoir means externally of said air passageway; and
(h) air-flow director means incorporated in said connector means for directing air, when said director means is assembled with said container means and said suction means, from said exhaust outlet of the suction means to atmosphere whilst placing the interior of said container means in communication with said air inlet of the suction means.

4,287,637
TRASH BAG ENCLOSURE
William A. Bernardi, 97 River St., Norwell, Mass. 02061
Filed Nov. 1, 1979, Ser. No. 90,120
Int. Cl.³ E04H *17/00*
U.S. Cl. 256—1 **7 Claims**



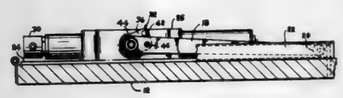
1. A trash bag enclosure comprising:
a sheet substantially rigid in the vertical direction and resiliently windable about a central vertical axis,
said sheet being biased to assume a rolled up configuration about said central axis,
said sheet encircling with a concave surface of said sheet at least one loaded trash bag and being partially rewound to encircle and grip said trash bag with said concave surface in a cooperative relationship with said trash bag,
said sheet having one end portion with means for securing said one end vertically to a fixed location and another end portion free to wind and unwind about said central vertical axis.

4,287,638
INSIDE/OUTSIDE LINK
Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 16506
Filed Nov. 29, 1978, Ser. No. 964,655
Int. Cl.³ E05F *15/2*
U.S. Cl. 16—48.5 **28 Claims**



1. A releasing device comprising:
(a) a releasable member;
(b) a substantially dome-shaped, mounting member, said dome-shaped member having a flattened portion at an apex thereof, a concave inner portion and a convex outer portion, said mounting member being adapted for mounting over an aperture in a fluid barrier, and further having an aperture therein for receiving said releasable member, said releasable member being adapted for insertion through said aperture in said mounting member from said outside portion to said inside portion; and
(c) gripping means, mounted on said mounting member for engaging said releasable member when in a normal position after said releasable member has been inserted through said aperture in said mounting member said gripping means further being adapted to release said releasable member when in an activated position, said gripping means further comprising heat responsive means, said heat responsive means being mounted on the inside portion of the flattened portion of said dome-shaped member and further being adapted to cause said gripping means to move to said normal position in response to a preselected ambient temperature and to cause said gripping means to move to said activated position in response to a preselected increase in said ambient temperature.

4,287,639
DOOR CLOSER PERMITTING FREE-SWING AND REGULAR-CLOSER MODES
Arthur M. Denton, Charlotte, N.C., assignor to Scovill Inc., Waterbury, Conn.
Filed Mar. 29, 1979, Ser. No. 24,721
Int. Cl.³ E05F *15/20, 1/00, 3/04*
U.S. Cl. 16—48.5 **6 Claims**



1. An operator assembly for a door closer having a drive shaft comprising:
(a) an operator arm having means at one end to pivotally secure it to the drive shaft and means at the other end to secure it to the door, the arm having a first aperture spaced adjacent the said one end;
(b) a drive plate having means to rigidly secure it to the shaft in a plane perpendicular to the shaft and adjacent the arm, the plate having a pair of spaced apertures, the said spaced apertures and the first aperture being equidistant from the axis of the shaft;
(c) pin means adapted to be selectively received into one of the spaced apertures on the plate and selectively into the aperture on the arm or in abutting relation with a side of the arm adjacent the aperture on the arm.

4,287,640
TOOL HANDLE AND METHOD OF MAKING SAME
Bob N. Keathley, Bernie, Mo., assignor to IXL Manufacturing Co., Inc., Bernie, Mo.
Filed Aug. 17, 1979, Ser. No. 67,260
Int. Cl.³ A47B *95/02*
U.S. Cl. 16—110 R **17 Claims**

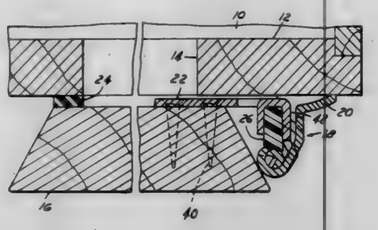


17. An elongated axe handle for an axe head having an eye for the reception of a handle, said axe handle comprising:
(a) a solid wood shaft member having a tool end portion, a butt end portion, and substantially the same cross section along the entire length of the shaft,
(b) a molded, axe head holding section molded directly to the wood at the tool end portion,
(c) said axe head holding section being composed of a high impact material and including an outer surface profile effective to slidingly receive and secure an axe head in place on said axe head holding section,
(d) said head holding section including a volumetric mass of material which gives off an amount of heat in its molten condition effective to drive moisture out of kiln dried wood,
(e) the wood of said shaft member has an amount of moisture sufficient to maintain the natural handle strength characteristics of the wood, and
(f) the combination of the wood shaft member and axe head holding section being effective to substantially reduce the size of the wood blank from which the wood shaft member is obtained when compared to the size of the wood blank of a conventional wood handle.

4,287,641
SELF-CLOSING HINGE
Robert D. MacDonald, Mesa, Ariz., assignor to Masco Corporation, Taylor, Mich.
Filed Aug. 20, 1979, Ser. No. 67,685
Int. Cl.³ E05D *11/10*
U.S. Cl. 16—139 **7 Claims**

1. A hinge assembly comprising first and second hinge members, said first hinge member having a hinge pin formation thereon, said second hinge member having a hinge formation thereon receiving said hinge pin formation to pivotally connect said hinge members, said first hinge member having an engageable surface thereon, said surface including a cylindrical portion and a cam portion, and a deformable pressure member compressed between said second hinge member and said engageable surface of said first hinge member, said pressure member providing the sole means of holding said hinge members in assembled condition, said pressure member engaging said cylindrical portion of said engageable surface from the full open position of the hinge members to the near-closed position

thereof and engaging said cam portion between the near-closed and fully closed positions thereof, said cam portion being arranged relative to the hinge axis and said pressure member so



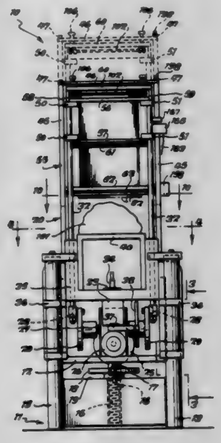
that the force applied by said pressure member passes to one side of the hinge axis thereby producing a torque tending to move said hinge members to the fully closed position.

4,287,642

MEAT TENDERIZING APPARATUS

Andre R. Jaccard, 10969 Darien Rd., Holland, N.Y. 14080, and Karl H. Voss, 6781 Ward Rd., Wheatfield, N.Y. 14304

Filed Dec. 28, 1978, Ser. No. 974,032
Int. Cl.[3] A22C *7/00*
U.S. Cl. 17—25 20 Claims



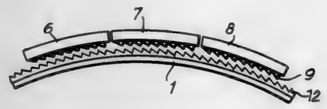
1. Meat tenderizing apparatus comprising: an assembly comprising a plurality of individual meat-piercing elements; means for supporting and moving a plurality of said elements; means for supporting a cut of meat; means for reciprocating said supporting and moving means toward and away from said meat; individual means for separately guiding each of said piercing elements; separate stripping means carried by each of said guiding means for holding said meat while said piercing elements penetrate said meat and are withdrawn therefrom; each said guiding means being carried by and slidably movable with respect to its associated piercing element.

4,287,643

CARDING ELEMENT

Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trutzschler GmbH & Co., Mochen-Gladbach, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,658
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741088
Int. Cl.[3] D01G *15/84*
U.S. Cl. 19—114 5 Claims



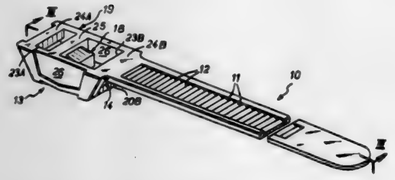
1. A carding element comprising: a support member; and a tooth set arranged on said support member and comprised of an alloy of steel-bound hard material containing up to 50% titanium carbide by volume, said tooth set being mounted on said support member in semifinished, machined state and hardened in situ by heating and quenching.

4,287,644

COIL LOOP TYPE CABLE TIE

Guy Durand, Montville, France, assignor to Le Grand S.A., Limoges, France

Filed Jan. 28, 1980, Ser. No. 115,747
Claims priority, application France, Jan. 30, 1979, 79 02333
Int. Cl.[3] R65D *63/00*
U.S. Cl. 24—16 PB 9 Claims



1. A cable tie of one-piece construction, comprising a flexible strap having a plurality of lateral ratchet teeth on one side of said strap and a fastening head having a passageway extending parallel to said strap and adapted to receive said strap to form a loop, a hinged pawl having at least one retaining tooth disposed at an end thereof adapted to mesh with any of said plurality of ratchet teeth and a hinge of reduced thickness joining said hinged pawl to said fastening head, said hinged pawl extending generally parallel to said strap, a notch separating said hinged pawl from the rest of said fastening head, said hinge defining the closed end of said notch, and said notch opening outwardly onto a surface of said hinged pawl opposite to a surface on which said retaining tooth is formed.

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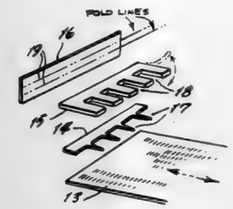
WAIST BAND FOR PANTS

Pasquale F. Di Costanzo, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Dec. 10, 1979, Ser. No. 101,681
Int. Cl.[3] A44B *9/10, 9/00*
U.S. Cl. 24—301 2 Claims

1. A beltless belt, comprising in combination, a length of elastic tape, a metal plate at each end of said tape having a row

of pointed teeth, said teeth of each said plate pointing toward each other, wherein a flexible plastic pad is included at each



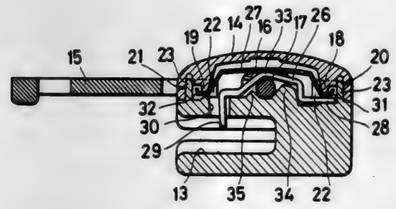
said tape end, said pad having a row of notches along one side aligning with said row of teeth.

4,287,646

AUTOMATICALLY LOCKING SLIDER FOR SLIDE FASTENER

Yoshihiro Kanzaka, Kunugiyama Nyuzen, Japan, assignor to Yoshida Kogyo, K.K., Japan

Filed Feb. 7, 1979, Ser. No. 10,125
Claims priority, application Japan, Feb. 23, 1978, 53-22540[U]
Int. Cl.[3] A44B *19/30*
U.S. Cl. 24—205.14 R 2 Claims



1. An automatically locking slider for a slide fastener having a pair of coupling element rows, said slider comprising:

(A) a slider body including a pair of first and second wings defining therebetween a generally Y-shaped guide channel for the passage of said pair of coupling element rows of the slide fastener,

(B) a yoke attached to said first wing,

(C) means attaching said yoke to said first wing, said attaching means comprising a pair of plugs on said yoke and a pair of sockets on said first wing, each of said plugs being fitted in one of said sockets respectively,

(D) a locking member supported on said first wing and having at one end a locking pawl engageable with coupling element rows of the slide fastener in said guide channel and having at the other end a pivot portion disposed in one of said sockets, said locking member being pivotable about said pivot portion,

(E) a resilient member urging said locking member against said first wing to cause said locking pawl normally to project into said guide channel through said aperture, and

(F) a pull tab operatively connected with said locking member for pivotally moving the latter against the bias of said resilient member, to retract said locking pawl from said guide channel into said aperture,

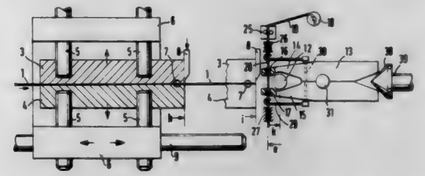
(G) said resilient member comprising a leaf spring having one end portion disposed between one of said plugs and said pivot portion of said locking member to prevent said one of said plugs from coming into contact with said pivot portion, whereby said one of said plugs is protected from abrasive wear by repeated pivotal movement of said locking member.

4,287,647

PROCESS AND APPARATUS FOR MAKING POMPONS

Gerd Rodermund, D-7631 Mahlberg, and Helmut Kappus, Altfelixstrasse 26, D-7630 Lahr, both of Fed. Rep. of Germany

Filed Dec. 27, 1979, Ser. No. 107,561
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942492
Int. Cl.[3] D04D *7/06*
U.S. Cl. 28—147 16 Claims



1. A process for making pompons, comprising the steps of:

(a) splitting a strip of foil on each side of the longitudinal center thereof in such a manner that a continuous spine with sideways projecting needles is formed;

(b) winding a predetermined length of said split strip on a coiling spindle to form a coil;

(c) fastening the end of said wound strip to prevent said coil from unwinding; and

(d) compression-shaping said coil between two compression members coaxially mounted to said coiling spindle in such a manner that after release by said compression members, the needles spring back into a pompon of predetermined shape.

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TIRE BUFFING BLADE

James R. Hineborg, Santa Ana, and Efrain Lopez, Pasadena, both of Calif., assignors to AMF Incorporated, White Plains, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,699
Int. Cl.[3] B23D *71/00;* B21K *21/00;* B29H *21/08*
U.S. Cl. 29—79 14 Claims



1. A buffing blade adapted for mounting in a tire rasp, comprising:

a flat planar body with a plurality of pairs of cutting and dragging teeth defining an interrupted convex working edge, and said teeth having a substantially constant radial rake angle which remains unchanged during wear of said teeth;

each of said teeth have straight leading and trailing edges substantially parallel to one another;

a series of primary cutouts separating pairs of cutting and dragging teeth each having a pair of straight diverging sides defined by the trailing edge of a dragging tooth and the leading edge of the following cutting tooth extending from the working edge to the bottom of the primary cutout defining a complex arc;

said teeth having enlarged root portions and said primary cutouts extending below said root portions providing a

heat transfer path from said root portions of each of said pairs of teeth to said planar body between successive cutouts;

a V-shaped cutout between each pair of cutting and dragging teeth having converging sides extending from said working edge to the bottom of said slot defined by the trailing edge of said cutting tooth and the leading edge of said dragging tooth;

said cutting teeth all being laterally offset in the same direction from the plane of said body a distance substantially equal to the thickness of said blade; and

said dragging teeth all being laterally offset from the plane of said body a distance substantially equal to the thickness of said blade and in a direction opposite from said cutting teeth.

4,287,649

ROLLER CONSTRUCTION FOR PAPER FEEDING

Henry A. Kohler, Orchard Park, N.Y., assignor to Truly Magic Products, Inc., Buffalo, N.Y.

Continuation of Ser. No. 930,933, Aug. 4, 1978, abandoned. This application Mar. 13, 1980, Ser. No. 130,145

Int. Cl.³ B05C *11/02*

U.S. Cl. 29—130 **18 Claims**



1. A paper feeding roller for feeding paper comprising a core of soft resilient material, an annular skin of abrasion-resistant flexible material secured to said core, and an outer surface on said annular skin having depression means therein for causing said outer surface to have a tread for gripping said paper and feeding said paper when said paper is free to move and for accepting air for avoiding planing of said roller when said paper is being fed by said roller and for acting as a lubricant to permit slipping between said paper and said roller in the event said paper is held against movement and for receiving paper particles from said paper, said annular skin being capable of flexing with said core to conform to the surface of the paper against which it is pressed, and said annular skin returning to its original shape upon terminating contact with said paper for ejecting said paper particles from said depression means to thereby produce a self-cleaning action.

4,287,650

UNIVERSAL JOINT OUTER MEMBER

Leslie G. Fisher, Birmingham, England, and John S. Waite, Welshpool, Wales, assignors to GKN Transmissions Limited, Birmingham, England

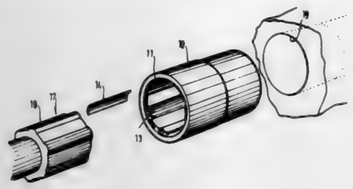
Filed Oct. 22, 1979, Ser. No. 87,281

Claims priority, application United Kingdom, Nov. 1, 1978, 42782/78

Int. Cl.³ B21D *53/12*

U.S. Cl. 29—148.4 R **4 Claims**

1. A method of making a universal joint outer member affording a cavity with axially extending grooves in the wall thereof for receiving balls for torque transmission, comprising the steps of providing at least one element affording groove-defining surfaces, providing an outer member affording a cavity shaped to receive said at least one groove-defining element and of a relatively light weight material permanently deformable by extrusion, introducing said at least one groove-defining element into said outer member, introducing into said outer member a former for determining the final positions of the grooves and dimensions of the cavity, and subjecting this assembly to an extrusion process to form the outer member to



the required size and to secure said at least one groove-defining element therein.

4,287,651

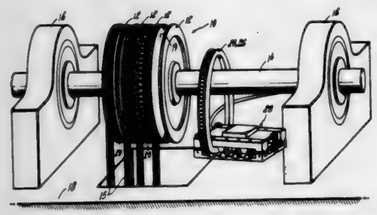
METHOD FOR FABRICATING AND INSTALLING THERMOSET SHEAVE INSERTS

Janis J. Cilderman, Simsbury, Conn., and Joseph G. Kirincich, Saddle River, N.J., assignors to Otis Elevator Company, Hartford, Conn.

Division of Ser. No. 30,986, Apr. 17, 1979, Pat. No. 4,198,196. This application Nov. 1, 1979, Ser. No. 90,186

Int. Cl.³ B21K *1/28*

U.S. Cl. 29—159 R **1 Claim**



1. A method for installing a thermoset plastic sheave insert on a sheave that is mounted on a shaft, comprising the steps:

cutting a premeasured length of insert that is shorter than the circumference of the sheave,

bonding the ends of said length together into a unitized loop around the shaft, including the steps:

colinearly holding said ends together; depositing liquid thermoset material around and between said ends; forcing and holding a mold around said ends for molding said material congruently to the shape of the insert in the space between the ends; heating the mold for curing said liquid; and

stretching the loop around the sheave for installation thereon.

4,287,652

BRAKE SHOE SALVAGING MEANS

Harrison R. Epperly, 8050 E. State Rd., Zionsville, Ind. 46077

Filed Apr. 3, 1980, Ser. No. 136,975

Int. Cl.³ B23P *15/18*

U.S. Cl. 29—233 **10 Claims**

1. A brake shoe salvaging means for removing rivets from a brake shoe table for replacement of the brake lining thereof, the brake shoe table being generally in the form of an arc of a cylinder, to the outer or convex side of which a replaceable brake lining is held by rivet means which extend from the brake lining through holes provided in the brake shoe table in a radial direction with respect to the cylindrical nature of the brake shoe table, the brake shoe salvaging means comprising:

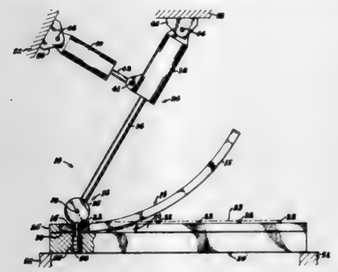
a plate means;

means supporting the brake shoe table and plate means in operative juxtaposition as hereinafter set forth;

the plate means having a pattern of pin means facing the brake shoe table and arranged in a pattern operatively corresponding to the pattern of rivet holes in the brake shoe table;

the pin means having their outer ends in a plane or in the form of a curved surface whose curvature differs from that of the brake shoe table;

pressure means urging the brake shoe table and plate means operatively toward one another in a forceful manner operative to force the pin means operatively through the



corresponding rivet holes of the brake shoe table to thereby drive the rivets therefrom; and

pressure means causing an operative relative rocking of the brake shoe table and the plate means to cause, sequentially or successively, corresponding portions of the brake shoe table rivet holes and pin means to come into the said forceful manner contact, thereby to successively drive from their rivet holes successive ones or groups of the rivets of the brake shoe table.

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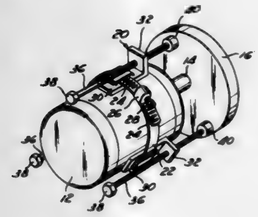
FORCE APPLYING APPARATUS

Howard Bloch, 1701 Nichols Canyon Rd., Los Angeles, Calif. 90046

Filed May 5, 1980, Ser. No. 146,489

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—256 **2 Claims**



1. In combination with a motor housing, a shaft extending from said motor housing, said shaft to be rotated by a motor mounted within said motor housing, an air movement member mounted on said shaft to be rotated thereby, a tight fit established between said air movement member and said shaft, a force applying apparatus for removing said air movement member from said shaft, said force applying apparatus comprising:

securing means for attachment on said motor housing, said securing means including a flexible band assembly which is to be tightened onto said motor housing;

a bracket assembly connected to said securing means, said bracket assembly comprising a plurality of separate spaced-apart bracket members, said bracket members to be tightly held in position against said motor housing by said band, said bracket assembly being movable along said band when said band is not tightened upon said motor housing; and

a force applying means connected by connecting means to said bracket members, said force applying means having an outer end and an inner end, said outer end of said force applying means to contact said air movement member, said inner end of said force applying means to engage with a torque applying tool, said connecting means permitting movement of said force applying means relative to said bracket members against said air movement member to cause said air movement member to be separated from said shaft.

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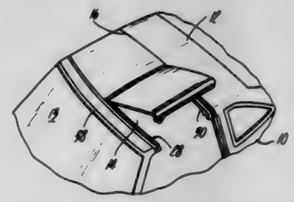
METHOD OF MODIFYING THE ROOF OF A VEHICLE TO RECEIVE REMOVABLE ROOF PANELS

Richard R. Chrysler, Brighton, Mich., assignor to Cars & Concepts, Inc., Brighton, Mich.

Continuation of Ser. No. 885,545, Mar. 13, 1978, abandoned, which is a division of Ser. No. 755,665, Dec. 30, 1976, Pat. No. 4,120,529. This application May 21, 1979, Ser. No. 40,653

Int. Cl.³ B23P *23/00, 17/04*; B21K *21/16*

U.S. Cl. 29—401.1 **6 Claims**



1. The method of modifying the roof of a vehicle body to receive detachable panels in which the vehicle body has a roof of rigid material, the steps comprising; cutting the roof of the body transversely from the door space at one side of the vehicle body to the door space at the other side of the vehicle body along transversely extending lines spaced longitudinally of the vehicle body, removing the roof portion between said spaced lines, installing a frame member on the longitudinal center line of the vehicle body and fastening opposite ends of the frame member to the roof of said vehicle body adjacent to said transverse lines, respectively, to form a pair of panel receiving spaces in said body at opposite sides of said frame member.

4,287,655

END EFFECTOR POSITION AND IDENTIFICATION SYSTEM FOR STEAM GENERATOR SERVICING MACHINE

Kenneth S. Gerkey, Mt. Lebanon, and Raymond P. Castner, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1979, Ser. No. 34,312

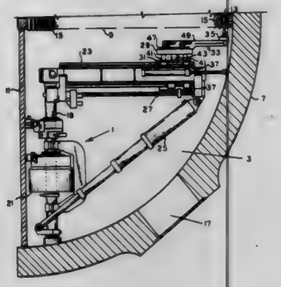
Int. Cl.³ B23P *15/26*; B23Q *21/00*

U.S. Cl. 29—407 **8 Claims**

1. Apparatus for servicing a steam generator tubesheet in which an end effector is mounted on the free end of a support member cantilevered, at selected angular positions in a plane parallel to the tubesheet, from a platform member of a carriage movable along an arm which rotates in a plane which is also parallel to the tubesheet, the improvement comprising:

signal generating means comprising at least two sensor elements mounted on one of said members, each of said sensor elements being operative to generate an electrical signal when triggered, and at least two trigger elements mounted on the other member, each of said trigger elements being operative to trigger a sensor element when aligned therewith, said sensor elements and trigger ele-

ments being arranged on the respective members to generate, through the alignment of trigger elements with selected ones of said sensor elements, a discrete pattern of electrical signals for each of a plurality of angular positions of the cantilevered support member on the platform member, and means responsive to said pattern of electrical signals to position said arm and carriage relative to said tubesheet to align the end effector with a selected location on the tubesheet.



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METHOD OF SETTING FASTENING ELEMENTS IN A HARD RECEIVING MATERIAL

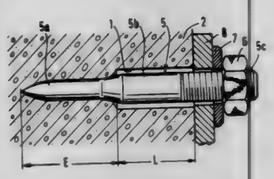
Horst-Detlef Gassman, Schaan, and Ernst Wohlwend, Nendeln, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Nov. 8, 1979, Ser. No. 92,543

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849139

Int. Cl.[3] B23P *11/00*

U.S. Cl. 29—432 6 Claims



1. Method of setting fastening elements, such as bolts, nails and studs, in a hard receiving matrial, such as concrete and rock, comprising the steps of drilling a blind borehole into the receiving material, aligning an explosive powder-operated setting device containing a fastening element with the blind borehole, and driving the fastening element from the setting device through the blind borehole and into the receiving material.

4,287,657

UPHOLSTERY BUTTON AND METHOD OF ASSEMBLY

Guy Andre, and Gilbert Besson, both of Grenoble, France, assignors to A. Raymond, Lorrach, Fed. Rep. of Germany

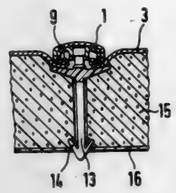
Filed Oct. 22, 1979, Ser. No. 86,790

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845939

Int. Cl.[3] B23P *11/02*

U.S. Cl. 29—450 4 Claims

4. The method of assembling an upholstery button to a cover fabric, comprising the steps of depositing the cover fabric on a die having a die opening, positioning a cap of the upholstery button with its top side on the cover fabric and moving said cap and cover fabric into the die opening to form an arcuate pleat in said cover fabric extending inwardly of said rim of said cap, positioning a lower part of said upholstery button under slight pressure on said cover fabric around the rim of the die opening, pressing said cap toward said lower part to clamp said fabric pleat against said lower part, and connecting said cap and lower part together.



4,287,658

APPARATUS FOR MAKING HEAT-INSULATED STRUCTURAL SECTION ASSEMBLIES

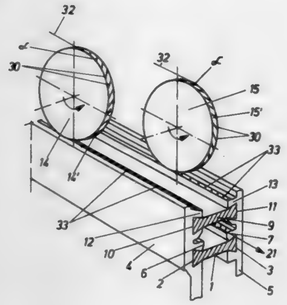
Rudolf Egerer, Bellengerg, Fed. Rep. of Germany, assignor to Wieland-Werke Aktiengesellschaft, Ulm, Fed. Rep. of Germany

Filed May 15, 1979, Ser. No. 39,401

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825301

Int. Cl.[3] B21D *39/00*; B23K *25/00*; B23P *19/04*

U.S. Cl. 29—509 4 Claims



1. Apparatus for making a heat-insulated structural section assembly consisting of at least two spaced facing structural metal sections transversely connected to each other by at least one heat-insulating bar having end portions retained in cavities defined by inwardly directed flanges on said spaced facing metal sections, said apparatus including at least one pressure roller for applying pressure against a flange on the structural section in order to hold the heat-insulating bar firmly in place within the respective cavity, each said pressure applying roller being rotatable to make rolling contact with the section assembly as said assembly travels through the apparatus and having a plurality of oblique substantially parallel grooves formed in the rolling surface thereof, each said groove having a longitudinal axis disposed at an acute angle with respect to the plane in which said roller rotates and being disposed in such manner that the acute angle faces forwardly and outwardly from the cavity when moving into rolling contact with the flange.

4,287,659

METHOD AND APPARATUS FOR EXCHANGING TOOLS IN HOBBING MACHINES

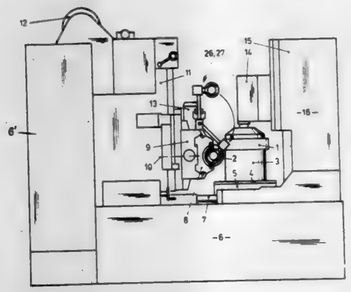
Manfred Erhardt, Puchheim; Werner Fendt, Munich, and Manfred Huber, Germering, all of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,214

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2818018

Int. Cl.[3] B23Q *3/157*

U.S. Cl. 29—568 14 Claims



1. A method for the automated tool exchange in hobbing machines having means facilitating an automatic sequence of operation for any desired number of workpieces, comprising the steps of moving only a first of said gripping devices at one point on the path of movement along the shaft into the region of a cutter which must be exchanged, a second of said gripping devices remaining stationary during the aforesaid movement of said first gripping device, gripping the cutter which must be exchanged with said first gripping device and removing the cutter from the cutting position, adding a new cutter at a loading point to said second one of said gripping devices which grips same therein, moving said first and second gripping devices together along the length of said shaft and thereafter moving only said second gripping device with said new cutter therein to said cutting position whereat said new cutter is released by said second gripping device, said first gripping device simultaneously carrying said cutter which must be exchanged to a location for removal thereof from said first gripping device, clamping said new cutter into said cutting position, and releasing the grip between said new cutter and said second gripping device to enable said new cutter to perform a certain number of working cycles.

4,287,660

METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

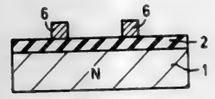
Keith H. Nicholas, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 789,879, Apr. 22, 1977, abandoned, which is a continuation of Ser. No. 574,510, May 5, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,546

Claims priority, application United Kingdom, May 21, 1974, 22583/74

Int. Cl.[3] H01L *21/223*

U.S. Cl. 29—571 14 Claims



1. A method of manufacturing a semiconductor device comprising a low resistivity conductive region having a substantially uniform narrow line width, said method comprising the steps of: (a) providing a semiconductor element having an insulating layer disposed at at least a surface part thereof, (b) depositing a layer of relatively high resistivity polycrystalline semiconductor material on said insulating layer, (c) forming a masking layer on a part of the exposed surface of said polycrystalline layer, (d) removing a part of said polycrystalline layer such that an edge thereof is exposed throughout the thickness thereof at an edge portion of said masking layer, (e) diffusing via the exposed edge portion a doping element laterally into a portion of said polycrystalline layer underlying said edge portion of said masking layer in the substantial absence of diffusing said doping element through said insulating layer itself into the semiconductor element, thereby forming said conductive region, (f) removing said masking layer, and (g) subjecting at least a part of the exposed polycrystalline layer adjacent said conductive region to an etching treatment to selectively remove undiffused portions thereof.

4,287,661

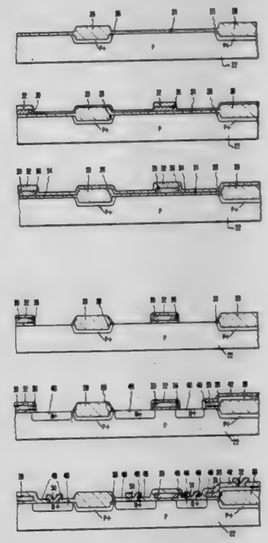
METHOD FOR MAKING AN IMPROVED POLYSILICON CONDUCTOR STRUCTURE UTILIZING REACTIVE-ION ETCHING AND THERMAL OXIDATION

Axel Stoffel, Wildberg, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,039

Int. Cl.[3] H01L *21/20, 21/306*

U.S. Cl. 29—571 10 Claims



1. In a method for making an improved polycrystalline silicon conductor structure in an integrated circuit comprising:

depositing a layer of polycrystalline silicon upon a silicon substrate covered by an insulator coating;

masking the polycrystalline silicon in areas where said conductor structure is desired;

reactive ion etching said polycrystalline silicon in unmasked areas until a thickness of said polycrystalline silicon of the order of hundreds of Angstroms remains on said insulator coating;

thermally oxidizing the unmasked polycrystalline silicon whereby the said thickness on said insulator coating is totally oxidized to silicon dioxide and the exposed side-

wall of polycrystalline silicon located under the mask is oxidized without causing a silicon dioxide wedge formation under the said polycrystalline silicon located under the mask; and

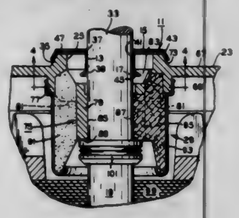
directionally reactive ion etching the said silicon dioxide to remove all silicon dioxide from the horizontal silicon substrate while leaving said silicon dioxide on the vertical said sidewall regions.

4,287,662

METHOD OF ASSEMBLING

Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 889,962, Mar. 24, 1978, Pat. No. 4,198,584.
This application Sep. 6, 1979, Ser. No. 73,139
Int. Cl.³ H02K *15/14*
U.S. Cl. 29—596 **16 Claims**



1. A method of assembling a device having a sleeve section integral with a pair of opposite annular slingers in a preselected assembly position onto a rotatable shaft of a prime mover and with respect to an end plate of the prime mover and an opening in the end plate through which the shaft extends so as to preclude contamination of a lubricant in a lubricating system of the prime mover communicated with the opening in the event the prime mover is operated in an environment in which a fluid incompatible with the lubricant may be presented to at least one of the end plate and an exterior end section on the shaft extending beyond the opening, the method comprising the steps of:

(a) arranging the sleeve section of the device generally in gripping engagement about the exterior end section of the shaft and moving the device on the exterior section toward the opening in the end plate;

(b) inserting the sleeve section at least in part into the opening and locating one of the slingers over the opening and with respect to a raised part of the end plate disposed about the opening so as to define the preselected assembly position of the device and preclude the passage of any incompatible fluid across the end plate part into the opening and along the exterior end section of the shaft into the opening when the prime mover is operated in the environment of the fluid; and

(c) predetermining the position of the other slinger on the shaft with respect to the opening and the lubrication system so that the other slinger is disposed in lubricant slinging relation with respect to a part of the lubrication system when the one slinger is located with respect to the raised part of the end plate during the inserting and locating step.

4,287,663

REINFORCED PLASTIC CONTAINER WITH AN INTEGRAL HEATING ELEMENT AND A METHOD OF FORMING THE SAME

Robert W. Newbold, Jr., Cincinnati, Ohio, assignor to Plas-Tanks Industries, Inc., Fairfield, Ohio

Filed Apr. 30, 1979, Ser. No. 34,775
Int. Cl.³ H05B *3/00*
U.S. Cl. 29—611 **13 Claims**

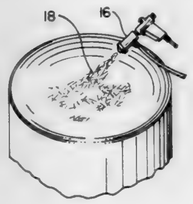
1. A method of making a reinforced plastic container having an integral heating element, comprising:

(a) covering a mold having a container shaped configuration with a first reinforced plastic material;

(b) covering the first reinforced plastic material on the mold with a resin;

(c) placing an electrical heating element which is encapsulated in a plastic material on the resin covered first reinforced plastic material, said encapsulating plastic material being bondable to the first reinforced plastic material;

(d) applying a further covering of resin to both the encapsulating material and the resin covered first reinforced plas-



tic material to secure the encapsulated heating element to the first reinforced material; and

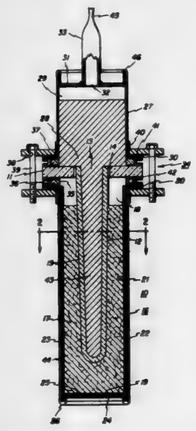
(e) applying a further covering of plastic reinforced material to the covered mold and bonding said further covering to both said encapsulated electrical heating element and to said first reinforced plastic material applied to the mold prior to placement of the heating element, said further covering of plastic reinforced material being applied after the further covering of resin has been applied to both the encapsulating material and the resin covered first reinforced plastic material.

4,287,664

SULFUR ELECTRODE CONTAINER AND METHODS OF MANUFACTURE

Debajyoti Chatterji, Latham, and Dong-Sil Park, Schenectady, both of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 895,141, Apr. 10, 1978, Pat. No. 4,209,573.
This application Oct. 22, 1979, Ser. No. 87,402
Int. Cl.³ H01M *2/02*
U.S. Cl. 29—623.2 **6 Claims**



1. A method of producing a sulfur electrode container which consists essentially of providing an outer metallic casing having opposite open ends readily corroded by liquid sulfur, providing a metallic foil substantially corrosion resistant to liquid sulfur, forming the foil into at least two full windings within

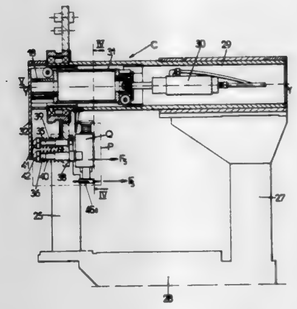
said casing producing a self-sealing protective liner in situ in said casing, said liner being contiguous to and coextensive with the inner surface of said casing, and sealing one open end only of the casing with a metallic end cap fitted within and adjacent said open end of said casing, said end cap having an inner surface substantially corrosion resistant to liquid sulfur.

4,287,665

DEVICE FOR FITTING THE ENDS OF ELECTRICAL CONDUCTORS OR SIMILAR ELEMENTS INTO A BOX

Sergio Leandris, Saint-Sauveur, France, assignor to Precision Mecanique Labinal, France

Filed Oct. 25, 1979, Ser. No. 87,934
Claims priority, application France, Oct. 25, 1978, 78 30352
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—705 **10 Claims**



1. A device for fitting the ends of electrical conductors or similar elements into a box, said device being operated in cooperation with a fixed supply corridor, adapted to feed a succession of suitably orientated boxes, and a transporter of conductors or wires, adapted to bring in a predetermined order a succession of conductors comprising at least one free end, with the free end of each successive conductor in a well-defined position; said device including

a box carrier comprising means for receiving a box from a supply corridor and means for bringing this box into a predetermined succession of well-defined fixed positions, in each of which a well-defined recess or socket of this box occupies a position fixed in space, and means for releasing this box once it is provided with its conductors; and

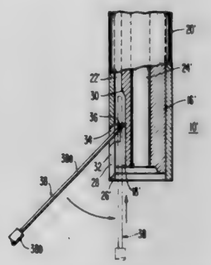
a unit for feeding and plugging in successive conductors or wires comprising grasping means adapted to grasp and release a conductor, means for bringing these grasping means opposite a conductor brought into position by a transporter, means for controlling the grasping of this conductor by said grasping means, means for bringing said grasping means and a conductor grasped thereby opposite said position fixed in space occupied by a well-defined recess of a box held by said box carrier, means for moving said grasping means so as to plug a free end of a conductor held by the grasping means into this well-defined recess and to ensure snap-fitting of this free end into this recess, and means for releasing this conductor from said grasping means.

4,287,666

SIDE-LOADING WIRE WRAPPING ASSEMBLY FOR SEMIAUTOMATIC WIRING MACHINES

George J. Sprenkle, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 19, 1979, Ser. No. 105,381
Int. Cl.³ B21F *3/00, 15/04*; B23P *19/00*
U.S. Cl. 29—753 **6 Claims**



1. A side-loading wire wrapping assembly for use in a wiring machine comprising:

a generally cylindrical wrapping bit having at its free end a central aperture for receiving a terminal upon which a wire is to be wrapped and a pair of contiguous longitudinally disposed sections for receiving said wire prior to the wrapping operation, a first of said sections having a bore whose central longitudinal axis is offset from that of said wrapping bit, said bore extending from said free end of said wrapping bit a predetermined distance, the diameter of said bore being such that a longitudinal slit leading into said bore is formed in the bit surface, the second of said sections having a groove in said bit surface which is in substantial longitudinal alignment with said slit,

a stationary sleeve substantially enclosing said wrapping bit, said sleeve having a longitudinal V-groove formed in its surface such that the sides of the "V" intersect the respective edges of the slit formed in said bit surface by said bore,

a wire feed hole formed in said sleeve, said V-groove extending from the end of said sleeve adjacent said free end of said wrapping bit and terminating in said wire feed hole, the center of said wire feed hole lying along the central longitudinal axis of said V-groove,

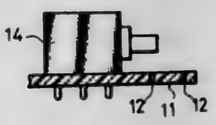
the portion of said wrapping bit appearing adjacent said wire feed hole during the loading of said wire into said wrapping bit having formed therein an opening substantially wider than said slit to provide maximum access to the interior of said bore from said wire feed hole.

4,287,667

METHOD OF MOUNTING AN ELECTRICAL COMPONENT

Masayuki Urushiyama, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 104,817
Claims priority, application Japan, Dec. 20, 1978, 53-15829
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—837 **3 Claims**



1. A method for mounting an electrical component having an operating portion and a plurality of terminals to a substrate

having its surface formed with a printed circuit pattern and formed with apertures for receiving said terminals therethrough, said substrate being provided with a removable portion opposite to an operating portion of the electrical component, the method comprising the steps of:

inserting said terminals of said electrical component through the respective apertures in said substrate,

soldering the terminals extending beyond the rear surface of said substrate by immersion soldering, and

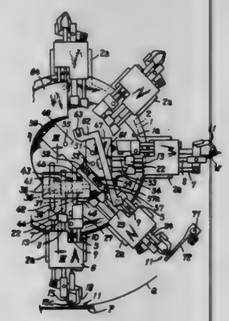
removing said removable portion of said substrate so as to make said operating portion to said electrical component operable from the rear surface side of said substrate.

4,287,668

METHOD OF INSERTING ELECTRONIC COMPONENTS TO A PRINTED CIRCUIT BOARD

Koichi Asai, Nagoya, and Tousuke Kawada, Chiryu, both of Japan, assignors to Fuji Mfg. Co. Ltd., Aichi, Japan

Division of Ser. No. 912,392, Jun. 2, 1978, Pat. No. 4,197,638.
This application Oct. 19, 1979, Ser. No. 86,394
Claims priority, application Japan, Aug. 27, 1977, 52/102880; Sep. 10, 1977, 52/108982
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—838 **7 Claims**



1. A method of inserting by means of a machine lead wires of electronic components into lead wire inserting holes, formed in a large number over a printed circuit board, and fixing them thereto, said method comprising at least one cycle of under-mentioned inserting operations:

a step of expanding the environmental area of targeted holes by pushing away the head portion of an already inserted component or components positioned within the closely neighboring space of said targeted holes, by means of abutting a member movable relatively to said printed circuit board onto said head portion and deforming the lead wires of said already inserted component; and

a step of inserting the lead wires of a component-to-be-inserted into said targeted holes to be fixed there by clinching, whereby the inserting of the lead wires of said components at a high distribution density can be achieved.

4,287,669

GLASS CUTTER

Toshimitsu Arai, 27, 8-chome, Anryu-machi, Sumiyoshi-ku, Osaka-shi, Japan

Filed Jun. 9, 1980, Ser. No. 157,835
Int. Cl.³ C03B *33/12*
U.S. Cl. 30—123.3 **4 Claims**

1. A glass cutter comprising a tubular barrel, a sleeve serving as a cutting oil reservoir, the lower end of said sleeve being capped over the upper end of said barrel, a tubular cutter head coaxially provided under said barrel, a tube immovably fitting in a hollow formed in said barrel but being axially movably fitting in a hollow formed in said cutter head, a bolt threaded into the upper end of said sleeve, said bolt being provided with a longitudinal groove in the threaded shank thereof to admit air, means for resiliently connecting said cutter head to said barrel, a cutting blade provided at the lower end of said cutter head, and a wick fitting closely in said tube with the upper and



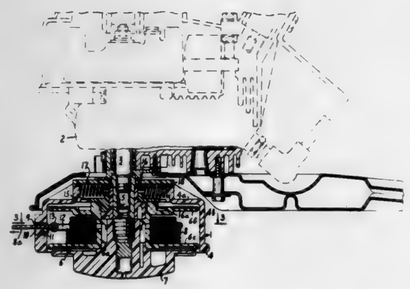
lower ends of said wick projecting from the upper and lower ends of said tube, respectively, the lower end of said wick being normally spaced from said cutting blade as long as said barrel and said cutter head are kept away from each other by the bias of said means for resiliently connecting said cutter head to said barrel.

4,287,670

FILAMENT-TYPE TRIMMER

Larry R. Baker, Dallas, N.C., assignor to Textron, Inc., Providence, R.I.

Filed Jul. 28, 1978, Ser. No. 929,026
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 **9 Claims**



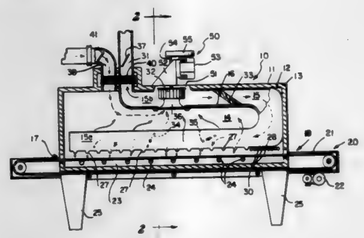
1. In a filament-type trimmer, the combination of a rotatable housing having a rim portion, a filament storage spool rotatably mounted in said housing, a filament wound on said spool, exit means in said rim portion of the housing through which an end portion of said filament extends in passing from said spool to the exterior of the housing, and flexible tubular guide means through which said filament extends in passing from said spool to said exit means.

4,287,671

METHOD OF CURING COATED ARTICLES

Robert L. Koch, II, Evansville, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.

Division of Ser. No. 942,598, Sep. 15, 1978, Pat. No. 4,216,592.
This application Mar. 27, 1980, Ser. No. 134,489
Int. Cl.³ F26B *3/04, 7/00*
U.S. Cl. 34—23 **12 Claims**



1. A method of curing coated articles within an oven, comprising:

carrying a plurality of coated articles to be cured through an oven with a passage time between the entrance into and the exit from the oven being sufficient to permit curing of the coating on the articles;

creating a circulation of the atmosphere through an open oven portion and a ducted oven portion and directing the atmosphere at the coated articles from the ducted oven portion as they travel through the open oven portion and approach the exit from the oven; heating said circulating atmosphere to produce a temperature sufficient to remove volatile portions of the coatings on the articles as the coated articles progress to the exit of the oven; and

exhausting a portion of the circulated atmosphere through an exhaust opening included in the ducted oven portion as it becomes mixed with volatile portions of the coating material being cured and as said volatile portions exceed a preset level, drawing fresh air into the oven through an oven inlet opening included in the open oven portion to replace the exhausted atmosphere and transferring heat from the exhausted atmosphere to the fresh air being drawn into the oven.

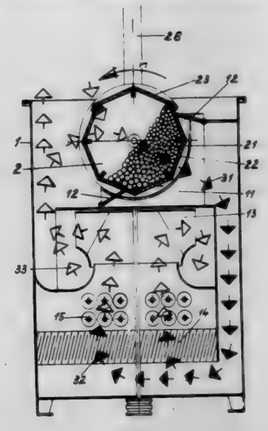
4,287,672

PROCESS AND APPARATUS FOR DRYING PIECES IN BULK IN A PLATING BARREL

Hans Henig, Albrecht-Achilles-Str. 48, 8500 Nünberg, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 64,988
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836183
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—28 **5 Claims**

1. A method for drying pieces in bulk consisting of metals and of synthetic materials, by means of an air flow in a rotating barrel which is suitable for the chemical or galvanic surface treatment of said pieces in bulk, wherein said barrel substantially consists of two frontal areas which are perpendicularly arranged to the axis of rotation of the barrel, and a perforated casing which is mounted between the two frontal areas comprising partially filling the barrel with a charge of said pieces, rotating said barrel in one direction only, directing the air by vacuum flow through the perforations of the barrel from substantially the entire outside and along the entire length thereof from the direction of the empty portion of the barrel only which is not in contact with the charge and guiding the flow of air through substantially all of the charge and out of said barrel



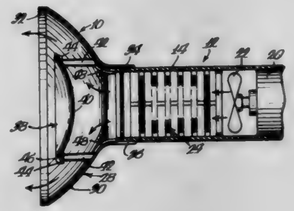
through substantially all and only that part of the perforated casing in direct contact with the charge.

4,287,673

HAIR DRYER DIFFUSER

Gilbert R. Wolter, Elmhurst, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 11, 1980, Ser. No. 111,413
Int. Cl.³ F26B *23/04*
U.S. Cl. 34—97 **4 Claims**



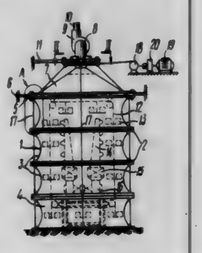
1. A diffuser attachment for a hair dryer comprising a forwardly flared body portion wherein the maximum diameter portion thereof is at its forwardmost edge and having a reduced diameter rear neck portion adapted to be telescopically assembled on the air outlet end of the hair dryer, a diffuser plate concentrically mounted within said forwardly flared body portion with its forward edge spaced rearwardly of said forwardmost edge of said flared body portion and having a convex surface facing the flow of heated air from the hair dryer, the diameter of said diffuser plate being greater than the diameter of said air outlet end of the hair dryer but substantially less than the inner diameter of said flared body portion in a transverse plane defined by the forward edge of said plate whereby an annular gap defined therebetween has a radial dimension in said plane approximately one-fifth of the inner diameter of said flared body portion in said plane, and said forwardly flared body portion having a parabolic configuration with a short cylindrical portion at its forward edge.

4,287,674

DRYING INSTALLATION

Anatoly G. Selivanov, Donskaya ulitsa, 24, kv. 110; Grigory P. Yakovlev, Flotskaya ulitsa, 26, kv. 63; Vladimir I. Khodyrev, Kerchenskaya ulitsa, 20, kv. 120, and Valery V. Zhivetin, ulitsa Sofii Kovalevskoi, 4, kv. 123, all of Moscow, U.S.S.R.

Filed Aug. 27, 1979, Ser. No. 70,146
Claims priority, application U.S.S.R., Dec. 13, 1978, 2691050
Int. Cl.³ E04H *12/34*
U.S. Cl. 34—201 **14 Claims**



1. A collapsible and extensible tower for drying comprising:
a sectional-construction defining a folding chamber;
bearing members forming sections of said folding chamber, each having a similar annular shape and vertically arranged one above another;
said sections of said folding chamber, each made up of two bearing members one mounted on the other; said sections adjoining one another being rigidly interconnected
an elastic covering enclosing two axially spaced said bearing members of each said section and secured to two said bearing members of each said section;
said elastic covering being capable of remaining intact under the weight of said the bearing members of folding chamber and those below it;
a hood made fast on a top bearing member of an uppermost section;
a means for holding said folding chamber to a support for depending therefrom, said means being linked to said top bearing member of said upper section;
a means for admission of heat to said folding chamber, situated inside said chamber;
a means for withdrawing air from said chamber, arranged on said hood;
at least three suspension wire ropes with one of their ends held to one of said bearing members of said lower section so as to provide approximately parallel travel of said bearing members when actuated by said ropes;
guideways through which said equal in number to the number of said ropes and located at the places of interlinking of said sections of said chamber.

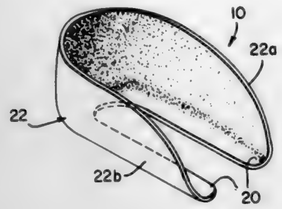
4,287,675

COUNTER FOR ATHLETIC SHOE

Edward J. Norton, Kingston, N.H., and Charles J. Flanagan, Melrose, Mass., assignors to New Balance Athletic Shoe, Inc., Lawrence, Mass.

Filed Jan. 17, 1980, Ser. No. 112,916
Int. Cl.³ A43B *13/42, 5/06*
U.S. Cl. 36—129 **8 Claims**

1. For use in footwear, a counter adapted to be mounted on the sole of the footwear within the region of the heel and toward the instep and superposed on the upper of the footwear along a portion of the medial and lateral sides, said counter having a body including a wall which is contoured to extend around the region of the heel and along the sides of the footwear, an upper edge of said wall being of maximum height at the rear of the heel and in the mounted position following a downward inclined generally arcuate path toward the sole, at least the medial side of the body extended to the region of the instep, and said body being formed of a stiff, relatively unyielding material to restrict movement at least of the heel to a



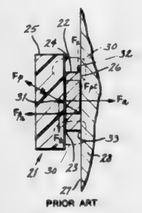
normal range of movement to reduce injury caused by instability.

4,287,676

MAGNETICALLY SECURED DISPLAY APPARATUS

Robert S. Weinhaus, 868 Albey La., St. Louis County, Mo. 63132

Filed May 22, 1978, Ser. No. 908,396
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—10 R **25 Claims**



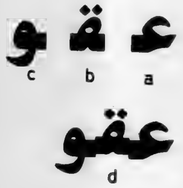
1. Display apparatus for magnetic securement to a ferromagnetic or paramagnetic object having a smooth surface in lateral displacement resistive relationship thereto, said apparatus comprising a support structure constituted by a sheet of self-supporting material, a display surface presented at the front face of said sheet, magnet means carried at a rear face of said sheet and positioned for developing a force of magnetic attraction to said object with said display surface presented for display purposes, said magnet means comprising a plurality of permanent magnets and means supporting said permanent magnets while permitting movement of said permanent magnets relative to said sheet to permit conformal adapsance and adherence of said permanent magnets to said smooth surface regardless of surface curvature or irregularity, said apparatus including a layer of elastomeric material associated with said magnet means and adapted for being interposed between said magnet means and said object surface with an area of said material maintained in contact with said surface by force of magnetic attraction of said magnet, said material being selected from the group consisting of plasticized polyvinyl chloride, plasticized polyvinyl acetals, and vulcanizing silicone rubber, said area of material magnetically maintained in contact with said object surface developing high intrinsic lateral adherence to said object surface for preventing said apparatus from moving laterally across said surface in response to high forces tending to laterally displace said apparatus.

4,287,677

SET OF SIGNS TO COMPOSE TEXTS IN ARABIC LETTERS BY THEIR JUXTAPOSITION

Joseph Aoun, Beirut, Lebanon, assignor to Lettera Arabica S.a.r.l., Beirut, Lebanon

Filed Jan. 16, 1979, Ser. No. 3,951
Claims priority, application Lebanon, Feb. 7, 1978, 564
Int. Cl.³ G09F *7/16*
U.S. Cl. 40—595 **5 Claims**



1. A two-dimensional set of signs for the composition by dry transfer of texts in Arabic letters through their juxtaposition which is characterized by the fact that it comprises a sheet of dry transfer material having thereon four kinds of signs; the first ones having the shapes of independent letters; the second ones corresponding to the shapes of the beginning letters provided with a connecting member comprising a protrusion on the visible outline of the letter to connect them to the following sign; the third ones corresponding to the shape of middle letters provided on one hand with a recess in the visible outline of the letter and on the other hand with a said connecting member to connect them to the following sign, and the fourth ones corresponding to the shape of end letters provided with a said recess, said connecting members and said recesses being so shaped as to interfit.

4,287,678

FISHING ROD LINE GUIDE

Shigeru Yamamoto, Higashikurume, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan

Division of Ser. No. 946,278, Sep. 27, 1978, abandoned. This application Apr. 24, 1980, Ser. No. 143,233
Int. Cl.³ A01K *87/04*
U.S. Cl. 43—24 **1 Claim**



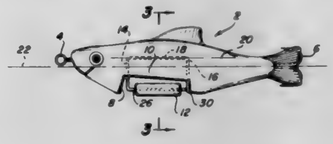
1. A fishing rod line guide comprising:
(a) an inner ring;
(b) an outer ring having a diameter larger than the diameter of the inner ring and disposed concentrically about said inner ring to thereby define an annular space between said inner and outer rings;
(c) a synthetic resin material molded into said annular space between said rings;
(d) the outer surface of said inner ring and the inner surface of said outer ring having concave contours wherein said combination of said inner and outer rings and synthetic resin material molded therebetween prevents said inner ring from slipping out of said outer ring, said combination forming a lightweight shock resistant fishing line guide structure.

4,287,679

ARTIFICIAL MINNOW BAIT WITH SWINGING KEEL WEIGHT

Al Klotz, 131 Dover La., Boise, Id. 83705

Filed Jun. 17, 1980, Ser. No. 113,077
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.09 **2 Claims**



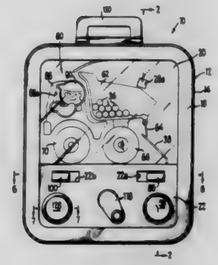
1. An artificial minnow lure comprising:
an elongated buoyant body having spaced head and tail portions and back and belly portions disposed therebetween, said belly portion having a recess therein;
a keel weight;
pivot means, having a pivotal axis, for suspending the keel weight substantially within said recess for side-to-side swinging movement of said keel weight about said pivotal axis of said pivot means which extends lengthwise of the body; and
said body having a center of buoyancy which is disposed generally at the juncture of the belly and back portions, said pivotal axis being disposed above said center of buoyancy.

4,287,680

MECHANICAL ACTION TOY

Robert K. Allen, Cincinnati, Ohio; Alan A. Hicks, Chicago, Ill., and Harry Disko, S. Barrington, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

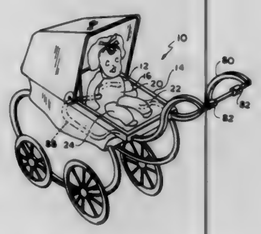
Filed Feb. 8, 1980, Ser. No. 119,885
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—1 R **22 Claims**



1. Toy apparatus comprising:
a housing having a plurality of separate compartments in communication with each other with a first compartment having an exterior wall of light transmitting material for external viewing of the interior thereof;
at least one playing piece adapted to move between said compartments;
a hopper in said first compartment mounted for movement between a first position for holding and receiving playing pieces discharged from a second compartment into said first compartment and a dumping position;
means for moving said playing piece(s) dumped from said hopper through said second compartment for discharge into said hopper in receiving position in said first compartment, said moving means comprises a member mounted for rotation in said housing including a plurality of separate receptacles for containing a playing piece and movable upon rotation of said member from a lower receiving

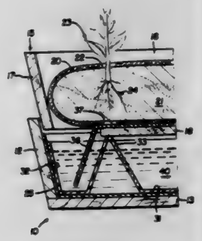
level to an upper discharge level above said hopper and, an intermediate wall for dividing said housing into separate compartments, said intermediate wall positioned to closely face open ends of said receptacle and formed with discharge openings adjacent said upper and lower levels.

4,287,681
TOY DOLL AND ACCESSORY
Judith Albert, Mill Neck, N.Y., and Robert E. Davis, North Branford, Conn., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed Feb. 29, 1980, Ser. No. 126,137
Int. Cl.³ A63H *29/16*
U.S. Cl. 46—44 **8 Claims**



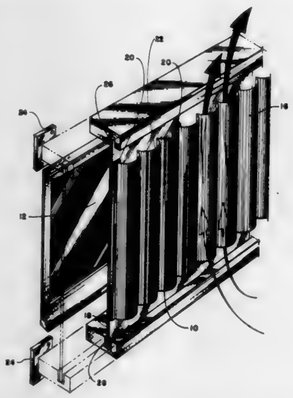
1. A combination doll and accessory comprising a doll body having a torso and at least one articulated limb mounted in the body for movement relative to the body's torso; a pressure responsive actuator in said body connected to said at least one limb for moving the limb relative to the torso upon application of fluid pressure thereto; a flexible fluid reservoir located in said body in fluid communication with said actuator whereby compression of said reservoir will cause application of pressure to said actuator and movement of said at least one limb; said reservoir having an outlet opening to the exterior of the doll's body and valve means for selectively opening and closing said outlet opening; an accessory for said doll including a second fluid reservoir and means for connecting said second reservoir to the reservoir in the doll's body, through said valve means, whereby said limb may be selectively actuated by application of pressure to the reservoir in the dolls's body or to said second reservoir.

4,287,682
PLANTER
Christopher R. Browne, 67-3120 Sheppard Ave. East, Agincourt, Ontario, Canada M1T 3J9
Filed Mar. 7, 1980, Ser. No. 127,957
Int. Cl.³ A01G *27/00*
U.S. Cl. 47—81 **5 Claims**



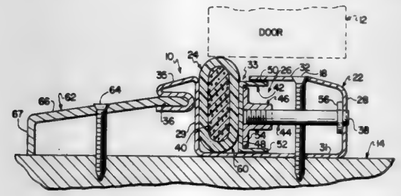
1. A planter comprising:
an open top, generally flat, box-like container having a closed bottom and upstanding walls, said container adapted for use as a reservoir for holding liquid, such as water and aqueous solutions of plant fertilizers and nutrients and the like;
a substantially horizontally arranged platform positioned within the container and having support means holding the platform a considerable distance above the bottom of the container, a water impervious plastic bag-liner closely fitted within said container against its bottom and upstanding walls to hold liquid within the container, and said support means comprising a relatively stiff sheet of cardboard-like material having a base portion closely arranged within the container against the plastic bag-like liner to hold the liner against the container bottom and said support means having spaced apart peaks bent up from the base portion for supporting said platform and said support means having bent up end flaps formed on its opposite ends for holding portions of the liner against their adjacent container wall surfaces;
a roughly flat generally horizontally arranged bag of a size to substantially cover the open top of the container, with the bag being pre-filled with a plant growing filler material, such as peat moss, soil compositions and the like;
with said bag being positioned upon and thereby supported by said platform considerably above the bottom of the container while substantially covering the open top of the container, and an upper, box-like frame of approximately the size of said container, said frame supported upon the platform support means and extending a distance above the container for surrounding the sides and ends of said bag;
a capillary type wicking sheet means arranged upon the platform beneath the filler material and having a portion extending beneath the platform into the container for capillary flowing liquid from the container to the filler material; and
with the exposed upper surface of the bag being adapted to be perforated for receiving plants, whereby the roots of the plants extend within the filler material and are watered by the capillary flow.

4,287,683
SOLAR SHIELD
David W. Louwenaar, 1248 Ironton St., Aurora, Colo. 80010
Filed Jan. 21, 1980, Ser. No. 113,958
Int. Cl.³ E06B *3/32*
U.S. Cl. 49—463 **3 Claims**



1. A solar shield for reflecting and dissipating solar energy before said solar energy enters a room's airspace, comprising:
(a) reflective surface piece having a reflective surface facing the sun,
(b) one or more spacers affixed between the reflective surface piece and a backing piece so that the spacer width creates and defines the width of a warm air channel between the reflective surface piece and a backing piece,
(c) a backing piece which is slidably attached to a mounting means and which is affixed to the spacer(s) on the side of the backing piece which faces the sun, and wherein said backing piece defines the exterior surface of an edge light space located between said backing piece and a window being shielded,
(d) mounting means for receiving the backing piece and for defining an edge light space between the rear side of the backing piece and the window being shielded.

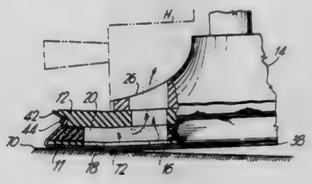
4,287,684
THRESHOLD WITH ADJUSTABLE WEATHER SEAL
H. Smith McKann, Fredericksburg, Va., assignor to General Products Company, Inc., Fredericksburg, Va.
Filed Aug. 15, 1979, Ser. No. 66,813
Int. Cl.³ E06B *1/70*
U.S. Cl. 49—468 **17 Claims**



1. A threshold having an adjustable weather seal, the combination comprising:
a rigid hollow assembly adapted to be fixedly interposed between a door and a floor;
said assembly having an elongated slot,
said assembly having a first stationary member and a second stationary member spaced apart by a fixed dimension, said second stationary member defining one side of said slot;
an elongated elastomeric seal received in said slot with a portion thereof extending above said assembly; and
compression means, located inside said hollow assembly and coupled to said first stationary member, for compressing said seal against said second stationary member to vary the distance said seal extends from said assembly so that said seal contacts the bottom of the door,
said hollow assembly comprising a top wall extending from said first stationary member and defining the other side of said slot,
said compression means comprising an elongated member having a main portion contacting said seal and a top portion extending from said main portion towards said first stationary member and below said top wall.

4,287,685
PAD ASSEMBLY FOR VACUUM ROTARY SANDER
Miksa Marton, 3620 Rankin Blvd., Windsor, Ontario, Canada
Filed Dec. 8, 1978, Ser. No. 967,581
Int. Cl.³ B24B *23/00, 55/06*
U.S. Cl. 51—170 T **3 Claims**

1. A pad assembly for a vacuum rotary sander, said assembly comprising:
(a) a circular upper pad portion of firm but resilient material, having a plurality of evenly spaced apertures concentrically arranged therein and positioned approximately midway between the centre of said upper pad portion and the circumferential edge thereof,
(b) and an elongated channel extending from each said aperture angularly outwardly in the direction of rotation of the assembly, each said channel having an open bottom edge,
(c) a lower pad portion of relatively soft, flexible material and having an inner and outer row of evenly spaced concentrically arranged apertures, each of said apertures extending through a top and bottom surface of said lower pad portion, said top surface of said lower pad portion being bonded to said upper pad portion so that the inner row of apertures in the lower pad portion coincide with the apertures in the upper pad portion to form a plurality of inner vacuum holes and wherein the outer row of apertures on the lower pad portion coincide with outer terminal ends of the channels in the upper pad portion, the material of the lower pad portion intermediate the inner and outer rows of apertures therein forming a flexible bottom wall for said channels,
(d) said upper pad portion having an inwardly and upwardly tapering circumferential side wall with a groove adjacent an upper end thereof, said pad assembly being adapted to receive a sanding disc on the bottom surface of said lower

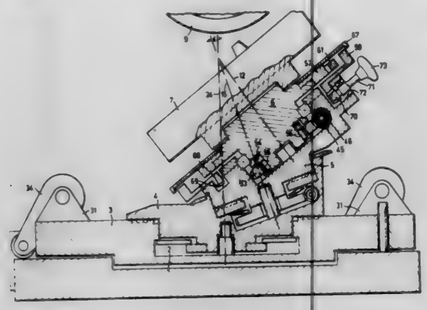


pad portion, the disc having apertures therein coinciding with those in the lower pad portion and retained thereon by a flexible backing held in the sidewall groove by elastic retaining means,
(e) a circular rigid head member secured concentrically to and on top of the upper pad portion and adapted for connection to rotating and vacuum means, said rigid member having a plurality of apertures therein somewhat larger than, and coinciding with the apertures in the upper pad portion; and
(f) said inner and outer rows of apertures in the lower pad portion are elongated in the direction opposite to that of rotation of the assembly to provide each aperture with a leading and trailing end, the leading end of the inner row of apertures coinciding with the inner ends of the apertures in the upper pad portion and the rigid head member.

4,287,686
CLAMPING APPARATUS FOR CLAMPING CUTTER BLADES OF A GEAR CUTTING MACHINE AT A GRINDING MACHINE
Erich Kotthaus, Wallisellen, and Hans J. Spiess, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland
Filed Mar. 13, 1980, Ser. No. 130,047
Claims priority, application Switzerland, Mar. 27, 1979, 2823/79
Int. Cl.³ B24B *3/02*
U.S. Cl. 51—225 **12 Claims**

1. A clamping apparatus for clamping cutter blades of a gear cutting machine, during the grinding of the cutter blades, at a grinding machine, comprising:
a cutter head in which there is mounted the cutter blades to be ground;
means for mounting said cutter head to be rotatable about a cutter head axis;
means for mounting said cutter head to be pivotable about a pivot axis;
said pivot axis being inclined through an acute angle with respect to said cutter head axis and arranged such that the smallest spacing between the pivot axis and the cutter head axis is located externally of the clamping apparatus;
said clamping apparatus has an axis of rotation which is

inclined at an acute angle with respect to the pivot axis; and



said pivot axis and said cutter head axis are rotatable about said axis of rotation.

4,287,687

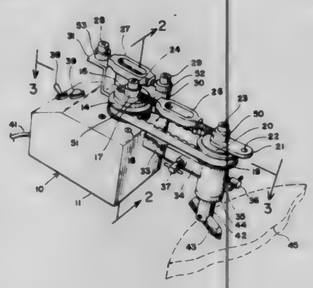
VARIABLE WORK HOLDING DEVICE FOR GRINDING GEMSTONES

Hugh R. Wilson, 10840 SW. 120th St., Miami, Fla. 33176

Continuation of Ser. No. 900,158, Apr. 26, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 53,903

Int. Cl.³ B24B *7/22, 9/16*

U.S. Cl. 51—229 **6 Claims**



1. In an abrading device with a planar abrading surface, a work holding device for grinding gemstones and industrial diamond tools comprising:

(a) a body;

(b) an extension means fixedly mounted on said body and extending from said body on a plane parallel to the plane of said abrading surface;

(c) a rotatable dop holding means adapted for holding a stone bearing dop means, said rotatable dop holding means being moveably mounted on said fixed extension means;

(d) a first and second pulley means, said first pulley means mounted on said body for eccentric movement and said second pulley means mounted on said rotatable dop holding means;

(e) a timing belt adapted to be connected between said first and second pulley means;

(f) a linkage means, said linkage means adapted to be connected between said first and second pulley means; and

(g) said second pulley means including means providing powered movement for said rotatable dop holding means.

4,287,688

APPARATUS FOR GRINDING PLANE, ANNULAR SURFACES, ESPECIALLY ON FAYING RINGS IN GATE VALVES

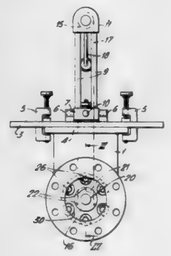
Per Jensen, Moss, Norway, assignor to Rino Solberg, Norway

Filed Nov. 22, 1976, Ser. No. 743,741

Claims priority, application Norway, Nov. 21, 1975, 753913

Int. Cl.³ B24B *15/02*

U.S. Cl. 51—241 VS **4 Claims**



1. Apparatus, for grinding plane annular surfaces, comprising:

(i) a support

(ii) means for mounting the support opposite to the annular surface with the support being rotatable about an axis which is substantially in alignment with the axis of the annular surface,

(iii) a plurality of grinding heads carried in freely rotatable manner by said support, said grinding head being rotatable about a respective axis of rotation which is parallel to the axis of rotation of the support, the respective axes pf rotation of the grinding heads being all disposed on a pitch circle concentric with the axis of rotation of the support, the radius of the pitch circle being different from the main radius of the annular surface whereby each grinding head as a result of grinding engagement with the annular surface performs a planatary rotation as the support is rotated, wherein the means for mounting the support comprises:

(a) a multi-part hub having an integral part-spherical bearing surface, said support being mounted on said hub with the axis of rotation of the support coincident with the center of said bearing surface,

(b) a driving shaft having a part-spherical head on which said multi-part hub is engaged by its part-spherical bearing surface, said part-spherical head having in it a diametral opening which increases in cross-section from the center of the head to the periphery of the head, and

(c) an entraining member disposed in said diametral opening and extending radially therefrom at each end to engage into said multi-part hub, whereby the axis of rotation of said multi-part hub may vary, with respect to the axis of rotation of said part-spherical head to the extent permitted by movement of the entraining member within said diametral opening.

4,287,689

METHOD FOR IMPROVING THE QUALITY OF LOW FREQUENCY OUTPUT OF A VIDEO DISC PICKUP STYLUS

Michael J. Mindel, Camby; Michael E. Miller; James C. Rustman, both of Indianapolis, all of Ind., and Richard C. Palmer, Blawenburg, N.J., assignors to RCA Corporation, New York, N.Y.

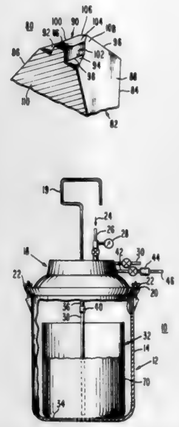
Filed Oct. 30, 1979, Ser. No. 89,479

Int. Cl.³ B24C *1/04, 1/08*

U.S. Cl. 51—320 **5 Claims**

1. A method for improving the quality of the low frequency signals recovered by a video disc playback stylus having on

one face of a dielectric support element a deposited conductive metal electrode which comprises the step of directing a suit-



able abrasive onto the dielectric support element so as to remove metal deposited on non-electrode surfaces.

4,287,690

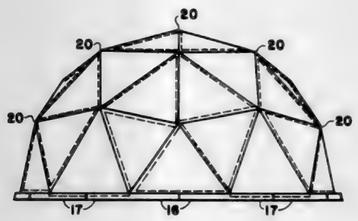
DOMICAL BUILDING STRUCTURE

William R. Berger, 3404 Hawthorne Ave., Richmond, Va. 23222, and Benjamin L. Rose, Jr., 220 W. Main St., Richmond, Va. 23220

Filed Jan. 21, 1980, Ser. No. 113,947

Int. Cl.³ E04B *1/32*

U.S. Cl. 52—81 **8 Claims**



1. A domed structure comprising a base perimeter foundation and a dome positioned thereupon, said dome being comprised of a plurality of triangular panels having a flat outer face and having adjacent each side a flat abutment surface having therein continuous interengaging means in the form of a groove or projection uniformly extending substantially the full length of said side and adapted to insertively mate with a corresponding projection or groove respectively associated with the side of an adjacently positioned interengaged panel in a manner to prevent motion of the interengaged panels in directions perpendicular thereto, said abutment surfaces being disposed below said outer face forming an angle therewith of between about 78° and 86°, the thickness and composition of said panels being selected so as to provide rigidity and thermal barrier characteristics while minimizing weight, and one triangular panel intended for positioning generally adjacent the uppermost portion of said dome as the last panel in the construction thereof, said last panel having interengaging means which do not require insertive mating and being otherwise identical to said plurality of panels, said base perimeter foundation being comprised of a plurality of footings of two different styles, each footing having two opposed straight segments, the length of each segment being half the length of a side of at least some of the panels, the upper portion of each segment being provided with interengaging means of the same general nature as employed in said plurality of panels, the configuration of interengaging means on one segment being the complementary mating configuration of interengaging means of the opposite segment of each footing, the two styles of footings having opposite arrangements of interengaging means in each segment such that, when placed in alternating end to end coplanar abutment to form a closed polygonal perimeter, the footings provide a series of interengaging means of alternating configuration adapted to receive sides of said panels in a manner whereby each side of said panels spans two segments of adjacent footings.

4,287,691

BASE CONSTRUCTION FOR GRAIN BINS AND THE LIKE INCLUDING MOISTURE SEALING MEANS

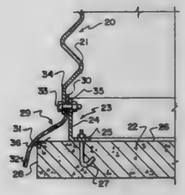
Bernard Guenther, 117-6th Ave., N., Yorkton, Saskatchewan, Canada

Filed Oct. 15, 1979, Ser. No. 84,667

Claims priority, application Canada, Oct. 20, 1978, 313849

Int. Cl.³ E04D *13/00*

U.S. Cl. 52—97 **4 Claims**



1. A grain bin including in combination a perimetrical wall, a floor including an upper, substantially horizontal surface portion and an outer, substantially vertical perimetrical edge portion, means to secure said wall to said floor adjacent the lower perimetrical edge portion of said wall and water impervious shield means extending from adjacent said lower edge of said wall oer the perimetrical edge portions of said floor and downwardly to cover at least the upper portion of the vertical edge portion of the floor in moisture shedding relationship, said means to secure said wall to said floor including a member extending around said floor adjacent the perimeter thereof, said member including an upwardly extending flange and a horizontal flange, said member being secured to said floor by said horizontal flange and to said wall by said upwardly extending flange, said shield means being secured to said wall outboard of said upwardly extending flange and extending over the perimetrical edge of said floor and downwardly therefrom and including a downwardly and outwardly sloping portion for water shedding action, said sloping portion extending from the junction of said shield means and said wall.

4,287,692

SAFETY APPARATUS FOR A MINING MACHINE

Clifton E. Alexander, Nortonville; Thomas R. Ford, Dawson Springs, both of Ky., and William S. Smith, Collinsville, Ill., assignors to Peabody Coal Company, St. Louis, Mo.

Filed Jun. 12, 1979, Ser. No. 47,717

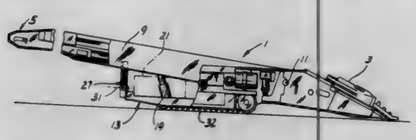
Int. Cl.³ E04H *12/34;* **F16M** *13/00*

U.S. Cl. 52—116 **10 Claims**

1. Safety apparatus for a mining machine having a frame and an elongate structure pivotally mounted for swinging movement on the frame about a horizontal axis extending transversely of the macine, hydraulic lift means between the frame and said pivoted elongated structure for raising and lowering it, access being provided between the frame and said structure when said structure is raised for personnel servicing machine

components underneath said structure; said safety apparatus comprising:

a pair of struts each pivotally mounted on the frame for pivotal movement about an axis extending in a longitudinal plane of the machine between a lowered storage position in which the strut extends outwardly toward but no farther than one side of the frame and a raised supporting



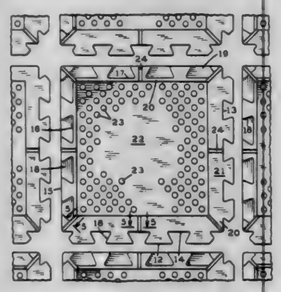
position, the upper end of each strut, when in supporting position, being engageable by said elongate structure so that, if hydraulic pressure to the lift means is lost during servicing of the machine components underneath said structure, downswing of the elongate structure and thus injury to personnel servicing the machine components is prevented.

4,287,693

INTERLOCKING RUBBER MAT

Roderick E. Collette, Pawling, N.Y., assignor to Pawling Rubber Corporation, Pawling, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,057
Int. Cl.³ B32B 3/10; E04C 1/10
U.S. Cl. 52—177 **3 Claims**



1. A ventilated, interlocking floor tile, which comprises

(a) a lower layer including a heavy, substantially solid edge region, the periphery of said edge region being provided with a plurality of interlocks to interconnect said tile with contiguous tiles whereby a floor surface covering can be constructed,

(b) said interlocks comprising dovetail projecting elements extending from said edge region and alternating dovetail slots formed thereby,

(c) said projecting elements interlocking with adjacently positioned dovetail slots of a contiguous tile,

(d) said lower layer including an inner region formed by said heavy, substantially solid edge region and defining a cavity,

(e) said heavy, substantially solid edge region including a plurality of ventilating grooves extending from the cavity to the edges of said floor tile to accommodate the flow of air to and from said cavity, and

(f) an upper layer joined with said lower layer and forming an upper floor surface,

(g) said upper floor surface including a unidirectional slip-resistant tread pattern,

(h) said upper layer being secured to said lower layer such that said upper layer overlies the projecting elements of two predetermined sides of said substantially solid edge region of the lower layer, whereby the remaining exposed projecting elements may only interlock with the dovetail slots defined by the covered projecting elements of a contiguous tile thereby maintaining uniformity in the pattern defined by the unidirectional tread patterns of said upper layer throughout the floor surface covering constructed from said floor tiles,

(i) said heavy edge region including at least one corner ventilating groove extending from said cavity to the tile corner,

(j) said tile corners being rounded to define an open space between contiguous tiles to accommodate the flow of air to and from said cavity,

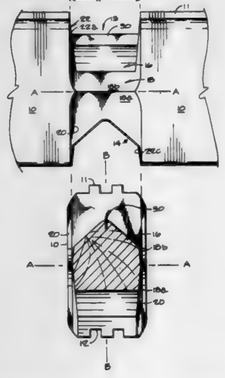
(k) each of said projecting elements positioned adjacent the corners of each tile including a truncated side arranged and configured to lie closely adjacent the corner ventilating groove of a contiguous tile when said tiles are in an interlocked relationship, whereby the projecting element may be positioned in close proximity to the corner of said tile while accommodating said corner ventilating groove.

4,287,694

CORNER JOINT FORMATION FOR BUILDING LOG

G. Howard Cornell, 4315 Villa Crescent NW., Calgary, Alberta, Canada

Filed Jul. 17, 1979, Ser. No. 58,412
Int. Cl.³ E04B 1/10
U.S. Cl. 52—233 **3 Claims**



1. In a building log having opposed side faces and upper and lower horizontal edges;

a joint formation for making a corner joint with an identical joint formation of a mating log, said formation including a neck joining parts of said log on opposite sides of notches in the upper and lower edges of said log, said neck being in part defined by said notches and in part by side surfaces recessed within the side surfaces of the log, and said notches being surrounded by an outer shoulder,

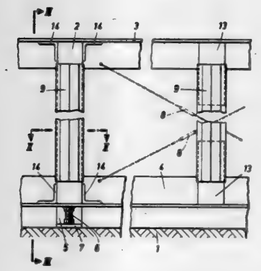
wherein flank areas of the notches within said outer shoulders are sloped at a small angle from a plane normal to the log axis so as to converge towards the centre of the log, and the neck side surfaces adjoining said notches also slope at a similar small angle to a vertical medial plane of the log so as to converge upwardly and downwardly from a horizontal medial plane of the log, whereby said converging surfaces of the flanks and neck sides can mate with similarly sloping neck and flank surfaces of said mating log, and wherein the top and bottom of said neck are arranged to provide a clearance space with the adjacent parts of said mating log when fitted together.

4,287,695

PREFABRICATED BUILDING

Alois Höfler, Walding, Austria, assignor to Lifehaus Corporation of Texas, New Braunsfels, Tex.

Filed Apr. 13, 1979, Ser. No. 29,635
Claims priority, application Austria, Jun. 19, 1978, 4426/78
Int. Cl.³ E04H 1/00
U.S. Cl. 52—241 **2 Claims**



1. An outer wall of a prefabricated building affixed to a foundation, which comprises:

(a) a load-carrying steel skeleton frame extending in a vertical plane and comprising

(1) a plurality of upright steel columns spaced apart in said plane, each column being of substantially square horizontal cross section, and

(2) an upper steel beam coupled to the upper ends of the columns and a lower steel beam coupled to the lower ends of said column to form the skeleton frame therewith, said lower steel beam being anchored to the foundation,

(b) a plurality of continuous vertical brackets extending between each of said beams and mounted on at least one of said steel columns, said brackets being of substantially I-shaped substantially horizontal cross section and of integral construction and having two U-shaped segments joined back to back each of which define a central web projecting perpendicularly to the vertical plane from the column, an outer flange extending parallel to said plane, and an inner flange extending parallel to said plane, the web and the inner and outer flanges defining therebetween two oppositely facing vertical guide channels extending parallel to said plane, said segments each also including an edge portion extending inwardly and normally from an outer end of said inner flange, the inner flange and the edge portion of each segment cooperatively fitting and laterally embracing the square cross section of the column, said segments each extending continuously from said edge portion to said outer flange thereof,

(c) a plurality of upright coupling elements arranged between respective ones of the upright steel columns, the coupling elements having upper and lower ends respectively welded to the upper and lower beams, the coupling elements having the same square horizontal cross section as the columns, and a respective one of the vertical brackets mounted on each upright coupling element, and

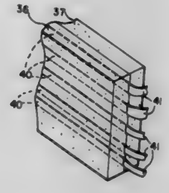
(d) a plurality of vertical wall panels aligned in a plane parallel to said vertical plane, the wall panels having edges slidingly received and engaged in the vertical guide channels of said brackets.

4,287,696

EXPANSIBLE CAULKING MATERIAL

William T. Mullen, 65 W. Street Rd., Suite A-220, Warminster, Pa. 18974

Filed Jul. 10, 1979, Ser. No. 56,343
Int. Cl.³ E04B 1/62; E04F 15/14
U.S. Cl. 52—309.7 **5 Claims**



1. A caulking strip for insertion into a space or gap between panels for sealing which comprises

a precompressed compressible and expansible sealing strip of open cell plastic material impregnated with a waterproof adhesive the viscosity of which varies with the temperature and having a volume of the order of one fourth of its expanded volume,

said strip comprising a plurality of bands disposed in parallel relation and in adherent engagement,

metallic heating means extending longitudinally of said strip between said bands with ends for connection thereto of a source of electrical energy,

said heating means being electrically insulated by the plastic material and the impregnant,

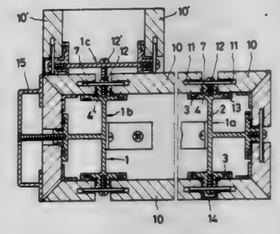
said strip being rapidly and continuously expansible by heat into gripping and holding relation in the joint between said panels and in expanded condition sealing said joint.

4,287,697

WALL PANEL ATTACHMENT APPARATUS

Isamu Matsubara, Nyuzen, and Moriyoshi Hayashi, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Continuation of Ser. No. 859,469, Dec. 12, 1977, abandoned.
This application Nov. 21, 1979, Ser. No. 96,310
Claims priority, application Japan, Dec. 14, 1976, 51-168068
Int. Cl.³ E04B 1/62
U.S. Cl. 52—403 **2 Claims**



1. A wall panel attachment apparatus comprising an interior pillar, a plurality of wall panels, fitting fixture and screws, said pillar including a plate-like portion molded to have a cross section providing at least one flange transverse to said plate, each such panel-receiving flange formed at the edge of said plate-like portion, and a joint-inserting portion projected at a central portion of said panel-receiving flange in the direction of extension of the edge of the plate to a reference edge and having a screw-inserting groove in the reference edge extending in its longitudinal direction, said wall panels each having a groove formed in the side edge thereof and being disposed along said panel-receiving flange, said fitting fixture being

fitted into said grooves of adjacent walls panels, said screw applied through the fitting being pressed into said screw-inserting groove to press the fixture against said reference edge and said panels against their respective flanges, whereby a partition wall structure is assembled around said pillar, another pillar with its plate portion transverse to the plate portion of said interior pillar positioned to cover said joint-inserting portion, at least one screw hole in said another pillar, and an extended length screw extending therethrough and into said groove formed in the joint-inserting portion, whereby another pillar is connected to said pillar and against said panels.

4,287,698

METHOD FOR FASTENING A PROFILED CONNECTING SECTION OF A PARTITION FOR WET ROOMS TO A ROOM SURFACE, AND PROFILED CONNECTING SECTION APPLICABLE THERETO

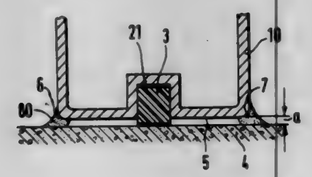
Heinz G. Baus, Ulmenweg 45, CH-3601 Thun, Switzerland

Filed Jun. 22, 1979, Ser. No. 51,196

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2828537

Int. Cl.³ E04B *2/00*

U.S. Cl. 52—741 **1 Claim**



1. Method for fastening a profiled connecting section having a substantially rectangular side, of a partition for a wet room to a room surface which comprises disposing the side of the profiled connecting section adjacent to but away from the room surface, tacking the profiled connection section by means of an elastic adhering device to the room surface while retaining the connecting section adjacent to but away from the room surface, and subsequently permanently cementing the long edges of the rectangular side of the profiled connecting section to the room surface by means of an elastic adhesive sealing compound while retaining the connecting section adjacent to but away from the room surface, wherein at least one adhesive strip is used for tacking.

4,287,699

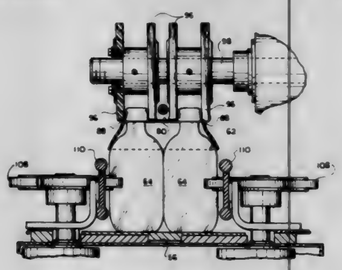
CARRIER APPLICATOR

William F. Hart, Lynchburg, Va., assignor to Dacam Corporation, Madison Heights, Va.

Filed Nov. 15, 1979, Ser. No. 94,807

Int. Cl.³ B65B *21/02*

U.S. Cl. 53—48 **10 Claims**



1. Apparatus for applying a carrier to a pair of upstanding containers each having a neck with a flange, the carrier having means adapted to engage the neck of each container below the flange thereon, the apparatus comprising means for placing a carrier on the containers with the engaging means aligned with the necks of the containers, means for seating the engaging means below the flanges and means for supporting and moving the containers, with the carrier thereon, relative to said seating means, said seating means comprising first and second discs, each having a substantially continuous deformable periphery, and means for mounting said discs in spaced relation such that their respective peripheries are separated by a distance less than the distance between the outer peripheries of the flanges, but great enough to permit the flanges to pass therebetween, as the containers are moved relative to said seating means, each flange deforming the periphery of a different disc and each disc periphery exerting a force, towards said moving means, on the carrier at a location thereon adjacent the outer periphery of the respective flange.

4,287,700

MACHINE FOR FITTING A SLEEVE SEAL OF A FLAT FORM OVER A CONTAINER

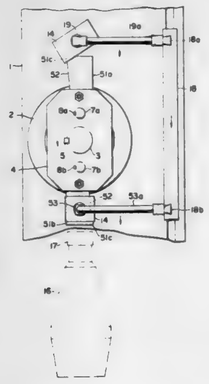
Masaaki Fujio, Suita, Japan, assignor to Fuji Seal Industry Co., Ltd., Osaka, Japan

Filed Oct. 4, 1979, Ser. No. 81,809

Claims priority, application Japan, Sep. 23, 1979, 53-130333

Int. Cl.³ B65B *7/28*; B67B *5/00*

U.S. Cl. 53—292 **3 Claims**



1. A machine for fitting a sleeve seal of a flat form over a container, comprising:

a rotating member;

a pair of half-mandrels mounted on the rotating member with their longitudinal axes substantially intersecting the axis of rotation thereof, and which can move towards and away from one another;

a pair of suction cups for opening the flat sleeve seal, which can move towards one another and away from one another, and which also can move together towards and away from the axis of the rotating member;

a means for pushing off the sleeve seal opened which is fitted over the half-mandrels, which when the rotating member is in a certain predetermined position can be moved towards and away from the axis thereof along the lontitudinal directions of the half-mandrels; and

a means for moving the mandrels, a means for moving the suction cups, and a means for moving the pushoff means; wherein the half-mandrels are formed as halves of an elliptical cylinder, with such a part cut away on at least one of the half-mandrels so that, when they are brought together so that their outside circumferential surfaces form part of the surface of said elliptical cylinder, a part of the side of said elliptical cylinder which is leading as the rotating member rotates is cut away, and more so towards the part of said elliptical cylinder which is nearer to the axis of said rotating member, so as to present a protuberance at the outer leading portion of said elliptical cylinder.

4,287,701

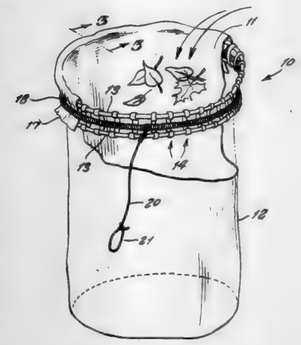
SACK BAG HOLDER

Raymond J. Washington, 300 Terry Dr., Lafayette, La. 70501

Filed Aug. 3, 1979, Ser. No. 63,405

Int. Cl.³ B65B *67/12*

U.S. Cl. 53—390 **4 Claims**



1. A sack holder comprising in combination:

a. a hoop-like assembly with a pair of circular metal rings, axially aligned and spaced apart;

b. a plurality of flat metal strips between said rings, and maintaining said rings spaced apart, a removable coiled tension spring band placed around an outer side of said plurality of strips, and means for removal of said removable tension coiled band from said hoop-like assembly.

4,287,702

METHOD AND INSTALLATION FOR PACKAGING IN A STERILE MEDIUM

Yves J. Corbic, Chatou, France, assignor to Gatrun Anstalt, Vaduz, Liechtenstein

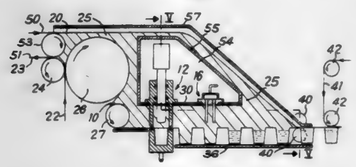
Continuation-in-part of Ser. No. 750,959, Dec. 15, 1976, Pat. No. 4,155,786. This application Apr. 28, 1978, Ser. No. 900,870

Claims priority, application France, May 10, 1977, 77 14285

The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.

Int. Cl.³ B65B *43/08, 47/04, 55/10*

U.S. Cl. 53—425 **45 Claims**



1. A method of packaging in a sterile medium, comprising the steps of:

providing a composite film comprised of a thermoplastic film covered, on a first side, by at least one covering strip;

moving said composite film towards the entrance of a sterile enclosure having sidewalls, an upper wall and a lower wall, the thermoplastic film and the covering film being superimposed in an air-tight manner at least along their edges and with their opposing sides being sterile;

separating the covering film from the thermoplastic film at the entrance to the sterile enclosure;

guiding the thermoplastic film along a path from the entrance to the sterile enclosure to a forming station, the portion of the thermoplastic film being guided along the path forming at least a portion of the lower wall of the sterile enclosure;

forming containers in the thermoplastic film at the forming station inside the sterile enclosure in which slight excess pressure prevails, said forming being performed by shaping the thermoplastic material heated to a forming temperature, the inner surface of said containers being formed by said first side of the thermoplastic film;

filling the containers at the filling station inside the sterile enclosure;

covering the full containers, without their contents being able to be contaminated by non-sterile atmosphere, with a covering strip, whereof at least the side facing the inside of the containers is sterile; and,

at the outlet of the sterile enclosure, connecting the covering strip in an air-tight manner to at least the edges of the thermoplastic film presenting full containers.

4,287,703

METHOD AND APPARATUS FOR FILLING AND SEALING CONTAINERS

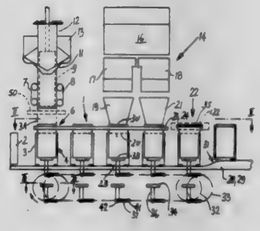
Karl Henle, Reinbek, and Nils von Wichert, Glinde, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,422

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851202

Int. Cl.³ B65B *3/02*; B31B *7/74*

U.S. Cl. 53—449 **19 Claims**



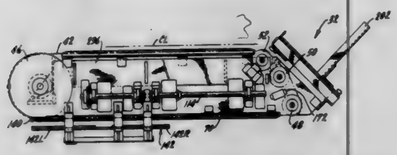
1. A method of introducing a flowable material into and of sealing such material in the bags of containers which further include boxes for the bags, comprising the steps of introducing boxes which are open at two opposite ends thereof into a first portion of a predetermined conveyance path wherein the boxes advance in a predetermined direction; inserting empty bags, each of which has an open end and a closed end, into successive boxes in a second portion of said path downstream of said first portion, as considered in said direction, so that the closed end of the bag enters into and the open end of the bag is accessible via one open end of the respective box; introducing flowable material through the open ends of and into successive bags in a third portion of said path; maintaining the open ends of successive filled bags outside of the respective boxes, at least in a fourth portion of said path downstream of said second portion; sealing the open ends of successive bags in said fourth portion of said path; and thereupon effecting relative movement between successive filled bags and the associated boxes so as to introduce the sealed ends of successive filled bags into the respective boxes.

4,287,704

FOLDING AND GLUING MACHINE

George L. Meyers, Ashland, Ohio; Frederick C. Seiden, Holmes Beach, and Lonnie J. Waller, Sarasota, both of Fla., assignors to American Can Company, Greenwich, Conn. and Rexham Corp., Sarasota, Fla.

Division of Ser. No. 954,402, Oct. 25, 1978, Pat. No. 4,210,069.
This application Dec. 17, 1979, Ser. No. 104,178
Int. Cl.[3] B65B *5/02*
U.S. Cl. 53—564 19 Claims



1. In a machine for folding carton blanks along score lines, gluing down a glue flap on the carton, and delivering the glued carton to the supply magazine of a cartoner machine where the carton is erected and then filled by moving the erected carton along a filling path:

means to clamp and pull each carton blank progressively through folding and gluing stations along a folding axis parallel to but spaced from the filling path of the cartoner machine with said one score line also being parallel to said filling path as the blank is being moved through said folding and gluing stations;

means at said stations respectively to fold the blank and glue said glue flap to an opposed surface of the blank;

means to invert the blank after it is glued and while it is still clamped;

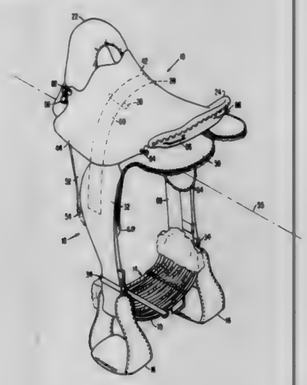
and means to deliver the inverted blank to the supply magazine of the cartoner machine.

4,287,705

SADDLES

Robert T. Frost, and May Frost, both of 6675 Bluebird Ave., Longmont, Colo. 80501

Filed Mar. 27, 1980, Ser. No. 134,523
Int. Cl.[3] B68C *1/02, 1/16*
U.S. Cl. 54—44 6 Claims



1. In a saddle having a rigid one-piece tree with a forward pommel and a rearward cantle and conformed on its underside to fit properly atop the back of a horse and on its upper side to comfortably seat a person astride the saddle, a cinch removably mounted to the saddle for encircling the girth of the horse and stirrups adjustably hung from respective sides of the saddle, the improvement comprising:

a pair of comparatively wide, flat and laterally-enclosed sleeves centrally depending from between said pommel and cantle and individually from respective sides of said tree;

a pair of rigid rings individually disposed within and substantially confined against lateral movement by the respective lower end portions of each of said sleeves;

adjustable fastening means for securing respective ends of said cinch between said rings;

a flexible strap having its opposing ends secured to respective ones of said rings and extending from said rings through said sleeves and said tree and over the top of said tree;

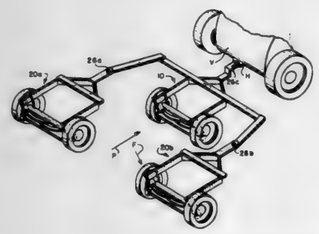
and a covering layer atop said tree for separating said strap from said person, whereby said sleeves, rings, fastening means and strap inhibit fore, aft or rocking movement of said saddle on said horse.

4,287,706

GANG MOWER ASSEMBLY

Leo W. Tobin, Jr., Morehouse La., Darien, Conn. 06820

Filed Feb. 4, 1980, Ser. No. 118,279
Int. Cl.[3] A01D *75/30*
U.S. Cl. 56—7 4 Claims



1. A gang mower assembly for the pulling of push-type reel mowers having a wheel axis, a reel axis and a ground roller axis by a vehicle exerting a pulling force in a pulling direction, comprising:

a leading mower mount having first connecting means for connecting same to the pulling vehicle for movement both laterally and perpendicularly with respect to the pulling direction;

two trailing mower mounts each including second connecting means for connecting same to the leading mower mount for movement both laterally and perpendicularly with respect to the pulling direction and independent of the movement of the other mounts; and

mounting means disposed on each mower mount for mounting a push-type reel mower thereon between the reel axis and the ground roller axis and below the height of the wheel axis thereof to exert a downwardly slanted force in the pulling direction in response to the application of the pulling force.

4,287,707

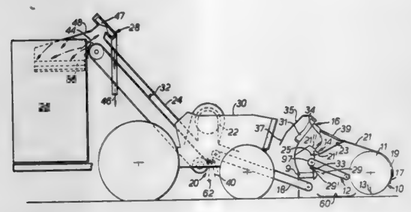
HARVESTERS

Gustaaf M. Persoons, Schoten, Belgium, and Corneel C. Wijts, San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 686,604, May 14, 1976, Pat. No. 4,178,743.
This application Jun. 18, 1979, Ser. No. 49,696
Int. Cl.[3] A01D *45/22*
U.S. Cl. 56—12.8 11 Claims

1. A bean harvester assembly arranged for mounting on a tractor, said assembly comprising a casing enclosing; the upper peripheral portion of a crop pick-up device, a first generally horizontal rearwardly extending conveyor arranged to receive crop and trash such as leaves and vine fragments from said pick-up device and a second conveyor disposed transversely to

and positioned to receive crop and a portion of the trash discharged by said first conveyor and transport them laterally relative to said first conveyor; said casing having a rearwardly extending wall overlying said first conveyor and including an inclined downwardly directed portion terminating in an edge above the discharge end of said first conveyor, said first conveyor together with the edge of said casing portion defining a generally rectangular passageway through which crop and trash are discharged for reception by said second conveyor, means forming a closure for said rectangular passageway for restricting the passage of air therethrough while allowing the passage of crop and trash, said second conveyor lying below said first conveyor a sufficient distance to form an opening therebetween, means for producing high velocity air flow traveling in an upwardly directed path through said opening between the first and second conveyors such that air currents



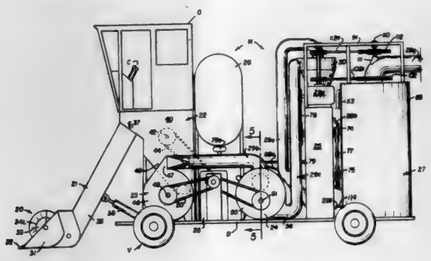
pass in substantial cross current relationship with the crop and trash traveling downwardly from said first to said second conveyor, said air currents entraining and removing a substantial portion of the trash from the heavier subsequently collected crop, a third conveyor having its inlet underlying the discharge end of said second conveyor and positioned normally with respect thereto to convey crop and remaining trash in a direction opposite to the direction of tractor movement, an elevating conveyor in longitudinal alignment with said third conveyor and having its inlet underlying and vertically downwardly spaced from the discharge of said third conveyor to produce a gap, means for producing upwardly flowing high velocity air currents traversing said gap to thereby entrain and remove additional trash from the crop to be collected, and storage means for collecting the crop conveyed thereto by said fourth conveyor.

4,287,708

ALFALFA HARVESTING AND PROCESSING APPARATUS

Allen B. Neely, Jr., 676 S. Oakland, Aurora, Colo. 80012

Filed Aug. 13, 1979, Ser. No. 65,956
Int. Cl.[3] A01D *43/00*
U.S. Cl. 56—13.5 15 Claims



1. In the combination of a harvesting apparatus adapted to move through a field of vegetation having a liquid component and a fiber component to mow and gather the vegetation, a processing means to grind the vegetation to a pulp as it is received, extract and collect the liquid component thereof and discharge the fiber therefrom, wherein a grinding means includes:

a cylindrical screen rotating on a generally horizontal axis;

rotating means provided with pivoted hammers whose circle of maximum extension is less than the interior diameter of said screen, said hammers moving close to the lower inside portion of said screen for grinding; and

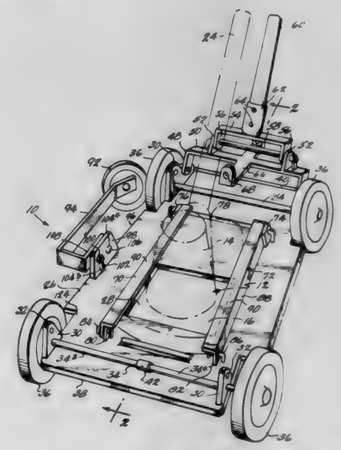
means spaced from the path of said hammers for forcing material inwardly through the holes in said screen.

4,287,709

CARRIAGE FOR A GRASS TRIMMING DEVICE

Joseph M. Lowry, 308 Sweetbriar Dr., and Ernest E. Griffin, 12306 Ridgefield Pkwy., both of Richmond, Va. 23233

Filed Feb. 6, 1980, Ser. No. 119,176
Int. Cl.[3] A01G *3/06*
U.S. Cl. 56—16.9 9 Claims



1. A carriage for a trimming device of the type having a motor, a housing for the motor, a cutting element in the form of a length of cable connected to said motor so as to be rotatable about an axis at high speed for cutting grass, weeds and the like, said carriage comprising:

a platform having a top and a bottom side, means for supporting said platform for movement over the ground,

an aperture in said platform for receiving and supporting a motor driven cutting device,

releasable clamping means movably mounted on said top side of said platform for securely holding the cutting device in said aperture with the cutting element disposed to extend from said bottom side of said platform and with the motor on said top side thereof above said aperture, said clamping means including first and second retaining arms each having one end pivotally mounted on said top side of said platform at spaced apart locations, each arm being pivotable between an open position, wherein said aperture in said platform is unobstructed by said arms, and a closed position, wherein each said arm extends to a respective portion of said platform on the side of said aperture opposite to said respective locations, said platform having grasping means for engaging and releasably holding the other ends of said retaining arms so that, when a motor housing is disposed in said aperture, said retaining arms will engage the housing when said retaining arms are in said closed position, arms so that, when a motor housing is disposed in said aperture, said retaining arms will engage the housing when said retaining arms are in said closed position,

said grasping means comprising a pair of flange members mounted on said platform and each extending substan-

tially perpendicular to said platform and each being located so as to cooperate with an associated retaining arm, pin receiving apertures in each said flange member, said retaining arms each having, adjacent said respective other ends thereof, pin receiving apertures therein each located so as to be alignable with said pin receiving aperture on an associated flange member, when said retaining arms are in said closed position, pin means for insertion into said respective apertures of said flange members and retaining arms.

4,287,710

HAY MACHINE FOR WORKING CROP LYING ON THE GROUND

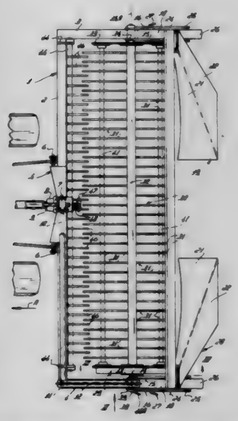
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Jun. 7, 1979, Ser. No. 46,238

Claims priority, application Netherlands, Jun. 8, 1978, 7806224

Int. Cl.³ A01B *33/00*

U.S. Cl. 56—372 **12 Claims**



1. A hay machine for working crop lying on the ground comprising a frame and a tine carrier mounted on said frame for rotation about a first horizontal axis, elongated tines mounted on said carrier and said tines being turnable about a second horizontal axis spaced from said first axis, driving means, including a transmission of engaged gears connected to rotate said carrier together with tines about the first axis and the tines about said second axis, said driving means being connected to rotate said carrier in a forward direction through a generally circular path with respect to the direction of machine travel, and orientate said tines forwardly and generally horizontally while being moved through the lower portion of said path, adjacent the ground to pick up crop on the ground, said transmission being connected to rotate the tines during rotation of the carrier in a relative opposite direction from that of the carrier, said tines being rotated to lift crop up and over the carrier and deposit same to the rear thereof.

4,287,711

MOUNTABLE TUBE FOR A TEXTILE SPINDLE

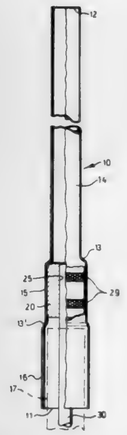
Max Hartmannsgruber, Kirchheim; Egon Nigg, and Kurt Hack, both of Ebersbach, all of Fed. Rep. of Germany, assignors to Firma Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,398

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913500

Int. Cl.³ B65H *75/02*

U.S. Cl. 57—130 **6 Claims**



1. A metallic mountable tube for the upper spindle portion of a textile spindle in which:

said mountable tube is formed from a one-piece tubular sheath and includes a lower whorl portion.

4,287,712

PNEUMATICALLY DISENGAGEABLE SELF-THREADING YARN BRAKE MECHANISM IN A HOLLOW SPINDLE ASSEMBLY OF A TEXTILE YARN PROCESSING MACHINE AND RELATED METHOD

Gustav Franzen, Willich, and Johannes Frentzel-Beyme, Monchen-Gladbach, both of Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Jul. 10, 1979, Ser. No. 56,212

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830265

Int. Cl.³ D01H *15/00, 7/86*

U.S. Cl. 57—279 **14 Claims**

1. In a textile yarn processing machine, such as a two-for-one twister or the like, having a plurality of spindle assemblies, each having an elongate yarn passageway extending therethrough and including a threading mechanism having a compressed air operated injector nozzle operable for sucking a yarn into said yarn passageway at the inlet end thereof and for automatically threading the yarn through the yarn passageway during a thread-up operation, the combination therewith of an improved yarn brake mechanism for applying a desired tension to the yarn passing through said passageway during operation of the yarn processing machine, said yarn brake mechanism being constructed to cooperate with said threading mechanism to facilitate automatic threading of a yarn through said yarn passageway and comprising

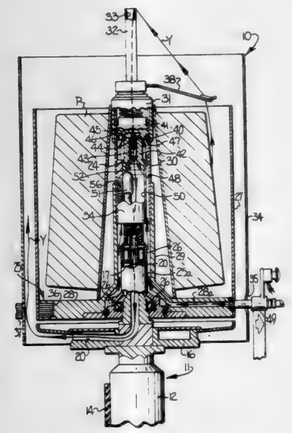
a tubular brake housing located in said spindle assembly with said yarn passageway extending axially therethrough,

an upper hollow insert mounted within said brake housing with said yarn passageway extending therethrough, and including means defining the upper end of an enlarged cavity forming a part of and enlarging a portion of said yarn passageway, and an upper annular braking ring surrounding the yarn passageway at the entrance to said cavity,

a lower hollow insert mounted within said brake housing with said yarn passageway extending therethrough, and including means defining the lower end of said enlarged cavity, and a lower annular braking ring surrounding the yarn passageway at the exit from said cavity,

an elongate capsule-shaped braking cartridge positioned within said cavity with opposite ends thereof adapted to be positioned in engagement with said upper and lower braking rings,

means for biasing said upper and lower inserts toward one



another so that said upper and lower braking rings engage opposite ends of said braking cartridge for applying tension to a yarn passing therebetween,

means cooperating with one of said upper or said lower inserts and actuable by the compressed air supplied to said threading mechanism for overcoming said biasing means and moving said one insert away from the other insert to release said braking cartridge from engagement by said upper and lower braking rings, and

means for moving said braking cartridge upon the release thereof by said upper and lower braking rings laterally out of the path of the yarn being threaded through said cavity to thus provide a clear path for threading the yarn through said yarn passageway.

4,287,713

PROCESS FOR LOW-TORQUE TEXTURED YARN

James E. Bromley, and Frank Stutz, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 866,745, Jan. 3, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 59,014

Int. Cl.³ D02G *1/20*

U.S. Cl. 57—288 **3 Claims**

1. A process for producing a low-torque textured polyester yarn, comprising:

a. selecting a spun polyester yarn having an elongation of 55–195% and having sufficient torqueless latent crimp to provide when hot-drawn at 200° C. to an elongation of 30% a bulk of at least 8%, and

b. draw-texturing said spun yarn at a temperature above the second order transition temperature to a drawn yarn having a denier of at least 250 and an elongation between 10 and 45%.

4,287,714

FALSE-TWISTING SYSTEM

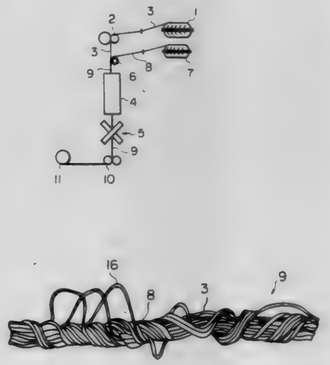
Isao Takai, Komatsu, Japan, assignor to Oda Gosen Kogyo Kabushiki Kaisha, Komatsu, Japan

Filed Aug. 23, 1979, Ser. No. 69,143

Claims priority, application Japan, Aug. 31, 1978, 53-106900; Aug. 31, 1978, 53-106901; Aug. 31, 1978, 53-106902; May 16, 1979, 54-59096; May 16, 1979, 54-59097

Int. Cl.³ D02G *3/38, 1/04*

U.S. Cl. 57—336 **10 Claims**



1. A composite crimped filament yarn, characterized by comprising first and second filament yarns each consisting of a plurality of monofilaments which are entangled firmly with monofilaments of the other of said yarns;

each of said filament yarns having S- and Z-twists in combination;

one of said filament yarns serving as a core while the other is twined round said core by a nipping type false twisting apparatus which causes said filament yarns to advance together therethrough in such a manner that said filament yarns are subjected to a greater tension at an inlet side of said false twisting apparatus than at an outlet side thereof.

4,287,715

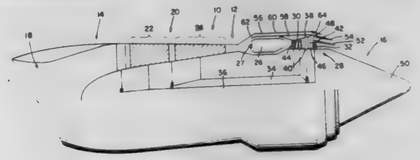
SUPERSONIC JET ENGINE AND METHOD OF OPERATING THE SAME

Garry Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 890,364, Mar. 27, 1978. This application Nov. 24, 1978, Ser. No. 963,907

Int. Cl.³ F02K *1/24, 3/02*

U.S. Cl. 60—204 **32 Claims**



1. A supersonic jet engine adapted to cruise at supersonic speeds at a relatively high efficiency, to operate with turbine inlet temperatures of at least 2500° F. for high power operation, and to cruise subsonically with a relatively low specific fuel consumption, said engine comprising:

a. a housing structure having an upstream inlet end to receive intake air, and a downstream exhaust end to discharge jet exhaust,

b. an air inlet arranged to receive intake air at subsonic

velocity and also to receive intake air at supersonic velocities and reduce said air to subsonic velocity,

c. a compressor mounted in said housing rearwardly of said inlet and arranged to compress air flowing into said inlet, said compressor having an inlet end and an outlet end arranged to operate between a maximum compression ratio and a minimum compression ratio,

d. means defining a combustion chamber mounted in said housing downstream of said compressor to receive compressed air therefrom,

e. fuel injection and ignition means in said combustion chamber arranged to burn fuel in air flow from the compressor and provide a gaseous flow from said combustion chamber,

f. means defining a first generally annular passageway downstream of said combustion chamber to receive gaseous flow from said combustion chamber,

g. means defining second and third generally coannular passageways, said second passageway being positioned radially inwardly of said third passageway and arranged to receive a first portion of gaseous flow from said first passageway, said third passageway arranged to receive a second portion of gaseous flow from said first passageway,

h. a turbine first stage positioned in said first passageway and arranged to receive the gaseous flow from said combustion chamber so as to be driven thereby with said gaseous flow proceeding to said second and third passageways, said turbine first stage being arranged to receive said gaseous flow at temperatures at least as high as 2500° F. and also at lower temperatures, said turbine first stage having a predetermined cross-sectional nozzle area,

i. a turbine second stage positioned in said second passageway and arranged to receive said first portion of gaseous flow so as to be driven thereby,

j. nozzle means positioned downstream of said second and third passageways to receive the first portion of gaseous flow and discharge said first portion at a radially inward location at a relatively low velocity, and to receive the second portion of gaseous flow and discharge said second portion at a relatively high velocity in a generally annular pattern radially outward of the radially inward location of the first portion of gaseous flow,

k. turbine bypass means to receive flow from a location downstream of said compressor as bypass flow, and to direct said bypass flow along a path bypassing said turbine first stage, and exhaust said bypass flow from said engine to produce a thrust,

l. bypass valve means to control the amount of flow bypassed into said turbine bypass means,

m. engine control means operatively connected to said fuel injection and ignition means and to said bypass valve means, in a manner to control the amount of fuel directed to said fuel injection and ignition means and to control said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means,

n. said turbine being matched to said compressor in a manner that with said engine operating at subsonic cruise velocity, with said compressor operating at maximum compression ratio, with said bypass valve means positioned so that there is substantially no flow through said turbine bypass means, and with fuel flow being adequate to create thrust to match airplane drag at said subsonic cruise velocity, the tubine first stage has a flow area sized to allow gaseous flow therethrough at the speed of sound in said gaseous flow, o. said engine control means being arranged to set said bypass valve means at a more open position at higher engine thrust settings where higher temperatures are created in said combustion chamber, and to set said bypass valve means at a more closed position at lower engine thrust settings where lower temperatures are created in said combustion chamber, in a manner that there is substantially constant corrected gaseous flow into said turbine first stage, said corrected flow being measured according to the formula:

$$\frac{W\sqrt{\theta+}}{\delta+} = \text{corrected flow}$$

where:

W=Total mass flow rate in lbs. per second

$\theta+$=Observed temperature (absolute) divider by standard temperature (518.67°R)

$\delta+$=Observed pressure divided by standard pressure (2116.22 lbs./sq.ft.)

whereby during subsonic cruise said engine can operate at a relatively low specific fuel consumption with high compression ratio and low combustion exit temperature, in a condition where said valve bypass means is at a substantially closed position, during high power acceleration mode said engine can operate at high combustion exit temperatures in a condition where said valve bypass means is in a more open position to maintain constant corrected flow through said turbine first stage to satisfy the turbine first stage requirements, and during supersonic cruise mode the engine can operate efficiently at relatively high combustion exit temperatures, and said engine discharges its jet exhaust in a pattern to alleviate noise generated by said engine.

4,287,716

EXHAUST GAS SYSTEM FOR INTERNAL COMBUSTION ENGINES

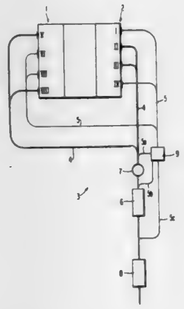
Hans-Dieter Schuster, Schorndorf; Karl Jans, Wendlingen, and Rolf Ohlendorf, Weinstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,448

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912796

Int. Cl.³ F01N *3/15;* **F02D** *17/00*

U.S. Cl. 60—276 **6 Claims**



1. An exhaust gas system for a multi-cylinder internal combustion engine, comprising several cylinder means, a common exhaust line means operatively connected with predetermined cylinder means and including an O_2-probe means and two catalyst means series-connected downstream of the O_2-probe, characterized in that at least one cylinder means is adapted to be effectively disconnected, and in that a separate exhaust gas line means is coordinated to the cylinder means adapted to be effectively disconnected, said separate exhaust gas line means including three separate line connections leading to the common exhaust line means, and load dependent control means for opening a respective one of said line connections in such a manner that when all cylinder means are effectively connected and operate as internal combustion engine, the line connection terminating in the common exhaust line means upstream of the O_2-probe means is opened, that with at least one cylinder means effectively disconnected and with a cold internal combustion engine up to a middle operating temperature, the line connection terminating in the common exhaust gas line means between the O_2-probe means and the catalyst means arranged downstream thereof is opened, and that the line connection terminating in the common exhaust gas line means between the two catalyst means is opened when the temperature of the engine exceeds the middle operating temperature.

4,287,717

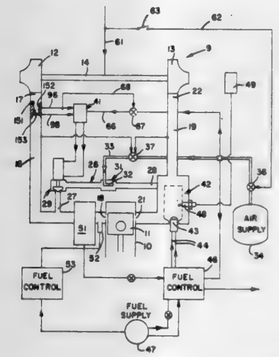
TURBOCHARGED INTERNAL COMBUSTION ENGINE

Thomas A. Oldfield; Edward D. Smith, both of Columbus, Ind., and Hideo Furukawa, Oyama, Japan, assignors to Cummins Engine Company, Inc., Columbus, Ind. and Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 906

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—606 **7 Claims**



1. Apparatus for use in a diesel engine including at least one engine cylinder, a turbine-compressor having a surge line characteristic, an intake manifold connecting the compressor outlet to the cylinder, and an exhaust manifold connecting the turbine intake with the cylinder, said apparatus comprising a by-pass pipe adapted to be connected between said compressor outlet and said turbine intake, bypass valve means in said pipe for controlling the volume of by-passed air flowing out of said compressor outlet and through said pipe to said turbine intake, sensing means for sensing the static and dynamic air pressures at said compressor outlet and for regulating said bypass valve means in response to the ratio of the static and dynamic air pressures, said sensing means including pressure ratio responsive means for regulating said volume of by-passed air to maintain compressor operation adjacent to said surge line, and a burner mounted between said pipe and said turbine intake and connected to receive both by-passed air from said pipe and exhaust from the exhaust manifold.

4,287,718

CONDENSER VACUUM LOAD COMPENSATING SYSTEM

Jimmy R. Dickey, Jacksonville Beach, Fla., assignor to Offshore Power Systems, Jacksonville, Fla.

Division of Ser. No. 856,064, Nov. 30, 1977, Pat. No. 4,206,013.

This application May 2, 1979, Ser. No. 35,167

Int. Cl.³ F01K *11/00*

U.S. Cl. 60—687 **6 Claims**

1. A condenser for eliminating the vacuum load on a steam turbine support arising from the condensation of the turbine exhaust steam, comprising:

a condenser steam inlet;

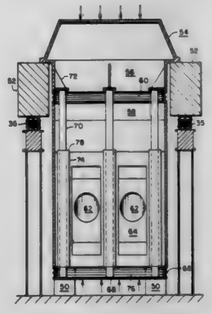
an expandable coupling hermetically connected to the condenser steam inlet at one end adapted to communicably couple the turbine exhaust and condenser steam inlet through an expandable path;

a condensation chamber communicably coupled to the steam inlet;

means for condensing steam within the condensation chamber;

means for rigidly supporting the condenser;

a load bearing member having at least a portion of a surface thereof hermetically communicating with the interior of the condensation chamber;



means for transmitting to the turbine forces acting on the load bearing member due to the vacuum generated from the condensation of steam within the condensation chamber, to a degree equal and in a direction opposite to the forces acting directly on the turbine from the vacuum load communicated from the condensation chamber;

means for substantially preventing the condensed steam from exerting a load on the load bearing member.

4,287,719

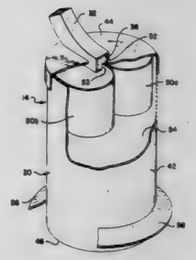
CARBON DIOXIDE SNOW HOOD WITH J-HORN

Peter A. Students, West Chester, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Sep. 18, 1980, Ser. No. 188,425

Int. Cl.³ F25J *1/00*

U.S. Cl. 62—10 **11 Claims**



10. A method of forming a confined, low velocity deposit of larger-particle CO_2 snow, said method comprising the steps of:

generating a flow of mixed fine-particle CO_2 snow and CO_2 vapor;

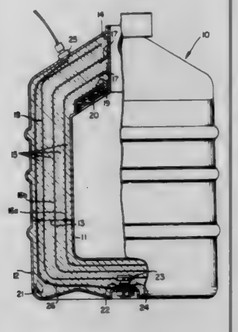
separating said flow into a first concentrated stream of fine-particle CO_2 snow and a second stream;

dividing said first stream into a pair of segregated counter-swirling streamlets;

introducing said streamlets in juxtaposition into a common mixing chamber whereby to transform the fine-particle CO_2 snow into large-particle snow by interaction of the snow particles in the counterswirling streamlets;

discharging said mixed streamlets from said chamber.

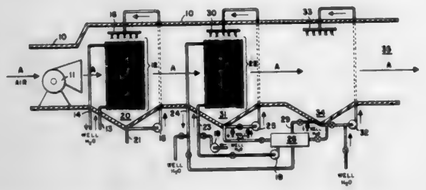
4,287,720
CRYOGENIC LIQUID CONTAINER
Alfred Barthel, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.
Filed Nov. 21, 1979, Ser. No. 96,407
Int. Cl.³ F17C *1/00*
U.S. Cl. 62—45 **12 Claims**



1. A cryogenic liquid container comprising:
(a) an inner vessel for holding cryogenic liquid;
(b) an outer shell surrounding said inner vessel arranged and constructed with respect to said inner vessel so as to form an evacuable space therebetween;
(c) insulation material disposed within and substantially filling said evacuable space; p1 (d) at least one high thermally conductive heat interceptor member disposed within and surrounded by said insulation material and oriented generally parallel to the inner vessel wall;
(e) at least one thermoelectric heat pump within said evacuable space being positioned between said heat interceptor member (d) and said outer shell (b) and having a hot end facing said outer shell (b) and a cold end facing said heat interceptor member (d);
(f) heat dissipation means for transferring heat from said hot end of (e) to the ambient surrounding said outer shell;
(g) first high thermally conductive means within said evacuable space joining said hot end of (e) and said heat dissipation means (f); and
(h) second high thermally conductive means within said evacuable space joining said cold end of (e) and said heat interceptor member (d); with
(i) said thermoelectric heat pump (e), said first high thermally conductive means (g), said second high thermally conductive means (h) and said heat interceptor member (d) being constructed and arranged so that said heat interceptor member (d) assumes temperature lower than temperature assumed by said heat interceptor member (d) absent said construction and arrangement.

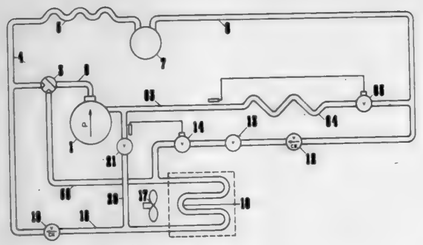
4,287,721
CHEMICAL HEAT PUMP AND METHOD
Harry I. Robison, 2916 Midway Loop, Pawleys Island, S.C. 29585
Filed Jun. 11, 1979, Ser. No. 47,356
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—94 **14 Claims**

1. In an apparatus for heating or cooling air wherein means are provided for forming an air conduit and for conducting air through said conduit for effecting said heating or cooling, the combination which comprises:
(a) means in said conduit for spraying said air with water,
(b) means also in said conduit for spraying said air with a hygroscopic liquid under conditions effective to extract humidity from said air,



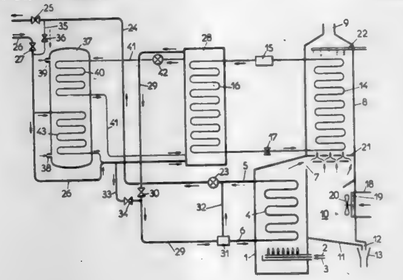
(c) means for separating water from said hygroscopic liquid to concentrate the same, and
(d) means for re-using the concentrated hygroscopic liquid.

4,287,722
COMBINATION HEAT RECLAIM AND AIR CONDITIONING COIL SYSTEM
Douglas C. Scott, 502 Madrona, Twin Falls, Id. 83301
Filed Jun. 11, 1979, Ser. No. 47,273
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—200 **22 Claims**



1. In a refrigeration system having:
compressor means having a suction and a discharge, a compressor discharge header connected to the discharge the compressor means,
first condensing means,
a condenser supply line operatively connecting said compressor discharge header to said first consenser means,
evaporator means,
evaporator supply means for operatively connecting said first condenser means to the evaporator means,
compressor suction header connecting the evaporator means to the suction of the compressor means for receiving the discharge of the evaporator means,
a combined heat reclaim and air conditioning coil comprising:
(a) a coil, having an inlet and an outlet, for condensing refrigerant gas or evaporating low pressure refrigerant liquid; and
(b) coil supply means for selectively connecting the inlet of the coil to either the compressor discharge header or to the evaporator supply means; and
(c) coil discharge means for operatively connecting the outlet of the coil to the condenser supply line when the coil supply means is operatively connected to the compressor discharge header or operatively connecting the outlet of the coil to the compressor suction header when the coil supply means is operatively connected to the evaporator supply means; and
(d) control means for selectively directing the flow of compressed refrigerant gas from the compressor discharge header to the coil supply means when the coil is to be used for condensing refrigerant gas or for selectively directing the flow of low pressure refrigerant liquid from the evaporator supply means to the coil supply means when the coil is to be used for evaporating low pressure refrigerant.

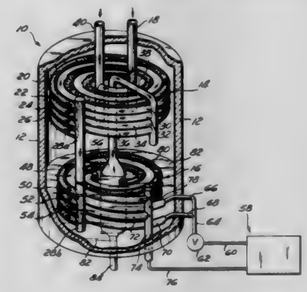
4,287,723
CENTRAL HEATING AND/OR SANITARY OR INDUSTRIAL HOT-WATER PRODUCTION INSTALLATION
Rene Dosmond, "La Poussiniere" Hameau de la Jonchere Chemin des Vignes, 92500 Rueil-Malmaison, France
Filed Mar. 4, 1980, Ser. No. 127,232
Claims priority, application France, Mar. 5, 1979, 79 05660
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **6 Claims**



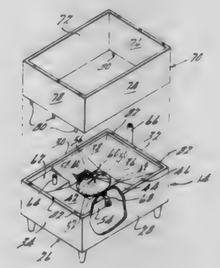
1. An installation for central heating and/or hot water production of the type using at least one source of conventional heat of the liquid or gaseous fuel boiler kind, and at least one source of heat pump thermodynamic heat, particularly of the compression heat cycle kind formed by a closed circuit in which flows a refrigerating fluid and comprising in series, in a way known per se, an evaporator, a compressor, a condenser forming the thermodynamic heat source properly speaking, and an expansion member for the condensed refrigerating fluid, one or more circuits for the circulation of the heat-carrying fluid of the central heating and for the production of sanitary or industrial hot water being furthermore provided and arranged to be the seat of heat exchanges with said above-mentioned heat sources, an installation in which a heat pump evaporator is situated in a duct for discharging the combustion gases from the boiler, there being provided in conjunction with this duct, upstream of said evaporator, one or more outside air intakes provided with flow-regulating means, wherein said duct contains several independent evaporators which, considered successively in the flow direction of the gases (air and water vapor and possibly combustion gases) are subjected to decreasing temperatures, each evaporator being associated with a condenser in a compression heat pump heat circuit so that the temperature difference between each evaporator and the condenser which is associated therewith is relatively reduced—of the order of 40° to 45° C.

4,287,724
AIR CHILLER/DRIER
Ralph E. Clark, Villanova, Pa., assignor to Morehouse Industries, Inc., Fullerton, Calif.
Filed Dec. 17, 1979, Ser. No. 104,410
Int. Cl.³ F25D *21/00*
U.S. Cl. 62—272 **9 Claims**

1. An air drier comprising:
a pre-cooler section for partially cooling air from an air source comprising conduits for ducting incoming warm moist air and conduits for ducting outgoing cooled dry air, at least one pair of conduits formed from an outgoing cooled dry air conduit and an incoming warm air conduit being interposed in coaxial spirals so that sections of said cooled dry air conduit alternate in intimate surface area contact with sections of said incoming warm air conduit; and
a chiller section comprising means for cooling said partially cooled air to a temperature below its dew point to produce chilled air which, when separated from liquid condensed from said chilled air, produces chilled dry air, said means for chilling said partially cooled air including a refrigerant, means for evaporating said refrigerant to absorb heat from the surrounding environment, means for ducting said air to the surrounding environment of said evaporating means to lower the temperature of said air below its dew point, and means for conducting thermal energy between said ducting means and said evaporating means, said thermal conducting means being located exclusively within said chiller section.



4,287,725
ICE TRANSPORT AND DISPENSING SYSTEM
Walter H. Hoenisch, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Prospect Heights, Ill.
Continuation of Ser. No. 906,228, May 15, 1978, abandoned, which is a division of Ser. No. 622,151, Oct. 14, 1975, Pat. No. 4,104,889, which is a continuation of Ser. No. 395,712, Sep. 10, 1973, abandoned. This application Feb. 13, 1980, Ser. No. 121,147
Int. Cl.³ F25C *5/18*
U.S. Cl. 62—344 **7 Claims**



1. In combination in an ice storage and transport system,
means defining an ice storage compartment adapted to receive and store discrete pieces of ice,
conduit means arranged along a first axis and extending along a path from said storage compartment to a remote location and adapted to communicate ice along said path,
an air blower for introducing a relatively high velocity flow of air into said conduit means for causing discrete pieces of ice to be communicated therewithin,
means within said compartment including a generally conically-shaped rotatable element for causing ice stored within said compartment to be moved toward a position adjacent a portion of said conduit means, said element having the upper surface thereof tapered radially outwardly and downwardly to cause ice to move toward an inlet opening in said conduit and being located downstream from said air blower, said element being mounted

for rotation about a generally vertical axis such that the first axis is tangentially oriented with respect to the outer peripheral edge of said rotatable element,

power operated means for effecting rotation of said element, said compartment comprising downwardly and inwardly inclined side walls, at least one of which terminates at its lower edge directly adjacent said inlet opening whereby ice will slide inwardly and downwardly toward said opening.

4,287,726

SINGLE-CYLINDER CIRCULAR HOSIERY KNITTING MACHINE WITH DEVICE FOR MAKING RIBBED KNITWEAR FABRICS

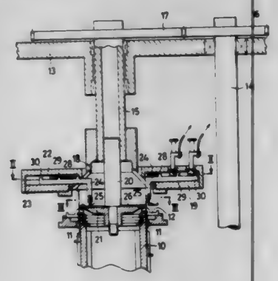
Bruno Del Barba, Brescia, Italy, assignor to IRMAC S.p.A., Brescia, Italy

Filed Apr. 2, 1979, Ser. No. 26,348

Claims priority, application Italy, Apr. 7, 1978, 22089 A/78

Int. Cl.[3] D04B *9/22*

U.S. Cl. 66—24 **3 Claims**



1. A single-cylinder circular hosiery knitting machine fitted with a device for producing ribbed knit-wear articles by a process including the step of shifting knit loops, comprising a vertical-axis cylinder including vertical needles axially displaceable under the control of cams of a cylinder cam box and also including stitch sinkers, a plate or disc coaxially overlying the cylinder and including horizontal needles which can be pushed radially under the control of cams of a plate cam box, means for driving said cylinder and said plate in synchronous rotation about their common axis, wherein each couple of needles composed by a vertical needle and its corresonding horizontal needle is arranged on the same radial plane and wherein each horizontal needle has its shank bent through substantially 90° and is fastened by the bent end of the shank to the bottom end of an L-shaped selector member guided by its horizontal portion within a radial slot of the plate, and wherein said shank includes a bevel adjacent said bend to deflect each said vertical needle from said radial plane during the centripidal movement of each said horizontal needle, the cams of the plate cam box being capable of acting upon butts projecting from the horizontal portion of said selector members, and at least one of said cams of said plate cam box being capable of originating movements of said selector members having horizontal needles fastened thereto in the centrifugal direction through such a distance as to bring the bent shanks of the horizontal needles to a position which is radially external with regard to the vertical movement paths of the corresponding vertical needles, whereby said horizontal needles do not interfere with said vertical needles except during the deflection of said vertical needles provided by said bevels during centripidal movement of said horizontal needles during shift of loops from said horizontal to said vertical needles.

4,287,727

FLAT BED KNITTING MACHINE

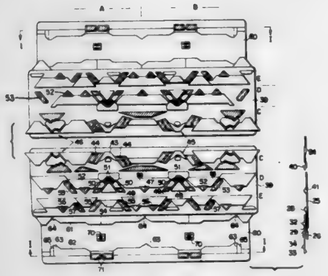
Kazuo Otoshi, Hiroshima, Japan, assignor to Tatsumi Seiki Co., Ltd., Hiroshima, Japan

Filed Feb. 12, 1980, Ser. No. 120,955

Claims priority, application Japan, Jun. 18, 1979, 54-84074[U]

Int. Cl.[3] D04B *7/00, 15/66*

U.S. Cl. 66—75.2 **8 Claims**



1. In a flat bed knitting machine of the type comprising a pair of needle beds arranged cross-sectionally in an inverted V-shape, a plurality of needles disposed in needle slots in each of said needle beds, a jack disposed in each needle slot for controlling the movement of the needle, a selector jack for actuating the needle-actuating jack, a carriage movable on said needle bed and provided with a cam plate facing each needle bed, a selector controllablee electrically in accordance with a patternfor pushing the selector jacks and angularly moving the selector jacks in said needle slots to place their butts out of the camming action; the improvement wherein said cam plate has a group of cams for acting on butts of the jacks, said group of cams including a tuck cam for acting on jack butts so as to advance the needles associated with the jacks to a tucking position, and a unit of cams composed of fixed cams and movable cams arranged in an inverted V-shape around the tuck cam for acting on jack butts to thereby advance the needles to a knitting position; control means for controlling selected jacks to shift their butts to a tucking position in which they move over the movable cams retracted in their inoperative position, and engageable with the tuck cam; and raising means for advancing jacks associated with the selector jacks newly selected by the selectors after the selection of said jacks, to a position upward of said tucking position, for enabling the jacks to engage with the upper cams in said unit of cams.

4,287,728

THREAD GUIDANCE IN MESH-FORMING MACHINES WITH ROTATING THREAD GUIDES

Manfred Schmid, Bempflingen; Werner Sommer, Esslingen, and Antonius Vinnemann, Stuttgart, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 776,910, Mar. 11, 1977, Pat. No. 4,109,491, which is a continuation of Ser. No. 705,285, Jul. 18, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 882,184

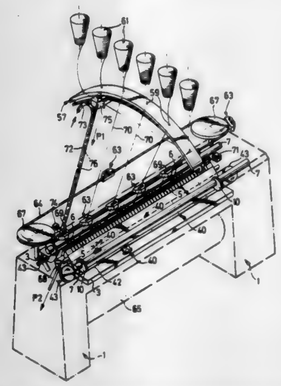
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1975, 2531734

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[3] D04B *3/06*

U.S. Cl. 66—125 R **24 Claims**

1. A method of automatically feeding to a loop forming machine a plurality of threads by a plurality of thread guiding means and a plurality of movable elements, said method comprising the steps of moving said movable elements one after the other in one direction along an endless path, each movable element having a first position corresponding to the beginning of and a second position corresponding to the end of a fabric produced by said machine; feeding said threads via said movable elements to said machine only during movement of said movable elements from said first position to said second position; cutting said threads for obtaining thread ends when said movable elements arrive at said second position; removing said thread ends from said movable elements; returning said thread ends back to said first position so that twisting of said plurality of said threads will not occur; returning said movable elements back to said first position along said endless path; and combining each of said returned thread ends with an associated one of said returned movable elements at said first position for again feeding the thread associated with said thread end to said machine via said associated movable element.



4,287,729

CIRCULAR KNITTING MACHINES

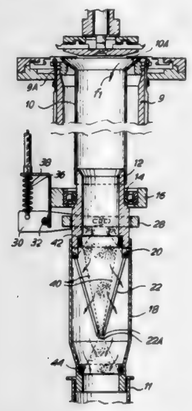
Anna Manini nee Gallichi, Via Pacini 43, Florence, Italy

Filed Apr. 30, 1979, Ser. No. 34,479

Claims priority, application Italy, May 3, 1978, 9444 A/78

Int. Cl.[3] D04B *15/92*

U.S. Cl. 66—149 S **10 Claims**



1. In a circular knitting machine, a rotating needle cylinder, a pneumatic tensioning duct along which an air current passes to tension an article being knitted, said duct comprising a rotating portion, a flexible textile net defining a tubular framework in the rotating portion of the tensioning duct, said net framework being deformable between a constricted state whereby it intercepts the article under formation and a relaxed state whereby it permits the knitted article to pass therethrough, and means operable to constrict the framework so that it intercepts the article under formation while the air current is maintained through the framework.

4,287,730

BEARING SUPPORT FOR A WASHING MACHINE DRUM

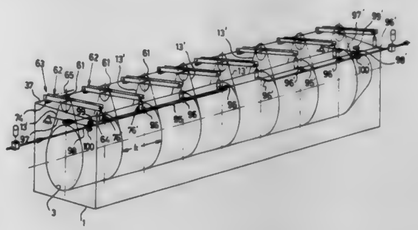
Heinz L. Grunewald, Bremen, and Jurgen Wellbrock, Lilienthal, both of Fed. Rep. of Germany, assignors to Engelhardt & Förster, Bremen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 3,396

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801381

Int. Cl.[3] D06F *21/04, 37/22*

U.S. Cl. 68—140 **13 Claims**



1. A bearing system in a tubular-type washing machine, comprising a substantially horizontal elongated drum, a plurality of buffers distributed in spaced-apart relation along the drum and connected to the drum and supporting it in suspension, each of such buffers including a piston-cylinder unit, means supplying a fluid pressure medium to the cylinders, each piston-cylinder unit having means therewith rendering it adjustable to load variation by the response of the piston to the pressure of the fluid pressure medium in the cylinder, and the cylinder of any one of the buffers being in flow interconnection with the cylinder of a second of the buffers.

4,287,731

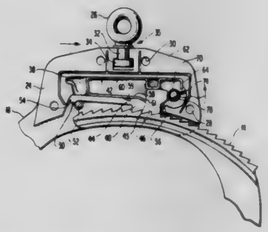
HANDCUFFS

James B. Kruger, Oxford, Conn., assignor to Bangor Punta Corporation, Greenwich, Conn.

Filed Dec. 7, 1979, Ser. No. 101,388

Int. Cl.[3] E05B *75/00*

U.S. Cl. 70—16 **6 Claims**



1. A handcuff comprising:

a generally arcuate cheek carrying a lock assembly at one end,

a generally arcuate jaw having teeth at one end,

means for pivotally coupling said cheek and said jaw one to the other at their respective opposite ends to enable relative pivotal movement of said cheek and said jaw toward and away from one another between handcuff closed and open positions, respectively,

said lock assembly including a bolt having teeth and movable between a locking position with its teeth engaging the teeth carried by said jaw to prevent relative movement of said cheek and said jaw away from one another toward the handcuff open position and an unlocking position with its teeth spaced from the teeth carried by said jaw to enable relative movement of said cheek and said jaw away from one another toward the handcuff open position, a bolt spring carried by said lock assembly for biasing said bolt for movement toward its locking position, and means adjacent an end of said bolt for mounting said bolt for pivotal movement between said locking and unlocking position, said mounting means including a stud extending in a direction parallel to the pivotal axis of said bolt and a frame having a curved wall in spaced opposition to said stud, said bolt end having an enlarged portion between the engaging said wall and said stud and providing the sole means for pivotally coupling said bolt in said handcuff.

4,287,732

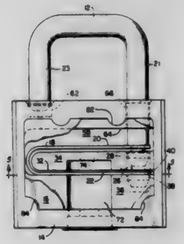
PADLOCK

Richard C. Remington, Pompton Plains, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.

Filed Aug. 27, 1979, Ser. No. 70,101

Int. Cl.³ E05B *27/22*

U.S. Cl. 70—38 C **14 Claims**



1. A padlock comprising a shackle, a case to receive the shackle, the shackle being movable within the case between locked and unlocked positions, a first elongated, substantially flat spring member confined within an elongated slot in the case with the plane of the first spring member and the slot being substantially perpendicular to the direction of movement of the shackle, the first spring member having an end portion engageable with the shackle for preventing movement of the shackle to unlocked position and having means cooperable with a key for moving said first spring member laterally within the plane of the slot to disengage the end portion from the shackle, and a second spring member within the case for urging the shackle to unlocked position.

4,287,733

MAGNET-ELECTRONIC LOCK SYSTEM

Mariano Gomez-Olea, Vuelta del Castillo 3, 5°A, Pamplona, Spain

Filed Mar. 27, 1979, Ser. No. 24,843

Int. Cl.³ E05B *19/00, 47/00, 49/00*

U.S. Cl. 70—276 **8 Claims**

1. A lock system comprising:

an elongated key extending along a key axis and having

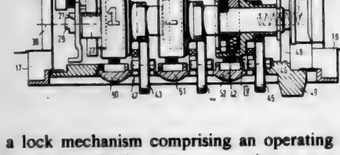
a stack of axially succeeding disks only some of which are formed with radially outwardly open recesses,

respective permanent magnets in some of said recesses and spaced axially and angularly apart in a predetermined magnet array relative to said key axis, and

a nonmagnetic sleeve surrounding said disks and retaining said magnets in the respective recesses;

a cylinder formed by a stack of axially succeeding rings some of which are formed with radially open recesses and which together define a passage generally complementary to said key and extending along a passage axis;

a plurality of magnetic detectors spaced axially and angularly apart in said recesses of said cylinder relative to said passage axis in a detector array generally complementary to said magnet array, each detector being capable of



changing state on juxtaposition with the respective magnet;

an openable latch; and

electronic circuit means connected between said latch and said detectors for opening said latch when all of said detectors have changed state on juxtaposition with the respective magnets of said key.

4,287,734

COMBINATION LOCK MECHANISM

Leslie V. Herriott, 31, Forton Close, Compton Ridge, Wolverhampton, England

Filed May 17, 1979, Ser. No. 39,753

Claims priority, application United Kingdom, May 18, 1977, 20824/77

Int. Cl.³ E05B *63/00*

U.S. Cl. 70—333 A **9 Claims**

1. In a lock mechanism comprising an operating member which, in use, normally imposes a constraint on an associated device but can undergo releasing movement to discontinue the constraint and a plurality of settable members, each of which can be set by an operator in a selected one of a number of alternative positions, it being necessary for the operator to establish a releasing combination of respective positions of the settable members before releasing movement of the operating member can occur, and further comprising indicating means for indicating visually to a user the respective positions to which the settable members have been set, the improvement comprising means for obscuring the indicating means, said means for obscuring and the indicating means being arranged for relative movement and means actuated by releasing movement of said operating member for causing relative movement between said obscuring means and said indicating means, whereby said indicating means is obscured.

4,287,735

KEY ASSEMBLY FOR CODED SECURITY SYSTEM

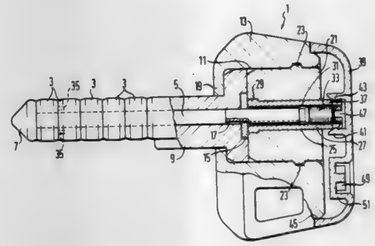
Gerd Brunken, Dittelbrunn, and Rupert Stangl, Oberwerrn, both of Fed. Rep. of Germany, assignors to Sachs Systemtechnik GmbH, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,467

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 7833265[U]

Int. Cl.³ E05B *19/04, 19/18*

U.S. Cl. 70—395 **7 Claims**



1. A key assembly particularly for operating a coded security system comprising: a plurality of information carrier members mounted on said key assembly and adapted to be arranged in a predetermined pattern for defining an operating code of said security system; a grip portion; a longitudinal member having said information carrier members rotatably supported thereon; a head portion on said longitudinal member cooperating with said grip portion for fixedly holding said information carrier members in place on said longitudinal member; means mounting said longitudinal member in said grip portion for axial nonrotational movement relative thereto; means defining a threaded portion on said longitudinal member; and a threaded sleeve member accessible from outside said grip portion threadedly engaging said threaded portion of said longitudinal member, said sleeve being axially fixed relative to said grip portion but rotatable relative thereto about an axis parallel to the direction of axial movement of said longitudinal member; said sleeve being operative to move said longitudinal member relative to said grip portion to enable loosening of the fixed engagement of said information carrier members for reorganizing the predetermined pattern thereof when it is desired to change said operating code; said grip portion including a main body, said key assembly further including an insert held in a locked manner in a recess of said main body by means of locking members, said sleeve carrying on its end facing toward said information carrier members a radially projecting flange, with said sleeve being rotatably arranged in a bearing opening of said insert, said flange being axially fixed between a pair of opposing stop faces defined within said grip portion.

4,287,736

KEY RING CLIP LOCK FOR PUMP HANDLES

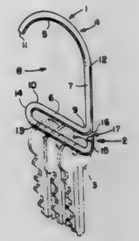
Gregory S. Hadgis, 14078 Zaremba Dr., Brookpart, Ohio 44142

Filed Apr. 23, 1979, Ser. No. 32,296

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—458 **20 Claims**

1. A key ring clip lock apparatus for pump handles and their plungers, or the like, comprising holding means for directly holding keys or the like, said holding means including a resiliently deformable portion for permitting opening of said holding means to receive and to remove keys or the like; and clip means cooperative with said holding means for holding the apparatus to a gas pump handle and for confining between said holding means and said clip means at least a portion each of the pump handle and of the plunger thereof in an automatic pumping positional mode normally to retain the plunger in such mode.



4,287,737

LOCK USING NON-ROTATING PERFORATED PLATE KEY

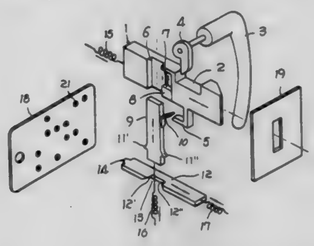
Byung D. Ahn, 130-109 Sooyu-Dong, Dobong Ku, Seoul, Rep. of Korea

Filed Sep. 21, 1979, Ser. No. 77,820

Claims priority, application Rep. of Korea, Sep. 23, 1978, 2902/78; Sep. 23, 1978, 2903/78

Int. Cl.³ E05B *55/04, 21/00*

U.S. Cl. 70—467 **7 Claims**



1. In a locking arrangement including a lock mechanism and a slidable non-rotating perforated key plate for operating the lock mechanism, said locking mechanism comprising:

a slidable lock bolt having a first groove therein adapted to receive a part of a swingable handle for controlling slidable displacement of the lock bolt along a first direction from a latching position into an unlatched position, said latch bolt also having a second groove formed therein and extending along a second direction which is transverse with respect to said first direction;

a support member slidably supported within said second groove adjacent one side edge thereof and being slidably displaceable longitudinally therealong, and a spring coacting between the lock bolt and said support member for urging the latter into a position adjacent one end of said second groove;

an elongated control rod slidably supported for movement along said second direction between a first position wherein one end of the control rod is engaged within the second groove and a second position wherein the one end of the control rod is withdrawn from the second groove and is thus disengaged from the lock bolt, said control rod having a projecting cam portion associated therewith;

said lock bolt having an L-shaped cam portion projecting sidewardly therefrom and being engageable with the projecting cam portion associated with the control rod when the lock bolt is moved toward its unlatched position for movably displacing the control rod away from said

second position so that the end of the control rod is moved into said second groove, the end of said control rod engaging and causing displacement of said support member against the urging of its spring when the control rod moves into the second groove and the lock bolt is displaced away from its latching position, said lock bolt when returned to its latched position causing said end of said control rod to be positioned adjacent the other side edge of said second groove so that the spring urges the support member into a position wherein it is sidewardly disposed between the control rod and said one side edge of the second groove for locking the lock bolt in its latching position; and

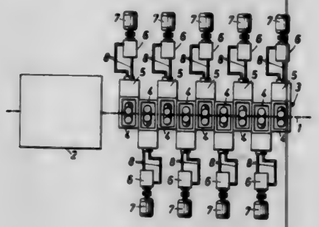
an operating rod having an opening therein for slidably receiving the other end of said control rod for controlling the movement of the control rod from its first position toward its second position, said operating rod being slidably displaceable along a third direction which extends transversely relative to said first direction, said operating rod being normally urged into a holding position wherein the operating rod engages the control rod and maintains it in said first position, said operating rod having a protrusion on one end thereof which, when engaged with an appropriate recess formed on the key plate, permits the operating rod to be moved into a release position wherein it disengages the control rod so that the latter is automatically moved into said second position so as to unlock the lock bolt.

4,287,738

METHOD OF CONTROLLING THE CONTINUOUS MOVEMENT OF STOCK BEING ROLLED IN A ROLLING MILL TRAIN

Hans Hojas; Alois Leutgöb, both of Steyr, and Johann Gottbauer, St. Martin, all of Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Nov. 20, 1979, Ser. No. 96,040
Claims priority, application Austria, Dec. 18, 1978, 9003/78
Int. Cl.³ B21B *37/00*; B21D *5/14*
U.S. Cl. 72—20 **3 Claims**



1. A method of controlling the continuous movement of stock to be rolled through a series of rolling mill stands, comprising

driving the rolls of each of said stands by a hydraulic turbine,

operating a variable displacement pump to apply hydraulic pressure to each of said turbines to operate the same at an infinitely variable speed,

detecting any change of said hydraulic pressure applied to the turbine which drives a preceding one of said stands in response to the initial passing of said stock through the succeeding one of said stands, and

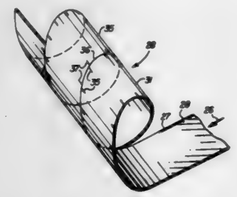
adjusting the displacement of the variable displacement pump which operates the turbine which drives said succeeding stand to correct the speed of the turbine which drives said succeeding stand to compensate the change of the hydraulic pressure which has thus been detected.

4,287,739

METHOD FOR PRODUCING A HELICALLY WOUND PIPE HAVING A PREDETERMINED DIAMETER

George L. Campbell, Scottsdale, Ariz., assignor to Syracuse Tank & Manufacturing, Phoenix, Ariz.

Filed Mar. 26, 1979, Ser. No. 23,585
Int. Cl.³ B21C *51/00, 37/12*
U.S. Cl. 72—34 **6 Claims**



1. In a method of forming a helically wound pipe of a predetermined diameter from an elongated sheet having a longitudinal axis and having a pair of opposing edges extending parallel to said longitudinal axis, the improvement comprising: marking said elongated sheet adjacent said opposing edges thereof with indicia at predetermined spaced intervals, said indicia so marked extending perpendicular to said longitudinal axis; feeding said elongated sheet in a direction parallel to its axis; helically winding said elongated sheet to form a helically wound pipe having adjoining revolutions, and during said winding maintaining the diameter of said helically wound pipe equal to said predetermined diameter by maintaining a predetermined distance, parallel to said longitudinal axis, between indicia adjacent the edge of one revolution and the indicia adjacent the edge of an adjoining revolution.

4,287,740

METHOD OF INCREASING THE FATIGUE LIFE OF TITANIUM ALLOY PARTS

Arun Kumar, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 12, 1978, Ser. No. 941,703
Int. Cl.³ B24C *1/10*; B22F *1/18*; B21C *43/00*
U.S. Cl. 72—40 **8 Claims**

1. A method of increasing the fatigue life of a part made of titanium alloy, which comprises subjecting the part to the steps of first abrasive cleaning and thereafter shot peening, said abrasive cleaning comprising blasting the surface of said part with particles having a diameter within the range of about 0.0024 to 0.0082 inches at a blast pressure within the range of about 10 to 50 p.s.i., said step of shot peening using a higher intensity and larger particle size than said step of abrasive cleaning.

4,287,741

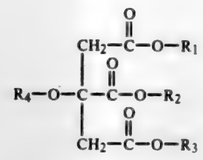
LUBRICATED TINPLATE FOR DRAWING AND IRONING OPERATION

Gordon L. Peters, Weirton, W. Va., and John R. Smith, Richmond, Ohio, assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Oct. 9, 1979, Ser. No. 82,877
Int. Cl.³ B32B *15/04*
U.S. Cl. 72—42 **14 Claims**

1. In the drawing and ironing of tinplate stock wherein the stock material is provided with a lubricant coating prior to the drawing or cupping stage, the improvement comprising

applying to the pre-drawn stock a substantially uniform film of lubricant consisting essentially of a citric acid ester having the structural formula



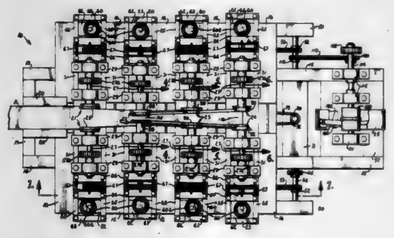
wherein R_1, R_2 and R_3 are individually selected from the group consisting of hydrogen and alcoholic residue containing 1–10 carbon atoms, R_4 is selected from the group consisting of hydrogen and carbocylic acid radicals containing 1–10 carbon atoms, and at least one of R_1, R_2 and R_3 is an alcoholic residue, the citric acid ester being present in a coating weight amount of at least 1.8 grams per basebox.

4,287,742

MACHINE FOR FORMING CURVED CONDUITS

John H. Heiman, 3407 W. Coleman Rd., Kansas City, Mo. 64111

Filed Sep. 6, 1979, Ser. No. 72,881
Int. Cl.³ B21C *37/12*
U.S. Cl. 72—49 **14 Claims**



1. A machine for forming a curved conduit from a continuous strip of sheet material, said machine comprising:

a frame;

means for advancing said strip along said frame in a preselected path;

a cutting mechanism mounted on said frame at a location along said path, said cutting mechanism including cutters movable toward and away from one another in directions transverse to said path and operable to cut said strip in a manner to form contoured opposite side edges thereof which are shaped to abut one another and provide a conduit having an arcuate axis when said strip is spirally wound;

winding means located downstream of said cutting mechanism along said path for spirally winding said strip in a manner to position the opposite side edges thereof adjacent one another; and

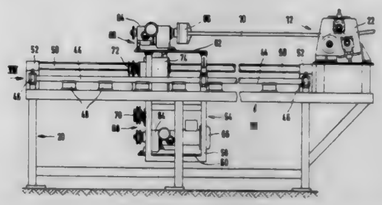
means for securing the adjacent side edges of said strip to one another, thereby securing said strip in the shape of a curved spirally wrapped conduit.

4,287,743

METHOD AND DEVICE FOR THE MANUFACTURE OF HELICAL ROTOR BLANKS FOR HELICAL GEAR MACHINES

Günther Hantschk, Waldkraiburg, Fed. Rep. of Germany, assignor to Netzsch-Mohnopumpen GmbH, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,187
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808081
Int. Cl.³ B21D *11/06*
U.S. Cl. 72—98 **10 Claims**



1. Apparatus for the manufacture of helical rotor blanks for helical gear machines from a straight cylindrical shaft by longitudinal movement of the shaft along the shaft axis and rotation of the shaft around the shaft axis while bending the shaft comprising

a clamping chuck for holding an end of the shaft and having means to rotationally actuate and translate said chuck in the direction of the axis of the shaft connected thereto,

a forming tool positioned to receive the shaft from the opposite end of the shaft,

said forming tool including

at least three bending rollers, the axes of which extend at least approximately at right angles to the shaft axis,

a first bending roller of said at least three bending rollers, being the first reached by the shaft in its longitudinal movement, having a ring groove located for guiding the shaft,

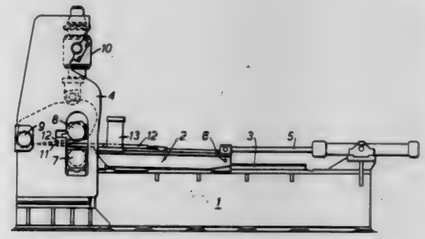
a second bending roller of said at least three bending rollers having a ring groove which is laterally displaced from said ring groove of said first bending roller.

4,287,744

TAPER ROLLING MACHINE

Edward J. Furness, Sheffield, and Philip Wade, Barnsley, both of England, assignors to British Steel Corporation, London, England

Filed Sep. 10, 1979, Ser. No. 74,169
Claims priority, application United Kingdom, Sep. 19, 1978, 37325/78
Int. Cl.³ B21B *1/42*
U.S. Cl. 72—214 **10 Claims**



1. Apparatus for taper rolling a length of stock comprising a roll head having a pair of idler rolls defining a roll gap therebetween; a carriage for gripping the stock and drawing it through the rolls in a multiplicity of passes whilst the roll gap is con-

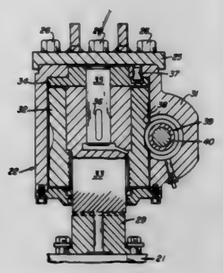
trolled to impart the taper; adjustment means to adjust the roll gap by effecting movement of only one of the idler rolls in a direction perpendicular to the movement of the stock; and, resilient mounting means attached to said carriage for resiliently mounting it for movement in a direction perpendicular to the movement of the stock so as to maintain a substantially constant pass line through the stock throughout the taper rolling thereof.

4,287,745

ROLLING MILL SCREWDOWN

Wilhelm Fuhrmann, Wexford, and Andrew J. Sofranko, Pittsburgh, both of Pa., assignors to Schloemann-Siemag, Inc., Pittsburgh, Pa.

Filed Apr. 20, 1979, Ser. No. 31,887
Int. Cl.³ B21B *31/24*
U.S. Cl. 72—248 **18 Claims**



1. A rolling mill including spaced-apart mill housings each having a window to receive and support a bearing chock on one of the ends of each of at least a pair of rolls for processing workpieces, the combination therewith of:

screwdown housing means extending within the windows of the mill housings for independent support between the bearing chocks of one roll and the mill housings,

nut members carried by the screwdown housing means,

a pair of screws each threadedly engaged with one of said nut members,

means carried by the screwdown housing means for producing relative rotation between the screws and nut members,

locking means supported by the screwdown housing means for linear constrained displacement of the pair of screws relative to the nut members by relative rotation therebetween, and

fastening means for releasably attaching the screwdown housing means on the mill housings within the windows thereof independently of said bearing chocks such that the nut members and the screws extend between the chocks of one roll and the mill housings for adjustably positioning one roll relative to the other roll.

4,287,746

DEVICE FOR CLOSING A METALLIC TUBE

Paige W. Thompson, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 899,596, Apr. 24, 1978, Pat. No. 4,204,378. This application Nov. 13, 1979, Ser. No. 93,664
Int. Cl.³ B21D *37/10*
U.S. Cl. 72—338 **5 Claims**

1. A device for reducing the cross-sectional area of a metallic capillary tube in a preselected region thereof, the device comprising:

a frame;

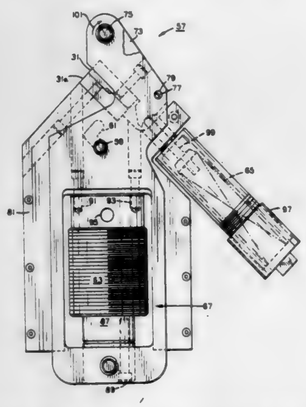
a first die pivotally mounted on said frame;

a slide member arranged with said frame so as to be movable with respect thereto;

a second die on said slide member;

means coupled with said slide member and said frame for predeterminately defining the movement of said slide member;

means for actuating said slide member through its predeterminately defined movement with respect to said frame; and



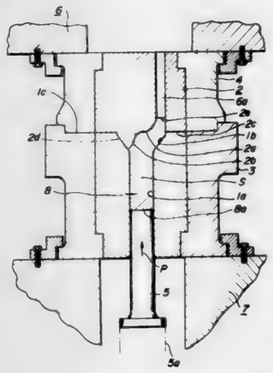
means movable with said slide member at least during a part of the defined movement thereof for pivoting said first die toward said second die when the slide member moves the second die toward said first die.

4,287,747

PROCESS OF CLOSED EXTRUSION SHAPING OF A METAL ROD MATERIAL AND AN APPARATUS THEREFOR

Hajime Koshimaru, Machida, and Shohju Ishii, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 16, 1979, Ser. No. 57,850
Claims priority, application Japan, Jul. 18, 1978, 53-86714; Jul. 18, 1978, 53-86715
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—358 **7 Claims**



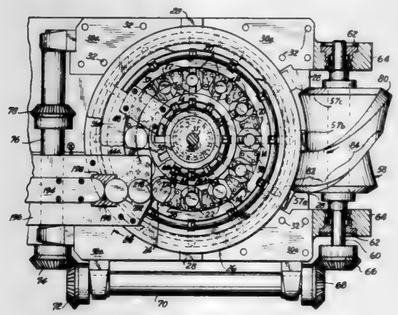
1. A process for manufacturing parts having yokes with two or more body portions from a metal solid rod material by extrusion shaping, which comprises pressing a solid metal rod material from one end into a chamber formed by two opposing dies, with the other end of the rod being urged into contact with an impression and associated projecting portions formed in one of said dies to divide the rod material into two or more body portions which are then extruded into cavities which are in communication with said chamber and which extend in the said one die parallel to the pressing direction.

4,287,748

ROTARY TRANSFER PRESS APPARATUS

Maurice Wolfthal, Ossining, N.Y., assignor to Stewart Stamping Corp., Yonkers, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,968
Int. Cl.³ B21D *43/14*; B21K *27/00*
U.S. Cl. 72—405 **21 Claims**



1. Rotary transfer press apparatus wherein each of a plurality of workpieces is sequentially transferred to a plurality of successive working stations so that the workpiece is successively formed to obtain a finished product, comprising:

a fixed die block having a plurality of successive working stations arranged along a substantially circular path, which working stations are adapted to perform corresponding successive working operations on a workpiece which is transferred along said circular path through said working stations to obtain a finished product subsequent to the last of the forming operations, each of said working stations including a die member into which each of a plurality of workpieces is brought into operative relation for performance of one of the successive forming operations;

a vertically reciprocatable upper press platen located over said die block having a plurality of punches, each of which extends coaxially with respect to the die member associated with a corresponding working station in said fixed die block, said punches having lower working end regions adapted to enter into and withdraw from said die members in corresponding working stations at substantially the same time during each reciprocating cycle of said upper press platen;

said upper press platen being adapted for vertical reciprocation so that said punches continuously cycle at a certain rate, each punch cycle including a downward stroke portion wherein said upper press platen travels from top dead center to bottom dead center and an upward stroke portion wherein said press platen travels from bottom dead center to top dead center; and

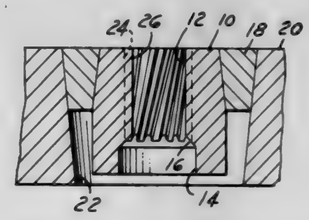
means for sequentially transferring the plurality of workpieces simultaneously along said substantially circular path in a manner such that each workpiece is sequentially carried to each of the successive working stations where corresponding successive forming operations are performed thereon, said transfer means advancing each workpiece from one working station where a forming operation has been performed thereon during a press cycle to the next successive working station in preparation for the next successive forming operation to be performed during the immediately subsequent press cycle.

4,287,749

TAPERED EXTRUSION DIE AND METHOD OF FORMING THE SAME

Benjamin I. Bachrach, Dearborn, and William J. Fuhrman, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1979, Ser. No. 94,629
Int. Cl.³ B21C *25/08*
U.S. Cl. 72—467 **14 Claims**



1. A die adapted to form an extrusion made by the method comprising the steps of:

elastically contracting the transverse size of a die blank by an amount of contraction that varies continuously along at least a portion of the length of the die;

forming a hole through the die blank; and

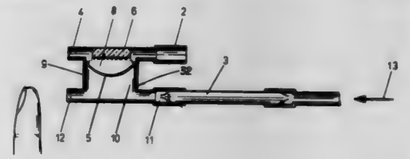
releasing the elastic contraction of the die blank.

4,287,750

DEVICE FOR CHECKING THE FUNCTIONING OF GAS MEASURING APPARATUS

Wolfgang Eckstein, Sereetz, and Horst Rabenecker, Klein Parin, both of Fed. Rep. of Germany, assignors to Drägerwerk AG, Lübeck, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,792
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843651
Int. Cl.³ G01N *1/22, 31/00*
U.S. Cl. 73—1 G **2 Claims**



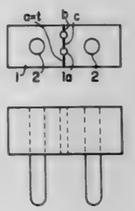
1. A device for optically checking the operability of a gas measuring apparatus, the gas measuring apparatus being of the type having a flow passage for passing a gas to be tested therethrough at a low rate of flow, comprising a housing defining a chamber having an inlet opening connection for receiving the gas in the chamber and an outlet opening connection for discharging the gas from said chamber, a spring diaphragm flexibly mounted in said chamber to divide said chamber into a first chamber and a second chamber, said diaphragm being flexible responsive to pressure variation between said first chamber and said second chamber, said inlet and outlet opening connections being in communication with said first chamber, said housing having a wall portion adjacent to said first chamber defining an aperture, and a translucent sheet mounted in said aperture to permit observation of said diaphragm through said sheet and first chamber from the outside of said housing, said housing having a wall portion adjacent to said second chamber with a second chamber opening for establishing communication between said second chamber and atmosphere, color indication means on the side of said spring diaphragm adjacent said first chamber, and said outlet opening connection including means for fluid communication with the flow passage.

4,287,751

GAS DETECTOR

Eturo Yasuda; Yoshihiro Segawa, both of Okazaki, and Minoru Ohta, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 8, 1978, Ser. No. 958,681
Claims priority, application Japan, Nov. 9, 1977, 52/134259
Int. Cl.³ G01N *27/04*
U.S. Cl. 73—23 **24 Claims**



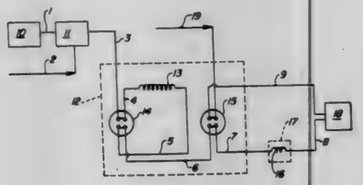
1. A gas detector comprising a gas detector element made of a sintered material of a metal oxide exhibiting an electric resistance corresponding to a gas to be detected, and a pair of parallel electrodes spaced from each other for measuring the electric resistance exhibited by said gas detector element, each of said parallel electrodes having an end thereof embedded in said gas detector element, said gas detector element having opposite side surfaces between which are at least two through holes located between and parallel to said pair of electrodes at different distances from said side surfaces respectively, a thickness of 0.1 to 0.6 mm being given to the larger one of the sintered metal oxide portions existing between said through holes and the side surfaces of said plate.

4,287,752

APPARATUS AND METHOD FOR ANALYZING THE HYDROCARBON TYPE COMPOSITION OF GASOLINE

George B. Ury, Naperville, Ill., assignor to Standard Oil Co. (Indiana), Chicago, Ill.

Filed Aug. 3, 1979, Ser. No. 63,427
Int. Cl.³ G01N *31/06*
U.S. Cl. 73—23.1 **12 Claims**



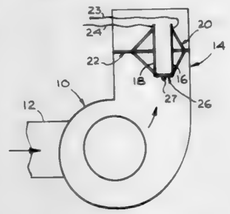
1. A method for separating olefins from saturates in a composition comprised of a number of olefins having between 5 and 12 carbon atoms and saturates which comprises:
(a) passing said composition into contact with a copper on silica gel composition whereby said olefins are adsorbed while said saturates pass through; and
(b) thereafter heating said copper on silica gel composition to release said olefins.

4,287,753

AUTOMATIC MOISTURE CONTROLLER WITH STACK SENSOR

Frederick W. Grantham, 12055 Goshen Ave., Los Angeles, Calif. 90049

Filed Jul. 24, 1980, Ser. No. 172,083
Int. Cl.³ G01N *27/04*; F26B *21/08*
U.S. Cl. 73—29 **13 Claims**



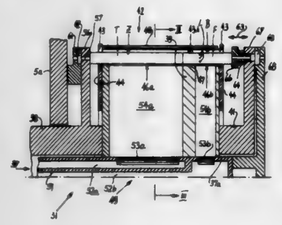
1. Moisture detecting apparatus comprising:
a duct for the passage of moist air;
a pair of opposed spaced-apart conductive plates mounted in said duct;
a wiper adapted to selectively traverse the facing surfaces of said plates; and
sensing means connected to said plates effective to measure the resistance between the plates and provide an indication of relative humidity of the air between the plates.

4,287,754

APPARATUS FOR AND METHOD OF MULTIPLE TESTING OF WRAPPERS OF CIGARETTES OR THE LIKE

Uwe Heitmann, Schwarzenbek; Heinz-Christen Lorenzen, Hamburg; Günter Wahle, Reinbek, and Rolf Dahlgrün, Schwarzenbek, all of Fed. Rep. of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 852,963, Nov. 18, 1977, abandoned. This application May 29, 1980, Ser. No. 154,291
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653734
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **22 Claims**



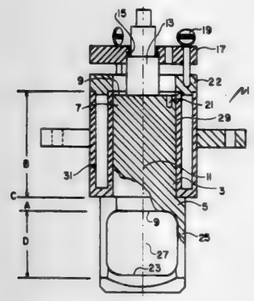
1. A method of testing the wrappers of cigarettes or analogous rod-shaped articles which constitute or form part of smoker's products, comprising the steps of measuring, with a first degree of accuracy, the permeability of a first portion of the wrapper of each of a series of successive articles; measuring, with a higher second degree of accuracy, the permeability of a second portion of the wrapper of each of said series of articles, said second portion of the wrapper having air admitting holes therein, said first mentioned measuring step including establishing a first pressure differential between the interior and exterior of successive first wrapper portions and said last mentioned measuring step including establishing a different second pressure differential between the interior and exterior of successive second wrapper portions; generating a succession of first signals having characteristics denoting the measured permeabilities of first and second portions of wrappers of successive articles; comparing each of said first signals with a first reference signal denoting the maximum permissible permeability of said wrappers; and comparing each of said first signals with a second reference signal denoting the minimum acceptable permeability of said wrappers.

4,287,755

PROBES FOR THE ULTRASONIC TREATMENT OR INSPECTION OF MOLTEN ALUMINUM

Thomas L. Mansfield, Louisa, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 12, 1979, Ser. No. 74,800
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—61 R **19 Claims**



1. An improved probe for conducting ultrasonic mechanical energy between a transducer device and an aluminum melt; where said probe comprises a working tip consisting of titanium, and a coating of aluminum which has been volatilized and deposited on said working tip in a vacuum; and said probe is further characterized in that upon the immersion of said working tip in an aluminum melt at temperatures up to about 850° C., said working tip is wetted by molten aluminum in about one minute or less.

4,287,756

STRATIFIED FLUID INTERFACE RECORDER

John J. Gallagher, 1000 Connecticut Ave., NW #1103, Washington, D.C. 20036

Filed Oct. 24, 1979, Ser. No. 87,737
Int. Cl.³ G01F *23/00, 23/24*
U.S. Cl. 73—61.1 R **11 Claims**



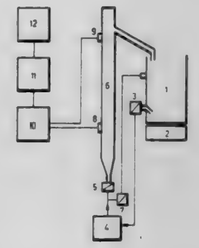
1. A device for determining the relative location of stratified fluids of different character when inserted through the stratified fluids comprising:
an elongated member having plural fluid character recording stations disposed therealong;
sensing means associated with each of said stations for determining the properties of the fluid proximate thereto when said probe is positioned through said fluids;
clearing means movably associated with each of said sensing means to preclude contamination thereof by fluid from other strata; and
means to determine the fluid characteristics recorded by said stations.

4,287,757

INSTRUMENTAL MEASURING METHOD FOR DETERMINING THE SIZE-DISTRIBUTION OF GRAINED MATERIAL

György Bucsky, Balatonalmádi; Zoltán Kiss, Veszprem, and Lajos Tátrai, Veszprém, all of Hungary, assignors to Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezet, Veszprém, Hungary

Filed Feb. 11, 1980, Ser. No. 120,060
Int. Cl.³ G01N *15/04*
U.S. Cl. 73—61.4 **3 Claims**



1. An instrumental measuring method for determining the size distribution of grained material, comprising the steps of
inserting the material to be measured into a fluid so that the particles of said material be substantially evenly distributed in said fluid,
sedimenting the material in said fluid and
continuously measuring the difference of hydrostatic pressure between at least two height regions in said fluid during sedimentation,
by developing an electrical signal at each point of measurement in response to the hydrostatic pressure at that point without disturbing the sedimentation by physical sampling.

4,287,758

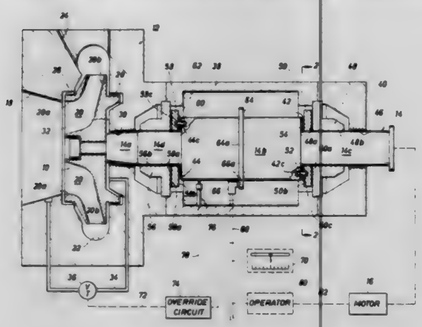
SHAFT MOUNTING DEVICE AND METHOD

Judson S. Swearingen, Malibu, Calif., assignor to Rotoflow Corporation, Inc., Los Angeles, Calif.

Filed Jul. 19, 1979, Ser. No. 58,859
Int. Cl.³ G01L *5/12*
U.S. Cl. 73—862.49 **13 Claims**

1. A shaft mounting device comprising
a housing;
two thrust bearing members fixed in said housing;
a shaft rotatably mounted in said thrust bearing members and being slideably disposed therein, said shaft including two radial surfaces thereon facing in opposite axial directions;
two thrust rings slideably disposed on said shaft adjacent said radial surfaces, said thrust bearing members each abutting one said thrust ring;

means for resiliently holding each said thrust ring spaced axially on said shaft from said radial surface; means fixed relative to said housing for sensing axial displacement of said shaft.

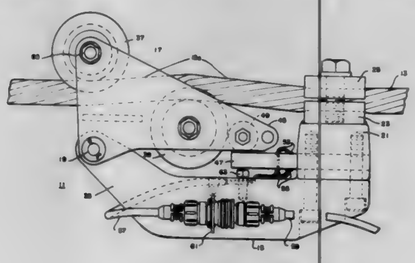


4,287,759

DEVICE FOR SENSING THE TENSION IN A LOAD CARRYING LINE

George W. Cooper, San Leandro, Calif., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Feb. 6, 1979, Ser. No. 9,952
Int. Cl.[3] G01L *5/10*
U.S. Cl. 73—862.45 1 Claim



1. An improved load sensing device adapted for attachment to a load carrying line comprising

a support frame having a clamping end adapted to fixably clamp to said load carrying line,

a load sensing unit fixed to said support frame, and

a rigid load line operator pivotally attached to said support frame in spaced relation to the clamping end thereof, said load line operator comprising

a torque transmitting end radially disposed from the pivot formed by the line operator's pivotal attachment to said support frame so as to react against the load sensing unit secured to said frame when torque is applied to said operator, and

first and second spaced apart load line bearing elements disposed to capture and deform a segment of the load carrying line threaded therebetween when said support frame is claimed to said load carrying line whereby the restoring forces of the deformed load carrying line exerted on said first and second load bearing elements of said operator cause a torque in said operator which urges the torque transmitting end thereof against said load sensing unit whereby the force applied to said load sensing unit is substantially proportional to the tension in the load carrying line threaded through said operator, and whereby said load sensing device is operatively held on said load carrying line due to the securement thereof by said load line operator and by the clamping end of said support frame, said load line operator being generally triangular in configuration, with the operator pivot, the first load line bearing element of the operator, and the torque transmitting end of the operator defining the corners of the triangle of said triangular configuration, and with said second load line bearing element being located within said triangle intermediate said operator pivot and the torque transmitting end thereof.

4,287,760

METHOD AND EQUIPMENT TO MEASURE FAT CONTENT OF MEAT

Shinji Kubo, Chiba, and Norio Yamada, Ichikawa, both of Japan, assignors to Chibayaku Groceries, Incorporated, Chiba, Japan

Filed Sep. 17, 1979, Ser. No. 76,309
Claims priority, application Japan, Dec. 4, 1978, 53-149089
Int. Cl.[3] G01F *17/00;* G01N *9/10*
U.S. Cl. 73—149 3 Claims



1. In apparatus for measuring fat content of meat, the combination comprising

(a) a first container to receive liquid into which a meat sample is immersed when the meat sample is placed in the container, and

(b) means associated with the container for indicating the amount of displacement of the liquid by the meat sample, the variance of such displacement being a function of fat content to be determined, whereby the fat content can be determined from the detected displacement,

(c) said means including a liquid height gage communicating with the container interior, there being meat fat content calibration indicia vertically spaced on the gage to indicate fat content percentages, and there also being a piston pump on a lid for the container, said lid providing means via which liquid is accessed into the container, said height gage projecting upwardly through the lid to receive liquid displaced by the pump.

4,287,761

MUD SAMPLING CHAMBER

John N. Moffet, and John D. Moffet, both of Wichita Falls, Tex., assignors to Energy Detection Company, Wichita Falls, Tex.

Filed Jan. 24, 1980, Ser. No. 115,002
Int. Cl.[3] E21B *47/00*
U.S. Cl. 73—153 10 Claims

1. A drilling mud sampling chamber, which comprises:

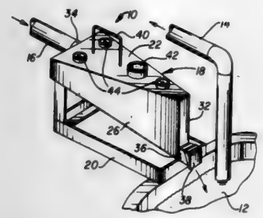
a rigid box having front and back ends, and top and bottom sides;

a handle secured to the top side of said box;

said box being of rectangular cross-section which increases in width and decreases in height from the back end of said box to the front end thereof such that the bottom wall is inclined relative to the top wall of said box;

a sight glass mounted in an opening provided in the top side of said box;

a fitting mounted in another opening provided in the top side



of said box, said fitting being adapted for receiving a hydrocarbon sensor;

an inlet in the front of said box;

an outlet in the end of said box, said outlet being positioned beneath said inlet; and

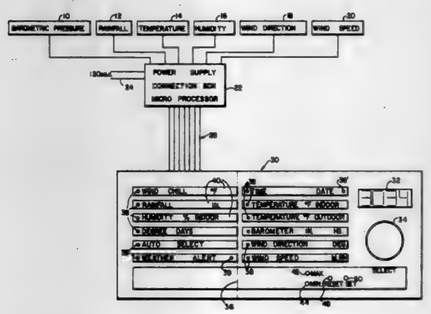
a hinged trap door covering said outlet.

4,287,762

DIGITAL WEATHER STATION

John S. Baer, Bar Harbor, Me., assignor to Rainwise, Inc., Pitman, N.J.

Filed Aug. 6, 1979, Ser. No. 63,789
Int. Cl.[3] G01W *1/04*
U.S. Cl. 73—170 R 18 Claims



1. Digital readout gauge means having a rotatable shaft responsive to a condition sensing element for producing a reading of a condition sensed comprising:

a support means;

calibration means supported on and rotating with the rotating shaft in the form of a translucent member made from a photographic reproduction providing a mirror image of fixed calibrations used with a pointer on a rotatable shaft having the same analog positions as the shaft, the photographic reproduction providing a pattern of digital calibrations arranged concentric to the shaft whereby as the condition sensor means drives the shaft it drives the calibration means rotatably about the shaft;

optical reader means to detect calibration marks and absence of calibration marks as a digital calibration pattern and generate an output pattern representative of digital counts;

means to sense and interpret direction of movement;

up-down counter means having a selectable starting value and receiving impulses from the reader means to modify the starting value as counts are added or subtracted by impulses from the reader means in accordance with the sensed and interpreted direction of movement; and

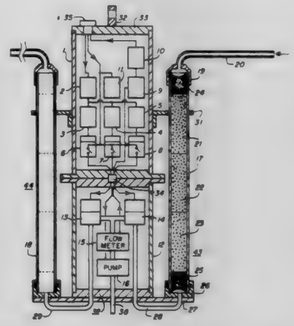
digital display means connected to and displaying the count of the counter.

4,287,763

APPARATUS FOR CONCENTRATING AND SAMPLING SUBSTANCES FROM SEAWATER

Joseph D. Richard, 5590 SW. 78 St., Apt. A, Miami, Fla. 33143

Filed Aug. 13, 1979, Ser. No. 65,907
Int. Cl.[3] G01N *1/10*
U.S. Cl. 73—863.21 9 Claims



1. Apparatus for obtaining a series of concentrated samples of trace substances from seawater in selected depths in the ocean comprising:

an instrumented body suitable for submersion in seawater; a signal cable for connecting said instrumented body with a surface vessel;

a plurality of sampling chambers arrayed around said instrumented body, each said sampling chamber having an inlet conduit and an outlet conduit; a porous material maintained within each of said sampling chambers for retaining and concentrating at least one substance occurring in seawater;

a plurality of electrically operated valves each for normally closing a selected one of the outlet conduits of one of said sampling chambers;

a pump connectable to the outlet conduit of any of said sampling chambers whenever corresponding said electrically operated valve is opened;

a flowmeter disposed to measure the seawater volume passing through a selected at least one of said sampling chambers which are open to said pump via a selected at least one of said valves;

remote control means operable from the aforementioned surface vessel for controlling said pump and a selected at least one of said electrically operated valves; and

remote indicating means operable adjacent said remote control means for totalizing and monitoring the volume of seawater measured by said flowmeter.

4,287,764

FLUID ANALYZER CONSTRUCTION AND HOUSING

Joachim Staab; Willy Apel, both of Frankfurt am Main, and Heinz Wolf, Kronberg, all of Fed. Rep. of Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

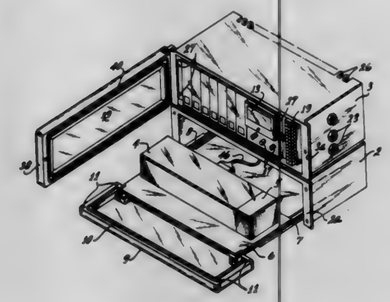
Filed Mar. 3, 1980, Ser. No. 126,730
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908169
Int. Cl.[3] G01D *11/24;* H05K *5/00;* G01R *1/04*
U.S. Cl. 73—431 10 Claims

1. In an analyzer arrangement for gas or liquid which includes an analyzer means, an indicating instrument, power

supply means, and electric circuit elements, a combination for mounting and assembly, comprising:

a first case and a second case, each having a front being open for access;

the first case including or containing (a) a carrier plate or tray mounted for insertion and retraction; (b) a door hinged to a front edge of the carrier plate about a horizontal axis, for sealingly closing the open front of the first case and bolting thereto when the plate is inserted in the first case, the door being capable of folding down into a horizontal position when the plate is pulled out, the analyzer means with preamplifier mounted on the plate to be contained in the first case when the plate is inserted;



the second case containing (a) the power supply means mounted inside the second case; (b) a frame in the second case for holding the instrument and a plurality of printed circuit boards for said circuit elements; (c) means for slideably and hingedly positioning the frame in the second case to permit full access of a rear of the frame; and (d) a door hinged to the second case for sealingly closing and bolting to the second case; and

electrical connection means including a removable or disconnectable portion for connecting the analyzing means in the first case to circuit elements on the boards in the second case.

4,287,765

ACCELEROMETER AND EVALUATION CIRCUIT

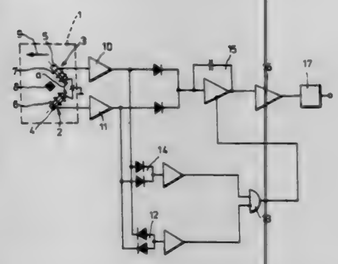
Wolfgang Kreft, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,471

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920147

Int. Cl.³ G01P *15/08*; B60R *21/08*

U.S. Cl. 73—517 R **5 Claims**



1. The combination of an accelerometer and an evaluation circuit connected thereto for controlling a safety device in an automobile, wherein said accelerometer comprises:

a pair of electromagnetic circuits arranged at an angle other than 180° relative to each other and each having a sensor coil;

a movable member, arranged to be inertially deflectable by acceleration forces applied to said accelerometer, and including means for inducing electrical voltages in the individual electromagnetic circuits, said voltages having a magnitude which is a function of the amplitude and direction of acceleration, wherein said evaluation circuit comprises directional discriminator means connected to each of said sensor coils for generating a first signal for actuating the safety device in response to a voltage with predetermined polarity occurring in at least one of said sensor coils, where the voltage in the other of said sensor coils is zero or has said predetermined polarity, and wherein said angle is chosen for generation of said first signal for actuating the safety device only in response to accelerations occurring within a desired directional sector.

4,287,766

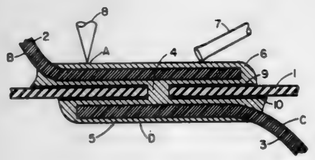
INSPECTION OF SOLDER JOINTS BY ACOUSTIC IMPEDANCE

Dale Ensminger, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Sep. 26, 1979, Ser. No. 78,958

Int. Cl.³ G01H *13/00*

U.S. Cl. 73—582 **7 Claims**



1. A method for qualitatively inspecting the integrity of a solder joint joining first and second conductors comprising

(a) applying acoustic vibrations to the solder joint over a range of frequencies which includes at least one natural resonant frequency of the solder joint,

(b) receiving the acoustic vibrations, as modulated thereby, from the solder joint with a receiving transducer converting acoustic vibrations into electrical signals,

(c) observing the spectral response of the receiving transducer, and

(d) comparing the spectral response of the receiving transducer with previously determined spectral responses characteristic of either unacceptable or acceptable solder bonds whereby to determine the acceptability of the solder bond.

4,287,767

ULTRASONIC SECTION SURFACE EXAMINATION EQUIPMENT

Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Nov. 13, 1979, Ser. No. 93,049

Claims priority, application Austria, Jan. 25, 1979, 522/79

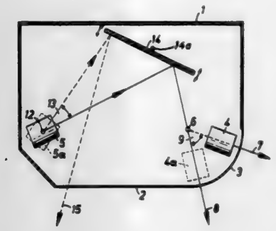
Int. Cl.³ G01N *29/00*

U.S. Cl. 73—625 **20 Claims**

1. Ultrasonic section surface examination equipment, comprising

a scanning unit which defines a plurality of sound paths and comprises first and second sound transducer heads, each of which comprises at least one sound transducer that is operable to project a sound beam along an associated one of said sound paths into a section surface of an object to be examined and to receive echo signals generated in said section surface in response to said sound beam and to derive echo signals from the echoes thus received,

scanning mechanism means for mechanically operating said scanning unit so as to move said sound paths transversely to themselves in said section surface in coordinated movements whereby the sound beam projected from a sound transducer of said first sound transducer head is caused to scan said section surface in a first section surface area having substantially divergent side edges and the sound beam projected from a sound transducer of said second sound transducer head is caused to scan said section surface in a second section surface area which is adjacent to said first area and has side edges which are less divergent than those of said first area, and



display means comprising a fluorescent screen and operable to display said echoes on said fluorescent screen in response to echo signals from said sound transducer of said first sound transducer head in a first screen area at locations which are geometrically coordinated with the locations at which the corresponding echoes have originated in said first section surface area and, at the same time, in response to echo signals from said sound transducer of said second sound transducer head in a second screen area at locations which are geometrically coordinated with the locations at which the corresponding echoes have originated in said second section surface area.

4,287,768

BEAM DEFLECTION METHOD AND APPARATUS FOR SECTOR SCAN ULTRASOUND IMAGING SYSTEMS

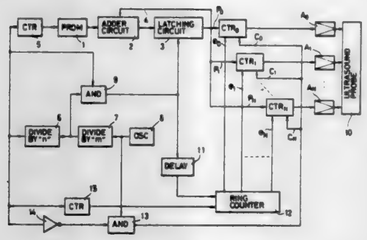
Yoshihiro Hayakawa, and Hiroshi Fukukita, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Nov. 9, 1979, Ser. No. 93,019

Claims priority, application Japan, Nov. 13, 1978, 53-140281; Aug. 13, 1979, 54-103042

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—626 **17 Claims**



1. A method for successively deflecting an ultrasound beam at different angles to provide a sector scan by successively activating piezoelectric transducer elements, comprising the steps of:

storing a set of delay time data in a memory, each said stored datum being provided for each said deflection angle of said ultrasound beam and representing a binary number corresponding to the delay time between successively activated transducer elements;

retrieving each said delay time data from said memory corresponding to each of said deflection angles;

repeatedly accumulating said retrieved data (N−1) times, where N is the number of said transducer elements, to generate an output data is succession for each said deflection angle; and

successively activating said transducer elements in response to said successively generated output data.

4,287,769

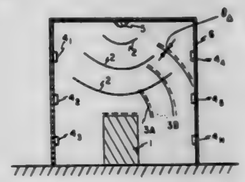
APPARATUS AND METHOD WHEREBY WAVE ENERGY IS CORRELATED WITH GEOMETRY OF A MANUFACTURED PART OR THE LIKE OR TO POSITIONAL RELATIONSHIPS IN A SYSTEM

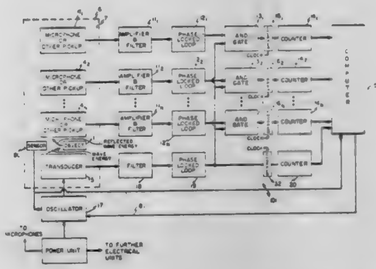
Bruce S. Buckley, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 911,622, Jun. 1, 1978, Pat. No. 4,200,921, which is a division of Ser. No. 679,262, Apr. 22, 1976, Pat. No. 4,095,475. This application Jul. 11, 1979, Ser. No. 56,577

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—627 **9 Claims**





1. Apparatus that comprises, in combination: source means directing acoustic wave energy upon an object that reflects the same, means for detecting the reflected wave energy and developing a signal θ_A therefrom, which signal θ_A bears a relationship to geometrical characteristics of the object, means comparing the signal θ_A with a standard signal θ_B representative of the geometrical characteristics of a standard to determine any differential θ_Δ therebetween, and means for adjusting the frequency of the wave energy to maintain a constant wavelength of the acoustic wave energy despite changes in an environmental condition which would otherwise effect changes in said wavelength.

4,287,770

METHOD FOR THE MANUFACTURE OF ULTRASONIC TRANSDUCERS

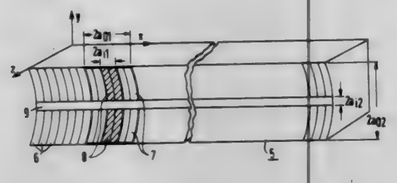
Arthur Weyns, Muizen, Belgium, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,643

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855143

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—632 **18 Claims**



1. A method for the manufacture of ultrasonic transducers with at least one ultrasonic transducer whose active surface exhibits recesses and whose sound radiation field is to be prescribable in terms of focal distance, focal width and angle of aperture in connection with the focus and ultrasonic frequency, characterized by the following steps:

(a) for the two focal magnitudes of focal width (F_B) and focal distance (F_A) to be prescribed, there is first determined for one of the two focal magnitudes (for example, F_B) either its outer dimension ($2a_O$) as a function of the radius of curvature (R) of the ultrasonic transducer (1; 5) or its radius of curvature (R) as a function of the outer dimension ($2a_O$);

(b) given the outer dimension determined in that manner or the radius of curvature determined in that manner, the magnitude radius of curvature or, respectively, outer dimension not yet determined for the other of the two prescribable focal magnitudes (for example, F_A) is determined.

(c) finally, the maximum value of the angle of aperture of the sound radiation field behind the focus deriving for the outer dimension ($2a_O$) and radius of curvature (R) according to steps (a) and (b) is limited by means of the introduction of a recess (2; 8, 9) in the active surface of the ultrasonic transducer (1; 5) of such size ($2a_i$) that the optimum relationship between the angle of aperture and side lobes of the sound radiation field ensue.

4,287,771

VEHICLE PASS-BY AND COMMUNITY NOISE MONITOR

Richard Dugot, New York, N.Y., assignor to Instrument Development Corp., South Hackensack, N.J.

Filed Oct. 29, 1979, Ser. No. 88,762

Int. Cl.³ G01H *3/12*

U.S. Cl. 73—647 **12 Claims**

1. A sound level detection system, which comprises

(a) sound level measuring means generating an electrical output corresponding to the measured sound level,

(b) measured sound information means associated with said sound level measuring means,

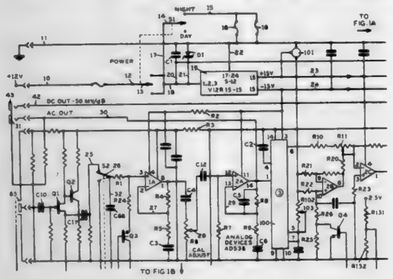
(c) circuit means interconnecting said information means and said sound level measuring means,

(d) said circuit means being operative in a plurality of conducting states, including at least a first conducting state acting to transmit said output to said information means, and a second conducting state acting to continuously, electrically store the maximum output generated by said sound level measuring means when said circuit means is operative in said second conducting state and to transmit said maximum output to said information means, and

(e) said circuit means comprising an electrical conducting means and an electrical storage means connected thereto,

(f) said electrical conducting means and said electrical storage means being operative together when said circuit means is in said second conducting state whereby said storage means continuously stores the maximum output generated by said sound level measuring means,

(g) a comparator means for comparing a predetermined



threshold value with the output of said sound level measuring means and being operative when said output exceeds said predetermined threshold value to switch said circuit means from said first conducting state to said second conducting state whereby said maximum output generated by said sound level measuring means and stored in said electrical storage means during the time said circuit means is operating in said second conducting state is continually transmitted to said sound information means.

4,287,772

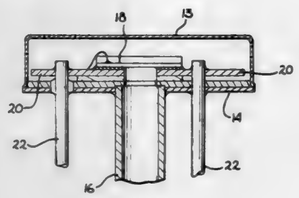
STRAIN GAGE TRANSDUCER AND PROCESS FOR FABRICATING SAME

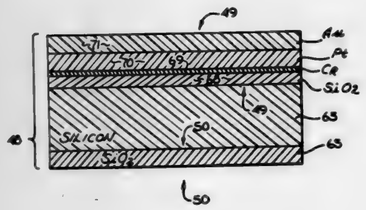
Carlyle A. Mounteer, Irvine, and Ronald L. Poteet, San Juan Capistrano, both of Calif., assignors to Gulton Industries, Inc., Metuchen, N.J.

Division of Ser. No. 906,955, May 18, 1978, Pat. No. 4,188,258. This application Sep. 4, 1979, Ser. No. 72,064

Int. Cl.³ G01L *9/04*

U.S. Cl. 73—720 **5 Claims**





1. A strain gage transducer comprising:

a monocrystalline silicon substrate having a first and second surface;

a silicon dioxide layer disposed on said first surface of said silicon substrate;

a plurality of platinum alloy strain gage resistors formed on said silicon dioxide layer;

a plurality of gold leads disposed over said silicon dioxide layer interconnecting said resistors;

whereby a low cost, high performance transducer is realized.

4,287,773

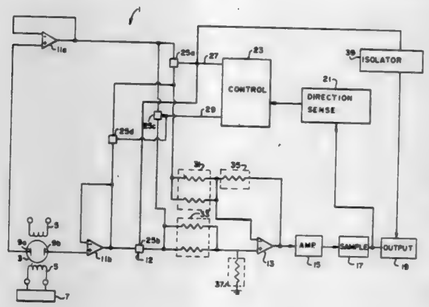
BIDIRECTIONAL MAGNETIC FLOWMETER

William R. Freund, Jr., Hatfield, and John C. Grebe, Jr., Norristown, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,764

Int. Cl.³ G01F *1/60*

U.S. Cl. 73—861.12 **5 Claims**



1. In a magnetic flowmeter comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, means for generating a magnetic field in said fluid flowing through said body, a pair of electrodes in said body for sensing a voltage generated in said fluid, and signal processing means for producing an output signal dependent on the magnitude and polartiy of said voltage, said signal processing means comprising differential amplifier means for producing a flow-dependent signal dependent upon said voltage, said differential amplifier means including an output and a pair of inputs, each of said inputs being operatively connected to a respective one of said electrodes, and amplifier means for amplifying said flow-dependent signal, the improvement wherein said signal processing means include polarity-sensing means for sensing a change in the direction of flow through said body, and flip-flop means for reversing the connections between said electrodes and said inputs of said differential amplifier means in response to a change of said direction.

4,287,774

MAGNETIC FLOWMETER WITH ULTRASONICALLY CLEANED ELECTRODES

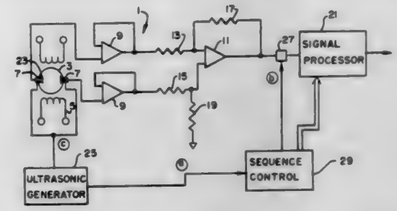
John C. Grebe, Jr., Norristown, and William R. Freund, Jr., Hatfield, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,763

Int. Cl.³ G01F *1/60*

U.S. Cl. 73—861.17 **9 Claims**

1. In a magnetic flowmeter comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, means for generating a magnetic field in the fluid flowing through the body, a pair of electrodes in said body for producing a voltage dependent on the electric field generated in the fluid flowing through the magnetic field, signal processing means for converting the output voltage to an output signal, ultrasonic transducers associated with the electrodes for cleaning the faces of the electrodes when activated, and ultrasonic generator means for periodically activating the transducers, the improvement comprising sequencing means for placing at least a part of said signal processing means in a hold state during activation of said transducers so as to



hold said output signal at an instantaneous level, thereby eliminating interference with said output signal by said ultrasonic generator.

4,287,775

FLUID FLOW MEASURING APPARATUS

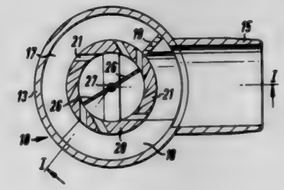
Stanley P. Hutton, Southampton, England, assignor to Ferraris Development and Engineering Company Limited, London, England

Filed May 7, 1979, Ser. No. 36,902

Claims priority, application United Kingdom, May 5, 1978, 18072/78

Int. Cl.³ G01F *1/06*; A61B *5/08*

U.S. Cl. 73—861.79 **8 Claims**



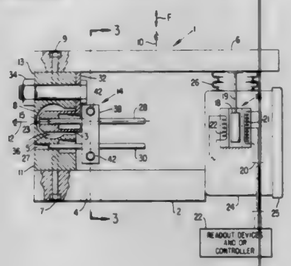
1. Respiratory flow rate measuring apparatus comprising a tubular stator which has oblique slots formed in its tubular wall; a casing within which said tubular stator is mounted and which forms a circumferential gallery around the tubular stator, a first port which communicates with the gallery at one end and which projects outwardly with respect to the stator from that end, and a second port which communicates with the interior of the tubular stator and which is in substantially coaxial alignment with the tubular stator; a rotor which is mounted for rotation within the stator; means by which a readout indication of respiratory flow rate is derived from rotation of the rotor; and a barrier which extends across the gallery so that substantially all respiratory flow which enters the gallery from said first port is constrained to flow around the tubular stator in one circumferential direction only, respiratory flow so circulated around the tubular stator being passed through to the interior of the tubular stator via the oblique slots and forming within the interior of the tubular stator a spirally swirling respiratory flow which drives the rotor, the location of the radially outer ends of the oblique slots and the orientation of the oblique slots with respect to said one circumferential direction being such that the angle by which the respiratory flow enters each slot from the gallery deviates from the respiratory flow path around the tubular stator is an acute angle.

4,287,776

FORCE TRANSDUCER

Clarence Johnson, 2922 Ash Dr., Springfield, Ohio 45504

Filed Dec. 26, 1979, Ser. No. 106,470
Int. Cl.³ G01L *1/14, 1/26*
U.S. Cl. 73—862.52 **5 Claims**



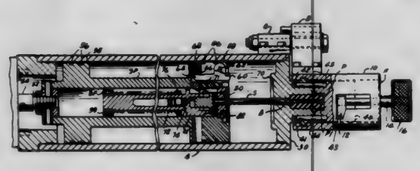
1. In a transducer for generating an output signal corresponding to the magnitude of a force having a force receiving platform cantilevered from a base through a C-shaped flexure formed with a cylindrical transverse hole and a slot opening radially into the hole to form a thin flexible middle section and opposed rigid outer sections engaging, respectively, the opposed surfaces of the base and platform, an auxilliary spring having a first section cantilevered from said rigid section engaging the surface of said force receiving platform, the longitudinal center-line of which is coincident with the transverse axis of the middle section of said C-shaped flexure, and having a second section cantilevered from the other of said rigid sections, adjustable means coupling said sections whereby the effective length of said auxiliary spring can be varied to thereby adjust the displacement of said platform about the transverse axis of said middle section produced by a given applied force, and a control couple having relatively movable elements operatively connected to said base and platform respectively generating an output signal corresponding to the displacement of the platform from a null position.

4,287,777

SEMI-AUTOMATIC CONTACT INSERTION TOOL

Bruno C. Buszkiewicz, Chicago, and Joseph A. Storcel, North Riverside, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 868,945, Jan. 12, 1978, Pat. No. 4,156,965, which is a continuation of Ser. No. 722,674, Sep. 13, 1976, abandoned. This application Feb. 6, 1979, Ser. No. 9,909
Int. Cl.³ G05G *17/00*
U.S. Cl. 74—2 **5 Claims**



1. An apparatus for simultaneously moving a pair of members in a first direction and for thereafter moving one of the members in a second direction opposite to the first direction, said apparatus comprising:

a fixed body;

a first piston means coupled to a first member;

a second piston means coupled to a second member;

one said piston means being slidably mounted within the other said piston means;

latching means for releasably connecting said first piston means and said second piston means together;

means for moving said first and second piston means relative to said fixed body together in said first direction;

biasing means arranged for urging one of said piston means in said second direction; and

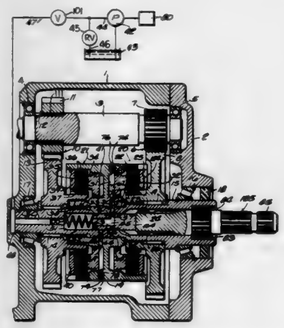
means for releasing said latching means and thereby cause said biasing means to move said one piston means in the second direction.

4,287,778

HYDRAULIC VALVE FOR TWO-SPEED POWER TAKE-OFF DRIVE

David C. Quick, New Berlin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 26, 1979, Ser. No. 106,693
Int. Cl.³ F16H *37/00*
U.S. Cl. 74—15.4 **12 Claims**



1. A two-speed power take-off drive for a tractor comprising, an input shaft, an output shaft means, a first and a second gearset for selectively driving between said input shaft and said output shaft, a first and a second hydraulic clutch and a hydraulic valve for selectively engaging one of said two first and second gearsets, a reversible stub shaft in said output shaft means operating said valve responsive to selective and alternative positioning of said reversible stub shaft for selective operation of said clutches operating said power take off drive in each of two speeds.

4,287,779

DIRECTIONAL-ACTION MECHANICAL VIBRATOR AND A MECHANICAL SYSTEM FOR CONVERTING ROTARY MOTION INTO RECIPROCATING MOTION

Evgeny S. Goncharov, ulitsa Lomonosova, 30/1, kv. 46; Anatoly N. Prilutsky, ulitsa Entuziastov, 29/2, kv. 36, both of Kiev, and Viktor I. Shevchuk, Vasilkovskogo raiona ulitsa Vokzalnaya, 23, kv. 33, poselok Glevakha Kievskoi oblasti, all of U.S.S.R.

Filed Jul. 11, 1979, Ser. No. 56,702
Int. Cl.³ B07B *1/42;* **F16H** *21/16*
U.S. Cl. 74—26 **2 Claims**



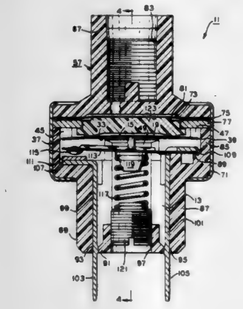
1. A directional-action mechanical vibrator comprising a housing linked, through a hinge joint, to the support of the mass being vibrated so as to balance the forces of inertia developed by said vibrator; a shaft mounted inside said housing parallel to said axis of said hinge joint; a crank provided on said shaft so as to stabilize the oscillation amplitude of said mass being vibrated; a number of inertia masses arranged on said shaft on both sides of said crank so that the centers of inertia of said masses are arranged diametrally opposite to said crank with respect to the axis of said shaft, thereby providing the balancing of the force of inertia developed by said mass being vibrated; a rod having two ends of which one end is articulated to said crank, and the other end to said mass being vibrated; the center of mass of said housing is arranged near the axis of said shaft; and the axis of said hinge joint is located close to said rod and forms an angle therewith approximately equal to $\pi/2$ radian.

4,287,780

SNAP-ACTION MEMBER

Ronald W. Poling, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 960,172, Nov. 13, 1978, Pat. No. 4,200,776. This application Aug. 6, 1979, Ser. No. 63,703
Int. Cl.³ F16H *21/44;* **H01H** *35/34*
U.S. Cl. 74—100 P **2 Claims**



1. A snap-action member adapted to be disposed in a predetermined assembly position on means for seating it within a control device and engaged with a part of the control device so as to maintain the snap-action member against displacement movement generally about the seating means from the predetermined assembled position of the snap-action member thereon, the snap-action member comprising:

a body formed from a metallic material having a grain orientation extending thereacross in a predetermined direction;

a peripheral portion on said body defining a generally constant diameter of said body at least about a major portion thereof and adapted to be seated on the seating means in the control device;

a pair of spaced apart surfaces on said body interconnected with said peripheral portion and arcuately displaced in a direction generally perpendicular to a plane intersecting with said peripheral portion, respectively; and

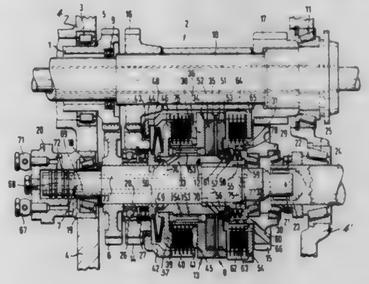
at least one projection on said body between said peripheral portion and said surface pair and predeterminately arranged so as to extend generally in the predetermined direction of the grain orientation in said metallic material of said body, said at least one projection being adapted to engage the control device part so as to locate the snap-action member in its preselected assembly position generally against the displacement movement about the seating means in the control device and thereby align the predetermined direction of the grain orientation in the metallic material of said body with respect to at least the seating means when said snap-action member is disposed thereon in the predetermined assembled position.

4,287,781

TRANSMISSION WITH DOUBLE FRICTION CLUTCH

Walter Zenker, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,087
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841053
Int. Cl.³ F16H *3/08;* **F16D** *25/062, 25/10*
U.S. Cl. 74—375 **10 Claims**



1. A gear change transmission, especially for agricultural vehicles and construction-industry vehicles, having two gear-shifting groups each being actuatable under load by a friction clutching arrangement comprising:

a first clutch inherently urged to engagement by means of a resilient biasing member and adapted to be disengaged by means of at least one piston-cylinder unit having at least one piston; and

a second clutch adapted to be engaged by means of at least one piston-cylinder unit, having at least one piston, said at least one piston of said second clutch having an effective operating surface area which is less than the effective operating surface area of said at least one piston of said first clutch, with the pertaining cylinders of each of said first clutch and said second clutch being connectible in such a way that said at least one piston of said first clutch and said at least one piston of said second clutch are subjected to the same control pressure in each clutch position, said first clutch and said second clutch forming a double friction clutch, and said at least one piston of said first clutch and said at least one piston of said second clutch being operable in a common cylinder chamber member, said double-row clutch comprising a primary part, said primary part including:

a hub part;

a radial member projecting radially from said hub part between said first clutch and said second clutch;

a cylindrical portion projecting axially from said radial member on that side thereof which faces said second clutch, said cylindrical portion being spaced from said hub and concentric thereto, said cylindrical member and said radial member forming a cup-shaped member with the annular space between said hub and said cylindrical portion forming said cylinder chamber for said at least one piston of said first clutch and said at least one piston of said second clutch;

said first clutch including secondary clutch lamellae, and primary clutch lamellae, and said second clutch including primary lamellae and secondary lamellae;

a first contact profile, on said hub radially inwardly of said lamellae of said first clutch on that side of said radial member which faces said first clutch, for engaging said primary lamellae of said first clutch; and

a second contact profile on said cylindrical portion radially outwardly of said lamellae of said second clutch on that

side of said radial member which faces said second clutch, for engaging said primary lamellae of said second clutch.

4,287,782

ELECTRIC REGULATING DEVICE

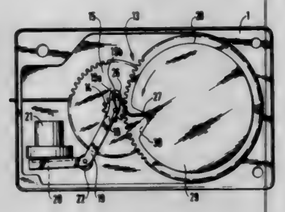
Gerhard Ruschek, Hattersheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 860,678, Dec. 15, 1977, Pat. No. 4,187,734. This application Oct. 27, 1978, Ser. No. 955,458

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741475

Int. Cl.³ B60K *31/00*; F16H *57/00*

U.S. Cl. 74—405 **6 Claims**



1. An electric regulating device, particularly for a speed control device for motor vehicles, comprising

a regulating member,

means for actuating said regulating member, said means constituting a rotatably mounted element,

a servomotor,

a coupleable mechanical gearing means and a coupling means therefor including an electromagnet for operatively connecting said element with said servomotor,

an armature cooperating with said electromagnet, and

said gearing means includes a plurality of gears, at least one of said gears of said gearing means being substantially radially moveably mounted and being operatively connected with said armature,

said gearing means including a gearwheel operatively coordinated to said at least one gear,

spring means for biasing said armature by a spring force for moving said one gear out of engagement with said gearwheel when said electromagnet is without current,

means for reducing pretension of said spring means in a neutral position of the regulating device,

said pretension reducing means includes a cam wheel operatively coupled to said element,

said spring means comprises a compression spring having one end in connection with said armature and having another end supported on said cam wheel,

a housing,

said at least one gear constitutes another gearwheel having a shaft,

said shaft is articulated on one end thereof on said housing,

an arm disposed on said armature, and

the other end of said shaft is disposed on said arm,

said one end of said shaft is formed semi-spherically,

said housing is formed with a spherical indentation, said one end of said shaft is mounted in said spherical indentation,

said other end of said shaft is formed into a pin-shaped set-off,

said arm is formed with an opening,

said pin-shaped set-off is inserted through said opening in said arm,

said one end of said compression spring is mounted on said arm against said pin-shaped set-off,

said arm includes a free end adjacent said opening,

a pin is secured to said free end of said arm, and

said spring means includes a substantially U-shaped central portion engaged around said pin.

4,287,783

MECHANISM FOR LUBRICATING BEARINGS OF A COUNTER SHIFT GEAR FOR A GEAR TRANSMISSION

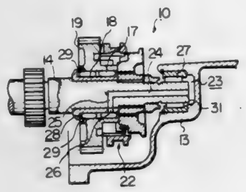
Shiuichiro Ida; Shoichi Ohshima; Syunichi Hirashima, all of Toyota, and Harada Yukihiro, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1979, Ser. No. 108,229

Claims priority, application Japan, Oct. 22, 1979, 54-144863[U]

Int. Cl.³ F16N *7/36*; F01M *9/06*

U.S. Cl. 74—467 **3 Claims**



1. In a gear transmission including a casing containing lubrication oil, a counter shaft rotatably mounted in said casing and constantly transmitting rotational movement from a power input shaft by means of gear trains, a counter shift gear rotatably mounted on said counter shaft through bearings disposed in an annular space, a shift gear rigidly mounted on a power output shaft and being in constant meshing engagement with said counter shift gear, and clutch means for interrupting the relative rotational movement between said counter shaft and said counter shift gear, the improvement comprising:

an annular counter inner race disposed between said bearings and said counter shaft and interfacing with and removably secured to said counter shaft for rotation with said counter shaft; and

means for lubricating said bearings and the adjacent surfaces of said counter shaft and said counter inner race comprising an axial oil port in fluid communication with the interior of said casing extending axially of said counter shaft, a first radial oil port in fluid communication with said axial port and with the interface between the adjacent surfaces of said counter shaft and said counter inner race, and a second radial oil port in said counter inner race in fluid communication with said first radial oil port and the annular space in which said bearings are disposed.

4,287,784

APPARATUS FOR FACILITATING GEAR CHANGING IN MECHANICAL GEARBOXES

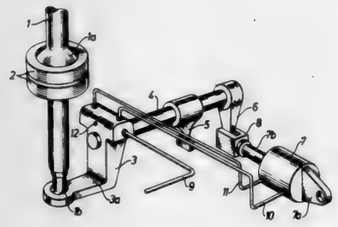
Bengt E. Cedendahl, Södertälje, Sweden, assignor to Saab-Scania Aktiebolag, Södertälje, Sweden

Filed Jul. 2, 1979, Ser. No. 53,849

Claims priority, application Sweden, Jul. 10, 1978, 7807669

Int. Cl.³ G05G *9/18*; F15B *9/10*

U.S. Cl. 74—473 R **12 Claims**



1. An apparatus for facilitating gear changing in mechanical gearboxes comprising a gear selector housing in which a gear selector shaft is rotatably and axially displaceably mounted, at least one lever being secured to the gear selector shaft by means of a torque transmitting connection, said gear selector shaft being displaced axially during a selecting step to a preselected engagement position and during an engaging or disengaging step is caused to turn for engaging or disengaging the appropriate gear, characterized in that the torque transmitting connection between the gear selector shaft and the lever is formed with a limited play in both directions of rotation, said play allowing relative free movement in the direction of rotation during the initial phase of an engaging or disengaging movement during which a control valve arranged in the gear changing mechanism is activated and triggers the actuation of a pressure-operated servo cylinder which, with anchorage in a fixed bracket and with connection to a lever on the gear selector shaft, is arranged to execute the gear changing work to a major extent.

4,287,785

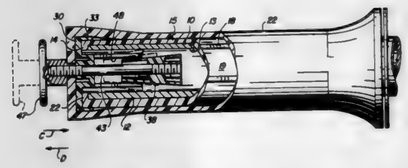
THROTTLE SETTING DEVICE

Robert T. Hunt, 549 E. McKellips, Space 86, Mesa, Ariz. 85203

Filed Dec. 12, 1979, Ser. No. 102,891

Int. Cl.³ G05G *1/08, 5/16*

U.S. Cl. 74—488 **7 Claims**



1. A throttle setting device for use in combination with a vehicle, which vehicle includes,

a cylindrical tubular handle bar having an inside surface and an end,

a tubular throttle sleeve having an outside surface coaxially rotatably mounted upon said handle bar, and

a hand grip coaxially sheathing said throttle sleeve and rotatable therewith,

and for retaining said throttle sleeve at rotatably selective positions relative said handle bar, said throttle control device comprising:

a. an end member positioned proximate the end of said handle bar;

b. engagement means carried by said end member for interlocking said end member with said throttle sleeve; and

c. retention means carried by said end member for selectively engaging said handle bar and stabilizing said end member against rotation.

4,287,786

STEERING COLUMN JACKET ON THE STEERING COLUMN OF MOTOR VEHICLES

Werner Berginski, Werdohl-Eveking, Fed. Rep. of Germany, assignor to Firma Leopold Kostal, Lüdenscheid, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,156

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905130

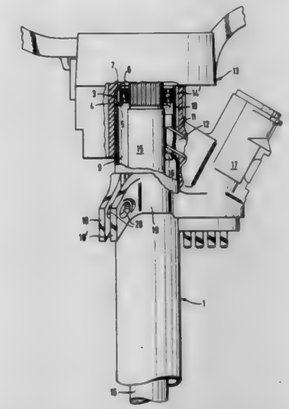
Int. Cl.³ B62D *1/16*

U.S. Cl. 74—492 **2 Claims**

1. In a steering column assembly having a steering spindle and a jacket therearound with a steering column switch having a steering column lock pin for cooperation with the steering spindle, the improvement comprising:

at least three coplanar tabs struck inwardly from adjacent one end of said jacket and engaging one end face of a bearing for said steering spindle, said tabs being substantially equally angularly displaced from each other around said jacket;

said one end of said jacket being bent inwardly to engage the other end face of said bearing at at least two opposed positions and thereby hold said bearing in fixed axial position in said jacket; and



an inwardly struck longitudinal rib on said jacket having an opening therein of a width at least equal to the width of said lock pin, said lock pin being projectable through said opening into engagement with said steering spindle.

4,287,787

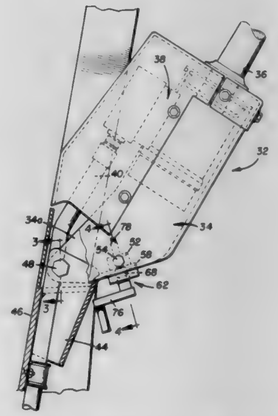
APPARATUS FOR MOVING A MEMBER

James A. Kulhanek, Perry, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Nov. 9, 1979, Ser. No. 92,808

Int. Cl.³ B62D *1/18*; F16H *25/20*

U.S. Cl. 74—493 **5 Claims**



1. An assembly (**32**) for adjusting a steering wheel (**30**) in relation to an operative position of the wheel (**30**), the wheel (**30**) being supported on a steering column (**36**), comprising:

(a) movable means (**34, 52, 54**) for supporting the steering column (**36**);

(b) fixed means (**44, 48, 58**) for pivotally supporting said movable means (**34, 52, 54**), said fixed means (**44, 48, 58**) including a seat (**58**), said movable means (**34, 52, 54**) being on said seat (**58**) in the operative position of the wheel (**30**); and

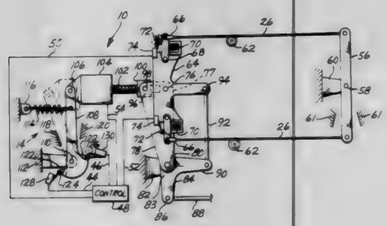
(c) means (62) for actuating said movable means (34, 52, 54) to move off said seat (58) and pivot about said fixed means (44, 48, 58).

4,287,788

SELF-RIGGING CABLE CONTROL SYSTEM AND PROCESS

Russell E. Baetke, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 14, 1979, Ser. No. 38,996
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501.5 R **8 Claims**



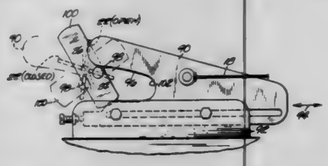
1. A control cable tension regulation system adapted to regulate tension in an opposed cable control system of an aircraft, said tension regulation system comprising load cell means for creating a predetermined tension load in a control cable system capable of transmitting a control signal thereover; first sensing means for monitoring said predetermined tension load; first signal means responsive to said first sensing means for producing one signal if the sensed load is greater than said predetermined load and a different signal if the sensed load is less than said predetermined load, power means responsive to said first signal means for restoring said predetermined tension load and an actuator connected to said power means; at least two, movably mounted control cable attachment means arranged in opposed pairs and connected to said actuator; second sensing means for monitoring each cable attachment means and second signal means responsive to each of said second sensing means for producing a signal that will prevent actuation of said power means if said attachment means moves beyond a predetermined position.

4,287,789

ENGINE THROTTLE CONTROL FOR MARINE PROPULSION DEVICES AND THE LIKE

Alan R. Dudleston, Waukegan, Ill., and Harry Stemper, Milwaukee, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 939,778, Sep. 5, 1978, Pat. No. 4,237,747.
This application Aug. 8, 1980, Ser. No. 176,274
Int. Cl.³ G05G *7/02*; F16K *31/524, 31/528*
U.S. Cl. 74—516 **1 Claim**



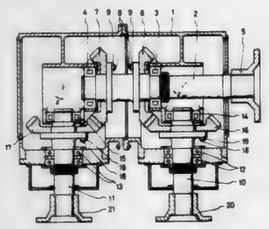
1. A throttle control comprising a control lever mounted for movement between an idle position and a full throttle position, a throttle lever adapted to actuate an engine throttle in response to rotational movement of said throttle lever, a cam plate connected to said control lever and mounted for translatory movement between an idle position and a full throttle position and relative to the rotational axis of said throttle lever in response to movement of said control lever between the control lever idle and full throttle positions, said cam plate having an inclined cam surface including a terminal portion, and means connecting said cam plate to said throttle lever for rotating said throttle lever in response to movement of said cam plate and for effecting gradually increasing rotational movement of said throttle lever relative to incremental movement of said cam plate during at least a portion of control lever movement from the control lever idle position toward the control lever full throttle position, said connecting means including a follower mounted on said throttle lever in spaced relationship to the throttle lever axis and engageable by said cam surface, said follower being engaged by said cam surface terminal portion after movement of said cam plate to a position intermediate the cam plate idle and full throttle positions and so as to effect throttle controlling movement of said follower during movement of said cam plate from the cam plate intermediate position to the cam plate full throttle position.

4,287,790

HIGH-SPEED BEVEL GEAR TRANSMISSION SYSTEM

Minoru Fujiwara; Tominori Yamada, and Tstsuji Tamura, all of Tamano, Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,877
Claims priority, application Japan, Oct. 11, 1979, 54-131143
Int. Cl.³ F16H *37/06, 1/22*
U.S. Cl. 74—665 GB **7 Claims**



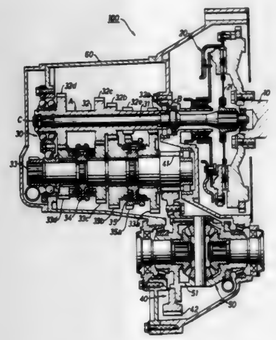
1. A high-speed bevel gear transmission system for transmitting a power between input and output shafts the axes of which intersect each other, which comprises an input shaft mounted on axially slidable bearings; a pair of driving bevel gears which are fixedly mounted on said input shaft such that said bevel gears face in opposite directions, teeth of the bevel gears being the same in number and size and spirally arranged in the opposite directions to each other; a pair of driven bevel gears engaged with said driving bevel gears, respectively; a pair of output shafts on which said driven bevel gears are fixedly mounted, respectively; and angular contact ball bearings for supporting said output shafts, the speed transmission ratio of the output shafts to the input shaft being between 1.45:1 to 0.476:1, the ratio R of a thrust load in the axial direction of said driven gears to a tangential load of said driven gears from a pressure angle α and a helix angle β of said driving bevel gears and said driven bevel gears, and a pitch cone angle δ of said driven bevel gears being defined by the formula, $R=[(\tan\alpha\cdot\sin\delta)/\cos\beta]-\tan\beta\cdot\cos\delta$ being from -0.324 to 0.1.

4,287,791

POWER TRANSMISSION UNIT FOR AUTOMOTIVE VEHICLES

Akio Numazawa, Nagoya, and Hajime Arai, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 9, 1979, Ser. No. 55,783
Claims priority, application Japan, Jul. 11, 1978, 53/84955
Int. Cl.³ F16H *37/08, 3/08;* F16D *3/10*
U.S. Cl. 74—701 **2 Claims**



1. In a power transmission unit for an automotive vehicle including a change-speed mechanism, a final drive gearing and a differential gear unit housed within a casing, said change-speed mechanism being drivingly connected to an engine by a friction clutch assembly, and said final drive gearing being connected to an output shaft of said change-speed mechanism to drive said differential gear unit,

the improvement wherein said change-speed mechanism comprises a first input shaft comprising a torsion bar drivingly connected at the inner end thereof to an output member of said clutch assembly and integrally formed at an intermediate portion thereof with an enlarged portion; a second hollow input shaft in surrounding relationship to said first input shaft and having an inner end facing the enlarged portion of said first input shaft and an outer end axially slidably connected to the outer end of said first input shaft, said second input shaft having a plurality of drive gear wheels for selectively driving respective change-speed gear wheels on said output shaft; resilient means interposed between the outer ends of said first and second input shafts to bias the enlarged portion of said first input shaft toward the inner end of said second input shaft; and an annular friction member secured to the enlarged portion of said first input shaft and maintained in engagement with the inner end face of said second input shaft.

4,287,792

VARIABLE GEAR RATIO TRANSMISSION

Alvin Dailey, 4527 New Hampshire Ave., NW, Washington, D.C. 20011

Continuation-in-part of Ser. No. 874,243, Feb. 1, 1978, Pat. No. 4,192,203. This application Jan. 4, 1980, Ser. No. 109,464
Int. Cl.³ B60K *41/14;* F16H *3/44, 57/10*
U.S. Cl. 74—863 **14 Claims**

1. A constant meshed, variable gear ratio transmission comprising:

a gear box including:

a housing,

input and output shafts journaled in said housing;

a plurality of planetary gear sets in said housing coupling said shafts together and including,

a pinion gear on each of said shafts;

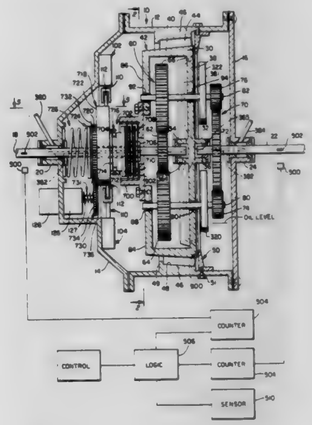
a plurality of planetary gears meshing with each said pinion gear;

planetary gear shafts connecting the corresponding planetary gears of each pinion;

a cage rotatably supported in said housing and supporting said planetary gear shafts;

means for controlling the rotation of said cage, including:

first hydraulic circuit means;



clutch means operatively associated with said first hydraulic circuit means and said cage for selectably engaging said first hydraulic circuit means to selectably control the rotation of said cage; and

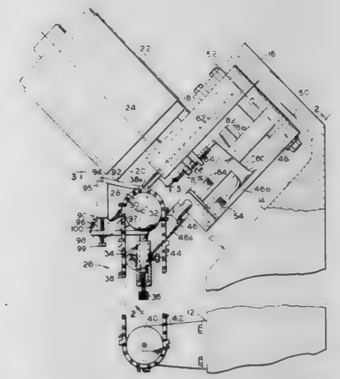
second independent hydraulic circuit means for controlling the rotation of said planetary gear shafts.

4,287,793

UNIVERSAL SAW CHAIN GRINDING MACHINE

E. Ray Silvey, 1231 Dutton Rd., Eagle Point, Oreg. 97524

Continuation of Ser. No. 535,661, Dec. 23, 1974, abandoned.
This application Dec. 22, 1975, Ser. No. 643,473
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—25 A **16 Claims**



1. A saw chain grinding machine comprising:

a machine base,

a disc-shaped rotatable grinding wheel,

said base including means mounting said grinding wheel for rotation about a central axis perpendicular to the plane of said wheel and lying in a median plane dividing said wheel into right-hand and left-hand grinding segments,

saw chain holder means for supporting a saw chain with the cutter elements in position for grinding,

a support arm for supporting said holder means,

said support arm extending lengthwise in its operative position across at least a portion of said wheel on one side thereof

means mounting said support arm at a position spaced along said arm from said holder means on said base for swinging movement about a pivot axis parallel to said axis of rotation, said pivot axis being positioned with respect to said axis of rotation such that when said arm is in an operative position with said holder means in a grinding position offset from said median plane along a peripheral edge of said wheel said arm extends from said holder means in a direction generally toward said median plane,

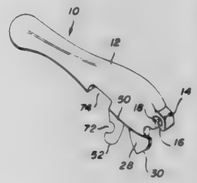
said pivot axis being positioned in said median plane, said median plane passing through a peripheral edge of said wheel to define a center point of grinding at said peripheral edge, said arm being swingable about said pivot axis to position a saw chain cutter element to be sharpened at said center point and at variable angular grinding positions along said peripheral edge from said center point.

4,287,794

CONTAINER OPENING TOOL

John S. Kubach, and Elizabeth V. Kubach, both of 1406 Milan Rd., Sandusky, Ohio 44870

Filed May 23, 1980, Ser. No. 152,609
Int. Cl.³ B67B *7/40*
U.S. Cl. 81—3.31 **15 Claims**



1. A container opening tool for a container having a frangible closure panel with an opening tab, comprising:

an elongated body member;

hook means at one end of said body member for engaging the lifting end of the opening tab of the frangible closure panel, said hook means comprising an elongated element folded inwardly on itself and terminating in an inwardly projecting tip member disposed at an acute angle with respect to the portion of said element at the base of said tip member;

first abutment means for abutting the frangible closure panel of the container and the inner end of the opening tab when said hook means engages the lifting end of the opening tab, said first abutment means projecting from said body member and fixed in spaced relation with respect to said hook means at a predetermined distance from said hook means;

second abutment means for abutting the surface of the container in opening a container having a tear-away closure panel and for thereby moving said first abutment means away from the container, said second abutment means being spaced rearwardly from said first abutment means; and,

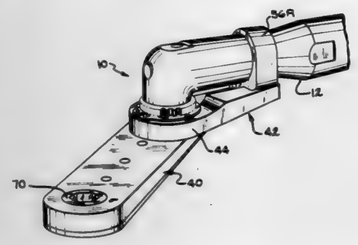
means for receiving the lip of the container adjacent the container opening in opening a container having an inwardly pivoting closure panel.

4,287,795

ADJUSTABLE BLADE WRENCH

George R. Curtiss, Chardon, Ohio, assignor to The Rotor Tool Company, Cleveland, Ohio

Filed Nov. 9, 1979, Ser. No. 92,999
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.26 **4 Claims**



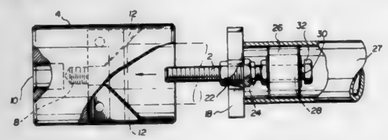
1. A wrench apparatus comprising, in combination, a housing, means for providing rotary motion disposed within said housing, a blade structure having means for engaging and rotating a fastening device, means for transferring rotary motion from said means for providing rotary motion to said means for engaging and rotating a fastening device, a coupling member disposed generally between said housing and said blade structure, said coupling member having clamp means engaging said housing for removably securing said member to said housing, said coupling member and said blade structure including mating means for providing adjustment of the angular relationship between said blade structure and said coupling member over a full circle and locking means for maintaining such angular relationship.

4,287,796

TOOL FOR PREPARING TUBE ENDS FOR WELDING

William D. Palmer, 195 Brier Hill Rd., London, Ontario, Canada N5Y 4V8

Filed Feb. 6, 1980, Ser. No. 119,100
Claims priority, application Canada, Jun. 26, 1979, 330609
Int. Cl.³ B23B *3/22, 51/00*
U.S. Cl. 82—4 C **17 Claims**



1. A tool for preparing a tube or pipe end for welding comprising:

a central shaft;

chamfering blade support means affixed to and coaxial with the central shaft and including a recess for receiving drive means, at least one support web and a chamfering blade affixed to each at least one said web;

squaring blade support means coaxial with said shaft and positionable longitudinally along said shaft independently of the position of said chamfering blade support means, and rotatable with said chamfering blade support means, and having affixed thereto at least one squaring blade;

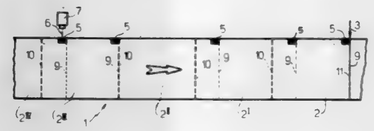
and alignment means for aligning said shaft with said tube or pipe end.

4,287,797

DEVICE FOR FEEDING AND ADJUSTING A CONTINUOUS WEB AND FOR CUTTING IT INTO PORTIONS

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Dec. 13, 1979, Ser. No. 103,281
Claims priority, application Italy, Dec. 22, 1978, 3634 A/78
Int. Cl.³ B26D *5/34*; G05B *19/29*
U.S. Cl. 83—74 **8 Claims**



1. A device for feeding and adjusting a continuous web and for cutting it into portions, said portions to be cut in a predetermined zone on said web, said device comprising means for periodically cutting in accordance with operational cycles which correspond to the formation of a portion of said web, means for feeding said web to said cutting means, and means for detecting at least one reference mark for said zone on said web, comprising first means for checking the position of said predetermined cutting zone relative to a cutting zone consequent on the action of said cutting means and to quantify any diversity between said two zones, and second means for controlling and correcting said any diversity relative to each portion cutting operation, arranged to directly or indirectly receive signals from said first means as a function of said any diversity, and to act on at least one of said feed means and said cutting means in order to eliminate said any diversity relative to each portion cutting operation, and wherein said first means comprise logic circuits and a binary code increasing counter and receive at least one first signal indicative of said cutting zone consequent on the operation of said cutting means, and one second signal indicative of said predetermined cutting zone, and are arranged to supply from said counter and from said circuits a third and fourth signal which indicate said any diversity between said two zones in terms of its absolute value relative to a predetermined quantification unit and in terms of its sign respectively, said predetermined quantification unit being a function of a pulse signal which reaches said first means, and of which the frequency is a function of the duration of the operating cycle of at least one of said periodic cutting means and said feed means for said web; and wherein said second control and correction means comprise a binary code decreasing counter and logic circuits which receive at least said third and said fourth signal, or a pair of signals homogeneous with said third and fourth signal, and said pulse signal.

4,287,798

SAWMILL WORK FEEDING AND PRODUCT HANDLING APPARATUS

Hill M. Cooper, Jr.; William B. Cooper, and Robert M. Cooper, all of P.O. Box 586, Wadley, Ga. 30477

Filed Jan. 31, 1980, Ser. No. 117,098
Int. Cl.³ B27B *7/00*
U.S. Cl. 83—155 **19 Claims**

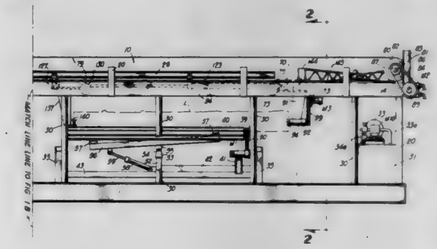
1. A sawmill of the type having a frame with a saw means for cutting slabs and boards from a log as it is reciprocated along a linear path, the log being suspended by dogs, wherein the improvement comprises:

(a) a pair of opposed parallel main rails disposed in a common horizontal plane and carried by said frame;

(b) a central monorail disposed parallel to and carried by said frame above and between said main rails;

(c) a main carriage having a main plate and wheels mounted for rotation on said plate, said wheels riding on said rails for supporting said main carriage for reciprocal movement longitudinally along said frame and for preventing appreciable pivoting or tilting of said plate;

(d) an auxiliary carriage having an auxiliary plate and a pair of wheels rotatably mounted for rotation on said plate and riding respectively on said rails for supporting an end portion of said auxiliary plate for movement longitudinally along said frame, said auxiliary carriage being rearwardly of said main carriage in said frame; said auxiliary carriage also having roller means supported by and riding on said monorail and spaced in a longitudinal direction from said pair of wheels for supporting another portion of said auxiliary plate; said wheels and said roller means preventing appreciable pivoting or tilting of said auxiliary plate;



(e) a pair of struts extending downwardly respectively from said main plate and said auxiliary plate for respectively supporting said dogs;

(f) control means connected between said main carriage and said auxiliary carriage for progressively altering the position of such carriages with respect to each other for moving said dogs into and out of clamping positions with respect to the ends of a log position between said dogs; and

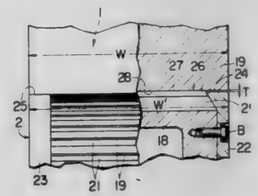
(g) drive means for driving one of the carriages with respect to said frame whereby said dogs move said log in a linear path past said saw means for cutting action of said saw means.

4,287,799

ROLLER APPARATUS FOR CUTTING GLASS FIBERS

Toshihito Fujita; Toshiaki Kikuchi, and Koji Nakazawa, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Jul. 18, 1977, Ser. No. 816,766
Claims priority, application Japan, Jul. 20, 1976, 51-86356
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—347 **2 Claims**



1. In a cutting roller for directly chopping wet continuous elongated filaments which are drawn from a bushing into finite fibers of predetermined length including a driven cutting roller drum mounting a plurality of spaced, parallel, radially outwardly extending cutting blades and adapted to be biased into driving and filament cutting engagement with the resilient

outer peripheral surface of a filament feed roller, the improvements characterized by:

(a) said cutting rollerdrum comprising a main body having axial slots in the surface thereof for receiving cutting blades and retainer strips, and cylindrical flange plates removably attached to the opposite ends of said main body, each said flange plate having a diameter greater than that of said main body and a flat cylindrical surface, the inner surface of said flange plate inclined inwardly at the part extending radially past the circumference of said main body,

(b) a plurality of retainer strips associated with said cutting blades, respectively, said retainer strips and cutting blades being held in said axial slots by said inwardly inclined surfaces of said flange plates, and

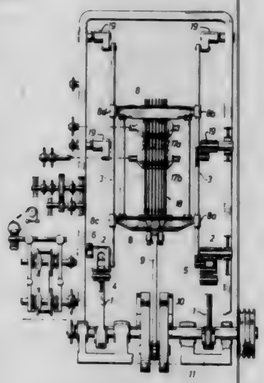
(c) the width of the feed roller being at least equal to that of the cutting roller including the flat cylindrical surfaces of said flange plates, whereby the flat cylindrical surfaces of said flange plates frictionally contact and drivingly engage the opposite ends of the outer peripheral surface of the feed roller, and the cutting blades penetrate into the resilient outer peripheral surface of the feed roller to a depth just sufficient to implement filament chopping.

4,287,800

FRAME SAW WITH HORIZONTALLY MOVABLE GUIDE SYSTEM

Gustaf A. Persson, Per Hallströms väg 2, S-131 00 Nacka, Sweden

Filed Aug. 22, 1979, Ser. No. 68,510
Claims priority, application Sweden, Aug. 24, 1978, 7808956
Int. Cl.³ B23D *49/04*; B26D *1/06*
U.S. Cl. 83—425.3 **13 Claims**



1. In a frame saw of essentially horizontally fed timber comprising a plurality of spaced apart saw blades (**18**) located substantially perpendicular to the direction of feed of the timber; a sash (**8**) in which said saw blades (**18**) are clamped; guide means (**3**) on which said sash (**8**) is reciprocably mounted for movement in a reciprocating generally upward and generally downward motion with upper and lower turning points; a crankshaft (**10**) pivotally coupled to said sash (**8**) for reciprocably moving said sash (**8**) relative to said guide means (**3**); connecting means (**12**) for moving said guide means (**3**) by a predetermined displacement in the direction of feed of the timber before the sash (**8**) is moved; said guide means (**3**) and connecting means (**1, 2**) each defining respective pivot points or fulcrums in or in relation to said connecting means (**1, 2**);

the improvement wherein:

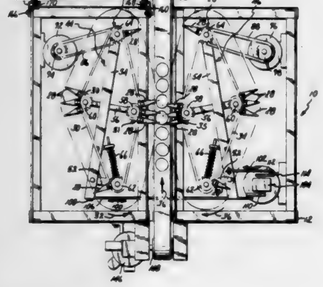
said pivot points or fulcrums of said guide means (**3**) are located in relation to said pivot points or fulcrums of said connecting means (**1, 2**) such that said fulcrums of said guide means (**3**) move along a circular arc with a shorter radius than do said fulcrums of said connecting means (**1, 2**) to create a phase displacement between the movement of said guide means relative to the movement of said saw blades, so as to impart to said guide means (**3**) and thus to said sash (**8**) carrying said saw blades (**18**) a movement with such a horizontal component as to cause said guide means (**3**) to be displaced against the essentially horizontal feed direction of the timber when said sash (**8**) and thus said saw blades (**18**) are in the vicinity of said upper turning point and during a downward movement, and in such a complementary movement with a horizontal component in the essentially horizontal feed direction of the timber when said sash (**8**) and thus said saw blades (**18**) are in the vicinity of said lower turning point and on their way up so that said sash (**8**) and thus said saw blades (**18**) over and above the horizontal motion during their downward and upward movement are also imparted during the cutting period of said saw blades (**18**) with such a horizontal complementary motion that the cutting engagement of said saw blades (**18**) with the timber becomes substantially constant (FIG. **6**) during the greater part of the cutting period.

4,287,801

DEVICE FOR PERFORATING BAKERY GOODS SUCH AS ENGLISH MUFFINS

Douglas R. Hanson, 1720 - 9th Ave. South, Anoka, Minn. 55303

Filed Feb. 4, 1980, Ser. No. 118,509
Int. Cl.³ B26D *3/30*
U.S. Cl. 83—871 **10 Claims**



1. A device for perforating the edges of individual bakery products to facilitate the separation of the products into portions comprising:

a rigid frame;

conveyor means mounted on said frame and adapted to move products in sequence along a path of movement in a first direction;

at least one set of perforating blades, said blades having outer ends;

means to mount said set of blades for sequential movement of the blades in a blade path having a portion adjacent to and parallel to the conveyor means, said blades in said path portion moving in said first direction;

said means mounting said blades guiding said blades from a first position to a second position in direction transverse to the first direction whereby the outer ends of the blades move toward and engage products on the conveyor means as the products and blades move in said first direction and the blades are in said path portion;

means to provide reactive force on products on the conveyor means as the blades engage the products sufficient so the blades pierce the products as the blades move from said first to said second position along said path portion; and

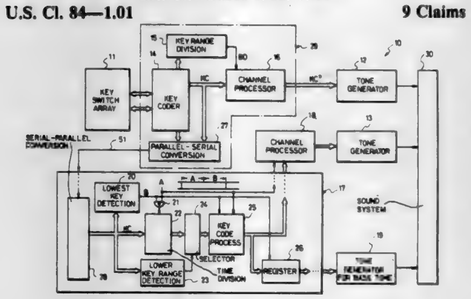
means to oscillate said at least one set of perforating blades in direction transverse to said first direction as said blades move from said first to said second position.

4,287,802

ELECTRONIC MUSICAL INSTRUMENT OF TIME DIVISION MULTIPLEXED TYPE

Akio Imamura, and Naota Katada, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 17, 1979, Ser. No. 40,041
Claims priority, application Japan, May 19, 1978, 53-60405
Int. Cl.³ G10H *1/22, 5/00*
U.S. Cl. 84—1.01 **9 Claims**



1. An electronic musical instrument comprising:

key switches corresponding to keys;

depressed key detection means for detecting on-off states if said key switches to sequentially deliver key data of depressed keys in respective time slots of a scanning cycle in which keys are scanned in the order of corresponding note pitch;

specific key detection means for detecting the specific time slot in which key data of the note of the first key in a predetermined priority order among the depressed keys is delivered;

a processing circuit for using one half of the specific time slot detected by said specific key detection means as a first processing time and the other half of said specific time slot detected by said specific key detection means as a second processing time, and for applying different processing to the key data of said first key respectively during said first and second processing times;

a first musical tone generation circuit for generating musical tones in response to the key data supplied during said first processing time; and

a second musical tone generation circuit for generating musical tones in response to the key data supplied during said second processing time.

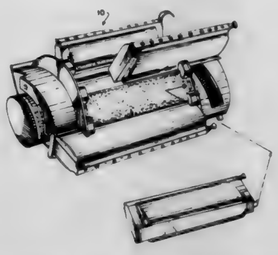
4,287,803

ELECTRIC MOUTH ORGAN HOLDER

Fred Zema, 26 Rosehill Ave., Tarrytown, N.Y. 10591

Filed Jun. 28, 1979, Ser. No. 53,069
Int. Cl.³ G10H *1/04, 3/12*
U.S. Cl. 84—1.06 **18 Claims**

1. An electric mouth organ holder comprising a first member having means thereon for holding a plurality of harmonicas; a second member held in movable relation to said first member; means on said holder for holding a single microphone; and said microphone, wherein said second member collects sound emitted from said harmonicas individually and wherein any individual harmonica, when held by said first member may be selectively and exclusively positioned and positively engaged acoustically adjacent said second member, with said second member being interposed between said selected harmonica and said microphone to direct sound from said selected harmonica to said microphone, said holder further containing means for manually altering sound emitted from said selected harmonica in the acoustic path between said selected harmonica and said microphone whereby said emitted sound is altered prior to pickup thereof by said microphone.

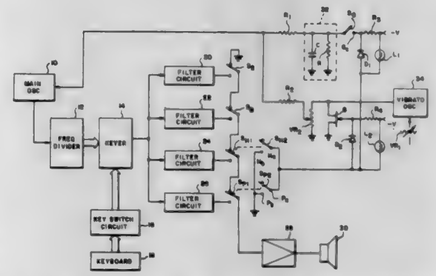


4,287,804

ELECTRONIC MUSICAL INSTRUMENT WITH TIMBRE SELECTION

Yasunori Hirose, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 9, 1980, Ser. No. 167,121
Int. Cl.³ G10H *1/02, 1/06*
U.S. Cl. 84—1.19 **9 Claims**



1. An electronic musical instrument capable of selecting a timbre applied to a sound produced therefrom comprising:

(a) keyboard means;

(b) means for selecting a desired timbre from among a plurality of timbres;

(c) means for electronically producing the sound with the selected timbre by said selecting means in response to a keyboard means;

(d) means for selectively imparting a plurality of effects to said sound;

(e) means for generating a timbre signal in accordance with said selected timbre; and

(f) means for preventing a specific effect or effects among said plurality of effects imparted to said sound in response to said timbre signal from said generating means.

4,287,805

DIGITAL ENVELOPE MODULATOR FOR DIGITAL WAVEFORM

Glenn Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

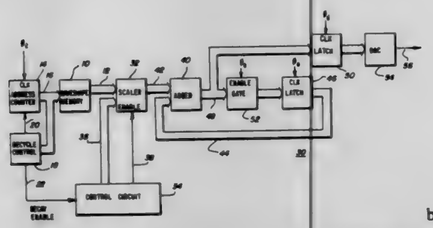
Filed Apr. 28, 1980, Ser. No. 144,287
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.26 **39 Claims**

1. In an electronic musical instrument of the type having means developing a plurality of series of successive binary waveform samples representing a musical waveform signal,

apparatus for imposing an envelope on said plurality of series of waveform samples comprising:

scaling means operable for developing a plurality of different scaled representations of each of said binary waveform samples;

control means operating said scaling means for developing a group of scaled representations of each of said binary waveform samples, the sum of each of said groups representing the product of the associated binary waveform



sample and a multiplication factor, said multiplication factor changing by a predetermined amount during each of said series of binary waveform samples with the predetermined amounts characterizing consecutive ones of said series differing by a multiple of two; and

output means responsive to said scaling means for successively summing the scaled representations forming each of said groups for developing an output staircase signal comprising an amplitude modulated representation of said binary waveform samples.

4,287,806

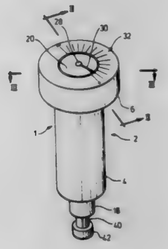
METHOD AND APPARATUS FOR TENSIONING A DRUM

John R. Neary, 54 School Ave., Kentville, Nova Scotia, Canada B4M 2P9

Filed Feb. 6, 1979, Ser. No. 9,726

Int. Cl.³ G10G *7/00*

U.S. Cl. 84—458 **2 Claims**



1. A method of tuning a drum using a torque device having a housing with a rotatable shaft including gripping means and torque indicating means responsive to the torque applied to the rotatable shaft, the drum having tension rods coupled between a drum head and a drum shell for applying tension to the drum head the method comprising: applying said torque device to said tension rods by engaging said gripping means with each of said tension rods in turn; turning the housing of said torque device in a direction to partially loosen each tension rod; and then turning the housing in the opposite direction until a desired torque is indicated by the indicating means.

4,287,807

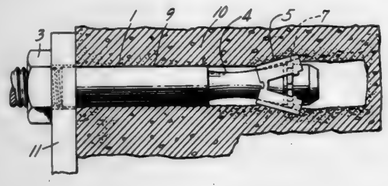
PULL-TO-SET ANCHORING DEVICE

George H. Pacharis, Wyomissing, and Kunissery P. Sadanandan, Reading, both of Pa., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 1, 1979, Ser. No. 44,595

Int. Cl.³ F16B *13/04, 33/04*

U.S. Cl. 411—42 **6 Claims**



1. In a pull-to-set anchor assembly comprising a fastener body having an elongate stem with a head at one end and pulling means at the other end and a reduced axially tapering portion of the stem disposed intermediate of the pulling means and the head, said axially tapering portion having the taper increasing toward the head and terminating as the diameter of the stem is reached and further including a deformable retaining means that is disposed about the tapering portion, said retaining means being greater than the diameter of the stem, said retaining means being arranged to engage an external surface and deform upon actuation of said pulling means wherein an abutment means disposed on the head is arranged to engage and expand the retaining means and limit motion of the stem along the longitudinal axis of the stem, said abutment means comprising an expandable annular member of diameter greater than the diameter of the stem which causes said retaining means to expand.

4,287,808

DRIVE MECHANISM

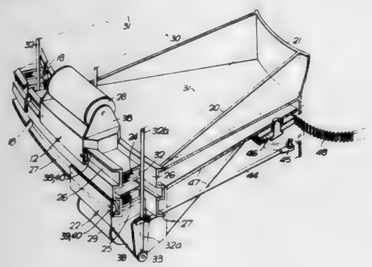
Ian C. A. Leonard, Astley Bridge, and Barry E. Jones, Altricham, both of England, assignors to National Research Development Corp., London, England

Filed Dec. 8, 1976, Ser. No. 748,402

Claims priority, application United Kingdom, Dec. 10, 1975, 50546/75

Int. Cl.³ D04C *3/00*; H02K *41/00*

U.S. Cl. 87—44 **15 Claims**



2. A drive mechanism for driving at least one displaceable element to move around a closed path, comprising:

a linear induction actuator extending adjacent said closed path and substantially entirely around it;

a reaction member for cooperation with said linear induction actuator on said at least one displaceable element, whereby, when said linear induction actuator is appropriately energized, said at least one displaceable element is driven around said closed path;

at least one fixed transducer member associated with said linear induction actuator;

means for feeding an electrical signal to said at least one fixed transducer member;

means for sensing the reactance between said at least one fixed transducer member and said reaction member of said at least one displaceable element which reactance sensing means provides an electrical signal which represents the actual position of said at least one displaceable element with respect to said linear induction actuator;

means for producing at least one demand signal representing the desired position of said at least one displaceable element; and

means for comparing said demand and said actual position signals to produce at least one error signal for controlling the position of said at least one displaceable element over at least a part of said path.

10. A braiding machine incorporating a drive mechanism as in claim 2, including a first set of carriages formed by a plurality of displaceable elements;

means constraining said first set of carriages to move around a circular path;

a second set of carriages;

means constraining said second set of carriages to move around a circular path;

a plurality of spools of filaments carried one on each of said carriages of said first and second set;

means for guiding filaments drawn from said spools carried by said carriage of said first set over and under filaments drawn from said spools carried by said carriages of said second set, with respect to an axis passing through both centres of said circular paths of said first and second sets of carriages.

4,287,809

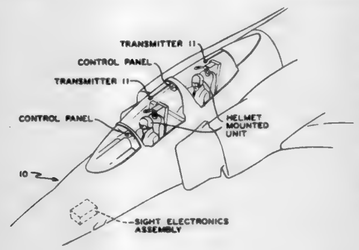
HELMET-MOUNTED SIGHTING SYSTEM

Werner H. Egli, Minneapolis; Dennis Kuhlmann, New Brighton, and Jack E. Wier, Roseville, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 20, 1979, Ser. No. 68,296

Int. Cl.³ F41G *9/00*; G01R *33/02*

U.S. Cl. 89—41 EA **42 Claims**



1. An electromagnetic system for use in determining the orientation of a helmet comprising:

a transmitting antenna for transmitting electromagnetic field vectors, said transmitting antenna having at least two transmitting coils;

a receiving antenna having three non-coplanar receiving coils fixed to the helmet, said receiving coils sensing the electromagnetic field vectors transmitted by said transmitting antenna;

control means for sampling said electromagnetic field vectors sensed by each of said receiver coils, said control means including orientation means for determining the orientation of said helmet using said sensed and said transmitted electromagnetic field vectors, said control means having a first output for supplying said orientation to a utilization means, and a second output;

driving means for supplying driving energy to said transmitting antenna for transmitting said electromagnetic field vectors; and,

selector means connected to said second output from said control means and to said driving means for sequentially energizing said at least two transmitting coils.

4,287,810

DRIVE FOR A PNEUMATIC HAMMER

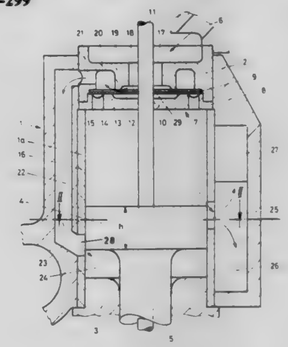
Hans Thoma, Neuhausen am Rheinfall, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 8, 1979, Ser. No. 37,050

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820842

Int. Cl.³ F01L *25/02, 21/02*

U.S. Cl. 91—299 **3 Claims**



1. In a pneumatic drive for a hammer tool including a cylinder; a piston slidably received in the cylinder and dividing the inner space of the cylinder into two cylinder chambers; a drive output member formed as a piston rod attached to the piston and projecting from the cylinder; a pressure-responsive valve means for admitting compressed air alternately to the cylinder chambers; means defining discharge openings in the cylinder wall for releasing compressed air alternately from the cylinder chambers dependent upon the position of said piston with respect to the discharge openings; the improvement wherein said discharge openings consist of a plurality of spaced, serially arranged cylindrical ports each having a diameter that equals at least one half of the height of said piston measured in the direction of its reciprocation and means defining a first expansion chamber directly communicating with said cylindrical ports and two second expansion chambers each communicating directly with said first expansion chamber.

4,287,811

BRAKE BOOSTER

Masayoshi Katagiri, Toyota, and Osamu Ogura, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Aug. 31, 1979, Ser. No. 71,489

Claims priority, application Japan, Feb. 28, 1979, 54-22633

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—369 A **9 Claims**

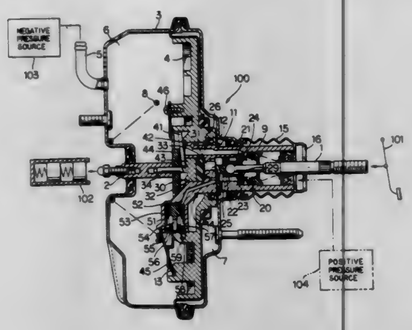
1. A brake booster of the stroke enlarging type comprising:

a power piston disposed in a casing to divide an area within the casing into two chambers, said power piston moving in accordance with the difference of pressures in said chambers on opposite sides of said power piston and being movable for a predetermined distance relative to a control piston,

a control valve for controlling the pressure difference in said

chambers in accordance with the operation of an input member, to enable an output member to obtain a larger stroke than the stroke of the input member at least during the initial stage of the braking operation,

a locking member movably retained by one of said power piston and said control piston and an engagable member provided on the other of said power piston and control piston, said locking member being movable by said pressure difference in said chambers between a first position



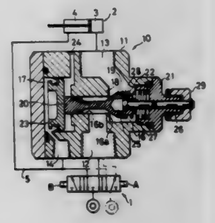
out of engagement with said engagable member allowing said control and power pistons to be movable relative to one another and a second position into engagement with said engagable member to lock said control and power pistons together for joint movement; and

resilient means for normally retaining said locking member at said first position and allowing said locking member, when said pressure difference has exceeded a predetermined value, to move to said second position to engage with said engagable member.

4,287,812
CONTROL VALVE

Tomomitsu Iizumi, Tokyo, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 826,251, Aug. 19, 1977, Pat. No. 4,192,346. This application Sep. 20, 1979, Ser. No. 77,475
Claims priority, application Japan, Aug. 25, 1976, 51/113601; Sep. 10, 1976, 51/121042; Oct. 8, 1976, 51/134892; Oct. 27, 1976, 51/144311; Oct. 27, 1976, 51/144312; Jul. 5, 1977, 52/88168
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—420 **7 Claims**

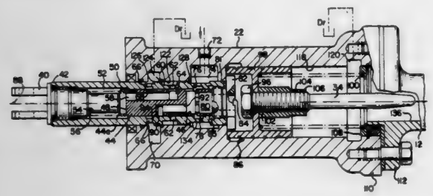


1. A control valve particularly adapted for use together with a direction-changeover valve and with an actuator cylinder having therein an actuator piston with a first and a second actuator chamber defined on opposite sides of said piston, said direction changeover valve operative through said control valve to control fluid pressure in said first and second actuator chambers thereby to control movement of said piston, said control valve comprising: means defining a fluid flow passage between said first actuator chamber and said direction-changeover valve; valve means including a valve body and a valve seat defining a constriction therebetween within said fluid flow passage operating to control fluid flow therebetween said first actuator chamber and said direction-changeover valve; resilient means biasing said valve body toward said valve seat in a direction to reduce said constriction thereby tending to constrict fluid flow through said fluid flow passage between said first actuator chamber and said direction-changeover valve; and pilot piston means responsive to fluid pressure in said second actuator chamber acting against said resilient means to tend to open said constriction in said fluid flow passage with increased fluid pressure in said second actuator chamber.

4,287,813
TWO-STAGE CONCENTRIC HYDRAULIC BRAKE BOOSTER

Probir K. Chatterjea, Mt. Prospect, and Daniel B. Shore, Niles, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 20, 1979, Ser. No. 105,692
Int. Cl.³ F15B *13/042, 13/14*
U.S. Cl. 91—434 **12 Claims**



1. For use in hydraulically supplied, brake booster mechanism, disposed between brake pedal actuated means (**40**) and a power piston (**98**) thereof, actuatable by the metered hydraulic output of an actual fluid pressure:

an interposed, concentric, hydraulic boost control (**22**) comprising telescoping, generally hollow parts one within another, one (**44**) metering the hydraulic output of an actual fluid pressure developed from high and low pressure means of communication thereto;

the other part (**42**) comprising a signal pressure sleeve mechanically secured to the brake pedal actuated means and having means (**66, 134**) of communicating the high and low pressure to the one metering part.

4,287,814
BELLOWS APPARATUS

Takeshi Jinnouchi, Sakado, Japan, assignor to Nippon Oil Seal Industry, Co., Ltd., Tokyo, Japan

Division of Ser. No. 834,445, Sep. 19, 1977. This application Jul. 19, 1979, Ser. No. 59,108
Claims priority, application Japan, Sep. 22, 1976, 51-128026
Int. Cl.³ F16J *3/04*
U.S. Cl. 92—43 **1 Claim**

1. A bellows apparatus consisting essentially of a bellows main body and restriction means for restricting elongation and contraction, said restriction means comprising

a plurality of annular first, second and third guide metals arranged integrally with said bellows main body with a predetermined spacing therebetween in the axial direction;

a plurality of first, second and third guide members each secured integrally to each of said first, second and third guide metals and extending in the axial direction and terminating in edge sections;

a plurality of first, second and third stoppers, each integrally extending in the circumferential direction from the edge section respectively of said first, second and third guide members;

said first and third guide metals being positioned to interpose said second guide metal therebetween and provided, respectively, with first and third guide members that are displaced at said first and third guide metals with respect to each other in the circumferential direction and extend oppositely to each other in the axial direction;

said second guide members comprising a central and two outer guide members displaced circumferentially with respect to each other and with respect to said first and third guide members so that one of each first and third guide members is disposed circumferentially between said central second guide member and one of said outer second guide members, said central second guide member extending axially in both directions from said second guide metal



and said outer second guide members extending axially in opposite directions with respect to each other from said second guide metal;

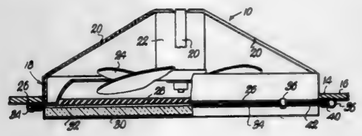
said stoppers on said first and third guide members comprising two oppositely directed stoppers which overlap circumferentially said second stoppers on said second guide members between which they are disposed;

said first, second and third guide members being disposed such that they do not overlap each other in the circumferential direction, and restrict the elongation of said bellows main body by engagement of said first, second and third stoppers, and said first guide member being abutted by said third guide metal and said third guide member being abutted by said first guide metal, when said bellows main body is fully contracted.

4,287,815
COVER ASSEMBLY FOR ATTIC FANS

Richard E. Henderson, 1400 Liggett Rd., Blue Springs, Mo. 64015

Filed Dec. 10, 1979, Ser. No. 101,427
Int. Cl.³ F24F *7/00*
U.S. Cl. 98—43 R **1 Claim**



1. A cover assembly for a fan assembly mounted in an opening in a ceiling, the fan assembly including a vertical frame having a peripheral, laterally extending, normally horizontal rim in face to face engagement with the ceiling circumscribing said opening, the cover assembly comprising:

a shell of dimensions to cover the opening in the ceiling provided for said fan assembly, the shell having a normally horizontal main panel of essentially the same size as said opening, a wall circumscribing said main panel and extending from said panel toward said ceiling in substantial alignment with said frame and a normally horizontal lip circumscribing said wall and extending outwardly therefrom in face to face relationship with said rim when the shell is in place;

said main panel and said wall defining a recess in the shell extending away from said opening and in facing relationship thereto when the cover assembly is in place;

heat insulating material within said recess and filling the same to a level coincident with the plane of said lip;

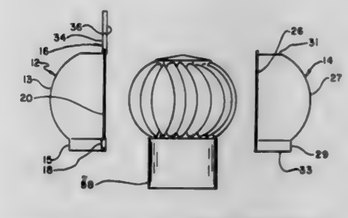
sealing means between said lip and said rim when the cover assembly is in place; and

means engaging said lip and said rim for securing the cover assembly to the frame.

4,287,816
VENTILATOR SHROUD

Theodore M. Riccard, 605 Lavon Dr., Altamonte Springs, Fla. 32701

Filed Oct. 11, 1979, Ser. No. 83,599
Int. Cl.³ F24F *13/08*
U.S. Cl. 98—119 **1 Claim**



1. An enclosure for a roof ventilator comprising:

a first semi-hemispherical shell having its uppermost portion closed and its lowermost portion defining a semi-circular opening of substantially smaller diameter than the diameter of said shell and projecting downward from the periphery of said opening is a collar, and wherein said shell includes an outward projecting flange along its outer periphery thereof;

a second semi-hemispherical shell having its uppermost portion closed and its lowermost portion defining a semi-circular opening equal in size to said opening in said first shell and projecting downward from the periphery of said opening is a collar, and wherein said second shell includes an outward projecting flange along its outermost periphery, and wherein said second shell is intimately attachable to said first shell thereby defining a complete enclosure having a contour substantially approximating the contour of the roof ventilator; and

engaging means pivotally attached to said flange of said first shell for engaging said flange of said second shell, said engaging means includes a pivotal channel shaped member and wherein the side flanges of said channel, in the latching mode, overlie portions of said projecting flange for maintaining intimate contact of said flanges.

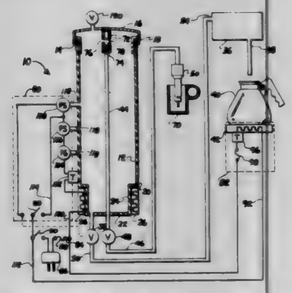
4,287,817
APPARATUS FOR USE IN PREPARING INFUSIONS

Paul M. Moskowitz, Brooklyn; Yuliy Rushansky, Bronx; Lester Brown, Flushing, and Gerald Weinstein, Brooklyn, all of N.Y., assignors to Salton, Inc., N.Y.

Filed Jun. 5, 1978, Ser. No. 912,194
Int. Cl.³ A47J *31/54*; A23F *5/00*
U.S. Cl. 99—282 **7 Claims**

1. In an apparatus for use in preparing infusions having an enclosed container, heating means for heating said container, infuser means having an inlet and an outlet, conduit means leading from the bottom of the container to said inlet in which the improvement comprises:

said heating means comprises an electric heating element,
regulating means for operating said heating means at either of two different temperatures sufficient to cause the formation of steam in the top of said container from any water located within said container at a pressure sufficient to force water within the bottom of said container through said conduit means and said infuser means,
said regulating means comprises two separate, normally closed pressure sensitive switches which are capable of opening at different pressures connected in series with said heating element, said separate switches being connected to the interior of said container and being capable of being opened at different pressures within the interior of said container,
said regulating means also including a control switch for removing the one of said pressure sensitive switches which opens in response to the lowest of said pressures from said series circuit,
said regulating means also including a third normally closed pressure sensitive switch which is capable of opening at a



third pressure higher than the pressures at which said two pressure sensitive switches open, said third switch being located in said series circuit so as to be uneffected by said control switch, said third switch being connected to the interior of said container and being capable of being opened in response to pressure within the interior of said container, and including,
second conduit means for conveying steam leading downwardly from the interior of said container adjacent to the top thereof, and
valve means for controlling the movement of steam through said second conduit means,
a temperature responsive vent valve located in the top of said container, said valve being normally open and being responsive to an increase in temperature so as to close, said vent valve being responsive so as to close at a temperature below the temperature at which steam will accumulate in the top of said container at a temperature such that the pressure within said container is sufficient to force water within the bottom of said container through said conduit means and said infuser means to close.

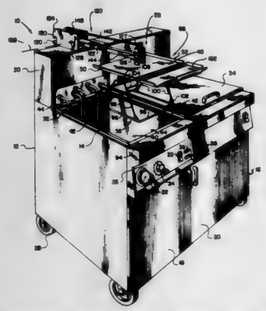
4,287,818

AUTOMATIC FRYER FOR BREADED PRODUCTS

Lewis F. Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Filed Oct. 23, 1978, Ser. No. 953,910
Int. Cl.³ A47J *37/12*
U.S. Cl. 99—355 **13 Claims**

1. In frying apparatus of the type including a console and a fry pot mounted on said console having an open mouth for receiving portions of food, the combination with said frying apparatus of a frying rack assembly having portions for maintaining food portions in separate vertical layers and a rack support assembly movably suspended with respect to the open mouth of said fry pot, said rack support assembly and said frying rack assembly having mutually engageable portions permitting detachable coupling arrangement of said frying rack assembly to said rack support assembly, and guiding means coupled to said rack support assembly for guiding said frying rack assembly for movement from an elevated position above the open mouth of said fry pot wherein the frying rack assembly may be engaged or disengaged from said rack support assembly prior to or after completion of a cooking cycle, respectively, to a position inside of said fry pot wherein food



portions contained within the frying rack assembly may be fried during a cooking cycle, said guiding means comprising an elongated support bar having a first end portion pivotally coupled to said console about a fixed axis of rotation and a second end portion pivotally coupled to said rack support assembly, and drive means coupled to said support bar for causing said support bar to rotate about its fixed axis through a vertical plane relative to said console as said frying rack assembly is inserted into or withdrawn out of said fry pot.

4,287,819

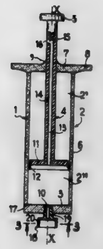
SOURCE OF VACUUM AND DEVICE FOR MAINTAINING A NEGATIVE PRESSURE IN AN ENCLOSURE

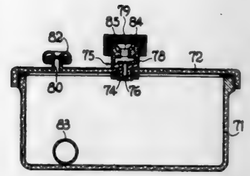
Andre A. C. Emerit, 30 Rue du Docteur Roux, 95110 Sannois, France

Filed Nov. 2, 1978, Ser. No. 957,286
Claims priority, application France, Nov. 9, 1977, 77 33716; Aug. 2, 1978, 78 22802
Int. Cl.³ A61M *1/00*; B65B *31/04*; B65D *81/20*; F04B *21/00*
U.S. Cl. 99—472 **13 Claims**

1. A source of vacuum comprising: a wall laterally defining a tubular body which has a first end portion and a second end portion and an axis and defines an inner chamber, a piston slidable in the body, a rod connected to the piston, an aperture in the body, the rod extending through the aperture, sealing means interposed between the aperture and the rod, means defining a suction orifice located at least in the vicinity of and parallel to said axis, means for depressing the piston toward the second end portion of the body, and communication means for putting the suction orifice suddenly in communication with a

part of said chamber in the body which is defined by the first end portion and the piston when the piston is depressed relative to the body toward said second end portion and reaches a predetermined position.



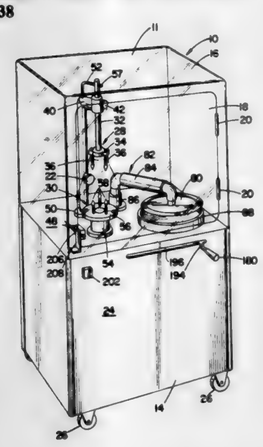


4,287,820

SPIRAL MEAT SLICER

Robert F. Urban, Painesville, Ohio, assignor to National Ham Company, Cleveland, Ohio

Filed Sep. 15, 1978, Ser. No. 943,312
Int. Cl.³ A23N *7/00*; A47J *17/00*
U.S. Cl. 99—538 **8 Claims**



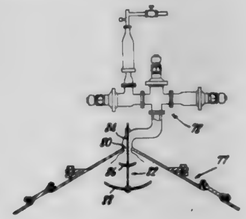
1. Apparatus for spirally slicing a cut of meat such as a ham or the like comprising:
a support frame;
upper and lower skewer mounting means on the frame for mounting said cut of meat in substantially a vertical position;
means on said frame to rotate said meat relative to said frame;
means for mounting a circular cutting blade on said frame in substantially a horizontal position;
means for rotating said blade;
means to move said blade vertically from a rest position to a first position a slight vertical distance from said rest position in order to clear said lower skewer mounting means;
means to move said blade horizontally from said first position to a second position into slicing engagement with said meat;
means precluding movement of said blade from said first position to said second position until said blade is vertically above said lower skewer mounting means;
means to move said blade vertically from said second position to a third position, said blade being advanced along the axis of rotation of the meat to form a continuous spiral slice in the meat;
signal means signaling approach of said blade to said upper skewer mounting means;
means responsive to said signal means to move said blade horizontally from the third position to a fourth position outward of said third position to clear said upper skewer mounting means;
means to move said blade vertically from said fourth position to a fifth position defining the upper limit of travel of said blade;
means to terminate vertical travel and blade rotation upon the blade reaching said fifth position;
means to move said blade from said fifth position back to the rest position.

4,287,821

ASEPTIC STORAGE TANK

Nobuo Ukai, Machida; Akira Funado, Funabashi, and Tethuya Yokota, Mathudo, all of Japan, assignors to Kagome, Ltd., Japan

Filed Sep. 28, 1979, Ser. No. 80,059
Claims priority, application Japan, Sep. 28, 1978, 53-118623; Sep. 28, 1978, 53-118627
Int. Cl.³ A23P *1/00*
U.S. Cl. 99—646 C **7 Claims**



1. An aseptic storage tank for germ-free storage of partially processed food products comprising, an upright tank having a conical top portion defining an inlet into said top portion for introducing a fluid semi-processed food product into the tank, the conical top portion including an upper inlet apex, a removable manhole plate mounted below said apex, and connecting means connecting said manhole plate to said upper inlet apex, the inner surfaces of said conical top being smooth and flush, an inspection plate defining a closed peephole on said conical top portion, inner surfaces of said inspection plate being smooth and free of recesses, said inlet apex constituting a sole opening for introducing the fluid food product and cleaning fluids into the interior of said conical top portion and into the interior of said tank, a dispersion device disposed suspended in fixed position below and spaced downwardly from the inlet opening interiorly of said tank within said conical top portion for dispersing and homogenizing a fluid while it is being introduced as a flow into the tank through the inlet opening, said dispersion device comprising suspended disc means disposed under the inlet opening with a periphery thereof spaced inwardly from interior wall surfaces of said conical top portion

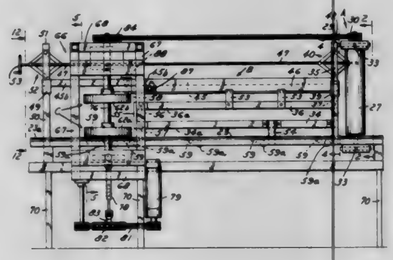
and having upper surfaces spaced downwardly from said inlet and shaped to receive the flow of fluid and splash and direct it upwardly toward the top of the conical top portion and outwardly onto the inner surfaces of the conical top portion, and said device comprising means suspending said disc.

4,287,822

TRUSS ASSEMBLY MACHINE

Donald M. Bowser, Barrie, Canada, assignor to Truswal Systems Corporation, Madison Heights, Mich.

Filed Jan. 8, 1980, Ser. No. 110,366
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—35 **34 Claims**



1. Truss assembly apparatus for securing toothed connector plates to sides of vertically spaced wood chords comprising vertical axis longitudinally fixed roller means for progressively pressing said connector plates with teeth placed against said chords ahead of said roller means into wood penetrating assembled relation as they pass said roller means, means for maintaining said chords in required spaced relation, and means for driving said chords in said required spaced relation together with said connector plates past said side roller means.

18. A production method for assembling trusses constructed of spaced parallel wood chords connected by stamped sheet metal elements having toothed extremities fixedly penetrating said wood chords comprising the steps of prepositioning said chords in parallel vertically spaced relation, positioning the extremities of said elements on respective horizontally spaced sides of said wood chords in required spaced relation to each other, driving and guiding said chords along a horizontal path, and applying synchronized compressive rolling pressure adjusted to the width of said chords to progressively force said toothed extremities into penetrating assembled relation along the length of said wood chords.

4,287,823

SLUSH PULP BALER

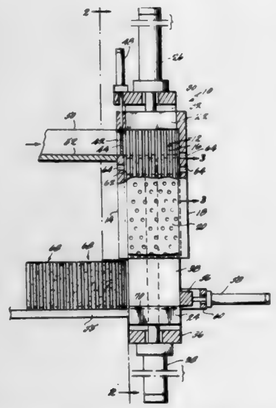
Wallace M. Thompson, Cordele, Ga., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Filed Dec. 11, 1979, Ser. No. 102,350
Int. Cl.³ B30B *9/06*
U.S. Cl. 100—129 **14 Claims**

1. In a press for forming self-supporting bales of fibrous material from pulpy masses of the same containing a high percentage of liquid, such as slush-pulp, the combination comprising:

means defining a closed baling chamber having at least a pair of opposed generally rectangular walls, one of which is movable toward the other to compress material in said chamber, and having at least a third fixed wall along which said one wall is movable; and

drainage means for liquid in said chamber comprising a plurality of narrow grooves in the inner sides of said third wall extending in the direction of movement of said one wall, the mouth of each of said grooves being of uniform width throughout its length and at least as wide as the width of said groove inwardly of said mouth, and spaced holes in said third wall unobstructedly and directly communicating the bottoms of said grooves, at spaced intervals therealong, with the exterior of said chamber, said third wall being of generally uniform thickness throughout except for said grooves and holes, whereby fibrous solids in fibrous material having a high liquid content in said chamber form rib-like formations in said grooves that



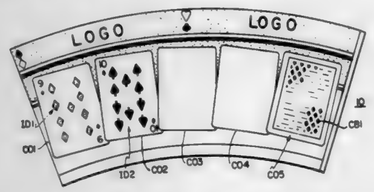
block passage of fibrous solids through said holes but permit liquid to drain through said rib-like formations and through said holes, and the rib-like formations are and remain integral with a bale formed in said chamber on removal of such bale from said chamber by movement in said direction.

4,287,824

MEANS FOR IMPRINTING MULTIPLE PERMUTATIONS AND COMBINATIONS OF CARDS ON CUPS

Patrick T. Boyle, Baltimore, Md., assignor to Maryland Cup Corporation, Owing Mills, Md.

Filed Apr. 11, 1979, Ser. No. 29,073
Int. Cl.³ B41F *13/54*
U.S. Cl. 101—45 **7 Claims**



1. Means for printing a plurality of container sidewall blanks in sequence and transverse disposition on a strip of stock material and providing said blanks in said sequence with combinations of generically related discrete indicia such that no two successive blanks bear the same combination, comprising:

a plurality of rotary printing cylinder means having at least one axially extending printing zone in alignment for printing in sequence on a strip of stock material;

said discrete indicia occupying at least two discrete longitudinally spaced positions on said sidewall blanks;

said plurality of printing cylinders corresponding in number to said discrete indicia, at least one of said printing cylinders including art copy for said sidewall in addition to a respectively associated one of said discrete indicia;

a plurality of peripherally disposed printing plates extending longitudinally of said printing cylinders and transversely of said printing zones and said strip stock, each said printing plate corresponding to a single sidewall blank to be printed;

each said printing plate including at least one font position corresponding to a discrete one of the spaced positions of said discrete indicia and all of the printing plates on a given one of said printing cylinders defining the same discrete spaced position for the discrete indicia borne thereby;

said printing cylinders each containing a different number of printing plates defining the circumference of its corresponding printing area;

said printing plates being of identical dimension; and

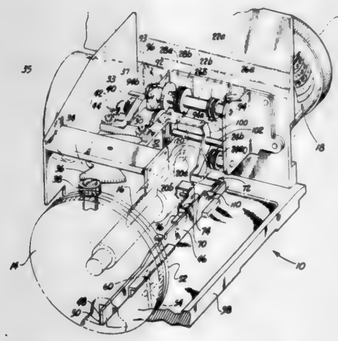
said printing cylinder means being rotated at the same peripheral velocity to cause successive impressions of said printing plates on said stock from a given one of said printing cylinder means to be in mutual registry with impressions made by corresponding plates on the other of said printing cylinder means.

4,287,825

PRINTING CONTROL SYSTEM

Alton B. Eckert, Jr., Norwalk; Richard A. Malin, Westport; Robert B. McFiggans, Stamford, and Leonard M. Pengue, Huntington, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,412
Int. Cl.³ B41J *1/22*
U.S. Cl. 101—91 **8 Claims**



1. A printing control system comprising:

means for printing postage having a plurality of separately settable print elements, said postage printing means settable to print a plurality of different postage amounts and adapted to be energized by a source of operating energy to print postage;

energizing means operably coupled to said postage printing means for energizing said printing means to print postage;

postage setting means including a gear rotatably mounted and movable to be selectively operably connected to each of said settable print elements of said postage printing means for changing the postage amount setting of said postage printing means to a selected postage amount of said plurality of different postage amounts;

a shutter means which can be moved into and out of a position to block said means energizing from energizing said postage printing means to print postage;

interposer means for holding said shutter means in said blocking position; and

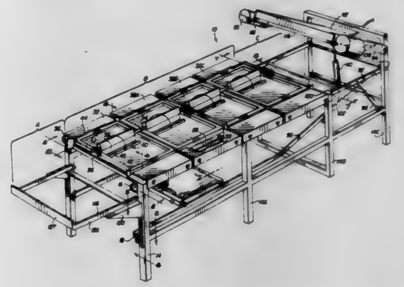
means adapted to be engaged by said postage setting means gear for moving said interposer means into and out of said position holding said shutter means in said blocking position.

4,287,826

METHOD AND APPARATUS FOR SCREEN PRINTING

Michael W. Brabec, 6135 N. 5th Pl., Phoenix, Ariz. 85012

Filed Mar. 30, 1979, Ser. No. 25,672
Int. Cl.³ B41F *15/04*; B05C *17/06*
U.S. Cl. 101—115 **6 Claims**



1. A screen printer for applying a design to a workpiece using a printing medium comprising:

(a) a printing section having a frame including:

(i) a first horizontal track on said frame and a second spaced-apart return track disposed subjacent said first track and generally parallel thereto;

(ii) a plurality of printing heads disposed adjacent said first track defining printing stations, said printing heads having squeegee means associated therewith for applying a printing medium to the workpiece;

(b) a drying section contiguous and aligned with said printing section and including:

(i) a moveable receiving track having a first position in alignment with said first track of said printing section and moveable to a second position aligned with the said second track of said printing section;

(ii) heating means moveable from a first position to a second drying position adjacent the said receiving track in said first position; and

(c) carrier means moveable along said tracks, said carrier means including platen means associated therewith for receiving a workpiece whereby the workpiece may be placed on said platen means on said carrier means and advanced through said printing section for application of a printing medium at each of the said stations in said printing section to said drying section and thereafter transferred to said second track at said receiving track by moving said receiving track from said first position to said second position to be returned along said second track whereby the operator can remove the completed workpiece and replace the workpiece with a new workpiece.

4,287,827

COMBINED INKING AND MOISTENING ROLLER

Gordon R. Warner, 5624 Stow Canyon Rd., Goleta, Calif. 93017

Filed May 17, 1979, Ser. No. 39,785
Int. Cl.³ B41F *7/36, 31/06*
U.S. Cl. 101—141 **5 Claims**

1. In a lithographic printing press, the combination of:

(a) a printing press fountain having a blended mixture of water and oil-based ink;

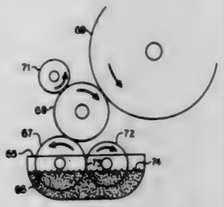
(b) a fountain roller contacting the water and ink mixture;

(c) and a squeegee roller contacting the fountain roller to limit the amount of water and ink mixture carried by the fountain roller;

(d) a lithographic printing plate separate from the fountain roller;

(e) and means to transport the particles of water and ink from the fountain roller to the lithographic printing plate, characterized by said fountain roller having a lithographic

surface of intermixed hydrophilic and oleophilic areas, whereby the fine particles of ink and water are selectively



taken from the fountain and transported in measured proportions to properly ink and dampen the plate cylinder.

4,287,828

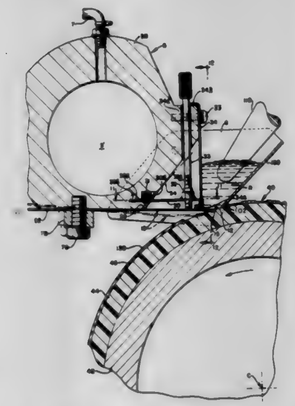
INK METERING APPARATUS

Harold P. Dahlgren, 726 Regal Row, Dallas, Tex. 75247

Continuation of Ser. No. 795,292, May 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 779,647, Mar. 21, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 25,802

Int. Cl.³ B41F *31/04, 27/06*

U.S. Cl. 101—363 **7 Claims**



1. A method of forming a thin film of printing ink on a resilient form roller surface urged into pressure relation with a printing plate, wherein an excess of ink is applied to a portion of the form roller surface carrying a film of ink of irregular thickness, the improvement comprising the steps of: providing a resilient cantilever metering member supported at one end; positioning a flexible support surface lying between a metering edge and a trailing edge on the other end of said metering member in pressure indented relation with ink and said resilient roller surface such that the metering edge is indented further into the roller than the trailing edge and the support surface is entirely indented into the resilient roller surface so that ink carried by the roller surface impinges against a substantially radially disposed metering surface on the metering member adjacent the metering edge; resiliently applying force along the entire length of the support surface for resiliently urging the metering edge and the trailing edge in a direction generally radially of the roller to position the metering edge and the trailing edge on the metering member in pressure relation with the resilient roller surface; said step of resiliently applying force including providing resilient pressure adjustment means at spaced locations along the length of the metering member, supporting said resilient pressure adjustment means separate from said metering member so that said resilient pressure adjustment means are biased toward and into contact with said resilient metering member, adjusting the resilient adjustment means so as to deflect the support surface at said spaced locations for thus applying a resilient contacting force to said resilient metering member at spaced locations along the length of the metering member to vary the thickness of the film of ink along the length of the roller while permitting movement of the support surface in a direction radially of the roller to prevent changes in the film thickness around the circumference of the roller as the roller rotates.

4,287,829

CARRIER STOPPING DEVICE FOR POWER-AND-FREE CONVEYOR

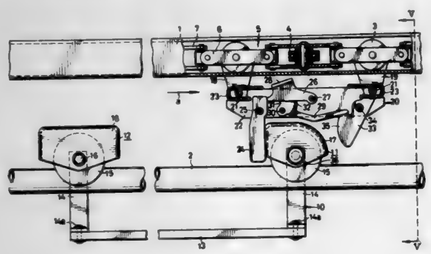
Takao Wakabayashi, Toyonaka, Japan, assignor to Nakanishi Metal Works Co., Ltd., Tenmabashi, Japan

Filed Sep. 26, 1978, Ser. No. 945,795

Claims priority, application Japan, Oct. 5, 1977, 52-134583; Oct. 5, 1977, 52-134584; Apr. 6, 1978, 53-45746

Int. Cl.³ B61B *10/02*

U.S. Cl. 104—172 S **6 Claims**



1. In a power-and-free conveyor including a power rail having a drive chain, a free rail provided below the power rail at a predetermined distance therefrom, both rails extending in a longitudinal direction, a plurality of carriers movably supported by the free rail, each carrier having an engageable portion, a plurality of pusher dogs engageable with the engageable portion of the carriers, a pusher dog supporting member attached to the drive chain, and a disengaging means located at a position where the carrier is to be brought to a stop, the pusher dogs each being pivotably supported at an upper portion thereof on the pusher dog supporting member, the improvement wherein, the pusher dog supporting member includes a stopper pivoted at its front end, a stopper receiving means for normally supporting the stopper in a substantially horizontally directed position, a stopper raising lever pivoted at its rear end below the stopper, and a lever receiving piece pivotally supported rearwardly and upwardly, wherein the rear end of the stopper is in engagement with the top of the pusher dog, the stopper has a pusher dog disengaging portion extending outwardly therefrom, the stopper raising lever has a stopper receiving portion and a stopper raising portion, each of these portions upwardly extending from the rear portion of the stopper raising lever, and the lever receiving piece has a receiving portion on which the front free end of the stopper raising lever is received, wherein the stopper receiving portion stands just above the pivot point of the stopper raising lever and the stopper raising portion is positioned in front of the pivot point, and wherein the disengaging means includes a disengaging lever rotatable through a predetermined angle taken in the longitudinal direction of the power rail and the free rail, the disengaging lever having an upper piece with a stopper raising means mounted thereon, the upper piece extending forward of the power rail.

4,287,830

VEHICLE ADAPTED TO BE GUIDED ON TRACKS FOR THE PUBLIC LOCAL PASSENGER TRAFFIC WITH PIVOTAL REAR AXLE AND LONGITUDINAL GUIDE MEMBERS FOR SUCH AXLE

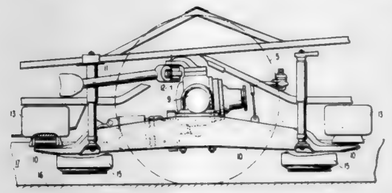
Dieter Braun, Weinstadt; Herbert Mehren, Ludwigsburg, and Helmut Wulf, Ostfildern, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,324

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813700

Int. Cl.³ B62D *1/26*

U.S. Cl. 104—247 **12 Claims**



1. A vehicle adapted to be selectively operated with or without guide rails or tracks, the vehicle including a steerable vehicle axle means having steerable wheels mounted thereon and at least one non-steerable vehicle axle means having non-steerable wheels mounted thereon, means for mounting the non-steerable vehicle axle means so as to be pivotable in its entirety about a centrally positioned vertically extending pivot axis, spring means for suspending a superstructure of the vehicle, and spring bracket means fixedly mounted to an axle body for the non-steerable vehicle axle means for mounting the spring means to the vehicle, characterized in that ring mount segment means are provided for mounting the spring means at outer ends of the spring bracket means so as to be horizontally movable, at least two supporting roller means each having an axis of rotation disposed approximately toward a pivot center of the non-steerable axle means are attached to an underside of the spring means, said supporting roller means being adapted to roll along a flat top surface of the ring mount segment means, at least one of a shape-mating lateral guide means and a safety means arranged on both sides of the supporting roller means adjacent a mounting means for the supporting roller means, the guide means are adapted to engage lateral edges of the ring mount segment means on a freely projecting underside of the ring mount segments, said safety means lying in a lateral groove means provided in a shoulder of the ring mount segment means formed at the mounting means for the supporting roller means.

4,287,831

FRICTION AND RACK AND PINION LOCOMOTIVE

Laszlo Farkas, Am Hang 31, 4713 Bockum-Hövel, Fed. Rep. of Germany

Continuation of Ser. No. 817,105, Jul. 29, 1979, Pat. No. 4,133,267. This application Sep. 12, 1978, Ser. No. 941,454

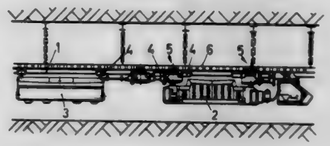
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632506

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.³ B61B *3/00, 13/02;* **B61C** *11/04, 13/04*

U.S. Cl. 105—29 R **10 Claims**

1. In a suspended railroad, a combination comprising a monorail having an elongated friction section and an elongated rack section, one of said sections being superimposed upon the other section; at least one car suspended on said monorail; and drive means for moving said car along said rail, said drive means comprising a friction wheel in frictional engagement with said friction section, a gear wheel coaxial with said friction wheel and movable in axial direction relative to the latter between an active position engaged with said rack section and an inactive position disengaged therefrom, means for moving said gear wheel between said positions thereof and comprising an elongated hollow shaft coaxially projecting from said gear wheel and forming a double-acting cylinder, stationary piston means in said cylinder and dividing the interior thereof in an upper and lower pressure chamber, means for switching fluid



under pressure between said chambers to thereby move said gear wheel between said positions thereof, support means supporting said friction wheel and said gear wheel with said hollow shaft for rotation about a common axis, and means operatively connected to said friction wheel and said gear wheel for simultaneous rotating the same about said common axis.

4,287,832

TRANSVERSELY TORSIONALLY INTERCONNECTED RAILWAY VEHICLE TRUCKS

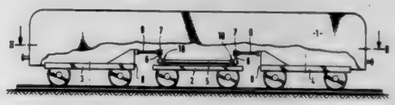
Ernst Kreissig, Seuzach, and Friedrich Steinmann, Weisslingen, both of Switzerland, assignors to Schweizerische Lokomotive- und Maschinenfabrik, Winterthur, Switzerland

Filed Jul. 10, 1978, Ser. No. 923,298

Claims priority, application Switzerland, May 9, 1978, 4997/78

Int. Cl.³ B61F *3/08, 5/44, 5/50*

U.S. Cl. 105—176 **13 Claims**



1. In combination with a rail vehicle having at least two longitudinally spaced trucks for supporting a body; a transverse coupling assembly for coupling said trucks comprising

a hollow shaft disposed longitudinally of said trucks and said vehicle,

bearing means supporting each end of said shaft relative to said body;

a torsion spring element extending within said shaft at least over one end section, said spring element being secured at one end to said shaft and being relatively rotatable at an opposite end to said shaft within a predetermined angle; and

a pair of linkages, each linkage connecting a respective one of said trucks to a respective end of said shaft and including a lever secured to said torsion spring element and connected to a respective one of said trucks.

4,287,833

AUTO CARRIER RAILWAY CAR

David J. Roldness, San Diego; Felixberto A. Galasan, Chula-Vista, and Thomas H. Watson, Bonita, all of Calif., assignors to Pullman Incorporated, Chicago, Ill.

Filed Sep. 19, 1979, Ser. No. 77,255

Int. Cl.³ B61D *19/00, 17/06, 3/02*

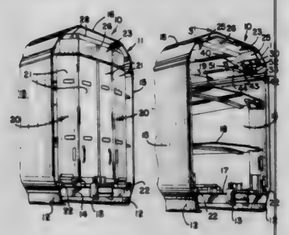
U.S. Cl. 105—378 **14 Claims**

1. In a railway car having a body including side walls and a roof structure,

said body having at least one open loading end including one or more cargo supporting platforms adapted to be loaded with cargo through said open end, and a door arrangement for said open end including a pair of vertical doors, adapted to be moved between open and closed position,

the improvement of an upper door arrangement on said body supported above said vertical doors for closing an upper space disposed between said roof and said vertical doors, comprising

door panel means having an outer surface and being pivotally mounted above said vertical doors and movable between a closed position adjacent said vertical doors to an



open position away from said vertical doors whereby the outer surface of the door panel means is disposed in a position facing the inside of the car roof structure,

supporting means supporting said door panel means solely for rotating movement on said body about a generally horizontal axis extending substantially parallel to and spaced inwardly of said open end of said body,

said door panel means being rotatably movable about said supporting means from an open position substantially entirely recessed within said body to a closed position substantially closing said upper space, and

operating means connected with said door panel means for moving the same between open and closed positions.

4,287,834

STOPS OF A DRAFT GEAR HOUSING OF A RAIL CAR CENTRAL COUPLER ARRANGED IN A CENTER SILL

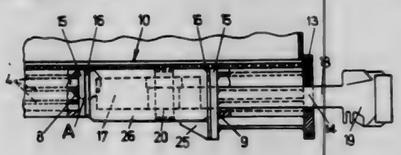
Jürg Zehnder, and Erich Neumeier, both of Zurich, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 25, 1979, Ser. No. 60,349

Claims priority, application Switzerland, Feb. 5, 1979, 1100/79

Int. Cl.³ B61F *1/00, 1/08*

U.S. Cl. 105—420 **10 Claims**



1. In a sill of a rail car having stops for a draft gear housing of a central coupler in at least one space in said sill, said draft gear housing being secured in said space, wherein the said sill is provided with longitudinal struts or ribs discontinuous at said space, and including front stops and rear stops for pushing and pulling the draft gear, provided that said stops are integral components of the sill, are provided at the location of the discontinuity and the front stops and the rear stops for the draft gear are created by removing material from the sill or struts, wherein said stops meet the tractive and compressive forces arising in use.

4,287,835

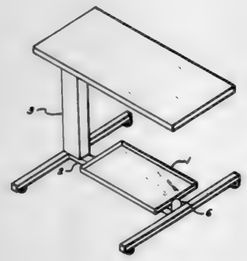
SLIPPER TRAY AND FOOTREST

David W. Stratton, 1901 Tradewinds La., Newport Beach, Calif. 92660

Filed Jul. 31, 1978, Ser. No. 881,496

Int. Cl.³ A47B *85/00*

U.S. Cl. 108—26 **1 Claim**



1. A pivotable combination footrest and slipper tray attached to the base of an over-the-bed table by means of brackets attached to the ends of said footrest and slipper tray, said brackets being of such shape as to include two flanges which extend downward to enclose a structural member of the base of such over-the-bed table, screws extending through both flanges of said brackets to attach said bracket to said structural member, said screws being retained in place by means of nuts and washers, the shape of such mounting bracket being tailored to the size and shape of said structural member of the over-the-bed table, said footrest and slipper tray being made pivotable with respect to said mounting brackets and over-the-bed table by means of centrally located pivot shafts attached to the ends of said combination footrest and slipper tray and extending through vertical flanges of said mounting brackets, the ends of said pivot shafts being clamped to said vertical flanges of said brackets by means of plain washers, lockwashers, and capnuts in such a manner as to permit the footrest and slipper tray to pivot with the application of foot pressure, the amount of friction required to pivot said footrest and slipper tray being adjustable by the amount of torque applied to said capnuts and lockwashers, spring loaded plungers having nonskid end caps on their lower ends being contained within cylindrical housings attached to each side of said footrest and slipper tray mounting brackets to maintain the combination footrest and slipper tray in a horizontal position or to lock the over-the-bed table in place, said springs being compression springs and so located and loaded as to apply a force between the bottom of the cylindrical plunger housing and a flange on the plunger, said force being applied in such a manner as to force an upper spherical end of said plunger against the bottom of said footrest and slipper tray, said plungers being located on opposite sides of said footrest and slipper tray pivot point to apply spring loaded equal and opposite forces against the bottom of said tray, thereby maintaining such tray in a horizontal position, the application of pressure eccentrically about the tray pivot point and downward to the top of said footrest and slipper tray causing said tray to pivot, thereby forcing said plungers downward against the surface upon which the over-the-bed table rests, such downward pressure creating friction between the plunger and said surface thereby locking the over-the-bed table in place and preventing said table from moving, the footrest and slipper tray being pivotable either clockwise or counter clockwise about its pivot point causing the over-the-bed table to be locked in place with the application of said pressure on either side of said pivot point.

4,287,836

PALLET MADE OF SYNTHETIC RESIN

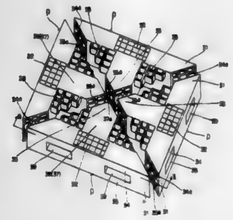
Hisashi Aoki, Kaiseimachi, Japan, assignor to Kabushiki Kaisha Meiji Gomu Kasei, Tokyo, Japan

Filed May 24, 1979, Ser. No. 42,152

Claims priority, application Japan, Jun. 3, 1978, 53-67100; Jun. 3, 1978, 53-67101

Int. Cl.³ B65D *19/32*

U.S. Cl. 108—51.1 **7 Claims**



1. A pallet made of a synthetic resin and comprising four corner posts, intermediate posts provided between said corner posts, a center post, hollow edge boards connecting said corner posts and said intermediate posts, hollow deck boards provided in a crossed manner to connect said intermediate posts and said center post together, and fork inserting openings provided at the four sides of said pallet, wherein four identical complementary pallet elements are combined together along two crossed division lines on said pallet, said elements being provided with edge boards and deck boards, with flat walls provided at both ends of each of said edge boards and deck boards so as to form a closed hollow space in each of said elements, and reinforcing ribs provided in the hollow space in each of said edge boards such that said reinforcing ribs are extended in parallel with the side surfaces of said pallet and disposed such that said reinforcing ribs meet with one another at right angles in the four corners of said pallet, said reinforcing ribs and said upper and lower flat walls in each of said pallet elements being butt fused together.

4,287,837

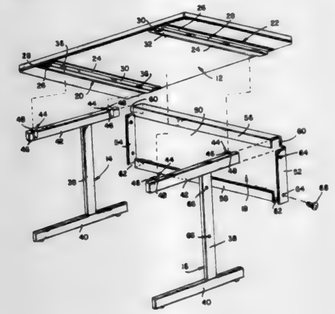
FURNITURE ASSEMBLY

Richard A. Bayles, 8 Idlewild Park Dr., Cornwall-on-Hudson, N.Y. 12520

Filed Nov. 30, 1979, Ser. No. 98,753

Int. Cl.³ A47B *3/06, 17/00*

U.S. Cl. 108—154 **8 Claims**



1. A furniture assembly comprising

a table top having a flat bottom surface

a plurality of elongated leg-support members secured to the bottom surface of said table top in parallel, spaced relationship to each other,

each of said leg-support members having a plurality of spaced slots formed in one side thereof,

a plurality of leg members, each comprising an upright portion and an upper elongated portion formed rigidly with said upright portion and extending perpendicularly thereto at the upper end thereof,

a plurality of tabs secured to said upper elongated portions and sized and positioned to fit within the slots of one of said leg-support members,

a panel adapted to be mounted between said leg members in an upstanding position beneath and perpendicular to said table top,

said panel having flange portions positioned to abut the upright portions of the respective leg members, and

snap-fitting attachment means for connecting said flange portions to said leg members to maintain said leg members in a fixed relationship when said leg members are assembled with said table top.

4,287,838

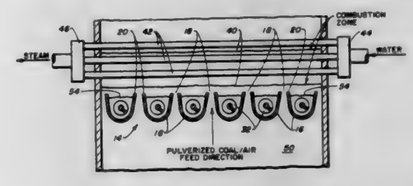
FLUIDIZED BED COAL COMBUSTION REACTOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Philip I. Moynihan, La Canada, and Donald L. Young, Pasadena, both of Calif.

Filed Dec. 15, 1978, Ser. No. 969,759

Int. Cl.³ F23B *7/00*

U.S. Cl. 110—234 **8 Claims**



1. A reactor for combusting a suspension of fluidized carbonaceous fuel comprising in combination:

wall means defining a vertical reaction chamber;

a horizontal grid of upwardly facing channels which are arcuate in shape with outwardly diverging upper ends, said channels being mounted in said reaction chamber with preselected spacing between the channels defining elongate nozzle openings;

ash removal means mounted in each of said channels;

means for injecting a suspension of carbonaceous fuel into said reaction chamber below said grid whereby said suspension is injected through said openings into a combustion zone above said grid; and

means for removing combustion gases from said chamber.

4,287,839

APPARATUS FOR LINING THE INNER WALLS OF INDUSTRIAL FURNACES

Manfred Severin, Schwerte-Geisecke, and Hans-Dieter Marsch, Dortmund, both of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,929

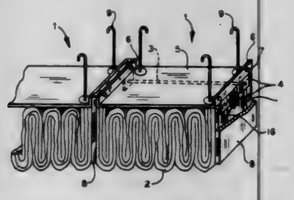
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856441

Int. Cl.³ E04B *1/80;* **C04B** *43/02*

U.S. Cl. 110—331 **6 Claims**

1. A lining for the inner walls of industrial furnaces comprising a plurality of insulating blocks, each block comprising an insulating mat which is folded in corrugated manner, said insulating mat being made of highly heat-resistant material, especially ceramic fibrous material; carrying elements pene-

trating the folds of the corrugations on one side of said insulating mat; a base plate provided on the outside of each said insulating block, said base plate having at least two webs extending outwardly and disposed on opposite sides of said base plate; means disposed on said base plate on the side opposite said webs for connecting said carrying elements to said base plate; and means rotatably attached to said base plate for sus-



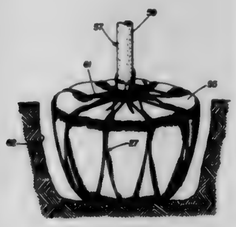
pending each said insulating block from the walls of the furnace, said fixing means comprise hooks and including holding means attached to the furnace walls, said holding means comprising holding bars and said carrying elements comprise at least two carrying bars that penetrate all folds of said insulating mat and said connecting means comprise lugs extending from said base plate for connecting said carrying bars to said base plate.

4,287,840

TREE TRANSPLANTING METHOD AND APPARATUS THEREFOR

Barry Weidner, 153 E. Marion St., Doylestown, Ohio 44230

Filed Mar. 17, 1980, Ser. No. 131,208
Int. Cl.³ A01C *11/00*; **A01G** *23/02*
U.S. Cl. 111—1 **3 Claims**



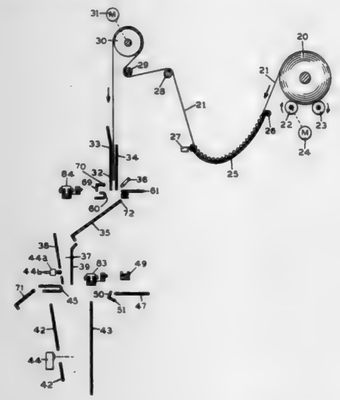
1. An improved method of packaging and transplanting trees including the steps of:
(a) forming a drum lacing of fibrous rope material having a circular rope base and a plurality of closed end rope loops connected to the base and extending radially outwardly from said base;
(b) providing an open top wire basket formed by two half-basket sections detachably joined together to form a downwardly, inwardly sloping interior;
(c) suspending the drum lacing within the wire basket by said closed end loops;
(d) placing a sheet of flexible material over the drum lacing and open top of the basket;
(e) placing the roots of a tree and attached ball of soil into the basket;
(f) wrapping the sheet of flexible material about the ball of soil and tree roots;
(g) tying the drum lacing loops about the sheet of flexible material and to the trunk of the tree to securely confine the tree roots and soil ball within the sheet of material;
(h) detaching the wire basket and removing the wrapped tree therefrom;
(i) transporting the tree to a transplanting site; and
(j) replanting the wrapped tree at said transplanting site.

4,287,841

APPARATUS FOR CUTTING AND HEMMING BED SHEETS AND THE LIKE

Herman Rovin, c/o Automatech Industries Inc., Rte. 3 Box 370A, Piedmont, S.C. 29673

Filed Aug. 6, 1979, Ser. No. 64,096
Int. Cl.³ D05B *19/00*
U.S. Cl. 112—121.11 **10 Claims**



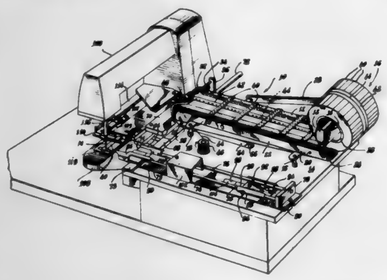
1. Apparatus for forming and sewing hemmed bed sheets or the like, which comprises,
(a) a supply of web material,
(b) a feed roll for controllably advancing said web material,
(c) guide means for receiving the advanced material by gravity,
(d) control means operative to interrupt the advance of fabric when the leading edge reaches a predetermined location,
(e) means for forming and folding a hem across the full width of the material,
(f) means for gripping the material in the region of the thus formed hem and transporting the material laterally,
(g) means for sewing the hem during the lateral transport of said material.

4,287,842

AUTOMATIC BELT LOOP TACKER

Louis W. Breck, Jr., Eight Joe Turner Ct., El Paso, Tex. 79915

Filed Sep. 17, 1979, Ser. No. 76,085
Int. Cl.³ D05B *23/00*
U.S. Cl. 112—121.27 **11 Claims**



1. Apparatus for sewing a belt loop to a garment comprising:
folding means for folding opposite transverse ends of said belt loop back upon itself,
means for feeding an unfolded belt loop on a support adjacent said folding means, and

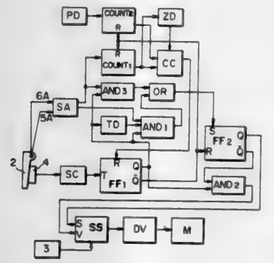
sewing means for tacking a folded belt loop to a garment,
said folding means including
means for reciprocating said folding means to deliver a folded belt loop beneath said sewing means for tacking the folded belt loop to a garment; and
said sewing means including
means for successively positioning the transverse ends of said belt loop beneath said sewing means so that the transverse ends can be sewn to a garment.

4,287,843

ELECTRIC SEWING MACHINE WITH A SPEED CONTROL SYSTEM

Yoshiaki Ozaki, Hachioji, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1980, Ser. No. 114,245
Claims priority, application Japan, Feb. 9, 1979, 54-14882[U]; Feb. 15, 1979, 54-17141[U]
Int. Cl.³ D05B *69/18*
U.S. Cl. 112—277 **3 Claims**



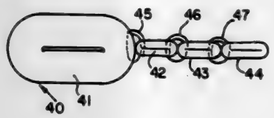
1. A sewing machine with a machine drive motor having an upper drive shaft and a motor speed control system including a variable motor speed control circuit, said motor control system comprising electrically conductive operating means sensing a touch by an operator; a switch means operated by manipulation of the electrically conductive operating means to produce a signal; motor starting and stopping means including bistable functioning means to start the machine drive motor at a predetermined speed when the bistable functioning means receives the signal from the switch means while the machine drive motor is stopped, said motor starting and stopping means operating to stop the machine drive motor when the bistable functioning means receives the signal from the switch means while the machine drive motor is rotating; and extreme lower speed control means operated to drive the machine drive motor at an extreme lower speed when the operating means is touched by the operator while the machine drive motor is driven by the motor starting and stopping means.

4,287,844

BULKY COMPOSITE FABRIC AND METHOD OF MAKING SAME

Thomas L. Weil, Elverson, Pa., assignor to Bentley-Harris Manufacturing Company, Lionville, Pa.

Filed Apr. 24, 1979, Ser. No. 32,960
Int. Cl.³ D05B *93/00*
U.S. Cl. 112—412 **12 Claims**



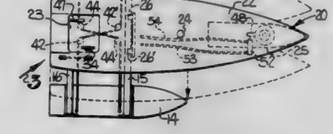
1. A bulky composite fabric having a uniform width throughout its length and composed of a given number of groups of strands of fibrous material, each of said groups of strands being interknitted to form an elongated tubular fabric component, whereby said given number of groups form a given number of said components, said tubular fabric components being juxtaposed and interconnected side-by-side throughout their length in pairs by seams of zigzag stitching extending diagonally alternately between said juxtaposed fabric components, each of said components comprising a knitted fabric tube of small diameter, each said tubular fabric component having a plurality of wales of needle loops extending longitudinally of said fabric, any given wale of needle loops having loops alternating in sequence between loops of first and second strands of fibrous material throughout the length of the fabric, the first of said strands alternately forming needle loops in a wale on one side of the given wale and the second of said strands alternately forming needle loops in a wale on the other side of said given wale a first of said components being fabricated of strands of fibrous material of substantially greater bulk than the strands making up a second fabric component, whereby the thickness of said bulky composite fabric is greater along the line of the first component than along the line of said second component.

4,287,845

SAILBOAT HAVING MULTIPLE HULLS

Sidney N. Sanner, P.O. Box 1173, Tryon, N.C. 28782

Filed Aug. 23, 1979, Ser. No. 69,239
Int. Cl.³ B63B *35/00*; **B63H** *9/00*
U.S. Cl. 114—39 **8 Claims**



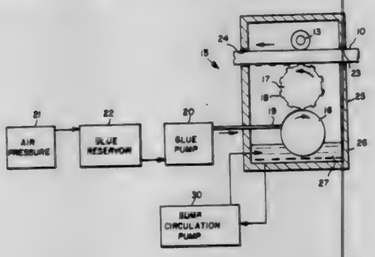
1. A multi-hulled sailboat characterized by the ability to limit heeling under various headings to thereby maximize the effective sail area and speed, and comprising
a hull assembly comprising first and second hulls, and means fixedly interconnecting said hulls in a laterally spaced apart and laterally aligned relationship and including at least one laterally directed beam,
a deck assembly comprising a deck adapted to support the crew of the sailboat, a mast fixed to said deck for supporting a sail, and a third hull mounted to said deck,
means mounting said deck assembly to said hull assembly to permit relative lateral movement therebetween, and so that said three hulls are disposed in a triangular arrangement and are adapted to concurrently support the weight of the sailboat, said mounting means including cable means for limiting canting between said deck assembly and said hull assembly and comprising first and second cables fixedly interconnected between said first and second hulls, with the ends of each cable being fixed to opposite hulls at longitudinally spaced points, and pulley means mounted on said deck assembly and operatively engaging each cable so that each cable includes a medial portion which extends in a direction having a substantial longitudinal component, and
means for effecting relative lateral movement between said deck assembly and said first and second hulls and for maintaining a selected relative position therebetween,
whereby the weight of the deck assembly and crew may be moved toward the windward one of said first and second hulls to minimize heeling of the sailboat.

4,287,846

INTERMITTENT ADHESIVE APPLICATOR

Gary S. Klein, Aurora, Ohio, assignor to Vopiex Corporation, Pittsford, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,089
Int. Cl.³ B05C 1/08, 1/16
U.S. Cl. 118—212 **8 Claims**



1. An applicator for depositing a solvent-carried adhesive intermittently along a moving strip, said applicator comprising:
a. a sump arranged below said strip and containing a quantity of the solvent carrying said adhesive;
b. an adhesive wheel arranged to rotate below said strip and having a lower region immersed in said solvent in said sump;
c. said adhesive wheel having a continuous peripheral surface for receiving said adhesive;
d. means for continuously applying said adhesive to said continuous surface of said rotating adhesive wheel above said solvent in said sump;
e. an applicator wheel arranged to rotate below said strip and above said solvent in said sump;
f. said applicator wheel having an intermittent peripheral surface;
g. said applicator wheel being arranged with said intermittent peripheral surface running against said adhesive wheel and said moving strip to receive spaced increments of the continuous adhesive from said adhesive wheel and apply said received adhesive intermittently to said strip while leaving unreceived, spaced increments of adhesive on said adhesive wheel for removal in said solvent in said sump;
h. means for rotating said adhesive wheel and said applicator wheel at peripheral surface speeds approximately equal to the speed of said strip;
i. an enclosure enclosing said sump, said adhesive wheel, said applicator wheel, and the region of contact betwen said applicator wheel and said strip;
j. an entrance and exit for said strip to move through said enclosure in contact with said applicator wheel; and
k. said enclosure being sufficiently closed to retain a substantially saturated solvent vapor atmosphere within said enclosure to inhibit evaporation of solvent from said adhesive.

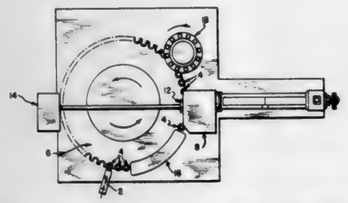
4,287,847

APPARATUS FOR DISTRIBUTING LINING MATERIAL IN CAP SHELLS

Hidehiko Ohmi, Hiratsuka, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 25, 1979, Ser. No. 51,505
Claims priority, application Japan, Oct. 7, 1978, 53-82888
Int. Cl.³ B05C 7/00; B29D 31/00; B29F 3/00
U.S. Cl. 118—215 **4 Claims**

1. An apparatus for distributing lining material in cap shells where the apparatus has a cap shell transport means for moving cap shells at a predetermined speed along a path, a lining material extrusion means positioned above and along said path for extruding a predetermined amount of lining material through an extrusion passage, a rotatable lining material cutting knife positioned adjacent the exit end of said extrusion passage adapted to move across lining material extruded from said passage to cut the same, drive means for rotating said knife, and a transmission means operatively connecting said



drive means to said knife; the improvement comprising in that said transmission means contains at least two sets of non-circular gear pairs and wherein the relative angle between the said two sets of gear pairs is adjustable.

4,287,848

APPARATUS FOR THE MANUFACTURE OF EPITAXIAL $Ga_{1-x}Al_xAs$:Si FILM

Siegfried Leibenzeder, Erlangen, and Christine Heindl, Mantel, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,155
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2847091
Int. Cl.³ B05C 5/00
U.S. Cl. 118—401 **3 Claims**



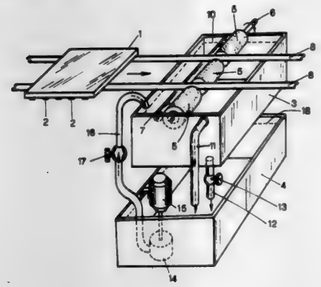
1. An apparatus for use in the manufacture of epitaxial $Ga_{1-x}Al_xAs$:Si by liquid phase epitaxy comprising:
a first horizontally disposed graphite boat having a substantially flat lower surface, a substantially flat upper surface having at least one depression therein, adapted to receive Al, and rims at each end of said boat projecting a substantially identical pre-determined distance vertically above said upper surface;
a second horizontally disposed graphite boat having a substantially flat lower surface, a substantially flat upper surface having at least one depression therein and rims at each end of said second boat projecting a substantially identical pre-determined distance vertically above said upper surface thereof;
said second boat being stacked upon said first boat such that the lower surface of said second boat is in contact with the projecting rims of said first boat and defines an open longitudinal recess with the upper surface of said first boat for receiving Ga, at least one GaAs substrate wafer and Si on the surface of said wafer.

4,287,849

APPARATUS FOR COATING CERAMIC TILES OR THE LIKE TO BE ADVANCED TO ROLLER TUNNEL KILNS

Ulrico Walchhuetter, Via Accademia 39, Milan, Italy

Division of Ser. No. 16,895, Mar. 2, 1979. This application Aug. 7, 1979, Ser. No. 64,624
Claims priority, application Italy, Mar. 24, 1978, 21580 A/78
Int. Cl.³ B05C 1/02
U.S. Cl. 118—602 **4 Claims**



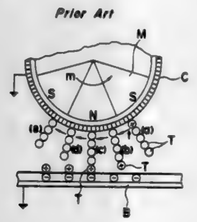
1. An apparatus for protecting ceramic tiles or the like to be advanced to roller tunnel kilns utilized for firing the ceramic tiles, comprising conveying means for advancing the tiles to be treated in a direction towards the kiln; a plurality of rotary rollers coaxially mounted to one another with a common axis extending in a direction transversal to the advancing direction; a first tank containing the refractory material suspension; a second tank containing the refractory material suspension and located below said first tank and in communication therewith; and means for circulating the refractory material suspension between said first and second tanks for maintaining constant and uniform density of the suspension, said rollers being partially extended into said first tank and adapted to contact the underside of the tiles for applying a protective layer of a refractory material in suspension only to the underside of the tiles when the latter pass said rollers in the advancing movement whereby said rollers absorb the material suspension and apply a protective layer to at least part of the underside of the tiles prior to entry of the same into the kiln.

4,287,850

MAGNETIC BRUSH DEVELOPING APPARATUS

Toshio Yamamoto, and Shizuo Yuge, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1978, Ser. No. 884,184
Claims priority, application Japan, Mar. 22, 1977, 52-31719
Int. Cl.³ G03G 15/09
U.S. Cl. 118—657 **18 Claims**



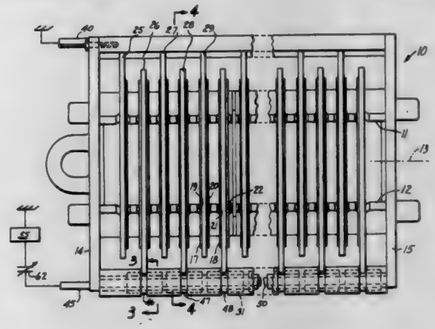
1. A magnetic brush developing apparatus for use in a toner powder image transfer type electrophotographic copying machine, which comprises: a photosensitive member; a single outer cylinder fixedly disposed in spaced opposed relation to said photosensitive member; a magnet member rotatably accommodated in said outer cylinder for being rotatably driven; a toner container containing therein a mono-component developer composed of magnetically attractive toner particles and disposed adjacent said outer cylinder for supplying the toner particles onto said outer cylinder; a developing electrode plate on said outer cylinder and in spaced opposed relationship to the surface of said photosensitive member approximately equidistantly spaced from said photosensitive member and located upstream of the position at which the surface of said outer cylinder is closest to the surface of said photosensitive member an excessive developing region for causing the toner particles to be magnetically formed into a brush for transferring toner particles to said photosensitive member for developing the image portion of an electrostatic latent image formed on said photosensitive member with sufficient density; toner particle guide means extending from said outer cylinder to the upstream end of said developing electrode plate for guiding toner particles from said outer cylinder to the upstream end of said developing electrode plate; means connected to said apparatus in said excessive developing region for giving to said developing electrode plate a charge ranging from a charge equal to that of the reverse surface of the photosensitive member to a charge which biases said developing electrode plate with an opposite polarity to the polarity of said latent image, said outer cylinder and said photosensitive member downstream of said excessive developing region defining therebetween a toner removing region for removing toner particles adhering at least to the non-image portions of the electrostatic latent image, said magnet member in said outer cylinder being closer to said photosensitive member in said toner removing region than in said excessive developing region for exerting a substantially stronger magnetic force on toner particles in said toner removing region than in said excessive developing region; and further means connected to said apparatus in said toner removing region for giving to said apparatus on the side of said toner removing region on which said outer cylinder is positioned a charge ranging from a charge equal to that of said photosensitive member to a charge which biases said side of the toner removing region with the same polarity of said latent image.

4,287,851

MOUNTING AND EXCITATION SYSTEM FOR REACTION IN THE PLASMA STATE

Alfred R. Dozier, 9332 Portsmouth Dr., Huntington Beach, Calif. 92646

Filed Jan. 16, 1980, Ser. No. 112,786
Int. Cl.³ C23C 13/08
U.S. Cl. 118—723 **9 Claims**



1. Apparatus for supporting a plurality of wafer-like substrates so as to be treatable in a plasma environment, comprising:
at least three plate-like electrically conductive electrodes each having a face parallel to and spaced from one another along an axis;

support means adjacent to each of said electrodes for supporting a wafer-like substrate against at least one of said faces between each pair of adjacent electrodes;

a first conductive bus conductively connected to a first set of alternate ones of said electrodes;

a second conductive bus; and

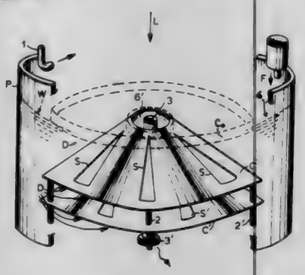
an individual capacitative coupling respective to each member of a second set of said electrodes, said second set of electrodes comprising the electrodes located between the electrodes of said first set, each said capacitative coupling being connected to its respective electrode and to said second bus but not directly to any other capacitative coupling, whereby in a circuit including said first and second buses, each pair of adjacent electrodes and the respective capacitative coupling are in series relationship, and the respective members of said pairs are in parallel connection with one another.

4,287,852

FISH GROWTH ACCELERATION AND DENSITY-INCREASING APPARATUS AND METHOD

Robert H. Rines, 13 Spaulding St., Concord, N.H. 03301, and Albert Knowles, Westbrook, Moniack Bridge by Kirkhill, Scotland

Filed Oct. 11, 1979, Ser. No. 83,571
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—3 **49 Claims**



1. Apparatus for accelerating the growth of fish, including salmonoids and the like, within a pool of water containing the fish, comprising light-opaque cover means provided with means supporting the same submerged within the pool; the cover means having a plurality of open regions spaced along its surface intermediate light-opaque regions of the cover means; said light-opaque regions producing dark light-shielded zones within the pool underneath the same for the fish to rest in quiet, with said open regions providing access to and visibility for feed immediately thereunder; and means for promoting visual feeding by the fish under said open regions.

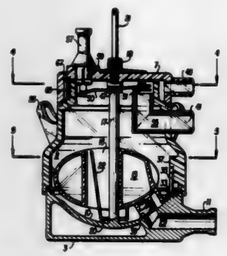
4,287,853

MILKING DEVICE

Lloyd P. Duncan, 3 Riverbend Pl., Washington, Mo. 63090

Filed Mar. 24, 1980, Ser. No. 133,313
Int. Cl.³ A01J *5/04*
U.S. Cl. 119—14.55 **15 Claims**

1. A milker comprising a walled chamber with a lower milk exit and upper entry nipples adapted to be connected to teat cups and communicate milk into said chamber, said exit being connectible to a vacuum milk line and having a valved seat adjacent the bottom of said chamber, said chamber having vacuum inlet means that maintains an operating vacuum therein, a float valve on said seat and said valve being pivoted to the milker to rise and expose the exit responsive to the level of milk in said chamber, said valve having curved sides, said nipples extending upwardly from leads into the chamber side wall adjacent the float, and positioned to direct at least a substantial portion of the milk inflow downwardly to below the upper surface of the float tangentially with respect to said



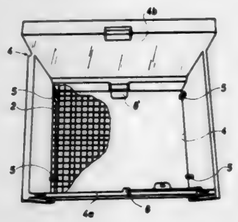
sides, whereby said float can rise unimpeded during the inflow of milk.

4,287,854

CAGE CONSTRUCTION FOR USE IN BREEDING FUR-BEARING ANIMALS

Finn Hansen, Risskov, Denmark, and Bernhard Lodder, Hardenberg, Netherlands, assignors to Wavin B.V., Em Zwolle, Netherlands

Filed Feb. 11, 1980, Ser. No. 120,543
Claims priority, application Denmark, Feb. 12, 1979, 573/79
Int. Cl.³ A01K *1/02, 1/03*
U.S. Cl. 119—17 **12 Claims**



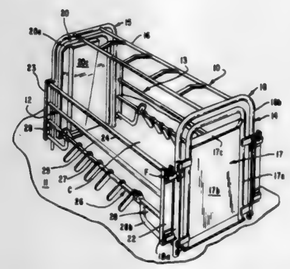
1. A cage construction for use in breeding fur-bearing animals, such as mink, and comprising a plurality of cages arranged on a stand, whereby each cage is provided with a breeding coop with an opening giving access to the cage, characterized in that each breeding coop (**4**) comprises a vertical plastic pipe open at both ends and having a substantially rectangular cross section, said pipe wall being formed by a central foam plastic layer (**14***a*) and an outer and an inner solid surface layer (**14***b* and **14***c*), said layers being integrally connected, molded projections (**5**) projecting into the pipe on the inner side of the pipe wall at a predetermined distance from the lower edge (**4'**) of the pipe wall, said projections optionally being present in the form of corner ledges (**5'**) for supporting an inner coop insert (**3**) in the form of a grate, at least one set of auxiliary projections (**8**, **8'**, **8''**) provided at the lower edge (**4'**) of said pipe wall, said projections being adapted to pivotably mount perforated bottom wall (**10**) such as a second grate closing the plastic pipe, a part of said pipe wall forming the rear wall (**4***b*) of the breeding coop (**4**) being extended a short distance above the remaining portion of the pipe and provided with molded means (**15**) opposing the interior of the pipe, for locking the coop insert (**3**) in the pipe.

4,287,855

FARROWING PEN

Robert J. Gibson, R.R. #1, Brook, Ind. 47922

Filed Jan. 31, 1980, Ser. No. 117,057
Int. Cl.³ A01K *1/02*
U.S. Cl. 119—20 **10 Claims**



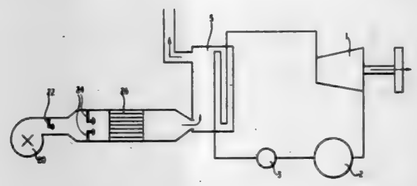
1. A farrowing pen comprising upright side walls, and upright end walls connected thereto and coacting therewith to form a compartment for accommodating a sow during and after farrowing; at least one side wall having a lower peripheral portion elevated relative to a surface for supporting the accommodated sow and coacting therewith to form an elongated opening for access to a nursing space, and an adjustable assembly carried by said one sidewall and adjacent said lower peripheral portion, said assembly including an elongated center section adjustable about its longitudinal axis and having a plurality of longitudinally spaced elements protruding outwardly therefrom and adjustable as a unit with said center section, relatively stationary end sections supportingly engaging opposite ends of said center sections, and complemental means mounted on said center and end sections for retaining said center section in a predetermined position of adjustment.

4,287,856

ENGINES

Bernard E. Enga, Maidenhead, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed May 4, 1979, Ser. No. 35,826
Claims priority, application United Kingdom, May 8, 1978, 18240/78
Int. Cl.³ B09B *3/00*
U.S. Cl. 122—4 D **9 Claims**



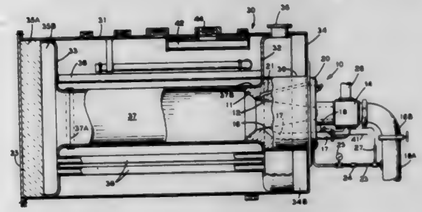
1. A Rankine cycle engine including a boiler unit comprising a catalytic combustor; a fan for producing a stream of air to said combustor wherein the temperature of the air is between 0° and 600° C. and the pressure is between 1 and 20 atmospheres; a pilot burner; and fuel injector means for fueling said pilot burner and further means for injecting the remaining fuel into the stream of air; said catalytic combustor comprising a temperature stable oxidation resistant monolith, the monolith providing catalytic channels for contact with and passage of the air combined with injected fuel such that catalytic combustion of the fuel takes place therein but with a pressure drop of 10% or less, and means for transferring heat from the stream of hot gaseous fluid to the working fluid of the Rankine cycle engine, the monolith comprising at least one of the metals Ru, Rh, Pd, Ir and Pt, a base metal, a base metal alloy or a base metal alloy containing at least one platinum group metal.

4,287,857

BURNER-BOILER COMBINATION AND AN IMPROVED BURNER CONSTRUCTION THEREFOR

Leo Schnitzer, 22 Burr Farms Rd., Westport, Conn. 06880

Filed Sep. 11, 1979, Ser. No. 74,494
Int. Cl.³ F22B *31/00*
U.S. Cl. 122—23 **20 Claims**



1. A burner for burning a gasifiable liquid fuel comprising

a burner nozzle having an inlet and an outlet,

a mixing chamber connected in communication with said inlet;

means for introducing combustion air into said mixing chamber under pressure whereby the velocity of the combustion air through said mixing chamber creates a zone of reduced pressure in said mixing chamber,

said nozzle having a gas return port adjacent to the outlet of said nozzle, and

a return tube interconnected between said gas return port and said mixing chamber whereby the zone of reduced pressure in said mixing chamber induces a flow of hot combustion gas through said gas return port and connected return tube to said mixing chamber,

means for introducing a liquid fuel into said return tube whereby the hot gases of combustion effect the gasification of the liquid fuel prior to said fuel entering into said mixing chamber to mix with said air to form a combustible gaseous mixture;

ignition means disposed relative to said nozzle to effect ignition of said combustible gaseous mixture, whereby a flame having a high flame velocity and very high flame temperature is achieved so as to cause a break down in a portion of the hydrocarbons into their basic elements hydrogen and carbon, and a means disposed adjacent to the outlet of said burner nozzle for directing an air stream in a generally tangential direction relative to the longitudinal axis of said nozzle and burner flame therein whereby said air stream effects the diffusion burning of the free hydrogen and carbon and the maintaining of said velocity.

4,287,858

INTERNAL COMBUSTION ENGINE

Luigi Anzalone, Rochester, N.Y., assignor to Vincenzo Pasquarella, Rochester, N.Y.

Filed Sep. 21, 1979, Ser. No. 66,072
Int. Cl.³ F02B *57/00*
U.S. Cl. 123—43 AA **9 Claims**

1. An engine, comprising

a housing having a cylindrical bore, a pair of axially-spaced, circular cylinder plates mounted to rotate in opposite ends of said housing bore coaxially thereof,

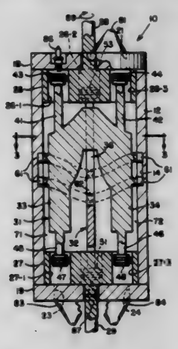
each of said cylinder plates having therein at least one axially-extending piston bore opening at its inner end on said housing bore,

at least one piston member extending transversely across the center of said housing bore in the axial space between said

cylinder plates, and mounted for axial reciprocation in said bore and for rotation with said plates,

at least one piston carried on each end of said member for reciprocation in the piston bore in the adjacent cylinder plate,

means for conveying combustible fuel to, and for conveying exhaust gases from, the outer ends of said piston bores, whereby cyclical combustion of said fuel in said piston bores imparts reciprocation to said piston member,



means interposed between said housing and said member and operative to impart rotation to said member and said plates during reciprocation of said member in said housing, and

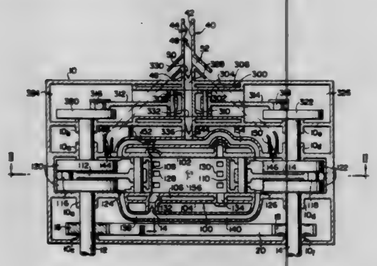
a shaft connected to at least one of said plates for rotation therewith in axially spaced relation to said piston member, and projecting from said one plate to the exterior of said housing coaxially thereof.

4,287,859

TWO-STROKE CYCLE GASOLINE ENGINE

Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, and Isao Igarashi, both of Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 20, 1978, Ser. No. 917,244
Claims priority, application Japan, Apr. 28, 1978, 53-52104
Int. Cl.³ F02B *1/08*
U.S. Cl. 123—51 BA **7 Claims**



1. A two-stroke cycle gasoline engine, comprising:

(a) at least one two-stroke cycle power cylinder-piston assembly incorporating uniflow scavenging and two horizontally opposed pistons;

(b) a pair of crankcases and crank mechanisms housed in said crankcases operatively associated with said power cylinder-piston assembly;

(c) a scavenging pump means including:

(1) at least one pump cylinder-piston assembly of the reciprocating type driven by said power cylinder-piston assembly in synchronization therewith; and

(2) reciprocating piston pump structures including said crankcases and crank mechanisms;

(d) a carburetor;

(e) first passage means for supplying fuel-air mixture from said carburetor individually to said pump cylinder-piston assembly and to said pair of crankcases;

(f) second passage means for supplying fuel-air mixture from said pump cylinder-piston assembly to said pair of crankcases; and

(g) third passage means for supplying fuel-air mixture from said pair of crankcases to said power cylinder-piston assembly,

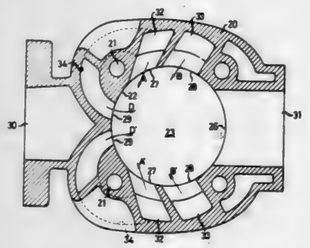
wherein the total stroke volume of said scavenging pump means is between 1.35 and 1.85 times as large as that of said power cylinder-piston assembly, and the operational phase of said pump cylinder-piston assembly is so shifted relative to that of the power cylinder-piston assembly to which it supplies scavenging mixture, that when the power cylinder piston assembly is at its bottom dead center the pump cylinder-piston assembly is in a range between its top dead center and a phase point which is slightly before the top dead center.

4,287,860

TWO-CYCLE ENGINE

Tetsuzo Fujikawa, Kobe; Toshiyuki Takada, Miki, and Kichiji Misawa, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Mar. 24, 1980, Ser. No. 133,373
Claims priority, application Japan, Mar. 28, 1979, 54-40813
Int. Cl.³ F02B *33/04*
U.S. Cl. 123—73 PP **4 Claims**



1. A two-cycle engine of the crank chamber preloading type comprising:

a cylinder head;

a crankcase;

a cylinder interposed between said cylinder head and said crankcase;

a plurality of clamping members penetrating said cylinder to clamp together said cylinder head, said cylinder and said crankcase;

a piston arranged in said cylinder for sliding reciprocating movement;

a suction port and an exhaust port formed in the wall of said cylinder;

at least one main scavenging port formed in the wall of said cylinder and communicating with a crank chamber in said crankcase via a main scavenging passage; and

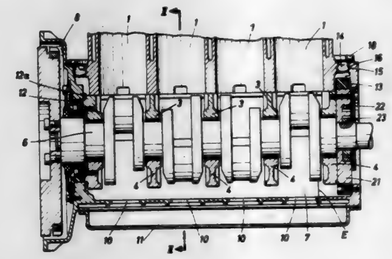
at least on ancillary scavenging port formed in the wall of said cylinder and communicating with said crank chamber via an ancillary scavenging passage; wherein the improvement resides in that said ancillary scavenging port extends through the wall of said cylinder in a manner to surround the outside of one of said clamping member receiving openings.

4,287,861

RECIPROCATING INTERNAL-COMBUSTION ENGINE

Kurt Lettner; Eugen Egger, and Rudolf Unger, all of Steyr, Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Mar. 9, 1979, Ser. No. 19,323
Int. Cl.³ F02B *77/13*
U.S. Cl. 123—198 E **9 Claims**



1. An internal combustion engine comprising

(a) a power unit including a plurality of cylinders and associated cylinder heads, crankshaft bearings connected to the cylinders and a crankshaft rotatably mounted in the bearings, the crankshaft having two ends,

(b) an outer pan having a bottom and an upper rim, the outer pan carrying the power unit and the power unit being mounted in the outer pan with a portion of the power unit protruding above the upper rim of outer pan, the protruding power unit portion and the upper rim defining a space therebetween,

(c) a flywheel housing connected to the outer pan beyond one of the crankshaft ends,

(d) annular soundproofing, load-bearing supporting members mounted coaxially about the crankshaft bearings near the ends of the crankshaft, the supporting members being arranged to support and center the power unit with respect to the outer pan and to hold the power unit against substantial axial movement in the outer pan, and

(e) an oil seal mounted in the space between the protruding power unit portion and the outer pan upper rim for sealing in an oil-tight manner the power unit in the outer pan.

4,287,862

OTTO-CYCLE INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Taro Tanaka, Chiryu, and Yoji Kato, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 29, 1978, Ser. No. 947,703
Claims priority, application Japan, Oct. 3, 1977, 52-118807; Oct. 5, 1977, 52-119861; Dec. 2, 1977, 52-145552; Dec. 5, 1977, 52-145872; Dec. 19, 1977, 52-153279; Dec. 22, 1977, 52-155337
Int. Cl.³ F02P *15/02*
U.S. Cl. 123—310 **7 Claims**

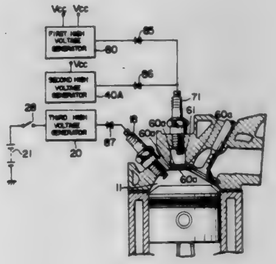
1. An internal combustion engine including a cylinder head, a cylinder block coupled with said cylinder head, a piston housed in said cylinder block to define a combustion chamber therein with said cylinder head, an intake port for introducing an air-fuel mixture into said combustion chamber during a suction stroke of the engine, an exhaust port for exhausting a residual gas, and an intake valve positioned at said intake port to open and close the same, comprising:

a first spark plug mounted in said cylinder head to expose its electrodes to said combustion chamber; and

a first spark discharge control circuit coupled with said spark plug for starting a spark discharge at said spark plug at a predetermined time during the suction stroke and for continuing said spark discharge during at least a first half of a compression stroke,

thereby producing radicals by modifying said air-fuel mixture around said electrodes so that the entire air-fuel mixture introduced into said combustion chamber can be readily and completely burnt, and

wherein said cylinder head is provided with a radical producing chamber communicated with said combustion chamber, and said spark plug is so mounted as to expose its electrodes into said radical producing chamber thereby to retain said radicals in said radical producing chamber, and



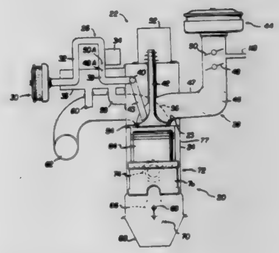
wherein said radical producing chamber is provided with a flame arrester through which said radical producing chamber communicates with said combustion chamber, whereby the flame which may be caused by said spark discharge started during the suction stroke is effectively extinguished by said flame arrester.

4,287,863

POWER TRANSMISSION

John T. Rauen, 6190 Lodewyck, Detroit, Mich. 48224

Continuation-in-part of Ser. No. 539,661, Jan. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 313,144, Dec. 7, 1972, Pat. No. 3,859,971. This application Jan. 11, 1979, Ser. No. 2,624
Int. Cl.³ F02B *5/00*
U.S. Cl. 123—432 **17 Claims**



1. A method of reducing the exhaust emissions of an internal combustion engine having a dual induction system, said dual induction system including a cold air intake and a heated fuel-air intake, a plurality of cylinders, each having a reciprocating piston, and an exhaust outlet means, a crankshaft, said engine including connecting rods interconnecting said pistons and said crankshaft, said method including the steps of:

(a) supplying a heated fuel-air gaseous mixture through said heated fuel-air intake into a cylinder during the intake stroke of a piston reciprocating therein;

(b) simultaneously with step (a) supplying cold intake air through said cold-air intake into said cylinder whereby the overall fuel content in the cylinder remains at approximately 4.8% of the total air volume inducted and thereby increasing the breathing capacity of said engine, said mixture being concentrated at said cylinder's spark plug, by said dual induction system, to assure consistent ignition

of said mixture whereby unburned hydrocarbon emissions, carbon monoxide gas and nitrogen oxide gas are reduced;

(c) guiding said reciprocating pistons within said cylinders by means of a crosshead assembly and guideways guiding said crossheads in the reciprocating axis of said pistons, to eliminate from said pistons the thrust force of said connecting rods and permit the pistons to float within the cylinders; and

(d) increasing the piston sliding speed to a speed in excess of 3000 feet per minute thereby compensating for the power loss to said lower power mixture.

4,287,864

AIR-FUEL MIXTURE RATIO CONTROL DEVICE

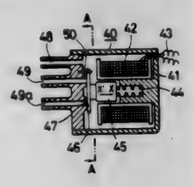
Shigetaka Takada, Ohbu, and Kazumichi Naruse, Nagoya, both of Japan, assignors to Aisan Industry Co., Ltd., Aichi, Japan

Filed Sep. 25, 1979, Ser. No. 78,744

Claims priority, application Japan, Oct. 9, 1978, 53/138740[U]

Int. Cl.³ F02B *33/00*; F22M *17/00*

U.S. Cl. 123—440 **6 Claims**



1. An air-fuel mixture ratio control device for controlling air-fuel mixture ratio in a carburetor which supplies a fuel mixture to an engine and has high speed and low speed systems with air bleed intake ports, comprising

a feed-back loop including an exhaust gas sensor means for detecting the air-fuel ratio of the fuel mixture,

the air bleed intake ports of said high speed and low speed fuel systems each being projected forming two air bleed control ports,

an actuator means for controlling air bleed quantities for both the high speed and low speed fuel systems in the carburetor which supplies the fuel mixture to the engine,

a control circuit means for driving said actuator means in dependency on a signal from said exhaust gas sensor means,

said actuator means comprising,

means comprising a single, rotatable solenoid valve axially moveably mounted with a stroke of the valve for simultaneously opening and closing respectively said air bleed control ports of said high speed and low speed fuel systems, said solenoid valve having an armature, a plate-shaped valve member mounted on said armature and a valve seat portion, said air bleed control ports extending in said valve seat portion,

a pin means projecting from said valve seat portion operatively engages said plate-shaped valve member over the stroke of said valve, for preventing rotation of said valve member,

said plate-shaped valve member is substantially rectangular, is centrally connected to said armature and is formed with a U-shaped groove in one narrow edge of said plate-shaped valve member,

said pin has a free end remote from said valve seat portion and a length from said free end to said valve seat portion slightly greater than the stroke of said valve,

said pin freely extends into said U-shaped groove from one side and said free end extends beyond the other side of said valve member in at least a postion of the latter against said valve seat portion.

4,287,865

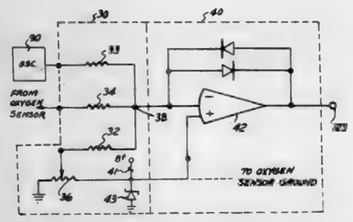
CLOSED LOOP ENGINE CONTROL SYSTEM

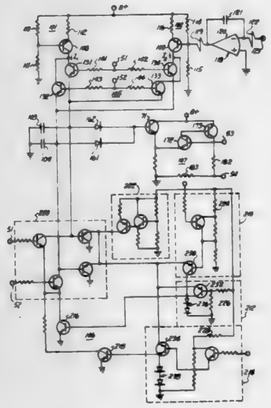
William R. Seitz, Farmington, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 18, 1972, Ser. No. 290,188

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—489 **19 Claims**





1. A control system for an internal combustion engine said control system comprising:

an internal combustion engine;

sensor means for examining an engine operating variable, operative to generate an output signal having a variable characteristic selected to be indicative of the quality of the combustion process occurring within the engine;

signal generating means operative to generate an oscillatory signal having a frequency varying with engine RPM;

signalling means responsive to combine the sensor means signal and the oscillatory signal and to generate a further output signal, at least a portion of which has a repetition rate controlled by said frequency of said oscillatory signal and at least a portion of which has a signal characteristic dependant on said variable characteristic which is indicative of combustion process quality deviations from a predetermined quality;

fuel delivery controller means receiving said further output signal and operative to modulate each increment of fuel delivery at all engine speeds in response to both the repetition rate and characteristic of said further output signal.

4,287,866

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINE

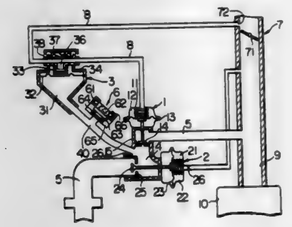
Yasuhiro Ikuta, and Masashi Matsuo, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 11, 1979, Ser. No. 74,764

Claims priority, application Japan, Jul. 31, 1979, 54-98492

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 **6 Claims**



1. An exhaust gas recirculation system for an internal combustion engine comprising:

an exhaust gas recirculation passage,

a constant pressure chamber defined in said exhaust gas recirculation passage,

a pressure regulating valve communicating with said control pressure chamber through a pressure transmitting passage operative in response to the exhaust gas pressure in said constant pressure chamber,

a first flow-rate control valve responsive to vacuum regulated by said pressure regulating valve for opening and closing said exhaust gas recirculation passage,

a second flow-rate control valve disposed at the upstream side of said constant pressure chamber for changing the cross-sectional area of said exhaust recirculation passage in response to the vacuum generated by said engine, and

an atmospheric-pressure introduction valve for introducing atmospheric pressure into said pressure transmitting passage in accordance with the increase of the level of vacuum in at least one of said constant pressure chambers and said pressure transmitting passage.

4,287,867

COMPOUND BOW

John J. Islas, Canastota, N.Y., assignor to Victor United, Inc., Chicago, Ill.

Filed Feb. 25, 1980, Ser. No. 124,473

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—24 R **10 Claims**

1. An archery bow including

a riser having a front face arranged to be directed at a target and a belly facing the archer, said riser further having spaced-apart top and bottom ends,

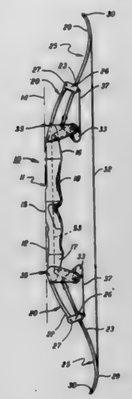
a pair of outwardly extended spring members cantilevered from the top and bottom ends of the riser,

upper and lower elongated limbs each having a midsection, an outer tip and an inner base, each limb being rotatably connected by pivot means to the free end of one of the extended spring members with the limb being positioned on the belly side of said spring member,

a pair of movable cams rotatably supported from the top and bottom ends of the riser adjacent to the base of the upper and lower limbs,

cable means trained over each of said cams for movement therewith, each of said cable means being secured at one end to the base of an adjacent limb and at the other end to the midsection of said adjacent limb, and

a bow string being connected to the tip of each limb whereby drawing the bow string from its rest position



toward a fully drawn position causes the cams to rotate and thus impart a programed motion to said limbs.

4,287,868

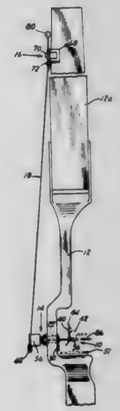
RETRACTING ARROW REST

Charles M. Schiff, 976 S. Rifle, Aurora, Colo. 80012

Filed Jun. 16, 1980, Ser. No. 159,877

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—41 A **9 Claims**



1. An arrow rest device movable from an arrow supporting position to a position to clear fletching on an arrow released from a bow, comprising:

(a) an arrow holder assembly adapted to be mounted on a bow said assembly including an arrow rest

(b) positioning means connected to said arrow holder assembly for positioning said arrow rest from upright arrow holding, position when the bow is not drawn, to a lowered, arrow clearing, position when a drawn bow string is released

(c) triggering means adapted to be attached to an end portion of a limb of a bow, responsive to movement of a bow limb after arrow release, for moving said arrow holder assembly from said upright position to said lowered position in response to said movement of a bow limb, inclusive of a shaft adapted to be mounted on said end portion of a bow limb and a pivotal arm extending radially from said shaft and pivotable relative to a bow, weight means associ-

ated with said pivotal arm and movable in response to movement of a bow limb and cable means interconnecting said arrow holding assembly and pivotal arm whereby movement of said weight means pivots said pivotal arm pulling on said cable means to pivot said arrow rest to said lowered position.

4,287,869

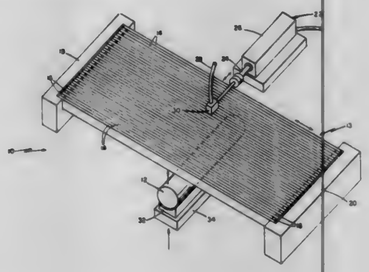
CHARGING SYSTEM FOR CUTTING BLADE

Frederick Schmid, Marblehead, Mass., assignor to Crystal Systems Inc., Salem, Mass.

Division of Ser. No. 886,036, Mar. 13, 1978, Pat. No. 4,187,828, which is a continuation-in-part of Ser. No. 767,809, Feb. 11, 1977, Pat. No. 4,092,972. This application Jun. 15, 1979, Ser. No. 48,712

Int. Cl.³ B28D *1/06*

U.S. Cl. 125—16 R **14 Claims**



1. A system for charging abrasive particles into a blade including a longitudinally-extending abrasive-holding portion as said blade is moved in a direction generally parallel to its length, said system comprising:

a charging roll mounted for rotation about an axis generally perpendicular to the direction of movement of said blade and including an annular groove having a width slightly greater than the width of said abrasive-holding portion and less than the sum of said width of said abrasive holding portion plus twice the nominal size of said particles, whereby said blade may be charged by positioning said abrasive-holding portion in said groove and embedding said particles into the portion of said abrasive-holding portion facing the base of said groove.

4,287,870

INDOOR BARBEQUE COOKING DEVICE

John Johnson, 3695 Hunter St., Glen Avon Heights, Calif. 92509

Continuation-in-part of Ser. No. 889,754, Mar. 24, 1978, Pat. No. 4,185,611, which is a continuation-in-part of Ser. No. 713,888, Aug. 12, 1976, Pat. No. 4,088,144. This application Apr. 9, 1979, Ser. No. 28,058

Int. Cl.³ A47J *37/00*; F24B *7/00*; F23H *13/00*

U.S. Cl. 126—25 C **10 Claims**

1. A cook device comprising

means for holding fuel;

means for holding food to be cooked;

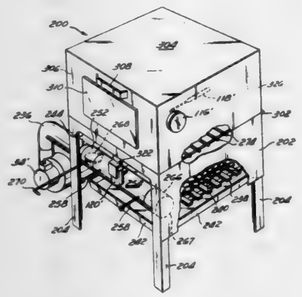
means for selectively enclosing said food-holding means to provide an oven;

means for blowing air;

air jet means, in air flow communication with said air-blowing means (for) selectively moveable between a first position directing a jet of air toward the fuel in said fuel holding means (or) and a second position directing air into said oven;

light-sensing means for activating said air blowing means in response to the detecting of an open flame in said fuel-holding means so that said flame is extinguished by a jet of air from said air jet means when said air jet means is directed toward the fuel in said air jet means, thereby preventing the charring of said food, and

heat-sensitive means for activating said air blowing means in response to the presence of a temperature in said oven which is greater than a selected temperature so that said oven is cooled to approximately said selected temperature by a flow of air from said air jet means when said air jet means is directed toward said oven;



wherein said air jet means comprises:

a tubular member rotatable about its longitudinal axis; and

a nozzle in said tubular member,

said food holding means is a grill, said fuel holding means is a grate, and said air jet means further is selectively rotatable to a third position directing said nozzle toward said grate.

4,287,871

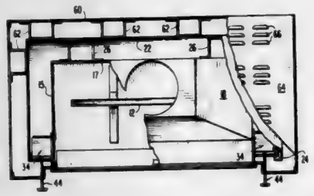
ZERO CLEARANCE MOBILE HOME FIREPLACE UNIT

George Schumann, Vanderhoof, Canada, and Jerry Beckstead, Glenrock, Wyo., assignors to Energy Research International, Nassau, The Bahamas

Filed Oct. 23, 1978, Ser. No. 953,759

Int. Cl.³ F24B *3/00*; F24C *1/14*; F24B *7/00*

U.S. Cl. 126—67 **7 Claims**



1. An isolated fireplace, space heater for utilizing the heat of combustion of fuel therein to heat the interior of a structure without withdrawing air from the interior of said structure for combustion, comprising:

a firebox having a floor, back, and two sides adapted to be disposed within a structure to be heated; hood means mounted on the upper portion of said firebox for collecting gaseous products of combustion from said box; flue means in communication with said hood means for venting said products to the atmosphere external to the structure;

a first metal skin surrounding the floor, sides, and back of said firebox, and said hood means, said first skin being spaced therefrom to define with said box and hood means a first air passage between the outer surface thereof and the inner surface of said skin; means carried by said device for admitting outside air to said air space and for circulating said air therethrough; vent means carried by said first skin for venting outside air from the passage into the interior of the structure to be heated whereby when fuel is consumed in said firebox outside air will be circulated therearound and vented into the structure;

door means coupled to the front of said device for enclosing said firebox and said first skin to isolate the interior of said firebox from the interior of the structure;

control means disposed within the air passage for diverting and preheating a portion of the air therein into the firebox to supply combustion air when fuel is consumed therein; said control means comprising at least one housing mounted on the outer surface of said firebox and having an inlet opening into the first passage and an outlet into said firebox; said housing being an elongated, vertically disposed, hollow member and the outlet including a plurality of vertically arrayed apertures disposed adjacent said door means; baffle means disposed between the inlet and the outlet to define a tortuous pathway between the inlet and outlet for air passing into the firebox; and means carried by said housing for controlling the flow of air through the inlet thereto;

insulating means surrounding the outer surface of said first skin for minimizing heat loss therefrom when fuel is consumed in said firebox; and

a second skin surrounding the sides, back, floor and upper portion of said first skin and spaced therefrom to define a second air passage; flow means carried by said device for circulating air from within the structure through said second passage.

4,287,872

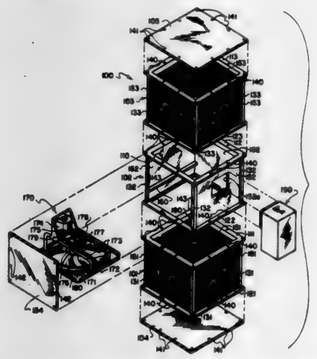
METHODS AND APPARATUS FOR DUCTLESSLY DISTRIBUTING AND CIRCULATING HEATED AIR FROM A GAS-FIRED HEATER TO HEAT LARGE VOLUMES OF AIR IN INDUSTRIAL FACILITIES

John F. Rampe, Mayfield Heights, Ohio, assignor to Rampe Research, Cleveland, Ohio

Filed Oct. 5, 1979, Ser. No. 82,115

Int. Cl.³ F24H *3/02*

U.S. Cl. 126—110 D **3 Claims**



1. An apparatus for heating, circulating and dispersing air in industrial building facilities and the like, comprising:

(a) an upstanding structure of substantially right parallelepiped configuration including an assambly of lower, intermediate and upper modules arranged one atop the other and secured together to define a substantially unobstructed vertical chamber extending through the assembled modules;

(b) each of the modules having a framework which defines upper and lower mounting flanges extending perimetrically in horizontal planes near upper and lower ends of their associated modules;

(c) the upper and lower mounting flanges of adjacent modules being releasably connected to releasably interconnect the modules;

(d) closure means closing the upper end of the upstanding structure;

(e) each of the modules additionally having four substantially rectangular sidewalls secured to their associated framework, each of the sidewalls of the upper and lower modules having a plurality of apertures formed therethrough to facilitate the passage of air therethrough, and the sidewalls of the intermediate module being substantially imprevious to inhibit the passage of air therethrough with the exception of one of the intermediate module sidewalls having an opening formed therethrough for receiving heated air being discharged from a gas-fired heater;

(f) a heater positioned externally of said one intermediate module sidewall so as to avoid obstruction to said chamber and mounted thereon, said heater having gas-fired means for heating air drawn externally of said modules into said heater from within said industrial facility for discharging heated air through said intermediate sidewall opening into the intermediate module for combining with and augmenting air passing vertically through the chamber; and,

(g) an electrical blower assembly disposed in said vertical chamber at a location between the upper and lower module apertures and including a fan for drawing ambient air through the apertured lower module sidewalls, for ducting such air upwardly through the chamber for combination with heated air being discharged into the chamber by the gas-fired heater, and for discharging such combined air through the apertured upper module sidewalls.

4,287,873

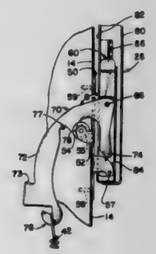
OVEN DOOR HINGE

James R. Goins, Ten Mile, and Hubert H. Cardin, Athens, both of Tenn., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed May 2, 1980, Ser. No. 146,038

Int. Cl.³ F23M *7/00*; E05F *1/12*; A22C *21/00*

U.S. Cl. 126—194 **11 Claims**



1. A hinge mechanism comprising:

a mounting plate supporting a stop member fixed relative to the mounting plate;

a longitudinally extending hinge link having one end pivotally mounted to and supported by the mounting plate at a location spaced from the position of the mounting plate supported stop member, the hinge link being pivotally movable toward and away from the stop member;

a hinge blade configured as a bell crank pivotally mounted intermediate its ends to the hinge link at a location spaced from said pivotally mounted end, one arm of said hinge blade extending from the hinge link toward the stop member, said one arm being biased toward the stop member and including a recess aligned with the stop member when the hinge mechanism is in at least a partially open position, the other arm of said hinge blade extending generally along at least a portion of the longitudinal extent of the

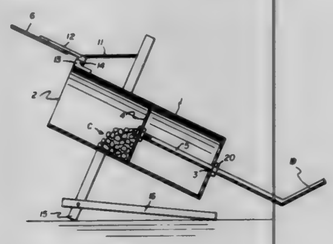
hinge link, wherein axial alignment of said other arm and the hinge link holds the recess out of engagement with the stop member when the hinge link is moved toward and away from the stop member, a predetermined degree of nonaxial alignment between said other arm and the hinge link permitting engagement of the recess with the stop member to lock the hinge mechanism in place at said partially open position.

4,287,874

COAL AND ASH CADDY

Edgar E. Michael, Rte. 1, Box 404A, Verona, Va. 24482

Filed Oct. 18, 1979, Ser. No. 86,252
Int. Cl.³ F23J *1/00*; B65D *88/00*
U.S. Cl. 126—242 **9 Claims**



1. A coal and ash caddy comprising in combination:
a container of uniform cross-section having an open end at one extremity thereof and an aperture at a closed end opposite from said open end,
a plunger plate disposed within said container having a configuration complemental to said uniform cross section of said container,
a plunger rod connected to said plunger plate, said rod extending through said aperture to push the contents within said container outside said open end by coaction of said plunger plate against the contents,
support means pivotally disposed on an outer portion of said container about an axis, said support means having door means overlying said open end, and door-control means operatively connected to said support means whereby when said container is pivoted about said axis relative to said support means said door means opens and closes said open end and said support means simultaneously keeps said container suspended so as to prevent heat from ashes and the like from contacting the surface supporting said caddy.

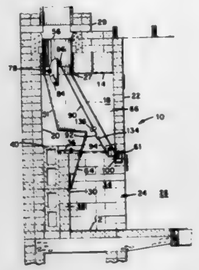
4,287,875

DAMPER SYSTEM

Clell C. Mayes, Box 8, Pigeon Forge, Tenn. 37862

Filed Nov. 23, 1979, Ser. No. 96,983
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—288 **3 Claims**

1. A damper system in combination with a fireplace including a firebox having a front opening in communication with a room, a lintel, a corner passageway offset from said front opening in communication with said firebox, and below said lintel, an upper opening spaced above said front opening, and a sleeve member extending downwardly from said upper opening toward said front opening to direct combustible product from said fireplace to said upper opening, said damper system comprising weighted plate means pivotally mounted within said sleeve member and biased to an open position, support means connected to said plate means and extending from said plate means through said support means and into said room, means for guiding said elongated flexible means for passage through said corner passageway and through said support means, locking means for selectively securing said flexible means within said support means, whereby said plate means is



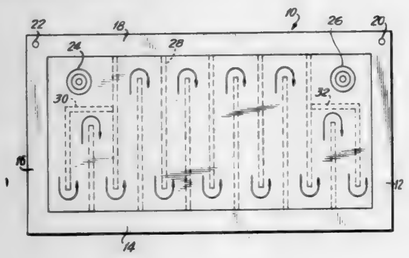
selectively pivotable by an operator through said flexible means without penetrating said front opening.

4,287,876

SOLAR HEATING PANEL UNIT AND SYSTEM THEREFOR

Pierre Jacques, Huntington, N.Y., assignor to Cellu-Craft Products Company, New Hyde Park, N.Y.

Filed Nov. 20, 1979, Ser. No. 96,065
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 **14 Claims**



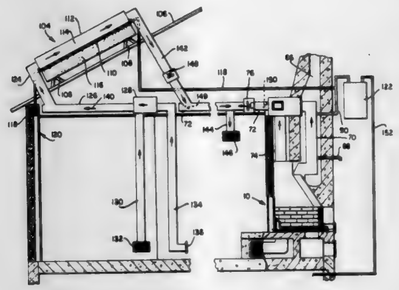
1. A solar heating panel unit comprising first and second sides connected together along an at least substantially endless path to form a pouch having an internal chamber adapted to accommodate a heat transfer fluid, at least one opening being provided through said first and second sides in a position spaced from said chamber to provide for the mounting of said pouch and access means coupled to at least one of said sides for the supply and removal of said fluid to and from said chamber, said first side including a layer of black polyester, said second side including a lamination of reflective foil and plastic, said foil facing said chamber, said access means including inlet and outlet fixtures coupled to said pouch and including engaged members comprising flanges sandwiching one of said sides therebetween, said members defining a bore communicating with said chamber, one of said members extending into said chamber and including therein a cylindrical part spacing said sides apart and provided with radial openings connecting said bore with said chamber, said panel unit further comprising connecting means in said chamber connecting said first and second sides in offset parallel lines to define a serpentine path in the chamber for the flow of said fluid and also connecting said sides in transverse lines proximate said access means to form sub-chambers communicating with said serpentine path to divert the flow of fluid between said access means and said serpentine path.

4,287,877

SOLAR AND CENTRAL FIREPLACE HEATING SYSTEM

Cecil A. Gaines, Rte. 1, Box 120 G, Fort Walton Beach, Fla. 32548

Continuation-in-part of Ser. No. 947,350, Oct. 10, 1978, abandoned. This application Dec. 7, 1979, Ser. No. 101,147
Int. Cl.³ F24J *3/02*; F28B *7/00*
U.S. Cl. 126—427 **4 Claims**



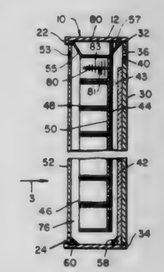
1. A heating system for a building comprising:
a solar panel mounted externally of said building, said solar panel comprising:
a solar radiation absorbing plate;
a solar radiation transmissive plate spaced from said absorbing plate to define a solar air heating chamber therebetween, said solar air heating chamber being sized and shaped to conduct air therethrough and to heat said air passing therethrough during periods when said solar panel is exposed to solar radiation, said solar air heating chmaber having an input and an output;
means for conducting air from inside said building to said input of said solar air heating chamber and for conducting heated air from said output of said solar panel to the inside of said building and for distributing said air to selected portions of said building;
means for forcing air through said conducting and distributing means and through said solar air heating chamber;
water heating means in heat transfer relation with said absorbing plate for conducting water therethrough to heat said water during periods when said solar panel is exposed to solar radiation; said means having an input and an output;
means for conducting water from a pressurized source to said input of said water heating means;
means for conducting water from said output of said water heating means to a storage tank;
a fireplace for burning fuel therein; said fireplace having an opening into a room of said building;
a chimney connected to said fireplace to provide an exhaust for gases of combustion from said fuel burned in said fireplace;
means for selectively providing air from outside said building to said fireplace;
means for selectively sealing said opening of said fireplace from communication with said room;
a heat extraction unit mounted within said fireplace, said unit comprising:
a first air chamber defining a sloping back wall of said fireplace;
a second air chamber defining a sloping upper front wall of said fireplace, such that said sloping back wall and said sloping upper front wall define an opening for passage of said hot gases of combustion from said fireplace to said chimney;
two side air chambers each defining a side wall of said fireplace, said side air chambers freely communicating with said first and second air chamber;
means for conducting air from said building to at least one of said side air chambers, whereby said air in said air chambers is heated by fuel burned in said fireplace;
means for conducting said heated air from said second air chamber to said means for distributing heated air;
means for conducting said heated air from said first air chamber vertically through at least a portion of said chimney, whereby said heated air in said means is further heated by said hot gases of combustion in said chimney, said means further conducting said heated air to said means for distributing heated air; and
means for selectively preventing communication between said means for distributing heated air and said heat extraction unit.

4,287,878

PORTABLE SOLAR HEATER STRUCTURE

Danforth Holley, and Danforth E. Holley, both of Grosse Pointe Shores, Mich., assignors to Holly International Company, Grosse Pointe Farms, Mich.

Filed May 16, 1979, Ser. No. 39,684
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **5 Claims**



1. Solar heater structure comprising an outer frame having a top, a bottom and two sides defining an exposed elevation and a shade elevation, a back covering the shade elevation of the frame having opening means therein adjacent said top permitting cool air to pass therethrough into the solar heater structure, insulating material within the frame positioned adjacent the back, solar collector means opening toward the exposed elevation of the frame positioned within the frame in spaced relation to said back, said solar collector means being secured to the top of the frame so as to prevent flow of heated air passing over the collector across the top of the collector and out of the back of the frame, being in spaced relation to the bottom of the frame to permit flow of air entering through the back of the frame across the bottom of the collector and upward across the front of the collector, and extending entirely between the sides of the frame, a cover over the exposed side of the frame which is transparent to sun rays in spaced relation to the solar collector means said cover having opening means therein adjacent the top thereof permitting heated air to pass out of the solar heater structure adjacent the top thereof, and a passage in the solar heater structure including the space between the insulating material and the back of the collector, the space between the bottom of the collector and the bottom of the frame and the space between the front of the collector and the cover through which air is drawn from the opening means in the back over the insulating material and past the solar collector means to the opening means in the cover.

4,287,879

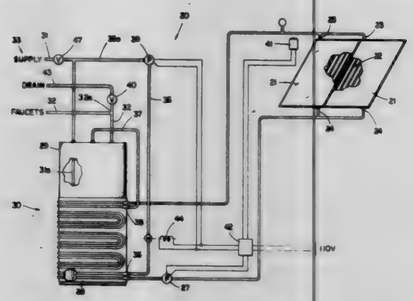
WATER HEATING SYSTEM USING SOLAR ENERGY

Charles F. Roark, 24 Maple La., Brownsburg, Ind. 46112

Division of Ser. No. 810,888, Jun. 28, 1977, abandoned. This application May 3, 1979, Ser. No. 35,463

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—437 **22 Claims**



1. A water heating system which comprises:

a solar collector panel having a first passageway cooperating therewith;

a conventional hot water heater assembly having a storage tank therein and a heating device associated with said tank for heating stored water in the tank independent of solar energy;

a heat exchanger jacket having a second passageway and a third passageway therein, said second passageway coupled in a continuous flow loop with said first passageway in said collector panel;

said continuous flow loop having a working fluid therein;

pumping means operable for circulating said working fluid through said continuous flow loop;

fluid transfer means operable for circulating water from within said storage tank through said third passageway and back into said storage tank; and

means circumferentially securing said heat exchanger jacket around said storage tank in direct contact with said tank for heat transfer directly from said jacket by conduction to said tank.

17. A method of converting a water heating system to a solar supplemented heating system comprising the steps of:

taking a conventional water heater assembly having a storage tank with an outer housing and inner insulation, and removing from the tank, the outer housing and insulation to expose the storage tank;

securing to the exposed storage tank, a heat exchanger jacket wrapped around at least the lower half of the tank and circumferentially securing it to the tank;

reinstalling the insulation around the jacket and tank and reinstalling the outer housing around the insulation;

establishing communication of the interior of the tank with one of two serpentine passageways in the jacket to provide a circulation loop for water in the tank through one of the passageways in the jacket and back into the tank; and

providing a solar collector and establishing a circulation loop for working fluid through the solar collector and through another of the serpentine passageways in said jacket.

4,287,880

SOLAR COLLECTOR

John M. Geppert, 3282 S. 77th Ave., Omaha, Nebr. 68124

Filed Nov. 13, 1979, Ser. No. 93,756

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—439 **15 Claims**

1. A stationary solar heat collector comprising,

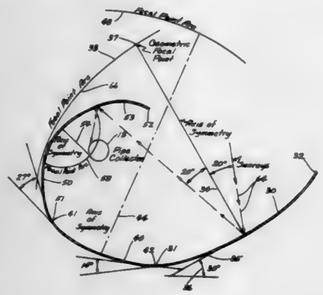
a reflector including a substantially upwardly facing concave reflective surface,

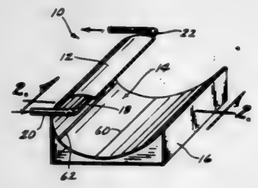
an absorber tube,

means for supporting said absorber tube relative to said reflective surface for receiving reflected sunrays therefrom,

said reflective surface being defined in cross-section by first, second and third semi-parabolic curves arranged in generally end-to-end relation,

said second curve being interposed between said first and third curves, said first and third curves each including a free end and an opposite end situated adjacent a respective end of said second curve,





said first and second curves being disposed in generally upwardly facing relation and said third curve being disposed in generally downwardly facing relation, said absorber tube being positioned below at least an upper portion of said third curve,

said first, second and third semi-parabolic curves each being generally centrally intersected by the respective axis of symmetry therefor,

said first curve being oriented such that the axis of symmetry thereof is inclined upwardly and toward said third curve, and

said second curve being oriented such that the axis of symmetry thereof is inclined upwardly and toward said first curve.

4,287,881

SOLAR ENERGY ABSORBER FOR USE WITH A LINEAR OPTICAL CONCENTRATING SYSTEM

Mario Palazzetti, Avigliana; Angioletta Boero, Turin; Francesca Demichelis, Turin, and Enrica Minetti-Mezzetti, Turin, all of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Feb. 7, 1980, Ser. No. 119,603

Claims priority, application Italy, Feb. 20, 1979, 67372 A/79

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—440 **7 Claims**

1. A solar energy absorber for use with an optical system for focusing radiant energy at a focal axis, comprising;

a peripheral wall defining a duct and a longitudinally extending slit for location at said focal axis to allow passage of said radiant energy focused by said optical system into said duct, said peripheral wall having a reflective internal surface;

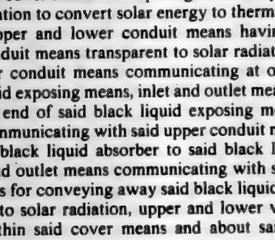
a plurality of parallel, spaced-apart plates extending longitudinally within said duct, arranged to receive directly said radiant energy passing through said slit and adapted to absorb said radiant energy as heat;

a reflective surface extending longitudinally of said duct on the opposite side of said plates from said slit and being arranged to reflect radiant energy incident in a direction parallel to said plates onto said plates; and

said duct having an air-flow therethrough to take up heat from said plates in use of the absorber.

7. Solar energy absorption apparatus comprising, in combination:

an optical system for focusing radiant energy at a focal axis, said optical system having a plane of symmetry; and



a solar energy absorber comprising;

a peripheral wall defining a duct and a longitudinally extending slit at said focal axis to allow passage of said radiant energy focused by said optical system into said duct, said peripheral wall having a reflective internal surface,

a plurality of spaced-apart plates extending longitudinally within said duct parallel to said plane of symmetry of said optical system, said plates being arranged to receive directly said radiant energy passing through said slit and being adapted to absorb said radiant energy as heat;

a reflective surface extending longitudinally of said duct on the opposite side of said plates from said slit and being arranged to reflect radiant energy incident in a direction parallel to said plates; and

said duct having an air-flow therethrough to take up heat from said plates in use of said absorption apparatus.

4,287,882

BLACK LIQUID ABSORBING SOLAR COLLECTOR

John P. Mattson, Ducksberry, Mass., assignor to Solarspan, Inc., Duxbury, Mass.

Continuation-in-part of Ser. No. 938,026, Aug. 30, 1978, Pat. No. 4,210,128. This application Jun. 25, 1979, Ser. No. 51,617

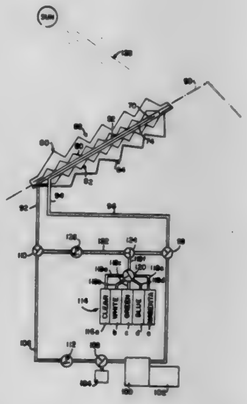
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ F24J *3/02;* **F28F** *27/02*

U.S. Cl. 126—445 **8 Claims**

7. A solar energy collector comprising an upper and lower cover means wherein at least the upper cover means is transparent to solar radiation, means disposed between said upper and lower cover means for exposing a black liquid absorber to solar radiation to convert solar energy to thermal energy comprising upper and lower conduit means having at least the upper conduit means transparent to solar radiation, said upper and lower conduit means communicating at one end of said black liquid exposing means, inlet and outlet means, disposed at the other end of said black liquid exposing means, said inlet means communicating with said upper conduit means for introducing a black liquid absorber to said black liquid exposing means, said outlet means communicating with said lower conduit means for conveying away said black liquid absorber after exposure to solar radiation, upper and lower wall means disposed within said cover means and about said black liquid exposing means and wherein at least the upper wall means is transparent to solar radiation, said wall means having the configuration and being positioned relative to said black liquid





exposing means whereby when said collector is exposed to solar radiation will provide for mechanical rigidity of said collector and minimize heat loss by conduction, convection and radiation.

4,287,883

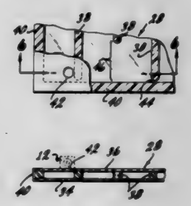
COST-EFFECTIVE SOLAR HEATING SYSTEM

George M. Kyrias, 31112 Via Santo Tomas, San Juan Capistrano, Calif. 92675

Filed May 6, 1980, Ser. No. 147,206

Int. Cl.³ F24J *3/02;* **F28F** *3/14*

U.S. Cl. 126—445 **10 Claims**



5. A collector of solar heat comprising in combination:

a first panel of a composite material including a sheet of glass cloth included in a cured epoxy resin;

a second panel, parallel to but spaced from said first panel, of a composite material including a sheet of glass cloth included in a cured epoxy resin; and,

a spacer of a cured mixture of silica particles and an epoxy resin, located between and bonded to said first panel and said second panel, and including strips juxtaposed across

the opposing surfaces of said first panel and said second panel, each of said strips being completely surrounded by a space included between said first panel and said second panel whereby said space constitutes a passage for the flow of a fluid through said collector;

said epoxy resin further comprising:

a polymer of the group consisting of epichlorohydrin and bisphenol A, said polymer being crosslinked with a compound of the group consisting of a polyamine, a polyamide, urea formaldehyde, melamine formaldehyde, methylated melamine, methylated urea, or a multibasic organic acid.

4,287,884

KNEE BRACE WITH SELECTIVELY VARIABLY POSITIONABLE PADS

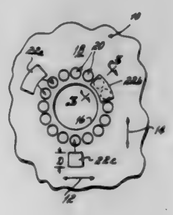
Leslie T. Applegate, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio

Filed Dec. 6, 1979, Ser. No. 100,842

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ A61F *3/00*

U.S. Cl. 128—80 C **2 Claims**



1. An improved knee brace comprising:

a tubular elastic sleeve dimensioned and configured to apply radially inwardly directed compressive forces to the wearer's knee when placed thereabout,

at least four individual pad mounts of substantially identical size permanently fixed to the interior of said sleeve and disposed in a generally circular array surrounding a substantial portion of the wearer's patella, including portions above, below, and on either side of the patella, said mounts being free of direct interconnection therebetween to enable said elastic sleeve to stretch to enlarge the diameter of said circular array when placed on knees of varying girth,

at least a first resilient pad of unit size and at least a second resilient pad of N-unit size where N is an integer larger than one, said pads each selectively removably engageable with different individual pad mounts for selectively removably mounting said pads at different positions relative to the wearer's patella to provide support and protection for the wearer's patella at variable locations thereof as dictated by the individual needs of the wearer, the ratio between the number of pad mounts engaged by said second and first pads being N.

4,287,885

KNEE BRACE WITH RESILIENT PAD SURROUNDING PATELLA

Leslie T. Applegate, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio

Filed Dec. 6, 1979, Ser. No. 100,851

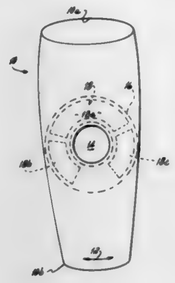
Int. Cl.³ A61F *5/01*

U.S. Cl. 128—80 C **10 Claims**

1. An improved knee brace comprising:

a generally cylindrical sleeve formed of elastic material stretchable in a circumferential direction and dimensioned to cover the leg area at the knee joint, said sleeve having a central front patella section located to be proximate a wearer's patella when said sleeve is positioned about the wearer's knee,

a flexible sheet of material substantially inelastic in a circumferential direction fixedly secured to the interior of said sleeve, said sheet configured and dimensioned to surround a substantial portion of said patella section of said sleeve, and



a plurality of physically separate resilient pads secured to the interior surface of said sheet at spaced locations in a generally circular pattern to surround a substantial portion of said patella section of said sleeve, said pads being restrained by said sheet against circumferential movement relative to said patella section as said sleeve stretches under forces exerted thereon by the knee of a wearer thereof when bent.

4,287,886

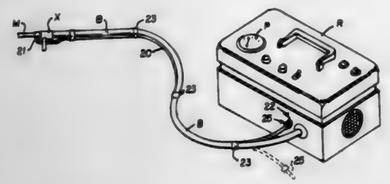
REMOTE PRESSURE SENSOR TUBE FOR THE ALARM SYSTEM OF A RESPIRATOR

Harris A. Thompson, 175 Bellevue Dr., Boulder, Colo. 80302

Filed May 12, 1980, Ser. No. 148,766

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—202.22 **7 Claims**



1. In combination with a respirator having a breathing tube extended therefrom and to a mouthpiece or the like at its remote end and having a pressure-responsive indicator means, including an alarm, to indicate a disruption of the pressures of cyclic respiratory action within a supply passageway in the respirator, the improvement comprising: a sensor means associated with the breathing tube and with the indicator means to initiate a pressure indication at the indicator means responsive to a disruption of pressures of cyclic respiratory action at the remote end of the breathing tube, and selective switch-over means adapted to permit the indicator means to selectively respond to a disruption within the respirator or to a disruption at the remote end of the breathing tube.

4,287,887

OXYGEN RESPIRATOR CONTAINER FOR AN OXYGEN RELEASING CHEMICAL CARTRIDGE

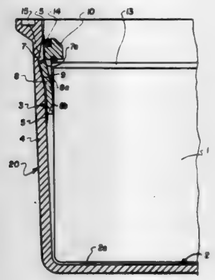
Claus-Dieter Hinz, Lübeck, and Adalbert Pasternack, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Dräger werk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,999

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913507

Int. Cl.³ A62B *7/08*

U.S. Cl. 128—202.26 **7 Claims**



1. An oxygen respirator container comprising a cylindrical bottom part having a bottom wall, and an interior side wall with a plurality of spaced apart raised ribs on said side wall defining a recess between adjacent ribs, an oxygen generating cartridge disposed in said bottom part on said bottom wall and over said ribs of said side wall, and at least one holding element disposed in said recess between adjacent ribs between said side wall and said container and having a top head portion projecting outwardly from said holding element towards the center of the bottom part and overlying the top edge of said cartridge and holding said cartridge over said bottom wall, said side wall having an indented part adjacent the top of said container in said recess with a top ledge thereof defining a holding nose, said holding element having a deflectable tab portion engageable under said holding nose.

4,287,888

IRRIGATING APPLIANCE FOR FEMALE HYGIENE

Günter Schwarz, Steinacherstr. 67, 8804 Au, Switzerland

PCT No. PCT/CH79/00039, §371 Date Nov. 13, 1979, §102(e) Date Oct. 19, 1979, PCT Pub. No. WO79/00750, PCT Pub. Date Oct. 4, 1979.

This PCT application filed Mar. 13, 1979, Ser. No. 86,581

Claims priority, application Switzerland, Mar. 13, 1978, 2682/78

Int. Cl.³ A61M *3/00*

U.S. Cl. 128—239 **15 Claims**



1. In an irrigating appliance for female hygiene with a shaft-like member in which there is a cavity with an inlet (8) and at least one outlet for an irrigating liquid, means for fixing the appliance to one end of a tube connectable to a stationary water supply means located in the vicinity of the rear end of the member and an engagement member arranged in the vicinity of the rear end of the shaft-like member and which projects at least approximately radially from the latter, so that irrigating liquid which flows out when the member is inserted in the woman's vagina is guided over the body surface areas adjacent to the vaginal opening and at least one outlet of the cavity is positioned adjacent to the engagement member side directed towards the front end of the shaft-like member, the improvement comprising a main outlet (18, 34, 34') whose water discharge direction runs radially along one surface of the engagement member positioned adjacent to the latter, an annular duct (68) which embraces the shaft-like member and which is connected with the cavity (70) by a plurality of springs (72), the main outlet (34') being located on an outer periphery point of the annular duct, and a coupling part (102) detachably connected to a ring member (94) and the shaft-like member (90) and having at least one radially directed opening (126) issuing into at least partly annular duct (128) having the main outlet (132) at one point on its periphery.

4,287,889

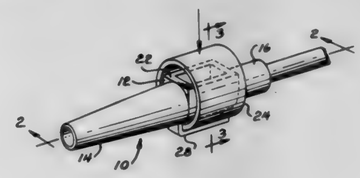
SUCTION CATHETER HAVING A NON-STRESSED VACUUM REGULATOR

James A. Stupar, Waukegan, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 29, 1979, Ser. No. 99,134

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—276 **6 Claims**



1. A suction catheter, adapted for operation without direct contact by the operator with the secretions being drawn from the patient through the catheter, comprising:

an open ended tube, one end of which is adapted for connection to a vacuum source for the application of a suction force therethrough;

a longitudinal bore extending through the catheter and between its ends;

portions of the catheter defining an opening transverse to the bore and in fluid communicaton therewith; and a flexible band encircling the longitudinal axis of the catheter and overlying the transverse opening in said catheter and spaced therefrom in its unstressed state and having a band portion attached to said catheter the band being made from an inherently resillient material such that it returns to its original conformation after being deformed, the band in said original confirmation being in an unstressed state, the portion of the band adjacent the opening being selectively spaced therefrom, whereby an unintentional closing off of the opening by the band is avoided and residual vacuum is minimized.

4,287,890

ENDARTERECTOMY METHOD

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304

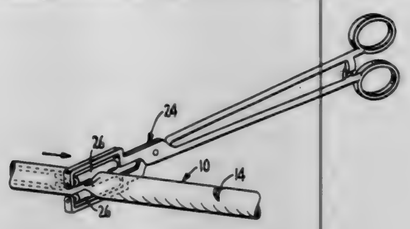
Filed Jan. 24, 1980, Ser. No. 114,980

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—303 R **4 Claims**

4. A method for freeing arteriosclerotic occlusions from arteries comprising laterally compressing the artery in a zone of compression to form a tapered end edge on an occlusion

segment, and stripping said occlusion segment from said artery by causing said zone of compression to progressively traverse



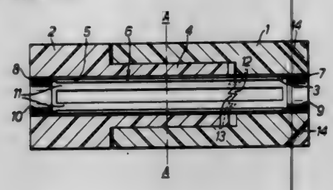
said segment from said tapered end edge to the distal end of said segment.

4,287,891

SECURING DEVICE FOR SURGICAL TUBES

Joseph L. Peters, 282B Ballard La., Finchley, London N.12, England

Filed Aug. 31, 1979, Ser. No. 71,484
Int. Cl.³ A61B *17/34*
U.S. Cl. 128—347 **9 Claims**



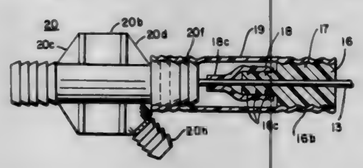
1. A securing device to be fixed externally to the body of a patient fitted with a surgical body tube for securing the body tube against unintentional displacement into or out of the patient, said device comprising tubular means having an axial bore for the body tube to pass through, a flexible elongated gripping element mounted within and extending generally longitudinally of said axial bore means securing said gripping element to said tubular means, and selectively adjustable means for helically winding said gripping element about the axis of said bore and the body tube passing through the bore for urging the element radially whereby to grip the body tube securely, said adjustable means being operable to also unwind said element to release the body tube and allow the latter to be pulled freely through the device.

4,287,892

CANNULA FOR INTRA-AORTIC BALLOON DEVICES AND THE LIKE

Peter Schiff, Box 354 Rte. 7, Cookeville, Tenn. 38501

Filed Mar. 3, 1980, Ser. No. 126,452
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—349 B **29 Claims**



1. A cannula assembly for use with intra-aortic balloons and the like comprising a rigid Y-shaped connector having a first bore extending therethrough and a branching bore communicating with said first bore and extending at an angle thereto; said firstbore having first and second ends; said fitting being providedwith first, second and third coupling projections; said first bore extending through said firstand second couplingprojections and said second bore extending through said third coupling projections; and

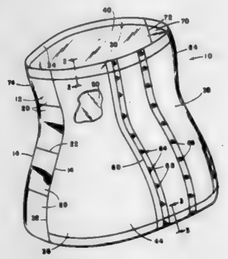
a cannulatube having a first end thereof mounted upon said first coupling projection to form a liquid-tight seal therebetween; the inner diameter of said cannula tube and said first bore being substantially equal.

4,287,893

WEIGHT REDUCING BELT

Maria V. Salazar, 9505 Holmes Plz., Apt. 2, Omaha, Nebr. 68127

Filed Jun. 26, 1979, Ser. No. 52,301
Int. Cl.³ A41C *1/00*
U.S. Cl. 128—556 **8 Claims**



1. A weight reducing belt of a length sufficient to cover a person's midsection, said belt having a vertically extending tightening section made of stretchable resilient material and having the majority of its remaining area formed of flexible material which is substantially impervious to moisture passage therethrough and which is substantially less resilient than said material of said tightening section, means connecting adjacent ends of said remaining area to said tightening section, said remaining area having therein two terminal end portions extending from top to bottom of said belt, means for adjustably connecting said two terminal end portions together so as to give said belt a greater or lesser interior size.

4,287,894

APPARATUS FOR PRODUCING A SERIES OF IMPULSES CORRESPONDING TO A SUCCESSION OF PULSE BEATS

Peter Lautenschläger, Gonbach, and Michael Teichmann, Obermoschel, both of Fed. Rep. of Germany, assignors to Keiper Dynavit GmbH & Co., Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,719
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825327
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—687 **8 Claims**

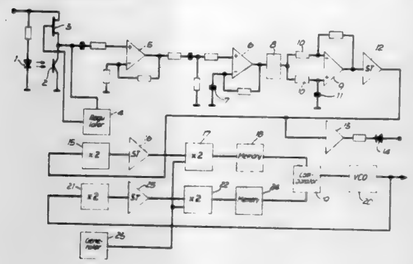
1. An apparatus for producing a succession of pulses corresponding to the succession of pulse beats of a person, said apparatus having a pulse detector and at least one stage means, arranged subsequent to said pulse detector, for suppressing disruptive influences, comprising:

a voltage-controlled pulse generator,

first and second memory means,

a comparator means for controlling said pulse generator and for comparing contents of said first and second memories, whereby disturbances in the form of missing pulses may be suppressed,

said first memory being coupled to the output of said pulse detector and having means for storing a pulse coming from the pulse detector, and



said second memory being coupled to the output of said pulse generator and having means for storing a pulse appearing at an output of the pulse generator.

4,287,895

ELECTROPALATOGRAPH

Kiyoharu Hori, Hino, Japan, assignor to Rion Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 127,932
Claims priority, application Japan, Mar. 15, 1979, 54-29328; Mar. 15, 1979, 54-29329
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—777 **15 Claims**

1. An electropalatograph comprising an artificial palate formed of an insulative material in a configuration substantially coinciding with the hard palate of a person speech-trained,

said artificial palate having a plurality of signal-transmitting electrodes distributed substantially over an entire surface of the artificial palate to sense an actual linguapalatal contact during a phonation and a single signal-receiving electrode provided to contact with the hard palate as insulated from said signal-transmitting electrodes,

means for scanning sequentially respective said plurality of signal-transmitting electrodes with a series of signals, and

means for recognizing a pattern of at least said actual linguapalatal contact on the basis of said scanning signals received by said signal-receiving electrode as transmitted from certain ones of the signal-transmitting electrodes which have sensed the linguapalatal contact.

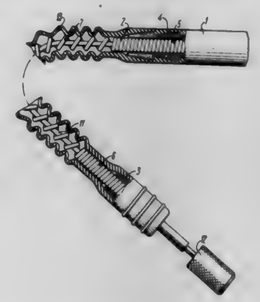
4,287,896

ELECTRODE FOR CONNECTING TO AN INTERNAL ORGAN OF HUMAN BODY

Sergei S. Grigorov, prospekt Vernadskogo, 105, korpus 2, kv. 81, Moscow, and Ravil N. Nazyrov, MIZ, 31, kv. 1, Mozhaisk, both of U.S.S.R.

Filed Aug. 22, 1979, Ser. No. 68,524
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 **3 Claims**

1. An electrode for connecting to an internal organ of a human comprising, an insulative tubular body, an electrically conductive coil spring lead extending axially in said body, an electrically conductive distal head in said body at one end and electrically coupled to said coil spring lead, an electrically conductive contact head at an opposite end of said body electrically coupled to said coil spring lead, opposite end portions of said coil spring lead having the coils thereof closely adjacent one another, said end portions not exceeding a length twice the distance from a point of contact of said head with the internal



organ to a point where the electrode emerges from said internal organ, a middle portion of said coil spring lead between said end portions, the coils of said middle portion having a pitch greater than the pitch of the coils of said end portions and effective to provide a longitudinal stability of the electrode while being implanted in said human along an intravenous route, and said tubular body comprising a corrugated portion in correspondence with said middle portion of said coil spring lead.

4,287,897

TREATMENT AND OPENING OF ORIENTAL TOBACCO BALES

Warren A. Brackmann, Cooksville, and Albert Kuhner, Schomberg, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

Filed Sep. 26, 1979, Ser. No. 78,963
Claims priority, application United Kingdom, Oct. 3, 1978, 39186/78
Int. Cl.³ A24B *1/02*
U.S. Cl. 131—303 **2 Claims**

1. A method of premoistening and opening a burlap-wrapped bale of oriental tobacco, which comprises:

conveying said bale horizontally in a rectilinear direction with the grain of the tobacco in the bale oriented generally transversely of the direction of movement of the bale,

injecting a vertically-aligned plurality of steam jets directly into each side of the burlap-clap bale over the vertical height thereof as said bale is conveyed therepast to cause penetration of steam into the centre of the bale,

removing the burlap covering from the resulting steam-treated bale, and

vibrating the coverless steam-treated bale to cause the bale to fall apart and lose its integrity.

4,287,898

HAIR COMB

Leo L. Konesky, #4 Verona St., Villa Capri, Rio Piedras, P.R. 00924

Filed Jul. 13, 1979, Ser. No. 57,395
Int. Cl.³ A45D *24/00*
U.S. Cl. 132—11 R **1 Claim**

1. A comb for use in combing the human hair, comprising a single elongated backing member and teeth formed integrally with the backing member and extending in the same direction therefrom,

(a) the teeth being arranged in three parallel rows which

extend substantially from end to end of the backing member,

(b) each of the teeth being shaped in a compound curve from end to end and the curvatures of all of the teeth being in the same direction whereby the teeth are substantially parallel,

(c) the spacing of the teeth longitudinally of the backing member being the same in each row and in all three rows,

(d) the teeth of the two side rows being aligned transversely of the backing member and the teeth of the middle row



being positioned longitudinally of the comb midway between those of the side rows,

(e) all of the teeth being of the same cross sectional size and elliptical cross-sectional shape with the major axis of the ellipse being transverse of the backing member,

(f) the free ends of the teeth of the middle row lying in a straight line extending longitudinally of the comb, and

(g) the free ends of the teeth of the two side rows lying in a common plane which is spaced toward the backing member from the straight line of the ends of the teeth of the middle row.

4,287,899

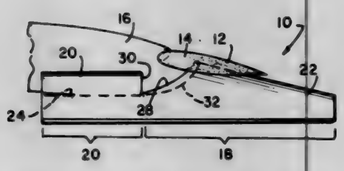
NAIL FORM DEVICE

Eileen Robichaud, 16 Newhill Rd., Methuen, Mass. 01844

Continuation-in-part of Ser. No. 23,908, Mar. 26, 1979. This application May 27, 1980, Ser. No. 153,378

Int. Cl.³ A45D *29/00*

U.S. Cl. 132—73 **10 Claims**



1. A device for forming and attaching a synthetic fingernail to a natural nail comprising, an integral structure having a forward portion and a rearward portion, said forward portion having an upwardly convex surface for supporting the synthetic nail which is to be attached to the natural nail, the rearward portion having a downwardly concave surface for supporting the finger to which the synthetic nail is to be attached, and an opening positioned in the upper portion of said structure having a forward edge formed by said forward portion and a rearward edge formed by said rearward portion, said opening being adapted to receive the forward portion of said finger, the forward edge of said opening being adapted to insert beneath a portion of said natural nail.

4,287,900

COIN DISCHARGE MACHINE

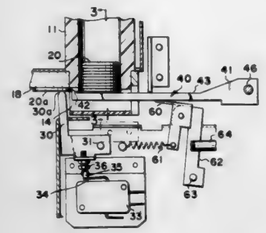
Eiichi Kokubo, and Takatoshi Sugai, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 131,908

Claims priority, application Japan, Mar. 22, 1979, 54-37430[U]

Int. Cl.³ G07D *9/04*

U.S. Cl. 133—4 A **2 Claims**



1. A coin discharge machine wherein coins (**20**) accumulated in at least one cartridge (**11**) are pushed out from the cartridge, one at a time, from the lowermost by at least one selected pair of rod pushers (**40**) into a coin dropping outlet (**17**), which comprises

a plurality of select arm driving solenoids (**65**) selectively actuated in accordance with kinds of coins to be discharged, to bring the selected pair of rod pushers (**40**) to an upper position so that each selected pair of rod pushers (**40**) pushes the lowermost coin (**20*a***) of coins (**20**) accumulated in the cartridge (**11**),

a plurality of microswitches (**33**) selectively actuated by the lowermost coins (**20*a***) pushed by the selected pair of rod pushers (**40**), and

a comparator (**73**) for receiving and comparating data indicating the selectively actuated solenoids (**65**) and data indicating the selectively actuated microswitches (**33**),

whereby, when both of data are not coincedent, the coin discharge machine is stopped.

4,287,901

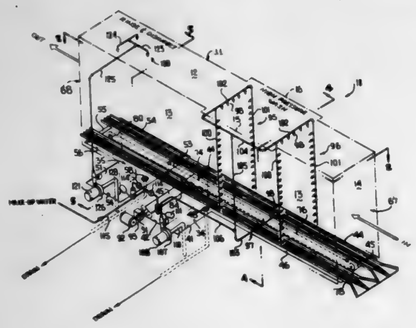
APPARATUS FOR WASHING EGG INCUBATING AND/OR HATCHING TRAYS AND BUGGIES THEREFOR

Douglas Fowler, 5145 Merry Ln., Gainesville, Ga. 30501, assignor to Douglas Fowler, Hall County, Ga.

Division of Ser. No. 915,234, Jun. 13, 1978, Pat. No. 4,227,938. This application May 23, 1980, Ser. No. 152,829

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—56 R **11 Claims**



1. An apparatus for washing articles comprising a housing having an entrance opening and an exit opening, means for conveying a carrier carrying articles to be washed from said entrance opening to said exit opening, said housing setting off a washing zone contiguous said entrance opening and a rinse zone contiguous said exit opening, means for guiding a carrier from said entrance opening to said exit opening during the conveyance thereof by said conveying means, nozzle means in said washing zone for directing a plurality of streams of water against articles conveyed through said washing zone by the carrier, said housing having opposite side walls, and said side walls being recessed for receiving therein and protecting said nozzle means against contact by a carrier conveyed through said housing by said conveying means.

4,287,902

METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Gifford G. McClaflin, and Charles R. Clark, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 5, 1979, Ser. No. 91,014

Int. Cl.³ F17D *1/17*

U.S. Cl. 137—13 **10 Claims**

1. In the method of transporting viscous crude oil through a pipe the improvement which comprises forming an oil-in-water emulsion by adding to said crude oil about 20 to about 80 volume percent of an aqueous solution containing an effective amount of a combination of

(a) about 500 to about 10,000 parts per million, based on said crude oil, of an alkaryl sulfonate having a molecular weight of about 415 to about 470 and being represented by the formula

$$R—Ar—SO_3M$$

wherein Ar is an aromatic moiety which is phenyl, tolyl, xylyl or ethylphenyl, R is a linear or branched-chain alkyl group containing 17 to 22 carbon atoms, and M is sodium, potassium or ammonium, and

(b) methanol, wherein the amount of methanol is in the range of 0.1:1 to 10:1 parts by weight based on the alkaryl sulfonate.

4,287,903

METHOD AND APPARATUS FOR RECOVERING PRODUCTS OF LOW PUMPABILITY

Maurice Cessou, Communay, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

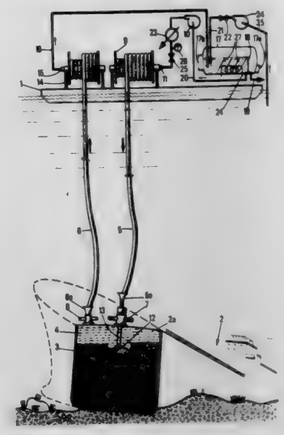
Division of Ser. No. 859,590, Dec. 12, 1977, Pat. No. 4,195,653. This application May 16, 1979, Ser. No. 39,653

Claims priority, application France, Dec. 13, 1976, 76 37849; Feb. 17, 1977, 77 04584

Int. Cl.³ F17D *1/18*

U.S. Cl. 137—13 **6 Claims**

1. A method for removing from a tank a product difficult to pump, comprising connecting to the tank at least one drain pipe, feeding the tank with hot water and discharging the product through the pipe as the hot water is introduced into the tank, wherein an aqueous phase is formed and permanently maintained at the upper part of the tank above the product to be removed, by introducing the hot water in the form of at least one striking and stirring jet in said aqueous phase located



above the product, and discharging the product dispersed in said aqueous phase.

4,287,904

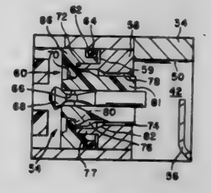
VALVE ASSEMBLY HAVING A PREDETERMINED SHEAR LINE

Gregory A. Kushner, and Jack Martinic, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 22, 1979, Ser. No. 13,848

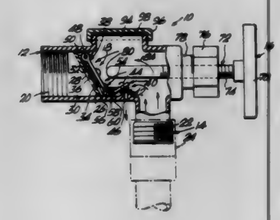
Int. Cl.³ F16K *13/04*

U.S. Cl. 137—68 R **2 Claims**



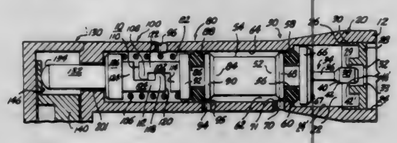
1. In a valve assembly having a body which is received within a bore **50** of a housing, the bore leading to a pressure chamber within the housing, the body having a passage providing communication through the bore, and a valve member carried by the body within the passage, the valve member cooperating with the body in a first position to close the passage and being movable to a second position to open the passage to communicate fluid pressure through the passage to the pressure chamber, characterized by the body including means to provide for shearing of the body at a predetermined location, a portion of the body being movable when the body is sheared to engage the housing and said portion cooperating with the housing to substantially define a secondary passage opening to the pressure chamber when the body is sheared, and the engagement between said portion and the housing substantially defining a restriction within said secondary passage to provide for restricted communication of fluid pressure to the pressure chamber.

4,287,905
ANTI-BACKFLOW VALVE FOR A FAUCET
Gilberto Iglesias, 2940 SW. 99th Ave., Miami, Fla. 33165
Filed Apr. 10, 1980, Ser. No. 138,888
Int. Cl.[3] F16K *15/18*
U.S. Cl. 137—102 10 Claims



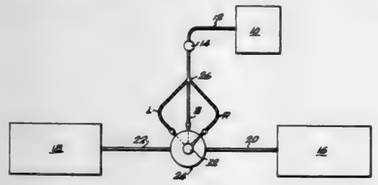
1. An anti-backflow valve comprising
an inlet from a fluid source;
an outlet;
an interior chamber defined by a valve body in fluid communication with the inlet and outlet;
a septum including an inlet port disposed between the inlet and interior chamber;
a check valve within the chamber, pivotally movable in relation to the inlet port to open and close same;
a relief valve pitotally movable in relation to the relief port to open and close same;
valve interlocking means cooperating between the check valve and the relief valve so that the relief valve is closed in relation to the relief port when the check valve is open in relation to the inlet port and vice versa; and
means adjustable between a closed operator position in contact with the check valve to maintain same closed and the interlocked relief valve open, and an open operator position allowing the check valve to open, resulting in closing of the interlocked relief valve.

4,287,906
CONTROL VALVE
Charles J. Green, Vashon, and Alan K. Forsythe, Burton, both of Wash., assignors to Sprague Devices, Inc., Michigan City, Ind.
Filed Mar. 10, 1980, Ser. No. 128,731
Int. Cl.[3] G05D *11/00*
U.S. Cl. 137—118 12 Claims



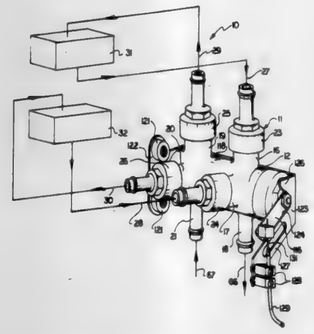
1. A valve for controlling the pressure and volume rate of flow of a fluid delivered to a utilization device comprising:
a valve housing having inlet means for receiving fluid at an elevated pressure, a first outlet means axially spaced from said inlet means for providing fluid at a regulated pressure and rate of flow to the utilization device, a second outlet means axially spaced from said first outlet means for providing fluid pressure to a control means for said utilization device, vent means axially spaced from said second outlet means for selectively venting fluid from said second outlet means, and a regulator valve chamber;
an axially movable valve spool contained in said valve housing have a metering means positioned adjacent said inlet means and adapted to regulate the pressure and flow rate of fluid entering the regulator valve chamber in response to axial movement of said spool;
first valve means positioned on said spool between said regulator valve chamber and said first outlet, said first valve means operable by axial movement of said valve spool to open and close a fluid flow path between said inlet means and said first and second outlet means,
second valve means positioned on said spool adjacent said second outlet means and slidably engaging said housing to selectively connect said second outlet means to said regulator valve chamber or to said vent; and
means to bias said movable valve member against fluid forces in said regulator valve chamber to provide a regulating function for said metering means said second valve means isolating said second outlet from said vent means when said first valve means is closed, and said second valve means connecting said second outlet to said vent means after said first valve means has moved a defined increment between a fully closed position and a fully opened position.

4,287,907
FUEL FEEDING SYSTEM FOR AIRCRAFT
Howard G. Worthy, 6060- 22nd Ave. SW., Naples, Fla. 33942
Filed Aug. 10, 1979, Ser. No. 65,723
Int. Cl.[3] F02M *37/00*
U.S. Cl. 137—255 8 Claims



1. A fuel feeding system for aircraft having first and second fuel tanks, and including a fuel selector valve movable between first and second fuel feed positions to an existing aircraft engine, a first fuel line portion communicating between the first tank and said valve in said first position, a second fuel line portion communicating between the second tank and said valve in said second position, a third fuel line portion communicating from said valve in said first position to the engine and a fourth fuel line portion communicating from said valve in said second position to the engine, first and second indicator light means of a first distinctive color, first and second electric circuits from a power source such as a battery and connecting respectively to said first color indicator lights, means associated with said selector valve to selectively energize said first color indicator lights through said first and second circuits to visually indicate the valve position relative to said first and second tanks; first and second indicator lights of a second distinctive color; third and fourth electric circuit means from said source, connecting respectively to said second color indicator lights, first and second switch means in said third and fourth circuit means responsive to a flow of fuel respectively in said third and fourth fuel line portions to illuminate one of said second color lights to indicate an actual fuel flow from one of said fuel tanks to the engine as determined by said selector valve position, means for manual operation of said selector valve, a single indicator light of a third distinctive color, and a fifth circuit means connected from said source to said single light, and switch portion on each of said first and second switch means connected in series in said fifth circuit means in a manner so as to complete a circuit to said third color light only when there is no fuel flow from either of said first and second tanks.

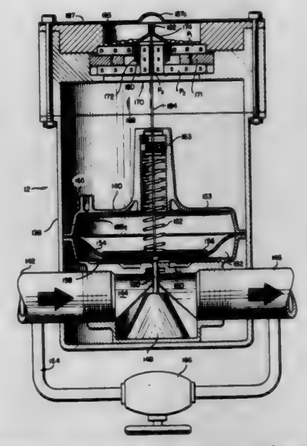
4,287,908
FUEL TANK SELECTOR VALVE
David N. Storgard, Brecksville, Ohio, assignor to Dana Corporation, Cleveland, Ohio
Filed Jul. 30, 1980, Ser. No. 173,448
Int. Cl.[3] F16K *11/16*
U.S. Cl. 137—255 11 Claims



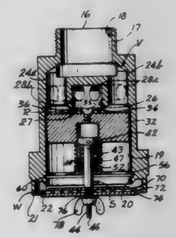
1. A valve for selectively connecting one of a pair of alternate fuel supply tanks with a common supply line to and a common return line from a combustion engine, said valve including a housing having a first chamber dedicated to supply fuel from said tanks to said engine and a second chamber dedicated to return unused fuel from said engine to said tanks, actuator shaft means shiftable on an axis between first and second positions, at each chamber first and second tank connecting ports and an engine connecting port, valving means disposed in said chambers, said valving means being radially oriented with respect to said shaft axis, said valving means being responsive to positioning of said shaft in its first position to establish supply flow from a first of said tanks through said first chamber to said engine and return flow from said engine through said second chamber to said first tank while isolating said second tank from supply and return flow connection with said engine, said valving means being responsive to positioning of said shaft in its second position to establish supply flow from a second of said tanks through said first chamber to said engine and return flow from said engine through said second chamber to said second tank while isolating said first tank from supply and return flow communication with said engine.

4,287,909
VALVE FOR DEVELOPING VARIABLE OUTPUT PRESSURE
Clement R. Tompson, 3020 LaPorte, Melrose Park, Ill. 60164, and Garrett Gruner, 1610 W. Kalamazoo, Lansing, Mich. 48915
Division of Ser. No. 46,227, Jun. 7, 1979. This application Jan. 17, 1980, Ser. No. 113,023
Int. Cl.[3] G05D *16/06*
U.S. Cl. 137—312 9 Claims

1. In a fluid flow valve having fuel inlet and outlet ports, having a flow restriction device for altering the flow of fluid between the inlet and outlet ports, and having a diaphragm for biasing the restriction device in a position to effect a given fluid pressure at the outlet port, the improvement comprising:
an annular magnet having north and south poles separated by a circular groove;
an armature coil form riding in said groove;
a coil wound on said coil form and receiving a control current indicative of a desired fluid pressure at the outlet port for developing a mechanical force on said coil form in response to the control current, said coil form being constructed of non-ferrous metal for damping its movement and for conducting heat away from the coil; and
a flexible cable coupled between said armature coil form and the restriction device for responding to the force developed by the coil form so as to vary the bias on the restriction device and vary the fluid pressure at the outlet port at equilibrium.



4,287,910
TANK PRESSURE AND VACUUM RELIEF MECHANISM
Frank H. Petersen, Warren, Pa., assignor to Betts Machine Company, Warren, Pa.
Filed Jul. 25, 1979, Ser. No. 60,300
Int. Cl.[3] F16K *17/196*
U.S. Cl. 137—493.9 9 Claims



1. A tank pressure and vacuum relief mechanism for relieving excess pressure or vacuum in a tank interior comprising; an elongated valve housing having an outer end secured in a coacting associated tank wall aperture in an upper wall of an associated tank interiorly thereof with the inner end of the housing disposed in the tank interior, said housing having a longitudinal bore having a vacuum opening at its inner end communicating with the tank interior and forming a vacuum valve seat, said housing having a vacuum passageway connecting said bore with the tank wall aperture whereby the bore is in communication with the atmosphere exteriorly of the tank, said bore having a pressure opening at its outer upper end forming a pressure valve seat, said housing having a pressure passageway connecting said pressure opening with the tank interior, an elongated stem positioned longitudinally in said bore for limited longitudinal reciprocation therein, a normally-closed pressure relief valve operatively disposed in said bore and on the outer end of said stem and selectively reciprocable toward and away from said pressure valve seat for controlling fluid flow through said pressure opening and pressure passageway, a normally-closed vacuum relief valve disposed on the stem adjacent its inner end and selectively reciprocable toward and away from said vacuum valve seat for controlling fluid

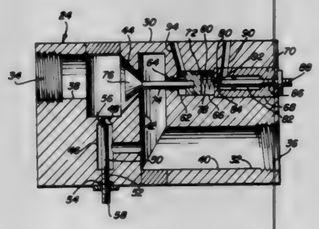
flow through said vacuum opening and vacuum passageway, pressure bias means operatively disposed on said stem for maintaining said pressure relief valve in a normally-closed position against said pressure valve seat, and vacuum bias means operatively disposed on said stem for maintaining said vacuum relief valve in a normally-closed position against said vacuum valve seat.

4,287,911

THREE SPEED FLUID FLOW CONTROL VALVE

Donald D. Houdeshell, 1647 N. Township Rd., R.R. #2, Republic, Ohio 44867

Filed Jul. 25, 1980, Ser. No. 172,152
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—513.7 **8 Claims**



1. A control valve for series connection in a fluid flow control line in which alternating fluid flow in opposite directions at different speeds is desired and with the fluid flow in one direction being allowed at a substantially constant high rate and the fluid flow in the opposite direction is initially allowed at generally the same rate and is thereafter gradually throttled to a slower flow rate, said valve including a body having a main flow passage therethrough and a by-pass passage therein by-passing a central portion of said main flow passage, throttle means operative to adjustably throttle the fluid flow rate through said by-pass passage, and control valve means in said main flow passage central portion supported from said body for shifting between open and closed positions allowing fluid flow therepast at a rate slightly slower than said high rate in said one direction and at least substantially terminating fluid flow therepast in said closed position, means yieldingly biasing said control valve to said open position, said control valve including a fluid impact portion disposed in said central portion of said main flow passage for fluid impact pressure thereon to shift said control valve toward said closed position against said means biasing said control valve toward said open position, and adjustable rate movement dashpot means operatively connected between said body and control valve operative to vary the closing rate of said control valve.

4,287,912

MONOFLOW BALL VALVE AND SYSTEM

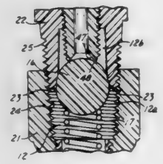
Charley L. Hewett, Englewood, Colo., assignor to Kem-O-Kleen, Inc., Englewood, Colo.

Filed Mar. 24, 1980, Ser. No. 133,637
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—516.27 **22 Claims**

1. A monoflow ball valve for controlling fluid flow comprising:

a valve body having an internal flow passage with an inlet and an outlet, said valve body having a first portion with a first passage section and a second portion with a second passage section, a shoulder at the inner end of said second portion and a spacing surface within said second portion;

a resilient, compressible ball in said passage, said ball having an external dimension less than the internal dimension of said first passage section to slide therein and greater than the internal dimension of said second passage section, said ball being normally seated on said shoulder in a contacting position to block fluid flow toward said inlet, said ball being movable away from contact with said shoulder to permit fluid flow toward said outlet, said ball being movable into the inside of said second passage section in a compressed position to form a fluid-tight seal to prevent backflow from said outlet to said inlet, the extent to which said ball extends into said second passage section toward said inlet being limited by said spacing surface; and



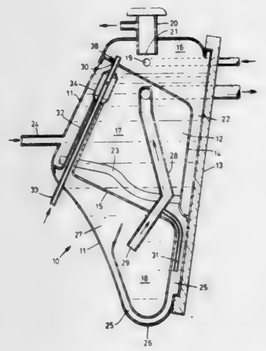
an inlet member adjustably movable axially relative to said second passage section having an inner end defining said spacing surface which, in use, is suitable for dislodging said ball from a lodged position in said second section upon the movement of said inlet member toward said outlet.

4,287,913

TANK SUITABLE FOR HOLDING LIQUIDS

George H. Bennett, Hendon; Alfred W. Osborn; Clive N. Bunyan, both of Harrow, and Ronald A. Midgley, St. Albans, all of England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 12, 1980, Ser. No. 177,513
Claims priority, application United Kingdom, Sep. 29, 1979, 33866/79
Int. Cl.³ F16K *24/04*
U.S. Cl. 137—574 **8 Claims**



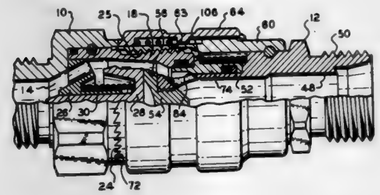
1. A tank suitable for holding a liquid comprising first and second baffles adapted to divide the interior of said tank into first, second and third series interconnected chambers, each adapted to contain said liquid, and inlet adapted to supply a mixture of a gas and said liquid to said first chamber, an outlet adapted to withdraw said liquid from said third chamber and venting means having an outlet through which said gas present in said first chamber is vented, said baffles being so adapted and arranged that when said tank is in its normal spacial disposition, liquid supplied in operation to said first chamber flows into said third chamber via said second chamber, and if said tank subsequently adopts a spacial position other than said normal spacial disposition, the flow of liquid from said third chamber to said second chamber is prevented or is of a sufficiently low level that an adequate quantity of liquid is retained within said third chamber to provide a continuity of liquid flow through said outlet for a finite time period and unsufficient liquid flows from said second chamber into said first chamber to obstruct said venting means.

4,287,914

SELF SEALING COUPLING WITH FULL FLOW RELIEF VALVE

Richard A. Buseth, and William C. Marrison, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 16, 1980, Ser. No. 112,639
Int. Cl.³ F16L *37/28*; F16K *31/12*
U.S. Cl. 137—613 **6 Claims**



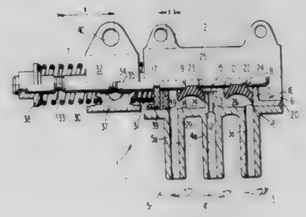
1. A self sealing quick disconnect fluid coupling fitting for use with a pressurized fluid system adapted to be selectively coupled and uncoupled to another fitting characterized by its ability to function as a pressure relief valve when uncoupled, comprising, in combination, a tubular body having an axial passage defined therein, a conduit connection end and a coupling end, coupling means defined on said body adjacent said coupling end for coupling said body to said another fitting, valve structure mounted upon said body adjacent said coupling end adapted to automatically open and close upon said body being coupled and uncoupled at said coupling end, respectively, with respect to said another fitting, said valve structure comprising first and second valve members within said passage relatively movable between open and closed positions controlling fluid flow through said passage, one of said members being fixed relative to said body, positioning means supporting the other member on said body for axial movement thereto between a closed position engaging said one member and an open position axially spaced from said one member, said other member being engaged by said another fitting upon coupling of said fittings moving said other member to said open position, said other valve member further including at least one radially extending surface exposed to fluid pressure within said passage when said other member is in said closed position so oriented to said other member that fluid pressure exerted thereon produces an axial force on said other valve member in the direction of said member open position, and spring means axially biasing said other member in the direction of said member closed position counter to the fluid pressure force, the area of said surface and the force of said spring means being preselected to permit the fluid pressure within said passage to axially displace said other valve member to said open position upon the fluid pressure reaching a predetermined value whereby fluid pressure is released through said body coupling end.

4,287,915

CONTROL VALVE FOR PNEUMATIC CONDUITS

Rüdiger Hoffmann, Sindelfingen, and Dieter Feichtiger, Aidlingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,988
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922681
Int. Cl.³ F16K *31/44*
U.S. Cl. 137—625.5 **14 Claims**



1. A control valve for controlling a routing of a pressure medium from a central pneumatic conduit to further pneumatic conduits disposed to the left and right of the central pneumatic conduit, the control valve including a housing provided with a cylindrical recess, a control slide means longitudinally displaceably guided in the cylindrical recess, and valve sealing means for alternatingly communicating the central pneumatic conduit with the further pneumatic conduits disposed to the left and right thereof upon execution of an operating stroke of the control slide means, characterized in that the control valve further includes two compression spring means supported on the control slide means, an operating sleeve longitudinally displaceably supported on the control slide means between the two compression springs, detent means for defining respective end positions of the displacement path of the operating sleeve, and means for enabling an axial displacement of the operating sleeve such that the operating sleeve, upon exceeding a predetermined resistance, is disengaged from one of the detent means, and, upon further axial displacement, engages in the other detent means against a force of one of the compression spring means.

4,287,916

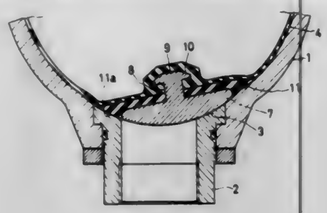
SEMISPHERICAL SHAPE VALVE DEVICE IN BLADDER TYPE ACCUMULATORS

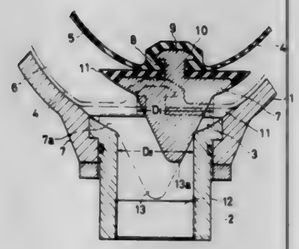
Kazuo Sugimura, and Nobuyuki Sugimura, both of 308, Mabase, Shimizu-shi, Shizuoka-ken, Japan

Filed Oct. 24, 1979, Ser. No. 87,701
Claims priority, application Japan, Sep. 5, 1978, 53/108943
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **13 Claims**

1. In a bladder type accumulator consisting of a vessel enclosing a bladder to be filled with pressure gas, a liquid pipe connected to the bottom of the vessel to be opposed to the free end of the bladder, the improvement characterized by the top end of the liquid pipe being formed as a valve seat to be opened and closed by the mating thereof by a spherical valve body

which is secured to the bottom of the bladder and is larger in diameter than said valve seat to assure closure of said valve





seat and to prevent extrusion of the bladder therebetween should said valve body eccentrically engage said valve seat.

4,287,917

DIAPHRAGM DEVICE FOR DAMPING VIBRATIONS IN FLOWING LIQUIDS

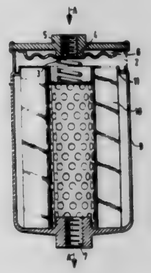
Günter Frey, Feilbach, Fed. Rep. of Germany, assignor to Knecht Filterwerke GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,327

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849925; Nov. 17, 1978, 2849926

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—30 **3 Claims**



1. A liquid flow damping device comprising a housing (1) a liquid inlet opening (4) in said housing, said housing having an end wall extending outwardly from the inlet opening and an annular seating at the inner side of the inlet opening, said housing having a peripheral wall at the periphery of the end wall, a diaphragm free from openings within its periphery, said diaphragm having its peripheral margin adapted to seat on said end wall and spaced from said peripheral wall, said diaphragm being adapted to seat at a central part thereof as a valve plate against said annular seating to close said inlet opening in which condition there is a liquid space (6) between the diaphragm and said end wall disposed radially between said central part and the periphery of the diaphragm, an opening (5) leading from said inlet opening to said space, a spring engaging said central part of the diaphragm on its downstream side to urge it against said annular seating, support means for the spring, an outlet opening in said housing (7), said diaphragm being sufficiently flexible to oscillate at its periphery and permit flow of liquid only when liquid current commences, said central part of the diaphragm lifting off said seating under liquid pressure said spring permitting the central part of the diaphragm to vibrate off, said annular seating against the force of said opening when liquid flow occurs.

4,287,918

APPARATUS FOR MANUFACTURING A SLIDE FASTENER STRINGER HAVING A WOVEN COILED COUPLING ELEMENT

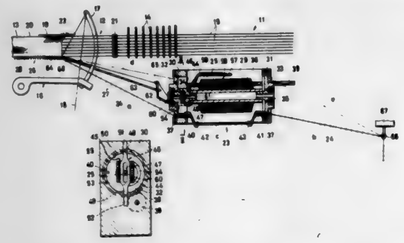
Muchiji Shimono, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 90,997

Claims priority, application Japan, Nov. 20, 1978, 53-142999

Int. Cl.³ D03D *41/00*

U.S. Cl. 139—35 **2 Claims**



1. An apparatus for manufacturing a slide fastener stringer including a woven stringer tape and a coiled coupling element woven into the stringer tape along a longitudinal edge thereof, comprising:

(a) means for weaving the stringer tape of warp and weft threads;

(b) a mandrel for extending at an angle to the warp threads, said mandrel having a portion to be located adjacent to the fell of the stringer tape being woven;

(c) means for winding a monofilament around said portion of said mandrel to form the coiled coupling element, which is then woven into the stringer tape by the weft thread, said winding means having means for guiding the monofilament to revolve in a first conical orbital path; and

(d) means for guiding the monofilament toward said winding means in a second conical orbital path, said last-mentioned guiding means being fixedly located in substantially three-dimensional point-symmetry relation to said portion of the mandrel with respect to the center of said winding means, whereby said first and second conical orbital paths are substantially identical in shape with each other, thereby allowing the length of a portion of the monofilament extending between said last-mentioned guide means and said portion of the mandrel to be kept substantially constant at all times to maintain the tension of said portion of the monofilament substantially uniform during revolving movement of the monofilament.

4,287,919

PROCESS IN THE MANUFACTURE OF SPACE FRAMEWORKS, AND A MACHINE FOR THE MANUFACTURE THEREOF

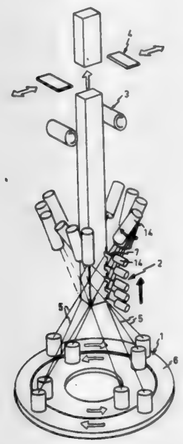
Hans C. Georgii, Stockholm, Sweden, assignor to AB Hydro Betong, Sweden

Filed May 18, 1979, Ser. No. 40,382

Claims priority, application Sweden, May 23, 1978, 7805891

Int. Cl.³ B21F *27/10*

U.S. Cl. 140—112 **6 Claims**



1. A process in the manufacture of a space framework such as in section has straight sides and comprises two multi-wire systems of spirally wound wires (5), the wires (5) of which, in one system are wound in one direction and in the other system are wound in the other direction, being interconnected at points where they intersect, wherein said wires (5) in both systems are wound simultaneously in opposite directions during the simultaneous advancement of the finished portion of the space framework at a rate corresponding to the pitch of the spiral windings, including steps of catching pairs of counter-running wires (5) at those points where they, during the winding operation, intersect at the outer contour of the space framework by means of welding electrodes in the form of holders (7) to follow the points of intersection of the counter-running wires (5) caught thereby at the speed at which the framework is advanced, thereby bending and leading the wires (5) to the final contour of the space framework, and welding the wires (5) at the same time such wires (5) are being bent and led to the final contour of the space framework to effect interconnection of the wires (5) at the points of intersection.

4,287,920

SELF-SEALING VALVE

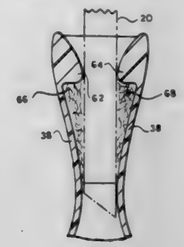
Glenn W. Johnson, Jr., 10 Friar Tuck Clr., Summit, N.J. 07901

Continuation-in-part of Ser. No. 842,961, Oct. 17, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,746

Int. Cl.³ B65B *3/17*

U.S. Cl. 141—85 **4 Claims**

1. In an inflatable article having an integral valve; comprising at least a pair of sheets bonded together along their periphery in the shape of the article, said valve being joined to and extending from said periphery and being extensions of said sheets, the outer housing of the valve being formed by said sheet extensions sealed together along side edges to leave outer edges of the sheets unattached and forming an opening through which the article is inflated; and at least one of said outer edges being folded inwardly of and positioned within said outer housing to provide a flap responsive to the pressure of the fluid in the article to maintain the flap in a position effective to seal the valve wherein the improvement comprises: means disposed on the surface of said at least one flap to bias the flap into sealing position, said biasing means comprising a thin layer of a tacky, grease-like substance, and means for



maintaining an adequate supply of said substance in the vicinity of said flap comprising a member extending transversely inwardly of said valve to form a recess for receivably storing said tacky, grease-like substance interiorly of said valve.

4,287,921

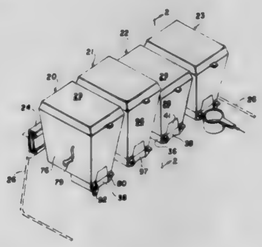
CANISTER SET

Robert B. Sanford, 7605 Walton La., Annandale, Va. 22003

Filed Jun. 5, 1979, Ser. No. 45,787

Int. Cl.³ B65B *1/04*

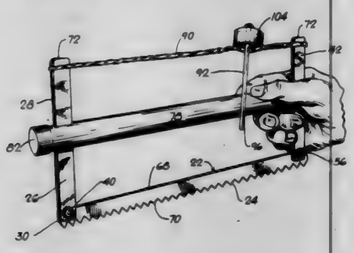
U.S. Cl. 141—360 **4 Claims**



1. A dispensing canister for flowable solids comprising a hopper body and supporting means therefor, a measuring chamber at the bottom of the hopper body and receiving with the assistance of gravity flowable solids from the hopper body, upper and lower movable closure gates for the top and bottom of said measuring chamber, the upper closure gate being arcuate and having horizontal axis rotational support means, the lower closure gate being flat and horizontally movable and having linear horizontal guide means on opposite sides of the measuring chamber, crank arms for driving the upper closure gate attached to said rotational support means, drive elements for the lower closure gate fixed to opposite sides of the lower closure gate, an approximately U-shaped bail having spaced arms straddling the upper and lower closure gates and measuring chamber, corresponding ends of said arms being drivingly connected to said crank arms, intermediate portions of said arms being formed to provide lost motion loops therein and said drive elements being engaged movably within said lost motion loops, a spring means connected with said bail and biasing it toward a position which opens the upper closure gate and closes the lower closure gate, the bail including a driving crossbar, and a trap chamber having linear movement guided engagement with the bottom of the hopper body on a path of movement parallel to the movement of the lower closure gate and including pusher elements drivingly engaged with said crossbar, said trap chamber having a recessed front wall for ready engagement by a receptacle receiving flowable solids,

and the trap chamber being bodily separable from the hopper body for emptying.

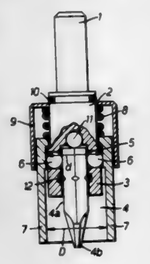
4,287,922
FOLDABLE BUCKSAW
John R. Nelson, Lemont, Ill., assignor to Research, Development & Marketing, Barrington, Ill.
Filed Jan. 28, 1980, Ser. No. 116,020
Int. Cl.³ B27B *21/00*
U.S. Cl. 145—32 R **6 Claims**



1. A foldable bucksaw comprising an elongated tube having a cavity extending therein from one end thereof along the axis of elongation of the tube, said tube having a first pair of slots disposed therein at one end thereof, slots of said first pair being disposed on opposite sides of the tube and disposed on an axis traversing the axis of the tube, said first pair of slots being closed and having spaced flat ends, said tube having a second pair of slots disposed therein at the other end of the tube, the slots of said second pair of slots being on opposite side of the tube and disposed on an axis parallel to the axis extending between the slots of the first pair of slots, an elongated blade having parallel spaced sides extending between the ends thereof and straight edges parallel to the axis of elongation of the blade, said parallel edges being spaced from each other by a distance less than the cross sectional dimension of the cavity of the tube, said blade having a plurality of cutting teeth on one of the edges thereof, a first elongated bar pivotally mounted adjacent to one end thereof on one end of the blade, a second elongated bar pivotally mounted adjacent to one end thereof on the other end of the blade, each of said first and second bars having parallel spaced flat sides and spaced edges parallel to the axis of elongation thereof, the edges being spaced by a distance less than the cross sectional dimension of the cavity of the tube, the first bar being slidably disposed and extending through the first pair of slots with the edges thereof in slidable abutment with a flat end of each of the slots of the first pair of slots, and the second bar being slidably disposed and extending through the second pair of slots, the pivotal axes between the blade and first and second bars being normal to the flat sides of the blade and the respective bar, and removable tensioning means mounted on the other end of the first and second bar and urging said other ends of the first and second bars toward each other, whereby the tensioning means may be removed, the bars removed from the slots and pivoted to positions parallel to and adjacent to the blade, and the blade and bars inserted into the cavity of the tube from the one end thereof.

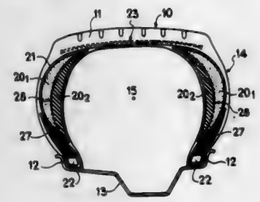
4,287,923
SCREWING HEADS
Ewald Hornung, Forstweg 144, 3260 Rinteln 6, Fed. Rep. of Germany
Filed Mar. 30, 1979, Ser. No. 25,606
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843684
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—429 **7 Claims**

1. A screwing head, comprising shank means adapted to be rotatably driven, said shank means having a longitudinal axis and said shank means having an end portion of annular cross-section, said end portion of annular cross-section defining a seat, a screwdriver bit comprising a shank part, said shank part being located in said seat, locking members for releasably locking the shank part of the screwdriver bit within the seat so that the screwdriver bit can be rotated by the shank means, said locking members being mounted in the end portion of annular cross-section for movement transversely of the longitudinal axis of the shank means between radially inner positions in which the locking members lock the shank part of the screwdriver bit for rotation with the shank means, and radially outer positions in which the locking members release the shank part of the screwdriver bit to permit relative rotation between the shank means and the shank part of the screwdriver bit, an



annular casing mounted on the shank means for longitudinal movement relative thereto, said casing surrounding the annular end portion of the shank means and having an internal surface, said internal surface comprising a portion of relatively small internal diameter and a portion of relatively larger internal diameter, said casing being movable longitudinally relative to the shank means from a locking position in which the small internal diameter portion holds the locking members in the radially inner positions and a release position in which the locking members can move radially outwardly into the larger internal diameter portion, and spring means biasing the casing into its locking position, the casing being movable from its locking to its release position by engagement with a workpiece upon a predetermined depth of screwing being attained.

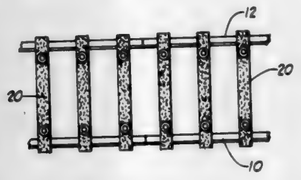
4,287,924
SAFETY TIRE WITH SIDEWALL SUPPORT MEMBERS HAVING TWO PARTS WITH DIFFERENT FLEXIBILITIES
Alphonse Deck, Meudon, and Claude Lefaucheur, Paris, both of France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques, Kleber-Colombes, France
Filed May 10, 1979, Ser. No. 37,889
Claims priority, application France, May 10, 1978, 78 13891
Int. Cl.³ B60C *17/00, 15/00, 9/08*
U.S. Cl. 152—153 **5 Claims**



1. A safety tire comprising a tread reinforced by an inextensible belt, spaced beads each having a bead core and bead fillers, side walls for connecting the beads to the sides of the tread and for defining an inflatable central chamber, a carcass extending below the tread and into each side wall having ends that are curved around the bead cores and bead fillers of each bead,

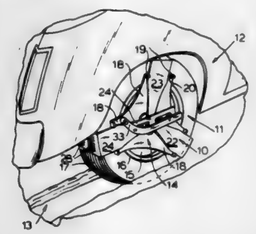
support members formed of elastomeric material having a lenticular cross sectional shape extending into each side wall on the inside of the carcass from the vicinity of the beads up to the edges of the inextensible belt for reinforcing the tread, each support member being formed of two parts with different flexibilities, one part being located adjacent to the carcass and having a Shore A hardness not greater than 70 and an elasticity modulus not greater than 80 bars and the other part being made of a less flexible elastomeric material and having a Shore A hardness between 80 and 95 and an elasticity modulus between 70 and 100 bars.

4,287,925
ANTISKID DEVICE
Robert Spann, 121 Kingsbury, Norman, Okla. 73069
Filed Dec. 10, 1979, Ser. No. 101,889
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—221 **8 Claims**



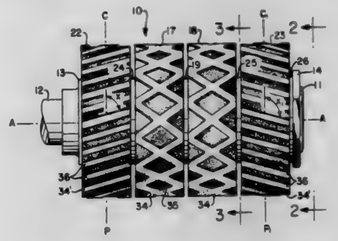
1. An antiskid device for pneumatic tires comprising:
a pair of opposed, spaced, annular sidewall elastomeric tubular elements;
a plurality of spaced transverse traction straps extending between and connected to each of said tubular elements, each of said traction straps comprising:
a woven nylon primary substrate at one side of the strap;
a woven nylon secondary layer spaced from said substrate;
a layer of rubber between, and bonded to, said nylon substrate and said nylon second layer; and
a body of rubber bonded to said nylon second layer on the side thereof opposite said layer of rubber, and including a plurality of nubs of rubber projecting therefrom, each of said nubs including a base having a frizzed neck projecting outwardly therefrom, said traction strap construction being such that when said primary substrate engages the face of a tire upon which the device is mounted, said body of rubber faces outwardly in a ground engaging position and is tensioned through its extension through a greater distance than said primary substrate.

4,287,926
TIRE TRACTION DEVICE
James K. C. Wong, 5100 Marine Dr., Chicago, Ill. 60640
Filed Jun. 26, 1979, Ser. No. 52,249
Int. Cl.³ B60C *27/04, 27/20*
U.S. Cl. 152—225 C **10 Claims**



1. A traction device for application to driven wheels which comprises a mounting base adapted to be positioned over the outer face of the wheel to extend radially beyond the wheel rim, a stud mounted on and projecting outwardly from the central portion of said base, a plurality of superimposed J-shaped fingers pivotally stacked on said stud and radiating from said base having cups for receiving the periphery of the wheel, road gripping tread surfaces on said cups, means accommodating radial movement of one of said fingers on said stud, and means on said base capable of retracting said one of said fingers to clamp all of the fingers on the periphery of the wheel.

4,287,927
MULTIPLE RING TIRE
Vito A. Caravito, Uniontwon, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 921,061, Jun. 30, 1978, abandoned.
This application Apr. 4, 1980, Ser. No. 137,470
Int. Cl.³ B60C *7/00*
U.S. Cl. 152—302 **6 Claims**

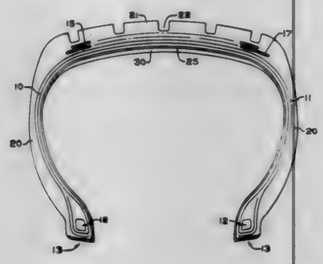


1. A tire and rim assembly comprising a rim of substantially rigid material connected to an axle and rotatable about an axis, said rim having a tire-supporting surface, a tire of resilient elastomeric material including a pair of annular side elements mounted on said tire-supporting surface, an annular central element mounted on said tire-supporting surface, said central element being interposed between and axially spaced apart from said side elements, each of said side elements and said central element having a radially outer belt portion, a radially inner bead portion and a load-carrying and cushioning intermediate structure positioned between said inner bead portion and said outer belt portion, said intermediate structure having a plurality of generally radially extending flexible resilient strap members connected to said outer belt portion and to said inner bead portion, and each of said side elements having a spring rate which is not equal to the spring rate of said central element.

4,287,928
PUNCTURE-SEALING TIRE
Robert W. Hallman, Medina, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Apr. 28, 1977, Ser. No. 791,760
Int. Cl.³ B60C *5/14*; B29H *17/14*
U.S. Cl. 152—346 **24 Claims**

1. In a puncture-sealing tubeless pneumatic tire comprising two spaced inextensible beads, a ground contacting tread portion, a pair of individual sidewalls extending radially inward from the axial outer edges of said tread portion to join the respective beads, a carcass portion, and a tire sealant layer disposed inwardly of said carcass portion, the improvement comprising an integral layer of vulcanized tack rubber disposed between said carcass and said sealant, wherein said tack rubber comprises at least one polymer selected from the group consisting of cis-polyisoprene and natural rubber and said tack

layer has a vulcanized Shore A durometer of from about 25 to about 40 and a thickness in the range of from about 0.1 to about



30 percent of the total tire thickness, and wherein said tack layer is substantially free of antioxidants.

4,287,929

PNEUMATIC VEHICLE TIRE

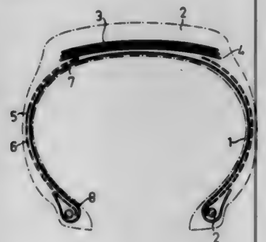
Heinrich Huinink, Garbeen, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,763

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905244

Int. Cl.³ B60C *9/08*

U.S. Cl. 152—354 R **3 Claims**



1. A pneumatic vehicle tire having a hollow inner chamber defined by a rubbery body with inner periphery as well as outer periphery and comprising in combination:

a tread included with the body;

a shoulder region of the body on each side of and adjacent to said tread;

a sidewall of the body on each side of and adjacent to said shoulder regions;

a bead section adjacent each of said sidewalls;

a bead core in each of said bead sections;

a reinforcement having an edge located along inner periphery as inserted extending at least approximately radially and including a radially inner first rayon cord fabric layer directed toward said hollow inner chamber, and two radially outer second polyamide cord fabric layers, said first layer having a first elasticity and extending from one bead section to another and being anchored therein along outer periphery and simultaneously along inner periphery by being looped around the respective bead cores; and

a pull-resistant belt located between said tread and said first layer, extending essentially over the width of said tread between said should regions, and essentially stabilizing the tire body against lateral forces, said second layers having a greater elasticity than said first layer, one of said second layers being located in each of said sidewalls and extending from a respective bead section to the respective adjacent shoulder region, with that edge of the respective second layer which is located in said pertaining shoulder region being located between a pertaining edge of said belt and said first layer.

4,287,930

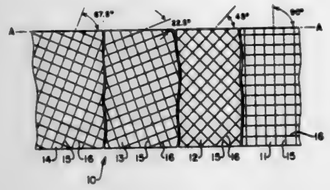
TIRE AND METHOD OF REINFORCEMENT

Kenneth W. McIntosh, Cuyahoga Falls, Ohio, and Edward B. Colby, Jr., Audubon, Pa., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 11, 1980, Ser. No. 139,412

Int. Cl.³ B60C *9/02*

U.S. Cl. 152—357 R **28 Claims**



1. A tire of the type which is cast or injection molded comprising an annular body of elastomeric material having a U-shaped cross section, a pair of radially inner edges of said body, a crown portion, a pair of sidewalls extending radially outward from said inner edges and connected to said crown portion, overlapping, multidirectional reinforcing strands positioned in at least one of said sidewalls to define openings between said strands for striking through of elastomer forming material during molding to provide encapsulation of said strands and interlocking with said annular body.

4,287,931

VACUUM-FORMING PROCEDURE IN METAL CASTING

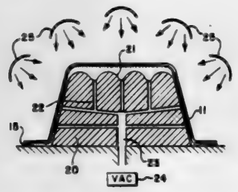
Anton Vogt, Hanau, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,376

Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918571

Int. Cl.³ B22C *9/02, 23/08*

U.S. Cl. 164—7.2 **4 Claims**



1. In the method of metal casting which includes placing a pattern in sand to form a mold for the metal, the steps which include pre-coating a thin film of translucent thermoplastic material with a thin layer of finely divided graphite, applying infrared radiation to the film to soften the same facilitated by the radiant heat absorbed by the graphite, then while the film is still in soft drawable condition vacuum-forming the film onto the surface of the pattern with the graphite sandwiched in between by applying vacuum through the body of the pattern so that the graphite serves as a lubricant for the plastic film as the film is drawn about irregular surfaces on the pattern to produce a tightly conforming barrier layer, molding sand about the pattern and its barrier layer to form a mold, and then removing the pattern from the mold while leaving the film in the form of the barrier layer in conforming and supporting contact with the sand.

4,287,932

PROCESS FOR THE PRECISION MOLDING OF CASTINGS

Hans Schneider, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 20, 1980, Ser. No. 179,674

Claims priority, application Switzerland, Sep. 10, 1979, 8131/79

Int. Cl.³ B22D *29/00*

U.S. Cl. 164—516 **11 Claims**

1. A process for the precision molding of castings, said process comprising the steps of

forming a lost pattern with at least one inserted core of a metal which is oxidizable below the solidification temperature of a melt to be cast;

thereafter forming a ceramic mold about said pattern and core;

dissolving the pattern out of the ceramic mold;

thereafter firing and heating the ceramic mold to a predetermined temperature; and

pouring a melt of molten metal into the ceramic mold, whereby after solidification of the melt into a casting, the core metal oxidizes and sublimates to escape out of the casting.

4,287,933

CONTINUOUS CASTING METHOD WITH ROTARY MELT MOVEMENT

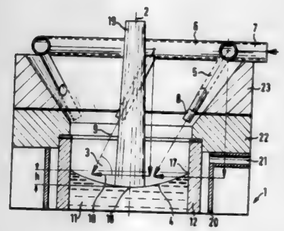
Emil Elsner, Baden-Baden, and Leo Heinen, Kehl, both of Fed. Rep. of Germany, assignors to Korf-Stahl AG, Baden-Baden, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,380

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749405

Int. Cl.³ B22D *11/04, 11/10*

U.S. Cl. 164—452 **12 Claims**



1. In a continuous metal casting method, especially continuous steel casting method, in which the melt is set into rotatory movement about the strand axis within a continuous casting mold and gas in the gaseous or liquid state is fed onto the bath surface of the melt eccentrically to the mold axis and at an acute angle to the velocity vector of the rotatory movement, the improvement comprising providing a substantially rectangular-shaped mold cavity, delivering molten metal into said mold cavity coaxially with said mold axis, and setting said melt into said rotatory movement substantially by the thrust of the gas directed onto said bath surface.

4,287,934

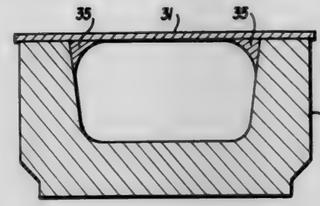
CONTINUOUS CASTING MOLD

George C. Ward, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 860,648, Dec. 14, 1977, Pat. No. 4,211,271. This application Jun. 23, 1980, Ser. No. 162,237

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—482 **5 Claims**



1. An improved process for the continuous casting of metal of the type wherein molten metal is cast into a continuously advancing molding cavity formed by at least one endless moving band in conjunction with other mold surfaces so as to form a molding cavity having at least one sharp corner at the junction of said band and said other mold surfaces, and wherein the molten metal is solidified in the shape of said molding cavity to form a cast bar which is then extracted for further processing, wherein the improvement comprises the steps of:

introducing a fixed shaping means for eliminating the sharp corner into said advancing molding cavity near said junction; casting molten metal into the cavity and adjacent said shaping means; advancing the cavity without advancing the shaping means; cooling the molten metal to form a solid shell adjacent the mold surfaces while forming a non-sharp edge on the solidifying cast bar; advancing the cast bar with the cavity while sliding the cast bar along the shaping means and extracting the cast bar from the mold for further processing.

5. Improved apparatus for the continuous casting of metals of the type having a continuously advancing molding cavity formed by an endless moving band in cooperation with a peripheral groove in a rotating casting wheel which is adapted to receive molten metal and solidifying said metal in the shape of said cavity to form a continuous length of cast bar, wherein the improvement comprises:

an additional mold defining means for eliminating the sharp corner of the molding cavity which would otherwise occur at the junction of said band and said wheel, said means extending into the molding cavity without advancing as the casting wheel rotates and adapted to provide a barrier between cast molten metal and said junction.

4,287,935

VERTICAL DIE CASTING MACHINE

Toyoaki Ueno, Yamaguchi, and Masashi Uchida, Ube, both of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jun. 25, 1980, Ser. No. 162,804

Claims priority, application Japan, Jul. 26, 1979, 54-94237; Jul. 31, 1979, 54-96789

Int. Cl.³ B22D *17/12*

U.S. Cl. 164—314 **10 Claims**

1. A vertical die casting machine, comprising:

a stationary platen;

a stationary mold secured to said stationary platen, to define a die cavity, with a movable mold;

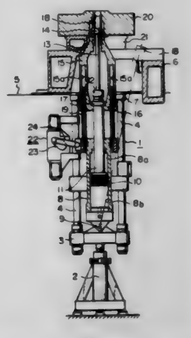
a casting sleeve having an upper end for abutting against said stationary mold from below said stationary mold;

a plunger slidably disposed in said casting sleeve, said plunger having a plunger tip at the upper end thereof which defines, with said casting sleeve, a space in said

casting sleeve, in which space a molten metal to be injected by said plunger into said die cavity is received;

a hollow block having an axial bore, a lower end portion of said casting sleeve being connected to an upper portion of said block, said plunger extending axially downwardly in the bore of said block, the bore of said block being restricted in a lower portion of said block, and;

a hydraulic casting cylinder, mounted to said stationary platen, for actuating a casting piston rod, said casting piston rod being connected to a lower end of said plunger to form, together with said plunger, a piston extension,



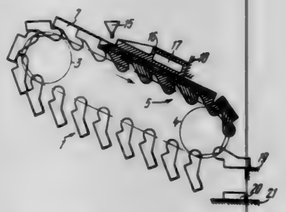
said block being mounted to said casting cylinder and including means for an axial movement thereof relative to said cylinder, said piston extension having within the bore of said block a radial projection, whereby the lower portion of said block serves as a stopper against said projection when said casting piston rod moves downwardly and said projection serves as a stopper against the lower portion of said block when said block moves upwardly, so that an axial length of said space for the molten metal is maintained constant regardless of the axial movements of said casting sleeve and said plunger tip.

4,287,936

INGOT CASTING APPARATUS

Efim Y. Ljublinsky, Vitebsky prospekt, 53, korpus 1, kv. 47, Leningrad; Viktor A. Smirnov, ulitsa Popova, 44, kv. 13, and Anatoly A. Kostylev, ulitsa Bazstroevskaya, 9, kv. 26, both of Krasnoturiinsk Sverdlovskoi oblasti, all of U.S.S.R.

Filed Nov. 16, 1978, Ser. No. 961,249
Int. Cl.³ B22D *5/04, 9/00, 29/04*
U.S. Cl. 164—329 **3 Claims**



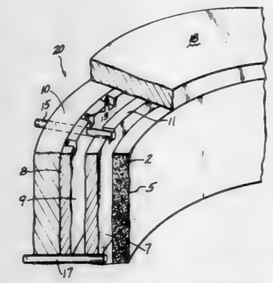
1. In an ingot casting apparatus comprising open top ingot moulds hinged to an endless revolving hauling chain of an inclined conveyer and means for feeding molten metal into open tops of said ingot moulds, wherein the improvement comprises: ingot moulds arranged on an upper descending branch of said endless hauling chain of said inclined conveyer and movable in descending direction along said upper descending branch, each ingot mould consisting of a bottom having an upper moulding surface and an opposed lower external surface, two longitudinal sidewalls associated with said bottom and extending parallel to the direction of descent of said ingot moulds along the upper descending branch and a single transverse wall adjoining said sidewalls and bottom, said single transverse wall extending normal to the direction of movement of said ingot moulds along said upper descending branch and each transverse wall being shaped to define at least one opening within said transverse wall and extending through said transverse wall, said single transverse wall including an internal moulding surface cooperating with said adjoining side walls and the upper moulding surface of said bottom to define a portion of said open top ingot mould cavity, and an external surface adapted to cooperate with an adjacent ingot mould along said upper descending branch to define an open top ingot mound cavity: said ingot moulds being arranged along said upper descending branch to provide a series of open top ingot moulds and cooperating to define a series of ingot mould cavities which are in communication with one another by said openings within the transverse walls of adjacent ingot moulds; means for feeding metal to said open top ingot moulds being arranged along said upper descending branch and a cooled plate disposed above said series of open top ingot moulds and downwardly along the upper descending branch relative to said means for feeding metal to sequentially close the ingot moulds as they pass beneath the cooled plate.

4,287,937

CONTINUOUS LUBRICATION CASTING MOLDS

Michael J. Pryor, Woodbridge, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 15, 1979, Ser. No. 84,768
Int. Cl.³ B22D *11/07*
U.S. Cl. 164—418 **23 Claims**



1. A casting apparatus for continuously casting molten metals or alloys comprising:

a continuous lubrication casting mold, said casting mold including a permeable casting mold section defining an inner casting surface and an outer lubricant receiving surface extending over substantially the entire length of said casting mold section;

said permeable casting mold section comprising a porous body having a continuous open pore fraction associated therewith for establishing passages for said lubricant; and

means for supplying said lubricant to said outer lubricant receiving surface comprising at least one chamber extending along substantially the entire length of said outer lubricant receiving surface;

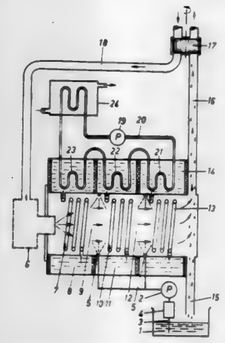
whereby lubricant continuously transfers onto said inner casting surface along substantially the entire length thereof.

4,287,938

METHOD FOR EXCHANGING HEAT AND A DEVICE FOR CARRYING OUT SAID METHOD

Sven G. R. Lagerquist, Göingevägen 1, and Yngve R. Kihlberg, Ingelstadsvägen 47, both of 230 47 Akarp, Sweden

Filed Sep. 7, 1979, Ser. No. 73,427
Claims priority, application Sweden, Sep. 14, 1978, 7809801
Int. Cl.³ F24F *3/14;* **F28D** *15/00;* **F02M** *23/14*
U.S. Cl. 165—3 **1 Claim**



1. A method of exchanging heat comprising the steps of establishing a heat source comprising a first flow of combustion gases from combustion of fossil fuel with air from a burner at a temperature high enough to vaporize water, establishing heat utilization means comprising a second flow through piping of a heat absorbing medium through the combustion gases, passing the combustion gases of said first flow through a chamber from a higher temperature to a lower temperature part, spraying into said chamber in said first flow at a position on the lower temperature side of said flow from said piping a volatile medium in liquid phase having a high coefficient of evaporation and a low boiling point—e.g. water—at least at said higher temperature part of the first flow path so that the medium is caused to vaporize and the vapours of said volatile medium flow toward said lower temperature part of the first flow path with the combustion gases and are thereat caused to condense in said lower temperature part, whereby the heat exchange between said first and second flow is made more efficient and requires less maintenance by removing with the medium soot and other materials tending to form deposits on said piping, characterized in that the combustion gases cooled in the low temperature part carrying moisture from said evaporation are used for regenerative preheating and humidifying of the air introduced to said burner for combustion, wherein said first flow is divided into a plurality of zones where the first flow has different temperatures, and wherein each zone is provided with separate piping of heat absorbing medium at different temperatures, said method further including the step of surrounding the first flow path of combustion gases with a ring shaped reservoir containing a cooling liquid.

4,287,939

AIR CONDITIONING CONTROL SYSTEM WITH LOCAL AND REMOTE CONTROL CAPABILITIES

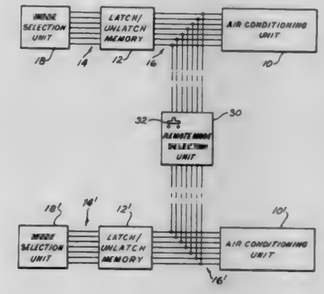
Walter J. Pohl, Louisville, Ky., and Arthur L. Burns, North Syracuse, N.Y., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 21, 1980, Ser. No. 180,216
Int. Cl.³ G05D *23/00;* **H04Q** *9/02*
U.S. Cl. 165—11 R **7 Claims**

1. A control system for an air conditioning unit having a plurality of operational modes, said control system comprising:

mode selection memory circuitry capable of storing and unstoring representations corresponding to each of the operational modes, said memory circuitry having mode selection inputs responsive to momentary actuations and operable when a particular actuation occurs to store the representation corresponding to the particular selected mode and to unstore any other representations;

an operative connection between said memory circuitry and the air conditioning unit to effect operation of the air conditioning unit in the mode corresponding to any particular stored representation;



a relatively local mode selection unit including a plurality of momentarily actuable switching elements connected to said mode selection inputs; and

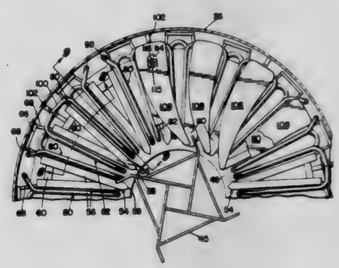
a relatively remote mode selection unit including at least one momentarily actuable switching element additionally connected to said mode selection memory circuitry for selecting at least one particular mode.

4,287,940

COOLING APPARATUS FOR DIFFUSERS

Robert L. Corbett, Jr., 22732 Lake Rd., Rocky River, Ohio 44116

Filed Jun. 20, 1979, Ser. No. 50,168
Int. Cl.³ C21D *9/673;* **F27D** *9/00*
U.S. Cl. 165—48 R **19 Claims**



1. A diffuser, adapted for transmitting thermal energy by conduction across metallic members and convection of a heat-treating gas in an annealing furnace, comprising:

(a) a diffuser member having a generally annular shape defined by inner and outer peripheries, said diffuser member comprising:

(i) a plurality of vertical radial walls for supporting a load plate;

(ii) a plurality of radial gas flow passages, each being bounded on opposite sides by one of said radial walls, for directing gas along a substantially radial path;

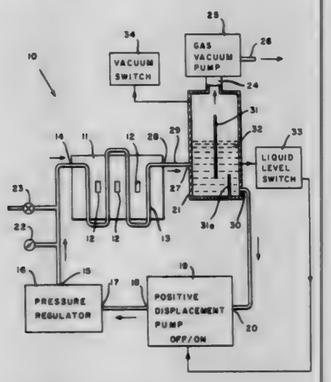
(b) a cooling subassembly disposed in each of said radial passages, said subassembly comprising at least one radial cooling fluid leg extending substantially the length of each radial passage and having an upper and lower run, each of substantial length through the radial passage having a longitudinal axis extending in the direction of gas flow.

4,287,941

PLASTIC MOLD NEGATIVE PRESSURE COOLING SYSTEM

Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.

Filed Oct. 1, 1979, Ser. No. 80,631
Int. Cl.³ F28D *15/00*; B29F *1/08*
U.S. Cl. 165—70 **7 Claims**



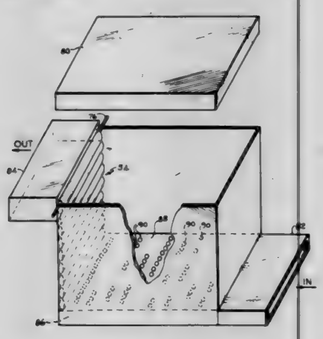
1. A system for transferring heat between a plastic injection mold and a transfer liquid with the mold having a liquid passageway having an inlet and an outlet, a closed reservoir for transfer liquid having an inlet and an outlet, means for maintaining the interior of the reservoir at a high vacuum, means connecting the outlet of the liquid passageway to the inlet of the reservoir, and a pump means having an inlet connected to the outlet of the reservoir and an outlet connected to the inlet of the liquid passageway with said pump means producing a higher vacuum at its inlet than the high vacuum maintained in the interior of the reservoir.

4,287,942

HEAT STORAGE APPARATUS

William C. Whitman, 3 Fourth St., New Brunswick, N.J. 08901

Filed Jun. 30, 1978, Ser. No. 920,962
Int. Cl.³ F28D *13/00*; F24M *7/00*
U.S. Cl. 165—104.14 **6 Claims**



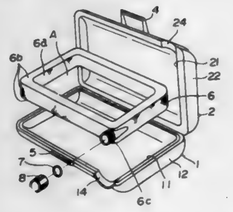
1. Storage apparatus for thermal energy comprising
a housing,
inlet and outlet means in said housing directing a flow of fluid, for use in performing a heat transfer operation, along a path through said housing,
a plurality of thermal storage assemblies disposed in a series adjacent to each other and generally parallel to each other and positioned so that fluid flows from said inlet means to said outlet means between and along said storage assemblies, said storage assemblies being adapted to take part in a transfer of thermal energy with said fluid,
each storage assembly comprising a sheet-like member formed with a plurality of parallel, elongated, generally tubular pockets containing a chemical substance which can store and give up thermal energy, said pockets forming a plurality of parallel curved corrugations spaced apart along the length of and in the outer surfaces of said sheet-like member, said pockets being disposed generally transverse to said path of fluid flow through said housing,
said storage assemblies being positioned, with respect to each other, so that the pockets of one sheet-like member are aligned generally with the space in the adjacent sheet-like member which is present between the pockets thereof so that a serpentine path is formed by the tubular pockets of one member and the spaces between the pockets of the adjacent member,
said pockets and spaces causing said fluid to flow along said serpentine path between said sheet-like members, the tubular pockets of one member directing the fluid into the spaces between the tubular pockets of the adjacent member, so that static layers of fluid cannot form along said sheet-like members and cannot reduce the efficiency of the heat transfer process between the fluid and the material in said pockets,
said fluid flowing continually in the same direction along said serpentine path from said inlet means to said outlet means and thus facilitating said heat transfer process.

4,287,943

HEAT INSULATING BOX

Masashi Hotta, Osaka, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Jun. 28, 1979, Ser. No. 52,735
Claims priority, application Japan, Jul. 5, 1978, 53-93314; Jul. 5, 1978, 53-93315
Int. Cl.³ F28D *21/00*; F25D *3/08*
U.S. Cl. 165—104.19 **4 Claims**



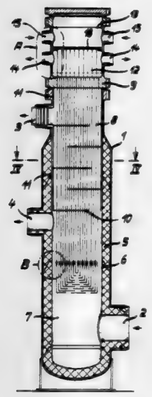
1. An insulating box comprising a box body having an opening, a lid hingedly supported to said box body for closing said opening to form a space between said lid and said box body, releasable means for retaining said lid closed over said opening, and a radiator housed within said space, said box body and lid having an adiabatic construction, said radiator being smaller in size than said space so that when said radiator is housed within said space, a temperature retention space is defined by said radiator, box body and lid for keeping objects therein at a constant temperature, said radiator comprising a hollow and sealed container of heat resistant material having an intake for liquid and a cap closing said intake, and having a frame-like shape encircling said temperature retention space, said radiator intake projecting through an opening of said box body such that said cap is accessable from the exterior of said body.

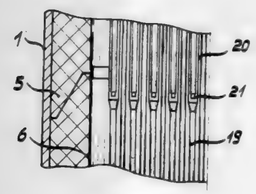
4,287,944

HEAT EXCHANGER FOR COOLING PROCESS GASES WHICH ARE UNDER HIGH PRESSURE AND TEMPERATURE

Jörgen Becker, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,796
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804187
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—158 **2 Claims**





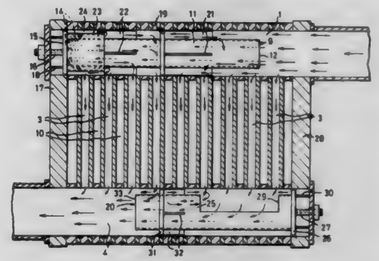
1. A heat exchanger for cooling process gases which are under high pressure and high temperature, with withdrawn heat being used for high pressure steam generation in accordance with natural circulation principles to influence cooling medium flow, said heat exchanger comprising in combination:
a housing having at least one process gas inlet and at least one process gas outlet;
a tube sheet extending across the inside of said housing separating the housing into a process gas plenum and a coolant gas plenum above the process gas plenum;
the coolant plenum being divided into two chambers by said tube sheet, said chambers being separated from one another to provide a first chamber for inlet coolant-steam and a second chamber below the first chamber for outlet coolant-steam in order to provide coolant-steam circulation; and
a U-tube bundle suspended on said tube sheet in said housing and extending into the process gas plenum from the coolant plenum, each U-tube of said U-tube bundle having the upper portion of a first leg of the "U" at least some of said tubes being in the form of a double tube having an inner tube surrounded by an annular conduit, the inner tube being in open communication with the first chamber and the annular conduit being an open communication with the second chamber, the remaining portion of said first leg continuing as a single tube through the bight of said U-tube and into a second leg thereof which second leg opens into the second chamber, whereby said inner tube has the function of a gravity tube for delivering coolant steam into the U-tube whereby said annular conduit and said single tube have the function of risers constructively arranged to maintain U-tube guidance of cooling medium flow so that by application of natural circulation principles cooling- medium-circulation instabilities are avoided during starting phases and during pressure fluctuations.

4,287,945

PLATE HEAT EXCHANGER

Manouchahr F. Hessari, Brighton, England, assignor to The A.P.V. Company Limited, Crawley, England

Filed Jun. 26, 1980, Ser. No. 163,349
Claims priority, application United Kingdom, Jul. 3, 1979, 23178/79
Int. Cl.³ F28D *9/00*; F28F *9/22*
U.S. Cl. 165—167 **16 Claims**



1. In a plate heat exchanger comprising a pack of plates arranged in spaced face to face relationship to define flow spaces between adjacent plates, the plates having aligned holes therein which form ducts for the supply and discharge of media to and from the flow spaces, the arrangement of the ducts for at least one medium being of asymmetric or Z arrangement with the supply and discharge ducts being fed from and discharged to opposte ends of the pack; the improvement that an insert is provided in the supply duct for the said at least one medium to assist in distribution of the medium along the pack of plates by inhibiting the flow to the flow spaces near the end of the pack remote from the inlet end of the supply duct.

4,287,946

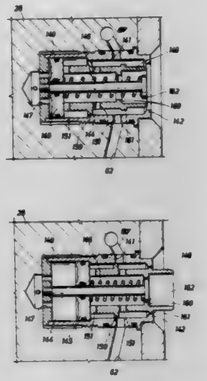
FORMATION TESTERS

Emmet F. Brieger, Bonito Rte., Nogal, N. Mex. 88341

Division of Ser. No. 908,579, May 22, 1978, Pat. No. 4,210,018.
This application Aug. 9, 1979, Ser. No. 65,166
Int. Cl.³ E21B *49/00*
U.S. Cl. 166—100 **13 Claims**

1. A formation tester adapted for passage through a well bore traversing earth formations and comprising:
an elongated tool body adapted for passage through a well bore;
shoe and pad means on said tool body adapted for lateral movement relative to said tool body between a retracted position and an extended position in engagement with the wall of a well bore;
a tubular member slidably disposed in said pad means, said tubular member having an actuating piston which can be placed into access to well pressure thereby to move said tubular member between a retracted position and an extended position,
spring means in said pad means normally urging said tubular member toward its retracted position;
said tubular member having a central opening adapted to receive a fluid sample,
said pad means and tubular member cooperating when said tubular member is in an extended position to restrict the

size of said central opening to form an annular clearance space for bridging sand particles, and when said tubular



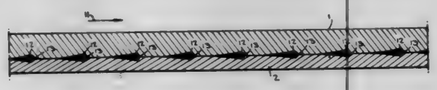
member is in a retracted position, to provide unrestricted access to said central opening.

4,287,947

SOLAR PANEL ELEMENTS AND METHOD OF MANUFACTURE THEREOF

Edgar D. Oppenheimer, Mamaroneck, N.Y.; Humfrey N. Udall, Darien, and Wallace C. Rudd, New Canaan, both of Conn., assignors to Thermatool Corp., Stamford, Conn.

Filed Apr. 23, 1980, Ser. No. 142,966
Int. Cl.[3] F28F *1/20*
U.S. Cl. 165—183 **3 Claims**



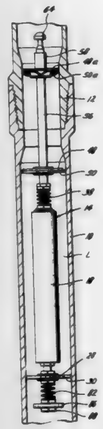
1. A heat exchanger element comprising metal tubing substantially continuously secured along its length to a metal strip which is wide relative to the cross-sectional dimension of said tubing and which is thin relative to its width, said tubing being secured to said strip by metal of at least one of said tubing and said strip which has been melted and cooled to form a cast weld between said tubing and said strip, said cast weld being formed by at least two similarly shaped, continuous and discrete volumes of weld metal per inch of the tubing length, each of which volumes has a first end and an opposite second end, the first end of one volume commencing at the second end of the next adjacent volume and the longitudinal cross-sectional dimension of the weld metal at the first end of a volume being substantially greater than the cross-sectional dimension of the weld metal at the second end of said last-mentioned volume, whereby the strength of the weld at the first end of each volume is substantially greater than the strength of the weld at the second end thereof and at the second end of the next adjacent volume, so that the strength of said weld varies in the longitudinal direction of said tubing at a rate of at least two times per inch of the tubing length and said tubing is secured to said strip by welds of greater strength separated by welds of lesser strength.

4,287,948

TUBULAR MEMBER INTERIOR WIPER

Archie K. Haggard, Houston, Tex., assignor to Haggard I. D. Wiper, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 25,302, Mar. 30, 1979, abandoned. This application Sep. 13, 1979, Ser. No. 74,843
Int. Cl.[3] E21B *37/02*
U.S. Cl. 166—170 **8 Claims**



1. A wiper for wiping liquids from the interior walls of a bore of a member as it is removed from a bore hole comprising,

a buoyant chamber having a closed top and a bottom effective to float the wiper in liquids in the bore of the member and being smaller in external diameter than the smallest bore of the member in which the wiper is to be used,

a flexible centralizer connected to the wiper adjacent the bottom of the buoyant chamber arranged to permit movement of liquid past it, the centralizer extending outwardly sufficiently to centralize the bottom portion of the wiper in the bore of the member and flexible enough to readily pass through the smallest bore of the member,

a mandrel yieldingly connected to and extending upwardly from the buoyant chamber,

first and second flexible wipers provided with drain openings through them, the wipers extending outwardly far enough to engage and arranged to circumferentially wipe the largest bore and flexible enough to readily retract to pass through and circumferentially wipe the smallest bore of the member,

means securing the first and second wipers to the mandrel,

the first and second wipers being axially spaced from one another a distance sufficient to permit ready passage through the smallest bore of the member and to centralize the wiper's upper portion in the bore of the member,

whereby the wiper floats in the liquid in the bore with the first and second wipers above the liquid, and as the member is removed from the well bore, the first and second wipers wipe the bore of the member of liquid and any of the liquid above the wipers drains through the drainholes,

and means for equalizing pressure within the buoyant chamber with pressure in the well bore comprising an open passageway extending into a lower portion of the buoyant chamber,

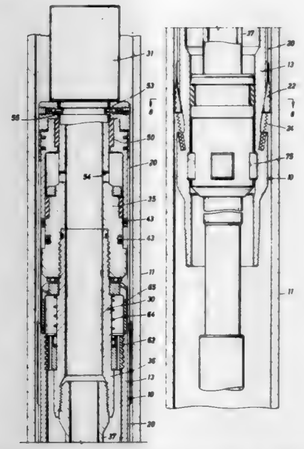
the bouyant chamber, the flexible centralizer, the mandrel and the first and second wipers formed of material which will not cause an explosion of an explosive mixture when rubbing or striking the interior walls of the member.

4,287,949

SETTING TOOLS AND LINER HANGER ASSEMBLY

Hiram E. Lindsey, Jr., Midland, Tex., assignor to MWL Tool and Supply Company, Midland, Tex.

Filed Jan. 7, 1980, Ser. No. 109,979
Int. Cl.[3] E21B *23/04*
U.S. Cl. 166—212 **12 Claims**



9. A liner hanger for use in hanging tubular liners a well bore comprising;

an elongated tubular body member having

(i) an internally threaded portion at its upper end for releasably coupling to a setting tool,

(ii) an external threaded portion at its lower end for coupling to a tubular liner,

(iii) an integral monolithic solid wall surface between said upper and lower ends,

(iv) a longitudinally extending internal sealing bore portion between said upper and lower ends, said bore portion having a polished portion for slidably and sealingly receiving a tubing string having a sealing member for establishing a sealing relationship within said polished bore portion,

(v) an internal recessed portion below said sealing bore portion, said recessed portion being sized and adapted for receiving locking means, and

(vi) externally located slip means for engaging the wall of a pipe and preventing downward movement of said body member in a pipe.

4,287,950

GAS PRE-INJECTION FOR CHEMICALLY ENHANCED OIL RECOVERY

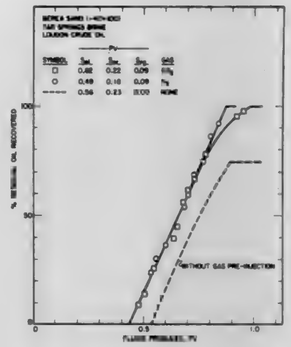
Edward G. Baker, Berkeley Heights, and John S. Huang, East Brunswick, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 3, 1980, Ser. No. 136,937
Int. Cl.[3] E21B *43/22, 33/13*
U.S. Cl. 166—273 **10 Claims**

1. A process for the chemically enhanced recovery of oil from an oil-bearing formation which consists essentially of the steps of

injecting nitrogen, flue gas or exhaust gas into the formation in an amount sufficient to attain trapped gas phase saturation,

injecting a fluid containing an effective amount of surfactant to displace oil,



driving the fluid through the formation with an aqueous pusher, and

recovering the displaced oil.

4,287,951

PROCESS FOR IMPROVING CONFORMANCE AND FLOW PROFILES IN A SUBTERRANEAN SANDSTONE FORMATION

R. D. Sydansk, Littleton, Colo., and P. R. Gucwa, Houston, Tex., assignors to Marathon Oil Company, Findlay, Ohio

Filed Jun. 30, 1980, Ser. No. 164,619
Int. Cl.[3] E21B *33/38, 43/22*
U.S. Cl. 166—281 **18 Claims**

1. A process for improving vertical conformance and flow profiles of fluids injected into or produced from a subterranean sandstone formation having at least one zone of relatively high permeability and at least one zone of relatively low permeability, the formation being penetrated by a well bore in fluid communication therewith and having a near well bore environment which exhibits relatively homogeneous horizontal properties, the process comprising:

injecting into said near well bore environment via said well bore a caustic aqueous solution, having caustic dissolved therein;

shutting in said well bore for a period of time sufficient to allow said caustic to interact with said sandstone formation thereby resulting in at least a portion of said caustic being held within said near well bore environment;

injecting into said near well bore environment an aqueous spacer slug; and thereafter,

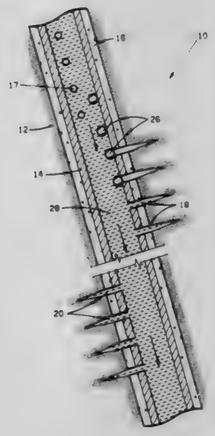
injecting into said near well bore environment via said well bore a polyvalent cation containing solution having a polyvalent cation dissolved therein that is reactive with said caustic, permitting said polyvalent cation to react with said at least a portion of said caustic to form an insoluble precipitate preferentially and predominantly within said at least one zone of relatively high permeability in said near well bore environment of the formation, said precipitate predominantly and preferentially reducing the permeability of said at least one zone of relatively high permeability.

4,287,952

METHOD OF SELECTIVE DIVERSION IN DEVIATED WELLBORES USING BALL SEALERS

Steven R. Erbstoesser, Missouri City, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed May 20, 1980, Ser. No. 151,567
Int. Cl.[3] E21B *33/10, 43/26, 43/119*
U.S. Cl. 166—284 11 Claims



1. A method of selectively sealing perforations in a deviated well casing comprising the steps of:

perforating a first portion of said casing with a first plurality of perforations where substantially all of said perforations are positioned abutting a plane aligned substantially in the vertical and extending along the longitudinal axis of said casing;

perforating a second portion of said casing with a second plurality of perforations where substantially all of said perforations are circumferentially spaced-away from said plane at a distance sufficient to substantially prevent diverting agents being transported down said casing in carrier fluid in a pathway adjacent to said casing and to said plane, from seating in said perforations;

injecting into said casing a carrier fluid containing diverting agents selected from the group consisting of diverting agents having a density greater than that of the carrier fluid and diverting agents having a density less than that of the carrier fluid;

transporting said diverting agents in said carrier fluid down said casing to said first portion of said casing, and

flowing said carrier fluid into said first plurality of perforations to cause said diverting agents to selectively seat in said first plurality of perforations.

4,287,953

METHOD OF REMOVING CONDUIT FROM CURVED BOREHOLE

Raymond L. Mazza, Morgantown, W. Va., assignor to Conoco, Inc., Ponca City, Okla.

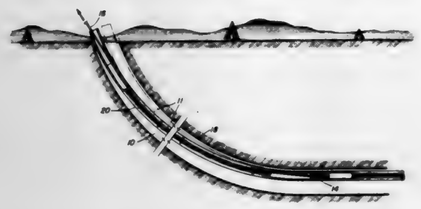
Filed Jun. 9, 1980, Ser. No. 157,909
Int. Cl.[3] E21B *31/00*
U.S. Cl. 166—301 3 Claims

1. A method of removing a conduit from a curved borehole comprising:

(a) pumping a settable plug down said conduit to a position beyond at least a portion of the curved borehole;

(b) setting said plug against the interior of said conduit;

(c) applying a compression load to said conduit by applying tension to a cable attached to said plug; and



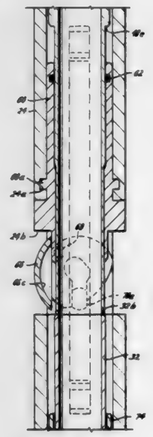
(d) simultaneously with step (c) applying a pulling force to said conduit whereby removal of said conduit from said borehole is facilitated.

4,287,954

SUBSURFACE SAFETY VALVE

William F. Krause, and Edwin C. Turner, both of Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Aug. 20, 1979, Ser. No. 68,077
Int. Cl.[3] E21B *43/12*
U.S. Cl. 166—322 2 Claims



1. A subsurface well safety valve for use in a well flow conductor, including:

a tubular valve housing having means for securing in a well flow conductor at a subsurface location in a well, said housing having a bore formed therethrough in flow communication with the flow conductor for enabling production of hydrocarbons from the well;

a flow closure element disposed in said bore for movement to and from a first position blocking flow of fluid through said bore and a second position enabling flow through said bore;

operator means disposed in said bore for moving said flow closure element to and from the first and second positions, said operator means having a pressure responsive surface exposed to a control fluid for moving said flow closure element to the second position in response to the application of control fluid pressure to said pressure responsive surface;

urging means mounted with said tubular housing for urging said operator means to move said closure element to the first position for blocking flow of fluid through said bore;

said closure element pivotally connected to said tubular valve housing for rotation about said pivotal connection to and from the first position and second position;

said closure element operably connected to said operator means for pivoting said closure element about said pivotal connection in response to movement of said operator means;

seat means fixed in said bore and sealingly engageable with said closure means in the first position for blocking flow of fluid through said bore;

said closure element in the second position pivoted outwardly of said seat means to enable said operator means to isolate said flow closure element from the flow of fluids wherein said closure element is protected when in the second position enabling flow of fluid through said bore; and

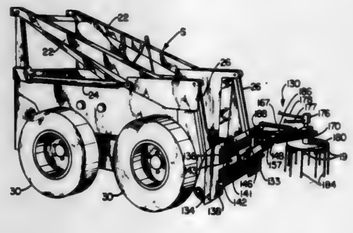
said operator means includes a tubular assembly reciprocally movable within said bore, said tubular assembly having a flow tube for isolating said closure element in the second position from the flow of well fluids.

4,287,955

ROTARY TILLER DEVICE

Jack F. Anderson, Marion, N. Dak. 58466

Filed Jun. 7, 1979, Ser. No. 46,160
Int. Cl.[3] A01B *33/06, 39/16, 59/048*
U.S. Cl. 172—98 21 Claims



1. In combination with a skid turn mobile vehicle that is adapted for steering by slowing, stopping, and reversing the rotation of the wheels on one side of the vehicle in relation to the wheels on the other side of the vehicle, rotary tiller apparatus, comprising:

a main support frame adapted for mounting on said vehicle;

yieldable suspension means attached to and extending laterally outward from said main support frame, the distal end of said suspension means being movable upwardly and downwardly in relation to said frame;

a rotor assembly suspended from the distal end of said suspension means, including a vertical drive shaft, a rotor member mounted on the lower end of said shaft and a plurality of resilient cultivator means attached to and extending downwardly from said rotor member in spaced-apart relation to each other, said cultivator means being resiliently flexible elongated shank members adapted for tilling the ground; and

drive means for rotating said shaft.

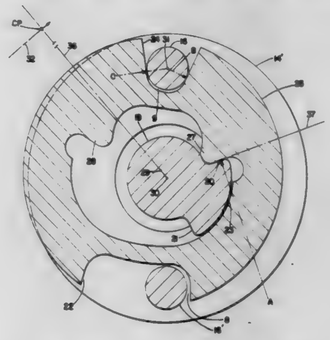
4,287,956

IMPACT WRENCH MECHANISM AND PIVOT CLUTCH

Spencer B. Maurer, 6070 Tarawood Dr., Orlando, Fla. 32811

Filed Aug. 10, 1979, Ser. No. 65,541
Int. Cl.[3] B25D *15/02*
U.S. Cl. 173—93.5 13 Claims

1. A rotary impact tool comprising, in combination, a housing, a motor having a rotor mounted in said housing, an output shaft mounted on said housing for rotation and including impact receiving anvil jaw means generally radially disposed on its periphery, carrier member means coaxially around said output shaft and mounted for rotation in respect to said output shaft, driving connecting means between said rotor and said carrier member means for rotating said carrier member means, hammer member means pivotally connected in said carrier member means for rotation therewith and for angular pivotal motion relative thereto about an axis offset from but parallel to the axis of rotation of said carrier member means, said hammer member means for clockwise impact operation having clockwise impact delivering jaw means on its inside surface means located between 0° and 90° clockwise from its pivot connection to the carrier member means, said impact jaw means being movable into and out of the path of said impact receiving anvil jaw means to deliver impact blow(s) thereto, cam means for effecting the angular pivot movement of said impact delivering jaw means into the path of said anvil jaw means in a clockwise direction relative to said carrier member means, centrifugal force created by the proportions, mass and mass center location of said hammer member means holding said impact delivering jaw means in the path of said anvil jaw means until the



delivery of said impact blows thereto, said impact delivering jaw means being so shaped and positioned that when in forceful contact with said anvil jaw means a counterclockwise pivot torque is created acting on said hammer means tending to pivot it out of engagement with said anvil jaw means, inertia forces created by the proportions, mass and mass center location of said hammer means preventing said counterclockwise pivot motion of said hammer means until the conclusion of the impact blow;

said carrier member means comprising a front plate and a rear drive member, each having at least one hole therein, offset axially from said output shaft, and longitudinal pin means extending into said at least one hole in said front plate and rear drive member connecting said plate and member together for said carrier member means rotation and providing pivot means for said hammer member means.

4,287,957

COOLING A DRILLING TOOL COMPONENT WITH A SEPARATE FLOW STREAM OF REDUCED-TEMPERATURE GASEOUS DRILLING FLUID

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Continuation-in-part of Ser. No. 153,540, May 27, 1980, which is a continuation-in-part of Ser. No. 95,532, Nov. 19, 1979, Pat. No. 4,240,674. This application Aug. 8, 1980, Ser. No. 176,338
Int. Cl.[3] F21B *9/08*; F16C *19/34*
U.S. Cl. 175—17 23 Claims

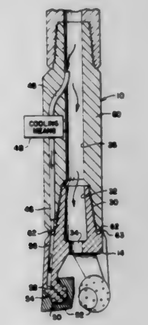
1. An improved method of cooling a drilling tool component of a gaseous drilling fluid circulation drilling system, comprising the following steps:

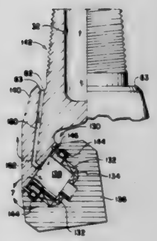
conducting a supply of pressurized drilling gas into a borehole through a drilling fluid passageway for the primary purpose of carrying particle cuttings out of the borehole, separating in the borehole a part of the supplied drilling gas

into a flow stream separate from the remaining drilling gas in the drilling fluid passageway,

conducting the whole of the flow stream to the drilling tool component to be cooled,

passing the flow stream through a heat exchanger which is thermally separate from the drilling component to be cooled prior to conducting the flow stream to the drilling tool component to be cooled, and





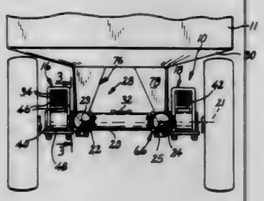
cooling the flow stream in the heat exchanger to a temperature less than the temperature of the remaining drilling gas in the drilling fluid passageway by thermally immersing the heat exchanger in a cooling stream of drilling gas separate from that of the flow stream and that in the drilling fluid passageway, the cooling stream having been reduced in temperature due to thermodynamic effects of the cooling stream drilling gas within the borehole.

4,287,958

VEHICLE SUSPENSION WITH FLEXIBLE TRANSVERSAL BEAM

Kenneth J. Schmidt, Springfield, Oreg., assignor to General Trailer Company, Inc., Springfield, Oreg.

Filed Oct. 12, 1979, Ser. No. 84,521
Int. Cl.³ G01G *19/08, 3/14*
U.S. Cl. 177—136 **4 Claims**



1. Load-measuring means in a vehicle having an elongate load bed and ground-traveling support means, said measuring means comprising

a flexible beam extending generally transversely of the longitudinal axis of said bed,

means operatively attaching said support means to said beam at a pair of spaced points thereon,

journal means mounting said bed on said beam at another pair of points spaced thereon for journaled pivoting of the beam about spaced axes generally paralleling the bed's longitudinal axis and intersecting the beam's longitudinal axis, which other points are generally symmetrical with respect to said first-mentioned pair of points, and

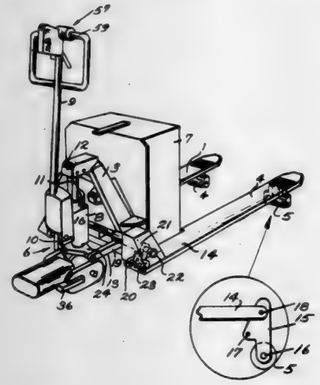
means mounted on said beam intermediate said pairs of points for monitoring beam deflection related to the weight of load carried on said bed.

4,287,959

SELF PROPELLED PALLET TRUCK

Richard Inman, 3905 Green Industrial Way, Atlanta, Ga. 30341

Division of Ser. No. 901,099, Apr. 28, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,900
Int. Cl.³ B62D *1/14*
U.S. Cl. 180—12 **6 Claims**



1. In a pallet truck comprising means for supporting a pallet, wheels rotatably mounted on said supporting means, a drive carriage including at least two rotatably mounted wheels and means connecting said drive carriage to said supporting means, said pallet truck being supported on the wheels of said supporting means and the wheels of said drive carriage, and said wheels rotating as said pallet truck is moved;

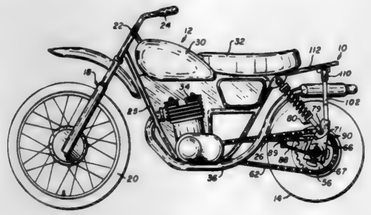
the improvement wherein said connecting means comprises a gimbal between said drive carriage and said supporting means, whereby the wheels of said drive carriage remain in contact with the floor as said pallet truck turns corners and as it moves across uneven floors, said pallet truck including drive means comprising an electric motor operatively connected to the wheels of said carriage, to propel said pallet truck, said pallet truck including a handle and switch means on said handle for actuating said drive means to propel said pallet truck, said switch means including a rotatable collar, spring means operatively connected to said rotatable collar, and a potentiometer mounted in said handle, said spring means urging said rotatable collar in a direction which stops said drive means from propelling said pallet truck, said switch means also including a lever connected to said rotatable collar, a rack and a pinion mounted to rotate the shaft of said potentiometer to control the speed of said drive means, said lever engaging said rack and said rack engaging said pinion to rotate said pinion when said rotatable collar is rotated, whereby the speed of said truck is controlled.

4,287,960

MOTORCYCLE CONVERSION KIT

Harold McConnell, Box 15, Bald Knob, Ak. 72010

Filed Sep. 28, 1979, Ser. No. 80,021
Int. Cl.³ B62K *13/04*; B62D *61/08*
U.S. Cl. 180—16 **5 Claims**



1. A kit for converting a two wheel motorcycle to three wheel operation, said kit comprising:

elongated axle means adapted to be transversely coupled to said motorcycle at the rear thereof, said axle means adapted to receive a standard drive gear associated with said two wheel motorcycle for rotation thereby;

first and second substantially planar mounting plates revolvably coupled to said axle means at spaced-apart locations thereon at opposite sides of said drive gear;

means adapted to couple said first and second mounting plates to said motorcycle;

a pair of drive hubs disposed at opposite ends of said axle means adapted to receive first and second drive wheels for propelling said motorcycle; and

stabilizer means comprising:

a horizontal member rigidly extending between said first and second mounting plates;

a vertical member rigidly attached to said horizontal member and rising upwardly therefrom; and

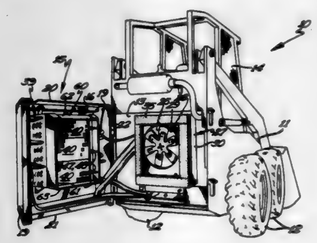
bearing means adapted to be rigidly coupled to said motorcycle at an upward location thereon for slidably receiving said vertical stabilizer member whereby vertical displacement of a suspension system of said motorcycle is facilitated while damage to said motorcycle from twisting or torsional forces is prevented.

4,287,961

VARIABLE CAPACITY RADIATOR SYSTEM FOR OFF-HIGHWAY VEHICLES

Bruce W. Steiger, Thief River Falls, Minn., assignor to Hydra-Mac, Inc., Thief River Falls, Minn.

Filed Oct. 10, 1979, Ser. No. 83,545
Int. Cl.³ B60K *11/04*
U.S. Cl. 180—68 R **5 Claims**



1. A self-propelled vehicle comprising:

a body having an engine compartment,

propulsion wheels for supporting the vehicle for travel, an internal combustion engine in said engine compartment for propelling said ground-engaging wheels, said engine being cooled during operation thereof by a liquid coolant,

a vertically disposed perforated grill housing hingedly mounted on said body for swinging movement relative thereto about a vertical axis between open and closed positions with respect to said engine compartment,

a reservoir tank mounted on the vehicle body and connected to said engine for returning cooled coolant to said engine, said reservoir tank being spaced from said grill housing,

a variable capacity radiator system for cooling heated coolant comprising a plurality of similar cooling modules, means mounting the modules in stacked relation interiorly of the rear grill housing, conduit means connecting the radiator modules with each other and with said engine to receive said coolant from the latter, conduit means interconnecting certain modules with said reservoir tank to direct cooled coolant to the reservoir tank, said module mounting means being effective for permitting ready removal or addition of radiator modules for mounted relation on the rear grill housing to thereby selectively vary the cooling capacity of the radiator system,

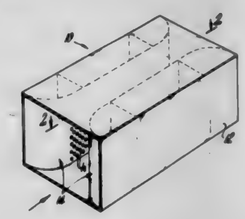
an annular yieldable member mounted on the vehicle body and being engaged by the radiator system when the grill housing is in the closed position.

4,287,962

PACKLESS SILENCER

Uno Ingard, Kittery Point, Me.; James A. Morgan, Wyckoff, N.J., and Martin Hirschorn, New York, N.Y., assignors to Industrial Acoustics Company, Bronx, N.Y.

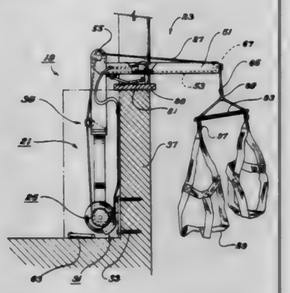
Continuation-in-part of Ser. No. 851,300, Nov. 14, 1977, abandoned. This application Apr. 17, 1979, Ser. No. 30,925
Int. Cl.³ F01N *1/08*; E04F *17/04*
U.S. Cl. 181—224 **22 Claims**



1. A packless acoustic silencer for use in a duct member having a pair of opposed, upstanding sidewall members, for attenuating noice associated with a fluid medium passing through said silencer comprising:

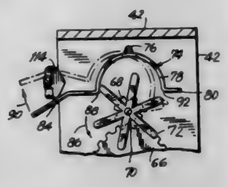
a pair of opposed, spaced apart facing panels each of which being disposed within the duct and adjacent to one of said duct sidewalls, each facing panel including a substantially flat center wall portion spaced apart from its adjacent duct sidewall and a pair of curved end wall portions, each end wall portion being connected to its adjacent duct sidewall to define a cavity within each facing panel, the space between the facing panels defining a fluid passageway bordered by each facing panel center wall portion, said center wall portions being generally parallel to one another and perforated having an open area in the range of from about 2 to 10%, said perforations each having an effective diameter in the range of from about 0.032 inch to 0.125 inch respectively for facing panels having a thickness of from about 26 gauge to 11 gauge, each of the duct sidewalls and facing panel end walls being acoustically opaque and impervious to the fluid such that there is no net flow of the fluid through said facing panels.

4,287,963
SAFETY APPARATUS
Darrell W. Coxsey, Rte. 2, Pilot Point, Tex. 76258
Filed Jan. 21, 1980, Ser. No. 113,976
Int. Cl.³ A62B 1/12
U.S. Cl. 182—231 **5 Claims**



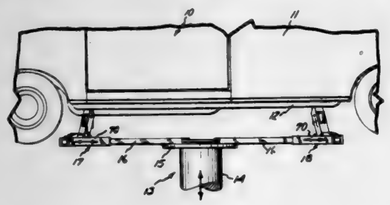
1. Safety window apparatus for lowering at least one person from a window of a hotel room or the like comprising:
a. structural framework disposed and affixed interiorly of the room and disposed adjacent the window;
b. extensible arm pivotally connected at its first end with said structural framework and having a free end that is pivotally moveable exteriorly of said window;
c. rotatable drum journalled in said structural framework for rotating and controllably playing out a lineal member for lowering the person;
d. lineal member disposed about and connected with said rotatable drum means;
e. at least one sheave mounted at the free end of said arm and having said lineal member traversing thereover;
f. body harness means for holding said person, said body harness means being connected with said lineal member; and
g. means controlling the rate of rotation of said rotatable drum means and hence the rate of descent of said person; said means controlling the rate of rotation comprising a brake means;
said arm having a brake applying means for applying a braking force proportional to the weight of said at least one person being lowered by said lineal member from the end of said arm.

4,287,964
TIMER
Edward Sollenberger, Triadelphia, W. Va., assignor to Empire of Carolina, Inc., New York, N.Y.
Filed Feb. 9, 1979, Ser. No. 10,863
Int. Cl.³ F03G 1/00
U.S. Cl. 185—38 **4 Claims**



1. A timer comprising: a housing, a spring-powered mechanical motor means mounted in said housing, said motor means including spring means and step up gear train means driven by said spring means for advancement during the relaxation of the tension in the spring means, switch means manually manipulatable from outside of said housing, said switch means being displaceable between a first position at which said switch means stops the advancement of said motor driven means and a second position at which said switch means permits said motor to advance, and speed governor means coupled to said gear train means for regulating the speed of rotation of said gear train means, said speed governor means being reciprocally oscillatable along a path by said gear train means, said switch means including a projection displaceable into and out of the path of said governor means when said switch means is displaced from its first toward its second position, said switch projection being formed with camming surfaces for displacing said governor means out of its path during displacement of said switch means from said second to said first position thereof.

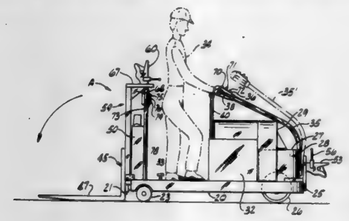
4,287,965
HOIST PAD
Alan D. Pearson, and Gary L. Pearson, both of 1127 Cliff Rd., Burnsville, Minn. 55337
Filed Oct. 15, 1979, Ser. No. 84,799
Int. Cl.³ B60S 13/00
U.S. Cl. 187—8.75 **36 Claims**



1. A hoist pad useable with a lift arm of a hoist to support a part of a load comprising: frame means mountable on a lift arm, a base supported on the frame means, said base including side pockets, means attaching the base to the frame means, and a lift assembly mounted on the base and engageable with a load to support a part of the load on the hoist pad, said lift assembly having a first member movably mounted on the base, said first member including means located in said side pockets to movably mount the first member on the base, said first member and base having first cooperating means which permit the first member to be located in separate locations relative to the frame means, said first cooperating means including a plurality of transverse grooves located at different elevations in said base, said first member having a rib selectively locatable in one of said grooves to locate the first member in a selected position relative to the base, and a second member movably mounted on the first member, said first and second members having second cooperating means selectively locating the second member in a first down position and a second up position whereby the first and second members can be positioned relative to each other to change the effective lifting height of the hoist pad.

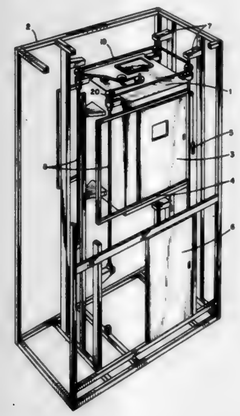
4,287,966
INDUSTRIAL TRUCK
Kenneth A. Frees, St. Charles, Mo., assignor to Missouri Research Laboratories Inc., St. Charles, Mo.
Filed Nov. 6, 1978, Ser. No. 958,166
Int. Cl.³ B66B 9/20
U.S. Cl. 187—9 R **22 Claims**

1. A small, compact industrial fork lift truck comprising a chassis, a power unit at the front of said chassis including a steerable drive wheel under said power unit, a pair of nonsteerable wheels at the rear of said chassis, a platform at the rear of said chassis for standing of an operator while operating said truck, said platform being rearward of said power unit, a steering control interconnected with said drive wheel and accessible by said operator, said steering control comprising a steering arm extending from said power unit toward said platform, said power unit comprising a motor and drive wheel unit mounted for rotation about an axis vertical to said chassis, said steering arm being swingable about said axis for steering said drive wheel, a fork lift assembly carried at the rear of said chassis having a pair of forks extending rearwardly from said chassis for lifting palletized loads, fork actuation means for selectively raising and lowering said forks, coupler means carried at least at one end of said chassis for coupling a trailer to said truck independently of said fork lift assembly, and control means accessible to said operator from said platform for controlling



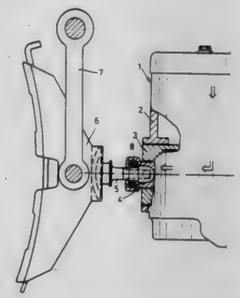
movement of said truck and raising and lowering of said forks, said control means comprising first and second sets of controls each adapted for operating said fork actuation means to control raising or lowering movement of said forks, said first set of controls being carried by said arm and said second set of controls being carried at the rear of said truck for accessibility when said operator faces rearwardly on said platform, and a high speed control accessible only at said platform and operable by said operator when standing upon said platform for effecting high speed movement of said truck.

4,287,967
SELF-SUPPORTING AND SELF-CONTAINED ELEVATOR
Rex H. Perkins, Victoria, Australia, assignor to Sanscord Australia Pty. Limited, Victoria, Australia
Filed Jun. 8, 1979, Ser. No. 46,948
Int. Cl.³ B66B 11/04
U.S. Cl. 187—24 **6 Claims**



1. Self-supporting and self-contained apparatus capable of being preassembled and placed into an existing well or space provided in a structure, said apparatus being for the transfer of loads between vertically spaced-apart levels of a structure, said apparatus including
(a) support frame means;
(b) platform means for supporting a load, said platform means being accessible from one side thereof or from two sides thereof, said two sides being opposite to each other;
(c) guide means extending between said levels and rigidly affixed to said support frame means to constitute a path for movement of said platform means between said levels; said guide means including at least two elongated, stationary screws, each of said screws being threaded within a revolving circulating ball nut; each ball nut being fixed to a sleeve formed with a central bore having a diameter greater than the screw thickness, to maintain said screw and said sleeve spaced apart from each other; each of said sleeves being attached to a sprocket and being supported within a bearing means, said bearing means being rigidly connected to said platform means; and
(d) drive means associated with said platform means and operable to simultaneously drive each of said sprockets and thereby cause each ball nut to revolve around the respective stationary screw whereby movement is imparted to said platform means.

4,287,968
DEVICE AT A BRAKE ACTUATOR
Bo G. Stensson, Teckomatorp; Jan O. Harström, Malmö, and Jan Csiba, Paarp, all of Sweden, assignors to SAB Industri AB, Landskrona, Sweden
Filed Oct. 16, 1979, Ser. No. 85,285
Claims priority, application Sweden, Nov. 2, 1978, 7811340
Int. Cl.³ F16D 49/00
U.S. Cl. 188—74 **1 Claim**



1. A braking system with a brake shoe movable along an arcuate path and thereby operable in the presence of substantial lateral movement of a brake block holder comprising in combination,
said brake block holder in said arcuate path adapted to move a brake shoe into contact with a rotating surface along a movement line and thereby having a degree of motion lateral to a linear movement line,
a push rod having a linear movement path,
means actuating the push rod in a substantially linear back and forth direction along said linear movement line for actuating the brakes by moving said brake shoe in and out of said contact,
a transmission part substantially disposed along said linear movement line between said brake block holder and push rod to move substantially along the linear movement line comprising a transmission rod having a longitudinal axis diposed in a neutral position along said linear movement line with spherical surfaces of differing diameters disposed on opposite ends thereof to engage respectively the brake block holder at a substantially flat surface and the push rod in a cup shaped surface to coact therewith to permit an angular departure of the order of 3° to 4° from said neutral position relative to the push rod, the radius of the spherical surface in contact with the brake block holder being substantially larger than that of the spherical surface

in contact with the push rod thereby to reduce the forces exerted on the push rod perpendicular to said linear movement path when the brake shoe moves along said arcuate path, wherein the respective spherical surfaces are in substantially unconfined movable surface contact with the flat and cup shaped surfaces and have a common center thereby eliminating slippage between the spherical surfaces with the respective block holder and push rod surfaces, and rotation prevention means comprising members engaging the push rod, the brake block holder and the transmission part thereby holding the transmission rod non-rotational about its axis whereby the brake block holder upon actuation of the push rod moves the brake shoes into contact with the rotating surface in the presence of said lateral motion without imparting a rotational movement to the push rod.

4,287,969

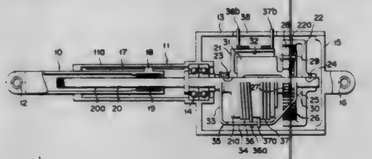
MOTION SNUBBING DEVICE

Atsushi Misumi, and Yoshio Kimura, both of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 21, 1979, Ser. No. 105,930

Int. Cl.³ B60T *7/12*

U.S. Cl. 188—134 **7 Claims**



1. A motion snubbing device comprising:

a pair of telescoping support members mounted to reciprocate on each other along the axial direction thereof, while being restrained from relative rotation, when any force is applied from the outside;

means for converting the axial movement of one of the paired support members into a rotation moment;

a shaft supported by the other member to be rotated by said moment converting means;

an inertia member rotatable relatively to said shaft;

a planetary gearing mechanism interposed between said shaft and inertia member, said planetary gearing mechanism rotating on its own axis to rotate said inertia member with said shaft when gentle external force is applied;

a brake member mounted on said shaft and having a brake surface;

clutch spring means disposed around said brake surface and normally in a stationary state where said clutch spring means is disengaged from said brake surface; and

actuating means disposed between said planetary gearing mechanism and clutch spring means, said actuating means being operated by said planetary gearing mechanism to revolve when drastic external force is applied and applying initial force to said clutch spring means for clutch engagement with said brake surface, whereby said shaft is prevented from rotation.

4,287,970

HYDRO-PNEUMATIC DAMPING DEVICE

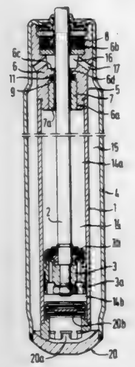
Robert Eusemann, Bergrheinfeld; Günther Handke, Euerbach, and Manfred Koller, Bergrheinfeld, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,500

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905928

Int. Cl.³ F16F *9/06*

U.S. Cl. 188—269 **15 Claims**



1. A hydro-pneumatic damping device comprising

(a) an inner cylinder having an axis and two ends,

(b) a central cavity defined within said inner cylinder between said two ends,

(c) an outer container surrounding said inner cylinder, said outer container having two ends adjacent respective ends of said inner cylinder,

(d) an annular cavity defined between said inner cylinder and said outer container,

(e) first and second closure means closing said two ends of said cylinder and said container,

(f) piston rod passage means through the first ones of said closure means,

(g) fluid passage means between said central cavity and said annular cavity adjacent the second ones of said closure means,

(h) first fluid throttling means associated to said fluid passage means,

(i) a piston rod axially extending through said piston rod passage means and into said central cavity,

(k) a piston unit mounted on said piston rod within said central cavity and defining two working chambers within said cavity, a first working chamber adjacent said first closure means and a second working chamber adjacent said second closure means,

(l) fluid connecting means connecting said two working chambers across said piston unit,

(m) second fluid throtteling means associated to said fluid connecting means,

(n) a body of liquid at least within the central one of said cavities,

(o) a body of gas within said annular cavity,

said first closure means comprising

(aa) a cylinder closing unit surrounding said piston rod and having an inner end adjacent said first working chamber and an outer end,

(bb) a sealing unit engaging said piston rod and having an inner end adjacent said outer end of said cylinder closing unit,

(cc) venting passage means between said first working chamber and said annular cavity extending across said cylinder closing unit and axially inside said inner end of said sealing unit,

(dd) check valve means associated to said venting passage means permitting fluid to flow from said first working chamber toward said annular cavity and preventing reverse flow, said check valve means comprising

an annular check valve member in frictional sliding engagement with said piston rod for axial movement with said piston rod toward a sealing position during inward movement of said piston rod and toward an opening position during outward movement of said piston rod, first and second abutment means being provided for defining said sealing position and said opening position of said annular check valve member respectively.

4,287,971

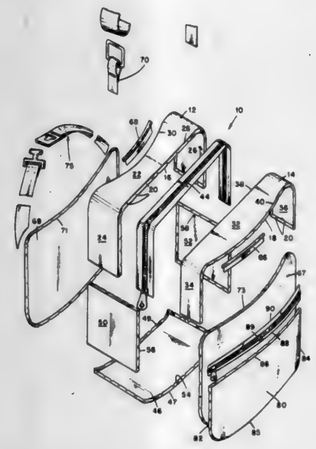
BODY-ATTACHABLE BAG FOR TRANSPORTING ARTICLES

Clayton J. Doulet, P.O. Box 220, Dandridge, Tenn. 37725

Filed Jan. 2, 1980, Ser. No. 109,154

Int. Cl.³ A45C *3/10, 13/00, 13/30*

U.S. Cl. 190—48 **4 Claims**



1. A bag particularly suitable for transporting an article in a suspended position alongside of and in substantial wrapping contact with the user's body and having a reduced tendency to swing relative to such user's body during the user's walking or other movements, said bag comprising strap means of suitable length to overwrap the shoulder of a user and having its opposite ends extending downwardly from such shoulder in the direction of a user's waist, first flexible elongated panel means formed into a generally inverted U-shape with its base portion defining a substantial portion of the top of said bag and its leg portions defining substantial portions of the opposite ends of said bag, said ends of said strap being secured to respective ones of said leg portions, second elongated panel means of substantially the same length as and substantially coterminal with said first panel means but of more narrow width disposed in side-by-side relation to said first panel means with one of the side edges of said first panel means being contiguous to one of the side edges of said second panel means, said contiguous side edges being aligned along the aforesaid U-shape to define a top opening in said bag, closure means extending along said contiguous side edges and adapted to releasably join said side edges to one another, third elongated flexible panel means defining the bottom of said bag, fourth and fifth planar panel means interposed between said bottom panel and the coterminal ends of said first and second panel means, means joining each of said fourth and fifth panel means to said respective coterminal ends of said first and second panel means and said bottom panel means, first side panel means, means joining said first side panel means along its perimeter to the outboard side edges of said first, third, fourth and fifth panel means to close one side of said bag, second side panel means, means joining said second side panel means along its perimeter to the opposite side edges of second, third, fourth and fifth panel means to close the opposite side of said bag, said first panel means having one side edge which is outboard and concave with respect to the length dimension of said first panel along that portion thereof which is disposed on the top of said bag, said third panel means having one side edge which is outboard of said bag and concave with respect to the length dimension of said third panel in that portion thereof which is disposed on the bottom of said bag whereby said first side panel, when joined to said side edges as aforesaid, is caused to assume a concave geometry.

4,287,972

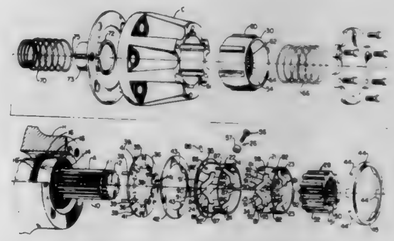
AUTOMATIC CLUTCH ASSEMBLY

Harry A. Petrak, 2565 Table Mesa Dr., Boulder, Colo. 80303

Filed Oct. 22, 1979, Ser. No. 87,025

Int. Cl.³ B60B *27/00*; F16D *1/06, 43/20*

U.S. Cl. 192—54 **24 Claims**



1. In a clutch assembly, an actuator mechanism operative to effect releasable but positive driving engagement between a member to be rotated and a rotatable drive member, said actuator mechanism comprising:

first actuating means including a cam follower rotatable in response to positive rotation of said drive member;

second actuating means releasably locked against rotation and provided with first cam control means operative to advance said first actuating means into engagement with the member to be driven, second cam control means engageable by said first actuating means to release said second actuating means for rotation upon engagement between said first actuating means and the member to be driven, and third cam control means engageable by said first actuating means when said drive member is no longer positively rotated and the member to be driven is reversed in its direction of rotation with respect to said drive member whereby to return said second actuating means to its locked position and to disengage said first actuating means from driving engagement with the member to be driven.

4,287,973

SHIFTABLE FRICTION CLUTCH IN PARTICULAR FOR GEAR DRIVES

Johann Eichinger, Vaterstetten, and Gert Burzlauer, Anzing, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,070

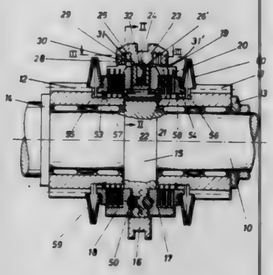
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855318

Int. Cl.³ F16D *21/06, 13/42*

U.S. Cl. 192—54 **9 Claims**

1. In a shiftable friction clutch for gear drives including a shaft, a carrier having inclined first surfaces thereon, a collar which surrounds and is supported axially movably with respect to said shaft, and first and second clutch halves having

cooperable friction surfaces, said first clutch half having at least one friction ring which is axially movable with respect to said shaft and has second surfaces which are arranged on an axially facing surface thereof facing away from said clutch friction surfaces and are inclined with respect to the plane of



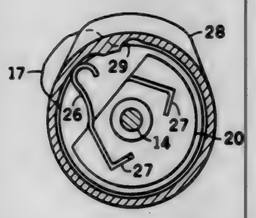
rotation of said friction ring, said first and second surfaces opposing one another, the improvement comprising at least one sliding member provided between said second inclined surfaces on said friction ring and said first inclined surfaces on said carrier.

4,287,974

CLUTCH ASSEMBLY FOR VENDING CONTROL SYSTEM

Wayne Krejci, Chesterfield, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Oct. 17, 1979, Ser. No. 85,583
Int. Cl.³ F16D *7/02*; F16P *7/02*
U.S. Cl. 192—56 R **1 Claim**



1. A torque-limiting clutch means and switch assembly for a vending control system including a motor for driving a load, comprising:

(a) a shaft driven by the motor,

(b) a motor cam connected to the shaft, the motor cam including:

1. a first circular end portion providing a bearing extending coaxially of the shaft,
2. a second opposite end portion, and
3. an intermediate portion extending between the first and second end portions,

(c) a load cam including a cup-shaped section open at one end and closed at the other end by a wall, and having an annular spring-bearing wall extending axially between the open end and closed end wall, the end wall being provided with a recess communicating with the interior of the cup-shaped section and rotatively receiving the said first end portion of the motor cam and providing the only rotative bearing support for the motor cam and shaft on the load cam,

(d) the said second opposite end portion and the said intermediate portion of the motor cam being received in the cup-shaped section of the load cam, the said second opposite end portion and said intermediate portion of the motor cam having a transverse dimension smaller than the cup-shaped section of the load cam to provide a peripheral space therebetween without physical engagement,

(e) a clutch spring carried by the said intermediate portion of the motor cam and engaging the annular spring-bearing wall of the cup-shaped section of the load cam for turning the load cam with the motor cam when the load torque on the load cam is less than a predetermined value, and the clutch spring slidably engaging the annular spring-bearing wall of the cup-shaped section of the load cam when the load torque is greater than the predetermined value for allowing relative rotative movement between the load cam and the motor cam, and

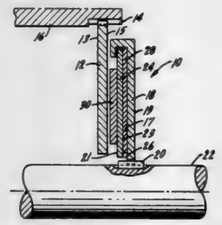
(f) the second opposite end portion of the motor cam including a transverse raised portion for actuating the switch assembly, the transverse raised portion being located outside of and spaced from the open end of the cup-shaped section of the load cam.

4,287,975

CLUTCH WITH FUSIBLE MATERIAL AS PROTECTIVE ELEMENT

John J. Tuzson, Evanston, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 16, 1980, Ser. No. 112,673
Int. Cl.³ F16D *43/25, 9/00*
U.S. Cl. 192—82 T **6 Claims**



1. A clutch assembly having at least one driving plate, a first and second driven plate positioned for selective engagement with, and disengagement from, the driving plate, each of said plates having at least one face oriented toward an opposed face on another of said plates, a friction lining material affixed to one of said faces, and a meltable, fusible material interposed between said driven plates, said meltable, fusible material having a melting point such that it undergoes a transition from the solid state to the liquid state when the clutch assembly reaches a predetermined, elevated temperature, allowing the driven plate with the lining material affixed thereto to slip with respect to the second driven plate and prevent damage to the friction lining material.

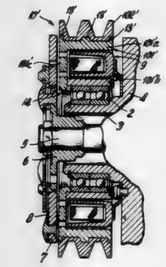
4,287,976

ELECTROMAGNETIC CLUTCHES

Masakatsu Sakaki, and Nobuaki Saegusa, both of Isesaki, Japan, assignors to Sankyo Electric Company Limited, Isesaki, Japan

Filed May 8, 1979, Ser. No. 37,237
Int. Cl.³ F16D *27/10*; F16H *55/36*
U.S. Cl. 192—84 C **3 Claims**

1. In an electromagnetic clutch which includes a first magnetic rotatable member rotatably supported on first bearing means, said first rotatable member being provided with at least one annular groove in the outer surface thereof for receiving belt means operatively connected to an external power source to be rotated by the external power source and having axial end magnetic friction surfaces, a second rotatable member rotatably supported on second bearing means, an annular magnetic member being supported on said second rotatable member so as to be capable of limited axial movement and having an axial end surface which faces said magnetic friction surfaces of said first magnetic rotatable member with an axial gap therebetween, and electromagnetic means associated with one of said first rotatable member and said annular magnetic member for attracting the other member, the improvement comprising said first rotatable member having an annular body of magnetic material, a pulley member having said belt-receiving groove in the outer surface thereof which is formed of aluminum alloy, said pulley member being disposed on the outer surface of said annular magnetic body by casting, said annular magnetic body having an outer annular portion and an inner annular ring, an axial end annular plate portion integral with said outer annular



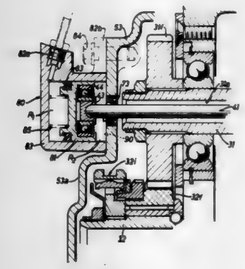
portion and joining said outer annular portion and said inner annular ring at an axial end thereof to define an annular hollow portion, said electromagnetic means being fixedly disposed in said annular hollow portion, said inner annular ring being joined to said axial end annular plate portion at the radial inner end, said axial end annular plate portion having said axial end magnetic friction surfaces, said axial end annular plate portion having an annular axial boss at the radial inner end thereof, said annular axial boss including an axially projecting end, said annular axial boss being fitted into and fixed to said inner annular ring, and said axially projecting end of said annular axial boss serving as a stopper for preventing axial movement of said first bearing means.

4,287,977

HYDRAULIC CLUTCH RELEASE MECHANISM

Shozi Haga, and Hisao Ootani, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 4, 1979, Ser. No. 45,054
Claims priority, application Japan, Oct. 28, 1978, 53-132989; Oct. 28, 1978, 53-132990
Int. Cl.³ F16D *25/08*
U.S. Cl. 192—91 A **6 Claims**



1. In an hydraulic release mechanism for a vehicle clutch in combination with a power transmission unit, said release mechanism comprising a push-rod axially slidable within an input shaft of said transmission unit and having one end engaged with a release member of said clutch and the other end extended outwardly from said housing assembly of said transmission unit and an hydraulic cylinder attached to said housing assembly to urge said push-rod toward said release member, causing disengagement of said clutch;

the improvement wherein a seal member is adapted to said housing assembly for surrounding the outwardly extended portion of said push-rod in a fluid tight manner, and said hydraulic cylinder includes a cylinder housing provided at its closed end with a port for connection to a source of hydraulic pressure and being detachably secured at its open end to said housing assembly to contain the outwardly extended end of said push-rod therein; a piston axially slidable within said cylinder housing and engaged with the outwardly extended end of said push-rod, said piston being provided at its outer periphery with an annular seal member to subdivide the interior of said cylinder housing into a pneumatic chamber and an hydraulic chamber in open communication with said port; and a communication passage provided between the open end of said cylinder housing and the outer wall surface of said transmission housing assembly to vent said pneumatic chamber to the atmospheric air, said communication passage having the upper end opening into the bottom portion of said pneumatic chamber and the lower end opening adjacent to an embossed portion of said housing assembly.

4,287,978

ANNULAR FRICTION DISC WITH RADIAL GROOVING

Vincent M. Staub, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1979, Ser. No. 60,798
Int. Cl.³ F16D *13/74*
U.S. Cl. 192—113 B **1 Claim**



1. A friction disc for a clutch or brake comprising; an annular disc of friction material having a radial inner periphery and a radial outer periphery, a substantially flat surface between the peripheries and a plurality of radially extending circumferentially spaced grooves formed in said flat surface and each groove having an edge at the inner periphery displaced axially from the flat surface, an edge at the outer periphery contiguous with the flat surface and spaced sidewalls disposed at an angle to the groove bottom and the flat surface.

4,287,979

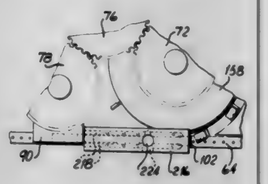
METHOD AND APPARATUS FOR ASSEMBLING ROD-LIKE ARTICLES

Desmond W. Molins, and Brian H. Warner, both of London, England, assignors to Molins Limited, London, England

Filed Jul. 12, 1977, Ser. No. 815,197
Claims priority, application United Kingdom, Jul. 22, 1976, 30534/76
Int. Cl.³ B65G *47/29*
U.S. Cl. 198—425 **11 Claims**

1. Apparatus for assembling rod-like articles, the apparatus comprising endless band conveyor means for conveying a stream of rod-like articles in an endwise direction; guide means spaced above and extending along said conveyor means, said guide means including a surface having an arcuate cross sec-

tion adapted to partly surround a plurality of articles in said stream so as to guide and align the plurality of the articles on said conveyor means, said surface having a predetermined axial length so as to extend from a leading edge of one of said articles to a trailing edge of at least one other abutting article of said plurality of articles; at least one suction outlet in said surface; and means for applying suction to said outlet in a



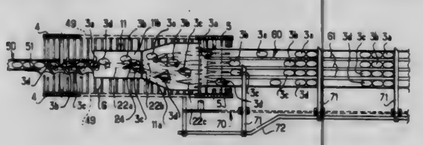
direction transverse to said stream to retard predetermined articles of said stream relative to said conveyor means by drawing said predetermined articles against said surface and for subsequently removing suction to release said articles after a predetermined period, so that said conveyor means conveys spaced groups of abutting articles downstream of said suction outlet.

4,287,980

DEVICE FOR DISTRIBUTING CONTAINERS INTO SEVERAL ROWS AND MACHINE USING SUCH A DEVICE

Daniel Montferme, Vernouillet, France, assignor to E. P. Remy et Cie., Dreux, France

Filed Dec. 4, 1979, Ser. No. 100,188
Claims priority, application France, Sep. 21, 1979, 79 23565
Int. Cl.³ B65G *47/30*
U.S. Cl. 198—425 **12 Claims**



1. Apparatus for distributing articles from a single line moving along a predetermined path into a plurality of adjacent lines, the apparatus comprising:

an endless conveyor extending above the predetermined path through a distributing region;

a plurality of gripper heads, each gripper head being actuable between an article engaging position and an article releasing position;

a plurality of means for mounting respective ones of said gripper heads on said conveyor for movement in longitudinally spaced relation through said distributing region, each of said mounting means providing for transverse movement of the respective gripper head relative to said path;

means for aligning each gripper head on its respective mounting means with said single line of articles prior to its entry into the distributing region;

means for actuating each gripper head to the article engaging position upon entry of said gripper head into the distributing region;

at least one branched track means arranged in the distributing region, said branched track means having a single entry and at least two transversely spaced exits, each of said gripper heads having a guiding means engageable with said branched track means;

a deflection member pivotally mounted on said track means for diverting gripper heads from said single entry alternately to said at least two exits; and

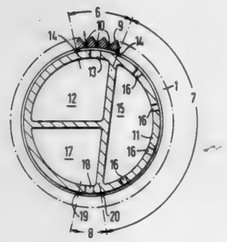
means for actuating each gripper head to the article releasing position prior to exit of said device from the distributing region.

4,287,981

COLLATING MEANS

Roger A. Allen, Great Missenden; Bruce R. Inglis, Wooburn Green, and Kieron P. Green, Thame, all of England, assignors to The Wiggins Teape Group Limited, Hampshire, England

Filed Jan. 16, 1979, Ser. No. 3,819
Claims priority, application United Kingdom, Jan. 23, 1978, 02706/78
Int. Cl.³ B65G *47/26, 29/00, 17/46*
U.S. Cl. 198—457 **12 Claims**



1. An apparatus for collating a flow of rod-like elements moving in a lengthwise direction, comprising:

(a) a rotatable drum for receiving the rod-like elements and moving them transversely to their lengthwise direction from a reception zone located at the upper part of said drum to a discharge zone angularly spaced from said reception zone through a holding zone located between said reception zone and said discharge zone, said rotatable drum having a cylindrical wall upon the outer surface of which the rod-like elements are received, said cylindrical wall having means throughout the area of said cylindrical wall for permitting fluid flow through said cylindrical wall;

(b) means for supplying a fluid flow radially outwardly and upwardly through said cylindrical wall throughout the area of said reception zone to create a fluid bed at said reception zone for assisting the reception of the rod-like elements on said drum;

(c) means for supplying a fluid flow inwardly through said cylindrical wall at said holding zone whereby a vacuum is created for holding the rod-like elements on said drum; and,

(d) means for supplying a fluid flow outwardly through said cylindrical wall at said discharge zone for assisting the discharge of the rod-like elements.

4,287,982

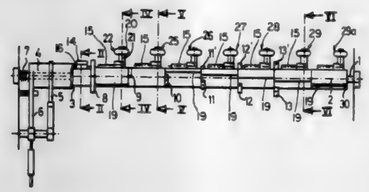
APPARATUS FOR CONSECUTIVELY DISCHARGING OBJECTS FROM CONTAINERS

Hendrik J. Kattenbroek, and Jan Plug, both of Barneveld, Netherlands, assignors to Moba Holding Barneveld, Barneveld, Netherlands

Filed Dec. 10, 1979, Ser. No. 101,767
Claims priority, application Netherlands, Dec. 13, 1978, 7812116
Int. Cl.³ B65G *47/46*
U.S. Cl. 198—706 **9 Claims**

1. In an apparatus for consecutively discharging containers, a driving means for a control sleeve provided with discharge stops, which driving means contains a rotatably mounted driving member, a coupling operative to transmit a driving torque

from the driving member on the said control sleeve in one direction only, said driving member being connected to a device continuously exerting a torque on said driving member in said mentioned direction, a resetting device for rotating said driving member in the direction opposite to said mentioned



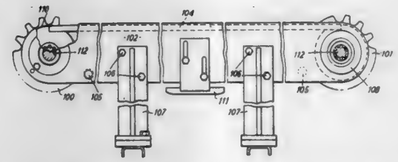
direction, a release member for said resetting device being connected to said driving member and adapted to cooperate with said resetting device to activate to rotate said driving member a predetermined angle in said opposite direction and a means for preventing said sleeve to rotate in the said opposite direction.

4,287,983

CONVEYORS HAVING A PLURALITY OF DRIVEN ENDLESS CHAINS

Frederik A. Bronsveld, Ijmuiden, Netherlands, assignor to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Jun. 15, 1979, Ser. No. 48,809
Claims priority, application Netherlands, Jun. 21, 1978, 7806685
Int. Cl.³ B65G *15/10, 21/00*
U.S. Cl. 198—817 **4 Claims**



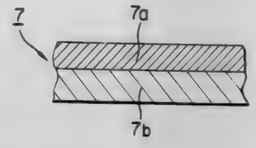
1. In a conveyor having a plurality of endless chains arranged side-by-side and each being driven around a path having an upper and a lower run, the upper runs supporting and displacing articles being conveyed on the conveyor, each chain being composed of elements running on rollers along a roller track and there being sprocket wheels engaging the chain at each end of the upper and lower runs, the sprocket wheels of the respective chains being arranged coaxially at each end of the conveyor, a shaft passing through the sprockets at each end of the conveyor, the improvement that each said chain is mounted on a cassette, the respective cassettes being individually and independently removable from the conveyor for repair or replacement, each cassette having an elongate frame providing said roller track and carrying bearings supporting said sprocket wheels at the ends of the conveyor a fixed distance apart, said upper runs supporting and displacing articles being conveyed on the conveyor being supported only by said roller track, the sprocket wheels of the respective cassettes at one end of the conveyor being drivingly engaged by one said shaft acting as a drive shaft while the sprocket wheels at the other end of the conveyor are freely rotatable about another said shaft, said shafts being splined, said sprockets at one end of said conveyor having splined holes therethrough cooperating with said splined shaft and a D.C. electric motor directly driving and splined sprockets through said splined shaft.

4,287,984

BELT WITH PLURAL LAYERS USED IN THE AUTOMATIC DOCUMENT FEEDING APPARATUS

Syuzi Okamoto, and Naoto Mukai, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1980, Ser. No. 115,807
Claims priority, application Japan, Feb. 13, 1979, 54-23418[U]
Int. Cl.³ B32B *27/06, 27/32;* E65G *15/34*
U.S. Cl. 198—847 **4 Claims**



1. In a document feeding apparatus for use in an electrophotographic copying machine, the improvement comprising a document feeding belt having at least an internal layer and an external layer, said internal layer consisting essentially of chloroprene rubber which is flexible and has a high coefficient of friction, said external layer consisting essentially of chlorosulfonated polyethylene which is flexible, has high whiteness, and is difficult to stain.

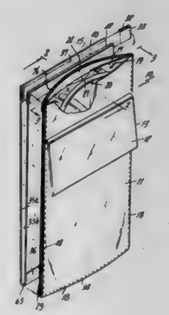
3. In a method of feeding documents in an electrophotographic copying machine, the improvement comprising providing a document feeding belt having at least an internal layer and an external layer, said internal layer consisting essentially of chloroprene rubber which is flexible and has a high coefficient of friction, said external layer consisting essentially of chlorosulfonated polyethylene which is flexible, has high whiteness, and is difficult to stain.

4,287,985

EYEGLASS CASE

Arnold R. Feniger, 415 E. 52 St., New York, N.Y. 10022

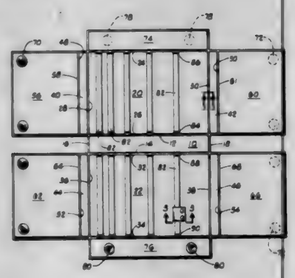
Continuation-in-part of Ser. No. 104,149, Dec. 17, 1979, abandoned. This application Jul. 17, 1980, Ser. No. 169,662
Int. Cl.³ A45C *11/04*
U.S. Cl. 206—5 **6 Claims**



1. An eyeglass case comprising a case being formed of flexible sides and with a pocket for receiving a pair of folded eyeglasses, a cleaning sheet attached to one side of said case, and a second cleaning sheet being attached adjacent to said first cleaning sheet and forming a second pocket therewith, said second pocket being transversely disposed to said first pocket and wherein one surface of said second sheet is facingly disposed to one surface of the first sheet, attaching means wherein said second sheet is fixedly attached to the case at the top and

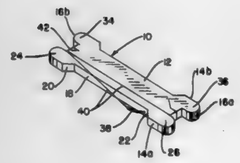
bottom of the case to form said second pocket, whereby the eyeglasses may be removed from said first pocket and unfolded and the lens of the unfolded glasses inserted in said second pocket to be engaged by opposed surfaces of the cleaning sheets with the fingers in the first pocket and the thumb pressing the second sheet so that the cleaning sheets are pressed against the lens and said case being tapered so as to permit the fingers opposing the thumb to be inserted in said first pocket for cleaning the lens.

4,287,986
EARRING DISPLAY CASE
William M. Beck, 133 Barbara Dr., Edmond, Okla. 73034
Filed Sep. 13, 1979, Ser. No. 75,517
Int. Cl.³ B65D *5/50*
U.S. Cl. 206—45.19 **14 Claims**



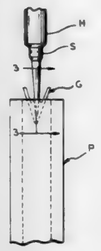
14. A display case comprising:
a substantially rectangular back hinge panel having opposed, parallel side edges and opposed, parallel end edges;
a pair of opposed, substantially rectangular display panels each having a first side edge hingedly connected to one of the side edges of said back hinge panel, and each further having a second side edge, and opposed, parallel end edges terminating in alignment with the end edges of said back hinge panel;
a pair of end hinge panels each including a first side edge and each having a second side edge, said end hinge panels each being hingedly connected along the second side edge thereof to an end edge of one of said display panels, with two of said end hinge panels being connected to the respective opposite end edges of each of said display panels, each of said end hinge panels having a width as measured normal to said second side edge which is substantially one-half the width of said back hinge panel;
four flexible cover flaps each having an edge connected to the first side edge of one of the end hinge panels;
a pair of spaced locking panels hingedly connected to the second side edges of the two display panels, and dimensioned to overlap each other when the display panels are folded on said back hinge panel to positions in which they extend parallel to each other, said locking panels each having a width as measured in a direction normal to the respective second side edge of the display panel to which each locking panel is connected which is substantially equal to the width of said back hinge panel;
a plurality of substantially parallel, spaced clip bars extending transversely across each of the display panels and spaced outwardly therefrom by a distance not more than one-half the width of said back hinge panel, and each having ends secured to one of the respective display panels on one side thereof; and
locking tabs carried on each of said flexible cover flaps for securing pairs of said flaps in overlapped relation to each other both at the time when said case is closed and with said display panels extending parallel to each other, and also at a time when said case is opened with said display panels in coplanar alignment and said flexible cover flaps folded back against the opposite side of said display panel from the side carrying said clip bars.

4,287,987
SUTURE HOLDER
Luther A. Hoffman, Sinking Spring, and Friedrich W. Schmidt, Ephrata, both of Pa., assignors to Sharpoint, Inc., Mohnton, Pa.
Filed Jul. 23, 1979, Ser. No. 59,677
Int. Cl.³ A61L *17/02*
U.S. Cl. 206—63.3 **5 Claims**



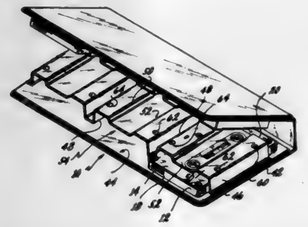
1. A suture packaging element comprising a body formed of a substantially planar, pierceable, nonsloughing material, the body having opposed side and end surfaces, a needle-receiving portion formed in a side surface of the body intermediate the opposed ends, the needle receiving portion comprising a recessed surface extending along a major portion of the side surface and a pair of opposed surfaces, one at each end of the recessed surface, extending outwardly from the recessed surface to the adjacent side surface of the body, thereby forming a pair of opposed enlargements, a second needle-receiving portion formed in the side opposite the first-mentioned needle-receiving portion and including a recessed surface extending along a major portion of said opposite side surface and a pair of opposed surfaces, one at each end of the recessed surface and extending outwardly from the recessed surface to the adjacent side surface of the body, thereby forming a second pair of enlargements, one at each end of the body.

4,287,988
SYRINGE SHEATH GUIDE
Richard F. House, St. Charles, Ill., assignor to Container Corporation of America, Chicago, Ill.
Filed Mar. 14, 1980, Ser. No. 130,573
Int. Cl.³ B65D *85/24*
U.S. Cl. 206—365 **2 Claims**



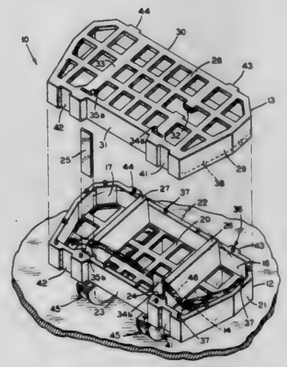
1. A one-piece molded plastic device for protecting and guiding the needle sheath portion of a hypodermic syringe into the cavity of a package, comprising:
(a) a pair of relatively thin, flat blades, joined at their forward edges and diverging rearwardly to form a wedge shaped structure;
(b) a hollow cylindrical sleeve formed integrally with the blades of said wedge shaped structure and extending rearwardly therefrom for removably receiving a forward portion of a syringe sheath.

4,287,989
STORAGE CONTAINER FOR MAGNETIC TAPE CASSETTES
Edward B. Plummer, 29472 Thackery Dr., Laguna Niguel, Calif. 92677
Filed Dec. 14, 1979, Ser. No. 103,865
Int. Cl.³ B65D *85/67*
U.S. Cl. 206—387 **10 Claims**



1. A storage container for magnetic tape cassettes of the type having an enclosed case with essentially parallel top and bottom surfaces and two sets of essentially parallel side surfaces each set essentially mutually perpendicular to the other set, one of said side surfaces of one of said sets including an opening exposing the surface of the magnetic tape and two capstan locating holes passing through said cassette from said top surface to said bottom surface proximal to said side surface wherein said opening is located which comprises:
a support base;
at least one cassette holding sleeve fixedly mounted to said support base;
said cassette holding sleeve including two upstanding walls, each independently fixedly attached to said support base essentially perpendicular to said support base and spaced essentially parallel to one another at a distance slightly greater than the distance between the side surfaces of one of said sets of said side surfaces of said cassette, a top wall located with respect to said support base at a distance slightly greater than the thickness of said cassette between said top and said bottom surfaces of said cassette, said top wall attaching to each of said upstanding walls so together said support base, said upstanding walls, and said top wall form said holding sleeve, said holding sleeve capable of containing between said top wall and said support base at least that portion of said cassette which includes the capstan locating holes;
at least one protuberance means integrally formed with said top wall and projecting toward said support surface, said protuberance means positioned on said top wall to be located directly over one of said capstan locating holes when said cassette is located in said sleeve such that one of said sets of said side surfaces of said cassette are adjacent to said upstanding walls;
at least that portion of said top wall wherein said protuberance means are located capable of being distorted in a direction away from said support base when said cassette is inserted into said sleeve and then returning to its undistorted position when said cassette is positioned between said top wall and said support surface in a position wherein said protuberance means is aligned over one of said capstan locating holes to locate at least a portion of said protuberance means in one of said capstan locating holes.

4,287,990
GLASS SHEET SHIPPING PACKAGES
James F. Kurick, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Jul. 30, 1979, Ser. No. 61,754
Int. Cl.³ B65D *85/48*
U.S. Cl. 206—448 **10 Claims**



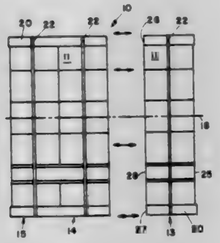
1. In a composite shipping package of the type containing a stack of upstanding sheets of glass having curved end portions, wherein said sheets are supported on edge, the improvement comprising:
(a) an elongate, integrally formed, substantially rectangular male member, with spaced apart support members extending into and projecting from said male member for supporting said stack of glass sheets on edge, said male member being provided with a pair of spaced apart recesses for receiving the curved end portions of said stack of glass sheets and including a pair of side supporting members extending transversely thereacross and above the surfaces of the walls defining said recesses, said side supporting members bearing against one of the major surfaces of the stack of glass sheets;
(b) an elongate, integrally formed, substantially rectangular female closure member matching and interfitting with said male member and having a cavity for receiving said stack of glass sheets, said female closure member having apertures for receiving said support members projecting from said male member;
(c) means for securing said stack of glass sheets within said male and said female closure members; and
(d) further means surrounding said female closure member and said male member for securing them together.

4,287,991
MODULARIZED UNIT LOAD AND DISPOSABLE PALLET THEREFOR
Bernard P. Donnelly, 1306 Waukazoo Dr., Holland, Mich. 49423
Filed Apr. 2, 1979, Ser. No. 26,002
Int. Cl.³ B65D *19/00*
U.S. Cl. 206—597 **23 Claims**

1. A modularized unit load of rectangular objects comprising:
a plurality of modules of said objects, each of said modules being capable of breaking away from the other modules, each of said breakaway modules comprising a parallel array of objects stacked in side-by-side relationship and approximately centered in a transversely extending plane, said breakaway modules being aligned in end-to-end relationship, each of said breakaway modules being approximately centered on a longitudinally extending axis;
a plurality of severable longitudinally extending braces for

interconnecting said modules and forming said unit load; and

a plurality of tension bands, at least one of said tension bands surrounding each of said parallel arrays of objects and said braces to secure each of said parallel arrays of objects in



modular form to facilitate handling of said objects contained therein, each of said breakaway modules being interconnected by said braces whereby said modules may be selectively removed from said unit load without destroying the structural integrity of said unit load by severing said braces between said modules.

4,287,992

RACK STRUCTURE

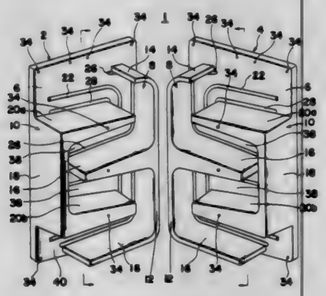
Kanji Takemori, Toyonaka, Japan, assignor to Shimoda Kogyo, Ltd., Osaka, Japan

Filed Feb. 21, 1979, Ser. No. 13,225

Claims priority, application Japan, Jul. 11, 1978, 53/84694; Aug. 23, 1978, 53/103174; Aug. 23, 1978, 53/116061[U]

Int. Cl.³ A47F *1/00*

U.S. Cl. 211—49 D **9 Claims**



1. In a rack structure for a vending machine which comprises a pair of plastic rack halves each formed in a single unitary body, said rack halves when combined together in face-to-face relation having at least one serpentine passage defined therein, said serpentine passage having a first end, through which a plurality of articles are supplied successively into the serpentine passage, and a second end from which the articles in the serpentine passage can be removed one at a time from the rack structure, and means for connecting the rack halves together, said first end of the serpentine passage being positioned above said second end of the serpentine passage whereby the articles accomodated within the serpentine passage can move downwardly from said first end towards said second end successively by gravitational force each time the articles are removed from the rack structure from said second end one after another, at least one of the said rack halves comprising a substantially rectangular wall; at least two rows of ramp assemblies spaced apart from each other and cooperative with each other to define the serpentine passage; said ramp assemblies projecting from and in a direction substantially perpendicular to the substantially rectangular wall, and having ramp members alternately protruding into respective spaces each defined between the adjacent two of the ramp members of the other ramp assembly such that the passage assumes a serpentine shape when the rack halves are combined together, said substantially rectangular wall having a rib protruding outwards therefrom at a position intermediately between each one ramp member of said one ramp assembly and the next adjacent ramp member of said other ramp assembly and extending along the contour of the serpentine passage and grooves formed near the base portions of each of the ramp members along the contour of the serpentine passage.

4,287,993

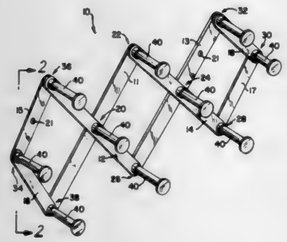
ADJUSTABLE RACK FOR HANGING ARTICLES

Vito Licari, 875 Ocean Ave., Elberon, N.J. 07740

Filed Jun. 6, 1980, Ser. No. 157,003

Int. Cl.³ A47F *5/08*

U.S. Cl. 211—105 **10 Claims**



1. A rack for hanging articles comprising: at least a first pair of equally sized first and second members adjacent to one another, said second member having at least an aperture therethrough and said first member having a pin at one end integral with said first member, said pin being pivotably engaged within said aperture with the opposite end of said pin protruding through said aperture; and at least a hook member having a bore therein, said bore being sized to frictionally engage said opposite end of said pin in an interference fit and to thereby fasten said second member to said first member, said hook member, said pin and said aperture defining a pin joint to pivotably attach said first member to said second member.

4,287,994

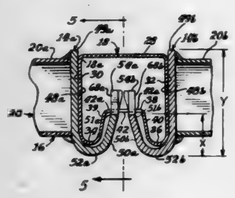
WEDGABLE STORAGE RACK

Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Nov. 2, 1979, Ser. No. 90,536

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—191 **24 Claims**



1. A storage rack, comprising:

an upright post having a front face portion facing laterally outward away from the interior of the storage rack and an end face portion facing generally in a longitudinal direction, said front face portion defining at least one finger-receiving opening having an inclined side providing a wedging surface sloping generally downwardly and away from said end face portion, said wedging surface spaced longitudinally from said end face portion;

an elongated load-carrying beam extending generally horizontally in the longitudinal direction; and

wedging connector means secured to said load-carrying beam for interlocking engagement with said post to detachably connect and wedgingly secure said beam to said post, said wedging connector means having an elongated abutment plate positioned generally transverse to the longitudinal direction for abuttingly engaging and bearing against said end face portion and having an arm plate extending arcuately from said elongated abutment plate for positioning adjacent said post, said wedging connector means having at least one downwardly extending hook-shaped camming finger extending laterally inwardly from said arm plate generally toward the interior of said storage rack for engaging said finger-receiving opening to generally prevent substantial downward movement of said beam under load, said hood-shaped finger having a camming portion disposed substantially parallel to said wedging surface for cammingly engaging and interlockingly wedging against said wedging surface, said camming portion spaced longitudinally from said elongated abutment plate, the minimum longitudinal distance between said camming portion and said elongated abutment plate at any given location on said camming portion when said wedging connector means is detached from said post being normally less than the longitudinal distance between said wedging surface of said finger-receiving opening and said end face portion of said post at the location on said wedging surface corresponding to said given location on said camming portion, and said wedging connector means being expandable under the combined weight of said beam and its load to clampingly embrace and wedgingly engage said post.

4,287,996

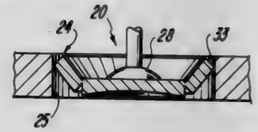
FLEXIBLE CLOSURES AND CLOSURE FOR BUNG OPENINGS

Herbert J. Wanderer, Wheatridge, Colo., assignor to Denver Plastics, Inc., Denver, Colo.

Filed Oct. 9, 1979, Ser. No. 83,110

Int. Cl.³ B65D *39/00*

U.S. Cl. 217—108 **19 Claims**



1. A closure for a surface defining an orifice comprising:

a central portion; and

an annulus portion arranged about said central portion connected at an inside edge by a hinge to said central portion, said annulus portion being pivoted about said hinge to move to an expanded position with a peripheral surface movable with said annulus portion in engagement with a surface defining an orifice and said annulus portion compressed between said central portion and said orifice surface, said annulus portion being disposed at an angle diverging back away from the top of said central portion at an angle to a radial line normal to the longitudinal axis of said central portion and pivoting toward said radial line to said expanded position.

4,287,997

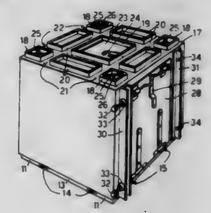
CONTAINER FOR TRANSPORTED GOODS

Keith O. Rolfe, Netley, Goovigen, Queensland, Australia 4702, and Clifford E. Smith, "Karawatha", Thangool, Queensland, Australia 4716

Filed Jan. 29, 1980, Ser. No. 116,546

Int. Cl.³ B65D *21/02, 88/12*

U.S. Cl. 220—1.5 **2 Claims**



1. A container for transported goods of substantially rectangular form, having sides, ends, top and bottom, wherein:

the length of the container is substantially equal to its width,

connector means are provided at one end of the container for releasably connecting the container, end to end, to the corresponding end of another similar container,

a doorway and closure for said container in said one end thereof,

supporting members of open-bottom box-like form secured below the container bottom for supporting it above ground level,

passages between said supporting members capable of receiving, from both sides and both ends of the container, the tines of a fork-lift vehicle, and

container locating members secured on the top of the container and arranged to interfit, without obstructing said passages, with said supporting members of a similar container superimposed thereon and in vertical alignment therewith,

said locating members also being of open-top box-like form, with one of said locating members being a coaming for a

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4,287,995

CONTAINER SEALING MEMBER WITH OXYGEN ABSORBENT

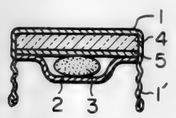
Takehiko Moriya, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,425

Claims priority, application Japan, Nov. 30, 1978, 53-165451; Nov. 30, 1978, 53-165452; Dec. 4, 1978, 53-166842; Feb. 14, 1979, 54-17628; Mar. 6, 1979, 54-28218; Mar. 6, 1979, 54-28219; Mar. 6, 1979, 54-28220; Mar. 13, 1979, 54-32218

Int. Cl.³ B65D *85/72*

U.S. Cl. 215—228 **6 Claims**



1. A container sealing member for a container used for preserving an aqueous liquid or semi-liquid material, characterized in that the sealing member is provided with an oxygen absorbent and retainer means to hold said oxygen absorbent, and the absorbent is covered by a film which adheres to the sealing member so that when the sealing member is in use on a container the oxygen absorbent is prevented from contacting of the contents of the container, the film having a plurality of fine openings, and being gas-permeable, but water-impermeable at one atmospheric pressure and wherein the film has a plurality of fine openings in the range of from 0.01 to 45 microns.

hatch leading into the container, and a closure for said coaming.

4,287,998

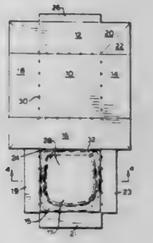
DEW WORM CARTON

John Zimmermann, Scarborough, Canada, assignor to Somerville Belkin Industries Limited, London, Canada

Continuation-in-part of Ser. No. 17,252, Mar. 5, 1979, abandoned. This application May 13, 1980, Ser. No. 149,469

Int. Cl.³ B65D *5/42, 5/24, 5/66*

U.S. Cl. 229—16 R **3 Claims**



1. A paperboard container blank having, an inside face and an outside face adjacent wall panels defined by fold lines that are die formed depressions in said inside face of the container blank;

U-shaped cuts in the blank each having two arms and a base, each arm having a free end and an end joining the base, said U-shaped cuts interrupting the fold lines to form U-shaped tabs, the direction of the arms of the U-shaped cuts being transverse of the direction of the fold lines, the tops of the arms of the U-shaped cuts being on a first one of two adjacent panels adjacent a fold line, and the base of the U-shaped cuts being in the second one of two adjacent panels;

said U-shaped cuts in said blank being wider at the inside face of the blank than they are at the outside face of the blank;

the distance between the arms of said U-shaped cut being less than 3/32 of an inch and the length of the arms being greater than the distance between them, the container being adapted for set up by folding said blank about said fold line whereby said U-shaped tabs separate from said second panel and remain in the plane of said first panel to leave a ventilating opening in said second panel at the corner between said first panel and said second panel when the container is set up.

4,287,999

SECONDARY SEAL FOR FLOATING ROOF STORAGE TANK

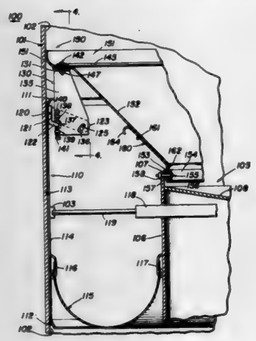
Milton W. Heisterberg, Flossmoor, Ill., assignor to GATX Tank Erection Corporation, Chicago, Ill.

Filed May 21, 1980, Ser. No. 151,786

Int. Cl.³ B65D *88/42*

U.S. Cl. 220—222 **15 Claims**

1. A floating roof storage tank comprising an upstanding cylindrical tank shell for containing a quantity of liquid to be stored, a floating roof within said tank shell and adapted to float on the surface of the liquid within said tank shell, a circular metal shoe encircling said floating roof and slidably engaging the inner surface of said tank shell, pusher structure mounting said metal shoe upon said floating roof and urging said metal shoe into sealing contact with the inner surface of said tank shell, a sealing member extending between said floating roof and said metal shoe and closing the space therebetween to provide a primary seal therebetween, a plurality of seal support members shiftably mounted upon said metal shoe adjacent to the upper end thereof and shiftable toward and away from the associated tank shell, and flexible means extending between said floating roof and said seal support members and secured thereto and extending beyond said seal support members and lying in sealing engagement with the inner surface of said tank shell to form a secondary seal between said floating roof and



said tank shell, said seal support members being shiftable toward and away from said tank shell to accommodate variations in position of said floating roof with respect to said tank shell and being shiftable away from said tank shell to move said flexible means out of contact with said tank shell a distance to permit inspection of the primary seal.

4,288,000

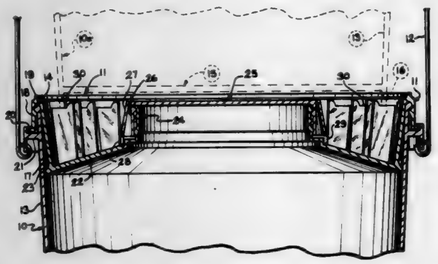
CHILD-RESISTANT LID FOR A PAIL

Charles E. Luker, and Peter P. Gach, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Aug. 4, 1980, Ser. No. 174,736

Int. Cl.³ B65D *43/04*

U.S. Cl. 220—281 **10 Claims**



1. A lid for a pail or bucket, said lid and the rim of said pail having co-operating snap-over means for retaining said lid on said pail, said lid having

(a) a short, centrally located neck,

(b) an annular body, integral with and surrounding said neck,

(c) an inner annular skirt at the periphery of said body and extending upwardly therefrom to a level above the top of said neck,

(d) a rim at the junction on said body and said inner skirt that is adapted to tightly fit the inner surface of the pail,

(e) an outer annular skirt depending from the upper end of said inner skirt which is adapted to fit circumjacently to the outer side of the pail,

(f) a removable closure for said neck, and

(g) co-operating, disengageable child-resistant means on said body near said neck and on said closure.

4,288,001

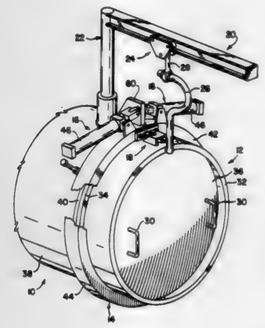
CLOSURE ARRANGEMENT FOR PRESSURE DEVICE

Robert J. Lankston, Shawnee, Kans., assignor to Gulf & Western Manufacturing Company, New York, N.Y.

Filed Jul. 15, 1980, Ser. No. 169,036

Int. Cl.³ B65D *45/00*

U.S. Cl. 220—316 **31 Claims**



1. A closure for a pressure device having an opening bounded by a radially projecting circumferential flange comprising, a cover member having a radially projecting circumferential flange axially engaging said flange on said pressure device, clamping ring means releaseably interengaging said flanges on said pressure device and said cover member, said clamping ring means extending circumferentially about said flanges and having circumferentially adjacent end means, said ring means being displaceable laterally relative to said flanges between first and second positions in which said ring means respectively interengage said cover member and said pressure device and release said cover member for removal from said pressure device, means for displacing said clamping ring means between said first and second positions, releaseable latching means interengaging said end means of said ring means in said first position against displacement toward said second position, and means including bleed valve means on one of said cover member and pressure device preventing release of said latch means until the interior of said pressure device is vented to atmosphere.

4,288,002

THERMALLY INSULATED VESSEL, ESPECIALLY FOR LIQUEFIED GASES

Horst Göbl, Garching, Fed. Rep. of Germany, assignor to Linde AG, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 636,964, Dec. 2, 1975, Pat. No. 4,176,761. This application Sep. 12, 1979, Ser. No. 74,777

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1974, 2457264

The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.

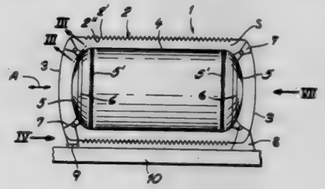
Int. Cl.³ F17C *3/08;* **B65D** *81/18, 88/06*

U.S. Cl. 220—438 **6 Claims**

1. An insulated vessel for the storage or transport of liquefied gas comprising:

an inner axially elongated generally cylindrical receptacle receiving said liquefied gas;

an outer axially elongated generally cylindrical receptacle spacedly surrounding said inner receptacle and substantially coaxial therewith, said receptacles defining between them an empty evacuatable space, said outer receptacle comprising at its ends a pair of opposing shell members, said outer receptacle having an intermediate tubular member sealingly connected to said shell members and disposed between the shell members, said intermediate member being corrugated over its length with the corrugations formed by annular alternating troughs and crests, said troughs and crests each lying in a respective plane perpendicular to the longitudinal axis of said receptacles, said corrugations forming unitary stiffening formations of said intermediate member preventing radial expansion and



contraction thereof but permitting elastic axial expansion and contraction of said intermediate member; and

support elements rigidly connected to said inner receptacle engaging said shell members and supporting said outer receptacle on said inner receptacle.

4,288,003

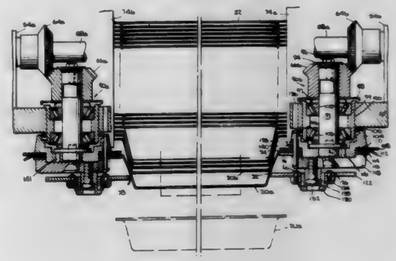
APPARATUS FOR AUTOMATICALLY DISPENSING NON-ROUND FLEXIBLE CONTAINERS

Carl Fries, Jr., Holland, Pa., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 869,505, Jan. 16, 1978, Pat. No. 4,180,180. This application Dec. 13, 1979, Ser. No. 103,043

Int. Cl.³ B65G *59/10*

U.S. Cl. 221—1 **10 Claims**



1. An apparatus for dispensing non-round, flexible, elastic, flanged containers having corners and non-vertical sides, from the bottom of a nested stack of the containers, said apparatus comprising:

(a) a base; and

(b) a plurality of rotor assemblies to operate on the stack, each rotor assembly being rotatably mounted on the base for synchronized movement with respect to the one or more other assemblies and comprising:

(i) support means;

(ii) separating means;

(iii) release means, and

(iv) compressive means;

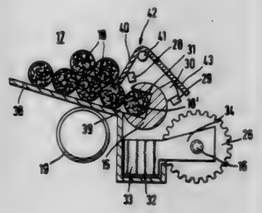
wherein the support means, separating means, and release means are rotatably fixed with respect to each other and the compressive means is rotatably and eccentrically mounted with respect to the support means, separating means, and release means.

4,288,004

CIGARETTE DISPENSER WITH A LIGHTING ARRANGEMENT

Willi Göhringer, Glagenbergstr. 56; Friedrich Hechtel, Ziegelstr. 132, both of 7080 Aalen, and Wolf E. Müller, Balsewitzer Ring 4, 1 Berlin 20, all of Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,994
Int. Cl.³ A24F *15/10*
U.S. Cl. 221—147 **10 Claims**



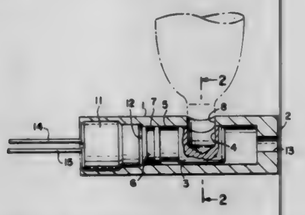
1. In a cigarette dispenser with an ignition arrangement, the dispenser having a housing with a storage chamber for the cigarettes, an ignition head mounted in the interior of the housing, and an arrangement for expelling a lighted cigarette through a housing opening, the improvement wherein the floor of the storage chamber is in the form of a funnel and ends in a discharge slot, and comprising a rotatable drum having a cigarette-receiving recess therein disposed downstream of the discharge slot, a reversible electric motor adapted selectively to rotate the drum in opposite directions, a drive train between the motor and the drum, said drive train having a disconnectable coupling interposed in the drive train, an outlet channel disposed beneath the drum, an ignition head in the channel, and means driven by the motor for driving the ignition head in reverse directions, in its forward travel toward the housing opening the ignition head thrusting a cigarette in the discharge channel toward the opening and lighting it.

4,288,005

PRESSURIZED GAS BOTTLE DISCHARGE DEVICE

Edward Soo-Hoo, Stanhope, N.J., assignor to Cartridge Actuated Devices, Inc., Fairfield, N.J.

Filed Jul. 27, 1979, Ser. No. 61,535
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—5 **5 Claims**



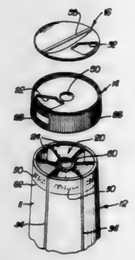
2. Apparatus for discharging a gas bottle, comprising:
(a) a body provided with a longitudinal bore and a transversely facing orifice into said bore adapted to receive the neck of a gas bottle, and
(b) a ram member slidably disposed in said longitudinal bore and provided with a transverse bore adapted to receive the end of the neck of the gas bottle, said ram member being initially positioned with said transverse bore aligned with said orifice,
(c) one end of said longitudinal bore being adapted to receive a pyrotechnic device for driving, when fired, said ram to a second position, shearing off the neck of the bottle and carrying the end thereof in said transverse bore,
(d) said ram member being provided with a peripheral groove which, when said ram is in said second position, lies under said transversely facing orifice in said body,
(e) said body being provided with at least one further orifice that opens into said groove when said ram is in said second position.

4,288,006

MULTI-COMPARTMENT CONTAINER

William M. Clover, Jr., Costa Mesa, Calif., assignor to Dale J. Kirstine, San Juan Capistrano, Calif.

Continuation of Ser. No. 623,860, Oct. 20, 1975, abandoned.
This application May 18, 1977, Ser. No. 798,047
Int. Cl.³ B65D *83/04*
U.S. Cl. 222—42 **8 Claims**



1. A dispenser comprising:
a container body;
means defining a series of juxtaposed compartments in said container body each having an upper opening;
a selector cap rotatably mounted on said container body covering said upper openings and having a selector aperture, said selector cap having first means adapted to be gripped to manually rotate said selector cap;
a cover plate with an access aperture movably mounted on said selector cap for rotation together with and relative to said cap and having second means adapted to be gripped to manually rotate said cover plate;
third means proximate the axis of rotation of said cover plate for (a) providing a pivot axis for said cover plate relative to said selector cap, (b) maintaining said cover plate in tight relation with said selector cap and resisting relative rotation therebetween and (c) causing said cover plate to rotate with said selector cap when only said first means is gripped and manually rotates; and
fourth means on said selected cap and said container body and located proximate the periphery of said selector cap for both (a) releasably maintaining said selector cap over one of said plurality of compartments and (b) requiring an unlocking force greater than the resisting force of said third means for preventing said selector cap from rotating with said cover plate when only said second means is gripped and manually rotated.

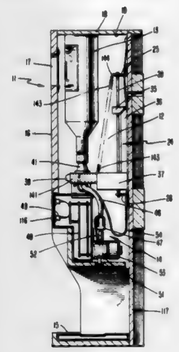
4,288,007

STRUCTURE FOR HOLDING A RESERVOIR IN AN INVERTED POSITION FOR GRAVITY DISPENSING OF A LIQUID

Dan C. Rogers, and Joseph A. Maggio, both of Miami, Fla., assignors to M.R.E. Enterprises, Inc., Miami Lakes, Fla.

Filed Jun. 2, 1978, Ser. No. 911,897
Int. Cl.³ B67D *5/60*
U.S. Cl. 222—66 **28 Claims**

1. A structure for enabling liquid to be dispensed by gravity from orifices at the tops of a plurality of bottles adapted to be inserted simultaneously in situ into the structure, differing simultaneously inserted bottles being susceptible of having differing heights along longitudinal axes thereof between a bottom surface thereof and the top, comprising means for simultaneously holding the plurality of bottles in an inverted position so that the orifices of the bottles are below the bottom surfaces thereof and the longitudinal axes of the bottles are substantially vertical, said holding means including a stationary, horizontally extending first surface against which the bottom surfaces of all the bottles simultaneously bear, a separate horizontally extending second surface for each bottle, each second surface being arranged so a portion of the bottle removed from the bottom surface of the bottle bears against it, each of said second surfaces being vertically translatable relative to the first surface to accomodate bottles of differing



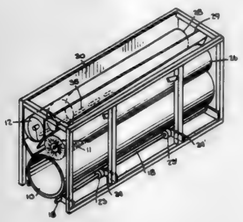
heights, spring means for separately controlling the vertical position of each of the second surfaces and for maintaining the bottom surface and the removed bottle portion of each of the bottles in a bearing relation against the first surface and the separate second surfaces, valve means in fluid flow relationship with liquid at the orifice of each bottle for selectively enabling liquid to be dispensed by gravity from each of the bottles, and vent means for each of the bottles extending through the orifice of each of the bottles for applying sufficient pressure to an air-liquid interface in each bottle to cause the liquid in each bottle to flow by gravity to the valve means of each bottle.

4,288,008

AGRICULTURAL SPREADER DEVICE OF MODULAR DESIGN FOR PULVERULENT MATERIAL

Jean-Louis Amblard, Bédillous Rte. de l'Aérodrome, 33250-Cissac (Gironde), and Pierre M. Saintemarie, 33112-Saint Laurent du Médoc (Gironde), both of France

Filed Nov. 19, 1979, Ser. No. 95,432
Claims priority, application France, Nov. 24, 1978, 78 33645
Int. Cl.³ G01F *13/00*
U.S. Cl. 222—281 **14 Claims**



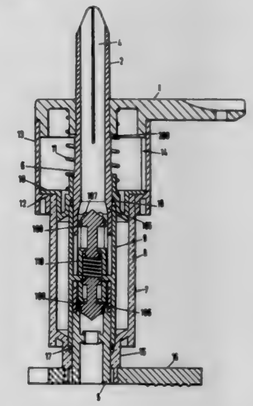
1. An agricultural device adapted to spread pulverulent or granular material such as seed or fertilizer, said device having at least one operating assembly comprising:
(A) a plurality of rollers supported on a frame, at least one roller being a drive roller;
(B) a cylinder disposed within said frame and resting on said rollers, said cylinder being caused by the drive roller to rotate;
(C) a distribution hopper for distributing material fed thereto across the top surface of the rotating cylinder; and
(D) a rotary brush adjacent said hopper on the discharge side of the cylinder and engaging said cylinder to discharge the material from the surface thereof.

4,288,009

LIQUID MEASURING DEVICE

Graham M. A. Simmons, 22, Chalfont Rd., Seer Green, Buckinghamshire, England

Filed Mar. 18, 1980, Ser. No. 131,401
Int. Cl.³ G01F *11/16*
U.S. Cl. 222—442 **4 Claims**



1. A liquid measuring and dispensing device comprising: a flow tube providing an inflow duct and an outflow duct; an upper valve seat provided at the lower end of the inflow duct; a lower valve seat provided at the upper end of the outflow duct; a measuring chamber axially slidable relative to the flow tube; and a valve carrier connected to the measuring chamber for movement therewith; an upper valve member and a lower valve member carried by the valve carrier; the measuring chamber being movable between an upper and a lower position through an intermediate position; in the lower position of the chamber, the lower valve member seating on the lower valve seat to close communication between the chamber and the upper end of the outflow duct but the upper valve member being unseated from the lower end of the inflow duct to provide communication between the inflow duct and the chamber; in the upper position of the chamber the upper valve member seats on the upper valve seat closing communication between the inflow duct and the chamber but the lower valve member is unseated from the lower valve seat to provide communication between the chamber and the outflow duct; in the intermediate position of the chamber, both valve members seat on the respective valve seats to close communication between the chamber and both the inflow and outflow ducts; and throughout movement of the chamber between its upper and lower positions, the chamber remains in communication with the portion of the flow tube between the valve seats.

4,288,010

EMBROIDERY THREAD ORGANIZER

Joseph W. Holladay, Eatontown, N.J., assignor to Jo-Pat, Incorporated, Nashville, Tenn.

Filed Sep. 21, 1979, Ser. No. 77,631
Int. Cl.³ A41H *31/00*
U.S. Cl. 223—106 **6 Claims**

1. Apparatus for storing and dispensing plural lengths or

windings of threads and yarns and the like previously transferred thereto, for example, from respective skeins while preventing entanglement, comprising the combination of:

at least three nestable cylindrical tubes of substantially equal length and varying sizes, each tube being relatively elongated and unitary and having a pair of end members and a plurality of relatively flat faced vanes acting as dividers spaced intermediate said end members, said end members and said vanes being integral with a respective tube to define plural retention regions on each tube for individual winding of said threads and yarns transferred thereto, said end members and said vanes having a generally circular



perimeter and selectively dimensioned to slide freely in and out and completely removable from the inner diameter of the next larger sized tube and wherein the spacing between the vanes of the innermost and outermost tubes is substantially the same but the vane spacing of the intermediate tube is relatively greater than the spacing of said innermost and outermost tubes whereby increased structural rigidity is provided, each tube and its respective end members and vanes being comprised of transparent material for providing ease of identification of the various windings transferred thereto and each tube further having a frictional surface on its outer wall to prevent the slipping of said windings thereon.

4,288,011

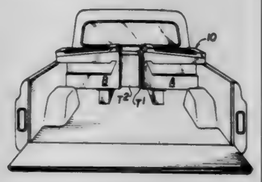
ADJUSTABLE CONTAINER

Robert D. Grossman, 22 Rivo Alto Dr., Miami Beach, Fla. 33139

Filed Jan. 22, 1979, Ser. No. 5,742

Int. Cl.³ B65D *43/16*

U.S. Cl. 224—42.42 **16 Claims**



1. An adjustable container adapted to fit between the side panels of pickup trucks, said container comprising first and second sections, said first section having a bottom wall, an open top wall, a closed end wall, an open end wall, first and second longitudinal side walls, a bottom support means connected to said bottom wall and adapted to rest upon the pickup truck bed, an upper support means formed by said side walls and said closed end wall and adapted to rest upon one of said side panels, and a first telescoping means connected to said open end wall, said second section having a bottom wall, an open top wall, a closed end wall, an open end wall, first and second longitudinal side walls, a bottom support means connected to said bottom wall and adapted to rest upon the pickup truck bed, an upper support means formed by said side walls and said closed end wall and adapted to rest upon the other one of said side panels, and a second telescoping means connected to said open end wall, said first telescoping means adapted to be slidable within said second telescoping means whereby said longitudinal dimension of said container is adjustable by the relative movement of said first and second telescoping means, each of said sections including a closure means to cover said open top wall, each closure means on each section being operable from a closed to an open position regardless of the relative positions of said first and second telescoping means wherein said bottom support means is adapted to space said bottom walls from said pickup truck bed and to slide upon said bed as said container is adjusted whereby bottom support is provided for said container regardless of the relative positions of said first and second telescoping means.

4,288,012

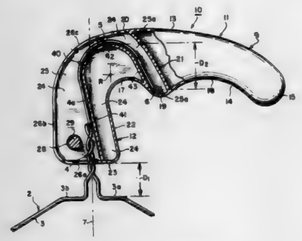
COATHANGER SUSPENDER

Roni K. Doak, 15021 Kimberley La., Houston, Tex. 77079

Filed Sep. 6, 1979, Ser. No. 72,947

Int. Cl.³ A45C *13/26*

U.S. Cl. 294—143 **3 Claims**



1. A coathanger suspender comprising:

a housing defining a handle portion shaped to be comfortably carried by hand, and a magazine portion adapted for suspending one or more coathangers and, in use, extending forwardly and downwardly of said handle portion in a vertical plane;

said handle having a curved top wall, an outer wall, side walls, a bottom wall, and a first transverse wall extending between said side walls and being spaced from said outer wall; and

said magazine portion having a pair of opposed front and back side walls and a transverse, generally U-shaped hook wall spaced inwardly from the edges of said front and back side walls to form therebetween a magazine chamber having a slot, the outermost end of said hook wall forming with said first transverse wall an inner channel which is in communication through said slot with said magazine chamber whereby, in use, the outer end of the hook of a coathanger is captured through said slot within said inner channel, the curved portion of said hook rests on the curved portion of said hook wall, and the innermost end of said hook of said coathanger resting on the innermost end of said hook wall, so that said handle portion allows the hand of the user to comfortably carry the magazine portion, with the coathanger resting outside of and being easily removable from or mounted on said hook wall.

4,288,013

JAR CARRIER HAVING U-SHAPED JAR RETAINERS

David Napier, Roark, Ky. 40979

Filed Sep. 19, 1979, Ser. No. 77,106

Int. Cl.³ B65D *71/00*; A47B *73/00*

U.S. Cl. 294—87.2 **4 Claims**

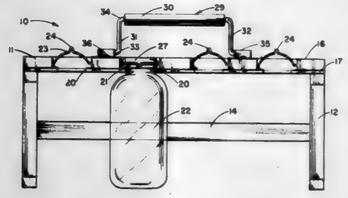
1. A portable jar carrier which comprises:

a generally rectangular, horizontal frame having a top, a bottom and two opposed sides, said frame defining a first plurality of generally U-shaped openings along each of the opposed sides, said frame further defining a second plurality of generally U-shaped openings along each of the opposed sides, each of said second plurality of openings being smaller and aligned with one of the first plurality of openings, the first and second plurality of openings thereby defining a plurality of lipped openings for reception and support of jars therein;

legs mounted to said frame and extending downwardly therefrom;

handle means secured to said frame; and

retaining means mounted to said frame for retaining a jar within each of the plurality of U-shaped openings, said retaining means including each of the openings having a separate, generally U-shaped member pivotally mounted



to said frame, each of the U-shaped members having end portions received in apertures in said frame located on opposite sides of the respective U-shaped opening, each of the retaining members being pivotable about the end portions from an open position to a closed position in which the U-shaped member engages the jar, whereby each U-shaped opening may be individually opened or closed.

4,288,014

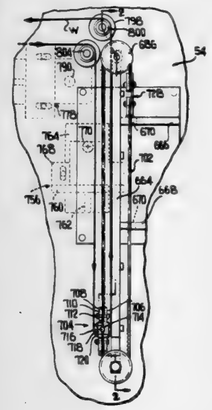
DANCER ROLL ASSEMBLY

Jack R. Evers, Torrance, Calif., assignor to Developak Corporation, Redondo Beach, Calif.

Filed Sep. 17, 1979, Ser. No. 76,446

Int. Cl.³ B65H *25/04*

U.S. Cl. 226—44 **9 Claims**



1. A dancer roll arrangement for use with a web feeding device, said arrangement comprising upper and lower shafts, axially spaced sprockets on said shafts in vertically aligned relation, endless belts entrained over said aligned sprockets, a dancer roll shaft extending between and secured to said belts in supported relation parallel to said upper and lower shaft, a dancer roll carried by said dancer roll shaft for controlled vertical movement and control means coupled to one of said upper and lower shafts for controlling the rotation thereof.

4,288,015
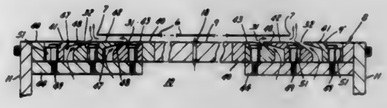
CONTACTLESS WEB TURNING GUIDE

Larry E. Curtin, Rockford, Ill., assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,707

Int. Cl.³ B65H *23/24, 23/32, 17/32*

U.S. Cl. 226—97 **3 Claims**



1. A web turning guide whereby a web that runs lengthwise along a defined path is contactlessly supported and guided through an arcuate turn in a portion of said path, said guide having a surface which is convexly curved in the direction that the web runs, and having means for maintaining a film of pressure air between said surface and a web, there being an area of said surface which is normally overlain by a web and which has parallel boundaries that extend in said direction and are spaced apart by a distance equal to the width of the web, said web turning guide being characterized by:

a pair of elongated pressure air edge-jet outlets adjacent to each of said boundaries, each of said edge-jet outlets extending substantially parallel to said boundaries and substantially entirely along said area in the direction that the web runs, each pair of edge-jet outlets comprising

(1) an outer edge-jet outlet spaced a small distance outwardly of its adjacent one of said boundaries, to be outside said area, and

(2) an inner edge-jet outlet within said area and spaced a small distance from its adjacent one of said boundaries to be overlain by a marginal portion of a web,

means positioning both edge-jet outlets of each pair to direct pressure air along said surface in the direction towards the other pair of edge-jet outlets; and

means for directing pressurized air to each of said edge just outlets.

4,288,016

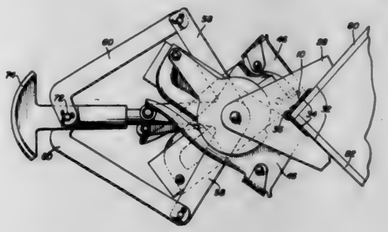
CORNER BEAD AND INSTALLATION TOOL

Stephen J. Failla, Chester, N.J., and Raymond S. Perry, Miami, Fla., assignors to Plastic Components, Inc., Miami, Fla.

Filed Nov. 21, 1979, Ser. No. 96,307

Int. Cl.³ B25C *1/02*

U.S. Cl. 227—30 **11 Claims**



1. A corner bead installation tool including an elongated support having longitudinally spaced abutment structures defining registered generally V-shaped notches opening outwardly alongside of said support and adapted to abut the outer surfaces of the flanges of a corner bead extending along said support and having its apex portion seated in said notches, a pair of fastener guns mounted on said support and including abutment surfaces thereof from which fastener may be ejected, said abutment surfaces being disposed, generally, in planes lying along and extending between corresponding sides of said

notches, said fastener guns each including an actuator shiftable between active and inactive positions and means operative in response to shifting of said actuators to said active positions to eject fasteners from said abutment surfaces in directions generally normal thereto, operator means shiftably supported from said support and operative to substantially simultaneously shift said actuators toward said active positions in reponse to shifting to the operator means.

4,288,017

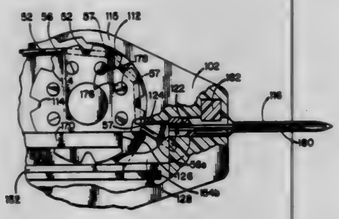
METHOD AND APPARATUS FOR DISPENSING FASTENERS

David B. Russell, Southborough, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 827,276, Aug. 24, 1977, abandoned. This application Aug. 31, 1979, Ser. No. 71,458

Int. Cl.³ A41H *37/00*

U.S. Cl. 227—67 **22 Claims**



1. Apparatus for advancing connected fasteners which are each formed by a flexible filament angularly connected to an end bar, comprising

a housing,

means for mounting a slotted hollow needle on said housing,

means associated with said housing for advancing each fastener to a position for being dispensed including means for aligning the end-bar of each fastener with the bore of said hollow needle by a cam that is movable back and forth within said housing to rotate said end-bar about a connector joining it to the end-bar of the next fastener that is being advanced.

2. The method of dispensing a fastener through a hollow slotted needle from fastener stock comprising a plurality of fasteners each of which has a filament with a transversely disposed end-bar at one end, end-bars of adjacent fasteners being joined end-to-end by severable connectors, said method comprising advancing said fastener to a position adjacent the rear portion of the needle bore with the end-bar transversely disposed to the needle bore, rotating the end-bar from said transverse position about the connector joining it to the next adjacent end-bar into a position in alignment with said bore, severing said connector, and forcing said end-bar through said bore.

4,288,018

FASTENING DEVICE FOR PAPERS

Fumio Taniguchi, 5, Ueno-cho 5-chome, Tajimi-shi, Gifu-ken, Japan

Filed Oct. 10, 1979, Ser. No. 83,954

Claims priority, application Japan, Oct. 30, 1978, 53-133587

Int. Cl.³ B25C *1/02*

U.S. Cl. 227—76 **5 Claims**

1. A fastening device for papers, comprising:

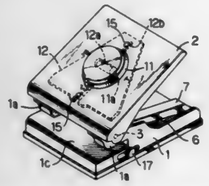
a punching mechanism with punching depression drivers which move upwards and downwards;

a stapling mechanism with depression drivers for pushing out contained staples and fastening papers together;

a depression mechanism with pressing parts for depressing the depression drivers in said punching and stapling mechanisms;

a selecting mechanism knob for selecting the interlocking of the pressing parts with said depression drivers by sliding a moving plate comprising said pressing parts; and

a selection indicator in association with said selecting mechanism, wherein the selection indicator is installed around



the knob of the selecting mechanism, and the indication is effected by rotation of the knob which slides the plate comprising said pressing parts in three steps corresponding to the selection of punching or stapling or both thereof.

4,288,019

PIVOTED STAPLER ASSEMBLIES

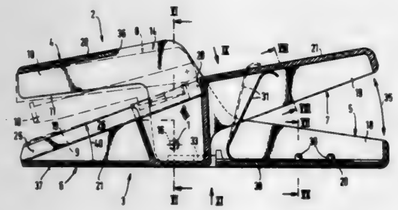
Gerald Dahle, Coburg, Fed. Rep. of Germany, assignor to Wilhelm Dahle Buro- und Zeichengerätefabrik, Coburg, Fed. Rep. of Germany

Continuation of Ser. No. 969,308, Dec. 13, 1978, abandoned. This application Mar. 7, 1980, Ser. No. 128,114

Claims priority, application Fed. Rep. of Germany, Jan. 2, 1978, 2800042

Int. Cl.³ B25C *5/02*

U.S. Cl. 227—144 **31 Claims**



1. In a stapler assembly including a frame composed of first and second levers pivotably connected together to pivot relative to one another in a pivot plane and about an axis of pivotal pivotal movement, at least a portion of each lever having a U-shaped cross section, and an office stapler which is operable independently of said frame and which is releasably fastened to, and carried by, one of the levers and is arranged to be acted upon by the other lever for movement with respect to an associated pivot axis of said stapler to effect a stapling operation, the improvement wherein:

each of said levers is a two-armed lever the arms of which are disposed to respectively opposite sides of the axis of pivotal movement and said levers cross each other in the form of scissors;

said first lever is provided, in the region of said axis of pivotal movement, with a passage opening and includes a pair of lateral jaws coplanar with the sides of said U-shaped portion of said first lever and laterally delimiting said passage opening; and

a portion of said stapler extends into said passage opening.

4,288,020

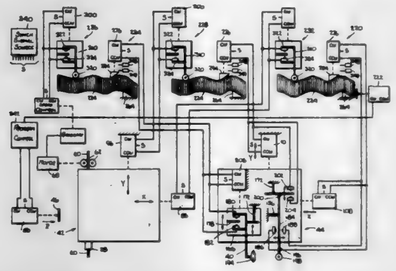
TRACKING TYPE WELDING APPARATUS

William K. Searles; Richard J. Searles, both of Katonah, and Kenneth R. Searles, Bedford Village, all of N.Y., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,264

Int. Cl.³ B23K *37/02*; B23Q *15/013*

U.S. Cl. 228—7 **29 Claims**



1. A welding apparatus comprising:

workpiece mounting means for mounting a workpiece to be welded,

a probe and torch assembly including a probe and a welding torch positioned a fixed distance from each other in a given direction and each being separately movable transversely of said given direction,

main drive means for producing relative movement between said workpiece mounting means and said probe and torch assembly in said given direction,

said probe being constructed to follow transverse deviations of a seam to be welded during said relative movement, said probe being provided with a probe motor to drive the probe to follow said transverse deviations, said probe further being provided with a probe sensor to sense said deviations and a probe switch actuable by said probe sensor,

said torch being provided with a torch drive motor arranged to drive said torch to undergo transverse deviations,

an adjustable contour cam positioned remotely from said probe and torch assembly, said cam comprising a pin mounting means and a plurality of pins positioned side by side and forming a line on said mounting means,

a pin setter and reader assembly including a pin setter and a pin reader mounted at a predetermined distance from each other along said line and each being separately movable in the longitudinal direction of the pins in contact with said pins,

cam drive means for producing relative movement between said pin mounting means and said pin setter and reader assembly along said line, so that said setter and reader successively contact different ones of said pins during said relative movement,

said pin reader being constructed to follow the longitudinal positions of the pins it contacts during said relative movements, said pin reader being constructed and arranged to follow said longitudinal positions of the pins, said pin reader further being provided with a reader sensor to sense changes in said longitudinal positions from one pin to the next,

said pin setter including a pin setter drive motor arranged to adjust the longitudinal position of the pins it contacts during said relative movement,

first synchronizing means connected between said main drive means and said cam drive means to synchronize their operation,

second synchronizing means comprising a circuit including said probe switch, said probe motor and said pin setter drive motor connected such that actuation of said switch operates said probe motor and said pin setter drive motor together to synchronize the movements of said pin setter with those of said probe, and

third synchronizing means comprising a circuit including said reader sensor and said torch drive motor connected such that actuation of said probe switch programs said pin setter and said pins to subsequently operate said reader sensor and said torch drive motor together to synchronize the movements of said torch drive with those of said pin reader.

4,288,021

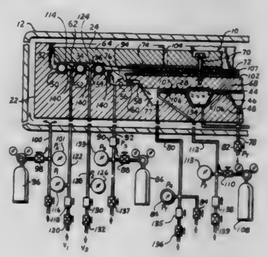
TOOLING FOR SUPERPLASTIC FORMING DIFFUSION BONDING PROCESSES

Walter Leodolter, Rancho Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Oct. 3, 1979, Ser. No. 81,483

Int. Cl.³ B23K *20/14*

U.S. Cl. 228—15.1 **12 Claims**



1. Tooling for use in superplastic forming diffusion bonding processes which includes:

a first member having a first die surface thereon and a first seal engaging surface about said first die surface;

a second member having a second die surface thereon and a second seal engaging surface about said second die surface, said first and second die surfaces facing each other and said first and second seal engaging surfaces facing each other;

a plurality of tubular sealing rings spaced from each other and positioned in contact with said first and second seal engaging surfaces, said first and second seal engaging surfaces and said plurality of sealing rings defining a plurality of cavities; and

a plurality of conduits extending to the defined cavities for introducing and removing gas therefrom, said plurality of tubular sealing rings having a higher pressure side portion and a lower pressure side portion, said higher pressure side portion having at least one opening therethrough so that pressure can be introduced within said tubular sealing rings to expand them in response thereto.

4,288,022

UNDERWATER EXPLOSIVE WELDING

Terence Sim, and Keith Allen, both of Barrow-in-Furness, England, assignors to Vickers Limited, London, England

Filed Oct. 10, 1979, Ser. No. 83,274

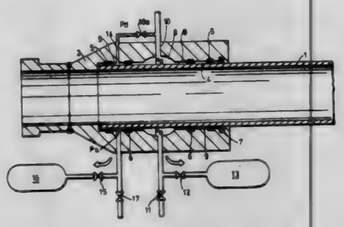
Claims priority, application United Kingdom, Oct. 10, 1978, 39943/78

Int. Cl.³ B23K *28/00*

U.S. Cl. 228—107 **3 Claims**

1. A method of explosively welding together an inner first tubular member and an outer second tubular member underwater which comprises inserting the first tubular member into the second tubular member so that the outer surface of the first tubular member and the inner surface of the second tubular member are spaced apart to form an annular cavity, sealing the cavity to prevent ingress of water, cleaning and drying the cavity, introducing gas into the cavity at a pressure greater

than the surrounding water pressure, and reducing the pressure in the cavity prior to detonating an explosive charge within the first tubular member to cause the outer surface of the first



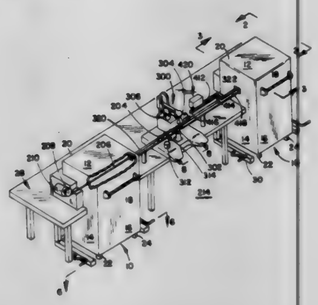
member to be urged across the cavity and into collision with the inner surface of the second member and become welded thereto.

4,288,023

PARTS STORAGE AND HANDLING SYSTEM

John E. Larrison, Costa Mesa, Calif., assignor to Orthodyne Electronics, Costa Mesa, Calif.

Filed Jul. 12, 1979, Ser. No. 56,803
Int. Cl.[3] B65G *1/06*
U.S. Cl. 228—110 14 Claims



13. A process for moving and storing electronic parts comprising:

providing a plurality of tubular elongated conduits having openings passing therethrough which are in side by side hinged relationship;

providing support means upon which said tubular elongated conduits are supported;

indexing said tubular elongated conduits with respect to a delivery point;

providing a track in adjacent relationship to said delivery point;

driving said parts from said tubular conduits outwardly by pushing them end to end toward said delivery point; and,

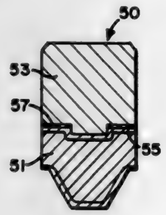
moving said parts along said track for subsequent processing from said delivery point.

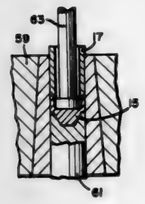
4,288,024

METHOD FOR MAKING A BIMETAL RESISTANCE WELDING ELECTRODE

Russell A. Nippert, Delaware, Ohio, assignor to The Nippert Company, Delaware, Ohio

Continuation-in-part of Ser. No. 844,899, Oct. 25, 1977, abandoned, which is a division of Ser. No. 749,983, Dec. 13, 1976, Pat. No. 4,071,947. This application Nov. 13, 1978, Ser. No. 960,224
Int. Cl.[3] H01B *13/00*; B23K *9/24*; B21D *39/00*
U.S. Cl. 228—155 6 Claims





1. A method of making a bimetal resistance welding electrode having a dispersion strengthened copper tip and a high conductivity copper shank, comprising:

(a) cutting a cylindrical rod of the desired quantity of dispersion strengthened copper material for the electrode tip, said rod including a cylindrical coating of high conductivity copper extending circumferentially therearound,

(b) upsetting said cylindrical rod along the axis thereof to form a generally cylindrical billet having a coating of high conductivity copper extending circumferentially therearound,

(c) upsetting said generally cylindrical billet in a direction perpendicular to the axis thereof to form an electrode tip member of extrusion diameter having a negative locator recess positioned in one end thereof and a coating of high conductivity copper covering substantially all of said one end of said tip member,

(d) forming a solid, high conductivity copper, cylindrical billet of extrusion diameter having a positive locator protrusion which is centrally positioned on one end thereof, said billet formed of the desired quantity of high conductivity copper for the shank of the electrode,

(e) placing together said electrode tip member and said high conductivity copper cylindrical billet with brazing compound therebetween, such that said protrusion and said recess mate,

(f) heating said electrode tip member, said high conductivity copper cylindrical billet, and said brazing compound such that said tip member and said high conductivity copper cylindrical billet are brazed together into a single extrusion blank having a tip portion formed of dispersion strengthened copper and a shank portion formed of annealed high conductivity copper, and

(g) back extruding said shank portion of said extrusion blank such that a high conductivity shank is formed while only partially back extruding said tip portion of extrusion

blank, thereby forming a full-hard bimetal electrode, whereby said coating of high conductivity copper prevents depletion of said brazing compound from the brazed joint between said tip member and said high conductivity copper cylindrical billet, and reduces the stress experienced by the brazed joint during extruding.

2. A method of making a bimetal resistive welding electrode of unitary construction having a tip portion formed of a dispersion strengthened copper and a shank portion formed of a high conductivity copper, comprising the steps of:

forming a tip member of dispersion strengthened copper having a high conductivity copper coating across a first end thereof,

forming a cylindrical billet of high conductivity copper,

brazing said cylindrical billet to said first end of said tip member using a brazing compound, at a temperature which does not anneal said dispersion strengthened copper, to form a bimetal extrusion blank having a tip portion formed of dispersion strengthened copper and a shank portion formed of annealed high conductivity copper, and

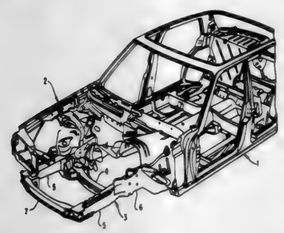
extruding said shank portion of said bimetal extrusion blank into a hardened electrode shank while only partially extruding said tip portion of said bimetal extrusion blank, thereby forming a full-hard bimetal electrode, whereby said high conductivity copper coating prevents depletion of said brazing compound from the brazed joint between said tip member and said cylindrical billet of high conductivity copper, and reduces the stress experienced by the brazed joint during extruding.

4,288,025

HOLLOW BEARER FOR VEHICLES AND METHOD FOR ITS MANUFACTURE

Willi Reidelbach, Sindelfingen; Hermann Renner, Magstadt, and Wolfgang Klie, Korntal, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 937,979, Aug. 30, 1978, abandoned, which is a division of Ser. No. 818,268, Jul. 22, 1977, Pat. No. 4,194,763. This application Oct. 2, 1979, Ser. No. 81,181
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636655
Int. Cl.[3] B21D *39/00*
U.S. Cl. 228—173 F 5 Claims



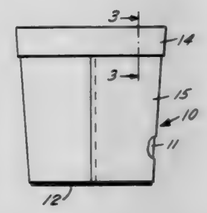
1. A method of manufacturing a hollow longitudinal bearer for a motor vehicle body construction comprising the steps of subjecting a plurality of elongated sheet metal blanks to a localized treatment increasing the strength of transverse zones thereof relative to the strength of remaining untreated areas, and joining said blanks together along longitudinally extending surfaces to form said hollow longitudinal bearer, wherein a first of said blanks is deformed into a configuration having longitudinally extending flanges and wherein said joining step is performed by connecting the flanges of the first blank to the second blank in a manner defining a hollow space therebetween and exclusively within the treated areas of higher strength, with untreated areas of said blanks remaining unconnected.

4,288,026

CONTAINER STRUCTURE

Thomas D. Wilhelm, Larsen, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Sep. 6, 1979, Ser. No. 72,911
Int. Cl.[3] B65D *3/04*; B32B *23/08*
U.S. Cl. 229—1.5 B 8 Claims



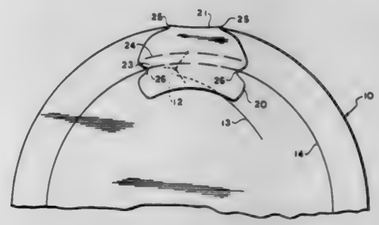
1. A container comprising: a sidewall portion of generally circular cross-sectional configuration and extending from a closed end portion to an open end portion thereof, said sidewall and said closed end portions being of seamless one-piece expanded polystyrene construction having a density of from about 1.5 to about 2.5 lbs./ft^3, and having a thickness of from about 70 to about 100 mils; and a reinforcing band encircling said sidewall portion and firmly adherent thereto throughout a substantially circumferential band region thereof, said band comprising paper of from about 1 to about 2 mils thick and having a basis weight of from about 9 to about 20 lbs./ream.

4,288,027

OPENABLE CARDBOARD LID FOR EXTENDABLE POPCORN PANS

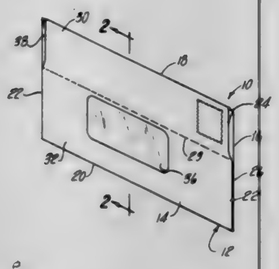
David S. Peterson, Oak Lawn, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 20, 1979, Ser. No. 77,382
Int. Cl.[3] B65D *5/64*, *5/70*
U.S. Cl. 229—43 3 Claims



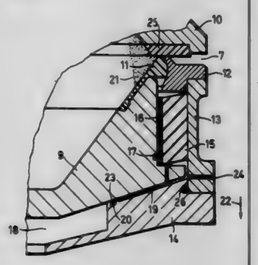
1. In an openable lid for use in connection with a popcorn pan covered with an expandable foil, said lid including an opening device in the form of curved score lines cooperating with an angular pulling tab, and a protective tab of a substantially semi-circular shape having a base line integral with a circumferential section of said lid, a cut-away top edge of a substantially semi-elliptical shape, a row of through-cuts extending along said base line, and two parallel rows of through-cuts extending substantially parallel to said cut-away top edge and being separated from the lateral edges of said protective tab, a combination comprising additional cuts in said protective tab extending between said lateral edges of the latter and at least one of said two rows of through-cuts to reduce the resistance of said protective tab against the expandable foil during expansion.

4,288,028
REMAILABLE ENVELOPE
Jose O. Diaz, 8711 Carpenter Rd., Milan, Mich. 48160
Filed Jan. 7, 1980, Ser. No. 109,545
Int. Cl.³ B65D 27/06
U.S. Cl. 229—73 9 Claims



1. A remailable envelope comprising an envelope body having front and rear panels, each of said panels having top, bottom and side edges, means securing said panels together to form an envelope pocket, said front panel comprising upper and lower panel portions and being adapted to exhibit address indicia, said upper panel portion being foldable toward and away from a face-to-face relationship with said rear panel, a first closure flap connected to said upper panel portion at the top edge of said front panel for closing the mouth of said envelope pocket, a second closure flap connected to said rear panel and operable to overlie a substantial portion of said front panel during reuse of said envelope, said second flap being of a size sufficient to cover said front panel to overlie said address indicia and being adapted to exhibit a second address for remailing of the envelope, said second flap being folded upon itself and inserted in said envelope pocket during the first mailing of the envelope, said upper panel portion of said front panel being foldable away from said rear panel to expose said folded second panel for expeditious withdrawal thereof from said envelope pocket.

4,288,029
SEPARATOR WITH PRESSURE-RESPONSIVE DISCHARGE
Wolfgang Epper, Bergheim-Zievenich, and Wolfgang Heckmann, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany
Filed Nov. 27, 1979, Ser. No. 97,714
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852628
Int. Cl.³ B04B 1/14
U.S. Cl. 233—20 A 6 Claims



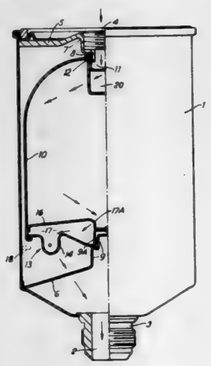
1. A separator for separating materials of different densities consisting of:

a rotational-symmetric separation vessel having at least one discharge aperture disposed on a circumference thereof;

an annular sleeve spaced from said separation vessel and forming a piston valve in cooperation therewith having a chamber which is chargeable with a pressure medium and which surrounds the exterior of the separation vessel and normally blocks said discharge aperture;

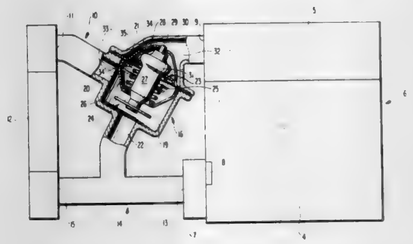
a flexible connection element radially attached between the sleeve and the separation vessel, said connection element permitting limited uniform axial displacement of and guiding said sleeve to open and close said aperture, said connection element further having a selected flexibility to normally oppose interior pressure developed in said separator and to allow piston valve displacement and material discharge upon developement of a selected interior pressure.

4,288,030
CENTRIFUGAL SEPARATOR
Rodney T. Beazley, Downderry, and Mervyn T. Haggett, Thistledovine, both of England, assignors to The Glacier Metal Company Limited, Wembley, Great Britain
Filed Aug. 29, 1979, Ser. No. 70,617
Claims priority, application United Kingdom, Apr. 12, 1979, 12939/79
Int. Cl.³ B04B 9/00
U.S. Cl. 233—23 R 11 Claims



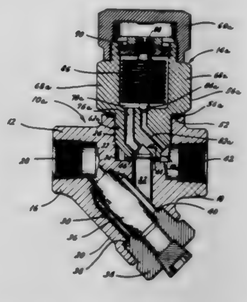
1. In a disposable centrifugal separator for separating contaminants from oil used for lubricating an engine, said separator comprising shroud means defining a first chamber, bearing means within the shroud means, a hollow rotor rotatably carried by the bearing means, said hollow rotor defining a second chamber for receiving contaminated oil, inlet port means in said shroud means said port means being aligned with said bearing means and adapted to form a releasable connection with said engine, an inlet passage passing through said bearing means and connecting said inlet port means to said second chamber, means to rotate said rotor and thereby cause contaminants in the contaminated oil within said second chamber to migrate towards the sidewall of said second chamber under the influence of centrifugal force and to be separated from such contaminated oil, said means to rotate said rotor comprising outlet reaction port means on said rotor in fluid communication with said second chamber to cause said rotor to rotate upon discharge of fluid from said second chamber to said first chamber, partition means in said second chamber adjacent said outlet port reaction means dividing said second chamber into a centrifuging chamber and an outlet port chamber, said centrifuging chamber and said outlet port chamber being interconnected adjacent the rotary axis of the rotor, and outlet port means in said shroud means for discharging fluid from said first chamber, said outlet port means being adapted to form a releasable connection with said engine, the improvement which comprises forming said bearing means as axially aligned stub axles and leaving said centrifuging chamber substantially unrestricted whereby oil entering said centrifuging chamber through said inlet passage immediately flows outwardly towards said sidewall under centrifugal force.

4,288,031
THERMOSTATIC CONTROL VALVE
Jürgen Hass, Weinstadt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Dec. 13, 1978, Ser. No. 968,922
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755464
Int. Cl.³ G05D 23/12
U.S. Cl. 236—34.5 14 Claims



1. A thermostatic control valve for maintaining an essentially constant set value of an operating temperature of a liquid coolant conductible through a cooling jacket of an internal combustion engine, the thermostatic control valve including a first, second, and third valve connection, two of the valve connections being adapted to be connected to the cooling jacket with the remaining valve connection being adapted to be connected to a radiator means for dissipating heat of the liquid coolant, a valve chamber means open to the first valve connection, a first valve means for controlling a flow of liquid coolant between the second valve connection and the valve chamber means, and a second valve means for controlling a flow of liquid coolant between the third valve connection and the valve chamber means, a thermostatic adjusting means operatively connected with said first and second valve means, said adjusting means being movable in response to predetermined temperature changes, said first and second valve means being actuatable such that, in a lower temperature phase which extends up to a lower reference value of an operating temperature which is below a predetermined operating temperature value, one of said valve means is brought into a closed position blocking the valve chamber means from one of the valve connections so as to suppress the flow of liquid coolant to at least a partial area of the cooling jacket, and, in an upper temperature phase adjacent the lower reference value containing the predetermined operating temperature value, the other of said valve means permits at least a partial volume of liquid coolant from the cooling jacket to be conducted through the radiator means, the other valve means being adapted to be brought into a closed position at an upper reference value of the operating temperature which is above the predetermined operating temperature value so as to block off the valve chamber means from one of the valve connections thereby causing a total volume of liquid coolant from the cooling jacket to flow through the radiator means, characterized in that a spring means is provided for displacing said one of said valve means to the closed position so as to block the valve chamber means and suppress a flow of liquid coolant, means are provided for mounting the spring means at the valve chamber means, the other valve means is actuatable by said adjusting means, and in that one of the two valve connectons is adapted to be connected to a suction side of a coolant pump having a pressure side connected to the cooling jacket.

4,288,032
STEAM TRAP INCLUDING INTERCHANGEABLE BODY MEMBER AND INSERT ASSEMBLY
Heinz K. Hetz, Halicong, Pa., assignor to Yarway Corporation, Blue Bell, Pa.
Continuation-in-part of Ser. No. 629,649, Nov. 6, 1975, abandoned. This application Aug. 30, 1977, Ser. No. 829,008
Int. Cl.³ F16T 1/10
U.S. Cl. 236—56 15 Claims

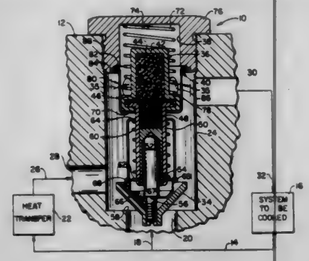


1. A steam trap comprising a body member and an insert assembly; said body member including a generally cylindrical recess extending inwardly from an outer surface thereof and terminating in an end face, said recess being formed with a threaded portion extending from adjacent said outer surface and terminating at a point spaced from said end face such that an unthreaded portion is formed between said threaded portion and said end face, said threaded portion and said unthreaded portion having a substantially uniform diameter, inlet and outlet passage means communicating with said recess, said inlet passage means including a passageway terminating in said end face of said recess, said outlet passage means including a passageway terminating in said unthreaded portion and said face of said recess, a seat formed in said outer surface of said body member and extending about said recess, and an annular rib formed on said end face around said inlet passageway, said annular rib having a seating surface located in said recess and spaced from said end face thereof; said insert assembly including means for preventing the flow of steam from said inlet passage means to said outlet passage means and for allowing the flow of condensate from said inlet passage means to said outlet passage means, said insert assembly further including a threaded portion engaged with said threaded portion of said recess for retaining said body member and said insert assembly in assembled relationship, first and second bearing surfaces included in said insert assembly, said first bearing surface being located in said recess adjacent said end face thereof and said second bearing surface being located externally of said body member adjacent said seat in said outer surface thereof; a first sealing ring clamped between said first bearing surface and said seating surface on said rib and a second sealing ring clamped between said second bearing surface and said seat in said outer surface of said body member.

4,288,033
CONTROL VALVE ASSEMBLY
Thomas W. Wisyanski, Terryville, Conn., assignor to Century Brass Products, Inc., Waterbury, Conn.
Continuation of Ser. No. 925,274, Jul. 17, 1978, abandoned. This application Apr. 9, 1980, Ser. No. 138,673
Int. Cl.³ G05D 23/12
U.S. Cl. 236—93 A 4 Claims

1. A temperature and pressure responsive fluid flow control

assembly comprising a temperature responsive valve actuator having a heat conductive casing containing a thermally expansible material, a housing having a chamber therein, the housing including a cup of stamped metal construction having an apertured end wall defining a first end wall of the housing and a side wall having openings therein defining side wall openings for the housing, said first apertured end wall of the housing serving as a seat for the valve actuator casing in a normal operating position, the valve actuator casing being received within the housing chamber for movement away from its normal operating position toward a second end wall of the housing opposite its said first end wall, an override spring urging the casing toward said normal operating position, the spring having opposite ends seated against said second end wall of the housing and against a radial shoulder formed on the



casing of the valve actuator, a tubular guide secured to the casing to extend from the chamber through said first apertured end wall of the housing, a piston slidably mounted within the guide and having an end projecting from the guide, said projecting end of the piston carrying a valve member for movement between closed and open positions, the valve actuator casing having an end extending beyond its said radial shoulder and surrounded solely by the coils of the override spring with the end of the valve actuator casing in spaced relation to a confronting side wall of the housing and its said second end wall in said normal operating position of the valve actuator to permit substantially frictionless movement of the casing away from its said normal operating position against the force of the override spring to balance fluid pressure force on the valve member for effecting pressure relief.

4,288,034

BOOM SHOCK AND TILT SYSTEM

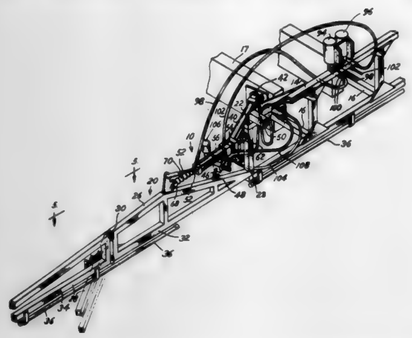
Gerald L. Widmer, Loda, Ill. 60948; Larry J. Gray, Loda, and Richard H. Pardee, Springfield, both of Ill., assignors to Gerald Widmer, Paxton, Ill.

Filed Mar. 19, 1979, Ser. No. 21,993
Int. Cl.³ B05B *1/20*
U.S. Cl. 239—168 **24 Claims**

1. In a spray boom assembly mountable on a vehicle for movement with the vehicle,

at least one boom,

shock absorbing means for absorbing shock imparted to said boom assembly in a direction substantially parallel to the direction of movement of the vehicle, said shock absorbing means including fluid circuit means for converting said shock to a force pivotally lifting said boom in a direction substantially perpendicular to the direction of said



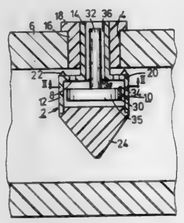
shock in response to the occurrence of said shock to dissipate said shock.

4,288,035

FLUID FLOW CONTROL DEVICE PARTICULARLY USEFUL AS A DRIP-IRRIGATION EMITTER

Avner Rosenberg, Moshav Beit Shearim, Israel

Filed Dec. 6, 1979, Ser. No. 100,979
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—271 **15 Claims**



1. A fluid flow control device particularly useful as a drip-irrigation emitter, comprising a housing including a control member disposed within but unattached to the housing so as to be freely movable therein, said housing including a wall formed with an inlet opening and an outlet opening both facing the same side of said control member and located so as to be covered and uncovered by said side of the control member as the control member moves towards and away from said wall of the housing.

4,288,036

SPRAY GUN

Roland C. Jubinville, P.O. Box 150, Millet, Alberta, Canada T0C 1Z0

Filed Oct. 17, 1979, Ser. No. 85,552
Int. Cl.³ B05B *7/14*
U.S. Cl. 239—345 **8 Claims**

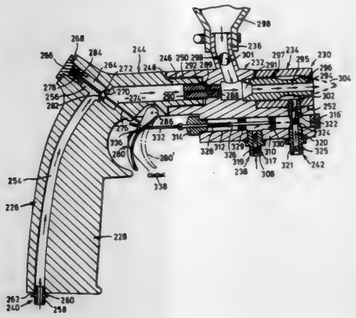
1. A spray gun adapted to simultaneously spray a liquid and a particulate material, the gun comprising:

a body defining a handle section;

a nozzle assembly coupled to said body and having: a central opening for the discharge of a stream of said particulate material; and liquid discharge means disposed around said opening for the discharge of liquid around said stream of particulate material;

said body including: a first air passageway having an inlet end, and an outlet end communicating with said central

opening of the nozzle assembly; means at said inlet end for coupling a source of pressurized air to said first air passageway; a second air passageway having an inlet end, and an outlet end coupled to said liquid discharge means of the nozzle assembly; means at said inlet end for coupling a source of pressurized air to said second air passageway; first inlet means disposed intermediate said inlet and outlet of said first air passageway and through which said particulate material can be introduced into said first air passageway; second inlet means disposed intermediate said inlet and outlet of said second air passageway and through which said liquid can be introduced under pressure into said second air passageway; and means in said first inlet means for controlling the introduction of said particulate material into said first air passageway;



a trigger mounted on said body adjacent said handle section for progressive movement with respect to said body from a rest position, said trigger being positioned so that it can be squeezed towards said handle section by a person holding the gun by said section;

spring means normally biassing said trigger to its said rest position; and,

an air flow control valve disposed in said first air passageway upstream of said first inlet means and coupled to said trigger so that the valve is progressively opened as the trigger is squeezed;

said second inlet means including a liquid flow control valve coupled to said trigger so as to be progressively opened as the trigger is squeezed;

whereby the volume of liquid and the amount of particulate material issuing from the gun can be simultaneously varied in use by operation of the trigger.

4,288,037

FUEL INJECTION VALVE

Peter Schelhas, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,281
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2900847
Int. Cl.³ B05B *1/34*
U.S. Cl. 239—434.5 **6 Claims**

1. A fuel injection valve comprising:

a valve housing, said housing having therein;

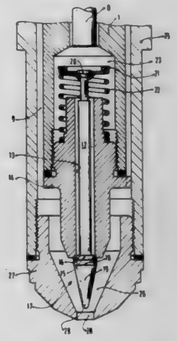
an air conduit connected to an air chamber;

a fuel conduit connected to a fuel chamber;

a fuel injection nozzle opening;

a bore in said valve housing extending between said air chamber and said fuel chamber connecting said fuel chamber with said air chamber; a valve seat on the end of said bore extending into said air chamber;

a valve needle extending through said bore in said valve housing, said valve needle comprising a conical section valve seat engaging portion and a smooth tapered end portion tapering toward said fuel injection nozzle opening, said conical section valve seat engaging portion being positioned to engage the valve seat of said valve housing to close said bore against fuel flow, said tapered end portion being positioned centrally over said fuel injection nozzle opening in said housing and extending into said air chamber; and



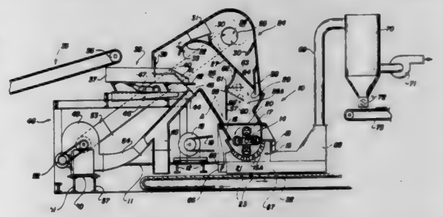
resilient means connected between said valve needle and said valve housing, said resilient means urging said valve needle in a direction toward said valve seat; whereby actuation of said valve needle in a direction relative to said valve seat controls fuel flow therethrough and along said tapered end portion of said valve needle into said air chamber.

4,288,038

WASTE MATERIAL PROCESSING APPARATUS

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Dec. 17, 1979, Ser. No. 104,750
Int. Cl.³ B02C *13/288*
U.S. Cl. 241—52 **10 Claims**



1. Waste material processing apparatus comprising: material reducing mill means having an outlet for reduced material; a waste material receiving chamber for directing waste material toward said mill means, said mill means operating to agitate the waste material and create a circulating flow thereof in said chamber during reduction thereof; and operable means mounted in said chamber in advance of said mill means and responsive to the waste material being circulated by said mill means, said operable means including a first gate means normally movable in a direction for admitting waste material to said mill means, and second gate means movable in a direction to release waste material circulated from said mill means, said first and second gate means operating to confine waste material to be reduced by said mill means and responding to the circulating flow thereof, so that said first gate means limits the quantity of waste material released to said mill means by withholding waste material in response to the back pressure of the flow of waste material being acted on by said mill means and said second gate means releases waste material back to said chamber for unloading said mill means of excess and hard to reduce waste material.

4,288,039

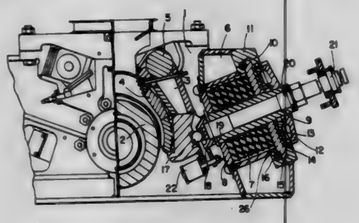
SINGLE-ROLL CRUSHER

Eberhard Waskow, Minden, Fed. Rep. of Germany, assignor to Weserhütte Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 959,296, Nov. 9, 1978, abandoned. This application Feb. 12, 1980, Ser. No. 120,808

Int. Cl.³ B02C *1/08*

U.S. Cl. 241—198 A **2 Claims**



1. In a single-roll crusher having a housing, a roll body freely rotatably supported on an eccentrically rotatable drive shaft in said housing, at least one laterally mounted crushing beam pendularly suspended in the upper part of said housing and being positioned at approximately the height of the roll body axis by means of a clamping bolt against a prestressed set of springs including a plurality of springs clamped between a front spring seat and a rear support disc, the set of springs, in turn, being supported by means of the support disc against said housing,

whereby when crushing forces acting on said prestressed set of springs exceed a prestressing force, the springs are further compressed and said clamping bolt and said front spring seat are displaced in said housing away from said crushing beam,

the improvement comprising base means on the crusher housing adapted to support said rear support disc,

said base means having an aperture therein through which said set of springs is adapted to pass,

a stop surface, in said base means, facing away from said crushing beam,

prong means, facing each other, in said base means,

and opposed prong means on said rear support disc,

whereby the prestressed set of springs can be locked in the axial direction thereof by interengaging, in the manner of a bayonet lock, the prong means in said base means with the opposed prong means on said rear support disc.

4,288,040

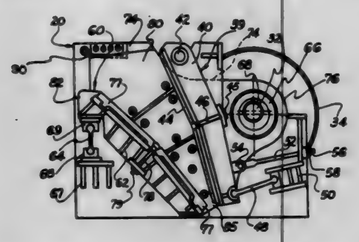
LOW PROFILE CRUSHING APPARATUS

Harold J. Miller, Galion, Ohio, assignor to Eagle Crusher Company, Inc., Galion, Ohio

Continuation-in-part of Ser. No. 904,906, May 11, 1978, abandoned. This application Jan. 9, 1980, Ser. No. 110,708

Int. Cl.³ B02C *1/04*

U.S. Cl. 241—263 **4 Claims**



1. An improved low profile crushing apparatus for mine ore or hard rock comprising, in combination, a base means; a first crushing jaw means mounted in a releasably fixed position on said base in a vertically inclined position; a second crushing jaw means mounted on a support means and disposed below and spaced from said first jaw means in a similarly vertically inclined position to define a crushing chamber between said respective jaw means, said support means including a supporting toggle arrangement near its upper end mounted on said frame means; eccentric drive means mounted on said frame means and operatively connected to the upper and lower ends of said support means carrying said second jaw means to impart repetitive predetermined motion to said second jaw means relative to said first jaw means; feeding means mounted adjacent to said crushing chamber and means mounted adjacent to the lower end of said crushing chamber to collect and transport material passing through said crushing chamber.

4,288,041

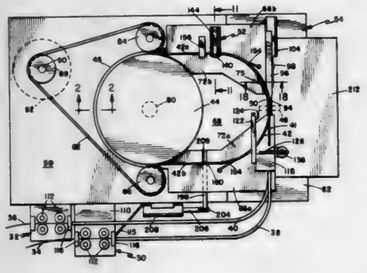
SHUTTLELESS TOROIDAL CORE WINDER

Willy Marzec, San Diego, and James D. Lint, Santee, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 10, 1979, Ser. No. 101,829

Int. Cl.³ H01F *41/08*

U.S. Cl. 242—4 R **11 Claims**



1. An apparatus for winding a wire having a leading end from a continuous source onto a core having a central opening, comprising:

a drum having an annular outer surface;

means for mounting the drum for rotation about its central axis;

endless belt means for engaging a portion of the annular outer surface to rotate the drum;

means for defining a curved wire receiving channel extending generally perpendicular to the drum axis, the channel having a pair of open ends positioned adjacent the annular outer surface of the drum, a width and a height sufficient to accommodate a predetermined number of vertically stacked lengths of the wire, and a gap therein;

gap crosser means for selectively bridging the gap to complete the channel;

core feeding means for supplying and supporting the core in the gap so that the gap crosser means can extend through the core opening; and

wire feeding and braking means for guiding the leading end of the wire into the channel and around the drum during rotation thereof to form the wire into a coil having the predetermined number of vertically stacked loops, the coil being frictionally held between the drum and the belt means and positively driven thereby to circulate it in the channel through the core opening, and further for selectively braking and rigidly holding the trailing end of the wire,

whereby when the trailing end of the wire is braked and held as the coil is circulated, the loops will successively peel radially inwardly out of the channel and from between the drum and the belt means and will wind into turns about the core.

4,288,042

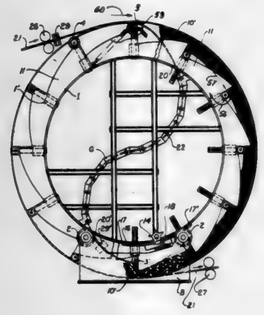
VARIABLE CAPACITY STRIP ACCUMULATOR ROTATABLE ON A HORIZONTAL AXIS

Tadeusz Sendzimir, 269 Brookside Rd., Waterbury, Conn. 06720

Filed Sep. 11, 1979, Ser. No. 74,415

Int. Cl.³ B65H *17/48*

U.S. Cl. 242—55 **21 Claims**



1. The method of transiently storing a variable length of strip material on two adjacent spiral coils rotating on a common horizontal axis with the convolutions of the coils wound in opposite directions, comprising

(a) winding the incoming strip of material into one coil and withdrawing the strip from the other coil while the connection between the inner portions of the two coils moves in opposite directions in response to the relative preponderance of the rate of accumulation and exhaustion of the strip of material from the coils as they increase and decrease in diameter,

(b) supporting the inner periphery of each of the spiral coils with a plurality of circumferentially displaced supporting rollers which permit sagging of the strip between adjacent rollers in their elevated orbit and the consequent freedom of movement and creeping between the juxtaposed windings of the strip material, and

(c) adjusting the circular orbit of the supporting rollers in conformity with the variation of the diameters of the inner peripheries of the spiral coils to maintain the support of the innermost windings of the coils and the resultant sagging and creeping effects of the strip material for all thicknesses of said spiral coils.

4,288,043

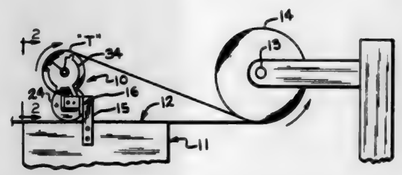
MEASURING TAPE DISPENSER

Andrew C. Bohnengel, Sylvania, Ohio, assignor to The Perfect Measuring Tape Company, Toledo, Ohio

Filed Apr. 18, 1980, Ser. No. 141,355

Int. Cl.³ B65H *75/02*

U.S. Cl. 242—55 **5 Claims**



1. Mechanism for dispensing measuring tape into the wraps of a length of cloth that is being wound onto a mandrel, said mechanism comprising, in combination,

(a) a frame extending transversely to the length of the cloth,

(b) a horizontally extending guide on said frame,

(c) a carriage mounted for movement along said guide,

(d) a rotatable shaft mounted on said frame for reciprocating said carriage back and forth along said guide,

(e) means on said carriage engaged with said shaft,

(f) an arm on said carriage which extends radially away from said shaft,

(g) means on the outer end of said arm for individually replaceably mounting each of two rolls of measuring tape, and

(h) a drive wheel fixed on the end of said shaft to rotate the latter in response to movement of a length of cloth being wound.

4,288,044

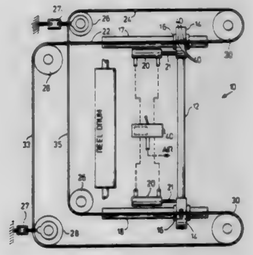
PAPER REEL SYNCHRONIZING SYSTEM

Robert Greding, Beaconsfield, Canada, assignor to Dominion Engineering Works Limited, Quebec, Canada

Filed Nov. 15, 1979, Ser. No. 94,448

Int. Cl.³ B65H *23/02*

U.S. Cl. 242—67.1 R **1 Claim**



1. In a paper reeling system having a rotatably mounted reel drum for reeling paper thereon, a removable reel bar for applying pressure against a roll being reeled on said drum and incorporating end bearings, each said bearing detachably mounted on a carriage; a rotatably mounted reel drum; a pair of tracks extending substantially normally to the drum in spaced apart relation, each having a said carriage mounted in sliding relation thereon; an air cylinder adjacent each track attached to a respective said carriage to displace the carriage along the track, including air admission control means for selectively admitting air simultaneously to each said air cylinder in an advancing or a retracting sense; mechanical synchronizing means interconnecting the two said carriages including substantially inextensible cable means looped in tensioned relation as an endless loop arranged to maintain the carriages in substantially mutually parallel relation, and lost motion means interconnecting said cable means and one said carriage to permit limited skewing of said reel bar relative to said drum in roll building operation.

4,288,045

DEVICE FOR CONTROLLING THE TENSION OF A WEB

Werner Römhild, Landau, Fed. Rep. of Germany, assignor to Tidland GmbH, Ahaus, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,736

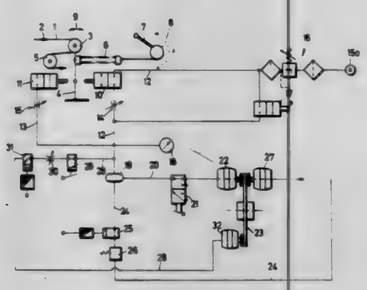
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855591; Dec. 22, 1978, 2855592

Int. Cl.³ B65H *59/00*

U.S. Cl. 242—75.53 **4 Claims**

1. Device for controlling the tension of a web discharged from a delivery spool including a compensating roller around which said web is guided to which a tiltingly supported lever is connected the deflection of which influences a pneumatic

valve, which provides, in a compressed-air line system including a reduction valve, for the pneumatic pressure of a brake cylinder of a pneumatic brake of a machine processing said web, wherein said lever is engaged by a tension spring with adjustable stroke and said lever is tiltable between two end switches, which actuate valves including series-connected reduction valves inserted into one pneumatic line each, both



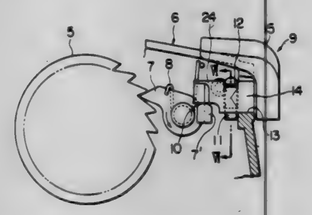
being connected to a compressed-air tank, which actuates said brake cylinder, the valve actuated in case of a decrease of the tension of said web being inserted into the line under pressure and when actuated by said lever connecting said compressed-air tank to the compressed-air source, and the valve actuated in case of an increase of the tension of said web being inserted into a line leading to the atmosphere and when actuated connecting said compressed-air tank to the atmosphere.

4,288,046

SPINNING REEL WITH ANTI-REVERSAL MECHANISM

Yoshinori Morimoto, Fuchu, and Takehiro Kobayashi, Fukuyama, both of Japan, assignors to Ryobi, Ltd., Fuchu, Japan

Filed Oct. 25, 1979, Ser. No. 88,220
Claims priority, application Japan, Nov. 6, 1978, 53-153235
Int. Cl.³ A01K *89/01*; F16D *63/00*
U.S. Cl. 242—84.21 R **7 Claims**



1. In a spinning reel including a rotor, a reel body, a drive gear rotatably mounted in said reel body, a pinion gear engaged with said drive gear and connected to said rotor, an an anti-reversal mechanism which includes a ratchet gear integrally and coaxially provided with said drive gear, a stop pawl pivotally secured to said reel body and normally biased by a bias spring so as to engage said ratchet gear and prevent reverse rotation of said rotor, and switching means movable between at least a first position in which said pawl is permitted to engage said ratchet and a second position in which said pawl is held out of engagement with said ratchet, the improvement characterized in that said switching means comprises:

a depressing portion rotatable between a first position in which said pawl is permitted to engage said ratchet and a second position in which it holds said pawl out of engagement with said ratchet gear;

a position setting portion;

a shaft portion rotatably supported by said reel body;

a thumb lever for rotating said depressing portion; said thumb lever, shaft portion, position setting portion and depressing portion all being formed in a single integral rotatable member and the diameters of each of said depressing portion and position setting portion being no larger than the diameter of said shaft portion whereby said depressing portion and position setting portion can be inserted into said reel body from the outside thereof;

spring means fixedly secured to the interior of said reel body and engaging said position setting portion to maintain the rotational position of said depressing portion; and

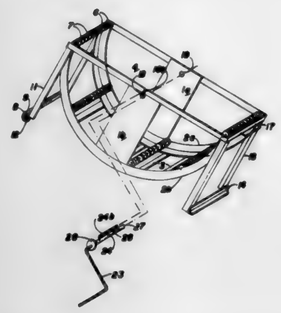
at least one indentation in the surface of said position setting portion and extending around less than the entire periphery of said position setting portion, said spring means being engagable with said indentation to prevent axial movement of said integral rotatable piece and thereby prevent disassembly of said single integral piece from said reel body, said spring means being disengagable from said indentation by rotation of said integral rotatable member to thereby permit removal of said integral rotatable member from the outside of said reel body.

4,288,047

FIREHOSE REEL AND TRANSFER DEVICE

Doyle R. Berry, 2509 Woodland Ct., and Walter S. Elder, 821 Morningside Dr., both of Jeffersonville, Ind. 47130

Filed Jun. 3, 1980, Ser. No. 156,069
Int. Cl.³ B65H *75/38*
U.S. Cl. 242—86 **4 Claims**



1. A hose reel and transport device including first and second generally parallel wall means of generally semicircular peripherial configuration disposed in aligned relation, bracket means extending between the first and second wall means along a portion of the length of the periphery thereof to form a hose receiving chamber, at least two roller means located adjacent the periphery of the wall means and disposed to extend across the chamber between the first and second wall means.

4,288,048

CASSETTE

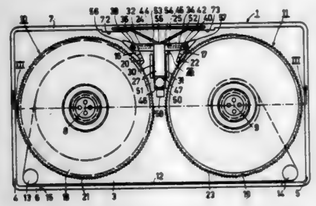
Joannus H. F. C. Sieben, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1980, Ser. No. 121,338
Claims priority, application Austria, Mar. 6, 1979, 1694/79
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **5 Claims**

1. A cassette for a record carrier in the form of a tape, comprising two rotatable winding reels for taking up and unwinding the record carrier; a brake lever for each of the winding reels, movable between a disengaged position, in which the brake lever is disengaged from the associated winding reel, and a braking position, in which the brake lever cooperates with the associated winding reel so as to brake said reel, the brake

lever rotating the associated winding reel in a winding direction through a limited angle; and resilient means for moving each brake lever from its disengaged position to its braking position,

comprising in addition a lever mount for the two brake levers, means for mounting the lever mount for movement between a rest position and an operating position, and means for moving the mount actuable from outside the



cassette, the two brake levers being each journalled on said mount so as to be pivotable between their braking positions and their disengaged positions, and

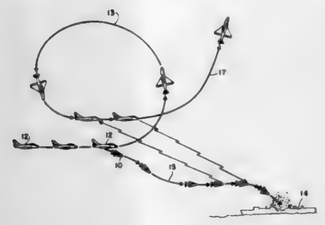
at least one control surface in the cassette for the brake levers, arranged such that during the movement of the lever mount from its rest position to its operating position, said surface cooperates with said brake levers to pivot said levers to their disengaged positions.

4,288,049

REMOTE TARGETING SYSTEM FOR GUIDED MISSILES

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1971, Ser. No. 112,494
Int. Cl.³ F41G *7/28*
U.S. Cl. 244—3.14 **5 Claims**



1. In a remote target system for guided missiles, the combination comprising:

(a) a radar located at a remote station for detecting and tracking a target,

(b) a self-propelled guided missile launched from said remote station on a course established by said tracking radar,

(c) said guided missile having seeker means for detecting and tracking said target,

(d) a guidance data transfer unit coupled to said missile seeker for transferring guidance data between said missile seeker and said tracking radar,

(e) said missile seeker being responsive to guidance information received from said tracking radar for acquiring and locking-on said target in a homing mode,

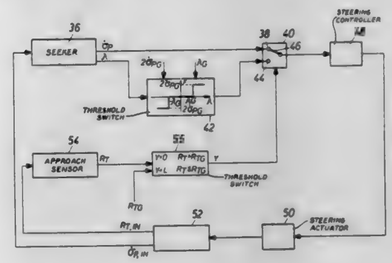
(f) said guidance data transfer unit including a control switching unit for transferring guidance information supplied for the guidance of said missile from the pre-established course to guidance information supplied by said missile seeker in response to a command signal from said tracking radar.

4,288,050

STEERING DEVICE FOR MISSILES

Roland Gauggel, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,672
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830502
Int. Cl.³ F41G *7/00*
U.S. Cl. 244—3.16 **3 Claims**



1. A missile steering device for directing a steering controller of a missile to cause the missile to fly to intercept an airplane in flight, wherein the steering device includes target seeker means continuously directed towards a target having a positional relationship with respect to said airplane and producing a sight line rate signal ($o\rho$) proportional to the rate of change in space of the sight line to said target, said steering device being characterized by:

said target seeker means also producing a "look angle" signal (λ) representing the angular difference between the longitudinal axis of the missile and the optical axis of the seeker means;

threshold switch means connected to said seeker means to receive said look angle signal and producing an output signal of a corresponding sign when the look angle signal exceeds or falls below respective threshold values ($+\lambda_G$ and $-\lambda_G$);

approach sensor means for producing an output signal (R_T) representing the distance between the missile and the airplane; and

circuit means connecting the threshold switch means, the approach sensor means, the steering controller to receive said output signals and produce a lead signal for the controller to deflect the trajectory of the missile towards a point offset, along the path of the airplane, and in the direction of the airplane velocity vector (V_T), with respect to said target, when the distance between the missile and the airplane are less than a given magnitude and the look angle is greater than said respective threshold values.

4,288,051

METHOD AND APPARATUS FOR CONTROLLING A SATELLITE

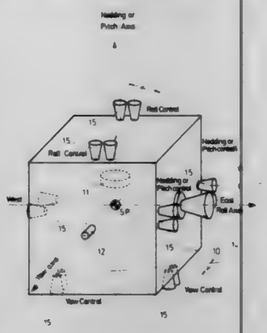
Wilhelm Göschel, Taufkirchen, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 832,791, Sep. 12, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,526
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1976, 2642061
Int. Cl.³ B64G *1/24, 1/26, 1/28, 1/36*
U.S. Cl. 244—164 **17 Claims**

1. A method for attitude control and trajectory change of a satellite having a mission encompassing a transfer phase wherein said satellite is spin-stabilized and a latter phase wherein said satellite is three-axis stabilized, said satellite having a momentum wheel, an attitude control system and propulsion means, said method comprising the steps of:

activating said momentum wheel at the latest in the transfer phase of the mission;

rotating said satellite about an axis of the satellite which is parallel to the spin axis of the momentum wheel with a smaller angular momentum than that of said momentum wheel during said spin-stabilization phase;



substantially changing the trajectory of said satellite from said transfer phase to a substantially different trajectory and stabilizing said satellite along three axes at the moment of said changing of trajectory; and

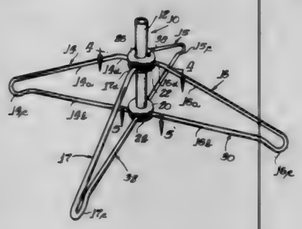
selecting the thrust of said propulsion means to be effective to maintain proper satellite attitude during said changing of trajectory and for a period of three-axis stabilization after said trajectory is changed.

4,288,052

BASE FOR FREE STANDING MERCHANDISER

George B. Scott, 1727 Crystal La., Apartment 411, Mount Prospect, Ill. 60056

Filed May 24, 1979, Ser. No. 42,030
Int. Cl.³ F16M *11/32*
U.S. Cl. 248—188.6 **11 Claims**



1. A collapsible support stand being erectable into a locked position, said stand comprising a central support shaft, four legs having outer ends for engaging the floor and inner ends for attachment to said shaft,

each of said legs having an upper segment and a lower segment extending from said outer ends toward said support shaft,

a first upper support mounted on said shaft for axially sliding movement,

inner ends of one pair of legs attached to said upper support,

a lower support mounted on said shaft and movable axially along said shaft,

inner ends of a pair of legs secured to said lower support,

and detent means formed on at least one of said supports having an axially directed opening for receiving therein the inner ends of the other set of legs, said inner ends snapping into said detent openings when they are rotated into aligned and detenting position in which the legs are in said openings and are held by said detent means against rotation therefrom,

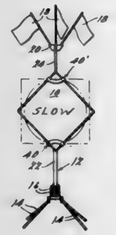
said detented leg ends being removable from said detent openings by being moved axially and then turned therefrom to allow the pairs of legs to be swung toward each other to collapse the stand.

4,288,053

ADJUSTABLE SIGN MOUNTING BRACKET

Robert Sarkisian, 4276 Stoneleigh Rd., Bloomfield Hills, Mich. 48013

Filed Jun. 20, 1979, Ser. No. 50,453
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—218.4 **2 Claims**



1. A bracket for mounting a sign on a pole, said bracket comprising

a first section for fastening said bracket to said pole, said first section comprising a U-shaped bracket positioned around the pole and connected to a backing member, a gripping plate movably disposed inside said U-shaped bracket, and a handle adjustably mounted on said U-shaped bracket and attached to said gripping plate for moving said plate relative to said U-shaped bracket and securely holding said pole therein, said gripping plate being configured to contact and securely grip said pole along two elongated lines of force, and

a second section for holding said sign, said second section comprising a generally C-shaped bracket attached to said backing member

said backing member having an aperature therein and said C-shaped bracket being curved allowing access through said aperature to allow attachment of said gripping plate to said handle.

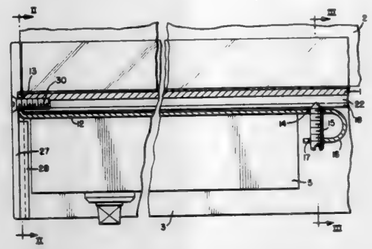
4,288,054

DOOR CLOSER MOUNTING ARRANGEMENT

Gerhard Schröder, Tiefenbronn, and Fritz Feucht, Renningen, both of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch and Co., GmbH, Leonberg, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,857
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736665
Int. Cl.³ E04G *5/06*; F16M *1/00*
U.S. Cl. 248—225.1 **30 Claims**

1. An arrangement for mounting a door closer to a stationary or movable door frame having a channel rail, characterized in that the channel rail is provided with longitudinally extending undercut grooves, the undercut grooves form transversely extending guide means, means are provided for suspending the door closer at the channel rail, at least a portion of said suspending means is adapted to be received in the undercut grooves behind the transversely extending guide means, and means adapted to be supported at the door closer are provided for alignment with an end face of the channel rail for exact positioning of the door closer along the channel rail and for pressing said suspending means against said transversely ex-



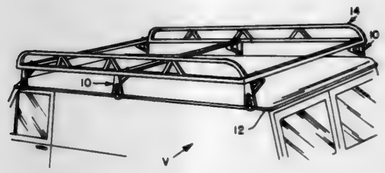
tending guide means so as to securely position the door closer relative to the channel rail.

4,288,055

MOUNTING BRACKET

William E. Gump, 12114 SE. 19th, Milwaukie, Oreg. 97222

Filed Mar. 31, 1980, Ser. No. 135,524
Int. Cl.³ E04G *5/06*
U.S. Cl. 248—226.1 **7 Claims**



1. A mounting bracket for clampingly being clamped onto a drip gutter of a vehicle, comprising:

first leg means and second leg means disposed at right angles to one another, said first leg means being disposable within the drip gutter;

third leg means extending between said first and second leg means defining a brace therebetween;

said first leg means has a slot therethrough and a free end of said third leg means extends through said slot and extends beyond said first leg means therely defining base means;

clamping-plate means movably mounted along said first leg means including an inwardly-directed projection extending along the bottom of said first leg means and engagable with a bottom outside surface of the drip gutter; and

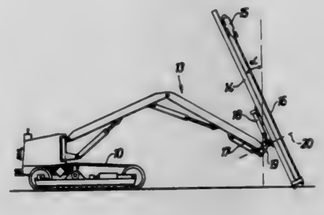
securing means provided between said first leg means and said clamping-plate means and between said base means and said clamping-plate means for clampingly securing said inwardly-directed projection against the bottom outside surface of the drip gutter and said clamping-plate means against the side of the drip gutter.

4,288,056

DEVICE FOR SETTING THE DIRECTION AND/OR THE INCLINATION OF AN ELONGATED ROCK DRILLING APPARATUS

Claes-Gustav Bergström, Saltsjöbaden, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation-in-part of Ser. No. 897,515, Apr. 18, 1978. This application Oct. 26, 1979, Ser. No. 88,625
Claims priority, application Sweden, Oct. 27, 1978, 7811159
The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.
Int. Cl.³ E21C *1/00, 35/06*
U.S. Cl. 248—542 **6 Claims**



1. A rock drilling apparatus comprising:

a carrier (**10, 13**);

a feed beam (**14**) pivotally mounted to said carrier so as to be pivotable in a first plane about a first axis (**19**) and to be pivotable in a second plane about a second axis (**20**) that is at right angles to said first axis (**19**);

a rock drill (**15**) movable along said feed beam and arranged to drill a hole that is parallel with said feed beam;

first power means (**17**) coupled to said feed beam (**14**) to effect swinging of said feed beam about said first axis;

second power means (**18**) coupled to said feed beam (**14**) to effect swinging of said feed beam about said second axis;

a first member (**25**) affixed to said feed beam (**14**);

a second member (**23,12**) universally pivotably but non-rotatably carried by said first member (**25**);

indicating means (**21, 22**) affixed to said second member (**23, 12**) for indicating when an axis of said second member (**23**) is vertical;

means (**29**) for adjustment of said second member (**23**) relative to said first member (**25**) in order to adjust the angle between said axis of said second member (**23**) and an axis that is parallel with said feed beam (**14**); and

means (**26,34**) coupled to said second member (**23**) for swinging said second member about said axis that is parallel with said feed beam such that said axis of said second member (**23**) follows a conical path about said axis that is parallel with said feed beam;

said indicating means (**21,22**) comprising:

a first indicating device (**21**) arranged to indicate movements of said feed beam (**14**) in said first plane irrespective of the actual relative position between said first and second members (**25** and **23**, respectively); and

a second indicating device (**22**) arranged to indicate movements of said feed beam (**14**) in said second plane irrespective of the actual relative position between said first and second members;

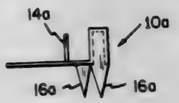
each of said first and second devices (**21,22**) comprising a pair of screens (**41,47**), one of said screens (**47**) being fixed with respect to said second member (**23,12**), and the other of said screens (**41**) being pivotable and biased to take up a predetermined position relative to the vertical, said pair of screens (**41,47**) forming an interference pattern that visually indicates the position of said second member (**23,12**) relative to the vertical.

4,288,057

CURTAIN AND WINDOW SHADE HARDWARE

Arthur W. Sainsbury, Jr., 103 Pine St., South Easton, Mass. 02375

Filed Nov. 2, 1979, Ser. No. 90,549
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—546 **1 Claim**



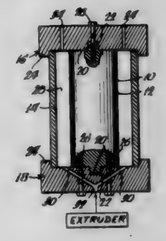
1. Hardware comprising a one-piece bracket, the bracket including a base, a holding tab, a curtain rod hook, a first prong, a second prong, and a strike pad, the base having a first side edge, lying on a horizontal plane and having an upper surface, the first prong integral with the base and in angular relation to the holding tab and the base, the holding tab extending from the first side edge and lying on the horizontal plane and the first prong in angular relation to the horizontal plane, the strike pad extending from the upper surface of the base in right angle relation to the horizontal plane, the second prong extending from the base toward the same direction as and in spaced parallel relation to the first prong and the curtain rod hook extending from the base in a direction away from the first prong.

4,288,058

COMPOSITE MOLD FOR MAKING RUBBER COVERED ROLLS AND METHOD FOR MAKING SAME

Hubert W. Inman, North Charleston, S.C., assignor to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Sep. 17, 1979, Ser. No. 76,403
Int. Cl.³ B28B *7/34*
U.S. Cl. 249—134 **7 Claims**



1. A method for making a cylindrical mold comprising the steps of disposing a flexible tube of heat shrinkable polymeric material around a rigid cylindrical mandrel, disposing said tube covered mandrel in concentric relation within a rigid cylindrical shell having an inner diameter greater than the outer diameter of the tube covered mandrel, injecting a curable elastomer under pressure between the tube and the shell until any space therebetween has been filled, curing the elastomer to form a continuous elastomer layer bonded between said shell and said tube, and then removing the mandrel.

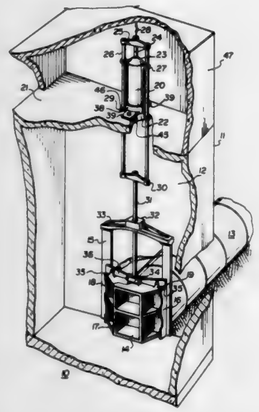
4,288,059

SLUICE GATE

Florian Gurbin, 331 Irwin Ave., Essex, Ontario, Canada N8M 2T7

Filed Oct. 17, 1979, Ser. No. 85,916
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—58 **7 Claims**

1. In a sluice gate apparatus including drawing means energizable to operate the apparatus, a gate disc adapted to open and close a gate opening, frame means defining the gate opening, including guide means adapted to retain the disc in slidable relation with respect to said opening, means connecting the disc with the drawing means for laterally displacing the disc relative to the opening when the drawing means are energized, said drawing means comprising a hydraulic cylinder having a long axis aligned with the connecting means, a closed end facing the disc and an open end facing away from the disc, a piston slidably disposed within the cylinder along said axis and a piston rod extending outwardly of the open end and connecting said piston to the connecting means, lever means having long and short ends and a fulcrum therebetween pivotably



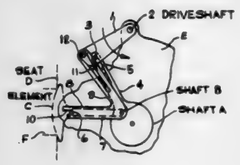
connected to the disc, the short end being disposed to bear against a fixed portion of at least one of the guide means and said frame when the disc is in closed relation with the opening, and the long end being connected to the connecting means to obtain a mechanical advantage in drawing pressure when displacing the disc to a partially open position, an improvement comprising a bulkhead isolating the open end from the disc, said bulkhead retaining the cylinder in fixed relation to the frame means and having walls defining at least one passage through which at least one tail rod of the connecting means is adapted to pass and sealing means for slidably sealing said at least one tail rod in said at least one passage.

4,288,060

SEQUENCED DRIVE FOR ROTARY VALVES

Larry C. Mittell, Palos Verdes Estates, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 21, 1979, Ser. No. 106,130
Int. Cl.³ F16K *31/44, 31/12*
U.S. Cl. 251—215 **5 Claims**



1. A sequenced drive mechanism for producing linear and rotary motions in rotary valves having a housing within which is located a seat and a sealing element movable with respect to the seat, said sequenced drive mechanism comprising a first

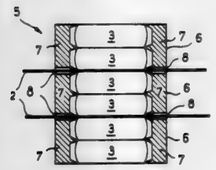
link adapted to be connected at one end thereof to a driving means and having a pair of spaced cam followers secured at the other end thereof, a first shaft, a second link having one end thereof connected to said first shaft and having a longitudinally extending slot in the other end thereof, one of said pair of spaced cam follows being located within said slot, a second shaft in offset coaxial arrangement with respect to said first shaft and operatively connected to said sealing element, a third link having a pair of angularly spaced, outwardly extending arms secured to said second shaft, one of said arms having an open slot in the outer end thereof and adapted to cooperate with a third cam follower fixedly secured to said valve housing, the other of said arms having a longitudinally extending slot therein having two sections of which one section is wider than the other, the other of said pairs of spaced cam followers being located within said last mentioned slot, such that initial rotation of said first link in one direction moves said second link causing rotation of said first shaft without rotation of said second shaft resulting in a translating of said sealing element in a direction substantially perpendicular with respect to said seat and moving said third link with respect to said third cam follower, and further rotation of said first shaft moves said third link causing rotation of said second shaft which produces rotation of said sealing element with respect to said seat.

4,288,061

SAFETY BARRIER WHICH IS ESPECIALLY USEFUL FOR MOTORWAYS

Joël P. Moreau, 62, rue Paul Bert, 92150 Suresnes, France

Filed May 9, 1979, Ser. No. 37,382
Claims priority, application France, May 9, 1978, 78 13628
Int. Cl.³ E04H *17/00*
U.S. Cl. 256—13.1 **10 Claims**



1. A safety barrier comprising a plurality of modules coupled to one another by at least one embedded linear element under tension, said modules each being composed of an integral material subject to bursting as a result of internal tension due to said linear element passing through the modules and embedded therein so that any module struck by a car involved in an accident bursts together with adjacent modules and a flexible casing surrounding each module and preventing ejection of debris and fragments of materials upon impact and bursting of the module.

4,288,062

APPARATUS FOR CONTROL AND MONITORING OF THE CARBON POTENTIAL OF AN ATMOSPHERE IN A HEAT-PROCESSING FURNACE

Bhupendra K. Gupta, Canton; Paul K. Shefsiek, Farmington, both of Mich., and Freeman W. Fraim, Lexington, Mass., assignors to Holcroft, Livonia, Mich.

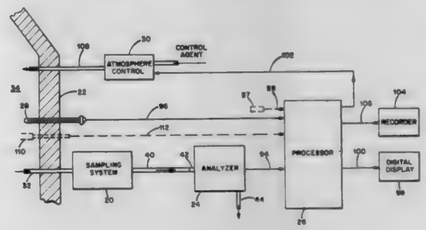
Filed Aug. 9, 1979, Ser. No. 65,308
Int. Cl.³ C21D *11/00*
U.S. Cl. 266—88 **3 Claims**

1. Apparatus for monitoring and control of the carbon potential in the atmosphere of a heat processing furnace comprising:

means for measuring the temperature of said atmosphere and for producing a temperature signal;

sampling means for withdrawing from the furnace a sample of said atmosphere;

an infrared analyzer connected to said sampling means outside of said furnace for receiving and analyzing said sample; said analyzer including means for producing a CO_2-absorbed electrical signal indicative of the partial pressure of carbon dioxide of said sample and a CO-absorbed electrical signal indicative of the partial pressure of carbon monoxide of said sample;



a microprocessor electrically connected to said infrared analyzer and to said temperature measuring means, said microprocessor operable to calculate a carbon potential signal from said temperature signal and said CO_2-absorbed and CO-absorbed electrical signals; and

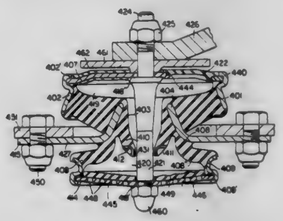
control means for comparing said calculated carbon potential signal with a predetermined desired value of carbon potential and adjusting the flow of a control agent to said furnace to minimize the difference between said desired value and said carbon potential signal calculated by said microprocessor.

4,288,063

RUBBER ELASTIC ENGINE MOUNTS OR SUPPORTS WITH HYDRAULIC DAMPING, ESPECIALLY FOR ENGINE SUSPENSIONS IN MOTOR VEHICLES

Heinz Brenner, and Arno Hamaekers, both of Ahrweiler, Fed. Rep. of Germany, assignors to Boge GmbH, Eitorf, Fed. Rep. of Germany

Division of Ser. No. 889,381, Mar. 23, 1978, Pat. No. 4,215,842, which is a continuation-in-part of Ser. No. 791,309, Apr. 27, 1977, Pat. No. 4,161,304. This application May 3, 1979, Ser. No. 35,512
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2718121; Mar. 24, 1977, 2713008
Int. Cl.³ F16F *1/36*
U.S. Cl. 267—8 R **10 Claims**



1. An elastic rubber engine mount with hydraulic damping, especially for engine suspensions in motor vehicles, comprising a first metallic end wall for connection to an engine casing, a second metallic end wall spaced axially from said first wall, a metallic supporting element for connection to an engine supporting frame, a first elastic rubber-like peripheral wall adheringly connected with said first end wall and with said supporting element, an elastic rubber-like partition connected with

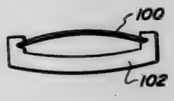
said supporting element so as to define with said first end wall and said first peripheral wall a liquid-filled main chamber of variable volume on one side of said partition, a second elastic rubber-like peripheral wall adheringly connected with said second end wall and with said supporting element so as to define an auxiliary liquid-filled chamber of variable volume on the other side of said partition, means forming a choke opening in said partition as a flow connection between said main and auxiliary chambers, and means rigidly connecting said first and second end walls together for joint movement relative to said supporting element, at least one of said metallic end walls being formed with at least one end wall opening covered by a resilient wall part which can flex resiliently to compensate for changes in the volume of said chamber, and thus pose a decreasing resistance to a change of liquid pressure in its appurtenant chamber, said end wall opening having a peripheral edge, the flexible wall part being so arranged that its outward flexure in response to pressure increases in said chamber is limited by engagement between the peripheral edge of said end wall opening and said flexible wall part.

4,288,064

TIMED-ACTION ACTUATORS

Alfred R. Austen, R.D. #1, Box 451, Center Valley, Pa. 18034

Filed May 5, 1980, Ser. No. 146,745
Int. Cl.³ F16F *1/26*
U.S. Cl. 267—182 **15 Claims**



1. A resettable apparatus for producing time delayed force and/or displacement response comprising in combination:

a first or restraining element, said first element being constructed of a material that will, under load, exhibit creep deformation within its intended operating temperature range; and

a second or force producing element disposed proximate said first element so that said second element can be moved into contact with said first element to engage said first element and produce elastic distortion of said first element;

whereby when said second element is moved into an actuation position the elastically distorted portion of said first element creeps such as to increase the distortion under load to, after a time delay, release or permit said second element to return to its original or released position.

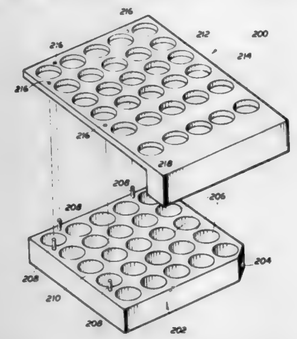
4,288,065

EXTENDER AND HEADER CARD FOR MEDICINAL DISPENSING DEVICE AND FIXTURE BASE CONVERTER FOR FILLING THE SAME

Milton Braverman, 640 Wynmill Pl., Philadelphia, Pa. 19115

Division of Ser. No. 33,923, Apr. 27, 1979, Pat. No. 4,211,329.
This application Jan. 14, 1980, Ser. No. 111,614
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—43 **1 Claim**

1. In combination a fixture base having a plurality of openings extending therein, said openings being disposed in an array of a first predetermined number of rows and columns and a removable converter comprising a planar support surface disposed directly on said fixture base, said base being of a first predetermined thickness and including a plurality of spring loaded alignment pins projecting upward therefrom, said planar support surface having a plurality of alignment apertures in which respective ones of said alignment pins are located, said planar support surface having a first plurality of openings in an array of said first predetermined number of rows and columns and a second plurality of openings disposed in an array of a single row, said first plurality of openings in said converter being aligned with said plurality of openings in said base when said converter is on said base and said alignment pins are located in said alignment apertures, said converter including a ledge projecting downward from said planar support surface a



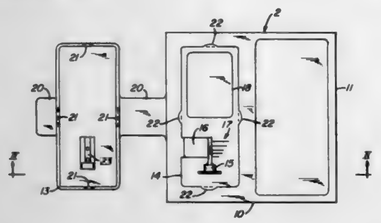
distance equal to said first predetermined thickness, whereupon said ledge contacts the surface upon which said fixture base is disposed.

4,288,066

CONTAINER FOR MEDICAL DEVICE

Harry T. Treace, Forest Hill, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.

Filed Dec. 10, 1979, Ser. No. 101,773
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—270 **5 Claims**



1. A container and surgical aid for the storage, transportation, asepsis and surgical preparation of a medical device, comprising:

a base comprising a raised platform adapted for preparing tissue utilized in implantation of said medical device, said base having a first recessed area adapted by size and shape to receive and conform to a substantial portion of said medical device, and a second recessed area coplanar and contiguous with said first recessed area, said second area being adapted to permit the trimming of the said medical device; and

measuring means integrally disposed on the upper surface of said base longitudinally adjacent to the said first recessed area and laterally aligned in the same plane opposite to the said second recessed area;

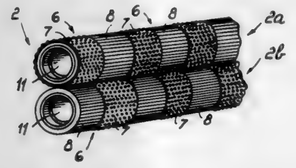
whereby the medical device resting in the first recessed area can be cut to a selected measurement, the said second recessed area permitting a cutting instrument to cut through the medical device as it remains in place.

4,288,067

MACHINE FOR FOLDING SHEETS

Vittorio Vigano', Via Delle Ginestre, 13, Zingonia, Province of Bergamo, Italy

Filed Dec. 26, 1978, Ser. No. 973,297
Claims priority, application Italy, Jan. 4, 1978, 19019 A/78
Int. Cl.³ B65H *45/18*
U.S. Cl. 493—420 **4 Claims**



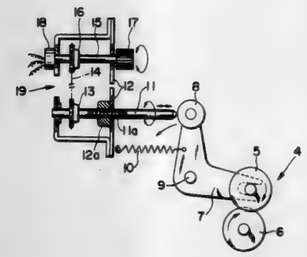
1. A machine for folding sheet material, comprising a stationary frame, at least one pair of rollers rotatably supported by said stationary frame and arranged parallel to each other, pressure members for biasing said rollers toward each other, a plurality of sleeves on said each rollers each having a coated portion of substantially hard and unelastic rubber-like material; each of said coated portions having a circumferential surface having a plurality of flexible bosses thereon, said coated portions being arranged axially spaced from one another on said rollers to define uncoated portions therebetween, wherein said coated portions and said uncoated portions have equal axial lengths and said flexible bosses have outer ends projecting radially above said uncoated portions, and wherein said coated portions of one of said rollers are axially offset with respect to said coated portions of the other of said rollers such that each of said coated portions on one of said rollers exactly faces a corresponding one of said uncoated portions on the other of said rollers.

4,288,068

SHEET FEEDING DEVICE

Hideo Hashimoto, Yokohama, and Tokuzo Kaneda, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Japan

Filed May 2, 1980, Ser. No. 146,089
Claims priority, application Japan, May 14, 1979, 54-62938[U]
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—125 **7 Claims**



1. A sheet feeding device comprising:

a sheet feeding member maintained in contact with the uppermost sheet of a stack of sheets for feeding one sheet after another in a sheet feeding direction;

sheet separating means including a pair of separating members comprising a feeding member for exerting a sheet conveying force on a sheet, and a braking separating member exerting a sheet arresting force on a sheet to stop the movement thereof or forcing same to move oppositely to the sheet feeding direction, said separating members being located downstream of said sheet feeding member with respect to the sheet feeding direction;

a speed adjusting mechanism including an adjusting member for suitably adjusting the sheet feeding speed;

a supporting member for journalling at least one of said feeding member and said braking separating member for movement toward or away from the other separating member; and

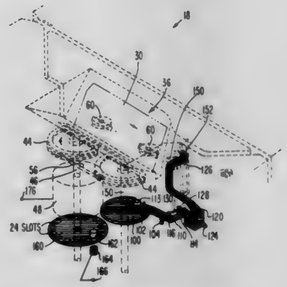
transmission means operative to move said supporting member in synchronism with the movements of said adjusting member of said speed adjusting mechanism to vary the spacing between said feeding member and said braking separating member.

4,288,069

CAM OPERATED DOCUMENT STOP FOR HIGH SPEED ITEM SORTER

Harry L. Wallace, Livonia, and John D. Thomas, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 29, 1979, Ser. No. 87,228
Int. Cl.³ B65H *9/06*
U.S. Cl. 271—245 **3 Claims**



3. A mechanism having a stop mode and a go mode for controlling the flow of documents through a hold and view station of a high speed sorting system, comprising:

a stop arm pivoted to rock between a go position allowing documents to pass and a stop position preventing documents from passing;

an actuator arm linked to said stop arm and pivoted to rotate about an axis between a first position urging said stop arm to its go position and a second position urging said stop arm to its stop position;

a cam linked to said actuator arm and pivoted to rotate about an axis and drive said actuator arm between its first and second positions;

drive means including a motor linked to said cam by a drive shaft to rotate said cam;

sensing means coupled to the drive shaft of the motor to provide a plurality of timing pulses, and

processing means responsive to said timing pulses to turn the motor off at a particular pulse count for a selected period to permit documents to leave the hold and view station;

said processing means turning the motor on after said selected period to enable the stop arm to return to the stop position.

4,288,070

CHUTE RETURN MECHANISM FOR A PHOTOCOPIER COLLATOR

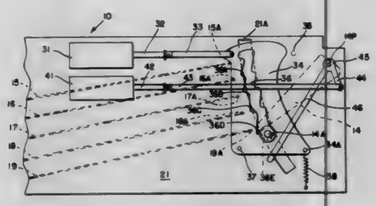
Fred R. Langner, 48 Hillcrest La., Williamsport, Pa. 17701

Continuation-in-part of Ser. No. 46,673, Jun. 8, 1979. This application Sep. 12, 1979, Ser. No. 75,135

The portion of the term of this patent subsequent to May 8, 1998, has been disclaimed.

Int. Cl.³ B65H *29/60, 39/11*

U.S. Cl. 271—296 **10 Claims**



1. A chute return mechanism for a collator adapted for use with an electrostatic photocopy machine, said collator including a plurality of bins mounted within a housing, a movable chute operatively positioned to receive photocopies from a discharge slot of said electrostatic photocopy machine and divert said photocopies to each of said plurality of bins, said movable chute being selectively pivoted from an initial position, indexing means for selectively pivoting said movable chute including an electrical connection adapted to receive a first pulse from said electrostatic photocopy machine indicating that a photocopy has been discharged therefrom, said pulse actuating said indexing means for selectively pivoting said movable chute to lower said movable chute for diverting photocopies to each successive bin, the improvement comprising:

return means for returning said movable chute including an electrical connection adapted to receive a second pulse from said electrostatic photocopy machine indicating the completion of a predetermined number of copies, said second pulse actuating a drive means for imparting motion to a lever means for returning said chute to its initial position for diverting a photocopy to a first bin of said plurality of bins, said indexing means includes a cam latch having a tortuous path with flanges for guiding a follower element connected to the movable chute to lower said movable chute in response to said first pulse.

4,288,071

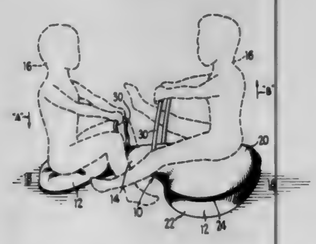
PNEUMATIC SEESAW APPARATUS

David A. Glickson, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 21, 1979, Ser. No. 106,281

Int. Cl.³ A63G *31/00*

U.S. Cl. 272—1 R **10 Claims**



1. Pneumatic seesaw apparatus, comprising: an elongated, hollow, unitary, air-tight, flexible vessel formed of two thin flexible sheets of material of substantially uniform thickness, said sheets joined along their edges and said vessel inflatable to contain a volume of gas under pressure and collapsible to flattened configuration when uninflated;

said vessel including a pair of relatively large volume, generally circular-shaped, hollow seats, at opposite ends and interconnected by an integrally formed, centrally disposed hollow tubular conduit portion having an internal volume substantially less than said circular-shaped seats and a transverse dimension substantially less than the diameter of said seats at the end, said circular-shaped seats having a diameter greater than their transverse dimension; and

each seat including an upper seating surface for supporting a person in an elevated position above a lower wall portion in contact with a floor or support, whereby a person on one seat may force said upper seating surface downwardly toward said floor to move air from said one seat into said conduit for elevating the upper seating surface of the opposite seat for raising another person sitting thereon.

4,288,072

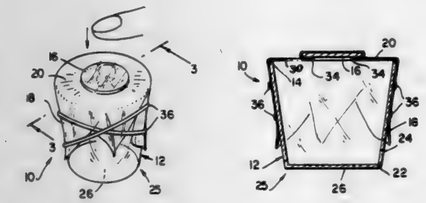
ILLUSION CREATING DEVICE

William Gewirtz, 2500 Johnson Ave., Bronx, N.Y. 10463

Filed Sep. 21, 1979, Ser. No. 77,724

Int. Cl.³ A63J *21/00*

U.S. Cl. 272—8 N **9 Claims**



1. An illusion creating device comprising:

a. a support structure having a support edge encircling an aperture;

b. a rigid flat element smaller in diameter than the diameter of said aperture; and

c. an elastic membrane means being supported on said support edge and being stretched over said flat element to a degree wherein a supporting segment of said membrane underlies at least a portion of said element and supports the same, said element being viewable through said membrane so as to appear to be disposed on top of said membrane and said aperture whereby pressing said stretched membrane means over said flat element causes said element to be released from said membrane creating the illusion that the flat element passed through said membrane.

4,288,073

EXERCISE BAR

Frank Petrachonis, and Felix Petrachonis, both of 411 W. Chester St., Shenandoah, Pa. 17976

Filed Dec. 19, 1979, Ser. No. 105,212

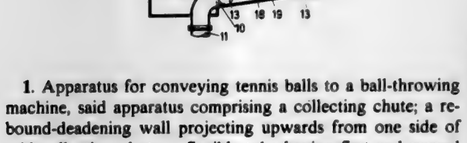
Int. Cl.³ A63B *13/00*

U.S. Cl. 272—123 **2 Claims**

1. An exercise bar for use by weight lifters in performing wide grip bench presses, said bar comprising:

a straight horizontally elongated relatively long central section of unifrom diameter, the length of said central section falling within the approximate range 30 to 39 inches;

two like straight downwardly and outwardly extending short inclined sections, the diameter of the inclined sections being equal to that of the central section, said inclined and central sections lying in a common plane, the uper end of each inclined section being integral with and directly adjacent to a corresponding end of the central section, each inclined section intersecting the central section with a like included angle, the included angle falling within the approximate range 151 to 160 degrees, each inclined section being adapted to be grasped by a corresponding one of the hands of the lifter when the bar is in use, the length of each inclined section falling within the approximate range 4 to 5 inches; and



two like straight horizontally elongated end sections of intermediate length falling along a corresponding horizontal line and lying in said common plane, one end of each end section being integral with and directly adjacent to the lower end of the corresponding inclined section, said end sections extending outwardly from the inclined sections, the diameter of the end sections being equal to that of the central section, each end section being adapted to have weights secured thereto when the bar is in use, the length of each section falling within the approximate range 12 to 16 inches.

4,288,074

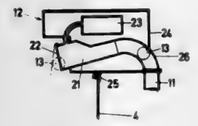
APPARATUS FOR CONVEYING TENNIS BALLS TO A BALL-THROWING MACHINE

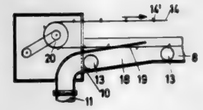
Norbert Kainz, Pyrkergasse 21, Vienna, Austria

Filed Jul. 14, 1980, Ser. No. 168,337

Int. Cl.³ A63B *61/00*

U.S. Cl. 273—29 A **6 Claims**





1. Apparatus for conveying tennis balls to a ball-throwing machine, said apparatus comprising a collecting chute; a rebound-deadening wall projecting upwards from one side of said collecting chute; a flexible tube having first and second ends and attached at said first end to said collecting chute at a withdrawal point thereof; a rigid conduit having first and second ends and attached at said first end thereof to said second end of said flexible tube; a hinged closure at said second end of said rigid conduit; and a device for generating underpressure connected laterally to said rigid conduit, whereby said underpressure in said rigid conduit normally holds said hinged closure in a closed position and tennis balls passing from said collecting chute into said flexible tube are conveyed therealong by said underpressure to said rigid conduit where a ball is capable of opening said hinged closure and thereby passing out of said rigid conduit to said ball-throwing machine; said apparatus being further characterised in that:

(a) said collecting chute is provided with an endless conveyor element passing around two sheaves and provided with spaced ball-entrainment means, a run of said conveyor element being spaced above a bottom of said collecting chute by a distance so as to engage balls in said chute;

(b) said collecting chute has a downwardly sloping section only at one end adjacent to said withdrawal point and is provided above said downwardly sloping section with at least two guide members adapted to deflect said balls downwards, said run of said conveyor element passing between said guide members;

(c) a double section ramp is fitted to the side of said chute remote from said one side from which said rebound-deadening wall projects upwards, a first section of said ramp rising upwards away from said collecting chute and a second section of said ramp descending from said first section in use to the level of a tennis court on which said chute stands; and

(d) said flexible tube is freely movable and extends to a ball-dispensing unit incorporating said device for generating underpressure and said rigid conduit and adapted to be fitted to said ball-throwing machine, said device for generating underpressure being attached to the upper wall of an obliquely downwardly sloping end piece of said rigid conduit, said end piece being provided at its lower end with said hinged closure and having a cross section greater than an upstream portion of said rigid conduit.

4,288,075

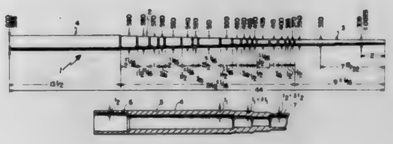
ULTRA LIGHT WEIGHT GOLF CLUB SHAFT

Eugene Kaugars, and George A. Ossola, both of Torrington, Conn., assignors to Brunswick Corporation, Skokie, Ill.

Filed Aug. 27, 1979, Ser. No. 69,796

Int. Cl.³ A63B *53/12*

U.S. Cl. 273—80 B **6 Claims**



1. A light weight, hollow metal, golf club shaft tapered with a step pattern, having approximately the same deflection feel as conventional weight golf club shafts having the same stiffness characteristics, having a grip section including a grip portion at one end and weighing not more than about 2.9 ounces.

said shaft exclusive of the grip portion having a thin, substantially uniform, wall thickness,

said shaft consisting of a metal having a yield strength after heat treatment of at least about 235000 lbs./in.^{2} and an ultimate strength of at least 265000 lbs./in.^{2},

said shaft being subject to a maximum bending moment in the grip section during play,

the said grip section comprising a portion having a wall thickness greater than the wall thickness of the rest of the shaft in order to resist said bending moment,

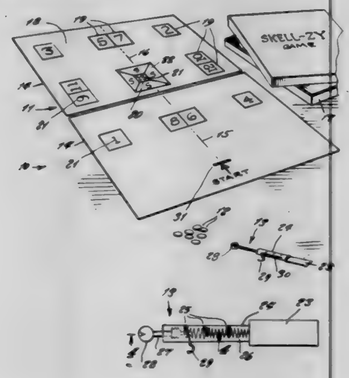
said portion of greater wall thickness comprising at least a part of the grip section, and wherein the entire grip section has the same outside diameter.

4,288,076

FOLDABLE GAMEBOARD AND DISC PLAYING PIECE APPARATUS

Ralph Oyague, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 15, 1979, Ser. No. 3,639
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—126 R **3 Claims**



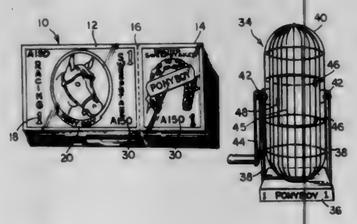
1. A game, comprising in combination, gameboard, a set of playing pieces for movement upon said gameboard, and a plurality of shooters for hitting said playing pieces to propel them over the gameboard said gameboard comprising a pair of foldable panels which together upon one side thereof include a printed playing field of numbered playing spaces around a central playing space, and a starting line at one end of said playing field, said playing pieces each being individually differently colored and including air lift means for causing each piece to lift upon being propelled by said shooter, each said shooter comprising a calibrated, transparent barrel having a hand grip attached to one end thereof, a compression coil spring inside said barrel and having one of its ends attached to one end of a stem, said stem projecting from the opposite end of said barrel, and a hitting plate attached to the other end of said stem for contacting said playing pieces, and a puller attached to said spring for retracting the same into operative position.

4,288,077

HORSE RACE LOTTERY GAME

William A. Rose, 1225 Eastland Dr., Lexington, Ky. 40505, and Scott D. Rose, 4510 N. Sherman Dr., Indianapolis, Ind. 46226

Filed Apr. 8, 1980, Ser. No. 138,523
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—246 **18 Claims**



1. A horse race lottery game for a plurality of players comprising in combination:

a racetrack having a plurality of laterally spaced starting positions and a finish line,

a plurality of game pieces adapted to be supported on the racetrack and movable therearound, there being less game pieces than number of players,

a plurality of groups of tickets selectable by the players and corresponding respectively to said game pieces wherein each said group comprises a plurality of tickets having first indicia thereon corresponding to only one of the game pieces, and have second indicia means thereon to enable each ticket to be distinguished from the other tickets of the same group,

a plurality of container means equal in number to the number of said groups of tickets for receiving the respective groups of tickets and enabling the tickets of each group to be shuffled and enabling one ticket of each group to be drawn at random from each container means thereby determining which of the players is assigned to each game piece during a subsequently run race of the game pieces,

means for determining the starting position of each of said game pieces, and

means for enabling the game pieces to move out of their starting positions and around the racetrack until all of the game pieces cross the finish line thereby determining the finishing placings of the game pieces assigned to the respective players selected by the container draw.

12. A method for playing a horse race lottery game comprising:

providing a racetrack having a plurality of starting positions and a finish line,

providing a plurality of game pieces, there being less game pieces than players playing the game,

providing a plurality of groups of tickets corresponding respectively to the game pieces wherein each group comprises a plurality of tickets having indicia corresponding to only one of the game pieces and having indicia enabling each ticket to be distinguished from the other tickets of the same group,

each player selecting one or more tickets of his choice and placing the selected tickets of each group in a separate container such that the selected tickets are stored in containers pertaining to the respective game pieces,

shuffling the tickets in their respective containers,

drawing at random a single ticket from each container thereby assigning a player to each of the game pieces,

determining the starting position of each of the game pieces and moving the game pieces to the respective starting positions on the racetrack, and

causing the game pieces to move out of their starting positions and around the racetrack until all of the game pieces have crossed the finish line thereby determining the finishing placings of the game pieces assigned to the winners of the container draw.

4,288,078

GAME APPARATUS

Julio I. Lugo, B. Boca - Buzon B106, Guayanilla, P.R. 00656

Filed Nov. 20, 1979, Ser. No. 96,207
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—264 **1 Claim**

1. A game for two players having playing rules and a scoring system, and comprising a board having a field consisting of

a. a first regular octagonal figure,

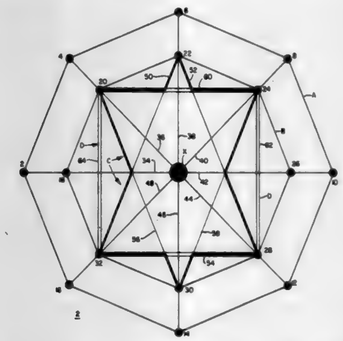
b. a second regular octagonal figure concentric with and within the first octagonal figure, with its sides parallel respectively to the sides of the first octagonal figure,

c. radial lines extending through each aligned pair of corners of the two octagonal figures, all of said lines meeting at the common center of the two figures,

d. each corner point of the two octagonal figures and the center point of intersection of the radial lines being distinctively marked,

e. a six-pointed star within the inner octagonal figure, such star being formed by two oppositely extending isosceles triangular figures the apices and the ends of the bases of which are at opposite corner points of the inner octagonal figure,

f. a square within the inner octagonal figure, two sides of which are formed by the bases of the two triangles of the six-pointed star and the other two sides of which join the end points of said bases,



g. a first set of five counters to be used by one player, and a second set of five counters visually differentiated from the first set to be used by another player,

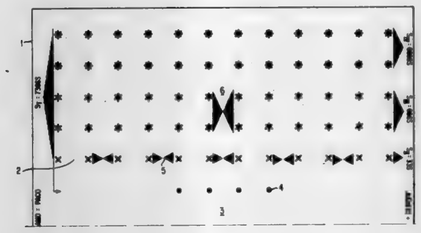
h. the ends of the base of each of the triangular figures, the two corner points of the first octagonal figure which are aligned with said ends, and the corner point of the first octagonal figure between said two corner points providing initial positions for each set of counters from which the counters are moved in either direction along the radial lines of the field.

4,288,079

GAME APPARATUS

Jean-Claude M. J. Belony, 2803 Keith St., Marlow Heights, Md. 20031

Filed Aug. 16, 1979, Ser. No. 67,192
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—273 **19 Claims**



1. A game apparatus comprising:

(a) at least ten distinct playing pieces each bearing means to indicate distinctness;

(b) a game board including at least one planar playing section, said at least one playing section including a first subsection having a first plurality of one-variable playing piece receiving means for receiving one playing piece, a second subsection having a second plurality of spaced apart two-variable playing piece receiving means for receiving two playing pieces, a third subsection having a third plurality of spaced apart three-variable playing piece receiving means for receiving three playing pieces, and a fourth subsection having a fourth plurality of spaced apart four-variable playing piece receiving means for receiving four playing pieces; and

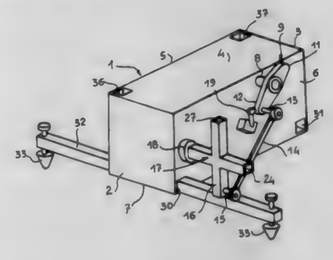
(c) chance means for determining which of said pieces may be played and in which of said subsections said pieces may be played.

4,288,080

APPARATUS FOR TARGET PRACTICE

Jean C. Laporte, and Jean M. Laporte, both of Biot, France, assignors to S.A.R.L. Laporte Cibelec, Antibes, France

Filed Dec. 19, 1979, Ser. No. 105,241
Int. Cl.³ F41J *7/00*
U.S. Cl. 273—406 **3 Claims**



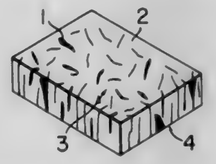
1. Apparatus for target practice, comprising a body enclosing a motor that drives a shaft that supports a target, means for mounting the body on a support selectively in either of two positions spaced apart from each other by 90°, said shaft extending from the body horizontally in one said position and vertically in the other said position, said shaft having a perpendicular cross arm, and means selectively to mount the target either on said shaft or on said cross arm.

4,288,081

GASKETS FOR ELECTRIC SHIELDING

Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,482
Claims priority, application Japan, Apr. 28, 1979, 54-52915
Int. Cl.³ H05K *9/00*; H01B *1/06*; F16J *15/14*
U.S. Cl. 277—1 **2 Claims**



2. A method for the preparation of a gasket for electric shielding which comprises the steps of

(a) admixing flakes of an electrically conductive material into an electrically insulating rubbery elastic material in a plastic condition to form a composite dispersion of the flakes in the rubbery elastic material as the matrix,

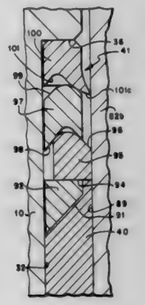
(b) subjecting the thus obtained composite dispersion to shearing deformation on one direction so as that the flakes are oriented in the matrix to have the flat surfaces thereof substantially in parallel with the direction of the deformation,

(c) hardening the rubbery elastic material in a plastic condition to fix the flakes as dispersed and oriented in the matrix, and

(d) slicing the composite dispersion with the thus hardened

rubbery elastic material in a plane substantially not in parallel with the direction of the deformation.

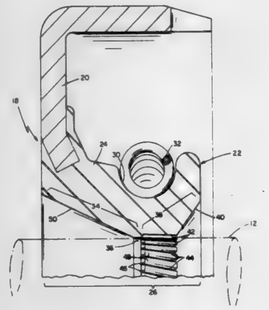
4,288,082
WELL SEALING SYSTEM
John R. Setterberg, Jr., Richardson, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Apr. 30, 1980, Ser. No. 145,328
Int. Cl.³ F16J *15/28*
U.S. Cl. 277—125 **17 Claims**



1. A well sealing system for blocking fluid flow through an annulus partially defined by the exterior of a first tubular means and the interior of a second tubular means when the first tubular means is disposed within the second tubular means, comprising:
a. a production well packer attached near one end of the first tubular means and engageable with the interior of the second tubular means;
b. a plurality of packing rings carried on the exterior of the first tubular means and engageable with the interior of the second tubular means;
c. a metal seal ring carried on the exterior of the first tubular means;
d. means for compressing and radially expanding the metal seal ring to contact the interior of the second tubular means when the first tubular means is disposed therein;
e. the means for compressing and radially expanding the metal seal ring comprising a guide sleeve slidably carried over the other end of the first tubular means;
f. a shoulder on the exterior of the first tubular means and the metal seal ring disposed between the guide sleeve and the shoulder; and
g. the outside diameter of the guide sleeve sized to engage a first restriction within the second tubular member preventing longitudinal movement of the guide sleeve therethrough and compressing the metal seal ring between the shoulder and the guide sleeve.

4,288,083
HYDRODYNAMIC SHAFT SEAL
Karl Braconier, Bridgewater, N.H., assignor to International Packings Corporation, Bristol, N.H.
Filed Feb. 7, 1980, Ser. No. 119,297
Int. Cl.³ F16J *15/32, 15/40*
U.S. Cl. 277—134 **4 Claims**

1. A shaft seal for use between a rotating shaft and a surrounding stationary housing under both static and dynamic conditions, said housing having an opening extending therethrough and receiving said shaft therein
said shaft seal comprising
an annular resilient seal body adapted to be fixed relatively to said housing in a position encircling said shaft
said resilient seal body having a central axis coincident with that of said shaft and comprising
an integral radially inwardly extending flexible inner portion terminating in a generally annular sealing face for sliding engagement with the periphery of said shaft, the liquid axial side of said seal body being exposed to a liquid to be sealed against leakage, and
an outer annular spring-retaining groove located radially outwardly of said sealing face, and
an annular coil spring mounted in said groove providing a radially inwardly directed force biasing said sealing face radially inwardly toward said shaft
said sealing face including
a continuous annular static portion with a narrow static sealing surface adjacent the other side of the seal for static sealing against said shaft, and
a dynamic portion adjacent the liquid side of said seal body, including
an annular liquid side surface on said liquid side of said seal body
an imperforate annular outer surface of greater diameter than that of said static sealing surface, spaced radially

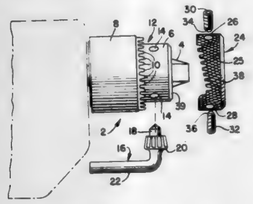


outwardly from said shaft and extending axially from said static sealing surface toward said liquid side of said seal body and intersecting said liquid side surface, said outer surface having a plurality of peripherally spaced vanes extending radially inwardly and extending axially at an angle to the axis of said seal body,
said outer surface and said vanes forming chambers therebetween open to said liquid side of said seal body,
said spring force
being effective under static conditions to urge said static sealing surface into contact with said shaft to prevent escape of liquid from said liquid side along said shaft, and
being effective under high speed dynamic conditions to balance the radially outwardly directed hydrodynamic force against said outer surface and maintain both said static sealing surface and the inner surfaces of said vanes spaced radially outwardly from said shaft and to control said spacing to prevent escape of liquid from said liquid side along said shaft.

4,288,084
CHUCK COLLAR
Robert H. Newberry, 4502 Havre Way, Pensacola, Fla. 32505
Filed Oct. 5, 1979, Ser. No. 82,285
Int. Cl.³ B23B *31/06*
U.S. Cl. 279—60 **18 Claims**

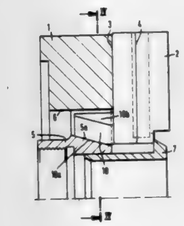
8. A chuck assembly including:
(a) an outer cylinder with a set of teeth circumferentially arranged around one end thereof;
(b) an inner cylinder rotatably mounted within said outer cylinder, said inner cylinder having at least one chuck key pivot hole formed therein adjacent the set of teeth on said outer cylinder;
(c) a jaw mechanism mounted within said inner cylinder and

movable between fully open and fully closed positions upon relative rotation of said inner and outer cylinders;
(d) a chuck key means for providing torque to rotate said inner cylinder relative to said outer cylinder, said chuck key means including a pivot pin and a bevel gear which may be brought into registry with said set of teeth on said outer cylinder by inserting said pivot pin into one of said chuck key pivot holes; and
(e) an annular member shaped to releasably fit over said inner cylinder, said annular member having a plurality of teeth circumferentially arranged around one and thereof



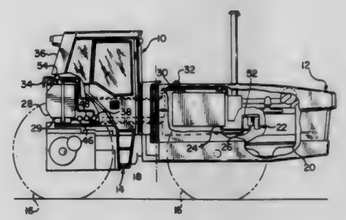
and a securing means for fixing said annular member simultaneously against either clockwise or counterclockwise rotation relative to said inner cylinder and for spacing said annular member from said outer cylinder in a position such that a bladed instrument may be used to simultaneously engage the teeth in said plurality of teeth on said annular member and the teeth in said set of teeth on said outer cylinder to provide a torque for rotating both said inner cylinder and said annular member relative to said outer cylinder when the bladed instrument is turned.

4,288,085
FORCE ACTUATED JAW CHUCK
Herbert Antoni, Grevenbroich, Fed. Rep. of Germany, assignor to Paul Forkardt Kommanditgesellschaft, Düsseldorf, Fed. Rep. of Germany
Filed Jan. 28, 1980, Ser. No. 116,359
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903904
Int. Cl.³ B23B *31/16*
U.S. Cl. 279—121 **6 Claims**



1. In a powered-operated jaw chuck, formed as a hollow chuck, with clamping jaws radially displaceably guided in a chuck body and adapted for external and internal clamping, each of the clamping jaws being actuatable, via a common chuck piston movable axially through a bore in the chuck body, by means of a separate wedge hook transmission, respectively, each said wedge hook transmission comprising wedge surfaces inclined in an axial direction and formed in a circumferential direction in pairs on the chuck piston and on a wedge hook, each said wedge hook being formed T-shaped in cross section with a web and has a radially innermost base surface which forms a continuous wedge surface adapted for the internal clamping cooperating with a wedge surface of the chuck piston, said wedge hook has other wedge surfaces laterally adjacent to the web respectively, said chuck piston is formed with ledge-shaped wedge pieces, said wedge pieces extend in the circumferential direction of said chuck piston substantially up to said web of the wedge hook, said wedge pieces cooperate respectively with said other wedge surfaces respectively of said wedge hook for the external clamping, the improvement wherein
said chuck body has an uninterrupted cylindrical guide surface defining said bore of the chuck body as a completely closed bore, said chuck piston is disposed in said bore,
each of said wedge pieces has a partial cylindrical outer surface, said partial cylindrical outer surface of each said wedge pieces is operatively supported in the bore of the chuck body against said cylindrical guide surface,
the clamping jaws each have a radially inwardly facing radially innermost free surface and a radially extending axially facing rear side, said rear side has a radially-inner end, said web constitutes means for connecting said wedge hooks, respectively, to said rear side at said radially-inner end of said rear side, with said wedge hooks formed on and arranged at the rear side at said radially-inner end of the rear side of a corresponding of said clamping jaws, respectively, spaced from said radially inwardly facing radially innermost free surface of said clamping jaw,
each said wedge hooks formed on said clamping jaws respectively has a radial thickness between said wedge surfaces thereof greater than the radial thickness of said ledge-shaped wedge pieces respectively of said chuck piston.

4,288,086
FUEL TANK ARRANGEMENT FOR A TRACTOR
Harold C. Oban, Darien, and Charles M. Peterson, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 22, 1980, Ser. No. 114,435
Int. Cl.³ B60K *15/06*
U.S. Cl. 280—5 A **7 Claims**



1. A fuel tank arrangement for a tractor having fuel stored in an auxiliary tank and a main tank, said tanks being spaced apart in said tractor with said fuel supplied to the engine of said tractor through a primary fuel filter by a fuel pump, said arrangement comprising, in combination:
a first line fluidly connecting said main tank to said fuel pump;
a main vent fluidly connecting the forwardmost portion of the upper section of said main tank to the atmosphere;
an auxiliary vent fluidly connecting the rearwardmost portion of the upper section of said auxiliary tank to the atmosphere;
a supply system whereby all of the fuel passes through said main tank to said fuel pump, said system including
a second line fluidly connecting the bottom section of said auxiliary tank to said forwardmost portion of said top section of said main tank;
first means fluidly interposed in said second line for providing fuel flow from said auxiliary tank to said main tank

until said fuel in said main tank reaches a first predetermined volume;

second means fluidly interposed in said second line between said first means and said auxiliary tank for removing foreign matter from said fuel before it passes through said first means; and

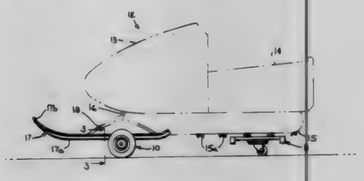
third means fluidly connected to said second line between said first means and said main tank, and fluidly connected to said rearwardmost portion of said upper section of said auxiliary tank, for venting said second line to said atmosphere when a vacuum occurs in said second line, and for maintaining the exclusivity of said fuel flow from said first means to said main tank.

4,288,087

SIMPLIFIED SNOWMOBILE SUPPORT DOLLY

Robert I. Morrison, Delavan, Wis., assignor to MPD Enterprises of Delavan, Inc., Delavan, Wis.

Filed Jul. 25, 1979, Ser. No. 60,485
Int. Cl.³ B62B *1/10*
U.S. Cl. 280—47.32 **1 Claim**



1. A single-wheeled dolly adapted to support a snowmobile having a longitudinally extending, endless drive track including a plurality of transverse traction ribs, said dolly comprising:

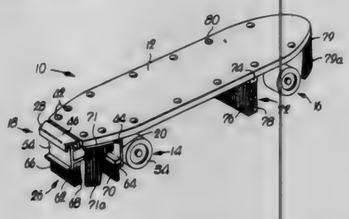
a pair of spaced apart transverse supports having a length generally similar to the width of said track; at least one elongated member interconnecting said transverse supports; and only one wheel, said wheel comprising a caster wheel pivotally mounted to said elongated member intermediate said transverse members, said dolly adapted to support said track with said transverse supports extending parallel to said ribs, whereby said dolly is prevented from sliding longitudinally along said track by engagement of one of said ribs with one of said transverse supports.

4,288,088

BRAKE ASSEMBLY FOR SKATEBOARD

William H. Harrison, P.O. Box 8863, Kansas City, Mo. 64109

Filed Apr. 6, 1979, Ser. No. 27,872
Int. Cl.³ A63C *17/14*
U.S. Cl. 280—87.04 A **5 Claims**



1. A brake assembly for a skateboard having a rider-supporting board and spaced front and rear wheel assemblies secured to said board, said brake assembly comprising:

a brake plate;

means shiftably supporting said plate adjacent one of said wheel assemblies for movement of the plate between a braking position wherein the plate is in frictional engagement with a wheel of said one assembly, and a non-braking position wherein the plate is out of engagement with said wheel;

means for biasing said plate to the non-braking position thereof;

operating means including a pedal disposed for depression by a rider standing on said board and means operatively coupling said pedal and plate for movement of the plate to the braking position thereof when said pedal is depressed; and

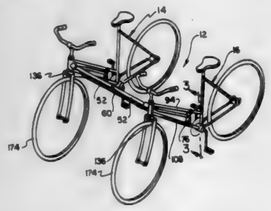
at least one ground-engaging brush element secured to said coupling means adjacent and in front of said wheel for clearing debris ahead of the wheel and for, when said pedal is depressed, assisting in the braking of said skateboard.

4,288,089

ATTACHMENT APPARATUS FOR SIDE-BY-SIDE BICYCLES

Henry F. Thiessen, R.R. #1, 405 W. Port Ave., Buhler, Kans. 67522

Filed Jul. 30, 1979, Ser. No. 61,766
Int. Cl.³ B62K *13/06*
U.S. Cl. 280—209 **9 Claims**



3. An attachment apparatus for interconnecting side-by-side bicycle members, comprising:

(a) a main support coupling means to interconnect said bicycle members, including a horizontal connector assembly and an inclined connector assembly connected between said horizontal connector assembly and respective ones of said bicycle members;

(b) a steering coordinator means connected between a steering mechanism on each of said bicycle members to achieve conjoint movement of front wheel members on each of said bicycle members;

(c) said horizontal connector assembly includes a steering post connector assembly mounted on each of said bicycle members and interconnected to each other by a connector rod assembly;

(d) said connector rod assembly includes an outer connector tube member which allows independence rotational movement of said bicycle members;

(e) said steering post connector assembly includes a connector member mounted against each respective steering housing of each of said bicycle members by clamp members;

(f) each of said connector members having a laterally extended horizontal tube portion for connection to said connector rod assembly;

(g) said connector rod assembly includes said outer connector tube member secured at outer ends to respective ones of said horizontal tube portions and an inner main rod assembly connected to said outer connector tube member to maintain the spaced relationship of said bicycle members; and

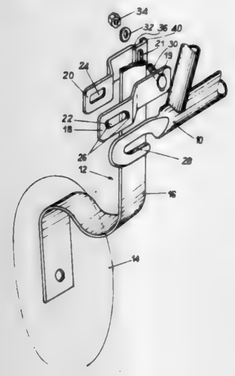
(h) said outer connector tube member constructed in half sections to permit relative rotational movement therebetween.

4,288,090

ELASTIC LATERAL SUPPORT WITH SUPPORTING WHEEL FOR CHILDREN'S BICYCLES

Franz Müller, Eichelhäherstrasse 1, 6200 Wiesbaden, and Helmut Müller, Brunnenstrasse 63, 6231 Liederbach, both of Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,678
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850568
Int. Cl.³ B62H *1/12, 7/00*
U.S. Cl. 280—293 **12 Claims**



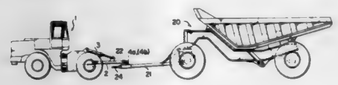
1. An elastic lateral support with supporting wheel for children's bicycles comprising a single resilient part releasably attachable at one end to the frame of the bicycle and having said supporting wheel at the other end, said lateral support in the mounted state at a tilting moment of 15 Nm exhibiting an elastic deflection of at least 20 mm and being deflectable up to the contact of the resilient part or of the supporting wheel on the frame.

4,288,091

APPARATUS FOR COUPLING A TRACTOR, A DUMP TRAILER AND A DUMP TRUCK

Haruhiko Umeda, Yokohama; Hidehiro Takeuchi, Kawasaki; Masaru Uenoyama, Ayase; Kotoshige Ishizuki, Yokohama; Hiroyuki Ando, Kawasaki, and Hideo Hara, Tokyo, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 13, 1978, Ser. No. 951,271
Claims priority, application Japan, Oct. 13, 1977, 52-136263[U]
Int. Cl.³ B60D *1/04*
U.S. Cl. 280—415 A **1 Claim**



1. An apparatus for coupling a tractor, a dump trailer and a dump truck, comprising:

an arm member pivotally connected to said tractor, said arm member being pivotable in the vertical direction;

first coupling means provided at the leading end of said arm member, said first coupling means comprising a pair of grippers arranged opposite to each other, each having a partial-spherical engaging hole formed therein at the opposing surfaces thereof, spring means mounted between said grippers so as to normally urge said pair of grippers away from each other at the leading ends thereof, cotter means engageable with said grippers when said grippers are closed thereby maintaining said grippers in the closed condition, and cylinder means coupled to said cotter means for moving said cotter means to engage and disengage said cotter means and said grippers;

a draw bar pivotally connected to said dump trailer, said draw bar having second coupling means formed thereon, said second coupling means comprising a trunnion having a partial-spherical surface adapted to be engageable with the engaging holes of said grippers to enable said dump trailer to be drawn by said tractor and rotate vertically and horizontally with respect thereto;

third coupling means formed on said draw-bar, said third coupling means comprising at least one hole formed in the leading end portion of said draw bar; and

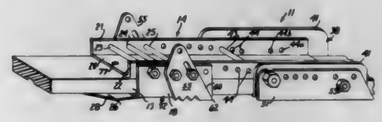
fourth coupling means pivotally mounted on a rear axle of said dump truck said fourth coupling means being adapted to engage with said third coupling means to enable said dump trailer to be drawn by said dump truck after disconnecting said dump trailer from said tractor wherein said fourth coupling means comprises a coupler mounted on the rear axle of said dump truck so as to pivot in the vertical direction, said coupler having a hole formed therein at the trailing end portion thereof, a pair of damper means for supporting said coupler approximately in horizontal position, and fluid cylinder means mounted on said coupler means, said fluid cylinder means having a coupler pin connected with a piston rod thereof, said coupler pin being adapted to be inserted into said at least one hole of said third coupling means and said coupler so as to connect said dump trailer with said dump truck.

4,288,092

SKI ACCESSORY

Louis E. Mukri, 13000 Roselle Ave., Hawthorne, Calif. 90250

Filed Jan. 22, 1979, Ser. No. 5,151
Int. Cl.³ A63C *5/00*
U.S. Cl. 280—605 **5 Claims**



1. An accessory device for a ski having a forward leading end comprising:

a channel member having a web portion to extend under said ski and upwardly extending side portions to straddle the sides of said ski,

a chassis member to extend over said ski,

means for attaching said side portions of said channel member to said chassis member, and

a resilient deflector plate secured at the rear thereof to the bottom of said web portion and extending upwardly and forwardly to engage the forward end thereof against the bottom of said ski and to yieldably hold said chassis member against the top of said ski,

said accessory device also comprising:

a traction member,

means pivotally supporting said traction member on said chassis member for trailing movement over the snow during forward movement of said ski and for downward swinging movement to penetrate the snow upon rearward movement of said ski, and

means for limiting said downward movement of said traction member,

said traction member comprising a channel element having a web section to extend under said ski and side sections to straddle said sides of said ski,

said deflector plate and said web section supporting the

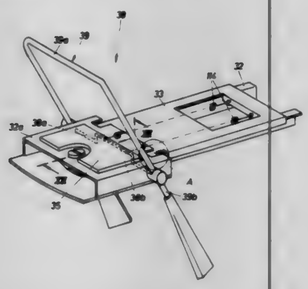
intermediate bottom portion of said ski above the surface of the snow during forward movement of said ski.

4,288,093

SOLE-SUPPORT MECHANISM FOR THE SOLE OF A SKI BOOT

Erwin Krob, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to TMC Corporation, Switzerland

Filed Jul. 6, 1979, Ser. No. 55,337
Claims priority, application Austria, Jul. 7, 1978, 4928/78
Int. Cl.³ A63C *11/00*
U.S. Cl. 280—605 **6 Claims**



1. A sole support mechanism for the sole of a ski boot secured to a ski between a toe jaw and a heel holder, comprising:
guide rail means adapted to be mounted on said ski;
guide plate means mounted for reciprocal movement on said guide rail means, said heel holder being fixedly mounted on said guide plate means for movement therewith, said heel holder including means adapted to engage and hold said sole of said ski boot;
stepping plate means on said guide plate means for supporting the heel portion of the sole of said ski boot during changes in the spacing between said toe jaw and said heel holder in response to a flexing of said ski with no relative longitudinal movement occurring between the sole of said ski boot and said stepping plate means;
a ski brake pivotally secured about a pivot axle to said guide rail means adjacent said stepping plate means, said ski brake having an offset axle portion located between the lateral edges of said ski;
and resilient means operatively connected to said guide plate means and said guide rail means for urging said guide plate means toward said toe jaw, said resilient means being a tension spring connected to and extending between said offset axle portion and said guide plate means to effect both a thrust compensation and also an erecting of said ski brake.

4,288,094

SAFETY SKI BINDING

Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Feb. 21, 1979, Ser. No. 13,473
Claims priority, application Austria, Feb. 20, 1978, 1192/78
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—623 **5 Claims**



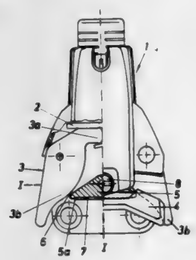
1. A safety ski binding, comprising:
base plate means adapted to be fixedly secured to the upper surface of a ski, said base plate means having first and second abutment members thereon longitudinally spaced from one another in a direction parallel to the longitudinal axis of said ski;
toe binding means adpteed to releasably engage the toe portion of a ski boot and first support means for supporting said toe binding means on said base plate means for movement relative to said base plate means in a direction parallel to said longitudinal axis of said ski, said toe binding means having release means thereon which includes a first spring support member movable with said toe binding means and a first release spring, said first release spring extending between said first abutment member and said spring support;
heel binding means adapted to releasably engage the heel portion of said ski boot and second support means for supporting said heel binding means on said base plate means spaced longitudinally from said toe binding means and for movement relative to said base plate means in a direction parallel to said longitudinal axis of said ski, said heel binding means having second release means thereon which includes a control cam movable with said heel binding means and a second release spring, said second release spring extending between said second abutment member and said control cam;
first stop means for limiting the movement of said heel binding means away from said toe binding means;
first resilient means for urging said heel binding means toward said toe binding means;
second resilient means for urging said toe binding means towards said heel binding means for assuring at least a movement of said heel binding means into engagement with said first stop means against the urging of said first resilient means in response to an insertion of said ski boot between said toe binding means and said heel binding means; and
at least one of said first and second release springs being located on the side of the related abutment member towards the tip of the ski for facilitating, during a longitudinal movement of at least one of said toe binding means and said heel binding means relative to said ski during skiing, a reduction of the amount of spring force in said at least one of said first and second release springs that is being utilized to releasably hold said ski boot in said toe binding means and in said heel binding means to thereby facilitate an easy release of said ski boot from between said toe binding means and said heel binding means.

4,288,095

SAFETY SKI BINDING

Heinz Wittmann, and Alois Himmetsberger, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Sep. 6, 1979, Ser. No. 73,059
Claims priority, application Austria, Sep. 8, 1978, 6522/78
Int. Cl.³ A63C *9/10*
U.S. Cl. 280—625 **7 Claims**



1. A safety ski binding, comprising:

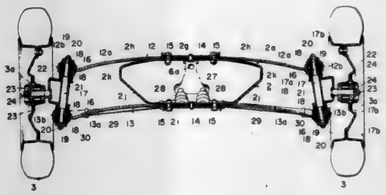
a binding housing mounted on the upper surface of a ski;
symmetrically arranged, two-arm sole holders pivotal between a sole holding position and a sole releasing position about ski-fixed axes which are arranged perpendicularly with respect to said upper surface and which each rest with one arm thereof against a side edge of the sole of a ski boot and a second arm thereof against one end of a resiliently biassed slide means whereby each of said sole holders is pivotal against the biassing force of said slide means, said resiliently biassed slide means effecting an urging of said sole holders toward said sole holding position;
sole hold-down means and pivotal support means for freely pivotally securing said sole hold-down means to said binding housing and for movement between first and second positions, said sole hold-down means having a downwardly facing surface adapted to engage an upwardly facing surface on said sole of said ski boot, said sole hold-down means further having an upright surface means adapted to engage a side edge of said sole of said ski boot and being movable with said sole hold-down means about said pivotal support means between said first and second positions therefor, said hold-down means being urged from said second position to said first position in response to at least one of said sole holders being urged by said resiliently biassed slide means from said sole releasing position to said sole holding position.

4,288,096

FRONT WHEEL SUSPENSION MECHANISM FOR VEHICLE

Akito Enokimoto, Asaka; Toshio Tsuchiya, Kawagoe; Tatsuo Masuda, Niiza, and Suwaji Takano, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,628
Claims priority, application Japan, Oct. 13, 1978, 53/125947
Int. Cl.³ B60G *3/18*
U.S. Cl. 280—694 **5 Claims**



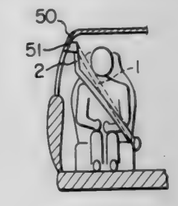
1. A front wheel suspension mechanism for a vehicle having two front wheels and at least one rear wheel, comprising:
two transverse leaf springs mounted on a front portion of a frame of said vehicle;
said leaf springs being vertically spaced apart;
each said leaf spring having a mounting hole formed in each end portion thereof;
substantially vertically disposed king pins for supporting horizontal axles of said front wheels, said king pins being fitted in substantially upright positions between said vertically spaced apart leaf springs with the upper end portions of said king pins extending through said mounting holes of the upper one of said leaf springs and the lower end portions of said king pins extending through said mounting holes of the lower one of said leaf springs; and
elastic members interposed between both end portions of said leaf springs and said end portions of said king pins, said elastic members being adjustably compressed axially of said king pins to elastically connect said leaf springs and said king pins.

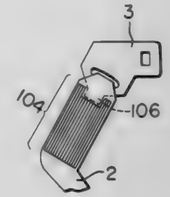
4,288,097

SHOULDER BELT FOR SEAT BELT DEVICE

Takeo Ueda, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,891
Claims priority, application Japan, May 12, 1978, 53-62665[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **2 Claims**





1. A seat belt device comprising a belt for constraining the upper half of the body of a seat occupant, means for connecting an upper end of the belt to a side roof of a vehicle body, the connecting means comprising a tongue having an opening therein for attaching the tongue to the end of the belt, and tongue receiving means attached to the side roof for connecting the tongue thereto, and a length of the belt adjacent to the upper end of the belt being stiffened by a double layer sewn structure, the tongue having means adjacent to said opening projecting slightly into said double layer sewn structure for preventing said end of the belt from rotating with respect to said tongue, said double layer sewn structure supporting said length at an angle relative to a lower portion of the belt so that the belt does not bear against the neck or face of the seat occupant, and said double layer sewn structure further being flexible enough so that the belt may extend straight from the connecting means when the belt is pulled by the occupant in an emergency.

4,288,098

PISTON RETURN STOP DEVICE FOR TENSIONING DEVICE OF SEAT BELT

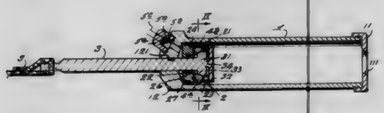
Noboru Tsuge, Kariya; Satosi Kuwakado, Aichi; Toshihiro Takei; Toshiaki Shimogawa, both of Okazaki, and Seiichi Chiba, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 6, 1979, Ser. No. 45,921
Claims priority, application Japan, Jun. 7, 1978, 53-77426[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—806 **20 Claims**

1. A seat belt tensioning device comprising:
a cylinder,
a piston slidably disposed within said cylinder,
said piston having a hole along the axis thereof and a plurality of guide grooves extending in the radial direction of said piston and communicating with said hole,
a tapered member having opposite ends and an inclined

surface rising toward one end, the other end being adapted for connection to a seat belt, said tapered member being slidably disposed within said hole,

connecting means connecting said piston and said one end and breakable by a predetermined tension force exerted on said other end of said tapered member,



stopper members respectively disposed in said piston guide grooves so as to be slidable in the radial direction of said piston, the inner surface of said stopper members being in contact with said inclined surface of said tapered member, the outer ends of said stopper members being in slidable contact with an inner wall of said cylinder, and

piston operating means for sliding said piston within said cylinder.

4,288,099

ADHESIVE CONNECTION OF A BODY HAVING A BASE PLATE WITH A SKI

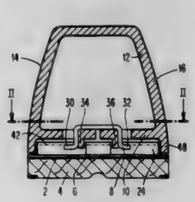
Günter Schwarz, Steinacherstr. 67, 8804 Au, Switzerland

Filed Jan. 18, 1979, Ser. No. 4,913

Claims priority, application Switzerland, Jan. 26, 1978, 836/78

Int. Cl.³ A63C *11/00*

U.S. Cl. 280—817 **12 Claims**



1. An adhesive connection between a body having a base plate and a ski, especially with the scoop-like tip portion of the ski, comprising:

a bendable attachment plate having an adhesive surface for securing the plate to the ski;

at least one attachment device for releasably connecting the attachment plate to the base plate of the body;

said base plate having at least one substantially tongue-shaped part, said tongue-shaped part being part of the base plate of said body and extending essentially parallel to a base surface of the body;

said attachment device being connected to an intermediate region of the attachment plate and to said at least one tongue-shaped part; and

said tongue-shaped part being narrower than the base surface of the body and being located in spaced relation from the attachment plate so that it is resiliently movable in the direction of said attachment plate.

4,288,100

BUCKLE AND STRAP AND METHOD FOR THE MANUFACTURE THEREOF, ESPECIALLY HAND STRAP AND BUCKLE FOR A SKI STICK

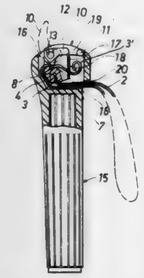
YrjöKuninkaantie Aho, 02160 Westend, Finland

Filed Dec. 29, 1978, Ser. No. 974,617

Claims priority, application Finland, Dec. 30, 1977, 773985

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—821 **7 Claims**



1. Wrist strap and buckle for a ski stick located in a cavity space of a knob-shaped upper part of a handle at one end of the stick, the buckle being a separately removable member contained in the cavity space and comprising a frame portion having spaced-apart side faces and a transverse beam extending therebetween in which one end of the wrist strap is permanently secured and a locking lever pivotally journalled in said side faces over said transverse beam, a free end of the wrist strap being lockable at a desired point between a locking cam of said locking lever and said transverse beam, and an intermediate portion of the wrist strap extending exteriorly of the handle through a slot leading from the cavity space.

4,288,101

SKI STICK HANDLE

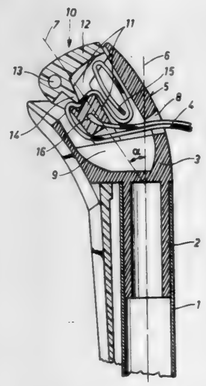
Yrjö Aho, Westend, Finland, assignor to Exel Oy, Finland

Filed Feb. 21, 1979, Ser. No. 13,450

Claims priority, application Finland, Feb. 20, 1978, 780552

Int. Cl.³ A44B *11/00*; A63C *11/22*

U.S. Cl. 280—821 **4 Claims**



1. A handle for a ski stick comprising a cylindrical fitting element (2, 2') for mounting on the upper end of a straight ski stick (1), a curved extension (3) having a convex side wall (5, 5'), said extension being secured to and extending up above said fitting element, a cavity space (9) within the curved extension,

gripping means (11, 12) for a wriststrap disposed within the cavity space (9), and an outlet opening (8) for said wriststrap in the convex side wall (5, 5') of the curved extension, said gripping means being formed as a buckle having a frame portion (11) and a lever portion (12) pivotably journalled to the frame portion (11) so as to lock a free end of said wriststrap therebetween, said lever portion (12) forming a cover for the upper end of said cavity space (9), the outlet opening (8) for said wriststrap (4) being located immediately adjacent to the ski stick center line (6), the gripping means (11, 12) being located on the other side of said center line (6), the outer surface of said convex side wall (5, 5') extending above said outlet opening (8) so as to provide a high face surface, the center axis (7) of the curved extension (3) forming an angle (α) which is between 15° to 40° with respect to the center line (6) of the straight stick portion.

4,288,102

EXTENSIBLE SKI POLES WITH HAND GUARD GRIP

Paul C. Ramer, Golden, Colo., assignor to Alpine Research, Inc., Golden, Colo.

Filed Mar. 12, 1979, Ser. No. 19,829

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—823 **6 Claims**



1. A pair of ski poles, each ski pole comprising, in combination:

a hand grip having a gripping portion and a hand guard operatively connected to and extending a predetermined parallel distance along said gripping portion, said hand guard terminating near the uppermost portion of said gripping portion, and a downwardly curving arresting spur extending at an acute angle downwardly away from said hand guard and said grip;

a shaft operatively connected to said hand grip; and

a basket operatively connected to said shaft.

4,288,103

FLUID FITTING HAVING GRIPPING BASS MEANS FOR CHUCKING

Bernard J. Gallagher, Mayfield; Erling G. Wennerstrom, and Mark R. Houdek, both of Cleveland, all of Ohio, assignors to Cajon Company, Solon, Ohio

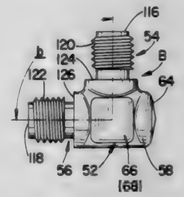
Filed Mar. 27, 1979, Ser. No. 24,393

Int. Cl.³ F16L *43/00*

U.S. Cl. 285—39 **2 Claims**

1. A fluid fitting comprising:

a pair of elongated fitting branches angularly disposed relative to each other; a fluid passageway extending longitudinally through each of said branches into communication with each other, said branches adapted to be placed in cooperative communication with the ends of a pair of adjacent fluid conduit means for placing said conduit means in fluid communication with each other; and, a separate gripping boss area having a length of approximately 2.286 mm with said boss area and one of said



branches spaced therefrom having circular cross sections and defining gripping means, said gripping means permitting said fitting to be gripped at spaced apart locations by chucking means during fitting manufacture for providing fitting stability and allowing at least said passageways to be more accurately generated at a desired angular relationship relative to each other.

4,288,104

PIPE SECTION, PREFERABLY A CONCRETE PIPE SECTION

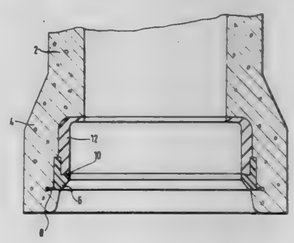
Olof Nordin, Värnamo, Sweden, assignor to Forsheda Gummifabrik AB, Forsheda, Sweden

Filed Sep. 5, 1979, Ser. No. 72,574

Claims priority, application Sweden, Sep. 8, 1978, 7809451

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—45 **5 Claims**



1. In combination, a pipe of the type which is manufactured by moulding the pipe and material in a mould, an annular sealing ring connected to said pipe near one end thereof and adapted for sealingly connecting said pipe to another pipe, said sealing ring including ring an annular inwardly projecting sealing portion and a further portion located axially inward of said sealing portion relative to the end of said pipe, said sealing portion and said further portion having surfaces forming an axially inwardly facing pocket, and a protector for said surfaces of said sealing ring portions comprising an annular element in contact with said pipe and said surfaces of said sealing ring portions, said annular element being easily removable from said pipe at the place where said pipe is to be used, said pipe being moulded against said annular element.

4,288,105

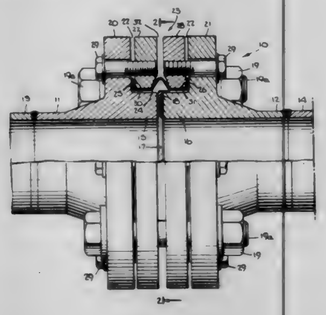
PIPE UNION WITH BOTH PRE-LOAD DEPENDENT AND INDEPENDENT SEALS

Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation, Roseland, N.J.

Continuation-in-part of Ser. No. 13,676, Feb. 21, 1979. This application Oct. 31, 1979, Ser. No. 90,037

Int. Cl.³ F16L *9/14*

U.S. Cl. 285—55 **26 Claims**



1. A disconnectable pipe union comprising in combination first and second union members, means for establishing between said union members a first circumferential seal whose sealing effectiveness is a function of its pre-loading and which is fluid-tight when pre-loaded above a given level, means constructed and arranged to be placed under tension to draw said first and second union members toward each other to provide at least said given level of pre-loading for said first seal, said union members being related to said means for establishing a first seal such that at least corresponding portions of said union members radially outward of said first seal remain separated axially with at least a certain minimum gap therebetween when the union members are drawn together with said first seal established therebetween, axially extensible sealing means constructed and arranged to be separably fastened to both of said union members for establishing a second fluid-tight circumferential seal within said gap surrounding concentrically said first seal and operative independently of said pre-loading at least to contain any fluid leaking past said first seal due to diminution of said pre-loading below said given level anywhere circumferentially around said first seal, and means for establishing a separable reusable connection between said union members and the corresponding end of said axially extensible sealing means.

4,288,106

ROTATABLE SWIVEL FOR ONE OR MORE CONDUITS

Jan A. Foolen, Eze-sur-mer, France, assignor to Single Buoy Moorings Inc., Fribourg, Switzerland

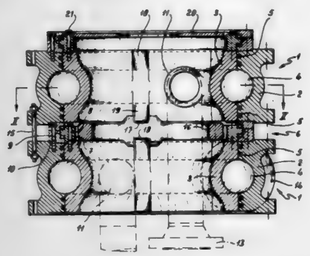
Filed Dec. 20, 1979, Ser. No. 105,523

Claims priority, application Netherlands, Dec. 22, 1978, 7812499

Int. Cl.³ F16L *39/04*

U.S. Cl. 285—136 **7 Claims**

1. In a rotatable swivel for conduits comprising annular chambers each of which includes a fixed wall portion and a wall portion rotatably mounted with respect thereto, said wall portions being supported on each other by means of radially and axially operative bearings and being sealed with respect to each other, each wall portion having inlet and outlet line connections; the improvement in which all chambers are the same in such a manner that all inner wall portions (3) are identical and all outer wall portions (2) are identical, said inner wall



portions (3) surrounding a central aperture through which said connections (11, 13) run.

4,288,107

TERMINATION CONSTRUCTION OF A CABLE COMPRISED OF BUNDLED TUBES

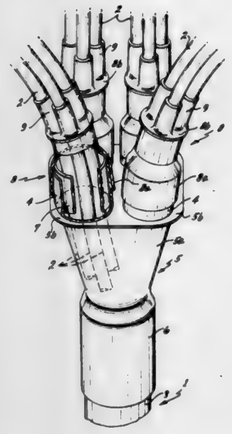
Hansjürgen Schwartze, Osnabrück, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte A.G., Hanover, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,737

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 7728990; Mar. 11, 1978, 2810708

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—137 R **13 Claims**



1. In a construction for placement at an end of a bundle of tubes, a member having a neck portion placed in shrink fit onto the bundle, the member having a bottom plate from which extend a plurality of different sleeves, each said sleeves being passed through by at least one of said tubes, said sleeves being placed in shrink fit around and on the respective tube or tubes.

4,288,108

COLLAR COUPLED PLASTIC CONDUIT

Kenneth F. Streit, Mt. Prospect, Ill., assignor to Techplastics, Inc., West Chicago, Ill.

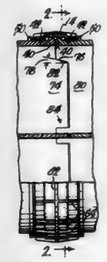
Filed Jul. 27, 1979, Ser. No. 61,356

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—137 R **17 Claims**

1. A plastic conduit section for connection to similar conduit sections, comprising: a plurality of interconnected enclosing

walls defining an open ended conduit passageway with end portions having on their outside surfaces a peripheral, circumferential groove adjacent the free ends, and a circumferential flange adjacent said groove; a resilient conduit coupling collar having a plurality of parallel interconnected walls at least at one of its ends defining an open ended closure with said collar walls having inner transverse dimensions generally equal to the outer transverse dimensions of the outside surfaces of said end portions adjacent said grooves, said collar having a length



sufficient to telescope upon and join together the end portions of two adjacent conduit sections; a gasket carried within each of said grooves to seal the joints between the exterior of said conduit end portions and the interior of a coupling collar telescoped over that end portion; and means, integral with and adjacent said end portions and cooperating with the interior surfaces of said coupling collar, for mechanically locking said two adjacent conduit sections and said coupling collar together by snap fitting action and said grooves being located intermediate said flange and said means.

4,288,109

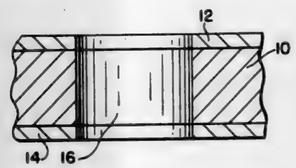
CORROSION RESISTANT ASSEMBLY AND METHOD OF MAKING IT

Claude E. Ellis, Wausau, Wis., assignor to Sterling Drug, Inc., New York, N.Y.

Filed Jan. 19, 1979, Ser. No. 4,662

Int. Cl.³ F16L *3/04*

U.S. Cl. 285—158 **6 Claims**



1. A joint for a tube to extend through a steel sheet, there being a hole through the steel sheet, corrosion resistant material at both sides of the steel sheet, a corrosion resistant sleeve located in hole welded to the corrosion resistant material at both sides of the steel sheet, thus isolating the hole from the steel sheet by corrosion resistant material, and a corrosion resistant tube in the corrosion resistant sleeve, said tube being secured to the sleeve at one side only of the sheet,

the corrosion resistant sleeve terminating at the exterior surfaces of the corrosion resistant material covering the sides of the steel sheet, and

adjacent corners of the corrosion resistant sleeve and sheets on both sides of the tube sheet being bevelled forming V-grooves for welding.

4,288,110

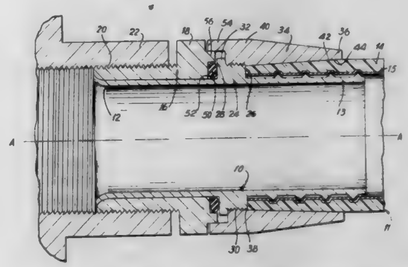
END FITTINGS FOR FLEXIBLE METALLIC CONDUITS

David Grenell, Laurelton, N.Y., assignor to Allen-Stevens Corp., Woodside, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,717

Int. Cl.³ F16L *33/24*

U.S. Cl. 285—174 **8 Claims**



1. An end fitting for a flexible metallic conduit having an outer deformable wall in which electric cables are received, comprising:

(a) a tubular metallic body elongated along a longitudinal axis and bounding an interior in which the electric cables are received, said body having a radially outwardly flaring end portion and an opposite threaded end portion for threadedly engaging the flexible metallic conduit, said body having a radially outwardly extending stationary projection which is fixedly anchored on said body for non-movement relative thereto intermediate the end portions thereof;

(b) a tubular metallic sleeve concentrically surrounding and being rotatably mounted on said body between said stationary projection and said flared end portion, said sleeve having a threaded end portion for threadedly engaging a support, and an opposite abutment end portion which is axially spaced from said stationary projection;

(c) a tubular metallic collar concentrically surrounding said threaded end portion of said body and having an inner circumferential surface which bounds therewith an annular space in which the flexible metallic conduit is received, said collar being threadedly mounted on said stationary projection for continuous adjustable axial movement relative thereto; and

(d) resilient sealing means located between and sealingly engaging both said stationary projection and said abutment end portion, said stationary projection being nonmovable relative to said resilient sealing means for providing a wear-and fluid-resistant seal between said body and said sleeve to thereby protect the electric cables, said resilient sealing means being stressed for affirmatively urging said sleeve away from said stationary projection and into electro-mechanical engagement with said flaring end portion of said body.

4,288,111

JOINT CONSTRUCTION FOR SHEET METAL DUCTS

Roger A. Feutz, Grand Rapids, Mich., assignor to Enterprise Construction Services, Inc., Grand Rapids, Mich.

Filed Jan. 21, 1980, Ser. No. 113,630

Int. Cl.³ F16L *43/00*

U.S. Cl. 285—183 **11 Claims**

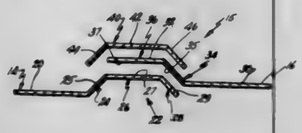
1. A joint assembly for ducts comprising:

a first section of duct defined by a wall having a first flange extending radially outwardly from said wall, a second flange extending from an end of said first flange axially aligned with and radially outwardly offset from said wall, and a third flange extending radially inwardly from an end of said second flange, said first, second and third flanges defining an end of said first section of duct; and having a

wall thickness substantially the same as the wall thickness of said section of duct;

a second section of duct defined by a wall having a fourth flange extending radially outwardly and a fifth flange extending from an end of said fourth flange axially aligned with and radially outwardly offset from said wall of said second section of duct, said fourth and fifth flanges defining an end of said second section of duct having a diameter greater than that of said end of said first section of duct to receive in mating sealed engagement said third and second flanges respectively of said first section of duct; and

a band circumscribing and overlying said ends of said first and second sections of duct for securing the junction therebetween.



4,288,112

CONNECTING PIECE FOR SUPPLY LINES CARRYING GASEOUS OR FLUID MEDIA

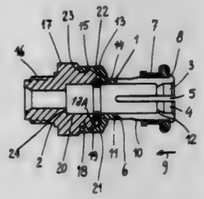
Kurt Stoll, Lenzhalde 72, Esslingen, Fed. Rep. of Germany

Filed Apr. 19, 1979, Ser. No. 31,492

Claims priority, application Fed. Rep. of Germany, May 3, 1978, 7813457

Int. Cl.³ F16L *33/00*

U.S. Cl. 285—238 **6 Claims**



1. A connecting piece for supply lines carrying gaseous or fluid media, comprising:

a first elongated and hollow connecting member having a first central body segment with an enlarged end structure on one end terminating in a first axially facing surface which has a first axially facing recess therein communicating with the interior of said hollow connecting member and opening in a direction remote from said first central body segment, the bottom of said first recess defining a second axially facing surface extending parallel to said first surface, said first recess having an annular recess on the internal surface thereof intermediate said first and second surfaces, a supply line clamping means connected to said first central body segment on an end thereof remote from said enlarged end structure;

a second elongated and hollow connecting member having a second central body segment with an end segment extending axially away from said second central body segment and a sleeve segment extending axially away from said second central body segment on a side thereof opposite said end segment, said sleeve segment having a cross-sectional size less than the cross-sectional size of said second central body segment to thereby define a third axially facing surface facing in a direction toward said first surface on said first connecting member, said sleeve terminating in a fourth axially facing surface parallel to said third surface, said fourth surface having a second axially facing recess therein communicating with the interior of said second connecting member, the bottom of said second recess defining a fifth axially facing surface extending parallel to said third and fourth surfaces, the axial spacing between said third and fourth surfaces on said second connecting member being equal to the axial spacing between said first and second surfaces on said first connecting member, said sleeve segment having an annular projection on the external surface thereof intermediate said third and fourth surfaces;

said sleeve segment being received in said first recess with said third surface thereof engaging said first surface and with said fourth surface engaging said second surface, a compressible seal member received in said second recess and being compressed between said second and fifth surfaces, said annular projection being operatively received in said annular recess to hold said first and second connecting members in a coupled relationship and said first and third surfaces as well as said second and fourth surfaces in engagement with each other.

4,288,113

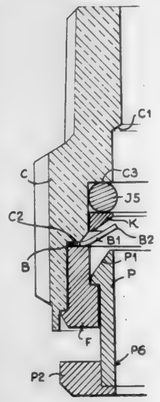
QUICK CONNECTOR COUPLING FOR SEMI-RIGID HOSE

Charly J. Saulnier, Bonne, France, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jul. 6, 1979, Ser. No. 55,400

Int. Cl.³ F16L *33/00*

U.S. Cl. 285—238 **4 Claims**



1. A quick connector coupling for semi-rigid hose of the type providing a tight, self-gripping connection by simply inserting the hose end into the coupling, which comprises a hollow body having formed therein a first shoulder constituting an abutment for the hose end to limit the hose length that can be introduced into the coupling, a retaining ring having an external annular portion engaging a second shoulder of said hollow body and a central portion apertured and formed with a plurality of radial slits providing as many lugs adapted to grip said hose to counteract any outward movement thereof, means for locking the retaining ring in place, a push member adapted to slide in relation to said body and formed with an internal tapered head adapted to engage said lugs so as to bend them away from the hose surface when said push member is moved inwardly of said body and resilient sealing means disposed axially inwardly of said lugs, wherein abutment means is resiliently fitted in said hollow body axially inwardly of said lugs in order to permit a bending movement of said lugs by said push member to provide an aperture substantially greater than a normal movement and a normal aperture and to prevent an excess amount of said bending, said sealing means comprising an O-ring disposed between a shoulder provided in said hollow body and said abutment means to permit a slight axial movement of said abutment means.

4,288,114

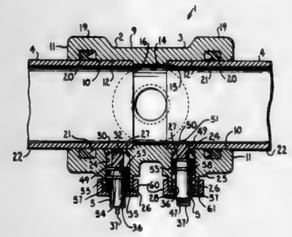
FITTING WITH BIASED LOCKING DEVICE FOR COUPLING PIPES

Arne H. Hansen, Doylestown, Pa., assignor to Meyertech Incorporated, Lakewood, Colo.

Filed Nov. 28, 1979, Ser. No. 98,130

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—317 **9 Claims**



1. A fitting for connection to a pipe to form a joint therewith comprising:

(a) a generally cylindrical wall defining a pipe end receiving socket having an exterior surface and a pipe cradling interior surface;

(b) a bore extending at least partially through said wall;

(c) a locking device engaged in said bore and having a shaft with a head end and an opposite tip end extensible inwardly of said interior surface a sufficient distance to extend at least partially through and at least partially pierce a wall of a pipe end received in said socket for locking said pipe end in said socket;

(d) a ring seal surrounding said shaft and forming a fluid-tight seal between said shaft and said socket; and

(e) resilient means urging said tip end inwardly of said interior surface for maintaining engagement with said pipe end received in said socket and a retainer normally containing said tip end within said bore and spaced from said interior surface whereby said locking device is in a ready-to-use position; and wherein said resilient means urges said tip end against said retainer.

4,288,115

DUCT JOINTING SYSTEM

Michael T. Sullivan, 36 Hess St. South, Hamilton, Ontario, Canada

Filed Oct. 3, 1979, Ser. No. 81,501

Claims priority, application Canada, Oct. 19, 1978, 313737

Int. Cl.³ F16L *23/00*

U.S. Cl. 285—363 **6 Claims**

1. A connection means for connecting adjacent ends of rectangular sheet metal ducts, comprising:

a plurality of elongated hollow flange members each having a channel portion with a mouth opening to receive therein an end face of a wall of said sheet metal duct and to extend along a major part of the length thereof, and a transverse hollow portion upstanding from the channel portion, said transverse portion having a generally planar upstanding outer side face;

the channel portion extending beyond the plane of said outer face;

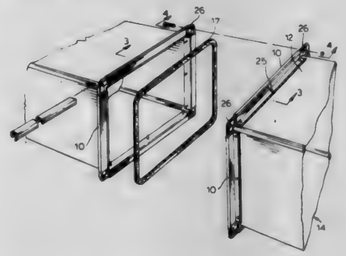
the transverse portion having openings at each longitudinal end thereof;

a substantially planar, generally L-shaped corner connecting piece, having co-planar limbs, said limbs being adapted to be received in the openings in the longitudinal ends of adjacent ones of said hollow flange members so as to link a pair of flange members together in mutually right angular disposed relationship with said planar outer side faces substantially in a common plane;

said corner connecting piece having a first laterally offset portion at its radially inner central corner section and a second laterally offset portion at its radially outer central corner section, the first and second offset portions being offset in opposite directions from one another;

said corner connecting piece being adapted to be assembled with a pair of said flange members with said first laterally offset portion being offset in the direction away from the planar outer side faces thereof;

a gasket adapted to be placed in sealing engagement with the planar upstanding outer side faces of an adjacent pair of said flange members;



the channel portions of said profile members extending beyond the plane of said outer face so as to form protuberances extending toward each other in the assembled joint, to grip the gasket in tight sealing engagement between opposed pairs of said flange members;

each of the first and second offset portions of the corner connecting piece being offset from the main plane thereof sufficiently to protrude a distance of about one wall thickness of the flange member said first offset portion thus constituting means permitting end faces of said walls of the duct in the region of said first offset to project beyond the plane of said first offset portion towards said outer side face to grip said gasket in sealing engagement between opposed such regions of said end faces of opposed ducts.

4,288,116

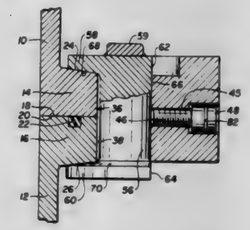
APPARATUS FOR FASTENING FLANGED TUBULAR MEMBERS

Max P. Schlienger, Ukiah, Calif., assignor to Retech, Inc., Ukiah, Calif.

Filed Apr. 20, 1979, Ser. No. 31,892

Int. Cl.³ F16L *17/00*

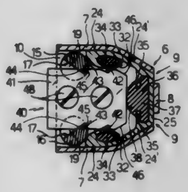
U.S. Cl. 285—364 **35 Claims**



1. Apparatus for securing to each other and sealing open ends of generally tubular pressure vessels fitted with radially outwardly protruding end flanges having back sides which face away from each other, the apparatus comprising: a plurality of clamping spools each having a shank and a rim protrud-

ing radially outward from each shank end, the rims defining opposing faces dimensioned for placement over the flanges and overlapping the back sides; a spool retaining ring having an inner diameter greater than an outer diameter of the flanges for placement thereover, the ring including means for receiving the spools and for positioning the spools between the ring and the flanges when the former is placed over the latter; means for movably connecting the spools to the retaining ring so that the ring and the spools can be placed as a unit into radial alignment with the flanges; means for moving the spools towards the flanges and for subjecting the spools to a force acting in the same direction; and means for establishing firm contact between the rims and the flanges and for generating a force with each spool which acts on the respective back sides of the flanges in opposite, axial directions so as to secure the flanges and therewith the vessels together and establish a seal between the vessels.

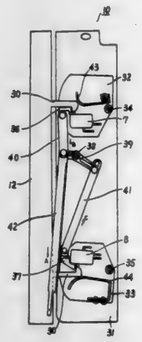
4,288,117
LOCK FOR MOTOR VEHICLE DOORS
Giovanni Nardi, Pisa, Italy, assignor to Whitehead Motofides, S.p.A., Via Salvatore Orlando, Italy
Filed Dec. 15, 1978, Ser. No. 969,676
Claims priority, application Italy, Mar. 10, 1978, 67515 A/78
Int. Cl.[2] E05C *13/00*
U.S. Cl. 292—52 **25 Claims**



1. A lock for motor vehicle doors, comprising a striker member arranged for engagement and disengagement by means comprised in a mechanism of said lock, the mechanism being supported by a first plate, and the striker member and means being disposed on a part fixed relative to the door and on the door respectively, or vice versa, wherein said means comprise at least one pair of engagement members for said striker which are rotatable on pins, and the disengagement load exerted between said member and said means is opposed only by component forces passing substantially through the axis of said pins, wherein the contact engagement between said pair of engagement members and said striker member occurs, at least partially, on surfaces which are concentric about the axis of said pins, and pertain respectively to said engagement members and striker member.

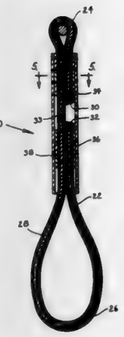
4,288,118
DOOR LOCK MECHANISM OF MICROWAVE OVEN
Michio Ohkado, Sakai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 13, 1978, Ser. No. 960,029
Claims priority, application Japan, Nov. 16, 1977, 52/155098[U]
Int. Cl.[3] E05C *3/06*
U.S. Cl. 292—201 **7 Claims**

1. A lock mechanism for an oven generation circuit comprising:
- a door switch being controlled by the opening and closing of an oven door;
- a cook switch which may be activated when said oven door is in the closed position;
- a generation circuit operatively connected to a power source, a heat generating source, said door switch and said cook switch;
- said heat generating source being power supplied by the activation of both the door switch and the cook switch;
- first means for controlling the activation of the cook switch; and



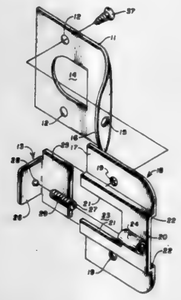
- second means responsive of a door opening mechanism for controlling the opening and closing of the oven door, thereby controlling the activation of the door switch;
- wherein the second means is prevented by the first means from controlling the opening of the oven door while the first means is activated to provide the activation of the heat generating source.

4,288,119
DOOR LOCKING CABLE
Robert G. Geiger, Elkhart, Ind., assignor to Air-Flo Co., Inc., Elkhart, Ind.
Filed Jul. 5, 1979, Ser. No. 54,665
Int. Cl.[3] E05C *17/04*
U.S. Cl. 292—262 **6 Claims**



1. A cable door lock comprising a flexible metal cable bent to define a loop at one end and including securing means for attaching the cable to a door frame at the opposite end, said loop being of a size to slip around a doorknob, metal means clamping said loop defining cable portion to an intermediate portion of said cable, and a sleeve encircling and rotatable on the major portion of said cable and clamping means between said loop and said securing means.

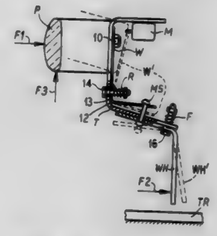
4,288,120
DOOR LATCH ASSEMBLY
Donald H. Moore, Rte. #3, Cannon Falls, Minn. 55009
Filed May 14, 1979, Ser. No. 38,920
Int. Cl.[3] E05C *13/00*
U.S. Cl. 292—341.18 **6 Claims**



1. A latch assembly comprising:
- a striker plate having front and rear surfaces and having a latching notch therein;
- an adjustable latching surface disposed within said latching notch and adapted for latching engagement with a corresponding protruding latch member for retaining the same in a latched position, said latching surface comprising an "L" shaped slide member slidably associated with a portion of the rear surface of said striker plate;
- slide rail means for slidably receiving said slide member, said slide rail means including a slide rail plate having a pair of generally parallel peripheral edges connected in face-to-face registration with the rear surface of said striker plate on either side of said latching notch and an intermediate section disposed between said peripheral edges, said intermediate section being spaced from, but in parallel relationship to, the rear surface of said striker plate and having portions extending inwardly from each of said peripheral edges for slidably retaining said slide member;
- threaded means for adjusting the position of said latching surface, said threaded means having a portion connected with said slide rail plate and being disposed on the opposite side of said slide rail means from said striker plate.

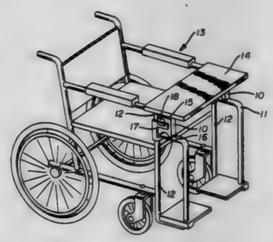
4,288,121
TRANSPORT CAR, PARTICULARLY FOR TRANSPORTING FILES, WITH FRONTALLY ARRANGED BUMPER
Edelbert Wiechert, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Sep. 14, 1979, Ser. No. 75,659
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2846245
Int. Cl.[3] B60R *19/02*
U.S. Cl. 293—4 **4 Claims**

1. A rail-bound transport car with self-drive means and frontally arranged bumper means (P) and with switch contact means for actuation upon frontal impact of the bumper means against an obstacle for influencing the transport car self-drive means; said bumper means comprising a bumper providing a handle contour; a mounting angle (T); a bumper movement sensing lever (W) having said bumper arranged thereon, and being pivotably mounted on said mounting angle (T), and having actuation means for actuating said switch contact means upon pivotal movement of said bumper movement sensing lever (W) in response to frontal impact of the bumper against an obstacle; reset spring means (R) acting on said bumper movement sensing lever (W) to oppose the pivotal movement thereof, a catch (MS); and an angle lever (WH) having a mounting arm and a depending arm, and the mounting arm being rotatably mounted below said bumper movement sensing lever (W) on said mounting angle (T) and being coupled with said bumper movement sensing lever (W) by said catch (MS),



said angle lever (WH) being arranged for deflection upon impact of the depending arm of said angle lever (WH) against an obstacle located on the rails below the area of said bumper, so as to pivot said bumper movement sensing lever (W) by means of said catch (MS).

4,288,122
WHEEL CHAIR TABLE CLAMP
Lloyd F. Meek, 4589 Phillips Rice Rd., Cortland, Ohio 44410
Filed May 9, 1979, Ser. No. 37,309
Int. Cl.[3] A47C *7/70*
U.S. Cl. 297—153 **4 Claims**



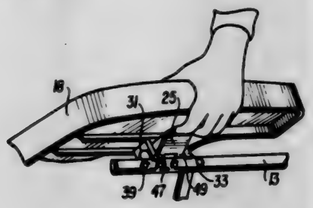
1. A clamp is adapted to mount a table on a wheel chair having a pair of horizontally spaced vertically disposed tubular frame members, each having a horizontal tubular frame member intersecting and projecting therefrom with said horizontal members parallel to each other, said clamp comprising a pair of vertically disposed body members adapted to hold a table on said horizontal frame members adjacent said vertical frame members, a clamping member on each body member, pivot means pivotally mounting each clamping member to its respective body member so that the clamping member is disposed adjacent a vertical frame member, said clamping member having opposite vertical sides, each of which sides having a right angularly disposed tab thereon, said tabs on each clamping member vertically spaced on the clamping member and projecting towards the tabs on the other clamping member with the lower tab on each clamping member being disposed below its body member, whereby when the body members have their lower edges mounted on the horizontal frame members, each clamping member is pivoted to clamp the tabs on opposite sides of a vertical frame member with the lower tab disposed below the horizontal frame member to thereby secure the body member and a table carried thereby to the horizontal and vertical frame members against vertical and horizontal movement.

4,288,123

HIGH CHAIR TRAY ATTACHMENT MECHANISM

Richard E. Cone, Dayton, Ohio, assignor to Questor Corporation, Toledo, Ohio

Filed Oct. 11, 1979, Ser. No. 83,796
Int. Cl.³ A47B 39/00, 39/04
U.S. Cl. 297—154 4 Claims



1. In combination with the arms of a high chair, a tray, and a swivel mounted on the underside of said tray and removably securable to one of said arms, the improvement comprising

bracket means mounted on the underside of said tray in juxtaposition with said other arm;

depending legs extending downward from said bracket so as to form a recess for said other arm;

at least one aperture in the outer surface of said other arm;

a plate rotatably mounted on said underside of said tray adjacent said depending legs;

spring means for rotatably biasing said plate away from said underside of said tray and against said depending legs;

a pin extending from said plate and being of a dimension to mate with said aperture; and

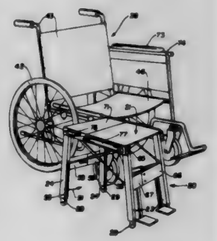
a flange extending outwardly from said plate toward the outer edge of said tray, whereby movement of said flange in a direction toward the underside of said tray overcomes the bias of said spring means and removes said pin from said aperture.

4,288,124

WHEELCHAIR-CARRIED TRANSFER STOOL

Rex Hamilton, 2701 S. Watson, Visalia, Calif. 93277

Filed Oct. 1, 1979, Ser. No. 80,580
Int. Cl.³ A47C 13/00
U.S. Cl. 297—217 13 Claims



1. A transfer stool attachable to a wheelchair comprising:

a seat portion;

leg means secured to said seat portion and formed for movement to and from a collapsed condition at which said leg means and seat portion are in close compact proximity to each other and an extended condition at which said leg means is extended for support of an individual sitting on said seat portion, said leg means and seat portion being further formed to provide a relatively narrow width dimension when said leg means is in said extended condition;

wheel means rotatably mounted to said leg means for rolling support of said stool when said leg means is in said extended condition; and

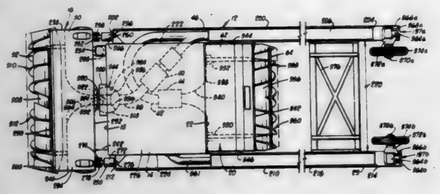
mounting means secured to at least one of said seat portion and said leg means and formed for cooperative engagement with a wheelchair mount provided on a wheelchair, said mounting means being further formed for selective removable mounting of said transfer stool to said wheelchair mount for carrying of said transfer stool by said wheelchair when said leg means is in said collapsed condition, said mounting means mounting the collapsed stool on said wheelchair in the position of an armrest.

4,288,125

MINING APPARATUS HAVING AN IMPROVED COUPLING ASSEMBLY

James E. Ingle, Edmond, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 768,650, Feb. 14, 1977, Pat. No. 4,160,566. This application Apr. 23, 1979, Ser. No. 32,465
Int. Cl.³ E21C 27/02
U.S. Cl. 299—30 61 Claims



1. A mining apparatus for forming a borehole in an earth formation comprising:

a miner, comprising:

a frame, having a forward end and a rearward end; and

a forward cutter assembly connected to the forward end of the frame for excavatingly engaging the earth formation;

at least one carrier, each carrier having a forward end and a rearward end, the forward end of one of the carriers being removably connectable to the miner and the rearward end of the carrier being removably connectable to the forward end of one other carrier, each carrier comprising:

a carrier frame, having a forward end, a rearward end, a first side and a second side, comprising:

a first barrier beam having a forward end and a rearward end;

a second carrier beam having a forward end and a rearward end, the second carrier beam being spaced in a substantially parallel relationship with the first carrier beam, and the forward ends of the first and second carrier beams forming the forward end of the carrier frame and the rearward ends of the first and second carrier beams forming the rearward end of the carrier frame; and

means for supporting the first and second carrier beams in the substantially parallel, spaced apart relationship;

coupling means comprising:

a first male coupler secured to the forward end of the first carrier beam;

a second male coupler secured to the forward end of the second carrier beam, the first and second male couplers being secured in a substantially parallel spaced relationship on one end of each of the carrier frames;

a first female coupler secured to the rearward end of the first carrier beam;

a second female coupler secured to the rearward end of the second carrier beam, the first and second female couplers being secured in a substantially parallel relationship on one end of each of the carrier frames, opposite the end with the male couplers, the first and second female couplers on one carrier frame being substantially alignable with the first and second male couplers on another carrier frame so that the first and second female couplers on one carrier frame operatively engage the first and second male couplers of another carrier frame to connect the respective ends of the two carrier frames;

a first female coupler and a second female coupler, the first and second female couplers being secured to the rearward end of the frame in a substantially parallel, spaced-apart relationship, the first and second female couplers on the miner being substantially alignable with the first and second male couplers on one end of one of the carrier frames so that the first and second female couplers of the miner operatively engage the first and second male couplers of the carrier frame to connect the miner to the carrier frame; and

means connected to each carrier for movingly supporting each carrier, comprising:

a first axle secured at one end thereof to the first female coupler connected to the first carrier beam;

a second axle secured at one end thereof to the second female coupler connected to the second carrier beam;

a first wheel mounted on the first axle; and

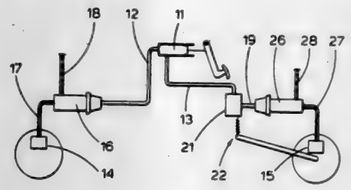
a second wheel mounted on the second axle.

4,288,126

AIR ASSISTED BRAKING SYSTEM

David Parsons, Kenilworth, and Harold Hodkinson, Finham, both of England, assignors to Automotive Products Limited, Warwickshire, England

Filed Aug. 22, 1979, Ser. No. 68,535
Claims priority, application United Kingdom, Sep. 1, 1978, 35259/78
Int. Cl.³ B60T 8/26
U.S. Cl. 303—6 C 4 Claims



1. An air powered braking system for a vehicle and comprising;

a front wheel air powered brake system;

a rear wheel air powered brake system;

a pair of air pressure valves each of which regulates the air pressure in its respective one of the front or rear brake systems, said air valves being hydraulically controlled so that the air pressure in each of said front and rear systems is proportional to the hydraulic pressure;

a hydraulic master cylinder operable by the vehicle driver and independently connected to each of air valves so as to generate said hydraulic pressure;

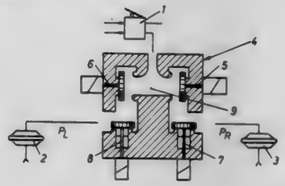
and a pressure reducing valve interposed in the connection between the master cylinder and the rear brake system air valve so that on operation of the reducing valve to reduce the hydraulic pressure to that air valve the air pressure in the rear brake system relative to that in the front brake system is also reduced.

4,288,127

ANTI-LOCK CONTROL SYSTEM

Heinz Leiber, Leimen; Wolf-Dieter Jonner, Sandhausen, and Hermann-Josef Goebels, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,653
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830809
Int. Cl.³ B60T 8/10
U.S. Cl. 303—111 8 Claims



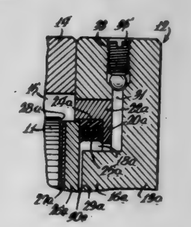
1. An anti-lock control system for the brakes for each of two wheels on one axle of a vehicle which brakes are actuated by a pressure medium from a pressure source comprising, in combination, a signal transducer **30** associated with each wheel of one axle for providing a signal characterizing the wheel motion behavior, an evaluator circuit **31**, means for supplying the signals to said evaluator circuit to generate brake pressure control signals, brake pressure control devices for separately influencing the brake pressure on said two wheels, means for supplying said brake pressure control signals to said brake pressure control devices, said evaluator circuit being provided with control means which in the event of a pressure drop on the brake of one wheel prevents a substantial pressure increase on the brake for the other wheel and in the event of a subsequent pulsated pressure increase on the first brake permits only a synchronously pulsated pressure buildup on the other brake, a fluid pressure line having a common section and a branching point for connecting said pressure source to said wheel brakes, said branching point being disposed in one of the immediate vicinity of the brake pressure control devices and in the brake pressure control devices themselves.

4,288,128

SELF-ALIGNING THRUST BEARING

Alan W. Wells, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00804, §371 Date Oct. 1, 1979, §102(e) Date Oct. 1, 1979, PCT Pub. No. WO81/00898, PCT Pub. Date Apr. 2, 1981.
This PCT application filed Oct. 1, 1979, Ser. No. 95,196
Int. Cl.³ F16C 33/74
U.S. Cl. 308—36.2 17 Claims



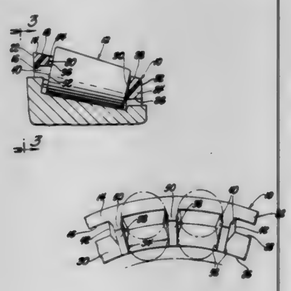
1. In a mechanism which includes first (**10** and **11**; **111**) and second (**12**; **112**) relatively rotatable members, the first of said members having a thrust surface (**28***a*; **128***a*) and the second of said members having a thrust abutment surface (**29***a*; **129***a*) facing and very close to said thrust surface (**28***a*; **128***a*), self-aligning thrust bearing means (**24***a*–**26***a*; **124***a*–**126***a*) comprising in combination:

a thin bearing member (**26***a;* **126***a*) between said thrust surface (**28***a;* **128***a*) and said thrust abutment surface (**29***a;* **129***a*), the area of said bearing member (**26***a;* **126***a*) being large in proportion to its thickness;

peripheral sealing means (**24***a;* **124***a*) in sealing relationship with a face of said bearing member (**26***a;* **126***a*) and with one (**28***a* or **29***a;* **128***a* or **129***a*) of said surfaces to define a shallow sealed chamber (**30***a;* **130***a*) between said bearing member (**26***a;* **126***a*) and said one (**28***a* or **29***a;* **128***a* or **129***a*) of said surfaces, said sealing means (**24***a,* **124***a*) being substantially uniformly axially compressible and extensible;

and liquid filling said shallow sealed chamber (**30***a;* **130***a*) so that axial and cocking loads of either of said relatively rotatable members (**10** and **11** or **12**; **111** or **112**) may rock the bearing member (**26***a;* **126***a*) without effective axial displacement during operation of the mechanism.

4,288,129
BEARING CAGE
Robert M. Ryanen, Union Lake, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Apr. 11, 1980, Ser. No. 139,384
Int. Cl.³ F16C *33/00*
U.S. Cl. 308—218 **11 Claims**



1. A conical bearing cage (**10**) for a tapered bearing assembly (**12**) comprising: an integral member having a conical central axis and including; a large circular ring (**14**) having an inner circumferential surface (**16**) and an outer circumferential surface (**18**) connected by inner (**20**) and outer (**22**) faces, a small circular ring (**24**) having an inner circumferential surface (**26**) and an outer circumferential surface (**28**) connected by inner (**30**) and outer (**32**) faces, a plurality of circumferentially spaced bridges (**34**) interconnecting said rings (**14, 24**), each of said bridges (**34**) having top (**36**) and bottom (**38**) surfaces interconnected by spaced sides, said sides of each of said bridges (**34**) having a tapered portion (**40**) extending inwardly from said top surface (**36**) thereof for defining lips (**42**) at the intersection of each side and associated top surface (**36**), characterized by a rib (**44**) on said top surface (**36**) of each bridge (**34**) extending between said rings (**14, 24**).

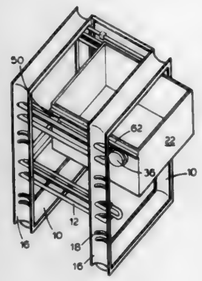
4,288,130
FILING SYSTEMS AND OTHER COLLAPSIBLE STRUCTURAL UNITS
Robert J. Baldwin, London, England, assignor to H. Geoffrey Lynfield, Old Greenwich, Conn.
Filed Jan. 17, 1979, Ser. No. 4,246
Int. Cl.³ A47B *63/00;* A47F *5/14;* F16C *21/00*
U.S. Cl. 312—183 **6 Claims**

1. A collapsible structural storage unit comprising in combination:

(1) a pair of profiled main frames;

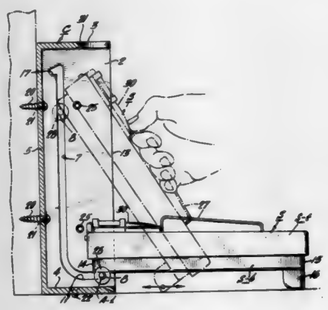
(2) locking slots arranged in pairs along the vertical sides of the said main frames;

(3) at least two locking frames with multiple bars fitting tightly with a spring action into said locking slots and rigidly locking the main frames together; and



(4) drawers and like receptacles slidably supported by said locking frames which are also serving as drawer runners.

4,288,131
CABINET-MOUNTED BATHROOM-SCALE
William J. Griffin, 2531 Rosewood Ave., Roslyn, Pa. 19001
Filed Apr. 27, 1979, Ser. No. 34,124
Int. Cl.³ G01G *19/52;* A47F *5/08*
U.S. Cl. 312—245 **6 Claims**



1. A cabinet-mounted bathroom-scale comprising

a bathroom scale;

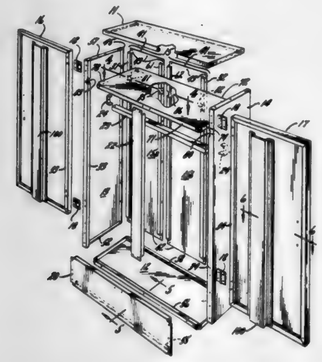
a cabinet having a top wall and two generally vertical sidewalls having generally vertically disposed pivot-guiding grooves therein;

opposite pivots carried by the rear end of the bathroom-scale and extending into said grooves;

said grooves and said pivots being so arranged that when the rear end of the bathroom-scale is raised the pivots thereof will rise upwardly in the grooves and the front end of the bathroom-scale can be moved into the cabinet, and so that by lowering the pivots in said grooves the front end of the bathroom-scale will extend outwardly from the cabinet into its operative position; and

said top of the cabinet having a cutout in the front edge thereof for improving visibility of the bathroom-scale.

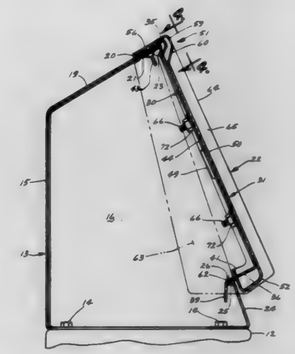
4,288,132
METAL CABINET FOR ASSEMBLY BY THE USER FROM KNOCKED-DOWN CONDITION
Henry Znamirowski, Ellicott City, and David J. Roles, Baltimore, both of Md., assignors to Roper Corporation, Kankakee, Ill.
Filed Feb. 19, 1980, Ser. No. 122,447
Int. Cl.³ A47B *43/00;* F16B *12/00*
U.S. Cl. 312—257 R **12 Claims**



1. In a rectangular metal cabinet construction the combination comprising top and bottom panels, side panels, and an extensive rear panel all having mated edges as well as a pair of front doors and intended for sale and transport in a knocked-down condition for assembly with self-tapping screws penetrating the mated edges, the rear panel having flanges along its lateral edges, the side panels having flanges along their front edges, the flanges being of the box type to impart torsional rigidity at the four upright corners of the cabinet and to receive as well as shield and conceal the tips of the self-tapping screws upon penetration thereof, a rectangular shelf in the cabinet dimensioned to extend to the walls thereof and having downwardly turned edges to define a thickness dimension, the box type flanges being notched out at the shelf level by an amount equal to the thickness dimension of the shelf to enable engagement between the edges of the shelf and the walls as well as support for the shelf in the vertical direction.

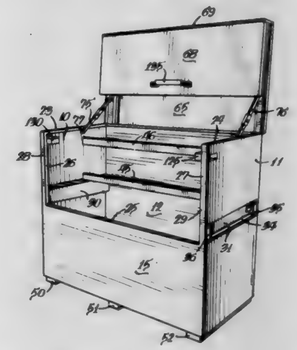
4,288,133
APPLIANCE CONTROL HOUSING AND CONSOLE CONSTRUCTION
Robert L. Deatherage, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Mar. 17, 1980, Ser. No. 130,836
Int. Cl.³ A47B *81/00;* B65D *6/00*
U.S. Cl. 312—279 **12 Claims**

1. A control panel assembly for an appliance control housing having an open front, the combination comprising: a relatively rigid support panel for generally closing said open front and including a front portion and rearwardly projecting upper and lower shoulder portions; a relatively less rigid decorative panel including a face portion having a generally coextensively overlying relationship with the front portion of said support panel and rearwardly projecting upper and lower flanges having an overlapping engagement with the shoulders of said support panel, the fabricated dimension between said support panel shoulder portions across the points of engagement with said decorative panel flanges being greater than the corresponding dimension between said decorative panel flanges to produce interference for removably retaining said decorative panel on said support panel and for springing apart said decorative panel flanges and bowing said decorative panel face portion into biased engagement with the front portion of said support panel; means associated with each of said panels and



cooperable for locating said decorative panel upon and interlocking said decorative panel to said support panel.

4,288,134
STORAGE CABINET
Howard L. Knaack, and Kenneth F. Weger, Jr., both of Cary, Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.
Filed Aug. 21, 1980, Ser. No. 179,969
Int. Cl.³ A47B *81/00, 95/02;* E05B *67/38*
U.S. Cl. 312—290 **15 Claims**



1. A storage cabinet of sheet metal having a body with front, rear and side walls extending upwardly from a bottom to define a storage space,

said side walls having upper edges which lie in a plane parallel to said bottom and said front wall having a major part thereof with an upper edge positioned at a lower level than said plane to provide a front access opening,

a two-part cover for said cabinet hinged along the upper edge of said rear wall with one part of the cover of a width to span the upper edges of the side walls and having a section at a right angle to the major part thereof, the other part of the cover being hinged to said section along an edge thereof and having a width and length to coact with said section and cover said access opening when the cover is closed,

a cover restrictor connected between said cover parts to limit relative pivotal movement of said parts and movable to a position to permit said cover parts to lie in close generally parallel relation when the cover is open,

elongate reinforcing members secured to the underside of

the cover parts and positioned to lie immediately within the upper edges of the side walls and parts of the front wall extending upwardly at either side of the access opening to strengthen the cover and deter insertion of a prying tool,

a reinforcing member secured to the free edge of the other part of the cover and having a flange spaced therefrom to provide a U-shaped space for receiving and interfitting with the front wall edge which is positioned at said lower level, said space having a sufficient height to maintain said interfit for a limited amount of movement of the cover upwardly relative to the front wall,

lock means associated with the body and the cover including a pair of lock members pivotally mounted on said reinforcing members secured to said one part of the cover and a pair of padlock holders secured to said side walls within the storage space and opening to the exterior of the side walls for exterior access,

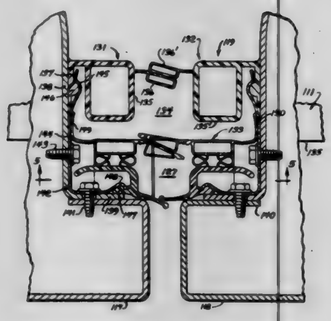
each of said side walls having a formed horizontally-extending rib defining a recess for strengthening of the side walls, a pair of handles pivotally mounted one in each of said recesses for movement between a storage position lying within the recess and behind the exterior faces of the side walls to operative positions extended outwardly of the recesses, a shelf within the storage space secured at its ends to said side walls and resting upon the side wall ribs, and skid members secured to the underside of said bottom each including a formed member with an interior chamber and a series of openings, and a pair of plates secured to the formed member within the chamber at opposite ends thereof and having holes in alignment with said openings for mounting of casters on the underside of said skid members.

4,288,135

FRENCH DOOR REFRIGERATOR SEAL

William J. Buchser, Marrs Township, Posey County; Ralph Tate, and Charles W. Haag, both of Center Township, Vanderburgh County, all of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 11, 1979, Ser. No. 83,974
Int. Cl.³ E06B 7/16; A47B 96/00
U.S. Cl. 312—296 **24 Claims**



1. In a refrigeration apparatus having wall means defining a refrigerated space and having a front portion defining an access opening to said space, a pair of doors pivotally mounted in side-by-side relationship for selectively closing said access opening, and seal elements carried by portions of the doors which are juxtaposed when the doors are positioned to close said access opening outwardly of said wall means, said seal elements including outer portions cooperatively defining an outer seal and inner portions cooperatively defining an inner seal with an air space having upper and lower ends between said outer and inner seals when the doors are positioned to close said outer and inner seals when the doors are positioned to close said access opening, the improvement comprising:

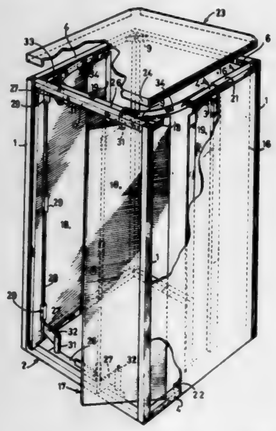
sealing closure means for closing said ends of said air space to define a dead air space between said doors outwardly of said wall means front portion when said doors are positioned to close said access opening.

4,288,136

METAL CUPBOARD

Gerard Le Mer, 12 Chemin du Milieu, 95540 Mery sur Oise, France

Filed Aug. 22, 1979, Ser. No. 68,649
Claims priority, application France, Sep. 5, 1978, 78 25474
Int. Cl.³ A47B 43/00; E06B 9/14
U.S. Cl. 312—297 **4 Claims**



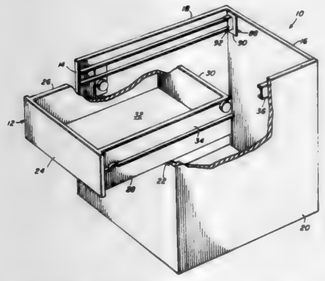
1. In a metal cupboard comprising a parallel-sided framework, the framework comprising an upper frame having a rectangular shape and comprising tubular members, a lower frame having a rectangular shape and comprising tubular members, four uprights constituted by tubular section members which are assembled at respective ends thereof with the upper and lower frames, at least two rectangular panels respectively closing at least two lateral sides of the framework, which sides are in opposed relation, and a sheet metal roof covering said upper frame; the improvement comprising an arrangement which is sufficient to maintain said at least two panels assembled with the framework and with the roof and comprises in combination first flange means rigid with a lower end portion of each of said at least two panels and downwardly bearing on a corresponding one of said tubular members of said lower frame, second flange means rigid with an upper end portion of each of said at least two panels and downwardly bearing on a corresponding one of said tubular members of said upper frame, and downwardly extending edge portions on said roof so that said roof constitutes a lid which closely caps said at least two panels and said downwardly extending edge portions overlap and engage said upper end portions of said at least two panels and trap said upper end portions between said downwardly extending edge portions and said corresponding ones of said tubular members of said upper frame and said roof overlaps and engages said second flange means and traps said second flange means between said roof and said corresponding ones of said tubular members of said upper frame.

4,288,137

DRAWER SLIDE SYSTEM

Paul M. MacDonald, Scituate, Mass., assignor to Dickran Babigian, West Newton, Mass.

Filed Feb. 19, 1980, Ser. No. 122,351
Int. Cl.³ A47B 88/04; F16C 21/00
U.S. Cl. 312—341 R **5 Claims**



1. A system for slidably mounting a drawer to a cabinet, comprising

(a) a pair of first members mountable to said cabinet one on each side thereof adjacent the path of travel of said drawer, and,

(b) a pair of second members mountable to said drawer one on each side thereof in generally opposite facing relation to said first members,

(c) each of said first members including an elongated first track of U-shaped transverse cross-section defining a channel of a length generally co-extensive with the depth of said cabinet, said first track mountable to said cabinet with said channel facing said drawer and a first roller mounted integral to said first track in predetermined spaced relation below said channel and near the forward end thereof, said first roller defining a gap with the lower portion of said channel,

(d) each of said second members including an elongated second track of an L-shaped transverse cross-section defining a generally flat back portion and a rail portion perpendicular thereto and longitudinally co-extensive therewith of a length generally corresponding with the depth of said drawer, said rail extending from the lower edge of said back portion, said second track mountable to the outer face of the side of said drawer with said back portion flat against said side and said rail extending outwardly from the lower long edge thereof and below the channel of said first track into said gap to rest on top of said first roller, and a second roller mounted integral to the flat back portion of said second track above said rail near the rearward end thereof and extending into cooperative engagement with said channel said first and second rollers being generally co-planar.

4,288,138

FUSE PULLER

Edgar L. Berry, and Joseph C. Drilling, both of Lexington, Ky., assignors to Square D Company, Palatine, Ill.

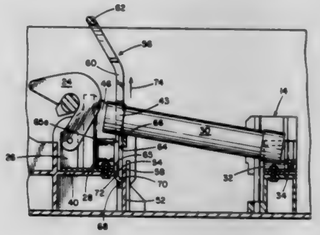
Filed Oct. 29, 1979, Ser. No. 89,001
Int. Cl.³ H01R 13/633
U.S. Cl. 339—45 R **15 Claims**

1. A fusible switch assembly having a fuse puller for disengaging a fuse extending between a pair of spaced fuse clips secured to an insulating assembly, the improvement comprising:

said insulating assembly having portions defining a linear guideway adjacent one of said clips, said guideway extending transverse to the axis of said fuse and positioned intermediate the ends of said fuse and between said clips,

an integrally formed loop of insulating material encircling the axis of said fuse and having a handle portion adapted to be manually engaged and a second portion engaged in said guideway to guide the movement of said loop transverse to said axis,

a first wall portion integrally formed on said loop intermediate the ends of said loop for engaging said fuse to disengage said fuse from one of said clips in response to manual



engagement of said handle portion and movement of said loop along said guideway in one direction, and

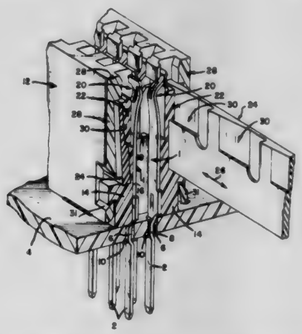
stop means integrally formed on said loop for engaging respective portions of said insulating assembly to define respective limit positions in the movement of said loop in said one direction and in a second direction opposite said one direction.

4,288,139

TRIFURCATED CARD EDGE TERMINAL

Robert F. Cobaugh, Elizabethtown; James E. Lynch, Harrisburg, and Attalee S. Taylor, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 6, 1979, Ser. No. 18,076
Int. Cl.³ H01R 13/62
U.S. Cl. 339—74 R **21 Claims**



1. In an elongated electrical terminal having a conductive first contact surface and a joined, resilient beam portion provided with a conductive second contact surface, with each of said contact surfaces being pivoted toward and into engagement with a conductive circuit member upon resilient pivotal deflection of said terminal in a first direction toward said circuit member, the improvement comprising:

said second contact surface being provided on a free end of said beam portion which initially projects outwardly beyond said first contact surface in said first direction,

said second contact surface initially engaging said circuit member in a first position prior to engagement thereof by said first contact surface, and

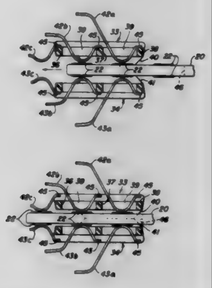
said beam portion being resiliently deflected by continued pivotal resilient deflection of said terminal in said first direction while said second contact surface engages said circuit member, so that said second contact surface is

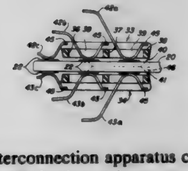
caused to slidably traverse along said circuit member to a second position which is on said circuit member and which is in a plane common to said first contact surface and extending directly across a width of said terminal and normal to a tangent of said first contact surface with said circuit member.

4,288,140
PRINTED WIRING BOARD INTERCONNECTION APPARATUS

Gary L. Griffith, Arvada, Colo.; Richard G. Johnsen, Wheaton, Ill., and Charles J. Sherman, Westminster, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1979, Ser. No. 105,494
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—74 R **10 Claims**





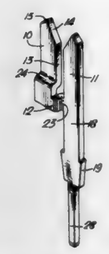
1. Electrical interconnection apparatus comprising an electrical component (20) having at least a row of contact areas (22) affixed to a flat surface thereof, a row of contact springs (e.g., 42) corresponding to said row of contact areas (22), and guide means (16, 17) for guiding said component (20) into association with said springs (42), characterized in that means are provided for ensuring a simultaneous engagement of said contact areas (22) only with said corresponding contact springs (42), said means comprising rider ends (45) terminating each of said springs (42), a lattice structure (33) for supporting said spring rider ends (45), and cam means (40) extending from said lattice structure (33) slidable along said surface of said component (20) as said component is guided into association with said springs (42) for maintaining said springs (42) out of engagement with said contact areas (22), said component (20) having recesses (46) adapted to admit said cam means (40) when said contact areas (22) and said corresponding springs (42) are in alignment.

4,288,141
INSULATION DISPLACEMENT CONTACT FOR AN ELECTRICAL CONNECTOR

Russell A. Leather, Perth, Scotland, assignor to Ferranti Limited, Cheadle, England

Filed Dec. 4, 1979, Ser. No. 100,107
Claims priority, application United Kingdom, Dec. 8, 1978, 47683/78
Int. Cl.³ H01R *11/20, 43/00*
U.S. Cl. 339—97 R **16 Claims**

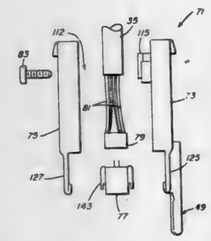
1. An insulation-displacement contact for an electric connector which includes a terminal element for connection to an electric conductor and a contact-making element for connection to an electric circuit, the terminal element comprising two spaced arms joined together at one end by a link portion and together defining a parallel-sided notch, a first one of the arms being displaced relative to the other arm by a double bend formed in the link portion and being further displaced by a double bend formed in the said one arm to define, with the other arm, a notch of the required width to receive and displace insulation of an electric conductor.



4,288,142
CABLE CONNECTOR

John J. Anderton, Oil City, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,601
Int. Cl.³ H01R *13/504*
U.S. Cl. 339—176 M **6 Claims**

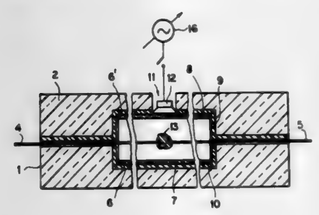


1. A connector having a plurality of terminals for interconnecting a plurality of conductors of a cable with a respective plurality of electrical contacts comprising an elongated insulating bottom body having opposing faces and a plurality of openings arranged along a pair of spaced parallel rows, a plurality of terminals being retained in respective openings, each terminal having a conductor receiving portion extending outwardly from one face and a contact engaging portion associated with the other face, an elongated top insulating body having a plurality of partitions adapted to hold a plurality of conductors in parallel spaced relation along a substantially common plane, a cover having a top opening for receipt of a cable therethrough and having means adapted to hold a cable extending through said top opening, a pair of opposing retaining flanges depending from said cover, said top body engaging said cover intermediate said flanges for preventing upward movement of said top body relative to said cover, said flanges have a plurality of slots, each slot having a lower edge portion, said bottom body includes projecting bosses matching said slots, each boss includes a lip portion, each lip portion overlaps a respective lower edge portion for holding said top and bottom bodies in assembled relationship interposed said flanges with the conductive receiving portions of respective contacts adapted to engage respective conductors of a cable, said bottom body and said flanges forming a pluggable portion with said contact engaging portions being adapted to mate with said respective electrical contacts.

4,288,143
METHOD OF AND APPARATUS FOR SPLICING OPTICAL FIBERS

Pietro Di Vita, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Dec. 27, 1979, Ser. No. 107,658
Claims priority, application Italy, Dec. 28, 1978, 69977 A/78
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.21 **19 Claims**

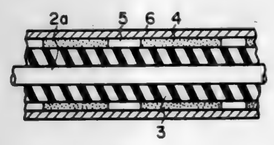


1. A method of splicing trunks of optical fibers, comprising the steps of:
axially aligning a pair of fiber trunks to be spliced, with ends closely juxtaposed;
clamping said fiber trunks at points spaced from their juxtaposed ends whereby said fiber trunks have unclamped extremities free to vibrate transversely;
setting said extremities in joint vibration of limited amplitude and at frequencies higher than their natural frequency, with formation of standing-wave nodes adjacent their juxtaposed ends; and
joining said juxtaposed ends together during their joint vibration.

4,288,144
OPTICAL FIBER SUBMARINE CABLE

Taiichiro Nakai, Fujisawa; Kahei Furusawa, Kamifukuoka; Makoto Nunokawa, Kawasaki, and Yoshihiro Ejiri, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Jan. 25, 1980, Ser. No. 115,331
Claims priority, application Japan, Jan. 26, 1979, 54/7043
Int. Cl.³ G02B *5/16*
U.S. Cl. 350—96.23 **7 Claims**



1. In an optical fiber submarine cable, the improvement comprising a high viscosity material of good wettability containing air gaps and filled in a space between an optical fiber cord having housed therein at least one coated optical fiber and a pressure resisting material layer having housed therein the optical fiber cord for protecting it from seawater pressure.

4,288,145
FIBER FOR OPTICAL COMMUNICATIONS

Tadashi Takeuchi, Higashikurume, and Taiji Yamabe, Yokohama, both of Japan, assignors to Daicel Ltd., Osaka, Japan

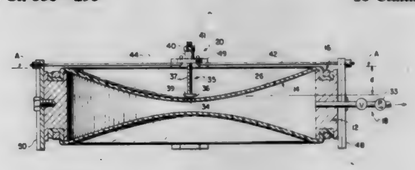
Filed Apr. 2, 1979, Ser. No. 25,950
Claims priority, application Japan, Apr. 10, 1978, 53-41975
Int. Cl.³ D02G *3/00*; G02B *5/14*
U.S. Cl. 350—96.34 **11 Claims**

1. A fiber for optical communication comprising a low-loss optical fiber core for optical communication, said core being covered with at least one coating layer of a polylaurolactam copolymer, said copolymer consisting essentially of 20 to 98 parts by weight of laurolactam and 80 to 2 parts by weight of one or more polyamide-forming monomers different from laurolactam, said polyamide-forming monomers being selected from the group consisting of lactams having 4 to 16 carbon atoms, amino carboxylic acids having 4 to 16 carbon atoms and salts of alkylene (C_4-C_{16}) diamines and alkylene (C_4-C_{16}) dicarboxylic acids, said copolymer having a melting point within the range of 100° C. to 170° C.

4,288,146
CURVED REFLECTOR WITH ADJUSTABLE FOCAL LENGTH

Alfred L. Johnson, Jr., and Victor A. Peckham, both of Manhattan Beach, Calif., assignors to LaJet Energy Company, Abilene, Tex.

Filed May 14, 1980, Ser. No. 149,587
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—295 **18 Claims**



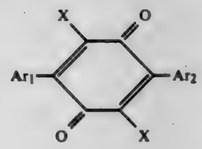
1. A reflector comprising:
a hollow housing having an opening;
a flexible, elastic reflective membrane;
means for coupling said membrane over said opening in a gas-tight manner;
evacuation means, coupled to said housing, for creating a partial vacuum in said housing tending to deflect said membrane below a reference plane and into said housing; and
valve means, coupled to said housing, for controlling the depth of the deflection of said membrane,
said valve means comprising
an aperture located in said membrane, and
a body mounted adjacent said aperture and having a flow restricting surface extending into said housing a depth equal to the depth of the desired deflection of said membrane relative to the reference plane and overlying said aperture.

4,288,147
ELECTRO-OPTICAL COMPOSITION OF THE GUEST-HOST TYPE

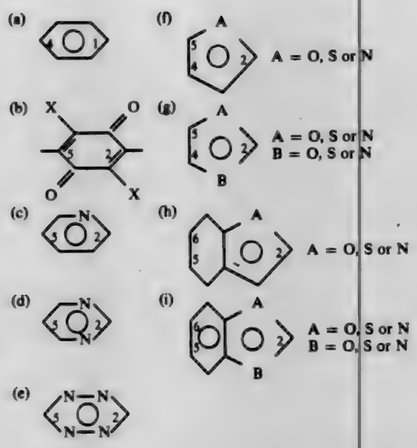
Gene C. Koch, Palo Alto, Calif., assignor to Timex Corporation, Waterbury, Conn.

Continuation-in-part of Ser. No. 971,625, Dec. 20, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,770
Int. Cl.³ G02F *1/13*; C09K *3/34*
U.S. Cl. 350—349 **16 Claims**

1. An electro-optical composition comprising a host liquid crystal admixed with a linear, noncondensed aromatic guest dichroic dye of the formula:



where Ar_1 and Ar_2 can be the same or a different mono or polycyclic aromatic radical selected from:



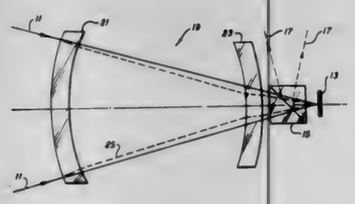
or (j) combinations of two or more of (a)–(i) joined together in a linear, noncondensed structure, with the proviso that when Ar_1 or Ar_2 comprise only one of (a)–(i), the radical is joined to the quinonoid ring at a 1 (para) type ring position in the case of (a) and at a 2 type ring position in the case of (b)–(i) and that when Ar_1 or Ar_2 comprise the combination of two or more of (a)–(i), radical (a) is linked to adjacent radicals at 1,4 type ring positions, radicals (b), (c), (d) and (e) are linked to adjacent radicals at 2,5 type ring positions and radicals (f) through (i), when present, are terminal radicals at the end of the dye molecule and are linked to adjacent (a), (b), (c), (d), or (e) radicals at a 2 ring position, and with the further proviso that the terminal radical of the dye molecule may include a generally linear, nonionic substituent at a 4 type terminal ring position in the case of (a), at a 5 type terminal ring position in the case of (b), (c), (d) and (e), at a 4 or 5 terminal ring positions in the case of (f) and (g) and at 5 or 6 terminal ring positions in the case of (h) and (i) and where X is a monovalent blocking substituent which is not fused to the adjacent aromatic radical so as to ensure the linear, noncondensed molecular structure.

4,288,148

BEAM-SPLITTING OPTICAL SYSTEM

Abe Offner, Darien, and David A. Markle, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 29, 1979, Ser. No. 70,568
Int. Cl.³ G02B *13/00, 27/18*
U.S. Cl. 350—453 **13 Claims**



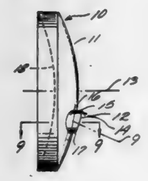
1. A unit power optical system for insertion into projection apparatus to permit viewing an image projected on an image plane without affecting its quality, size or position comprising:
a beam splitting element disposed in the optical path of the converging light before the image plane so that said beam splitting element will transmit the radiation to the image plane and reflect a portion of the radiation reflected from the image plane in a direction which permits viewing;
means disposed in said optical path to correct for image displacement and aberrations caused by said beam splitting element; and
said optical system being afocal so that said system will remain at unit power when it is shifted longitudinally and the image position is insensitive to longitudinal displacement.

4,288,149

RESIN OPHTHALMIC LENSES HAVING A PRISMATIC SEGMENT

Charles D. Campbell, La Jolla, Calif., assignor to Signet Optical Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 765,537, Feb. 4, 1977, abandoned, and Ser. No. 876,323, Feb. 9, 1978, Pat. No. 4,163,541, which is a continuation-in-part of Ser. No. 765,536, Feb. 4, 1977, abandoned. This application Feb. 24, 1978, Ser. No. 881,131
Int. Cl.³ G02C *7/06*
U.S. Cl. 351—170 **4 Claims**



1. A cast resin ophthalmic lens comprising a homogeneous body defined of cured optical casting resin and having a cast optically finished front surface composed of a major surface portion and a minor surface portion, the minor surface portion defining in the front surface in a selected localized area thereof a lens segment having a predetermined prismatic optical effect, the major surface portion being a portion of an aspheric surface of revolution having a first axis of symmetry and having an effective center of curvature located therealong, the minor surface portion being a portion of a surface of revolution having a second axis of symmetry, the first and second axes of symmetry intersecting, if at all, at a location on the first axis other than at substantially the center of curvature of the major surface portion, said axes having substantial angularity therebetween if they intersect.

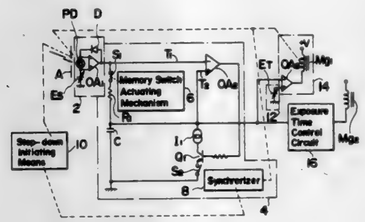
4,288,150

DIAPHRAGM CONTROL DEVICE FOR CAMERAS

Tokuji Ishida, Daito, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1980, Ser. No. 201,312
Claims priority, application Japan, Oct. 26, 1979, 54/139182
Int. Cl.³ G03B *7/097*
U.S. Cl. 354—23 D **12 Claims**

1. A diaphragm control device for a camera which includes a diaphragm forming a diaphragm aperture and which is capable of a stopping-down operation and a means for initiating the stopping-down operation of said diaphragm, said control device comprising:
a light measuring circuit for generating a light measurement signal commensurate with the scene brightness measured through said diaphragm aperture, said light measurement signal including fluctuation components when timewise variations are involved in the scene brightness and which varies with the change in said diaphragm aperture due to the stopping-down operation of said diaphragm;
an approximate signal-generating circuit for generating, on the basis of said light measurement signal, an approximate signal which varies approximately with the change in said diaphragm aperture due to the stopping-down operation of said diaphragm and which coincides with said light measurement signal when no fluctuation components are included in said light measurement signal;



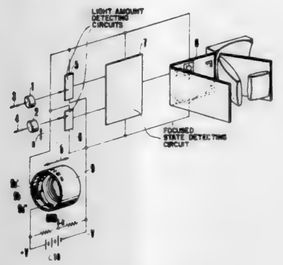
means for generating a reference signal; and
stopping-down operation stopping means for stopping the stopping-down operation of said diaphragm when said approximate signal represents a given relationship with respect to said reference signal.

4,288,151

POWER SOURCE SWITCH FOR USE IN CAMERA CIRCUIT TO DETECT A FOCUSED CONDITION

Seiichi Matsumoto, Yokohama; Hideo Yokota, Tokyo, and Mutsuhide Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 774,116, Mar. 3, 1977, Pat. No. 4,142,788. This application Aug. 23, 1978, Ser. No. 936,590
Claims priority, application Japan, Mar. 12, 1976, 51/27583; Mar. 12, 1976, 51/27584; Jul. 30, 1976, 51/91094
Int. Cl.³ G03B *13/18, 17/20*
U.S. Cl. 354—25 **5 Claims**



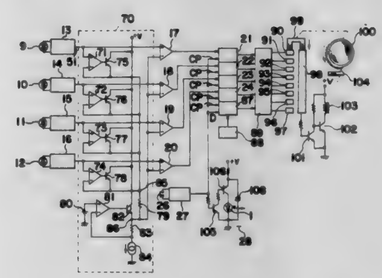
1. A photographic camera comprising:
(a) a camera casing;
(b) a manually operated distance setting ring carried on said casing;
(c) light receiving means within said camera for producing an output in response to received light;
(d) a detecting circuit for detecting a focused condition in accordance with the output of said light receving means;
(e) display means for displaying existence of a focused condition in accordance with the output of the detecting circuit;
(f) a power source for energizing at least said detecting circuit;
(g) a normally open switch connected between the detecting circuit and said power source; and
(h) an operating member responsive to pressure exerted thereon to close said switch, said member being arranged on said distance setting ring at a point where an operator operates the ring in performing a distance setting operation.

4,288,152

AUTOMATIC RANGE FINDER SYSTEM

Motonobu Matsuda, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1980, Ser. No. 176,635
Claims priority, application Japan, Aug. 16, 1979, 54-104796; Aug. 16, 1979, 54-104797; Aug. 16, 1979, 54-104798
Int. Cl.³ G03B *7/08*; G01J *1/20*
U.S. Cl. 354—25 **36 Claims**



1. An automatic range finder for a camera comprising:
means for projecting a pulse of light beam toward an object;
means kept apart from said projecting means by a predetermined base length for focusing the light beam reflected back from the object, the optical axis of said focusing means being substantially parallel with the path of the projected light beam;
means arranged on the focal plane of said focusing means for receiving the reflected light beam focused by said focusing means, said receiving means including a plurality of photosensitive elements aligned along the direction of the base length;
means connected to said photosensitive elements for detecting the relatively rapid changes in the individual currents generated by said photosensitive elements respectively to produce corresponding current outputs;
means connected to said detecting means for converting said current outputs into corresponding changes in voltages if any of said relatively rapid changes in the currents is detected respectively;
means for generating reference voltage levels;
means for comparing each of said voltage changes from said converting means with each of said reference voltage levels respectively;
means for producing a distance signal in response to said comparing means; and
means for altering said reference voltage levels in response to said converting means by values determined by the greatest of said changes in voltages respectively.

4,288,153

AUTOMATIC STROBE CAMERA

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 28, 1979, Ser. No. 80,130
Int. Cl.³ G03B *7/087, 7/16, 15/05*
U.S. Cl. 354—27 **6 Claims**

1. A camera for use under conditions ranging from insignificant ambient scene light intensity to substantial scene light intensity, said camera comprising:
a housing having means for defining a focal plane;
a lens assembly for directing image forming light rays from a photographic scene along a given exposure path to said focal plane;
means for positioning a sheet of photographic film at said focal plane;
energizable means for evaluating scene light;
an electrically controlled shutter arrangement actuatable for

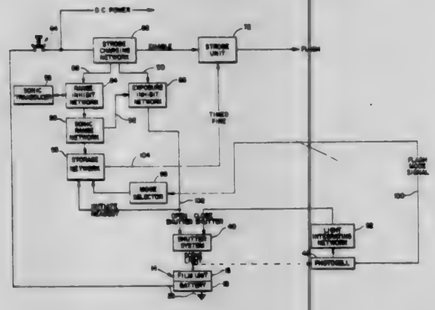
unblocking and blocking said exposure path to define an exposure interval, said shutter arrangement including means responsive to each actuation of said shutter arrangement for defining the same pattern of varying aperture values, including progressively enlarging aperture values, in operative relation to said exposure path in the absence of actuation of said shutter to terminate said exposure interval prior to said shutter arrangement defining its maximum achievable aperture value;

an electronic flash unit permanently affixed on said housing and having a predetermined maximum effective range;

means for producing a range signal corresponding to the distance of a photographic subject from said camera;

a manual actuator; and

circuit control means programmed to be responsive to every operation of said manual actuator, at least when photographing a subject within the maximum effective range of



said flash unit, for effecting the actuation of said shutter arrangement to initiate an exposure interval, for automatically firing said electronic flash unit during each said exposure interval at the instant an aperture value, correlated to said range signal and selected from said enlarging aperture values, is presented in operative relation to said exposure path by said shutter arrangement, and for then actuating said shutter arrangement to terminate said exposure interval in accordance with a predetermined film exposure being achieved,

whereby, whenever a photographic subject is within said maximum effective range of said flash unit during different exposure operations, said camera is preprogrammed to automatically provide photographic exposures embodying range dependent, aperture controlled amounts of flash illumination responsive to all normally intended actuations of said manual actuator regardless of the levels of ambient scene light present.

4,288,154

DIGITAL INFORMATION INDICATING SYSTEM

Nobuaki Sakurada, Kanagawa; Nobuhiko Shinoda; Yukio Mashimo, both of Tokyo; Tadashi Ito, and Fumio Ito, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 850,806, Nov. 11, 1977, abandoned, which is a continuation of Ser. No. 610,276, Sep. 4, 1975, abandoned. This application May 2, 1979, Ser. No. 35,211

Claims priority, application Japan, Sep. 4, 1974, 49/101710

Int. Cl.³ G03B *17/18*; G01J *1/44*

U.S. Cl. 354—23 D **11 Claims**

1. A device for indicating photographic exposure information in digital form, comprising:

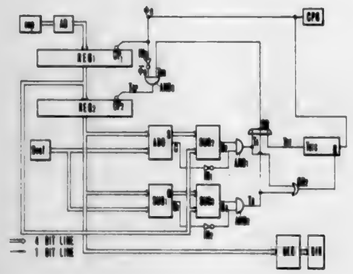
(a) a conversion means for converting analog exposure information corresponding to an object brightness into a digital value;

(b) a first register means to read out and memorize the output of said brightness information converting means;

(c) a second register means coupled to said first register means, said second register means for memorizing the content of the first register means;

(d) an indication circuit to provide an indication corresponding to the content of the second register means;

(e) a transmit signal forming circuit for generating periodically a signal for transmitting content of the first register means to the second register means, the periodically generated signals being produced with a period necessary for visually recognizing the display value when the content of the second register means is indicated by means of the indication circuit, so that the content of the second regis-



ter means is renewed periodically into a value corresponding to the brightness; and

(f) a control circuit connected to the first register means and the second register means, which forms a signal for transmitting the content of the first register means to the second register means independently of the transmit signal formed by the transmit signal forming circuit when the difference between the contents of the first and second register means exceeds a prescribed value, whereby the content of the second register means is renewed immediately when the brightness of the object changes sharply with the formation of the transmit signal.

4,288,155

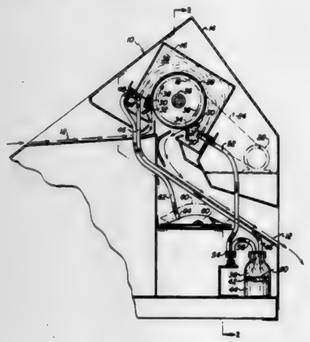
VARIABLE VOLUME DIAZOTYPE DEVELOPING APPARATUS AND METHOD

Henry W. Patrick, Raleigh, N.C., assignor to Diazit Company, Inc., Youngsville, N.C.

Filed Aug. 29, 1979, Ser. No. 70,795

Int. Cl.³ G03D *7/00*

U.S. Cl. 354—300 **11 Claims**



1. In a diazotype developing apparatus in which a gaseous developing medium of predetermined concentration is supplied to a containing system within which the gaseous developing medium is to be isolated from the surrounding ambient atmosphere, the containing system including a developing chamber, the improvement comprising variable volume means for enabling the volume of the containing system to be varied with only negligible changes in the pressure within the containing system so as to allow the volume of gaseous developing medium of predetermined concentration to be maintained within the containing system at essentially the same pressure as the pressure of the surrounding ambient atmosphere during variations in the volume of gaseous developing medium within the containing system resulting from operation of the apparatus.

4,288,156

CARRIER FOR SHEET OF PHOTOGRAPHIC PAPER

David H. Savage, 4806 Castlewood Dr., Lilburn, Ga. 30247

Filed Feb. 4, 1980, Ser. No. 118,567

Int. Cl.³ G03D *13/12*

U.S. Cl. 354—312 **8 Claims**



1. Apparatus for simultaneous processing of a plurality of sheets of material, said apparatus comprising:

a plurality of carriers each comprising a generally rectangular plate having a face, a back and a lower edge, said face having a smooth surface for receiving said sheet, said smooth surface being sufficiently smooth that said sheet, when wetted, will adhere to said smooth surface, said back having an irregular surface which is sufficiently irregular that said sheet, when wetted, will not adhere to said irregular surface, a lip along the lower edge of said plate and extending from said smooth surface, said lip being so constructed and arranged that said sheet is urged against said lip and said lip supports said sheet on said smooth surface;

a sleeve having a lower end and a upper end, said sleeve being sized and shaped to receive said plurality of carriers through an opening defined in said upper end of said sleeve, said lower end of said sleeve supporting said lower edge of said plate;

a tank for containing a quantity of liquid, said tank being sized and shaped to receive said sleeve therein; and

said lower end of said sleeve defining at least one opening, whereby said liquid in said tank is communicable with said sheet on said smooth surface when said sleeve is received in said tank.

4,288,157

APPARATUS FOR CONTROLLING THE QUALITY OF A PICTURE WHICH IS TO BE PROCESSED IN A REPRAPPARATUS

Felix Brunner, Coirppo, Switzerland

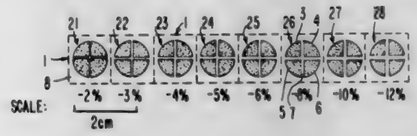
Continuation of Ser. No. 756,562, Jan. 3, 1977, abandoned, which is a continuation of Ser. No. 447,621, Mar. 4, 1974, abandoned. This application Mar. 20, 1979, Ser. No. 22,243

Claims priority, application Switzerland, Mar. 8, 1973, 3437/73

Int. Cl.³ G03B *27/52, 27/32*

U.S. Cl. 355—40 **21 Claims**

1. An apparatus for use in checking the quality of a screened print, consisting of screen dots, which occupies a predetermined area of a carrier member, said apparatus comprising at least one measurement element which is applied to the carrier member outside said predetermined area, said measurement element including at least one measurement symbol which is of substantially the same overall shape as one of the screen dots forming the screened print and the size of which is of the same order of magnitude as the size of one of the screen dots forming



the screened print, said symbol having an external periphery and being formed with a gap which is located within the external periphery of the symbol and disappearance of which during reproduction of printing of an image formed by the screen dots within said predetermined area represents directly a measure of a departure of the screen dots from the desired shape or size thereof.

4,288,158

LASER CEILOMETER WITH SAFETY POWER-REDUCTION FEATURE

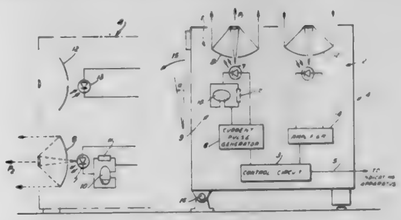
Frank Früngel, Herwigredder 105a, 2000 Hamburg 56, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,779

Claims priority, application Switzerland, Mar. 31, 1978, 3468/78

Int. Cl.³ G01C *3/08*; G08B *21/00*

U.S. Cl. 356—4 **14 Claims**



1. An improvement in a laser ceilometer, for use in a laser ceilometer which can be vertically oriented, which can be tilted away from a vertical orientation, and which emits laser radiation, comprising a means responsive to orientation of the laser ceilometer and cooperating therewith in such a manner as to cause the laser ceilometer to emit a maximum effective radiant power of laser radiation when the laser ceilometer is vertically oriented, and to cause the laser ceilometer to emit a less-than-maximum effective radiant power when the laser ceilometer is tilted away from a vertical orientation.

4,288,159

OPTICAL TEMPERATURE TRANSDUCER

David P. Newman, Yellow Springs, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Oct. 1, 1979, Ser. No. 80,759

Int. Cl.³ G01J *5/48*; G01K *11/14*

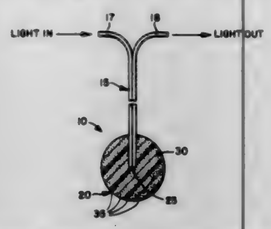
U.S. Cl. 356—44 **20 Claims**

1. An optical temperature transducer, comprising:

(a) fiber optical light conducting means having a terminal end,

(b) a substantially solid temperature-dependent light absorbing matrix mass optically coupled on said terminal end of said fiber optical light conducting means, and

(c) said matrix mass including multifaceted randomly oriented and distributed reflecting chips therein for randomly distributiung light therein received from said fiber



optical light conducting means and returning a portion of the unabsorbed light therethrough, reflection of light by said chips being substantially unaffected by temperature.

4,288,160

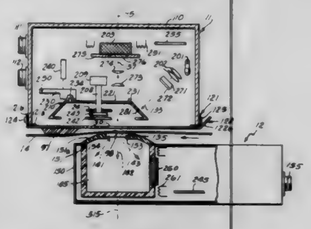
OPTICAL PROPERTY MEASUREMENT SYSTEM AND METHOD

Fred P. Lodzinski, Port Edwards, Wis., assignor to Nekoosa Papers Inc., Port Edwards, Wis.

Continuation-in-part of Ser. No. 429,637, Dec. 28, 1973, abandoned, and a continuation-in-part of Ser. No. 540,251, Jan. 10, 1975, Pat. No. 4,019,819. This application Jan. 24, 1975, Ser. No. 543,902

Int. Cl.³ G01N *21/17, 21/86*

U.S. Cl. 356—73 **4 Claims**



1. A method of measuring Tappi opacity comprising the steps of:

(a) calibrating a transmittance measurement (TSP6) to obtain a calibrated transmittance value (TPD/TD) which is a measure of the transmittance of light having a spectral distribution for characterizing Tappi opacity,

(b) separately calibrating a reflectance measurement (RSP6) to obtain a calibrated reflectance value (RPD6) which is a measure of the reflectance of light having a spectral distribution for characterizing Tappi opacity,

(c) calculating a transmittance value (T) based on the calibrated transmittance value (TPD/TD) and the calibrated reflectance value (RPD6) such that the calculated transmittance value (T) corresponds to the absolute transmittance as measured on a scale from zero to one hundred,

(d) calculating a reflectance value (R_o) based on the calibrated reflectance value (RPD6) and the calibrated transmittance value (TPD/TD) such that the calculated reflectance value (R_o) corresponds to the absolute reflectance as measured on a scale from zero to one hundred, and

(e) calculating a value for Tappi opacity ($R_o/R.89$) based both on said calculated transmittance value (T) and on said calculated reflectance value (R_o) utilizing a nonlinear mathematical relationship between Tappi opacity and the absolute transmittance and absolute reflectance values,

(f) arranging a light source on one side of a moving web of paper sheet material,

(g) directing light from the light source along a common incident light path so as to impinge on said one side of said moving web, and so as to provide wavelengths of light incident on the moving web having a spectral distribution for characterizing Tappi opacity,

(h) arranging transmitted light and reflected light detectors on the respective opposite sides of the moving web to receive light of said spectral distribution from the light source after passage along said common incident light path and respectively after being transmitted through said moving web and respectively after being reflected from said one side of said moving web, thereby to obtain from a common region of the moving web a transmittance signal from the transmitted light detector and a reflectance signal from the reflected light detector, and

(i) separately transmitting the transmittance and reflectance signals to provide a transmittance measurement (TSP6) and a reflectance measurement (RSP6) and separately converting said measurements to digital form for processing at least according to the foregoing steps (a) through (e).

4,288,161

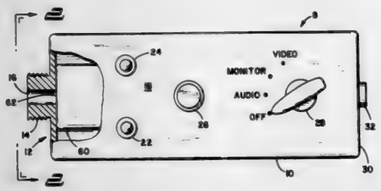
OPTICAL PROBE FOR DETECTING TRANSITORY AND REPETITIVE LIGHT SIGNALS

George H. Fortescue, Granada Hills, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jun. 4, 1979, Ser. No. 44,989

Int. Cl.³ G01J *1/44*

U.S. Cl. 356—73 **10 Claims**



1. A device for detecting transitory and repetitive light signals comprising:

detector means for detecting said light signals and for providing output signals indicative of the presence thereof;

first indicator means coupled to said detector means for providing a continuous indication of the initial presence of said light signals; and

second indicator means coupled to said detector means for providing an indication of the repetition rate of said light signals.

4,288,162

MEASURING PARTICLE SIZE DISTRIBUTION

Yoshiyasu Sakamoto; Yoichi Tamura; Kiyohiko Kawaguchi, and Kiyotaka Inada, all of Amagasaki, Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1979, Ser. No. 15,871

Int. Cl.³ G01N *15/02*

U.S. Cl. 356—335 **6 Claims**

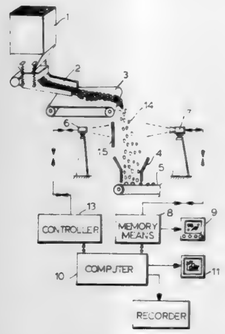
1. A method of determining particle size distribution of particles in a mass of a granular substance, comprising:

causing the mass of the granular substance to fall in a stream of separate particles through a predetermined distance;

producing a static image of the projected areas of the falling particles of the granular substance by providing a light transmitting screen along one side of the falling stream of particles, intermittently lighting said screen for brief periods of time for producing images of the particles in the stream of particles when the screen is viewed from a position laterally of the stream, the periods of the illumination being sufficiently brief to cause the images to appear

to be motionless, and televising the images of the particles at at least one period of lighting of the screen, and

measuring the projected areas of the images by utilizing the video signal of the televised instantaneous image of the falling stream of particles as the source of information of



the number of particles and the areas of the respective particles, the images of which have been televised; and, from the projected areas and assuming the average shape of the particles to be substantially a rotational ellipsoid, calculating the sizes of the individual particles and the distribution of the sizes of the particles in the mass.

4,288,163

LASERS ANGULAR RATE SENSOR

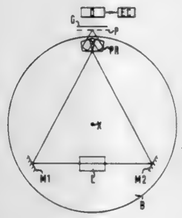
Ian G. Cassels, Dundee, Scotland, assignor to Ferranti Limited

Filed Sep. 25, 1979, Ser. No. 78,814

Claims priority, application United Kingdom, Sep. 27, 1978, 38274/78

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **8 Claims**



1. A ring laser which includes a laser active medium, two or more optical energy reflecting devices and a partially-reflecting device arranged around a closed path such that laser energy generated in the active medium circulates as two counter-rotating beams around the closed path, the partially-reflecting device being arranged to divert a small part of the energy in each beam out of the closed path, an optical energy reflecting element located so as to direct the diverted parts of both of the counter-rotating beams of energy towards one another to produce an interference pattern in a plane outside the closed path, and of such form that the diverted parts of the counter-rotating beams of energy intersect with one another in the same sense as that in which the counter-rotating beams strike the partially-reflecting device, an optical grating located in a plane adjacent to and parallel to that of the interference pattern and comprising a series of parallel lines spaced from one another at a pitch equal to or slightly different from that of the interference pattern, and a detector arranged to detect the presence and movement of any Moire fringe pattern set up by the relative movement of the interference pattern and the optical grating.

4,288,164

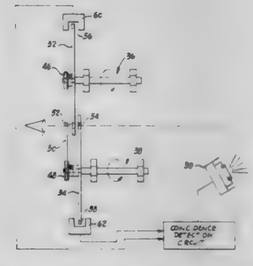
METHOD AND APPARATUS FOR VIEWING GLOWING OBJECTS

James M. Toth, Lyndhurst, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Jul. 19, 1979, Ser. No. 59,025

Int. Cl.³ G01N *21/55, 21/88*; B07C *5/342*; G05D *25/00*

U.S. Cl. 356—445 **23 Claims**



1. A method of determining surface characteristics of a quantity of steel during an intermediate stage in the manufacture of a finished steel product wherein the quantity of steel is in a hot, glowing, solid state comprising:

(a) illuminating the quantity of glowing steel with a source of bright light to create differentiating shadows so that surface indentations may be viewed and identified;

(b) determining surface characteristics of the quantity of steel by viewing the hot and glowing steel from behind a protective device which permits intermittent visualization of the glowing steel; and

(c) further processing the steel in accordance with information derived by such determination.

4,288,165

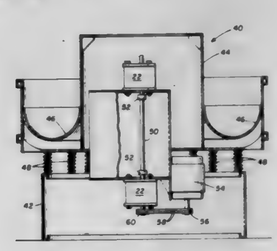
VIBRATORY ACTUATOR INCORPORATING HYDRODYNAMIC JOURNAL BEARING

Kenneth J. Fewel, Nacogdoches, Tex., assignor to The Hutson Corporation, Arlington, Tex.

Filed Aug. 15, 1979, Ser. No. 66,672

Int. Cl.³ B01F *11/00*

U.S. Cl. 366—124 **22 Claims**



1. A vibratory actuator, comprising:

a housing with an inner bearing surface of full cylindrical configuration;

eccentric means rotatably supported in said housing for generating vibration responsive to rotation thereof;

said eccentric means including an outer journal surface of partial cylindrical configuration extending in spaced apart relationship with the bearing surface of said housing to form a fluid film gap therebetween; and

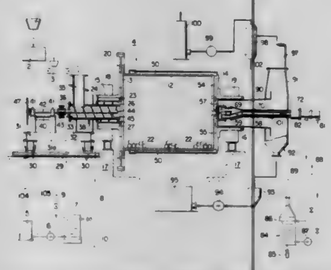
fluid means disposed in said housing for hydrodynamically supporting said eccentric means during rotation within said housing.

4,288,166

APPARATUS FOR PRODUCTION OF STABLE SLURRY OF MILLED COAL AND A HYDROCARBON OIL

Yasuyuki Nakabayashi, Yokohama; Yoshio Matsuura, Funabashi; Masashi Hatano, Yono; Tatsuo Hagiwara, Funabashi; Masaaki Mikamo; Yoshimasa Ebihara, both of Chiba; Yasutomo Tomura, Narita, and Keiji Imai, Tonemachi, all of Japan, assignors to Electric Power Development Co. Ltd., Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Kobe, both of, Japan

Filed Apr. 17, 1979, Ser. No. 30,868
Claims priority, application Japan, Jun. 16, 1978, 53-72176
Int. Cl.³ B01F *15/06*
U.S. Cl. 366—149 7 Claims



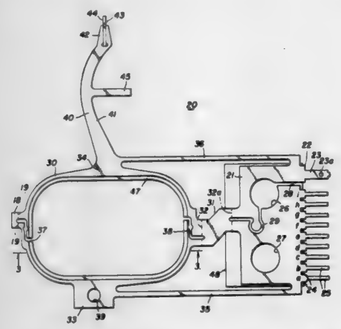
1. An apparatus for producing a liquid mixture of a coal and a hydrocarbon oil comprising: a ball mill (4) including a substantially horizontal rotary drum having a horizontal axis and inlet and outlet end covers (13,14), said rotary drum having inlet and outlet bosses (15, 16) of cylindrical shape respectively fixed with mutually coaxial alignment to said inlet and outlet end covers and extending axially outwardly of the drum; heat applying means (50) disposed around and secured to the outer surface of the drum; bearing means (18, 19) for rotatably supporting said bosses; means (44, 45, 38) for supplying through said inlet boss (15) into the rotary drum the coal which previously has been coarsely crushed and the hydrocarbon oil; means (7) for preheating the hydrocarbon oil prior to its being thus supplied into the rotary drum; means (20) for rotating the rotary drum to mill, agitate, and mix therewithin the coal and the oil thereby to form a liquid mixture; a discharge duct (90) fixedly connected to said outlet boss (16) so as to be rotatable with the outlet boss for conducting therethrough the liquid mixture as well as any water, which was originally contained in the coal and which has been separated by evaporation from the liquid mixture, out of the rotary drum; a stationary discharge tower (91) slidably supporting therein the free end of said discharge duct (90) so as to receive the liquid mixture and water thereinto, said discharge tower having a bottom part (92) to which the liquid mixture flows down and a top part (97) through which the volatile matter flows upward; means (94) for conducting the liquid mixture from said bottom part to a storage tank (95); and means (99) for drawing out the water from said top part, further comprising heating medium supply and discharge pipe means (58, 70) extending longitudinally through said discharge duct (90) and said discharge tower (91) and having one end connected to said heat applying means (50) and the other end disposed outside said discharge tower for supplying and discharging a heating medium to and from the heat applying means (50), said supply and discharge pipe means being rigidly connected to the rotary drum and rotatable therewith; and a rotary joint (72) connecting said pipe means to heating means (84, 87) for heating and circulating the heating medium.

4,288,167

PRINTHEAD AND BLADES THEREFOR

Andrew B. Carson, Jr., Waynesboro, and Frederick M. Blodgett, Jr., Stuarts Draft, both of Va., assignors to General Electric Company, Waynesboro, Va.

Filed Feb. 13, 1980, Ser. No. 121,132
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—121 20 Claims



1. In a flat printing blade of the type having a flat generally annular rim in which is retained a flat-spiral substantially planar coil energizable for interaction with an associated magnetic field to effect movement of the rim in a predetermined direction parallel to the plane of the coil, a mounting portion spaced from the rim and substantially parallel to the plane of the coil, and a pair of resilient mounting arms spaced apart in the predetermined direction and extending from the mounting portion to opposed points on the rim, the improvement comprising:

an elongated arcuate printing arm extending from the rib generally in the predetermined direction and terminating in a printing tip, and

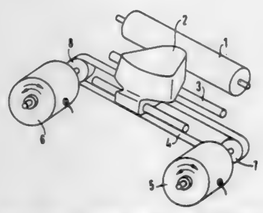
an elongated stabilizing member extending from the concave side of said printing arm intermediate the ends thereof substantially parallel to the plane of the coil.

4,288,168

ARRANGEMENT FOR DRIVING A PRINTER CARRIAGE IN TELETYPEWRITERS OR DATA PRINTERS

Ulrich Mayr, Germering; Dietmar Höreth, and Hans Kusmierz, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,767
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825761
Int. Cl.³ B41J *19/30*
U.S. Cl. 400—322 9 Claims



1. In an arrangement for the drive of a printer carriage in teletypewriters or teleprinters, the combination of a platen for supporting a recording medium, a printer carriage disposed for movement relative to the platen and carrying a printing head, a pair of drive motors of identical design, each disposed adjacent opposite sides of the carriage in the direction of travel

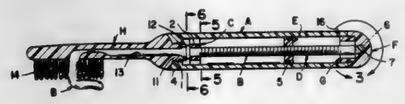
thereof, and pliable drawing means operatively connecting said carriage and said motors, whereby said motors are always simultaneously driven by means of identical control signals during the transport of said carriage and head on said pliable drawing means.

4,288,169

FOUNTAIN TOOTH BRUSH WITH SNAP-ON CLOSURE

Hugh McMenamin, IV, 2532 Nevada St., Union City, Calif. 94587

Filed Apr. 15, 1980, Ser. No. 140,576
Int. Cl.³ A46B *11/02*
U.S. Cl. 401—175 1 Claim



1. A fountain tooth brush comprising:

(a) a hollow barrel for holding toothpaste and having at a rear end thereof a fixed sleeve with an outer end projecting beyond the rear end of said barrel and being provided with an annular groove, the front end of said barrel having a threaded outlet opening;

(b) a screw shaft receivable in said barrel and a spider mounted in said barrel and having a bore for rotatably receiving an unthreaded portion of said screw shaft, said spider being spaced a short distance from said barrel outlet opening and said screw shaft having a flanged head contacting said spider on the side thereof adjacent the outlet opening of said barrel;

(c) a brush head with a threaded end removably receivable in said barrel outlet and having a toothpaste conveying passage leading from its threaded end to the bristle portion of said brush head, the inner end of said threaded end having spaced apart projections for extending into said barrel and contacting the adjacent end of said screw shaft head for spacing the flanged shaft end from the barrel outlet and preventing any axial movement of said screw shaft toward said threaded outlet of said barrel;

(d) a snap-on cap having a recess for receiving the exposed portion of said sleeve, the recess having a cylindrical wall of limited flexibility for rotatably receiving the outer cylindrical wall of said sleeve and having an annular rib adapted to be snapped into the annular groove in said sleeve;

(e) said shaft having a length to dispose the end of said screw shaft opposite to said head end projecting beyond the outer end of said sleeve being rounded with an indentation adjacent thereto and having flattened parallel side faces and a rounded end, said snap-on cap having said recess formed with an inner depression shaped similar to the screw shaft end which projects beyond said sleeve for operatively receiving this shaft end when said cap is snapped onto said sleeve so that rotation of said cap will rotate said screw shaft, the projections on the threaded end of said brush head contacting said screw shaft head for retaining said screw shaft against moving inwardly into said barrel when said cap is forced against said shaft end thus opposing the force required to snap the cap onto the adjacent end of said screw shaft and onto the sleeve; and

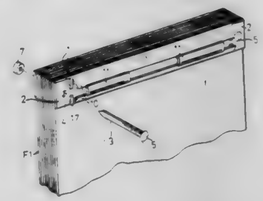
(f) a piston slidably received in said barrel and having a threaded bore for receiving said screw shaft so that rotation of said cap moves said piston through said barrel.

4,288,170

FILE BINDING SYSTEM

Donald T. Barber, Willowdale, Canada, assignor to Datafile Limited, Willowdale, Canada

Filed Aug. 31, 1979, Ser. No. 71,531
Int. Cl.³ B42F *13/36*
U.S. Cl. 402—17 5 Claims



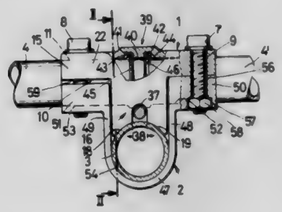
1. A file binding system comprising a pair of elongated rigid support members for supporting a file along its edge, securing members for securing the support members in a binding position, each of the securing members being provided with securing portions adapted for fitting through and securing the support members from their outer sides to provide an effective clamp of the file between the support members, and adjustable extension members along the outer sides of said rigid support members, said rigid support members being separable from one another when removed from the binding position and said securing members being independent of said rigid support members other than in the binding position to facilitate binding adjustment, each of said extension members being two-tiered in construction and comprising a lower hollow tier and an upper tier section raised and extended relative to the lower tier, the lower tiers of said extension members being slidable within the support members which are shaped to cooperate with the lower tiers and which are undercut to secure the lower tiers therein, the upper tiers of said extension members being adapted to override the securing portions of the securing members, each of which is made of resilient material with said securing portions being folded beneath the hollowed triangular tiers of extension members, the resiliency of each securing member driving said securing portions to a locking engagement with said extension members, said extension members being retractable inwardly of the securing portions of the securing members to gain access to said securing portions.

4,288,171

MOUNT FOR A HOLDING STRUCTURE OF A FREE-CUTTING DEVICE

Joachim Kottke, Remseck, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Mar. 1, 1978, Ser. No. 882,434
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 7706436[U]
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—218 23 Claims



1. A mount for a single holding structure of a free cutting device, comprising: only first and second clamping members which respectively are each provided with openings and

depression-forming means and with cooperating clamping surfaces, a bearing or handle supporting tube member of the holding structure received between said first and second clamping members, at least one clamping member being provided with spacers and a receiving space located transverse to the depression-forming means and adapted to clampingly receive said supporting tube member of the free cutting device, screws guided in the openings of said clamping members and adapted to clamp said supporting tube member therewith between said clamping members, said receiving space for the supporting tube member and the depression-forming means at least partially confining a passage for said supporting tube member, said passage extending over the entire length of said clamping members, and at least four screws provided in pairs which are located on both sides of said receiving space and said depression-forming means in said clamping members, said passages being thread free passages for said screws.

4,288,172

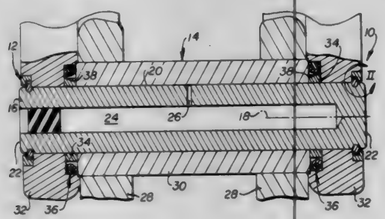
KEEPER ASSEMBLY

Richard E. Livesay, and Paul L. Wright, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 889,702, Mar. 24, 1978, Pat. No. 4,182,578. This application Feb. 21, 1979, Ser. No. 12,994

Int. Cl.³ F16B *21/16*

U.S. Cl. 403—317 **4 Claims**



1. In a keeper assembly (10) of the type including a first member (16) having a central axis (18) and an annular groove (64), and a second member (32) having a force transmitting surface (76) located in a plane transverse to the axis (18), the improvement comprising:

said groove (64) having a pair of planar side walls (66,68) and a concave root (70) defining a preselected U-shaped configuration in cross section as taken by a cutting plane through the axis (18); and

a plurality of similar arcuate keeper segments (46), each keeper segment (46) having a pair of planar side surfaces (56,68) and a convex curved surface (60) defining a preselected U-shaped configuration in cross section generally corresponding to the cross section of said groove (64), each keeper segment (46) being seated in said groove (64) and in use transferring force from the surface (76) of the second member (32) into the first member (16), and each keeper segment (46) having a radially outer cylindrical surface portion (50) having opposite edges (52,54), each of said planar side surfaces (56,68) being connected to one of said edges (52,54).

4,288,173

EXPANSION AND CONTRACTION JOINT ASSEMBLY

Albert T. Nick, 3545 Flowers Dr., Montgomery, Ala. 36109

Filed Dec. 19, 1979, Ser. No. 105,466

Int. Cl.³ E01C *11/10*

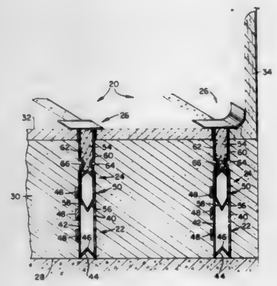
U.S. Cl. 404—49 **2 Claims**

1. An expansion and contraction joint assembly positionable between spaced floor tiles, the tiles being placed in a setting bed which is supported by a slab base, said joint assembly comprising:

a base component, said base component being an elongated channel having a hollow interior, spaced side walls, and a connecting bottom, at least one of said side walls having external locking ridges extending along said channel, bottom portions of said side walls contacting the slab;

an upper component in the form of a rectangular channel having a wedge shaped lower part telescopingly positionable in said hollow interior of said base component, side walls provided with lock slots, and an open upper chamber;

a cap component having downwardly extending legs and a detachable tab extending between said legs, said legs



having locking indents which cooperate with said lock slots to secure said cap component to said upper component; and

a resilient core positionable in said upper chamber of said upper component, said joint assembly being positionable between adjacent ones of the floor tiles with an upper surface of said core being adjacent an upper surface of the floor tiles, said joint assembly being adapted to compensate for expansion and contraction of said slab, setting bed, and floor tiles.

4,288,174

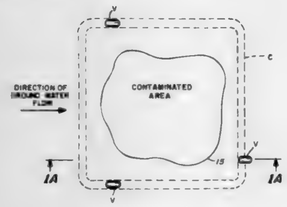
SYSTEM FOR GROUNDWATER FLOW CONTROL

Awbrey C. Laws, West Tisbury, Mass. 02175

Filed Sep. 10, 1979, Ser. No. 74,168

Int. Cl.³ E02B *11/00*

U.S. Cl. 405—43 **5 Claims**



1. A system for virtually stopping the horizontal rate of groundwater flowing through and above a land mass, said system comprising means defining a plurality of adjacent approximately vertical well defining means located substantially along the circumference of the land mass and penetrating earth from a point at or below ground surface to a point at which substantial quantities of groundwater can be collected, said adjacent well means being connected to each other by conduits at connecting locations along said means forming at least 180 degrees of continuous conduit arc around said land mass, the connecting locations being approximately one foot to twenty feet below the upper level of said groundwater, said system functioning to virtually stop the horizontal flow rate of groundwater through said land mass and to virtually stop the rate of groundwater flow in subsurface land located in the region defined by the conduit arc and the groundwater level.

4,288,175

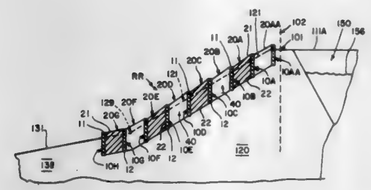
RETICULATELY REINFORCED EARTHEN DAMS AND METHOD FOR PROVIDING REINFORCEMENT

Leroy E. Baker, and Barry L. Butterfield, both of Omaha, Nebr., assignors to Henningson, Durham & Richardson, Inc., Omaha, Nebr.

Filed Oct. 29, 1979, Ser. No. 89,024

Int. Cl.³ E02B *7/06*

U.S. Cl. 405—117 **20 Claims**



1. In an earthen dam comprising a lofty crest located immediately forwardly a water reservoir and including a crest-top transversely extending along a dam-axis, a downstream side including a substantially planar downstream-face sloping longitudinally forwardly and downwardly from said crest-top and having a transversely extending finite-extent defined by downstream-face gutters, and a dam toe portion including a toe-surface at the natural terrain, the improvement of reticulate dam reinforcement commencing at the crest-top and extending longitudinally downwardly therefrom and also extending generally parallel thereto for at least said finite-extent, said reinforcement being indefinitely thereafter capable of preventing breach of the earthen dam during overtopping by water flood flows and comprising:

A. a plurality of transversely extending and longitudinally separated upright check-walls and each check-wall including:

i. opposed transversely extending upright rear-surface and front-surface,

ii. a transversely extending bottom-edge embedded into the earthen dam, the bottom-edges of the check-walls being substantially parallel to each other and to a vertical plane passing through the dam axis, and

iii. a transversely extending substantially horizontal top-edge and defining with said bottom-edge an upright height, the check-walls top-edges being substantially horizontal and parallel to each other and to a vertical plane passing through said dam-axis; the majority of said check-walls at their top-edges being recessed below the adjacent surfaces of the earthen dam; the longitudinally separated consecutive check-walls within the region of the dam downstream-face being of progressively lower elevation whereby the top-edge of an immediately forward upright check-wall has an elevation between the top-edge and bottom-edge of the rearwardly neighboring check-wall; and

B. a plurality of intervening longitudinally, extending spacer-walls located between and attached to consecutively neighboring check-walls and for braceably maintaining the longitudinal spacing therebetween, each of said spacer-walls having an upper-edge and a lower-edge, said spacer-walls providing in concert with the check-walls a plurality of tetragonal pocket-like stilling-basins for said dam reinforcement, said spacer-walls being at least partially embedded into the earthen dam and the majority of said spacer-walls at their upper-edges being recessed below the adjacent surfaces of the earthen dam.

4,288,176

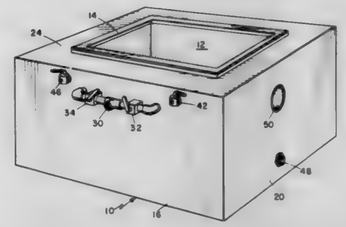
UNDERWATER AIR POCKET WORK UNIT

Thomas H. Devine, 147 Jefferson Ave., Chula Vista, Calif. 92012

Filed Mar. 23, 1979, Ser. No. 23,329

Int. Cl.³ B63L *11/10*

U.S. Cl. 405—188 **10 Claims**



1. An underwater gas pocket work unit, comprising:

a structure having side walls with opposite first and second ends and defining a work chamber, wherein the work chamber is defined solely by the side walls to provide unobstructed access to the work chamber at both ends;

means for sealing the first end of the structure to an underwater work surface; and

valve means in the structure for enabling a gas to enter the work chamber to provide a gaseous pocket in the upper portion of the work chamber when the first end of the structure is sealed to said underwater work surface.

4,288,177

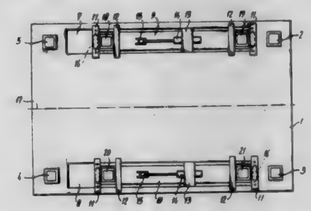
WALKING PLATFORM CONSTRUCTION

Wim Schoonmade, Rozenoord, Netherlands, assignor to RSV-Gusto Engineering B.V., Schiedam, Netherlands

Filed May 10, 1979, Ser. No. 37,860

Int. Cl.³ E02B *17/08*

U.S. Cl. 405—196 **4 Claims**



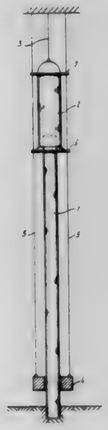
1. A walking platform construction comprising a barge or work platform and a number of legs movable in a vertical direction and securable with respect to the barge or platform, a plurality of auxiliary frames disposed in a plurality of elongated rectangular recesses in the barge or work platform that are parallel to each other, first power means for shifting each auxiliary frame relative to the barge or platform in a horizontal direction parallel to the longitudinal axis of the recess relative to and independently of the other said auxiliary frames, second power means for shifting each auxiliary frame relative to the barge or platform in a horizontal direction at 90° to said axis relative to and independently of the other said auxiliary frames, there being substantial clearance between each said auxiliary frame and the barge or platform in both said horizontal directions thereby to enable said shifting, each said auxiliary frame having at least one leg and means to move said at least one leg vertically relative to the associated said auxiliary frame.

4,288,178

APPARATUS FOR GENERATING A RETROPULSIVE FORCE ON A BODY SUCH AS A PILE

Joost W. Jansz, The Hague, Netherlands, assignor to Hollandsche Beton Groep N.V., The Hague, Netherlands

Filed Apr. 17, 1979, Ser. No. 30,808
Claims priority, application Netherlands, Apr. 18, 1978, 04128
Int. Cl.³ E02D *7/00*
U.S. Cl. 405—228 **6 Claims**



1. An apparatus for generating a retropulsive force on at least one object which tends to deviate from a desired vertical disposition under the influence of detrimental forces, said apparatus comprising:

an elongated member standing upright at a ground surface and having a desired vertical disposition;

force means guided by said elongated member;

tensioning means for supporting said force means under tension above said ground surface, said tensioning means being guided through said elongated member above said force means and supported above said elongated member by support means, said tensioning means applying no retropulsive force to said object when said object is in said desired vertical disposition, and applying an increasing retropulsive force to said object when said object increasingly deviates from said desired vertical disposition, said tensioning means applying an amount of retropulsive force proportional to the amount of deviation.

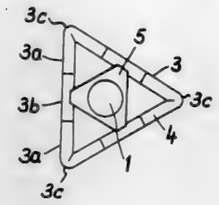
4,288,179

CUTTING TOOL BIT

Heinrich Krüger, Essen, and Hans Tack, Velbert, both of Fed. Rep. of Germany, assignors to Fried. Krupp GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 16,945
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810824
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—114 **13 Claims**

1. In a cutting tool bit having a central mounting hole, a planar bottom face and an opposite top face having a central zone situated at a lower level than the marginal zones thereof; chip breaking elements formed on the top face; and lateral faces defining cutting edges with the top face; the improvement wherein each cutting edge has lineal length portions sloping from opposite ends of the cutting edge in the direction of its middle towards said bottom face; the improvement further comprising an elevation situated in said central zone and having an upper surface located at a lower level than the lowest point of said cutting edges; and a plurality of surfaces each situated between a respective said cutting edge and said



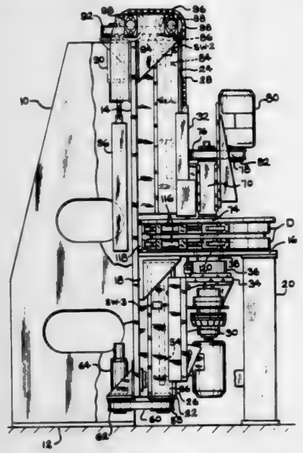
elevation; said chip breaking elements being formed by said surfaces and said elevation.

4,288,180

APPARATUS FOR TRUING BOLTING SURFACES OF WHEELS AND THE LIKE

David Trevarrow, 119 Reiniche, Horton, Mich. 49246

Filed Mar. 12, 1979, Ser. No. 19,970
Int. Cl.³ B21D *53/26*; B21K *1/28*; B23D *41/00*
U.S. Cl. 408—2 **25 Claims**



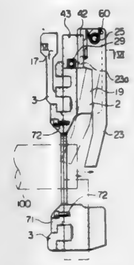
1. A machine for truing the opposite surfaces of tool deformable workpieces relative to their sides, comprising: a frame having a work station intermediate the ends of said frame, chucking means at said work station for accurately positioning a tool deformable workpiece at generally right angles to said frame, a first slide on said frame for movement toward and away from one side of said workpiece, said first slide having tooling thereon for machining surfaces of the workpiece held by said chucking means, a second slide on said frame for movement toward and away from the opposite surfaces of a workpiece held by said chucking means, a cutter on said second slide rotatable about an axis paralleling the slide movement toward and away from the workpiece, and control means holding said tooling on one of said first and second slides in cutting position against the workpiece while causing said cutter on said other one of said slides to finish its cutting operation on the workpiece.

4,288,181

DIE-HEAD OF CUTTING MACHINES

Ryo Sakaguchi, and Yoshiharu Ikenaka, both of Osaka, Japan, assignors to Rex Industries Co., Ltd., Osaka, Japan

Filed May 7, 1979, Ser. No. 36,809
Claims priority, application Japan, May 9, 1978, 53-54027
Int. Cl.³ B23B *5/12*
U.S. Cl. 408—15 **11 Claims**



1. A die-head of a cutting machine comprising a pair of relatively rotatable annular plates each having a center opening into which a workpiece to be cut extends, which plates movably hold cutting tools therebetween so that said cutting tools can be radially displaced by the relative rotation of said annular plates, wherein an improvement comprises a tool retracting lever having a projection, said tool retracting lever being, at its one end, pivotally connected to one of said annular plates, and projecting, at its other end, in said center opening of said annular plates, said other end being positioned to be engaged by the workpiece as the cutting operation approaches completion, and a slide which is slidably mounted to said one annular plate and which is integrally connected to said other annular plate so as to move therewith, said slide being always pressed in a peripheral direction of said annular plates by a spring which is arranged between said slide and said one annular plate, said slide being provided with a recessed groove into which is engaged said projection of said tool retracting lever, whereby when said tool retracting lever is pushed and pivoted by said workpiece which axially moves in said opening of said annular plates, said projection of said lever is completely disengaged from said recessed groove of said slide, thus resulting in a sudden and substantial relative rotation of said annular plates to retract said cutting tools, wherein said recessed groove of said slide into which is engaged said projection of said tool retracting lever comprises an inclined taper portion so that the slide movement of said slide gradually occurs as the cutting operation approaches completion to thereby gradually retract the cutting tools until said projection of said tool retracting lever is completely disengaged from said recessed groove of said slide.

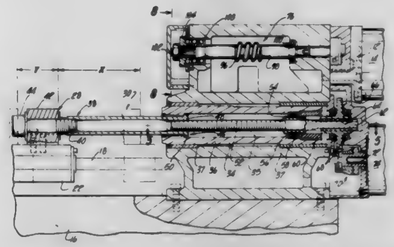
4,288,182

MACHINING APPARATUS TOOL FEED AND RETRACT SYSTEM

John Vandenkieboom, Troy, and Douglas Myers, Sterling Heights, both of Mich., assignors to LaSalle Machine Tool, Inc., Troy, Mich.

Filed Feb. 15, 1980, Ser. No. 121,747
Int. Cl.³ B23B *47/00*
U.S. Cl. 408—129 **19 Claims**

1. Machining apparatus for machining a workpiece with a work-performing tool comprising a frame, a tool carrier movably mounted on said frame for reciprocal movement relative to a workpiece, feed means for reciprocating said tool carrier between a fully retracted tool change position and a partially retracted position in a clearance relation with the workpiece and for moving said tool carrier from said partially retracted position toward and away from the workpiece through a reciprocal machining stroke, said feed means including a drive transmitting assembly having extensible and contractible means thereon connected to said tool carrier, means mounting said drive assembly on said frame for reciprocal movement substantially in the direction said tool carrier is reciprocally moved, first drive means for moving said drive assembly so as



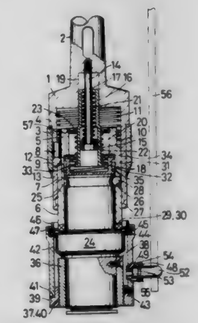
to move said tool carrier through a machining stroke, and second drive means operatively associated with said extensible and contractible means for moving said tool carrier between said fully and partially retracted positions.

4,288,183

TOOL HOLDER OR SPINDLE

Taizo Kato, 3007-104 Obatahigashijima, Moriyamaku, Nagoya, Japan

Filed Jul. 19, 1979, Ser. No. 59,255
Claims priority, application Japan, Jul. 27, 1978, 53-103852[U]
Int. Cl.³ B23B *41/00*, *47/18*
U.S. Cl. 408—142 **6 Claims**



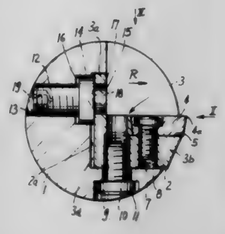
1. A rotatable tool holder for driving a tool having a pitch against a workpiece, said tool holder being adapted to be mounted in a machine and rotated on a tool holder axis, comprising a driving cylinder, a driven cylinder reciprocatable and rotatable within said driving cylinder means resiliently connecting said driven cylinder on said driving cylinder, said driven cylinder being adapted to be attached with the tool, first thread means reciprocatable and rotatable together with said driven cylinder and having the same pitch as said tool, and a second thread means in threaded engagement with said first thread means and rotatable and reciprocatable relative to said driving cylinder, said second thread means having means engageable with a member angularly immovable about the axis of said tool holder for preventing rotation of said second thread means together with said first thread means and said driving and driven cylinders, such that rotation of said first thread means forces the tool to be advanced accurately with the same pitch of the tool, and further comprising means normally connecting said driving and driven cylinders for rotation together, said driving cylinder being disconnectable from said driven cylinder to stop said driven cylinder from rotating when said

driven cylinder has moved to a predetermined position relative to said driving cylinder.

4,288,184
BORING TOOL

Helmut Veigel, Schwieberdingen, Fed. Rep. of Germany, assignor to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 114,939
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 7904992[U]
Int. Cl.³ B23B *29/02*
U.S. Cl. 408—185 **5 Claims**



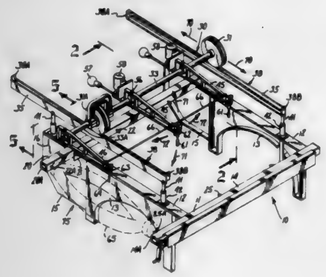
1. In a boring tool having a shaft and at least one support which is inserted in a cylindrical blind hole in the shaft and is attached by means of a fixing screw, the support having a rear cylindrical portion with a circular cross-section adapted to fit in the blind hole and, adjoining this, a forward approximately half-cylindrical portion with an essentially semi-circular cross-section of the same diameter, the forward half-cylindrical portion having a recess for a replaceable cutting insert through which a clamping screw passes, the recess having a seating which is parallel to the top surface of the insert which passes approximately along a diameter of the shaft and abutment surfaces for the replaceable cutting insert, and in which a thread for the clamping screw is arranged perpendicularly to the seating, the improvement comprised in that the support has a second thread arranged parallel to the first thread for the clamping screw, the second thread receiving a fixing screw which is screwed from below through an oblong hole in the shaft into the support, wherein an adjusting screw is provided in the base of the blind hole and is arranged to be parallel to and displaced from the axis of the blind hole, the adjusting screw having a cylindrical centring shoulder which is a snug fit in a passage in the shaft and, adjoining the centring shoulder, a cylindrical spigot at its forward end, which is smaller in diameter than the centring shoulder and is a snug fit in a recess of the cylindrical portion of the support, and in which the rear and-/or front end(s) of the adjusting screw have a depression to allow engagement of an adjusting tool.

4,288,185
OUTBOARD TRACING STATION FOR CARVING MACHINE

John O. Lenz, Coon Rapids, Minn., assignor to Kurt Manufacturing Company, Inc., Minneapolis, Minn.

Filed Feb. 25, 1980, Ser. No. 124,463
Int. Cl.³ B23K *1/16*
U.S. Cl. 409—121 **5 Claims**

1. A carving machine comprising in combination a frame, said frame having fore and aft extending side members that are spaced apart laterally from each other, and cross member means holding said fore and aft extending side members together, means on said frame positioned between said side members to support workpieces to be carved, carving arm means mounted on said frame, said carving arm means also being positioned between said side members, and tracing station arm means duplicating movements of the carving arm means positioned to the lateral side of one of said side members, means to mount a pattern to the outside of one of said side members aligned with said tracing station arm means, and means to couple and support the carving arm means and the tracing station arm means which cause the movement of the tracing

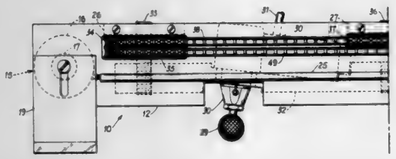


station arm means to be duplicated by the carving arm means, the means to couple and support and the means to mount a pattern being supported by the frame adjacent said one side member.

4,288,186
PIT CUTTER APPARATUS

Rodney O. Dockal, Alvin, and Harold A. Lindsey, Houston, both of Tex., assignors to AMF Incorporated, White Plains, N.Y.

Filed Dec. 6, 1979, Ser. No. 100,779
Int. Cl.³ B23C *1/20*
U.S. Cl. 409—175 **7 Claims**



1. Apparatus for accurately making an anomaly of predetermined size and depth in the surface of a standard for calibrating an instrument for non-destructive testing for such anomalies and indicating the severity thereof, comprising

frame means elongated along its longitudinal axis;

a pair of electro-magnetic hold-down means mounted on said frame means each having a laterally spaced pair of legs depending from said frame means for contacting the surface of the standard;

one of said hold-down means being disposed adjacent the front end of said frame means and the other of said hold-down means being longitudinally spaced therefrom intermediate the ends of said frame means;

motor means disposed between said hold-down means and having cutting means of predetermined size depending therefrom for making an anomaly in the surface of the standard when rotatably driven by said motor means;

means movable relative to said frame means for mounting said motor means and moving said motor and cutting means toward and away from the surface of the standard;

means adjacent the rear end of said frame means for manually moving said mounting means and having adjustable means for indicating when said cutting means has moved a predetermined depth into the standard;

a pair of rotatable shafts journaled in said frame means each threadedly engaging a respective end region of said motor mounting means;

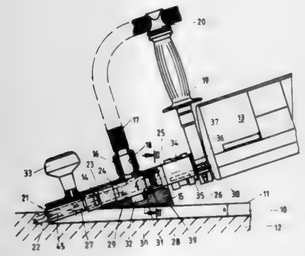
means drivingly connecting said pair of rotatable shafts together; and

means drivingly connecting said means adjacent the rear end of said frame means to one of said pair of shafts for manually rotating said pair of shafts in unison to move said motor mounting means relative to said frame means.

4,288,187
ARRANGEMENT FOR PRODUCING GROOVES

Karl Wanner, Leinfelden-Echterdingen; Wilbert Reibetanz, Leinfelden; Hans-Peter Dohse, Grafenau; Otto Baumann, Leinfelden-Echterdingen; Dietmar Spiwokz, Stuttgart; Karl Seitz, Oberkochen; Ernst Angermair, Bietigheim-Bissingen, and Herbert Wiesner, Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,429
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814672; Feb. 17, 1979, 2906235
Int. Cl.³ B23C *1/20*
U.S. Cl. 409—180 **34 Claims**



1. An arrangement for producing grooves in walls, ceiling and like elements of a structure by a hand-held processing machine having a tool holder, comprising a rotatable material-removing tool having an axis and driven in rotation about said axis by the processing machine, and a housing including a substantially wedge-shaped guiding piece having a bottom wall and two lateral walls and adapted to receive said tool and a slide element mounted on said guiding piece and defining a guiding surface inclined at an acute angle to said axis of the tool and adapted to lie in contact with a wall or ceiling to be machined, said slide element having two opposite members defining said guiding surface, and positioned so as to provide a clearance therebetween through which said tool extends, said tool including a cross-bit having a shaft and a cruciform cutting head on said shaft, said cutting head having a guiding portion which is formed as an axially extending centering point provided cutting blades; and a holding device arranged to detachably connect said guiding piece to the processing machine and adjustable relative to said tool in a longitudinal direction of the latter in dependence upon differing lengths of said tool and the tool holder, and also adjustable about a further axis extending transverse to said axis of said tool which accompanying adjustment of said acute angle in dependence upon differing diameters of said tool, each of said guiding members being a bent-off portion of a respective one of said lateral walls of said guiding piece.

4,288,188
TIE DOWN

Edward R. Smith, Denville, N.J., assignor to Patent Products, Inc., East Hanover, N.J.

Filed Aug. 24, 1978, Ser. No. 936,526
Int. Cl.³ B60R *7/00*; A44B *31/00*
U.S. Cl. 410—97 **12 Claims**

4. A tie down comprising

a self-supporting flexible metal cable of limited length having one end looped over onto an intermediate portion of said cable to define a loop;

a clamp securing said one end of said cable to said intermediate portion;



a ferrule secured to said cable at an opposite end from said loop, said ferrule having a bore passing therethrough on an axis perpendicular to the axis of said cable; and

a plastic coating covering said cable, clamp and ferrule.

4,288,189
THREADED INSERT

Theodore Zinylek, Jr., Yardley, Pa., assignor to Yardley Products Corp., Yardley, Pa.

Filed Aug. 10, 1979, Ser. No. 65,490
Int. Cl.³ F16B *37/12*
U.S. Cl. 411—180 **8 Claims**



1. A threaded insert, particularly usable fixedly positioned in a base material which is molded, comprising a generally cylindrical body including a securement means about the outer surface thereof to facilitate the securing of the threaded insert to the surrounding molded base material, said cylindrical body defining a vertically extending central bore therethrough including a thread means on the walls thereof, each of said thread means comprising:

(a) an upper thread face extending centrally inwardly and downwardly from the walls of said central bore;

(b) a lower thread face extending centrally inwardly and upwardly from the walls of said central bore;

(c) a thread end extending from the innermost end of said upper thread face to the innermost end of said lower thread face, said thread end extending in a direction generally parallel to the axis of said central bore;

(d) an upper thread edge defined along the inner section of said upper thread face and said thread end;

(e) a lower thread edge defined along the intersection of said lower thread face and said thread end;

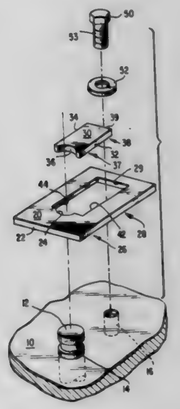
said upper face including an upwardly extending section directly adjacent said upper thread edge to prevent flow of base material thereby during material molding, said lower thread facing including a downwardly extending section directly adjacent said lower thread edge to prevent flow of base material thereby during material molding.

4,288,190

TWO-PIECE GROOVED PIN RETAINER

Samuel L. Benson, Clinton, Ind., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 22, 1979, Ser. No. 87,581
Int. Cl.³ F16B *21/16*
U.S. Cl. 411—511 **8 Claims**



1. Apparatus for retaining a pin having a circumferential groove, said pin projecting through a bore defined in the surface of a housing, comprising:

(a) first retainer means, resting flatly on the surface of said housing, for engaging a first portion of said circumferential groove;

(b) second retainer means, encircling said pin and said first retainer means and resting flatly on the surface of said housing, for engaging a second portion of said circumferential groove, said second retainer means having a first interior edge which is complementary to said second portion of the circumferential groove; and

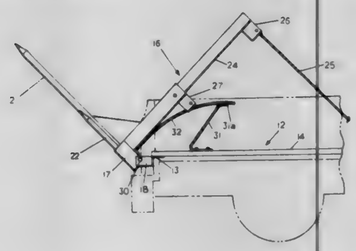
(c) one removable headed fastener for holding said first retainer means and second retainer means together about said pin and for holding said first retainer means and said second retainer means fixed flatly in place relative to the surface of said housing such that said pin is free to rotate relative to said housing.

4,288,191

HAY BALE HANDLING MECHANISM

Bobby R. Lynch, Ozark, Mo., assignor to Tri-L Manufacturing, Inc., Ozark, Mo.

Filed Oct. 3, 1979, Ser. No. 81,468
Int. Cl.³ B66F *11/00*
U.S. Cl. 414—24.5 **13 Claims**



1. A bale handling mechanism adapted to mounting on the bed portion of a pick-up truck or the like comprising

a base member for attachment to said truck bed portion,

a T-shaped finger support member comprising a cross-member and a central member, one end of said central member being secured to said cross-member and extending transversely from said cross-member and the opposite end thereof being free, said cross-member being pivotally mounted on said base member adjacent the rearward end of said base member and said truck bed portion for pivotal movement between a lowered position in which said central member extends upwardly from said cross-member and a raised position in which said central member extends forwardly above said base member and said truck bed portion,

a plurality of elongated finger members attached to and projecting rearwardly from said pivotally-mounted cross-member in its lowered position and adapted to penetrate and support the bale,

cable means connected to the free end portion of the central member of said T-shaped finger support member,

winch means mounted on said base member spaced from said pivotal T-shaped finger support member and connected to the other end of said cable means and adapted to raise said bale,

spring means mounted in lineal alignment between the said pivotal T-shaped finger support member and said base member and adapted to maintain continuous tension on said cable means, said spring means comprising a pair of leaf springs, one of said leaf springs having one end thereof attached to said base member and extending upwardly from said base member, the end opposite said one end being free and being flattened, and the other of said leaf springs having one end thereof attached to said T-shaped finger support member and extending from said T-shaped finger suppport member upwardly and forwardly in an arcuate configuration such that the underside thereof contacts said flattened end portion of said leaf spring when said T-shaped finger support member is in said lowered position,

whereby as said T-shaped finger support member is moved by said winch means from said lowered position to said raised position the underside of said other leaf spring is caused to slide forwardly over said flattened end of said one leaf spring, said one leaf spring is pressed downwardly in the forward direction by said other leaf spring and said other leaf spring is compressed towards a less arcuate configuration by said one leaf spring.

4,288,192

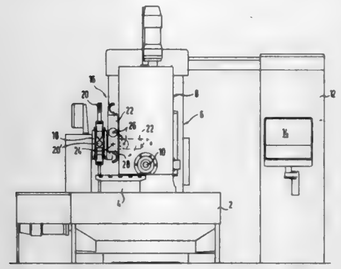
TOOL-CHANGING MECHANISM

Michael Geiger, Starnberg; Manfred Schneider, Grossbottwar, and Jörg Lützkendorf, Markgroeningen, all of Fed. Rep. of Germany, assignors to Friedrich Deckel Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,602
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844319
Int. Cl.³ B23Q *3/157*
U.S. Cl. 414—223 **18 Claims**

1. A tool-changing mechanism for tool machines of the kind having a working spindle which receives a tool, said tool-changing mechanism including a tool magazine which contains several tools and a double-arm tool-changing arm which has on its two ends respective gripping mechanisms, said tool-changing arm being rotatable about an axis of rotation parallel to the spindle axis and being movable along the direction of said axis of rotation, said arm having a gripping position in which it simultaneously grips a tool which is in the magazine and a tool which is in the working spindle and exchanges these tools by rotation about said axis of rotation, said arm being pivotable about a pivot axis between a working position and a rest position outside of the spindle area, said pivot axis being parallel to said axis of rotation and to said spindle axis, wherein the improvement is comprised by means locating said pivot

axis on said machine and with respect to said axis of rotation for pivoting of said tool-changing arm about its pivot axis from its said rest position into its said gripping position directly and



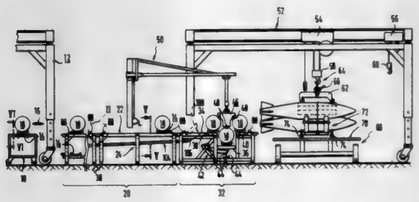
thus without need for rotation about its said axis of rotation, and for later pivoting of said tool-changing arm back to its said rest position.

4,288,193

ARRANGEMENT FOR FORMING AND HANDLING COLLECTIVE LOADS

Gert Klausbruckner, and Konrad Sieber, both of Moosburg, Fed. Rep. of Germany, assignors to Steinbock GmbH, Moosburg, Fed. Rep. of Germany

Filed Feb. 6, 1980, Ser. No. 119,117
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906457
Int. Cl.³ B64D *7/00*
U.S. Cl. 414—342 **45 Claims**



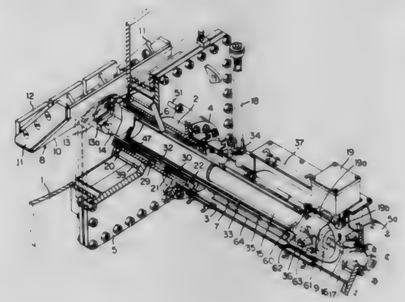
1. An arrangement for assembling and conveying a number of elongated generally cylindrical single loads which are collectively supported in a collecting carrier, comprising an elongated single load supply track for delivering the single loads to a collecting location so that each of the single loads extends transversely of the longitudinal direction of said supply track, a single load positioning device at said collecting location for arranging three of the single loads from said supply track in a triangular configuration so that the longitudinal axes of the single loads extend parallel to one another, said positioning device including a first and a second load stand each arranged to support a different one of the single loads at the same level as the single loads on said supply track, and a third single load stand between said first and said second single load stands for supporting a third single load, said third single load stand including means for lowering the third single load from the level of said supply track to a certain level below that of the single loads supported on said first and said second single load stands, a handling device for attaching the single loads positioned in said single load positioning device to the collecting carrier to form a collective load, a hoist arrangement for removing the collective load from said single load positioning device, and means for conveying the collective load to a collective load receiving location after the collective load is released from said hoist arrangement.

4,288,194

RAW MATERIAL DISTRIBUTING APPARATUS FOR A FURNACE

Susumu Nemoto, Kawasaki, and Toshio Fujieda, Togoshi, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 23,533
Claims priority, application Japan, Apr. 4, 1978, 53-38811
Int. Cl.³ F27B *1/20*
U.S. Cl. 414—586 **8 Claims**



1. A raw material distributing apparatus for a furnace, comprising

an armer rod slidable with respect to said furnace;

a distributing plate for charged raw material secured at a front end of said rod;

a casing for holding said rod;

a sliding bearing comprising hard synthetic resin arranged on an inner wall of said casing between said casing and said rod;

a non-metallic dust sealing mechanism disposed toward an end of said sliding bearing;

means for supplying sealing gas to said dust sealing mechanism; and

cooling means having part hereof disposed within said rod and toward a front end of said casing, to cool the interior of said rod, and an outer circumference of said front of said casing;

wherein said sealing mechanism comprises a unit casing, a first oil seal, a second oil seal, a set of supports, said unit casing being independent of said casing holding said rod, said first oil seal being secured to said unit casing and contacting its lip end to the outer periphery of said rod, said second oil seal being secured at the front end directed toward the furnace of said unit casing and being packed with adiabatic material for spouting out the sealing gas from the lip pointed into said furnace, and said supports being of hard synthetic resin and secured to said unit casing.

4,288,195

ROLL-AWAY WHEEL TRUCK AND LIFT TABLE ASSEMBLY

John Brewer, Scarborough, Me., assignor to Southworth, Incorporated, Portland, Me.

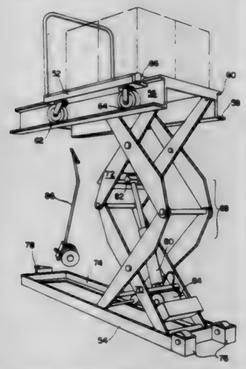
Continuation-in-part of Ser. No. 46,521, Jun. 7, 1979, Pat. No. 4,219,186. This application Dec. 14, 1979, Ser. No. 103,792
Int. Cl.³ B60P *1/02*
U.S. Cl. 414—608 **4 Claims**

1. A roll-away lifting combination which essentially comprises a vertically extendable lift table assembly and a cooperating wheeled truck assembly that is operable for a selective, roll-away superposed mating upon said lift table assembly; wherein,

(a) said lift table assembly comprises a horizontally extending working platform which is positioned above, and operable to be vertically extended by, a scissor jack link-

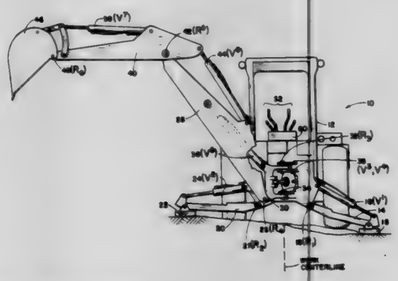
work assembly, said working platform further comprising at least one horizontally extending and longitudinally disposed flange and at least one horizontally extending guideway which is also horizontally disposed and spaced above said flange; wherein,

(b) said wheeled truck assembly comprises a load platform supported upon wheels which maintain the load platform underside at a first distance above a ground reference, said first distance being sufficient to allow said truck assembly to be horizontally wheeled from a ground reference onto said horizontally extending flange of said working plat-



form when said lift table assembly is in a lowered position upon said ground reference, said wheeled truck assembly further including means to vertically surround and frictionally engage said horizontally extending guideway of said lift table assembly when so wheeled thereover, whereby said wheels are operable to be selectively positioned upon said flange while maintained against any transverse movement, and retarded against any longitudinal movement, by said guideway, wherein said truck assembly is operable to be raised to any desired vertical elevation above said ground reference, and then selectively wheeled off, in said longitudinal direction.

4,288,196
COMPUTER CONTROLLED BACKHOE
James O. Sutton, II, 14515 East Rd., Montrose, Mich. 48457
Filed Jun. 14, 1979, Ser. No. 47,735
Int. Cl.³ E02F *9/26, 3/87*
U.S. Cl. 414—699 **4 Claims**



1. In a vehicle having

a frame having an imaginary "x" or roll axis and a "y" or pitch axis,

at least two outriggers pivotal to the frame to level the frame relative to the "x" axis,

a a first and a respective second hydraulic actuator to move each respective outrigger,

a backhoe assembly comprising a boom pivotal at one end to the frame,

hydraulic means to pivot the boom in a vertical plane, and

boom hydraulic means to pivot the boom in a horizontal plane,

a crowd pivotal at one end to the other end of the boom,

crowd hydraulic means to pivot the crowd in the vertical plane,

a bucket pivotal at the other end of the crowd,

bucket hydraulic means to pivot the bucket in the vertical plane, and

a manual control valve for each of the hydraulic actuators and hydraulic means,

the improvement comprising:

a multiple bit computer with interphase and pre-programmed ROM to provide information to a central processor in the computer for the purpose of vectorization of the backhoe assembly or parts thereof, and

means to controllably provide required voltages to the computer,

a dual axis gyro fixed to the frame means in the computer to continuously sense the position of the "x"–"y" axes,

variable resistors located at the pivot axes of the outriggers, the boom, the crowd, and the bucket to sense the pivotal position of each outrigger, the boom, the crowd and the bucket relative to the "x"–"y" axial position of the frame,

means to electrically operate each of the control valves;

switch means to select manual or computer operation of the valve,

switch means to activate and interconnect the gyro with the interphase of the computer and to generate a signal to operate the outrigger hydraulic actuator to level the frame,

visual means to indicate an unsafe position of the frame,

switch means to activate the computer to allow it to receive desired programming of the bucket depth relative to a given elevation,

means to input the desired bucket depth information to the memory (RAM) of the computer.

4,288,197
CARTRIDGE PACKAGE
Richard C. Gurolnick, 1311 N. Rand Rd., Arlington Heights, Ill. 60004
Filed Jun. 21, 1979, Ser. No. 50,804
Int. Cl.³ F42B *37/00, 39/00*
U.S. Cl. 414—786 **2 Claims**



1. A method of using a cartridge package having a cartridge retaining panel with spaced apertures therein for cartridges having bullet ends smaller than the apertures and rim ends larger than the apertures, comprising the steps of:

a. inserting the bullet ends of the cartridges in one direction through the spaced apertures in the cartridge retaining panel,

b. folding another portion of said package over the rim ends of the cartridges so the rims of the cartridges are located between the other portion and cartridge retaining panel,

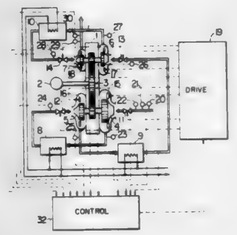
c. securing the cartridge retaining panel and other portion together to retain the cartridges,

d. holding the package in one hand with the bullet ends pointing away from the palm,

e. encircling a portion of the package and cartridges extending therefrom with the thumb and fingers of the one hand holding the package, and

f. manipulating a finger and thumb on the one hand holding the package to withdraw a cartridge from the package in said one direction with the rim of the cartridge being withdrawn being forced through its respective aperture.

4,288,198
METHOD OF CONTROLLING MULTISTAGE CENTRIFUGAL COMPRESSOR EQUIPMENT
Yozo Hibino; Junichi Oizumi; Hideo Nishida; Yoshiyuki Nakano, and Hiroshi Ohmachi, all of Shimoinayoshi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 15, 1979, Ser. No. 94,733
Claims priority, application Japan, Mar. 12, 1979, 54-27744
Int. Cl.³ F04D *15/00*
U.S. Cl. 415—1 **3 Claims**



1. A method of controlling multistage centrifugal compressor equipment having inlet guide vanes and diffuser vanes mounted at each stage in variable angle position, the method comprising the steps of:

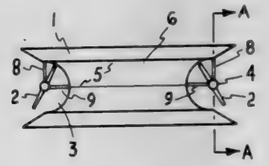
determining which one of a range of operating conditions near the desired operating conditions and a range of operating conditions remote from the desired operating conditions the prevailing operating conditions of the compressor equipment are in; and

controlling a combination of the amount of operation of the inlet guide vanes with the amount of operation of the diffuser vanes, which is determined beforehand, along an operating line of the compressor equipment so as to bring the prevailing operating conditions to the range of operating conditions near the desired operating conditions when the prevailing operating conditions are determined to be in the range of operating conditions remote from the desired operating conditions, and effecting fine adjustments of the inlet guide vanes and diffuser vanes to shift the efficiency of operation to a higher level within a range that the prevailing operating conditions do not deviate from the desired operating conditions when the prevailing operating conditions are determined to be in the range of operating conditions near the desired operating conditions.

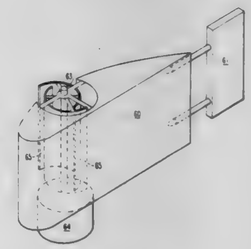
4,288,199
TARP YAW TRACK MEANS FOR ROTORS
Alfred L. Weisbrich, 76 Mayflower Rd., Windsor, Conn. 06095
Continuation-in-part of Ser. No. 763,936, Feb. 25, 1977, Pat. No. 4,156,579. This application Dec. 21, 1978, Ser. No. 971,924
Int. Cl.³ F03D *3/04*
U.S. Cl. 415—2 R **10 Claims**

1. A power generating device comprising:

a fluid flow velocity augmentor structure means being substantially the shape of a concentric interior section of a hollow toroid of general arbitrary cross-section in both vertical and horizontal planes, meaning that in both a vertical and horizontal plane cross-sections may not be limited to circular arc and circular sections respectively, providing thereby open peripheral fluid flow channel means and defining augmented flow velocity regions about the exterior periphery of said fluid flow augmentor structure wherein a plurality of interconnected fluid impact impellers are mounted within said peripheral fluid flow channel; Track means, mounted on the fluid flow augmentor structure substantially concentric to the peripheral fluid flow channel, with said interconnected fluid impact impellers mounted for yaw upon track means within the peripheral fluid flow channel for tracking and maintaining alignment with shifting flow augmentation fields relative to flow augmentation structure in response to change in ambient flow direction.



4,288,200
WIND TOWER TURBINE
Louis R. O'Hare, 1041 Ponderosa Apt. 2, Fort Collins, Colo. 80521
Filed Apr. 25, 1979, Ser. No. 33,195
Int. Cl.³ F03D *3/04*
U.S. Cl. 415—2 R **2 Claims**



1. A wind driven turbine comprising:

(1) a wind energy to rotary motion conversion means in the form of impeller blades so formed with regard to curvature that wind striking the concave side of the curvature interacts with the blade to tend to move it more than it tends to move it in striking the opposite convex side and said blades being so positioned on and attached to a rotating member means such as a shaft, said shaft being vertically disposed and supported by thrust bearings in a base structure that is in the form of a housing capable of containing an energy extraction means such as a generator, said rotating member means being caused to rotate in a horizontal plane of rotation paralell to the plane of the wind's movement such that for each blade that is impelled to move in the direction of the wind another blade fastened to the opposite side of the rotatable member is caused to move counter to the wind thereby causing said shaft to rotate and,

(2) a single convex airfoil wind shielding and wind accelerating means rotable about the same axis as the axis about which the turbine impellers rotate and rotably secured to said verticle shaft by means of support bearings both above and below the rotable impeller means and said wind accelerator means being pivotable on said support bearings, the length of the leading edge of said convex airfoil extending vertically and said convex airfoil having within

it an approximately cylindrical cavity the length of which cavity is vertically disposed with said cavity being of sufficient diameter to enclose the rotating impeller blades except at approximately that area on the surface of the convex curvature of the airfoil where the cord of the airfoil reaches maximum thickness, said cylindrical cavity in that area opening through the airfoil's convex surface to permit rotating blades to move outside the cavity for a portion of the arc of each rotation and said airfoil being of such a shape that it has a convex leading edge and sides at least one of which is convex with a lengthwise verticle opening to an internal cylindrical cavity, said airfoil also having a tapered trailing edge to which are attached support tubes to hold,

(3) wind shield-accelerator directing means in the form of a weathervane which is a flat rectangular plate with its length extending vertically and capable of interacting with the relative wind to position the airfoil's leading edge to confront the approaching wind and,

(4)energy extraction means whereby the energy imparted to the turbine blades is transmitted to an energy requireing unit such as a generator by means of attachment to the shaft in its base mounting.

4,288,201

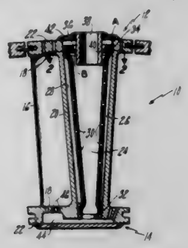
VANE COOLING STRUCTURE

Gregory S. Wilson, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 14, 1979, Ser. No. 75,397

Int. Cl.³ F01D 9/02

U.S. Cl. 415—115 **5 Claims**



1. A coolable stator vane structure of the type disposed across the path of high temperature working medium gases in a rotary machine, the vane structure including:

an airfoil section having a hollow cavity extending thereacross including an interior surface defining said cavity;

a tubular insert disposed in said cavity which is fixedly attached at one end to the interior surface and is slidable at the opposing end with respect to the interior surface of the vane;

a closure plate affixed to the slidable end of the insert and having an aperture therein;

a tube extending through the aperture of the closure plate through which cooling air is flowable to the hollow cavity of the airfoil section.

4,288,202

FAN HAVING INTERNAL POLYHEDRAL STRUT FRAME

Paul S. Buckmann, Roseville, Calif., assignor to Aerojet-General Corporation, LaJolla, Calif.

Filed Jun. 20, 1977, Ser. No. 807,961

Int. Cl.³ F01D 25/16, 25/24

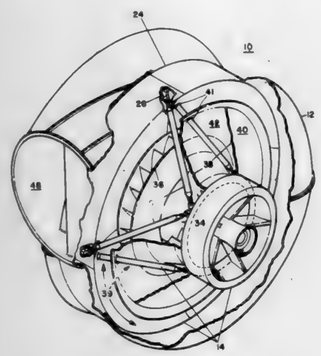
U.S. Cl. 415—142 **9 Claims**

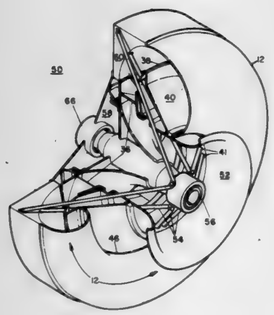
1. A fan comprising:

a bladed impeller;

a housing for said impeller defining a substantially enclosed area having at least one air inlet and one air outlet; and

a housing support frame comprised of a plurality of struts disposed within said housing, at least one support ring supporting said struts, and means connecting said struts to





said housing, each strut extending from said at least one support ring to said housing across the air flow path between said impeller blades and said air outlet at a non-orthoginal angle to said impeller, each end of said struts juxtatosed to an end of an adjacent strut to define a zig zag star shaped-pattern.

4,288,203

MULTI-FLOW GAS DYNAMIC PRESSURE-WAVE MACHINE

Reinhard Fried, Nussbaumen, and Günter Kudernatsch, Klingnau, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

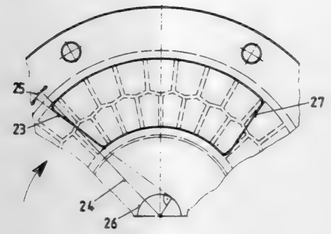
Filed Aug. 23, 1979, Ser. No. 69,121

Claims priority, application Switzerland, Oct. 2, 1978, 10216/78

Int. Cl.³ F04F 11/02

U.S. Cl. 417—64 **11 Claims**

1. In a multi-flow gas-dynamic pressure-wave machine of the type comprising a rotor, the rotor including a hub tube and a shroud located radially outwardly thereof to form a cell zone therewith for receiving a gaseous working media, the cell zone being subdivided into at least two concentric flow channels by means of at least one intermediate tube arranged between the hub tube and the shroud, cell walls disposed in each flow channel, a housing enclosing the rotor, an air housing, a gas housing, and ducts for the supply and removal of the gaseous working media relative to the rotor, the improvement wherein the cell walls of one flow channel and the cell walls of an adjacent flow channel are circumferentially staggered with respect to one another by essentially one-half the circumferential interface between such cells, and a point of intersection of the center line of an outer cell wall with the center line of the



intermediate tube is farther away radially from the axis of the rotor than the point of intersection of the center line of an adjacent inner cell wall with the center line of the intermediate tube.

4,288,204

SUPPORT FOR MULTI-STAGE COMPRESSORS

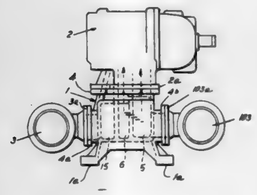
Albin Viertler, Saarwellingne, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker AG, Frankenthal, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,476

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808952

Int. Cl.³ F04B 25/00

U.S. Cl. 417—243 **10 Claims**



1. In an aggregate wherein a compressor for a fluid medium includes a series of successive stages and is connected with at least one heat exchanger means, wherein a next-following stage of said series, as considered in the direction of flow of fluid medium through the compressor, is disposed between first and second preceding stages and therein each stage of the compressor and each heat exchanger means has an inlet and an outlet, a hollow support for said compressor and said heat exchanger means, said support including a partition and having first and second chambers disposed at the opposite sides of said partition and respectively interposed between the outlets of said first and second stages and the inlets of said second and next-following stages, said support further having first and second passages respectively interposed between the outlets of said first and second stages and said first and second chambers, said one heat exchanger means being connected between the outlet of one of said first and second stages and the respective passage.

4,288,205

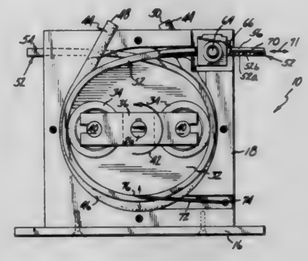
VARIABLE VOLUME PERISTALTIC PUMP

Keith L. Henk, Brooklyn Park, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Jan. 18, 1980, Ser. No. 113,331

Int. Cl.³ F04B 43/12, 45/08

U.S. Cl. 417—477 **16 Claims**



1. A peristaltic pump comprising:

housing means with an arcuate chamber defined by an arcuate wall;

rotor means coaxially positioned within the arcuate chamber;

a plurality of roller means spaced circumferentially within the arcuate chamber and rotatably attached to the rotor means;

flexible conduit means circumferentially arranged within the arcuate chamber;

adjustable band means circumferentially arranged in the arcuate chamber between the flexible conduit means and the roller means for longitudinally engaging the flexible conduit means; and,

adjusting means for adjusting the effective length of the flexible band means to adjust the extent of flattening of the flexible conduit means against the arcuate chamber wall and thereby adjusting the volumetric capacity thereof.

4,288,206

AUTOMATIC MULTIPLE WATER SAMPLER

David C. Tigwell, 401 E. Colorado, Urbana, Ill. 61801, and David J. Schaeffer, 1716 E. Walnut St., Chatham, Ill. 62629

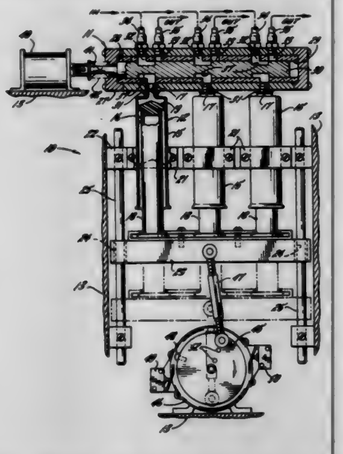
Filed Aug. 15, 1979, Ser. No. 66,518

Int. Cl.³ F04B 7/00, 21/08

U.S. Cl. 417—517 **1 Claim**

1. A sampler for delivering multiple independent water samples comprising, in combination, a frame, a drive bar mounted in said frame for linear reciprocation, a plurality of glass chambered syringes having movable plungers mounted in said frame with their axes parallel to the direction of said bar reciprocation, said plungers being coupled to said drive bar, a valve body on said frame having a chamber opening to the chambers of said syringes, said body having an inlet and an outlet opening for each of said syringes, a valve spool shiftably mounted in said valve body chamber and having relieved regions for alternately connecting said syringe chambers with said inlet and then said outlet openings upon shifting of said spool, and means for reciprocating said drive bar and shifting said spool so that said syringe will draw liquid from said inlet openings and then positively discharge that liquid through said

outlet openings, said plungers having non-wetting plastic pistons in wiping contact with said glass chambers, said valve



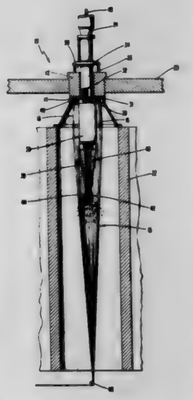
body chamber being defined by a glass tube, and said valve spool being formed of non-wetting plastic.

4,288,207

APPARATUS FOR PRODUCING MELT-SPUN FILAMENTS

William W. Wilkes, Florence, S.C., assignor to Fiber Industries, Inc., New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,425
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—72 S **3 Claims**



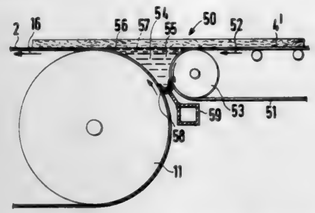
1. In apparatus for the manufacture of melt-spun filaments, said apparatus being of the type wherein molten polymer is extruded downwardly through a filter pack and through an annular array of holes of a spinneret to form a circularly arranged group of filaments, quench gas supply conduits means extending downwardly through said pack and said spinneret coaxially relative to said row of holes, said conduit means including gas discharge means disposed above said guide for discharging quench gas outwardly through the group of filaments, means for applying a finish substance onto said filaments, and a guide below said finish applying means for gathering and redirecting the filaments, the improvement wherein said finish applying means comprises finish supply conduit means extending downwardly through said pack and said spinneret within said quench gas supply conduit means, said finish supply conduit means projecting below said gas discharge means coaxially within the group of filaments and including a means for discharging finish outwardly onto the filaments wherein said finish discharge means is disposed above the midpoint of the distance between said spinneret and said guide.

4,288,208

BELT ARRANGEMENT AND PRESS EQUIPPED THEREWITH FOR THE CONTINUOUS MANUFACTURE OF WOOD CHIPBOARD AND SIMILAR MATERIALS

Eduard Küsters, Gustav-Fünders-Weg 18, 4150 Krefeld-Forstwald, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,510
Int. Cl.³ B29J *5/08*
U.S. Cl. 425—371 **9 Claims**



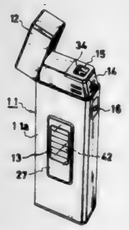
1. In a belt arrangement including two endless belts revolving about deflection cylinders with their axis parallel to each other, for transporting loose, finely divided material, the upper sections of which belts are in approximately the same plane, said belts being driven in the same transport direction and following each other immediately in the transport direction and thus forming an upper wedge space between the two belts; and an auxiliary device for transferring the material from one belt to the next one, an improved auxiliary device comprising:
a liquid which is of higher specific gravity than the material to be transported and does not wet the latter in the upper wedge between the last deflection cylinder of the first belt and the first deflection cylinder of the following belt; and
means sealing said wedge at the bottom and sides.

4,288,209

GAS CIGARETTE LIGHTER WITH SOLAR CELL

Sadao Yoshinaga, Tokyo, Japan, assignor to Prince Industrial Development Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1979, Ser. No. 16,190
Claims priority, application Japan, Mar. 2, 1978, 53-26870; May 29, 1978, 53-72473
Int. Cl.³ F23Q *7/12*
U.S. Cl. 431—255 **5 Claims**



1. A gas cigarette lighter comprising:
a casing having an opening in one side thereof;
a fuel tank mounted within said casing;
a nozzle through which the gas flows when the lighter is actuated, said nozzle being coupled to said fuel tank;

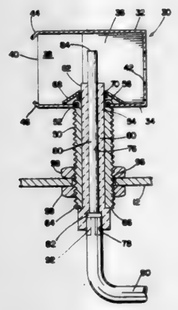
an electrical circuit comprising a discharge means;
electrical storage means connected as part of said discharge means;
a solar cell unit formed as a thin plate having at least one hole therein, said solar cell unit having at least one solar cell and being connected to said discharge means so as to electrically charge said electrical storage means;
an ignition switch in one wall of said casing;
a cover for said discharge means;
at least one protrusion on said cover, said solar cell unit being mounted to said cover of said discharge means with said protrusion extending into said hole in said plate; and
guide means framing at least part of said opening in said casing, said guide means positively retaining said solar cell unit so that said solar cell element is aligned with said opening in said casing to facilitate reception of light energy by said solar cell element when said discharge means, cover and solar cell unit are mounted in said casing.

4,288,210

GAS COLLECTOR/IGNITER FOR GRILLS

Murray Leonard, Mayfield, and Herbert F. Jugl, Bedford, both of Ohio, assignors to Vernitron Corporation, Lake Success, N.Y.

Continuation-in-part of Ser. No. 941,281, Sep. 11, 1978, Pat. No. 4,226,930. This application Jul. 17, 1979, Ser. No. 58,391
Int. Cl.³ F23Q *7/06*; H01T *13/20*
U.S. Cl. 431—263 **9 Claims**



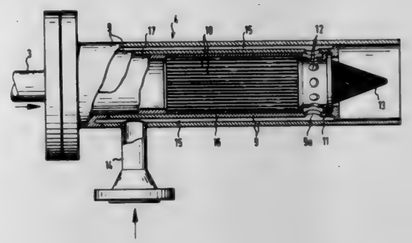
1. A spark igniter for gas burners comprising: a gas collector formed of metal and having spaced top, bottom and side walls defining a collector chamber, a gas inlet to said chamber, a collector mounting tube having one end portion secured to said bottom wall against relative longitudinal and rotational movement between said gas collector and said mounting tube, said tube having a free end opposite from said one end portion, a hole in said bottom wall aligned with said tube, a ceramic sleeve having an electrode mounted therein and including an electrode tip extending therefrom, said sleeve being received in said tube with said electrode extending through said hole and with said electrode tip positioned in said collector chamber, said sleeve having an outwardly extending sleeve shoulder generally opposite from said electrode tip, said sleeve shoulder bearing against said free end of said tube for locating said electrode tip a predetermined distance from said top wall, and fastener means securing said sleeve in said tube.

4,288,211

PROCESS AND DEVICE FOR THE INTRODUCTION OF EXPLOSIVE GASES INTO A COMBUSTION CHAMBER

Kurt Bodenbenner, Wiesbaden; Gerhard Müller, Kelkheim, and Helmut Perkow, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,585
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758819
Int. Cl.³ F23D *13/46*
U.S. Cl. 431—346 **2 Claims**



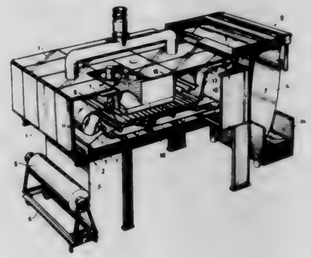
1. A device for the introduction of explosive gases into a combustion chamber comprising a tubular casing, a bundle of tubes in the casing, each having an internal diameter of at most twice the quenching distance of the explosive gases, said casing being partially provided with a double shell defining a hollow space and the bundle of tubes opening into a spacer ring, said spacer ring being provided with a jacket having openings which are in communication with the hollow space of the double shell.

4,288,212

METHOD AND APPARATUS FOR FIXING A BINDING AGENT

Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Brabant B.V., Netherlands

Continuation-in-part of Ser. No. 871,927, Jan. 24, 1978, abandoned. This application Apr. 2, 1979, Ser. No. 26,404
Int. Cl.³ F26B *13/00*; F27B *9/28*
U.S. Cl. 432—8 **8 Claims**



7. A method of fixing the binding agent of a dyestuff to a printed web of material by means of heat comprising the steps of introducing said web into a closed chamber, subsequently depositing said web on moving support members and heating said web to treatment temperature, said temperature continues acting on the web during its stay within the chamber, whereafter discharging said web of material from the chamber, and depositing said web on a supporting belt within the closed chamber, the velocity of supply and discharge of the web exceeding the traveling velocity of the supporting belt for promoting a tension-free formation of loops, while, prior to

depositing said web on the belt, heating said web to almost the treatment temperature by contact with a source of heat in order to prevent difference of temperature in the formation of loops.

4,288,213

METHOD AND APPARATUS FOR THE HEAT TREATMENT OF FINE-GRAINED MATERIAL

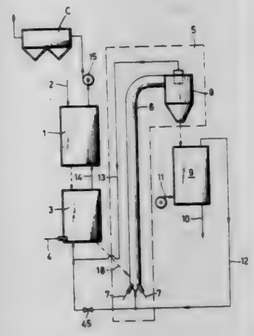
Horst Herchenbach, Troisdorf; Hubert Ramesohl, Bergisch-Gladbach, and Joachim Fleischer, Lohmar, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,582

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846584

Int. Cl.³ F27B *15/00*; C04B *7/02*

U.S. Cl. 432—14 **15 Claims**



1. In a method for heat treating a fine-grained material in which said material is sequentially passed through a pre-heating zone, a calcining zone, a sintering zone, and a cooling zone, the improvement which comprises separately heat treating the calcined material from said calcining zone to volatilize lower melting components, suspending the substantially calcined and heat treated material as an airborne suspension in said sintering zone and sintering the suspension in said sintering zone.

4,288,214

ARRANGEMENTS FOR FEEDING FLUIDIZING GAS TO A FLUIDIZED BED COMBUSTION APPARATUS

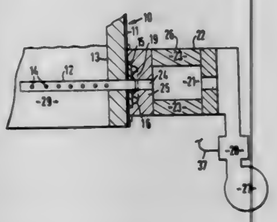
Maurice Harman, Milton Keynes, England, assignor to The Energy Equipment Company Limited, Olney, England

Filed Jan. 4, 1980, Ser. No. 109,635

Claims priority, application United Kingdom, Jan. 10, 1979, 00928/79

Int. Cl.³ F27B *15/00*; F26B *17/00*; F27D *1/12*

U.S. Cl. 432—58 **10 Claims**



1. A fluidised bed combustion arrangement comprising a container having walls for housing a bed of inert particulate material, at least one supply tube passing into said container through at least one of said walls to extend into said bed of inert particulate material, each said supply tube having apertures formed along the length thereof and having its outermost end coupled to a fluidising gas supply means operable to pass fluidising gas thereto whereby gas from said fluidising gas supply means passes into said container via said supply tubes and passes via said apertures into said bed of inert particulate material to fluidise said bed, the outermost end of each said supply tube being fixed to a wall of the container of the fluidised bed, cooling means mounted in intimate thermal contact with that portion of said wall adjacent the ends of each of said at least one supply tube, said cooling means including a liquid coolant passing therethrough to cool that portion of said wall adjacent the outermost end of said at least one supply tube.

4,288,215

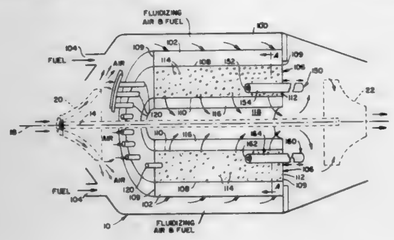
METHOD AND APPARATUS FOR PREHEATING A ROTATABLE FLUIDIZABLE BED

George B. Grim, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 117,587, Nov. 5, 1979. This application May 27, 1980, Ser. No. 153,009

Int. Cl.³ F27B *7/00*

U.S. Cl. 432—103 **5 Claims**



1. A method for preheating a rotating fluidized bed combustor to the ignition temperature of the exothermic combustion reaction desired to occur therein, said combustor including an elongated fluidization chamber having a longitudinally extending axis and a perforated peripheral wall, a bed of pulverulent solid particles in said chamber, heating means in thermal communication with said bed, means for rotating said chamber about said axis to cause the particles to centrifugally gravitate toward said perforated peripheral wall and means for selectively initiating a flow of combustible fuel in a gaseous agent stream into said chamber through said peripheral perforated wall, said gaseous agent stream fluidizing said bed particles and said fuel reacting with said gaseous agent in said chamber, said method comprising the steps of:

(a) slowly rotating said chamber at a speed sufficient to cause tumbling and mixing of said bed particles but insufficient to cause centrifugal gravitation toward said peripheral wall prior to initiating the flow of said gaseous agent stream; and

(b) applying thermal energy to said tumbling particles to heat said particles to said ignition temperature.

4,288,216

CALCINER WITH TAPERED REVERSE FEED SPIRAL

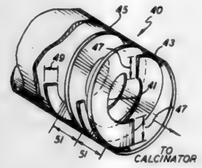
James N. Christini; Tai K. Kim, both of Towanda, and Robert P. McClintic, Monroeton, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 24, 1980, Ser. No. 143,236

Int. Cl.³ F27B *6/08*; F27D *3/00*

U.S. Cl. 432—112 **10 Claims**

1. A reverse pitch tapered spiral for a refractory metal reclaiming calciner having a cylindrical rotatable retort of a given inner diameter with a material-receiving end and a material-discharging end separated by a hot zone and coupled to a motor drive for rotating the retort in a given direction to provide material flow in a given direction, said reverse pitch tapered spiral characterized by the improvement wherein a spiral having a reverse pitch with respect to said given direction of material flow is positionally located in said material-discharging end of said rotatable retort and tapers toward the material exit from said material-discharging end whereby the direction of material flow within said material discharge end is reversed with respect to material flow within said material-receiving end and hot zone of said rotatable retort.



4,288,217

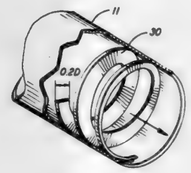
ROTARY CALCINER FEED SPIRAL

James N. Christini; Tai K. Kim, both of Towanda, and Robert P. McClintic, Monroeton, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 28, 1980, Ser. No. 144,126

Int. Cl.³ F27B *6/08*; F27D *3/00*

U.S. Cl. 432—112 **12 Claims**



1. A material feed spiral for a refractory metal reclaiming calciner having a cylindrical rotatable retort of a given inner diameter with a material receiving end and a material discharging end separated by a hot zone and coupled to a motor drive source, said material feed spiral characterized by the improvement comprising a spiral having a final turn and a ¾-turn rotated 180° therefrom and ending adjacent said material-receiving end of said rotatable retort and a next to final turn connected to and extending outwardly from said final turn and away from said material-receiving end of said rotatable retort, said final turn and said ¾-turn having a height substantially equal to a given percentage of the inner diameter of said cylindrical retort and said next to final turn tapering from said height of a given percentage of said inner diameter of said cylindrical retort to a height less than said given percentage of said inner diameter of said cylindrical retort whereby undesired "feedback" into the material feed spiral is inhibited.

4,288,218

HEATING APPARATUS

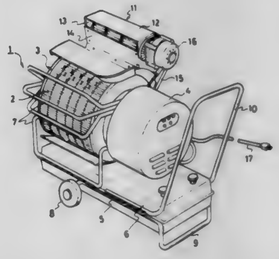
Akio Obinata, Suzaka, Japan, assignor to Orion Machinery Co., Ltd., Nagano, Japan

Filed Nov. 19, 1979, Ser. No. 95,237

Int. Cl.³ F24H *1/00*

U.S. Cl. 432—222 **9 Claims**

1. A heating apparatus comprising a combustion chamber including a generally cylindrical housing, a radiator forming a part of the exterior of said housing and having a radiating surface which extends over the axial length of said chamber for directing radiant heat in a forward heating direction transverse to the axis of said chamber so that an object located away from said chamber in the forward heating direction is directly heated by radiation, casing means on the exterior of said housing for reducing heat radiation from said radiator in directions other than the forward heating direction, fan means including an elongated case which forms an outlet opening substantially coextensive with said radiating surface in the axial direction of said chamber for deflecting convective air which rises above the exterior of said chamber in said forward direction, said case being mounted to said casing means above said chamber on the rear side of said chamber facing opposite said heating direction so that said fan means is out of the influence of radiant and convective heat developed by said chamber, said outlet opening facing in the same direction as said forward heating direction, and a motor mounted at one end of said fan means for driving said fan means so that said motor is out of the influence of said radiant and convective heat.



4,288,219

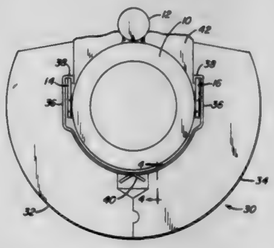
REFRACTORY INSULATED MEMBER AND METHOD OF INSTALLATION THEREOF IN A REHEAT FURNACE

John Gana, Doylestown, Pa., and Dwight L. Torisy, Lawrenceville, N.J., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 18, 1979, Ser. No. 49,758

Int. Cl.³ F27D *1/12*

U.S. Cl. 432—234 **2 Claims**



1. In a horizontal work support member for a reheat furnace, said member including an elongated metal pipe, a refractory barrier comprising a plurality of mateable pairs of sections for covering at least a portion of the periphery of said pipe, support means for said sections secured exteriorly on each of two opposite sides of an upper half of the cross section of said pipe, each barrier section having a metal hanger secured to and extending along the inner surface thereof from an upper end engageable with said support means to a lower end connectable to the corresponding lower end of the hanger means of the opposite section in the pair,

the improvement in said member which comprises:

said support means being a plurality of elongated metal bars secured lengthwise in prescribed position on the periphery of said pipe on each of said opposite sides thereof,

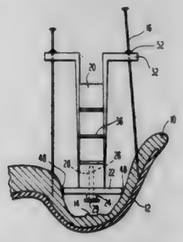
said bars being aligned mateably in close adjoining end-to-end relation and of substantially solid cross section,
said bars facing upwardly and having a portion of the cross section thereof remote from the pipe periphery extending therefrom a uniform distance along the length of said pipe,
the upper end of said hanger means having a fixed shape substantially conforming to the shape of said remote portion of the bars protruding from said pipe so as to fit closely over the outer periphery of said bars at any desired location along the length thereof.

4,288,220

DENTAL CASTS HAVING VERTICAL ADJUSTMENTS

Robert W. Waltke, Bayside, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 31, 1980, Ser. No. 135,805
Int. Cl.³ A61C *19/00*
U.S. Cl. 433—74 **10 Claims**



1. Apparatus for preparing a dental cast from a negative dental impression, said cast having a detachable vertically adjustable edentulous portion replicating an edentulous area of said impression, said apparatus comprising
pin means insertable in said impression adjacent said edentulous area,
a stanchion assembly articulating with said pin means and positionable above said edentulous area in spaced relationship thereto, said stanchion assembly comprising
a parting plate of substantially identical size and shape as said edentulous area,
an upright stanchion positioned above said parting plate and having mounting means at its upper end for effecting said articulation with said pin means,
holding means for releasably interconnecting said parting plate and stanchion, said holding means being permanently affixed to said edentulous portion, said parting plate being removable from said dental cast for substitution by another plate of different thickness whereby engagement therewith by said holding means and edentulous portion provides said vertical adjustability thereto, said vertical adjustability including raising and lowering of said edentulous portion depending upon difference in thickness between said parting plate and said another plate of different thickness.

4,288,221

DURABLE, POLISHABLE DIRECT FILLING MATERIAL

Michael R. Engel, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 28, 1980, Ser. No. 115,741
Int. Cl.³ A61C *13/08*; C08L *77/00*
U.S. Cl. 433—202 **15 Claims**

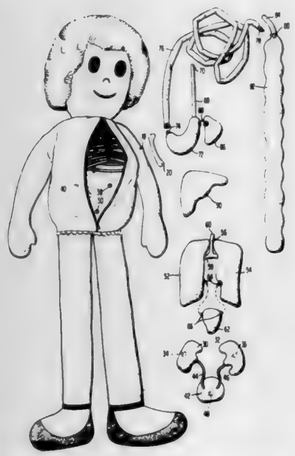
1. A composite dental restorative composition, comprising a blend of:
(A) free radically polymerizable resin comprising at least one acrylic monomer; and
(B) finely divided organic filler particles, said filler having a Izod milled notch strength of at least about 1 joule/cm and a flexural strength of at least about 34 Mpa;
which composition in reactive association with a free radical generating catalyst will cure into a direct filling material.
11. An artificial tooth made from a composition according to claim 1.
12. A denture base made from a composition according to claim 1.

4,288,222

DOLL WITH REMOVABLE ORGANS

Jane A. Kling, 818 S. Wolcott, 401 S.R.H., Chicago, Ill. 60622

Filed Feb. 19, 1980, Ser. No. 122,892
Int. Cl.³ G09B *23/34*
U.S. Cl. 434—272 **2 Claims**



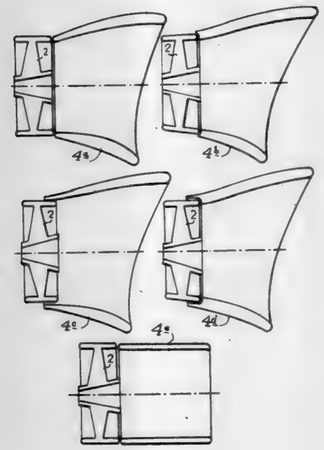
1. A doll comprising a soft, pliable hollow body portion, a head, arms and legs secured to said doll, a closeable aperture in said body portion for providing access to the interior thereof, a simulated rib cage constructed from elongated malleable elements interconnected with each other located within said hollow body portion, a plurality of soft, pliable simulated body organs detachably connected to each other and the interior of said hollow body portion in the proper location relative to each other including a heart, lungs, a stomach, a spline, a liver, kidneys, and a bladder, said kidneys being connected to said bladder by simulated ureter tubes of cloth material with said kidneys and bladder being detachably connected to the wall of said hollow body portion, said heart being detachably connected to said lungs and said lungs being connected to each other by simulated bronchea tubes of cloth material which in turn are connected to a simulated trachea tube of cloth material detachably connected to the interior of said hollow body portion, and said spleen being detachably connected to said stomach which in turn is detachably connected to the interior of said hollow body portion through a simulated esophagus tube of cloth material and further comprising a simulated small intestinal tube of flexible cloth material detachably connected at one end to said stomach and a simulated colon of flexible cloth material being detachably connected at one end to the other end of said small intestinal tube.

4,288,223

TUBULAR DUCT FOR A SHIP PROPELLER

Ramon R. Gonzalez, and Gonzalo P. Gomez, both of Madrid, Spain, assignors to Astilleros Espanoles, S.A., Madrid, Spain

Filed Feb. 8, 1980, Ser. No. 119,609
Claims priority, application Spain, Nov. 2, 1979, 485.667
Int. Cl.³ B63H *1/14, 5/06*
U.S. Cl. 440—71 **12 Claims**



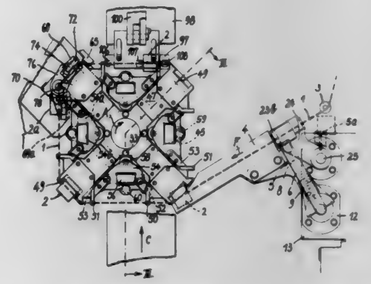
1. A combination of a ship propeller in juxtaposition with a non-rotating tubular duct,
the propeller having an axis, a diameter and a plurality of blades, each blade having (a) a tip radius, (b) a fixed plate and (c) a back or suction side,
the tubular duct (d) being coaxial with and displaced from said propeller and on the back or suction side thereof, (e) effectively comprising means to extend a geometric figure generated (by a cross-section of an axial plane, through the tip radius of a blade, with the fixed plate) on rotation of said fixed plate about the axis, (f) having an internal radius at a point adjacent to the fixed plate which is approximately that of the geometric figure at a point which is closest to said duct, (g) providing means to direct fluid toward said back or suction side of said propeller and (h) having a length at its shortest point which is at least 20 percent and at most 2 times that of the diameter.

4,288,224

APPARATUS FOR SECURING A SUSPENSION THREAD TO FILTER BAGS FOR INFUSION PRODUCTS

Andrea Romagnoli, Bologna, Italy, assignor to IMA - Industria Macchine Automatiche S.p.A., Ozzano Emilia, Italy

Filed Jun. 25, 1979, Ser. No. 51,655
Claims priority, application Italy, Mar. 6, 1979, 3341 A/79
Int. Cl.³ B31B *1/90*
U.S. Cl. 493—345 **5 Claims**



1. An apparatus for applying tags to a web of a filter material adapted to form filter bags in the production of infusion products, said apparatus comprising:
a support;
a rotatable member journaled on said support for rotation about a horizontal axis, said member having a plurality of angularly spaced arms lying substantially in a vertical plane, each of said arms being formed at an extremity with a pocket for receiving a respective tag, and a pair of string clamps flanking said pocket;
guide means for directing a string toward said member from a supply spaced therefrom;
feed means for advancing a succession of folded tags to said guide means and provided with means for fixing said tags at spaced locations to said string with sections of said tags straddling the string, said tags on said string being received in succession in respective pockets of said of said arms upon rotation of said member with the string on either side of said member being engaged in the respective clamps at a receiving station along the path of said arms;
means for guiding said web in a substantially vertical plane across said member, said arms successively arriving at a further station angularly spaced from said receiving station about said axis;
a cutting station disposed between said receiving station and said further station along the path of said arms on rotation of said member provided with means for cutting said string between tags engaged by respective arms whereby a free end of a string is formed at upstream and downstream sides of each tag;
means for looping an upstream free end of a string between a tag at said further station and said web; and
means at said further station for bonding a string of each tag to said web at three locations including two locations respectively on an upstream and a downstream side of each tag.

4,288,225

FLUID, COLD-STABLE, TWO-COMPONENT WASHING COMPOSITIONS AND METHOD OF WASHING TEXTILES

Wolf-Achim Roland, Hilden, and Wolfgang Bechstedt, Langenfeld, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthaasen, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 174,560

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933579

Int. Cl.[3] **C11D** *9/34, 10/04, 10/06, 17/08*

U.S. Cl. 8—137 **12 Claims**

1. A method of washing soiled textiles consisting of the steps of adding a washing agent consisting of two components, A and B, wherein conponent A is an aqueous dispersion of fatty acids consisting essentially of

(a) from 15% to 35% by weight of a C_{12-18} fatty acid having from 60% to 100% of the fatty acids of oleic acid,

(b) from 2% to 6% by weight of potassium hydroxide and from 2% to 6% by weight of triethanolamine, where the total amount is such that from 50% to 95% by weight of the fatty acids are present as a potassium or triethanolamine soap,

(c) from 4% to 10% by weight of an ethoxylate of from 5 to 12 ethoxylate units onto a primary alcohol selected from the group consisting of linear C_{8-14} alkanols and C_{8-14}-2-methylated-alkanols,

(d) from 4% to 10% by weight of a sodium C_{10-14}-alkylbenzenesulfonate,

(e) from 0.05% to 1% by weight of an alkali metal salt of substituted stilbenesulfonic acid optical brighteners,

(f) from 5% to 15% by weight of alcohols selected from the group consisting of C_{1-3}-alkanols and mixtures of C_{1-3}-alkanols with up to 50% by weight of the mixture of C_{1-4}-alkoxy-C_{2-3}-alkanols or C_{1-4}-alkoxy-C_{2-3}-alkoxy-C_{2-3}-alkanols, and

(g) from 35% to 50% by weight of water, and component B is an aqueous solution of alkalies consisting essentially of

(h) from 2% to 7% by weight of sodium tripolyphosphate and from 2% to 7% by weight of potassium tripolyphosphate, where the total amount is from 5% to 12% by weight,

(i) from 0.5% to 4% by weight of 1-hydroxyethane-1,1-diphosphonic acid in the form of the sodium or potassium salt,

(j) from 10% to 20% by weight of potassium hydroxide and from 0 to 5% by weight of sodium hydroxide, where the total amount of alkali metal hydroxide is from 10% to 20% by weight,

(k) from 0.5% to 3.5% by weight of an alkali metal silicate of the composition $Me_2O:SiO_2=1:1$ to 1:3.5 where Me is sodium or potassium,

(l) from 0 to 2.5% by weight of a sequestering agent selected from the group consisting of alkali metal salts of polyaminopolycarboxylic acids and alkali metal salts of polyaminopolyphosphonic acids, and

(m) from 50% to 70% by weight of water, where the ratio of component A to component B in the combination for washing is from 1:1 to 1:4; and where the washing liquor has a pH of from 9.6 to 14;

to an aqueous wash liquor containing soiled textiles in such amounts that the total amount of all active washing ingredients including wash alkalies is from 2 gm to 8 gm per liter of wash liquor, agitating said textiles in said wash liquor, draining and rinsing said textiles and recovering clean textiles, where the water employed has a German hardness degree of less than 10 °dH and the wash:liquor ratio is from 1:4 to 1:8.

4,288,226

PROCESS FOR SLOP-PADDING TEXTILE CELLULOSE MATERIAL

Heinz Abel, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 20, 1979, Ser. No. 77,421

Claims priority, application Switzerland, Nov. 8, 1978, 11481/78

Int. Cl.[3] **D06P** *1/38, 1/56, 3/60*

U.S. Cl. 8—496 **26 Claims**

1. A process for slop-padding textile cellulose material with an anionic substantive dye, which comprises applying to said material an aqueous liquor which, in addition to the dye, contains

(A) 2.5 to 15 g/l of an etherified N-methylolmelamine,

(B) an acid catalyst and at least one of the components

(C) an anionic surfactant,

(D) a non-ionic surfactant and

(E) an organic solvent which boils above 140° C., and subsequently subjecting the material to a heat treatment.

4,288,227

BASIC PHENOXAZINE DYESTUFFS

Berthold Gertisser, Münchenstein, and Beat Henzi, Neuallschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

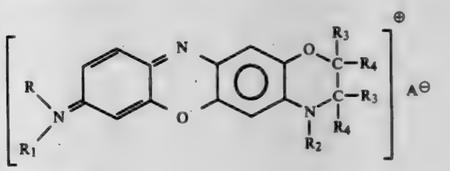
Continuation-in-part of Ser. No. 837,902, Sep. 29, 1977, abandoned. This application May 16, 1979, Ser. No. 39,646

Claims priority, application Switzerland, Oct. 1, 1976, 12452/76

Int. Cl.[3] **C09B** *19/00;* **D06P** *1/00, 1/52, 3/24*

U.S. Cl. 8—655 **29 Claims**

1. A colouration process for a substrate comprising or consisting of homo- and co-polymers of acrylonitrile or of dicyanoethylene, or acid modified synthetic polyamide or polyester, which process comprises mass dyeing, dyeing or printing such substrate, employing a dyestuff or mixture of dyestuffs of formula I,



I

wherein either

R is hydrogen, or a straight or branched chain C_{1-8}alkyl radical, unsubstituted or mono-substituted by OH, CN, Cl, Br, $CONH_2$, C_{1-4}-alkoxy, phenyl, phenoxy, —O—CO—R_5 or —CO—O—R_5,

and R_1 is a straight or branched chain C_{1-8}alkyl radical, unsubstituted or mono-substituted by OH, CN, Cl, Br, —$CONH_2$, C_{1-4}alkoxy, phenyl, phenoxy, —O—CO—R_5 or —CO—O—R_5; or phenyl, unsubstituted or monosubstituted by halogen, C_{1-4}alkyl or C_{1-4}alkoxy,

or R and R_1, together with the nitrogen atom to which they are attached, form a morpholine, piperidine, pyrrolidine, piperazine or N—C_{1-4}alkyl-piperazine ring,

R_2 is hydrogen or a straight or branched chain C_{1-8}alkyl radical, unsubstituted or mono-substituted by OH, CN, Cl, Br, —$CONH_2$ or —$COOR_5$,

each R_3, independently, is hydrogen or unsubstituted C_{1-4}alkyl,

each R_4, independently, is hydrogen, unsubstituted C_{1-4}alkyl or unsubstituted phenyl,

R_5 is unsubstituted C_{1-4}alkyl or unsubstituted phenyl, and

$A^{\ominus}$ is an anion,

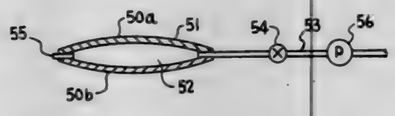
with the proviso that any substituted alkyl as R, R_1 or R_2 is of at least 2 carbon atoms.

4,288,228

WHOLE BLOOD ANALYSES AND DIFFUSION APPARATUS THEREFOR

Bruce J. Oberhardt, Katonah, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,858
Int. Cl.³ G01N *31/06, 33/52*
U.S. Cl. 23—230 R **31 Claims**



29. A method of performing a reaction with an analyte of a sample, comprising the steps of:

(a) diffusing said analyte into a first porous medium;

(b) contacting said first porous medium with a second porous medium to allow diffusion of said analyte into said second porous medium, said second porous medium having at least one first reagent for reaction with said analyte; and

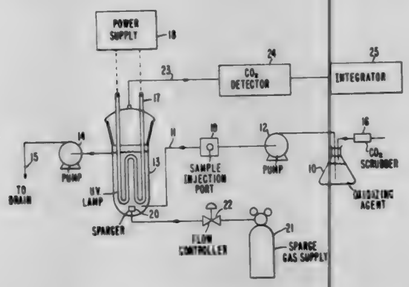
(c) contacting said second porous medium with a third porous medium containing at least one second reagent, said contacting of at least two of said porous media comprising the displacement of a liquid from between said two media.

4,288,229

DETERMINATION OF TOTAL ORGANIC CARBON IN A PLURALITY OF AQUEOUS SAMPLES CONTAINING HALIDE ION

Danny M. Mar, Daly City, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 128,066, Mar. 7, 1980. This application Apr. 21, 1980, Ser. No. 142,577
Int. Cl.³ G01N *33/18, 31/12*
U.S. Cl. 23—230 PC **23 Claims**



1. A process for determining total organic carbon in each one of a plurality of discrete aqueous samples containing halide ion, said process comprising the steps of:

(a) maintaining a continuous flow via a flowline into a reactor of an aqueous solution that contains an oxidizing agent and mercuric monohalide ion without forming an insoluble precipitate;

(b) introducing said samples in succession into said reactor;

(c) irradiating said solution and each sample in said reactor with electromagnetic energy, said electromagnetic energy emanating from a source immersed in said aqueous solution inside said reactor, thereby causing oxidation of organic carbon in each sample;

(d) causing carbon dioxide produced by oxidation of said organic carbon in each sample to be removed from said reactor; and

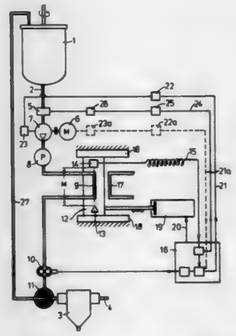
(e) passing the carbon dioxide removed from said reactor to a means for measuring total carbon in said carbon dioxide for each sample.

4,288,230

METHOD AND A DEVICE FOR THE PRODUCTION OF A SOLID-FORMING OR FOAM-FORMING FLOWABLE REACTION MIXTURE

Wilfried Ebeling, Cologne, and Volkmar Tennemann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,818
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933327
Int. Cl.³ G01N *23/14;* B29D *27/02*
U.S. Cl. 23—230 A **11 Claims**



1. A method for the production of a solidforming of foam-forming flowable reaction mixture from at least two flowable components reacting with each other, which are fed continuously to a mixing zone and mixed together, wherein the volumetric rate of flow of at least one component is measured and its density determined, characterized in that the density of the component is measured by radiometry under high pressure and under low pressure in succession,

(a) the quantitative rate of flow of the component being determined from the measurement under high pressure as a product of the density and of the measured volumetric rate of flow, and the quantitative rate of flow being controlled by comparison with a predetermined set value and,

(b) the measurement of the density under low pressure serving as a gauge for the gas charge and the quantity of gas necessary being controlled so as to maintain a predetermined set value by comparison of the difference between the two measured density values.

4,288,231

COAL TREATMENT PROCESS

David W. Taylor, Edgemont, Pa., assignor to Microfuels, Inc., Haverford, Pa.

Filed Nov. 13, 1979, Ser. No. 93,870
Int. Cl.³ C10L *9/00, 9/08;* B02C *19/06*
U.S. Cl. 44—1 SR **22 Claims**

1. An apparatus for treating coal to reduce the level of ash-forming impurities contained therein comprising, in combination:

a substantially air tight grinding mill for reducing said coal to particles comprising a hydrophobic coal-fraction and a hydrophilic impurities-fractions, a major portion of said particles having a size less than about 40 microns, injector means for introducing an air-free fluid carrier medium into said mill, inlet means for introducing raw coal into said carrier medium, and outlet means for withdrawing from said mill at least a portion of said coal-fraction and impurities-fraction entrained in said carrier medium;

a feed conduit for supplying raw coal to said mill for size reduction said conduit having means for excluding air from said conduit and said mill;

means for cooling said withdrawn coal-fraction and impurities-fraction thereby causing wetting of the particles constituting the impurities fraction, but leaving the particles constituting the coal-fraction substantially dry;

a separator for separating said hydrophobic coal-fraction from said wetted impurities-fraction; and

means for transferring said carrier medium with said unagglomerated coal-fraction and said impurities-fraction entrained therein from said mill to said separator.

15. A process for treating coal to reduce the level of ash-forming impurities contained therein comprising:

a. grinding raw coal to a particle size of less than about 40 microns in a substantially air free environment to form a hydrophobic coal fraction and a hydrophilic impurities fraction;

b. contacting said fractions with an aqueous liquid whereby the particles constituting the impurities fraction are wetted, but the particles constituting the coal fraction are left substantially dry;

c. separating the impurities particles from the coal particles.

4,288,232

ESTER CONTAINING FUEL COMPOSITION

Irving R. Schmolka, Grosse Ile, and Joseph H. Y. Niu, Trenton, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 19, 1979, Ser. No. 105,424
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **11 Claims**

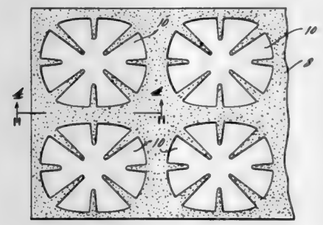
1. A combustible fuel slurry comprising solid particulate carbonaceous material, liquid hydrocarbon fuel, and a minor slurry suspension stabilizing amount of a fatty acid ester of a polyoxyalkylene polymer wherein said fatty acid has about 12 to 22 carbon atoms in the acyl group, the polyoxyalkylene groups have a total molecular weight of about 500 to 2000 and said polyoxyalkylene polymer is selected from the group consisting of polyoxypropylene polymers and polyoxyethylene-polyoxypropylene copolymers containing up to about 60 percent by weight polyoxyethylene groups.

4,288,233

ABRASIVE PADS FOR LENS LAPPING TOOLS

Ronald C. Wiand, 1790 Washington, Birmingham, Mich. 48009

Continuation of Ser. No. 872,334, Jan. 25, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,104
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—295 **10 Claims**



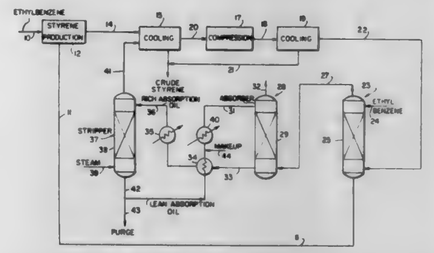
1. A method of making an abrasive pad for an ophthalmic lens lapping tool comprising first metal plating diamond particles to a substrate sheet and then cutting shapes from said sheet, said shapes being conformable to the surface of said lens lapping tool.

4,288,234

RECOVERY OF AROMATICS FROM STYRENE PRODUCTION OFF-GAS

Robert P. Cox, Wyckoff, N.J., and Norbert R. Tarradellas, Basrah, Iraq, assignors to The Lummus Company, Bloomfield, N.J.

Filed Nov. 15, 1979, Ser. No. 94,672
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—48 **5 Claims**



1. In a process for treating an off-gas generated in a process for producing styrene from ethylbenzene, said off-gas containing hydrogen and aromatic hydrocarbons, the improvement comprising:

finally treating the off-gas, which comprises hydrogen ethylbenzene and a member selected from the group consisting of styrene, benzene, toluene and mixtures thereof, and which contains from 0.5% to 10% by volume of aromatic hydrocarbons by contacting the off-gas at a temperature of from 35° F. to 125° F. and a pressure of from 15 to 100 psia with an absorption oil for aromatics having a 5-volume percent distillation temperature of at least 400° F. to absorb aromatic hydrocarbons present in the off-gas and provide a remaining off-gas essentially free of aromatic hydrocarbons, which off-gas contains less than 0.2% by volume of aromatic hydrocarbons, wherein said absorption oil is a heavy byproduct from the production of ethylbenzene by alkylation of benzene, and which contains diphenylethane and polyethylbenzenes; and recovering aromatic hydrocarbons absorbed by said absorption oil by stripping.

4,288,235

LOW RESIDENCE TIME SOLID-GAS SEPARATION DEVICE AND SYSTEM

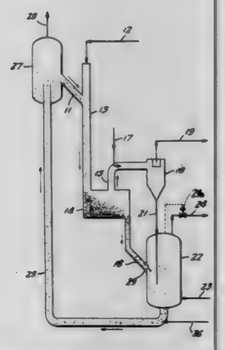
Robert J. Gartside, Auburndale, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Jul. 6, 1979, Ser. No. 55,148
Int. Cl.³ B01D *45/06, 50/00*
U.S. Cl. 55—196 **14 Claims**

1. A solids-gas separator designed to effect rapid removal of particulate solids from a dilute mixed phase stream of solids and gas, the separator comprising a chamber for disengaging solids from the incoming mixed phase stream, said chamber having rectilinear longitudinal walls to form a flow path essentially rectangular in cross section, said chamber also having a mixed phase inlet, a gas phase outlet, and a solids phase outlet, with the mixed phase inlet being at one end of the chamber and disposed normal to one wall of the rectilinear chamber, said solids phase outlet being at the other end of the chamber and suitably arranged for downflow of discharged solids by gravity, and said gas phase outlet being therebetween and oriented to effect a 180° change in direction of the gas, and wherein said separator further comprises a weir disposed in said chamber and extending across said flow path adjacent said gas phase outlet upstream of said solids phase outlet.

2. A solids-gas separator designed to effect rapid removal of particulate solids from a dilute mixed phase stream of solids

and gas, the separator comprising a chamber for disengaging solids from the incoming mixed phase stream, said chamber having slightly arcuate longitudinal walls to form a flow path essentially rectangular in cross section, said chamber also having a mixed phase inlet, a gas phase outlet, and a solids phase outlet, with the nixed phase inlet being at one end of the chamber and disposed normal to one wall of the rectilinear



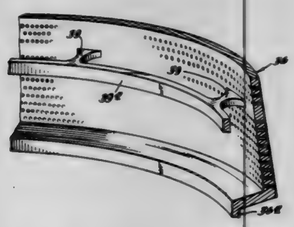
chamber, and the solids phase outlet being at the other end of the chamber and suitably arranged for downflow of discharged solids by gravity, and said gas phase outlet being therebetween and oriented to effect a 180° change in direction of the gas, and wherein said separator further comprises a weir disposed in said chamber and extending across said flow path adjacent said gas phase outlet upstream of said solids phase outlet.

4,288,236

GLASS FIBERIZATION BY CENTRIFUGAL FEED OF GLASS INTO ATTENUATING BLAST

Jean A. Battigelli, and Francois Bouquet, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 27,617, Apr. 6, 1979, Pat. No. 4,203,745. This application Nov. 6, 1979, Ser. No. 91,792
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—14 **5 Claims**



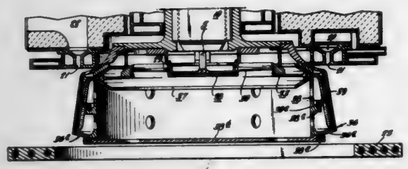
1. Glass fiberizing equipment comprising a hollow spinner arranged on an upright axis and having a peripheral wall having an area perforated with a plurality of rows of orifices for centrifugal projection of streams of molten glass and a blower generating an annular gas current downwardly around the spinner, characterized by the provision of a wall bracing structure positioned inside of the spinner and having means connecting the bracing structure with the mid region of the perforated area of the peripheral wall at circumferentially spaced points.

4,288,237

GLASS FIBERIZATION SPINNER

Jean A. Battigelli; Francois Bouquet, both of Rantigny, and Igor Fezenko, Aubervilliers, all of France, assignors to Saint-Gobain Industries, Cedex, France

Division of Ser. No. 28,393, Apr. 9, 1979, Pat. No. 4,203,748. This application Nov. 6, 1979, Ser. No. 91,794
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—14 **3 Claims**



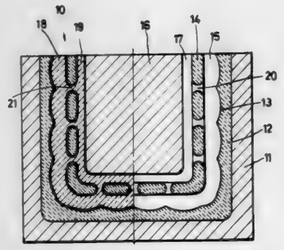
1. Glass fiberizing equipment comprising a hollow spinner having a peripheral wall open at one edge and having mounting means at the other edge, the wall being provided with a plurality of rows of orifices for centrifugal projection of streams of molten glass, characterized in that an annular reinforcement element is integrally connected with the spinner throughout the entire circumference of the open edge of the peripheral wall of the spinner, said element being offset radially inwardly from the open edge of the peripheral wall, and said element having a sectional dimension in a direction axially of the spinner which dimension is greater than the wall thickness of said peripheral wall.

4,288,238

PROCESS AND MOULD FOR THE MANUFACTURE OF MULTI-WALLED HOLLOW BODIES, ESPECIALLY OF GLASS

Kristian Klepsch, Viechtach, Fed. Rep. of Germany, assignor to Klepsch Kunst GmbH & Co. KG Galerie, Viechtach, Fed. Rep. of Germany

Filed Jan. 8, 1980, Ser. No. 110,315
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900429
Int. Cl.³ C03B *11/10*
U.S. Cl. 65—23 **15 Claims**



1. A molding process for the production of a hollow vessel from a meltable casting material such as glass, said vessel having at least two walls spaced apart and joined together by a plurality of lateral webs, comprising the steps of:

(a) positioning a first destructable hollow auxiliary mode form (**14**) having a plurality of lateral passages (**20**) extending therethrough within a hollow outer mold (**11**) but spaced therefrom to define an outer wall chamber (**15**) therebetween,

(b) introducing said casting material into said outer wall chamber, said lateral passages, and over the inner surface of said auxiliary mold form,

(c) hardening said casting material to define a unitary hollow vessel having an outer wall (**18**) and an inner wall (**19**) spaced therefrom but connected thereto by a plurality of webs (**21**) formed within said lateral passages, and

(d) chemically dissolving said auxiliary mold form.

13. A mold assembly for the production of a hollow vessel from a meltable casting material such as glass, said vessel having at least two walls spaced apart and joined together by a plurality of lateral webs, comprising:

(a) a rigid hollow outer mold (**11**),

(b) a first destructable hollow auxiliary mold form (**12**) disposed within the outer mold and in intimate contact therewith throughout, and

(c) a second destructable hollow auxiliary mold form (**14**) disposed within said first auxiliary mold form but spaced therefrom to define an outer wall chamber therebetween,

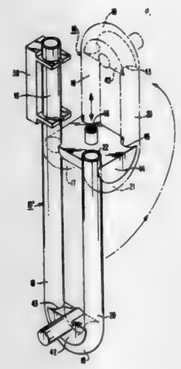
(d) said second auxiliary mold form having a plurality of lateral passages extending therethrough.

4,288,239

METHOD OF MAKING A CONVOLUTED TUBULAR ENVELOPE FOR A COMPACT ELECTRIC DISCHARGE LAMP

Frederick W. Hoeh, deceased, late of Livingston, N.J. by Inga Hoeh, executrix, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 11,836, Feb. 13, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 126,098
Int. Cl.³ C03B *23/06*
U.S. Cl. 65—110 **7 Claims**



1. In the manufacture of an electric lamp, the method of forming an envelope of compact triple-U-bent configuration from vitreous tubing that is substantially straight, which method comprises the steps of;

heating a predetermined length of such substantially straight vitreous tubing in a manner such that the end segments thereof are rigid and the remainder of the tubing is uniformly softened sufficiently to be bent without fracturing or collapsing,

gripping the rigid end segments of said tubing and swinging them toward one another along a common plane until the heat-softened medial portion of the tubing is bent through an arc such that the tubing is U-shaped,

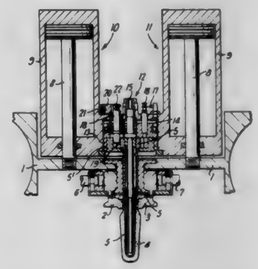
immediately placing heated mold means of arcuate configuration against the heat-softened leg portions of the U-shaped tubing and, while maintaining the gripped end segments of the tubing stationary, swinging the U-bent medial part of the tubing through an arc of approximately 180° along a path which is substantially normal to the plane of the first bending operation and thereby simultaneously bending both of the heat-softened leg portions around said mold means and forming two additional U-bends in the tubing which are aligned with one another and position the neck of the first-formed U-bend proximate the gripped end segments of the tubing, and then removing said mold means and cooling the resulting triple-U-bent tubular envelope to rigidify and set the vitreous tubing in such configuration.

4,288,240

PLUNGER MOUNTING MECHANISM IN A GLASSWARE FORMING MACHINE

David Braithwaite, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Aug. 6, 1980, Ser. No. 175,614
Claims priority, application United Kingdom, Aug. 29, 1979, 29860/79
Int. Cl.³ C03B *11/05, 11/16*
U.S. Cl. 65—246 **7 Claims**



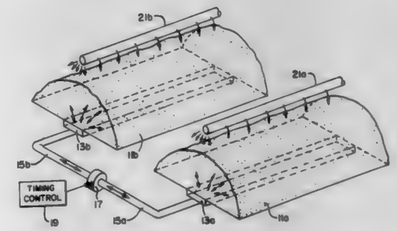
1. A glassware forming machine comprising at least one upwardly open parison mould in which parisons are formed from molten glass at a blank station, a carriage, and, supported on the carriage, a neck ring, a plunger, and means for moving the plunger between a raised inoperative position and a lowered operative position, the carriage being reciprocable between a first position at which the neck ring engages a parison formed in the parison mould and a second position at which the neck ring opens to release the parison at a further station of the machine, and the plunger being moved to the lowered operative position when the carriage is in the first position so that the plunger projects through the neck ring into the parison mould to form a parison from a gob of molten glass at the blank station.

4,288,241

METHOD AND APPARATUS FOR COMPOSTING SLUDGE

Gedaliahu Shelef, 9 Ayalon St., Haifi, Israel

Filed Jul. 26, 1979, Ser. No. 60,989
Claims priority, application Brazil, Aug. 22, 1978, PI7805441
Int. Cl.³ C05F *11/08*
U.S. Cl. 71—9 **2 Claims**



1. A method of composting sludge comprising arranging the sludge into first and second windrows extending lengthwise

over first and second elongated, perforated conduits, respectively, drawing air from said first windrow into said first perforated conduit and forcing the air drawn from said first windrow into said second windrow through said second conduit in spaced time intervals and in alternate intervals drawing the air from the second windrow into the second conduit and forcing the air drawn from said second windrow into said first windrow through said first conduit.

4,288,242

ALPHA-CHLORO-ALKOXYMETHYL-N-(2,6-DIALKOXYPHENYL)ACETAMIDES AS EFFECTIVE TURFGRASS REGULANTS

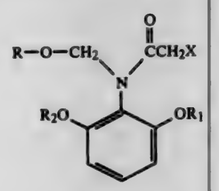
Gerhard H. Alt, University City, and John P. Chupp, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 25, 1980, Ser. No. 133,762

Int. Cl.³ A01N *37/24*

U.S. Cl. 71—76 **9 Claims**

1. A method for retarding the growth of turfgrass which comprises applying to said turfgrass an effective growth retarding amount of a compound of the formula



wherein R, R_1 and R_2 are independently lower alkyl and X is chloro, bromo or iodo.

4,288,243

2',5'-DIOXO-1'-PYRROLYDINYL 5-(2-HALO-4-TRIFLUOROMETHYLPHENOXY)-2-HALO-, CYANO- OR NITROBENZOATES

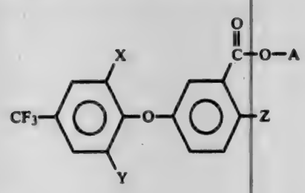
William S. Grove, Doylestown, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 7, 1980, Ser. No. 166,017

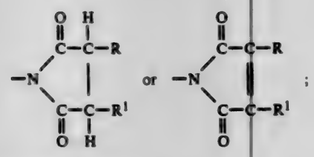
Int. Cl.³ A01N *43/36, 43/38;* C07D *209/48, 207/20*

U.S. Cl. 71—95 **9 Claims**

1. A compound represented by the formula:



wherein:
A is



X is hydrogen or halogen;
Y is hydrogen, halogen, cyano, trifluoromethyl, or alkyl containing up to 4 carbon atoms;
Z is nitro, halogen, or cyano; and
R and R^1 are the same or different and represent hydrogen, halogen, or alkyl containing up to 10 carbon atoms, or R and R^1 may join together to form a benzene ring.

8. In a method of controlling weed growth wherein a herbicidally effective amount of herbicide is either applied to the growth medium prior to emergence of the weeds or applied to the weeds subsequent to emergence from the growth medium, wherein the improvement resides in using as the herbicide a herbicidally effective amount of a compound or mixture of compounds defined in claim 1.

4,288,244

N-BENZYLHALOACETAMIDE DERIVATIVES, AND THEIR PRODUCTION AND USE

Osamu Kirino, Ashiya; Shunichi Hashimoto, Sonchigashimachi; Hiroshi Matsumoto, Takarazuka, and Hiromichi Oshio, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

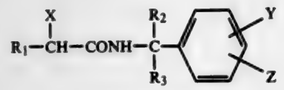
Filed Sep. 14, 1979, Ser. No. 75,705

Claims priority, application Japan, Sep. 19, 1978, 53/115588; Nov. 10, 1978, 53/139069; Nov. 14, 1978, 53/140800

Int. Cl.³ A01N *37/18;* C07C *103/127*

U.S. Cl. 71—118 **13 Claims**

1. A compound of the formula:



wherein R_1 is a C_4–C_7 tertiary alkyl group, X is a halogen atom, R_2 is a methyl group or an ethyl group, R_3 is a methyl group or an ethyl group, or when R_2 and R_3 are taken together, they represent a C_2–C_5 alkylene group, and Y and Z, which may be the same or different, are each a hydrogen, a halogen atom, a methyl group or a methoxy group.

12. A herbicidal composition comprising an inert carrier or diluent and at least one of the N-benzylhaloacetamide derivatives according to claim 1 as an active ingredient in a herbicidally effective amount.

4,288,245

PROCESS FOR PRODUCING AGGLOMERATES OF METAL CONTAINING ORES AND THE PRODUCT OF THE PROCESS

Herm J. Roorda, Rijswijk, and Max J. Jipping, Driebergen, both of Netherlands, assignors to Akzo NV, Arnhem, Netherlands

Filed Nov. 15, 1976, Ser. No. 741,981

Claims priority, application Netherlands, Nov. 20, 1975, 7513554

Int. Cl.³ C22B *1/14*

U.S. Cl. 75—0.5 R **14 Claims**

1. In a process for agglomerating a metal-containing ore material in the presence of water and an alkali metal salt of carboxymethyl cellulose as a binder, the improvement comprising combining as a binder an alkali metal salt of carboxymethyl cellulose in an amount of at least 0.01%, calculated on the weight of the dry ore material, with one or more salts selected from the group consisting of an alkali metal salt of acetic acid, benzoic acid, lactic acid, propionic acid, tartaric acid, succinic acid, citric acid, nitrous acid, boric acid and carbonic acid in an amount of at least 2%, calculated on the weight of the alkali metal salt of carboxymethyl cellulose.

11. The agglomerated product of claim 10 wherein the binder composition is an alkali metal salt of carboxymethyl cellulose in an amount of 0.01–1% by weight and one or more salts derived from an alkali metal and a weak acid with a pK vaslue higher than 3 and a molecular weight lower than 500 in an amount of 0.001–10% by weight, all percentages being calculated on the dry ore material.

4,288,246

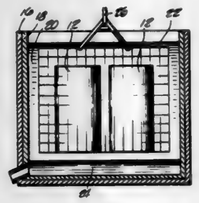
SEPARATION OF ALUMINUM FROM ARTICLES COMPOSED OF ALUMINUM BONDED TO FERROUS METAL

Thomas J. Banski, Kenosha, and Robert J. Riedner, Big Bend, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 26, 1979, Ser. No. 106,554

Int. Cl.³ C22B *21/06*

U.S. Cl. 75—68 R **10 Claims**



1. A method for separating aluminum from an article composed of an aluminum part bonded to a ferrous metal part, said method comprising the steps of immersing the article in a molten salt bath composed of about 5 to about 10 weight % cryolite, about 5 to about 10 weight % aluminum fluoride and about 80 to about 90 weight % of a mixture of sodium chloride and potassium chloride, having a specific gravity less than that of the aluminum, and maintained at a temperature above the melting point of the aluminum, retaining the article in said bath a sufficient time for substantially all the aluminum to melt, to separate from the ferrous metal part, and to settle in said bath, maintaining the ferrous metal part out of contact with the molten aluminum accumulating in said bath, and removing the resulting substantially aluminum-free ferrous metal part from said bath.

4,288,247

NICKEL-BASE SUPERALLOYS

Stuart W. Shaw, Sutton Coldfield, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,308

Claims priority, application United Kingdom, Jul. 6, 1978, 28996/78

Int. Cl.³ C22C *19/05*

U.S. Cl. 75—171 **7 Claims**

1. An alloy consisting essentially of, by weight, 19 to 21% chromium, 5 to 25% cobalt, 1 to 5% tungsten, 0.5 to 3% tantalum, 2 to 5% titanium, 1 to 4.5% aluminum, the sum of the titanium plus aluminum being from 4.5 to 9%, 0 to 2% niobium, 0.35 to 1.2% boron, 0 to 3.5% molybdenum, 0 to 0.5% zirconium, 0 to 0.2% in total of yttrium or lanthanum or both, and 0 to 0.1% carbon, the balance, apart from impurities, being nickel, characterized in that the alloy additionally contains one or both of hafnium in an amount up to 2.2% and vanadium in an amount up to 2.0%.

4,288,248

TEMPERATURE RESISTANT ABRASIVE COMPACT AND METHOD FOR MAKING SAME

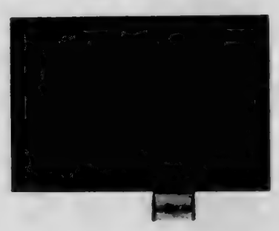
Harold P. Bovenkerk, and Paul D. Gigl, both of Worthington, Ohio, assignors to General Electric Company, Worthington, Ohio

Division of Ser. No. 890,898, Mar. 28, 1978, Pat. No. 4,224,380, which is a continuation of Ser. No. 770,151, Feb. 18, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,054

Int. Cl.³ B22F *3/00, 3/24*

U.S. Cl. 75—226 **6 Claims**

1. A method of making a tool component comprising:
a. placing within a reaction cell a mass of abrasive particles selected from the group consisting of diamond and cubic boron nitride and a mass of sintering aid material for said abrasive particle mass;
b. simultaneously subjecting said cell and the contents to temperatures in the range of 1200° C. and to 2000° C. and pressures in excess of 40 kilobars;
c. ceasing the input of heat to said cell;



d. removing from said cell an abrasive body formed by steps (a) to (c), said body comprising said particles in a self-bonded form and said material infiltrated throughout the particles the improvement comprising:
removing substantially all said material infiltrated in said body by contacting said body with a first hot medium comprising nitric acid and hydrofluoric acid and then a second hot medium comprising hydrochloric acid and nitric acid.

4,288,249

WATER SOLUBLE PENTACHLOROPHENOL AND TETRACHLOROPHENOL WOOD TREATING SYSTEMS

Joseph Amundsen, Federal Way; Robert J. Goodwin, Puyallup, and William H. Wetzel, Federal Way, all of Wash., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Continuation of Ser. No. 14,955, Feb. 26, 1979, abandoned, which is a continuation of Ser. No. 857,035, Dec. 2, 1977, abandoned. This application Aug. 11, 1980, Ser. No. 176,795

Int. Cl.³ C09D *5/14*

U.S. Cl. 106—18.35 **4 Claims**

1. Water soluble wood treating and preserving solutions consisting of blends of (A) from about 0.1% to about 50% by weight of a chlorophenol selected from a group consisting of pentachlorophenol and tetrachlorophenol and mixtures thereof (B) from about 2% to about 98% by weight aliphatic alcohols selected from the group consisting of N-butyl alcohol, secondary butyl alcohol, isobutyl alcohol, tertiary butyl alcohol and isopropyl alcohol and mixtures thereof (C) from about 0.56% to about 45% by weight of an amine selected from the group consisting of ammonium hydroxide, triethylamine, trimethyl amine, methyl amine and methyldiethanol amine and mixtures thereof and (D) from about 1% to about 97% by weight water.

4,288,250

GLASS FILTER FOR CONTRAST ENHANCEMENT IN CRT DISPLAYS

Toshiharu Yamashita, Hachioji, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,347

Claims priority, application Japan, Mar. 20, 1979, 54-31785

Int. Cl.³ C03C *3/04;* C07C *3/08;* C03C *3/10*

U.S. Cl. 501—78 **6 Claims**

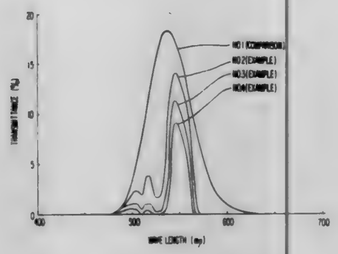
1. A green filter glass having a sharp transmission peak in only the wavelength range of 540 to 550 mμ where the peak transmittance is to 10 to 16% through which 2 to 4% light having a wavelength of 610 to 620 mμ passes together with the light in the 540 to 550 mμ transmission peak consisting essentially of:
about 0.1 to 1.5 part by weight Cr_2O_3,
about 0 to 0.5 part by weight CuO,
about 0 to 0.2 part by weight NiO and

100 parts by weight of a base glass composition consisting essentially of:

about 4 to 70% by weight SiO_2

about 15 to 30% by weight Nd_2O_3

about 0 to 25% by weight of an alkali metal oxide (R_2O) and



about 0 to 46% by weight of a divalent metal oxide (RO) such that the sum of R_2O and RO is about 10 to 50% by weight

about 0 to 25% by weight B_2O_3

about 0 to 10% Al_2O_3 and

about 0 to 10% by weight of each of TiO_2, ZrO_2, La_2O_3, Nb_2O_5 and Ta_2O_5.

4,288,251

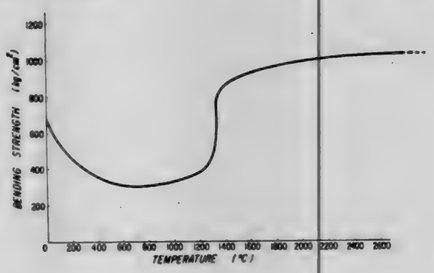
REINFORCED ELECTROCAST ZIRCONIA REFRACTORIES

Toshikatsu Hagi; Hiroyuki Fukuda, both of Iwaki; Hiroshi Shinoda, Gifu, and Hideharu Hayakawa, Nagoya, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and NGK Insulators, Ltd., Aichi, both of, Japan

Continuation-in-part of Ser. No. 47,102, Jun. 11, 1979, abandoned. This application Feb. 21, 1980, Ser. No. 123,452

Int. Cl.³ C04B *35/48*

U.S. Cl. 501—105 **2 Claims**



1. A reinforced electrocast zirconia refractory obtained by heating fully stabilized electrocast zirconia refractories containing 89.0 to 97.5% by weight of ZrO_2, less than 1% by weight of SiO_2, less than 1% by weight of Al_2O_3 and 2.5 to 8.0% by weight of a stabilizing agent to a temperature of at least about 1400° C. in an atmosphere containing from 1.5 to 30% volume of oxygen, a raising rate of temperature being less than 85° C./hour during the period from the time when temperature reaches about 600° C. to the time when the temperature reaches about 1400° C., and maintaining said stabilized electrocast zirconia refractory at the temperature of at least about 1400° C. at least for 30 minutes.

4,288,252

METHOD OF MAKING LOW TEMPERATURE CURABLE SILICATE COMPOSITIONS

James E. Neely, Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 973,479, Dec. 26, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,492

Int. Cl.³ C09D *1/02*; C09J *1/02*

U.S. Cl. 106—74 **4 Claims**

1. A method for making a waterstable composition from an aqueous silicate solution comprising a water soluble silicate and an inorganic curing agent which comprises the steps of:

a. reacting an ammonia compound with aluminum dihydrogen phosphate to form a reaction product;

b. heating said reaction product at a sufficient temperature for a sufficient time to produce predominantly B-form aluminum trimetaphosphate;

c. combining said heated reaction product with a mixture of alkali metal silicates; and

d. curing at a temperature between 150° C. and 250° C. until the composition is water stable.

4,288,253

WATER INSENSITIVE BONDED PERLITE STRUCTURAL MATERIALS

Joseph M. Venable, New Braunfels, Tex., assignor to Pamrod, Incorporated, McQueeney, Tex.

Continuation of Ser. No. 502,072, Aug. 30, 1974, abandoned. This application Jun. 8, 1979, Ser. No. 46,848

Int. Cl.³ C04B *43/00*

U.S. Cl. 106—84 **10 Claims**

1. An improved water insensitive structural material consisting essentially of reactive expanded perlite bonded by an in situ produced water insoluble, crystalline reaction product of said expanded perlite and at least one alkali metal silicate selected from sodium silicate and potassium silicate, said structural material being made by a process comprising the steps of:

(a) mixing from about 1 to about 2 parts by weight of a filler material having at least 75 parts by weight reactive expanded perlite with about 4 to about 1 parts by weight of an aqueous solution of said at least one alkali metal silicate and when said alkali metal silicate is sodium silicate, the weight ratio of SiO_2 to Na_2O is from about 3:1 to about 4:1 and the solids content is from about 28 to about 34 weight percent and when said alkali metal silicate is potassium silicate, the weight ratio of SiO_2 to K_2O is from about 2:1 to about 2.6:1 and the solids content is from about 24 to about 30 weight percent;

(b) thereafter compressing the mixture from step (a) into a coherent article; and

(c) thereafter subjecting the coherent article from step (b) to a one-stage curing process in which the article is maintained through the entire curing process at a temperature about 180° F. to about 225° F. at a relative humidity of from about 30% to 60%.

4,288,254

PREDISPERSED SLURRY OF TITANIUM DIOXIDE

Yves Gladu, Quebec, Canada, assignor to NL CHEM Canada Inc., Montreal, Canada

Continuation-in-part of Ser. No. 61,515, Jul. 27, 1979, abandoned. This application May 19, 1980, Ser. No. 151,120

Int. Cl.³ C09C *1/36*

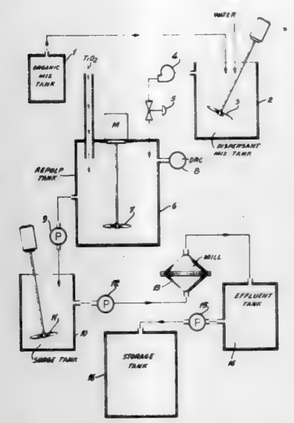
U.S. Cl. 106—300 **12 Claims**

1. A process for preparing a dispersed slurry of dispersant coated rutile titanium dioxide which comprises:

a. preparing a dispersant coated titanium dioxide slurry having a solids content of at least about 60% by weight by mixing rutile titanium dioxide; at least one dispersant additive, and water;

b. passing the dispersant coated titanium dioxide slurry directly through a high shear mill having an impeller

peripheral speed sufficient to de-agglomerate the titanium dioxide but prevent stripping the coating from the titanium dioxide; and



c. recovering a substantially agglomerate-free rutile titanium dioxide slurry having a solids content of at least 60% by weight.

4,288,255

RINSING METHOD AND APPARATUS FOR CAR-WASHING INSTALLATION

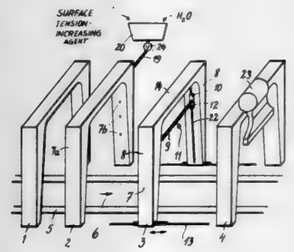
Horst Burger, Gartenstr. 6d, 8901 Neusäss, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 63,170, Aug. 2, 1979, abandoned. This application Nov. 19, 1979, Ser. No. 95,423

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834582

Int. Cl.³ B08B *7/00*

U.S. Cl. 134—6 **13 Claims**



1. In a method of cleaning a car wherein the car is treated with soapy water, the car is then prerinsed with water to remove most of the soapy water and then rinsed with clean water to wash off the remaining soapy water, and the clean water is dried and driven off the car by an air stream, the improvement comprising the steps of:

mixing the prerinse water prior to use with a surface-tension-increasing agent to render the surface of said car slightly hydrophobic; and

pouring said rinse water from an overhead dispenser onto said car under substantially atmospheric pressure as a substantially continuous film, whereby said film runs off said car substantially without leaving drops behind said dispenser having a downwardly extending curtain formed from filaments, said rinse water being poured by flowing the rinse water down said curtain while maintaining the lower edge of said curtain in contact with the car being washed.

4,288,256

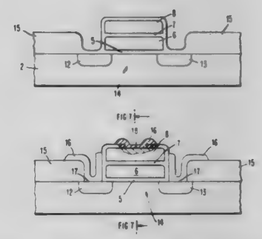
METHOD OF MAKING FET CONTAINING STACKED GATES

Tak H. Ning, Yorktown Heights; Carlton M. Osburn, Croton-on-Hudson, and Hwa N. Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1977, Ser. No. 864,074

Int. Cl.³ B01J *17/00*; H01L *29/27*

U.S. Cl. 148—1.5 **10 Claims**



1. In a method for fabricating an integrated circuit containing an array of FETs and the associated, addressing, decoding and sensing circuits wherein individual FETs of the array include a floating gate and a control gate in a stacked relationship with each other and having electrical insulator between the floating and control gates which comprises:

A. delineating predetermined insulating regions above or recessed into the substrate to provide isolating field regions between FETs of the array;

B. then delineating a first layer of gate-forming material employing the same lithographic mask to provide a floating gate and a control gate which are self-aligned with each other in all lateral directions, and to provide etched regions which are to be subsequently doped for forming source and drain regions self-aligned in the length dimensions with respect to both of said floating and control gates;

C. then thermally diffusing or ion-implanting active impurities into predetermined regions of the semiconductive substrate beneath the etched regions to provide source and drain regions which are self-aligned with respect to said floating and control gates;

D. then providing insulating layer;

E. then delineating contact holes to source and drain regions; and

F. then delineating a metallic-type high-conductivity electrical interconnection pattern that makes electrical connection to the control gates in the array of FETs and to FET sources and drains.

4,288,257

BRASS MATERIAL AND A PROCESS FOR THE PREPARATION THEREOF

Peter Ruchel, Lauf, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Fed. Rep. of Germany

Division of Ser. No. 941,131, Sep. 11, 1978, Pat. No. 4,226,621. This application Mar. 6, 1980, Ser. No. 127,578

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2742008

Int. Cl.³ C22F *1/08*

U.S. Cl. 148—11.5 C **9 Claims**

1. In a process for the preparation of a brass material from a semi-finished material constituted of a copper-zinc alloy of about 61 to 65% by weight of copper with the remainder being zinc, said semi-finished material is cold worked and subse-

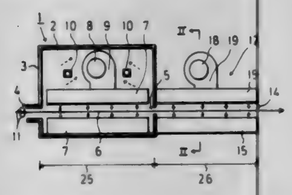
quently subjected to a temperature- and time-measured heat treatment utilized for malleable alloys; the improvement comprising initial formation of the α solid solution only by annealing said alloy at temperatures of 450° to 700° C. and for an annealing period of about 20 hours at 450° C. and for about 15 minutes at 700° C. to totally dissolve all of the β phase; thereafter cold working said alloy to a degree of deformation of at least 50%; and subsequently subjecting said alloy to a heat treatment leading to a β_1 phase precipitation and recrystallization at temperatures of between 200° and 350° C., and an annealing period of between 1 minute and 500 hours.

4,288,258

METHOD FOR COOLING A METAL STRIP DURING THE PROCESS OF HEAT TREATMENT

Seiichiro Sekiwa, Aichi; Kenji Kawate, and Hidesobu Jinnouchi, both of Nagoya, all of Japan, assignors to Daidotokushuko, Japan

Filed Aug. 3, 1979, Ser. No. 63,509
Claims priority, application Japan, Aug. 6, 1978, 53-95625
Int. Cl.³ C21D *9/52*; C22F *1/00*
U.S. Cl. 148—13 **5 Claims**



1. In a method, of heat treatment of a metal strip, which includes the steps of:

(a) passing the metal strip lengthwise through a heating zone,

(b) during passage of the metal strip through the heating zone, blowing hot gas onto the strip such that the strip is heated and is also maintained in floating condition by said gas,

(c) upon emergence of said heated strip from said heated zone, immediately passing said heated strip lengthwise through a cooling zone,

(d) during passage of the metal strip through the cooling zone, blowing cool gas onto the strip such that the strip is cooled and is also maintained in floating condition by said gas, the cooling of the metal strip being carried out with a cooling gradient which is sufficiently steep to cause in the strip, if cooled substantially equally over its width, a thermal stress greater than the anti-buckling stress of the strip, the improvement which comprises cooling the lateral longitudinal portions of the strip more rapidly than a central longitudinal portion thereof, at a rate ensuring that the thermal stress produced in the metal strip is less than the anti-buckling stress thereof.

4,288,259

TANTALUM MODIFIED GAMMA PRIME-ALPHA EUTECTIC ALLOY

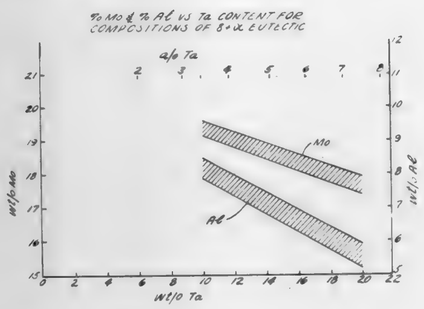
David D. Pearson, West Hartford, and Franklin D. Lemkey, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 4, 1978, Ser. No. 966,416
Int. Cl.³ C22C *19/03*
U.S. Cl. 148—32 **7 Claims**

1. A directionally solidified eutectic article having a composition which satisfies the following relationship:

$12.5 \pm 0.5\%$ Mo, X% Ta, $[22 \pm 0.5 - X\%]$Al balance essentially Ni,

where all percentages are atomic percentages, and X varies from 3.4 to 7.5,



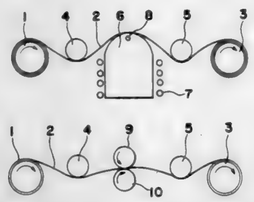
said article having a microstructure comprising about 18 volume percent of aligned Mo fibers in a gamma prime matrix wherein from about 15.5% to about 34% of the normally occurring Al in the gamma prime matrix has been replaced by an equiatomic amount of Ta.

4,288,260

METHOD OF HEAT TREATMENTS OF AMORPHOUS ALLOY RIBBONS

Harufumi Seano, Yamatokoriyama; Hiroshi Sakakima, Hirakata; Yukihiro Yanagiuchi, Katano; Tsuneo Inoue, Moriguchi; Masatsugu Yamaguchi, and Eiichi Hirota, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 968,969, Dec. 13, 1978, abandoned. This application Mar. 26, 1980, Ser. No. 134,132
Claims priority, application Japan, Dec. 16, 1977, 52/151871
Int. Cl.³ H01F *1/00*
U.S. Cl. 148—121 **7 Claims**



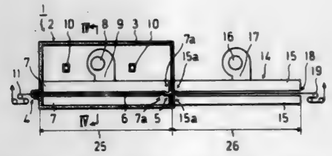
1. A method of heat treating an amorphous alloy ribbon manufactured by a splat cooling method, which comprises continuously transferring said amorphous alloy ribbon at a rate between 1 cm/sec and 50 cm/sec between two stations; contacting the ribbon with at least one heating body intermediate the two stations so that at least one surface of the ribbon directly contacts the heating body during the transfer step, said heating body being maintained at a temperature range (T°C.) which includes the crystallization point temperature T_{cry}°C. of said amorphous alloy ribbon such that the alloy is maintained in an amorphous state, such heat treatment being conducted for a time sufficient to enhance the magnetic properties of the alloy while maintaining the alloy in an amorphous state, wherein said temperature (T°C.) can be defined by the following relationship of $(T_{cry}-200° C.) \leqq T \leqq (T_{cry}+50° C.)$.

4,288,261

METHOD FOR THE HEAT TREATMENT OF ALUMINUM STRIP

Hiromu Yoshimoto, 1-18 Aza Tabuchi, Yawata, Chita-shi; Michitoshi Okumura, 139 3-chome, Jojo-cho, Kasugai-shi, and Kenji Kawate, 4-2 Naruko-cho, Midori-ku, Nagoya-shi, all of Aichi-ken, Japan

Filed Jul. 13, 1979, Ser. No. 57,474
Claims priority, application Japan, Jul. 15, 1978, 53-86559
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—131 **4 Claims**



1. A method, for the heat treatment of aluminium strip, comprising the steps of:

(i) passing an aluminium strip in floating mode through a heating zone;

(ii) passing the strip, from the heating zone, through a cooling zone in a floating mode so as to be cooled thereby;

(iii) in a portion of the length of the moving strip passing from within the heating zone to within the cooling zone, imparting to the strip a wave-like form extending longitudinally of the strip and having a radius of curvature smaller than the value of the expression

$$\sqrt{\frac{x \cdot 0.339}{y^3}}$$

wherein x is the sum of the lengths of the heating zone and of the cooling zone, and y is the width of the aluminium strip.

4,288,262

GUN PROPELLANTS CONTAINING POLYGLYCIDYL AZIDE POLYMER

Joseph E. Flanagan, Woodland Hills, and John C. Gray, Ventura, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 891,581, Mar. 30, 1978, abandoned. This application May 7, 1979, Ser. No. 39,629
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.6 **9 Claims**

1. A propellant comprising nitrocellulose (NC) and polyglycidyl azide (GAP).

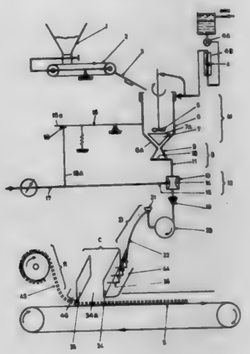
4,288,263

PROCESS FOR MAKING PLASTER BOARD

Adrien Delcoigne, Chantilly, and Jacques Lanneau, Breuil-le-Vert, both of France, assignors to Saint Gobain Industries, Neuilly, France

Filed Jan. 15, 1979, Ser. No. 3,414
Claims priority, application France, Feb. 8, 1978, 78 03473; Feb. 8, 1978, 78 03474; Feb. 8, 1978, 78 03475
Int. Cl.³ B32B *13/04, 13/14*
U.S. Cl. 156—42 **27 Claims**

1. A process for making a board from a fluid evolutive product including pouring said product into a reservoir located above a conveyor moving at a uniform speed, passing said product through a slit transverse to the conveyor so that the board is formed between the conveyor and the downstream wall of the reservoir, characterized by continuously introducing streams of fresh fluid evolutive product substantially horizontally into the reservoir through spaced nozzles discharging



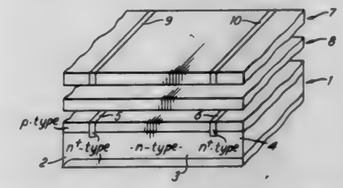
into the product in the reservior with such force as to eliminate dead spots and prevent premature hardening of said product.

4,288,264

DETECTOR CONSTRUCTION

Promod Haque, Evanston, Ill., assignor to EMI Limited, Hayes, England

Filed Nov. 21, 1979, Ser. No. 96,436
Int. Cl.³ H01L *31/18*
U.S. Cl. 156—67 **7 Claims**



1. A method of constructing a detector arrangement for producing electrical output signals in response to penetrating radiation comprising the steps of providing at least one semiconductive photodiode, forming a layer of optical cement on said at least one photodiode, providing a layer of plastics material, which readily peels from said optical cement, on said layer of optical cement, and depositing a layer of phosphor material on said plastics material.

4,288,265

PROCESS AND APPARATUS FOR MANUFACTURING RADIAL TIRES

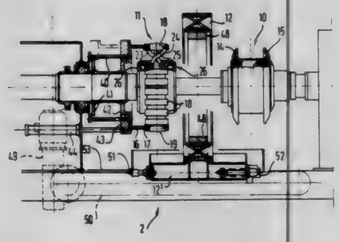
Antonio Pacciarini, and Giorgio Bertoldo, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Sep. 18, 1979, Ser. No. 76,743
Claims priority, application Italy, Oct. 25, 1978, 29063 A/78
Int. Cl.³ B29H *17/20*
U.S. Cl. 156—126 **25 Claims**

1. In a process for manufacturing radial tires for a motor vehicle having a radial carcass, a reinforcing structure with at least two layers of metallic cords forming a belt, the cords of adjacent layers being criss-crossed with respect to each other, and symmetrically oriented with respect to the longitudinal direction of the tire, and a tread, the said process comprising the steps of:

(a) building-up a carcass in a cylindrical configuration, on an expandable main tire building-drum;

(b) shaping the said carcass in its non-vulcanized state, into a toroidal configuration,
(c) winding two layers of metallic cords on an auxialiary drum having an expandable part and a diameter equal to the external diameter of the carcass after the toroidal configuration (b) thereof on the main building-drum to form a cylindrically shaped belt;
(d) expanding the expandable part of the said auxiliary drum, and maintaining the said belt in a slidable condition on said expandable part of the auxilliary drum, converting the belt from its first cylindrical configuration to a toroidal configuration with an equatorial development which is larger than the equatorial development of the carcass after the shaping step (b);



(e) winding an elastomeric band from which a tread band is formed on the toroidal shaped belt formed in (d);
(f) contracting the auxiliary drum;
(g) removing from the contracted auxiliary drum, the annular layered-band comprising the belt and the tread band,
(h) transferring and centering said annular layered-band with the equatorial plane of the carcass on the main drum;
(i) expanding the main drum, and shaping the carcass into a second toroidal configuration until the carcass crown is brought into contact with the corresponding toroidal surface of the belt; and
(j) vulcanizing the so-formed tire in a mold under pressure.

4,288,266

METHOD FOR HEATED TOOL BUTT WELDING OF TUBE AND PIPE OF THERMOPLASTIC MATERIALS

Klaus-Dieter Konrad, Oberhausen; Rudolf Kellerjohn, Hamminkeln; Hans Steck, and Josef Schaub, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

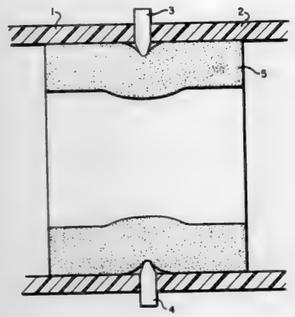
Filed Jul. 9, 1979, Ser. No. 55,879

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830722

Int. Cl.³ B65H *69/00*

U.S. Cl. 156—158 **5 Claims**

1. A process of forming a weld between abutting ends of thermoplastic pipes to be joined which comprises:
(a) disposing at the point of abutment of said pipes and within said pipes and inwardly deformable elastic insert;
(b) disposing between the ends of said thermoplastic pipe a heated tool such that the ends of said thermopastic pipe abut said heated tool;
(c) heated tool projecting into said inwardly deformable elastic insert to inwardly deform and shape the same and to dispose a portion of said elastic insert away from the point of the weld to thereby reduce the pressure on the inside of said pipe at the point of the weld;
(d) heating said ends by contact with said heated tool to a temperature sufficient to weld their respective ends to one another;
(e) withdrawing said heated tool and fitting said respective ends to one another, whereby said elastic insert bears against and flattens a bead which forms at said weld; and



(f) cooling the pipes while said elastic insert bears against the walls of said thermoplastic pipe at the weld.

4,288,267

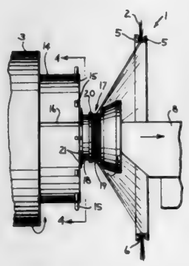
PRELIMINARY AND END WINDING METHOD AND APPARATUS

J. Lowrie McLarty, Mequon, Wis., assignor to McClean Anderson, Inc., Milwaukee, Wis.

Filed Jan. 21, 1980, Ser. No. 113,732

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—175 **15 Claims**



1. A method of forming a fiber reinforced resin article, comprising the steps of forming a coaxial extension on the end of a mandrel, said extension having a smaller outer diameter than the mandrel, positioning the extension longitudinally adjacent a wind-off ring, winding a fibrous strand impregnated with a resin binder on the wind-off ring in a plurality of generally circumferentially turns, transferring the winding of the strand from the wind-off ring to the extension and winding the strand on said extension in a plurality of circumferential turns, transferring the winding of the strand from the extension to the outer surface of the mandrel, winding the strand on the outer surface of the mandrel in a generally helical pattern in a number of superimposed layer to form a wound tubular article, transferring the winding of the fibrous strand from the outer surface of the mandrel to the extension and winding the strand on said extension in a plurality of turns, transferring the winding from the extension to the wind-off ring and winding the strand in a plurality of turns on said wind-off ring, and severing the strand at a location axially outward of and adjacent the mandrel to separate the strands wound on the extension and on the wind-off ring from the wound tubular article.

5. A filament winding machine, comprising a mandrel member, a guide member disposed adjacent the mandrel member and having means for guiding a resin impregnated fibrous strand onto the mandrel member, means to rotate one of said members about its axis, means to advance one of said members longitudinally and thereby wind the strand onto the mandrel in a helical pattern to form a wound tubular article, an extension connected to an end of the mandrel member in co-axial relation and having a smaller diameter than the mandrel member, and a wind-off ring disposed longitudinally adjacent the extension, said strand being initially wound on said wind-off ring to lock the strand to the ring and the strand then being transferred to said extension and subsequently transferred to the outer surface of the mandrel member, the diameter of the extension being correlated with the diameter of the mandrel and the angle of winding, such that no slippage of the strand occurs as it passes from the extension onto the mandrel, said strand being severed at a location axially adjacent the mandrel to separate the strand wound on the extension and on the wind-off ring from the wound tubular article.

4,288,268

METHOD OF PRODUCING A PROTECTIVE HELMET

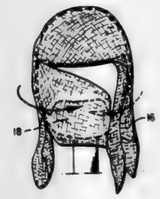
Helmut Hartung, Mirador d'Encamp, France, assignor to Düsseldorfer Lackgrosshandlung Otto Hartung GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,076

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855967

Int. Cl.³ A42B *3/02*

U.S. Cl. 156—245 **5 Claims**



1. In a method free from heat and fluid pressures of producing a protective helmet of substantially uniform thickness with the aid of a positive-type mold having a surface region of predetermined dimensions, the steps comprising:
applying a first layer of hardenable synthetic resin and shortly thereafter a first single-piece fibrous tissue having an continuous surface area of prearranged dimensions corresponding at least to said surface region of predetermined dimensions on said surface region of said positive-type mold, so as to leave laterally overhanging tissue ends,
thereafter pulling said laterally overhanging ends so as to tension said fibrous tissue, until said surface region is uniformly covered up to at least a predefined longitudinal region, said tensioning step being free from exerting any significant force on said mold, and
subsequently repeating the layer-applying and tensioning steps a prearranged number of times, so as to obtain successive layers forming said protective helmet.

4,288,269

REMOVAL OF PROTECTIVE PAPER TAPE AND MASKANTS

Walter Batiuk, Seattle, Wash., assignor to Boeing Aerospace Co., Seattle, Wash.

Filed Dec. 21, 1979, Ser. No. 106,232

Int. Cl.³ B32B *13/00*

U.S. Cl. 156—344 **5 Claims**

1. A method for the removal of adhesively-bound protective paper from a substrate, comprising:
applying a single-phase solvent solution that penetrates the paper and adhesive consisting essentially of by volume:

a ketone from the group of methyl ethyl ketone, acetone, butyl acetone	50–70%
a lower aliphatic alcohol	10–20%
toluene	5–10%
a non-ionic wetting agent from the group of propylene glycol, NH_4OH or a sulfate-free detergent	1–10%
deionized water	5–10%

immediately covering the treated area of with a vaportight barrier sheet sealed about its periphery to prevent selective evaporation of components of said solvent solution thereby maintaining said solvent solution in a single phase until the organic coating or maskant loosens and blisters from the solvent action and vapor pressure of the single-phase solution,
removing said barrier, and
mechanically removing said adhesively-bound protective paper from the substrate.

4,288,270

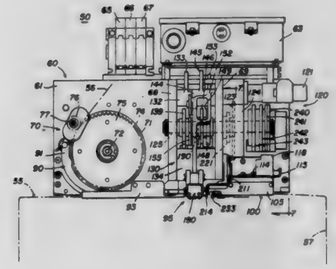
HEAT-SEALING STRAPPING MACHINE

Alan T. Mossell; James R. Simmons, both of Homewood, and Charles G. Middleton, Schaumburg, all of Ill., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Jun. 4, 1979, Ser. No. 45,224

Int. Cl.³ B30B *15/34*; **B65B** *13/32*

U.S. Cl. 156—359 **15 Claims**



5. Heat sealing apparatus for use in a strapping machine for applying plastic strap around an object with the leading end of the strap overlapping and spaced from the supply portion thereof in a strap-sealing region, said heat sealing apparatus comprising a heating element movable between a strap-heating position disposed in said sealing region between the overlapping portions of the strap and a retracted position displaced from between the overlapping portions of the strap, pressure-applying means including movable pressing means and cam means engageable with said pressing means for effecting movement thereof, said cam means including a first resiliently yieldable portion engageable with said pressing means when said heating element is in the strap-heating position thereof for resiliently moving said pressing means to a first pressing condition pressing the overlapping strap portions against said heating element with a predetermined limited force for melting the facing surfaces of the overlapping strap portions, and means for moving said heating element to the retracted position thereof while said pressing means is in the first pressing condition thereof so that the melted overlapping portions of the strap are pressed together as said heating element is withdrawn from therebetween, said cam means having a second portion engageable with said pressing means after said heating element has been moved to the retracted position thereof for effecting movement of said pressing means to a second pressing condition to increase the force with which the melted overlapping

portions of the strap are pressed together thereby to insure the formation of a solid joint therebetween, said pressing means including control means for limiting the pressure with which the overlapping strap portions are pressed together in the second pressing condition.

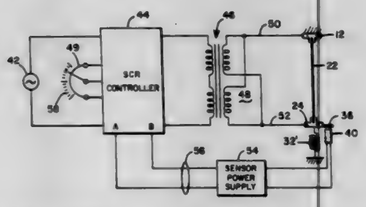
12. Heat sealing apparatus for use in a strapping machine for applying plastic strap around an object with the leading end of the strap overlapping and spaced from the supply portion thereof in a strap-sealing region, said heat sealing apparatus comprising a heating element movable between a strap-heating position disposed in said sealing region between the overlapping portions of the strap and a retracted position displaced from between the overlapping portions of the strap, energizing means connected to said heating element for heating thereof and switchable between first and second energizing conditions, said energizing means in the first energizing condition thereof heating said heating element to a temperature in a first predetermined temperature range sufficient for melting the facing surfaces of the overlapping portions of the strap, said energizing means in the second energizing condition thereof heating said heating element to a temperature in a second predetermined temperature range above said first predetermined range and sufficient for burning from said heating element residues picked up from the melted portions of the strap, pressure-applying means operable when said heating element is in the strap-heating position thereof to a first pressing condition pressing the overlapping strap portions against said heating element for melting the facing surfaces of the overlapping strap portions, said pressure-applying means including first resilient means operable in the first pressing condition for controlling the pressure with which the overlapping strap portions are pressed against said heating element, means for moving said heating element to the retracted position thereof while said pressure-applying means is in its first pressing condition so that the melted overlapping portions of the strap are pressed together as said heating element is withdrawn from therebetween, said pressure-applying means including means effecting operation thereof to a second pressing condition after said heating element is moved to its retracted position for increasing the force with which the melted overlapping portions of the strap are pressed together thereby to insure the formation of a solid joint therebetween, said pressure-applying means including second resilient means operable in the second pressing condition for controlling the pressure with which the overlapping strap portions are pressed together, and switching means for switching said energizing means from the first energizing condition to the second energizing condition thereof when said heating element is in the retracted position thereof.

4,288,271

TEMPERATURE CONTROL APPARATUS

Glenn M. Campbell, Jr., Hopkins, Minn., and Raymond K. Newkirk, 110 Loring Dr., Mound, Minn. 55364, assignors to Raymond K. Newkirk, Mound, Minn.

Filed May 27, 1980, Ser. No. 153,082
Int. Cl.³ B05G *15/00*
U.S. Cl. 156—359 **1 Claim**



1. In a machine for bonding two three-dimensional thermoplastic bodies together along a juncture zone, a thermal bonding blade assembly which is adapted to traverse said juncture zone comprising in combination:

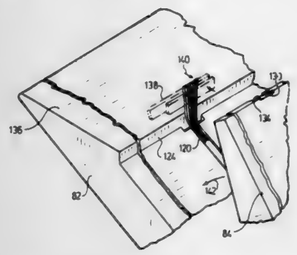
(a) a first conductive holding block insulating lead mounted on an upper movable carriage arm;
(b) a second conductive holding block;
(c) tensioning means insulatively coupled between said second conductive block and a lower carriage arm;
(d) an elongated thermal bonding blade having a predetermined coefficient of linear expansion conductively coupled between said first and second holding block;
(e) means for applying an electrical voltage between said first and second conductive block;
(f) a controllable regulator for controlling said electrical voltage;
(g) means coupled between said second conductive holding block and said lower movable carriage arm for sensing the relative displacement between said second conductive holding block and said lower movable carriage arm and producing an electrical control signal proportional thereto; and
(h) means coupling said control signal to said controllable regulator whereby the heating current flowing through said thermal bonding blade is regulated as a function of the thermal expansion of said blade.

4,288,272

LABEL APPLICATOR WITH SENSOR

George B. Pfeffer, Minnetonka, Minn., assignor to Datafile Limited, Willowdale, Canada

Filed Jun. 4, 1979, Ser. No. 43,821
Int. Cl.³ B65H *5/28*; G01N *21/86*
U.S. Cl. 156—361 **14 Claims**



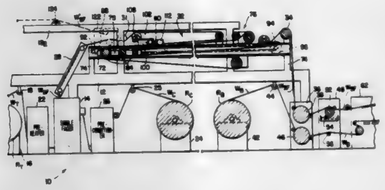
1. In apparatus for separating spaced-apart labels from a carrier, a ramp having a tongue portion about which such carrier travels to separate labels from carrier, a fibre optic bundle having a first end positioned in an opening defined in the ramp surface near the tongue and its second end remote from said tongue, said ramp having a parting line between two ramp components, said parting line being near said tongue portion, one of said components being removable from said ramp, the parting line having a recessed area to define said opening for and confine said first bundle end, a label sensor comprising an emitter unit and receiver unit, one of said units spaced from and directed at said first bundle end and the other unit, positioned in said ramp and directed at the remote bundle end, such carrier with labels travelling over said first bundle end whereby a predetermined detected decrease in emitter beam intensity received by said receiver indicates a label.

4,288,273

METHOD AND APPARATUS FOR MAKING CORRUGATED BOARD

Richard A. Butler, Jr., Greenwich, Conn., and Bucky Crowley, Newton, Mass., assignors to Butler Greenwich Inc., Greenwich, Conn.

Filed May 12, 1980, Ser. No. 148,580
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—361 **8 Claims**



1. A corrugator comprising
A. a single facer,
B. means for conducting liner web to the single facer,
C. means for conducting corrugating medium web to the single facer, said single facer fluting the corrugating medium web and laminating said web to produce single face web having a fluted face,
D. a double backer,
E. means for conducting the single face web to the double backer, said conducting means including a web accumulator located between the single facer and the double backer, said accumulator comprising
(1) one or more stationary rollers,
(2) one or more dancer rollers, said single face web being looped back and forth between said stationary dancer rollers so that the fluted face of said single face web engages around at least some of said rollers,
(3) means defining a track for the dancer rollers so that the dancer rollers can move toward or away from the stationary rollers,
(4) means for force loading the dancer rollers along said track away from the stationary rollers so that the single face web being conducted from the single facer to the double backer is maintained under low and substantially constant tension across its full width thereby imparting a low and substantially uniform pressure to the flutes in the single face web,
(5) means for controlling the speed of the single facer or the double backer in response to the positions of the dancer rollers with respect to a reference position to allow control over either the amount of material or the amount of time the material spends between the single face and the double back processes, independent of the overall process speed and
F. means for conducting liner webs to the double backer for laminating with the single face web conducted thereto so as to produce corrugated board having minimum warpage and substantially uniform crush strength along its length and breadth.

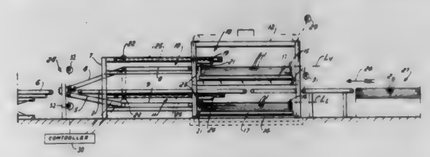
4,288,274

METHOD OF AND APPARATUS FOR APPLYING VENEER FOILS TO A BOARD

Karl-Heinz Holz, Krefeld, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 105,880
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855870
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—364 **3 Claims**

1. In an apparatus for making a laminate, said apparatus comprising:
a rack having upper and lower vertically displaceable platforms adapted to support respective stacks of upper and lower foils;
means connected to said platforms for vertically displacing same to position the uppermost foils of the respective stacks at respective upper and lower levels;
transport means including a central conveyor having an upstream stretch extending horizontally between said upper and lower platforms to an assembly location spaced downstream in a transport direction from said platforms and a downstream stretch extending from said location away from said platforms for displacing a board in said transport direction between said platforms to said assembly location;
respective upper and lower suction-belt conveyors having upstream ends substantially at said levels and downstream ends at said assembly location, said upper and lower conveyors having respective horizontal upstream stretches substantially at the respective levels and respective downwardly and upwardly inclined downstream stretches extending from the respective upstream stretches to said assembly location;



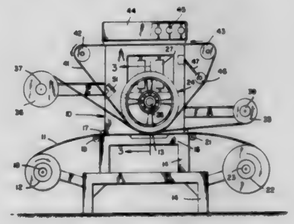
pickup means including upper and lower horizontally displaceable carriages provided generally at the respective levels with suction lifters and displaceable between upstream positions above the respective stacks and downstream positions above said upstream stretches of the respective upper and lower conveyors for picking the uppermost foils off said stacks at said levels and depositing them on the upstream stretches of said upper and lower conveyors, said carriages being displaceable horizontally in said direction the full length of the respective upstream stretches; and
control means connected to said conveyors and to said carriages for sandwiching said board between one of said lower foils and one of said upper foils at said assembly location and then transporting the sandwich away from said location in said direction.

4,288,275

ROLL LEAF COATING APPARATUS

Jesse B. Daviz, 196 So. Kilburn Rd., Garden City, N.Y. 11530

Filed May 14, 1979, Ser. No. 38,630
Int. Cl.³ B05C *11/02*; B29C *27/00*
U.S. Cl. 156—367 **14 Claims**



1. Apparatus for applying a decorative roll leaf to the surface of a product 11, from a foil comprising a carrier strip having said decorative roll leaf detachably adhered with a

thermally meltable adhesive to one side thereof, which apparatus includes;

a platform **16** adapted to support said product **11**,

a pressure member **24** having an outer surface positioned adjacent to said platform **16** and being operable to exert a force in the direction of the latter, and to define a transfer station **13** therebetween,

product handling means positioned adjacent to said transfer station whereby to guide said product into said station,

foil transfer means **37, 39** positioned to introduce said foil into said transfer station **13** and into registry with said product **11** surface,

a thermal belt **41** defining a closed loop,

a heat source **44**,

belt guide means engaging said thermal belt **41** to progress the latter along said closed loop, and to guide a belt section sequentially into heat exchange relationship with said heat source **44**, and thence into heat exchange contact with at least a part of the outer surface of said pressure member, whereby to melt said adhesive and to cause separation of said decorative roll leaf from said carrier strip and transfer thereof to the product surface at said transfer station **13**.

4,288,276

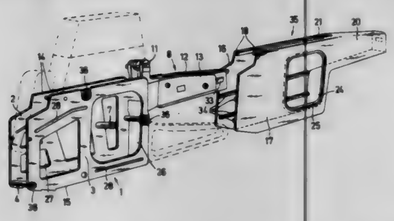
HAND-HELD LABEL PRINTING, DISPENSING AND APPLYING APPARATUS

Kurt Schrotz, and Werner Becker, both of Hirschhorn, Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Jun. 20, 1979, Ser. No. 50,427

Int. Cl.³ B65C *11/02*

U.S. Cl. 156—384 **14 Claims**



1. A hand-held labelling apparatus for printing, dispensing and applying self-adhering labels, comprising:

a housing (**1**) provided with a handle (**8**) and having two side walls (**2,3**) consisting of sheet metal and held in spaced relation each side wall (**2,3**) comprises two parallel and free edges (**14,15**) which are opposite one another

casing or sheathing walls (**16,17**) consisting of synthetic plastics and capable of being pushed over the outsides of each side wall (**2,3**), the said casing walls comprising flanges (**18,19**) which engage over the free edges (**14,15**) of the side walls (**2,3**)

and further comprising, arranged between said side walls (**2,3**)

a printing unit (**5**)

a withdrawal device for a carrier strip feeding the labels

a deflecting device for the carrier strip

a pressure-applying device (**6**) for the labels.

4,288,277

MOLDING SYSTEM WITH RETRACTING MOLD

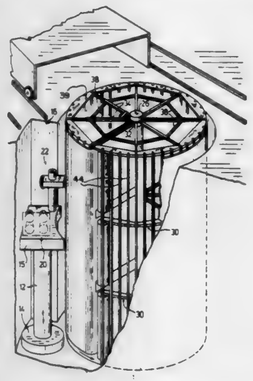
Lembit Silats, 37 Bingham Ave., Toronto, Ontario, Canada

Filed Jul. 17, 1979, Ser. No. 58,137

Int. Cl.³ B65H *81/00*; B29C *1/00*

U.S. Cl. 156—425 **7 Claims**

1. A radially retractable and expansible cylindrical mold of modular form having an axially extending support means; a plurality of spider means mounted in mutual axially spaced relation on the support means, the spider means including radially extending arms having segment portions arcuately arranged thereabout in secured relation therewith; axially extending rib means interconnecting said segment portions to provide a support form of substantially cylindrical shape; said arms including individual fluid pressure actuator means to



extend the arms radially outwardly upon pressurization of said actuator means, to increase the effective diameter of said cylindrical shape, flexible wrapping diaphragm means positioned in wrapped covering relation about said rib means, and means to tension said wrapping means to receive in use molding material in support relation therewith.

4,288,278

APPARATUS FOR CONTINUOUSLY PRODUCING PLEATED SEMIPERMEABLE MEMBRANE ELEMENTS

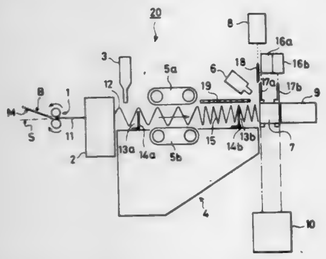
Hisataro Akao, Sakai, Japan, assignor to Daicel Chemical Industries Ltd., Osaka, Japan

Filed Dec. 4, 1979, Ser. No. 100,237

Claims priority, application Japan, Dec. 8, 1978, 53-152326; May 12, 1979, 54-58321

Int. Cl.³ B31F *1/34*

U.S. Cl. 156—474 **12 Claims**



1. An apparatus for continuously producing pleated semipermeable membrane elements comprising means for continuously feeding a strip of assembly composed of a synthetic resin semipermeable membrane and a spacer in the form of a thin sheet and superposed on at least one side of the semipermeable membrane; folding means having a pair of upper and lower folding blades for loosely folding the assembly fed by the feeding means; adhesive applying means disposed within, or to the front or rear of the folding means for applying an adhesive to the opposite selvage portions of the assembly on one side thereof; holding cases each having an openable lid at each of its inlet and outlet; transfer means for placing the folded portion of the assembly into one of the holding cases while progressively folding the assembly more compactly, said transfer means comprising a plurality of pilot plates insertable between pleats of the folded assembly, at least two pairs of guide chains operable by frictional power transmission for moving the pilot plates as supported vertically thereon, means for attaching the pilot plates to the guide chains at a specified spacing and removing the pilot plates from the guide chains, and a pair of upper and lower belt conveyors positionable above and under the folded assembly and approximately equal to the folded assembly in width; counter means disposed in the vicinity of the inlet of the holding case for counting the number of the pleats of the folded assembly; cutter means disposed on the inlet-side of the holding case for cutting the folded assembly; compressing means disposed on the outlet side of the holding case for compressing the folded assembly in the holding case; and means for selecting said one of the holding cases and supplying the same.

4,288,279

APPARATUS FOR PRODUCING BAGS OF PLASTICS MATERIAL

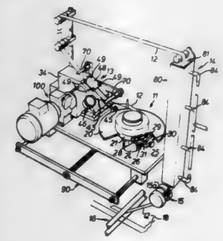
Peter D. Blore, Beeston, and David S. Wheatley, Ilkeston, both of England, assignors to Metal Closures Venue Packaging Limited, Ilkeston, England

Filed Jul. 12, 1979, Ser. No. 56,891

Claims priority, application United Kingdom, Jan. 12, 1979, 1255/79

Int. Cl.³ B32B *31/04*

U.S. Cl. 156—498 **25 Claims**



1. Apparatus for producing bags of plastics material having an opening closable by a flap and a band of adhesive for securing the flap after closing of the opening, the band of adhesive being covered by a releasable strip of plastics material, the apparatus including a reel holder for rotatably supporting a reel of the releasable strip, guide means for feeding the strip in succession passed on adhesive applicator for applying a band of adhesive to one side of the strip, further guide means for guiding a continuous length of folded plastics material for forming the bags to heat severing means which operate to sever separate bags from said continuous length and also fuse together the edges of each separated bags, and pressure means arranged to apply the strip to said continuous length so that the strip is secured by the band of adhesive to said continuous length before it is fed to the severing means, a reel holder including a table rotatable about a vertical axis and arranged to support the reel horizontally, brake means being provided for restraining rotation of the table so as to tension the strip as it is pulled off the reel.

4,288,280

TAPE APPLYING MACHINE

Robert W. Morin, Salem, Mass., assignor to Boston Machine Works Company, Lynn, Mass.

Filed Oct. 19, 1979, Ser. No. 86,355

Int. Cl.³ B26D *7/08*; B65C *9/18*

U.S. Cl. 156—510 **7 Claims**

1. A tape applying machine comprising:

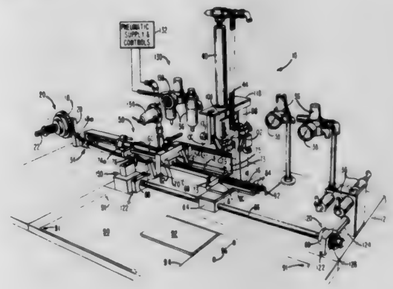
(a) means for supporting a supply of tape;

(b) a member pivotable between a first position and a second position and mounted in operative association with said supply of tape;

(c) means for feeding a set length of said tape onto said member while it is in its said first position;

(d) a cutter mounted adjacent said member to cut said length of said tape while said member is in its said first position;

(e) work support for locating a piece of work in operative association with said member; and



(f) means for pivoting said member and said cut length of tape thereon from its said first position to its said second position for applying said cut length of tape onto said workpiece;

(g) said means for feeding a set length of said tape including a cylinder whose piston is provided with a feed detent at its forward end and a grabber at its rear end, said feed detent and said grabber simultaneously operable, first between a tape-engaging and secondly a non-engaging position.

4,288,281

APPLIANCE FOR ADHERING A SENSING MARKER ON A MEDIUM FOR RECORDING INFORMATION

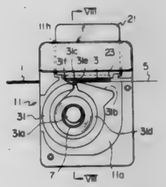
Kaoru Kanda, Yokohama, Japan, assignor to Sigma Corporation, Tokyo, Japan

Filed Sep. 12, 1979, Ser. No. 75,243

Claims priority, application Japan, Sep. 28, 1978, 53-118666; Sep. 28, 1978, 53-118667; Oct. 13, 1978, 53-125075; Mar. 2, 1979, 54-23435

Int. Cl.³ B44C *7/02*

U.S. Cl. 156—540 **7 Claims**



1. An appliance for adhering an adhesively-backed sensing marker on a medium for recording information, comprising:

a case adapted to accommodate a marker roll which includes a continuous backing liner and an adhesively-backed sensing marker having a predetermined length and width and adhered on said backing liner;

a removing rotor having a substantially flat surface providing a station for receiving said backing liner withdrawn from said marker roll and disposed in said case pivotably about an axis between a first position, where one of said sensing markers is positioned at said station, and a second position, whereby said sensing marker is removed from said backing liner as the pivotal movement of said remov-

ing rotor proceeds from said first position to said second position;

a transferring member having a soft material mounted thereon in the form of a substantially flat surface corresponding to said substantially flat surface of said removing rotor station and capable of being pressed toward said sensing marker on said backing liner at said removing rotor positioned in said first position, whereby said sensing marker is transferred from said backing liner to said soft material as said pivotal movement of said removing rotor proceeds, and then, said sensing marker is transferred from said soft material to said information recording medium positioned at a location for adhering thereon;

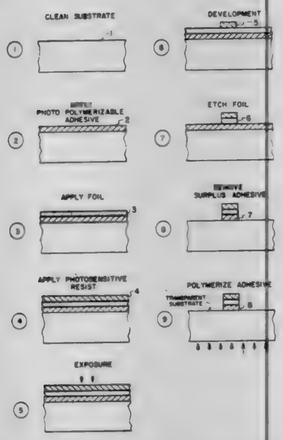
said removing rotor having a cavity at the center thereof, which cavity is adapted to accommodate said marker roll coaxially therewith.

4,288,282

METHOD FOR PRODUCING A METALLIC PATTERN UPON A SUBSTRATE

Lawrence E. Brown; James L. Bauer, and Gerald W. Scheck, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 28, 1979, Ser. No. 79,865
Int. Cl.³ B44C *1/22*; C23F *1/02*; H01L *21/312*
U.S. Cl. 156—630 **2 Claims**



1. A process for producing upon a transparent substrate a pattern in a metallic foil, comprising the steps of:

applying a layer of photopolymerizable adhesive to a first surface of the transparent substrate;

applying an etchable metallic foil to the layer of photopolymerizable adhesive;

applying a layer of photoresist to the etchable metallic foil;

exposing the photoresist to a desired pattern of actinic radiation;

removing the exposed photoresist to uncover the underlying etchable metallic foil;

etching away the uncovered portion of the etchable metallic foil;

etching away the portions of the layer of photopolymerizable adhesive uncovered by the step of etching the etchable metallic foil; and

polymerizing the remaining photopolymerizable adhesive by exposing it to actinic radiation passing through the transparent substrate from a second surface opposite the first surface.

4,288,283

METHOD OF FORMING A MICROSCOPIC PATTERN

Hiroshi Umezaki, Hachioji; Hideki Nishida, Hinodemachi; Norikazu Tsumita, Kodaira; Hirozi Yamada, Hachioji; Katsuhiro Kaneko, Sayama, and Nagatugu Koiso, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 8, 1980, Ser. No. 110,445
Claims priority, application Japan, Jan. 10, 1979, 54/714
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—643 **9 Claims**



1. A method of forming a microscopic pattern, comprising the steps of:

(a) depositing a film to effect masking onto an object to-be-etched,

(b) forming a reflection reducing film on said film to effect masking,

(c) depositing a photoresist film onto said reflection reducing film,

(d) forming a photoresist pattern by irradiating a desired portion of said photoresist film with light and thereafter conducing development,

(e) removing the exposed part of said reflection reducing film and the masking film which is disposed underneath said exposed portion, by employing said photoresist pattern as a mask, and

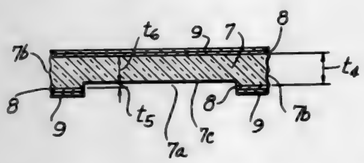
(f) removing the exposed part of said object to-be-etched.

4,288,284

METHOD OF PRODUCING HOUSING ELEMENT FOR QUARTZ CRYSTAL OSCILLATOR

Masatoshi Kobayashi; George Shimakawa; Yukio Hara, all of Nagano, and Hiroyuki Fujii, Suwa, all of Japan, assignors to Matsushima Kogyo Kabushiki Kaisha and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Division of Ser. No. 966,688, Dec. 5, 1978. This application Apr. 17, 1980, Ser. No. 141,025
Claims priority, application Japan, Dec. 5, 1977, 52/145863; Dec. 5, 1977, 52/145864
Int. Cl.³ H01L *21/306*; C03C *15/00, 25/06*
U.S. Cl. 156—651 **6 Claims**



1. A method for producing a housing element for a thin, flat quartz crystal oscillator package, said element being formed from planar material having a finite thickness, and having a recessed concave portion therein, comprising the steps of:

(a) coating the opposed planar surfaces of said planar material with a masking film, said masking film edges defining the peripheral edges of said housing element and being resistant to chemical etching;

(b) chemically etching said planar surfaces whereby the peripheral edge portions of said housing element are etched away;

(c) removing said masking film to expose a defined portion of one of said planar surfaces;

(d) chemically etching said defined portion to produce said recessed concave portion in said housing element,

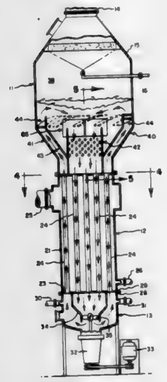
whereby the time allowed for etching said peripheral edges and said recessed concave portions can be independently determined.

4,288,285

APPARATUS FOR FORMING A VORTEX

James E. Houston, Grand Island, N.Y., assignor to Evaporator Technology Corporation, Buffalo, N.Y.

Filed Jul. 28, 1980, Ser. No. 173,141
Int. Cl.³ B01D *9/02*
U.S. Cl. 159—1 C **9 Claims**



1. Apparatus for forming a vortex, comprising:

an outer wall having an upper end and a lower end;

a first wall arranged within and spaced from said outer wall, said first wall having an upper end and a lower end and defining an inner flow passageway therewithin;

a second wall arranged within and spaced from said outer wall, said second wall having a lower end joining said first wall and forming with said first and outer walls an annular outer flow passageway;

a plurality of inclined vanes joining said second and outer walls and arranged to induce an upward flow through said outer flow passageway to swirl; and

fluid supply means operatively arranged to maintain a level of fluid within said apparatus such that said vanes will be submerged and for causing a fluid flow upwardly through said outer passageway and downwardly through said inner passageway;

thereby to create a vortex within said apparatus.

4,288,286

KRAFT MILL RECYCLE PROCESS

Willard A. Fuller, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 967,933, Dec. 8, 1978, abandoned, which is a continuation of Ser. No. 753,656, Dec. 22, 1976, abandoned. This application Mar. 3, 1980, Ser. No. 126,594
Int. Cl.³ D21C *11/04*
U.S. Cl. 162—30 R **12 Claims**

1. An integrated process for pulping and bleaching cellulosic material and sulfur recovery comprising the steps of:

(a) digesting a fibrous pulp,

(b) separating the fibrous pulp and waste liquor produced by said digesting step,

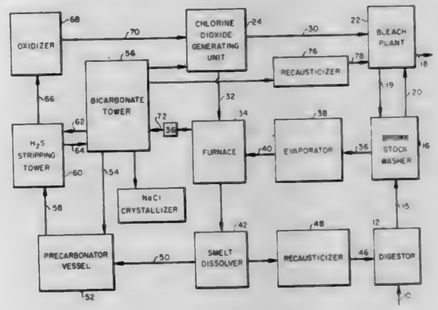
(c) evaporating and burning said waste liquor in a furnace to form a smelt and stack gas,

(d) dissolving said smelt to form a green liquor and causticizing a portion of said green liquor for use in (a),

(e) treating a portion of said green liquor with a solution of $NaHCO_3$ containing CO_2 in a closed vessel to produce a precarbonate solution containing NaHS,

(f) stripping said precarbonate solution to produce hydrogen sulfide and a solution of Na_2CO_3,

(g) utilizing the Na_2CO_3 solution from (f) and CO_2 to produce a solution of $NaHCO_3$ and a chloride stream, and utilizing a portion of the $NaHCO_3$ solution as a feed material in (e), and a further portion of the $NaHCO_3$ solution as a feed material in (f),



(h) oxidizing at least a portion of said hydrogen sulfide to produce H_2SO_4,

(i) utilizing at least a portion of said H_2SO_4 as feed stock in a chlorine dioxide generator to react with an alkali metal chlorate and an alkali metal chloride to produce ClO_2 and an alkali metal sulfate, and

(j) utilizing said alkali metal sulfate as a feed into said furnace.

4,288,287

PHOTOGRAPHIC SUPPORT

Masao Miyama, and You Kusama, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jan. 11, 1980, Ser. No. 111,297
Claims priority, application Japan, Jan. 16, 1979, 54-3572; Jan. 20, 1979, 54-5690
Int. Cl.³ D21H *1/34*
U.S. Cl. 162—135 **4 Claims**

1. A photographic support which comprises a paper made from woodpulp fibers and containing a sizing agent and a strength reinforcing agent, and a polyethylene resin coated thereon, the bone dry weight ratio of said strength reinforcing agent to said sizing agent being 1.8–4.0 to 1 and the amount of the sizing agent being 0.3–10.0% by weight of the woodpulp fibers, wherein said polyethylene resin coated on the back side of the paper contains 35–80% by weight of low-density polyethylene, wherein woodpulp fibers constituting the paper stock have fractionation characteristics in accordance with the fractionation method specified in JISP8207 such that 0% is retained by the first wire sieve cloth having a sieve opening of 710 μm and not more than 35% is retained by the second wire sieve cloth having a sieve opening of 350 μm.

4,288,288

APPARATUS FOR MIXING CHEMICALS INTO PULP AT A REFINER INLET

John A. Fleck, Everett, and Michael D. Meredith, Federal Way, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 15, 1979, Ser. No. 48,933
Int. Cl.³ D21D *1/30*
U.S. Cl. 162—261 **15 Claims**

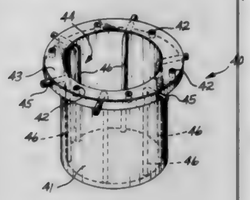
1. Apparatus for mixing chemicals with pulp comprising a casing,

a refiner section in said casing,

a pair of opposed refiner plates in said refiner section rotatably movable with respect to each other,

an inlet to said refiner section,

said inlet having an inner wall,
an outlet in said casing,
a sleeve extending along the inner wall of said inlet, said sleeve having a wall with inner and outer surfaces,



a plurality of parallel tubes oriented axially and distributed radially around the axis of said inlet and being part of said sleeve,
means for holding said sleeve in position in said inlet,
means associated with said tubes for providing chemicals through said tubes to the pulp.

4,288,289

STRONG FOCUSING MEGATRON

Ronald W. Landau, 1015 Ocean Pkwy., Brooklyn, N.Y. 11230

Filed Mar. 30, 1978, Ser. No. 891,602
Int. Cl.³ G21B *1/00*
U.S. Cl. 176—3 **15 Claims**



1. A fushion machine comprising a hollow toroidal chamber, a gas of ionized isotopes of hydrogen in said chamber, means for establishing an inducing magnetic field whose amplitude is controllably variable and which has a component perpendicular to the plane of said hollow toroidal chamber and said component being coaxial with the axis of revolution of said hollow toroidal chamber so that an increasing circular plasma electric current is induced in said hollow toroidal chamber as said inducing magnetic field increases, and generating means for generating a strong focusing magnetic field whose amplitude is controllably variable to be proportional to the plasma current and which is toroidally disposed about said axis of revolution and enters on one side of said hollow toroidal cylinder, passes through said hollow toroidal chamber and exits on the other side of said hollow toroidal cylinder in a direction parallel to said axis of revolution.

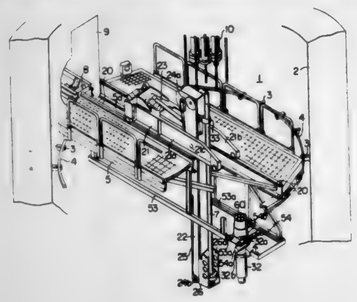
4,288,290

APPARATUS FOR EXCHANGING CONTROL ROD DRIVE MECHANISM IN A NUCLEAR REACTOR

Tooru Saima, Tokyo; Isao Ohya, Yokohama; Takahiko Imada, Akishima; Hideo Sato, Hachioji, and Shinichi Katsuma, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jan. 15, 1979, Ser. No. 3,523
Claims priority, application Japan, Jan. 19, 1978, 53/4717
Int. Cl.³ G21C *17/00, 19/20*
U.S. Cl. 176—19 R **16 Claims**

1. In apparatus for exchanging a control rod drive mechanism of a nuclear reactor of the type comprising a horizontal platform supported to be rotatable in a working chamber disposed below a reactor pressure vessel and a traveling carriage traveling on a rail assembly laid on said platform, the improvement which comprises a beam attached to said traveling carriage to be swingable between the vertical and horizontal portions and provided with a carrier for vertically moving said control rod drive mechanism, bolt mounting means for loosening and clamping bolts which are used to connect said control rod drive mechanism to a housing in the reactor pressure vessel; holding means secured to said beam for carrying one end of said control rod drive mechanism when said control rod mechanism is separated from said bolt mounting means and holding said control rod drive mechanism when said beam is



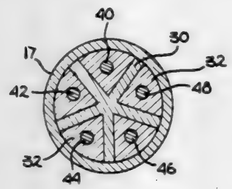
swung to said horizontal position, said holding means being received in a position where said holding means is not interferred with said carrier when said carrier passes near said holding means; means for conveying said bolt mounting means in and out of the passage of movement of said carrier so that said control rod drive mechanism can easily be withdrawn vertically without being interferred with said bolt mounting means; and means for receiving said control rod drive mechanism when said beam has been moved to said horizontal position and for conveying said control rod drive mechanism into an inspection chamber for inspecting said control rod drive mechanism through a passage provided for the peripheral wall of said working chamber.

4,288,291

RADIATION DETECTOR FOR USE IN NUCLEAR REACTORS

Terry C. Cisco, Glendale, and Algert G. Grimaila, Northridge, both of Calif., assignors to Whittaker Corporation, Burbank, Calif.

Filed May 11, 1979, Ser. No. 38,200
Int. Cl.³ G21C *17/00*
U.S. Cl. 176—19 R **8 Claims**



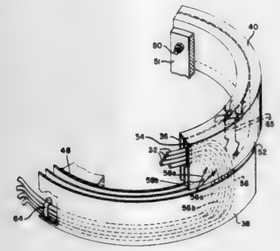
1. A multiple sensor radiation detection device for insertion into a nuclear reactor comprising:
an outer tubular sheath member;
an electrically conducting member having a crosssection comprised of a plurality of radially extending arms joined at their center, said conducting member having a crosssectional diameter substantially equal to the inner diameter of said sheath;
said electrically conducting member being inserted into said sheath member so as to divide the interior volume of said sheath member into a plurality of volumes having a generally wedge-shaped cross-section extending axially long said sheath; and
at least two radiation sensors each of which is located within a respective one of said volumes of wedge-shaped cross-section and spaced from said electrically conducting member by a dielectric whereby said electrically conducting member is a common conducting member for each radiation sensor.

4,288,292

CONNECTING APPARATUS FOR LIMITED ROTARY OF RECTILINEAR MOTION (II)

Roy T. Hardin, Jr., Greensburg, and Carl D. Kurinko, Penn Township, Westmoreland County both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 800,256, May 25, 1977, abandoned.
This application Apr. 6, 1979, Ser. No. 28,018
Int. Cl.² G21C *13/10*; H02G *11/00*
U.S. Cl. 176—87 **5 Claims**



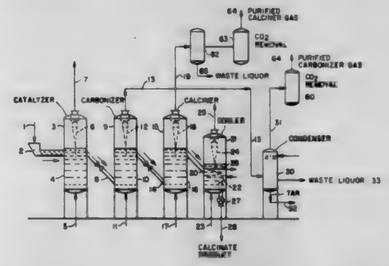
1. Apparatus for providing connection between a first member and a second member movable within a horizontal plane with respect to said first member, comprising:
a. a first plurality of affixed vertical surfaces laterally spaced, each having a laterally extending upper restraint;
b. a second plurality of affixed vertical surfaces laterally spaced, each having a laterally extending lower restraint;
c. structure for affixing said first surfaces to said first member and said second surfaces to said second member such that said first surfaces are laterally aligned with said second surfaces and are vertically spaced therefrom a preselected distance;
d. a plurality of flexible cables of substantially similar diameter, each said cable being stationary at one portion with respect to said first member and stationary at another portion with respect to said second member and positioned partially between two consecutive first surfaces and partially between two consecutive second surfaces and between their respective restraints so as to form a generally C-shaped loop in a substantially vertical orientation which slidingly moves with respect to said surfaces upon relative motion of said first and second members; and
e. a plurality of flexible devices affixed to said first surfaces for supporting the upper portion of each said looped cable, said flexible device including a flexible body affixed to one of said first vertical surfaces having an upper section and a crimped lower segment, said lower segment spaced from one of said vertical surfaces a distance less than said diameter and said upper section spaced from said last-named surface a distance greater than said diameter, whereby upon relative motion of said members in one direction said loops of said cables contact said crimped segment from below, flex said segment laterally, and pass above said segment, and upon relative motion in the opposite direction said loops flex said segment laterally and pass free from said segment.

4,288,293

FORM COKE PRODUCTION WITH RECOVERY OF MEDIUM BTU GAS

Erik Saller, Stamford, Conn., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 14, 1980, Ser. No. 140,392
Int. Cl.³ C10B *49/10*; C10J *3/54*
U.S. Cl. 201—6 **7 Claims**



1. In the production of metallurgical form coke briquettes wherein:
(a) coal particles are heated in the presence of oxygen below tar forming temperatures; wherein (b) the oxidized coal particles from (a) are heated to carbonization temperatures to evolve tar forming vapors and give reactive char particles; wherein (c) the reactive char particles from (b) are heated to still higher temperature to reduce the volatile content of the char to less than about 5% and produce a reactive coal calcinate; wherein (d) the reactive coal calcinate is mixed with bituminous binder and wherein (e) the mixture from (d) is briquetted, cured and coked; the improvement of producing medium BTU by product gas while maintaining coke quality comprising the steps:
A. carrying out carbonization and calcining steps (b) and (c) in a fluidized bed in which the fluidizing gas introduced consists of pure oxygen diluted with steam or carbon dioxide while the temperature of step (c) is maintained below that at which substantial gasification occurs;
B. collecting gaseous overheads from steps (b) and (c);
C. separating the diluent from the overheads; and
D. recovering medium BTU gas therefrom.

4,288,294

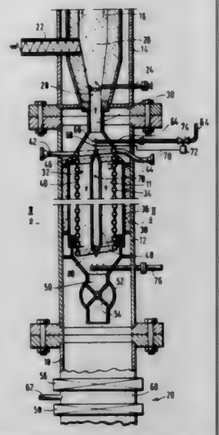
METHOD FOR THE COOLING OF SOLID RESIDUES OF GASIFICATION

Günter Velling, Rheinstrasse 236, 5303 Bornheim-Hersel, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,249
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856059
Int. Cl.³ C10B *39/02, 39/04*
U.S. Cl. 201—39 **7 Claims**

1. A method of cooling the solid residues of gasification of a reactor operated at a pressure above atmospheric for the gasification of carbonaceous materials, wherein the residues of gasification are conducted out of the reactor into a cooling apparatus located therebelow which forms a pressure system with said reactor, and flow through the cooling apparatus from the top to the bottom thereof, cooling liquid being introduced into the solid residues of gasification in the upper region of the cooling apparatus and being metered such that the greater portion of the heat contained in the residue is eliminated in the form of heat of vaporization and sensible heat and chemical

binding energy with the resultant steam and the reaction products produced, and the remaining residual quantity of heat, which corresponds to the difference between the desired final



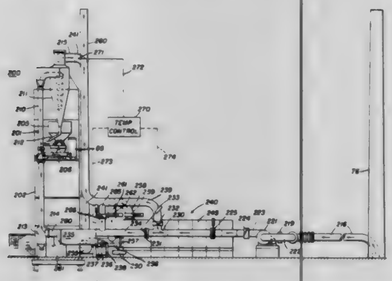
temperature and the temperature after cooling by the liquid, is eliminated by gas which is blown into the bottom region of the cooling apparatus and by indirect heat exchange.

4,288,295

COKE OVEN WITH APPARATUS FOR PARTIALLY DRYING AND PREHEATING COAL

Brian W. H. Marsden, Palos Heights, Ill., assignor to Interlake, Inc., Oak Brook, Ill.

Filed Jun. 12, 1979, Ser. No. 47,871
Int. Cl.³ C10B *45/00*
U.S. Cl. 202—150 **11 Claims**



1. In a coke oven including a coking chamber, a combustion chamber in heat transfer relation to the coking chamber and having a fuel inlet and a heated air inlet and a high temperature flue gas outlet, a heat exchanger associated with the combustion chamber including a cold air inlet and a heated air outlet communicating with the heated air inlet and a high temperature flue gas inlet communicating with the high temperature flue gas outlet and an intermediate temperature flue gas outlet, the heat exchanger heating the inlet air using the energy in the high temperature flue gases to provide heated air for the combustion chamber and cooling the high temperature flue gases to an intermediate temperature, a chimney having the lower end thereof connected by a conduit to the intermediate temperature flue gas outlet, and coal transport mechanism for conveying coal to the coking chamber; apparatus for preheating and partially drying coal comprising a coal dryer having an inlet for wet coal and an outlet for partially dried and preheated coal and an inlet for intermediate temperature flue gases and an outlet for low temperature flue gases, a pipe interconnecting the conduit and said inlet for intermediate temperature flue gases, sensing means coupled to said outlet for low temperature flue gases for sensing the temperature of the flue gases leaving said coal dryer, valve mechanism associated with the conduit and said pipe for diverting at least a portion of the intermediate temperature flue gases to said coal dryer, the flue gases in said coal dryer being in heat exchange relation with the wet coal in said coal dryer partially to dry the coal to a water content of a few percent by weight and to preheat the coal to a temperature below the boiling point of water, a supplemental heater in heat exchange relationship with the intermediate temperature flue gases in said pipe for increasing the temperature of the intermediate temperature flue gases when the moisture content of the wet coal at the coal inlet to said coal dryer is above about 8% by weight, and control mechanism connected to said sensing means and to said valve mechanism and to said supplemental heater responsive to the temperature of the gases leaving said coal dryer for controlling the amount of intermediate temperature flue gas diverted to said coal dryer and the operation of said supplemental heater, said control mechanism operating said valve mechanism to increase the amount of the intermediate temperature flue gases diverted to said coal dryer when the temperature of said low temperature flue gases leaving said coal dryer is below a predetermined temperature range and to decrease the amount of intermediate temperature flue gases diverted to said coal dryer when the temperature of said low temperature flue gases leaving said coal dryer is above said predetermined temperature range, said control mechanism actuating said supplemental heater in response to a temperature of the flue gases leaving said coal dryer above said predetermined temperature range when said valve mechanism is in a condition for diverting substantially all of said intermediate flue gases to said coal dryer, the coal transport mechanism conveying the partially dried and preheated coal to the coking chamber for the coking thereof to produce coke with a high stability index at a fuel savings with high coking productivity.

4,288,296

DECOMPOSITION INHIBITORS FOR HIGH TEMPERATURE STORAGE AND DISTILLATION OF CHLORINATED PHENOLS

Leonard R. Thompson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 23,867, Mar. 26, 1979, abandoned. This application Feb. 1, 1980, Ser. No. 117,733
Int. Cl.³ B01D *3/34*; C07C *37/74, 39/36*
U.S. Cl. 203—6 **10 Claims**

1. A process for inhibiting the decomposition of chlorinated phenol during exposure to high temperatures, which comprises adding at least 0.25 percent by weight of said chlorinated phenol of at least one primary alcohol having at least 14 carbon atoms, one hydroxyl group, and devoid of any other heteroatoms and ether linkages, selected from the group consisting of straight-chain or branched monohydric primary alcohols and mixtures of said straight-chain or branched monohydric primary alcohols.

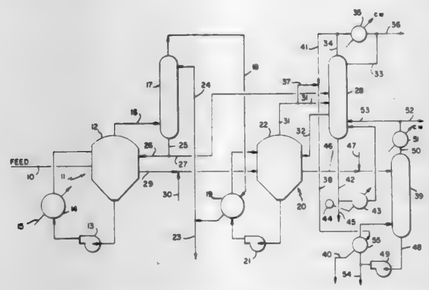
6. A process for purifying impure chlorinated phenol which comprises distilling said chlorinated phenol at subatmospheric pressures in the presence of at least about 0.25 percent by weight of said impure chlorinated phenol of at least one primary alcohol having at least 14 carbon atoms, one hydroxyl group, and devoid of any other heteroatoms and ether linkages, selected from the group consisting of straight-chain monohydric primary alcohols, branched monohydric primary alcohols and mixtures thereof, thereby separating said chlorinated phenol from higher boiling impurities.

4,288,297

PROCESS FOR RECTIFICATION OF MISCELLA FROM EXTRACTION OF OLEAGINOUS SEEDS

George B. Karnofsky, Pittsburgh, and John Slovski, Allison Park, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 745,397, Nov. 26, 1976, abandoned. This application Apr. 14, 1980, Ser. No. 140,151
Int. Cl.³ B01D *3/14*
U.S. Cl. 203—81 **8 Claims**



1. A process for distilling a miscella including dissolved carbohydrates obtained by extracting oleaginous seed material with alcohol solutions to recover a dilute alcohol solution and a concentrated alcohol solution while minimizing foaming which comprises:

(a) introducing said miscella into a first vapor/liquid separation;

(b) withdrawing and heating a liquid stream from said first vapor/liquid separation zone and introducing said heated liquid stream into said vapor/liquid separation zone;

(c) withdrawing a vapor stream from said first vapor/liquid separation zone and introducing said vapor stream into a first rectification zone;

(d) contacting said vapor stream of step (c) in said first rectification zone with a liquid stream to separate a lower boiling component from said liquid stream;

(e) withdrawing a vapor stream from said first rectification zone;

(f) condensing said vapor stream of step (e) to form a condensate;

(g) passing a portion of said condensate to said rectification zone as said liquid stream of step (d);

(h) recovering a remaining portion of said condensate as a concentrated alcohol solution;

(i) withdrawing a net liquid stream from said first vapor/liquid separation zone and introducing said net liquid stream into a second vapor/liquid separation zone;

(j) withdrawing and heating a liquid stream from said second vapor/liquid separation zone and introducing said heated liquid stream into said second vapor/liquid separation zone;

(k) withdrawing a vapor stream from said second vapor/liquid separation zone and introducing a portion of said vapor stream into a second rectification zone;

(l) contacting said vapor stream of step (k) in said second rectification zone with a liquid stream to separate a lower boiling component of said liquid stream;

(m) withdrawing and condensing a vapor stream from said second rectification zone to form a condensate of concentrate alcohol solution;

(n) withdrawing a net liquid stream from said second vapor/liquid separation zone and introducing said net liquid stream from said second vapor/liquid separation zone into a stripping zone;

(o) contacting said net liquid stream in said stripping zone with a vapor stream to separate a lower boiling component from said liquid stream;

(p) withdrawing and condensing a vapor stream from said stripping zone as said dilute aqueous alcohol solution; and

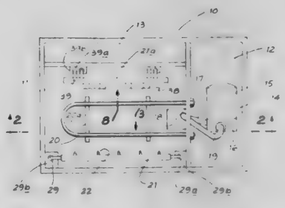
(q) withdrawing a liquid bottom stream from said stripping zone, said liquid bottom stream containing said carbohydrates in a concentration of no more than 30 percent by weight.

4,288,298

METHOD AND APPARATUS FOR ELECTROPLATING OR ELECTROFORMING METAL OBJECTS

Olbert W. Rogers, 70 Gymea Bay Rd., Gymea, New South Wales, Australia 2227

Filed Mar. 11, 1980, Ser. No. 129,293
Claims priority, application Australia, Mar. 14, 1979, PD8025
Int. Cl.³ C25D *1/00, 5/00, 17/06, 17/10*
U.S. Cl. 204—4 **5 Claims**



1. An apparatus for use in electrodeposition of a metal onto a chosen variable number of substrates, which comprises

a retainer for an electrolyte,

a first electrode member having means for supporting said plurality of substrates within said retainer,

a second electrode member comprising a non-conductive panel having mounted thereon a plurality of metal baskets, each metal basket being for containing in electrical connection therewith a piece of said metal to be electrodeposited,

connecting means for mounting the first electrode member in the retainer and intended for connecting the first electrode member to one pole of a direct current supply,

mounting means for mounting the second electrode member in the retainer, and

means for making selective connection of a number of the metal baskets to the other pole of the direct current supply, the remaining baskets not being connected to the supply.

4,288,299

ENHANCED HYDROTHERMAL SEALING OF ANODIZED ALUMINUM

Bryan G. Carter, Banbury, England, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed May 11, 1979, Ser. No. 38,125
Claims priority, application United Kingdom, May 22, 1978, 21032/78
Int. Cl.³ C25D *11/18*
U.S. Cl. 204—35 N **14 Claims**

1. In a method for producing hydrothermally sealed anodized aluminum including

initially establishing an anodic oxide coating on a substrate of aluminum or aluminum base alloy; and,

subsequently hydrothermally sealing the coating by subjecting the established anodic oxide coating on the substrate to hydrothermal sealing conditions in the presence of an amount of smut-inhibiting agent effective in inhibiting formation of smut incident to hydrothermal sealing, said smut-inhibiting agent being an agent for suppressing formation of crystalline boehmite particles on the surface of the anodic coating while permitting hydration to take place in the pores of the coating, the improvement which comprises:

promoting the hydrothermal sealing of the anodized aluminum by pretreating the established anodic oxide coating prior to hydrothermal sealing, with a basic aqueous medium at a pH in the range of about 7 to about 11 and a temperature of from about 20° C. to about 80° C. for up to about 30 minutes, the combination of said conditions being effective to enhance and promote sealing of said anodic oxide coating during the subsequent hydrothermal sealing step, but below those required to effect substantial sealing of the coating.

4,288,300

PROCESS FOR THE MANUFACTURE OF N-α-ALKOXYETHYL-CARBOXYLIC ACID AMIDES

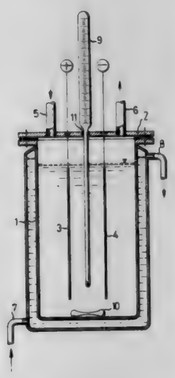
Michael Mitzlaff, Bad Homburg; Jürgen Cramer, Eppstein, and Rudolf Pistorius, Ober-Mörlen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 14, 1980, Ser. No. 149,189

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919756

Int. Cl.³ C25B *3/02, 11/12*

U.S. Cl. 204—59 R **13 Claims**



1. A process for the manufacture of N-α-alkoxyethylcarboxylic acid amides in an electrolysis solution which comprises alkoxylation of an N-ethyl-carboxylic acid amide with an alcohol in an electrolytic cell equipped with an anode and a cathode in the presence of a supporting electrolyte, using vitreous carbon as anode material and at least one alkali metal, or tetraalklammonium alkosulfate as supporting electrolyte.

4,288,301

METHOD OF FORMING HYDROGEN

Thomas G. Hart, Royal Oak, Mich., assignor to Energy Development Associates, Inc., Southfield, Mich.

Division of Ser. No. 925,980, Jul. 19, 1978. This application Oct. 18, 1979, Ser. No. 86,258

Int. Cl.³ C25B *1/26, 1/02, 1/00*

U.S. Cl. 204—101 **3 Claims**

1. A method of producing hydrogen by electrolysis of a water base electrolyte using oxidation of ungraphitized carbon particles in said solution as an input energy source, said method comprising the steps of:

(a) providing an electrolysis cell with a first electrode and a second electrode;

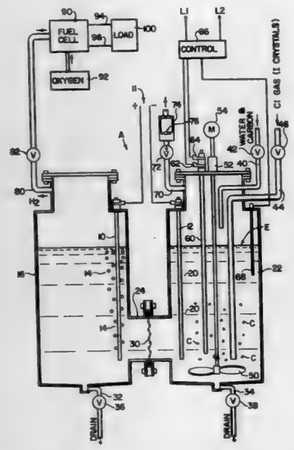
(b) providing a gas collecting chamber in said cell and adjacent each of said electrodes;

(c) providing a water base electrolyte in said cell and communicated with both said first and second electrodes;

(d) periodically adding water to said electrolyte;

(e) periodically adding oxidizable ungraphitized carbon particles to said electrolyte adjacent at least said first electrode;

(f) applying a direct current across said electrodes at a voltage at least as great as said decomposition voltage of said electrolyte;



(g) collecting hydrogen in said chamber adjacent said second electrode; and,

(h) collecting an oxide gas of carbon in said chamber adjacent said first electrode.

4,288,302

METHOD FOR ELECTROWINNING METAL

Vittorio de Nora, Nassau, The Bahamas; Giuseppe Bianchi, and Antonio Nidola, both of Milan, Italy, assignors to Diamond Shamrock Technologies S.A., Geneva, Switzerland

Division of Ser. No. 436,687, Jan. 25, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 763,889

Claims priority, application Italy, Jan. 26, 1973, 19679 A/73

Int. Cl.³ C25B *1/02;* C25C *1/00;* C25B *11/10*

U.S. Cl. 204—105 R **12 Claims**

1. In the method of electrowinning metals from an aqueous acid electrolyte solution containing dissolved metals therein in an electrolysis cell containing a cathode, and means to pass an electrolysis current through said cell between an anode and a cathode, the novel steps which comprise inserting an anode comprising titanium alloyed with 1 to 50% by weight of at least one metal from Groups VIB, VIIB, VIII, IIB, IB, IVA and lanthanum and lanthanide series of the Periodic Table into said electrolyte and passing an electrolysis current through said cell to release oxygen at said anode and deposit dissolved metal from said solution on the cathode.

4,288,303

ELECTROCHEMICAL PROCESSING SYSTEM

Wayne R. Matson, Ayer, Mass., assignor to Environmental Sciences Associates, Inc., Bedford, Mass.

Division of Ser. No. 953,335, Oct. 20, 1978, Pat. No. 4,226,695. This application Nov. 29, 1979, Ser. No. 98,689

Int. Cl.³ C25C *1/00;* C02F *1/46*

U.S. Cl. 204—105 R **23 Claims**

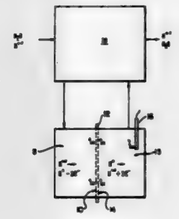
1. In a method for electrochemically treating a first solution containing a selected material so as to effect a desired change in said first solution, said method comprising the steps of:

passing said first solution in contact with one side of a porous membrane under electrochemical conditions such that said selected material reacts to produce a first product;

passing said deposited first product through said porous membrane to the other side thereof; and

reacting said first product in a second solution in contact with said other side to produce a second product;

the improvement which comprises providing as said porous membrane a porous bi-polar electrode, maintaining one side of said porous bi-polar electrode at a first predetermined electrical potential versus a reference electrode in



said first solution and electrochemically depositing said first product onto said one side, maintaining the other side of said porous bi-polar electrode at a second predetermined electrical potential verses a reference electrode in said second solution, while fixing said porous bi-polar electrode at ground.

4,288,304

HYDROMETALLURGICAL PROCESS FOR TREATMENT OF SULPHUR ORES

Jean-Michel DeMarthe, Viroflay; Louis Gandon, and Andre Georgeaux, both of Rambouillet, all of France, assignors to Societe Miniere et Metallurgique de Penarroya, Paris, France

Continuation of Ser. No. 677,515, Apr. 16, 1976, abandoned. This application May 15, 1980, Ser. No. 150,179

Claims priority, application France, Apr. 21, 1975, 75 12373

Int. Cl.³ C22B *19/26, 13/08, 11/04*

U.S. Cl. 204—111 **69 Claims**

1. A hydrometallurgical process for treating a sulphur- and zinc-containing ore or concentrate to recover zinc therefrom, which process comprises the following three steps:

(a) leaching the ore or concentrate with an aqueous solution of cupric chloride thereby forming cuprous chloride;

(b) subjecting the solution thus obtained to liquid-liquid extraction by means of an organic phase to extract zinc into the organic phase while concurrently oxidizing cuprous chloride to cupric chloride; and

(c) recovering the zinc extracted into the organic phase.

48. A hydrometallurgical process for treating a sulphurized ore or concentrate containing iron and rich in zinc and copper, in the form of their sulphides to recover the sulphur, iron, zinc, and copper values therefrom, comprising:

(a) leaching the ore or concentrate with an aqueous solution of cupric chloride whereupon the zinc and copper sulphides are converted to soluble zinc and cupric chlorides, the cupric chloride is reduced to cuprous chloride, and elemental sulphur is produced;

(b) separating the sulphur and any unreacted residue from the reaction mixture;

(c) regenerating the resulting solution, in situ, at atmospheric pressure, with air and a regenerating agent selected from the group consisting of hydrochloric acid and ferrous chloride to oxidize the cuprous chloride to cupric chloride so as to provide a concentration of cuprous ions exceeding 1 gram per liter in the resulting aqueous solution of cupric chloride which is recycled for additional leaching to step (a) and the iron is precipitated as goethite and separated from the aqueous solution;

(d) subjecting the resulting aqueous solution, now free of sulphur, residue, and iron, and containing zinc and copper chlorides to liquid-liquid extraction with a neutral organic zinc extracting agent to obtain an organic phase containing the extracted zinc and an aqueous phase containing copper chlorides;

(e) recovering the zinc from the organic phase and recycling the zinc-free organic phase to step (d);

(f) subjecting the aqueous phase containing copper chlorides to liquid-liquid extraction with an organic copper-extraction cationic agent to obtain an organic phase containing the copper, the acidity released by this extraction being absorbed by the regeneration of cupric chloride; and

(g) recovering the copper from the organic phase and recycling the copper-free organic phase to step (f).

60. A process for extracting zinc from an aqueous solution containing zinc and copper in which at least a portion of the copper is present as cuprous ions comprising contacting the aqueous solution with an organic phase containing a cationic extraction agent having an affinity for zinc while concurrently oxidizing the cuprous ions in the aqueous solution to cupric ions.

4,288,305

PROCESS FOR ELECTROWINNING NICKEL OR COBALT

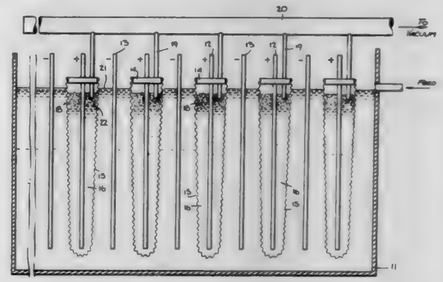
Petrus G. S. Garritsen, Welland; Douglas J. MacVicar, Port Colborne; Daniel P. Young, Sherkston, and John G. Sojda, Welland, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Aug. 18, 1980, Ser. No. 178,819

Claims priority, application Canada, Oct. 10, 1979, 337248

Int. Cl.³ C25C *1/08;* C25B *15/08*

U.S. Cl. 204—112 **5 Claims**



1. In a process wherein nickel or cobalt is electrowon from an electrolyte in apparatus having alternately spaced insoluble anodes and cathodes, each anode being provided with diaphragm means for defining an anolyte compartment surrounding the submerged portion of the respective anode, and wherein feed electrolyte is introduced into the space between anolyte compartments and spent electrolyte is withdrawn from within each anolyte compartment, the improvement consisting of including in the feed electrolyte an amount of frothing agent sufficient to ensure the formation of a stable froth at least 3 centimeters thick on the electrolyte surface within the anolyte compartments, and withdrawing froth continuously from each of the anolyte compartments, thereby simultaneously withdrawing from the apparatus spent electrolyte and anodically generated gases.

4,288,306

PROCESS FOR FORMING A METAL OR ALLOY LAYER AND DEVICE FOR EXECUTING SAME

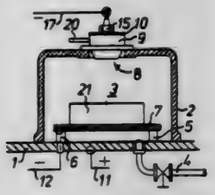
Wolfgang Kieferle, Lindenstrasse 23, D 7981 Grünkraut, and Franz Wäschle, Brucknerstrasse 16, D 7987 Weingarten, both of Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 56,121

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830134

Int. Cl.³ C23C *11/02, 15/00*

U.S. Cl. 204—192 R **4 Claims**



1. A process for coating a metal or alloy layer on an electricity-conducting work piece by means of a glow discharge, wherein the work piece is connected as one electrode of an electric field in a low-pressure chamber loaded with carrier gas and the material to be coated or spender medium is connected as the other electrode, wherein the carrier gas and the spender medium are preionized and are transferred into the electric field of the low-pressure chamber in ionized state, characterized by the fact that an arc discharge is utilized for the explosive spattering of spender medium with the aid of a carrier gas put into turbulence, and this arc discharge is superposed on a glow discharge, and energy is additionally imparted to the preionized metal ions of the spender medium by making use of the cathode fall of potential, and these metal ions of high velocity are coated or deposited on the work piece connected as the first electrode.

4,288,307

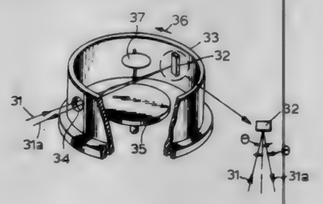
METHOD OF MAKING A MAGNETIC HEAD

Kiyotaka Wasa, Nara; Takao Tohda, Ikoma; Kazuo Yokoyama, Osaka; Eiichi Hirota, and Shigeru Hayakawa, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 19, 1980, Ser. No. 122,809

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 D **13 Claims**



1. A method of making magnetic head core pieces for use in making a magnetic gap formed by cementing together a pair of magnetic head core pieces at least one of which has the face within the joint coated with glass, said method comprising: depositing a glass layer on a surface of a magnetic head core piece made of a magnetic head core material by a cathodic sputtering of a glass target means by mounting said piece in a sample holder and, while carrying out said sputtering, rotating the sample holder around the target means with the surface of said piece facing in a direction lateral to the target means; positioning a mask plate between said target means and the circumferential path of said piece for preventing an excess of sputtered glass from being deposited onto said piece; and monitoring the thickness of the sputtered glass layer formed on said piece by directing a light beam of a wavelength λ directly onto said surface of said piece in a direction for producing an interference light beam reflected from said piece, the speed of rotation of said sample holder being at least 50 $^{V}dep/n\lambda$, in which ^{V}dep is the speed of deposition of the sputtered glass per minute and n is the refractive index of the deposited glass layer, whereby the intensity of the interference light beam is indicative of the thickness of the sputtered glass layer.

4,288,308

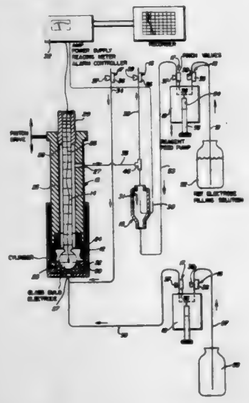
CONTINUOUS PH METER

Clifford C. Hach, Loveland, Colo., assignor to Hach Chemical Company, Loveland, Colo.

Filed Jun. 6, 1980, Ser. No. 156,936

Int. Cl.³ G01N *27/38*

U.S. Cl. 204—195 R **6 Claims**



1. A pH meter comprising, in combination, a frame, a sample chamber mounted on said frame, a reference electrode mounted in fluid communication with said chamber, a piston mounted in said chamber and including a glass electrode to cooperate with said reference electrode for measuring the pH of liquid samples in the chamber, intake and outlet lines opening to said chamber, valves on said frame for each of said lines, means for reciprocating said piston in said chamber and operating said valves so that the outlet line is open and the intake line closed as the piston fills the chamber to exhaust fluid from the chamber and the intake line is open and the outlet line closed as the piston withdraws from the chamber and draws a new liquid sample into the chamber, said reference electrode mounting including an electrolyte line opening into said outlet line, a positive displacement pump in said frame driven by said means, said pump being connected to deliver controlled amounts of electrolyte past said reference electrode so as to maintain a flow of electrolyte into said outlet line, and a body of deformable material in said chamber and positioned to engage and clean said glass electrode each time said piston is reciprocated.

4,288,309

ELECTROLYTIC DEVICE

Samuel Cohen, Paris, France, assignor to Ecopol, Paris, France

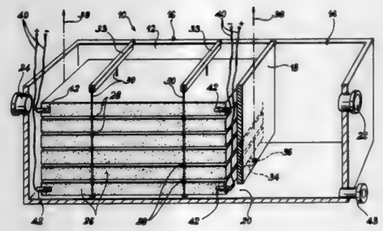
Filed Dec. 17, 1979, Ser. No. 104,688

Claims priority, application France, Dec. 20, 1978, 78 35830

Int. Cl.³ C25B *9/02, 11/02, 15/04*

U.S. Cl. 204—225 **20 Claims**

1. An electrolytic device, wherein said device comprises a tank adapted to contain electrolyte, flat electrodes which are stacked horizontally so as to rest one upon another under the action of gravity and at least a certain number of which are consumable, two successive electrodes being separated by spacer elements having the same thickness and formed of



material which is inert to electrolysis so that the contact surfaces between the spacer elements and the electrodes permit substantially uniform erosion of the consumable electrodes over their entire surface and the spacing between two consecutive electrodes thus remains constant.

4,288,310

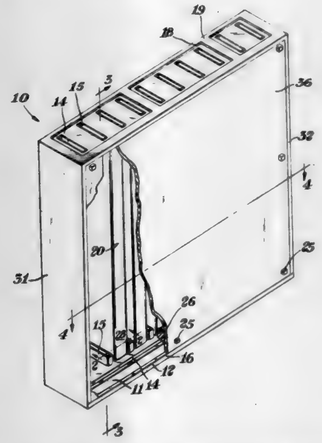
MEMBRANE SUPPORT ASSEMBLY FOR ELECTROLYTIC CELL AND METHOD OF MAKING SAME

Allan R. Knight, 437 Crescent Park, Petrolia, Ontario N0N 1R0, Canada, and Indresh Mathur, 939 Cathcart Blvd., Sarnia, N7V 2P1 Ontario, Canada

Filed Sep. 12, 1979, Ser. No. 74,640

Int. Cl.³ C25B *9/00, 13/02, 13/08, 1/16*

U.S. Cl. 204—252 **15 Claims**



1. In an electrolytic cell for the production of chlorine and caustic from aqueous alkali metal chloride solutions comprising a plurality of cathodes spaced from one another and a plurality of anodes interposed between said cathodes and spaced therefrom, an improved membrane support assembly which comprises a continuous, elongated sheet of preformed membrane positioned in serpentine fashion between the anodes and the cathodes so as to separate all opposing surfaces of anodes and cathodes, a first membrane support plate cast in situ embedding one serpentine-shaped edge of said membrane, and a second membrane support plate cast in situ embedding the other serpentine-shaped edge of said membrane, said membrane support assembly dividing said electrolytic cell into separate anolyte and catholyte compartments.

4,288,311

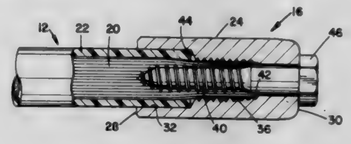
CONTACTOR AND DANGLER ASSEMBLY FOR PLATING BARREL

Albert Singleton, 7360 Brookside Pkwy., Middleburg Heights, Ohio 44130, and Raymund Singleton, North Ridgeville, Ohio, assignors to Albert Singleton, Cleveland, Ohio

Filed Jan. 18, 1980, Ser. No. 113,220

Int. Cl.³ C25D *17/00, 17/20;* **H01R** *4/24*

U.S. Cl. 204—279 **13 Claims**



1. A dangler assembly for an electro-chemical apparatus comprising in combination:

an elongated electrical conductor, an insulating sheath closely surrounding said conductor, an electrical connector disposed at one terminal end of said conductor, and, a contactor disposed at the opposite terminal end of said conductor;

said contactor comprising a generally cylindrical open ended casing having opposed inner and outer ends with a first bore section extending axially thereinto from said outer end receiving a longitudinal portion of said electrical conductor and insulating sheath adjacent said conductor opposite terminal end, a second bore section communicating with said first bore section extending further axially into said casing toward said inner end, having a threaded side wall at least substantially over the length thereof, and receiving a portion of the length of said conductor at said conductor opposite end, a third bore section communicating between said second bore section and said casing inner end axially of said casing and

elongated fastening means, comprising a threaded lag screw extending from said casing inner end through said third and said second bore sections and through at least a portion of said first bore section to penetrate at least a portion of said conductor received in said first bore section, and including threads of the opposite hand from the threads of said second bore section side wall;

said fastening means axially penetrating said conductor from said opposite terminal end thereof for radially expanding said conductor into retained engagement with the side wall of said second bore section.

4,288,312

CATHODE AND EDGE STICK ASSEMBLY

Ralph E. Johnson, and Reno P. Biscaro, both of Trail, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Nov. 30, 1979, Ser. No. 99,030

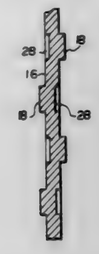
Claims priority, application Canada, Aug. 13, 1979, 333639

Int. Cl.³ C25C *7/02;* **C25D** *17/10*

U.S. Cl. 204—281 **14 Claims**

1. A cathode assembly for the electrodeposition of metals comprising in combination at least one edge stick engaging at least one edge of a cathode, wherein the cathode has at least one upstanding projection on each of its surfaces proximate said edge, the projections each having an upstanding face which is both substantially parallel to the proximate cathode edge and facing away therefrom, and wherein the non-conductive plastic edge is of channel-like form, the inner trough faces of the channel being provided with projecting lips at their

outer edges adapted to move over the projections on each surface of the cathode proximate the cathode edge and to



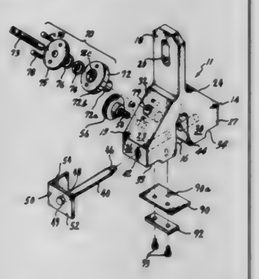
engage opposite cathode faces resiliently and securely, thereby to retain the edge stick thereon.

4,288,313

HANGER FOR HANDLING SHEET MATERIAL DURING PROCESSING THEREOF

Odo S. Bormke, Gig Harbor, and Ronald L. Bunch, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 9, 1980, Ser. No. 138,665
Int. Cl.³ C25B 9/02; C25D 17/08
U.S. Cl. 204—297 W **17 Claims**



1. An electrically conductive hanger for engaging sheet metal material from an upper edge portion thereof and for cooperating with an overhead hanger support fitting and with spaced parallel hanger supports so as to supportively hang such material during handling and electroprocessing thereof, in which such sheet metal material has a hanger cooperating opening provided adjacent such upper edge portion, comprising:

an inverted Y-shaped body made of electrically conductive material and including a downwardly oriented bifurcation that forms first and second legs that bound a centrally located sheet receiving slot, feet means formed on said legs adapted for suportively resting on spaced parallel hanger supports, and an upwardly projecting attachment portion adapted for receiving a cooperating hanger support fitting;

releasable shear pin means cooperating with said legs and slot for releasably hanging the sheet metal material by engaging an opening provided in such sheet material adjacent an upper edge portion thereof when such upper edge portion is disposed in said receiving slot of said body; and,

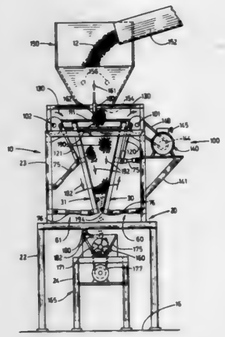
clamping screw means cooperating with said body and slot therein for jamming a surface of such sheet material when disposed in said slot, against an interior wall of said slot.

4,288,314

APPARATUS FOR SEPARATING ADHERING DRIED FRUITS AND THE LIKE

Edward J. Derderian, 4514 N. Wilson Ave., Fresno, Calif. 93704

Filed Sep. 2, 1980, Ser. No. 182,953
Int. Cl.³ B07B 13/16
U.S. Cl. 209—3 **6 Claims**



6. An apparatus for separating clumps of adherent dried fruit and the like comprising:

A. a frame having opposite sides;

B. a pair of substantially planar downwardly convergent friction members;

C. means mounting one of the members in the frame between the sides thereof comprising

(1) a pair of vertically spaced, elongated links each having opposite ends individually pivotally connected to said one member and to an adjacent side of the frame, such links extending generally horizontally in substantially parallel relation and being movable through substantially equal angles above and below the horizontal;

D. means for mounting the other member in the frame comprising:

(1) an elongated upper link and an elongated lower link disposed in vertically spaced relation, each of said links having opposite ends individually pivotally connected to said other member and to an adjacent side of the frame, the lower link extending generally horizontally and being movable through substantially equal angles above and below the horizontal and the upper link having a substantial upward inclination in a direction from its connection to the side of the frame to said other member when said other member is at the lower extremity of the movement thereof so that said upward inclination increases substantially as said other member moves upwardly from said extremity and the upper end of said other member moves toward the side of the frame to which it is connected and so that said upward inclination decreases substantially as said other member moves downwardly toward said extremity and said upper end moves away from the side of the frame to which it is connected;

E. drive means for alternately and oppositely elevationally reciprocating said members;

F. means for supplying clumps of fruit between said members for separation by rubbing action of the friction members thereagainst; and

G. means disposed beneath said members for receiving separated fruit therefrom.

4,288,315

BENEFICATION OF FLUORSPAR ORES

John C. Morrisey, IV, Beckley, W. Va., and Ulus R. Smith, Cave-In-Rock, Ill., assignors to Allied Corporation, Morris Township, N.J.

Filed Mar. 26, 1979, Ser. No. 24,215
Int. Cl.³ B02B 1/02
U.S. Cl. 209—11 **3 Claims**

1. A process for the froth flotation of fluorspar ore containing metallic sulfide accessory minerals to obtain a fluorspar enriched concentrate that is substantially free of sulfide impurities, which comprises the steps of:

a. preparing an aqueous pulp of said ore suitable for froth flotation;

b. conditioning the pulp with flotation reagents including oleic acid as a collector for said ore, sodium sulfide as a depressor for metallic sulfides, gangue depressors, and a pH regulator to maintain the pulp in the pH range of about 8.5 to 9.5 while heating the pulp to a temperature in the range of about 85° to 105° F. (29° to 41° C.); and

c. subjecting the conditioned pulp to froth flotation and recovering a fluorspar enriched concentrate having a fluorspar content of at least about 96.5 wt. % and a sulfide sulfur content not greater than about 0.02 wt. %;

wherein: said ore includes about 30 to 60 wt. % fluorspar, up to about 3 wt. % metallic sulfides, and up to about 55 wt. % gangue including silica, calcite, and barite;

said pulp has a solids content of about 35 to 45 wt. % with a particle size of less than about 48 mesh;

said gangue depressors are an alkali metal silicate, starch, and quebracho, each added to said pulp at an addition rate of about 1 to 5 pounds per ton of ore (0.5 to 2.5 kg/tonne), and said pH regulator is soda ash;

said oleic acid is added to said pulp at an addition rate of about 0.5 to 1.5 pounds per ton of ore (0.25 to 0.75 kg/tonne); and

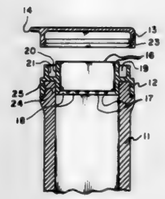
said sodium sulfide is added to said pulp at an addition rate of about 0.05 to 0.4 pound per ton of ore (0.025 to 0.2 kg/tonne).

4,288,316

FECAL EXAMINING DEVICE

Michael J. Hennessy, 1673 E. Oak Rd., Vineland, N.J. 08360

Filed Feb. 21, 1980, Ser. No. 123,370
Int. Cl.³ B03B 7/00
U.S. Cl. 209—17 **14 Claims**



1. A fecal examining device to support an ova-collecting slide whereby the slide receives and collects ova upwards through a liquid-fecal material mixture comprising:

(a) a vial for holding a sample of feces to be examined,

(b) a tubular extension with an upper edge of the extension constructed to receive the ova-collecting slide wherein a lower portion of the tubular extension is connected to the vial opening by a sealable fit means to sealably connect the parts and expand the internal volume of the device upwardly to the extent of the internal volume of the tubular extension, and

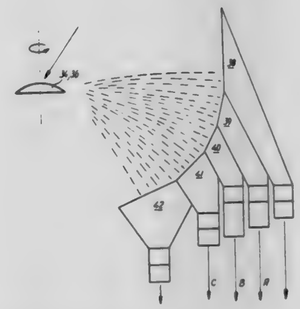
(c) a screen means immovably affixed across the internal volume of the tubular extension wherein the screen means comprises a plurality of said guards providing an essentially clear vertical flow area upwardly of at least 40% of the screen area.

4,288,317

METHOD AND A SYSTEM FOR SEPARATING AN AQUEOUS SUSPENSION CONTAINING FIBROUS PARTICLES INTO FRACTIONS OF DIFFERENT AVERAGE CHARACTERISTICS

Alfonso de Ruvo, Stockholm; Bo Norman, Johanneshov, both of Sweden; Geoffrey G. Duffy, Aukland; Klaus Moller, Hamilton, both of New Zealand; Karl E. Hansen, Kokkedal, Denmark; Karsten S. Felsvang, Allerod, Denmark, and Erik Liborius, Charlottenlund, Denmark, assignors to A/S Niro Atomizer, Søborg, Denmark

Continuation-in-part of Ser. No. 872,714, Jan. 26, 1978, abandoned, which is a continuation of Ser. No. 708,441, Jul. 23, 1976, abandoned. This application May 11, 1979, Ser. No. 38,045
Claims priority, application Sweden, Jul. 29, 1975, 7508592
Int. Cl.³ B07B 7/083
U.S. Cl. 209—139 A **17 Claims**



1. A method for separating an aqueous suspension containing fibrous particles into fractions of different average characteristics with respect to particle size and shape, comprising the steps of

supplying the suspension to a separator disc having a concave surface with a solid matter concentration not exceeding 10 percent by weight, said separator disc rotating in a substantially horizontal plane at a circumferential velocity sufficiently great that a film of said suspension formed on said concave surface is accelerated towards the disc circumference in a continuous flow in which fractions of the suspension having said different average characteristics are separated from each other and at the circumference of the disc said film is broken up and said separated fractions dispersed outwardly from the disc in different directions in a dense mist of particles and atomized water droplets in air, and

collecting said fractions in a number of collecting zones disposed in different vertical portions relative to said disc.

4,288,318

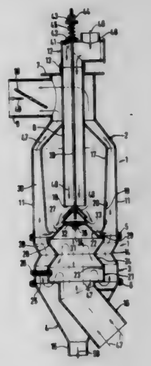
PNEUMATIC SEPARATOR FOR FLOWABLE PARTICULATE MATERIALS

Wolfgang Essmann, and Kurt Schnellbacher, both of Brunswick, Fed. Rep. of Germany, assignors to Bühler-Miag GmbH, Brunswick, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,457
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929672
Int. Cl.³ B07B 4/02
U.S. Cl. 209—139 R **8 Claims**

1. A pneumatic separator for multi-fraction particulate pourable materials, comprising first means defining a first upright passage for admission of a multi-fraction particulate material in

downward direction and having a first open lower end; second means defining an upright annular second passage surrounding said first passage outwardly spaced therefrom and having a second open lower end downwardly spaced from said first end, said second passage having an outlet in the region of its upper end and converging in the direction towards said region; means for applying suction to said outlet to produce in said second passage an airstream flowing in upward directon and a guide body centrally located beneath said first end and having a conical surface which directs the material towards said second end, and a shoulder downwardly of said conical surface



and extending at least substantially normal to a central axis of said annular second passage and having an edge over which material is discharged into said second passage in direction substantially normal to said airstream and without having at the time of such discharge any significant componenet of movement in said downward direction, said second passage having at least in the region below said shoulder at least one zig-zag shaped passage portion so that, when suction is applied to said outlet and material is discharged into said passage portion, the material undergoes repeated directional changes during each of which the airstream aspirated by application of the suction travels transversely through the material.

4,288,319

METHOD OF AND ARRANGEMENT FOR DE-INKING FIBER

Karel A. G. Heijs; Antonius J. Deckamps, both of Gennep, and Robert L. de Jong, Boxmeer, all of Netherlands, assignors to N.V. Papierfabriek Gennep, Gennep, Netherlands

Filed Feb. 4, 1980, Ser. No. 118,590

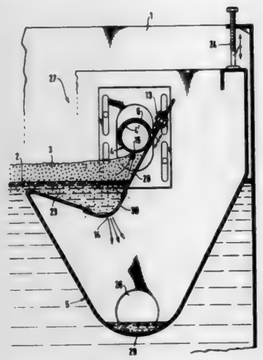
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904326

Int. Cl.³ B03D *1/02, 1/24*

U.S. Cl. 209—166 **14 Claims**

1. A method of de-inking pulp suspension by way of flotation comprising the steps of chemically treating the pulp suspension, supplying air at a particular level below the liquid level of the chemically treated pulp suspension thereby purifying it of suspended impurities by generating a foam containing the impurities on the surface of the liquid level of the suspension, drawing off the foam closely above the liquid level, quenching the drawn-off foam, and separately discharging, simultaneously with said drawing off step and above the level at which said air supplying step is performed, an upper layer of the pulp suspension directly beneath the liquid level thereby removing fiber fines contained in the upper layer.

5. An arrangement for de-inking a pulp suspension by way of flotation comprising a tank of given width for containing the suspension, aeration means in the bottom region of said tank for supplying air at a particular level below the liquid level of the suspension to produce a foam containing impurities on the surface of the liquid level of the suspension, means in said tank arranged to be in the region of the liquid level of the pulp suspension for discharging the impurities, said discharging means including at least one elongated drainage element arranged to extend closely above the liquid level and substantially transversely of the entire width of said tank for discharging the foam, and at least one discharge channel arranged to



extend substantially transversely of the entire width of said tank, closely below the liquid level and above the level at which air is supplied to the suspension by said aeration means, for separately discharging fiber fines contained in a layer of the pulp suspension directly beneath the liquid level.

4,288,320

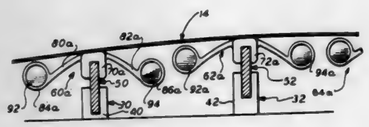
VIBRATING SCREEN WITH SCREEN DECK UNCLOGGING MECHANISM

Albert Wilson, Columbia, S.C., assignor to Litton Systems, Inc., Columbia, S.C.

Filed May 5, 1980, Ser. No. 146,251

Int. Cl.³ B07B *1/54*

U.S. Cl. 209—382 **34 Claims**



1. A screen deck unclogging mechanism; comprising:
(a) mounting means formed to be supported beneath and to aid in the support of a screen deck when disposed in proximity to the screen deck;
(b) arm means formed integral with and extending laterally to at least one side of said mounting means and so as to have a free end spaced from said mounting means;
(c) weight means disposed at said free end of said arm means;
(d) said arm means including an integrally formed springy section disposed between said mounting means and said free end; and
(e) the coaction between said weight means and said springy section of said arm means being such that when said mounting means is disposed beneath and in proximity to a screen deck and the screen deck is vibrated said weight means will rap against the underside of the screen deck to loosen material which may be lodged in the openings of the screen deck.

4,288,321

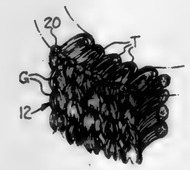
DRAIN TILE AND PILE FABRIC FILTER SLEEVE

Frank T. Beane, Rte. 7, Hwy. 49, Concord, N.C. 28025

Continuation-in-part of Ser. No. 626,630, Oct. 29, 1975, Pat. No. 4,180,464, which is a division of Ser. No. 483,391, Jun. 25, 1974, Pat. No. 3,976,578. This application Nov. 23, 1979, Ser. No. 96,643

Int. Cl.³ E02B *13/00*; B01D *29/14*

U.S. Cl. 210—170 **5 Claims**



1. In a land drainage line having an elongated flexible corrugated drainage conduit of the type having alternating peaks and valleys along its longitudinal axis and a plurality of openings through the conduit arranged along its longitudinal axis and in valleys of the conduit and a knitted fabric filter sleeve in the form of a length of tubular knit fabric having a length substantially coextensive with the length of the conduit and a diameter in relaxed condition less than the maximum diameter of the conduit, the sleeve covering the drainage conduit and filtering fine particles of soil from water passing through the sleeve and into the drainage conduit, the improvement in the knitted fabric filter sleeve comprising the fabric being formed of stitches defining a ground and defining terry loops extending from the ground and being directed in a predetermined generally radial direction relative to the longitudinal axis of the drainage conduit.

4,288,322

SAMPLE/STANDARD INJECTION HEAD FOR FLUID-PHASE CHROMATOGRAPH

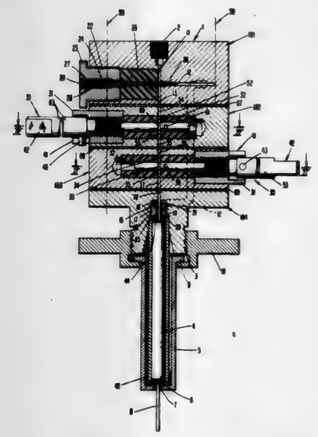
Claude Guillemin, Paris, and Christian Mayen, Creteil, both of France, assignors to Prolabo, Paris, France

Filed Sep. 29, 1980, Ser. No. 192,089

Claims priority, application France, Sep. 28, 1979, 79 25520

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—198.2 **10 Claims**



1. In a device for sweeping and injecting a sample and at least one standard into the separation column of a fluid-phase chromatograph, including (i) means for securing same to the inlet of such separation column, (ii) a supply inlet for a stream of carrier medium and means for directing said stream to said separation column, (iii) dividing means in said device for dividing said stream into primary and secondary streams, (iv) distributing means for directing said primary stream to said separation column and distributing said primary stream over the entire inlet area of said column, (v) means for directing said secondary stream axially into said separation column inlet, and (vi) means for introducing a sample into said secondary stream, the improvement which comprises (vii) means for introducing at least one standard also into said secondary stream.

4,288,323

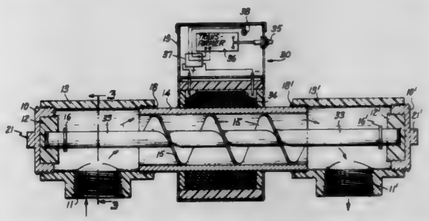
FREE FLOW NON-CORROSIVE WATER TREATMENT DEVICE

Miguel F. Brigante, 16550 NW. 10th Ave., Miami, Fla. 33169

Continuation-in-part of Ser. No. 9,669, Feb. 5, 1979, Pat. No. 4,226,720. This application May 27, 1980, Ser. No. 153,219

Int. Cl.³ C02F *1/48*

U.S. Cl. 210—222 **4 Claims**



1. In a unitary package water purification and treatment device adapted to be attached to a water appliance comprising:
a 24 volt DC power supply;
an electromagnetic coil within a housing energized by D.C. which completely encircles and extends along substantially the entire length of a centrally supported conduit pipe section;
said electromagnetic coil being fed by 24 volts D.C. to thereby induce a D.C. magnetic field within the interior of said conduit pipe section through which water flows;
an elongated shaft extending through said pipe section and having a solid helical impeller of ferromagnetic material with six to eight flights, longitudinally traversing the entire length of said electromagnetic coil;
end portions of said impeller shaft arranged centrally of said pipe section for central support on bearing bushings at opposing ends of the pipe section;
each of said bearing bushings respectively secured to externally threaded male plugs;
each of said male plugs provided with a means (central projection) for threaded installation and removal of said plugs into opposing ends of internally threaded T-shaped fittings, said T-shaped fitting secured at opposite ends of said central pipe conduit and communicating therewith to define a flow path with the helical impeller;
each of said T-shaped fittings includes internally threaded post means for entrance of feed water and delivery of purified water, such that the flow path is free and unobstructed from the bearings; and
each of said T-shaped fittings provided with means for a maximum flow of water through said central pipe section and free of deposits and corrosive effects.

4,288,324

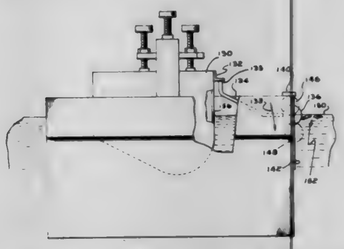
SKIMMING APPARATUS

Howard D. Urdanoff, P.O. Box 3152, Bethlehem, Pa. 18017

Continuation-in-part of Ser. No. 938,644, Aug. 31, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,745

Int. Cl.³ E02B *15/04*

U.S. Cl. 210—242.1 **10 Claims**



1. In a skimming system for removing a floating layer from a body of liquid which includes:

a skimmer for semi-immersion in said liquid having an inlet opening and a hollow interior compartment;

means supporting said skimmer for tilting movement from a recumbent position generally parallel with the liquid surface to an inclined position admitting the floating layer to the compartment; and

means associated with the skimmer for removing contaminated liquid from the compartment;

the improvement comprising:

laterally spaced baffles opposite the inlet mounted on the means supporting the skimmer for blocking debris from entering the opening; and

plural cleaning members protruding forwardly between the baffles mounted on the skimmer, for vertical movement with respect to the baffle;

whereby on tilting movement of the skimmer the members push away debris trapped by the baffles to facilitate movement of the floating layer to the inlet opening.

4,288,325

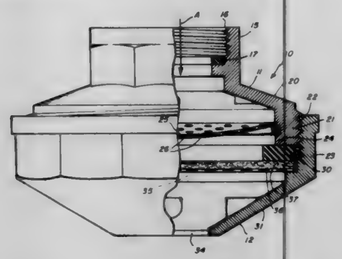
WATER TAP FILTER

Samuel Lieberman, Newton Centre, Mass., assignor to Thomas P. Shann, Boston, Mass.

Filed Oct. 9, 1979, Ser. No. 82,806

Int. Cl.³ B01D *25/02*

U.S. Cl. 210—449 **1 Claim**



1. A filter device for attachment to a water tap nozzle comprising upper and lower components having means for selective interengagement and detachment, said upper component having means for securing to a water tap nozzle at one end and for attachment to said lower component at the other end thereof, and said upper component providing a passage for water from said tap to said lower component and having a water diffusing screen extending across said passage, said water diffusing screen being bowed to form a very shallow dome-like depending configuration, said lower component forming a passage for water from said upper component and having a single thin porous fibrous water filter pad having a thickness of several millimeters or less extending across the passage in said lower component and aligned with said screen in said upper component to receive water passing therefrom in a spray form, a supporting metal mesh screen positioned below and adjacent to said fibrous filter for support thereof, a sealing ring positioned above and in facing relation with said fibrous filter and forming a sandwich of said sealing ring, fibrous filter and mesh screen with said sandwich rigidly secured between projections extending from the internal walls of said upper and lower components, said diffusing screen spaced a distance of less than ¼ inch above said filter to substantially reduce the impact of the water spray on the porous filter, said lower component forming a chamber as means for receiving water passing through said water filter and redirecting said water from a spray form to a steady stream as it passes from said device.

4,288,326

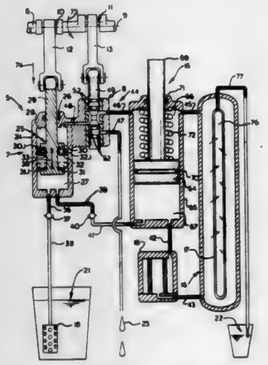
ROTARY SHAFT DRIVEN REVERSE OSMOSIS METHOD AND APPARATUS

Bowie G. Keefer, 4324 W. 11th Ave., Vancouver, B.C., Canada (V6R 2M1)

Continuation-in-part of Ser. No. 886,429, Mar. 14, 1978, Pat. No. 4,187,173, which is a continuation-in-part of Ser. No. 782,540, Mar. 28, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,664

Int. Cl.³ B01D *31/00, 13/00*

U.S. Cl. 210—637 **34 Claims**



31. A method of membrane separation of a feed fluid into permeate fluid and concentrate fluid fractions which are respectively permeated and rejected by selective membrane means, the membrane means being exposed to pressurized feed fluid supplied by a reciprocating feed pump means having a feed cylinder, a feed displacer and a feed displacer rod, the displacer dividing the cylinder into a pumping chamber in which feed fluid is pressurized and an expansion chamber in which concentrate fluid is depressurized, valve means in conduit means associated with the chambers determining fluid flow directions to and from the membrane means, the method being characterized by steps of:

(a) as the displacer rod initiates an induction stroke, permitting yielding between portions of the displacer and the displacer rod so that there is relative movement therebetween,

(b) whilst inducting feed fluid into the pumping chamber, simultaneously exhausting depressurized concentrate fluid from the expansion chamber,

(c) after the end of the induction stroke of the feed displacer, shifting the valve means across a closed intermediate position thereof during an interval of zero fluid transfer from the cylinder by the displacer, and when pressure difference across the valve means is relatively low,

(d) as a displacer rod initiates a pumping stroke, permitting yielding between portions of the displacer and the displacer rod so that there is relative movement therebetween,

(e) whilst pressurizing feed fluid in the pumping chamber to force the pressurized feed fluid to the membrane means, simultaneously admitting into the expansion chamber pressurized concentrate fluid fraction from the membrane means to depressurize the concentrate fluid fraction to supplement energy supplied to the feed displacer in the pumping stroke, so that pressure differences across the displacer are relatively low,

(f) after the end of the pumping stroke of the feed displacer, shifting the valve means during an interval of zero fluid transfer in the expansion chamber and when pressure difference across the valve means is relatively low.

4,288,327

COPOLYMERS FOR THE CONTROL OF THE FORMATION AND DEPOSITION OF MATERIALS IN AQUEOUS MEDIUMS

Irene T. Godlewski, Cinnaminson, N.J.; Joseph J. Schuck, Holland, and Andrew S. Chisarik, Cornwells Heights, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 689,755, May 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 610,952, Sep. 8, 1975, abandoned. This application Jan. 19, 1979, Ser. No. 4,646

Int. Cl.³ C02F *5/10*

U.S. Cl. 210—698 **59 Claims**

1. A method of controlling the formation and deposition of materials on the structural parts of a system containing an aqueous medium, which in turn contains ions which would otherwise form and deposit as said materials, which comprises introducing into the aqueous medium an effective amount for the purpose of a polymer or the water soluble salt of said polymer, which polymer is comprised of sulfonated styrene moieties and moieties derived from maleic anhydride, the ratio of said styrene moieties to said maleic anhydride derived moieties being from about 2:1 to about 4:1.

4,288,328

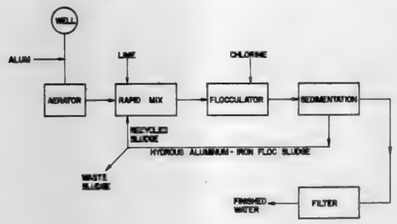
USE OF SPECIALLY PREPARED IRON FLOC TO OXIDIZE AND REMOVE IRON IN WATER TREATMENT PROCESSES

John R. Montgomery, Tuscaloosa, Ala., assignor to Iron Removal Specialists, Inc., Tuscaloosa, Ala.

Continuation-in-part of Ser. No. 45,609, Jul. 19, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,095

Int. Cl.³ C02F *1/52, 1/76*

U.S. Cl. 210—713 **3 Claims**



1. A process for treating water containing ferrous compounds comprising the following steps:

(a) a first step of adding approximately 1 to 50 mg/l of alum to the untreated water;

(b) a second step of aerating the water by intimate contact with air to remove dissolved gases and add oxygen to the water and to oxidize said ferrous compounds into iron oxides;

(c) a further step of adding lime to the water to adjust the pH of the water to a value approximately from 7 to 9;

(d) a further step of adding to the water recycled hydrous aluminum-iron floc sludge, collected in step (h) to produce a water to sludge ratio of about 2 to 30 percent by volume, said hydrous aluminum-iron floc sludge having an iron to aluminum ratio in the range of 15.7–57.3 by weight;

(e) a further step of detention of the water for a time, after steps (a)–(d), and prior to the addition of chlorine in step (f) said detention time being effective in forming said hydrous aluminum-iron floc sludge including said iron oxides;

(f) a further step of addition of chlorine to the water to produce a final concentration of at least about 0.5 mg/l;

(g) a further step of separating the hydrous aluminum-iron floc sludge, formed in the prior steps, from the treated water; and

(h) collecting the hydrous aluminum-iron floc sludge and recycling a part thereof for use in step (d).

4,288,329

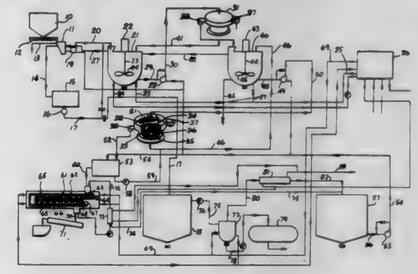
METHOD AND APPARATUS FOR CLEANING FINE WASTE MATERIAL MIXED WITH OIL AND WATER

Leonard A. Duval, 207 Harmon Rd., Aurora, Ohio 44202

Filed Nov. 9, 1979, Ser. No. 93,004

Int. Cl.³ B01D *21/02;* **B08B** *3/10*

U.S. Cl. 210—772 **2 Claims**



2. A method of cleaning fine solid waste material mixed with oil and water, comprising one intergrated system including (a) first decanting most of the water at a feed point, then (b) mixing with solvent said solids-oil-water material thoroughly in a first mixer, (c) returning excess expended solvent from said first mixer to said feed point, (d) then pumping the slurry of solids and solvents to a first dewetter-separator device, (e) transferring expended solvent from said first dewetter-separator device back to said first mixer, (f) transferring solids from said first dewetter-separator device to a second mixer, (g) thoroughly mixing with solvent these latter solids in the second mixer, (h) pumping the slurry of solids-solvent-water from said second mixer to a second dewetting-separator device, (i) transferring expended solvent from said second dewetting-separator device to said second mixer, (j) transferring solids from said second dewetting-separator device to a dewetting screen, (k) washing said solids on said dewetting screen with a small amount of clean solvent, (l) transferring expended solvent from said dewetting screen to said second mixer, (m) transferring solids from said dewetting screen to a dryer, (n) drying said solids in said dryer for use, (o) collecting all said expended solvent and passing it through a fractioning still and collecting therefrom the recovered oil, and (p) passing the solvent vapor through a condenser and to a regenerated solvent storage.

4,288,330

SUPPORT WITH ROTARY SYMMETRIC OPENINGS FOR FILTER AID, METHOD AND APPARATUS

Fritz Strub, St. Gallen, Switzerland, assignor to Filtrox Maschinenbau AG, St. Gallen, Switzerland

Continuation of Ser. No. 457,205, Apr. 2, 1974, abandoned. This application Dec. 16, 1976, Ser. No. 751,220

Claims priority, application Switzerland, Apr. 3, 1973, 4729/73

Int. Cl.³ B01D *37/02*

U.S. Cl. 210—777 **3 Claims**



1. In a process of filtering fluids utilizing as the active filtering component a layer of filter aid particles settled directly on and supported by a sheet-metal support provided with openings for passage of the filtered fluid moving through said filter aid layer, said filter aid particles being from the group comprising kieselguhr and other particles with similar irregular surfaces which promote bridging and are smaller in particle size diameter than the smallest diameter of said openings, wherein the liquid to be filtered is introduced on the side of said filter aid layer opposite said support and removed downstream of said support, the improvement of using as said support a support penetrated by a multitude of rotary symmetric openings of circular cross-section throughout their length and having a diameter of their narrowest point in the range of 50 to 250 microns, the walls of said opening making an angle of less than about 20° with the opening axis, whereby the particles form bridges over the openings in the configuration of dome-shaped arches, and said support provides around the margin of each such opening a generally flat stable bearing surface for supporting the end of said dome-shaped arch and having a width at least corresponding to the opening diameter, whereby said filter aid layer exhibits an increased stability to breakdowns of said bridges due to sudden pressure changes in the unfiltered fluid or high pressure drops over said layer.

4,288,331

LUBRICATING COMPOSITIONS FOR PRIMARY BACKING FABRICS USED IN THE MANUFACTURE OF TUFTED TEXTILE ARTICLES

John D. Shepley, and Herman M. Muijs, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 13, 1979, Ser. No. 48,289

Int. Cl.³ D06M *13/18*; C10M *1/20*

U.S. Cl. 252—8.9 **8 Claims**

1. A lubricating composition comprising a major amount of a polyalkoxylate lubricating oil and 0.001 to 10% by weight, based on the polyalkoxylate lubricating oil, of a saturated or unsaturated aliphatic carboxylic acid of from 10 to 20 carbon atoms.

4,288,332

METHODS AND COMPOSITIONS FOR TREATING SUBTERRANEAN FORMATIONS

Bobby E. Hall, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 770,881, Feb. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 533,375, Dec. 16, 1974, abandoned. This application Aug. 27, 1979, Ser. No. 70,286

Int. Cl.³ E21B *43/27*

U.S. Cl. 252—8.55 C **17 Claims**

1. A composition for treating a subterranean formation comprising:

an aqueous acid solution capable of dissolving mineral constituents contained in said formation;

at least one additive having surface active properties present in said aqueous treating solution for imparting desired treating properties to said solution and to said formation to be treated; and

a chemical having the property of reducing the adsorption of said additive on material surfaces present in said formation, said chemical being present in said composition in the range of from about 1% to about 90% by volume of said composition and having the general formula:

$$C_nH_{2n+1}(OC_2H_4)_xR$$

wherein:

n has a value in the range of from about 4 to about 12;

x has a value in the range of from about 1 to about 10; and

R is a radical selected from the group consisting of $-OCH_3$, $-OSO_3^-M^+$ and $-NH_2$, wherein M^+ is one of H^+, NH_4^+, Na^+, K^+, Ca^{++} and Mg^{++}.

4,288,333

DISSOLVING BARIUM SULFATE SCALE WITH AQUEOUS SOLUTIONS OF SALTS OF PHOSPHOMETHYL AND AMINO-SUBSTITUTED MACROCYCLIC POLYETHERS

Arie van Zon; Feike de Jong, and Gerridina J. Torny-Schutte, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 5, 1979, Ser. No. 91,009

Claims priority, application United Kingdom, Jun. 29, 1979, 22689/79

Int. Cl.³ C02F *5/14*; E21B *43/25*

U.S. Cl. 252—8.55 B **5 Claims**

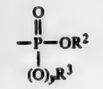
1. A process for dissolving solid barium sulfate in or around a well in a location into which fluid can be flowed, which process comprises:

flowing into said well and into contact with the barium sulfate an aqueous solution consisting essentially of water, a phosphomethyl and amino-substituted macrocyclic polyether and sufficient dissolved alkaline, inorganic, alkali metal or ammonium compound to provide a pH of at least about 8; and,

using as said polyether a compound of the formula



wherein each A^1, which may be the same or different, represents a hydrocarbon radical of up to 12 carbon atoms and each D, which may be the same or different, represents an oxygen or sulphur atom or a hydrocarbon radical having up to 6 carbon atoms or a group N-R, representing a hydrogen atom or a hydrocarbon radical having up to 12 carbon atoms, a hydrocarbon sulphonyl radical having up to 12 carbon atoms, an alkoxycarbonylmethylene radical having up to 4 carbon atoms or a carboxymethylene radical, at least two of said D members representing an oxygen or a sulphur atom or a group N-R, and each R^1, which may be the same or different, represents a hydrogen atom, an alkyl group having up to 6 carbon atoms or a carboxy group, m and n are whole numbers from 0 to 5 inclusive and Z represents a group



wherein y is 0 or 1 and R^2 and R^3, which may be the same or different, represent a hydrogen atom or an alkyl group or a lithium, sodium, potassium or ammonium ion.

4,288,334

PROCESS FOR SECONDARY RECOVERY OF HYDROCARBONS

David R. McCoy, and Carter G. Naylor, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Jan. 17, 1980, Ser. No. 112,690

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **11 Claims**

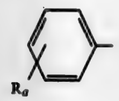
1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein:

(a) from 0.05 to about 6.0 weight percent of a nonionic surfactant of the formula:

$$RO(CH_2CH(OH)CH_2O)_m(CH_2CH_2O)_nH,$$

wherein R is selected from the group consisting of alkyl of from 8 to about 20 carbon atoms and



wherein R_a is branched or linear alkyl of from 6 to about 18 carbon atoms, wherein m is an integer of from 1 to about 20 and n is an integer of from 2 to about 20, and

(b) about 0.03 to about 5 weight percent of a surfactant selected from the group consisting of an anionic sulfonate and an anionic sulfate surfactant,

(B) forcing the said fluid through the formation, and

(C) recovering hydrocarbons through the production well.

4,288,335

NOVEL METALLIC DITHIOPHOSPHATES AND THEIR USE AS ADDITIVES FOR LUBRICATING OILS

Georges Rivier, Bron, France, assignor to Orogil, Courbevoie, France

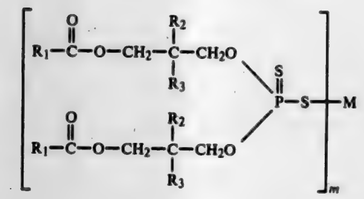
Filed Mar. 4, 1980, Ser. No. 127,049

Claims priority, application France, Mar. 9, 1979, 79 06058

Int. Cl.³ C10M *1/48*; C07F *3/06*

U.S. Cl. 252—32.7 E **37 Claims**

1. A metallic dithiophosphate having the formula:



in which:

R_1 represents:

(a) a linear or branched alkyl radical containing from about 1 to 24 carbon atoms;

(b) a linear or branched alkenyl radical containing from about 2 to 24 carbon atoms;

(c) a saturated or unsaturated cycloaliphatic or polycycloaliphatic radical containing from about 3 to 20 carbon atoms;

(d) an aryl radical containing from 6 to 14 carbon atoms;

(e) a heterocyclic radical containing one or more heteroelements selected from among nitrogen, sulfur and oxygen;

R_2 and R_3 are alkyl radicals containing from about 1 to 12 carbon atoms;

m represents the valence of the metal M;

M represents a metal of groups IIB, IIIB, IVB, or VIII of the Periodic System of the Elements.

4,288,336

PROCESS FOR PREPARING OVERBASED ALKALINE EARTH METAL SULFONATES

Garth M. Stanton, San Anselmo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 28, 1980, Ser. No. 182,158

Int. Cl.³ C10M *1/40, 1/22, 3/16*

U.S. Cl. 252—33 **8 Claims**

1. In a process for the preparation of an overbased alkaline earth metal sulfonate in which a mixture of a hydrocarbyl sulfonic acid or neutral sulfonate in an organic solvent comprising a mineral oil, is overbased with an alkaline earth metal base, the improvement comprising carrying out said overbasing in the presence of a solution of a sugar.

4,288,337

LIGHTWEIGHT MATERIALS HAVING A HIGH DIELECTRIC CONSTANT AND THEIR METHOD OF MANUFACTURE

Hiroshi Ota, Tokyo; Noboru Sakuma, Kamakura; Takeki Takarabe, and Isao Takiguchi, both of Tokyo, all of Japan, assignors to Tokyo Keiki Company Limited, Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,690

Claims priority, application Japan, May 2, 1977, 52-50958

Int. Cl.³ H01B *3/02*

U.S. Cl. 252—512 **12 Claims**

1. A mixed dielectric obtained by mixing the expanded particles selected from the group consisting of expanded polystyrols, expanded polyethylenes, expanded polyurethanes, glass balloons and silica balloons, with metal-coated particles consisting of said expanded particles whose surfaces have been coated with a thin film selected from the group of chromium, aluminum, copper, nickel, gold, silver and magnesium in proper proportions to obtain a desired dielectric constant and then forming the same to a desired shape by the use of binder.

4,288,338

STATIC SOLAR HEAT STORAGE COMPOSITION

Hugh J. Phillips, 2510 N. 156th St., Omaha, Nebr. 68116

Continuation-in-part of Ser. No. 39,312, May 16, 1979, abandoned. This application Mar. 17, 1980, Ser. No. 131,067

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—70 **10 Claims**

1. A composition for the storage of heat energy utilizing the heat of fusion of the composition, said composition comprising a salt-hydrate having a heat of fusion of more than about 50 BTU per pound, a nucleating agent and a porous solid selected from the group consisting of calcium sulfate hemihydrate and soluble calcium sulfate anhydride at a level from about 15 to about 75 percent by weight based on the weight of the salt portion of said salt-hydrate.

4,288,339

SPRAY CLEANER COMPOSITION FOR THE SPOT TREATMENT OF TEXTILES BEFORE WASHING

Heinz-Manfred Wilsberg, Monheim-Baumberg, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,521

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1979, 2939810

Int. Cl.³ C11D *1/68, 1/825, 3/44, 17/08*

U.S. Cl. 252—90 **7 Claims**

1. A pressurized aerosol spray cleaner, for the spot treatment of textiles before washing, comprising a pressurized container

containing from 2 to 3.6 parts by weight of carbon dioxide as propellant and from 96.4 to 98 parts by weight of a spray cleaner composition consisting essentially of, without propellant,

(a) from 6% to 16% by weight of ethoxylated C_6–C_{10} alcohols selected from the group consisting of alkanols and alkenols, having an average of from 4 to 8 ethylene glycol ether groups, wherein the content of saturated C_8-alkanol is at least 50% by weight,

(b) from 6% to 10% by weight of ethoxylated C_{12}–C_{18} alcohols selected from the group consisting of alkanols and alkenols, having an average of from 2 to 4 ethylene glycol ether groups, wherein the content of C_{16}–C_{18} alkanols is not more than 50% by weight,

(c) from 6% to 10% by weight of ethoxylated C_{16}–C_{18} alcohols selected from the group consisting of alkanols and alkenols, having an average of from 10 to 15 ethylene glycol ether groups,

(d) from 40% to 45% by weight of aliphatic hydrocarbons having a boiling range of from 205° to 245° C., and

(e) from 10% to 35% by weight of at least one chlorohydrocarbon selected from the group consisting of methylene chloride, ethylene chloride, 1,1,1-trichloroethane and perchloroethane;

with the proviso that components (a), (b) and (c) amount to from 20% to 35% by weight of said composition and components (d) and (e) amount to from 65% to 80% by weight of said composition.

7. A method of spot treatment of spot-soiled textiles consisting essentially of spraying said spots of soil with an effective amount of the spray cleaner of claim 1, washing said spot-soiled textiles in water with a conventional detergent composition, rinsing said washed textiles, and recovering washed textiles free of spots of soil.

4,288,340

GRANULATED COMPOSITION COMPRISING A POLYMER PHOSPHATE AND AN ALKALI METAL ALUMINUM SILICATE, PROCESS OF MAKING AND METHOD OF USING SAME

Juergen Dankworth, Bensheim; Helmut Hartenstein, Ruelzheim, and Ludwig Hertling, Biblis, all of Fed. Rep. of Germany, assignors to Joh. A. Benckiser GmbH, Ludwigshafen am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 892,209, Mar. 31, 1978, Pat. No. 4,171,277. This application Oct. 2, 1978, Ser. No. 947,643

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744773

The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.

Int. Cl.³ C01B *33/28;* C02B *1/42;* C11D *3/12, 11/00*

U.S. Cl. 252—99 **13 Claims**

1. A process of producing an agglomerated composition comprising granulating a pulverulent mixture comprising an ion-exchanging alkali metal aluminum silicate and a polymer phosphate comprising from 5 to 100 weight percent highly condensed polymer phosphates of the formula:

$$Me^{l}{}_{(n+2)}P_nO_{(3n+1)}$$

wherein Me represents an alkali metal and n is an integer from 4 to about 50 and from 95 to 0 weight percent alkali tripolyphosphate, by spraying said mixture with water in a spray mixer or a rotary tubular mixer, the weight ratio of polymer phosphate to alkali metal aluminum silicate in said mixture being from 1:20 to 20:1.

2. The process of claim 1, wherein said pulverulent mixture further comprises an effective amount of at least one of the following additives: anionic surfactants, active oxygen-containing compounds, optical brighteners, alkali metal metasilicates, alkali metal disilicates, sodium carbonates, active chlorine-containing organic compounds, foam-inhibiting agents, corrosion-inhibiting agents and mixtures thereof.

4,288,341

DETERGENT PRODUCT CONTAINING DEODORANT COMPOSITIONS

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 15, 1978, Ser. No. 933,943

Claims priority, application United Kingdom, Mar. 20, 1978, 10969/78; May 16, 1978, 19841/78

Int. Cl.³ C11D *9/44, 9/50*

U.S. Cl. 252—107 **16 Claims**

1. A deodorant toilet soap bar comprising:

(i) from 0.5 to 99.9% by weight of a soap mixture;

(ii) from 0 to 15% by weight of C_6 to C_{18} straight chain fatty acids; and

(iii) from 0.1 to 10% by weight of a deodorant composition comprising from 45 to 100% by weight of deodorant active components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances
Class 2: essential oils, extracts, resins and synthetic oils
Class 3: aldehydes and ketones
Class 4: polycyclic compounds
Class 5: esters
Class 6: alcohols

provided that where a component can be classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of Class 1,Class 2 and Class 4;

(b) the deodorant composition contains components from at least 4 of the 6 classes, and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b), said deodorant composition having a deodorant value of from 0.50 to 3.5 as measured by the Deodorant Value Test.

4,288,342

INORGANIC WATER-SOFTENING BEAD

Joseph E. Wagner, III, Newark, Del., and Lloyd E. Williams, Bel Air, Md., assignors to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 883,006, Mar. 3, 1978, abandoned. This application Jun. 21, 1979, Ser. No. 50,938

Int. Cl.³ C02F *1/42;* C11D *3/12, 7/20, 11/02*

U.S. Cl. 252—140 **8 Claims**

1. A spray dried inorganic water-softening bead consisting of:

(a) at least 66% by weight of sodium aluminosilicate on an anhydrous basis having a silica to aluminum oxide ratio of between 2:1 and 4:1 and a sodium oxide to aluminum oxide ratio of between 0.8:1 and 1.2:1;

(b) from 1 to 20% by weight of sodium silicate with a silica to sodium oxide ratio of between 1:1 and 3.3:1;

(c) from 1 to 20% by weight of a solubilizing agent selected from the group consisting of soluble sodium phosphates, sodium carbonates, sodium bicarbonates, sodium tetraborates and sodium sulfate; and

(d) the remainder being water.

4,288,343

METHOD FOR INCREASING SHELF-LIFE OF A SERUM BILIRUBIN REFERENCE COMPOSITION AND COMPOSITION PRODUCED THEREBY

Allan L. Louderback, Temple City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 925,484, Jul. 17, 1978, Pat. No. 4,201,694. This application Mar. 22, 1979, Ser. No. 22,567

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ G01N *33/48;* C09K *3/00*

U.S. Cl. 252—408 **14 Claims**

1. An improved blood serum reference composition of the type comprising blood serum having a bilirubin constituent of known value, characterized in that said composition possesses a pH of from about 8.2 to about 9.2 and further comprises:

(a) a sulfhydryl compound in an amount sufficient to further enhance the stability of bilirubin and

(b) a chelating agent in an amount sufficient to bind the metals present in said blood serum.

7. An improved bilirubin reference composition comprising in its non-biological component from about 60 to about 80 weight percent water, from about 20 to about 40 weight percent of at least one alkylene polyol having from 2 to 5 carbon atoms, the remainder being bilirubin and, optionally, other natural biological materials selected from a group consisting of blood serum, enzymes, metabolites, electrolytes, and hormones, characterized in that said composition possesses a pH of from about 8.2 to about 9.2 and further comprises:

(a) a sulfhydryl compound in an amount sufficient to further enhance the stability of bilirubin and

(b) a chelating agent in an amount sufficient to bind the metals present in said blood serum.

4,288,344

STABLE DIAZONIUM SALT GENERATOR FOR IMPROVED MARIJUANA ANALYSIS

Andre Reiss, 147-47 Village Rd., Jamaica, N.Y. 11435

Continuation-in-part of Ser. No. 744,288, Nov. 22, 1976, abandoned, and Ser. No. 903,750, May 8, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 55,616

Int. Cl.³ G01N *21/06, 31/22;* C09K *3/00*

U.S. Cl. 252—408 **2 Claims**

1. A Composition of Matter utilized as a Diazonium Salt Generator comprising Methyl Cellosolve, saturated with Zirconium Oxychloride and Sodium Cobaltinitrite.

2. A Composition of Matter used as a reagent in a pre-packaged test kit for Marijuana detection comprising Fast Blue BB Base dissolved in a diazotizing solution of Methyl Cellosolve saturated with Zirconium Oxychloride and Sodium Cobaltinitrite; contact of said reagent with Marijuana plant Phenols producing a characteristic reddish dye color when developed by an equal volume of a second aqueous alkaline solution.

4,288,345

PLATINUM COMPLEX

Bruce A. Ashby, Schenectady, and Frank J. Modic, Scotia, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

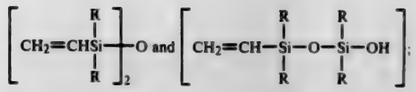
Filed Feb. 6, 1980, Ser. No. 119,014

Int. Cl.³ C07F *15/00;* B01J *31/12*

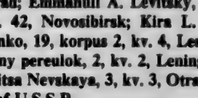
U.S. Cl. 252—431 R **10 Claims**

1. A platinum-siloxane complex catalyst, substantially free of inhibitory impurities and detectable inorganic halogen, and consisting essentially of

(i) one gram-atom of chemically combined platinum and one mole each of an organosiloxane of the formula



(ii) one gram-atom of chemically combined platinum and two moles of an organosiloxane of the formula



(iii) a combination of (i) and (ii); wherein R is free of aliphatic unsaturation and is selected from alkyl radicals, cycloalkyl radicals and phenyl radicals.

4,288,346

CATALYST FOR CATALYTIC HEAT EXCHANGE

James B. Hunter, Newtown Square, and George McGuire, West Chester, both of Pa., assignors to Johnson Matthey Inc., Malvern, Pa.

Continuation of Ser. No. 925,862, Jul. 18, 1978, Pat. No. 4,214,867. This application Feb. 7, 1980, Ser. No. 119,315

Int. Cl.³ B01J *21/04, 23/64, 27/18, 35/04*

U.S. Cl. 252—437 **4 Claims**

1. A catalyst consisting essentially of a heat conductive metal screen membrane having two sides, the membrane being coated on both sides with alumina cement so as to fill openings in the screen and make the screen gas impervious, the alumina cement coating on at least one side having a catalytically active material thereon comprising one or more platinum group metals and the alumina cement coating being derived from an aqueous dispersion of aluminum metal powder, chromium salt and aluminum phosphate binder.

4,288,347

NOVEL CATALYST FOR DEALKYLATING ALKYL BENZENES AND FRACTIONS OF AROMATIZED BENZINES BY CONVERSION WITH STEAM

Georgy L. Rabinovich, ulitsa Antonova-Ovseenko, 19, korpus 2, kv. 104; Gdal N. Maslyansky, Moskovsky prospekt, 189, kv. 64; Ljubov M. Birjukova, Zhdanovskaya naberezhnaya, 9, kv. 2, all of Leningrad; Emmanuil A. Levitsky, ulitsa Akademicheskaya, 6, kv. 42, Novosibirsk; Kira L. Volkova, ulitsa Antonova-Ovseenko, 19, korpus 2, kv. 4, Leningrad; Zoya P. Lukina, Manezhny pereulok, 2, kv. 2, Leningrad, and Viktor N. Mozhaiko, ulitsa Nevskaya, 3, kv. 3, Otradnoe Leningradskoi oblasti, all of U.S.S.R.

Filed Jun. 18, 1979, Ser. No. 49,722

Int. Cl.³ B01J *27/02, 23/14, 23/16, 23/62*

U.S. Cl. 252—439 **12 Claims**

1. A catalyst for dealkylating alkyl benzenes and fractions of aromatized benzines by means of conversion with steam, consisting essentially of elements selected from the group consisting of rhodium or rhodium mixed with another metal from Group VIII of the Periodic Table in an amount of 0.01 to 5 wt.%; and at least one element selected from the group consisting of sulfur, selenium and lead in an amount of 0.003 to 3 wt.%; and at least one element selected from the group consisting of chromium, copper, and vanadium in an amount of 0.01 to 5 wt.%; and a carrier.

4,288,348

SEPARATELY SUPPORTED POLYMETALLIC REFORMING CATALYST

Hans J. Schoennagel, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 112,756, Jan. 17, 1980, and Ser. No. 76,047, Sep. 17, 1979, which is a continuation-in-part of Ser. No. 934,143, Aug. 16, 1978, abandoned, said Ser. No. 112,756, is a continuation of Ser. No. 934,143, , abandoned. This application Feb. 13, 1980, Ser. No. 120,956

Int. Cl.³ B01J *27/08, 27/10, 23/64, 21/04*

U.S. Cl. 252—441 **11 Claims**

1. A catalyst composition made up of a mixture of two components one component comprising a minor proportion of platinum and rhenium on a support and the second component comprising a minor proportion of iridium on a separate support.

4,288,349

PERFUME COMPOSITIONS CONTAINING 3,3-DIMETHYLBICYCLO-[2,2,1]-HEPTANE-2-CARBOXYLIC ACID AS A PERFUME

Harmannus Boelens, Huizen, and Roelof Ter Heide, Bussum, both of Netherlands, assignors to Naarden International N.V., Naarden-Bussum, Netherlands

Filed Nov. 5, 1979, Ser. No. 91,188

Claims priority, application Netherlands, Nov. 3, 1978, 7810966

Int. Cl.³ A23L *1/226*

U.S. Cl. 252—522 R **6 Claims**

1. A perfume composition containing 3,3,-dimethylbicyclo-[2,2,1]-heptane-2-carboxylic acid as a fragrance to impart an acidic and somewhat resinous odor tending to cistus and olibanum.

4,288,350

PERFUME COMPOSITIONS CONTAINING DIALKYL DELTA-LACTONES

Kees N. Nieuwland, Amersfoort, and Dirk K. Kettenes, Putten, both of Netherlands, assignors to Polak's Frutal Works B.V., Amersfoort, Netherlands

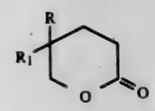
Continuation of Ser. No. 858,502, Dec. 7, 1977, abandoned. This application Mar. 26, 1980, Ser. No. 134,010

Claims priority, application United Kingdom, Dec. 23, 1976, 53707/76

Int. Cl.³ A61K *7/46*; C11B *9/00*

U.S. Cl. 252—522 R **7 Claims**

1. A fragrance composition comprising, in combination with other olfactorily active materials, an odor-modifying amount of a substitutedδ-valerolactone having the structural formula



where R and R_1 are the same or different alkyl or alkenyl groups.

4,288,351

WATER REDUCIBLE ALKYD RESIN COATING COMPOSITION

Lester I. Miller, Troy, Mich., and Thomas J. Smearing, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 20,984, Mar. 16, 1979, abandoned. This application May 27, 1980, Ser. No. 153,205

Int. Cl.³ C09D *3/52, 3/66, 5/02*

U.S. Cl. 260—21 **20 Claims**

1. A coating composition comprising about 40–90% by weight of a film forming binder and about 10–60% by weight of a water soluble organic solvent and pigments in a pigment to binder weight ratio of about 1:100 to 300:100; wherein the binder consists essentially of about

(1) 60–90% by weight, based on the weight of the binder, of an alkyd resin consisting essentially of the esterification product of soya oil fatty acid, isophthalic acid, trimellitic acid or its anhydride and trimethylol propane having an acid number of about 20–100 and a weight average molecular weight of about 800–15,000 determined by gel permeation chromatography;

(2) 0.5–15% by weight, based on the weight of the binder, of an alkylated melamine formaldehyde resin;

(3) 1–20% by weight, based on the weight of the binder, of an acrylic dispersing resin comprising styrene, an alkyl methacrylate, an alkyl acrylate and an ethylenically unsaturated carboxylic acid; and

(4) 0.5–5% by weight, based on the weight of the binder, of an organo metallic drier.

4,288,352

ELECTRICALLY CONDUCTIVE POLYMERIC COMPOSITIONS

Robert A. Weiss, Summit, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 26, 1979, Ser. No. 23,632

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—23.5 A **17 Claims**

1. A polymeric composition produced by the high shear intensity mixing of a mixture of:

(a) a neutralized sulfonated polymer having about 5 to about 100 meq. neutralized sulfonate groups per 100 grams of said neutralized sulfonate polymer, said neutralized sulfonated polymer being formed from a unsulfonated polymer having a Mooney viscosity (M.L. 1+8, 212° F.) of about 10 to about 60;

(b) about 10 to 20 parts by weight of discontinuous and uniaxially oriented carbon or graphite fibers per 100 parts by weight of said neutralized sulfonated polymer, said fibers having a length of about 0.125 inches; and

(c) at least about 3 parts by weight of a preferential ionic plasticizer based on 100 parts by weight of said neutralized polymer.

4,288,353

CARBON BEARING CONTACT PASTE

Wolf-Dietrich Eckel, Frankfurt, and Eckhard Schulz, Bad Homburg, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland and Sigri Elektrographit GmbH, Meitingen, Fed. Rep. of Germany

Filed Oct. 8, 1980, Ser. No. 194,965

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942469

Int. Cl.³ C08L *95/00*; C09J *3/30*

U.S. Cl. 260—28 R **10 Claims**

1. Contact paste, which can be cold worked and contains carbonizable binding agents and powdered solids, which comprises as binder a mixture of epoxy resin and tar, as solids a mixture of grahite and metal powders, and an acid-free hardener.

4,288,354

CONCRETE JOINT SEALANT

Kiyozo Shiomoto, Hiroshima, Japan, assignor to AOI Chemical Inc., Shiroshima, Japan

Continuation-in-part of Ser. No. 16,179, Feb. 28, 1979. This application Apr. 17, 1980, Ser. No. 140,460

Claims priority, application Japan, Aug. 30, 1978, 53-105904; United Kingdom, Mar. 2, 1979, 07412/79; Taiwan, Mar. 24, 1979, 6811135

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—28.5 AS **7 Claims**

1. A concrete joint sealant composed of 10–40 weight % coal tar mainly consisting of a distillate boiling at up to 350° C.; 2–25 weight % vinyl chloride resin; 5–15 weight % coal pitch; and 20–40 weight % of a mixture of dioctyl phthalate and dioctyl adipate as plasticizers.

4,288,355

SURGICAL CEMENT COMPOSITION

Harvey L. Anderson, Dellwood, and Ronald M. Randklev, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 22, 1978, Ser. No. 908,576

Int. Cl.³ C08K *3/22*

U.S. Cl. 260—29.6 M **10 Claims**

1. A process for the preparation of a surgical cement which comprises forming a mixture of an aqueous suspension of metal oxide powder, said powder being about 30 to 60 percent by volume of said suspension, and an aqueous solution of polycarboxylic acid, said acid being about 55 to about 80 percent by weight of said solution, and wherein the weight ratio of said suspension of metal oxide powder to said aqueous polycarboxylic acid is 0.5/1 to 8/1.

4,288,356

POLYSILOXANE EMULSION ELASTOMERS REINFORCED WITH EMULSIFIED ORGANO-SILICONE COPOLYMERS

David J. Huebner, and Donald R. Weyenberg, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 30, 1980, Ser. No. 192,397

Int. Cl.³ C08L *83/06*

U.S. Cl. 260—29.6 NR **12 Claims**

1. A method of blending aqueous emulsions to provide an elastomeric product upon devolatization comprising:

(I) mixing

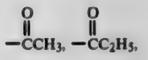
(A) an aqueous emulsion of an anionic emulsion polymerized hydroxyl endblocked polydiorganosiloxane, said hydroxyl endblocked polydiorganosiloxane having a weight average molecular weight of at least 5000, the organo groups being selected from the group consisting of monovalent hydrocarbon radicals containing less than seven carbon atoms per radical and 2-(perfluoroalkyl)ethyl radicals containing less than seven carbon atoms per radical, and

(B) an aqueous emulsion of an emulsion polymerized copolymer consisting essentially of free radical polymerized monomers selected from at least one unsaturated organic monomer and at least one unsaturated organosilicon monomer selected from the group consisting any unsaturated silane, siloxane, or silazane that will both copolymerize with the unsaturated organic monomer or mixture of unsaturated organic monomers used and will form ≡SiOH under the conditions of the emulsion polymerization method used to produce the copolymer, said copolymer being produced from 1 to 7 weight percent unsaturated organosilicon monomer and 93 to 99 weight percent unsaturated organic monomer, to form a mixture of emulsions,

(II) adjusting the mixture to a pH of 7 or greater,

(III) adding with agitation an amount of aqueous emulsion, (C), of an alkyl tin salt to provide from 0.1 to 2 parts by weight of alkyl tin salt for each 100 parts by weight of polydiorganosiloxane, and thereafter

(IV) adding with agitation an amount of silane cross-linking agent, (D), to obtain crosslinking, said silane crosslinking agent having the general formula $A_mSi(OR)_{4-m}$ wherein A is a member selected from the group consisting of a hydrogen atom, monovalent hydrocarbon radicals containing 1 to 6 inclusive carbon atoms and monovalent halohydrocarbon radicals containing 1 to 6 inclusive carbon atoms, R is a member selected from the group consisting of a hydrogen atom, an alkyl group containing 1 to 4 inclusive carbon atoms,



$-CH_2CH_2OH$, $-CH_2CH_2OCH_3$, and $-CH_2CH_2OC_2H_5$ group and m is 0 or 1, there being for each 100 parts by weight of polydiorganosiloxane in (A) sufficient (B) to provide from 5 to 60 parts by weight of emulsion polymerized copolymer.

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COATING COMPOSITION AND METHOD FOR THE IMPROVEMENT OF SURFACE HARDNESS OF ARTICLE BY THE USE THEREOF

Hiroyuki Kanazawa, and Mikio Futagami, both of Nihama, Japan, assignors to Sumitomo Chemical Co. Ltd. and Nippon Sheet Glass, both of Osaka, Japan

Division of Ser. No. 902,736, May 3, 1978, Pat. No. 4,190,699. This application Aug. 31, 1979, Ser. No. 71,585

Claims priority, application Japan, May 10, 1977, 52-53946

Int. Cl.³ C08K *5/54*

U.S. Cl. 260—31.2 N **6 Claims**

1. A coating composition consisting essentially of:

(A) 100 parts by weight of partially hydrolyzed silicon compounds consisting essentially of co-partial hydrolyzates of a tetraalkoxysilane of the formula $(Si(OR^1)_4$ wherein R^1 is an alkyl having 1 to 4 carbon atoms and an organic silicon compound of the formula: $R_n^2Si(OR^3)_{4-n}$ wherein n is an integer of from 1 to 3, R^2 is a hydrocarbon group having 1 to 6 carbon atoms and R^3 is an alkyl having 1 to 4 carbon atoms and/or a mixture of partial hydrolyzates of each tetraalkoxysilane and organic silicon compound, said partially hydrolyzed silicon compounds containing said partially hydrolyzed tetraalkoxysilane, calculated as SiO_2, and said organic partially hydrolyzed silicon compound, calculated as $R_n^2SiO_m$ wherein $m=(4-n)/2$, in the ratio of 5/95 to 95/5 by weight, and the weight (100 parts by weight) of said partially hydrolyzed silicon compounds being also calculated as SiO_2 for said partially hydrolyzed tetraalkoxysilane and as $R_n^2SiO_m$ for said partially hydrolyzed organic silicon compound,

(B) 10 to 400 parts by weight of a monomer or oligomer having two or more hydroxy groups, and

(C) 0 to 300 parts by weight of an etherified methylolmelamine, wherein said etherified methylolmelamine is contained in an amount of 0.5 to 1.5 gram equivalent per 1 gram equivalent of the monomer or oligomer, said composition being dissolved in a solvent.

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BLENDS OF PROPYLENE/1-BUTENE OR 1-PENTENE/HIGHER α-OLEFIN COPOLYMERS, COMPATIBLE TACKIFYING RESINS AND PLASTICIZING OILS USEFUL AS HOT-MELT, PRESSURE-SENSITIVE ADHESIVES

Jimmy R. Trotter; Richard L. McConnell, and Frederick B. Joyner, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,419

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.³ C08K *5/10*; C08L *23/12*

U.S. Cl. 260—31.8 M **16 Claims**

1. An adhesive composition capable of being used as a hot-melt, pressure-sensitive adhesive comprising a blend of

(1) about 98 to 25 weight percent of an olefin copolymer containing 10–65 mole % propylene, 15–75 mole % of either 1-butene or 1-pentene and 3 to 14 mole percent of at least one higher linear alpha-olefin of 6 to 10 carbon atoms, said copolymer having a melt viscosity of 10,000 to 1,000,000 centipoise at 190° C.,

(2) 1 to 60 weight percent of at least one compatible tackifying resin, and

(3) 1 to 25 weight percent plasticizing oil.

4,288,359

EPOXY IMIDE COMPOSITIONS

William F. Graham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

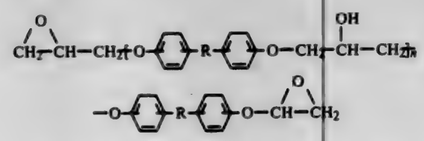
Continuation-in-part of Ser. No. 848,638, Nov. 4, 1977, abandoned. This application Apr. 5, 1979, Ser. No. 27,444

Int. Cl.³ C08L *63/00*

U.S. Cl. 260—32.8 EP **11 Claims**

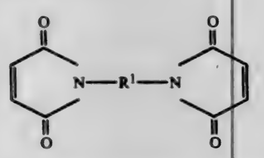
1. A composition comprising 20–80% by weight of a reaction product and 20–80% of a nonamide solvent for the reaction product having a dispersion solubility parameter of 7.2–10.5, a polar solubility parameter of 3–9.5 and a hydrogen bonding solubility parameter of 0–5.5; wherein the reaction product consists essentially of

(a) an epoxy resin of the formula



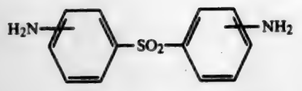
wherein R is an alkylene group of 1–4 carbon atoms, n is a positive integer; and the resin having an epoxide equivalent of about 150–1000; and

(b) a bismaleimide of the formula



where R^1 is an aromatic, aliphatic or cycloaliphatic group and wherein (a) and (b) are reacted at 115°–135° C. for about 0.5–2 hours and subsequently contacting the product of (a) and (b) with

(c) a diamine of the formula



wherein the molar ratio of bismaleimide to diamine is about 0.6 to 0.8.

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FLAME RESISTANT SILICONE RUBBER COMPOSITIONS AND METHODS

William J. Bobear, Latham, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,795

Int. Cl.³ C08L *83/04*

U.S. Cl. 260—37 SB **16 Claims**

1. A composition curable to a silicone rubber exhibiting improved flame retardancy and tear strength comprising:

(A) 100 parts by weight of a base compound comprising a polydiorganosiloxane gum or blend of polydiorganosiloxane gums having a viscosity of 1,000,000 to 200,000,000 centipoise at 25° C., and having an average unit formula of $R_aSIO_{(4-a)/2}$, wherein R is a monovalent substituted or unsubstituted hydrocarbon radical selected from the class consisting of methyl, vinyl and phenyl radicals, a is approximately, 1.98 to 2.05, and wherein approximately, 0 to 5.0 mole percent of the total organic groups are vinyl radicals; (B) 0.01 to 250 ppm platinum; (C) 1.0 to 20 parts by weight hydrated alumina, and (D) 0.001 to 2.0 parts by weight magnesium oxide.

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SUBSTITUTED OXAZOLINES AS STABILIZERS

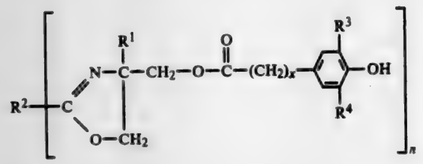
Mary J. Zestermann, Cincinnati, and John F. Hussar, Loveland, both of Ohio, assignors to Carstab Corporation, Reading, Ohio

Division of Ser. No. 952,492, Oct. 18, 1978, Pat. No. 4,205,176. This application Nov. 9, 1979, Ser. No. 93,030

Int. Cl.³ C08K *5/35*

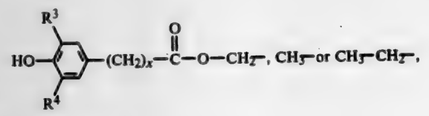
U.S. Cl. 260—45.8 NZ **15 Claims**

1. A stabilized composition resistant to oxidative degradation comprising (a) an organic substance normally susceptible to oxidative deterioration and (b) a stabilizingly effective amount of an oxazoline compound which has the following formula:

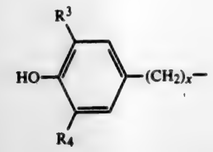


wherein

R^1 is



R^2 is, when n is 1,



or a monovalent hydrocarbyl group having from 1 to 23 carbon atoms,

R^2 is, when n is 2, an alkylene group having from 1 to 8 carbon atoms,

R^3 and R^4 are the same or different monovalent hydrocarbyl groups having from 1 to 8 carbon atoms,

n is 1 or 2 and

x is an integer of from 1 to 4.

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MONOAZO PIGMENTS CONTAINING A QUINAZO LINONYLACETOACETANILIDE COUPLING COMPONENT

Meinhard Rolf; Rütger Neeff, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

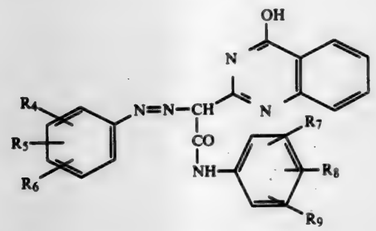
Filed May 29, 1979, Ser. No. 43,494

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830555

Int. Cl.³ C09B *29/01, 29/32*; D06P *1/642, 5/06*

U.S. Cl. 260—154 **4 Claims**

1. An azo colorant of the formula



wherein

R_4 represents hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4 alkoxy, nitro, cyano, carboxyl, C_1–C_4-alkylsulphonyl, trifluoromethyl, C_1–C_4-alkylcarbonylamino, benzoylamino which is unsubstituted or substituted by C_1–C_4 alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, C_1–C_4-alkoxycarbonyl, carbamoyl or sulphamoyl which are unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, phenyl or benzyl, said phenyl and benzyl being unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine and nitro, C_1–C_4-alkylsulphonylamino, and phenylsulphonylamino which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro,

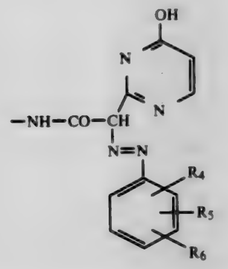
R_5 represents hydrogen, halogen, C_1–C_4-alkyl, cyano, C_1–C_4-alkoxy, nitro or trifluoromethyl,

R_6 represents hydrogen, chlorine, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_7 represents hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, nitro, cyano, C_1–C_4-alkylsulphonyl, trifluoromethyl, C_1–C_4-alkylcarbonylamino, benzoylamino which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, C_1–C_4-alkoxycarbonyl, or carbamoyl or sulphamoyl which are unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, phenyl or benzyl, said phenyl and said benzyl each being unsubstituted or said phenyl and said benzyl is substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine and nitro,

R_8 represents hydrogen, halogen, C_1–C_4-alkyl, cyano, C_1–C_4-alkoxy, nitro or trifluoromethyl and

R_9 represents hydrogen, chlorine, C_1–C_4-alkyl, C_1–C_4-alkoxy, or a radical of the formula



wherein R_4, R_5 and R_6 have the above-mentioned meanings.

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NOVEL AZO DYES HAVING 2-AMINO-5-AMINOMETHYL-7-SULFO NAPHTHALENE COUPLING MOIETY

Rudolf Hurter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

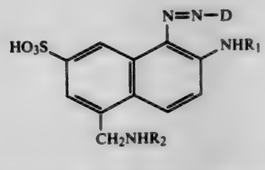
Filed Mar. 23, 1979, Ser. No. 23,514

Claims priority, application Switzerland, Apr. 3, 1978, 3537/78

Int. Cl.³ C09B *29/00, 63/00*

U.S. Cl. 260—155 **6 Claims**

1. Azo dyes of the formula



wherein D represents the radical of a diazo component, R_1 represents hydrogen, an alkyl radical of 1 to 8 carbon atoms or a phenyl radical, and R_2 represents hydrogen or an acyl radical.

4,288,364

FRAGMENTATION PROCEDURE FOR PREPARING 3-AMINO-AZETIDINONES

Karl Schaffner, Oberwil; Hansuli Wehrli, Reinach; Beat Müller, Reinach, and Riccardo Scartazzini, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

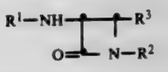
Filed May 15, 1979, Ser. No. 39,239

Claims priority, application Switzerland, May 18, 1978, 5393/78

Int. Cl.³ C07D *205/08, 120/00, 403/06*

U.S. Cl. 260—239 A **14 Claims**

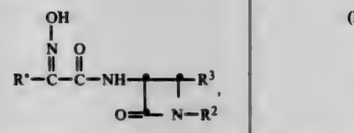
1. A method for the preparation of a 3-amino-2-oxo-azetidine compound of the formula



(I)

in which R^1 denotes hydrogen or a group of the formula $R_a{}^1$—O—C(=O)—, in which $R_a{}^1$ denotes lower alkyl, oxo-lower

alkyl, halogeno-lower alkyl, cyano-lower alkyl, cycloalkyl, phenyl, phenyl substituted by one to five halogen, one or two lower alkoxy, or one or two nitro, benzyl or diphenylmethyl which can be monosubstituted in the aromatic radical by halogen, lower alkoxy or nitro, R^2 denotes hydrogen, 1-carboxy-lower alkyl, 1-carboxy-1-phenylmethyl, in which the phenyl ring is unsubstituted or monosubstituted to trisubstituted by lower alkyl, halogen, nitro, amino, hydroxy, lower alkoxy, acetoxy, and/or carbamoyloxy, 1-carboxy-1-heterocyclylmethyl, in which heterocyclyl is thienyl, furyl, thiadiazolyl monosubstituted by lower alkyl, or benzthiazolyl, 1-amino-lower alkyl, in which lower alkyl contains one to four C atoms, 1-hydroxy-lower alkyl, in which lower alky contains one to four C atoms and hydroxyl can be replaced by lower alkoxy, acetoxy or carbamoyloxy, 1-carboxy-lower alkenyl, in which lower alkenyl contains two or four C atoms and can be substituted by phenyl or phenylthio, in which groups R^2 the carboxyl group can be replaced by lower alkoxycarbonyl, pivaloyloxymethoxycarbonyl, halogeno-lower alkoxycarbonyl, benzyloxycarbonyl, 4-methoxybenzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, diphenylmethoxycarbonyl, 4,4'-dimethoxydiphenyl-methoxycarbonyl, cycloalkyloxycarbonyl, phenoxycarbonyl, 2- or 4- nitrophenoxycarbonyl, 4-methoxyphenyloxycarbonyl, halogenophenoxycarbonyl, aminocarbonyl, anilinocarbonyl, hydrazinocarbonyl or azidocarbonyl, and in which groups R^2 amino can be substituted by one or two lower alkyl, one acetyl, a group $R_1{}^a$—O—C(=O)—, 2-halogenoacetyl, benzyl, 4-methoxybenzyl, 2- or 4-nitrobenzyl, diphenylmethyl or phthaloyl, and in which groups R^2 hydroxyl can be substituted by lower alkyl, acetyl, carbamoyl, a group $R_1{}^a$—O—C(=O)—, 2-halogenoacetyl, benzyl, 4-methoxybenzyl, 2- or 4-nitrobenzyl or diphenylmethyl, and R^3 denotes hydrogen, hydroxymethyl, wherein hydroxy can be protected by a group $R_1{}^a$—O—C(=O)—, 2-halogenoacetyl, benzyl, 4-methoxybenzyl, 2- or 4-nitrobenzyl or diphenylmethyl, phenyl or 2-phenylvinyl, and a conventional salt of such compound containing a salt-forming group, and/or of a nitrile of the formula R°—CN, in which R° denotes ω-carboxyl-ω-amino-propoxyphenyl, wherein the ω-amino group can be protected by a group of the formula $R_1{}^a$—O—C(=O)— and carboxyl can be protected in esterified form by lower alkyl, lower alkanoyloxymethyl, 2,2,2-trichloroethyl, benzyl, 4-methoxybenzyl, 2- or 4-nitrophenyl or diphenylmethyl, and a conventional salt of such compound containing a salt-forming group, which comprises treating a 3-(2-hydroxyimino-acetylamino)-2-oxoazetidine compound of the formula



(II)

in which R_2 and R_3 are as defined above and R° denotes phenyl, hydroxyphenyl, lower alkoxyphenyl, lower alkenyloxyphenyl, aralkyloxyphenyl, lower alkoxycarbonyl-lower alkoxyphenyl, carboxy-lower alkoxyphenyl, ω-carboxy-ω-hydroxy-lower alkoxyphenyl, ω-carboxy or ω-lower alkoxycarbonyl-lower alkoxyphenyl, ω-amino-lower alkoxyphenyl, ω-carboxy-ω-amino-lower alkoxyphenyl, furyl, thienyl, thiazolyl, which heterocyclic radicals can be monosubstituted by hydroxy, halogen or amino, in which groups R° hydroxy and amino groups can be protected by a group $R_1{}^a$—O—C(=O)—, and carboxy can be protected in esterified form by lower alkyl, lower alkanoyloxymethyl, 2,2,2-trichloroethyl, benzyl, 4-methoxybenzyl, 2- or 4-nitrobenzyl or diphenylmethyl, or a conventional salt of such a compound containing a salt forming group, in an aqueous medium in the presence of a base, with a compound which is an anhydride or a mixed anhydride with a hydrogen halide of a carbonic acid half-ester of the formula $R_1{}^a$—O—C(=O)—OH, in which $R_1{}^a$ is as defined above, isolating a compound of the formula I, wherein R^1 is a group of the formula $R_a{}^1$—O—C(=O)—, and/or isolating a nitrile R°—CN, in which R° denotes ω-carboxyl-ω-aminopropoxyphenyl, wherein the ω-amino group can be protected by a group of the formula $R_1{}^a$—O—C(=O)— and carboxyl can be protected in esterified form by lower alkyl, lower alkanoyloxymethyl, 2,2,2-trichloroethyl, benzyl, 4-methoxybenzyl, 2- or 4-nitrophenyl, or diphenylmethyl and, if desired in a resulting compound liberating the protected hydroxy, amino and/or carboxy groups present by detaching the protective groups, or protecting in a conventional form free hydroxy, amino and/or carboxy groups present, and, when required, converting a resulting compound containing a salt-forming group to a conventional salt or converting a resulting salt to a free compound.

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PYRIDO DERIVATIVES

Robert W. Morrison, Jr.; William R. Mallory, and Virgil L. Styles, all of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

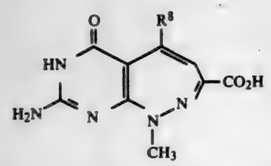
Division of Ser. No. 926,072, Jul. 19, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,406

Claims priority, application United Kingdom, Jul. 20, 1977, 30380/77

Int. Cl.³ C07D *487/04*; A61K *31/505*

U.S. Cl. 260—243.3 **6 Claims**

1. A compound of formula (XVIII)



(XVIII)

a tautomer or a salt thereof wherein R^8 is lower alkyl, pyridyl, phenyl or phenyl substituted by one or more hydroxy or lower alkoxy.

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METHOD OF PREPARATION OF 5,6-DEHYDROPENICILLINS

Luciano Re; Alberto Brant, both of Rome, and Luciano Bassignani, Passo Corese, all of Italy, assignors to Snamprogetti, S.p.A., Switzerland

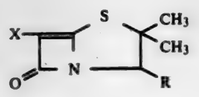
Division of Ser. No. 949,546, Oct. 10, 1978, abandoned, which is a division of Ser. No. 769,527, Feb. 17, 1977, Pat. No. 4,133,807. This application Jul. 19, 1979, Ser. No. 58,945

Claims priority, application Italy, Feb. 23, 1976, 20451 A/76

Int. Cl.³ C07D *499/00*

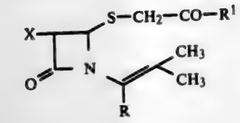
U.S. Cl. 260—245.2 R **7 Claims**

1. A method of preparing dehydropenicillins of the formula

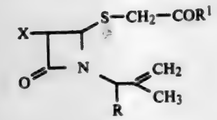


wherein X is an aminic group which may be substituted with at least one member selected from the group consisting of aralkyl and acyl and R is a carboxyl group or a salt, an amide, an ester, or thioester thereof comprising:

(a) irradiating a compound of the formula



or of the formula



wherein R^1 is selected from the group consisting of alkyl, aryl, and aralkyl and X and R are the same as defined above, in the presence of an inert gas and in an inert anhydrous oxygen-free solvent selected from aromatic solvents and acetonitrile at a temperature of from −10° C. to 40° C.; and

(b) treating said irradiated compound with triethylamine in the presence of a halogen-substituted aliphatic solvent or an aromatic solvent at a temperature of −10° C.+40° C.

4,288,367

2-CYANO-2-CARBOXY-3-AZABICYCLO[3.1.0]HEXANE, HYDRATES, ESTERS, AND SALTS THEREOF

Janet A. Day, and Robert J. G. Searle, both of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

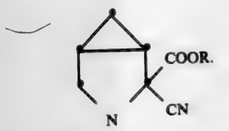
Filed Oct. 28, 1980, Ser. No. 201,106

Claims priority, application United Kingdom, Nov. 16, 1979, 39782/79

Int. Cl.³ A01N *43/38*; C07D *209/52*

U.S. Cl. 260—326.27 **1 Claim**

1. A member selected from the group consisting of compound of the formula



in which R is a hydrogen atom or alkyl of from 1 to 4 carbon atoms, the hydrates, and alkali metal salts of the acid, and the hydrochloride salts of the acid and esters.

4,288,368

DITHIOACYLPROLINE DERIVATIVES

Rudiger D. Haugwitz, Titusville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 30, 1979, Ser. No. 61,729

Int. Cl.³ C07D *207/16, 409/12*

U.S. Cl. 260—326.35 **2 Claims**

1. (S)-1-[2-Methyl-1-oxo-3-[(2-thienylthioxomethyl)-thio]-propyl]-L-proline.

2. (S)-1-[2-Methyl-1-oxo-3-[(1-thioxooctadecyl)thio]-propyl]-L-proline.

4,288,369

PRODUCTION OF CYCLIC ETHERS

Norman L. Holy, Bowling Green, Ky., and Theodore E. Nalesnik, Cincinnati, Ohio, assignors to Western Kentucky University, Bowling Green, Ky.

Continuation-in-part of Ser. No. 816,941, Jul. 19, 1977, abandoned. This application Aug. 31, 1979, Ser. No. 71,667

Int. Cl.³ C07D *307/08, 307/06, 309/04, 313/04*

U.S. Cl. 260—333 **18 Claims**

1. A process for the preparation of an unsubstituted cyclic ether which comprises reacting an unsubstituted alkanediol in which the hydroxyl groups are separated by a chain of at least four carbon atoms in the liquid phase, in a molecular oxygen gaseous atmosphere, at a temperature of from about 150° C. to 300° C. in the presence of a catalytic amount of a catalyst comprising about 0.45 to 0.71 grams of palladium in a palladium salt, about 0.30 to 1.2 grams of copper in a copper salt and about 0.30 to 1.1 grams of chloride ion, all per mole of alkanediol.

4,288,370

HALOGENOVINYL-SUBSTITUTED TETRA-HYDROFURAN-2-ONES

Hans-Georg Heine, Krefeld; Armin Hübner, Toenisvorst, and Willy Hartmann, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

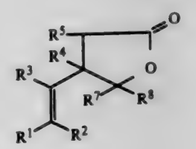
Division of Ser. No. 936,988, Aug. 25, 1978, Pat. No. 4,225,704. This application Oct. 30, 1979, Ser. No. 89,344

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740849

Int. Cl.³ C07D *307/32*

U.S. Cl. 260—343.6 **1 Claim**

1. A halogenovinyl-substituted tetrahydrofuran-2-one of the formula



in which

R^1 and R^2 each independently is hydrogen, chlorine, bromine, fluorine or alkyl or 1 to 4 carbon atoms,

R^3 is chlorine, bromine or fluorine,

R^4 is hydrogen or alkyl or 1 to 4 carbon atoms,

R^5 is hydrogen, chlorine, bromine or fluorine and

R^7 and R^8 each independently is methyl or ethyl or together are $—(CH_2)_3—$, $—(CH_2)_4—$ or $—(CH_2)_5—$.

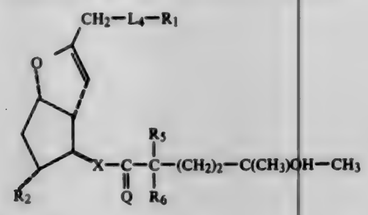
4,288,371

19-HYDROXY-19-METHYL-6,7-DIDEHYDRO-PGI$_1$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507. This application Mar. 3, 1980, Ser. No. 126,505
Int. Cl.^{3} C07D *307/935*
U.S. Cl. 260—346.22 6 Claims

1. A prostacyclin-type compound of the formula



wherein L_4 is
(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive, or
(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4,
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) $-COOR_3$,
(2) $-CH_2OH$,
(3) $-CH_2N(R_7)(R_8)$,
(4) $-CO-N(R_7)(R_8)$,
(5) $-CO-NH-SO_2-R_{15}$, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{16}$,
wherein —(Ph)— is phenylene and —(Ph) is phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$.

4,288,372

PRODUCTION OF MALEIC ANHYDRIDE

Graham J. Hutchings, and Raymond Higgins, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 906,251, May 15, 1978, Pat. No. 4,209,423. This application Dec. 4, 1979, Ser. No. 100,141
Claims priority, application United Kingdom, May 23, 1977, 21610/77; Jan. 30, 1978, 3686/78
Int. Cl.^{3} C07D *307/60*
U.S. Cl. 260—346.75 1 Claim

1. A process of oxidizing butane, a butene or a mixture of butane and a butene to maleic anhydride by contacting it in the vapor phase and in the presence of oxygen with a catalyst which consists essentially of a vanadium/phosphorous mixed oxide having a surface area greater than 10 m^2/g and lanthanum as a promoter.

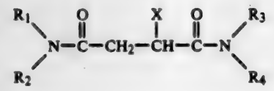
4,288,373

CERTAIN N,N'-BIS-TETRAHYDROFURYL-2-HALO-SUCCINAMIDES

Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 93,358, Nov. 13, 1979, which is a continuation of Ser. No. 960,379, Nov. 13, 1978, abandoned, which is a division of Ser. No. 821,688, Aug. 4, 1977, Pat. No. 4,143,070, which is a division of Ser. No. 546,234, Feb. 3, 1975, Pat. No. 4,056,524, which is a continuation-in-part of Ser. No. 459,438, Apr. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 410,641, Nov. 12, 1973, abandoned. This application May 19, 1980, Ser. No. 151,017
Int. Cl.^{3} C07D *307/22*
U.S. Cl. 260—347.3 3 Claims

1. A compound in which the formula is



wherein X is chlorine or bromine; R_1 and R_3 are each alkyl and R_2 and R_4 are each tetrahydrofurfuryl.

4,288,374

SYNTHESIS OF 3-BUTEN-1-OL, 3,4-DICHLOROBUTAN-1-OL AND 3-CHLOROTETRAHYDROFURAN

Edward N. Squire, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 74,097, Sep. 10, 1979. This application Jul. 28, 1980, Ser. No. 173,097
Int. Cl.^{3} C07C *29/16, 29/62;* C07D *307/18*
U.S. Cl. 260—347.91 5 Claims

1. A process for preparing 3-buten-1-ol from propylene and formaldehyde, the process comprising
reacting propylene and aqueous formaldehyde stabilized with alcohol in the presence of silica sand at a temperature of from 250°–350° C., and a pressure of from 50–800 atmospheres in the absence of oxygen at a ratio of propylene to formaldehyde of at least 1:1.

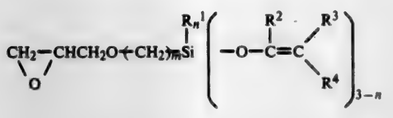
4,288,375

NOVEL ORGANOSILANE COMPOUNDS

Masatoshi Arai, and Koji Futatsumori, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1980, Ser. No. 162,534
Claims priority, application Japan, Jun. 29, 1979, 54-82451
Int. Cl.^{3} C07D *303/02*
U.S. Cl. 260—348.41 5 Claims

1. An organosilane compound represented by the general formula



in which
R^1 is selected from the class consisting of methyl, ethyl and phenyl groups,
R^2 is a methyl or an ethyl group,
R^3 and R^4 are each a hydrogen atom or a methyl group,
m is 3 or 5, and
n is zero or 1.

4,288,376

PROCESS FOR PREPARING HEXAFLUOROPROPENE OXIDE

Yohnosuke Ohsaka, Takatsuki, and Takashi Tohzuka, Settsu, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 18, 1980, Ser. No. 170,153
Claims priority, application Japan, Jul. 18, 1979, 54/91827
Int. Cl.^{3} C07D *301/08*
U.S. Cl. 260—348.23 3 Claims

1. A process for preparing hexafluoropropene oxide which comprises reacting hexafluoropropene with oxygen in the presence of at least one barium compound selected from the group consisting of barium oxide, barium hydroxide and inorganic barium salt as a catalyst at a temperature of from 100° to 350° C.

4,288,377

PROCESS FOR PURIFICATION OF WOOL GREASE

Norair S. Arutjunian, ulitsa Krasnaya, 143/1, kv. 35; Evgenia A. Arisheva, ulitsa Kotovskogo, 92, kv. 22, both of Krasnodar; Nikolai V. Rogachev, pereulok Sportivny, 17, and Lidia G. Vasilievna, ulitsa Matrosova, 153a, kv. 57, both of Nevinnomyssk Stavropolskogo kraya, all of U.S.S.R.

Filed Jun. 27, 1980, Ser. No. 163,739
Int. Cl.^{3} C11B *1/10;* C07J *9/00*
U.S. Cl. 260—397.25 4 Claims

1. A process for purification of wool grease comprising mixing the grease miscelle in a hydrocarbon solvent with an alcohol in a ratio of from 10:1 to 10:4, mixing an aqueous alkali solution with an alcohol in a ratio of water: alkali:alcohol of 60–75:2–5:20–35, neutralization of free fatty acids by dispersing said mixture of the miscelle with said alcohol in said aqueous-alcoholic alkali solution, followed by separation of the formed phases by settling.

4,288,378

METHOD OF PREPARING AN ENRICHED PEANUT OIL PEANUT BUTTER STABILIZER

Cornelis H. Japikse, and Irwin B. Simon, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 23, 1979, Ser. No. 41,668
Int. Cl.^{3} C11C *3/12;* A23D *5/00*
U.S. Cl. 260—409 9 Claims

1. A method of preparing an enriched, hydrogenated peanut-oil based peanut butter stabilizer comprising the steps of:
(a) randomly interesterifying (randomizing) a first mixture of from about 0% to about 70% hydrogenated peanut oil (hardstock) and from about 30% to about 100% unhydrogenated peanut oil;
(b) fractionally crystallizing from the randomly interesterified first mixture a second mixture of triglycerides having at least 10% long chain fatty acids having from 20 to 24 carbon atoms; and
(c) substantially completely hydrogenating said second mixture to an iodine value less than about 8 to form said enriched hydrogenated peanut oil-based peanut butter stabilizer.

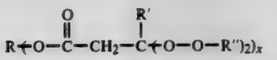
4,288,379

HYDROCARBON POLYL GEM-BIS(T-ALKYLPEROXY)ALKANOATES DERIVED FROM β-KETO-ACIDS

Duane B. Priddy, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 31, 1977, Ser. No. 802,216
Int. Cl.^{3} C07C *179/06*
U.S. Cl. 260—410.6 8 Claims

1. A hydrocarbon polyl gem-bis(t-alkylperoxy)alkanoate which has a one-hour half-life of at least about 130° C. and corresponds to the formula:



wherein R is an x-valent hydrocarbon whose chain length may be interrupted by one or more ether linkages;
R' is an aliphatic moiety of 1 to about 10 carbon atoms;
R'' is a tertiary hydrocarbon; and
x is an integer of at least 2.

4,288,380

HETERONUCLEAR-BRIDGED RHODIUM CLUSTERS

Ernst Billig; Jackie D. Jamerson, both of Charleston, W. Va., and Roy L. Pruett, New Providence, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,140
Int. Cl.^{3} C07F *15/00*
U.S. Cl. 260—429 R 18 Claims

1. A heteronuclear-bridged rhodium cluster compound having the generic formula

$$Rh_f(\mu\text{-}ER_2)_m(CO)_p(E'R'_3)_q$$

wherein E and E' each individually represent a Group VA element selected from the group consisting of phosphorus, arsenic or antimony; wherein R and R' each individually represent a monovalent organic radical selected from the group consisting of alkyl, cycloalkyl, aryl, alkoxy and aryloxy radicals; wherein f has a value of from 2 to 6, m has a value of from 1 to 6, p has a value of from 1 to 6 and q has a value of from 1 to 6.

4,288,381

METHOD FOR THE SYNTHESIS OF ALKOXYALANATES OF ALKALINE-EARTH METALS

Giovanni Dozzi, Milan, and Salvatore Cucinella, S. Donato Mi, both of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Mar. 26, 1980, Ser. No. 134,093
Claims priority, application Italy, Apr. 4, 1979, 21566 A/79
Int. Cl.³ C07F 5/06
U.S. Cl. 260—448 AD **6 Claims**

1. A process for synthesizing alkoxyalanates of alkaline earth metals of the formula:

$$M[AlH_{4-n}(OR)_n]_2.mB$$

in which M represents the alkaline earth metal, OR represents an alkoxy group of a primary, secondary or tertiary alcohol in which R is an aliphatic, cycloaliphatic or aromatic radical, n is a number between 0.5 and 3.5, B is a Lewis base, m is a number between 0 and 4, and R can also contain functional groups such as OR′, SR′, NR′$_2$, said R′ being the same as R consisting of reacting together (a) an alkali metal alanate, (b) a halide of the alkaline earth metal, (c) an alcoholate of the alkaline earth metal, and (d) an aluminium alcoholate.

4,288,382

REVERSIBLE ADDUCTS OF ISOCYANATES WITH BORON COMPOUNDS

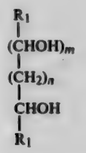
Luigi Giuffre, Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Vertac, Inc., Memphis, Tenn.

Filed Oct. 10, 1979, Ser. No. 83,400
Int. Cl.³ C07C 119/042
U.S. Cl. 260—453 A **20 Claims**

1. An adduct of:
(1) an isocyanate having the formula

$$R—N=C=O$$

wherein R is a member selected from the group consisting of alkyl having from 1 to 10 carbon atoms and alkenyl having 2 to 6 carbon atoms with
(2) a boron compound having at least one free ≡B—OH group selected from the group consisting of (a) polyol borates essentially free of alcoholic hydroxyl groups prepared from boric acid and polyols having at least two alcoholic hydroxyl groups selected from the group consisting of (i) compounds having the formula



wherein R_1 is a member selected from the group consisting of hydrogen, lower alkyl, and hydrocarbon aryl, n is 0 or an integer from 1 to 4, and m is 0 or an integer from 1 to 5, (ii) pentaerythritol, (iii) lower alkyl ethers of (i) or (ii), and (iv) lower alkanoic acid esters of (i) or (ii), and (b) metaboric acid.

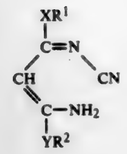
4,288,383

PROPENIMIDATES, THEIR PREPARATION AND REARRANGEMENT TO PYRIMIDINES

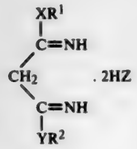
Julius J. Fuchs, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 67,354, Aug. 14, 1979, Pat. No. 4,235,802.
This application Apr. 24, 1980, Ser. No. 143,373
Int. Cl.³ C07C 125/08, 119/18
U.S. Cl. 260—453 RW **7 Claims**

1. A process for preparing a compound of the formula:



wherein
X and Y are independently O or S; and
R^1 and R^2 are independently C_1–C_4 alkyl, $(CH_2)_nOR^3$ where R^3 is C_1–C_4 alkyl and n is 1 or 2, CH_2CH_2Cl or CH_2CF_3, provided that when R^1 of R^2 is CH_2CH_2Cl or CH_2CF_3, then the respective X or Y is O, comprising:
(a) contacting a dihydrohalide salt of the formula:



wherein X, Y, R^1 and R^2 are as defined above and Z is F, Cl or Br, in an inert liquid medium with one equivalent weight of a base at a pH no higher than about 7, to produce a monohydrohalide salt; and,
(b) contacting the monohydrohalide salt with cyanamide.

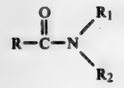
4,288,384

N-CYANOALKYL HALOACETAMIDES HERBICIDAL ANTIDOTES

Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 7, 1979, Ser. No. 73,392
Int. Cl.³ C07C 121/46, 121/14
U.S. Cl. 260—464 **39 Claims**

1. A compound of the formula



in which
R is 1–4 carbon haloalkyl wherein halo is bromo or chloro:
R_1 is selected from the group consisting of hydrogen and 1–4 carbon alkyl; and
R_2 is selected from the group consisting of 5–12 carbon cyanoalkylcycloalkyl, 5–12 carbon cyanocycloalkyl, and 3–6 carbon cyanoalkylalkoxy.

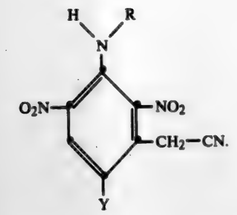
4,288,385

2,6-DINITROANILINE HERBICIDES AND USE THEREOF

Albert W. Lutz, Princeton, and Robert E. Diehl, Lawrenceville, both of N.J., assignors to American Cyanamid Co.

Filed Jul. 25, 1979, Ser. No. 60,532
Int. Cl.³ A01N 37/34; C07C 121/52
U.S. Cl. 260—465 E **12 Claims**

1. A compound of formula:



wherein R is secondary alkyl C_3–C_7 free from quaternary carbon atoms optionally monosubstituted with OCH_3 or Cl; and Y is CH_3, C_2H_5, C_3H_7—n, or C_3H_7—i.

4,288,386

ULLMANN REACTION FOR THE SYNTHESIS OF DIARYL ETHERS

Gerard Soula, Meyzieu, and Louis Linguenheld, Saint-Genis-Laval, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 12, 1980, Ser. No. 148,590
Claims priority, application France, May 18, 1979, 79 12688
Int. Cl.³ C07C 41/00, 65/21, 69/94, 121/75
U.S. Cl. 260—465 F **26 Claims**

1. In a process for the preparation of a diaryl ether by reacting an unactivated halobenzene with an alkali metal phenolate in the presence of a copper catalyst, the improvement which comprises conducting said reaction in the presence of an effective amount of at least one tertiary amine sequestering agent having the formula:

$$N-[CHR_1—CHR_2—O-(CHR_3—CHR_4—O)_nR_5]_3 \quad (I)$$

in which n is an integer which is greater than or equal to 0 and less than or equal to about 10, R_1, R_2, R_3 and R_4, which are identical or different, each represent a hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms and R_5 represents an alkyl or cycloalkyl radical having from 1 to 12 carbon atoms, a phenyl radical or a radical $—C_mH_{2m}—\phi$ or $C_mH_{2m+1}—\phi—$, wherein ϕ is phenyl and in which m is between 1 and 12.

22. The process as defined by claim 1 for the preparation of meta-phenoxytoluene by reacting sodium meta-cresolate with chlorobenzene, in the presence of cuprous chloride, said reaction being conducted in the presence of a tertiary amine selected from the group consisting of tris-(3,6-dioxaoctyl)-amine and tris-(3,6-dioxaheptyl)-amine.

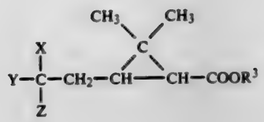
4,288,387

PROCESS FOR THE PREPARATION OF CYCLOPROPANE CARBOXYLIC ACID ESTERS

John Crosby, Cheshire; David Holland, Cheshire; Dale A. Laidler, Cheshire, and David J. Milner, Manchester, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 2, 1980, Ser. No. 156,077
Claims priority, application United Kingdom, Jul. 13, 1979, 24521/79
Int. Cl.³ C07C 69/74, 121/75
U.S. Cl. 260—465 D **10 Claims**

1. A process for the preparation of a compound of the formula:



(I)

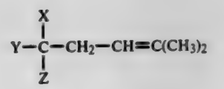
wherein
R^3 is an alkyl, 3-phenoxybenzyl, α-cyano-3-phenoxybenzyl or α-ethyl-3-phenoxybenzyl group,
Z is fluorine, chlorine or bromine, and
X and Y, which may be the same or different, are fluorine, chlorine, bromine, lower alkyl or $Q(CF_2)_m$-, in which Q is hydrogen, fluorine or chlorine and m is 1 or 2, or



in which each of U, V and W are independently hydrogen, fluorine or chlorine except that where one of X and Y is a group of formula $Q(CF_2)_m$- where Q is as defined above, the other of X and Y is fluorine, chlorine or bromine or a group

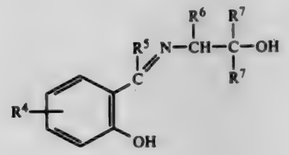


as previously defined,
characterised in that a compound having the formula:



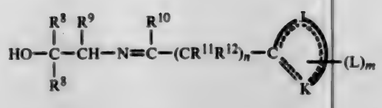
(II)

is reacted with an alkyl diazoacetate $N_2CH.COOR^3$, R^3, X, Y and Z having the previously defined meanings, in the presence of a catalyst selected from the following classes (i) to (vi):
(i) metallic copper, or a copper(II) salt,
(ii) rhodium(II) salts of carboxylic acids,
(iii) the copper complex of a chiral Schiff base having the formula:



(III)

in which
R^4 is hydrogen, alkyl, aralkyl, aryl or a substituent containing a hetero atom, or R^4, when taken with the aromatic nucleus to which it is attached, forms a naphthalene ring system,
R^5 is hydrogen, alkyl, aralkyl or aryl and R^6 and R^7 are each alkyl, aralkyl or aryl,
(iv) the transition metal complex of a chiral Schiff base having the general formula:



(IV)

wherein

R^8 and R^9, which may be the same or different, are alkyl, aralkyl or aryl;

R^{10} is hydrogen or lower alkyl, aryl, aralkyl or alkaryl,

R^{11} and R^{12}, which may be the same or different are hydrogen or lower alkyl, or where n is 1, may with the cyclic system to which $CR^{11}R^{12}$ is attached, form a fused ring system,

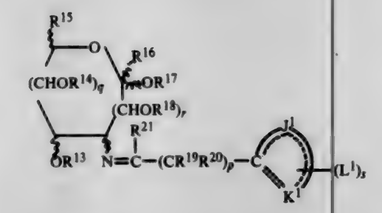
J is a chain of 3 or 4 atoms consisting either exclusively of carbon atoms or of carbon atoms together with one or more hetero-atoms which may be the same or different, which chain with the group —C K— forms an aromatic system,

K is nitrogen, N→O or —NH—,

L, each of which may be the same or different, represents a substituent attached to a carbon atom in the chain J and is hydrogen, alkyl, aralkyl, aryl or a substituent containing a hetero-atom, or two groups L together with the ring to which they are attached, form a fused ring system,

n is 0, 1 or 2, and m is the number of carbon atoms in the chain J,

(v) the transition metal complex of a chiral Schiff base having the general formula:



(V)

wherein

R^{13}, R^{14}, and R^{18}, which may be the same or different, are hydrogen or lower alkyl, except that at least one of R^{13} and R^{18} is hydrogen,

R^{15} is hydrogen, a sugar derivative or $—CH_2OR^{22}$ in which R^{22} is hydrogen, lower alkyl or together with R^{14} forms a divalent hydrocarbon group,

R^{16} is hydrogen or $—CH_2OH$,

R^{17} is hydrogen, lower alkyl or a sugar derivative,

R^{19} and R^{20}, which may be the same or different, are hydrogen or lower alkyl, or where p is 1, may with the cyclic system to which $CR^{19}R^{20}$ is attached form a fused ring system,

R^{21} is hydrogen, alkyl, aralkyl or aryl,

J^1 is a chain of 3 or 4 atoms consisting either exclusively of carbon atoms or of carbon atoms together with one or more hetero atoms which may be the same or different, which chain with the group —C K— forms an aromatic system,

K is C-OH, nitrogen, N→O or —NH—,

L^1, each of which may be the same or different, represents a substituent attached to a carbon atom in the chain J^1 and is hydrogen, alkyl, aralkyl, aryl or a substituent containing a hetero-atom, or two groups L^1 together with the ring to which they are attached form a fused ring system,

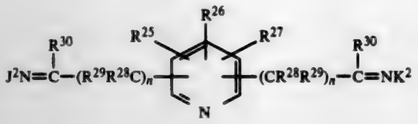
r is 0 or 1,

q is 0, 1 or 2, provided that q+r is 1, 2 or 3,

p is 0, 1 or 2, and

s is the number of carbon atoms in the chain J^1, and

(vi) the transition metal complex of a chiral Schiff base having the general formula:



(VA)

wherein

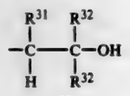
R^{25}, R^{26} and R^{27}, which may be the same or different, are hydrogen, alkyl, aralkyl, aryl, a substitutent containing a hetero atom, or two of R^{25}, R^{26} and R^{27} together with the pyridine ring from a fused ring system,

R^{28} and R^{29}, which may be the same or different, are hydrogen, lower alkyl, or, where n is 1, may with the pyridine ring to which $C^{28}R^{29}$ is attached, form a fused ring system,

R^{30} is hydrogen, alkyl, aralkyl or aryl,

n is 0, 1 or 2

and J^2 and K^2, which may be the same or different, are groups of the formulae:



(VB)

or



(VC)

in which R^{31} and R^{32}, which may be the same or different, are alkyl, aralkyl or aryl, and R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, q and r have the previously defined meanings, and the corresponding compounds having an oxygen atom attached to the pyridine ring nitrogen.

4,288,388

BLEACHING COMPOSITION

Joseph E. McCrudden, Warrington, and Alan Smith, Chester, both of England, assignors to Interox Chemicals Limited, London, England

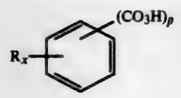
Division of Ser. No. 857,602, Dec. 5, 1977, Pat. No. 4,225,451, which is a continuation of Ser. No. 683,656, May 6, 1976. This application Nov. 14, 1979, Ser. No. 94,052

Claims priority, application United Kingdom, Nov. 18, 1975, 47372/75

Int. Cl.³ C07C *179/133, 179/10*

U.S. Cl. 260—502 R **2 Claims**

1. A compound having the general formula:



wherein R is selected from the group consisting of lower alkyl, chloro and nitro, x is 0, 1, 2 or 3 and p is 3 or 4, or an anion of said compound.

4,288,389

PROCESS FOR SEPARATING SULFONIC ACIDS FROM THE REACTION PRODUCTS OBTAINED WHEN PARAFINS ARE REACTED WITH SULFUR DIOXIDE, OXYGEN AND WATER IN THE PRESENCE OF ULTRA-VIOLET LIGHT

Hermann Springmann, Haltern, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,623

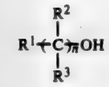
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004651

Int. Cl.³ C07C *139/00*

U.S. Cl. 260—504 S **4 Claims**

1. A process for separating the sulfonic acids in an untreated paraffin sulfonic solution containing in addition to said paraffin sulfonic acids, sulfuric acid, water and non-sulfonated paraffins, which comprises:

(a) admixing with the paraffin sulfonic acid solution, at least one aromatic alcohol having the general formula



wherein:

R^1 is a phenyl group, said phenyl group possibly substituted by halogen and/or alkyl groups having 1 to 6 C atoms;

R^2 and R^3 are hydrogen;

n is an integer from 1 to 3; and

R^2 is a methyl group when n=1, thereby forming a mixture having three phases wherein the uppermost layer consists essentially of unreacted paraffins, the center layer consists essentially of paraffin sulfonic acids and the lower layer consists essentially of an aqueous solution of sulfuric acid;

(b) separating said center layer; and

(c) said aromatic alcohol is separated from said center layer to produce said sulfonic acids.

4,288,390

PREPARATION OF N-(AMINOMETHYL)-α,β-ETHYLENICALLY UNSATURATED CARBOXAMIDES AND THEIR POLYMERS

Charles J. McDonald, Midland, Mich., assignor to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 856,704, Dec. 2, 1977, Pat. No. 4,166,828. This application Jun. 1, 1979, Ser. No. 44,436

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.³ C07C *102/00*

U.S. Cl. 564—204 **11 Claims**

1. A process for preparing a cationic N-(aminomethyl)-α,β-ethylenically unsaturated carboxamide which comprises contacting a reaction mixture comprising an N-alkylol and/or an N-alkoxyalkyl derivative of an α,β-ethylenically unsaturated carboxamide with an amine under conditions including a pH of less than about 7 sufficient to cause reaction of the derivative and amine to form at least 10 mole percent of cationic carboxamide based on moles of the derivative.

4,288,391

ALKYLATED 2,2'-BIPHENYLENE PHOSPHITES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

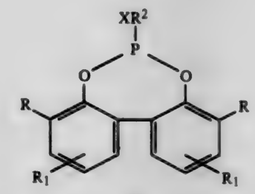
Continuation-in-part of Ser. No. 866,748, Jan. 3, 1978, Pat. No. 4,196,117. This application Nov. 13, 1979, Ser. No. 93,786

The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.

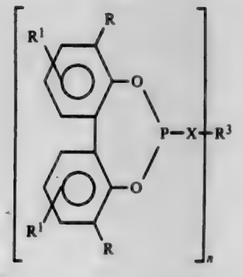
Int. Cl.³ C07F *9/15*

U.S. Cl. 260—927 R **8 Claims**

1. A 1,1'-biphenyl-2,2'-diyl phosphite of the formula



or



wherein

R is an alkyl group of 1 to 18 carbon atoms,

R^1 is hydrogen or alkyl group of 1 to 18 carbon atoms, and

R^2 is an alkyl group of 1 to 20 carbon atoms, phenyl, phenyl substituted by 1 to 3 alkyl groups each having 1 to 8 carbon atoms, or by two alkyl groups each having 1 to 8 carbon atoms and by $—COOR^4$ where R^4 is alkyl of 1 to 18 carbon atoms,

R^3 is an n-valent radical selected from the group consisting of a straight- or branched-chain alkylene of 2 to 12 atoms, a straight- or branched chain alkane-triyl, -tetrayl, -pentayl or -hexayl of 3 to 6 carbon atoms, alkylene of 4 to 6 carbon atoms, cycloalkylene of 6 to 12 carbon atoms, 1,4-cyclohexanedimethylene, arylene or arylene or arenetriyl of 6 to 10 carbon atoms, p-xylylene, phenylene-E-phenylene where E is a direct bond, —O—, —S—, $—NR^5—$, where R^5 is alkyl of 1 to 18 carbon atoms; a straight- or branched chain alkylene or alkylidene of 1 to 12 carbon atoms or cycloalkylidene of 5 to 6 carbon atoms, said arylene or said phenylene-E-phenylene substituted by 1 to 4 alkyl groups each having 1 to 8 carbon atoms, $—(CH_2)_xX(CH_2)_x$ where x is 2 to 6, dipentaerythrityl, and



where

Y is hydrogen, methyl or ethyl and z is 1 to 10,

X is oxygen or sulfur, and n is 2 to 6.

4,288,392

PROCESS FOR THE PREPARATION OF DIALKYL PHOSPHORIC ACIDS

James M. Horn, Richmond, Va.; Byron E. Johnston, Skillman, N.J.; Roger P. Napier, Califon, N.J., and Thomas N. Williams, Plainfield, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 3, 1980, Ser. No. 109,371
Int. Cl.³ C07F 9/09
U.S. Cl. 260—983 5 Claims

1. A process to produce dialkyl phosphoric acid that comprises:

(a) reacting PCl_3 with C_1–C_{12} alkanol in a molar ratio of said alkanol:PCl_3 of 3 at 10°–15° C., under an inert gas atmosphere, to produce a mixture of bis-(alkyl) hydrogen phosphite, alkyl chloride, and HCl;

(b) chlorinating said mixture with a stoichiometric amount of chlorine gas at about 20° C., until the reaction mixture attains a yellow-green color and a stable Platinum-Calomel electrode reading is obtained in the range of about 880–910 m.v.; optionally sparging with inert gas at about 50° C. until the HCl content is below about one weight percent, thus producing a solution of dialkyl phosphorochloridate in alkyl chloride;

(c) hydrolyzing said solution with water at 80°–100° C. for about 4–6 hours, using sufficient water to effect a final HCl content below about 11 weight percent, to produce dialkyl phosphoric acid product; and

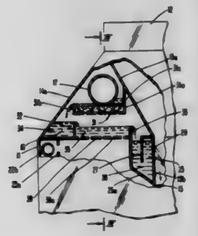
(d) separating said product.

4,288,393

DIRECT CONTACT CONDENSER

Hideki Sekiguchi; Michizo Miyoshi, and Katsutoshi Yonemura, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 14, 1980, Ser. No. 149,565
Claims priority, application Japan, Jun. 30, 1979, 54-82817
Int. Cl.³ B01F 3/04
U.S. Cl. 261—108 5 Claims



1. A direct contact condenser comprising:

a horizontally elongated housing;

partition means extending longitudinally within said housing and also extending from a top portion toward a middle portion of said housing for defining a steam inlet means in the top of said housing, downward passage means, lateral passage means, and collectively upward passage means for establishing the sequential steam flows within said housing;

first overflow means extending longitudinally within said housing at its top portion above collectively upward passage means for temporarily accumulating cooling liquid fed to said condenser and for allowing excess accumulated cooling liquid to overflow;

second overflow means extending longitudinally within said housing under said first overflow means and above said collectively upward passage means for temporarily accumulating the cooling liquid supplied from said first overflow means, for allowing the cooling liquid to fall in multiple streams into said collectively upward passage means to cause direct heat exchange between the falling cooling liquid and the steam, and for causing excess cooling water accumulated by said second overflow means to overflow;

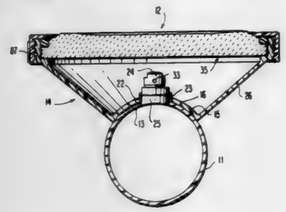
means for supplying the cooling liquid overflowing from said second overflow means to said downward passage means to cause direct heat exchange between the cooling liquid and the steam in said downward passage means when excess accumulated cooling liquid overflows from said second overflow means.

4,288,394

SEWAGE AERATION SYSTEM

Lloyd Ewing, Bayside; David T. Redmon, Racine; Paul M. Thayer, Milwaukee; Frank L. Schmit, Port Washington, and William H. Roche, Mequon, all of Wis., assignors to Water Pollution Control Corp., Milwaukee, Wis.

Continuation-in-part of Ser. No. 952,891, Oct. 19, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 102,175
Int. Cl.³ B01F 3/04
U.S. Cl. 261—122 48 Claims



1. A sewage aeration system comprising:

a horizontally extending header pipe having an upper surface which is arcuate in transverse cross-section and having air outlet openings in said arcuate upper surface at spaced points along the length of said header pipe;

a plurality of synthetic thermoplastic or thermoset resin plenums secured to said arcuate upper surface at spaced points along said header pipe in communication with said air outlet openings;

said plenums having wall means, including side wall means extending transversely and longitudinally relative to said arcuate upper surface, and arcuate bottom wall means sealed in gas-tight relationship to said side wall means, said plenums further including diffusion element supporting means spaced upwardly from said header pipe on said side wall means;

generally horizontal diffusion elements supported by said support means, said elements having air diffusion pores extending therethrough, but being free of through-holes other than air diffusion pores;

retaining means engaging said diffusion elements about their peripheries for securing said elements to said plenums;

sealing means adjacent the peripheries of the diffusion elements for preventing leakage of air from said plenums past the peripheries of said elements; and

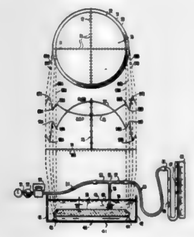
air flow regulator members in communication and connected with said air outlet openings and terminating beneath said diffusion elements for providing controlled flow of air from the interior of said header pipe to the interiors of said plenums beneath said diffusion elements.

4,288,395

DIFFUSION ELEMENT WITH BOUNDARY ZONE TREATMENT

Lloyd Ewing, Bayside; David T. Redmon, Racine, and William H. Roche, Mequon, all of Wis., assignors to Water Pollution Control Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 952,862, Oct. 19, 1978. This application Apr. 15, 1980, Ser. No. 140,505
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.³ C02C 1/12
U.S. Cl. 261—122 42 Claims



1. A diffusion element comprising

a peripheral zone which has lesser permeability, greater density or lesser height than a portion of the element surrounded by said peripheral zone;

a boundary zone, adjacent to and inward of the peripheral zone, characterized by a progressive increase in the apparent volumetric compression ratio of the element in a direction toward the peripheral zone, or toward a generally upright or vertical surface which is near the periphery of the element; and

a further portion, adjacent to and inward to said boundary zone;

said element being formed of a body of solid particles which has been shaped, pressed, and rendered coherent by bonding or sintering in a compacted form having pores;

said element including a generally horizontal portion having a specific permeability in the range of about 6 to about 200 SCFM per square foot of gas discharge surface per inch of thickness at a driving pressure of 2 inches in water gauge under standard conditions; and

said generally horizontal portion, when viewed in vertical cross-section, while positioned with its maximum dimension extending horizontally, having a maximum horizontal dimension in a ratio of at least about 4 to 1 relative to the thickness of said generally horizontal portion and including an upper gas discharge surface which is generally horizontal and which has a bubble release pressure in water in the range of about 2 to about 20 inches in water gauge.

4,288,396

METHOD AND DEVICE FOR CONDITIONING OF BREATHING AIR FOR DIVERS

Nils T. Ottestad, Hilton 156 A, N-2040 Kløfta, Norway

Continuation of Ser. No. 961,826, Nov. 17, 1978, abandoned. This application Jan. 29, 1980, Ser. No. 116,414
Int. Cl.³ B01F 3/04
U.S. Cl. 261—128 5 Claims

1. A method of conditioning the breathing air for an underwater diver, comprising: the steps of drawing dry, cold air from a source of pressurized air located underwater and being connected to a conditioning apparatus located underwater, in response to the breathing demand of the diver, heating said air in said apparatus to a temperature substantially higher than the body temperature of the diver; humidifying said heated air by supplying water thereto and passing it through a filter means having a large surface wherein said water is distributed over said surface for achieving efficient vaporization; and cooling the heated and humidified air to a temperature slightly above the body temperature of the diver and thereby increasing the relative humidity of said air to close to saturation, and supplying the so-conditioned air as breathing air directly to the lungs of the diver.

2. Apparatus for conditioning breathing air for an underwater diver, said apparatus being located underwater, comprising:

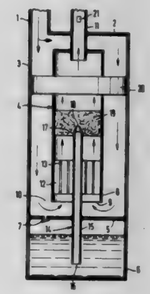
(a) a housing defining an air passage therethrough;

(b) an inlet tube coupled to one end of said air passage for connection to a supply of pressurized, dry, cold air;

(c) a heating element for heating the dry, cold air arriving at and passing said air passage;

(d) a container located adjacent to said air passage for holding a supply of water;

(e) means for controllably supplying humidifying water from said container to the heated air;



said means comprising a metal filter gauze having a large surface for effecting distribution and efficient vaporization of water supplied thereto together with said heated air;

(f) an outlet tube coupled to another end of said air passage for connection to means including a breathing valve control for supplying air conditioned by the apparatus to the driver; and

(g) temperature sensing means within the apparatus and at said breathing valve control arranged to control means for regulating the temperature of the breathing air so that the conditioned breathing air has a temperature slightly above the body temperature of the diver and a relative humidity close to saturation.

4,288,397

SPINNING PROCESS AND APPARATUS

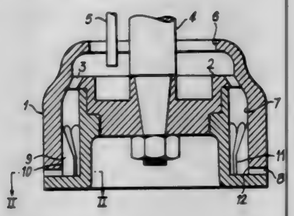
Paul Snowden, Redcar, and Margaret L. Steel, Runcorn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 9, 1980, Ser. No. 138,546
Claims priority, application United Kingdom, Apr. 9, 1979, 12389/79; Mar. 3, 1980, 07084/80
Int. Cl.³ B29C 6/00
U.S. Cl. 264—8 6 Claims

1. A process for the centrifugal spinning of fibers, utilizing a centrifugal spinning cup comprising a hollow cylinder with a plurality of discrete passages positioned around and extending through its circumferential wall from the interior cylindrical surface of the cup, with a plurality of flow-dividing members disposed between adjacent passage inlets and projecting inwardly from the interior cylindrical surface and axially extending for only a part of the length of the surface from the passages; said method comprising the steps of:

supplying a fibre-forming material in liquid form to the interior cylindrical surface at an area axially spaced from the passages so that the material must flow over a portion of the interior cylindrical surface before reaching the flow-dividing members;

dividing all of the fibre-forming material into a plurality of separate streams with the flow dividing members;
leading the fibre-forming material in each stream to the passage associated with that stream;



rapidly spinning the cup; and
collecting formed fibres from the passages.

4,288,398

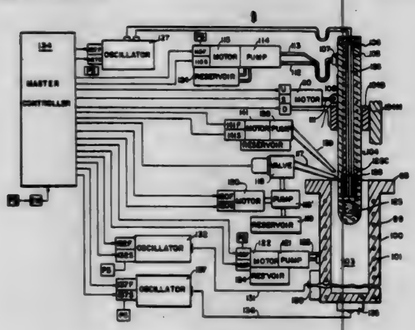
APPARATUS AND METHOD FOR CONTROLLING THE INTERNAL STRUCTURE OF MATTER

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 372,838, Jun. 22, 1973, abandoned, and a continuation-in-part of Ser. No. 53,834, Jul. 10, 1970, abandoned, and a continuation of Ser. No. 516,280, Dec. 27, 1965, abandoned, which is a continuation-in-part of Ser. No. 142,405, Oct. 2, 1961, Pat. No. 3,422,648, and Ser. No. 142,333, Oct. 2, 1961, abandoned. This application Mar. 3, 1976, Ser. No. 663,243

Int. Cl.³ B29F *3/00*

U.S. Cl. 264—23 **5 Claims**



1. A method of forming an article to shape from thermal plastic resin in a molten condition and simultaneously improving the physical characteristics of such resin forming said article comprising:
causing a molten plastic resinous material to flow through an extrusion die, and
while said resinous material admitted to said die is in a plastic and formable condition, causing said plastic material to conform to the shape of said die, thereafter solidifying said plastic material flowed to said die to a predetermined shape, and
prior to the solidification of said plastic material, subjecting said material to ultrasonic vibrations of sufficient frequency and intensity such that the vibrational energy reacts on the material in a manner to substantially change and improve its crystalline structure over that structure of said material existing prior to rendering said material in said molten condition.

4,288,399

PROCESS FOR LOW PRESSURE MOLDING THERMOPLASTIC ELASTOMER COMPOSITIONS

Roy W. Siedenstrang, and William H. Cornell, both of Stow, Ohio, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 17, 1977, Ser. No. 825,175

Int. Cl.³ B29C *3/00*

U.S. Cl. 264—25 **7 Claims**

1. A method for preparing molded articles comprising:
(a) introducing into a mold and enclosing in the mold the molding composition consisting essentially of:
(1) a thermoplastic elastomer that is a normally solid, linear or radial teleblock copolymer comprising about 30 to about 100 weight percent of the total polymeric component of the composition,
(2) solid resinous polymer that is a polymer of a vinyl-substituted aromatic compound comprising from about 0 to about 70 weight percent of the total polymeric component of the composition, and
(3) an amount ranging from about 0.5 to about 20 parts by weight per 100 parts by weight thermoplastic elastomer of a polarizing agent selected from among ethanolamines, isopropanolamines, and their hydrocarbyl-substituted derivatives;
(b) applying microwave energy to said composition for a time sufficient to produce a moldable consistency in said molded composition;
(c) supplying sufficient pressure up to about 200 psig to said molding composition for a time sufficient to produce a molded article;
(d) cooling said mold and molded article; and
(e) unmolding said cool molded article.

4,288,400

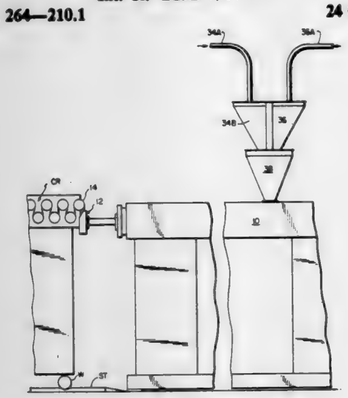
METHOD FOR THE CONTINUOUS FORMATION OF BIAXIALLY ORIENTED THERMOPLASTIC MATERIALS AND FORMING ARTICLES THEREFROM BY INTERMITTENT FORMING MEANS INTERFACED THEREWITH

Thomas W. Winstead, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Mar. 13, 1978, Ser. No. 886,161

Int. Cl.³ B29D *7/04*

U.S. Cl. 264—210.1 **24 Claims**



1. The method of forming products of biaxially oriented thermoplastic material comprising:
continuously extruding a web of thermoplastic material;
biaxially stretching said web in a continuous manner to effect biaxial orientation therein and dimension said web for subsequent forming;
substantially immediately transferring said web into conformal and dimensionally stable engagement with an undulating rotating peripheral surface to preclude loss of orientation;
transferring said web from said undulating surface onto a downstream transfer means while maintaining the dimensional integrity of said web;
synchronizing the transfer means with the undulations of said peripheral surface to intermittently advance lengths of the oriented web on said transfer means while continuously feeding the oriented web from said undulating surface; and
forming products in said intermittently advanced lengths of said oriented web, wherein the stress placed in the thermoplastic material by said biaxial orientation is substantially maintained from the initiation of said orientation to the forming of the products therein.

4,288,401

THERMOPLASTIC FORMING PROCESS

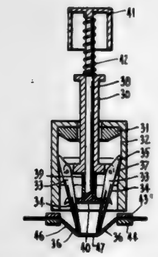
Donald G. Keith, Mount Eliza, and Anthony Flecknoe-Brown, Carlton, both of Australia, assignors to ICI Australia Limited, Victoria, Australia

Filed May 18, 1979, Ser. No. 40,312

Claims priority, application Australia, May 18, 1978, PD4433; Jun. 22, 1978, PD4833; Apr. 3, 1979, PD8263; Apr. 17, 1979, PD8398

Int. Cl.³ B29C *17/04*

U.S. Cl. 264—550 **4 Claims**



1. A method of stretch-forming a hollow article from a sheet of thermoplastic material at a temperature higher than 25° C. below the melting point and held against substantial non-stretching movement comprising pressing against one face of the sheet in a primary movement a plurality of tips carried symmetrically by a tool at a temperature lower than 50° C. below the melting point of the sheet and comprising a plunger having an axis extending in the direction of the primary movement, each tip being constituted by an end of a blade which blade is coplanar with the plunger axis and pivoted to the plunger, then while continuing the primary movement rotating the blades about the pivots while maintaining the blades coplanar with the plunger axis to symmetrically separate the tips in directions transverse of the plunger and to bring the outer edge of each blade from the tip progressively towards the rear into engagement with the sheet.

4,288,402

ACID FIELD TEST KIT FOR REFRIGERATION OILS CONTAINING A LEAK DETECTOR

Leonard C. Ellis, Chesapeake, Va., assignor to Virginia Chemicals Inc., Portsmouth, Va.

Filed Apr. 25, 1979, Ser. No. 33,240

Int. Cl.³ G01N *33/28*

U.S. Cl. 422—61 **29 Claims**

1. An acid field test kit for determining the acidity of oil samples, said test kit being of the two-phase type and operable within a single vial which has a selected internal volume, and said test kit being used: for measuring a sample of a refrigeration oil containing a highly colored leak detector; for carrying out a test procedure on said sample by fast phase separation into a solvent top layer and a highly ionic aqueous bottom layer; and for obtaining reliable test results as to acidity of said oil; and said test kit comprising:
A. at least one said vial having a means for indicating said selected internal volume;
B. a water-immiscible solvent, which is disposed within said vial; and
C. an indicator stock solution which is disposed within said vial, comprising:
(1) 20–28% by weight of a lower alcohol,
(2) 56–79% by weight of water,
(3) 6–12% by weight of a water-soluble inorganic salt,
(4) 0.2–0.3% by weight of a concentrated aqueous solution of a selected indicator having an unmistakable first color at a selected baseline pH which is at about the alkaline limit of the pH range for said indicator,
(5) sufficient alkaline hydroxide solution to create said baseline pH, and
(6) an amount of alkaline hydroxide solution which permits an unmistakable selected second color to appear within said aqueous bottom layer only when the acid number of said oil sample exceeds about 0.05 by limiting the change in pH from said baseline pH to a selected acidic pH at about the acid limit of said pH range after said oil sample has been mixed within said vial with said water-immiscible solvent and said indicator stock solution.

4,288,403

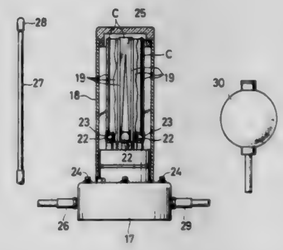
CHECKING PAPER FOR SHEET COMBUSTION TYPE OXYGEN CONCENTRATION MEASURING INSTRUMENT

Kogaku Komamiya, 438-7 Shimoishihara, Chofu, 182 Tokyo, and Hajime Suzuki, 3-61 Shioiri-cho, Yokosuka-shi, Kanagawa-ken, both of Japan

Continuation of Ser. No. 35,016, May 1, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 182,861

Int. Cl.³ G01N *7/00, 31/12*

U.S. Cl. 422—83 **1 Claim**



1. An instrument for measuring oxygen concentration by sheet combustion of a sheet of checking paper in a desired location, comprising in combination:
(a) a stand (**17**) with an outer portion, a suction port (**26**) with an intake pipe (**27**) connected thereto on one side thereof and a discharge port (**29**) on the other side thereof, a cap (**28**) for sealing said intake pipe suction port (**26**) when desired and a removable bulb (**30**) and a connecting pipe for mounting on said discharge port (**29**);
(b) a transparent tall sealed container (**18**) mounted on said stand (**17**);
(c) upright parallel guide rails (**19**) erected at a plurality of positions on said stand within said container (**18**) so disposed as to define centrally thereof a desiccant compartment (**21**) and a desiccant (**20**) packed therein;
(d) nichrome wire holder means (**22**) at the bottom of each of said guide rails for supporting a nichrome wire (**23**), and

electrical switch means (24) on said stand outer portion for each of said holder means (22);

(e) paper holding means and checking paper bonded to said paper holding means, said paper holding means being a plate member sized and shaped for being held in said guide rails (19) and being provided with a cutout extending from one end of the plate member substantially to but not quite to the other end thereof and disposed so that said paper sheet has a partly exposed area (11) through said cutout in the holding means, said cutout having a general triangular shape with a wide portion towards the stand (17) and a narrow portion towards the top of said upright guide rails (19), said wide portion having an open end, said paper extending out beyond the open end of said holding means, said holding means having the corners of the open end so cut as to enlarge the opening thereat, said holding means and checking paper being so disposed in said rails (19) that the checking paper is brought into contact with the corresponding nichrome wire (23) so that the depression of said switch means (24) will heat up said nichrome wire and ignite said paper;

(f) a cover for said sealed container; and,

(g) a scale along said cutout to indicate oxygen content.

4,288,404

APPARATUS FOR AUTOMATICALLY STABILIZING A PROCESS OF THERMAL TREATMENT OF LIQUID MEDIA

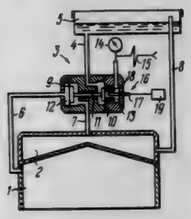
Jury V. Redikultsev, mikroraion "G", 19, kv. 113; Oleg P. Gorbunov, mikroraion "V", 28, kv. 18, and Alexandr M. Lomakin, mikroraion "G", 25, kv. 110, all of Puschino Moskovskoi oblasti, U.S.S.R.

Filed Dec. 20, 1979, Ser. No. 105,767

Claims priority, application U.S.S.R., Dec. 25, 1978, 2695900

Int. Cl.³ A61L *2/04, 2/24*

U.S. Cl. 422—107 **3 Claims**



1. An apparatus for automatically stabilizing a process of thermal treatment of liquid media, comprising:

a sterilization chamber;

a heat-exchange jacket which is in contact with said sterilization chamber;

a device for thermally controlling the process being conducted which is connected by means of individual pipelines to said sterilization chamber and to said heat-exchange jacket, said device comprising a coolant flow regulator which is divided by first and second flexible members into first, second and third sections, the first section comprising a pressure setting device in which an air pressure equal to the pressure of preselected conditions of the process being conducted is set-up, the second section comprising an overflow valve which is connected by means of said individual pipeline to said heat-exchange jacket and which cooperates with said pressure setting device through said first flexible member, and said third section comprising a pressure sensor which is connected by means of said individual pipeline to said sterilization chamber and cooperates with said overflow valve through the second flexible member; and

a source of a coolant which is connected by means of an individual pipeline to said overflow valve, the coolant from the source being admitted to said heat-exchange jacket through said overflow valve.

4,288,405

COAL HYDROGENATION APPARATUS HAVING MEANS FOR MONITORING AND CONTROLLING HYDROGENATION PRESSURE

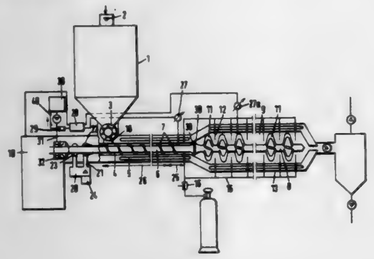
Klaus Koch, Laatzen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,763

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948550

Int. Cl.³ B01J *3/03, 4/00, 8/10*; C10G *1/06*

U.S. Cl. 422—111 **1 Claim**



1. Apparatus for monitoring and controlling the hydrogenation pressure in a plant for hydrogenating coal with hydrogen to form hydrocarbons, which plant comprises a cylindrical preparation chamber with a friction element rotatable therein, and an adjoining, cylindrical hydrogenation chamber in communication with the preparation chamber by way of a feed aperture and containing a rotor with mixing vanes and static mixing nozzles projecting through the wall of the hydrogenation chamber for ejecting hydrogen, said monitoring and controlling apparatus comprising a shutoff valve between said preparation chamber and said hydrogenation chamber, said shut-off valve comprising a conical seat in said hydrogenation chamber adjacent said feed aperture and an adjacent portion of said rotor formed with a conical portion to cooperate with said conical seat, a hydraulic cylinder to axially displace said rotor and coupled to control means, pressure sensors connected to said control means and disposed in said hydrogenating chamber and in the end of said preparation chamber adjacent said hydrogenating chamber and a connection from said control means to a drive for said rotor, said control means being effective, when said pressure sensor in said preparation chamber senses a lower pressure there than that sensed by said pressure sensor in said hydrogenation chamber, to cause said hydraulic cylinder to move said rotor axially to close said shut-off valve and to cause said drive to stop rotation of said rotor.

4,288,406

PROCESS ENERGY RECOVERY

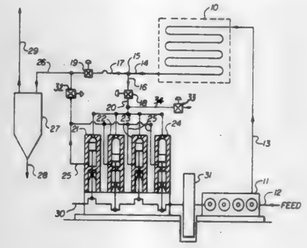
J. Robert Sims, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 29, 1979, Ser. No. 70,566

Int. Cl.³ F01K *25/08*; B01J *3/00*

U.S. Cl. 422—131 **6 Claims**

1. A system for polymerizing ethylene and recovering energy from pressured reactor effluent comprising compressor means for compressing ethylene, reactor means for carrying out ethylene polymerization reactions under pressure and adapted to receive compressed ethylene from said compressor means, product recovery apparatus for separating reactor product effluent comprising polyethylene and unreacted ethylene, and a reciprocating engine comprising at least two cylinders, an inlet port and an outlet port in each cylinder, a first valve movably seated in each of said inlet ports, means biasing said first valve into said inlet port, a piston slidably movable in each cylinder, each of said pistons having a conduit therethrough and a second valve movably mounted in each of said conduits, toward said first valve and aligned to contacts at first valve, each of said second valves being biased out of said



conduits, whereby contact of said first valve and said second valve forces said second valve into said conduit and forces said first valve out of said inlet port, said reciprocating engine adapted to receive reactor effluent under pressure and being operatively responsive to the expansion of reaction effluent therein.

4,288,407

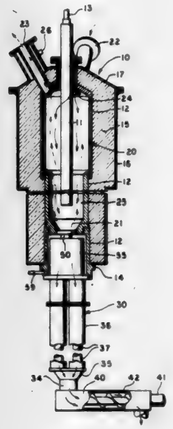
METHOD AND APPARATUS FOR TREATING MATERIAL IN A FLUIDIZED BED

Richard F. Markel, Box 10327 Federal Station, Greenville, S.C. 29603, and W. M. Goldberger, 415 S. Parkview, Columbus, Ohio 43209

Division of Ser. No. 592,118, Jul. 1, 1975, abandoned. This application Jun. 8, 1978, Ser. No. 913,758

Int. Cl.³ B01J *8/42*

U.S. Cl. 422—143 **8 Claims**



1. An apparatus for treating carbonaceous particulate material comprising:

a heating chamber including receiving means for continuously receiving a quantity of fluidizable, carbonaceous particles from an upper portion thereof and particle discharge means disposed at a lower portion of said heating chamber for continuously discharging said carbonaceous particles, said heating chamber having interior wall surfaces which are formed of a carbonaceous material to serve as a first electrode;

a second electrode of elongate shape disposed within said heating chamber along a substantial length of the longitudinal axis of said interior wall surfaces comprising said first electrode and in contact with said received carbonaceous particles;

means for supplying electrical current to said electrodes; and

means for fluidizing said carbonaceous particles within said heating chamber to form a fluidized zone within said chamber, said fluidized zone coincidental with an electrothermal zone formed by the flow of electrical current between said interior wall surfaces comprising said first electrode and said second electrode by means of and through said carbonaceous particles.

4,288,408

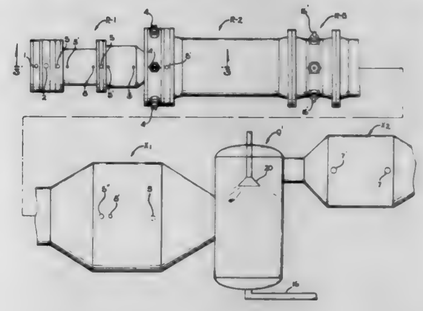
APPARATUS FOR THE DIACRITIC CRACKING OF HYDROCARBON FEEDS FOR THE SELECTIVE PRODUCTION OF ETHYLENE AND SYNTHESIS GAS

Eugene D. Guth, Villa Park; LeGrand A. Daly, and John K. Arand, both of Rancho Palos Verdes, all of Calif., assignors to L. A. Daly Company, Rancho Palos Verdes, Calif.

Filed Jul. 7, 1978, Ser. No. 922,675

Int. Cl.³ B01J *7/00, 10/00*

U.S. Cl. 422—193 **21 Claims**



1. Apparatus for the diacritic cracking of hydrocarbon feedstocks to obtain high yields for ethylene comprising:

a combustor means, said combustor means having an inner combustor wall defining a generally cylindrical combustion chamber, an outer combustor wall, and a fuel and oxidizer injector plate disposed transversely to said inner combustor wall and adjacent to the inlet of said combustor means for axially injecting a hyrocarbon fuel and an oxidizer into said combustion chamber to create a flow stream substantially without tangential flow components of high temperature gaseous combustion products, said combustion chamber having a length approximately three times its initial diameter, said diameter tapering to a diameter approximately two-thirds its initial diameter adjacent the combustor outlet, and said combustion chamber having a plurality of annular gas filming slots facing downstream parallel and adjacent to said inner combustor wall, for directing a non-reactive gas film along said inner combustor wall to prevent impingement of hydrocarbons upon said inner combustor wall;

feed stock injection means coupled to said combustor means, said injection means having a plurality of feed stock injectors disposed about the periphery of the flow stream, each of said feed stock injectors having an injector head, a feed stock supply line, and a means for providing a layer of non-reactive gas film flowing around said feed stock supply line and said injector head, for injecting a hydrocarbon feed stock in finely dispensed droplets into the flow stream received from the combustor means;

a reactor means coupled to said feed stock injection means for receiving the flow stream of hot combustion products and feed stock and defining a flow path of predetermined length within which cracking may take place, said reactor

means having an inner reactor wall defining a reactor chamber and an outer reactor wall, and having means for directing a non-reactive gas film along said inner reactor wall;

quench means coupled to said reactor means to receive the flow stream therefrom, said quench means having a plurality of quench fluid spray nozzles around the periphery of said inner reactor wall and having a means for providing a layer of non-reactive gas filming flowing around said spray nozzles, said spray nozzles being a means for spraying a quench fluid into the fluid stream to reduce the temperature thereof by an amount sufficient to terminate substantial cracking reactions;

a first heat exchanger coupled to said quench means for recovering heat from the flow stream from the quench means, said first heat exchanger being a tube and shell type of exchanger, said first heat changer having a plurality of water-jacketed cooling tubes, with each of said cooling tubes having means for directing non-reactive gas films along the inner walls thereof to discourage the impingement of the flow stream thereon; and

a knock out pot means coupled to said first heat exchanger for spraying a coolant into the flow stream coming from said first heat exchanger to reduce the stream temperature to condense out a majority of condensable hydrocarbons in the flow stream.

4,288,409

TUBULAR REACTOR FOR CARRYING OUT CATALYTIC PROCESSES

Heinrich Fedders, Jülich, and Willi Beckers, Übach-Palenberg, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,532

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848086

Int. Cl.³ B01J 8/06

U.S. Cl. 422—219 **1 Claim**



1. A tubular reactor for containing solid catalyst configured in chunks of a certain minimum diameter, the reactor comprising:

a vertical tubular support with spaced keys projecting therefrom;

a plurality of wire mesh baskets for containing said chunks each of said baskets having a top and bottom and each enclosing an unobstructed circular area, said baskets being mounted vertically on the tubular support in spaced relation with respect to one another and being supported by one of said keys;

a top end plate for enclosing the top of each basket, said top end plate having a central opening conforming to the tube, at least one radially projecting slot extending into the plate from the central opening for allowing the key on the tube to pass through; at least one radially projecting stop groove extending into the plate and being angularly spaced from the first slot, the stop groove extending only partially through the plate and facing into the basket whereby one key on the tube rests in the stop groove for supporting the basket on the tube; the top plate further including a plurality of openings therein larger in diameter than the chunks whereby the baskets can be filled through the top plate, and

a bottom plate secured to the bottom of the basket, said bottom plate having an opening therethrough with at least one radial key slot whereby the basket may be slid down the tube while clearing the keys, and a plurality of holes in the bottom plate smaller in diameter than the chunks to thereby support the chunks while allowing fluid to flow through the bottom plate.

4,288,410

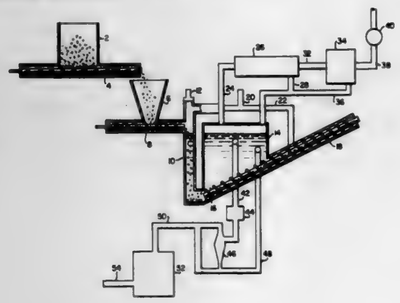
APPARATUS FOR PREPARING ALUMINUM ALKOXIDES

Willis W. Weber, South Salem; Richard F. Hill, Cold Spring, both of N.Y., and Thomas J. Weeks, Jr., Columbus, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 32,640, Apr. 23, 1979, Pat. No. 4,242,271. This application Jul. 17, 1980, Ser. No. 169,757

Int. Cl.³ B01J 8/02

U.S. Cl. 422—233 **1 Claim**



1. Apparatus suitable for use in the preparation of aluminum alkoxide by the reaction of a monohydric alcohol and impure aluminum which comprises

(a) an enclosed reactor adapted to contain a reactive mass of alcohol in the liquid state;

(b) a vertically disposed feed column communicating with said reactor through an inlet orifice located in the lower portion of said reactor, said feed column having an ingress opening to the atmosphere higher than the inlet orifice in said reactor whereby a portion of said feed column is filled with alcohol when said reactor is charged with alcohol to a point above the inlet orifice;

(c) means for depositing impure aluminum particles into the ingress opening of said feed column;

(d) a sludge removal column providing a conduit connecting the interior of the said reactor at a point below the surface of the liquid mass to be contained therein and the external atmosphere at a point having the same elevation as the surface of the said liquid mass in said reactor;

(e) means for transporting deposited impure aluminum particles from the inlet orifice of said reactor upwardly through said reactor in intimate contact with the liquid alcohol mass to be contained therein, and for conveying unreacted impurities associated with said aluminum particles out of said reactor through the said sludge removal column; and

(f) means for venting gases and vapors from the upper portion of the reactor.

4,288,411

PROCESS FOR THE SELECTIVE PRODUCTION OF A PLURALITY OF INDIVIDUAL PURE HALIDES AND/OR HALIDE MIXTURES FROM A MIXTURE OF SOLID OXIDES

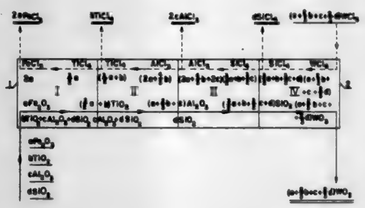
Gerhard Holland, and Rudolf Nowak, both of Westendstrasse 18a, D 6000 Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,514

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834165

Int. Cl.³ C01B 9/00

U.S. Cl. 423—1 **17 Claims**



1. A process for the selective production of individual pure halides and/or mixtures of halides from a mixture of solid oxides, either without or with only one single reducing halogenation stage using the known series of halide-forming affinities, characterised by the following features:

(a) the comminuted mixture of solid oxides is loaded into the front end of a unit having as many zones as the number of halides or halide mixtures to be produced, and is passed through it;

(b) into the rear end of the unit is fed a halide of an element with a lower halide-forming affinity than that of the lowest halide-forming affinity of those to be produced, whereby the quantity of halide supplied is equivalent to the total halogen content of the halides to be extracted from the units;

(c) the halide fed into the rear end of the unit and the solid oxide or mixture of oxides arriving there are converted by oxygen-halogen exchange to a solid oxide and a gaseous halide or mixture of halides;

(d) the solid oxide formed in the rear end of the unit is separated from the halide or mixture of halides and is removed from the unit;

(e) the gaseous halide or mixture of halides formed in the rear end of the unit is brought in contact in counter-current flow with the solid oxide mixture further to the front of the unit whereby again through an oxygen-halogen exchange an individual gaseous halide or mixture of halides is formed in each zone of the unit; and

(f) fractions of the gaseous halides or mixtures of halides formed in the individual zones are separated from the solid oxides and extracted from the unit in quantities such that the extracted amount of halide of each element is equivalent to the amount of oxide mixture loaded into the front end of the unit.

4,288,412

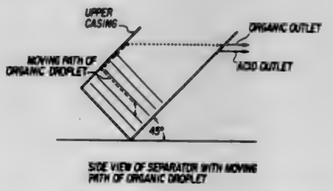
POST TREATMENT METHOD FOR THE RECOVERY OF URANIUM FROM WET-PROCESS PHOSPHORIC ACID

Sir-Sea Chang, Taipei; Sheng-Laang Chern, Taoyuan; Gann Ting, and Tsai-Shu Kuo, both of Taipei, all of Taiwan, assignors to Institute of Nuclear Energy Research, Taiwan, Taiwan

Filed Aug. 31, 1978, Ser. No. 938,658

Int. Cl.³ C01G 43/00

U.S. Cl. 423—10 **5 Claims**



SIDE VIEW OF SEPARATOR WITH MOVING PATH OF ORGANIC DROPLET

1. A method of effectively separating residual organic solvent entrained in the phosphoric acid raffinate obtained from uranium extraction comprising:

passing the raffinate into an inclined tank having parallel lower and upper casings, the tank containing a plurality of plates attached essentially perpendicularly to the lower casing but not touching the upper casing, whereby droplets of said organic solvent separate from the raffinate, flow upward along the lower surface of the plates, continue to flow upward along the inner surface of the upper casing and accumulate as a separate layer on the surface of the raffinate in the tank, the rate of flow of the raffinate into the tank being insufficient to cause said droplets of organic solvent to be carried away in the raffinate flow; and

separately withdrawing the layer of organic solvent and the raffinate from the tank.

4,288,413

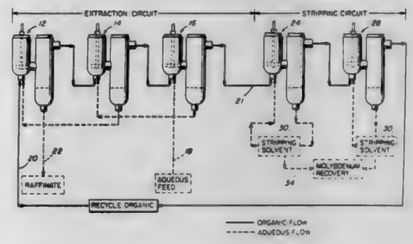
SEPARATING MOLYBDENUM VALUES FROM AN AQUEOUS SOLUTION CONTAINING TUNGSTEN BY SOLVENT EXTRACTION

Martin B. MacInnis, and Tai K. Kim, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 38,969, May 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 952,425, Oct. 18, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,967

Int. Cl.³ C01G 41/00

U.S. Cl. 423—54 **1 Claim**



1. A process for separating molybdenum values from an aqueous solution containing molybdenum and tungsten values comprising the following steps:

(a) forming an aqueous solution comprising less than about five grams per liter sodium molybdate and from about fifty to about two hundred grams per liter sodium tungstate;

(b) sulfidizing said aqueous solution to form a sulfidized

solution, said sulfidizing being carried out to an extent sufficient to convert substantially all of the sodium molybdate to sodium thiomolybdenum species, said sulfidizing being substantially less than the extent necessary to convert substantially all of said sodium tungstate to sodium thiotungsten species;

(c) contacting said sulfidized aqueous solution at a pH of from about eight to about nine and one-half with a suitable amount of organic extractant for a sufficient period of time to preferentially extract greater than ninety percent of the sodium thiomolybdenum species into the organic extractant, said organic extractant consisting essentially of tricaprylyl monomethyl ammonium chloride as the active extractant and the balance being an organic solvent comprising a mixture of alkyl benzenes having total carbon atoms in the alkyl group of from three to five, said active extractant being present as a volume percent of total organic extractant in an amount less than about three percent by volume wherein said volume percent is selected to result in greater than ninety percent of the sodium thiomolybdenum species and less than about five percent of the sodium thiotungsten species present in said solution being extracted,

(d) separating the organic extractant containing the sodium thiomolybdenum species from the sulfidized aqueous solution containing sodium thiotungsten values,

(e) stripping molybdenum values from the separated organic extractant by contacting said organic extractant with an aqueous solution containing sufficient amount of oxidizing agent suitable for oxidizing said molybdenum values to molybdate ion, and

(f) recycling said extracted solution to step (c) to extract further molybdenum values.

4,288,414

PROCESS FOR CHLORINATING CLAYS AND BAUXITE

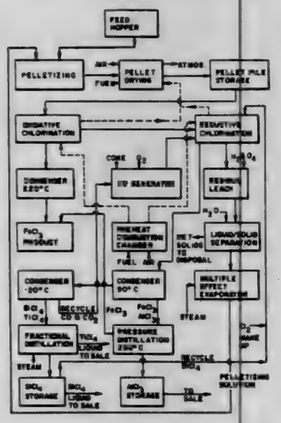
James E. Reynolds, Golden, and Alan R. Williams, Denver, both of Colo., assignors to Public Service Company of New Mexico, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 873,400, Jan. 30, 1978, Pat. No. 4,159,310. This application Jun. 20, 1979, Ser. No. 50,549

The portion of the term of this patent subsequent to Jun. 26, 1996, has been disclaimed.

Int. Cl.³ C01G *23/02*; C01F *7/56*; C01G *49/10*; C01B *33/08*

U.S. Cl. 423—79 **15 Claims**



1. A process for recovering aluminum from material selected from the group consisting of clays associated with coal and bauxite wherein the material contains aluminum, iron and siliceous materials comprising:

(a) chlorinating the material in an oxidizing atmosphere containing oxygen in an amount of from about 20 to about 60 percent by volume of the total gas composition at a temperature of about 650° C.–900° C. to selectively vaporize iron as iron chloride;

(b) chlorinating the residue of step (a) in a reducing atmosphere at a temperature of about 600° C.–850° C. to vaporize the chlorides of aluminum and silicon; and

(c) separating and recovering the formed chlorides from the vapors by selective condensing.

4,288,415

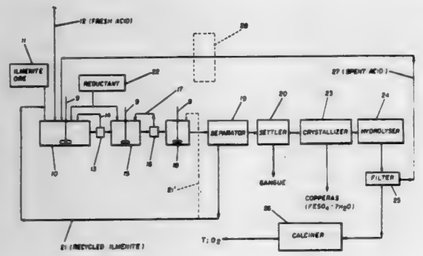
PROCESS FOR MANUFACTURING TITANIUM COMPOUNDS USING A REDUCING AGENT

Joseph A. Rahm, Long Branch, N.J., and Donald G. Cole, Pulheim, Fed. Rep. of Germany, assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 65,449, Aug. 10, 1979, abandoned. This application May 30, 1980, Ser. No. 151,998

Int. Cl.³ C01G *23/053*, *23/00*

U.S. Cl. 423—82 **14 Claims**



1. A process for producing a titanium sulphate solution which comprises reacting

(a) a titaniferous bearing material in an amount between about 10% and about 400% above the stoichiometric amount of titaniferous bearing material necessary to react with sulfuric acid to provide titanium sulphate, and

(b) a dilute sulfuric acid solution having a concentration between about 25% and about 60% by weight, based upon the total weight of said solution,

at a temperature below about 140° C., in the presence of a reducing agent which effects the reduction of ferric iron to ferrous iron; cooling the resulting reaction mixture to a temperature below 110° C. without precipitating the reaction products to produce a reaction mixture containing titanium sulfate; and separating undissolved solids to produce a titanium sulfate solution.

4,288,416

PROCESS FOR MANUFACTURING TITANIUM COMPOUNDS

Brian R. Davis, Bricktown, and Joseph A. Rahm, Long Branch, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 65,450, Aug. 10, 1979, abandoned. This application May 30, 1980, Ser. No. 151,999

Int. Cl.³ C01G *23/053*, *23/00*

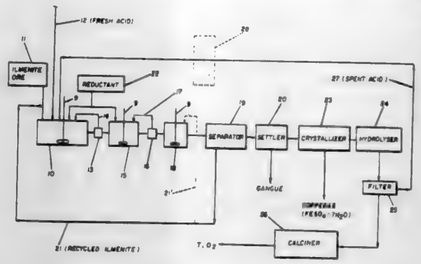
U.S. Cl. 423—82 **16 Claims**

1. A process for producing a titanium sulphate solution, which comprises: reacting

(a) a titaniferous bearing material in an amount between about 10% and about 400% above the stoichiometric amount of titaniferous bearing material necessary to react with sulfuric acid to provide titanium sulphate, and

(b) a dilute sulfuric acid solution having a concentration between about 25% and about 60% by weight, based upon the total weight of said solution,

at a temperature below about 140° C. in the absence of a reducing agent; cooling the resulting reaction mixture to a temperature below about 110° C. without precipitating the reaction products to produce a reaction mixture containing titanium sulfate, and separating undissolved solids to produce a titanium sulfate solution.



sulfate, and separating undissolved solids to produce a titanium sulfate solution.

4,288,417

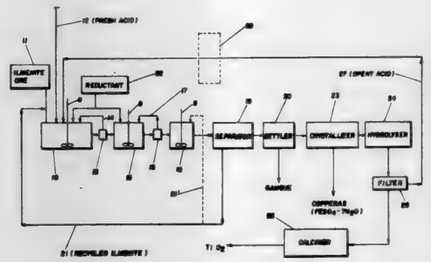
PROCESS FOR MANUFACTURING TITANIUM DIOXIDE

Joseph A. Rahm, Long Branch, N.J., and Donald G. Cole, Pulheim, Fed. Rep. of Germany, assignors to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 65,449, Aug. 10, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,938

Int. Cl.³ C01G *23/053*

U.S. Cl. 423—83 **14 Claims**



1. A process for producing titanium dioxide pigment which comprises (1) reacting

ilmenite, in an amount between 10% and 400% in excess of the stoichiometric amount of ilmenite necessary to react with sulfuric acid to provide titanyl sulphate, and

dilute sulfuric acid solution having a concentration between about 25% and about 60% by weight, based upon the total weight of said solution,

at a temperature below about 140° C. in the presence of a reducing agent which effects the reduction of ferric iron to ferrous iron; (2) cooling the resulting reaction solution to a temperature below about 100° C.; (3) removing iron sulphate from said reaction solution to provide a titanyl sulphate solution; (4) hydrolyzing said titanyl sulphate solution to provide a hydrate of titanium dioxide; (5) calcining said hydrate of titanium dioxide to provide titanium dioxide, and (6) recovering titanium dioxide.

4,288,418

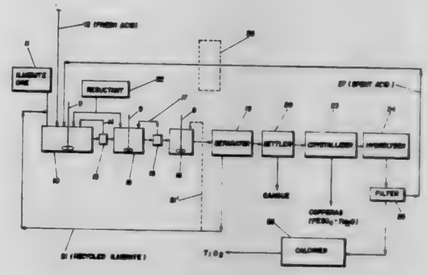
PROCESS FOR MANUFACTURING TITANIUM DIOXIDE

Brian R. Davis, Bricktown, and Joseph A. Rahm, Long Branch, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 65,450, Aug. 10, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 202,039

Int. Cl.³ C01G *23/053*

U.S. Cl. 423—83 **12 Claims**



1. A process for producing titanium dioxide pigment which comprises

(1) reacting

ilmenite, in an amount between 10% and 400% in excess of the stoichiometric amount of ilmenite necessary to react with sulfuric acid to provide titanyl sulphate, and

dilute sulfuric acid solution having a concentration between about 25% and about 60% by weight, based upon the total weight of said solution,

at a temperature below about 140° C.; (2) cooling the resulting reaction solution to a temperature below about 100° C.; (3) removing iron sulphate from said reaction solution to provide a titanyl sulphate solution; (4) hydrolyzing said titanyl sulphate solution to provide a hydrate of titanium dioxide; (5) calcining said hydrate of titanium dioxide to provide titanium dioxide and (6) recovering titanium dioxide.

4,288,419

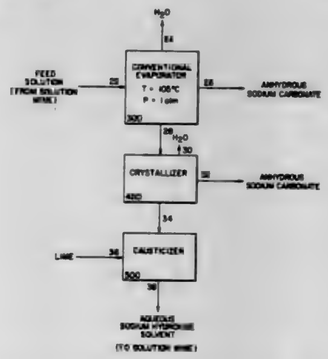
ENHANCED RECOVERY OF SODIUM CARBONATE FROM NaCL-CONTAINING SODIUM CARBONATE SOLUTIONS

William C. Copenhafer, Yardley, Pa., and Francis Rauh, Plainsboro, N.J., assignors to Intermountain Research & Develop. Corp., Green River, Wyo.

Filed Apr. 4, 1980, Ser. No. 137,209

Int. Cl.³ C01D *7/07*, *7/26*; E21B *43/28*

U.S. Cl. 423—190 **9 Claims**



1. A method for enhancing recovery of sodium carbonate

values from an NaCl-containing aqueous sodium carbonate solution, which comprises

subjecting an aqueous sodium carbonate solution which contains at least about 10% by weight sodium chloride to evaporative crystallization at superatmospheric pressure and at a temperature of at least 120° C. to induce crystallization of anhydrous sodium carbonate crystals without co-crystallization of sodium chloride until a crystallizer mother liquor containing less than 9% by weight Na_2CO_3 and greater than 23% by weight NaCl is obtained; and

separating the crystallized anhydrous sodium carbonate without NaCl crystallization from the crystallizer mother liquor to recover an anhydrous sodium carbonate product, essentially free of sodium chloride.

4,288,420

REMOVAL OF NITROGEN OXIDES AND SULFUR OXIDES BY AMMONIA

Hayami Ito; Chiaki Nagai, both of Kobe; Yasuyuki Nakabayashi; Kihachiro Igarashi, both of Yokohama; Kunihiko Mouri, Yokosuka, and Takashi Ikeda, Chigasaki, all of Japan, assignors to Electric Power Development Co. Ltd., Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, both of, Japan

Filed Aug. 29, 1980, Ser. No. 183,565

Claims priority, application Japan, Sep. 3, 1979, 54-113430

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—239 **2 Claims**

1. In a process for removing nitrogen oxides from sulfur oxides and ash containing exhaust gases from a coal-fired boiler by catalytic reduction followed by removal of the ash and ammonium-sulfur compounds from the gas, the improvement comprising contacting the ash containing ammonium-sulfur compounds with exhaust gas from said boiler at a temperature of 350° to 700° C. whereby the ammonium-sulfur compounds are decomposed, the sulfur compounds are preferentially retained in the ash and the ammonia containing exhaust gas is passed to said catalytic reduction.

4,288,421

PROCESS OF TREATING EXHAUST GAS CONTAINING NITROGEN OXIDES AND SULFUR DIOXIDE

Yoshihiko Kudo, and Hiroshi Hagiwara, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 57,815

Claims priority, application Japan, Jul. 28, 1978, 53/92222

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—395 **5 Claims**

1. In a process for treating an exhaust gas containing nitrogen oxides and sulfur dioxide, wherein said exhaust gas is brought into contact with an aqueous absorbing solution containing at least an iron chelate salt and an alkali sulfite for the production of absorption products, said absorbing solution containing said absorption products is cooled to crystallize and separate said absorption products by filtration, the filtrate is recycled to the above-mentioned step of contact between said exhaust gas and said absorbing solution, the thus obtained absorption products are reduced into ammonia or nitrogen and elementary sulfur, the improvement comprising the steps of:

(a) heating the separated absorption products of potassium imidodisulfonate, potassium dithionate and potassium sulfate to a temperature of 250° to 400° C. to convert potassium dithionate into potassium sulfate and sulfur dioxide;

(b) further heating a residual potassium imidodisulfonate to a temperature of 800° to 1000° C. in the presence of a carbonaceous substance selected from the group consisting of coal, coke, petroleum pitch and petroleum coke thereby decomposing said residual potassium imidodisulfonate into gaseous ammonia and at the same time reducing potassium sulfate into potassium polysulfide; and

(c) heating potassium polysulfide in the presence of carbon dioxide and steam to a temperature of 350° to 500° C., preferably 380° to 450° C. thereby converting said potassium polysulfide into hydrogen sulfide, gaseous sulfur and potassium carbonate.

4,288,422

METHOD OF PREPARING CHALCOGENIDES OF GROUP VIII BY LOW TEMPERATURE PRECIPITATION FROM MONAQUEOUS SOLUTION, THE PRODUCTS PRODUCED BY SAID METHOD AND THEIR USE AS CATALYSTS

Russell R. Chianelli, North Branch, and Theresa A. Pecoraro, Middletown, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 14,589, Feb. 23, 1979, abandoned, which is a continuation of Ser. No. 797,011, May 16, 1977, abandoned. This application Jun. 16, 1980, Ser. No. 160,106

Int. Cl.³ C01B *19/04*; C01G *3/12, 55/00*

U.S. Cl. 423—509 **15 Claims**

1. Chalcogenides amorphous to x-ray, having a particle size of less than 0.1 micron and a crystallite size of about 50 A × 100 A or less of the formula MX_y wherein M is a metal selected from the group consisting of ruthenium, rhodium, iridium and osmium, X is a chalcogen selected from the group consisting of sulfur, selenium, tellurium and mixtures thereof, and y is a number ranging from about 0.1 to about 3.

4,288,423

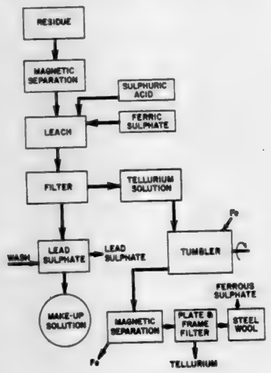
METHOD OF RECOVERING METALLIC TELLURIUM

Hans W. Rasmussen, St. George, Utah, assignor to Clarence E. Hulbert, Jr. and O. W. Coburn, both of Muskogee, Okla.

Filed Jul. 11, 1980, Ser. No. 168,759

Int. Cl.³ C01B *19/02*; C01G *21/20*

U.S. Cl. 423—510 **6 Claims**



1. A method of recovering metallic tellurium from a residue dust containing a major amount of lead oxide, a minor amount of tellurium oxide and a minor amount of iron oxide which comprises introducing the residue into a leach tank containing water, sulphuric acid and ferric sulphate, reacting the residue with the sulphuric acid and the ferric sulphate in the leach tank to produce lead sulphate and a tellurium solution, removing the lead sulphate and tellurium solution from the leach tank and separating the lead sulphate from the tellurium solution, adding the separated tellurium solution to a tumbler containing particles of metallic iron, agitating the tumbler so that the tellurium solution reacts with the iron to produce ferrous sulphate and metallic tellurium, withdrawing the mixture of ferrous sulphate and metallic tellurium from the tumbler and separating out the ferrous sulphate to recover essentially pure metallic tellurium.

4,288,424

GENERATOR FOR IONIC GALLIUM-68 BASED ON COLUMN CHROMATOGRAPHY

Rudi D. Neirinckx, Medfield, and Michael A. Davis, Westwood, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 15, 1979, Ser. No. 3,552

Int. Cl.³ A61K *43/00*; B65D *71/00*

U.S. Cl. 424—1 **5 Claims**

1. The process for obtaining a physiologically acceptable aqueous solution of gallium-68 which comprises binding $^{68}GeF_6$= to an anion-exchange resin from a hydrofluoric acid solution whereby gallium-68 fluorides are formed in situ from said $^{68}GeF_6$=, eluting said gallium-68 fluorides from said resin with an aqueous HF solution and neutralizing the aqueous HF solution containing gallium-68 fluorides.

4,288,425

METHOD AND APPARATUSES FOR ELECTROPHORETIC IMMUNOASSAY

Martin J. Lee, Leonia, N.J., and Leonard Ornstein, White Plains, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,203

Int. Cl.³ G01N *33/48*

U.S. Cl. 424—1 **10 Claims**

1. A disc-electrophoretic method for analyzing a sample constituent, said constituent having an ionic charge, said method comprising the steps of:

(a) introducing said sample constituent into a porous medium;

(b) applying an electric field across said medium for causing said constituent to migrate within said medium and concentrate by steady-state stacking in a first position thereof;

(c) further migrating said stacked concentrated constituent through a second portion of said medium containing a reactant, so as to cause a reaction therewith; and

(d) measuring said reaction.

4,288,426

SEROLOGICAL TEST FOR SYPHILIS

Roy W. Stevens, Schenectedy, N.Y., assignor to Research Corporation, New York, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,180

Int. Cl.³ G01N *33/54, 33/56*

U.S. Cl. 424—1 **8 Claims**

1. A serological method for determining the presence of *Treponema pallidum* antibodies in human serum which comprises diluting the serum to be tested in physiological saline solution to a dilution of from 1:20 to 1:100, and thereafter incubating the diluted serum with a lysate of *Treponema pallidum* adsorbed on an inert adsorbent to form an antigen-antibody conjugate when said antibodies are present, and detecting the presence of said conjugate.

4,288,427

CONDITIONING SHAMPOO COMPOSITION AND INGREDIENT THEREFOR

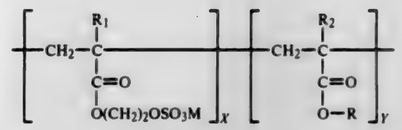
Robert F. Farmer, III, Rockville, Md., and Phillip E. Sokol, deceased, late of Rockville, Md. (by Eunice Sokol, legal representative), assignors to The Gillette Company, Boston, Mass.

Filed Aug. 21, 1979, Ser. No. 68,369

Int. Cl.³ A61K *7/06*

U.S. Cl. 424—70 **8 Claims**

1. A shampoo composition comprising an aqueous solution containing 1 to 10% by weight of a compound having the formula



In which the molar ratio of X to Y is from 3:1 to 1:2, in which R is a straight or branched chain alkyl group having 4-18 carbon atoms, in which R_1 is $-CH_3$ when R_2 is —H, in which R_1 is —H when R_2 is $-CH_3$, in which the ratio of carbon atoms to $-OSO_3M$ groups is from 1:8 to 1:16, and in which M is sodium, potassium or triethanolamine, in combination with 5-25% by weight of a surface active agent selected from the class consisting of anionic, nonionic, and ampholytic surface active agents.

4,288,428

UDDER DISINFECTANT AND METHOD OF DISINFECTING TEATS

Ake L. Föll, Södertälje, and Stig G. Widell, Ödeshög, both of Sweden, assignors to Ewos Aktiebolaget, Södertälje, Sweden

Filed Mar. 27, 1980, Ser. No. 134,425

Claims priority, application Sweden, Apr. 2, 1979, 7902893

Int. Cl.³ A61K *31/74, 31/18*

U.S. Cl. 424—78 **17 Claims**

1. An iodophorous udder disinfectant comprising an iodophor in the form of an alkylphenoxypoly(ethyleneoxy) ethanol-iodine complex or a polyvinylpyrrolidone-iodine complex, characterized in that in use dilution the disinfectant contains the iodophor complex in an amount sufficient to provide at least 0.01% by weight free iodine, 5 to 10% by weight urea, an acid in an amount sufficient to provide a pH between 1 and 5 and a solvent sufficient to make 100% by weight.

4,288,429

ANTIBIOTIC PLANOTHIOCINS

Tadashiro Fujii, Mishima; Satoshi Yaginuma, Shizuoka; Naoki Muto, Shizuoka, and Mitsuo Hayashi, Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 5, 1980, Ser. No. 175,677

Claims priority, application Japan, Sep. 8, 1979, 54-101548; Dec. 5, 1980, 55-63264

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—117 **7 Claims**

1. Planothiocin-A of the following properties:

(1) Melting point: 266°-269° C. (decomp.)

(2) Elementary analysis: C=49.47%, H=3.53%, N=13.25%, S=13.73%,

(3) Molecular weight: 1438 (minimum molecular weight calculated by amino acid analysis as one molecule of threonine in one molecule of the compound),

(4) Optical rotation: $[\alpha]_D^{23} = +19.6$ (c=0.7, pyridine)

(5) Ultraviolet absorption spectrum: FIG. **1** (in methanol), FIG. **2** (in acidic methanol), FIG. **3** (in alkaline methanol),

(6) Infrared absorption spectrum: FIG. **4**,

(7) Color reaction:
positive: decoloring potassium permanganate, iodine,
negative: ferric chloride, ninhydrine, Molisch,

(8) Solubility:
soluble: mixture of $CHCl_3$-methanol, pyridine, DMSO, glacial acetic acid.
insoluble: benzene, acetone, petroleum ether, hexane,

(9) Nature: weakly acidic,

(10) Color: white crystals.

4,288,430

DISINFECTANT CHLORINATED CYANURATE CONTAINING COMPOSITIONS AND METHOD OF USE

James E. Etzel, Lafayette, Ind., assignor to Purdue Research Foundation, Lafayette, Ind.

Filed Aug. 6, 1979, Ser. No. 64,346
Int. Cl.[3] A01N *59/08, 43/64*
U.S. Cl. 424—153 2 Claims

1. A method of disinfecting sodium chloride brine solutions held in a brine storage tank which is in fluid connection with an ion exchange column containing ion exchange resins for water softening, said brine being used to regenerate said ion exchange resins and the disinfecting of said brine thereby avoiding bacterial contamination of said resins, comprising adding to water in said brine storage tank a pelletized mixture of sodium chloride and a bactericidally effective amount of a chlorinated cyanurate selected from the group consisting of potassium dichloroisocyanurate and sodium dichloroisocyanurate, and dissolving said pelletized mixture in said water to provide both the chlorinated cyanurate to avoid bacterial contamination of the brine and the sodium chloride to form the brine solution for regeneration of said ion exchange resins.

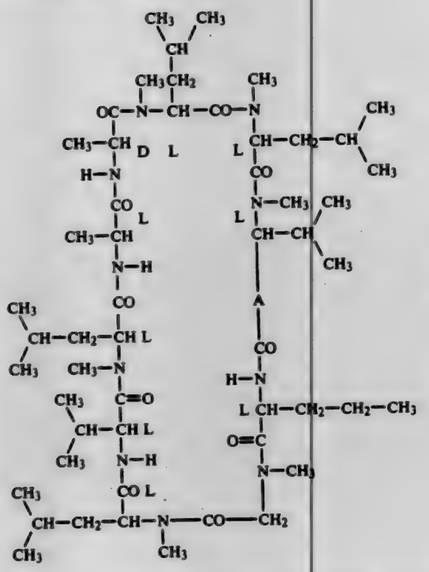
4,288,431

CYCLOSPORIN DERIVATIVES, THEIR PRODUCTION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

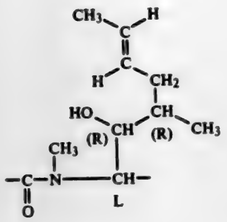
Rene P. Traber, Basel; Hans Hofmann, Ettingen; Eugen Härri, Therwil, and Kuhn Max, Basel, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Oct. 12, 1979, Ser. No. 84,100
Claims priority, application Switzerland, Oct. 18, 1978, 10776/78; Mar. 22, 1979, 2696/79; Aug. 15, 1979, 7480/79
Int. Cl.[3] A61K *37/00*; C07C *103/52*; C12P *21/04*
U.S. Cl. 424—177 9 Claims

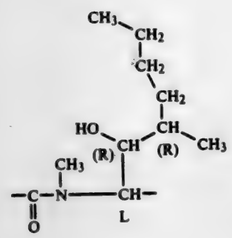
1. A compound of formula I



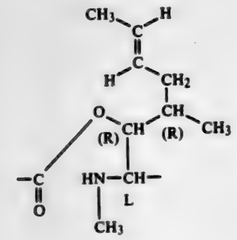
selected from the group consisting of cyclosporin G, wherein A is



dihydrocyclosporin G, wherein A is



and isocyclosporin G, wherein A is



4,288,432

NOVEL ENKEPHALIN ANALOGS AND PROCESS FOR THE PREPARATION THEREOF

Sandor Bajusz; Andras Ronay, and Jozsef Szekely, all of Budapest, Hungary, assignors to Richter Gedeon Vegyészeti Gyár Rt., Budapest, Hungary

Filed Jun. 6, 1980, Ser. No. 157,064
Claims priority, application Hungary, Jun. 12, 1979, GO 1448
Int. Cl.[3] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 6 Claims

1. An enkephalin analog having the formula I

$$H_2N\text{-}C(NH)\text{-}Tyr\text{-}A\text{-}Gly\text{-}Phe\text{-}B \quad (I)$$

wherein

Tyr, Gly and Phe are L-Tyrosine, glycine and L-phenylalanine residues, respectively,

A is a D-amino acid residue having a lower alkyl group of a lower thioalkyl group as a side chain, and

B is an amino group of an L-proline amide moiety, or a pharmaceutically acceptable salt thereof.

4,288,433

COSMETIC COMPOSITIONS HAVING A SLIMMING ACTION

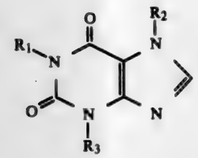
Constantin Koulbanis, Paris; Claude Bouillon, Eaubonne, and Patrick Darmenton, Villejuif, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 849,128, Nov. 7, 1978, abandoned. This application Sep. 24, 1979, Ser. No. 78,513
Claims priority, application Luxembourg, Nov. 8, 1976, 76148
Int. Cl.[3] A61K *31/625, 31/52, 31/22, 31/465*
U.S. Cl. 424—232 6 Claims

1. A method for the treatment of cellulitis which comprises massaging the part of the body to be treated with a therapeutically effective amount of a composition containing in a suitable vehicle:

(1) 0.1 to 1.5% by weight of a thioether selected from the group consisting of: S-carboxymethylcysteine, S-carboxymethylhomocysteine, thiolane-3,4-diol, thiolane-3,4-diol S-oxide, thiolane-3,4-diol S-dioxide and the malate, salicylate, nicotinate, tartrate or 5-amino-3-thiahexanedioate of 2-benzylthioethylamine, and

(2) 0.1 to 2% by weight of a xanthine derivative having the formula:



in which each of R_1 and R_3 independently represents a hydrogen atom, a linear or branched alkyl radical having 1 to 5 carbon atoms, an allyl radical, a propynyl radical or a cyclohexyl radical with the proviso that R_1 and R_3 do not simultaneously represent a hydrogen atom and R_2 represents hydrogen, a methyl, ethyl, hydroxymethyl or hydroxyethyl radical.

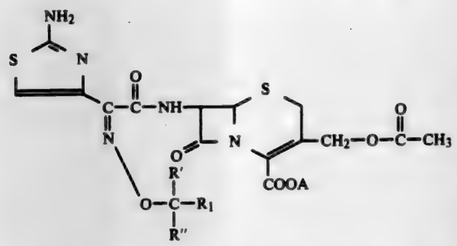
4,288,434

CEPHALOSPORANIC ACID DERIVATIVES

Rene Heymes, Romainville, France, assignor to Roussel Uclaf, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,421
Claims priority, application France, Mar. 25, 1977, 77 08988; Dec. 5, 1977, 77 36512
Int. Cl.[3] A61K *31/545*; C07D *501/34*
U.S. Cl. 424—246 24 Claims

1. Syn isomers of a 7-amino-thiazolyl-acetamido-3-acetoxymethyl-cephalosporanic acid compound of the formula



wherein R_1 is selected from the group consisting of —CN, —$CONH_2$ and —$COOR_1'$, R_1' is selected from the group consisting of alkyl of 1 to 3 carbon atoms, hydrogen, alkali metal, alkaline earth metal, ammonium and a non-toxic, pharmaceutically acceptable organic amine, A is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, ammonium and a non-toxic, pharmaceutically acceptable organic amine, and when R_1' is other than alkyl, R_1' and A are the same, R' and R'' are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms with the



group in the syn position with the proviso that when R_1 is —$COOR_1'$ and R_1' is hydrogen, A is hydrogen and when R_1 is —$COOR_1'$ and R_1' is an alkali metal, alkaline earth metal, ammonium or a non-toxic, pharmaceutically acceptable organic amine, A has the same meaning as R_1'.

12. An antibacterial composition comprising an antibacterially effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

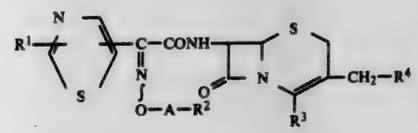
4,288,435

3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS AND PHARMACEUTICAL ANTIBACTERIAL COMPOSITIONS CONTAINING THEM

Takashi Kamiya, Suita; Kunihiko Tanaka, Toyonaka; Tsutomu Terazi, Osaka, and Yoshiharu Nakai, Ohtsu, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 11, 1979, Ser. No. 56,504
Claims priority, application United Kingdom, Jul. 17, 1978, 30080/78
Int. Cl.[3] A61K *31/545*; C07D *501/34, 501/56*
U.S. Cl. 424—246 30 Claims

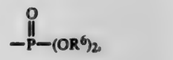
1. 3,7-Disubstituted-3-cephem-4-carboxylic acid compounds of the formula:



wherein

R^1 is amino or an amino group protected by an eliminatable protective group;

R^2 is —CONH—R^5,



or —NHCO—R^7;

R^3 is carboxy or a carboxy group protected by an eliminatable protective group;

R^4 is C_1–C_6 alkanoyloxy, benzothiazolylthio, tetrazolylthio, or thiadiazolylthio, the latter two of which may have one C_1–C_6 alkyl;

R^5 is pyridyl, thiazolyl, or phenyl having one or more substituent(s) selected from halogen, hydroxy, carboxy and C_2–C_7 alkoxycarbonyl;

R^6 is hydrogen or C_1–C_6 alkyl;

R^7 is isoxazolyl disubstituted with C_1–C_6 alkyl and halogen substituted phenyl, or phenyl having one or more substituent(s) selected from hydroxy and halogen; and

A is C_1–C_6 alkylene; and

pharmaceutically acceptable salts thereof.

30. A pharmaceutical antibacterial composition comprising an effective amount of the compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,288,436

3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takao Takaya, Kawanishi, and Masayoshi Murata, Mino, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

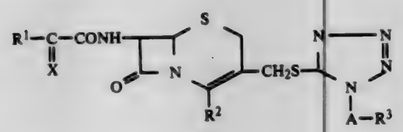
Continuation-in-part of Ser. No. 891,289, Mar. 29, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 79,796

Claims priority, application United Kingdom, Apr. 13, 1977, 15378/77; Jan. 23, 1978, 2650/78

Int. Cl.³ A61K *31/545;* **C07D** *501/56*

U.S. Cl. 424—246 **7 Claims**

1. 3,7-Disubstituted-3-cephem-4-carboxylic acid compounds of the formula:



wherein

R^1 is 2-amino-, lower alkanoylamino- or halo(lower)alkanoylamino substituted thiazol-4-yl;

R^2 and R^3 are each carboxy or an esterified carboxy;

X is lower alkynyloxyimino; and

A is lower alkylene, and pharmaceutically acceptable salt thereof.

7. A pharmaceutical antibacterial composition comprising a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,288,437

2-[(AMINO)-ARYL-METHYLENE]-BENZO[b]THIOPHEN-3(2H)-ONES

Wolfhard Engel, Biberach; Günter Trummlitz, Warthausen; Ernst Seeger, and Joachim Kühling, both of Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

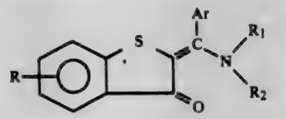
Filed Jul. 28, 1980, Ser. No. 173,173

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931010

Int. Cl.³ A61K *31/38, 31/44;* **C07D** *333/64, 409/06*

U.S. Cl. 424—246 **13 Claims**

1. A compound of the formula



wherein

Ar is phenyl; mono- or di-substituted phenyl, where the substituents are one to two halogens, one to two alkyls of 1 to 3 carbon atoms, or one amino, nitro, cyano or trifluoromethyl; or pyridinyl;

R is hydrogen, chlorine, methyl or methoxy;

R_1 is hydrogen or methyl;

R_2 is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkynyl of 2 to 6 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, methyl-(cycloalkyl of 3 to 8 carbon atoms) or —A—R_4,

wherein

A is alkylene of 2 to 3 carbon atoms, and

R_4 is hydroxyl, methylamino, dimethylamino, N-methylethylamino, diethylamino, pyrrolidino, piperidino, hexamethyleneimino, morpholino or 4-methyl-1-piperazinyl; or

R_1 and R_2, together with each other and the nitrogen atom to which they are attached, are pyrrolidino, piperidino, morpholino, N-methyl-piperazino, thiomorpholino, thiomorpholino-S-oxide or hexamethyleneimino.

13. The method of preventing or relieving convulsions in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective anticonvulsant amount of a compound of claim 1.

4,288,438

NITROGEN-CONTAINING HETEROCYCLIC RING DERIVATIVES AND ANALGESIC AND ANTI-INFLAMMATORY COMPOSITIONS AND METHODS EMPLOYING THEM

Kazuo Kubo, Uraws; Noriki Ito, Iwatsuki; Isao Souzu, Uraws; Yasuo Isomura, Yokohama; Hiroshige Homma, Omiya, Japan, and Masuo Murakami, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

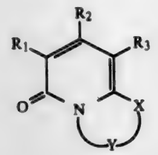
Division of Ser. No. 876,517, Feb. 9, 1978, Pat. No. 4,186,200, Continuation-in-part of Ser. No. 814,325, Jul. 11, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 68,073

Claims priority, application Japan, Jul. 22, 1976, 51-87486; Dec. 29, 1976, 51-158228; Jan. 8, 1977, 52-464; Mar. 31, 1977, 52-36384; Apr. 13, 1977, 52-42423

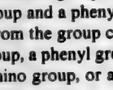
Int. Cl.³ A61K *31/505;* **C07D** *471/04*

U.S. Cl. 424—251 **15 Claims**

1. A nitrogen-containing heterocyclic compound of the formula



wherein one of R_1 and R_2 is a member selected from the group consisting of a lower alkyl group, a phenyl group, a halophenyl group, and a lower alkoxyphenyl group and the other of them is a member selected from the group consisting of a hydrogen atom, a lower alkyl group and a phenyl lower alkyl group; R_3 is a member selected from the group consisting of a hydrogen atom, a lower alkyl group, a phenyl group, and a phenyl lower alkyl group; X is an imino group, or an



wherein R_4' is a member selected from the group consisting of a lower alkyl group, a hydroxy lower alkyl group, a cycloalkyl group having 5–7 carbon atoms, and a phenyl lower alkyl group; and Y is a trimethylene group, and the pharmaceutically acceptable non-toxic salts thereof.

11. An analgesic anti-inflammatory composition comprising an effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or excipient.

15. A method of inducing an analgesic or anti-inflammatory effect comprising administering an effective amount of the composition of claim 11.

4,288,439

ANTI-ULCER TREATMENT METHOD

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

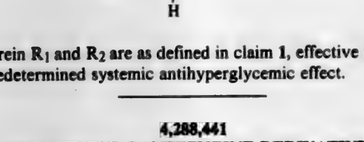
Filed Nov. 29, 1979, Ser. No. 98,418

Claims priority, application United Kingdom, Nov. 30, 1978, 46724/78

Int. Cl.³ A61K *31/44*

U.S. Cl. 424—263 **3 Claims**

1. A method for treating ulcers or hypersecretion in a mammal which comprises orally administering to said mammal an effective amount of an anti-ulcer agent of formula I



wherein R is alkyl of 1 to 6 carbon atoms, or aralkyl of 7–12 carbon atoms, R^1 is hydrogen or alkyl of 1 to 6 carbon atoms, and the R and R^1 radicals may be the same or different, A is methylene or ethylene radical, optionally substituted by lower alkyl of 1 to 6 carbon atoms, oxo, or hydroxy, S is sulphur and Z^- is a halide or lower alkyl-or by aryl sulphonate anion.

4,288,440

PYRIDINONES

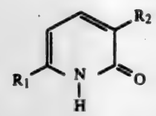
Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 29, 1980, Ser. No. 182,554

Int. Cl.³ C07D *213/64, 213/48, 401/04;* **A61K** *31/41*

U.S. Cl. 424—263 **15 Claims**

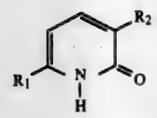
1. A 6-alkyl-1,2-dihydro-2-oxo-3-substituted pyridine derivative of the Formula II,



II

wherein R_1 is alkyl of four to eight carbon atoms, inclusive, and R_2 is tetrazolyl or carboxaldehyde.

6. A method of treating adult-onset diabetes mellitus in a human suffering from said disease which comprises orally administering an amount of a 6-alkyl-1,2-dihydro-2-oxo-3-substituted pyridine derivative of the Formula II



II

wherein R_1 and R_2 are as defined in claim 1, effective to exert a predetermined systemic antihyperglycemic effect.

4,288,441

NICOTINOYL PANTETHEINE DERIVATIVES

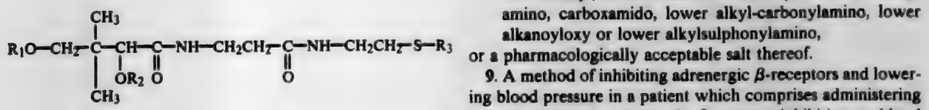
Tosaku Miki; Akashi Eriguchi; Yasushi Abiko, and Kinya Kameda, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,447

Int. Cl.³ C07D *401/14;* **A61K** *31/455;* **C07D** *401/12*

U.S. Cl. 424—266 **6 Claims**

1. A compound of the formula:



wherein R_1, R_2 and R_3 each represents a member selected from the group consisting of hydrogen and nicotinoyl, with the proviso that R_1, R_2 and R_3 do not all simultaneously represent hydrogen, and the nontoxic acid addition salts thereof.

5. A method of prolonging effective levels of free nicotinic acid in the blood comprising:

administering to a host subject a therapeutically effective amount of the compound of claim 1.

4,288,442

INHIBITING ADRENERGIC β-RECEPTORS WITH PIPERIDINOPROPYL DERIVATIVES

Walter-Gunar Friebe, Darmstadt; Helmut Michel, Mannheim; Carl H. Ross, Viernheim; Fritz Wiedemann, Weinheim-Lützelsachsen; Gisbert Sponer, Hemsbach, and Wolfgang Schaumann, Heidelberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Postfach, Fed. Rep. of Germany

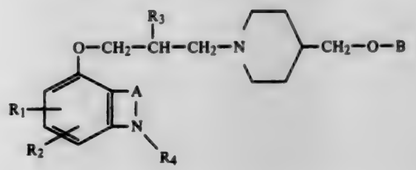
Filed Jan. 31, 1980, Ser. No. 117,172

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905876

Int. Cl.³ A61K *31/445;* **C07D** *401/12, 401/14*

U.S. Cl. 424—267 **10 Claims**

1. A piperidinopropyl derivative of the formula



in which

R_1 and R_2 each independently is hydrogen or a lower alkyl radical, or together are a C_{2-4}-alkylene radical,

R_3 is hydrogen, hydroxy, or lower alkanoyloxy,

R_4 is hydrogen or formyl,

A is (a) —X_1=Y_1— in which

(i) X_1 and Y_1 each independently is a nitrogen atom or —C(R_6)=, in which

(A)R_6 is hydrogen, a lower alkyl radical optionally substituted by hydroxy or lower alkanoyloxy, a carboxyl radical or an alkoxycarbonyl radical, or

(b)—X_2—Y_2— in which

(i) X_2 is —CH_2— or —N(R_7)—, in which (A)R_7 is hydrogen or lower alkyl, and

(ii) Y_2 is —CH_2— or —C(=Z)—, in which (A)Z is oxygen or sulfur, or

(c)—CR_8=CR_9— in which

(i) R_8 and R_9 together are a —CH=CH—CH=CH— bridge, with the proviso that when present, it is Y_1 or Y_2 which is connected to N—R_4, and

B is a pyridyl, primidyl, benzimidazolinonyl, benzimidazolinyl, benztriazolyl, indazolyl, benzodioxolanyl or carbazolyl radical or, if A is —X_2—Y_2— or —CR_8=CR_9, may also be a phenyl radical, either of which is optionally substituted by halogen, hydroxyl, lower alkyl, hydroxy-lower alkyl, carboxamido-lower alkyl, lower alkoxy, amino, carboxamido, lower alkyl-carbonylamino, lower alkanoyloxy or lower alkylsulphonylamino,

or a pharmacologically acceptable salt thereof.

9. A method of inhibiting adrenergic β-receptors and lowering blood pressure in a patient which comprises administering to such patient an adrenergic β-receptor-inhibiting or blood pressure lowering effective amount of a compound or salt according to claim 1.

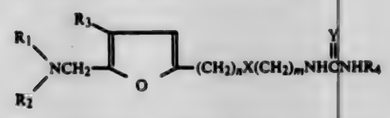
4,288,443

SUBSTITUTED FURAN COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Duncan B. Judd, Ware; John W. Clitherow, Sawbridgeworth; Barry J. Price, Hertford, and John Bradshaw, Ware, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 950,440, Oct. 11, 1978, abandoned.
This application Feb. 25, 1980, Ser. No. 124,115
Claims priority, application United Kingdom, Oct. 11, 1977, 42256/77
Int. Cl.³ A61K *31/34*; C07D *307/54*
U.S. Cl. 424—267 6 Claims

1. Compounds of the general formula



(I)

and physiologically acceptable salts and N-oxides, hydrates and bioprecursors thereof, in which R_1 and R_2 which may be the same or different each represent hydrogen, C_{1-8} alkyl, C_{4-8} cycloalkyl, C_{3-6} alkenyl, aralkyl with 1 to 4 carbon atoms in the alkyl residue or C_{1-8} alkyl interrupted by an oxygen atom or a group



in which R_5 represents hydrogen or C_{1-8} alkyl, or R_1 and R_2 may together with the nitrogen atom to which they are attached, form a saturated monocyclic 5 to 7 membered heterocyclic ring;

R_3 represents straight or branched chain C_{1-8} alkyl, alkoxyalkyl with 1 to 8 carbon atoms in each alkyl residue, C_{1-8} hydroxyalkyl, C_{1-8} alkoxycarbonyl, alkylthioalkyl with 1 to 8 carbon atoms in each alkyl residue, halogen or aryl;

R_4 represents hydrogen, C_{1-8} alkyl, C_{2-6} alkenyl or alkoxyalkyl with 1 to 8 carbon atoms in each alkyl residue;

X represents —O— or —S—;

Y represents =S, =O, $=NR_6$ or $=CHNO_2$ where R_6 represents hydrogen, nitro, cyano, C_{1-8} alkyl, aryl, C_{1-3} alkylsulphonyl or arylsulphonyl;

m represents an integer from 2 to 4 inclusive; and

n represents an integer which is 1 or 2, or additionally when X is —S— n may also be zero.

6. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as defined in claim 1 to relieve said condition.

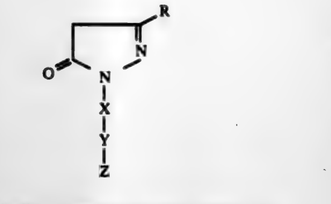
4,288,444

ANALGESIC AND MORPHINE-ANTAGONISTIC 6,7-BENZOMORPHANS

Antony M. Akkerman, Amsterdam; Hermanus C. C. K. van Bakel, Montfoort, and Henriette G. Van Brouwoort-Uurbanus, Nieuw-Loosdrecht, all of Netherlands, assignors to ACF Chemiefarma N.V., Maarssen, Netherlands

Division of Ser. No. 36,089, May 4, 1979, Pat. No. 4,234,591, which is a continuation of Ser. No. 804,149, Jun. 6, 1977, abandoned. This application Apr. 25, 1980, Ser. No. 143,770
Claims priority, application United Kingdom, Jun. 21, 1976, 25877/76
Int. Cl.³ A61K *31/445*; C07D *405/06*
U.S. Cl. 424—267 8 Claims

1. A benzomorphan compound of the formula



or a pharmaceutically acceptable salt thereof wherein R^1 is unsubstituted phenyl or phenyl substituted by a substituent selected from the group consisting of halogen, lower alkyl, trifluoromethyl, hydroxy, lower alkoxy, di(lower) alkylamino, and piperidino; R^2 is hydrogen, halogen, hydroxy, lower alkoxy, or acetoxy; R^3 is alkyl or alkenyl having up to four carbon atoms; R^4 is hydrogen, hydroxy, lower alkoxy, lower alkanoyloxy, nicotinoyloxy, or phenyl lower alkanoyloxy; and R^5 is heteroarylalkyl containing one oxygen atom as the sole hetero atom, such heteroarylalkyl substituted in the heteroaryl group by lower alkyl, or is heterocycloalkylalkyl containing one or two oxygen atoms as the sole hetero atoms.

8. The method of raising the pain threshold and/or of counteracting the physiological effects of an opiate in a warm-blooded animal, which comprises administering to said animal an effective analgesic and/or morphine-antagonistic amount of a compound or salt as in claim 1.

4,288,445

THERAPEUTIC COMPOSITIONS CONTAINING 4-NITROISOXAZOLE

Takenori Kusumi, and Koji Nakanishi, both of New York, N.Y., assignors to Suntory Limited, Osaka, Japan

Filed Oct. 10, 1980, Ser. No. 195,746
Int. Cl.³ A61K *31/42*
U.S. Cl. 424—272 10 Claims

1. A pharmaceutical composition containing an amount of 4-nitroisoxazole which is effective to cause vasodilation in a patient needing such treatment together with a pharmaceutically acceptable excipient.

4,288,446

PYRAZOL-5-ONES

Elke Möller; Karl Meng, both of Wuppertal; Egbert Wehinger, Nevigas, and Harald Horstmann, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 633,636, Nov. 30, 1975, abandoned, which is a division of Ser. No. 459,408, Apr. 9, 1974, Pat. No. 4,018,890. This application Dec. 12, 1979, Ser. No. 102,840
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1973, 2319278
The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.
Int. Cl.² A61K *31/415*
U.S. Cl. 424—273 P 54 Claims

1. A pharmaceutical composition useful for effecting diuresis and saluresis in humans and animals and for treating hypertension in humans and animals which comprises a diuretic, saluretic or antihypertensive amount of a pyrazol-5-one of the formula:

or a pharmaceutically acceptable salt thereof wherein

R is hydrogen, lower alkyl or amino;

X is ethylene, ethylene wherein 1 hydrogen atom on one of the carbon atoms is substituted by lower alkyl or ethylene wherein 1 hydrogen atom on each of the two carbon atoms is substituted by lower alkyl;

Y is oxygen or sulphur;

Z is aryl of 6 to 10 carbon atoms unsubstituted or substituted by:

(a) 1 or 2 of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, and alkenoxy of 2 to 4 carbon atoms;

(b) cycloalkyl of 5, 6 or 7 carbon atoms, or cycloalkenyl of 5, 6 or 7 carbon atoms;

(c) nitro; or

(d) nitro, and 1 or 2 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkenoxy of 2 to 4 carbon atoms, halogen and trifluoromethyl;

in combination with a pharmaceutically acceptable nontoxic inert diluent or carrier.

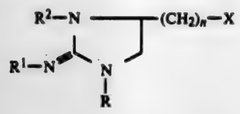
4,288,447

ANTIHYPERGLYCEMIC 4-SUBSTITUTED 2-IMINOIMIDAZOLIDINE COMPOSITIONS

Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 9,899, Feb. 6, 1979, Pat. No. 4,247,705. This application May 5, 1980, Ser. No. 146,611
Int. Cl.³ A61K *31/415*, *31/445*, *31/495*, *31/535*
U.S. Cl. 424—273 R 4 Claims

1. A pharmaceutical composition for the treatment of hyperglycemia comprising a pharmaceutical carrier and a hyperglycemia inhibiting quantity of a 2-iminoimidazolidine compound corresponding to the formula:



wherein R is loweralkyl; R^1 is a member selected from hydrogen, loweralkyl, phenyl, loweralkylphenyl, and chlorophenyl; R^2 is a member selected from loweralkyl, phenyl, loweralkylphenyl and chlorophenyl; X is member selected from amino, diloweralkylamino, di(phenylloweralkyl) amino, 1-piperidino, 1-piperazino, 1-morpholino, and chloro; and n is the integer 1 or 2, or a pharmaceutically acceptable acid addition salt thereof.

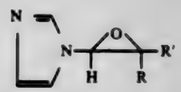
4,288,448

N-SUBSTITUTED IMIDAZOLE DERIVATIVES, AND THEIR USE

Ikutaro Saji; Shunji Aono, both of Osaka; Takao Okuda, and Hideo Agui, both of Sonehigashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 26, 1980, Ser. No. 210,619
Claims priority, application Japan, Dec. 5, 1979, 54-158581
Int. Cl.³ A61K *31/415*, *31/495*; C07D *403/00*, *405/14*
U.S. Cl. 424—273 R 18 Claims

1. An N-substituted imidazole compound of the formula:



(I)

wherein R and R′ are independently a phenyl group optionally substituted with one or more halogen, C_1–C_8 alkyl, C_1–C_8 alkoxy, C_1–C_8 alkylthio, phenyl, phenoxy, phenylthio, hydroxyl, trifluoromethyl, amino, carbamoyl, di(C_1–C_8)alkylamino, C_1–C_8 alkanoylamino, nitro, cyano, carboxy, C_1–C_8 alkoxycarbonyl, C_1–C_8 alkylsulfonyloxy or C_1–C_8 alkanoylpiperazino groups; a C_1–C_{15} alkyl group or a phenyl-(C_1–C_2)alkyl group optionally bearing halogen on the benzene ring, and its acid-addition salts.

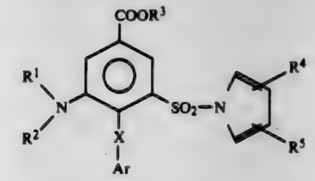
4,288,449

N-ARYLSULFONYLPYRROLES, THEIR PREPARATION, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Jens-Uwe Blicssener, Deidesheim; Karl-Heinz Geiss, Beindersheim; Dieter Lenke, Ludwigshafen, and Claus D. Mueller, Viernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 58,257, Jul. 17, 1979, abandoned. This application May 28, 1980, Ser. No. 154,036
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831850; Apr. 11, 1979, 2914615
Int. Cl.³ A61K *31/40*; C07D *207/48*
U.S. Cl. 424—274 9 Claims

1. A compound of the formula



I,

in which

R^1 is alkyl of 2 to 5 carbon atoms, allyl, benzyl, furylmethyl, wherein the furan ring is unsubstituted or substituted by bromine, or thienylmethyl, wherein the thiophene ring is unsubstituted or monosubstituted by methyl, and R^2 is hydrogen, or

R^1 and R^2 together with the nitrogen are a pyrrolidine ring,

R^3 is hydrogen, methyl or ethyl,

R^4 and R^5 are hydrogen or R^4 is methyl or ethyl in the α-position of the pyrrole ring and R^5 is methyl, ethyl or n-propyl in the α'-position of the pyrrole ring,

X is sulfur or oxygen, or N–H and

Ar is phenyl, which is unsubstituted or substituted by chlorine

and its therapeutically useful ammonium salts, alkali metal salts or acid addition salts.

9. A pharmaceutical diuretic composition comprising an

effective amount of a compound of the formula I of claim 1 and a pharmaceutically acceptable carrier.

4,288,450

PROCESS FOR THE PREPARATION OF NOVEL BENZOPYRANE DERIVATIVES

Georges Haas, Bianingen; Alberto Rossi, Oberwil; Knut A. Jaeggi, Basel, and Alex Sele, Muttenz, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

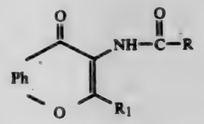
Division of Ser. No. 923,522, Jul. 11, 1978, Pat. No. 4,216,155. This application Jan. 7, 1980, Ser. No. 110,077

Claims priority, application Luxembourg, Jul. 15, 1977, 77786

Int. Cl.³ C07D *311/22;* **A61K** *31/35*

U.S. Cl. 424—283 **8 Claims**

1. A 3-oxaloamino-4-oxo-4H-1-benzopyrane derivative of the formula I



(I)

in which R is carboxyl, lower alkoxycarbonyl or carbamyl which is unsubstituted or mono- or di-sub-stituted by lower alkyl, Ph is 1,2-phenylene which is di-substituted by lower alkyl, or, at two adjacent carbon atoms, by 3-membered or 4-membered lower alkylene, and R_1 is hydrogen or lower alkyl, in the free form or in the form of a salt.

4,288,451

COMBATING ARTHROPODS WITH FERROCENE-CONTAINING SYNERGISTIC COMPOSITIONS

Volker Mues, Wuppertal, and Wolfgang Behrenz, Overath, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

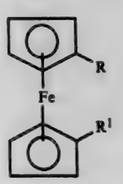
Division of Ser. No. 882,824, Mar. 2, 1978, Pat. No. 4,206,227. This application Jun. 29, 1979, Ser. No. 53,563

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711546

Int. Cl.³ A01N *37/00, 37/34, 43/02, 43/08, 43/36, 55/02, 57/00, 65/00*

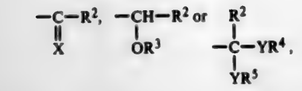
U.S. Cl. 424—295 **10 Claims**

1. An arthropodicidal composition containing, as active ingredient, an arthropodicidally effective amount of (1) at least one ferrocene derivative of the formula



in which

R and R^1 each independently is hydrogen, alkyl, or alkenyl with up to 20 carbon atoms, alkyl or alkenyl with up to 10 carbon atoms substituted by carbalkoxy with up to 4 carbon atoms per alkoxy, benzyl, nitrile, cyanomethyl, cyanoethyl;



R^2 is hydrogen, alkoxy with 1 to 10 carbon atoms; alkyl with 1 to 19 carbon atoms, cycloalkyl with 3 to 12 carbon atoms or phenyl optionally carrying at least one halogen, alkyl, hydroxyl, halogenoalkyl, nitro, nitrile or alkoxy substituent,

R^3 is hydrogen or alkyl with 1 to 8 carbon atoms,

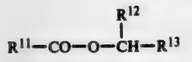
R^4 and R^5 each independently is alkyl with 1 to 6 carbon atoms or together are an alkylene radical with 1 to 6 carbon atoms,

X is oxygen, hydroxyimino or alkoxyimino with 1 to 6 carbon atoms, and

Y is oxygen or sulphur,

and (2) a compound selected from the group consisting of

(A) carboxylic acid esters of the formula



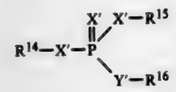
in which

R^{11} is alkyl with 1 to 6 carbon atoms optionally substituted by phenyl or halophenyl; phenyl; halophenyl; or cyclopropyl optionally substituted by alkyl, alkenyl, halogenoalkyl or halogenoalkenyl each with up to 6 carbon atoms,

R^{12} is hydrogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 3 halogen atoms, alkenyl, ethynyl or nitrile, and

R^{13} is phenyl optionally substituted by C_{1-4}-alkyl, halogen, phenoxy, halophenoxy, methyl-phenoxy or benzyl; furanyl, tetrahydrophthalimido or benzodioxolyl any of which is optionally substituted by halogen, alkyl or alkenyl with up to 4 carbon atoms or benzyl or, together with R^{12}, forms a cyclopentenone ring which is optionally substituted by C_{1-4}-alkyl, furfuryl or C_{1-5}-alkenyl, and naturally occurring pyrethroids, and

(B) phosphoric acid esters of the formula



in which

X' each independently is O or S,

Y' is O, S, —NH— or a direct bond between the central P atom and the radical R^{16},

R^{14} and R^{15} each independently is C_{1-4}-alkyl or phenyl, and

R^{16} is alkyl with 1 to 4 carbon atoms which is optionally substituted by halogen, hydroxyl, nitrile, optionally halogen-substituted phenyl, carbonylamide, sulphonylalkyl, sulphoxyalkyl, carbonylalkyl, alkoxy, alkylmercapto or alkoxycarbonyl; alkenyl with up to 4 carbon atoms which is optionally substituted by halogen, optionally halogen-substituted phenyl or alkoxycarbonyl; aralkyl; phenyl which is optionally substituted by methyl, nitro, nitrile, halogen or methylthio; a pyridine, quinoline, quinoxaline, pyrimidine, diazinone or benzo-1,3,4-triazine radical which is optionally substituted by C_{1-4}-alkyl or halogen; dioxanyl; an oxime radical; or a radical identical to that to which it is bonded,

the weight ratio of component (1) to component (2) being from about 0.1:10 to 10:0.1.

4,288,452

1-ARYLOXY-3-NITRATOALKYLAMINO-2-PROPANOLS AND USE AS β-RECEPTOR BLOCKER

Johannes Sombroek, Darmstadt; Karl-Heinz Becker, Dieburg; Klaus O. Minck, Ober-Ramstadt, and Hans-Joachim Enenkel, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

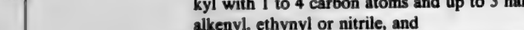
Filed Feb. 9, 1979, Ser. No. 10,781

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1978, 2805404

Int. Cl.³ A61K *31/21, 31/47, 31/275;* **C07C** *77/02*

U.S. Cl. 424—304 **6 Claims**

1. A 1-aryloxy-3-nitratoalkylamino-2-propanol of the formula



wherein

Ar is phenyl; phenyl substituted by (a) halogen, (b) cyano, (c) C_{1-7} alkanoylamino, (d) benzoylamino, (e) alkanoyl of 1–4 carbon atoms, (f) C_{1-10} alkyl, (g) C_{1-10} alkoxy, C_{1-10} alkoxy in which the carbon chain contains one ether oxygen atom, C_{1-10} alkyl in which the carbon chain contains 1 or 2 ether oxygen atoms, C_{1-10} alkylthio or C_{1-10} alkyl in which the carbon chain contains one thioether sulfur atom, (h) C_{1-10} alkenyl or C_{1-10} alkynyl, (i) the residues (g) containing a double or triple bond, (j) cycloalkyl of 3–8 carbon atoms or (k) cycloalkoxy of 3–8 carbon atoms; naphthyl; indanyl; indenyl; 1,2,3,4-tetrahydronaphthyl; indolyl; indolyl substituted by alkyl of 1–4 carbon atoms; carbazolyl; or 1,2,3,4-tetrahydro-2-oxoquinolyl, and

R is nitratoalkyl of 2–10 carbon atoms,

and the physiologically acceptable acid addition salts thereof.

6. 1-o-allyloxy-phenoxy-3-(1,1-dimethyl-3-nitrato-propylamino)-2-propanol, a compound of claim 1.

4,288,453

DERIVATIVES OF ARYLALKANOIC ACIDS, COMPOSITIONS AND USE

Michel Vincent, Bagneux; Jacques Duhault, Chatou; Michelle Boullanger, Marly le Roi, and Georges Remond, Versailles, all of France, assignors to Science Union et Cie, Suresnes, France

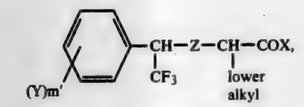
Filed Oct. 10, 1978, Ser. No. 949,571

Claims priority, application France, Oct. 7, 1977, 77 30186; Apr. 27, 1978, 78 12452

Int. Cl.³ A61K *31/19;* **C07C** *53/134*

U.S. Cl. 424—317 **12 Claims**

1. The (Aryl alkyl) alkanoic acids of the formula



including the diastereoisomers and enantiomers thereof, wherein Z is oxygen or sulphur; lower-alkyl is 1 to 5 carbon atoms, inclusive; Y is halogen, trifluoromethyl, or lower-alkyl; m' is zero or number from one to three, inclusive;

and X is hydroxy, or the grouping OM in which M is the monovalent cation of a mineral base.

7. The pharmaceutical compositions containing as active ingredient, in effective amount for hypolipemic or hypocholesterolemic action, at least one compound of claim 1 or a salt thereof in admixture with an inert non-toxic pharmaceutical carrier or vehicle.

4,288,454

ANTIVIRAL 1-ADAMANTYL-3-(PHENYLSULFONYL)THIOUREAS

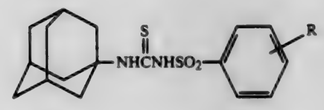
Michael J. Kramer, Glen Ridge, and Jefferson W. Tilley, North Caldwell, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 927,072, Jul. 24, 1978, abandoned. This application Dec. 13, 1979, Ser. No. 103,138

Int. Cl.³ A01N *41/06;* **C07C** *143/82, 143/833, 133/06*

U.S. Cl. 424—321 **4 Claims**

1. A method of treating a mammalian or avian host afflicted with a viral infection which comprises administering to the host an antivirally effective amount of an antiviral compound of the formula



wherein R is amino.

4,288,455

METHOD OF CONTROLLING MOLLUSC PEST

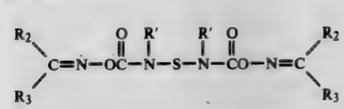
Robert G. Haines, Orange Park, Fla., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 15, 1978, Ser. No. 877,974

Int. Cl.³ A01N *33/24, 37/00, 43/24, 47/10*

U.S. Cl. 424—327 **10 Claims**

1. A method of controlling mollusc which comprises subjecting them to a molluscicidally effective amount of a compound of the formula:



wherein:

R' is alkyl having from 1 to 4 carbon atoms;

R_2 is alkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy or phenyl; or R_2 is R_4 R_5—NCO or R_6 CON(R_4)—groups, wherein:

R_4 and R_5 are individually hydrogen or alkyl;

R_6 is hydrogen, alkyl or alkoxy;

R_3 is hydrogen, alkyl, alkylthio, alkylsulfinyl, alkylsulfonyl or cyano;

with the provisos that:

A. the total number of carbon atoms in R_2 and R_3 together may not exceed eight; and

B. when R_2 is alkyl substituted with alkylthio, R_3 is cyano, alkyl, and alkylthio.

4,288,456

COMPOSITIONS CONTAINING 1-ARYL-5-(2-PROPENYLAMINO)-1-PENTEN-3-ONES AND METHOD FOR TREATING INFLAMMATORY CONDITIONS

Joseph E. Sundeen, Yardley, Pa.; Tamara Dejneka, Skillman, and Frederic P. Hauck, Bridgewater, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

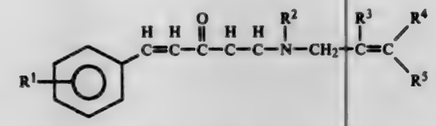
Filed Sep. 19, 1980, Ser. No. 188,647

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **8 Claims**

1. The method of treating an inflammatory condition in a mammalian species, which comprises administering to said

specie a composition comprising a therapeutically effective amount of a compound of the structure



wherein R^1 is hydrogen, lower alkyl, lower alkoxy, halogen, hydroxy, nitro or amino, and R^2, R^3, R^4 and R^5 may be the same or different and are hydrogen or lower alkyl, and physiologically acceptable salts thereof, and a pharmaceutically acceptable carrier therefor.

4,288,457

ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREOF

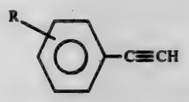
Julius Diamond, Morris Plains, N.J., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 431,254, Jan. 7, 1974, Pat. No. 3,923,910, which is a division of Ser. No. 268,419, Jan. 7, 1972, Pat. No. 3,852,364. This application May 14, 1975, Ser. No. 574,837

Int. Cl.³ A61K *31/03, 31/015*

U.S. Cl. 424—353 **12 Claims**

1. A method for treating inflammation, pain or fever comprising administering to a patient suffering from said inflammation, pain or fever a therapeutically effective amount between 0.5 to 100 mg/kg of body weight per day of at least one compound of the formula:



wherein R is selected from the group consisting of

lower alkyl of 1 to 7 carbon atoms,

cycloalkyl of 5 to 7 carbon atoms,

1-7 carbon atoms alkyl substituted cycloalkyl of 5 to 7 carbon atoms,

cycloalkenyl of 5 to 7 carbon atoms, and

1-to 7 carbon atoms alkyl substituted phenyl.

4,288,458

FISH SILAGE

Edward Barnes, Orwell, England, assignor to BP Nutrition (UK) Limited, London, England

Continuation of Ser. No. 901,510, May 1, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 94,851

Int. Cl.³ A23J *1/04*

U.S. Cl. 426—7 **11 Claims**

1. A process for preparing liquified fish silage which comprises admixing unground fish solids having dimensions up to 6 inches by 15 inches with liquified fish silage in a ratio in the range of from 10:1 to 1:10 by weight and an additive present in at least an amount capable of initiating and accelerating liquifaction of said fish solids, the additive being selected from the group consisting of organic acids, mineral acids, salts thereof, and enzymes; and effecting liquifaction of said fish solids in the presence of said liquified fish silage and at a temperature of at least 20° C.

4,288,459

LOW FAT IMITATION SOUR CREAM

Donald B. Baker, Tulsa, Okla., assignor to The Pro-Mark Companies, Tulsa, Okla.

Filed Sep. 28, 1979, Ser. No. 80,150

Int. Cl.³ A23C *9/12, 3/08, 23/00*

U.S. Cl. 426—43 **12 Claims**

1. A method for making a low fat milk product which resembles sour cream in appearance, texture and taste comprising the steps of:

(a) admixing milk having a butterfat content of 0.7 to 7% by weight and a stabilizer;

(b) heating said mixture to a temperature in the range of from about 150° to 180° F. (65.5° to 82.2° C.) for a time sufficient to form a uniform, substantially homogeneous mixture and to effect pasteurization;

(c) admixing bakers cheese curd and the resultant milk-stabilizer mixture from step (b) to coat said bakers cheese curd therewith and to form a bakers cheese curd mixture, said bakers cheese comprising about 40 to 70% by weight of said mixture and the relative proportions of milk and bakers cheese curd being selected to provide a fat content in said product of less than about 2% by weight;

(d) agitating said curd mixture to a substantially uniform and fluid consistency;

(e) maintaining said curd mixture at a temperature in the range of 70° to 130° F. (21.1° to 54.4° C.) and adding thereto a lactic acid producing bacterial culture;

(f) adding flavorants comprising at least one edible acid, lipase modified butterfat and starter distillate and a preservative at any time after step (b) and prior to step (g); and

(g) homogenizing said bacterial culture, flavorant and preservative containing bakers cheese curd mixture at pressures in the range of 500 to 5000 psig (35.15 to 351.5 kg/cm²).

4,288,460

NON-CAKING, WATER-SOLUBLE, GRANULAR COATED FOOD INGREDIENT

Paul Ciliberto, Slate Hill, and Stanley Kramer, Middletown, both of N.Y., assignors to Balchem Corporation, Slate Hill, N.Y.

Filed May 24, 1979, Ser. No. 41,804

Int. Cl.³ A23L *1/04, 2/00, 3/34*; C09K *3/00*

U.S. Cl. 426—96 **14 Claims**

1. A non-caking granular food ingredient composition comprising core particles of a normally hygroscopic, water-soluble food ingredient and a continuous encapsulating coating on said core particles consisting essentially of 5–37% of fatty acid derivative selected from the group consisting of polyoxyethylene sorbitan monooleate, polyoxyethylene sorbitan monostearate and lecithin, 15–56% propylene glycol and 38–62% finely divided flow agent.

4,288,461

METHOD OF SELECTIVE PITTING FOR FRUITS OF THE DRUPE TYPE

Konrad E. Meissner, Lafayette, Calif., assignor to California Processing Machinery, San Ramon, Calif.

Division of Ser. No. 880,229, Feb. 22, 1978, Pat. No. 4,213,382. This application Jan. 11, 1980, Ser. No. 111,371

Int. Cl.³ A01K *43/00*

U.S. Cl. 426—231 **11 Claims**

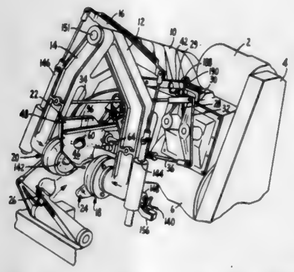
1. A method of pitting fruits of the drupe type at a single pitting station, some having sound pits and some having partially or completely split pits and presented randomly in succession to said station, comprising the steps of

supporting each whole fruit as said station with its suture substantially in a predetermined plane;

substantially bisecting the body of said fruit in said plane and, at the same time, moving opposed pit-gripping means through the body of said fruit in said plane toward the edges of said pit;

sensing if said pit is sound or split by sensing whether said movement of said pit-gripping means is arrested by gripping engagement of said pit at a first position or continues past the pit-gripping position to a second position;

upon said pit-gripping means engaging and gripping the edges of a sound pit, holding the same against rotation and rotating the halves of said fruit body relative to said pit-gripping means about an axis extending transversely to said plane and extending through said pit to shear said fruit body halves from the held sound pit; and



upon sensing the presence of a split pit, shifting said pit gripping means away from said pit and said second position and through said fruit body to a third position remote from said pit to bring a coring spoon spaced from said pit-gripping means into a position in said plane which is adjacent said split pit, and then rotating said coring spoon about an axis extending through said split pit without rotation of said fruit halves such that said coring spoon rotation describes a complete body of revolution and cuts a core, including said split pit, corresponding to such body of revolution from said fruit halves.

4,288,462

METHOD FOR REMOVING CATIONIC CONTAMINANTS FROM BEVERAGES

Kenneth C. Hou, Glastonbury, and Eugene A. Ostreicher, Farmington, both of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,142

Int. Cl.³ C12H *1/00*

U.S. Cl. 426—423 **8 Claims**

1. A process for the removal of haze or haze formers which are cationic submicronic proteinaceous contaminants from a beverage, comprising conducting a beverage containing such contaminants through a filter media having an anionic electrokinetic capture potential for such contaminants, the filter media being prepared by:

a. treating filter elements selected from the group consisting of cellulose pulp and particulate filter aids with an amount of inorganic cationic colloidal silica surface charge modifier to render the surface of the filter elements receptive to the subsequent deposition of an inorganic anionic colloidal silica charge modifier, thereafter,

b. charge modifying the treated filter elements with an inorganic anionic colloidal silica charge modifier, and

c. forming the filter elements into a sheet having a negative zeta potential and a wet strength of at least 2.5 kg/in.

4,288,463

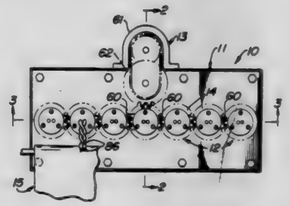
METHOD OF MAKING PRETZELS OF SELECTED SPIRAL PITCH

Edwin I. Groff, and Edwin T. Groff, both of 120 S. 3rd Ave., West Reading, Pa. 19611

Continuation of Ser. No. 6,359, Jan. 25, 1979, abandoned, which is a division of Ser. No. 913,582, Jun. 8, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,374

Int. Cl.³ D21C *11/16*

U.S. Cl. 426—500 **2 Claims**



1. In the method of manufacturing pretzels, the steps which comprise: extruding pretzel dough to form at least one dough strand, rotating said dough strand during extrusion about an eccentric axis to spirally wind the dough strand, gravitationally passing the dough strand downwardly during said rotation through a vertical distance from the point of final extrusion onto a conveyor belt, varying said vertical distance to change the wound spiral to a selected spiral pitch, and conveying away on the conveyor belt the spirally wound dough strand of the selected pitch for baking.

4,288,464

FLAVOR ENHANCER

Walton J. Smith, Rte. 4, Grafton, N.H. 03240

Continuation of Ser. No. 904,890, May 11, 1978, abandoned. This application Oct. 19, 1979, Ser. No. 86,432

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548 **8 Claims**

1. A flavor enhancer prepared by drying an aqueous composition comprising 1–5 parts of artifical sweetener, ½ to 1 part maltol or ethyl maltol, and 5 to 10 parts of a soluble low DE polysaccharide.

4,288,465

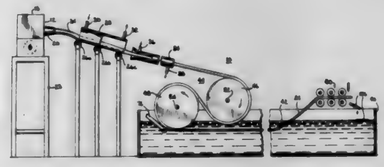
PREPARING CHEESE HAVING LONGITUDINAL FIBROUS TEXTURE

Matthew Meyer, 1001 E. 17th St., Marshfield, Wis. 54449

Filed Jun. 13, 1979, Ser. No. 48,525

Int. Cl.³ A23C *19/024*

U.S. Cl. 426—582 **19 Claims**



1. A process for manufacturing a cheese product having defined longitudinal fibrous texture properties from a cheese capable of forming a fibrous texture when stretched, said process comprising the steps of:

extruding a continuous strand of heated cheese;

continuously applying a longitudinal pulling force to the continuous strand after extrusion to induce longitudinal fibrous texture properties in the heated strand and reduce the cross-sectional size of the strand; and

cooling the strand at least after applying the longitudinal pulling force.

4,288,466

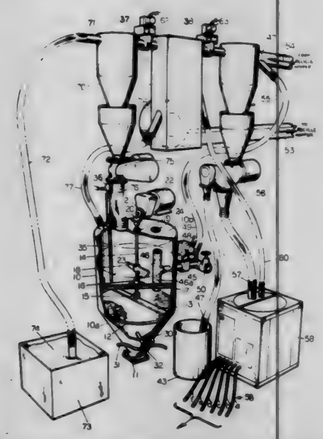
POWER PRECONDITIONING FOR ELECTROSTATIC APPLICATION

Russell W. Heckman, Perrysburg, and George A. Nickey, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 923,868, Jul. 12, 1978, Pat. No. 4,170,074, which is a continuation of Ser. No. 747,586, Dec. 6, 1976, abandoned. This application Jul. 2, 1979, Ser. No. 54,326

Int. Cl.³ B05D *1/06, 7/22, 3/02;* F26B *17/10*

U.S. Cl. 427—28 **7 Claims**



1. In the process for applying organic hygroscopic powder to coat a preheated glass container wherein said powder is electrostatically applied to said glass container in a powder application station and the adhered powder is subsequently thermally fused on said glass container to form a smooth coating, the improvement wherein said hygroscopic powder is preconditioned in a preconditioning zone prior to electrostatic application to said glass container by passing a stream of dry, inert gas having a dew point of less than about 35° F. upwardly through a mass of said powder at a rate sufficient to suspend said powder in said stream as a fluidized bed and mechanically agitating said fluidized bed for a residence time sufficient to yield a substantially dry, free flowing powder, separating the free flowing powder from said stream by aspirating through an outlet disposed intermediate of open ends of a vertical conduit immersed in said bed, and then transferring said free flowing powder to the electrostatic application station.

4,288,467

METHOD OF PRODUCING A MEMBRANE OF GRAFT COPOLYMER

Sueo Machi, Takasaki; Isao Ishigaki, Maebashi, and Takanobu Sugo, Gunma, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

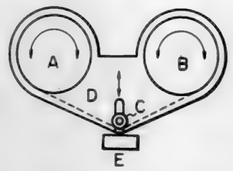
Filed Feb. 4, 1980, Ser. No. 118,105

Claims priority, application Japan, Feb. 5, 1979, 54-11995

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **4 Claims**

1. A method of producing a membrane of graft copolymer by irradiating a polyolefin film with ionizing radiation before or simultaneously with graft copolymerizing an olefinic monomer or a mixture of olefinic monomer and a polyene compound onto the polyolefin, said method being characterized by graft copolymerization wherein the polyolefin film is transported in a forward direction from a fixed reversing roller to another fixed reversing roller via an intermediate mobile roller and when the film comes to its end, it is transported in a reverse



direction, and said mobile roller is moved in a direction in which it applies a stretching load on the film being transported.

4,288,468

PROCESS FOR ENCAPSULATING ELECTRICAL COMPONENTS BY VORTEX SINTERING

Ferdinand Utner, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,568

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830893

Int. Cl.³ B05D *1/32*

U.S. Cl. 427—45.1 **4 Claims**



1. A process for encapsulating electrical components with hardenable casting resin, said components each having wire leads joined to a component body, said process comprising the steps of:

outwardly bending top edges of a pair of opposed adhesive heat-insulating strips;

placing a component lead between said strips;

gluing said strips to said component lead;

pressing said top edges of the adhesive strips against the lead wires after gluing to cover the lead up to a point at which the lead joins the component body;

heating the surface said component body by induction in a high frequency field;

moving the component through a vortex bath of said resin in powder form to sinter the powder to the surface of the component body;

removing loose resin powder from said insulating material;

smoothing the sintered resin on the surface of the component body by subjecting the body to further heat to melt the resin; and

allowing the sintered resin to harden.

4,288,469

ANODIZED ALUMINIUM ROLLERS WITH IMPROVED ELECTRICAL CONDUCTIVITY AND A PROCESS FOR THEIR MANUFACTURE

Rudolf Meyer, Leverkusen; Günther Koepke, Odenthal, and Roland Hourticolon, Leichlingen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 95,964

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851153

Int. Cl.³ C23C *9/02;* B44D *1/18*

U.S. Cl. 427—57 **4 Claims**

1. A process for producing a transporting roller comprised of aluminum with a surface adapted for transporting photographic materials

and having a highly insulating porous anodic oxide formed on the member surface,

with conductive surfaces on the anodized oxide layer including the steps of immersing the member in an aqueous cleaning liquid

subjecting the anodic oxide layer of the immersed member to ultrasonic treatment

impregnating the pores of the treated oxide layer with an aqueous solution of a wetting agent and the salt of a conductive and corrosion-resistant metal,

treating the impregnated metal salt with a solution of a reducing agent to reduce the metal salt in the oxide,

and forming a conductive layer on the outer surface of the oxide layer and conductive surfaces in the pores

so that the surface layer is in conductive connection with the aluminum roller.

4,288,470

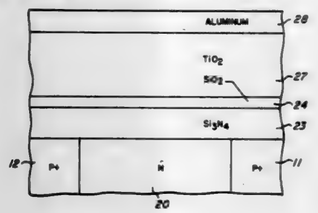
METHOD OF MAKING NON-VOLATILE SEMICONDUCTOR MEMORY ELEMENTS HAVING MULTIPLE DIELECTRIC LAYERS OF SILICON NITRIDE, SILICON DIOXIDE, AND RUTILE TITANIUM DIOXIDE

Robert T. Bate, Garland, and Henry B. Morris, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 968,545, Dec. 11, 1978, Pat. No. 4,250,206. This application Sep. 15, 1980, Ser. No. 187,230

Int. Cl.³ H01L *21/316, 21/318*

U.S. Cl. 427—88 **11 Claims**



1. A method of making a semiconductor memory element comprising the steps of:

forming a layer of silicon nitride directly upon the material of a silicon substrate;

forming a layer of silicon dioxide upon said nitride layer;

depositing a layer of titanium upon said oxide layer;

oxidizing said titanium layer in an oxidizing ambient between 200 degrees C. and 1200 degrees C. to form a type of titanium dioxide known as rutile; and

forming a conducting layer upon said titanium dioxide layer.

4,288,471

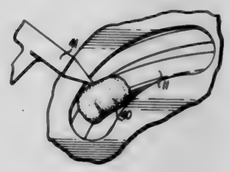
CABLE END SEALING METHOD

Jerry W. Lanier, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 5, 1980, Ser. No. 146,887

Int. Cl.³ B05D *3/00, 5/00, 7/20*

U.S. Cl. 427—120 **13 Claims**



1. The method of sealing the ends of an insulated electrical conductor against penetration by moisture and other contaminants comprising the steps of passing solid thermoplastic adhesive from a remote reservoir to a means for melting said adhesive and applying molten thermoplastic adhesive to the open ends of an insulated electrical conductor in a manner whereby said adhesive bonds to the insulated surface of said insulated conductor and seals the open ends of said conductor against penetration by moisture and other contaminants, wherein said thermoplastic adhesive comprises an ethylene vinyl acetate polymer characterized by:

a melt temperature range of from about 300° F. to about 375° F.;

a viscosity of about 1800 cps at 375° F.; and

a specific gravity of about 0.95 to about 0.99 at 75° F.

4,288,472

METHOD OF PRODUCING UNIFORM SYNTHETIC RESIN COATINGS ON WORKING CASTS FOR DENTAL APPLICATIONS

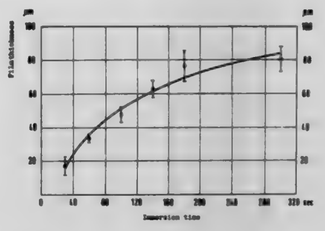
Knud D. Jorgensen, Copenhagen, Denmark, assignor to Etablissement Dentaire Ivoclar, Munich, Fed. Rep. of Germany

Filed Dec. 7, 1979, Ser. No. 101,985

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852984

Int. Cl.³ A61C *13/00*

U.S. Cl. 427—133 **9 Claims**



1. A method of producing a uniform synthetic resin coating on a working cast for dental applications which comprises:

(A) applying to or introducing in said working cast a first catalyst component which when initiated by a second catalyst component effects polymerization of a polymerizable composition;

(B) thereafter applying to said working cast a composition comprising said second catalyst component and a polymerizable composition which when polymerized forms said resin; and

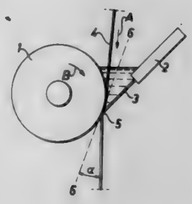
(C) thereafter effecting polymerization of said polymerizable composition to form a film.

4,288,473

PROCESS FOR APPLYING A COATING TO BOTH SIDES OF A RUNNING PAPER WEB

Hans I. Wallsten, Lausanne, Switzerland, assignor to Inventing S.A., Switzerland

Filed Apr. 24, 1979, Ser. No. 32,921
Int. Cl.³ B05D *1/00, 5/00*
U.S. Cl. 427—209 **6 Claims**



1. A continuous process for applying a coating to both sides of a paper web, said process comprising the steps of:

(a) feeding the web at a speed of at least 400 meters per minute through the nip formed between a rotating applicator roll and an elastically yielding blade having an edge which urges the web towards the roll, whereby a first sump is formed between the paper web and the roll and a second sump is formed between the paper web and the blade;

(b) feeding a coating composition into each of said first and second sumps at a rate such that the amount of coating material applied to the web, calculated as the total of both sides of the web, exceeds 14 grams per square meter;

(c) maintaining the viscosity of the coating composition in said first and second sumps at 400 to 2000 centipoises; and

(d) withdrawing the paper web from the nip, so that it is bent away from the applicator roll over the edge of the blade at an angle of between 8° to 12° to the tangient to the roll at the nip.

4,288,474

CONVEYOR BELTING

Gilbert E. Watts, Beverley, England, assignor to J. H. Fenner & Co. Limited, Hull, England

Filed Jun. 3, 1980, Ser. No. 156,039
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—290 **12 Claims**

1. A method for manufacturing textile reinforced conveyor beltings of the solid woven type wherein the textile carcass has been produced by the simultaneous weaving of a multilayer structure in which the layers are integrally combined by means of binder threads which comprises subjecting the outer surfaces of a solid woven textile carcass comprising at least a major proportion of synthetic fiber yarns to a brushing action so as to roughen a proportion of the filaments in the outermost yarns of the carcass, and then impregnating or coating the carcass with a polyvinylchloride material.

4,288,475

METHOD AND APPARATUS FOR IMPREGNATING A FIBROUS WEB

Brian L. Meeker, 1846 Winston, Toledo, Ohio 43614

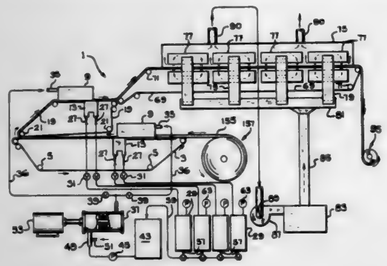
Filed Oct. 22, 1979, Ser. No. 87,207
Int. Cl.³ C23C *13/08*; B05D *3/00, 3/02*
U.S. Cl. 427—294 **10 Claims**

1. A method for impregnating a web of fibrous material comprising the steps of:

advancing a web of fibrous material having a first and a second surface along a path;

applying a foamed binder material to the first surface of the web, the foamed binder material sealing the first surface of the web; and

applying a source of vacuum to the second surface of the web, the vacuum being applied at a first and second location to the second surface of the web, the vacuum from the first and second locations overlapping in effect on the



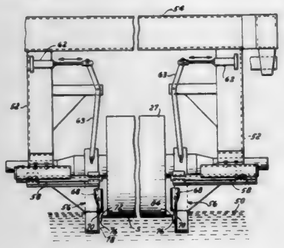
web, the vacuum compressing the web of fibrous material to an extent where the web is no more than one half its original thickness whereby the resistance to flow through the web is substantially uniform, the source of vacuum drawing the foamed binder into the web to impregnate the web with binder material.

4,288,476

ONE SIDE COATING OF CONTINUOUS STRAND

Herbert Wald, Baltimore; Harold K. Young, Dundalk, and Lacy C. Meadows, Baltimore, all of Md., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 12,927, Feb. 16, 1979, Pat. No. 4,207,831.
This application May 12, 1980, Ser. No. 148,655
Int. Cl.³ B05D *3/04*
U.S. Cl. 427—300 **6 Claims**



1. The method of coating a metallic strip with a molten coating metal on one side only, the second side of said strip being free of said coating metal, said process comprising the steps of cleaning said strip such that at least said one side to be coated is free of oxides and is wettable by said molten coating metal, providing a container for said molten coating metal, maintaining a bath of molten coating metal at a predetermined level within said container, moving said strip through said bath below said predetermined level, said strip following an arcuate path through said bath and supported therein by means of a deflector roll in contact with said second side of said strip and having a width less than the width of said strip, and preventing the coating of said second side of said metallic strip by said molten coating metal by directing a stream of gas toward the strip edges of said second side projecting beyond said deflector roll and against the surface of said bath of molten coating metal as said metallic strip moves through said bath.

4,288,477

READILY THERMOWELDABLE FILMS OF POLYOLEFINS COATED WITH LACQUERS BASED ON KETONIC RESINS

Fosco Bordini, and Luigi Mauri, both of Terni, Italy, assignors to Moplefan S.p.A., Milan, Italy

Filed Oct. 23, 1978, Ser. No. 953,873
Claims priority, application Italy, Oct. 24, 1977, 28894 A77
Int. Cl.³ B32B *27/08, 27/38*
U.S. Cl. 428—35 **7 Claims**

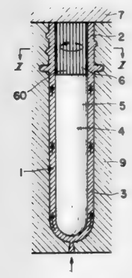
1. Bags and packaging articles formed of a heat-sealed film of normally solid polypropylene consisting essentially of recurring propylene units, having a substantial crystalline polypropylene content, said film being coated on at least one of its surfaces with a ketonic resin or with a mixture of a ketonic resin and at least one polymer selected from the group consisting of vinyl, acrylic and cellulose polymers.

4,288,478

PARISON AND METHOD FOR FORMING PARISONS FOR BIAXIAL ORIENTATION BLOW MOLDING

Harumi Kinoshita, Tokyo; Yoshiaki Hayashi, Matsudo, and Tadao Saito, Tokyo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Japan

Filed Sep. 18, 1979, Ser. No. 76,769
Claims priority, application Japan, Nov. 14, 1977, 52-136427; Nov. 14, 1977, 52-136430
Int. Cl.³ B65D *1/00*; B29C *17/07*; B29D *23/02*
U.S. Cl. 428—35 **4 Claims**



1. In a process for making injection-molded parison preforms for biaxial orientation blow molding of saturated polyester resin bottles, said preform having a body portion, a neck portion and a central axis, and said neck portion having an internal periphery and an external periphery, comprising forming a mold cavity for injection molding said preform, injecting molten resin into said mold cavity, and allowing said molten resin to solidify to form said preform, an improvement which comprises utilizing a mold cavity defined by an outer mold, a central core and a core plate, said central core having a rotatable base adjacent to the internal periphery of the neck portion of said preform and a stationary core extension adjacent to said body portion, said base being rotatable independent of said core extension, and applying a rotary force in one direction around the central axis of the preform, said force exerted only on the internal periphery of the neck portion of the preform by rotation of said rotatable base after said molten resin is injected into said mold cavity and while the injected resin is still at a temperature at which orientation is effected.

3. A product of the process of claim 1.

4,288,479

RADIATION CURABLE RELEASE COATINGS

Karl Brack, Holliston, Mass., assignor to Design Cote Corp., Westminster, Mass.

Continuation-in-part of Ser. No. 400,364, Sep. 24, 1973, Pat. No. 3,989,609. This application May 7, 1975, Ser. No. 575,252
Int. Cl.³ B32B *31/28, 33/00*
U.S. Cl. 428—40 **22 Claims**

1. The method of making an adhesive or transfer design laminate comprising a release layer in dry-stripping removable contact with said adhesive or transfer design, said method comprising forming as said release layer a liquid film of radiation polymerizable material, said liquid containing an effective amount of a release material having low adhesion to said adhesive or transfer design and being of limited compatibility in said liquid such that a thin layer thereof migrates to the surface of said film, curing said film to a flexible solid layer by irradiation without substantial evaporation of solvent, and applying said adhesive or transfer design to the surface of said cured film.

4,288,480

PRESSURE SENSITIVE ADHESIVE COMPOSITION AND COATED PRODUCT

Gerald G. Grzywinski, and Edward J. Foley, both of Gorham, Me., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 914,566, Jun. 12, 1978, abandoned. This application May 14, 1979, Ser. No. 38,393
Int. Cl.³ B32B *25/06*; C08F *19/08*
U.S. Cl. 428—40 **5 Claims**

1. A pressure-sensitive adhesive composition comprising a mixture of:

A. 100 parts by weight of an unvulcanized elastomer component comprising at least one block copolymer of styrene and either isoprene or butadiene, with a polystyrene block on at least one end of the block copolymer;

B. about 100 to about 250 parts by weight of a tackifying resin component compatible with the elastomer component;

C. about 10 to about 75 parts by weight of a plasticizer component; and

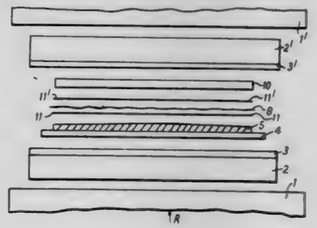
D. about 2 to about 100 parts by weight of a modifier component consisting essentially of unvulcanized cis-1,4-polybutadiene.

4,288,481

FOIL VIDEO DISCS

David E. Birt, London, and Peter J. Clarke, South Ruislip, both of England, assignors to EMI Limited, Hayes, England

Filed Jul. 11, 1980, Ser. No. 168,643
Claims priority, application United Kingdom, Jul. 14, 1979, 24622/79
Int. Cl.³ B29C *3/00*
U.S. Cl. 428—64 **11 Claims**



1. A method of moulding a thermoplastics foil to form a video disc comprising the steps of:

(a) providing means for impressing a thermoplastics foil with a satin finish consisting of a surface irregularity of C.L.A. depth between 250 nm and 1000 nm and in a first pressing

operation impressing a surface of the foil with the satin finish,

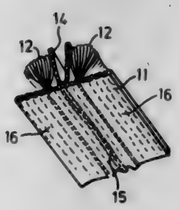
(b) providing a pressing arrangement for use in a second pressing operation, the arrangement comprising a pair of substantially parallel mould blocks, means for applying pressure to the mould blocks, a pair of substantially parallel stamper plates mounted between the mould blocks, at least one of the stamper plates bearing at its surface a relief structure indicative of information or data to be impressed and between an adjacent mould block and stamper plate a resilient material compensator comprising a body of a resilient material having a convex surface and in said second pressing operation pressing the foil between the opposed stamper plates to impart to said surface thereof having the satin finish an impression of the micro relief structure.

4,288,482

WEATHERSTRIP WITH SUBSTRATE OF TWO DIFFERENT MATERIALS

Frank W. Beck, Burlington, Canada, assignor to Schlegel Corporation, Rochester, N.Y.

Filed Sep. 9, 1980, Ser. No. 185,662
Claims priority, application United Kingdom, Jan. 31, 1980, 3267/80
Int. Cl.³ D04H *11/00*
U.S. Cl. 428—92 **15 Claims**



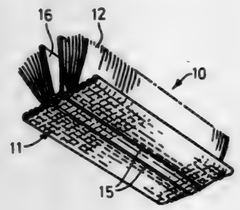
1. A flexible material for use as weatherstripping comprising a flexible substrate of woven strands of material; a pile strip of resilient fibers upstanding from said substrate, secured thereto and extending longitudinally of said substrate; and a barrier strip of impervious, flexible sheet material located within or immediately beside said pile strip, secured to said substrate and also extending longitudinally of said substrate; said strands of said substrate being composed of at least first and second different polymeric materials and a structural integrity maintaining material; said first polymeric material being a heat sealable material, being the same material as that of said barrier strip, being located in a region adjacent to said pile strip and extending longitudinally of said substrate to provide a region in said substrate to which said barrier strip is heat sealed; said second polymeric material and said structural integrity maintaining material being located laterally on either side of said region; said second polymeric material being a thermoplastic material distributed throughout said substrate in such a way that when said thermoplastic material is melted and then solidified, said strands of material become bonded together so that said substrate can be cut without fraying of the resulting edge, said thermoplastic material located laterally on either side of said region also being located at least on the side of said substrate opposite from the side from which said fibers upstand to provide a surface which can be heat sealed to compatible material; said structural integrity maintaining material being distributed throughout said thermoplastic material in such a way that when said thermoplastic material is melted, said structural integrity maintaining material preserves the structural integrity of said substrate.

4,288,483

WEATHERSTRIP WITH HEAT SEALED SUBSTRATE

Stanley R. Miska, Rochester, and Jay E. Boyce, Honeoye Falls, both of N.Y., assignors to Schlegel Corporation, Rochester, N.Y.

Filed Sep. 9, 1980, Ser. No. 185,663
Int. Cl.³ D04H *11/00*
U.S. Cl. 428—92 **22 Claims**



1. A flexible material for use as weatherstripping comprising a flexible substrate of woven strands of material; a pile strip of resilient fibers upstanding from said substrate, secured thereto and extending longitudinally of said substrate; and a barrier strip of impervious, flexible sheet material located within or immediately beside said pile strip, secured to said substrate and also extending longitudinally of said substrate; said strands of said substrate being composed of at least first and second different polymeric materials and a structural integrity maintaining material; said first polymeric material being a heat sealable material, being the same material as that of said barrier strip, being located in a region adjacent to said pile strip and extending longitudinally of said substrate to provide a region in said substrate to which said barrier strip is heat sealed; said second polymeric material and said structural integrity maintaining material being located laterally on either side of said region and at least one strand of said second polymeric material also being located on the side of said region remote from said barrier strip such that said first polymeric material is essentially located between said barrier strip and said at least one strand of said second polymeric material; said second polymeric material being a thermoplastic material distributed throughout said substrate in such a way that when said thermoplastic material is melted and then solidified, said strands of material become bonded together so that said substrate can be cut without fraying of the resulting edge, said thermoplastic material located laterally on either side of said region also being located at least on the side of said substrate opposite from the side from which said fibers upstand and thereby providing with said at least one strand of said second polymeric material a surface which can be heat sealed to compatible material; said structural integrity maintaining material being distributed throughout said thermoplastic material in such a way that when said thermoplastic material is melted, said structural integrity maintaining material preserves the structural integrity of said substrate.

4,288,484

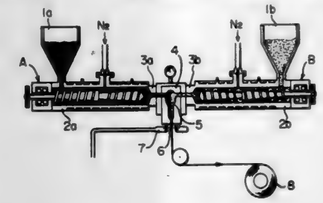
NOVEL FIBROUS ASSEMBLY AND PROCESS FOR PRODUCTION THEREOF

Susumu Norota; Tsutomu Kiriyama, and Tadasi Imoto, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 8, 1979, Ser. No. 46,753
Claims priority, application Japan, Jun. 13, 1978, 53-70315; Nov. 21, 1978, 53-142817
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—113 **17 Claims**

1. A fibrous assembly of many fibers, the individual constituent fibers being interconnected at random in a spaced-apart relationship so that when spread in a direction at right angles to the longitudinal axes of the fibers, said assembly forms a continuous integral reticulated structure; said individual fibers having asymmetrical irregularly-shaped cross sections of substantially different profiles and sizes from one another when said assembly is cut at right angles to the longitudinal axes of the fibers at an arbitrary point therealong; at least 40% of the entire cross-sectional area of each fiber consisting of at least two different polymer phases which are coalesced side-by-side as at least two irregular blocks; and each of the individual fibers of said assembly having a non-uniform cross-sectional shape along its longitudinal axis.

14. A process for producing a fibrous assembly, the individual constituent fibers being interconnected at random in a spaced-apart relationship so that when spread in a direction at right angles to the longitudinal axes of the fibers, said assembly can form a continuous integral reticulated structure; said individual fibers having asymmetrical irregularly-shaped cross sections of substantially different profiles and sizes from one another when said assembly is cut at right angles to the longitudinal axes of the fibers at an arbitrary point therealong; at least 40% of the entire cross-sectional area of each fiber consisting of at least two different polymer phases which are coalesced side-by-side as at least two irregular blocks; and each of the individual fibers of said assembly having a non-uniform cross-sectional shape along its longitudinal axis; which comprises associating melts of at least two different foamable polymer phases in the form of layers, extruding the associated mass from an elongated slit having a narrow clearance of 30 to 300 microns as superimposed layer-like streams in the direction of the narrow width, simultaneously foaming the polymer phases, and taking up the extrudate at a draft ratio of from 50 to 250 while cooling the extrudate at a location between the slit exit and a point 10 mm below the exit.

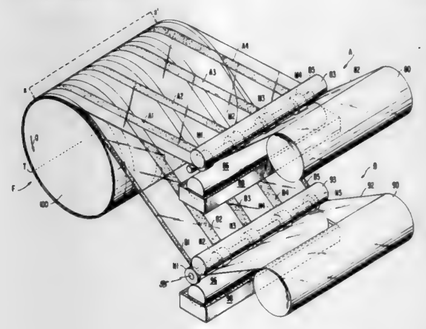


4,288,485

TUBULAR INSULATING CURTAIN AND METHOD OF MANUFACTURE

Heikki S. Suominen, Petsamonk 14, Tampere, Finland

Filed Sep. 13, 1978, Ser. No. 942,087
Claims priority, application Finland, Mar. 21, 1978, 780877
Int. Cl.³ B65H *81/00*
U.S. Cl. 428—116 **5 Claims**



1. A method of manufacturing a selectively collapsible and expandable curtain having thermal insulating characteristics in its expanded state, said curtain having in its expanded state a predetermined width and a predetermined height and comprising a plurality of expandable tubes each extending along the width of the curtain, said method comprising the steps of:

a. winding about a forming member a continuous sheet of a flexible thin film material so as to form on said member a plurality of superimposed strips of said material, the forming member being chosen to have a peripheral length at least as long as said predetermined curtain width;

b. adheringly securing each said strip to the adjacent contacting strip on the forming member along a plurality of uniformly spaced longitudinally extending bands, said bands on successive adjoining layers being in staggered relationship such that a plurality of superimposed tubes are formed one atop the other on said forming member and a plurality of sets of said superimposed tubes are formed adjacent one another transversely across said forming member, each tube when fully expanded having a width substantially defined by a pair of opposing bands on upper and lower adjoining layers and a height substantially defined by upper and lower side sections comprised of the portions of said thin film material lying between said pair of opposing bands and a pair of transversely spaced bands joining said upper and lower adjoining layers on either side of said opposing bands;

c. continuing said winding step until the combined heights of said superimposed tubes in their fully expanded state are sufficient to provide substantially said predetermined curtain height, each of said tubes when fully expanded having a substantially rectangular cross-section with top and bottom walls defined by said opposing bands and sidewalls defined by said upper and lower side sections;

d. transversely cutting said superimposed strips to permit removal thereof from said forming member; and

e. cutting at least one intermediate set of said superimposed tubes longitudinally along said opposing bands to form at least two separate curtains each having said predetermined width and said predetermined height in its expanded state.

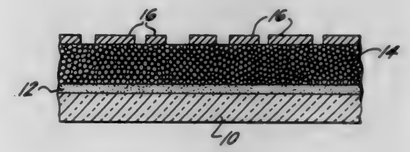
5. A thermal insulating curtain made in accordance with the method of claim 1, 2, 3 or 4.

4,288,486

FLEXIBLE SHEET-TYPE COVERING MATERIAL AND PROCESS FOR MAKING SAME

George R. Ferment, Randolph, N.J., and Douglas C. Woerner, Northampton, Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 36,605, May 7, 1979, Pat. No. 4,242,397.
This application Aug. 14, 1980, Ser. No. 178,051
Int. Cl.³ B32B *3/26*; B05D *3/12*
U.S. Cl. 428—141 **6 Claims**



1. Process for making decorative, flexible sheet type covering material comprising the steps of:

(a) coating at least one side of a flexible porous mat with a layer between about 10 and about 150 mils thick of mechanically frothed flexible foamed thermoplastic vinyl polymer;

(b) gelling and at least partially fusing the foamed layer; and

(c) then calendering the foamed layer at a temperature within the fusion temperature range of the vinyl polymer and at a nip pressure between about 2 and about 40 pounds per linear inch to thereby crush and consolidate the

foamed thermoplastic vinyl polymer so that no re-expansion of the foam occurs after crushing; wherein

(i) said mat has openings which average between about 2 and about 20 mils in the smallest linear dimension with at least about 50% of such openings having smallest linear dimensions between about 2 and about 10 mils; and

(ii) the foam as applied to the mat has a viscosity between about 3000 and about 25,000 cp.

4,288,487

METHOD OF FORMING SURFACE MARKINGS ON ROADWAY AREAS, AND ROADWAY AREAS PRODUCED THEREBY

Ludwig Eigenmann, POB 8, CH 6833, Vacallo, Switzerland

Filed Mar. 22, 1979, Ser. No. 23,087

Claims priority, application Italy, Apr. 7, 1978, 22101 A/78

Int. Cl.³ B32B *5/16*; E01F *9/04*

U.S. Cl. 428—213 **16 Claims**



1. A method of forming a traffic regulating marking on a roadway area, comprising the steps of forming a traffic wear resistant later on a surface of a roadway area, which layer has a predetermined thickness and is constituted by a pigmented resin material, said traffic wear resistant layer having an outer face; providing a plurality of retroreflective globules having a minimum dimension which is a multiple of the thickness of said traffic wear resistant layer and an elongated major dimension; wetting said globules by a wetting resin material which is compatible with said pigmented resin material of said traffic wear resistant layer; and applying the globules which are wetted by said wetting resin material, onto said outer face of said traffic wear resistant layer, so that the elongated major dimensions of said globules wetted by said wetting resins are in contact with but not embedded in said outer face of said traffic wear resistant layer, and said wetting resin material forms, on said outer face in the region of each of said globules, a separate collar which individually connects each globule to said outer face of said traffic wear resistant layer.

10. A roadway area, comprising a pavement forming an area surface; and a traffic regulating marking including a traffic wear resistant layer secured to said surface and having an outer face, said traffic wear resistant layer having a predetermined thickness and being constituted by a hardenable pigmented material, a plurality of retroreflective globules contacting and upwardly protruding from said outer face of said traffic wear resistant layer, said retroreflective globules having a minimum dimension which is a multiple of the thickness of said traffic wear resistant layer and an elongated major dimension, said retroreflective globules being applied on said outer face of said traffic wear resistant layer so that the elongated dimension of said retroreflective globules are in contact with but not embedded in said outer face of said traffic wear resistant layer, and a wetting resin material which wets said globules before applying onto said outer face of said traffic wear resistant layer and forms a plurality of separate collars each extending upwardly from said outer face of said traffic wear resistant layer and individually connecting a respective one of said globules with said outer face of said traffic wear resistant layer.

4,288,488

LAMINATED PACKING MATERIAL WITH A HIGH GAS-IMPERMEABLILITY AND AN ADVANTAGEOUS WORKABILITY

Nobuyuki Hisazumi; Masataka Yamamoto, and Tsutomu Uehara, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 940,118, Sep. 6, 1978, Pat. No. 4,221,841. This application Jun. 22, 1979, Ser. No. 51,193

Claims priority, application Japan, Sep. 13, 1977, 52-109431; Fed. Rep. of Germany, Sep. 8, 1978, 2839083; Netherlands, Sep. 7, 1978, 7909130

The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.

Int. Cl.³ B32B *7/02, 27/08, 9/04*

U.S. Cl. 428—214 **13 Claims**

1. A laminated material having high workability and gas-impermeability, prepared by laminating a layer of a copolymer of vinylidene chloride containing 3 to 10% by weight of a plasticizer having a molecular weight of less than 500 and a carrier layer of a synthetic resin carrying 5 to 70% by weight of at least one organic additive having a number average molecular weight in the range of 800 to 10,000 showing a melting point of lower than that of said copolymer of vinylidene chloride and selected from the group consisting of glycerides of higher saturated or unsaturated fatty acids or of higher saturated or unsaturated epoxidized fatty acids, rosin and derivatives thereof, oligomeric copolymers of styrene with isobutylene, butadiene or isoprene, oligomeric polyesters formed by polycondensation of an aliphatic dicarboxylic acid with 6 to 10 carbon atoms and a polyhydric alcohol with 2 to 6 carbon atoms and have a number average molecular weight of 1,000 to 2,000 and oligomeric epoxides formed by polycondensation of epichlorhydrin and bisphenol.

4,288,489

PROCESS FOR FLAMEPROOFING ORGANIC FIBROUS MATERIAL WITH PHOSPHONIC ACID SALTS

Hermann Nachbur, Dornach, and Peter Rohringer, Schönenbuch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

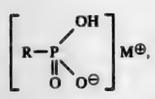
Filed Jan. 31, 1979, Ser. No. 8,217

Claims priority, application Switzerland, Feb. 6, 1978, 1279/78; Jan. 10, 1979, 214/79

Int. Cl.³ B32B *7/00*; D04H *1/58*; B05D *3/02*; D06M *9/00*

U.S. Cl. 428—265 **9 Claims**

1. A process for flameproofing organic fibrous material which comprises treating said material with an aqueous solution containing 25 to 500 g/l of a phosphonic acid salt of the formula



in which R is methyl or ethyl and $M^{\oplus}$ is an alkali metal cation or an ammonium cation, and drying it.

9. Fibrous material flameproofed according to claim 1.

4,288,490

ENGINE HOOD LINING FOR AUTOMOTIVE VEHICLES

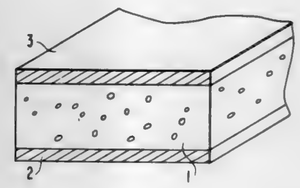
Franz-Werner Alfter, Sieburg, and Hans-Ulrich Breitscheidel, Troisdorf, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 16, 1976, Ser. No. 667,453

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2513705

Int. Cl.³ B32B *5/18*; E04B *1/74*

U.S. Cl. 428—315 **1 Claim**



1. An engine hood lining for an automotive vehicle which comprises a contoured, one-piece, molded composite panel adapted to cover struts extending across the inside portion of a hood of an automotive vehicle, said composite panel consisting of a closed-cell polyethylene foam material laminated on at least one side with a non-foamed polymer sheet and being shaped by molding to have a contour that fits the inside contour of the hood of the vehicle, said non-foamed polymer sheet being a heavy-weight sheet containing a mineral filler, said non-foamed polymer being a copolymer of ethylene and vinyl acetate containing 50–90% by weight of barium sulfate as the filler.

4,288,491

LAMINATED PLASTIC MATERIAL

Evgeny M. Surzhenko, ulitsa Shkolnaya, 8, kv. 7; Bronislav F. Basilaev, prospekt Tukhachevskogo, 37, kv. 66; Roman V. Molotkov, Vladimirsky prospekt, 7, kv. 23; Alexandr S. Madorsky, Piskarevsky prospekt, 40, kv. 273; Grigory B. Shalun, Zanevsky prospekt, 35, kv. 71; Valentina B. Golynkina, Piskarevsky prospekt, 48, kv. 5; Margarita A. Ershova, Tallinskaya ulitsa, 27, kv. 26; Irina P. Eliseeva, prospekt Energetikov, 30, korpus 1, kv. 383; Nina E. Trukhtenkova, prospekt K. Marxa, 72, kv. 51; Sergei M. Gurylev, Sestroretsk ulitsa Volodarskogo, 13, kv. 3; Diana L. Kopetskaya, naberezhnaya Fontanki, 90, kv. 5; Evgeny Y. Pechko, Krasnoe Selo, Fabrichny poselok, 4, kv. 7; Albert S. Khlamenko, Krasnoe Selo, Fabrichny poselok, 2, kv. 36, and Viktor V. Magnitsky, Krasnoe Selo, Fabrichny poselok, 5, kv. 17, all of Leningrad, U.S.S.R.

Filed Mar. 13, 1979, Ser. No. 20,080

Int. Cl.³ B32B *27/42, 23/06*

U.S. Cl. 428—332 **7 Claims**

7. A laminated material comprising surface layers of paper impregnated with amino-formaldehyde resin and inner layers of paper containing a flame retardant material in an amount of 4 to 8 percent by weight of the total laminate and impregnated with phenol-formaldehyde resin, said flame retardant material being a product of interaction of an aluminum or copper compound with phosphoric acid and nitrogen bases, containing, in weight percent:

P_2O_5 total	37 to 63
P_2O_5 water-soluble	0 to 6
NH_3	3.5 to 11
MO	18 to 43

where MO is at least one metallic oxide, said components of the laminated material being contained therein in the following ratio, in weight percent:

paper for surface layers	9 to 26
paper for inner layers	26 to 49
phenol-formaldehyde resin	16 to 30
amino-formaldehyde resin	5 to 26,

said laminated material having a combustibility index K in the range of 0.1 to 0.5, and a thickness of from 1 to 3 mm.

4,288,492

INSULATING COATING COMPOSITIONS APPLIED ON ELECTRICAL STEEL SHEETS

Yoshitaka Hiromae, Kitayushu; Kazuo Nakamura, Munakata; Toshiya Wada, and Hirotada Katoh, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 853,465, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 658,875, Feb. 18, 1976, abandoned. This application Feb. 4, 1980, Ser. No. 118,589

Claims priority, application Japan, Feb. 25, 1975, 50-23025

Int. Cl.³ B32B *15/08, 27/38*

U.S. Cl. 428—336 **6 Claims**

1. An electrical steel sheet coated with an insulating coating film said film having a thickness less than 10 microns and comprising 40 to 70 percent by weight of an organic polymeric material curable by ultraviolet rays or electron beam and 30 to 60 percent by weight of an inorganic compound selected from the group consisting of silicates having a hardness in Mohs scale of not higher than 5 and 1 to 50 percent by weight based on the total weight of the inorganic compound of a compound selected from the group consisting of boric acids and borates.

4,288,493

WATER-ACTIVATABLE CROSSLINKED ADHESIVE AND ENERGY CONTROL FILM MADE THEREWITH

James E. Kropp, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 16, 1979, Ser. No. 57,584

Int. Cl.³ C09J *7/02*; B32B *17/10*

U.S. Cl. 428—350 **4 Claims**

1. An energy control sheet comprising a transparent polymeric foil having bonded over one face a layer of water-activatable adhesive comprising in combination a blend of

(a) a polymeric substance selected from the class consisting of

(1) a copolymer of methyl vinyl ether and maleic anhydride and

(2) a half ester of said copolymer and

(b) a nonmetallic organic solvent-soluble crosslinking agent selected from the class consisting of

(1) polyfunctional epoxides and

(2) polyfunctional aziridines,

whereby when said adhesive is activated with water, said sheet is bonded to a windowpane to form a laminate, and said water is evaporated, the laminate thereafter possesses outstanding moisture resistance for extended periods of time but the sheet, after soaking in water, can be removed cleanly from the glass by simple hand pulling.

4,288,494

NON-UNIFORM CROSS-SECTIONAL AREA HOLLOW FIBERS

Christopher H. Porter, Newtown Square, and John A. Taylor, Furlong, both of Pa., assignors to Extracorporeal Medical Specialites, Inc., King of Prussia, Pa.

Filed Mar. 12, 1979, Ser. No. 19,973

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—398 **12 Claims**

1. A semipermeable hollow fiber comprising cuprammonium regenerated cellulose, said fiber having a hollow core

extending continuously throughout the length thereof and having a non-uniform wall thickness and a non-uniform cross-sectional area, said fiber having along its length a first plurality of points of maximum outside diameter and a second plurality



of points of minimum outside diameter, said maximum outside diameters ranging from about twenty microns to about one thousand microns and said minimum outside diameters ranging from about 0.25 times the maximum outside diameter to about 0.9 times the maximum outside diameter.

4,288,495

ARTICLE COATED WITH BETA SILICON CARBIDE AND SILICON

Leslie L. Terner, West Bloomfield; Roy L. Van Alsten, Redford, and David Moskowitz, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 907,530, May 19, 1978, Pat. No. 4,226,914. This application Feb. 4, 1980, Ser. No. 118,709

Int. Cl.³ B05D *1/08*; B32B *13/04, 9/04*; C01B *31/36*

U.S. Cl. 428—446 **3 Claims**

1. As a new article of manufacture,
a substrate and a tightly adherent coating on said substrate consisting essentially of beta silicon carbide and silicon.

4,288,496

SILICONE POLYMER-BASED RELEASE COATING AGENTS HAVING ORGANIC TITANATES AS STABILIZERS AND TAPES

Robert E. Reusser, and Brenton E. Jones, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 16, 1979, Ser. No. 3,824

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—447 **15 Claims**

1. A coating composition suitable for use with an adhesive tape or film which comprises the following ingredients in parts by weight as follows:
low release strength silicone-based polymers
a. high wt. average molecular weight polymethyldihydroxysiloxanes, 3
b. low wt. average molecular weight polymethylhydrosiloxanes, 0.03–0.3
high release strength silicone-based polymer, 0.1–0.5
hydroxy terminated poly(conjugated diene)polymer, 0.01–0.25
organo titanate, 0.005–0.5
catalyst, 0.1–0.6
solvent, 20–200

8. A tape or film having thereon to prevent permanent sticking of an adhesive thereto a composition according to claim 1 from which the solvent had been removed.

4,288,497

SILICONE-COATED ARTICLE AND PROCESS FOR PRODUCTION THEREOF

Mutsuhiro Tanaka, Ohtake, and Masatoshi Kashiwagi, Waki, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

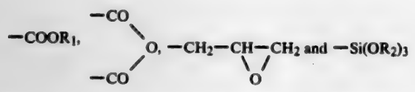
Filed Jan. 14, 1980, Ser. No. 111,674

Claims priority, application Japan, Jan. 16, 1979, 54/3599

Int. Cl.³ B05D *3/02*; B32B *9/04, 13/12*

U.S. Cl. 428—447 **17 Claims**

1. A silicone-coated article having releasability imparted thereto by the coating of a silicone, wherein that surface of said article on which to coat the silicone is composed of a resin containing a polar group-containing olefinic resin comprising (a) 55 to 99% by weight of a unit derived from an olefin and (b) 1 to 45% by weight of a unit derived from a radical-polymerizable monomer containing a polar group selected from the class consisting of



in which R_1 represents a hydrogen atom, a metal capable of forming a salt with the carboxyl group, or a monovalent hydrocarbon group, and R_2 represents a monovalent hydrocarbon group.

4,288,498

METHOD OF MAKING LEATHER FIBER INSULATION BY DRYING-CASE HARDENING AND PRODUCT THEREOF

Herbert C. Scribner, Jr., Pittsfield, Me., assignor to Collagen Corporation, New York, N.Y.

Filed May 6, 1980, Ser. No. 147,462

Int. Cl.³ B32B *9/02, 9/04*; C14B *1/58*

U.S. Cl. 428—473 **14 Claims**

1. Pipe insulation material comprising case-hardened shredded tanned leather fibers of reduced hydroscopic tendency capable of taking up moisture only to a level of about 12% by weight or less over an eight hour period in an atmosphere of 100% humidity.

4. A method of converting tanned leather scrap into thermal insulation comprising the steps of:
(A) Shredding the tanned leather scrap into leather fibers without damaging the structural fiber integrity; and
(B) case hardening the shredded leather fibers by drying same to produce fibers of reduced hydroscopic tendency capable of taking up moisture only to a level of about 12% by weight or less over an eight hour period in an atmosphere of 100% humidity.

4,288,499

POLYMERS ADHERENT TO POLYOLEFINS

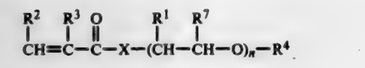
Andrew J. Kielbania, Jr., Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 8, 1979, Ser. No. 37,069

Int. Cl.³ B32B *27/08*

U.S. Cl. 428—518 **36 Claims**

1. An article comprising an untreated polyolefin substrate and adherent thereto a vinyl addition polymer of (1) monomers comprising at least 5% by weight a primary monomer selected from
(a) monomers having the formula



wherein
X is —O—, —NH— or —NR⁵—;
R^1 and R^7, individually, are H, methyl or ethyl;
R^2 is H, —COOH, —$CONH_2$, or —$COOR^6$,
R^3 is H, alkyl having up to 5 carbon atoms, —CH_2COOR^6, —$COOR^6$ or —CH_2COOH;
R^4 and R^5, individually, are monocyclic alkyl having 6 to 20 carbon atoms, acyclic alkyl having 9 to 20 carbon atoms, or alkaryl having 9 to 18 carbon atoms;
R^6 is hydrocarbyl; and
n having a value from zero to about ten;
(b) vinyl esters of alkanoic acids having 8 to 20 carbon atoms;

(c) Alkyl substituted styrene wherein the substituent group or groups have a total of 3 to 15 carbon atoms;
and mixtures thereof and optionally (2) or more substituted ethylene supplementary monomers; said polymer having surface energy properties such as to form a stable bond, having a 180° peel strength greater than 2 pounds per inch, with said substrate.

4,288,500

ELECTROCHEMICALLY ACTIVE ALUMINUM ALLOY AND COMPOSITE

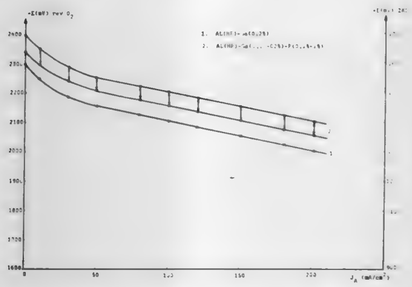
Budimir B. Jovanovic; Aleksandar R. Despic, both of Belgrade, and Dragutin M. Drazic, New Belgrade, all of Yugoslavia, assignors to Institute of Technical Sciences of the Serbian Academy of Sciences and Art, Belgrade, Yugoslavia

Filed Jan. 18, 1980, Ser. No. 113,184

Claims priority, application Yugoslavia, Aug. 28, 1979, 2098/79

Int. Cl.³ B32B *15/20*

U.S. Cl. 428—650 **5 Claims**



1. Electrochemically active aluminum alloy, characterized in that it consists essentially of, per 100 parts of weight of AL, 0.01–1 parts of weight of Ga and/or In, and in that it consists essentially of 0.01–1 parts of weight of P.

5. An article provided with an anti-corrosion protective coating of the electrochemically active aluminum alloy defined in claim 1.

4,288,501

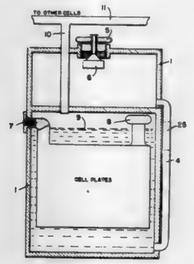
REUSABLE RESERVE BATTERY SYSTEM

Warren E. Moody, 95 Fiesta Way, Fort Lauderdale, Fla. 33301

Filed Feb. 7, 1980, Ser. No. 119,270

Int. Cl.³ H01M *2/40*

U.S. Cl. 429—70 **6 Claims**



1. Control valve actuated pneumatic means to evacuate electrolyte from a storage battery cell to an adjacent storage compartment and to return said electrolyte to said cell when desired comprising a storage compartment mounted over and adjacent to a battery cell, said storage compartment being connected to said cell by pipe means extending to a lower part of said cell, said storage compartment having a combination vent and float valve means activating a shut-off valve and a removable filler cap or plug, air pressure supply means piped to said control valve means thence into the top of said battery cell so that when said control valve is turned ON a supply of air under suitable pressure will be introduced into the top section of said cell thus forcing electrolyte downward and through said pipe means into said storage compartment until a level is reached sufficient to close said vent valve and stop further influx of electrolyte into said compartment and influx of air into said cell where maintenance of air pressure will keep electrolyte in said storage compartment until such time as said air control valve is turned OFF permitting said electrolyte to return to said cell under gravity and air pressure with the release of pressure in said cell.

4,288,502

PHOTO-ELECTROCHEMICAL CELL BATTERY

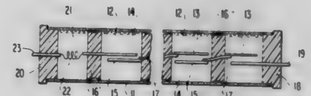
Yitzchak Avigal, Givataim; Joost Manassen, Rehovot; Gary Hodes, Rehovot, and David Cahen, Rehovot, all of Israel, assignors to Yeda Research & Development Co., Ltd., Rehovot, Israel

Filed Apr. 21, 1980, Ser. No. 141,795

Claims priority, application Israel, Apr. 22, 1979, 57109

Int. Cl.³ H01M *6/36*

U.S. Cl. 429—111 **21 Claims**



1. A battery comprising a plurality of photoelectrochemical cell arranged in series in an envelope adapted to permit solar energy to pass therethrough, each of said cells comprising a photoelectrode, a counterelectrode, and an electrolyte, the photoelectrode and counterelectrode of each cell being attached to and forming electrical contact with conductive means; said battery further comprising at least one separation means for separating each of said cells from one another so as to form a liquid-tight fit within said envelope whereby each of said cells is liquid tight.

20. A battery comprising a plurality of photoelectrochemical cells arranged in series in an envelope, said envelope being adapted to permit solar radiation to pass therethrough, each of said cells comprising a photoelectrode, a counterelectrode, and an electrolyte, the photoelectrode and counterelectrode of each cell being attached to and forming electrical contact with conductive means; said battery further comprising at least one separation means for separating each of said cells from one another, said separation means comprising means for compensating for volumetric changes within each of said cells.

4,288,503

LAMINATED MICROPOROUS ARTICLE

Bruce S. Goldberg, Clifton, N.J., assignor to Amerace Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 915,916, Jun. 16, 1978, Pat. No. 4,201,838. This application May 24, 1979, Ser. No. 41,511

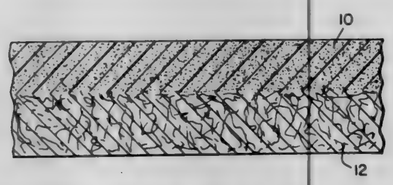
The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—145 **9 Claims**

1. As an article of manufacture, a laminated microporous article combination comprising a first layer of microporous material, wherein the micropores are substantially all of a size of about 2 microns and less and a layer thickness of 2 mils and greater and a second layer of porous backing material laminated to said first layer, said second layer comprising a heat-

bonded fibrous polyester non-woven web of a thickness of about 8 mils and greater and an electrical resistance, in a battery acid electrolyte, of about 0.25 mΩ in^2/mil, said laminate having a total thickness of about 10 to 40 mils for a backweb of a microporous layer and said backing material, said non-woven



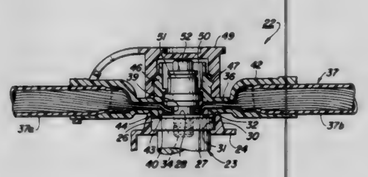
web having a grab breaking strength of 20 to 30 lbs. in machine direction and 12 to 18 lbs in cross direction, a grab breaking elongation, from 25 to 50 percent in machine direction and 50 to 120 percent in cross direction, with a Mullen burst value of 30 to 40 lbs.

4,288,504

SEALED BATTERY CABLE TERMINATION

Victor J. Julian, 2400 Belvue, Westchester, Ill. 60153, and Kenneth A. Julian, 409 Suffolk La., Oak Brook, Ill. 60521

Filed Jul. 21, 1980, Ser. No. 170,846
Int. Cl.³ H01M *2/30*
U.S. Cl. 429—179 **8 Claims**



1. In combination,
a storage battery having a wall formed of an insulating material having a hole therethrough,
a metallic terminal extending through said hole in sealing relationship with said wall,
said terminal having a cylindrical portion on the external side of said wall,
an upstanding flange on said wall surrounding said cylindrical portion and extending outwardly beyond the distal end of said terminal,
said terminal having a centrally disposed cylindrical boss defining with said flange an annular open top groove surrounding said boss,
said terminal having an internally threaded, axial blind hole opening onto said distal end, an electric cable having a terminal connector affixed thereto,
said terminal connector including,
a terminal plate having an opening therethrough in alignment with said hole in said terminal,
said terminal plate having a depending annular portion surrounding said opening and abutting said distal end of said terminal,
a plastic, insulating cover molded directly over said terminal plate and having an annular, resilient lip portion extending into said groove, and
a terminal bolt extending through said opening and threaded into said hole and holding said terminal plate in contact with said distal end of said terminal and said lip in compression in said groove.

4,288,505

HIGH ENERGY DENSITY SOLID STATE CELL

Ashok V. Joshi, Fishkill, N.Y., and William P. Sholette, Warminster, Pa., assignors to Ray-O-Vac Corporation, Philadelphia, Pa.

Filed Oct. 24, 1980, Ser. No. 200,275
Int. Cl.³ H01M *6/18*
U.S. Cl. 429—191 **5 Claims**

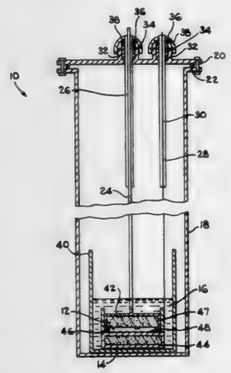
1. A solid state lithium electrochemical cell having a lithium anode, a solid state electrolyte capable of lithium-ion transport, having a high electronic resistivity and selected from the group of lithium nitride, lithium sulfide, lithium metaborate and lithium iodide in contact with said lithium anode and a cathode, separated from said lithium anode by said electrolyte, comprising at least one high energy denisty compound reactive with said electrolyte and separated from said electrolyte by a stable, in-situ formed, self-healing layer of electrolytically conductive reaction product of said electrolyte and said cathode material, said anode and said cathode being in electrolytically conductive contact through said electrolyte and said in-situ formed, self-healing layer.

4,288,506

CATHODE FOR AN ELECTROCHEMICAL CELL AND AN ELECTROCHEMICAL CELL

Johan Coetzer, and Michael M. Thackeray, both of Pretoria, South Africa, assignors to South African Inventions Development Corp., Pretoria, South Africa

Filed Sep. 5, 1979, Ser. No. 72,762
Claims priority, application South Africa, Sep. 22, 1978, 78/5392; Mar. 21, 1979, 79/1359; Apr. 11, 1979, 79/1739
Int. Cl.³ H01M *4/04, 4/58, 4/66*
U.S. Cl. 429—199 **25 Claims**



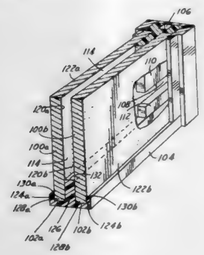
1. A cathode for an electrochemical cell, the cathode comprising as the electrochemically active material an intermediate refractory hard metal compound of at least one metal selected from the group consisting of chromium, manganese, iron, cobalt and nickel, with at least one non-metal selected from the group consisting of carbon, boron, nitrogen, silicon and phosphorus, which has been activated by halogenation.

4,288,507

CONTROL OF EDGE EFFECTS OF OXIDANT ELECTRODE

Peter Carr, Utica, and Chen H. Chi, Sterling Heights, both of Mich., assignors to Energy Development Associates, Inc., Madison Heights, Mich.

Division of Ser. No. 62,109, Jul. 30, 1979, Pat. No. 4,241,150. This application Jul. 21, 1980, Ser. No. 170,795
Int. Cl.³ H01M *4/02*
U.S. Cl. 429—209 **6 Claims**



1. An electrode assembly comprising:
a. a porous electrode (**40**) having a first (**122*a***) and second (**122*b***) exterior face with a cavity (**114**) formed in the interior between said exterior faces thereby having first (**120*a***) and second (**120*b***) interior faces positioned opposite the first and second exterior faces;
b. a counter electrode (**68**) positioned facing each of the first and second exterior faces of the porous electrode;
c. means (**83**) for passing an oxidant through said porous electrode; and
d. screening means (**126**) for blocking the interior face of the porous electrode a greater amount than the blocking (**124*a*** and **124*b***) of the respective exterior face of the porous electrode, thereby maintaining a differential of oxidant electrode surface between the interior face and the exterior face.

4,288,508

CHALCOGENIDE ELECTROCHEMICAL CELL

Samarnath Basu, Philadelphia, and Wayne L. Worrell, Narberth, both of Pa., assignors to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 943,107, Sep. 18, 1978, Pat. No. 4,206,276. This application Dec. 4, 1979, Ser. No. 100,043
Int. Cl.³ H01M *4/58*
U.S. Cl. 429—218 **11 Claims**

1. An electrochemical cell in the charge state, said cell having a cathode-active material, an anode-active material and an electrolyte, wherein the cathode-active material is an alkali metal comprising a partially alkali metal intercalated dichalcogenide of the formula A_yMZ_x wherein
A is an alkali metal more electropositive than the anode active material;
M is at least one transition metal of Group IV or V;
Z is selenium, sulfur or tellurium;
y is a numerical value from about 0.01 to about 1;
x is a numerical value from about 1.8 to about 2.1; and,
the anode-active material is an alkali metal.

7. An electrochemical cell in the charge state, said cell having a cathode-active material, an anode-active material and an electrolyte, wherein the cathode-active material is a metal intercalated dichalcogenide of the formula A_yMZ_x wherein
A is a metal selected from the group consisting of Be, Mg, Ba, Ca and Sr and is more electropositive and larger than the anode-active material;
M is at least one transition metal of Group IV or V;
z is selenium, sulfur or tellurium;
y is a numerical value from about 0.01 to about 1; and
x is a numerical value from about 1.8 to about 2.1.

4,288,509

RECORDING MATERIAL

Takashi Kashiwagi, Tachikawa, Japan, assignor to Process Shizai Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,369
Claims priority, application Japan, Jul. 21, 1978, 53-88276
Int. Cl.³ G03C *5/00, 5/24*
U.S. Cl. 430—5 **1 Claim**

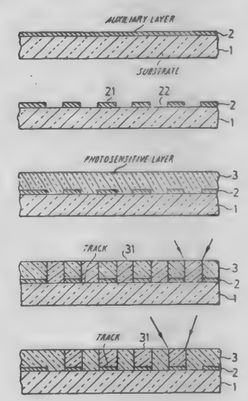
1. A process for forming a photomask which comprises flash exposing in heat conducting relation with an original a thermal recording material comprising a transparent support having formed thereon a recording layer containing a thermally coagulatable proteinaceous compound, wherein a coloring material is present in said recording layer in an amount such that said recording layer has an average optical density in the wavelength region of 350 nm to 450 nm of at least about 1.5, and removing the portions of the recording layer in the thermal recording material which have not been rendered insoluble by said flash exposing, whereby an image is formed in said recording layer.

4,288,510

PROCESS OF MAKING AN OPTICALLY RECORDABLE AND READABLE INFORMATION CARRIER AND THE CARRIER OBTAINED BY THIS PROCESS

Claude Tinet, and Claire Lemonon, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Division of Ser. No. 42,450, May 25, 1979, Pat. No. 4,252,889, which is a continuation of Ser. No. 835,282, Sep. 20, 1977, abandoned. This application Sep. 22, 1980, Ser. No. 189,222
Claims priority, application France, Sep. 24, 1976, 76 28771
Int. Cl.³ G03C *5/04, 1/76;* G01D *15/24*
U.S. Cl. 430—11 **3 Claims**



1. An optically readable video disc or tape for use in an information storage system of the type comprising optical means for producing a focussed reading radiation beam to be projected onto said video disc or tape, and servocontrol means for maintaining said optical means and said video disc or tape in proper registry, said video disc or tape carrying prerecorded elements of information and comprising:
a substrate;
a radiation sensitive layer covering said substrate;
an auxiliary layer covering said radiation sensitive layer and comprising a continuous recording track formed by a smooth groove in said auxiliary layer exposing a continuous track of said radiation sensitive layer following a predetermined configuration,

said continuous track being optically trackable by said optical servocontrol means; and

said pre-recorded elements of information being recorded along said continuous track in said radiation sensitive layer by the formation of optically detectable structural changes therein and being read by optically modulating said focussed reading radiation beam by the structural changes corresponding to said pre-recorded elements of information,

said continuous track and said information being distinctly detectable by optical reading means sensitive to said optical-structural changes, and

said track being detectable even in the absence of recorded information.

4,288,511

PHOTOGRAPHIC ELEMENTS CONTAINING ENCAPSULATED POLYMERS COORDINATED WITH METAL IONS

Drewfus Y. Myers, Jr., Pittsford, and George H. Hawks, III, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 22,676, Mar. 22, 1979. This application Apr. 29, 1980, Ser. No. 144,808

Int. Cl.³ G03C *1/40, 1/10, 5/54;* C08K *9/00*

U.S. Cl. 430—17 **9 Claims**

7. A photographic element comprising a dye mordant containing-layer containing a hydrophilic vehicle having dispersed therein a non-metal chelating particulate polymeric dye mordant encapsulated with a metal chelated with a chelating polymer and containing a dye or dye-forming material, imagewise.

4,288,512

METHOD OF MANUFACTURING LUMINESCENT SCREENS FOR COLOR PICTURE TUBES

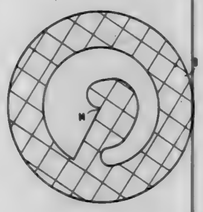
Bruno Fischer, and Rainer Vollath, both of Esslingen, Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 3, 1980, Ser. No. 109,388

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902233

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—24 **2 Claims**



1. A method of manufacturing luminescent screens for color-picture tubes comprising the steps of:

coating the faceplate with a light sensitive layer of luminescent material,

exposing the faceplate to light through a shadow mask by means of a pencil of light rays from a light source,

inserting a diaphragm having an aperture of radially increasing width in the path of said light rays, and

rotating said diaphragm at a rate of approximately 100–200 revolutions per minute so that the amount of light reaching said faceplate increases from the center to the outside edge.

4,288,513

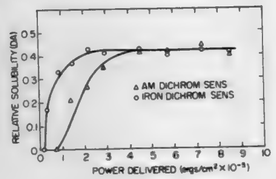
PHOTORESIST OF POLYVINYL ALCOHOL AND FERRIC DICHROMATE

Kurt B. Kilichowski, N. Framingham; Peter Cukor, Natick, and Charles Brecher, Lexington, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 734,897, Oct. 22, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,547

Int. Cl.³ G03C *5/00, 1/68*

U.S. Cl. 430—28 **11 Claims**



1. A method of enhancing the sensitivity of a cross-linkable poly(vinyl alcohol)photoresist to radiation in the visible region of the spectrum comprising incorporating a ferric dichromate into a cross-linkable poly(vinyl alcohol) photoresist-forming composition thereby enhancing the absorptive sensitivity of the photoresist in the visible region of the spectrum.

4,288,514

METHOD FOR CONTROLLING IMAGE FORMATION IN ELECTROPHOTOGRAPHY BY PRE-EXPOSURE STEP

Noboru Kutsuwada, Tokyo; Minoru Saito, Hachioji; Ryoichi Namiki, Hino, and Katsuo Kusunoki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 490,055, Jul. 19, 1974, abandoned, which is a continuation of Ser. No. 57,732, Jul. 23, 1970, abandoned. This application Sep. 7, 1977, Ser. No. 831,263

Claims priority, application Japan, Jul. 28, 1969, 44-59014

Int. Cl.³ G03G *13/22, 13/24*

U.S. Cl. 430—54 **6 Claims**

1. In a repetitive electrophotographic process including the steps of applying a primary charge of a predetermined polarity to a reusable photosensitive member having a photoconductive layer and an overlying insulating surface layer; discharging or applying a secondary charge having a component of a polarity opposite to said predetermined polarity to the photosensitive member, and substantially simultaneously therewith, exposing the photosensitive member to imaging light; then uniformly exposing the surface of the photosensitive member to light to form an electrostatic latent image on the photosensitive member; thereafter utilizing the electrostatic latent image; and thereafter sequentially repeating the process steps using the photosensitive member to form and utilize a plurality of electrostatic latent images, the improvement comprising the steps of:

uniformly applying light to the surface of the photosensitive member which is to be exposed to the image light at least before initiation of the application of primary charge to the photosensitive member for a first image formation in a continuous sequence of image forming operations; and

uniformly applying light of an intensity lower than that of the initial uniform light application to said surface of the photosensitive member before the initiation of primary charge application for a subsequent image formation in the sequence of image forming operations.

4,288,515

PROCESS FOR REVERSAL DEVELOPMENT USING INDUCTIVELY CHARGEABLE MAGNETIC POWDERY DEVELOPER

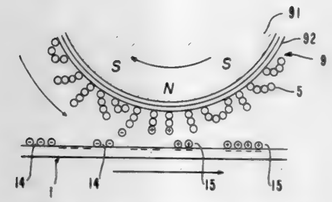
Keitaro Yamashita, and Kohji Noguchi, both of Saitama, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jun. 28, 1978, Ser. No. 919,999

Claims priority, application Japan, Jul. 6, 1977, 52-79925

Int. Cl.³ G03G *13/09, 13/22*

U.S. Cl. 430—100 **4 Claims**



1. A reversal developing process for developing an electrostatic latent image on a surface, the latent image being in the form of first charged areas and second lesser charged areas in which the potential of the first charged areas is substantially more in absolute value than that of the second charged areas, the potential of the first charged areas being of a given polarity, the process comprising:

forming a first toner brush with inductively chargeable ferromagnetic toner on a first shell by a magnetostatic attraction force caused by a permanent magnet member incorporated within the shell;

subjecting the first toner brush to the electrostatic force of the charged areas for adhering the toner as a layer on the first charged areas of the surface;

charging with a D.C. charger the toner layer adhering to the first areas and recharging the second areas both with a uniform amount of charge of the same polarity as the potential of the first areas;

damping the electrostatic charge on the first charged areas by dark decay and neutralization by the toner layer;

forming a second toner brush with inductively chargeable ferromagnetic toner on a second shell by a magnetostatic attraction force caused by a permanent magnet member incorporated within the shell; and

interpositioning the second toner brush and the surface for subjecting the second toner brush to the electrostatic force of the toner layer on the first charged areas and the electrostatic force of the second charged areas for magnetically removing the previously adhered toner and adhering toner on the second recharged areas in a single pass of the second toner brush.

4,288,516

POLYESTER RESIN CONTAINING MAGNETIC TONER MATERIAL AND PROCESS FOR ITS USE IN FLASH FUSER

Stephen L. Gaudioso, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1980, Ser. No. 115,974

Int. Cl.³ G03G *9/14*

U.S. Cl. 430—107 **10 Claims**

1. A single component magnetic toner comprised of from about 25 percent to about 50 percent by weight of a resin which is selected from the polymeric esterification condensation products of 2,2 bis (4-hydroxy-isopropoxy-phenyl)-propane and fumaric acid, 2,2 bis (4-hydroxy-isopropoxy-phenyl)-propane and 2,2-dimethyl fumaric acid, 2,2 bis (4-hydroxy-butoxy-phenyl)-propane and fumaric acid, 2,2 bis (4-hydroxy-butoxy-phenyl)-propane and 2,2-dimethyl fumaric acid, or 2,2 bis (4-hydroxy-ethoxy phenyl)-propane and fumaric acid, and from about 50 percent to about 75 percent of magnetite.

4,288,517

TONER FOR ELECTROSTATIC PHOTOGRAPHY CONTAINING RESIN COATED SILICA PARTICLES

Seiji Arimatsu; Katsukiyo Ishikawa; Yasuai Umeda, and Koichi Nagata, all of Neyagawa, Japan, assignors to Nippon Paint Co., Ltd., Japan

Filed May 14, 1980, Ser. No. 149,834

Claims priority, application Japan, Sep. 21, 1979, 54/122385

Int. Cl.³ G03G *9/10*

U.S. Cl. 430—110 **8 Claims**

1. A toner composition for electrostatic photography which comprises (A) toner powder comprising a base resin and a coloring agent and having an average particle size of not more than 30 microns and (B) silica powder coated on its surface with the base resin of the toner powder.

4,288,518

ELECTROGRAPHIC MAGNETIC DEVELOPING METHOD

Osamu Miyamoto, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan

Filed Nov. 26, 1979, Ser. No. 97,547

Claims priority, application Japan, Dec. 13, 1978, 53-154836; Dec. 19, 1978, 53-158020

Int. Cl.³ G03G *13/09*

U.S. Cl. 430—122 **5 Claims**

1. In a method of repetitively developing latent electrostatic images comprising:

a first step of stirring a developer containing toner particles and carrier granules having magnetic properties to triboelectrically charge the toner particles to a polarity suitable for developing a latent electrostatic image on an image-bearing surface and

a second step of causing a developer bearing member to attract the developer in the form of a magnetic brush and bringing said magnetic brush into rubbing contact with the latent electrostatic image on said image-bearing surface to electrostatically attract the toner particles thereto from said magnetic brush to convert the latent image to a visible image and

wherein there is an increase or a decrease in the degree of attraction of the toner particles to the latent image as the developing method is repeated, the improvement which comprises

a third step of determining whether there is an increase or decrease in the degree of attraction of the toner particles to the latent image as the developing method is repeated and if there is an increase in the degree of attraction, then replenishing the developer used for the development which contains a reduced quantity of toner particles, with toner particles having higher triboelectric chargeability than the toner particles contained in the developer before development and if there is a decrease in the degree of attraction, then replenishing the developer used for development which contains a reduced quantity of toner particles, with toner particles having lower triboelectric chargeability than the toner particles contained in the developer before development; the toner particles to be replenished and the toner particles contained in the developer being triboelectrically chargeable to the same polarity by frictional contact with the carrier granules contained in the developer; the size of said toner particles supplied in said third step being approximately equal in size to the toner particles contained in the developer,

wherein said toner particles to be supplied in said third step and said toner particles initially contained in the developer before the development respectively contain a charge-controlling agent in different proportions,

whereby the degree of attraction of the toner particles to the

latent image upon repeated development becomes more uniform.

4,288,519

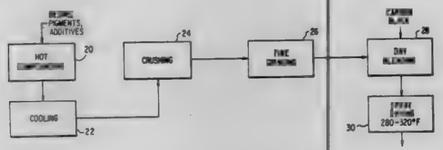
DUAL PURPOSE ELECTROPHOTOGRAPHIC MAGNETIC TONER AND PROCESS OF MAKING

Arthur S. Diamond, Ventura, and Sydney N. Floersheim, Encino, both of Calif., assignors to Black Copy Company, Inc., Canoga Park, Calif.

Division of Ser. No. 772,502, Feb. 28, 1977. This application Dec. 20, 1977, Ser. No. 862,613

Int. Cl.³ G03G *9/08*; B28B *11/06*

U.S. Cl. 430—137 **9 Claims**



1. A method of producing a dual purpose, single component, electronically conductive, magnetically attractable toner comprising the steps of:

heating and mixing a mixture of thermoplastic toner resins to form an intimate blend while dispersing therein 50 to 150 phr of finely divided, magnetic pigment and 0 to 15 phr of conductive pigment, said resins consisting essentially of a linear polyester consisting of the condensation product of an aromatic diol with an unsaturated aliphatic, dibasic acid having a softening point from 95° C. to 115° C. and an ethylene-vinyl acetate copolymer containing 5 to 40% vinyl acetate and the ratio of polyester to copolymer being from 1:1 to 5:1;

cooling the mixture to a brittle solid;

breaking the mixture into large fragments;

grinding the fragments to form coarse particles;

fine grinding the coarse particles to form fine, fragmentary aspherical, acicular particles having a diameter from 10 to 40 microns by subjecting the particles to jets of inert gas in absence of abrasive such that they fragment by self-impact;

dry blending the fine particles with from 0.5 to 2.0 percent by weight of finely divided conductive pigment having a particle diameter in the range of 10–80 milimicrons; and

embedding the conductive pigment on the surface of the fine, acicular, aspherical particles without changing the shape thereof by gravity feeding the dry blend into the top of a spray drier and heating the falling particles in a 250°–350° F. gas stream to a temperature just sufficient to soften the thermoplastic resin.

4,288,520

PROCESS OF MANUFACTURING LIGHT-SENSITIVE COPYING MATERIAL BASED ON DIAZONIUM SALT CONDENSATION PRODUCTS

Gerhard Sprintschnik, Hofheim, and Fritz Uhlig, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 62,026

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834059

Int. Cl.³ G03C *1/54, 1/71, 1/74, 1/94*

U.S. Cl. 430—169 **6 Claims**

1. In a process for the manufacture of a negative-working, presensitized planographic printing plate developable in pure water at room temperature by applying an aqueous coating mixture without any addition of organic solvent to an aluminum plate support and drying the coating, said coating mixture containing

(a) a water-soluble light-sensitive condensation product of an aromatic diazonium salt,

(b) a stable dispersion of a water-insoluble macromolecular polymer, and

(c) about 0.01 to 0.6 part by weight of a surface-active agent per part by weight of the water-insoluble polymer, over and above the amount of surface-active agent required to manufacture and stabilize the dispersion,

the improvement which comprises drying the coating mixture at a temperature between about 45° C. and the decomposition temperature of the diazonium compound and under conditions such that an optically homogeneous light-hardenable coating with no discrete particles visible at 30,000-fold magnification is formed.

4,288,521

PROCESS FOR THE PRODUCTION OF PHOTOSENSITIVE PLATES FOR PRINTING

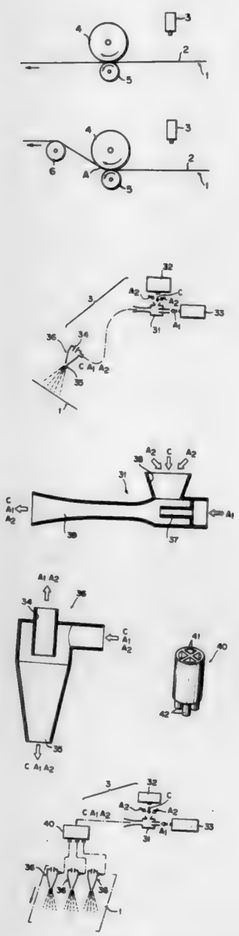
Hiroshi Kojima; Kunio Ito; Masami Akiyama, and Takeshi Tanaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1980, Ser. No. 115,122

Claims priority, application Japan, Jan. 30, 1979, 54/9818

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—169 **6 Claims**



1. A process for the production of a photosensitive plate for printing which comprises:

feeding a volume of air containing a given amount of a fine powder having a constant directional size of 0.5–40μ to at least one cyclone;

downwardly discharging from the bottom of said cyclone said given amount of said fine powder together with a volume of air which is small relative to the volume of air fed to said cyclone; and

uniformly dispersing and adhering the discharged fine powder onto the surface of the side of a photosensitive plate which contains a photosensitive layer which is continuously moving past said cyclone.

4,288,522

NON-PHOTOSENSITIVE RECEPTOR MATERIAL SUITED FOR PRODUCING BLACK-AND-WHITE SILVER IMAGES AND DYE IMAGES AND A PROCESS FOR THE PRODUCTION OF SUCH IMAGES THEREWITH

Frans Carael, Edegem; Daniël A. Claeys, Mortsel, and Wilhelmus Janssens, Aarschot, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Jan. 22, 1980, Ser. No. 114,082

Claims priority, application United Kingdom, Jan. 24, 1979, 02551/79

Int. Cl.³ G03C *5/54, 1/40, 1/48*

U.S. Cl. 430—213 **11 Claims**

1. A non-photosensitive receptor material free from silver halide adapted for use in a dye transfer and silver complex diffusion transfer process, said material including:

(i) a support,

(ii) a first organic hydrophilic colloid layer containing an organic onium compound capable of mordanting an acid dye, and

(iii) a transparent second organic hydrophilic colloid layer containing development nuclei for catalyzing the reduction of silver complex salts to silver;

said material containing at least one organic compound having an anionic group linked to a carbon atom in said layer (iii) and/or in a hydrophilic colloid interlayer consisting essentially of a hydrophilic organic colloid binder and said organic compound which is situated between said layers (ii) and (iii).

4,288,523

DIFFUSION CONTROL LAYERS IN DIFFUSION TRANSFER PHOTOGRAPHIC PRODUCTS

Lloyd D. Taylor, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 14, 1980, Ser. No. 130,527

Int. Cl.³ G03C *1/40, 1/48, 5/54*

U.S. Cl. 430—215 **39 Claims**

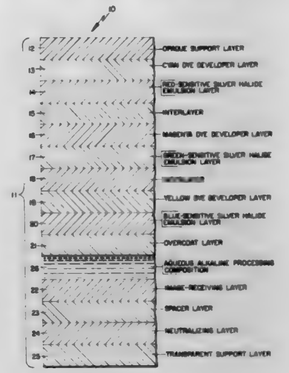
1. A photographic diffusion transfer film unit comprising:

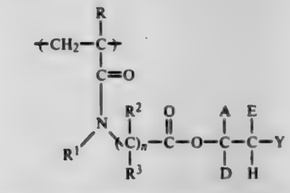
a support layer;

a photosensitive silver halide emulsion layer having associated therewith a diffusion transfer process image-providing material;

an alkaline processing composition permeable image-receiving layer; and

at least one diffusion control layer comprising a polymer having recurring units of the formula





wherein R is hydrogen or lower alkyl; R^1 is hydrogen or lower alkyl; R^2 and R^3 are independently hydrogen, lower alkyl, substituted lower alkyl, aryl, alkaryl, aralkyl, cycloalkyl, or R^2 and R^3 together with the carbon atom to which they are bonded constitute a carbocyclic or heterocyclic ring, or R^3, when substituted on the methylene carbon atom next adjacent the nitrogen atom, is taken together with R^1 to form part of a substituted or unsubstituted N-containing ring; A, D, and E are selected from the group consisting of hydrogen, methyl, and phenyl, provided that no more than one of A, D, or E may be methyl or phenyl; Y is a β-elimination activating group; and n is a positive integer one to six.

4,288,524

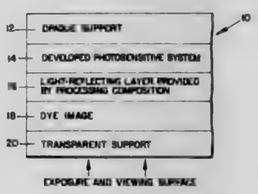
IMAGE-RECEIVING ELEMENTS UTILIZING LAMELLAR PIGMENT MATERIALS

Ruth C. Bilofsky, Lexington, and Howard G. Rogers, Weston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 921,186, Jul. 3, 1978, Pat. No. 4,216,018, which is a continuation-in-part of Ser. No. 744,598, Nov. 24, 1976, abandoned. This application May 27, 1980, Ser. No. 153,590

Int. Cl.³ G03C *5/54, 1/40, 1/84*

U.S. Cl. 430—220 **16 Claims**



1. An image-receiving element for a diffusion transfer prod-

uct which comprises a support carrying an image-receiving layer and a substantially white layer positioned between said image-receiving layer and said support, said substantially white layer comprising a lamellar pigment dispersed in a matrix material, said lamellar pigment having at least one layer with a geometric thickness within the expression:

$$T = \frac{\lambda}{4} /n \text{ (or an odd multiple thereof)}$$

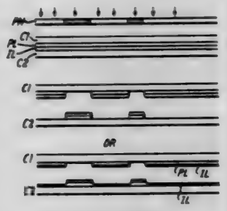
where: T is the geometric thickness of the layer, λ represents a wavelength or wavelength range of radiation in the visible region of the spectrum and n is the refractive index of the layer material and is at least 1.7; any layer adjacent said one layer having a geometric thickness of a value also within said expression but comprising a layer material having a refractive index different from the refractive index of said one layer.

4,288,525

PHOTOSENSITIVE MATERIALS

John V. Shepherd, 7 Apple Tree Yard, London, England, and Eric M. Sutton, P.O. Box 45315 Pemba St., Nairobi, Kenya

Filed Aug. 24, 1979, Ser. No. 69,367
Claims priority, application United Kingdom, Aug. 24, 1978, 34531/78
Int. Cl.³ G03C 11/12, 1/76
U.S. Cl. 430—253 14 Claims



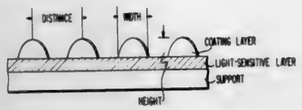
1. A photosensitive material comprising
a light transmitting first carrier sheet,
a photosensitive layer comprising at least one member selected from the group consisting of photopolymerizable compositions, photocrosslinkable compositions and mixtures thereof on said first carrier,
an image-forming non-photosensitive layer on said photosensitive layer, and
a second carrier sheet in contact with the free surface of said image-forming layer,
the bond between said second carrier sheet and said image-forming layer prior to exposure of said photosensitive layer to actinic radiation being stronger than the bond between said photosensitive layer and said first carrier sheet and, following exposure to actinic radiation through said first carrier sheet the bond between said photosensitive layer and said first carrier sheet in the light exposed areas being stronger than the bond between said image-forming layer and said second carrier sheet, and
the exposed portion of said photosensitive layer and at least part of said image-forming layer in contact with said exposed portion of said photosensitive layer are removable along with said first carrier sheet on separating said first and second carrier sheets after imagewise exposure.

4,288,526

LIGHT-SENSITIVE PRINTING PLATES WITH DISCONTINUOUS OVER-COATING

Kazutaka Oda, and Yoshio Okishi, both of Yoshida, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 878,355, Feb. 16, 1978, which is a continuation of Ser. No. 659,447, Feb. 19, 1976, abandoned. This application Jan. 9, 1980, Ser. No. 110,740
Claims priority, application Japan, Feb. 19, 1975, 50-20620; Mar. 24, 1975, 50-35940
Int. Cl.³ G03C 1/76
U.S. Cl. 430—272 5 Claims



1. A light-sensitive printing plate precursor comprising a support having coated thereon, in order, a light-sensitive layer and an outermost layer comprising an uneven pattern of a discontinuous coating layer consisting of coated areas and uncoated areas, the height of the coated areas being about 2 to 40 microns, and the distance between the coated areas adjacent to each other is about 50 to 100,000 microns, said outermost layer being substantially entirely removed upon development of said light-sensitive layer.

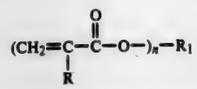
4,288,527

DUAL UV/THERMALLY CURABLE ACRYLATE COMPOSITIONS WITH PINACOL

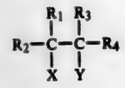
Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 13, 1980, Ser. No. 177,658
Int. Cl.³ G03C 1/68
U.S. Cl. 430—288 4 Claims

1. A dual UV radiation and heat activitable composition consisting essentially of
(1) a liquid ethylenically unsaturated compound of the formula:



wherein R is H or CH_3, R_1 is an organic moiety and n is 2 to 4,
(2) 0.0005 to 30% by weight of (1) of a photoinitiator, and
(3) 0.01 to 5% by weight of (1) of a substituted or unsubstituted pinacol of the general formula:



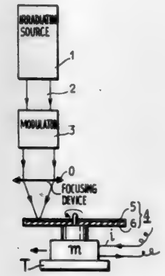
wherein R_1 and R_3 are members independently selected from the group consisting of substituted and unsubstituted aromatic radicals, R_2 and R_4 are members independently selected from the group consisting of substituted and unsubstituted aliphatic and aromatic radicals and X and Y are members independently selected from the group consisting of hydroxyl, alkoxy and aryloxy.

4,288,528

METHOD OF MAKING AN EMBOSSED PATTERN ON AN INFORMATION BEARING SUBSTRATE

Jean E. Picquendar; Michel Marchal; Jean C. Dubois, and Eugene Duda, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 874,840, Feb. 8, 1978, abandoned, which is a continuation of Ser. No. 663,789, Mar. 4, 1976, abandoned, which is a continuation of Ser. No. 433,406, Jan. 14, 1974, abandoned. This application Jun. 11, 1979, Ser. No. 47,219
Claims priority, application France, Jan. 18, 1973, 73 01746
Int. Cl.³ G03C 5/00
U.S. Cl. 430—297 10 Claims



1. A process for optically recording video frequency signals as an embossed pattern on the flat surface of a disc forming a substrate comprising:
(a) coating upon said flat surface a layer of photoresist material having a thickness at least equal to the depth of the resulting embossed pattern, the coated photoresist layer adhering to said flat surface;
(b) depositing upon said layer a film of residue-free, evaporable material having a thickness sufficient for masking said layer against actinic radiation, said film adhering to said layer of photoresist material;
(c) irradiating said film in situ along the prospective embossed areas of said pattern with a focussed writing beam from a coherent light source, said irradiation selectively evaporating said film from said area thereby opening holes in said film;
(d) irradiating said layer of photoresist material in situ through the thus opened holes in said film with actinic radiation;
(e) selectively dissolving said photoresist layer to remove the irradiated portions of said photoresist material facing said holes.

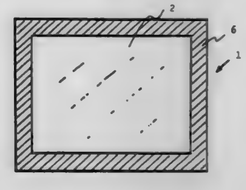
4,288,529

USE OF PHOTO-CURABLE COMPOSITE MATERIALS TO MAKE A STENCIL

Takezo Sano, Takatsuki; Haruo Inoue, Kobe, and Akihiro Furuta, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company Limited, Higashi, Japan

Continuation of Ser. No. 888,864, Mar. 22, 1978, Pat. No. 4,216,287. This application Jan. 25, 1980, Ser. No. 115,492
Claims priority, application Japan, Mar. 26, 1977, 52/33782
Int. Cl.³ G03C 5/00
U.S. Cl. 430—308 2 Claims

1. A process for preparing a stencil which comprises:
placing a photomask on a photo-curable composite material which comprises a flat, flexible and photo-transmitting thin film (A); a flat and flexible film (B); a liquid photo-curable resin and a flat screen material, said films (A) and (B) being air-tightly bonded to each other at their peripheral portion thereof to form a flat inner space therebetween, said liquid photo-curable resin being disposed in said inner space to form a layer, and said screen material also being disposed in the inner space substantially in parallel with the inner walls of the films (A) and (B);
curing the liquid photo-curable resin in the photo-curable composite material by irradiation with actinic light through said photomask; and



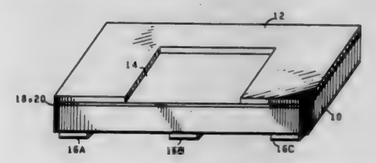
removing the uncured resin to develop an image after peeling off at least one film from the irradiated composite material.

4,288,530

METHOD OF TUNING APPARATUS BY LOW POWER LASER BEAM REMOVAL

Brian E. Bedard, Lochmere, N.H., and Gary R. Geller, Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 15, 1979, Ser. No. 84,941
Int. Cl.³ H01P 3/08
U.S. Cl. 430—315 7 Claims



1. A method of tuning an apparatus for use in communications equipment comprising the steps of:
providing a non-conductive wafer;
providing on a first major surface of said wafer at least one conductive circuit element;
providing on the second major surface of said substrate a relatively large conductive area having generally a first predetermined thickness and having, opposite the at least one circuit element, a portion of a second predetermined thickness, the second predetermined thickness being substantially thinner than the first predetermined thickness; and
evaporating appropriate portions of the thinner portion of the large conductive area by means of a low-power laser beam having sufficient energy to evaporate the thinner portions of the conductive areas on the second major surface and insufficient energy to evaporate the thicker portions; thereby altering the capacitance between the conductive elements on the opposing sides of said wafer.

4,288,531

IMAGING ELEMENTS

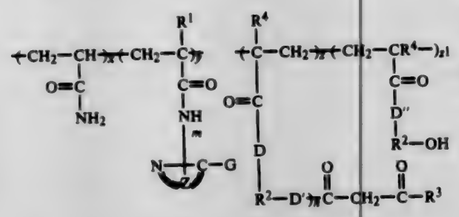
Anthony Adin; Richard C. Sutton, and Joseph A. Verdone, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 971,300, Dec. 20, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 78,865
Int. Cl.³ G03C 1/40, 1/52, 1/10, 1/76
U.S. Cl. 430—338 16 Claims

1. In an imaging element including a support and a radiation-responsive, image-forming composition capable of imagewise-converting an aromatic dialdehyde into a dye, said composi-

tion including said dialdehyde and comprising at least one layer on said support,

the improvement comprising a compatible polymer composition superimposed over said one layer, and having recurring units of the formula



wherein

R^2 is alkylene containing 1 to 3 carbon atoms;

R^3 is alkyl or alkoxy containing from 1 to 3 carbon atoms;

R^1 and R^4 are the same or different and each is hydrogen or methyl;

G is =O or hydrogen;

m and n are the same or different and each is 1 or 0;

D, D', and D'' are the same or different and each is —NH— or —O—;

Z is the atoms necessary to complete one or more saturated or unsaturated heterocyclic rings containing from 4 to 9 ring atoms; and

x, y, z and z^1 are weight percents, totalling 100, of the recurring units such that:

$50 \leqq x \leqq 90$,

$10 \leqq y \leqq 50$,

$0 \leqq z \leqq 10$,

$0 \leqq z^1 \leqq 10$,

said composition being capable when coated at a pH of 3.0 in an amount of about 21.5 mg/dm^2, dried, exposed for 0.5 second to a 400-watt medium-pressure mercury arc lamp and developed by heating for 5 seconds at 130° C., of producing with said one layer a maximum neutral density that is at least equal to that produced under identical conditions by the same element wherein said superimposed polymer composition consists essentially of poly(acrylamide-co-N-vinyl-2-pyrrolidone-co-2-acetoacetoxyethylmethacrylate) (50:45:5) at about 21.5 mg/dm^2.

4,288,532

COLOR PHOTOGRAPHIC MATERIALS CONTAINING CYAN COLOR-FORMING COUPLERS

Yoshio Seoka; Koso Aoki; Yukio Yokota, and Seiiti Kubodera, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

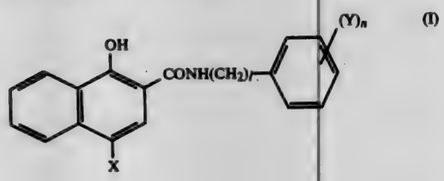
Filed Feb. 13, 1980, Ser. No. 120,962

Claims priority, application Japan, Feb. 13, 1979, 54/15885

Int. Cl.³ G03C *7/00, 1/40*

U.S. Cl. 430—385 **9 Claims**

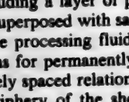
1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, said photographic light-sensitive material containing at least one cyan color-forming coupler represented by the following general formula (I):



wherein l represents 0, 1 or 2; X represents a group of the formula (II):

$$-O-(B)_a-(L_1-D)_b-L_2 \qquad (II)$$

capable of being released upon coupling reaction and having at least 6 carbon atoms and wherein in formula (II) L_1 represents an alkylene group having 1 to 12 carbon atoms which may be substituted or a phenylene group having 6 to 12 carbon atoms which may be substituted; L_2 represents a hydrogen atom, an alkyl group having 8 to 22 carbon atoms which may be substituted or a phenyl group which may be substituted; b represents 0, 1 or 2; D represents a divalent connecting group; B represents a divalent or trivalent group of —CO—, —CO_2—, —SO_2— or



a represents 0 or 1 and when a is 1 and B is a trivalent group another —$(L_1-D)_b-L_2$ group can be present,

Y represents RCONH—, RNHCO— or RNHCOHN— wherein R represents a hydrogen atom, a methyl group, an ethyl group or a methyl group substituted with one or more halogen atoms; n represents 1 or 2 and Y may be the same or different when n is 2; and the phenyl group can be substituted with a halogen atom, an alkyl group having 1 to 3 carbon atoms or an alkyl group having 1 to 3 carbon atoms.

9. A process of forming a cyan dye image which comprises developing an exposed color photographic light-sensitive material as claimed in claim 1 with an aqueous alkaline solution containing a primary aromatic amine developing agent.

4,288,533

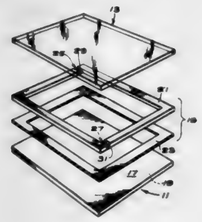
INSTANT FILM UNIT

Gerald M. Poshkus, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 5,406, Jan. 22, 1979. This application Apr. 24, 1980, Ser. No. 143,244

Int. Cl.³ G03C *1/48, 1/76*

U.S. Cl. 430—496 **7 Claims**



1. A photosensitive unit processable by a low viscosity processing fluid and comprising:

a first sheet including a layer of photosensitive material, a second sheet superposed with said first sheet for aiding in distributing the processing fluid over the photosensitive material, means for permanently securing said sheets together in closely spaced relationship around substantially the entire periphery of the sheets, a small access port extending from the exterior of the film unit into the space between the sheets which port comprises essentially a point source, uneffected by the orientation of the unit, for introducing the processing fluid into such space, and a small venting port extending from the space between the sheets to the exterior of the film unit for releasing air displaced by the processing fluid when the fluid is introduced into such space.

4,288,534

PHOTOGRAPHIC SILVER HALIDE MATERIALS CONTAINING LIGHT-ABSORBING DYES

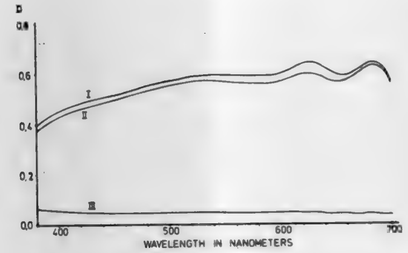
Raymond G. Lemahieu; Henri Depoorter, and Emiel A. Hofman, all of Mortsel, Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 15, 1980, Ser. No. 121,737

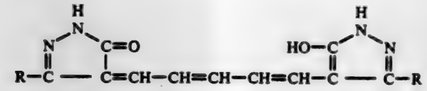
Claims priority, application United Kingdom, Mar. 2, 1979, 07439/79

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—522 **6 Claims**



1. A photograhic light-sensitive material comprising a support and at least one light-sensitive silver halide emulsion layer wherein the emulsion layer or an antihalation layer coated on either side of the support comprises in dispersed state therein a 2-pyrazolin-5-one oxonol dye corresponding to the general formula:



wherein R represents a C_1–C_5 alkyl group.

4,288,535

PROCESS FOR PREPARING SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Hideo Kanisawa; Tamio Kitahata, and Hideo Horie, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,410

Claims priority, application Japan, Jun. 16, 1979, 54/76215

Int. Cl.³ G03C *1/02, 1/28*

U.S. Cl. 430—569 **8 Claims**

1. A process for preparing a silver halide photographic emulsion which process comprises adding a water-soluble iridium compound in an amount of 10^{-7} to 10^{-4} mole per mole of the silver halide at the stage of precipitation of silver halide grains or physical ripening thereof, and adding a water-soluble iodide in an amount of 10^{-4} to 10^{-2} mole per mole of the silver halide and a sulfur sensitizer at the stage of chemical ripening thereof.

4,288,536

PHOTOTHERMOGRAPHIC STABILIZERS

Edward J. Goettert, and Gustav Gutman, both of Lake Elmo, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 5, 1979, Ser. No. 45,632

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—619 **10 Claims**

1. An unimaged photothermographic system having at least one emulsion layer comprising an image-silver source material of organic silver salts or complexed silver salts where the coordinating compound has a gross stability constant of between 4.50 and 10.0 with silver ion, silver halide in catalytic proximity to the image-silver source material, and a reducing agent for silver ion, where said system is characterized by having from 0.1/1 to 20/1 molar ratio to the silver halide in said emulsion of a heterocyclic compound selected from the group consisting of pyridines, 2-picolines, nicotinates, isonicotinates, 2,6-lutidenes, 4-picolines, quinolines, pyrazines, pyridazines, and pyrimidines.

4,288,537

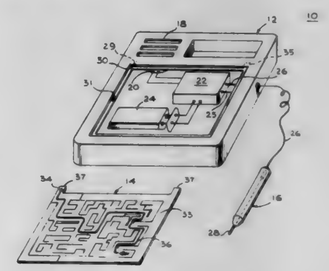
ELECTRONIC GAME

Robert C. Knetzger, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 14, 1980, Ser. No. 111,573

Int. Cl.³ G09B *7/06*; A63H *5/00*; A63F *9/06*

U.S. Cl. 434—169 **4 Claims**



2. A toy for playing a plurality of games comprising a sound generating circuit, a game board, resistive material affixed to the top surface of the board, viewable by an operator of the toy, and connectable to the circuit and shaped to form both a resistor and a game path, first means for connecting the resistive material to the sound generating circuit including a conductor affixed to a portion of the resistive material, and second means for connecting the resistive material to the sound generating circuit including a movable conductor which is adapted to be guided by an operator of the toy along the game path while maintaining continuous contact with the resistive material, whereby the distance between the first and second means for connecting the resistive material to the sound generating circuit defines the resistor, the value of which determines the frequency of the sound generated by the sound generator circuit.

4,288,538

TEST METHOD AND COMPOSITION THEREFOR

Ernest V. Groman, Sommerville, and Marian E. Sacco, Rochester, both of N.Y., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 31, 1979, Ser. No. 8,124

Int. Cl.³ C12Q *1/134*; C01N *31/14*

U.S. Cl. 435—7 **40 Claims**

1. In a specific binding assay for the determination of the total amount of steriod present in a test sample containing steriod and steriod conjugates, wherein the improvement comprises, contacting the test sample substantially simultaneously with receptor for the steriod, and with an enzyme composition suitable for converting the steriod conjugates to the steriod under conditions suitable for the conversion of the steriod and the binding of steriod by the receptor.

4,288,539

BACTERIAL OR BACTERIAL ANTIBODY ASSAY

William J. McAleer, Ambler; Henry Z. Markus, Wyncote, and Roy A. Machlowitz, Glenside, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 794,772, May 9, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 16,252
Int. Cl.[3] C12Q *1/04*; G01N *33/00*
U.S. Cl. 435—7 6 Claims

1. A method for determining the identity of a species of gram negative bacteria present in a sample comprising;
(a) incubating in the wells of a multiwell assay plate a serially diluted mixture of the sample together with reference antiserum to that bacteria, and a complement;
(b) adding a liquid growth medium to the wells containing the incubated mixtures resulting from step (a);
(c) incubating the wells containing the mixtures from step (b) for a time effective to permit bacterial growth to occur; and
(d) measuring and scoring the inhibition of bacterial growth in the liquid medium.

4,288,540

REAGENT FOR THE EARLY DETECTION OF CANCER

Hector Turcotte, 1572 du Ruisseau Ave., Sillery, Quebec, Canada (G1S 3V1)

Filed May 9, 1980, Ser. No. 148,257
Int. Cl.[3] G01N *33/54*
U.S. Cl. 435—7 7 Claims

1. A reagent for the early detection of cancer, comprising the water soluble extract of bacillus agrobacterium tumefaciens, strain 17022, adsorbed on red blood cells, on yeast cells or on particles selected from the group consisting of polyvinyl latex, kaolin and animal black.

4,288,541

ASCORBATE RESISTANT COMPOSITION, TEST DEVICE AND METHOD FOR DETECTING A COMPONENT IN A LIQUID TEST SAMPLE

Thomas A. Magers, South Bend, Ind.; John E. Sheats, Princeton, N.J., and David L. Tabb, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 15, 1979, Ser. No. 84,611
Int. Cl.[3] C12Q *1/28*, *1/54*
U.S. Cl. 435—14 18 Claims

1. In a composition for determining the presence of a component in a test sample, wherein said composition comprises a reagent system containing a peroxidatively active substance, and an oxidation-reduction indicator capable of providing a detectable response in the presence of H_2O_2 and said peroxidatively active substance, and wherein said response is suceptible to being adversely influenced by the presence in said test sample of ascorbic acid, said composition further comprising a heavy metal compound which, in its ionized state, has an oxidation potential below that of said indicator, but above that of ascorbic acid,
the improvement wherein said heavy metal compound is a complex of mercuric ion and one or more ligands, said ligand being covalently bound to said ion to form a water-soluble complex, and said ligand having a higher oxidation potential than said ion in its complexed state; said complex having a K_s greater than about 10^7, wherein K_s is defined by the equation

$$K_s = \frac{[OH^-]^2}{4 \times 10^{-26}}$$

and said complex being substantially noninterfering with respect to said reagent system.

5. The improved composition of claim 1, 2, 3 or 4 wherein said test sample component is a sugar and wherein said reagent system comprises
an enzyme capable of promoting the oxidation of said sugar to produce peroxide,
and wherein said indicator is a chromogenic substance.

6. The improved composition of claim 5 wherein said sugar is glucose, said enzyme is glucose oxidase and said peroxidatively active substance is peroxidase.

4,288,542

RADIOENZYMATIC ASSAY OF CATECHOLAMINES

Garland A. Johnson, Charleston, and Jacob D. Peuler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 681,999, Apr. 30, 1976, abandoned. This application Aug. 8, 1978, Ser. No. 931,651
Int. Cl.[3] C12Q *1/48*, *1/00*; C12N *9/10*
U.S. Cl. 435—15 81 Claims

1. A method for analyzing undifferentiated, total endogenous epinephrine and norepinephrine levels in a mammalian system selected from the group consisting of the supernatant of blood serum, plasma and urine which comprises
a. contacting an aliquot of the mammalian system with the enzyme catechol-O-methyl transferase, the tritium labeled methyl donor S-adenosyl-L-methionine(^{3}H)methyl substantially free of unlabeled methyl donor, a cation of oxidation number +2 which allows the methyl transfer to proceed, a compound which stabilizes the enzyme-substrate system, and an amount of ethylene glycol bis-(amino ethyl ether)-N,N-tetracetic acid sufficient to remove transferase-inhibiting concentrations of calcium ions, to form a mixture,
b. incubating the mixture for a time, temperature and pH sufficient to O-methylate (^{3}H) substantially all of the epinephrine and norepinephrine;
c. extracting the O-methylated (^{3}H) epinephrine and norepinephrine with an organic solvent in which the O-methylated (^{3}H) epinephrine and norepinephrine are preferentially soluble;
d. repartitioning the O-methylated (^{3}H) epinephrine and norepinephrine into an aqueous acid of sufficient strength to protonate the amine;
e. oxidizing O-methylated (^{3}H) epinephrine and norepinephrine to vanillin-^{3}H,
f. extracting vanillin-^{3}H from the aqueous solution with an organic solvent in which the vanillin-^{3}H is preferentially soluble, and
g. counting the radiation emitted from the vanillin-^{3}H.

4,288,543

METHOD AND APPARATUS FOR IDENTIFYING MICROORGANISMS

Bruce H. Sielaff, Gales Ferry; Julius Praglin, East Lyme; James E. McKie, Jr., Ledyard; David K. Longhenry, East Lyme; Alan C. Curtiss, Old Lyme, and Charles B. Bidwell, Madison, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 763,719, Jan. 28, 1977, abandoned. This application Oct. 17, 1977, Ser. No. 842,736
Int. Cl.[3] C12Q *1/04*, *1/12*, *1/10*; C12M *1/34*
U.S. Cl. 435—34 4 Claims

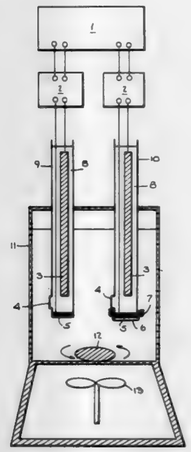
1. A method of identifying a strain of microorganism in a liquid sample comprising the steps of dividing the sample into at least 18 sub-samples, inoculating each of the sub-samples with a growth-inhibiting agent whose reaction with the sub-samples has characteristics capable of identifying the strain of microorganism in said sample, the identity and/or quantity of the growth-inhibiting agent inoculated into each of said sub-samples being different, incubating the sub-samples to develop potentially significant differences in the growth of microorganism in each of them, reading a measure of the growth of the microorganism in each sub-sample, and comparing the growth readings with a bank of microorganism-identifying data relative to said growth-inhibiting agents by quadratic discriminant function analysis, whereby the strain of microorganism in the sample is identified, said growth-inhibiting agents being selected from the group consisting of acriflavine, 9-amino-acridine, auramine O, brilliant green, cetrimide, cobalt chloride, cupric chloride, cycloserine, 3,5-dibromosalicylic acid, dodecylamine hydrochloride, 5-fluorouracil, floxuridine, malachite green, methylene blue, omadine disulfide, sodium omadine, sodium azide, thallous acetate, 2',3',4'-trihydroxyacetophenone, bacitracin, carbenicillin, cephalothin, colistin, kanamycin, methenamine mandelate, nalidixic acid, nitrofurantoin, novobiocin, polymyxin B and tetracycline.

4,288,544

METHOD AND APPARATUS FOR MEASURING MICROORGANISM ACTIVITY

Shuichi Suzuki, Tokyo, and Isao Karube, Tachikawa, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 1, 1979, Ser. No. 35,092
Claims priority, application Japan, Aug. 23, 1978, 53-101897
Int. Cl.[3] C12Q *1/06*; C12M *1/34*
U.S. Cl. 435—39 4 Claims



1. A method for determining the unknown number of living cells or total number of active parts in a liquid medium by measuring the difference between the current value or potential value of said microorganism and the current value or potential value of said liquid medium and correlating said measured difference with a current or potential difference which corresponds to a known amount of said microorganism.

4,288,545

MICROBIOLOGICAL PROCESS FOR REMOVING OLEAGINOUS MATERIAL FROM WASTEWATER AND MICROBIOLOGICAL COMBINATION CAPABLE OF SAME

Philip W. Spraker, Troutville, Va., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,241
Int. Cl.[3] G12P *39/00*
U.S. Cl. 435—42 16 Claims

1. A process for removing oleaginous materials of animal origin or containing such of animal origin from wastewater comprising treating, under aerobic conditions, wastewater containing said oleaginous material with a microbial combination of:
(a) a microorganism of the strain *Pseudomonas aeruginosa* $SGRR_2$ (ATCC-31480); and
(b) at least one of:
(i) a microorganism of the genus Bacillus; and
(ii) a microorganism of the genus Pseudomonas other than said strain *Pseudomonas aeruginosa* $SGRR_2$.

4,288,546

PROCESS FOR THE LARGE SCALE PRODUCTION OF PITUITARY HORMONES BY SERIAL SECONDARY SUSPENSION CULTURE

Mandayam J. Narasimhan, Mysore, India, and John A. Anderson, Menlo Park, Calif., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 675,643, Apr. 9, 1976, Pat. No. 4,124,448. This application Nov. 6, 1978, Ser. No. 957,725
Int. Cl.[2] A01N *1/02*; C12P *21/02*; C12N *5/02*
U.S. Cl. 435—70 4 Claims

1. A nutrient culture medium composition adapted to the production of Prolactin from the pituitary by serial sub-culturing, said composition consisting essentially of amino acid-rich nutrient Medium 199-1X with Earle's modified salts supplemented by the addition of about 5 to 20 ml of liver extract and about 6 to 20 I.U. of insulin per liter of Medium 199-1X, minor amounts of anti-bacterial and anti-fungal agents and about 10 to 100 mg per liter of Medium 199-1X of an aqueous suspension of a substance with progesteron-androgenic activity.

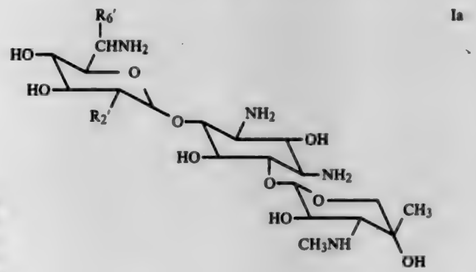
4,288,547

FERMENTATIVE PROCESS FOR PREPARING ANTIBIOTICS OF THE GENTAMICIN CLASS

Haruo Yamamoto, 11-16, Matsukazedai, Chigasaki City, Kanagawa Prefecture, Japan

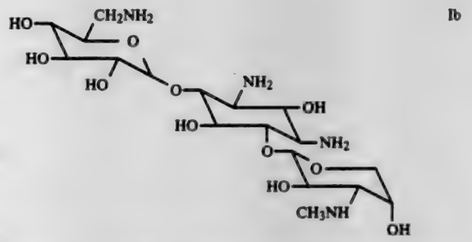
Filed Nov. 13, 1979, Ser. No. 93,062
Int. Cl.[3] C12P *19/48*
U.S. Cl. 435—80 1 Claim

1. A process for preparing a compound having one of the formulas:



Ia

or



Ib

where, in formula Ia, R_2' is hydroxy or amino and R_6' is hydrogen or methyl which comprises culturing a nutrient medium containing carbohydrates, a source of assimilable nitrogen, essential salts and D-streptamine with *M. purpurea* ATCC 31,536 and isolating the said compounds from the nutrient medium.

4,288,548

PROCESS FOR ISOMERIZING GLUCOSE TO FRUCTOSE

Steven P. Barrett, Byron, Ill., and William J. Nelson, Camanche, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

Filed Nov. 15, 1979, Ser. No. 94,520
Int. Cl.³ C12P *19/24*
U.S. Cl. 435—94 **9 Claims**

1. A process for enzymatically isomerizing glucose in an ion exchange refined glucose-containihg liquor to fructose comprising treating said refined liquor with an ion exchange material in the bisulfite/sulfite form and contacting the treated liquor with immobilized glucose isomerase under glucose isomerizing conditions to convert a portion of the glucose to fructose.

4,288,549

METHOD OF PRODUCING THE A-30912 ANTIBIOTICS

LaVerne D. Boeck, and Ralph E. Kastner, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 46,744, Jun. 8, 1979, abandoned. This application Mar. 3, 1980, Ser. No. 126,078
Int. Cl.³ C12P *17/18*
U.S. Cl. 435—119 **7 Claims**

1. The method of producing the A-42355 antibiotic complex comprising A-30912 factors A, B, D, and H which comprises cultivating *Aspergillus nidulans* var. *roseus* NRRL 11440 in a culture medium containing assimilable sources of carbohydrate, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced.

4,288,550

TREATING PROCESS OF GARBAGE CONTAINED WASTES

Masahiko Ishida; Ryoichi Haga, and Yoji Odawara, all of Hitachi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Nov. 1, 1978, Ser. No. 956,724
Claims priority, application Japan, Nov. 8, 1977, 52-133017
Int. Cl.³ C12P *5/02*
U.S. Cl. 435—167 **9 Claims**

1. A digestion process for treating starch containing garbage consisting essentially of the steps of:

(a) subjecting said starch containing garbage to an alcohol producing anaerobic fermentation in the slurry state without sterilizing said starch containing garbage in the presence of at least one ethanol producing yeast which directly converts starch into ethanol without a hydrolysis pretreatment step,

(b) subjecting the resultant alcohol fermented product containing ethanol directly to methane producing anaerobic fermentation in the presence of methane producing bacteria which directly converts ethanol into methane, and

(c) recovering the methane generated by said methane producing anaerobic fermentation.

4,288,551

PROCESS FOR THE PURIFICATION OF SUGAR SYRUPS

Geir V. Gudnason, Atlanta, and Joseph E. Stoll, Douglasville, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 10, 1980, Ser. No. 128,683
Int. Cl.³ C13D *3/00*; C12P *3/00*
U.S. Cl. 435—168 **62 Claims**

1. A process for the purification of an impure sugar syrup comprising:

a. maintaining said syrup at a temperature not greater than about 72° C. and not less than that at which formation of a primary floc may proceed to substantial completion;

b. combining said syrup with not less than about 25 ppm of hydrogen peroxide by volume of syrup, and an amount of a primary-floc-forming chemical couple sufficient to form a primary floc in said hydrogen peroxide containing syrup, said primary floc being formed in an amount sufficient to capture a substantial portion of the impurities present in said syrup;

c. mixing into said syrup an amount of catalase sufficient to cause rapid decomposition of said hydrogen peroxide with resultant rapid generation of oxygen bubbles;

d. dispersing throughout said syrup an amount of a polyelectrolyte sufficient to form a secondary floc having entrapped therein sufficient quantities of said oxygen bubbles to cause flotation, said dispersing being done by agitation such that a sufficient amount of said bubbles will be retained by said secondary floc to cause flotation, said dispersing being begun not more than about 180 seconds following said mixing;

e. discontinuing said agitation not more than about 180 seconds following the commencement of said dispersing;

f. allowing the flotation of said secondary floc thereby leaving a substantially purified sugar syrup; and

g. separating said purified sugar syrup from said secondary floc.

4,288,552

IMMOBILIZED INTRACELLULAR ENZYMES

Stina M. Gestrelius, Farum, Denmark, assignor to Novo Industri A/S, Denmark

Filed Apr. 11, 1979, Ser. No. 29,156
Claims priority, application United Kingdom, Apr. 19, 1978, 15521/78
Int. Cl.³ C12N *11/00, 11/16, 11/02*
U.S. Cl. 435—174 **15 Claims**

1. Process for immobilization of an intracellular, glutaraldehyde sensitive enzyme, which process comprises reacting in an aqueous medium microbial cell material containing therein an intracellular glutaraldehyde sensitive enzyme with glutartaldehyde in the presence of a branched polyalkalene imine added to the medium before or simultaneously with the glutaraldehyde, said polyalkalene imine having primary amino groups on the polyalkalene imine molecule at a ratio of primary amine equivalents to aldehyde equivalents in the range of from 0.01:1 to 10:1, and thereafter recovering the resulting immobilized enzyme containing microbial cell preparation.

4,288,553

DISOPYRAMIDE COMPOUNDS FOR CONJUGATING PROTEINS USED IN IMMUNOASSAYS FOR DISOPYRAMIDE

Prithipal Singh, Sunnyvale; Pyare L. Khanna, San Jose, and Floyd W. Colvin, Redwood City, all of Calif., assignors to Syva Company, Palo Alto, Calif.

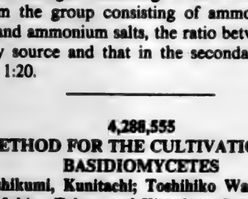
Filed Feb. 11, 1980, Ser. No. 120,590
Int. Cl.³ C12N *9/96*; G01N *33/54*; C02D *211/00*
U.S. Cl. 435—188 **12 Claims**

1. A compound of the formula:

$$(A—CONHR(CO)_m)_nZ$$

wherein:

A is of the formula:



R is a saturated aliphatic linking group of from one to six carbon atoms;

Z is hydrogen, hydroxyl, alkoxyl, a group forming an activated ester capable of amide formation in an aqueous medium, or a polypeptide which is antigenic or an enzyme;

m is zero or one when Z is a poly(amino acid) and is otherwise one; and

n is one when Z is other than a poly(amino acid) and is otherwise one to the molecular weight of Z divided by 500.

4,288,554

PROCESS FOR THE CULTIVATION OF YEAST CELLS

Aldo Zotti, and Giuliano Cardini, both of Milan, Italy, assignors to Enteco Impianti S.p.A., Milan, Italy

Filed Dec. 20, 1979, Ser. No. 105,486
Int. Cl.³ C12N *1/32*
U.S. Cl. 435—247 **11 Claims**

1. In a continuous process for the cultivation of yeast cells in an aqueous growth medium and under aerobic conditions, in which an aqueous nutrient medium comprising a source of assimilable nitrogen and methanol as a source of assimilable carbon is continuously delivered to a fermenting vessel containing the growth medium, and in which a stream of growth medium is continuously discharged from said vessel with recovery of the yeast cells present therein, the improvement which comprises using a yeast of the species *Candida boidinii* and using a nutrient medium comprising a primary source of assimilable nitrogen consisting of urea and a secondary source of assimilable nitrogen consisting of one or more compounds chosen from the group consisting of ammonia, ammonium hydroxide and ammonium salts, the ratio between nitrogen in the primary source and that in the secondary source being from 2:1 to 1:20.

4,288,555

METHOD FOR THE CULTIVATION OF BASIDIOMYCETES

Chikso Yoshikumi, Kunitachi; Toshihiko Wada, Mibu; Himromitsu Makita, Tokyo, and Kinzaburo Suzuki, Mibu, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 823,110, Aug. 9, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,400
Claims priority, application Japan, Aug. 24, 1976, 51-100157
Int. Cl.³ C12N *1/14*
U.S. Cl. 435—254 **1 Claim**

1. In a method for growing a fungus *Coriolus versicolor* (Fr.) Quél. by inoculating a culture medium with a homogenized slurry of seed mycelia of said fungus and cultivating said mycelia under submerged conditions to produce growth of said fungus, the improvement comprising the steps of:

treating seed mycelial lumps of said fungus with rotating propellers in a homogenizing apparatus at a speed of 3,000 to 6,000 r.p.m. for 1.5 to 2.5 minutes, thereby reducing the size of said seed mycelial lumps to 50 to 1,000 microns and at the same time obtaining homogeneously dispersed seed mycelia in the form of threads while substantially preventing cuts into said seed mycelia

inoculating said culture medium with the thus obtained seed mycelia at an inoculating rate of 0.01 to 0.2 g of said seed mycelia per liter of said culture medium, and

carrying out said cultivation under submerged conditions.

4,288,556

MICROORGANISM AND PROTEOLYTIC ENZYME DERIVED THEREFROM

Andre Belloc, Vanves; Jean Florent, Boulogne sur Seine; Jean Lunel, Paris; Jean-Claude Palla, Thiais, and Denise Mancy, Charenton le Pont, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 16, 1977, Ser. No. 825,055
Claims priority, application France, Aug. 24, 1976, 76 25631
Int. Cl.³ C14C *1/00*; C12N *9/52, 1/20*
U.S. Cl. 435—265 **14 Claims**

7. A proteolytic enzyme produced by culturing *Streptomyces caligosus* DS 14,486, said enzyme comprising a protein substance in the form of a powder having a brown to black color, a molecular weight of about 27,000, and an isoelectric point of about 3.7, said enzyme being rather soluble in water, slightly soluble in concentrated aqueous solutions of neutral salts and in water-alcohol or water-acetone mixtures and virtually insoluble in anhydrous alcohols and ketones and having a maximum activity on casein at a pH of 7.5 and a temperature of 45° C., a coagulant activity on milk and a fibrinolytic activity on a fibrin clot and having a specific activity on the hair-skin bond such that in use in a process for the enzymatic depilation of animal skin, said enzyme affords recovery of both intact hair and intact skin.

4,288,557

ANTIGENIC COMPLEX FROM *N. GONORRHOEAE*

Yashwant D. Karkhanis, Fanwood, and Dennis J. Carlo, South Amboy, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 949,581, Oct. 12, 1978, Pat. No. 4,220,638, which is a continuation-in-part of Ser. No. 862,265, Dec. 20, 1977, abandoned. This application Mar. 5, 1980, Ser. No. 127,297
Int. Cl.³ C07G *7/00*
U.S. Cl. 435—272 **5 Claims**

1. A method of obtaining an antigenic, immunogenic, complex obtained from the cell surface of *N. gonorrhoeae* which is protective against *N. gonorrhoeae* having a molecular weight of from about 9,200,000 to about 9,500,000, over 80% of the complex being formed of five sub-units in approximately equal amount having molecular weight of about 68,000, about 50,000, about 34,000, about 27,000 and about 10,500, the complex containing a dry weight basis from about 90 to about 95% protein, up to about 7% lipopolysaccharide, about 2% carbohydrate and less than 1% of RNA, DNA and phospholipids which comprises stirring a homogenized cell paste of *N. gonorrhoeae* for from about 10 to about 15 hours, removing cellular debris, RNA and DNA from the homogenized extract, and separating a fraction having a molecular weight in excess of about 9,000,000.

4,288,558

PROCESS FOR THE MANUFACTURE OF OXYGEN-CONTAINING CARBON COMPOUNDS FROM SYNTHESIS GAS

Hans-Joachim Schmidt, Königstein; Friedrich Wunder, Flörsheim am Main; Hans-Jürgen Arpe, Kelkheim, and Ernst I. Leupold, Neu-Anspach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 25,033, Mar. 29, 1979, abandoned. This application Apr. 1, 1980, Ser. No. 136,270

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814365; Jun. 10, 1978, 2825495; Nov. 18, 1978, 2850110

Int. Cl.³ C07C *27/06*

U.S. Cl. 518—716 **13 Claims**

1. A process for the manufacture of acetic acid, ethanol, acetaldehyde and any secondary products thereof which comprises catalytically reacting carbon monoxide and hydrogen using a catalyst, applied onto a carrier, containing salts or complex compounds of rhodium either with a valence of less than 3 or prepared by reduction of correspondingly supported compounds of trivalent rhodium at a temperature below 300° C., halide ions and a co-catalyst of magnesium in the form of a salt or complex compound.

4,288,559

FLAME RESISTANT FOAM

Hans-Walter Illger, Roesrath; Manfred Dahm, Leverkusen, both of Fed. Rep. of Germany, and Alberto C. Gonzalez-Dörner, Polinya, Spain, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,195

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849649

Int. Cl.³ C08J *9/40*

U.S. Cl. 521—55 **10 Claims**

1. A flame resistant foam-impregnated with a dispersion comprising:
(a) a polyurethane latex;
(b) an aluminum hydroxide;
(c) an aluminosilicate and
(d) surface active substances.

4,288,560

PROCESS FOR FOAMING PLASTICS

Rudolf Kirchmayr, Aesch; Werner Fussenegger, Basel, and Hugo Illy, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

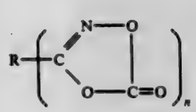
Continuation of Ser. No. 57,530, Jul. 13, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 180,738

Claims priority, application Switzerland, Jul. 21, 1978, 7906/78

Int. Cl.³ C08J *9/08*

U.S. Cl. 521—90 **9 Claims**

1. A process for foaming thermoplastic materials by adding to the plastics material a blowing agent consisting essentially of 0.05 to 5 percent by weight of a dioxazolone of the formula I



(I)

in which
n is 1, 2 or 3, and when n is 1
R is C_1–C_{12}-alkyl, C_7–C_9-aralkyl, C_3–C_6-cycloalkyl, C_6–C_{10}-aryl, or phenyl substituted by C_1–C_9-alkyl, halogen, C_1–C_9-alkoxy or nitro; or is a heterocyclic radical, or when n is 2
R is C_1–C_8-alkylene, m- or p-phenylene, m- or p-halophenylene, biphenylene, oxy-bis-(p-phenylene), 1,4-cyclohexylene, 2,5-thienylene, 2,5-furylene, 2,6-pyridylene or naphthylene, or when n is 3
R is phenenyl,
and subsequently heating the mixture.

4,288,561

FOAMABLE POLYESTER COMPOSITION

Donald I. Craft, and Morton Kramer, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 486,214, Jul. 5, 1974, abandoned. This application Feb. 22, 1978, Ser. No. 880,076

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—90 **18 Claims**

1. A foamable thermoplastic injection moldable composition consisting of in admixture: (a) a poly(1,4-butylene terephthalate) resin or copolyesters thereof; (b) a filler selected from the group consisting of fibrous glass or a mineral or mixtures thereof in an amount of from about 5 to about 50 weight percent; and, (c) a foaming agent in amounts of from about 0.02 to about 5.0 weight percent based on the weight of the resin selected from the group consisting of dinitrosopentamethylene tetramine, p-toluene sulfonyl semicarbazide, 5-phenyltetrazole, calcium oxalate and trihydrazino-s-triazine.

4,288,562

INITIATORS FOR ISOCYANATE REACTIONS

Jiri Kresta, Detroit, Mich., and Chen S. Shen, Strongsville, Ohio, assignors to The Dow Chemical Co., Midland, Mich.

Continuation of Ser. No. 890,153, Mar. 27, 1978, Pat. No. 4,220,728, which is a division of Ser. No. 695,897, Jun. 14, 1976, Pat. No. 4,111,914. This application Apr. 28, 1980, Ser. No. 144,737

Int. Cl.³ C08G *18/06, 18/14, 18/16*

U.S. Cl. 521—121 **7 Claims**

1. A process for preparing a polyurethane foam from (A) an organic isocyanate containing an average of at least two isocyanate groups per molecule or mixture of such isocyanates with (B) a mixture of water and a polyol having at least two alkanol groups per molecule or a mixture of such polyols which comprises reacting (A) and (B) in the presence of (C) a volatile, low boiling solvent as an auxiliary blowing agent and (D) an ar-sulfonium areneoxide as a catalyst in an amount and under conditions sufficient to initiate the reaction between (A) and (B).

4,288,563

PROCESS FOR THE MANUFACTURE OF A GLASS FIBRE-REINFORCED PLASTICS ARTICLE AND A GLASS FIBRE PASTE OR SLURRY FOR USE IN THE PROCESS

David Thorpe, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 16, 1979, Ser. No. 21,427

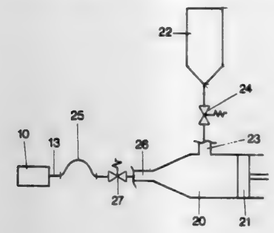
Claims priority, application United Kingdom, Mar. 23, 1978, 11674/78; Feb. 15, 1979, 5423/79

Int. Cl.³ C08G *18/14;* C09K *3/00;* B32B *5/02;* C08K *3/40*

U.S. Cl. 521—122 **8 Claims**

1. In a process for the manufacture of glass-reinforced plastics articles which comprises mixing liquid plastics forming ingredients together with chopped glass fibres and introducing the mixture so obtained into a mould, between mould surfaces or onto a former and allowing the mixture to set, the improvement which comprises using fibres which are:
(a) bound with a size which is soluble in a liquid medium; and
(b) supported as a paste or slurry in said liquid medium which is either (i) compatible with said plastics forming ingredients or (ii) all or part of one or more of said plastics forming ingredients;
wherein when said fibres bound with said size are mixed with the liquid medium for support the fibres disperse readily into individual filaments.

5. A glass fibre paste or slurry suitable for use in the manufacture of glass-reinforced plastics articles by mixing liquid plastics forming ingredients together with chopped glass fibres and thereafter introducing the mixture so obtained into a mould, between mould surfaces or onto a former and allowing the mixture to react and set, which paste or slurry comprises:
(a) chopped glass fibre strands in filamentary form and



bound with a size which is soluble in a liquid plastics forming medium, and supported as a paste or slurry in
(b) liquid medium which is compatible with plastics forming ingredients or all or part of one or more of said plastics forming ingredients,
said fibres being characterized further by their substantial separation into individual filaments when mixed with said liquid medium.

4,288,564

PROCESS FOR THE PRODUCTION OF MICROCELLULAR ELASTOMERIC MOLDINGS AND THE RESULTANT PRODUCTS

Steven M. Conover, Pittsburgh; Robert M. Loring; William A. Ludwico, both of Library, all of Pa.; John W. Arnold, West Bloomfield, and George Ferber, Sterling Heights, both of Mich., assignors to Mobay Chemical Corporation, Pittsburgh, Pa. and General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 895,336, Apr. 11, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 52,877

Int. Cl.³ B29D *27/00*

U.S. Cl. 521—122 **13 Claims**

1. A process for the production of Microcellular elastomeric moldings comprising:
(A) introducing a reaction mixture into a closed mold, said reaction mixture comprising:
(i) an organic polyisocyanate,
(ii) a hydroxyl group containing compound having a molecular weight of from 1800 to 12,000,
(iii) a catalyst for the reaction between hydroxyl groups and isocyanate groups,
(iv) an active aromatic diamine having at least one alkyl substituent in the orthoposition to a first amino group and two alkyl substituents in ortho-position to a second group, and
(v) air and/or nitrogen dissolved under pressure in any one or more of Components (i), (ii), (iii) or (iv),
(B) allowing said reaction mixture to react in said mold and
(C) removing the resultant product from said mold, the improvement wherein in any of Components (i), (ii), (iii) or (iv) which does contain said air and/or nitrogen dissolved therein there is included an inorganic, finely divided, nitrogen adsorbing agent in an amount sufficient to accelerate the transition of the air and/or nitrogen from the dissolved state to the dispersed state upon release of the pressure.

12. The product of the process of claim 1.

4,288,565

STORABLE, SOLID MIXTURE FOR THE PREPARATION OF PLASTICS WHICH ARE BASED ON EPOXIDE RESIN AND ARE STABLE TO HYDROLYSIS, THE USE OF THIS MIXTURE FOR THE PREPARATION OF SUCH PLASTICS AND PLASTICS OBTAINED IN THIS WAY

Friedrich Lohse, Oberwil; Ferdinand Gutekunst, Riehen; Rolf Schmid, Gelterkinden, all of Switzerland, and Andre Schmitter, Hegenheim, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,953

Claims priority, application Switzerland, Jun. 22, 1978, 6821/78

Int. Cl.³ C08L *63/00, 61/06*

U.S. Cl. 521—135 **13 Claims**

1. A storable, solid mixture for the preparation of a plastic which is based on epoxide resin and is stable to hydrolysis, which comprises (a) a long-chain, linear epoxide resin, which is free from ester groups, is solid at room temperature and has an epoxide equivalent weight of >700; (b) a compound which is free from ester groups, contains cyclic structures and 2 or 3 epoxide groups in the molecule and has an epoxide equivalent weight of 100 to 400, the components (a) and (b) being present in a ratio such that, per 1 total epoxide equivalent, 0.05 to 0.3 equivalent originates from (a) and 0.7 to 0.95 equivalent originates from (b); (c) the condensation product of 3 mols of phenol and 1 mol of acrolein, in an amount such that there are 0.5 to 1.1 equivalents of the phenolic hydroxy compound per epoxide equivalent with 0 to 70 equivalent % of said product being replaced by a phenolic bis-hydroxy compound; and (d) a curing accelerator.

4,288,566

PROCESS FOR THE PRODUCTION OF HIGHLY ELASTIC FOAMS CONTAINING URETHANE GROUPS FROM POLYETHERS, MODIFIED POLYISOCYANATES AND CROSS-LINKING AGENTS

Hanns P. Müller, Odenthal; Hansjürgen Rabe, and Kuno Wagner, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,250

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906879

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—158 **8 Claims**

1. A process for the production of highly elastic foams containing urethane groups and having increased impression hardness by reacting polyethers containing at least two hydroxyl groups having a molecular weight of 400 to 10,000 with modified polyisocyanates which contain carbodiimide groups, urethane groups, allophanate groups, isocyanurate groups, urea or biuret groups or combinations thereof in the presence of cross-linking agents and water and optionally in the presence of catalysts, emulsifiers, stabilizers, organic blowing agents and other auxiliaries and additives, characterized in that the reaction is carried out in the presence of 0.5 to 10 g/100 g of the polyether of a cross-linking mixture corresponding to the general formula

$$C_nH_{2n+2}O_n$$

wherein n=2 to 10,
which contains on a statistical average at least four hydroxyl groups per molecule.

4,288,567

ADHESIVE COMPOSITION AND METHOD OF PREPARATION

George W. Feeney, Akron, and William G. Stevenson, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 27, 1979, Ser. No. 70,379
Int. Cl.³ C08L 53/02
U.S. Cl. 525—99 12 Claims

1. An adhesive composition which comprises an admixture of an unvulcanized block polymer product and a compatible tackifier resin therefor prepared by the method which comprises (A) mixing (1) 100 parts by weight of a solution polymerizate comprised of 100 parts by weight of an unvulcanized block styrene/isoprene polymer product with an overall styrene polymer content in the range of about 10 to 35 weight percent and its polymerization solvent in the range of about 300 to about 1100 parts by weight with (2) about 50 to about 200 parts by weight of a solution polymerizate comprised of 100 parts by weight of a tackifying resin for said block polymer product and its polymerization solvent in the range of about 25 to about 1100 parts by weight and (B) removing said solvent from the prepared mixture prior to its application as an adhesive; wherein the total of said polymerization solvents is a solvent for the combination of said block polymer and said resin; wherein said block polymer polymerizate is produced by the process of contacting isoprene and a suitable amount of divinylbenzene under solution polymerization conditions with a polystyryllithium catalyst, said amount of divinylbenzene being from about 0.5/1 to about 10/1 moles of divinylbenzene per mole of active lithium catalyst; and wherein said tackifier resin polymerizate is prepared by copolymerizing in the presence of a catalyst selected from the group consisting of aluminum chloride, boron trifluoride and boron trifluoride etherate, a mixture of piperylene and at least one olefin containing 4–6 carbon atoms in a diolefin/olefin more ratio in the range of about 0.6/1 to about 2.5/1, optionally modified by copolymerizing about 5 to about 20 weight percent, based on the total monomers, of at least one additional monomer selected from α-methyl styrene and di-cyclopentadiene in which the resin itself has a softening point in the range of about 50° C. to about 150° C.

4,288,568

ELASTOMERS CONTAINING CHEMICALLY BONDED METAL ATOMS

Kenneth W. Lewis, Westminster, and Robert C. Shaffer, Playa del Ray, both of Calif., assignors to Hitco, Irving, Calif.

Filed Jul. 30, 1980, Ser. No. 173,453
Int. Cl.³ C08L 63/00
U.S. Cl. 525—111 13 Claims

1. An elastomer containing chemically bonded metal atoms obtained by reacting a diene elastomer with the reaction product of an epoxy resin and a metal containing polymer;

said metal containing polymer having been obtained by reacting a polycarboxylic acid and a metal complex which is a reaction product of tungsten carbonyl and/or molybdenum carbonyl with pyrrolidine.

4,288,569

POWER LACQUER BINDERS AND PROCESS FOR THE PREPARATION THEREOF

Ludwig Rottmaier, Odenthal; Rudolf Merten, Leverkusen; Rolf Dhein, and Hans J. Kreuder, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,667
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935446
Int. Cl.³ C08L 63/00
U.S. Cl. 525—113 7 Claims

1. A powder lacquer binder composition which comprises a homogenous, cross-linkable mixture comprising:

(A) A polymer containing more than one carboxyl group and having a melting and softening point of from 20° to 150° C. (as determined by differential thermoanalysis) and an acid number of from 10 to 150 mg of KOH/g; and

(B) a 1,2-polyepoxide which is an N,N',N''-triglycidyl triazolidine-3,5-dione having an epoxide value of from 0.6 to 1.13;

the mixture containing from 0.5 to 1.5 1,2-epoxide group per carboxyl group.

4,288,570

THERMOPLASTIC COMPOSITIONS OF EPICHLOROHYDRIN RUBBER AND POLY(ALKYL METHACRYLATE) RESIN

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed May 12, 1980, Ser. No. 149,074
Int. Cl.³ C08L 63/00, 61/08
U.S. Cl. 525—133 5 Claims

1. An elastoplastic composition comprising a blend of about 75 to 50 parts by weight of cross-linked epichlorohydrin rubber in the form of dispersed particles of a size of 50 microns number average or less and about 25 to 50 parts by weight of poly(alkyl methacrylate) resin per 100 total parts by weight of epichlorohydrin rubber and poly(alkyl methacrylate) resin, which composition is elastomeric and processable as a thermoplastic.

4,288,571

POLYESTER COMPOSITIONS

Lowell R. Comstock, South Charleston, and Percy L. Smith, Dunbar, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 107,514, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 8,070, Feb. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 72,798, Sep. 16, 1970, Pat. No. 3,718,714. This application Feb. 26, 1973, Ser. No. 336,120
The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.
Int. Cl.³ C08L 67/06
U.S. Cl. 525—170 31 Claims

1. A composition, suitable for use in molding, comprising an ethylenically unsaturated monomer, an unsaturated polyester which is the condensation product of an ethylenically unsaturated polycarboxylic acid or anhydride and a polyol, and, as a low profile additive, in an amount of from about 1 to about 85 weight percent, based on weight of said unsaturated polyester, a carboxyl containing polymer of a vinyl ester of an aliphatic, saturated monocarboxylic acid, wherein said carboxyl containing polymer contains from about 0.2 to about 5 weight percent of a polymerized carboxyl containing comonomer, and at least about 5 weight percent of polymerized vinyl alkanoate.

4,288,572

BLENDS OF ETHYLENE-ALKYL ACRYLATE COPOLYMERS WITH CERTAIN POLYESTERS

Khalid A. Karim, and James H. Rea, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,595
Int. Cl.³ C08L 67/02, 23/08
U.S. Cl. 525—176 11 Claims

1. A compatible blend of polymers consisting essentially of:

(a) 100 parts by weight of an ethylene copolymer, and

(b) About 0.2 to 3 parts by weight of a polyester resin;

said ethylene copolymer having polymerized therein about 70 to 98 weight % of ethylene and the balance an alkyl ester of acrylic or methacrylic acid; said polyester being poly(ethylene adipate) or poly(trimethylene adipate).

4,288,573

BLENDS OF LOW DENSITY ETHYLENE POLYMERS WITH CERTAIN POLYESTERS

Khalid A. Karim, and James H. Rea, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,594
Int. Cl.³ C08L 23/06, 23/16, 67/02
U.S. Cl. 525—177 9 Claims

1. A compatible blend of polymers consisting essentially of:

(a) 100 parts by weight of an ethylene polymer, and

(b) About 0.2 to 3 parts by weight of a polyester resin; said ethylene polymer being a homopolymer of ethylene or copolymer of ethylene with higher alpha-olefins, having a density of less than about 0.945 and a melt index in the range of about 0.5–20, said polyester being poly(ethylene adipate) or poly(trimethylene adipate).

4,288,574

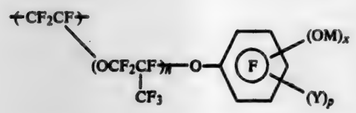
FLUORINATED PHENOXYPROPYL VINYL ETHER POLYMER

Burton C. Anderson, Wilmington, Del., and Ronald E. Uschold, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1979, Ser. No. 89,374
Int. Cl.³ C08F 12/16, 16/00, 18/00; C25B 13/00
U.S. Cl. 525—331 12 Claims

1. Fluorinated phenolic polymer consisting essentially of recurring units of

(1) —CF_2CFX— wherein X in each of the recurring units is independently selected from F, Cl, R and OR wherein R is perfluoroalkyl of 1 to 4 carbon atoms and



(2)

wherein Y is Cl, R or OR wherein R is perfluoroalkyl of 1 to 4 carbon atoms; M is H, alkali metal or NR'$_4$ wherein R' in each of the recurring units is independently selected from H and alkyl of 1 to 6 carbon atoms; x is an average value within the range about 0.2 to about 1.0; n is 1, 2 or 3; and p is 0 or 1,

said polymer having 0 to about 21 units of (1) per unit of (2).

4,288,575

CONJUGATED DIENE BUTYL ELASTOMER COPOLYMER

Irwin J. Gardner, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 966,396, Dec. 4, 1978, Pat. No. 4,211,855, which is a division of Ser. No. 775,389, Mar. 7, 1977, Pat. No. 4,145,492. This application Sep. 17, 1979, Ser. No. 76,471
Int. Cl.³ C08F 8/22, 8/26
U.S. Cl. 525—333 4 Claims

1. A conjugated diene butyl elastomer copolymer, said copolymer consisting of 85 to 99.5% by weight of a C_4–C_7 isoolefin combined with 15 to 0.5% by weight of a conjugated C_4–C_{14} diolefin, the copolymer having randomly distributed sites of conjugated diene unsaturation and a residual halogen content of 0.05 to 0.9% by weight, the halogen being present as primary allylic halogen, at least 50 mole % of said conjugated diene unsaturation being Diels-Alder active conjugated diene units.

4,288,576

2,5-DIMERCAPTO-1,3,4-THIADIAZOLE AS A CROSS-LINKER FOR SATURATED, HALOGEN-CONTAINING POLYMERS

John R. Richwine, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 942,856, Sep. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 842,839, Oct. 17, 1977, abandoned. This application Jun. 29, 1979, Ser. No. 53,449
The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.
Int. Cl.³ C08F 8/34, 8/30
U.S. Cl. 525—349 26 Claims

1. The process of cross-linking a halogen-containing polymer which contains at least about 2% by weight of halogen and less than 0.1 mole % ethylenic unsaturation, which comprises heating said polymer in the presence of 2,5-dimercapto-1,3,4-thiadiazole and a basic material selected from (1) amines having a boiling point above about 110° C. and a pK value below about 4.5; (2) salts of amines having pK values below about 4.5 with acids having pK values above about 2.0; (3) quaternary ammonium hydroxides and their salts with acids having pK values above about 2.0; (4) diphenyl- and ditolylguanidines; and (5) the condensation products of aniline and at least one mono-aldehyde containing one to seven carbon atoms in combination with at least an equal amount of an inorganic base.

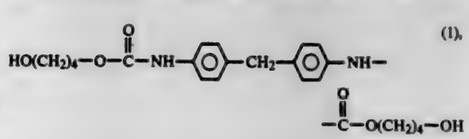
4,288,577

NOVEL URETHANEDIOLS AND POLYURETHANES THEREFROM

Herbert F. McShane, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

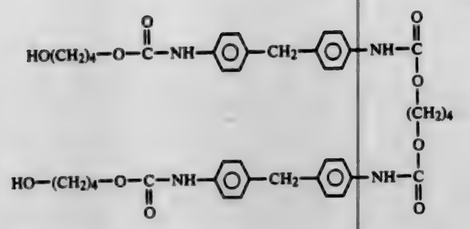
Filed Dec. 14, 1979, Ser. No. 103,577
Int. Cl.³ C08G 18/32, 18/76; C07C 125/07, 125/077
U.S. Cl. 525—453 8 Claims

1. A composition of matter selected from the group consisting of the urethanediol having the following formula (1)



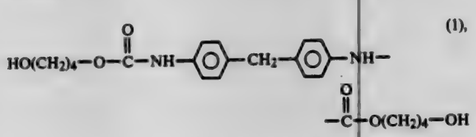
(1),

the urethanediol having the following formula (2)



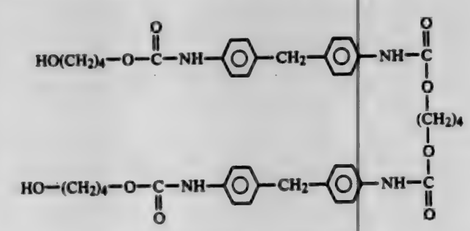
and a mixture of urethanediols having the above formulas (1) and (2).

5. In a process for curing an isocyanate-terminated polyurethane prepolymer with a diol, the improvement of using as the diol a mixture of about 85–92 weight percent of the diol of formula (1)



(1),

about 8–12 weight percent of the diol of formula (2)



and about 0–3 weight percent of 1,4-butanediol.

4,288,578

HIGH EFFICIENCY CATALYST FOR HIGH BULK DENSITY POLYETHYLENE

John T. T. Hsieh, Lake Charles, La., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 950,780, Oct. 12, 1978, Pat. No. 4,167,493, which is a continuation-in-part of Ser. No. 780,134, Mar. 22, 1977, abandoned. This application Apr. 30, 1979, Ser. No. 34,114

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—119 **3 Claims**

1. A process for the polymerization of alphamonoolefins having 2 to 6 carbon atoms comprising contacting said monoolefin at a temperature of from 40° to 200° C. at pressures of from 1 to 50 atmospheres in an inert hydrocarbon solvent or in the gas phase with a mixture of an alkylaluminum compound as activator-scavenger and a supported catalyst made by treating an anhydrous magnesium oxide support in hexane with methanol, removing the excess methanol from the support by drying the support under a vacuum to form a support containing between 0.004 and 10 moles of methanol per mole of magnesium oxide, refluxing the treated support with an equimolar mixture of titanium tetrachloride and tetrabutyltitanate, removing any excess titanium compound by repeated washing of the support with an inert hydrocarbon solvent, reducing said titanium compound on the support by reacting with an organoaluminum compound in an amount such that the aluminum to titanium ratio is between 0.05 and 0.5, and aging the resulting supported complex; said organoaluminum compound being of formula R_nAlX_{3-n}, wherein R is a hydrocarbon radical selected from branched or linear alkyl, alkenyl, cycloalkyl, aryl, alkylaryl, or arylalkyl radicals having 1 to 20 carbon atoms, X is hydrogen or halogen, and n is 1, 2 or 3.

4,288,579

PROCESS FOR PREPARING POLYOLEFINS

Mitsuji Miyoshi, Kanagawa; Yoshio Tajima, Tokyo; Kazuo Matsuura, Kawasaki; Nobuyuki Kuroda, Yokohama, and Mitsuo Matsuno, Kawasaki, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 27,929, Apr. 6, 1979, abandoned. This application Dec. 12, 1979, Ser. No. 102,646

Claims priority, application Japan, Apr. 11, 1978, 53/41715

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—124 **11 Claims**

1. A process for polymerizing or copolymerizing olefins containing from 3 to 8 carbon atoms using a catalyst consisting essentially of:

(A) a solid component obtained by contacting

(1) a reaction product resulting from heat reaction of magnesium oxide and an aluminum trihalide at 150° C. to 600° C. with

(2) a titanium halide and/or an addition product of a titanium halide and an aromatic carboxylic acid ester, and

(B) an organometallic compound and/or an addition product of an organometallic compound and an aromatic carboxylic acid ester; the total amount of aromatic carboxylic acid ester present in the polymerization system being at least 0.05 mol based on the amount of magnesium (gram-atom) contained in the catalyst system.

4,288,580

CATALYST AND PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS

John B. Rogan, Glen Ellyn, and Charles K. Buehler, Bolingbrook, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 641,437, Dec. 17, 1975, abandoned. This application Oct. 3, 1977, Ser. No. 838,552

Int. Cl.³ C08F *4/66, 10/06*

U.S. Cl. 526—138 **6 Claims**

1. An alpha-olefin polymerization catalyst composition which comprises:

(a) an alkylaluminum compound selected from the group consisting of a trialkylaluminum, a mixture of trialkylaluminum and an alkylaluminum dichloride of dibromide, a mixture of a trialkylaluminum and a dialkylaluminum chloride or bromide, and a dialkylaluminum chloride or bromide;

(b) an effective amount, ranging from about one to about twenty mol percent, of sulfur dioxide based upon the amount of titanium compound present;

(c) a titanium trichloride; and

(d) an effective amount of isobutylvinyl ether;

said effective amounts being effective to reduce levels of alkane solubles produced during polymerization of alpha-olefins without substantial decreases in polymer yield.

4,288,581

ALTERNATING ISOPRENE-ETHYLENE COPOLYMERS AND A PROCESS FOR THE PREPARATION THEREOF

Wolfgang Wieder, Leverkusen, and Josef Witte, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 199,071

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943129

Int. Cl.³ C08F *4/76, 236/08*

U.S. Cl. 526—169.2 **10 Claims**

1. Isoprene-ethylene copolymers having alternating monomer units in which the proportion of recurring

—isoprene-ethylene—

sequences is more than 80 mol %, in which the proportion of built-in isoprene in the 1,4-configuration is more than 80 mol % which consists of more than 70 mol % of a trans-arrangement, and in which less than 5 mol % of the built-in isoprene is present in the 3,4-configuration, the copolymers having a glass temperature of between −70° C. and −90° C., a Mooney-viscosity of between 30 and 150 [ML 1+4 (100° C.)] and a viscosity number [η], measured at 25° C. in toluene, of between 0.5 and 6.

4. A process for the preparation of isoprene ethylene copolymers according to any of claims 1 to 3, characterized in that polymerization is carried out in solution at a temperature of between −80° C. and +100° C. in the presence of a catalyst system which consists of

(a) a vanadium compound of the formula $VO(OR)_2X$ and

(b) an organoaluminum compound of formula AlR'_3, $HAlR'_2$ or R'_2A1Y

wherein

R represents an alkyl group containing from 1–20 carbon atoms,

X represents a halogen atom,

R′ represents an alkyl group containing from 1 to 8 carbon atoms,

Y represents a halogen atom.

whereby the molar ratio of b:a is between 100:1 and 1:10.

4,288,582

AQUEOUS DRILLING FLUID ADDITIVE, COMPOSITION AND PROCESS

James M. Lucas; Alphonse C. Perricone, and Dorothy P. Enright, all of Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Division of Ser. No. 946,227, Sep. 27, 1978. This application Oct. 29, 1979, Ser. No. 88,894

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ C08F *22/38*

U.S. Cl. 526—240 **9 Claims**

1. A solid, dry, particulate terpolymer consisting essentially of from about 5 to about 62 mole percent of alkali metal acrylate units; from about 2 to about 40 mole percent of hydroxyalkyl acrylate units selected from 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate and 2-hydroxybutyl acrylate units; and from about 31 to about 91 mole percent of acrylamide units; said terpolymer being suitable for use as a filtration control agent for aqueous based drilling fluids which will not adversely affect the rheological properties of an aqueous drilling fluid in which it is incorporated, which is comparatively insensitive to salt environments and concentrations, and which retains its effect as a filtration control agent even after exposure to increased temperatures as high as about 300° F.

4,288,583

CURABLE MIXTURES BASED ON MALEIMIDES AND 1-PROPENYL-SUBSTITUTED PHENOLS

Abdul-Cader Zahir, Oberwil, and Siegfried Wyler, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,593

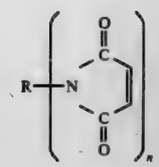
Claims priority, application Switzerland, Dec. 29, 1978, 13279/78

Int. Cl.³ C08F *16/02, 122/40, 226/06*

U.S. Cl. 526—262 **7 Claims**

1. A curable mixture which consists essentially of

(a) at least one maleimide of formula I



(I)

wherein R is an n-valent aliphatic or aromatic radical, and n is the number 1, 2 or 3; and

(b) at least one mono- or polyvalent phenol which contains in the molecule at least one 1-propenyl group in the ortho- or para-position with respect to the hydroxyl group, or an isomeric mixture of mono- or polyvalent phenols which are propenyl-substituted in the ortho- or para-position and of mono- or polyvalent phenols which are allyl-substituted in the ortho- or para-position, the proportion of propenyl groups in the isomeric mixture having to be at least 5 equivalent-%, relative to the sum of the equivalents of propenyl and allyl groups;

said mixture containing for each equivalent of imide group in the maleimide of component (a) from 0.05 to 10 mols of the propenyl-substituted phenol or isomeric mixture of phenols of component (b).

4,288,584

ELECTRET MADE OF BRANCHED ALPHA-OLEFIN POLYMER

Anupama Mishra, Guelph, Canada, assignor to Uniroyal Ltd., Ontario, Canada

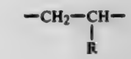
Filed Oct. 30, 1978, Ser. No. 955,822

Claims priority, application Canada, Aug. 10, 1978, 309053

Int. Cl.³ C08F *110/14;* H01G *7/02*

U.S. Cl. 526—348.4 **5 Claims**

1. A homoelectret comprising an electrostatically polarized resinous polymer of an alpha-olefin having a branched side chain, said polymer being composed of repeating units having the structure



wherein R is a branched alkyl radical having from 3 to 10 carbon atoms, the said polymer having a crystallinity of at least 20% by weight.

4,288,585

CARBORANYLCYCLOTRIPHOSPHAZENES AND THEIR POLYMERS

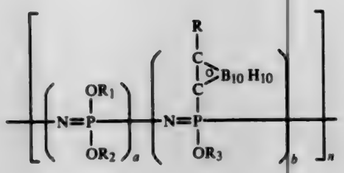
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Harry R. Allcock, State College, Pa.; John P. O'Brien, Wilmington, Del.; Angelo G. Scopelianos, University Park, Pa., and Larry L. Fewell, San Jose, Calif.

Filed Mar. 12, 1980, Ser. No. 129,799

Int. Cl.³ C08G *73/00, 79/02*

U.S. Cl. 528—4 **4 Claims**

1. A carboranylphosphazene polymer having the formula



wherein the ratio of a to b is about 2:1; n is an integer such that the molecular weight of the polymer is within the range of about 1×10^5 to 1×10^6; R is selected from the class consisting of hydrogen, alkyl radicals of up to about 6 carbon atoms, and aryl radicals of up to about 9 carbon atoms; R_1, R_2, and R_3 are selected from the class consisting of alkyl radicals containing up to about 6 carbon atoms, fluorinated alkyl radicals containing up to about 6 carbon atoms, aryl radicals containing up to about 9 carbon atoms, chlorinated aryl radicals containing up to about 9 carbon atoms, and mixtures thereof.

4,288,586

PROCESS FOR THE PREPARATION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS

Manfred Bock, Leverkusen; Josef Pedain, and Wilhelm Slawyk, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,465

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806731

Int. Cl.³ C08G *18/79, 18/80, 18/16*

U.S. Cl. 528—67 **12 Claims**

1. A process for the preparation of polyisocyanates containing isocyanurate groups which are soluble in lacquer solvents comprising

(a) partially trimerizing the isocyanate groups of 1-isocyanato-3,3,5-trimethyl-5-isocyanatomethyl-cyclohexane in the presence of catalyst(s) which are inactivated by heat and which accelerate the trimerization of isocyanate groups and

(b) thermally deactivating the catalyst(s), characterized in that the catalyst(s) used are quaternary hydroxyl alkyl ammonium hydroxides containing at least one hydroxy alkyl group.

9. In a process for the production of polyurethane lacquers from polyisocyanates, the improvement which comprises using polyisocyanates containing isocyanurates prepared by the process of claim 1.

4,288,587

PREPARATION OF NONCELLULAR POLYURETHANE COMPOSITIONS

Richard J. Turley, Orange, and David R. MacFarland, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 5, 1980, Ser. No. 146,856

Int. Cl.³ C08G *18/22*

U.S. Cl. 528—57 **13 Claims**

1. A process for preparing a noncellular polyurethane which comprises reacting an organic polyisocyanate with a chlorine-containing polyol in the presence of a catalytic amount of a metal carboxylate compound selected from the group consisting of an alkali metal salt of a carboxylic acid, an alkaline earth metal salt of a carboxylic acid and mixtures thereof, said chlorine-containing polyol having an average of 2–8 hydroxy groups and being comprised of the product of the acid-catalyzed condensation of a polyhydroxy initiator with 4,4,4-trichloro-1,2-epoxybutane or a mixture thereof with a halogen-free epoxide.

4,288,588

METHYL-SUBSTITUTED POLYPHENYLCARBOXYLIC ACIDS

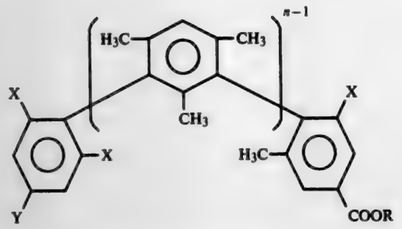
John A. Donohue, Elmhurst, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 622,656, Oct. 15, 1975, Pat. No. 4,154,922, which is a continuation-in-part of Ser. No. 517,506, Oct. 24, 1974, abandoned. This application Jul. 13, 1978, Ser. No. 924,145

Int. Cl.³ C08G *69/32, 69/26*

U.S. Cl. 528—348 **20 Claims**

1. A methyl-substituted polyphenyl compound of the structural formula



wherein n is a whole number from 2 to 3 inclusive, Y is selected from the class consisting of methyl acylhalide and —COOR, R is hydrogen or a monovalent alkyl group of 1 to 24 carbon atoms, when Y is methyl, each X is methyl and when Y is —COOR, each X is selected from the class consisting of methyl and —COOR.

4,288,589

CATIONIC DYES

Peter Loew, Münchenstein, and Rudolf Zink, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

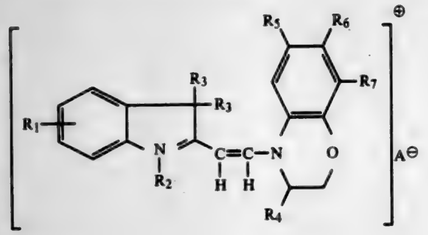
Filed Jun. 20, 1979, Ser. No. 50,247

Claims priority, application Switzerland, Jun. 30, 1978, 7165/78

Int. Cl.³ C07D *413/06*

U.S. Cl. 542—466 **23 Claims**

1. A cationic dye of the formula I



(I)

wherein

R_1 is hydrogen, halogen, lower alkyl, lower alkoxy or NO_2,

R_2 is unsubstituted lower alkyl, or lower alkyl which is substituted by: hydroxyl, lower alkoxy, halogen, CN, carboxylic acid amide, carboxylic acid alkyl ester or phenyl, or R_2 is alkenyl (C_3–C_4), the

R_3's independently of one another are each lower alkyl, or both R_3's together form a carbocyclic 5-, 6- or 7-membered ring,

R_4 is hydrogen, lower alkyl, unsubstituted aryl or substituted aryl,

R_5, R_6 and R_7 independently of one another are hydrogen, lower alkyl, lower alkoxy, halogen, NO_2, CN or lower alkylsulfonyl, and

A is an anion.

4,288,590

7-[Dα-(4-HYDROXY-1,5-NAPHTHYRIDINE-3-CARBOXAMIDO)-α-ARYLACETAMIDO]-3-(N,N-DIMETHYLAMINOMETHYLPYRIDINIUM) METHYL-3-CEPHEM-4-CARBOXYLATES

Masahisa Oka; Jun Okumura, both of Yokohama, and Takayuki Naito, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

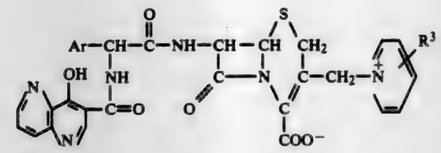
Filed Feb. 14, 1980, Ser. No. 121,623

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

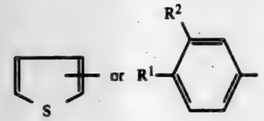
Int. Cl.³ C07D *501/40*

U.S. Cl. 544—25 **26 Claims**

1. A compound having the D-configuration in the 7-side-chain and the formula



wherein Ar is



wherein R^1 is hydrogen or hydroxy and R^2 is hydrogen, hydroxy, methyl, methoxy or chloro and R^3 is N,N-dimethylaminomethyl.

4,288,591

4-SUBSTITUTED 2-IMINOIMIDAZOLIDINE COMPOUNDS

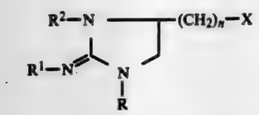
Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 9,899, Feb. 6, 1979, Pat. No. 4,247,705. This application May 5, 1980, Ser. No. 146,860

Int. Cl.³ C07D *413/06, 401/06, 403/06, 233/46*

U.S. Cl. 544—139 **11 Claims**

1. A 2-iminoimidazolidine compound corresponding to the formula:



wherein R is loweralkyl; R^1 is a member selected from hydrogen, loweralkyl, phenyl, loweralkylphenyl, and chlorophenyl; R^2 is a member selected from loweralkyl, phenyl, loweralkylphenyl and chlorophenyl; X is a member selected from amino, diloweralkylamino, di(phenylloweralkyl)amino, 1-piperidino, 1-piperazino, and 1-morpholino; and n is the integer 1 or 2, or a pharmaceutically acceptable acid addition salt thereof.

4,288,592

PROCESS FOR PREPARING AMIDES BY REACTION IN PRESENCE OF MOLECULAR SIEVE

Michael M. Rauhut, Bridgewater, and Shin-Shyong Tseng, Raritan, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 30, 1979, Ser. No. 34,120

Int. Cl.³ C07C *103/34, 103/737, 103/76, 143/74, 143/77, 143/78, 143/83*

U.S. Cl. 544—159 **9 Claims**

1. A process for preparing amides which comprises reacting an amine, or amide, and an acid halide, or anhydride, in suitable molecular proportions, in an inert organic solvent, in the presence of an effective amount of a molecular sieve, until the reaction is completed, separating the molecular sieve and without another acid-binding agent, and recovering the amide from the organic mother liquor.

4,288,593

POLYALKYLPIPERIDINE DERIVATIVES OF s-TRIAZINES

Jean Rody, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

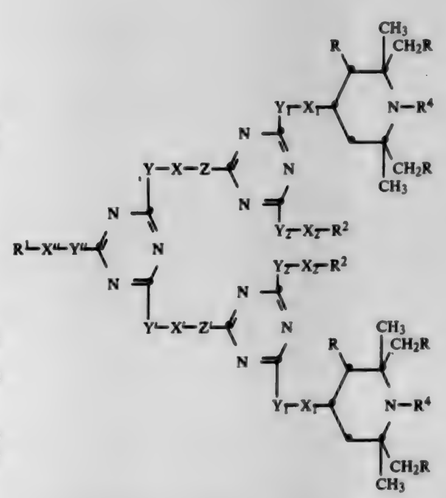
Filed Jan. 28, 1980, Ser. No. 115,640

Claims priority, application Switzerland, Feb. 6, 1979, 1146/79

Int. Cl.³ C07D *401/14*

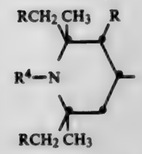
U.S. Cl. 544—198 **8 Claims**

1. A compound of the formula I



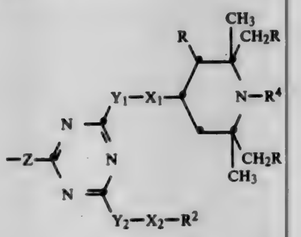
(I)

in which X and X′ are C_2–C_{12}-alkylene, which can be interrupted by —O—, —S— or —NR^3—, or p-xylylene, X″ has one of the meanings defined for X and X′ or is a direct bond or a group —$OCH_2CH_2CH_2$—, the O of which is not bonded to Y″, X_1 and X_2 are a direct bond, C_1–C_4-alkylene or a group —$OCH_2CH_2CH_2$—, the O of which is not bonded to Y_1 or Y_2, and Y_1, Y_2, Z and Z′ are —O—, —S—, —NH— or —NR^3—, Y, Y′ and Y″ are —O—, —S—, —NH—, —NR^3— or —NR^5—, R is hydrogen or methyl, R^1 is hydrogen, C_1–C_{18}-alkyl, C_2–C_8-alkoxyalkyl, C_2–C_4-hydroxyalkyl, C_5–C_{12}-cycloalkyl, allyl, benzyl, C_6–C_{10}-aryl or phenyl which is substituted by 1 or 2 C_1–C_8 alkyl groups or OH or C_1–C_4-alkoxy or is a polyalkylpiperidinyl group of the formula II



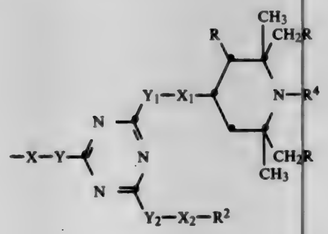
(II)

or, if Y″ is —NR³— and X″ is a direct bond, R¹ and R³ together with the N atom form a pyrrolidine, piperidine or morpholine ring, or R¹ is a radical of the formula III



III

or the group R¹—X″—Y″— is chlorine, R² is C_1–C_{18} alkyl, C_2–C_8 alkoxyalkyl, C_2–C_4 hydroxyalkyl, C_5–C_{12} cycloalkyl, allyl, benzyl, C_6–C_{10} aryl or phenyl which is substituted by 1 or 2 C_1–C_8 alkyl groups or OH or C_1–C_4 alkoxy or is a polyalkylpiperidinyl group of the formula II or, if Y_2 is —NR³— and X_2 is a direct bond, R² and R³ together with the N atom form a pyrrolidine, piperidine or morpholine ring, R³ is C_1–C_{18} alkyl, C_2–C_8 alkoxyalkyl, C_2–C_4 hydroxyalkyl, C_5–C_{12} cycloalkyl, allyl, benzyl, C_6–C_{10} aryl or phenyl which is substituted by 1 or 2 C_1–C_8 alkyl groups or OH or C_1–C_4 alkoxy or is a polyalkylpiperidinyl group of the formula II, R⁴ is hydrogen, O_o, C_1–C_{18}-alkyl, allyl or benzyl and R⁵ is a radical of the formula IV



IV

4,288,594

CAUSTIC-FREE PROCESS FOR THE PRODUCTION OF MONOCHLORO-DIAMINO-S-TRIAZINES

Philip G. McCracken; Hal Myatt, both of Greensboro, and Harris E. Petree, Kernersville, all of N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 48,868, Jun. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 933,375, Aug. 14, 1978, abandoned, which is a continuation of Ser. No. 753,032, Dec. 22, 1976, abandoned. This application Feb. 4, 1980, Ser. No. 118,375

Int. Cl.³ C07D *251/50*

U.S. Cl. 544—204 **12 Claims**

1. A three-stage process for the preparation of a monochloro-diamino-s-triazine which comprises:

(a) reacting at elevated temperature and normal or elevated pressure, and in an organic solvent, cyanuric chloride and a monoalkylamine hydrochloride in substantially stoichiometric amounts to form 2,4-dichloro-6-alkylamino-s-triazine and two moles of HCl gas,

(b) reacting the solution of step a) at a less elevated temperature and normal pressure with 100% or greater excess of a different monoalkylamine to form a monochloro-diamino-s-triazine and monoalkylamine hydrochloride, and

(c) distillatively exchanging the monoalkylamine hydrochloride obtained in step b) with the monoalkylamine in step (a) to generate the monoalkylamine hydrochloride needed in step (a) and the free monoalkylamine needed in step (b).

4,288,595

7-(SUBSTITUTED)-7H-PYRROLO[3,2-f]QUINAZOLINE-1,3-DIAMINES

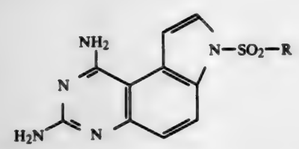
Kurt W. Ledig, deceased, late of Philadelphia, Pa., and by David R. Howes, executor, Baltimore, Md., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,228

Int. Cl.³ C07D *487/04*; A61K *31/505*

U.S. Cl. 544—250 **11 Claims**

1. A compound of the general formula:



or a non-toxic acid addition salt thereof,

wherein:

R is phenyl, 4-nitrophenyl, 4-methylphenyl, 4-t-butylphenyl, 4-methoxyphenyl, 4-chlorophenyl, 4-(acetylamino)phenyl, 3-(trifluoromethyl)phenyl, 3,4-dichlorophenyl, or 2-naphthyl.

4,288,596

FUROINDOLES

Tsutomu Kameyama, Nagoya, Japan, assignor to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

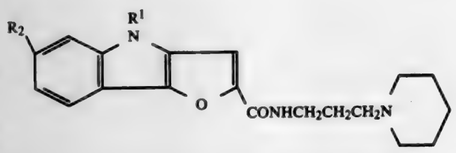
Filed Oct. 9, 1979, Ser. No. 82,728

Claims priority, application Japan, Mar. 31, 1978, 53-37874

Int. Cl.³ C07D *491/048*

U.S. Cl. 546—198 **3 Claims**

1. A furoindole compound of the formula



wherein R^1 is hydrogen or lower alkyl having 1-3 carbon atoms, and R^2 is hydrogen, trifluoromethyl, methoxy or methyl.

4,288,597

1,2-DIACYLAMINO-1,2-DI(4-PYRIDYL)ETHANES AND PROCESS FOR PRODUCING THEREOF

Miguel F. Brana; Maria L. Lopez Rodriguez; Jose M. Castellano Berlanga; Jose L. Soto Camara, and Cristobal Martinez Roldan, all of Madrid, Spain, assignors to Laboratorios Made, S.A., Madrid, Spain

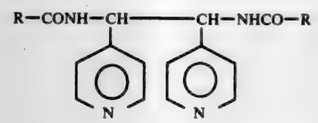
Filed Mar. 10, 1980, Ser. No. 128,427

Claims priority, application Spain, Apr. 26, 1979, 479,959

Int. Cl.³ C07D *401/06*

U.S. Cl. 546—265 **22 Claims**

1. A compound of the formula



where R is an alkyl group of 1 to 7 carbon atoms; a phenyl group which may be substituted with an alkyl group of 1 to 4 carbon atoms, halogen, trifluromethyl, methoxy, methylsulfonyl or nitro; benzyl or diphenyl.

4,288,598

PYRIDINE-2,3,6-TRIONES

William E. Long, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

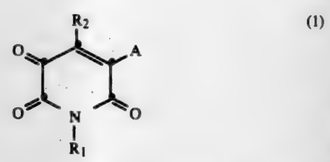
Filed Feb. 22, 1980, Ser. No. 123,867

Claims priority, application United Kingdom, Mar. 26, 1979, 10539/79

Int. Cl.³ C07D *213/56, 213/57*

U.S. Cl. 546—288 **5 Claims**

1. A compound of the general formula



(I)

wherein A is cyano or carboxamide and R_1 and R_2 are hydrogen, alkyl of 1 to 6 carbon atoms or alkyl of 1 to 6 carbon atoms substituted by a substituent selected from the group consisting of hydroxy, halogen and alkoxy of 1 to 4 carbon atoms, phenyl or phenyl substituted by a substituent selected from the group consisting of hydroxy, halogen, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms.

4,288,599

PROCESS FOR PRODUCING PYRIDINE DERIVATIVES HAVING A TRIFLUOROMETHYL GROUP AT β-POSITION THEREOF

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Isao Yokomichi, Moriyama; Yasuhiro Tsujii, Moriyama, and Shigeyuki Nishimura, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

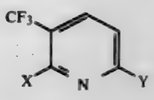
Filed Feb. 26, 1980, Ser. No. 124,757

Claims priority, application Japan, Mar. 9, 1979, 54/27369; Apr. 12, 1979, 54/44733; Oct. 22, 1979, 54/136057

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 **17 Claims**

8. A process for producing a pyridine derivative having a trifluoromethyl group at the β-position thereof and having the formula:



wherein X and Y, respectively, are hydrogen or chloro which comprises reacting β-picoline with chlorine and hydrogen fluoride by a vapor phase reaction in the presence of a catalyst comprising a fluoride of a metal selected from the group consisting of aluminum, chromium, iron, nickel, cobalt, manganese, chromium with aluminum, iron with aluminum, manganese with aluminum, and cobalt with aluminum.

4,288,600

PREPARATION OF 2-CHLORO-5-TRIFLUOROMETHYLPYRIDINE AND 2-CHLORO-5-PERCHLOROFLUOROMETHYLPYRIDINES

Norman L. Roberts, Walton, and Graham Whittaker, Frodsham, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 22, 1980, Ser. No. 143,479

Claims priority, application United Kingdom, Dec. 7, 1978, 47583/78

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 **5 Claims**

1. A process for the selective preparation of 2-chloro-5-trifluoromethylpyridine or a 2-chloro-5-perchlorofluoromethylpyridine which comprises vaporizing 3-trifluoromethylpyridine or perchlorofluoromethylpyridine respectively and chlorinating the vaporized 3-trifluoromethylpyridine or perchlorofluoromethylpyridine by contacting the same in the vapor phase with gaseous chlorine in the range of 300° C. to 450° C., condensing the resulting reaction mixture and recovering the desired product from the condensate.

4,288,601

FLUORINATION PROCESS

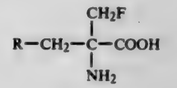
Janos Kollonitsch, Westfield, and Stephen Marburg, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 939,032, Sep. 1, 1978, Pat. No. 4,215,221, which is a continuation-in-part of Ser. No. 802,389, Jun. 1, 1977, abandoned. This application Sep. 19, 1979, Ser. No. 76,889

Int. Cl.³ C07C *101/24*; C07D *209/14*

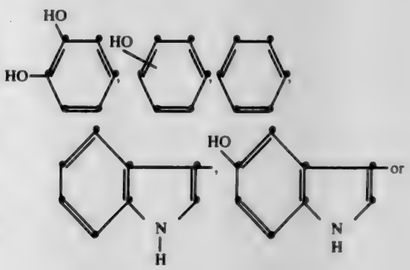
U.S. Cl. 548—344 **8 Claims**

1. A process for preparing compounds having the formula

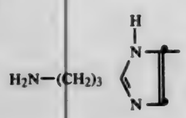


(I)

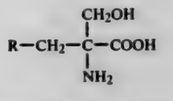
wherein R is



-continued



which comprises reacting a compound having the formula



with (a) SF_4 and (b) BF_3, in liquid HF at temperatures ranging from about −80° C. to about 20° C.

4,288,602

SELECTIVE OXIDATION OF 1,2-DIPHENYL-4-(2-PHENYLTHIO)ETHYL)-3,5-PYRAZOLIDINEDIONE TO THE SULFINYL COMPOUND

George A. Church, Dorval, and Chih H. Chou, Dollard des Ormeaux, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 136,147
Int. Cl.³ C07D *231/63*
U.S. Cl. 548—361 **5 Claims**

1. A process for preparing 1,2-diphenyl-4-[2-(phenylsulfinyl-)ethyl]-3,5-pyrazolidinedione, with only very small amounts of the undesired corresponding sulfone, which comprises oxidizing 1,2-diphenyl-4-[2-(phenylthio)ethyl]-3,5-pyrazolidinedione with peroxymonosulfuric acid.

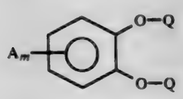
4,288,603

SILYLATED CATECHOL COMPOSITIONS

Charles J. Stark, Jr., Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,036
Int. Cl.³ C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—422 **8 Claims**

1. A composition of matter having the general formula



where Q is independently selected from the class consisting of Si—R_3 or hydrogen and, R is independently selected from the class carbon atoms, aryl, alkaryl, aralkyl, vinyl, and allyl radicals, A is independently selected from alkyl radicals the same as R above, halogen and the nitro radical, where A can be ortho-, meta or para- to either of the —OQ radicals, and m is an integer from 1 to 2 inclusive, with the proviso, that only one Q can be hydrogen, and only one R can be hydrogen on any one silicon atom.

4,288,604

METHOD FOR THE PRODUCTION OF TETRAALKYL SILICATES

Walter L. Magee, Danbury, Conn., and Jeffrey E. Telschow, Tarrytown, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 19, 1980, Ser. No. 151,226
Int. Cl.³ C07F *7/04, 7/18*
U.S. Cl. 556—470 **23 Claims**

1. A process for the production of tetraalkyl orthosilicates which comprises reacting a source of silicon metal with an alkanol having 1 to 6 carbon atoms in the presence of an alkali metal salt of a high-boiling alcohol selected from the group consisting of compounds of the formula $R''O(CHR'''CH_2O)_nH$ where R'' is hydrogen, ethyl, butyl, methyl, propyl, hexyl, cyclohexyl, or 2-ethylhexyl, R''' is hydrogen or methyl, n is equal to 2, 3, or 4, their isomers or mixtures thereof.

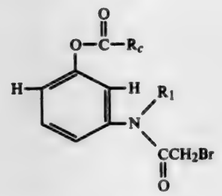
4,288,605

CYCLOHEXANE CARBONYLOXYBROMOACETANILIDE

Don R. Baker, Orinda, and Eugene G. Teach, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 960,378, Nov. 13, 1978, abandoned, which is a division of Ser. No. 560,843, Mar. 21, 1975, abandoned, which is a division of Ser. No. 311,034, Nov. 30, 1972, Pat. No. 3,898,273, which is a continuation-in-part of Ser. No. 127,760, Mar. 24, 1971, abandoned, which is a division of Ser. No. 806,717, Mar. 12, 1969, abandoned. This application Jan. 15, 1980, Ser. No. 112,252
Int. Cl.³ C07C *69/75;* A01N *37/08*
U.S. Cl. 560—1 **1 Claim**

1. A compound having the formula



in which R_c is cyclohexyl and R_1 is hydrogen.

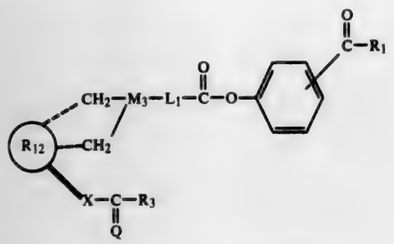
4,288,606

ESTERS OF PROSTACYCLIN-TYPE COMPOUNDS

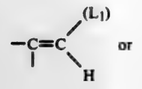
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 48,496, Jun. 14, 1979, Pat. No. 4,236,019, which is a division of Ser. No. 933,329, Aug. 14, 1978, Pat. No. 4,180,657. This application Feb. 15, 1980, Ser. No. 121,844
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—8 **1 Claim**

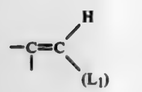
1. An acid ester of a 6a-carba prostacyclin analog of the formula



wherein L_1 is
(1) $-(CH_2)_n-$ wherein n is one to 5, inclusive,
(2) $-(CH_2)_p-$ wherein p is 2, 3, or 4, or
(3) $-(CH_2)_v-CH=CH-$ wherein v is 1, 2, or 3,
wherein M_3 is



(1)

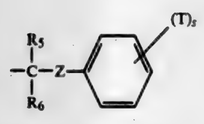


(2)

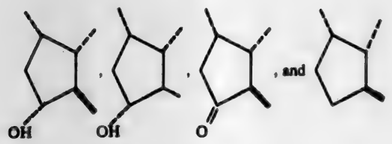
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH, wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_1 alkyl of one to 4 carbon atoms with the proviso that when R_1 is tert-butyl the group



is in the 4-position,
wherein R_3 is



wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro; and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—);
wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms; inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different.
wherein R_{12} is



wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $-CH_2CH_2-$.

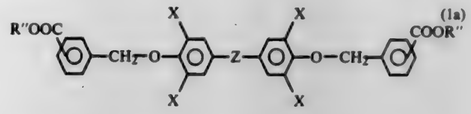
4,288,607

BIS-CARBALKOXY COMPOUNDS AND THEIR PREPARATION

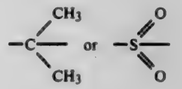
Gerhard Bier, Troisdorf; Dagmar Kottek, Sieburg; Egon N. Petersen, Neukirchen-Seelscheid; Hermann Richtzenhain, Much-Schwellenbach, and Norbert Vollkommer, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 733,820, Oct. 19, 1976, Pat. No. 4,152,511. This application Mar. 12, 1979, Ser. No. 19,944
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1975, 2547802; Mar. 26, 1976, 2612840; Mar. 26, 1976, 2612841; Mar. 26, 1976, 2612842; Jul. 23, 1976, 2633096
Int. Cl.³ C07C *147/107;* C08C *63/18*
U.S. Cl. 560—11 **6 Claims**

1. Bis-(carbalkoxy-benzyl)-ether of bisphenols of the formula



wherein X represents bromine, chlorine or hydrogen, -R''- represents alkyl of 1 to 6 carbon atoms and Z represents the groups

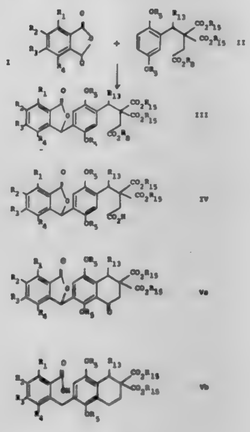


4,288,608

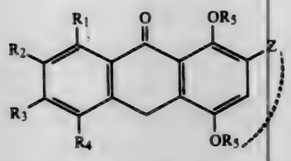
SYNTHESIS OF ANTHRACYCLINES

Francis Johnson, Setauket, N.Y., and Kyoung S. Kim, Jeonam, D.P.R. of Korea, assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 911,709, Jun. 1, 1978, Pat. No. 4,196,127. This application Nov. 5, 1979, Ser. No. 91,348
Int. Cl.³ C07C *69/95*
U.S. Cl. 560—53 **2 Claims**



1. A compound of the formula



and the enol forms thereof wherein R_1,R_2, R_3, and R_4 may also be the same or different and are each selected from the group consisting of hydrogen, alkyl, alkoxy, and halo, R_5 is alkyl wherein the alkyl and alkoxy moieties contain 1–5 carbon atoms, Z is

$$-CR_{13}H.C(COOR_{15})_2\,(CH_2)_2-$$

wherein the bondings indicated at both terminals of the Z group indicate position on the ring of the principal formula, but not stereo chemical orientation, R_{13} is alkyl of 1–5 carbon atoms or hydrogen, R_{15} is lower alkyl of 2–6 carbon atoms.

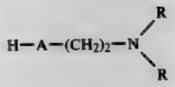
4,288,609

QUATERNARY AMMONIUM DERIVATIVES OF ADAMANTANE WITH ANTIMICROBIC ACTIVITY

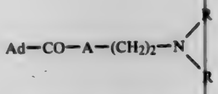
Luigi Rovati, San Fruttuoso di Monza; Francesco Makovec, Taccona, and Paolo Senin, Monza, all of Italy, assignors to Rotta Research Laboratorium S.p.A., San Fruttuoso di Monza, Italy

Continuation of Ser. No. 853,591, Nov. 21, 1977, abandoned. This application Dec. 4, 1979, Ser. No. 100,065
Claims priority, application Italy, Nov. 24, 1976, 69791 A/76
Int. Cl.³ C07C *67/08, 102/04*
U.S. Cl. 560—117 **3 Claims**

1. Process for the preparation of a quaternary ammonium salt having antibacterial, fungicidal and antiprotozoic activity, comprising reacting at 5° C. to 30° C. for 12–48 hours 1-carboxy-adamantane with a compound of the formula:



in which A is oxygen atom, R is $-CH_3$(methyl) or $-C_2H_5$(ethyl) group, in the presence of dicyclohexylcarbodiimide or carbonyl diimidazole as a condensing agent in anhydrous acetone as a solvent, thereby to obtain an intermediate compound:

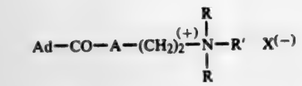


in which Ad is 1-adamantyl radical, and A and R have the meaning indicated hereinbefore, and subsequently, without isolating the intermediate compound from the reaction ambient, quaternising the compound with an alkyl halide of formula R'-X, in which:

R' represents a linear aliphatic hydrocarbon chain containing from 10 to 12 atoms of carbon,

X represents a halide atom,

thereby to obtain the said quaternary ammonium salt having the formula:



in which Ad, R, R' and X^- have the meanings stated above.

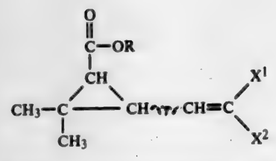
4,288,610

PURIFICATION OF PYRETHROID INTERMEDIATE COMPOUNDS BY SELECTIVE PARTIAL SAPONIFICATION

Edmund J. Rumanowski, Dover, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 25, 1980, Ser. No. 123,879
Int. Cl.³ C07C *67/60, 69/743, 69/747*
U.S. Cl. 560—124 **7 Claims**

1. A process for removing saponifiable impurities from a composition comprising said saponifiable impurities and a pyrethroid intermediate compound represented by the structural formula:



wherein R is an alkyl radical having from 1 to about 30 carbon atoms and wherein X^1 and X^2 are each independently selected from the group consisting of fluorine, bromine, chlorine and alkyl having from 1 to about 10 carbon atoms and wherein said saponifiable impurities comprise the maleate and fumerate esters of R, which comprises reacting said composition with a dilute aqueous base in an amount and under conditions sufficient to selectively saponify said saponifiable impurities so that they become soluble in said aqueous base, and separating said pyrethroid intermediate compound from said aqueous base.

4,288,611

N-METHYL-CARBAMATES OF 3,5-DIMETHYL-4-(N'-MONOSUBSTITUTED)-AMINO-PHENOLS EXERTING AN INSECTICIDAL AND ACARICIDAL ACTION

Franco Gozzo; Paride Paolucci, both of S. Donato Milanese, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 909,304, May 24, 1978, abandoned. This application May 21, 1980, Ser. No. 151,819
Claims priority, application Italy, May 26, 1977, 24031 A/77
Int. Cl.³ C07C *125/04, 125/067*
U.S. Cl. 560—133 **4 Claims**

1. N-methyl-carbamate of 3,5-dimethyl-4-(N'allylamino)-phenol.

4. N-methyl-carbamate of 3,5-dimethyl-4-(N'-benzylamino)-phenol.

4,288,612

DEPOSIT CONTROL ADDITIVES

Robert A. Lewis, Berkeley, and Lewis R. Honnen, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 917,427, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 891,879, Mar. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 801,444, May 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 730,495, Oct. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 700,922, Jun. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 698,243, Jun. 21, 1976, abandoned. This application Apr. 28, 1980, Ser. No. 144,797
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ C07C *125/04;* C10L *1/22*
U.S. Cl. 560—159 **12 Claims**

1. A hydrocarbylpoly(oxyalkylene) aminocarbamate having a molecular weight of about 600–10,000 and at least one primary or secondary amino group; wherein said hydrocarbylpoly(oxyalkylene) moiety is composed of oxyalkylene units selected from C_2–C_5 oxyalkylene units of which a sufficient number are branched-chain oxyalkylene units to render said carbamates soluble in liquid hydrocarbons; said hydrocarbyl group contains from 1 to 30 carbon atoms; and said amine moiety is derived from an ethylene diamine from 1 to 24 carbon atoms.

4,288,613

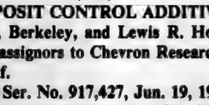
CYCLOPENTANONE SYNTHESIS

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 3, 1979, Ser. No. 99,321
Int. Cl.³ C07C *69/03, 45/54*
U.S. Cl. 560—231 **8 Claims**

1. A method of synthesis of cyclopentanones comprising: cyclizing a 4-pentenal in the presence of a catalytically effective amount of a cyclizing halo rhodium parasubstituted triarylphosphine catalyst and in the presence of a suitable organic solvent for said pentenal and catalyst.

7. The process of claim 1 wherein said pentenal has the general formula of



wherein R_1, R_2, R_3 and R_4 may be the same or different, and R_1 and R_2 are selected from the group consisting of hydrogen, and unsubstituted alkyl, alkenyl, alkynyl, aryl, aralkyl, alkoxy and acyloxy groups, and wherein R_3 and R_4 may be the same as R_1 and R_2, and may in addition be any other organic moiety.

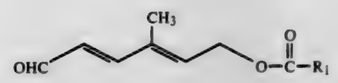
4,288,614

PROCESS FOR THE PREPARATION OF ESTERS OF 5-FORMYL-3-METHYL-2,4-PENTADIEN-1-OL

Gary L. Olson, Westfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

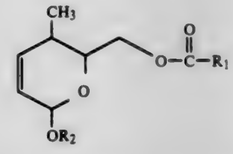
Division of Ser. No. 9,218, Feb. 5, 1979, Pat. No. 4,222,943, which is a division of Ser. No. 772,711, Feb. 28, 1977, Pat. No. 4,152,520, which is a division of Ser. No. 594,386, Jul. 9, 1975, abandoned. This application Feb. 6, 1980, Ser. No. 118,942
Int. Cl.³ C07C *67/24*
U.S. Cl. 560—240 **3 Claims**

1. A process for preparing a compound of the formula:



wherein R_1 is lower alkyl;

which comprises treating a compound of the formula:



wherein R_1 is as above and R_2 is lower alkyl,

with a catalytic amount of an amine hydrohalide at a temperature of from about 80° C. to about 200° C., said treatment being conducted in a polar aprotic solvent.

4,288,615

PROCESS FOR RECOVERING 3-NITROBENZOIC ACID

John H. Bright, Kendall Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1980, Ser. No. 122,957
Int. Cl.³ C07C *51/43*
U.S. Cl. 562—434 **10 Claims**

1. A process for the recovery of 3-nitrobenzoic acid from a mixture of 2-, 3-, and 4-nitrobenzoic acids comprising adding to the mixture an aqueous solution of a suitable base to form a solution having a pH of about 8–12, adding a suitable acid to lower the pH to about 1.5–3.5 and precipitate 3-nitrobenzoic acid as a slurry, and recovering said 3-nitrobenzoic acid.

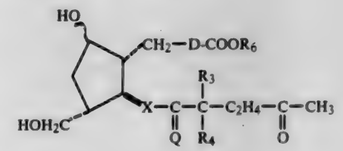
4,288,616

13,14-DIDEHYDRO-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGF$_2$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,961
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,

(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(3) cis—CH_2—CH=CH—CH_2—CH_2—, or

(4) trans—$(CH_2)_3$—CH=CH—;

wherein g is zero, one, two, or three;

wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is —C≡C—.

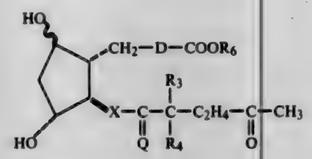
4,288,617

13,14-DIDEHYDRO-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,973
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(2) $(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is —C≡C—.

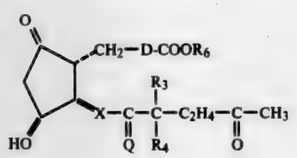
4,288,618

19-OXO-PGF$_2$ ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,220
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—;
wherein g is zero, one, two, or three; wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) -(p—Ph)—CO—CH_3,
(h) -(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) -(p—Ph)—NH—CO—(p—Ph),
(j) -(p—Ph)—NH—CO—CH_3,
(k) -(p—Ph)—NH—CO—NH_2,
(l) -(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is cis— or trans—CH=CH—; with the proviso that R_6 is not hydrogen or alkyl of one to 12 carbon atoms, inclusive, when Q is α—OH:β—H, R_2 is hydroxy, R_3 and R_4 are hydrogen or methyl and D is cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—.

4,288,619

PROCESS FOR THE RECOVERY OF α-HYDROXY- AND α-AMINO-CARBOXYLIC ACIDS FROM SUGAR-CONTAINING MEDIA

Francis Devos, and Michel Huchette, both of Lestrem, France, assignors to Roquette Freres, France

Filed Aug. 30, 1979, Ser. No. 71,371
Claims priority, application France, Aug. 31, 1978, 78 25239
Int. Cl.^{3} C07C *51/00, 51/42, 99/00*
U.S. Cl. 562—554 **13 Claims**

1. Process for recovering α-hydroxy- and α-amino-carboxylic acids in the form of their calcium salts from sugary media containing them, wherein:
in the first step, said sugary media containing an α-hydroxy- or α-amino-carboxylic acid in the form of its calcium salt is contacted with a cationic resin in the calcium form for a sufficient time to achieve an optimal adsorption of said calcium salt and then,
in a second step, the previously saturated resin is eluted by water to provide first fractions enriched in sugar and then latter fractions enriched essentially in an α-hydroxy- or α-aminocarboxylic acid in the form of its calcium salt,

recovering thus the said acid in the form of its calcium salt.

4,288,620

PROCESS FOR THE PRODUCTION OF 4-ACYLAMIDO-2-NITRO-1-ALKOXYBENZENES

Manfred Rosner, Muttenz, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jun. 12, 1980, Ser. No. 158,977
Claims priority, application Switzerland, Jun. 21, 1979, 5806/79
Int. Cl.^{3} C07C *102/00, 102/04*
U.S. Cl. 564—144 **8 Claims**

1. A process for the production of 4-acylamido-2-nitro-1-alkoxybenzenes by acylating p-alkoxyaniline with an acylating agent to 4-acylamido-alkoxybenzenes and subsequently nitrating these latter to 4-acylamido-2-nitro-1-alkoxybenzenes, which process comprises carrying out the reaction in an inert solvent, without isolation of the intermediates, using 88 to 95% sulfuric acid in the weight ratio of 6:1 to 10:1, based on the p-alkoxyaniline employed, during the nitration step.

4,288,621

SUBSTITUTED 2,2-DIMETHYLCYCLOPROPANEAMIDES

Gustave K. Kohn, and Ted A. Baer, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 102,050, Dec. 10, 1979, Pat. No. 4,254,264. This application Jun. 2, 1980, Ser. No. 155,262
Int. Cl.^{3} C07C *103/19*
U.S. Cl. 564—190 **1 Claim**

1. A compound of the following formula:

wherein, R is hydrogen or methyl.

4,288,622

N,N-DIALKYLAMINO DIPHENYLAMINES AND THE USE THEREOF IN COMPOSITIONS FOR DYEING KERATINIC FIBERS

Gregoire Kalopissis, Neuilly-sur-Seine; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 551,653, Feb. 21, 1975, Pat. No. 4,008,999. This application Nov. 12, 1976, Ser. No. 741,495
Claims priority, application Luxembourg, Feb. 22, 1974, 69459
Int. Cl.^{3} C07C *91/42;* D06P *1/32*
U.S. Cl. 564—194 **4 Claims**

1. 3,2',6'-trimethyl-4-hydroxy-6-amino-4'-N,N-dimethylamino diphenylamine.

4. 3,5-dimethyl-4-hydroxy-2-acetylamino-4'-dimethylamino diphenylamine.

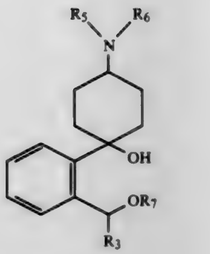
4,288,623

1-ARYL-4-AMINO-CYCLOHEXAN-1-OLS

Lawrence L. Martin, Lebanon, N.J., and Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 73,055, Sep. 6, 1979, Pat. No. 4,263,317. This application Nov. 28, 1980, Ser. No. 211,148
Int. Cl.^{3} C07C *87/452*
U.S. Cl. 564—307 **4 Claims**

1. A compound of the formula



wherein X is hydrogen, halogen or loweralkyl; R_5 and R_6 are loweralkyl; R_7 is hydrogen or loweralkyl; and the geometrical isomers and optical antipodes thereof.

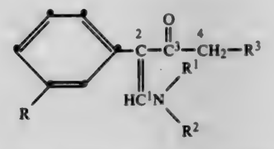
4,288,624

ACYLATION OR SULFENYLATION PROCESS

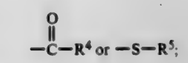
Riaz F. Abdulla, Greenfield, and Lawrence A. Morgan, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 21, 1980, Ser. No. 179,584
Int. Cl.^{3} C07C *85/24;* C07D *295/08, 295/10*
U.S. Cl. 564—345 **21 Claims**

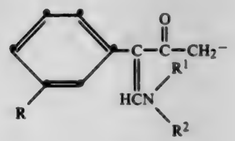
1. A process for preparing a compound of the formula



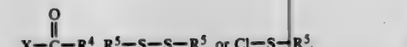
wherein R is chloro, bromo, fluoro or trifluoromethyl; R^1 and R^2 are independently C_1–C_3 alkyl, or R^1 and R^2 combine with the nitrogen atom to which they are attached to form pyrrolidino, piperidino, morpholino or N-methylpiperazino; R^3 is



R^4 is C_1–C_4 alkyl, phenyl, C_1–C_2 alkyl monosubstituted with methoxy, or phenyl monosubstituted with chloro, bromo, fluoro or trifluoromethyl; R^5 is C_1–C_3 alkyl, C_1–C_3 fluoroalkyl, phenyl, benzyl, or phenyl substituted with C_1–C_3 alkyl, C_1–C_3 alkoxy or halo; which process comprises reacting an anion of the formula



with a compound of the formula



wherein X is chloro or bromo, in an inert organic solvent.

4,288,625

DINITRILES, DIAMINES, AND POLYAMIDES

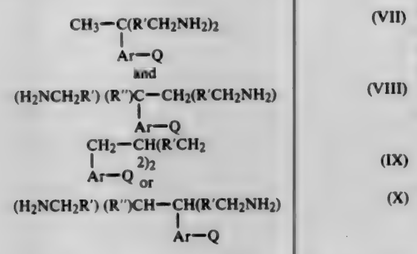
Charles A. Drake, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Continuation of Ser. No. 499,660, Aug. 22, 1974, abandoned. This application Aug. 23, 1976, Ser. No. 716,406

Int. Cl.³ C07C *85/12*

U.S. Cl. 564—372 **21 Claims**

1. As compositions of matter, aralkylenediamines represented by:



(VII)

(VIII)

(IX)

(X)

wherein each R′ is an alkylene or alkylidene radical of at least one carbon atom, R″ is an alkyl radical of at least one carbon atom, and Ar is a divalent phenylene or naphthylene radical wherein Q represents hydrogen or other substituent on said Ar, and wherein said —Ar—Q contains 6 to 22 carbon atoms, and wherein Q is selected from the group consisting of —H, —X, —R‴, —N(R‴)$_2$, —NH$_2$·HX, —OR‴, —SH, —OH, and —SR‴, wherein X is a halogen and is fluorine, chlorine, bromine, or iodine, and R‴ is an alkyl radical of 1 to 6 carbon atoms.

4,288,626

PROCESS FOR HYDROGENATION OF UNSATURATED DINITRILES

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 5, 1980, Ser. No. 184,520

Int. Cl.³ C07C *85/12, 85/26, 121/20, 121/28*

U.S. Cl. 564—491 **9 Claims**

1. In a process for producing saturated diamines or dinitriles from an olefinically unsaturated dinitrile feedstock comprising the reaction product obtained by contacting under suitable reaction conditions for producing said unsaturated dinitrile reactants consisting essentially of at least one olefinically unsaturated mononitrile reactant and at least one monoadduct reaction product of an olefinic hydrocarbon compound and an olefinically unsaturated mononitrile compound wherein each said olefinically unsaturated mononitrile reactant and each said olefinically unsaturated mononitrile compound contain a cyano group attached to a carbon atom adjacent and doubly bonded to a carbon atoms which is attached to at least one hydrogen atom and each said olefinic hydrocarbon reactant and each said olefinic hydrocarbon compound have at least one olefinic linkage having joined thereto a carbon atom having at least one hydrogen atom attached thereto comprising subjecting the feedstock to suitable hydrogenation conditions in the presence of hydrogen and a suitable hydrogenation catalyst, the improvement comprising contacting the feedstock with a crystalline zeolite so as to extend the activity of said hydrogenation catalyst.

4,288,627

OXIDATION OF THIOLS EMPLOYING COBALT MOLYBDATE/TRIETHYLAMINE CATALYST

Donald H. Kubicek, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1980, Ser. No. 120,812

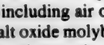
Int. Cl.³ C07C *149/12*

U.S. Cl. 568—26 **7 Claims**

1. A process for the conversion of a thiol represented by the formula



wherein R, R^1, and R^2 can be hydrogen, alkyl, or cycloalkyl containing from 1 to 20 carbon atoms, R and R^1 taken together can be an alkylene radical having from 5 to 10 carbon atoms to a corresponding disulfide which comprises subjecting the same to oxidation conditions including air or oxygen-containing gas in the presence of a cobalt oxide molybdenum oxide catalyst on a support and a liquid tertiary amine represented by the formula



where R^3 can be any alkyl radical having 1 to 6 carbon atoms.

4,288,628

PROCESS FOR THE PRODUCTION OF MONO-HALOTHIOPHENOLS AND THIOPHENOLS

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 8, 1979, Ser. No. 18,708

Int. Cl.³ C07C *149/34, 149/28*

U.S. Cl. 568—65 **16 Claims**

1. A process for the production of mono-halothiophenol and thiophenol comprising reacting a reactant mixture of benzene and dihalobenzene with hydrogen sulfide in the presence of an absorptive catalyst having a surface area of from about 1 to about 1,000 square meters per gram and selected from the group consisting of:

activated carbon,
petroleum coke,
charcoal,
calcined petroleum coke,
alumina,
clay,
silica gel, and
molecular sieves.

4,288,629

1-HYDROXYMETHYL-11-DEOXY-15-HYDROXY-PROSTEN-1-OL-DERIVATIVES

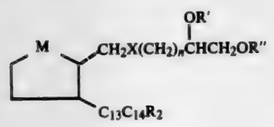
Allan Wissner, Ardsley, and Middleton B. Floyd, Jr., Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 3, 1980, Ser. No. 137,042

Int. Cl.³ C07C *35/06, 49/597, 49/798*

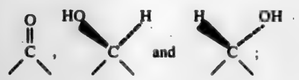
U.S. Cl. 568—330 **30 Claims**

1. A compound of the formula

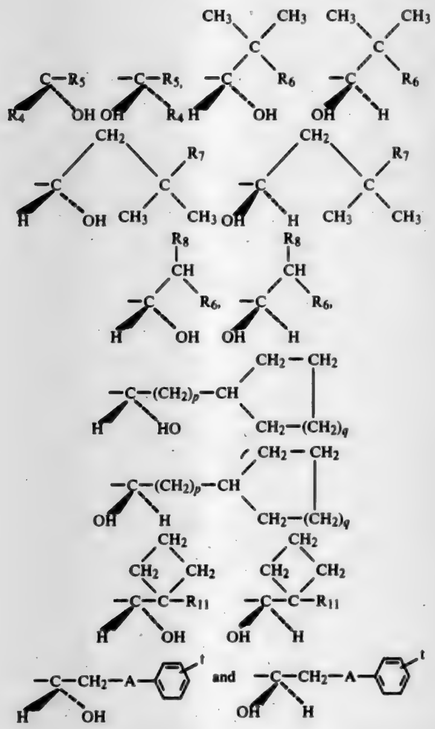


wherein

M is a radical selected from the group



X is —CH=CH—(cis) and —CH=CH—(trans);
R′ and R″ are the same or different and are hydrogen, C$_1$ to C$_6$ alkanoyl or optionally substituted benzoyl, the substituents selected from the group
C$_1$ to C$_4$ alkyl, C$_1$ to C$_4$ alkoxy, halo and trifluoromethyl;
C$_{13}$C$_{14}$ is selected from the group —CH=CH—(trans) and —CH$_2$—CH$_2$—; and R$_2$ is selected from the group wherein R$_2$ is selected from the group



wherein R$_4$ is hydrogen or methyl; R$_5$ is selected from the group consisting of C$_4$ to C$_7$ alkyl; R$_6$ is selected from the group consisting of C$_3$ to C$_6$ alkyl; R$_7$ is selected from the group consisting of C$_2$ to C$_4$ alkyl; R$_8$ is selected from the group consisting of C$_1$ to C$_2$ alkyl; R$_{11}$ is selected from the group consisting of C$_3$ to C$_7$ alkyl; A is a divalent radical selected from —CH$_2$— and —O—; p is an integer from 0 to 3; q is the integer 1 or 2; t is selected from the group consisting of hydrogen, chloro, fluoro, dichloro, trifluoromethyl and methoxy; and n is the integer 3, 4 or 5.

4,288,630

1-HYDROXYMETHYL-11,15-DIHYDROXY-PROSTEN-1-OL-DERIVATIVES

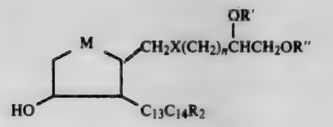
Allan Wissner, Ardsley, and Middleton B. Floyd, Jr., Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 3, 1980, Ser. No. 137,084

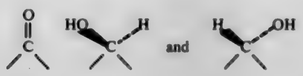
Int. Cl.³ C07C *49/597, 35/06, 49/798*

U.S. Cl. 568—330 **34 Claims**

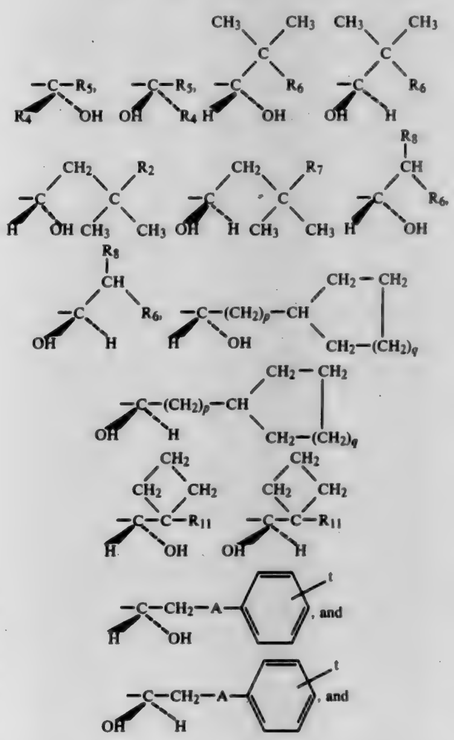
1. Compounds of the formula



wherein M is a radical selected from the group



X is —CH$_2$CH$_2$—;
R′ and R″ are the same or different and are hydrogen, C$_1$ to C$_4$ alkanoyl or optionally substututed benzoyl, the substituents selected from the group C$_1$ to C$_4$ alkyl, C$_1$ to C$_4$ alkoxy, halo and trifluoromethyl;
C$_{13}$C$_{14}$ is selected from the group —CH=CH—(trans) and —CH$_2$—CH$_2$—; and R$_2$ is selected from the group



wherein R$_4$ is hydrogen or methyl; R$_5$ is selected from the group consisting of C$_4$–C$_7$ alkyl; R$_6$ is selected from the group

consisting of C_3–C_6 alkyl; R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; A is a divalent radical selected from —CH_2— and —O—; p is an integer from 0 to 3; q is the integer 1 or 2, t is selected from the consisting of hydrogen, chloro, fluoro, dichloro, trifluoromethyl and methoxy; and n is the integer 3, 4 or 5, the racemic mixtures thereof and the individual optically active enantiomers thereof.

4,288,631

UV STABILIZERS, COATING COMPOSITIONS AND COMPOSITE STRUCTURES OBTAINED THEREFROM

Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,441
Int. Cl.³ C07C *49/245*; B32B *9/04*
U.S. Cl. 568—333 **2 Claims**

1. 2,4-dihydroxy-4'-methoxy-3-methylbenzophenone.

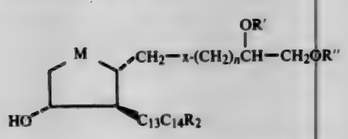
4,288,632

1-HYDROXYMETHYL-11,16-DIHYDROXY-PROSTEN-1-OL DERIVATIVES

Allan Wissner, Ardsley, and Middleton B. Floyd, Jr., Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

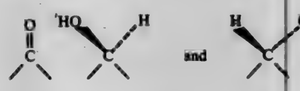
Filed Apr. 3, 1980, Ser. No. 137,030
Int. Cl.³ C07C *35/06, 49/597*
U.S. Cl. 568—367 **123 Claims**

1. Compounds of the formula:

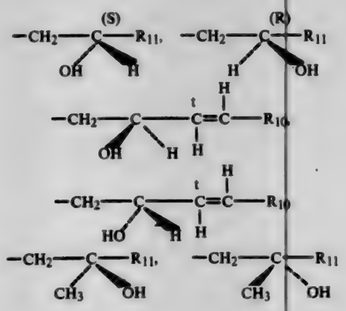


(I)

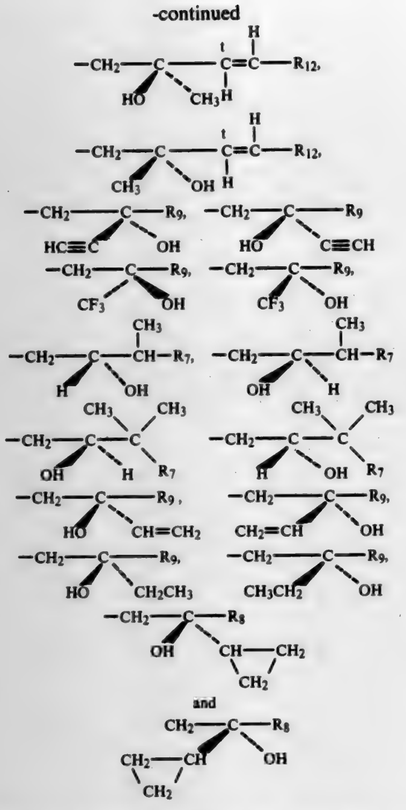
n is the integer 3–5 inclusive;wherein M is the divalent moiety selected from the group



X is selected from the group —CH=CH—(trans) and —CH=CH—(cis); R' and R'' are the same or different and are hydrogen, C_1 to C_4 alkyl, C_1 to C_6 alkanoyl or optionally substituted benzoyl, the substituents selected from the group C_1 to C_4 alkoxy, halo and trifluoromethyl; C_{13}–C_{14} is selected from the group —CH=CH—(trans) and —CH_2CH_2—; and R_2 is selected from the group



-continued



wherein R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_9 is selected from the group consisting of C_3–C_6 alkyl; R_{10} is selected from the group consisting of C_1–C_4 alkyl; R $_{11}$ is selected from the group consisting of C_3–C_7 alkyl; R_{12} is selected from the group consisting of C_1 to C_4 alkyl; the racemic mixtures thereof; and the mirror images thereof, and the pharmaceutically acceptable, non-toxic salts thereof.

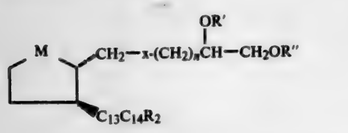
4,288,633

1-HYDROXYMETHYL-11-DEOXY-16-HYDROXY-PROSTEN-1-OL-DERIVATIVES

Allan Wissner, Ardsley, and Middleton B. Floyd, Jr., Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

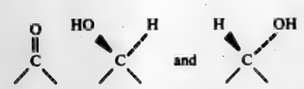
Filed Apr. 3, 1980, Ser. No. 137,031
Int. Cl.³ C07C *35/06, 49/597*
U.S. Cl. 568—367 **52 Claims**

1. Compounds of the formula:

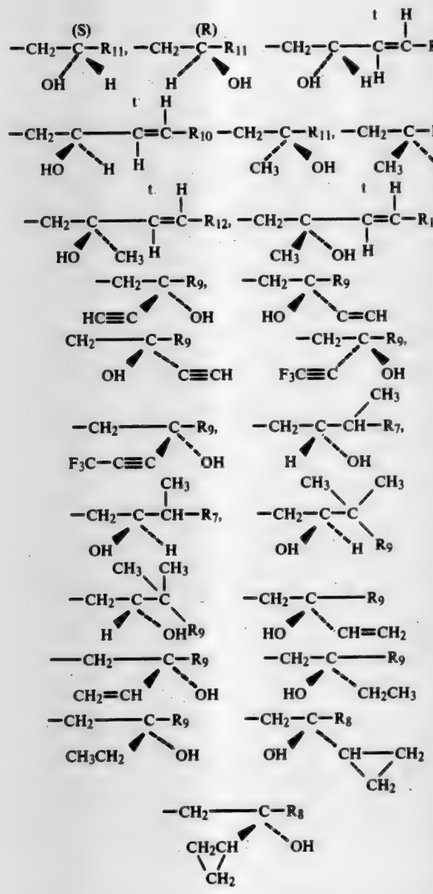


(I)

n is the integer 3–5 inclusive; wherein M is the divalent moiety selected from the group



X is —CH_2CH_2—, and; R' and R'' are the same or different and are hydrogen, C_1 to C_4 alkyl, C_1 to C_6 alkanoyl or optionally substituted benzoyl, the substituents selected from the group C_1 to C_4 alkoxy, halo and trifluoromethyl; C_{13}–C_{14} is selected from the group —CH=CH—(trans) and —CH_2CH_2—; and R_2 is selected from the group



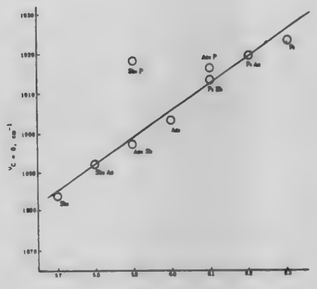
R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_9 is selected from the group consisting of C_3–C_6 alkyl; R_{10} is selected from the group consisting of C_1–C_4 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; R_{12} is selected from the group consisting of C_1 to C_4 alkyl the racemic mixtures thereof; and the mirror images thereof, and the pharmaceutically acceptable, nontoxic salts thereof.

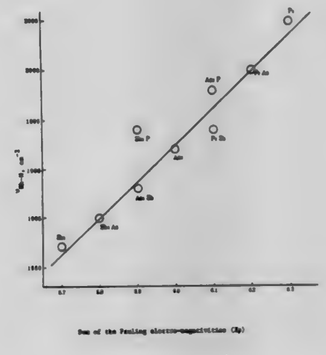
4,288,634

NOVEL RHODIUM COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Tadamori Sakakibara; Yoshihisa Matsushima; Yukio Nagashima; Nobukazu Okamoto; Katsumi Kaneko, all of Ooi; Yohio Ishii, Nagoya, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1979, Ser. No. 73,664
Claims priority, application Japan, Apr. 10, 1978, 53/121456; Apr. 10, 1978, 53/121457
Int. Cl.³ C07C *45/50*
U.S. Cl. 568—454 **5 Claims**





1. A process for the hydroformylation of olefins by the reaction of an olefin with carbon monoxide and hydrogen to produce an aldehyde having one more carbon atom than the olefin wherein there is used as catalyst at temperatures in the range of ambient to about 150° C., a total pressure in the range of atmospheric to about 100 atmospheres and a H_2/CO mol ratio of 10/1 to 1/10, a preformed rhodium complex having the general formula

$$HRh(CO)(PR^1R^2R^3)_n(AsR^4R^5R^6)_{3-n}$$

in which R^1,R^2,R^3,R^4,R^5 and R^6 are selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl and may be the same or different and n is 1 or 2, in the presence of excess mixed ligands of P and As having substituents selected from said group which may be the same as or different from those contained in the rhodium complex.

4,288,635

METHOD FOR THE PREPARATION OF (E)-4-BROMO-2-METHYLBUT-2-EN-1-AL

Gary M. Gray, Bethlehem, Pa., assignor to J. T. Baker Chemical Co., Phillipsburg, N.J.

Filed May 23, 1980, Ser. No. 152,700
Int. Cl.³ C07C 47/24
U.S. Cl. 568—483 **2 Claims**

1. A process for the production of (E)-4-bromo-2-methylbut-2-en-1-al comprising reacting 3,4-epoxy-3-methyl-1-butene with cupric bromide in the presence of lithium carbonate.

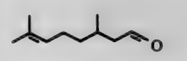
4,288,636

PREPARATION OF CITRAL

Axel Nissen, Leimen; Walter Rebafka, Eppelheim, and Werner Aquila, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

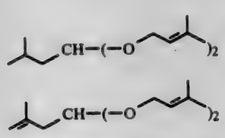
Filed Jun. 10, 1980, Ser. No. 158,346
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926562
Int. Cl.³ C07C 45/51, 47/21
U.S. Cl. 568—486 **4 Claims**

1. In a process for the preparation of citral (I)



I

by heating an acetal of the formula IIa or IIb



IIa

IIb

in the presence of an acid catalyst, the improvement which comprises carrying out the reaction at 100°–160° C. in the presence of 0.1–10 mole%, based on IIa or IIb, of an inert liquid IV, which under the reaction pressure boils at a higher temperature than 3-methyl-but-2-en-1-ol (III, prenol) but at a lower temperature than citral, 2,8-dimethyl-5-oxa-nona-1,3,7-triene (V) and 2,4,4-trimethyl-3-formyl-hexa-1,5-diene (VI) while continuously distilling off the prenol eleminated in the reaction over a fractioning column, at the top of which a pressure of 40–140 mbar is maintained.

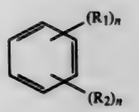
4,288,637

PROCESS FOR PREPARATION OF AROMATIC HYDROPEROXIDES

Fujihisa Matsunaga, Iwakuni; Yoshiyuki Shinohara, Kashiwa; Isamu Okubo, Ohtake; Takayuki Nakamura, Iwakuni, and Seiichi Tanaka, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,474
Claims priority, application Japan, Apr. 27, 1979, 54-51537
Int. Cl.³ C07C 179/035
U.S. Cl. 568—575 **8 Claims**

1. A process for the preparation of aromatic hydroperoxides which comprises reacting an aromatic compound represented by the following formula:



wherein R_1 stands for a secondary alkyl group having 3 to 4 carbon atoms, R_2 stands for a primary alkyl group having up to 4 carbon atoms, and n and m are numbers of 1 or 2 with the proviso that the sum of n and m does not exceed 3,

with a molecular oxygen-containing gas in two liquid phases which comprise an oily phase containing the aromatic compound and a basic aqueous phase under agitation at a temperature of from room temperature to 200° C. under a pressure of 1 to 50 Kg/cm² gauge, wherein a copper compound catalyst composed of an inorganic salt or organic acid salt of copper which is soluble in the basic aqueous phase is present in the liquid phases at a concentration of 0.005 to 10 ppm as the copper atom, the pH value of the basic aqueous phase is maintained at 7.6 to 10, and the volume ratio of the basic aqueous phase to the oily phase is in the range of from 0.001 to 1.

4,288,638

PROCESS FOR THE SYNTHESIS OF 2,4-DINITRO-6-T-BUTYL-3-METHYLANISOLE, REFERRED TO AS MUSK AMBRETTE

Helene M. Pascal, Le Pontet, and Jean-Marie L. Emeury, Sorgues, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Division of Ser. No. 970,139, Dec. 18, 1978, Pat. No. 4,236,029. This application Feb. 19, 1980, Ser. No. 122,476
Claims priority, application France, Dec. 29, 1977, 77 39625
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ C07C 41/18
U.S. Cl. 568—584 **4 Claims**

1. Process for the synthesis of 2,4-dinitro-6-t-butyl-3-methylanisole which consists of reacting 3-methyl-6-t-butylanisole with a ternary nitrating mixture which comprises acetic anhydride, acetic acid and nitric acid at between 5° and 30° C. wherein said nitrating mixture consists of a total of 30 to 50% by weight of acetic acid, 20 to 30% by weight of acetic anhydride and 25 to 45% by weight of nitric acid, and said 2,4-dinitro-6-t-butyl-3-methylanisole is recovered as a precipitate by introducing into the crude reaction mixture, preferably slowly and while stirring, one or more small amounts of water which are less than 100% by weight of the amount of nitrating mixture used.

4,288,639

ALPHA-OLEFIN OXIDE-MODIFIED LIQUID POLYETHER THICKENERS

Ronald L. Camp, Riverview, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 22, 1979, Ser. No. 86,837
Int. Cl.³ C07C 43/11, 43/164
U.S. Cl. 568—625 **7 Claims**

1. A polyether thickener for aqueous systems having a molecular weight of about 1000 to about 25,000 which is selected from the group consisting of at least one of

(A) polyethers prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one monohydric alcohol active hydrogen compound initiator containing no more than one active hydrogen and about 12 to about 18 aliphatic carbon atoms to prepare a heteric or block copolymer and further reacting said copolymer with at least one alpha-olefin oxide having a carbon length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener, and

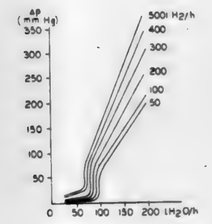
(B) polyethers prepared by reacting ethylene oxide with at least one monohydric alcohol active hydrogen compound initiator to prepare a homopolymer and further reacting said homopolymer with at least one alpha-olefin oxide wherein said initiator is an aliphatic or alkylaromatic compound which contains no more than one active hydrogen, has a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide has a carbon chain length of about 12 to about 18 aliphatic carbon atoms, and is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener.

4,288,640

CARRYING OUT EXOTHERMIC REACTIONS BETWEEN A GAS AND A LIQUID

Ludwig Schuster; Paul Raff, both of Ludwigshafen; Herwig Hoffmann, Frankenthal; Rolf Schneider, Mannheim, and Erich Flickinger, Frankweiler, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 63,068, Aug. 12, 1970, abandoned. This application Jul. 22, 1976, Ser. No. 707,499
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1969, 1941633
Int. Cl.³ C07C 33/046, 33/042, 39/08, 87/52
U.S. Cl. 568—855 **13 Claims**



1. In a process for carrying out a solid-catalyst promoted exothermic reaction between a gas and a liquid, wherein the gas and the liquid are conducted cocurrently through a packed column, the solid catalyst serving, alone or in admixture with inert packing, as the packing and wherein a pressure drop Δp is observed between the ends of said column, the improvement which comprises passing an intimate mixture of the gas and the liquid in the form of a turbulent stream through the packed column at such rates that, when the gas flow rate is kept constant, a variation in flow rate of the liquid produces a rise in the pressure difference Δp with increasing liquid flow load L, expressed as Δp/L, at least twice as large as the rise Δp/L under liquid trickling conditions providing laminar flow of the liquid over the packing bodies and continuous gas flow but said liquid flow rate being below the rate at which pulsing Δp in the column is produced, said packing being spheres having diameters of 2 to 8 mm., cylindrical bodies having a length of 2 to 15 mm. and a diameter of 2 to 6 mm. or nonspherical or non-cylindrical bodies having a volume equivalent to that of said spheres.

4,288,641

PROCESS FOR THE PREPARATION OF 1,4-BUTYNEDIOL AND RELATED CATALYST

Franco Codignola, Castenedolo; Giorgio Vergini, Milan; Paolo Gronchi, Milan, and Paolo Centola, Milan, all of Italy, assignors to Societa Italiana Serie Acetica Sintetica S.p.A., Milan, Italy

Filed Oct. 17, 1979, Ser. No. 85,792
Claims priority, application Italy, Jun. 15, 1979, 23655 A/79
Int. Cl.³ C07C 33/046
U.S. Cl. 568—855 **3 Claims**

1. A process for the preparation of 1,4-butynediol comprising reacting acetylene and formaldehyde at a temperature between 70° C. and 150° C. and at an acetylene pressure of between 0.5 and 1.5 atmospheres in the presence of a catalyst comprising an acetylide of copper supported on and chemically bonded to a molecular sieve material or a synthetic zeolite through an ion exchange reaction so that the copper atoms and the support form an inorganic, polymeric, crystal lattice in which the copper atoms are positioned at regularly distributed sites.

4,288,642

PRODUCTION OF ω-ALKENE-1-OLS

Tohr Yamanaka, Kamakura, and Takashi Imai, Hiratsuka, both of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,529
Claims priority, application Japan, Jan. 23, 1979, 54-6696
Int. Cl.³ C07C 29/60
U.S. Cl. 568—903 **4 Claims**

1. A process for producing an ω-alkene-1-ol which comprises heating an α,ω-alkanediol having 4 to 14 carbon atoms together with a fatty acid selected from the group consisting of stearic acid, palmitic acid and a mixture thereof, the molar ratio of said fatty acid to said α,ω-alkanediol being about 1:0.8 to 1:3.0, at a temperature of about 310° to 360° C. in the absence of a catalyst, and continuously feeding the α,ω-alkanediol to the reaction system, with the pressure of the reaction system being controlled to 200 to 700 mmHg, while maintaining the same temperature and simultaneously distilling the ω-alkene-1-ol.

4,288,643

PROCESS FOR PREPARING 2,3-DIMETHYL-BUTENE-2

Jürgen Weber, Oberhausen; Wolfgang Bernhagen, Mulheim an der Ruhr, and Helmut Springer, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,830
Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917779
Int. Cl.³ C07C 1/253
U.S. Cl. 585—324 **19 Claims**

1. A process for preparing 2,3-dimethylbutene-2 comprising

treating isovaleraldehyde by methylenation to form α-isopropylacrolein,

treating α-isopropylacrolein by hydrogenation to form 2,3-dimethylbutanol,

treating 2,3-dimethylbutanol by dehydration to form an olefin mixture, said olefin mixture including 2,3-dimethylbutene-1 and 2,3-dimethylbutene-2, and

isomerizing the 2,3-dimethylbutene-1 of said olefin mixture to form 2,3-dimethylbutene-2.

4,288,644

PROCESS FOR ISOMERIZATION OF TETRAHYDRODIMETHYLDICYCLOPENTADIENE

Edward J. Janoski, Havertown; Abraham Schneider, Overbrook Hills, and Richard E. Ware, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 961,911, Nov. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 838,182, Sep. 30, 1977, abandoned. This application Dec. 19, 1979, Ser. No. 105,169
Int. Cl.³ C07C 13/61
U.S. Cl. 585—360 **10 Claims**

1. Process for the catalytic isomerization of endo tetrahydrodimethyldicyclopentadiene comprising:

(a) contacting endo tetrahydrodimethyldicyclopentadiene with a catalytic amount of acidic alumina having isomeric activity;

(b) having the contacting occur at an isomerization temperature in the range of from about 100° C. to about 400° C. and in the presence of sufficient hydrogen to maintain the isomeric activity of the alumina; and

(c) continuing the contacting until the endo diene is isomerized to its exo isomer.

4,288,645

PROCESS FOR THE PREPARATION OF AROMATIC HYDROCARBONS AND HYDROGEN FROM PROPANE

Nigel Wagstaff, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 28, 1980, Ser. No. 125,734

Claims priority, application Netherlands, Mar. 14, 1979, 7902020

Int. Cl.³ C07C *2/76, 15/02*

U.S. Cl. 585—415 **5 Claims**

1. A process for the preparation of aromatic hydrocarbons and hydrogen, which comprises contacting in a contact zone as feed propane or a hydrocarbon mixture which consists of more than 75%w C_4-paraffins and of at least 50%w propane and less than 20% methane and/or ethane at a temperature of from 400°-700° C., a space velocity of from 0.5 to 10 $g.g^{-1}.h^{-1}$ and a pressure of between 5 and 10 bar with a crystalline silicate containing 0.05 to 20% w zinc as the promoter as the catalyst, which silicate is characterized in having the following properties after 1 hour's calcining in air at 500° C.:

(a) thermally stable up to a temperature above 600° C.,

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A.

TABLE A

Radiation: Cu-K 2θ	Wavelength 0.15418 nm relative intensity
7.8–8.2	S
8.7–9.1	M
11.8–12.1	W
12.4–12.7	W
14.6–14.9	W
15.4–15.7	W
15.8–16.1	W
17.6–17.9	W
19.2–19.5	W
20.2–20.6	W
20.7–21.1	W
23.1–23.4	VS
23.8–24.1	VS
24.2–24.8	S
29.7–30.1	M

(c) after conversion of the silicate into the H-form and after evacuation at 2×10^{-9} bar and 400° C. for 16 hours and measured at a hydrocarbon pressure of 8×10^{-2} bar and 100° C., the adsorption of n-hexane is at least 0.8 mmol/g, the adsorption of 2,2-dimethylbutanes at least 0.5 mmol/g and the ratio

$$\frac{\text{adsorption of n-hexane}}{\text{adsorption of 2,2-dimethylbutane}}$$

at least 1.5,

(d) the composition, expressed in moles of the oxides, is as follows:

$y.(1.0\pm0.3)\ M_{n/2}O.y.\ Al_2O_3.SiO_2$,

wherein M=H and/or alkali metal and/or alkaline-earth metal, n is the valency of M and y=0.0065 to 0.1; and recovering an aromatic hydrocarbon mixture and hydrogen-containing gas from said contact zone.

4,288,646

REGIOSELECTIVE PREPARATION OF β-ISOPROPYLNAPHTHALENE OVER SUPERACIDIC SOLID OR SUPPORTED PERFLUORINATED SULFONIC ACID CATALYSTS

George A. Olah, Beverly Hills, Calif., assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Oct. 5, 1979, Ser. No. 82,164

Int. Cl.³ C07C *2/66*

U.S. Cl. 585—458 **8 Claims**

1. A process for the regionselective production of β-isopropylnaphthalene which comprises reacting naphthalene with a propylating agent over a superacidic solid or supported solid perfluorinated sulfonic acid catalyst.

4,288,647

SHAPE SELECTIVE REACTIONS WITH ALKALINE EARTH-MODIFIED ZEOLITE CATALYSTS

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,688

Int. Cl.³ C07C *2/68, 5/22, 5/52, 15/12*

U.S. Cl. 585—467 **26 Claims**

1. A process for conversion of organic compounds, said process comprising contacting said organic compounds with a crystalline zeolite catalyst at a termperature of between about 250° C. and about 750° C. and a pressure within the approximate range of $10^5\ N/m^2$ to $10^7\ N/m^2$, said zeolite being characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, said zeolite having undergone prior modification by treatment with compounds containing one or more of the elements comprising the alkaline-earth metals, to deposit thereon at least 0.25 weight percent of such element.

15. The process of claim **1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13** or **14** wherein said conversion comprises the alkylation of an aromatic compound by contacting said compound with an alkylating agent to produce dialkylbenzene compounds wherein the 1,4-dialkylbenzene isomer is present in excess of its normal equilibrium concentration.

19. The process of claim **1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13** or **14** wherein said conversion comprises the transalkylation of aromatic compounds to produce dialkylbenzene compounds wherein the 1,4-dialkylbenzene isomer is present in excess of its normal equilibrium concentration.

4,288,648

PROCESS FOR THE OLIGOMERIZATION OF ETHYLENE

David L. Beach, and Thaddeus P. Kobylinski, both of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 21, 1980, Ser. No. 151,961

Int. Cl.³ C07C *2/02, 2/26*

U.S. Cl. 585—523 **67 Claims**

1. A process for oligomerizing ethylene which comprises contacting ethylene with a catalyst composition obtained by contacting (a) a refractory metal oxide/silica support wherein the silica content of said support is from about 2 to about 95 weight percent and the metal oxide content of said support is from about 5 to about 98 weight percent with (b) a tris(cyclopentadienyl)trinickel dicarbonyl.

4,288,649

ISOBUTYLENE POLYMERIZATION PROCESS

David A. McCaulay, Homewood, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 69,097, Aug. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 941,086, Sep. 11, 1978, abandoned. This application May 30, 1980, Ser. No. 154,943

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—533 **16 Claims**

1. A process for producing viscous polyisobutylene having a number average molecular weight greater than about 1,250 which comprises contacting a normally gaseous olefin stream feed comprising isobutylene with a halided alumina at a temperature of about −25° to 52° C. at sufficient pressure to maintain the feed in a liquid phase.

4,288,650

ELECTRICAL INSULATION DEVICE

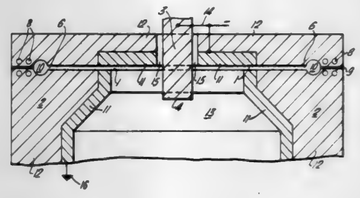
Michael Robinson, Wooton, England, assignor to LaPorte Industries Limited, London, England

Filed Mar. 20, 1979, Ser. No. 22,319

Claims priority, application United Kingdom, Mar. 23, 1978, 11612/78

Int. Cl.³ H05H *1/26*

U.S. Cl. 13—2 P **27 Claims**



1. A structure requiring electrical insulation between two parts thereof, a surface of the structure being intended for exposure in use in a furnace to radiation from a heat source having a temperature sufficiently elevated to cause a reduction in the electrically insulating properties of normally insulating constructional materials, characterised by the provision of a slot in the structure between the two parts thereof the slot extending from the heat exposed surface of the structure into the depth of the structure the slot being positioned and dimensioned so that the base of the slot would not view the heat source in use.

4,288,651

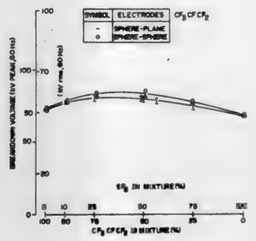
DIELECTRIC GAS SELECTED FROM BINARY MIXTURES OF SF_6, SO_2 AND CF_3CFCF_2

Roy E. Wootton, Murrysville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 6, 1979, Ser. No. 100,839

Int. Cl.³ H01B *3/56*

U.S. Cl. 174—17 GF **8 Claims**



1. A dielectric gas mixture comprising a binary pair of gases selected from the group consisting of (a) SF_6 and CF_3CFCF_2, (b) SO_2 and CF_3CFCF_2, and (c) SO_2 and SF_6.

4,288,652

CORRUGATED OUTER SHEATH GAS-INSULATED TRANSMISSION LINE

George A. Kemeny, Pittsburgh, and Alan H. Cookson, Churchill Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

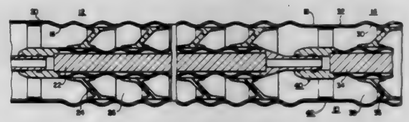
Filed Mar. 16, 1979, Ser. No. 21,391

Int. Cl.³ H01R *4/02*

U.S. Cl. 174—21 C **5 Claims**

1. A high-voltage gas-insulated transmission line comprising: first and second transmission line sections each comprising an elongated, corrugated tubular outer housing having a smooth end section, an elongated electrical conductor disposed within said outer housing, means for insulatably supporting said conductor within said outer housing, and an insulating gas electrically insulating said conductor from said outer housing, said electrical conductors being electrically connected to each other; and

joining means for sealingly fixedly joining said outer housings to each other at said smooth end sections thereof; said joining means comprising:



a first annular housing extension fixedly secured to one of said smooth end sections and extending longitudinally outwardly therefrom;

a second annular housing extension fixedly secured to the other of the smooth end sections and extending longitudinally outwardly therefrom, said first and second annular housing extensions being disposed adjacent to each other; and

a weld bead disposed between, contacting and joining said first and second annular housing extensions.

4,288,653

DISTRICT-HEATING LINE AND A METHOD OF MANUFACTURING THE SAME

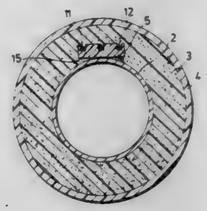
Hans Blom, Box 3158, S-103 63 Stockholm, and Leif Wiberg, 15 Observatoriegatan, S-113 25 Stockholm, both of Sweden

Filed Mar. 17, 1980, Ser. No. 130,725

Claims priority, application Sweden, Jun. 18, 1979, 7905331

Int. Cl.³ F17D *5/06*; F16L *55/00*

U.S. Cl. 174—47 **4 Claims**



1. A district heating line of the kind including an inner metal tube for transporting a heat transfer medium, an insulating layer of foam-plastic material arranged around the metal tube, a moisture impenetrable protective tube surrounding said foam-plastic layer, at least one electrical conductor formed as part of an electrical circuit, elongated blocks mounted on and affixed to the inner metal tube along the length of the tube, said blocks being made of electrically insulating material and having extending along the length thereof at least one radially outwardly opening channel with the channels on adjacent blocks aligned with one another, said channels being dimensioned to accommodate said electrical conductor and position it at a fixed distance from the outer cylindrical surface of the inner metal tube, and means securing said electrical conductor in said channels at said fixed distance from the outer cylindrical surface of the inner metal tube.

4. A method of manufacturing a district heating line including the steps of forming elongated blocks each having at least one axially extending radially outwardly opening channel dimensioned to receive at least one electrical conductor, attaching a plurality of said elongated blocks to the outer surface of a metal tube with the channels of adjacent blocks in alignment, positioning at least one electrical conductor in the

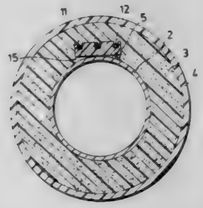
aligned channels and securing said conductor at a fixed distance from said elongated metal tube, arranging a protective tube around and coaxial with the metal tube and elongated blocks, and pouring a hardenable foamable plastic material in the annular chamber between the metal tube and the protective tube.

4,288,654

DISTRICT-HEATING LINE

Hans Blom, Box 3158, S-103 63 Stockholm, and Leif Wiberg, 15 Observatoriegatan, S-113 25 Stockholm, both of Sweden

Filed Mar. 17, 1980, Ser. No. 131,142
Claims priority, application Sweden, Sep. 5, 1979, 7907400
Int. Cl.³ F17D *5/06*; F16L *55/00*
U.S. Cl. 174—47 **1 Claim**



1. A district heating line of the kind including an inner metal tube for transporting a heat transfer medium, an insulating layer of foamed-plastic material arranged around the metal tube, a moisture impenetrable protective tube surrounding said foamed-plastic layer, at least one electrical conductor formed as part of an electrical circuit, elongated blocks mounted on and affixed to the inner metal tube along the length of the tube, said blocks being made of electrically insulating material and having extending along the length thereof at least one radially outwardly opening channel with the channels on adjacent blocks aligned with one another, said channels being dimensioned to accommodate said electrical conductor and position it at a fixed distance from the outer cylindrical surface of the inner metal tube, means securing said electrical conductor in said channels at said fixed distance from the outer cylindrical surface of the inner metal tube, and a water soluble salt incorporated in said electrically insulating blocks.

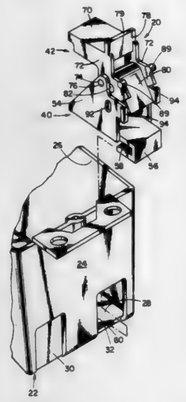
4,288,655

CABLE LOCK ASSEMBLY FOR OUTLET BOX

John L. Lass, Homewood, Ill., assignor to Square D Company, Palatine, Ill.

Filed Oct. 4, 1979, Ser. No. 81,944
Int. Cl.³ H02G *3/08*
U.S. Cl. 174—65 R **19 Claims**

1. In an electrical outlet box having at least one knock-out hole in one wall, a cable lock assembly including a first member having a locking lip defining a recess receiving a free edge of said knock-out hole to secure said assembly to said outlet box, said first member having a first cable engaging surface generally aligned with said hole and having a pair of legs extending away from said surface, a second member pivotally supported on said legs of said first member, said second member having a portion engaging said one wall adjacent said knock-out hole in said closed position to substantially enclose said hole and lock said assembly in said outlet box, said second member having a second cable engaging surface pivotal toward said first cable engaging surface to grip a cable therebetween.

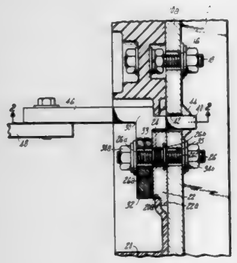


4,288,656

BOLTED/WELDED JOINT FOR SWITCHBOARD RUN-IN CONNECTOR

William F. Olashaw, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 19, 1980, Ser. No. 150,859
Int. Cl.³ H02B *1/20*; H02G *5/00*; H01R *4/02*
U.S. Cl. 174—71 B **4 Claims**



1. In an electrical switchboard, a bolted/welded electrical joint for electrically connecting an aluminum riser bus with an electrical device installed in a switchboard cubicle; said joint comprising, in combination:

A. an L-shaped run-in connector fabricated of aluminum having a horizontal segment extending forwardly to a termination facilitating electrical connection with a terminal of the device and a vertical segment;

B. a rearwardly extending projection formed with said vertical segment;

C. means forming an opening in the riser bus;

D. a bolt clamping said vertical segment in electrical connection with the riser bus with said projection protruding through said opening in the riser bus; and

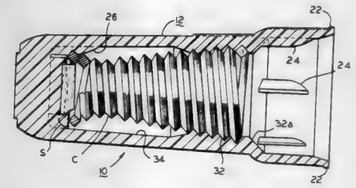
E. a weld electrically joining said projection to the riser bus along the edge of said opening therein.

4,288,657

FREE-SPRING WIRE CONNECTOR

Arthur F. Swanson, DeKalb, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,511
Int. Cl.³ H01R *4/22*
U.S. Cl. 174—87 **7 Claims**



1. A twist-on connector for connecting the stripped ends of a bundle of insulated wires comprising, in combination:

a hollow generally tubular shell of plastic material having an opening at one end thereof and a closed end wall at the other end thereof which is generally perpendicular to the longitudinal axis of said shell;

a plurality of circumferentially spaced and longitudinally extending ribs on the inner surface of said shell and extending from points adjacent said opening toward the central portion of said shell;

a coiled spring wound from a wire having a generally polygonal cross-sectional area which provides an edge on at least the external surface of said coiled spring, and said coil spring being inserted into said shell by threading said coil spring into said shell;

a stop member positioned along a peripheral portion of said end wall for engaging the free inner end of said coil spring for transfering external torsional forces applied to said shell to the other end of said coil spring; and,

the inner side of said end wall having a stepped transition portion between areas of differing longitudinal dimensions which provide a differential torque distribution to the wire bundle ends projecting through the open inner end of said coil spring, thereby to alter the initial alignment of the wire ends relative to the bundle diameter and into a diameter which exceeds the diameter of the inner end of said coil spring.

4,288,658

APPARATUS FOR GENERATING TELEX SIGNALING SEQUENCES IN A DISTRIBUTED PROCESSING TELEX EXCHANGE

Larry C. Bieber, Simi Valley, and Jack L. Woodell, La Canada, both of Calif., assignors to Frederick Electronics Corporation, Frederick, Md.

Filed Nov. 6, 1979, Ser. No. 91,793
Int. Cl.³ H04L *11/00*; H04Q *3/54*; G06F *11/00*
U.S. Cl. 178—3 **30 Claims**

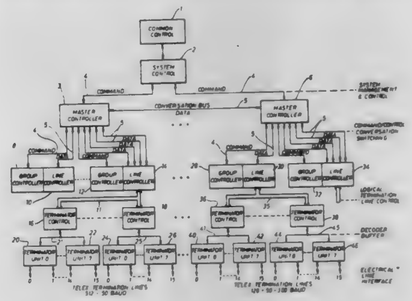
19. A device for the high-speed time share processing of the input and output signals in a plurality of data channels to achieve the real time processing of each channel, the device comprising:

(a) a supervising processor, for supervising the handling of the signals for each data channel;

(b) a sequence file responsive to said supervising processor, for controlling the sequence in which the data channels are time share processed during time share intervals, one data channel processed in each time share interval;

(c) input and output microprocessors responsive to said sequence file and said supervising processor, for executing signaling routines selected by said supervising processor which simultaneously process the respective input and output signals for the same data channel during each time share interval, said input and output microprocessors generating interprocessor flags to coordinate the execution of their respective signaling routines; and

(d) an input-output interface connected between said microprocessors and the data channels, for translating between the signaling levels of said microprocessors and the signaling of the data channels, and for selecting the data channel currently being time share processed to input to or receive signals from said processors, said supervising processor and said input and output microprocessors cooperating together to achieve the real time processing of the signals for each data channel.

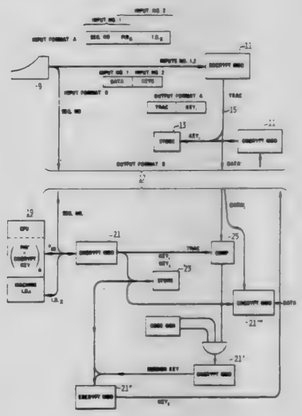


4,288,659

METHOD AND MEANS FOR SECURING THE DISTRIBUTION OF ENCODING KEYS

Martin M. Atalla, Menlo Park, Calif., assignor to Atalla Technovations, Sunnyvale, Calif.

Filed May 21, 1979, Ser. No. 40,687
Int. Cl.³ H04L *9/00*
U.S. Cl. 178—22.08 **6 Claims**



1. Data-handling apparatus for securing the transmission of data under control of an authorized individual from one location having an identification number to data processing means having memory means with the identification number stored therein at a remote location, the apparatus comprising:

encrypting means at the one location and remote location, each for producing first and second encoded outputs as a logical combination of a pair of signals applied thereto;

input means at the one location coupled to the encrypting means for applying a pair of signals thereto which are representative of the identification number for the one

location and of a code signal associated with the authorized individual;

at the one location, storage means for storing the first encoded output produced by the encrypting means;

at the remote location, data processing means having memory and storing the identification number for the one location and storing the code signal associated with the authorized individual;

said encrypting means at the remote location being coupled to receive the identification number and the code signal from the memory of the data processing means to produce first and second encoded outputs as said logical combination of signals applied thereto;

storage means at the remote location for storing the first encoded output from the encrypting means thereat;

comparator means responsive to the second encoded outputs received from each of said encrypting means for producing an enabling output in response to favorable comparison of said second encoded outputs;

means responsive to said enabling output for producing a key code;

means for transmitting to the one location an encrypted key code as the second logical combination of said key code and the first encoded output from the storage means at said remote location;

means at said one location for decrypting the encrypted key code received thereat with respect to the first encoded output stored thereat and the second logical combination to produce the key code; and

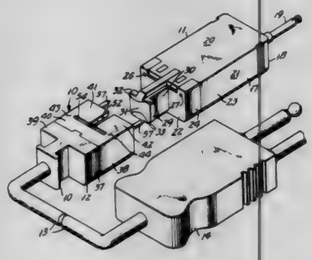
means at said one location and said remote location for encoding and decoding data thereat with respect to the same logical manipulation of an applied signal and said encoding key.

4,288,660

TEST CORD FOR TELEPHONE CIRCUITS

Michael Fasano, Syosset, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,921
Int. Cl.³ H04M *1/00, 3/22, 1/24*
U.S. Cl. 179—1 PC **4 Claims**



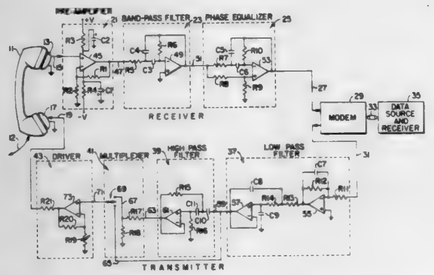
1. In a combination telephone protector module and test plug detachably engageable therewith to effect electrical communication therebetween, the improvement comprising: said module including a housing having an inner end providing means for the engagement thereof with a telephone connector block, and an outer end surface having openings therein providing access to electrically conductive terminals communicating with said inner end, a handle member mounted generally centrally on said outer end surface, said handle member having an enlargement thereon; said test plug having a cross sectional configuration generally corresponding to that of said housing of said module, and defining a recess extending outwardly from an inner end surface thereof sufficient to clear said handle upon engagement of said plug with said housing, and axially aligning said plug and said housing; a plurality of resiliently extendable pins on said plug projecting from said inner end surface thereof, and of effective cross sectional diameter substantially smaller than that of said openings in said outer end surface of said housing, said pins penetrating said openings upon engagement of said plug with said module, and effecting communication with said electrically conductive terminals without substantial contact with said openings; said handle and said plug having cooperative resilient detent means for maintaining said plug and housing in selectively engaged condition.

4,288,661

INTERFACE CIRCUITRY FOR ACOUSTIC COUPLER COMPENSATION

Baldev Krishan, San Jose, Calif., assignor to Anderson Jacobson, Inc., San Jose, Calif.

Filed Feb. 21, 1979, Ser. No. 13,021
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 C **7 Claims**



1. For an acoustic coupler that comprises,

a microphone adapted to receive from a telephone handset receiver an acoustic signal in a band between first and second distinct frequencies and to apply the received signal in an electronic form to a modem, and

a speaker adapted to acoustically transmit to a telephone handset transmitter a signal received in an electronic form from a modem in a band between third and fourth distinct frequencies,

an electronic interface circuit adapted to be connected between the modem and the coupler microphone and speaker for compensation of unequal amplitude acoustic coupling between a telephone handset and the coupler microphone and speaker of the various distinct frequency signals, said interface circuits comprising,

first means receiving electrical signals from said microphone before applying them to the modem for compensating for any unequal amplitude transmittance between said handset receiver and said coupler microphone of acoustic tone signals within said first and second distinct frequency band, said first means including a filter that attenuates one of said first and second frequency bands more than the other and means for equalizing any phase distortion introduced by said filter, and

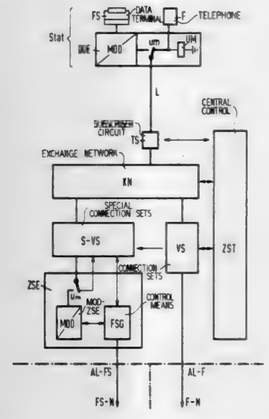
second means adapted to receiving electrical signals from said modem and apply them to the coupler speaker for compensating for any unequal amplitude transmittance between said coupler speaker and said handset receiver of acoustic tone signals within said third and fourth distinct frequency band.

4,288,662

CIRCUIT ARRANGEMENT FOR TELEPHONE EXCHANGE SYSTEMS, ESPECIALLY SUBSCRIBER EXTENSION STATION INSTALLATIONS, WITH ADDITIONAL DATA TRAFFIC, FOR EXAMPLE WITH TELEPRINTER EQUIPMENT

Franz Fahrenschon, Neuried; Alfred Meier, Munich, and Hans Thinschmidt, Germering, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,081
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1978, 2837654
Int. Cl.³ H04M *11/06*
U.S. Cl. 179—3 **7 Claims**



1. A switching arrangement for telephone exchange systems in which a telephone subscriber station includes telephone and data devices, a telephone exchange installation includes an exchange network having a telephone exchange line leading to the subscriber station, and a separate data exchange system has a separate data exchange line for connection with a selected data exchange subscriber, said switching arrangement comprising:

(a) special connection means (S-VS) selectable via the exchange network in response to a preassigned special selection signal transmitted to the exchange installation via the telephone exchange line;

(b) a special facility (ZSE) connected directly with a separate data exchange line (AL-FS) of the separate data exchange system (FS-N);

(c) said special facility (ZSE) having switching devices (FSG, MOD-ZSE) for receiving and converting line signals and data information destined for said separate data exchange system (FS-N); for receiving and converting line signals and data information from the separate data exchange system (FS-N); and operable in a data traffic mode for transmitting data information received from the data device of the telephone subscriber station, as converted, to said separate data exchange line; and for transmitting data information received from said separate data exchange line, as converted, to the data device of the telephone subscriber station;

(d) changeover means in said special facility (ZSE) responsive to line signals received as a result of a connection request from one of said telephone subscriber station and said separate data exchange system for switching said special facility (ZSE) from telephone traffic mode to said data traffic mode; said changeover means in said data traffic mode providing for said transmission of data information from the data device of the telephone subscriber station along a data transmission path which extends via the telephone exchange line (L), the exchange network, and the special connection means (S-VS) to said special facility (ZSE), and providing for said transmission of data information to the data device of the telephone subscriber station also via said data transmission path;

(e) said special facility (ZSE) being operable to transmit selection signals via the separate data exchange line (AL-FS) for controlling the separate data exchange system (FS-N) to connect with the desired data exchange subscriber; and

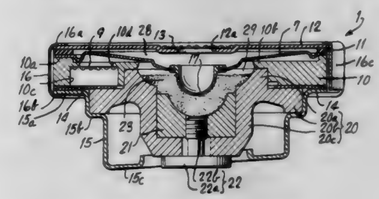
(f) said special facility (ZSE) being responsive to connection requests which arrive via the separate data exchange line (AL-FS) to process the selection digits received via said separate data exchange line (AL-FS) sufficiently to identify the desired telephone subscriber station (Stat) before release of any supervisory signal to said separate data exchange line (AL-FS).

4,288,663

NOISE CANCELING TRANSMITTER

James P. Foley, Astoria, N.Y., assignor to Roanwell Corporation, New York, N.Y.

Filed Mar. 5, 1980, Ser. No. 127,324
Int. Cl.³ H04M *1/19*; H04R *21/02*
U.S. Cl. 179—122 **6 Claims**



1. A noise canceling transmitter comprising:

a. a circular diaphragm (**7**) of electrically conductive material;

b. a circular grid (**12**) insulatingly spaced from one surface of the diaphragm and having a central aperture (**12*a***)through which sound waves may impinge on said one surface;

c. means (**10,20,21**) defining a chamber (**29**) on the opposite side of the diaphragm from said one surface, said means including an annular member (**10**) of electrically conductive material having a radially inwardly projecting flange (**10*b***) adjacent said chamber and a peripheral rim (**10*a***) supporting the rim only of said opposite side of the diaphragm so that the diaphragm is free to vibrate;

d. an annular frame (**16**) encircling the diaphragm and the annular member and having peripheral apertures (**16*d***) therein, said annular member having a passage (**10c**) providing acoustic communication between said peripheral apertures and said chamber, so that ambient noise passing through the cover aperture (**12*a***) and the frame apertures (**16*d***) reaches both sides of the diaphragm and the vibratory effects of the noise on the diaphragm substantially cancel;

e. an internal movable contact (**17**) fixed on the center of the diaphragm;

f. an internal stationary contact (**21**) in said chamber opposite said movable contact;

g. a mass (**23**) of granular carbon enclosed in the chamber (**29**) between the internal contacts and subject to varying compression as the diaphragm vibrates;

h. an external annular contact (**15**) electrically connected (**14,10,7**) to the internal movable contact;

i. an external central contact (**22*a***) within and spaced from the annular contact (**15**) and electrically connected to the internal stationary contact;

wherein the improvement comprises:

j. an annular insulator (**20**) in said means including an inter-

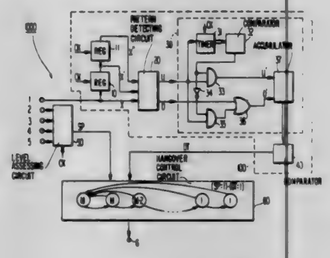
nal flange (20*a*) projecting axially toward the diaphragm and engaging the flange on the annular member, a peripheral flange (20*b*) adjacent said annular member, and a cup (20*c*) extending axially in the opposite direction from the internal flange and receiving said stationary contact, said cup being open toward said chamber and receiving the internal stationary contact, the end of the cup remote from the chamber having a central opening for receiving the external central contact.

4,288,664

NEUTRALIZATION SIGNAL DEVELOPING DEVICE FOR AN ECHO SUPPRESSOR

Takashi Araseki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,151
Claims priority, application Japan, Jun. 30, 1978, 53-80121
Int. Cl.³ H04Q *1/46*; H04B *3/20*
U.S. Cl. 179—170.2 **6 Claims**



1. A neutralization signal developing device for an echo suppressor, which is required for the transmission of data over a telephone line having four-wire circuits, each transmission of data being preceded by an identification signal at a given frequency, an input analog signal including said identification signal being sampled and quantized so that each sampled value is encoded into a binary codeword composed of a sign bit and a preset number of bits representing the magnitude of said analog signal, said device comprising:

means for receiving the series of codewords;

means responsive to a portion of each codeword in said series of codewords for detecting said identification signal;

means responsive to another portion of each codeword in said series of codewords for assessing the level of said series of codewords; and

means responsive to the outputs of said detecting means and said level assessing means for developing a neutralization signal for the echo suppressor, wherein said detecting means includes means for successively producing bit patterns from sign bits of said series of codewords;

means responsive to said bit patterns for producing a first detection signal if one of said bit patterns coincide with a first predetermined bit pattern and producing a second detection signal if one of said bit patterns coincides with a second predetermined bit pattern;

counting means responsive to said first and second detection signals for increasing its contents by a first predetermined number if said first detection signal is generated at any one of predetermined recurrence cycles and decreasing its contents by a second predetermined number if said second detection signal is generated; and

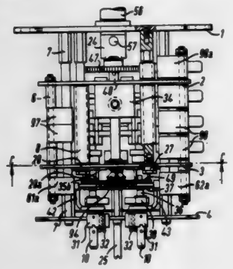
means responsive to the output of said counting means for producing an output signal indicating the presence of said identification signal if the output of said counting means exceeds a predetermined value.

4,288,665

ELECTRIC SWITCH CONTROL UNIT, MORE PARTICULARLY FOR ELECTRIC MOTOR DRIVEN ACTUATORS

Frederick A. Smith, Bristol, England, assignor to Rotork Limited, Bath, England

Filed Apr. 2, 1979, Ser. No. 26,308
Claims priority, application United Kingdom, Apr. 4, 1978, 13152/78
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—18 **11 Claims**



1. A motor driven actuator having a control unit comprising: a motor; means coupling said motor drive shaft to an input drive shaft of said actuator; a pair of switches each connected in an electric circuit, a first of said switches controlling the operation of the motor in one direction of movement of the actuator, and a second of said switches controlling the operation of the actuator in the other direction of movement, an actuating member for each switch for operating the corresponding switch at any point during the stroke of the actuator in accordance with the output force or the output movement of the actuator, a latch member associated with said switch actuating members, said latch member being drivably connected with the input drive shaft of said control unit for movement relative to one of said switch actuating members depending on the direction of movement of the actuator, a pair of pins for normally preventing movement in a first direction, said pins being mounted one on each of said switch actuating members and being each positioned in a first location during normal operation of said actuator prior to actuation of said switches; said pair of pins being movable with its switch actuating member upon movement of the actuating member to its switch operating position from said first location to a second location in which said latch member is movable into a position in which the latch member locks the actuating member in its switch operated position, said latch member operating to prevent the release of said switch actuating member whereby a corresponding switch is reset until the actuator input drive shaft moves in the reverse direction of said first direction.

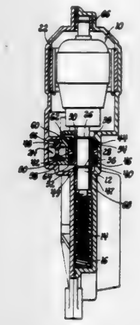
4,288,666

REACTION SWITCH FOR AN ACTUATOR DRIVE SYSTEM

Carlton A. Milbrandt, Dayton, and Roy C. Schoen, West Milton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1979, Ser. No. 92,198
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—47 **2 Claims**

1. An improvement in reaction switches for use with a worm gear drive wherein a worm shaft, rotatably driven by an electric motor, meshes with a worm gear subject to reaction load and at a predetermined reaction force level is moved longitudinally, the improvement comprising; a pair of electrical switch actuating members operatively associated with said worm shaft; primary spring means disposed between and urging said switch actuating members in opposite directions; stop means for positioning said actuating members, a pair of longitudinal force transmitting means secured to said worm shaft and selectively connectable with respective actuating members to selectively and individually move said actuating members longitudinally from their respective stop positions when the longitudinal force in the worm shaft is greater than the force in said primary spring member; and secondary spring means operatively connected between said worm shaft and a member stationary with respect to said shaft for applying a unidirectional force thereto so that a predetermined reaction load is required before the worm shaft will move longitudinally in one direction and a reaction load greater than the predetermined reaction load is required before the worm shaft will move longitudinally in the other direction.

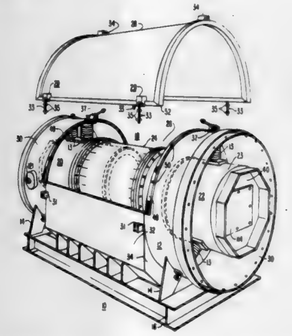


4,288,667

TELESCOPING DISCONNECT SWITCH WITH RAIL-MOUNTED TELESCOPE SECTION

Jayant M. Patel, Cincinnati, Ohio; Jerome K. Wolfe, Murrysville, Pa.; Forrest E. Coyle, Penn Hills, Pa., and James R. Farley, Plum Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 956,817, Nov. 1, 1978, abandoned. This application Apr. 15, 1980, Ser. No. 140,515
Int. Cl.³ H01H *31/32*
U.S. Cl. 200—48 R **2 Claims**



1. A telescoping high current disconnect switch for isolated phase bus comprising:

a cylindrical conductive housing;

a stationary contact disposed within said housing;

a movable contact axially movable within said housing and cooperating with said stationary contact to open and close an electrical circuit;

support means comprising a rail parallel to said housing; and

a bearing member fixedly attached to said movable contact, said bearing member comprising ball bearings movably bearing directly upon said rail,

said rail and said bearing member being positioned within the magnetic field produced by current flow through said switch and said rail consisting essentially of non-ferromagnetic work-hardenable material;

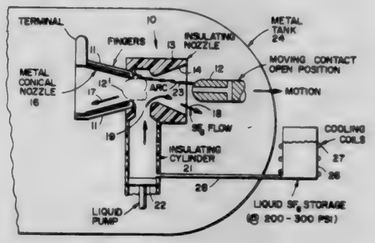
movement of said movable contact causing movement of said ball bearings along said rail, whereby said ball bearings cold-form grooves in said rail to work-harden selected portions thereof.

4,288,668

CIRCUIT INTERRUPTER USING A MINIMUM OF DIELECTRIC LIQUID

William H. Fischer, Pittsburgh; Charles F. Cromer, Trafford, and Joseph R. Rostron, Murrysville, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 826,382, Aug. 22, 1977. This application Feb. 13, 1980, Ser. No. 121,165
Int. Cl.³ H01H *33/75*
U.S. Cl. 200—150 G **7 Claims**



1. A circuit interrupter using a minimum of dielectric liquid having a low critical temperature at which it becomes gaseous relative to ambient temperature comprising: fixed contact means; an electrical and thermal insulating nozzle having a nozzle throat and an aperture in the side wall of said nozzle; a movable contact normally inserted in said nozzle throat and into electrical contact with said fixed contact means, said movable contact normally closing said aperture; an insulated cylinder for containing a predetermined quantity of said liquid having one end connected to said aperture in said side wall of said nozzle and the other end to a pump piston; liquid storage means having a pressure above ambient pressure permanently connected to said cylinder by a pipeline for filling said cylinder with said liquid at a relatively slow rate including cooling means for said storage means for maintaining said liquid in said storage means, in said pipeline, and in said insulating cylinder below said critical temperature in its liquid phase; said moving contact which normally closes said aperture when withdrawn allowing said predetermined quantity of liquid to flow, in response to actuation of said pump piston, through said nozzle throat at a relatively high rate to extinguish any arc created by said withdrawal of said contact.

4,288,669

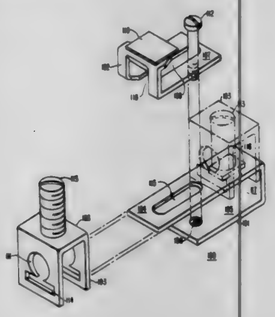
ELECTRIC CONTROL DEVICE

Kurt A. Grunert; William J. McKean, and John E. Grad, all of Beaver, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 19, 1979, Ser. No. 95,802
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—281 **4 Claims**

1. An electric control device, comprising a housing, a control device structure supported on the housing, said control device structure comprising a contact combination, said contact combination comprising a separable pull-out terminal assembly having at one end a separable pull-out contact carrier

with a stationary contact mounted thereon, a separable terminating collar with a convolute opening for securing electrical conductors mounted at its other end, and said separable pull-out terminal assembly cooperating with said separable terminating collar to allow individual removal of said separable pull-out contact carrier without removal of said electrical conductors from said separable terminating collar or removal of said separable pull-out terminal assembly from said housing.



4,288,670

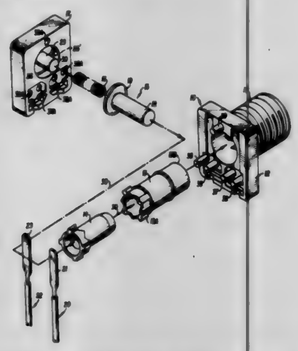
ELECTRICAL CONDUCTOR ALIGNMENT AND RETAINING ASSEMBLY

Horace J. Buttner, P.O. Box 487, North Harbor City, Calif. 90710

Continuation-in-part of Ser. No. 873,030, Jan. 22, 1978, Pat. No. 4,175,222, which is a continuation of Ser. No. 720,319, Sep. 3, 1976, abandoned. This application Nov. 19, 1979, Ser. No. 95,707

Int. Cl.³ H01H *13/04*

U.S. Cl. 200—303 **11 Claims**



1. An assembly for maintaining proper positioning of a planar electrical terminal within a surrounding housing assembly of an electrically operated device, and comprising:

said housing assembly including first and second housing portions arranged in adjacently disposed relationship to one another;

said electrical terminal extending in a substantially single plane within said housing assembly and including a first portion forming an electrical attachment with an electrical conductor, with said terminal first portion extending beyond said housing;

pin means including a plurality of pin members each attached to one of said housing portions and extending into corresponding recess means formed in the remaining housing portion;

said pin means including at least one pair of spaced pin members arranged on opposite sides of said electrical conductor and in contact therewith, defining a distance between said pin members which is appreciably less than a width of a second portion of said planar electrical terminal positioned on an opposite side of said pair of pin members from said first portion of the terminal which extends beyond said housing, thereby preventing withdrawal of said planar electrical terminal between said pair of spaced pin members;

one of said housing portions further including retaining means for preventing angular movement of said second portion of said planar electrical terminal in a plane extending transversely through said spaced pin members; and

said housing portions including means for restricting motion of said second portion of said planar electrical terminal in a direction perpendicular to said transversely extending plane through said spaced pin members.

4,288,671

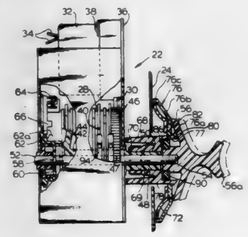
AUTOMATIC WASHER TIMER DIAL PROTECTIVE SHIELD

Russell J. Morrison, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 14, 1980, Ser. No. 111,715

Int. Cl.³ H01H *9/16, 19/00*

U.S. Cl. 200—304 **7 Claims**



1. In an automatic washer having a timer including a manually and automatically driven cam set for operating said washer through a sequence of washing operations and mounted within a console, a timer positioning and indicating mechanism comprising:

an indicator dial and integral dial support member affixed to said cam set for indicating its rotational position relative to said console, said indicator spaced outwardly from a front face of said console on a longitudinal axis of said cam set;

a manually operable knob selectively interconnectable with said cam set for one-way rotation of said cam set and said dial when connected, said knob spaced axially outwardly from said dial; and

a timer dial protective shield mounted in a freely rotatable manner about said dial support member and extending outwardly from said axis to fully encompass said dial, said position indicated by said dial visible through said shield.

4,288,672

ILLUMINATED KEYBOARD APPARATUS

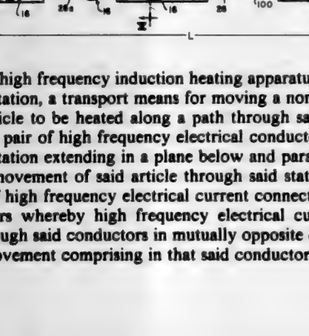
Richard E. Puccini, Taunton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1979, Ser. No. 106,777

Int. Cl.³ H01H *9/18*

U.S. Cl. 200—314 **13 Claims**

1. Keyboard apparatus comprising an escutcheon adapted to be mounted in a panel of a vehicle and having a surface with a plurality of key apertures therein, a thin flexible sheet underlying the escutcheon surface, the sheet having portions which are opaque and indicia portions which transmit light, a frame underlying the escutcheon surface and the flexible sheet, the frame being composed of light transmitting material, the frame having a top wall with a plurality of key member receiving apertures extending therethrough, key members composed of light transmitting material slidably received in respective key member receiving apertures, the key members each having a protrusion extending from a bottom surface thereof, light interrupting means formed on the remainder of the key member bottom surface, a circuit board disposed beneath the top wall of the frame, the circuit board having a plurality of switches mounted thereon, a switch being aligned with each aperture in the top wall of the frame so that depression of a key member by a force acting through the flexible sheet will cause actuation of a switch, the frame having light transmitting legs having first and second end portions, the legs depending downwardly from the second end portions and extending beyond the circuit board and terminating at the first end portions, a light source disposed beneath the circuit board, first light reflector surfaces located at the first end portions of the legs and arranged to reflect light from the light source up the legs to the second end portions, and second light reflector surfaces located at the second end portions of the legs and arranged to reflect light received from the first reflector surfaces laterally toward key member apertures and their respective key members whereby light transmitted from one of the second reflector surfaces will be reflected upwardly by the light interrupting surface on the bottom of a key member and through the transparent indicia portion of the flexible sheet.



4,288,673

HIGH FREQUENCY INDUCTION HEATING APPARATUS

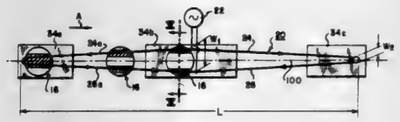
Kazuhisa Ishibashi, Tokyo, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,646

Claims priority, application Japan, Jul. 12, 1978, 53-84920; Jul. 12, 1978, 53-84921

Int. Cl.³ H05B *6/40*

U.S. Cl. 219—10.69 **4 Claims**



1. In a high frequency induction heating apparatus having a heating station, a transport means for moving a non-magnetic metal article to be heated along a path through said heating station, a pair of high frequency electrical conductors in said heating station extending in a plane below and parallel to the path of movement of said article through said station, and a source of high frequency electrical current connected to said conductors whereby high frequency electrical current will flow through said conductors in mutually opposite directions; the improvement comprising in that said conductors are symmetrically positioned with respect to said path of movement through the length of said station, in that each said conductor extends in a direction which is uniformly inclined at a constant angle to a portion of the path of movement of said article through said heating station, and in having a guide plate in a plane spaced above said conductors and parallel to said path of movement of said article through said heating station to form an unobstructed space through which said article may move with said plate being adapted to limit movement of the article away from said conductors due to any repulsion effect between said article and said conductors when high frequency current flows through said conductors.

4,288,674

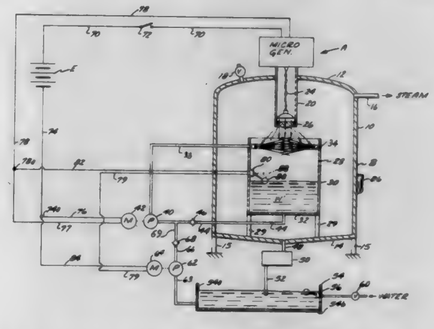
MICROWAVE ACTUATED STEAM GENERATOR

Graham D. Councell, 8242 Brookgreen Rd., Downey, Calif. 90240

Filed Apr. 21, 1980, Ser. No. 142,103

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 A **5 Claims**



1. In a steam generator having a boiler in the form of a hollow pressure vessel that has a top and bottom; a steam outlet in communication with the upper interior of said boiler; a pressure relief valve in communication with the upper interior of said boiler; a condensate drain in said bottom, a microwave generator; and a microwave emitter energized by said microwave generator, said emitter located in the upper interior of said boiler; and a source of water; and a source of electric power; the improvement for generating steam in said boiler, said improvement including:

a. a plurality of circumferentially spaced nozzles arranged as a horizontal ring in the upper interior portion of said boiler below said microwave emitter, said nozzles when supplied water under pressure transforming the latter to a plurality of sprays of fine droplets thereof, said sprays being directed horizontally towards one another to define a circular spray area on which microwaves from said emitter impinge to transform a first portion thereof to steam and a second portion of said droplets moving downwardly in said boiler by gravity;

b. a first pump and a first electric motor that drives the same, said pump having a first discharge outlet and a first suction inlet;

c. a container in said boiler below said nozzles that receives said second portion of said droplets that coalesce therein to a body of water in said container, and said microwaves that do not vaporize droplets impinging on said body of water to heat the same;

d. a first electric circuit extending from said source of electric power to said microwave generator and said first motor to concurrently energize said generator and motor;

e. a first conduit means that conducts water from said first discharge outlet to said nozzles to be transformed to said sprays;

f. a second conduit means that conducts water from said

container to said first suction inlet of said first pump to be recirculated to said nozzles to again be formed into said sprays;

g. a second pump and electric motor that drives the same, said second pump including a second discharge outlet and second suction inlet;

h. water level elevation sensing means in said container that becomes conductive only when said water level falls below a predetermined elevation;

i. third conduit means that connect said second suction inlet to said source of water;

j. fourth conduit means that connect said second discharge outlet to said second conduit;

k. a second electric circuit connected to said source of electric power and including said water level sensing means and said second motor, with said second pump being driven to supply make-up water to said first pump only when said water level in said container falls below said predetermined elevation; and

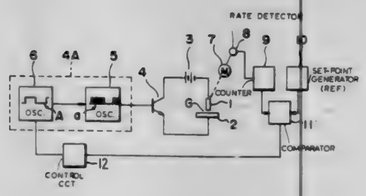
l. a steam trap in communication with said drain for discharging steam condensate to the exterior of said boiler.

4,288,675

CUTTING AREA RESPONSIVE EDM METHOD AND APPARATUS WITH CYCLICALLY INTERRUPTED PULSE TRAINS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 8, 1979, Ser. No. 18,537
Claims priority, application Japan, Mar. 9, 1978, 53-26822; Sep. 6, 1978, 53-109493; Sep. 12, 1978, 53-111986
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 M **15 Claims**



1. A method of electrical-discharge machining of a workpiece juxtaposed with a tool electrode across a dielectric-filled machining gap with machining surfaces of variable area as the tool electrode is advanced relatively toward the workpiece so as to maintain the gap spacing therebetween substantially constant, the method comprising the steps of:

applying across said machining gap pulse trains individually consisting of elementary pulses of predetermined on-time τon and off-time τoff, the pulse trains having a duration Ton constituting a first time element and the successive trains being separated by a cut-off interval Toff constituting a second time element;

sensing the instantaneous area of said machining surfaces during application of said pulse trains across said machining gap; and

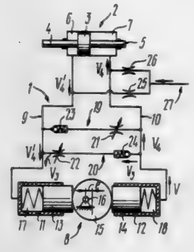
controlling at least one of said time elements in accordance with said sensed machining area so as to maintain the current density along said machining surfaces substantially constant in spite of change in said machining area during relative advance of said electrode.

4,288,676

METHOD OF CONTINUOUS FLASH BUTT WELDING AND HYDRAULIC DRIVE OF CONTINUOUS FLASH BUTT-WELDING MACHINE FOR REALIZATION OF THIS METHOD

Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47; Ivan A. Chernenko, ulitsa Vladimirskaya, 98/3, kv. 45; Mikhail V. Bogorsky, ulitsa Ozernaya, 30/51, kv. 120; Alexandr I. Kulesh, prospekt 40 let Oktyabrya, 114, korpus 2, kv. 59; Vitaly T. Cherednichok, Zadorozhny pereulok, 6, kv. 42, and Vladimir I. Tishura, ulitsa Chigorina, 55, kv. 27, all of Kiev, U.S.S.R.

Filed Jan. 19, 1979, Ser. No. 4,713
Int. Cl.³ B23K *11/04*
U.S. Cl. 219—100 **4 Claims**



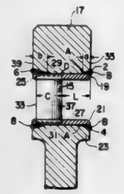
1. A method of continuous flash butt welding comprising: bringing together and moving apart the workpieces to be welded by imparting to at least one of them an oscillatory rectilinear motion along the line of bringing them together and moving apart with the amplitude in the movement of said at least one workpiece in the direction towards the other of said workpieces greater than the amplitude in the movement of the same said workpiece in the direction of moving apart, applying voltage to said workpieces being welded for flashing and heating the workpieces in the course of bringing them together and moving apart, and subsequently applying an upset force to said workpieces being welded.

4,288,677

WELDING METHOD OF TURBINE DIAPHRAGM

Shinji Sakata; Hirakazu Yokota; Tasuku Shimizu, all of Hitachi, and Yasuhiko Otawara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,458
Claims priority, application Japan, Sep. 29, 1978, 53/119391
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 ED **5 Claims**



1. A welding method of a turbine diaphragm comprising outer and inner wheels, a pair of spacers, and a plurality of nozzle blades secured between the spacers, the method comprising the steps of:

arranging the pair of spacers with the pluralty of nozzle blades between the outer wheel and the inner wheel so that the pair of spacers are fitted between the outer and inner wheels to provide abutments between the outer and inner wheels and the pair of spacers;

welding along the abutments between the outer and inner wheels and the pair of spacers at an inlet side of the turbine diphragm at which a motive fluid enters the turbine diaphragm, so that a weld depth from the inlet side of the turbine diaphragm will be at most 0.5 L, wherein L is a distance between the inlet side of the turbine diaphragm and a tip of the nozzle blades; and

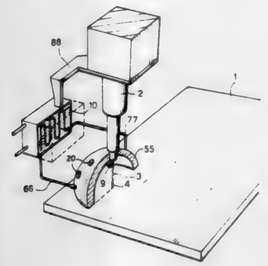
welding along the abutments between the outer and inner wheels and the pair of spacers at an outlet side of the turbine diaphragm at which the motive fluid exits the turbine diaphragm so that a weld depth at the outlet side will be at least 0.3 C, wherein C is a height of the nozzle blades.

4,288,678

APPARATUS FOR TREATING METAL WORKPIECES WITH LASER RADIATION

Aldo V. La Rocca, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 28, 1980, Ser. No. 125,315
Claims priority, application Italy, Mar. 5, 1979, 67467 A/79
Int. Cl.³ B23K *7/00*
U.S. Cl. 219—121 LE **3 Claims**



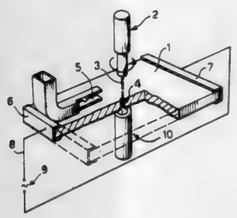
1. Apparatus for treating a metal workpiece with laser radiation, comprising a laser radiation generator arranged to generate and focus a laser beam onto a point on said workpiece, reflecting means arranged to refocus onto said point on said workpiece the radiation reflected therefrom and sensing means attached to said reflecting means for measuring physical and chemical parameters of the treated area of the workpiece by measurements of the radiation which reaches the said reflecting means after being reflected from the treated area of the workpiece.

4,288,679

METHOD OF MICRODRILLING METAL WORKPIECES USING A POWER LASER

Aldo V. La Rocca, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 28, 1980, Ser. No. 125,317
Int. Cl.³ B23K *26/16*
U.S. Cl. 219—121 LL **3 Claims**



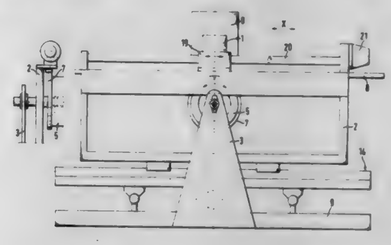
1. A method for microdrilling a hole in a metal workpiece using a power laser beam the action of which causes solid workpiece metal to be transformed into both liquid and vapour phases, said method including the operation of heating the workpiece to a temperature sufficient to cause both the liquid phase formed directly by the action of the laser beam and the liquid phase caused by the condensation of the vapour phase on the wall of the hole being formed, to be maintained in the liquid state for a period of time long enough to permit the uniform spreading of these liquid phases over the wall of the hole wherein said heating is accomplished by directing a plasma torch of a neutral gas along the axis of said laser beam, onto the face of the workpiece opposite that on which the laser beam acts whereby upon the formation of a through hole in the workpiece by the action of the laser beam, the plasma jet serves to effect further spreading of the liquid phases over the wall of the hole.

4,288,680

APPARATUS FOR CUTTING MOULD NOTCHES FOR STRIP STEEL CUTTING TOOLS

Walter Röder, Frankfurt, Fed. Rep. of Germany, assignor to R + S Stanzformen GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,390
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909140; Dec. 13, 1979, 2950149
Int. Cl.³ B23K *26/08*
U.S. Cl. 219—121 LG **13 Claims**



1. Apparatus for cutting notches in the outer circumferential surface of a hollow cylindrical drum to allow sheet steel strips to be fitted in the notches in the drum to form a cutting tool, each of the steel strips having a cutting edge of a desired length which edge is positioned a certain radial distance outwardly from the outer circumferential surface of the drum to define a cutting edge diameter, comprising a machine frame, a laser cutting set for providing a laser beam extending in a certain direction for cutting the notches in a drum, a carriage for supporting said laser cutting set, said carriage being movable on said machine frame along two mutually perpendicular axes which define the plane of movement for said carriage, a mounting shaft on said carriage adapted to support a drum coaxial with the axis of said mounting shaft for rotating the drum about the axis of said mounting shaft, said mounting shaft extending perpendicularly of the certain direction of the laser beam and parallel to one of the axes along which said carriage is movable and spaced from the plane of movement of said carriage, a drive wheel coaxially fixed to said mounting shaft for rotating said mounting shaft, said drive wheel having a radially outer circumferential engagement surface being adapted to correspond to the cutting edge diameter of the sheet steel strips to be fitted into the drum adapted to be supported on said mounting shaft, and an elongated guide member fixed to said machine frame and extending parallel to said plane of movement of said carriage for contacting said engagement surface and rotating said drive wheel for rotating a drum mounted on said mounting shaft when said carriage is moved relative to said guide member so that the length of notches cut by the laser beam in the outer circumferential surface of the drum mounted on said mounting shaft in a direction transverse of the axis of said

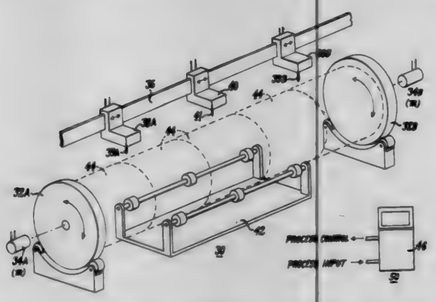
mounting shaft are shorter than the comparable lengths of the cutting edges of the steel strips to be fitted into the transversely extending notches in accordance with the relation between the radial dimensions of the cutting edge and the outer circumferential surface of the drum from the axis of said mounting shaft.

4,288,681

APPARATUS FOR FABRICATING ISOLATED PHASE BUS

Roy A. Niemann, Aston, Pa., assignor to General Electric Company, Philadephia, Pa.

Filed Jan. 30, 1979, Ser. No. 7,546
Int. Cl.³ B23K 9/12
U.S. Cl. 219—125.11 **14 Claims**



1. Apparatus for use in processing a plurality of cylindrical workpieces employed in the fabrication of an isolated phase bus system, the isolated phase bus system being of the type which includes a cylindrical bus conductor and a mating enclosure therefor, which comprises:

(a) at least one rotatable headstock, said rotatable headstock being of a configuration to securely receive an end of a first one of a plurality of cylindrical workpieces of a first diameter;

(b) support means for rotatably supporting said plurality of cylindrical workpieces when said plurality of cylindrical workpieces are disposed in end-to-end manner such that the longitudinal axes thereof are substantially coincident;

(c) a side beam adjacent to said headstock and extending along a line parallel to the axis of rotation of said rotatable headstock;

(d) controllable workpiece welding means coupled to said side beam, said welding means being capable of linear translation along the length of said side beam;

(e) controllable workpiece cutting means comprising a cutting torch coupled to said side beam, said cutting means being capable of linear translation along the length of said side beam independently of said welding means;

(f) drive means, which includes:

(i) controllable first drive means for rotating said headstock so that the cylindrical workpiece secured thereto is caused to rotate about its longitudinal axis,

(ii) controllable second drive means for causing said welding means to translate along said side beam;

(iii) controllable third drive means for causing said cutting means to translate along said side beam independently of said welding means; and

(g) processing control means, which includes:

(i) first control means for controlling said first drive means;

(ii) second control means for controlling said second drive means and the activation of said welding means into welding operation;

(iii) third control means for controlling said third drive means and the activation of said cutting means into cutting operation and operable to activate said cutting means while said cutting means is being translated along said side beam; and

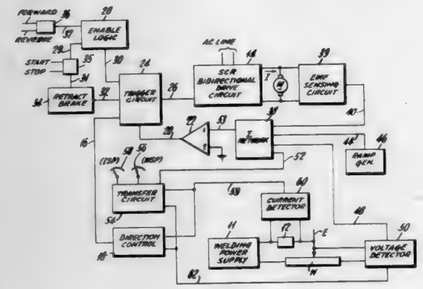
(iv) fourth control means for coordinating said first, second and third control means (a) to weld a plurality of said cylindrical workpieces together in end-to-end manner and (b) to then cut a plurality of openings in said welded-together workpieces, said welding locations and said openings being substantially precisely located in a predetermined reproducible manner.

4,288,682

WELDING SYSTEM WITH REVERSIBLE DRIVE MOTOR CONTROL

Tibor E. Toth, Florence, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,065
Int. Cl.³ B23K 9/12
U.S. Cl. 219—137.71 **6 Claims**



1. An electric welding system including an electrode, a workpiece, a power supply connected in series circuit relationship with said electrode and workpiece, a drive motor for feeding said electrode relative to said workpiece and a governor control system for controlling the speed and direction of rotation of said drive motor, said governor control system comprising:

a source of driving potential;

a bi-directional circuit including a first circuit drive means for connecting said source of driving potential across said drive motor in a first direction and a second circuit drive means for connecting said source of driving potential across said drive motor in a second direction opposite said first direction;

means for generating a current signal in response to the presence of current in said series circuit;

means responsive to arc voltage for generating a first voltage signal when the arc voltage is above a predetermined magnitude and a second voltage signal which varies in magnitude in proportion to variation in arc voltage;

means for generating a direction signal having a first logical output state in response to the presence of said first voltage signal and having a second logical output state in response to the absence of said first voltage signal;

logic means for enabling said first and second circuit drive means in response to the logical output state of said direction means;

first adjustable means for providing a first speed control signal;

second adjustable means for providing a second speed control signal;

speed control means for controlling the speed of the motor in response to said second voltage signal and to said first and second control signals; and

transfer circuit means responsive to said current signal and said first voltage signal for inhibiting either said first speed control signal or said second speed control signal such that when said current signal is present in the absence of said first voltage signal said second speed control signal is

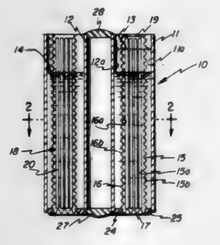
inhibited and when both said current and voltage signals are present said first speed control signal is inhibited.

4,288,683

INSULATING POROUS MATRICES FOR ELECTRODE BOILERS

Fritz G. Will, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,373
Int. Cl.³ H05B 3/60; F22B 1/30
U.S. Cl. 219—290 **20 Claims**



1. An electrode boiler comprising:

a first electrode having a major surface area;

a second electrode having a major surface area, said first and second electrodes being arranged in spaced relationship with said major surface areas in juxtaposition;

first and second spaced, porous electrically insulating support walls disposed between and spaced from each of said electrodes, each support wall having a major surface, said first support wall being disposed such that its major surface is in spaced juxtaposition with said major surface area of said first electrode, and said second support wall being disposed such that its major surface is in spaced juxtaposition with said major surface area of said second electrode; and

a plurality of electrically insulating members disposed between said walls, said members being arranged to provide paths exhibiting a high resistance to electrical current flow along a direction generally perpendicular to said major surfaces of said walls and paths exhibiting a low resistance to fluid flow along a direction generally parallel to said major surfaces of said walls; the space between each electrode and the respective juxtaposed support wall being free of said insulating members to form a considerably lower electrical resistance zone which reduces steam formation and arcing.

4,288,684

ELECTRODE TYPE STEAM VAPORIZER

Hisao Katou, and Yoshiya Sakata, both of c/o TDK Electronics Co., Ltd., 14-6, Uchikanda 2-chome, Chiyoda-ku, Tokyo, Japan

Filed Feb. 24, 1978, Ser. No. 880,981
Claims priority, application Japan, Oct. 18, 1977, 52/138713[U]; Oct. 18, 1977, 52/138714[U]; Oct. 22, 1977, 52/127161
Int. Cl.³ H05B 3/60; F22B 1/30
U.S. Cl. 219—295 **7 Claims**

1. An electrode type steam vaporizer comprising:

a container body forming a water receptacle, said container body including a surface;

an electrode unit having one end extending into said container body and fittable into an aperture of said surface and another end extending from said container body, said electrode unit including a power source connection external of and adjacent to said body for supplying power to said electrode unit whereby said water in said receptacle is vaporized;

a steam nozzle formed on the other end of said electrode unit;

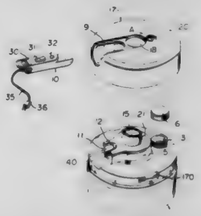
a removable power source connector adapted to be connected to said power source connection;

a water inlet on said surface;

a cover member covering said surface, said cover including a portion adapted to receive said removable power source connector and to provide access for said power source connector to said power source connection of said electrode unit, wherein said cover member includes an aperture through which said power source connector extends when connected to said power source connection, said cover member and said power source connector cooperating to prevent said cover from being removed from said container body when said power source connector and said power source connection are connected together;

cooperable releasable stopper means on said power source connector and one of said container body surface and said electrode unit for preventing the connection of said power source connector to the power source connection of said electrode unit; and

a stopper means releasing means on said portion of said cover member, said releasing means adapted to contact and release said releasable stopper means when said power source connector is inserted into said portion of said cover and said cover member is enclosing said surface.



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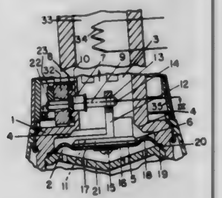
FLOW-ACTIVATED RESISTANCE HEATER FOR WATER

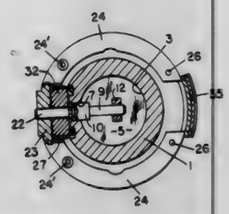
Helio Tommaso, Atibaia, Brazil, assignor to Produtos Eletricos Corona Ltda., Brazil

Filed Mar. 12, 1979, Ser. No. 19,839
Int. Cl.³ H05B 1/02; H01H 35/40; F24H 1/10
U.S. Cl. 219—309 **3 Claims**

1. In an apparatus for heating water including a hollow body through which a stream of water is permitted to flow, said body defining a heating chamber in which is positioned an electrical resistance heater, said body also having a receiving chamber therein for receiving the inflowing water and an intermediate duct for providing flow of water from said receiving chamber into said heating chamber, and activator means for energizing the resistance heater only in response to the flow of water into said receiving chamber, said activator means including piston means movably positioned within said body for effectively separating said receiving chamber from said intermediate duct, said piston means having small opening means associated therewith for restricting flow of water from said receiving chamber into said intermediate duct, said piston means being normally maintained in an inactive position under nonflow conditions and being moved a limited extent into an activated position in response to flow of water into said receiving chamber, electrical switching means positioned exteriorly of said body for selectively energizing or de-energizing said resistance heater, and lever-type link means operatively connected between said piston means and said switch means for activating said switch means to energize said heater when said piston means is moved into its activated position responsive to

flow of water, said link means having a portion thereof projecting into said intermediate duct and operatively connected to said piston means, said link means projecting through the wall of said body and having a portion thereof projecting exteriorly of said body for operative cooperation with said switch means, the improvement wherein said body includes a tubular portion defining therein said intermediate duct, said switch means including a pair of stationary contacts disposed exteriorly of said tubular portion adjacent one side thereof, said switch means including a further pair of movable contacts disposed closely adjacent and in opposed relationship to said fixed contacts, said movable contacts being connected to and movable by a carrier which is movably supported adjacent the exterior of said tubular portion for movement in a direction





substantially parallel with the axis of said tubular portion, said carrier being connected to the exteriorly projecting portion of said link means, said movable contacts being associated with a pair of substantially semicircular springlike conductive plates which are disposed in opposed relationship and substantially encircle the tubular portion, said carrier being connected between said springlike plates adjacent one end thereof and said movable contacts also being disposed adjacent said one end of said springlike plates, the other opposed ends of said springlike plates being fixedly positioned relative to said body and disposed relative to said tubular portion substantially diametrically opposite from said carrier, one said pair of contacts being electrically connected to said heater, and the other said pair of contacts being joined to a source of electrical energy.

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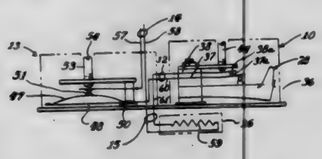
THERMOSTAT FOR POPCORN COOKING CONTAINERS OR THE LIKE

Charles D. Cretors, Lake Forest, Ill., assignor to C. Cretors and Company, Chicago, Ill.

Filed Dec. 17, 1979, Ser. No. 104,569

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—512 **9 Claims**



1. In a cooking apparatus for popcorn popping or the like, including a cooking container, an electric heating element for heating said container and a cooking temperature thermostat mounted on said container and connected in series with said electrical heating element, said cooking temperature thermostat being arranged to open when the temperature reaches a preset value and to close when the temperature drops below a value somewhat below the preset value, a safety thermostat arranged to be mounted directly on said cooking container for connection between said cooking temperature control thermostat and said heating element, said safety thermostat comprising: a support structure arranged to be firmly mounted on said cooking container, a temperature sensitive member having a first portion secured to said support structure to directly receive heat from said container through said support structure and having a second portion movable relative to said first portion in proportion to the temperature of said temperature sensitive member and in proportion to the temperature of said cooking container, trip means operable between a stable reset condition and a stable tripped condition and connected to said second portion of said temperature sensitive member for operation by said temperature sensitive member from a reset condition to said tripped condition when the temperature of said temperature sensitive member is at a certain high temperature of on the order of at least 500° F., said trip means being thereafter operative to remain in said tripped condition irrespective of lowering of the temperature of said temperature sensitive member to a temperature of on the order of 70° F. or less, and electric switch means including said electrical contacts connected to said trip means for operation therefrom.

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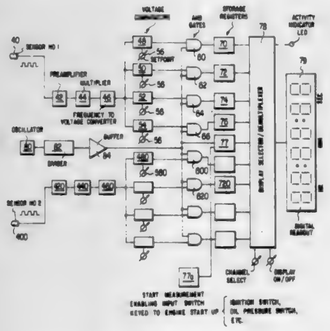
MULTIPOINT DIGITAL TACHOGRAPH

Michael J. Zinn, Noblesville, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Aug. 16, 1979, Ser. No. 67,171

Int. Cl.³ G07C *1/04*

U.S. Cl. 235—92 T **4 Claims**



1. A multipoint digital tachograph system for measuring, storing, and displaying the amount of total time as well as time spent at or above multiple points of interest, such as at pre-programmed rotational speeds of two rotary elements, the rotary elements rotating at different but related speeds, the system including a channel for each rotary element, each channel including,

(a) a sensor for sensing and converting to pulses the rotational speed of a rotary element,

(b) means for converting the pulses to a voltage, to thereby obtain a voltage proportional to rotary speed,

(c) a plurality of voltage comparators each coupled to receive said rotary speed voltage, each comparator passing a signal only after a predetermined reference voltage associated with it has been fed to it,

(d) a plurality of AND gates each having means for energizing one input terminal thereof and having its other terminal coupled to an associated one of said voltage comparators, whereby each AND gate opens and passes a signal to its output terminal only when and after its associated voltage comparator passes a signal responsive to equality between the predetermined reference voltage and the said rotary speed voltage,

(e) a plurality of storage registers each coupled to a respective one of said AND gates, each register storing the time its associated AND gate passes a signal from the latter's output,

(f) means for selectively reading and for displaying the information in a selected one of the storage registers,

(g) whereby the operation time of each rotary element, at or above a desired rotary speed as well as the total time of operation, may be displayed for inspection.

4,288,688

TOLL ROAD TERMINAL MACHINE

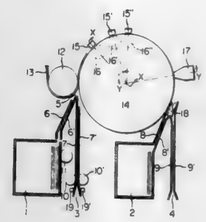
Yosito Kiyama; Shinichi Tachibana, both of Kobe; Riichiro Yamashita, Kakogawa, and Takeshi Horino, Yokohama, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Matsushita Tsushin Kogyo Kabushiki Kaisha, Kanagawa, both of, Japan

Filed Mar. 13, 1979, Ser. No. 20,232

Claims priority, application Japan, Mar. 17, 1978, 53-29957

Int. Cl.³ G07B *15/02*; G06K *13/00*

U.S. Cl. 235—384 **3 Claims**



1. A toll road machine for issuing transit tickets when used at an entrance gate and for verifying transit tickets when used as an exit gate, each of said transit tickets having a magnetic recording zone adapted for writing information thereon and for reading out information therefrom, and having a printing zone adapted for printing information thereon; said machine comprising:

a transit ticket hopper for storing a plurality of unused transit tickets;

an insertion port for manually inserting a transit ticket having a previously recorded magnetic recording zone;

a joining conveyor section and a main conveyor section, and joining conveyor section for conveying either one of said plurality of transit tickets stored in said transit ticket hopper or said transit ticket inserted into said insertion port to said main conveyor section, said main conveyor section comprising a magnetic head means for writing information on the magnetic recording zone of said transit ticket conveyed thereto and for reading information from the magnetic recording zone of said transit ticket conveyed thereto and comprising printing means for printing information on the printing zone of said transit ticket conveyed thereto;

a stacker means for storing transit tickets;

an ejection port for ejecting transit tickets;

a separating conveyor section connected to said main conveyor section for conveying transit tickets from said main conveyor section to either said stacker means or to said ejection port;

a conveyor control means and an information control means, operatively electrically connected to each other and to said main and separating conveyor sections, and a manual input means operatively electrically connected to said conveyor control and information control means;

wherein when said machine is used as an entrance gate, said machine issues one of said plurality of transit tickets stored in said transit ticket hopper by ejection through said ejection port subsequent to the writing of information on the magnetic recording zone and the printing of information on the printing zone thereof by said main conveyor section in conjunction with said conveyor control and information control means; and

wherein when said machine is used as an exit gate, said machine verifies a transit ticket manually inserted in said insertion port by reading the information written on the magnetic recording zone thereof by said main conveyor section in conjunction with said conveyor control and information control means and then stores said inserted transit ticket in said stacker means.

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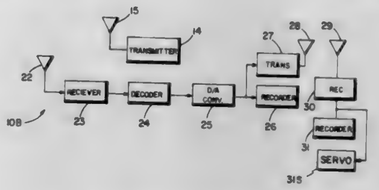
AUTOMATIC VEHICLE IDENTIFICATION SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Christian Grund, 2035 Burr Ave., Bronx, N.Y. 10461

Filed Oct. 12, 1979, Ser. No. 84,429

Int. Cl.³ G06K *7/00*; B61L *21/00*; G01S *9/56*

U.S. Cl. 235—435 **14 Claims**



1. A method of identifying a moving object such as a travelling vehicle comprising:

disposing on said object an electrical circuit means defined by a plurality of circuit elements capable of modulating a short wave receiver in a specific manner including the generation of a code which generated code is unique to said object,

moving said object past a detection station containing a source of radio frequency energy, a short wave receiving means and a code detection means connected to said receiving means, detecting said object as it moves past said detection station and generating a control signal upon effecting such object detection and applying said control signal to effect the energization of said short wave receiving means, said code detection means and said source of radio frequency energy to cause said source to generate a radio frequency field and applying energy from said field to said electrical circuit means on said object whereby said detection means detects the code defined by said plurality of circuit elements of said electrical circuit means,

generating signals on the output of said detection means, which signals define information representative of such code, and

identifying said objects as it moves past said detection station by applying said code signals to activate a transducing means operable to effect such object identification.

4,288,690

ILLUMINATION SYSTEM

Medford D. Sanner, Irving, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

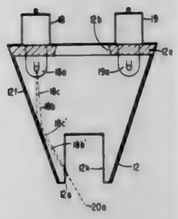
Filed Oct. 29, 1979, Ser. No. 88,963

Int. Cl.³ H01J *3/14*

U.S. Cl. 250—216 **4 Claims**

1. Improvement in a data field illuminator for uniformly

brightening a data field viewed by a photo sensor array in an optical character recognition system wherein the illuminator has side walls converging from an enclosure plate to a first aperture, the improvement comprising two additional apertures in opposite side walls of said illuminator, said apertures adjacent to said first apertures.

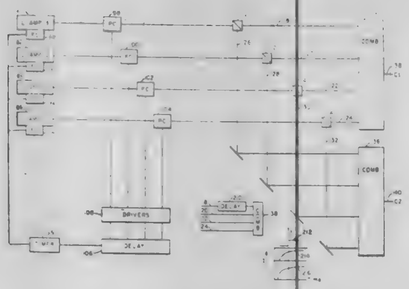


4,288,691

LASER PULSE SHAPING

James A. Horton, Kennewick, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Dec. 19, 1977, Ser. No. 861,941
Int. Cl.[2] B01D *59/44;* G02F *1/16*
U.S. Cl. 250—281 19 Claims



1. A system for pulse shaping pulsed radiation employed in photoexcitation comprising:

means defining an environment of particles;

a source of pulsed radiation;

means responsive to the pulsed radiation from said source for segmenting each pulse of radiation into temporally distinct segments;

means for separating the segments onto separate paths; and

means for applying the pulse segments on at least one of the different paths for producing photoexcitation of particles of said environment.

4,288,692

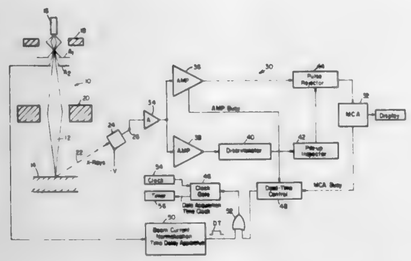
BEAM CURRENT NORMALIZATION IN AN X-RAY MICROANALYSIS INSTRUMENT

Frederick H. Schamber, and Jon J. McCarthy, both of Middleton, Wis., assignors to Tracor Northern, Inc., Middleton, Wis.

Filed Aug. 6, 1979, Ser. No. 63,734
Int. Cl.[3] G01N *23/00*
U.S. Cl. 250—310 15 Claims

1. In an electron column instrument for quantitative energy dispersive x-ray microanalysis including an optical system for establishing a focused electron beam of a preset beam current level directed onto an analysis specimen, means for analyzing the spectrum of x-rays emitted from the specimen to accumulate a count of x-ray intensities, and an elapsed time counter for timing out an analysis time period, the improvement comprising:

a beam current sensor for monitoring electron beam current stability; and



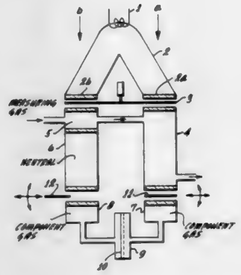
means for introducing delay time in the elapsed time counting of the analysis time period as a function of electron beam current stability to control the time of actual data accumulation such that x-ray spectral data is acquired over a defined beam current integral.

4,288,693

NONDISPERSIVE INFRARED GAS ANALYZER

Walter Fabinski, Kriftel, and Udo Deptolla, Ober Olm, both of Fed. Rep. of Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,549
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827345; Mar. 12, 1979, 2909688
Int. Cl.[3] G01J *1/00;* G01N *21/25*
U.S. Cl. 250—345 6 Claims



1. Nondispersive infrared gas analyzer which includes a particular component in a host gas, the host gas including at least one component having one or more infrared absorption bands which overlap an infrared absorption band of the particular component, the analyzer including a measuring beam path and a reference beam path and some means for providing infrared radiation beams of the same frequency band to the two paths, further including modulating means for the beams, the improvement comprising in combination:

a first, relatively short cell, being passed through by the gas to be analyzed and being disposed in one of said paths;

a second, relatively long cell, being also passed through by the gas to be analyzed and being disposed in another one of said paths;

a pair of receiver cells disposed respectively in said paths and being filled with the gas of said particular component;

differential pressure-sensing means coupled to the receiver cells and producing a signal representative of the concentration of the particular component in the host gas; and

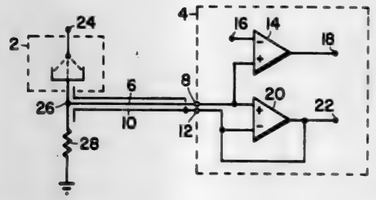
an interference filter in the beam path which includes the second, long cell, the filter having an absorption characteristic for a range of said overlapping absorption bands, but passing nonoverlapping portions of the absorption bands of the particular component, the filter having a disposition to permit a portion of the respective beam to pass without filtering.

4,288,694

HIGH-IMPEDANCE IGFET INPUT CIRCUIT SUITABLE FOR SMOKE DETECTOR I.C.

Richard W. Ahrons, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1977, Ser. No. 847,975
Int. Cl.[3] G01T *1/18*
U.S. Cl. 250—374 12 Claims



1. An electronic circuit for the transmission of an electrical signal in which the effect of leakage paths is reduced comprising:

(a) input terminal means for receiving said electrical signal,

(b) amplifier means coupled to said input terminal means for generating an output voltage signal having a voltage substantially equal to the voltage of said electrical signal,

(c) a first conductor coupled to said input terminal means for conducting said electrical signal, and

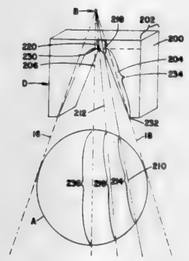
(d) a second conductor coupled to said amplifier means for conducting the output voltage signal, and disposed in close proximity to said first conductor for maintaining said input terminal means at a high impedance.

4,288,695

COMPUTERIZED TOMOGRAPHIC SCANNER WITH SHAPED RADIATION FILTER

Ronald G. Walters, Aurora, and Roland W. Carlson, Lyndhurst, both of Ohio, assignors to Technicare Corporation, Cleveland, Ohio

Filed Apr. 13, 1979, Ser. No. 29,877
Int. Cl.[3] G01N *23/02;* G21F *3/02*
U.S. Cl. 250—445 T 20 Claims



1. An apparatus for reconstructing an image of at least a region of an object positioned in a scan circle comprising:

a source of radiation having a polychromatic spectrum for irradiating the scan circle with a beam radiation from a plurality of directions;

at least one radiation detector positioned to receive radiation from said source which beam of radiation has traversed the scan circle along a plurality of paths through the scan circle;

a radiation filter positioned between the source of radiation and the detector;

data collection means for collecting data indicative of the intensity of radiation received by said at least one radiation detector along the plurality of paths and organizing the collected data into data lines, said data collection means operatively connected with said at least one detector;

beam hardness correction means for adjusting said data lines for non-linearities introduced by the polychromatic spectrum of radiation from the source of polychromatic radiation;

filter correction means for adjusting said data lines for non-linearities introduced by alterations to the polychromatic spectrum of the radiation caused by said radiation filter, said beam hardness correction means and said filter correction means being operatively connected with said data collection means; and

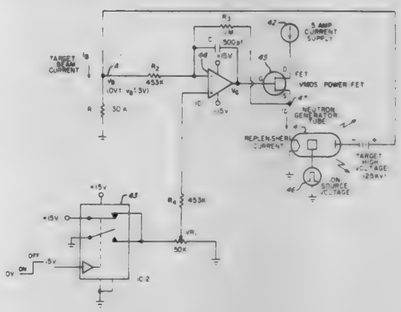
reconstruction means for reconstructing the data lines into a representation of an image of said region, said reconstruction means being operatively connected with said beam hardness correction means and said filter correction means.

4,288,696

WELL LOGGING NEUTRON GENERATOR CONTROL SYSTEM

Harold E. Peelman, and James R. Bridges, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 29, 1979, Ser. No. 53,627
Int. Cl.[3] G21G *4/02*
U.S. Cl. 250—502 8 Claims



1. A control system for controlling the output of a sealed off generator tube having a target material, an ion source, and a replenisher pressure regulator, comprising:

means for monitoring the average target current of said tube and for developing a voltage signal representative thereof;

means for comparing a function of said average target current representative signal with a reference voltage signal and for developing a control voltage signal representative of the comparison of said signals, said comparing means including an operational amplifier and means for summing said target current representative signal and a voltage signal representative of the replenisher current of said tube to form a summation signal and for comparing said summation signal and said reference voltage signal in said operational amplifier to provide an output control signal; and

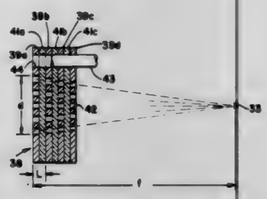
control means, responsive to said control signal, for controlling current flow to the replenisher of said tube as a function thereof.

4,288,697

LAMINATE RADIATION COLLIMATOR

Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Filed May 3, 1979, Ser. No. 35,733
Int. Cl.³ G02B *5/00*; G21K *1/00*; H01J *1/52*
U.S. Cl. 250—505 **12 Claims**



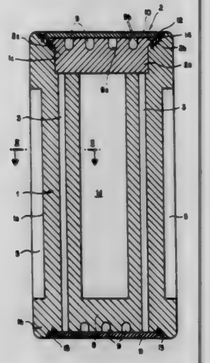
1. A radiation collimator defining a plurality of spaced apart radiation transmissive paths separated by radiation absorbent regions for suppressing intercepted radiation other than intercepted radiation which is traveling along said plurality of paths, wherein said collimator is comprised of a plurality of sheets of material each extending across said plurality of paths, each of said sheets of material being formed of a lamination of radiation transmissive material having a lamination of radiation absorbent material on at least one surface, said lamination of radiation absorbent material of each of said sheets being transpierced by a plurality of spaced apart radiation transmissive passages, corresponding ones of said passages of each of said laminations of radiation absorbent material being aligned to establish said radiation transmissive paths of said collimator.

4,288,698

TRANSPORT AND STORAGE VESSEL FOR RADIOACTIVE MATERIALS

Henning Baatz, Essen; Dieter Rittscher, Heiligenhaus, and Jurgen Fischer, Essen, all of Fed. Rep. of Germany, assignors to GNS Gesellschaft für Nuklear-Service mbH, Essen, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,276
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856620
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—506 **8 Claims**



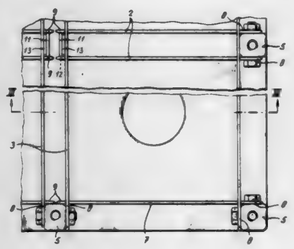
1. A transport and storage vessel for radioactive material, especially nuclear power plant waste, comprising a cast receptacle of a gamma-radiation shielding material having vertical walls defining a compartment for receiving said radioactive material, a bottom and a cover closing said compartment, at least said vertical walls being formed with spaced apart longitudinal passages of circular section with a spacing between said passages being equal to at least twice the diameter of said passages, a neutron moderator filling said passages, the volume of said neutron moderator in said passages being at least equal to the volume of an imaginary layer of said material applied along the exterior of an equivalent vessel to achieve a predetermined attenuation of neutron emission.

4,288,699

STORAGE RACK FOR THE STORAGE OF FUEL ELEMENTS OF NUCLEAR REACTORS

Adrianus van der Vlis, Vlaardingen, and Evert C. Boucherie, Kortgene, both of Netherlands, assignors to De Rotterdamsche Droogdok Maatschappij B.V., Rotterdam, Netherlands

Filed Apr. 6, 1979, Ser. No. 27,852
Claims priority, application Netherlands, Apr. 7, 1978, 7803742
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—507 **13 Claims**



1. A storage rack for the storage of fuel elements of nuclear reactors consisting of a sheet metal lattice arrangement constituting a plurality of abutting similar vertical storage cases having a rectangular cross section, characterized in that said lattice arrangement is constructed of a plurality of mutually substantially perpendicular sheet elements having a sharply shaped contour, the sheet elements in one of the two perpendicular directions being continuous traversing sheet elements forming walls and extending over the widths of a plurality of cases of the lattice arrangement, two adjacent traversing sheet elements being spaced at a mutual distance substantially corresponding with the width of a storage case and all sheet elements in the other of the two perpendicular directions being narrow sheet elements each extending only substantially over the width of one storage case, the narrow sheet elements at the opposite long edges thereof being provided with lugs protruding from the edges, the traversing sheet elements having openings formed therein for receiving the lugs, said lugs having openings extending therethrough for receiving wedges, the opening in the lug being positioned on the opposite side of a traversing sheet element from the narrow sheet element when the lug is inserted through an opening in the traversing sheet element, and wedges insertable into the openings in the lugs so that the long edges of the narrow sheet elements may be pressed tightly against the traversing sheet elements.

4,288,700

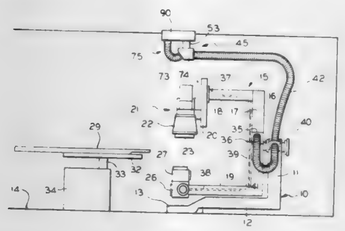
CABLE HANDLING DEVICE FOR DIAGNOSTIC X-RAY APPARATUS

Joseph J. Grass; David M. Barrett, both of Brookfield, and Randolph N. Wendt, Milwaukee, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,881
Int. Cl.³ H01J *35/16*; H02G *15/08*
U.S. Cl. 250—523 **6 Claims**

4. A device for handling a group of cables which extend in a room to and from x-ray equipment, said equipment including: An L-arm comprised of unitary vertical and horizontal sections, the horizontal section being supported on one end for enabling said section to rotate about a vertical axis in a horizontal plane; a U-arm comprising a base section mounted on said vertical section of the L-arm for rotation in vertical planes about a horizontal axis and a pair of radially spaced apart arm sections projecting from said base section; and, x-ray imaging and x-ray source means mounted on said spaced apart arm sections, respectively, said cable handling device comprising:

axle means mounted above said equipment and generally horizontally extending boom arm means for supporting said cable group, said boom arm means being mounted to said axle means for swinging about a vertical axis and for supporting a portion of said cable group generally horizontally with another continuous portion of said cable group extending beyond the support of said boom arm means being disposed downwardly for coupling to said x-ray equipment,



a swivel mechanism having a passageway for enabling said group of cables to run generally vertically and then to become generally horizontal on said boom arm means, said swivel mechanism being rotatable about an axis that is spaced from the axis of said axle means,

a first flexible tubular enclosure surrounding the cable portion between said swivel means and said boom arm means and having one end fastened to said boom arm means and an opposite end fastened to said swivel means to enable relieving the twist which would be otherwise imparted to said tubular enclosure by swinging of said boom arm means, and

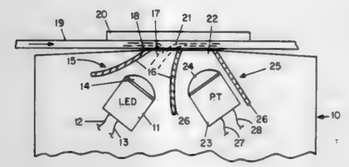
a second flexible tubular enclosure surrounding the portion of the group of cables extending between said boom arm means and said x-ray equipment.

4,288,701

MARK SENSING DETECTOR

Roy K. Hill, Bristol, Va., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,968
Int. Cl.³ G06K *7/14*
U.S. Cl. 250—569 **11 Claims**



10. A method for sensing partially opaque marks on a fiber paper object comprising the steps of:

placing a mark to be sensed at a sensing station,

directing a source of high-intensity light through a portion of said mark and into the fibers of said paper object below said mark, and

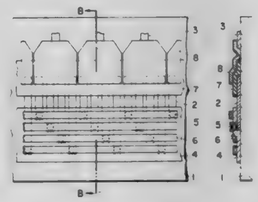
detecting the relative amount of light being transmitted transversely through said fibers of said paper object by detecting the light in a portion of said fibers at a point adjacent the portion of the mark being exposed to said high-intensity light.

4,288,702

IMAGE PICKUP DEVICE HAVING ELECTRODE MATRIX COUPLING

Takashi Ozawa, and Mutsuo Takenouchi, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,619
Claims priority, application Japan, Dec. 18, 1978, 53-157826
Int. Cl.³ H01L *27/14, 31/00*
U.S. Cl. 250—578 **4 Claims**



1. An image pickup device comprising: a plurality of individual electrodes divided into a plurality of groups, said individual electrodes being provided on one surface of a photoconductive film; a plurality of common electrodes disposed on an opposite surface of said photoconductive film opposite said groups of individual electrodes respectively forming light receiving elements with said individual electrodes; and common conductors connecting in the form of a matrix said individual electrodes which are provided at corresponding positions respectively in said groups of individual electrodes, at least one of said individual electrodes and said common electrodes being transparent electrodes so that when an optical image is projected onto said light receiving elements signal charges provided by said light receiving elements are stored in a stray capacitor in a common wiring section, said common wiring section being formed on the substrate of said light receiving elements, and the length of each common conductor of the common wiring section is sufficiently longer than the length of each individual electrode such that the impedances and stray capacitances of wirings from said light receiving elements to matrix wiring ends are substantially equal to one another.

4,288,703

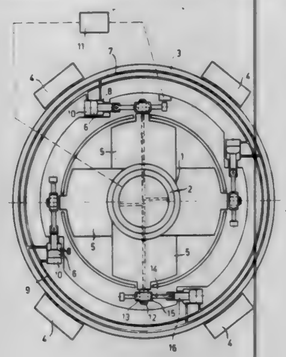
LARGE DIAMETER HYDROELECTRIC MACHINE

Friedrich Schneebeli, Oberengstringen, Switzerland, and Mario Biondetti, Schio, Italy, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Feb. 21, 1980, Ser. No. 123,465
Claims priority, application Switzerland, Feb. 26, 1979, 1857/79; Fed. Rep. of Germany, Jul. 16, 1979, 2933062
Int. Cl.³ F01D *15/10*; F03B *3/14, 13/00*
U.S. Cl. 290—52 **6 Claims**

1. An hydroelectric machine having an internal rotor comprising the turbine blades of an hydraulic machine and an external rotor comprising the rotor of an electric machine; a separate radial bearing for each of said rotors; an articulated coupling connecting the end of each turbine blade to the external rotor, said coupling permitting relative radial movement therebetween; and force compensating means connecting the

end of each turbine blade to the external rotor, said compensating means permitting circumferential movement between the



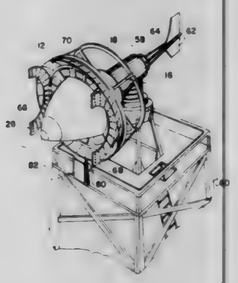
turbine blades and the external rotor while transmitting circumferential forces therebetween.

4,288,704

WIND DRIVEN GENERATOR WITH BLADE PROTECTING MEANS

James H. Bosard, 83-02 Dongan Ave., Elmhurst, N.Y. 11373

Filed Dec. 19, 1978, Ser. No. 970,837
Int. Cl.³ F03D *9/00*; H02P *9/04*; F03D *7/00*; F03B *13/00*
U.S. Cl. 290—55 **3 Claims**



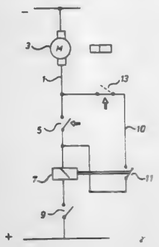
1. An electric current producing windmill comprising a windwheel having blades thereon; a generator; a housing for said windwheel; said housing includes a front disc having an open circular area and a dished peripheral wall; a conical wind deflector mounted centrally of said disc, and forward of the windwheel, for deflecting wind to the outer part of said blades; a shaft having one end rotatably mounted inside the forward tip of said deflector; said windwheel being keyed thereon; the other end of said shaft being coupled to one shaft of the generator for rotating same; and a pair of perforated semi-circular shields, one of which is hinged on each side of said deflector; said shields linked to means to pivot said shields about their respective hinges to a closed position for automatically covering the space between the outer periphery of said deflector and the inner periphery of said wall when the wind velocity exceeds a given speed, said perforated shields allowing wind currents to flow through perforations in the shield so as to power the windmill and its coupled generator when the shields are in the said closed position.

4,288,705

MECHANISM FOR REGULATING A WIPER MOTOR IN A VEHICLE

Heiko Barske, Ingolstadt, Fed. Rep. of Germany, assignor to Audi Nsu Auto Union, Ingolstadt, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,424
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902175
Int. Cl.³ G05D *3/10*; H02H *7/085*
U.S. Cl. 307—10 R **5 Claims**



5. Mechanism to regulate a wiper motor in a vehicle for which an ignition switch and an on/off switch for the wiper motor are in the electrical circuit of the wiper motor characterized by a holding circuit which is activated only by the turned on ignition switch and subsequently by the on/off switch and in this way activates the wiper motor and which discontinues when the ignition switch is turned off and also turns off the wiper motor.

4,288,706

NOISE IMMUNITY IN INPUT BUFFER CIRCUIT FOR SEMICONDUCTOR MEMORY

Edmund A. Reese, Sugar Land; Lionel S. White, Jr., Houston, and Joseph C. McAlexander, III, Sugar Land, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 20, 1978, Ser. No. 953,052
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—577 **6 Claims**



1. An input buffer circuit of improved noise immunity for a semiconductor memory comprising:

a bistable differential voltage detector having first and second field effect transistors, each having a source-to-drain path and a gate, the gates of the first and second transistors providing inputs to the detector,

means for coupling an input terminal to the gate of said first transistor,

means for coupling a reference voltage to the gate of said second transistor,

a pair of output transistors each having a source-to drain path and a gate with the source-to-drain paths being separately connected in series between the source-to-drain paths of the first and second transistors and a clocked supply voltage,

third and fourth field effect transistors each having a source-to-drain path and a gate, the source-to-drain paths of the third and fourth field effect transsistors being separately connected from the gates of said pair of output transistors to reference potential, and the gates of the third and fourth transistors being connected to logic voltages from the output transistors,

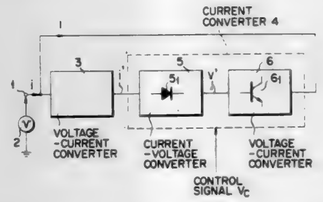
means for improving noise immunity including means for increasing the threshold voltages of the third and fourth transistors to a level significantly higher than that of said pair of output transistors, wherein the threshold voltage of the first and second transistors is significantly less than that of an enhancement mode field effect transistor.

4,288,707

ELECTRICALLY VARIABLE IMPEDANCE CIRCUIT

Masayuki Katakura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 8, 1979, Ser. No. 18,665
Claims priority, application Japan, Mar. 14, 1978, 53-28283; Nov. 9, 1978, 53-138243; Nov. 9, 1978, 53-138246
Int. Cl.³ H03H *11/00*
U.S. Cl. 307—264 **10 Claims**



1. An electrically variable impedance circuit comprising:

a voltage-current converter circuit having an input terminal receiving an input voltage signal for converting said input voltage signal into an output signal, said voltage-current converter circuit including means for keeping the conversion gain of said voltage-current converter circuit unchanged;

a current converter circuit having an output coupled to said input terminal of said voltage-current converter circuit, said current converter circuit including a PN junction connected to receive said output current signal of said voltage-current converter circuit to develop a voltage signal which is a logarithm of said output current signal of said voltage-current converter circuit, and a transistor across whose base and emitter terminals is applied said voltage developed by said PN junction to produce a current signal which is an exponential of said voltage developed by said PN junction, thereby to effect a linear conversion between said output current signal of said voltage-current converter and said current signal produced by said transistor; and

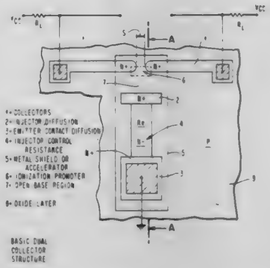
means for controlling the ratio between magnitudes of said output current signal of said voltage-current converter and said current signal produced by said transistor.

4,288,708

DIFFERENTIALLY MODULATED AVALANCHE AREA MAGNETICALLY SENSITIVE TRANSISTOR

Albert W. Vinal, Cary, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 1, 1980, Ser. No. 145,408
Int. Cl.³ H01L *29/82*
U.S. Cl. 307—309 **9 Claims**



1. A stabilized magnetically sensitive avalanche transistor having a base region of first conductivity type material and spaced emitter and collector regions of second conductivity type material forming respective PN junctions with said base region, said emitter and collector regions being connected to a source of electrical potential of proper polarity and magnitude to forward bias the emitter base junction and to reverse bias the collector base junction into avalanche generation of excess majority and minority carriers in said base region, said collector collecting said minority carriers, a region of second conductivity type forming an injector of minority carriers in said base region and a region of second conductivity type having a higher resistivity than said emitter region and said injector region extending from said emitter region to said injector region in the direction toward said collector region, said region of second conductivity type separating said emitter region from said injector region and from said base region only at a portion of said emitter base junction facing said collector base junction, there being at least two of said collector regions spaced apart from one another in said base material and approximately equidistant from said injector region, a localized impact ionization promotor means for facilitating the creation of an area of local covalent bond ruptures in the portion of the total area of said collector base junctions lying closest to said emitter, said promotor means affecting a portion of said area which is smaller than the total portion thereof lying closest to said emitter, said promotor means extending from said collector base junction area toward said emitter and serving to increase the local energy density in said smaller area to produce, upon supply to said area of said minority carriers from said injector, an abruptly conducting avalanche current generation of excess minority and majority carriers in an M factored multiplication process occurring at a characteristic voltage applied between said emitter and collector contacts.

4,288,709

HIGH PERFORMANCE STEPPER MOTOR

Dan W. Matthias, Downingtown, Pa., and Richard D. Thornton, Concord, Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 809,646, Jun. 24, 1977, Pat. No. 4,198,582.
This application Oct. 17, 1979, Ser. No. 85,614
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **4 Claims**

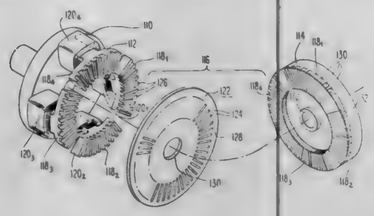
1. A high performance rotary stepper motor comprising:

stator means having an active and passive portion, each comprising a plurality of pole positions, each of said pole positions including a plurality of magnetic stator elements on opposite sides of an axial air gap with nonmagnetic

material located in the spaces between the extremities of said magnetic stator elements on each of said opposite sides of said air gap;

winding means associated with said active portion at said pole positions on only one side of said air gap for generating flux paths transverse to said air gap;

a rotor located within said air gap comprising a plurality of passive magnetic motive elements and nonmagnetic discontinuities including nonmagnetic material separating



said motive elements, said motive elements having extremities juxtaposed to the extremities of said stator elements so as to close said transverse flux paths through said motive elements, said motive means and said motive elements having configurations such that all of said motive elements are always confined to said air gap with magnetic force acting on said magnetic motive elements at both sides of said air gap, said rotor further comprising nonmagnetic discontinuities including said nonmagnetic material so as to eliminate any substantial longitudinal flux leakage.

4,288,710

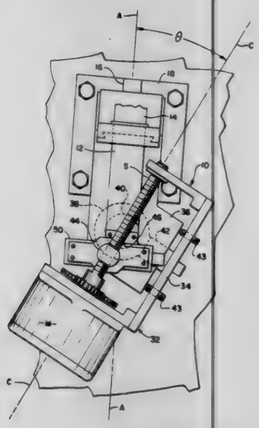
DRIVE MECHANISM

W. Duane Hamilton, Middletown, R.I., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 25, 1980, Ser. No. 124,193

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R **5 Claims**



1. Apparatus for driving an object along given path with a lead screw operated by a stepping motor wherein the improvement comprises:

a main support for said apparatus having a slideway and slide thereon, the latter carrying said object for movement along said given path;

a bracket supporting said lead screw and motor, said bracket being pivotally connected to said main support for selective angular adjustment of axial direction of said lead screw relative to said given path;

means pivotally interconnecting said slide and lead screw for moving said slide along said slideway with operation of said lead screw; and

means for selectively locking said bracket in various positions of said angular adjustment thereof.

4,288,711

ALTERNATOR-RECTIFIER CONSTRUCTION WHERE SHEET METAL DIODE SUPPORT PLATES SUPPORT A BEARING

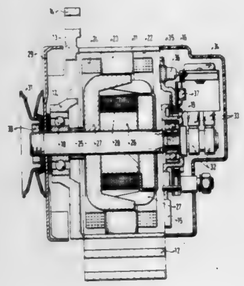
Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Karl Kleebaur, Allmersbach; Christoph Kugel, Stuttgart; Johann Künz, Sersheim; Werner Lemke, Bietigheim-Bissingen, and Rüdiger Söhnle, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,111

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847501

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 D **27 Claims**



1. Mobile alternator-rectifier combination construction, particularly for automotive vehicles, having

a frame structure (**11**);

a stator (**23, 24**) secured to the frame structure and having an armature winding (**24**);

a rotor (**26, 27, 28**) having a rotor shaft (**25**);

two bearings (**18, 21**) journaling the rotor;

an end cover (**13**) secured to one end of the frame and retaining one (**18**) of the two bearings, and extending transversely to the axis of rotation of the shaft;

and two groups of rectifier diodes (**36, 36'**) electrically connected to the armature winding,

and comprising, in accordance with the invention, two membrane-like disk-shaped sheet metal support plates (**15, 35**) positioned adjacent the axial end of the shaft remote from said end cover (**13**);

each support plate including

an essentially ring-shaped portion (**38**) surrounding the shaft and radially projecting fins (**39, 39'**) defining gaps therebetween;

at least one (**15**) of the disk-shaped support plates being secured to the frame and the other (**21**) of said two bearings (**18, 21**) being secured to the ring-shaped portion (**38**) of said at least one (**15**) of the support plates (**15, 35**);

one group of rectifier diodes (**36, 36'**), each, being secured to a respective support plate

whereby at least one support plate forms the support for the other bearing (**21**) and a heat sink and heat dissipation element for the diodes thereon;

electrically insulating means (**43, 43'**) interposed between said support plates;

and wherein the diodes (**36, 36'**) of the groups of rectifier diodes are secured on the projecting fins (**39, 39'**) of the disk-shaped sheet metal support plates (**15, 35**).

4,288,712

ALTERNATOR STRUCTURE FOR ASSEMBLY WITH A MOBILE INTERNAL COMBUSTION ENGINE, PARTICULARLY FOR AUTOMOTIVE USE

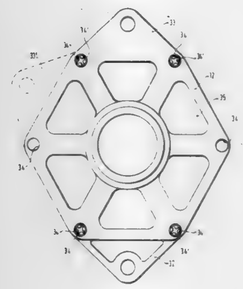
Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Karl Kleebaur, Allmersbach; Christoph Kugel, and Rüdiger Sohnle, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,115

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845667

Int. Cl.³ H02K *5/00*

U.S. Cl. 310—91 **9 Claims**



1. Alternator structure for assembly with a mobile internal combustion engine (E) particularly for automotive use having a housing (**11**);

a stator (**15, 23**) located and secured in the housing;

a rotor (**19, 21**) having a shaft (**18**) journaled in bearings (**16, 17**) positioned and secured in the housing;

and attachment means (**32, 33**) to removably and adjustably attach the structure to the internal combustion engine,

wherein, in accordance with the invention,

the machine housing comprises a polygonal radially symmetrical tubular shell structure (**11**) and at least one end cover (**12**) of polygonal radially symmetrical plan outline matching the polygonal tubular housing shell structure in which at least one respective bearing (**16**) is secured;

the tubular shell structure includes an outwardly extending attachment projection or arm (**32**) in form of an elongated bushing extending parallel to the axis of the machine, to permit passage of an attachment bolt (**32*a***) therethrough for attachment to the internal combustion engine (E);

the at least one end cover (**12**) includes a radial locating projection (**33**) formed with an opening in the end portion thereof to permit passage of a locating or positioning clamping bolt (**33*a***)therethrough for attachment to the internal combustion engine (E) to fix the position of the alternator structure with respect to the internal combustion engine;

and attachment means (**34, 34'**) removably and selectively angularly positionable to attach said at least one end cover (**12**) in predetermined selected angular orientation to the shell structure (**11**).

4,288,713

LAMP HAVING OPAQUE COATING

Richard C. Marlor, Beverly, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 23, 1979, Ser. No. 97,008

Int. Cl.³ H01K *1/32*

U.S. Cl. 313—117 **6 Claims**

1. In an incandescent lamp including at least one tungsten filament disposed within a glass envelope, the improvement comprising an opaque coating on a portion of the envelope for preventing transmission of light therethrough, the coating



comprising a dark mixture of manganese dioxide and aluminum phosphate.

4,288,714

SPARK PLUG FOR INTERNAL COMBUSTION ENGINE

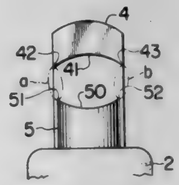
Shigeyasu Yamada; Kazumi Kawamura, and Shuji Nakamura, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jun. 6, 1979, Ser. No. 45,888

Claims priority, application Japan, Oct. 16, 1978, 53/127603

Int. Cl.³ H01T *13/32*

U.S. Cl. 313—142 **7 Claims**



1. A spark plug for an internal combustion engine comprising an insulating body member, a center electrode extending from said body member and having a top surface, said top surface of said center electrode configured as a concave surface, an outer electrode having an inner surface facing said top surface, said outer electrode inner surface configured as a rounded concave surface opposing said top surface, said rounded concave surface having wedge-shaped edge projections forming spark gaps with the opposing center electrode top concave surface.

4,288,715

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Johan B. J. van Overveld, Roosendaal; Auke G. van der Kooi, and Antonius J. A. van Stratum, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1979, Ser. No. 79,019

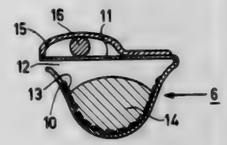
Claims priority, application Netherlands, Oct. 11, 1978, 7810213

Int. Cl.³ H01S *61/28*

U.S. Cl. 313—174 **6 Claims**

1. A low-pressure mercury vapor discharge lamp having a discharge vessel in which is located a container having an opening into the discharge vessel, the container containing a mercury amalgam for controlling the mercury vapor pressure in the discharge vessel, characterized in that the amalgam is secured to the inner surface of the wall of the container, said

container comprising a sheet metal plate formed to provide a receptacle in which the amalgam is present and a cover plate



which closes the receptacle except for a slit of not more than 0.2 mm wide between said cover plate and said receptacle.

4,288,716

ION SOURCE HAVING IMPROVED CATHODE

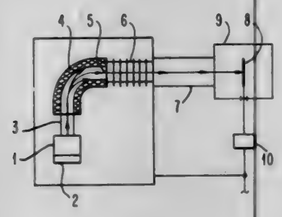
Holger Hinkel, Boeblingen, and Georg Kraus, Wildberg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,369

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855864

Int. Cl.³ H01J *27/00*

U.S. Cl. 313—230 **3 Claims**



1. An ion generator having a housing forming a chamber, means for supporting a cathode within the housing, means for establishing an electrostatic field between the cathode and the housing, positive and negative terminals for applying a DC voltage across opposite ends of the cathode to induce a heating current therein, and means for supplying a source of ionizable molecules into said chamber, wherein the improvement comprises:

the cathode having a region of reduced cross-section with respect to the cross-section of the remainder of the cathode, said reduced cross-section region being located nearer said negative terminal than said positive terminal.

4,288,717

THERMIONIC CATHODE APPARATUS

Hiroaki Tanji; Mitsuaki Saito, and Masaji Ishii, all of Machida-shi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Machidashi, Japan

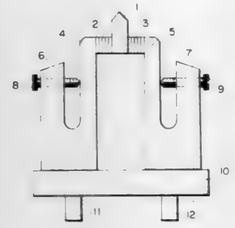
Filed Nov. 6, 1979, Ser. No. 91,360

Int. Cl.³ H01J *1/16, 19/10*

U.S. Cl. 313—336 **3 Claims**

1. A thermionic cathode comprising an electron emitting tip, tip supporting heaters made of a carbonaceous material arranged in contact with both sides of said tip, respectively, and supporting said tip, and elastic electroconductive members fixed to a base, said electroconductive members being arranged in pressure contact with the outer surfaces of said tip supporting heaters, and serving to supply an electric current thereto;

said tip supporting heaters being obtained by cutting said carbonaceous material, said carbonaceous material being obtained by hot-pressing a molding of synthetic resin that does not melt under heating, so as to form a pair of parallel planes perpendicular to the pressing direction, abrasion-polishing said parallel planes and then bringing the resulting smooth surfaces into close contact with said tip and said electroconductive members.



4,288,718

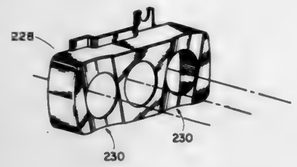
MEANS AND METHOD FOR BEAM SPOT DISTORTION COMPENSATION IN TV PICTURE TUBES

Allen P. Blacker, Hoffman Estates, and Arthur J. Ingle, Bartlett, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed May 24, 1979, Ser. No. 42,280

Int. Cl.³ H01J *9/14, 29/62*

U.S. Cl. 313—414 **17 Claims**



1. In a television cathode ray picture tube having at least one electron gun for generating at least one electron beam for projecting at least one beam spot on the picture imaging screen of said tube, said gun having a plurality of differently electrically charged electrodes having facing sections comprising juxtaposed walls with coaxially aligned openings therethrough for passage of said beam, said walls defining at least one gap in which is established a beam-focusing electrostatic field, said cathode ray tube being subject to influences which introduce an undesired distortion of said beam spot to the detriment of the quality of the image projected on said screen, said gun being characterized by at least one of said electrode walls being mechanically deformed in the perimeter of its opening to cause said field to be azimuthally asymmetrical about said opening, and effective to act on said beam in a sense tending to at least partially compensate for said undesired distortion of said beam spot.

4,288,719

CRT WITH MEANS FOR SUPPRESSING ARCING THEREIN

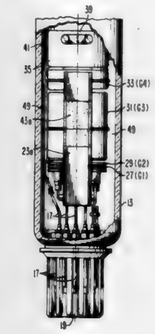
Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,907

Int. Cl.³ H01J *29/02, 29/46, 29/56*

U.S. Cl. 313—457 **9 Claims**

1. A cathode-ray tube comprising an evacuated envelope including an electrically-insulating neck, and an electron-gun mount assembly in said neck, said mount assembly comprising a plurality of electrodes mounted on at least two electrically-insulating support rods, said assembly being closely spaced from the inner surface of said neck, at least a portion of the surface of each of said support rods facing a portion of said neck being electrically conducting each of said electrically conducting portions being opposite an electrode that particiates in focusing said electron beam, and having a resistivity of less than about 50,000 ohms per square and is electrically floating.



4,288,720

METHOD OF ERASING INFORMATION IN A SCAN CONVERTER STORAGE TUBE

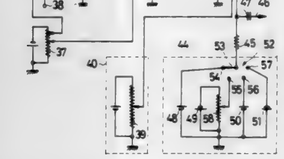
Takefumi Kato, Hinode, and Haruo Abe, Hino, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1979, Ser. No. 82,144

Claims priority, application Japan, Oct. 9, 1978, 53-124376

Int. Cl.³ H01J *29/50, 31/00*

U.S. Cl. 315—13 ST **6 Claims**



1. In a scan converter storage tube of the type having an electron gun of an electrostatic focus and deflection variety for generating a modulated or unmodulated electron beam, the electron gun including a cathode and a field mesh electrode, and a storage target to be scanned by the electron beam from the electron gun, the storage target including a substrate fabricated from a single crystal of insulating material, the substrate having a storage surface which is disposed opposite to the field mesh electrode of the electron gun and which has formed thereon a collector electrode having a plurality of regularly patterned openings formed therein, a method of erasing information from the storage target which comprises:

(a) setting the potentials of the field mesh electrode and the collector electrode at such relative values that the potential (Vc) of the collector electrode is higher than the value which is lower than the potential (Vm) of the field mesh electrode by up to about 100 volts;

(b) causing the electron gun to scan the storage surface of the substrate with the unmodulated electron beam while the potentials (Vm, Vc) of the field mesh electrode and the collector electrode are set as in step (a);

(c) setting the potential (Vc) of the collector electrode higher than the potential (Vk) of the cathode and at such a value that the potential (Vs) of the storage surface with respect to the potential (Vk) of the cathode is made less than a first crossover potential (Vl) at which the secondary emission ratio of the substrate first becomes unity; and

(d) causing the electron gun to scan the storage surface of the substrate with the unmodulated electron beam while the potential (Vc) of the collector electrode is set as in step (c).

4,288,721

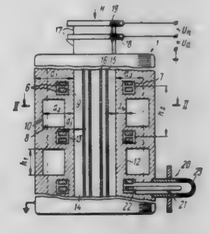
MICROWAVE MAGNETRON-TYPE DEVICE

Jury I. Dodonov, Profsojuznaya ulitsa, 93, korpus 2, kv. 384, Moscow, U.S.S.R.

Filed Jun. 20, 1979, Ser. No. 50,553

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.51 **5 Claims**



1. A magnetron comprising, an anode block comprising a multistage two-dimensional periodic retarding system and having a cylindrical central chamber, a cathode in said central chamber coaxial therewith, said anode block having a plurality of paired solid vanes disposed laterally spaced in a circumferential direction and extending inwardly of said chamber toward said cathode with the pairs thereof defining a plurality of resonator cavities, each vane having a root end and a free end terminating at said central chamber spaced outwardly from said cathode and having substantially flat sidewalls defining said resonator cavities, each cavity diverging from the free ends of the paired vanes toward the root ends thereof, each of said resonator cavities having a distributed inductance portion adjacent said root ends, said vanes having through windows on each stage of said retarding system, each of said through windows having a sidewall closer to the root end of a corresponding vane and an opposite sidewall closer to the free end of the corresponding vane, coaxial paired straps extending through the windows transversely of the vanes and each connected to a different group of alternate vanes, each of said vanes having an opening aligned with an opening of the adjacent vane to define a duct extending through all of the vanes in the vicinity of the distributed inductance portions thereof, and the magnetron having a frequency range including the long-wave range of the microwave frequency range greater than if the vanes did not have the aligned openings.

4,288,722

ELECTRONIC FLASH DEVICE

Kazuo Ikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1979, Ser. No. 70,422

Claims priority, application Japan, Sep. 7, 1978, 53-109975

Int. Cl.³ H05B *41/32*

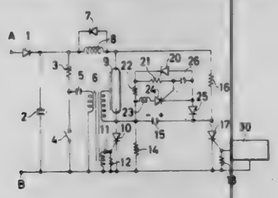
U.S. Cl. 315—151 **12 Claims**

1. An electronic flash device comprising:

(a) flash tube means responsive to a discharge current for illuminating an object to be photographed to obtain a desired exposure level;

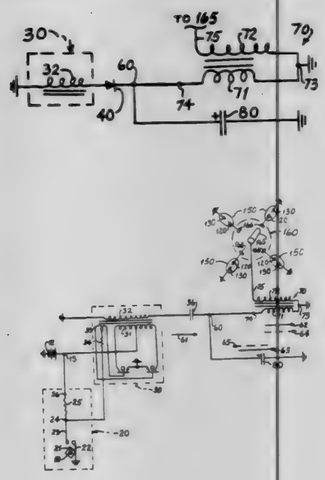
(b) main switching means connected in series with said flash tube means to form a discharge path for the discharge current when said main switching means is in a conductive state;

(c) subsidiary switching means coupled to said main switching means for rendering said main switching means non-conductive when the desired exposure level is obtained;
(d) a commutating capacitor connected between said flash tube means and said subsidiary switching means so that said commutating capacitor is charged in a forward direction through said main switching means when said subsidiary switching means is in a non-conductive state and said commutating capacitor is charged in the reverse direction through said subsidiary switching means when said subsidiary switching means is in a conductive state;



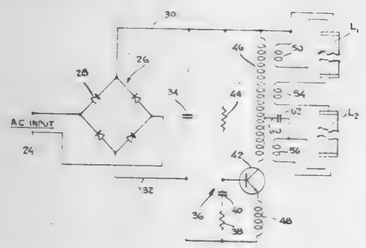
(e) a series circuit coupled across said commutating capacitor and including coil means and third switching means; and
(f) trigger means connected to said third switching means for applying a closing signal to close said third switching means to form a ringing circuit of said commutating capacitor and said series circuit after said subsidiary switching means is in the non-conductive state and said commutating capacitor has been charged in the reverse direction so that said commutating capacitor then discharges through said series circuit.

4,288,723
INDUCTIVE-CAPACITIVE CYCLIC CHARGE-DISCHARGE IGNITION SYSTEM
Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705
Continuation-in-part of Ser. No. 35,013, May 1, 1979, abandoned. This application Jan. 16, 1980, Ser. No. 112,715
Int. Cl.³ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **10 Claims**



1. An inductive-capacitive cyclic charge-discharge ignition system for providing a plurality of ignition periods, comprising the combination of:
an ignition transformer having a primary winding;
a capacitor connected to the primary winding and forming a parallel circuit with said primary winding;
a first diode in series with said parallel circuit;
AC generating means having an output winding in series with the first diode for powering said first diode and parallel circuit with AC energy during each said ignition period, said output winding, first diode and parallel circuit forming a switchless output network; and
timing means coupled to said AC generating means for controlling DC bias current to said generating means so as to duty cycle said generating means.

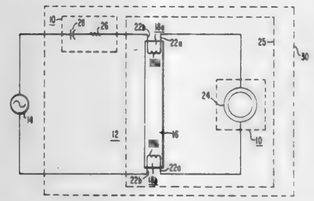
4,288,724
IMPULSE GENERATOR FOR USE WITH PHOSPHOR ENERGIZABLE LAMPS
Eli H. Sherman, 12554 Havelock Ave., Los Angeles, Calif. 90066
Continuation of Ser. No. 857,220, Dec. 5, 1977, Pat. No. 4,129,805. This application Nov. 20, 1978, Ser. No. 961,976
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—219 **42 Claims**



1. A generator for use with a phosphor excitable lamp, said generator comprising:
(a) input means to receive electrical current,
(b) means operatively connected to said input means for conducting said electrical current,
(c) a pulse generating means comprising:
(1) a solid state switching element connected to receive the electrical current,
(2) a primary inductive coil means connected to at least one terminal of said switching element,
(d) secondary coil means located to be coupled with said primary coil means, and developing a voltage therein substantially less than in the primary coil means,
(e) terminal means on said secondary coil means for connection to a phosphor excitable lamp,
(f) a first electrical current carrying conductor connected to one end of said primary coil means and being adapted for electrical connection to one terminal of said phosphor excitable lamp, and
(g) an intermediate tap on said primary coil means,
(h) a second electrical current carrying conductor connected to said intermediate tap on said primary coil means and being adapted for electrical connection to another terminal of said phosphor excitable lamp,
(i) a capacitive means in said second electrical current carrying conductor,
(j) said pulse generating means generating pulses in a sequence and at intervals sufficient to maintain energization of said lamp, said pulses being generated with relatively high peak rise on the leading edge of said pulses and a relatively gradual decay from said high peak for a greater portion of the pulse width of each of said pulses but which decay reaches a relatively sharp fall to a zero level at the

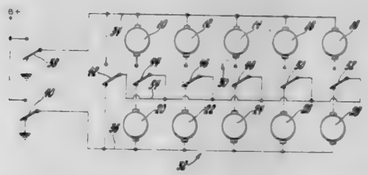
trailing edge of said pulses, such that the pulses are designed to maintain ignition and energization of the lamp with comparative current and voltage waveforms to achieve a power savings, and which pulses are transmitted from said primary coil means to said lamp through coupling of said lamp to said primary coil means.

4,288,725
LIGHTWEIGHT FLUORESCENT LAMP BALLAST
Edward W. Morton, Teaneck, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 26, 1979, Ser. No. 97,273
Int. Cl.³ H05B *41/18*
U.S. Cl. 315—245 **3 Claims**



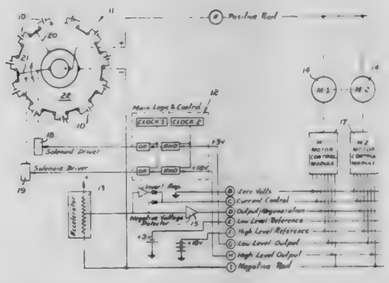
1. A lightweight starting and operating ballasting means for starting and operating a fluorescent lamp means from a household source of AC energy, said fluorescent lamp means comprising an elongated tubular light-transmitting envelope having electrodes positioned therein proximate each end thereof, said electrodes each comprising an elongated tungsten coil having a lead-in member affixed to each end of each said coils and sealed through the ends of said envelope, said envelope enclosing a discharge-sustaining filling comprising mercury and a low pressure of inert ionizable starting gas, and a phosphor material layer carried on the interior surface of said envelope, said fluorescent lamp means having a normal operating voltage drop thereacross not exceeding about 65 volts, and said ballasting means having elements which perform with said lamp means in a starting mode and an operating mode as follows:
a. said ballasting means in said starting mode consisting of a closed electrically-conducting current-interrupting means connecting exteriorly of said lamp means to one of said lead-in members at each end of said lamp means to form with said electrode coils a series electrode-coil-preheat circuit, resistor means of predetermined value and capacitor means of predetermined value connecting in series circuit exteriorly of said lamp means with said series electrode-coil-preheat circuit to form a composite series circuit, and said composite series circuit adapted to be connected across the standard household source of AC energy intended for operating said lamp means; whereby on application of said household AC energy across said composite series circuit, said electrode coils are preheated and the atmosphere within said lamp means envelope is ionized; and
b. said ballasting means thereafter shifting to said operating mode by said current-interrupting means opening to open said electrode-coil-preheat series circuit, with the household source of AC energy then applied across said preheated coils to initiate and maintain a low pressure mercury discharge between said lamp electrodes, with the operation of said lamp means thereafter normally continuing as ballasted solely by said series-connected resistor means and capacitor means.

4,288,726
PERMANENT MAGNET MOTOR CONTROL SYSTEM
Alfonso Vazquez-Cuervo; Frederick T. Richards; Daniel V. Bafunno, all of Warren, and George Papacostas, Youngstown, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 31, 1980, Ser. No. 135,483
Int. Cl.³ H02P *1/54*
U.S. Cl. 318—54 **6 Claims**



4. A circuit for controlling a plurality of reversible electric motors comprising
a source of direct current potential,
first, second and third conductors,
first and second motor banks, each bank including a plurality of motors, one side of each motor in said first motor bank connected to said first conductor, one side of each motor in said second motor bank connected to said second conductor,
a plurality of independently operable select switch means for selectively connecting the other side of respective ones of said plurality of motors in said first or second banks to said third conductor,
bank selection switch means for connecting said third conductor to said first or second conductor,
motor direction control switch means operable to connect said source across said first and second conductors in either of two polarity configurations.

4,288,727
MODULAR MOTOR AND CONTROL MEANS AND METHOD
Darryl R. Whitford, Bedford Park, Australia, assignor to The Flinders University of South Australia and The Minister of Transport, State of South Australia, both of Adelaide, Australia
Filed Sep. 6, 1978, Ser. No. 939,952
Claims priority, application Australia, Sep. 7, 1977, PD1537
Int. Cl.³ H02P *1/54*
U.S. Cl. 318—112 **8 Claims**



1. An arrangement of electric motors which are coupled together both mechanically and electrically,
comprising a reference voltage control potentiometer which controls a reference voltage,
each respective said motor having a separate power circuit and a separate control module comprising a series pass

element and a current sensing device in series with one another and with that said motor in the power circuit of that said motor, said series pass element having a control electrode, said current sensing device having an output voltage which is a correction voltage proportional to the motor current flow, a linear operational amplifier, and a conductor applying said correction voltage to said linear operational amplifier, isolator means connecting an output voltage of said linear operational amplifier to the control electrode of its respective said series pass element so as to control the equivalent resistance of that said series pass element,

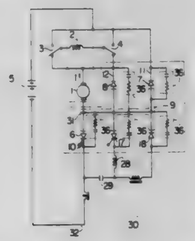
a further conductor also applying said reference voltage simultaneously to each one of said linear operational amplifiers, and co-operating with the correction voltage applied to each respective said amplifier so as to control said output voltage of that said amplifier, and in turn control the respective motor currents.

4,288,728

ELECTRIC VEHICLE CONTROL APPARATUS

Masayoshi Niimi, Toyota; Koshi Torii, Iwakura, and Hidetoshi Kato, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 27, 1979, Ser. No. 24,367
Claims priority, application Japan, Mar. 31, 1978, 53/38686
Int. Cl.³ B60L *11/18*
U.S. Cl. 318—139 **12 Claims**



1. An electric vehicle control apparatus, which includes at least a main thyristor for chopping a direct current flowing through an electric vehicle driving DC motor and a flywheel diode connected in parallel with said DC motor to form a path for conducting a flywheel current therethrough when said main thyristor is nonconductive, and which is fixed onto an electric vehicle body, comprising:

(A) a base member of said electric vehicle control apparatus fixed onto said vehicle body being in close contact therewith;

(B) a heat sink made of a metallic plate and fixed onto a portion of said base member through a thin sheet of an insulating material intervening therebetween, said heat sink has a substantially square shape;

(C) at least two substantially bare semiconductor pellets fixed directly onto said heat sink, each of said pellets being mounted on said heat sink, each of said pellets being mounted on said heat sink near one of four corners of said heat sink, and small capacity semiconductor devices are mounted on said heat sink near the remaining one of said four corners, said pellets constituting at least said main thyristor, said flywheel diode and a plugging diode;

(D) a plurality of connecting terminals each constituted by an L-shaped metallic bar which is mounted on one of said pellets and extends horizontally away from the pellet to which it is mounted and then bends upward leaving a suitable length of the horizontal portion thereof; and

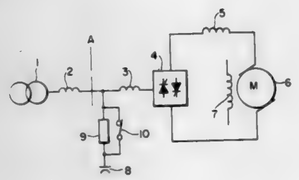
(E) at least one auxiliary electric device fixed onto said base member.

4,288,729

CONTROL SYSTEM FOR D.C. ELECTRIC MOTOR

Nobuo Anzai, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1980, Ser. No. 130,684
Claims priority, application Japan, Mar. 19, 1979, 54/31984
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—345 C **5 Claims**



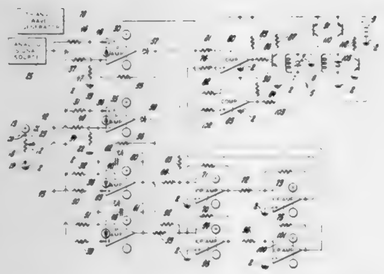
1. A control system for D.C. electric motors comprising: a thyristor converter; a gate control circuit for controlling a firing point of said thyristor converter; capacitor means connected through resistor means to an input side of said thyristor converter; and switching means connected in parallel with said resistor means, said switching means being opened after a predetermined time delay from said firing point of said thyristor converter.

4,288,730

PROPORTIONAL AND INTEGRAL SOLENOID ARMATURE POSITIONING CONTROL SYSTEM

Donald E. Graham, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 25, 1978, Ser. No. 945,086
Int. Cl.³ G05B *11/28*
U.S. Cl. 318—599 **3 Claims**



1. A proportional and integral solenoid armature positioning control system for effecting the adjustment of the armature of a solenoid into the solenoid armature position corresponding to each different input electrical signal representation of desired solenoid armature position comprising:

means for producing an electrical reference signal that is a function of the actual position of said solenoid armature;

first and second circuit means responsive to an input electrical signal representation of desired solenoid armature position and said reference signal for producing respective first and second mutually exclusive proportional error signals that are a function of the difference between the desired and actual solenoid armature positions in respective first and second relationships when the actual position of said solenoid armature does not correspond to the desired position as indicated by the input electrical signal representation of desired solenoid armature position;

third and fourth circuit means responsive to the said input electrical signal representation of desired solenoid armature position and said reference signal for producing respective first and second mutually exclusive integral error signals each of which corresponds to a respective one of said first and second proportional error signals;

means for summing each pair of corresponding said proportional and integral error signals; and

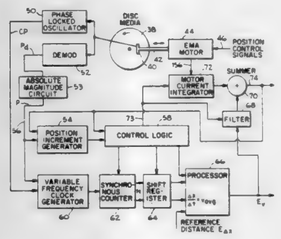
means responsive to the sum of said corresponding said proportional and integral error signals for effecting the adjustment of said solenoid armature into said desired solenoid armature position.

4,288,731

AVERAGE VALUE TACHOMETER FOR A DISC DRIVE SERVO AND THE LIKE

Patrick S. Lee, Campbell, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,640
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—618 **8 Claims**



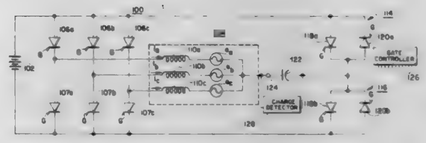
1. A tachometer for a disc pack servo system comprising means for generating a triangular position signal in response to radial movement of a servo head with respect to a prerecorded servo track, said position signal having ascending and descending linear portions each of which has a slope representative of the rate of radial movement of the servo head, means responsive to the linear portion of said position signal for producing at least first, second and third sampling pulses on attainment of said position signal of respective first, second and third voltage levels, the difference between said voltage levels being equal and representing equal increments of radial movement of said servo head, a counter having a reset input connected to said sampling pulse producing means, said counter having a counting input and being constructed and arranged to terminate counting of pulses supplied to said counting input in response to receipt of a sampling pulse at said reset input, a clock pulse source producing a series of regularly recurring clock pulses connected to said counting input so that said counter produces a number N at its output which is representative of the time between adjacent said sampling pulses, a digital to analog converter having a digital input to which N is connected, said converter having a capacity N_{limit}, a gain k and a reference voltage input and being constructed and arranged to produce an output equal to the product of k, (N/N_{limit}) and the voltage connected to said reference input, a difference circuit having a first input connected to said converter output and a second input to which a reference voltage is connected, said difference circuit being constructed and arranged to produce a voltage proportional to the difference between the voltage applied to said first and second inputs, and feedback means for feeding back to the reference voltage input of said converter the output of said difference circuit so that the voltage at a circuit point between the output of said difference circuit and the reference input of said converter is inversely proportional to N and is indicative of average radial speed of said servo head.

4,288,732

FORCED COMMUTATED STARTING CIRCUIT FOR LOAD COMMUTATED INVERTER DRIVE SYSTEM

James W. A. Wilson, and Robert L. Steigerwald, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,165
Int. Cl.³ H02P *1/46, 7/42*
U.S. Cl. 318—723 **5 Claims**



1. In an inverter polyphase synchronous machine drive system including a polyphase synchronous machine excited from a source of direct current potential by an inverter, said inverter providing forced machine commutation for initial excitement thereof, said inverter comprising:

a plurality of pairs of serially-connected unidirectional conduction means corresponding in number to the number of machine phases, each pair of said conduction means connected across said source of direct current potential and coupled at the pair junction to a corresponding machine phase, respectively, each said conduction means controlling current therein in response to a gate control signal impressed thereon;

first and second controlled bidirectional conduction means serially connected across said source of direct current potential, each said controlled bidirectional conduction means conducting current in a direction determined by an external gate signal impressed thereon;

capacitor means connected between the junction of said first and second controlled bidirectional conduction means and the neutral terminal of said polyphase machine;

means for determining the charge of said capacitor; and

means for providing gate control signals to each of said unidirectional conduction means and each of said bidirectional current means to cause current to flow in a predetermined sequence through said machine phases with energy supplied by said capacitor, when said capacitor charge is above a predetermined value and for providing gate control signals to each of said unidirectional conduction means and each of said bidirectional current means to cause current to flow in said predetermined sequence through said machine phases and to charge said capacitor, with energy supplied by said source of DC potential when said capacitor charge is below a predetermined value.

4,288,733

BATTERY CHARGER SYSTEM AND METHOD ADAPTED FOR USE IN A STERILIZED ENVIRONMENT

Silvio G. Bilanceri, Owings Mills; Gary L. Kanner, Parkton, and Michael B. Uffer, Baltimore, all of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Oct. 17, 1979, Ser. No. 86,027
Int. Cl.³ H01M *10/44*
U.S. Cl. 320—2 **18 Claims**

1. A battery charger system for use in a sterile environment such as an operating room, comprising:

a battery charger for electrical connection to at least one rechargeable battery;

an interface for operative connection between at least one rechargeable battery and said charger, said interface including a first connection means on one surface portion thereof for coupling with at least one rechargeable battery and a second connection means on another surface portion thereof for coupling with said charger and electrical inter-

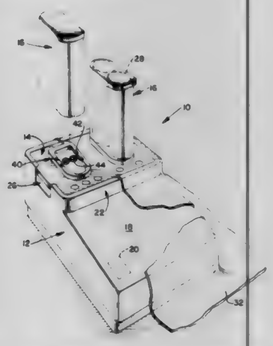
connection means for effecting electrical connection between said battery and battery charger; and

means for securing a sterilized drape between said interface and said charger.

10. A method of obtaining a charged sterile rechargeable battery, comprising the steps of:

discharging a rechargeable battery;

sterilizing said discharged battery;



mechanically and electrically connecting said sterilized, discharged battery to a sterilized interface;

mechanically and electrically connecting said sterilized interface to a battery charger, said interface effective to electrically interconnect said battery and said charger;

charging said battery by operation of said charger; and

disconnecting said sterile, charged battery from said interface.

4,288,734

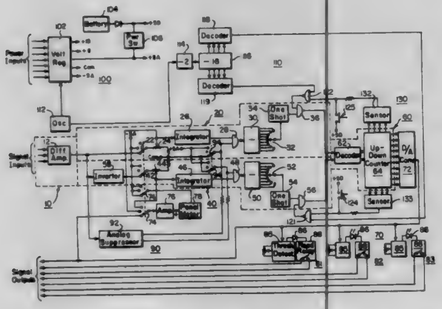
BIDIRECTIONAL INTEGRATOR

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed May 25, 1979, Ser. No. 42,532

Int. Cl.³ H02J *7/00*; G01R *11/00*

U.S. Cl. 320—48 **9 Claims**



1. A bidirectional integrator for integrating an electrical signal comprising:

first and second programmable pulse forming channels, each channel comprising means for forming a pulsed output signal having a pulse repetition rate which is a function of an input signal to said signal forming means, means for modifying said pulse repetition rate by a first factor selected from a continuous range of factors and a programmable circuit for multiplying and/or dividing said pulse repetition rate by a second factor selected from a plurality of discrete factors;

a bidirectional counter which is driven in one direction by the pulsed output signal from the programmable circuit of the first channel and in the opposite direction by the pulsed output signal from the programmable circuit of the second channel;

means for controlling the direction in which said bidirectional counter is driven; and

means for producing an output signal from said bidirectional counter.

4,288,735

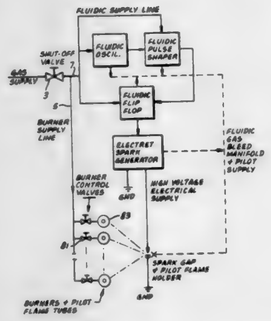
VIBRATING ELECTRET REED VOLTAGE GENERATOR

Roger C. Crites, Florissant, Mo., assignor to McDonnell Douglas Corp., Long Beach, Calif.

Filed Sep. 17, 1979, Ser. No. 75,881

Int. Cl.³ F23Q *3/01*

U.S. Cl. 322—2 A **10 Claims**



1. A vibrating electret reed voltage generator, comprising:

a flexible electret reed supported at one distal end and having first and second opposing major surfaces;

a high voltage electrode formed by coating said first major surface of said electret reed with a thin conductive coating;

a ground electrode spaced opposite said second major surface of said electret reed so that said second major surface contacts said ground electrode at full amplitude of the vibratory excursion of said electret reed;

a high voltage terminal connected to said high voltage electrode;

a ground terminal connected to said ground electrode; and

means to vibrate said electret reed whereby electrical power is produced with each vibratory cycle of said electret reed.

6. The vibrating electret reed voltage generator as recited in claim 1, wherein said means to vibrate said electret reed is a fluid controlled by a fluidic oscillator circuit.

4,288,736

CONTROL SYSTEMS FOR ELECTRIC GENERATORS

Michael J. Wright, Stamford, England, assignor to Newage Engineers Limited, Stamford, England

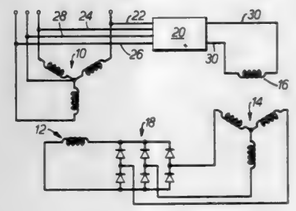
Filed Apr. 10, 1979, Ser. No. 28,698

Claims priority, application United Kingdom, Apr. 12, 1978, 14359/78

Int. Cl.³ H02P *9/10*; H02G *9/30*

U.S. Cl. 322—28 **15 Claims**

1. In a control system including a thyristor for controlling a generator having an excitation winding by which the excitation of the generator is produced or controlled, the excitation winding being connected, through the thyristor forming part of the control system, to at least one alternating current output terminal of the generator, the output terminal or terminals to which the excitation winding is connected together providing a waveform which is interrupted or changes polarity during each cycle of the waveform, thereby allowing the thyristor to turn off, the control system also including firing means arranged to fire the thyristor at a moment during the waveform which varies with variations in the required excitation, and a starting excitation current path leading from an output terminal or terminals of the generator to the excitation winding, which path includes means arranged to limit the current in the path to a value which is greater than the latching current of the thyristor, the improvement comprising protection means which includes a bistable device arranged to be switched from



its normal state by a fault or overload condition to a disabling state in which it disables the excitation of the generator, including disabling of the starting excitation current path, and to be maintained in its disabling state by the residual output of the generator until the speed of the generator is reduced to a resetting value, with a corresponding reduction in the generator output to a value at which the current in the starting excitation current path is less than the latching current of the thyristor.

4,288,737

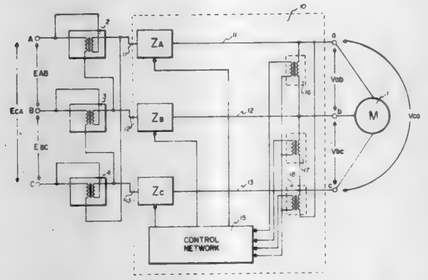
REGULATOR-COMPENSATOR CONTROL

James E. McClain, and Howard L. Scott, both of Greenville, Tex., assignors to Esco Manufacturing Company, Dallas, Tex.

Filed May 21, 1979, Ser. No. 40,857

Int. Cl.³ G05F *1/34*

U.S. Cl. 323—254 **5 Claims**



1. In a system for supplying power to a load from a polyphase source, the improvement comprising a regulator-compensator control interconnected between the source input terminals and the load input terminals, said regulator-compensator control comprising:

means for independently sensing the respective voltages across the load input terminals;

a feedback control network coupled to said voltage sensing means for generating a separate and independent control signal in response to each sensed terminal voltage; and

a control signal responsive, variable impedance element connected in series circuit relation between said source input terminals and said load input terminals, each variable impedance element being connected to said feedback control network to receive the corresponding independent control signal, with the impedance of each variable impedance element changing in response to a change in the associated control signal to selectively alter the voltage drops in each of the supply lines.

4,288,738

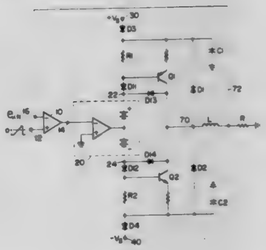
DUAL-MODE AMPLIFIER

Jerrold J. Rogers, and John Durecka, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 3, 1980, Ser. No. 137,039

Int. Cl.³ H03K *17/64*

U.S. Cl. 323—271 **8 Claims**



1. A circuit for controlling current flow through an inductance comprising:

(a) an inductance;

(b) means for receiving a variable input signal;

(c) amplifier means for producing in said inductance a controlled current representative of said input signal, said amplifier means being capable of operation in either a linear mode or a non-linear mode; and

(d) means responsive solely to the rate of change of said variable input signal for coupling a capacitance in parallel resonant connection with said inductance whenever said input signal changes at a rate greater than a predetermined design rate, thereby causing said amplifier means to switch from said linear mode to said non-linear mode.

4,288,739

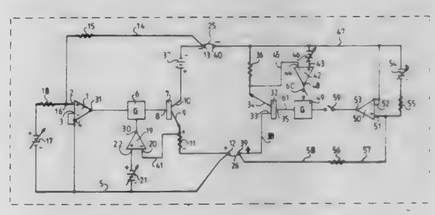
DYNAMIC LOAD FOR TESTING REGULATED POWER SUPPLIES

Sarkis Nercessian, Flushing, N.Y., assignor to Kepco, Inc., Flushing, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,850

Int. Cl.³ G01R *21/00*

U.S. Cl. 323—275 **4 Claims**



1. In an electronic load for loading a voltage/current regulated power supply, the combination of;

a pair of terminals for connecting to a voltage/current regulated power supply one of said terminals being designated negative, to be connected to the negative terminal of said power supply and the other being designated positive, to be connected to the positive terminal of said power supply;

a pass transistor and current sensing resistor connected in series across said terminals with the collector of said transistor connected to said positive terminal, the emitter of

said transistor connected to one end of said resistor and the other end of said resistor connected to said negative terminal;

a current regulating circuit including a comparison amplifier and a source of adjustable reference voltage connected across said current sensing resistor;

a voltage regulating circuit including a comparison amplifier, a source of adjustable reference voltage and a feedback path including a series resistor wherein said amplifier and reference voltage returns are connected to said negative terminal and said feedback path is connected to said positive terminal;

and means for connecting the output of said current regulating comparison amplifier to the base of said pass transistor for loading a voltage/current regulated power supply when said power supply is operated in voltage regulating mode,

and means for connecting the output of said voltage regulating comparison amplifier to the base of said pass transistor for loading a voltage/current regulated power supply when said power supply is operated in current regulating mode wherein the said reference voltages and feedback resistors are polled and oriented so that said electronic load acts as a voltage/current sink to a voltage/current regulated power supply connected to said terminals.

4,288,740

CONSTANT CURRENT SWITCH

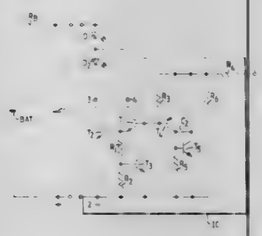
Karl-Diether Nutz, Oedheim, and Helmut Moser, Heilbronn, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Aug. 31, 1979, Ser. No. 71,477

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838171

Int. Cl.³ G05F *5/00*

U.S. Cl. 323—303 **4 Claims**



1. A constant current switch for controlling a largely constant switchable load current in the case of a fluctuating supply voltage subject to large decreases, comprising, a first bipolar transistor connected into the current branch of the load current; a voltage divider for measuring the control voltage at said first transistor connected in parallel with the base-emitter path of said first transistor; a second bipolar transistor in connection with a control input of the circuit and having its base electrode connected to said voltage divider; and a third bipolar transistor connected between the collector electrode of said second transistor and the base electrode of said first transistor, with the collector electrode of said second transistor connected to the base electrode of said third transistor and the emitter electrode of said third transistor connected to said voltage divider and to the base electrode of said first transistor.

4,288,741

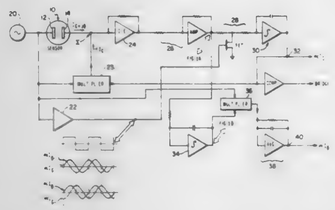
ELECTRICAL MEASUREMENT OF FLUID VOID FRACTION FOR FLUID HAVING CAPACITIVE AND RESISTIVE CONDUCTIVE COMPONENTS

Ronald L. Dechene, Boxford, and Robert E. Newton, Tewksbury, both of Mass., assignors to Auburn International, Inc., Danvers, Mass.

Filed May 18, 1979, Ser. No. 40,326

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **4 Claims**



1. Method of measuring a liquid content of mixed phase fluid in a container wherein a conductive liquid contains voids therein comprising:

making a capacitive current measurement between two spaced (in cross-section of the fluid container) electrodes,

and cancelling out a conductive (electrically) component of the current measurement through the fluid inherently picked up in making the capacitive measurement so that the capacitive measurement is not masked by the conductive measurement and wherein the measured current is produced by application of an oscillating voltage to the electrodes and the output capacitive current component (or a voltage derivative thereof) is shifted into phase with the oscillating voltage.

4,288,742

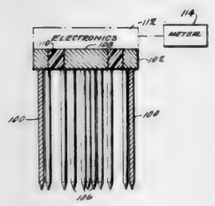
ELECTRICAL MOISTURE SENSOR

John E. Walsh, Box 264, Bradford, Vt. 05033, assignor to Dartmouth College and John E. Walsh, both of Hanover, N.H., part interest to each

Filed Dec. 18, 1979, Ser. No. 104,738

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **4 Claims**



1. A moisture sensor comprising:

a base,

a first ring of spines extending outwardly from said base in parallel;

a second ring of spines extending outwardly from said base in parallel within said first ring, separated and electrically insulated therefrom, said spines being sufficient in number to appear as a ground plane forming an effective coaxial capacitor and being insertable into material to be sensed; and

circuit means connected to said first and second rings for applying an ac signal to said spines measuring the impedance of said material between said rings.

4,288,743

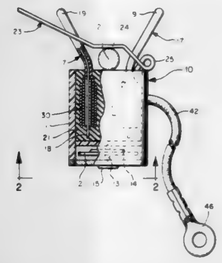
FAULT INDICATOR OPERABLE FROM A REMOTE EXCITATION SOURCE THROUGH A UNIFORMLY DISTRIBUTED IMPEDANCE CABLE

Edmund O. Schweitzer, 1002 Dundee Rd., Northbrook, Ill. 60118

Filed Oct. 10, 1978, Ser. No. 949,656

Int. Cl.³ G01R *19/165, 31/02;* H02H *9/00;* H01C *7/00*

U.S. Cl. 324—127 **17 Claims**



15. In a fault indicator operable from a remote low-voltage excitation source for indicating the presence of a fault current in a relatively high-voltage electrical conductor, said indicator including a housing, and externally-viewable circuit condition indicating means within said housing having a fault-indicating state and a reset-indicating state, said indicating means being operable from an applied excitation current, the improvement comprising;

means comprising a flexible cable extending between said indicating means and said external excitation source for supplying excitation to said indicating means, said cable including;

an electrically conductive core portion forming an electrical path having a uniformly distributed impedance many times greater than that of said electrical conductor and said excitation source between said indicating means at one end and said source at the other end, whereby said core portion, if shorted to ground, results in only an inappreciable current flow from either said electrical conductor or said excitation source; and

an electrically insulating sleeve portion extending around and along said core portion between said housing at one end and said excitation source at the other end.

4,288,744

SUMMING WATT-HOUR TRANSDUCER

John E. Callan, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 19, 1979, Ser. No. 58,752

Int. Cl.³ G01R *21/06, 19/16;* H02J *3/14*

U.S. Cl. 324—142 **10 Claims**

1. A summing transducer for summing the energy consumption of a first load, which is connected to a plurality of power supply lines, and the energy consumption that is measured for a second load by an energy-monitoring device that generates an energy demand signal, the transducer comprising:

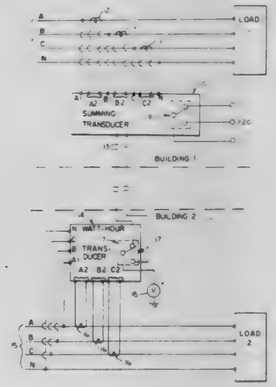
power transducer means, coupled to the power supply lines, for generating a signal proportional to the instantaneous power being supplied to the first load;

summing integrator means having two inputs and an output, one input being coupled to the power transducer means to receive the signal proportional to the instantaneous power supplied to the first load, and the other input being connected to receive a signal derived from the energy demand signal provided by the energy-monitoring device, the summing integrator means being responsive to the received signals for generating an output signal proportional to a unit of energy consumption for the two loads;

control means adapted to be coupled to the energy-monitoring device, and responsive to the energy demand signal from the energy-monitoring device to generate a control signal;

a capacitor;

switch means connected between a voltage supply and the capacitor and connected between the capacitor and the second input on the summing integrator means for initially coupling the capacitor to the voltage supply to charge the capacitor to a value proportional to a unit of energy demand for the second load, the switch means being coupled to the control means and being responsive to the control signal therefrom to electrically couple the charged capacitor to the second input of the summing integrator means; and



unit measuring means coupled to the output of the summing integrator means and responsive to the output signal therefrom for generating a signal representing the consumption of a preselected unit of energy by the two loads,

whereby the discharge of the capacitor in response to its coupling to the second input on the summing integrator means provides a signal that can be summed and integrated with the signal from the power transducer means to generate the signal proportional to a unit of energy consumption for the two loads.

4,288,745

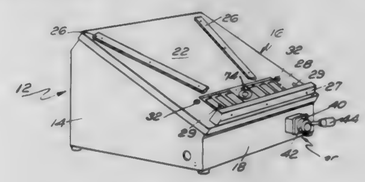
PRINTED CIRCUIT BOARD TESTING MEANS

James E. Plante, Attleboro, Mass., and Warren E. Pfeifer, North Kingstown, R.I., assignors to Ostby & Barton Company, Providence, R.I.

Filed Jul. 22, 1980, Ser. No. 171,093

Int. Cl.³ G01R *31/02, 15/12*

U.S. Cl. 324—158 F **5 Claims**



1. A printed circuit board testing means, comprising in combination:

a housing having an essentially rectangularly-shaped, truncated, box-like structure, having a forward sloping upper surface with a platen means secured thereto;

a test head interface assembly adapted to be received on said platen;

said platen having at least a pair of guide rails in a V-shaped configuration on the surface thereof;

said test head assembly having a plurality of guide rails to engage the platen rails and align the test head assembly on said platen;

a means for elevating and lowering said platen;

electrical connecting means incorporated in said housing and said test head interface assembly, said guide rails on said platen and said housing positioned to direct the test head assembly to a predetermined location on the platen, whereby when the platen is lowered the connecting means are mated.

4,288,746

MEASURING SENSOR

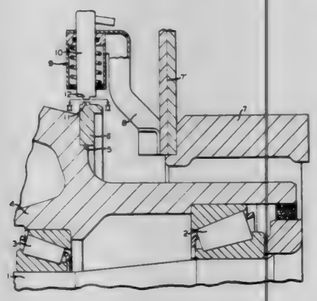
Günther Singbartl, Hanover, Fed. Rep. of Germany, assignor to Wabco Westinghouse GmbH, Hannover, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 953,529

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755379

Int. Cl.³ G01P *3/48*

U.S. Cl. 324—174 **6 Claims**



1. A speed measuring sensor for producing an output signal corresponding to the angular rotation between two relatively movable components and including a rotor driven by the rotating component and a stator carried by the stationary component, the stator includes only a single dependent cylindrical pole shoe, the pole shoe of the stator is separated from the rotor by an air gap, the rotor includes a ring-like magnetic member having a plurality of magnetizable projecting sectors of equal dimensions which change the magnetic field while passing the pole shoe of the stationary mounted stator, characterized in that the surface area of each of the plurality of the magnetizable sectors of the rotor and the surface area of the pole shoe of the stator exhibit a maximum ratio of 1 to 1 and in that the maximum cross sectional dimension of each of the magnetizable sectors of the rotor is equal to the maximum distance between two adjacent magnetizable sectors of the rotor so that spurious noise signals are minimized.

4,288,747

SELF-SCANNING APPARATUS HAVING IMPROVED MEASURING RANGE FOR MEASURING CONTOUR OF A METALLIC BODY

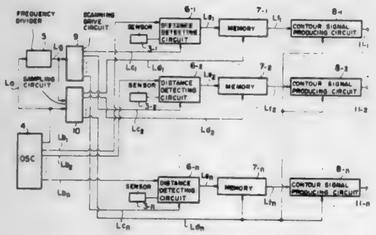
Shigeo Kawabata, Tokyo, and Norihisa Inazaki, Yokohama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,337

Claims priority, application Japan, Apr. 27, 1978, 53-55258[U]

Int. Cl.³ G01B *7/04, 33/12;* G01N *27/82;* H03K *5/00*

U.S. Cl. 324—207 **3 Claims**



1. In a contour measuring apparatus, comprising eddy-current distance measuring means for measuring a contour of a conductive object, said eddy-current distance measuring means including a plurality of detection sensors arranged in a row along a predetermined reference line which provides measuring reference positions with respect to said conductive object to be measured so that the distance between each of said detection sensors and a surface of said conductive object is detected to measure said contour of said conductive object, each of said detection sensors including a detection coil, said eddy-current distance measuring means further including an oscillator for energizing each of said detection coils with a reference alternating signal having a predetermined frequency and amplitude, and a distance detecting circuit for detecting a change in the impedance of each of said detection coils varying in accordance with the distance between each said detection coil and said conductive object due to a mutual inductive action therebetween; the improvement comprising:

scanning means for energizing said detection sensors sequentially one at a time and in accordance with a unit scanning period corresponding to plural times the period of said reference alternating signal;

memory means for receiving measurement signals corresponding to distances sequentially measured by said detection sensors at said unit scanning period, said measurement signals being received sequentially from said distance detecting circuit and stored temporarily for a time duration in which a cycle of the scanning of all said detection sensors is completed;

contour signal producing means for reading a stored content of said memory means and generating a corresponding contour signal each time said cycle of scanning is completed; and

sampling means for providing an update signal to said memory means in accordance with energization of each of said detection sensors at said unit scanning period, said memory means being responsive to said update signal for updating its stored content with a measurement signal from said energized detection sensor after a predetermined delay time with respect to the time of beginning of the energization thereof.

4,288,748

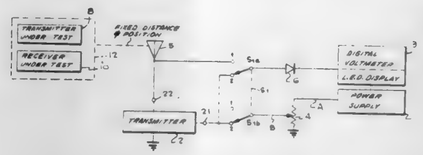
METHOD FOR TESTING METAL DETECTORS

Robert M. Kaye, 1309 S. Columbus St., Arlington, Va. 22204; Gary A. Elloo, 9089 Brook Ford Rd., Burke, Va. 22015, and Thomas Tucker, 1740 Tucker Rd., Oxon Hill, Md. 20022

Division of Ser. No. 718,345, Aug. 27, 1976, Pat. No. 4,144,486. This application Aug. 7, 1978, Ser. No. 931,938

Int. Cl.³ G01V *3/12;* G01R *35/00*

U.S. Cl. 324—326 **1 Claim**



1. A method for testing low power, low frequency devices used for locating metal objects or the like and equipped with, at least, a radio receiver, comprising the steps of:

selectively supplying variable voltage power to an input of voltage measuring means and to a power input connection of a low power, low frequency radio frequency transmitter unit for transmitting to said receiver,

placing said receiver at a predetermined fixed location at a constant distance and orientation with respect to the antenna of said radio transmitter,

tuning said receiver to receive the signal radiated from said radio transmitter,

measuring an output voltage produced by the received signal at said receiver,

adjusting the voltage of said supplied power to said transmitter to a predetermined value,

decreasing the variable voltage of said supplied power until a minimum acceptable voltage output is obtained from the receiver and

comparing the measurements of said supplied variable voltage corresponding to a minimum acceptable output from the receiver at which the receiver is functional with a predetermined value indicative of a properly functioning receiver whereby the receiver is determined to be operative or nonoperative.

4,288,749

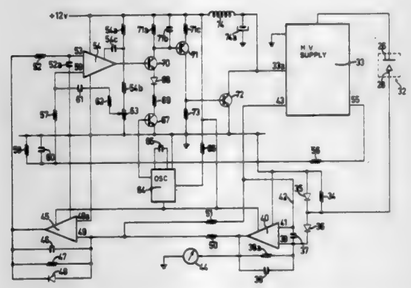
METHOD AND APPARATUS FOR MEASURING OXYGEN CONCENTRATION

Fernand R. C. Murtin, Paris, France, assignor to Generale de Fluide, Paris, France

Filed Apr. 26, 1979, Ser. No. 33,500

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—464 **11 Claims**



1. Apparatus for measuring the oxygen concentration in a gas comprising:

an ionization-probe comprising an ionization cell having a substantially flat electrode and a pointed electrode disposed substantially perpendicular to said flat electrode at a short distance therefrom;

a high voltage DC source connected to said flat electrode for providing current to said flat electrode at a voltage sufficiently high to generate successive electric discharges between said electrodes at substantially atmospheric pressure;

regulating means for holding substantially constant the ratio of the voltage of said DC source to the current in said pointed electrode as oxygen concentration varies; and

processing circuitry connected to said pointed electrode for measuring the average value of the current flowing therein.

4,288,750

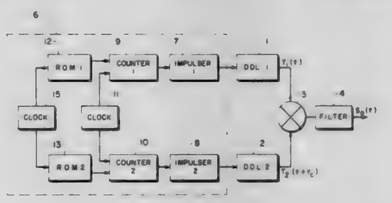
SURFACE ACOUSTIC WAVE TIME CHIRP DEVICES

Cleland O. Newton, Malvern Wells, and Edward G. S. Paige, Horton-com-Studley, both of England, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,540

Int. Cl.³ H03K *3/00*

U.S. Cl. 328—158 **16 Claims**



1. A surface acoustic wave device comprising: first and second surface acoustic wave dispersive delay lines having input and output connections; first and second pulse means for applying respective input pulses to said delay lines input connections, said pulse means including means for varying the relative time delay between said respective input pulses to said delay lines; and mixer means for mixing together the outputs of said delay lines.

4,288,751

WAVE TRANSLATING CIRCUIT

Ikio Yoshida; Kouzou Kage; Kazuhiro Ikeda, and Yasuo Sato, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,648

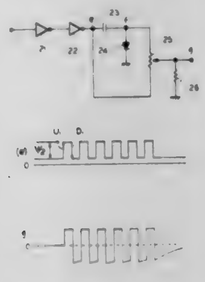
Claims priority, application Japan, Mar. 24, 1978, 53/34320; Mar. 24, 1978, 53/115329

Int. Cl.³ H03K *5/08;* H04N *5/16*

U.S. Cl. 328—173 **3 Claims**

1. A wave translating circuit comprising capacitor means

supplied with an input signal; limiter means for limiting the output of said capacitor means; and adder circuit means for



adding the output of said limiter means to said input signal to produce an output signal from said wave translating circuit.

4,288,752

STEREO DEMODULATOR WITH HIGH FREQUENCY DE-EMPHASIS COMPENSATION

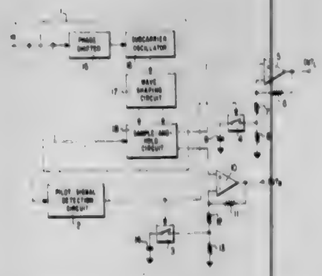
Atsushi Ogawa, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1979, Ser. No. 74,824

Claims priority, application Japan, Sep. 18, 1978, 53-127772[U]

Int. Cl.³ H03D *3/18*; H04H *5/00*

U.S. Cl. 329—50 **2 Claims**



1. In a stereodemodulator for demodulating a composite stereo signal including a sample-and-hold stereo multiplex demodulator having (a) an oscillator, the output of which is phase synchronous with and double in frequency that of a pilot signal in said composite stereo signal and (b) circuitry for deriving from the oscillator output signal, a pair of oppositely phased, low duty ratio sample pulses for sampling said composite stereo signal to obtain left and right signals therefrom, the improvement comprising

pilot signal detecting means for detecting the presence of said pilot signal in said composite stereo signal; and

a pair of frequency sensitive amplifiers respectively responsive to said left and right signals, said amplifiers including control means for varying the respective high-frequency characteristics thereof, said control means being responsive to said pilot signal detecting means to emphasize the high-frequency characteristics of said pair of amplifiers to thereby compensate for de-emphasis of the high frequency range of the right and left signals caused by said sample-and-hold stereo multiplex demodulator.

4,288,753

MUTING CIRCUIT WITH OPERATIONAL AMPLIFIER

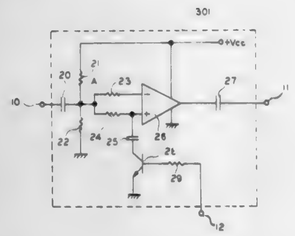
Sotoaki Babano, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,673

Claims priority, application Japan, Sep. 12, 1978, 53-125968

Int. Cl.³ H03G *3/24*

U.S. Cl. 330—51 **13 Claims**



9. An FM muting circuit comprising a common input terminal, operational amplifier means having a pair of input terminals coupled to the common input terminal of the muting circuit, electronic switching means connected between ground and one of the operational amplifier input terminals, control means responsive to input signals at said common input terminal when said input signals are free of noise for developing a high-level control signal which switches the electronic switching means to a condition which grounds one of the operational amplifier input terminals, whereby the operational amplifier amplifies only the signal applied from the common input terminal of said muting circuit to the other input terminal of said amplifier means, said control means responsive to noise appearing in the input signal at said common terminal for developing a low-level control signal which switches the electronic switch to a condition which enables the signal appearing at the common input terminal of said muting circuit to appear in phase at both amplifier input terminals to cause a cancellation of an output signal from said operational amplifier, thereby effectively rejecting the signal containing noise, and means at the two input terminals of the operational amplifier for preventing any substantial change of bias potential thereat responsive to switching operations of the muting circuit.

4,288,754

FILTER CIRCUIT

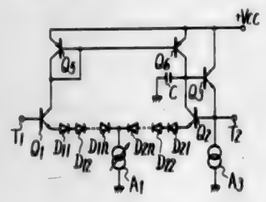
Takashi Okada, Yokohama, and Yasunobu Kuniyoshi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 24, 1979, Ser. No. 78,205

Claims priority, application Japan, Sep. 26, 1978, 53-118248

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—260 **8 Claims**



1. A filter circuit, comprising an input terminal for receiving an input signal; first and second transistor means, each having base, emitter and collector electrodes, said first and second transistor means being connected in differential amplifier configuration and having their emitter electrodes connected to a common connection; variable current source means connected to said common connection; said input terminal being connected to the base electrode of said first transistor means; a source of reference potential; reactance means coupled between the collector electrode of said second transistor means and said source of reference potential; third transistor means having base, emitter and collector electrodes, the base electrode of said third transistor means being connected to the collector electrode of said second transistor means and the emitter electrode of said third transistor means being connected to the base electrode of said second transistor means; an additional current source connected to the emitter electrode of said third transistor means; resistance means connected between the emitter electrode of each of said first and second transistor means and said common connection; and an output terminal connected to the emitter electrode of said third transistor means, whereby the cut-off frequency of said filter circuit is a function of the current produced by said variable current source.

4,288,755

PROTECTIVE CIRCUIT FOR A DIRECT-COUPLED AMPLIFIER

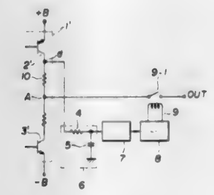
Kazumasa Sakai, Tokyo, Japan, assignor to TRIO Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,434

Claims priority, application Japan, Aug. 18, 1978, 53-113365[U]

Int. Cl.³ H02N *7/20*; H03F *3/04, 21/06*

U.S. Cl. 330—298 **6 Claims**



1. A protective circuit for a direct-coupled amplifier and for a load device connected to said direct-coupled amplifier, said direct-coupled amplifier comprising:

a positive and a negative power sources;

two output transistors connected to said positive and negative power sources, respectively;

series-connected two resistors defining an intermediate point therebetween at which substantially zero voltage prevails when said direct-coupled amplifier is functioning normally, and being interposed between said two output transistors; and

an output terminal interconnecting said intermediate point and said load device;

said protective circuit comprising:

a low pass filter connected to the junction between one of said output transistors and said series connected two resistors; and

means connected to said low pass filter for isolating said intermediate point from said output terminal in response to the output of said low pass filter.

4,288,756

CO_2 LASER

Alan S. Kaye, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

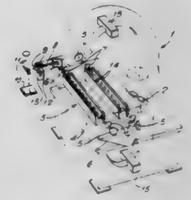
Filed Jun. 13, 1978, Ser. No. 915,284

Claims priority, application United Kingdom, Jun. 17, 1977, 25510/77

Int. Cl.³ H01S *3/02*

U.S. Cl. 331—94.5 G **10 Claims**

1. A transverse flow gas discharge laser comprising, a closed system of ducting including a region of rectangular cross-section, means for forming an optical resonant cavity including said region, means for abstracting energy from said optical resonant cavity, means for circulating a gaseous lasing medium unidirectionally through the system of ducting, a cathode electrode situated adjacent to and spaced from one wall of the said region of ducting and extending parallel thereto, the cathode electrode also extending transversely of the direction of flow of the lasing medium and parallel to the optic axis of the optical cavity, an anode electrode at the other side of the said region of ducting opposite the cathode electrode and extending



parallel thereto, the cathode electrode having a non-circular cross-section and being mounted such that the lasing medium surrounds the cathode electrode, the separation between the cathode electrode and the adjacent wall of the said region of ducting being such that, in use, distortions in the flow of the flowing lasing medium in the neighborhood of the adjacent wall of the said region of ducting interact with the cathode electrode to stabilize a cathode flare which forms in operation of the laser and hence to stabilize an associated electric discharge between the electrodes.

4,288,757

SEMICONDUCTOR LASER DEVICE

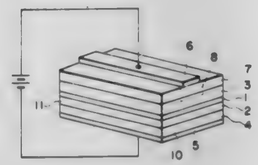
Takashi Kajimura, Hachioji; Motohisa Hirao, Tokyo; Michiharu Nakamura, Hinodemachi; Takao Kuroda, Kokubunji; Shigeo Yamashita, and Jun-Ichi Umeda, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,360

Claims priority, application Japan, Jul. 10, 1978, 53-83014

Int. Cl.³ H01S *3/19*

U.S. Cl. 331—94.5 H **6 Claims**



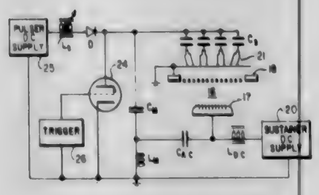
1. In a semiconductor laser device comprising a semiconductor substrate composed of $GaAs_tP_{1-t}$ ($0.54 \leqq t < 1.0$), a first semiconductor layer of a first conducting type formed on the substrate and composed of $Ga_pAl_{1-p}As_qP_{1-q}$ ($0 \leqq p \leqq 0.91$ and $0.47 \leqq q \leqq 1.0$), a second semiconductor layer formed on said first semiconductor layer and composed of $Ga_yIn_{1-y}As_xP_{1-x}$ ($0.52 \leqq y \leqq 1.0$ and $0 \leqq x \leqq 1.0$), a third semiconductor layer of a conducting type reverse to that of the first semiconductor layer, which is formed on said second semiconductor layer and is composed of $Ga_{p'}Al_{1-p'}As_{q'}P_{1-q'}$ ($0 \leqq p' \leqq 0.91$ and $0.47 \leqq q' \leqq 1.0$), said second semiconductor layer containing at least one optical confinement region having a higher refractivity than those of the first and third semiconductor and a band gap smaller than those of the first and third semiconductor layers.

4,288,758

HIGH POWER LASER AND CATHODE STRUCTURE THEREOF

Herb J. J. Seguin; John Tulip, and Kyong H. Nam, all of Edmonton, Canada, assignors to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Aug. 6, 1979, Ser. No. 64,093
Claims priority, application Canada, Jun. 14, 1979, 330140
Int. Cl.³ H01S *3/09*
U.S. Cl. 331—94.5 PE **5 Claims**



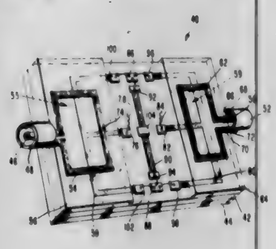
1. In an electric discharge gas laser, the improvement comprising:
(a) a flat plate of non-conducting material positioned in the laser in spaced relation to the laser anode to define a discharge region therebetween,
(b) a two-dimensional array of metal sub-electrode rods passing through the plate and having
(c) their upper ends lying flush with the surface of the plate,
(d) a block of dielectric material positioned below the plate and containing a series of transverse channels therein,
(e) electric current conductors lying in the channels and adapted for connection to a power supply,
(f) the lower ends of the said rods passing through openings in the block into the channels to define a predetermined uniform gap between the ends of the rods and the electrical conductor, and
(g) a liquid electrolyte solution filling the channels and electrically connecting the sub-electrode rods and the conductors.

4,288,759

MICROWAVE TRANSFORMER

Harry L. Stover, 99 E. Middle Field Rd., Mountain View, Calif. 94043

Filed Jan. 28, 1980, Ser. No. 116,121
Int. Cl.³ H01P *5/00*
U.S. Cl. 333—24 R **10 Claims**



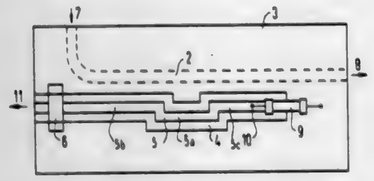
1. A center-tapped transformer for transferring energy having a center frequency $1/\lambda$ comprising:
(a) first coupling means including an elongated member and a stub member, said stub member having first and second ends, said first end conductively engaged to the center of said elongated member;
(b) second coupling means comprising a loop overlying and inductively engaged to said first coupling means; and
(c) means for providing a reactive impedance conductively engaged to said stub member at a distance of a multiple of one-quarter λ from the first end of said stub member.

4,288,760

STRIP LINE DIRECTIONAL COUPLER

Franz Beyer, and Peter Schucht, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 31, 1979, Ser. No. 71,840
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838317
Int. Cl.³ H01P *5/18*
U.S. Cl. 333—116 **8 Claims**



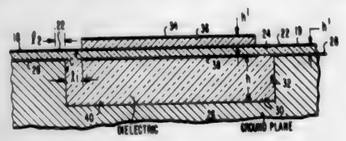
1. A directional coupler capable of being built in strip line technology, comprising two transmission lines coupled to each other and formed on opposite surfaces of a dielectric supporting plate and the ends of said transmission lines forming connecting points and with one transmission line formed as a microstrip line with a first strip line on one surface of said dielectric supporting plate and an electrical conducting grounded line surface formed on the opposite surface of said supporting plate, and wherein the other one of said transmission lines is formed as a coplanar line and comprises a second strip line (5) mounted on said opposite surface of said supporting plate in an area (4) which is free of said grounded line surface (3) and wherein said second strip line (5) is essentially parallel to said first strip line (2) of the microstrip line and wherein said second strip line (5) and said first strip line (2) are positioned on said dielectric plate such that energy is coupled between them along their lengths so that a directional coupler is formed.

4,288,761

MICROSTRIP COUPLER FOR MICROWAVE SIGNALS

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation, Farmingdale, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,767
Int. Cl.³ H01P *5/18*
U.S. Cl. 333—116 **5 Claims**



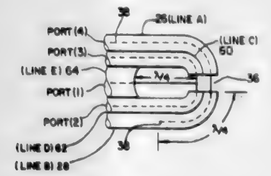
1. A microstrip coupler for microwave signals having a certain terminal impedance comprising:
a plurality of coplanar thin microstrip conductors having terminal portions, coupled portions extending over a certain distance with their edges in closely spaced parallel relation, and connecting portions between said terminal and coupled portions, said coupled and connecting portions being substantially wider than said terminal portions;
conductive means providing an electrical ground plane having different ground plane surfaces in different planes including a first planar surface having a certain dielectric spacing to said terminal microstrip portions in accordance with the characteristic terminal impedance of said coupler, a second planar surface having a certain dielectric spacing to said coupled microstrip portions larger than said terminal spacing, and a connecting surface between said planar surfaces;
a first thin electrically conductive coupling member between one face of said coupled microstrip portions and said second ground plane surface and of a length less than the length of said second ground plane surface;
and a second thin electrically conductive coupling member extending over and dielectrically spaced from the opposite face of said coupled microstrip portions;
said connecting microstrip portions of said microstrip conductors extending in length between said first coupling member and at least said connecting ground plane surface to compensate for capacitive coupling between said connecting microstrip portions and said connecting ground plane surface.

4,288,762

WIDEBAND 180° HYBRID JUNCTIONS

Gordon J. Laughlin, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 945,964, Sep. 26, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,309
Int. Cl.³ H01P *5/19*
U.S. Cl. 333—117 **4 Claims**



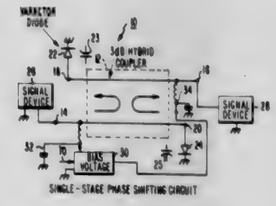
1. An impedance-matched 180° hybrid junction comprising:
first, second, third and fourth electrically conductive arms, each arm terminating in a port, and a stub arm, the arms being formed from transmission lines having inner and outer conductor means,
said first arm interfacing with said stub arm such that the inner conductor means of said first arm is connected to the inner conductor means of said stub arm,
said second arm interfacing with said third arm such that the inner conductor means of said second arm is connected to the inner conductor means of said third arm,
the outer conductor means of said first arm and said stub arm having a gap at the interface of said first arm and said stub arm, the outer conductor means of said second and third arms having a gap at the interface of said second and third arms, said gaps being at the center of the hybrid junction, and said gaps being small in length, approximately ten percent of the wavelength at the highest frequency of operation,
the inner conductor means of said second and third arms being connected to the inner conductor means of said fourth arm at the center of said gap in the outer conductor means of said second and third arms,
said fourth arm having no outer conductor means along its inner conductor means for a distance of $\lambda/4$ from the connection point of the inner conductor means of said fourth arm and the inner conductor means of said second and third arms, λ being the wavelength at a central frequency of a frequency band of operation,
the outer conductor means of the first and second arms and the outer conductor means of said fourth arm being joined, and the outer conductor means of the third and stub arms and the outer conductor means of said fourth arm being joined, such that power sent into the port of said first arm is transmitted in equal amplitude but in anti-phase to said second and third arms and no power is transmitted to said fourth arm, and such that power sent into the port of said fourth arm is transmitted in equal amplitude and in phase to said second and third arms and no power is transmitted to said first arm.

4,288,763

ANALOG PHASE SHIFTER

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation, Farmingdale, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,768
Int. Cl.³ H01P *1/18*
U.S. Cl. 333—164 **18 Claims**



1. An analog phase shifter for electrical signals at microwave radio frequencies within a certain broad bandwidth, said phase shifter comprising:
a hybrid coupler having a certain input impedance and including two reflection terminals, and two signal terminals respectively for receiving radio frequency signals from a source and for supplying said signals at a desired phase shift;
and separate similar means for producing a variable reactance connected to said reflection terminals to control the angle of signal reflectance thereat and thereby said phase shift, said variable reactance means, each producing an intermediate reactance approximately equal in magnitude to the input impedance of said coupler at an intermediate frequency of said bandwidth, and including means for varying said reactance over a certain range about said intermediate reactance in response to a control signal;
whereby said phase shifter is substantially independent of frequency over said bandwidth of radio frequencies.

4,288,764

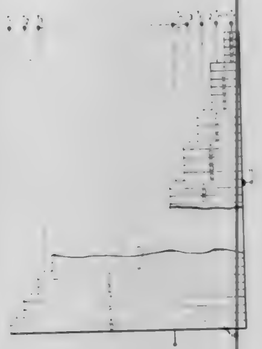
SIGNAL PROCESSING DEVICES

Lip H. Ong, Birmingham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 23, 1979, Ser. No. 87,609
Claims priority, application United Kingdom, Oct. 25, 1978, 41849/78; Nov. 15, 1978, 44568/78
Int. Cl.³ H03K *5/159*; G11C *19/28*; H03H *17/08, 11/36*
U.S. Cl. 333—165 **2 Claims**

1. A signal processing device comprising a plurality of input taps, a plurality of delay stages, and a clock signal input, said input taps being arranged to receive a plurality of signals, said delay stages being arranged in the path of signals from each input tap such that signal samples may be transferred from one stage of said delay stages to another stage of said delay stages in response to a clock signal applied at said clock signal input, said clock signal, in use, having a duty cycle which varies linearly with time at a predetermined rate, and the number of said stages in the path of said signals from each of said input

taps being determined in accordance with the predetermined function:



$$x_n = \frac{\log\left(\frac{(1+r)}{(1+r)-r(n-1)}\right)}{\log(1+r)} + 1$$

where n is the number of input taps, x_n is the number of delay stages in the path of signals from the nth input tap, and r is the rate of change of the clock duty cycle.

4,288,765

FREQUENCY SELECTOR APPARATUS

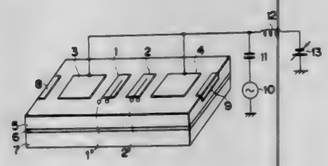
Nobuo Mikoshiba, Sendai, and Shoichi Minagawa, Urawa, both of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,513

Claims priority, application Japan, Jun. 6, 1978, 53/67289

Int. Cl.³ H03H *9/72, 9/64, 9/68;* **H03F** *7/00*

U.S. Cl. 333—195 **11 Claims**



1. A frequency selector apparatus comprising:

a piezoelectric element;

elastic surface wave transducer means disposed in an acoustic wave propagation track formed in said piezoelectric element, said elastic surface wave transducer means comprising a signal input transducer and a signal output transducer;

reflecting electrode means disposed in said acoustic wave propagation track; and

exciting power source means connected to said reflecting electrode means, wherein said exciting power source means comprises an a.c. signal source and a d.c. bias source.

4,288,766

MICROWAVE CIRCUIT

Toshimichi Okita, Hatano, Japan, assignor to Sony Corporation, Tokyo, Japan

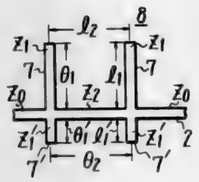
Filed Nov. 8, 1979, Ser. No. 92,639

Claims priority, application Japan, Nov. 13, 1979, 53-139713

Int. Cl.³ H03H *1/203, 3/08*

U.S. Cl. 333—204 **1 Claim**

1. A microwave circuit comprising, a dielectric; a transmission line mounted on one surface of said dielectric, a conductor mounted on the other surface of said dielectric, and at least two stubs provided on said transmission line at different positions thereof, said two stubs extending transversely to said transmission line on one side thereof for a distance l_1, and having electrical angles of θ_1 and spaced apart a distance l_2 and an electrical angle of θ_2, at least one of said stubs extending across said transmission line on both sides of said transmission line and



having a different length l_1', and electrical angle θ_1' which differ from l_1 and θ_1 and wherein

$$(\tan\theta_1 + \tan\theta_1')\tan\theta_2 = 2$$

and

$$\tan\theta_1 = \tan\frac{2\pi}{\lambda A} l_1 = \infty$$

$$\tan\theta_1' = \tan\frac{2\pi}{\lambda' A} l_1' = \infty$$

where λA and λ'A corresponds to frequencies f_A and f_A' where maximum attenuation occurs above and below the pass band.

4,288,767

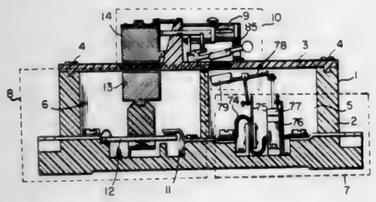
AUTOMATIC MAGNETIC SWITCH

Wen-Fong Lee, 13-2, Lane 79, Sec. 1, Chung-Kung Rd., Tai-chung, Taiwan (400)

Continuation-in-part of Ser. No. 751,209, Dec. 16, 1976, Pat. No. 4,150,350. This application Dec. 8, 1978, Ser. No. 967,712

Int. Cl.³ H01H *73/02, 73/30*

U.S. Cl. 335—6 **20 Claims**



1. An automatic magnetic switch comprising a switch casing having a cover, over-load and short-circuit protection means installed in a first chamber of said switch casing, a manual magnetic switch installed in a second chamber of said switch casing, and a magnetic control means at least partially contained in a sub-casing arranged on the cover, said manual magnetic switch having a first electrically conductive plate or means fixedly mounted within said casing; a first electrical contact on said first electrically conductive plate or means; a generally rigid and inflexible second electrically conductive plate or means mounted within said casing for movement between engaging and disengaging positions with respect to said first electrically conductive plate or means; a second electrical contact on said second electrically conductive plate or means arranged to make and break contact with said first electrical contact in the respective engaging and disengaging positions of said second electrically conductive plate or means; resilient means for urging said second electrically conductive plate or means to one of said engaging and disengaging positions; said magnetic control means cooperating with said second electrically conductive plate or means and including actuatable means movable proximate to and away from an accessible wall on the opposite side thereof with respect to said second electrically conductive plate or means, said magnetic control means being actuatable by said over-load and short-circuit protection means to thereby automatically switch off power in the magnetic switch upon the occurrence of an over-load or short-circuit condition in said conductive plates and contacts, movement of said actuatable means proximate to said accessible wall moving said second electrically conductive plate or means to the other of said engaging and disengaging positions without material flexure or deformation thereof.

4,288,768

ELECTRICAL FULL PROTECTION CIRCUIT BREAKER

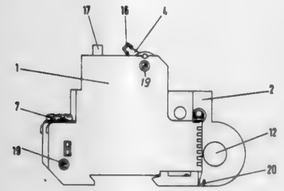
Hans Arnhold, Kälberau, and Peter Flohr, Kahl, both of Fed. Rep. of Germany, assignors to Firma Heinrich Kopp GmbH & Co. KG., Kahl, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 62,166

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834327

Int. Cl.³ H01H *83/02*

U.S. Cl. 335—18 **10 Claims**



1. An electrical full protection circuit breaker for interrupting the current circuit in response to an overload current, a short circuit current, or an earth leakage or fault current, comprising the structural and functional combination of single pole circuit breaker means with an earth leakage current circuit breaker means, each having a narrow structure and the same housing contour, said leakage current circuit breaker means comprising its own contact interruption means (10, 11) and its own outwardly located terminal connection zone including a summing current transformer means accessible from outside the circuit breaker and constructed as a bushing transformer located in said terminal connection zone for operatively electrically coupling with the single pole circuit breaker means through connecting conductors leading to the circuit breaker means for detecting current, and means operatively mechanically coupling said single pole circuit breaker means and said leakage current circuit breaker means in switching engagement to form an effective double pole circuit breaker combination.

4,288,769

AMBIENT TEMPERATURE RESPONSIVE TRIP DEVICE FOR STATIC TRIP CIRCUIT BREAKERS

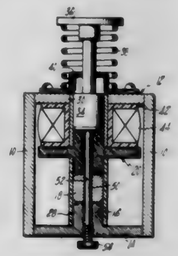
Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,095

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—173 **13 Claims**

1. In an electromagnetic trip device including a plunger reciprocally mounted for movement between a retracted position and an extended position, a spring biasing the plunger to its extended position, a permanent magnet developing a holding flux in a holding flux path including the plunger, the holding flux providing sufficient magnetic holding force on the plunger to hold the plunger in its retracted position against the bias of the spring, and an electromagnet selectively electrically energized to develop flux in the flux path opposing the holding flux whereby the magnetic holding force is diminished to the extent that the spring becomes overpowering and thus acts to propel the plunger to its extended position effective in initiating tripping of a circuit breaker, a thermal trip override comprising a temperature response element acting in response to an excessive ambient temperature condition within a circuit



breaker enclosure to increase the magnetic reluctance of the holding flux path at a predetermined location therein, thereby to reduce the magnitude of the holding flux flowing in the plunger and thus reduce the magnetic holding force exerted thereon to the extent that the spring becomes overpowering and the plunger is propelled by the spring to its trip initiating, extended position.

4,288,770

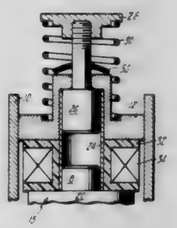
THERMAL OVERRIDE FOR STATIC TRIP CIRCUIT BREAKERS

Stephen F. Gillette, Rocky Hill, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,097

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—173 **10 Claims**



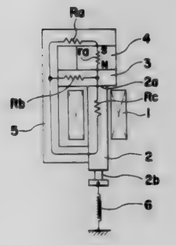
1. For incorporation in an electromechanical trip device including a permanent magnet for developing a holding flux to create a magnetic force on a plunger sufficient to hold the plunger in a retracted position against the bias of a spring and an electromagnet for selective electrical energization to develop flux in opposition to the holding flux, whereby the magnetic holding force on the plunger is diminished to the extent that the spring becomes overpowering, whereupon the plunger is propelled by the spring to an extended circuit breaker trip initiating position, a thermal trip override comprising a thermal-mechanical element acting to exert a force on the plunger aiding the spring force such as to overpower the magnetic holding force when the temperature becomes excessive whereupon the plunger is propelled to its extended, circuit breaker trip initiating position by the spring.

4,288,771

ELECTROMAGNETIC DRIVEN DEVICE

Hiroshi Ueda, Nara, and Shigeru Oyokota, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 8, 1980, Ser. No. 119,775
Claims priority, application Japan, Feb. 16, 1979, 54-17586
Int. Cl.[3] H01F *7/08*
U.S. Cl. 335—230 16 Claims



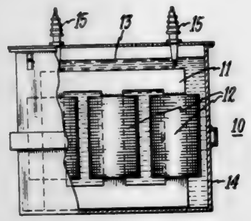
1. An electromagnetically driven device comprising:
a coil adopted to be energized by the application of an electric power thereto;
a plunger made of magnetic material and inserted in the hollow of the coil for movement in an axial direction of the hollow of the coil between an inserted position and an ejected position;
an armature made of magnetic material and having first, second and third faces, said first face of the armature being positioned to confront with one end of the coil, one end of the plunger contacting said first face of the armature when said plunger is moved to its inserted position;
a permanent magnet having first and second polar faces, said first polar face of the permanent magnet being held in contact with the second face of the armature for magnetizing the armature, said plunger being held in the inserted position, when said coil is deenergized, by a magnetic attractive force developed between the first face of the armature and the plunger, and said plunger being released from the magnetic attractive force in readiness for movement from the inserted position towards the ejected position when said coil is energized to counterbalance said magnetic attractive force;
a yoke made of a magnetic material and arranged for establishing a main magnetic circuit for the magnetic flux generated by said coil and said permanent magnet, and a bypass magnetic circuit for the magnetic flux generated by said permanent magnet, said main magnetic circuit being established through said yoke, said first and second faces of said armature and said first and second polar faces of said permanent magnet while said bypass magnetic circuit is established through said yoke, said second and third faces of said armature and said first and second polar faces of said permanent magnet;
means for presenting a predetermined reluctance between the third face of the armature and said yoke for bypassing predetermined flux emanated from the first polar face of the permanent magnet through the armature and the yoke without passing through the plunger to control the magnetic attractive force between the first face of the armature and the plunger.

4,288,772

DIELECTRIC LIQUID IMPREGNATED WITH GASES FOR USE IN TRANSFORMERS

Ian H. MacBeth, Egremont, Mass., assignor to General Electric Company, N.Y.

Continuation of Ser. No. 969,246, Dec. 13, 1978, abandoned.
This application Mar. 6, 1980, Ser. No. 127,686
Int. Cl.[3] H01F *27/10*; H01B *3/20*
U.S. Cl. 336—58 2 Claims



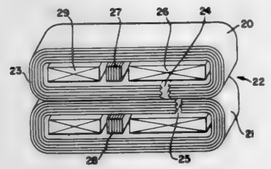
1. A transformer having improved 60 Hertz voltage breakdown characteristics comprising:
a transformer casing including at least one core and at least one winding arranged around the core; and
a quantity of silicone fluid within the casing for insulating and cooling the core and winding, with five to twenty-five percent by volume of sulfur hexafluoride gas for improving the 60 Hertz voltage breakdown properties of the silicone fluid.

4,288,773

AMORPHOUS METAL BALLASTS AND REACTORS

Robert P. Alley, Manlius, and Russell E. Tompkins, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1978, Ser. No. 966,855
Int. Cl.[3] H01F *17/06, 71/08, 77/24*
U.S. Cl. 336—160 6 Claims



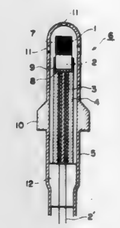
1. An amorphous metal inductive device for ballast and reactor applications comprising a pair of coplanar generally "O" shaped magnetic cores, each constructed of nested almost closed loops of amorphous metal strip having loop openings located along one core side, the core sides with such openings being adjacent to and in contact with one another to be the center leg of a magnetic structure, said amorphous metal loop openings in each core are aligned to define a constant gap of predetermined length, the gap in one core being separated from the gap in the other core, and at least one coil mounted on said center leg magnetically coupled with said cores.

4,288,774

GAS DETECTOR

Akio Takami; Toshitaka Matsuura, and Tsutomu Saito, all of Wagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jan. 17, 1980, Ser. No. 112,977
Claims priority, application Japan, Jan. 18, 1979, 54-5649[U]
Int. Cl.[3] H01L *7/00*
U.S. Cl. 338—34 4 Claims



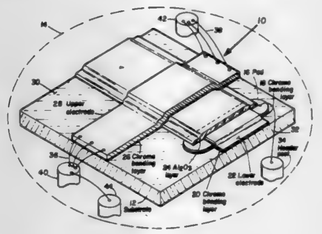
1. A gas detector comprising: a gas sensitive element having an electrical resistance which varies with the type of gas with which said element is in contact, at least first and second electrodes coupled to said gas sensitive element, lead wires operatively coupled to said electrodes of said gas sensitive element, a ceramic insulator tube for supporting said gas sensitive element, said gas sensitive element having a lower part and an upper part, the lower part of said gas sensitive element being positioned in a slot in said tube and said tube having through holes provided therein for receiving said lead wires and a housing for enclosing said tube, said electrodes being provided only in the upper part of said gas sensitive element which is not positioned within said insulator tube.

4,288,775

DEVICE AND METHOD OF MANUFACTURING A RELATIVE HUMIDITY SENSOR AND TEMPERATURE SENSOR

Paul F. Bennewitz, and Matt C. Bennewitz, both of 623 Wyoming, S.E., Albuquerque, N. Mex. 87123

Filed Nov. 9, 1979, Ser. No. 92,766
Int. Cl.[3] H01L *7/00*
U.S. Cl. 338—35 6 Claims



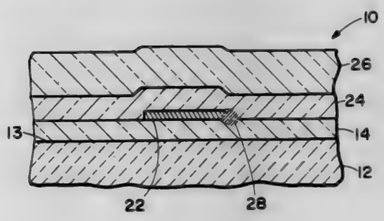
1. A semiconductor for use as a sensor for detecting relative humidity comprising:
a lower electrode formed from a noble metal;
an essentially pure layer of Al_2O_3 having a thickness ranging from approximately 120 angstroms to 5000 angstroms deposited on said lower electrode, said layer of Al_2O_3 having a disordered crystalline structure and a density gradient which varies progressively through the thickness of said layer of Al_2O_3 from a less dense structure at the lower surface of said layer of Al_2O_3 adjacent said lower electrode to a more dense structure at the upper surface of said layer of Al_2O_3;
an upper electrode deposited on said upper surface of said layer of Al_2O_3, said upper electrode having a thickness ranging from approximately 7 Å to approximately 1000 Å; whereby said disordered crystalline structure and said density gradient of said layer of Al_2O_3 function to produce a linear response to relative humidity from said sensor.

4,288,776

PASSIVATED THIN-FILM HYBRID CIRCUITS

Robert E. Holmes, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 910,178, May 30, 1978, Pat. No. 4,210,500. This application Jan. 9, 1980, Ser. No. 110,562
Int. Cl.[3] B05D *3/06*
U.S. Cl. 338—308 10 Claims



1. A method for manufacturing a thin-film electrical microcircuit structure containing a laser-trimmed circuit element, which structure includes an unfractured silicon nitride passivation layer, comprising the subsequential steps of:
(a) forming a first layer of an insulating oxide on a substrate,
(b) forming a thin-film electrical circuit element on the first oxide layer, said element being formed from a material containing a metal capable of reacting with silicon nitride at the temperature produced by laser trimming of the element to form a metal nitride having a dissociation temperature no higher than the first-mentioned temperature,
(c) forming a second layer of an insulating oxide over the circuit element and adjacent portions of the first oxide layer,
(d) depositing a layer of silicon nitride over the exposed surface of said second layer, and
(e) trimming the thin-film circuit element to a desired value by removing portions of the element with a laser beam directed through said silicon nitride layer and second oxide layer.

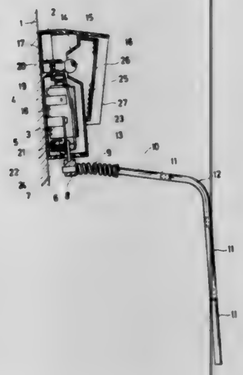
6. A microcircuit structure comprising
a substrate having a first layer of an insulating oxide on a surface thereof, said layer having a minimum average thickness of about 1,000 angstroms,
a thin-film electrical component disposed on said first oxide layer, said component being formed from a material containing a metal capable of reacting with silicon nitride at the temperature produced by laser trimming of the component to form a metal nitride having a dissociation temperature no higher than the first-mentioned temperature, and
an unfractured protective coating covering said component and adjoining surface areas of the first oxide layer, said coating including a second layer of an oxide deposited to a minimum average thickness of about 1,000 angstroms on said component's and the first oxide layer's surface areas, and an overlying layer of silicon nitride,
said structure including a relatively high resistance region within the portions of said oxide layers that adjoin said component, said region being formed by laser trimming of the component through said protective coating and containing a stable reaction product of said metal with the material forming said oxide layers.

4,288,777

PARKING AID

Manfred Luik, Ulmer Str. 18, 7250 Leonberg, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 56,103
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830604; Jan. 8, 1979, 2900489
Int. Cl.[3] G08G *1/14;* H01H *3/16, 19/00*
U.S. Cl. 340—51 17 Claims



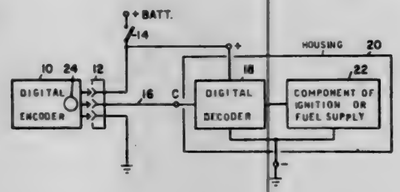
1. A parking aid for vehicles approaching an obstacle, particularly a wall of a garage, comprising signal generating means; and actuating means operatively connected with said signal generating means to trigger the same when contacted by an approaching vehicle, said actuating means comprising a resiliently mounted contact member coupled with said signal generating means, a feeler member having an upper part extending outwardly from the obstacle and a lower part extending vertically downwardly from said upper part, and a resilient spring having spaced end portions connected to said upper part of said feeler member and to said contact member, respectively.

4,288,778

ELECTRONIC THEFT PREVENTION APPARATUS FOR VEHICLES

Yehuda Zucker, 6 Gan Yavne St., Rishon Le Zion, Israel

Filed Jul. 2, 1979, Ser. No. 53,794
Claims priority, application Israel, Jul. 2, 1978, 55057
Int. Cl.[3] B60R *25/04, 25/10*
U.S. Cl. 340—64 16 Claims



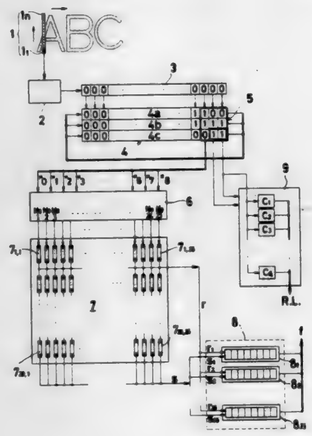
1. Vehicle theft prevention apparatus comprising:
decoder means integrally formed with a vehicle component and selectively enabling the operation thereof;
encoder means accessible to a vehicle operator for providing coded instructions to the decoder means to enable operation of said vehicle component; and
data coupling means for interconnecting said decoder means and said encoder means to permit data transfer therebetween, whereby application of a constant battery voltage to said data coupling means is not effective to operate said decoder means.

4,288,779

METHOD AND APPARATUS FOR CHARACTER READING

Nobuyuki Otsu, Tokyo; Shunji Mori, Kashiwa, and Taiichi Saito, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 54,704
Claims priority, application Japan, Jul. 8, 1978, 53/82512
Int. Cl.[3] G06K *9/68*
U.S. Cl. 340—146.3 Y 5 Claims



1. A character reading method for character recognition, comprising the steps of:
(a) subjecting a string of character patterns to continuous discrimination scanning carried out by one column in the row direction on the character patterns to produce a digital binary signal derived from the character pattern information of the column being scanned;
(b) matching sequentially the digital binary signal containing character pattern information with predetermined mask patterns on the basis of histograms of the character patterns, and producing histogram signals of the character feature for each mask pattern;
(c) accumulating the successively produced histogram signals by additive extraction so as to extract local feature vectors on the basis of the histograms;
(d) subjecting the local feature vectors to linear consolidation to produce lower dimensional feature axis vectors, and
(e) matching the feature axis vectors with predetermined standard vectors defined from known character categories.

4,288,780

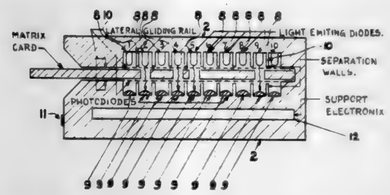
PATTERN RECOGNITION SYSTEM

Alexander S. Theodoru, 210 Thames St., New London, Conn. 06320, and Stefan G. Theodoru, 28-18 29th St., Long Island City, N.Y. 11102

Filed Jul. 12, 1979, Ser. No. 57,098
Int. Cl.[3] G06K *7/14*
U.S. Cl. 340—146.3 Z 22 Claims

1. A pattern recognition system comprising:
a thin card having a matrix array, said card being coded by perforating a plurality of elements of said matrix array in a pattern to be recognized;

a card reader, said reader having means for receiving said card and producing an electrical signal for every matrix position on said card;
a comparator including, an matrix array of radiant energy emitting elements said array of radiant energy emitting elements being arranged such that each one of said radiant energy emitting elements matches in number and location, a different one of said elements of said matrix array of said card and an array of radiant energy sensors identical to said array of radiant energy emitting elements, each being sensor optically aligned with a different one of said radiant energy emitting elements of said array of radiant energy emitting elements, said comparator having a pre-set code



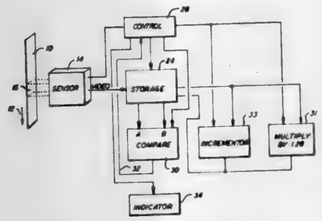
such that said comparator provides a "1" logic level output signal when said pre-set code in said comparator matches exactly the code on said card when said card is inserted into said reader and provides a "0" logic level output signal when said pre-set code in said comparator and the code in said card do not match exactly when said card is inserted into said reader, said reader providing input signals to said comparator indicative of the code of a card inserted into said reader,
an array of Schmitt trigger circuits, means for coupling the said electrical signals from said card reader to a corresponding one of said Schmitt trigger circuits, and means for coupling the outputs of said Schmitt trigger circuits to said comparator.

4,288,781

CURRENCY DISCRIMINATOR

Harvey R. Sellner, Newtown, and Robert T. Wada, Ridgefield, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 960,156, Nov. 13, 1978. This application Jul. 24, 1979, Ser. No. 60,090
Int. Cl.[3] G06K *9/00*
U.S. Cl. 340—146.3 Q 9 Claims



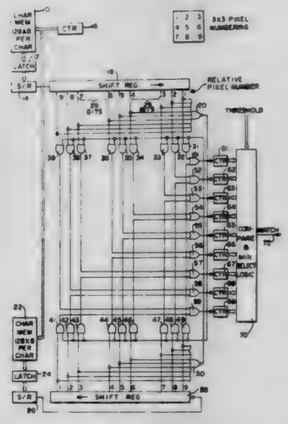
1. Apparatus for identifying the denomination of a bank note or the like comprising, in combination:
means for directing a source of light onto one surface of the bank note whose denomination is to be determined;
means for measuring the reflectance of light from a plurality of incremental areas disposed across the length of the bank note whose denomination is to be determined;
means for comparing the reflectance of light from each incremental area with the reflectance of light from each of a preselected plurality of other incremental areas of said bank note taken in a preselected sequence and producing a first correlation signal responsive to said comparisons for each incremental area; and
means for comparing said first correlation signals to second reference correlation signals corresponding to each denomination identifiable by the apparatus to determine the denomination of the bank note to be identified.

4,288,782

HIGH SPEED CHARACTER MATCHER AND METHOD

Ronald S. Bader; Lyle V. Rennick, both of Cupertino, and Robert H. Wallis, Portola Valley, all of Calif., assignors to Compression Labs, Inc., Cupertino, Calif.

Filed Aug. 24, 1979, Ser. No. 69,258
Int. Cl.[3] G06K *9/68*
U.S. Cl. 340—146.3 Q 13 Claims



1. In a high speed character matching apparatus, the method comprising the steps of storing digital pixel data representing first and second characters, respectively, forming an array for each pixel of said first and second characters where each pixel of said first and second characters is the center element of said array surrounded by its nearest neighboring pixels, determining whether each center pixel is in a first state, determining whether any pixel in the corresponding array of said second character is in said first state or in a second state, different from said first state, and counting the number of pixels of said center pixel and said corresponding array when said pixels are in said first state.

4,288,783

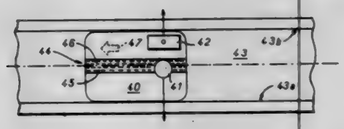
DEVICE FOR SELECTIVELY AUTHORIZING PASSAGE THROUGH A DOOR

Dominique Chauvat, Chalet des Mounines, Bressolles, 03000 Moulins, and Michel Charpentier, 42 avenue des Jardins Anglais, 77410 Claye-Souilly, both of France, assignors to Dominique Chauvat, Moulins; Michel Charpentier, Claye-Souilly and S.A. Emile Chauvat et Sofranq Reunis, Moulins, all of, France, a part interest to each

Filed May 23, 1980, Ser. No. 152,465
Claims priority, application France, May 23, 1979, 79 13078
Int. Cl.[3] H04Q *3/00;* G06K *5/00*
U.S. Cl. 340—149 A 10 Claims

1. A device for selectively authorizing the bearer of a coded card to pass through a door in a wall, the device comprising: a card reader located in the vicinity of the door and accessible from the or each approach side thereof, said card reader being responsive to the insertion of a card by reading a digital signal recorded on the card and comprising a path along which the card is moved, extending longitudinally between opposite sides

of the aforementioned wall and terminating at its opposite ends in respective slots with respective card sensors, a bidirectional drive system for moving a card in either of two opposite directions along said path and a read head centrally located on said card path to read the aforementioned signal from a longitudinal track centrally located on the card; means for opening or permitting opening of the door in response to an electrical command signal; a logic unit including a memory and connected to said card reader and said door opening means to compare the read digital signal with a plurality of digital signals stored in said memory and responsive to equality of said read signal with at least one of said stored signals by sending an electrical command signal to said door opening means, said



logic unit being responsive to insertion of a card in the first of said slots by causing said drive system to operate in such a way as to move the card in a first direction from said slot to a position beyond said read head and selectively responsive to comparison of the signal read from the card with the aforementioned plurality of signals by causing said drive system to operate in such a way as to move the card in a second direction opposite to said first direction so as to return it to the first slot, or by sending an electrical command signal to said door opening means; and means responsive to closure of the door following the sending of said electrical command signal to said door opening means by causing said drive system to operate in such a way as to move the card to the second slot.

4,288,784

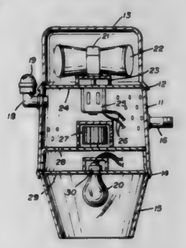
LIGHT AND ALARM DEVICE

Andrew Fusco, 52 Winchester, Youngstown, Ohio 44509

Filed Oct. 31, 1979, Ser. No. 89,997

Int. Cl.³ G08B *1/08, 7/00*

U.S. Cl. 340—326 **4 Claims**



1. A security light and alarm device consisting of a housing having light transmitting extensions on its upper and lower ends, a rotatable socket assembly positioned in the extension on said upper end thereof, at least one alarm lamp mounted in said rotatable socket assembly, a power source, a circuit in connection with said power source and said rotatable socket assembly for energizing said rotatable socket assembly and alarm lamp and means for imparting rotary movement to said rotatable socket assembly, a security light located in said light transmitting extension on the lower end of said housing, a circuit in connection with said power source and said security light, a photocell positioned exteriorly of said housing and arranged to receive light from said alarm lamp and controlling said circuit connecting said power source and said security light, said photocell arranged to disconnect said security light by interrupting said circuit thereto upon actuation and rotation of said alarm lamp, and separate means for controlling said circuit in connection with said power source and said rotatable socket assembly and the alarm lamp and said means for imparting rotary movement to said socket assembly and wherein said security light is a mercury vapor type.

4,288,785

LIGHT INTENSITY MODULATOR WITH DIGITAL CONTROL AND A DIGITAL-ANALOG CONVERTER COMPRISING SUCH A MODULATOR

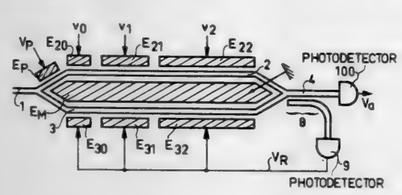
Michel Papuchon; Claude Puech, and Jean C. Anne, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 20, 1980, Ser. No. 151,616

Claims priority, application France, May 23, 1979, 79 13194

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **8 Claims**



1. A digitally controlled light intensity modulator comprising, on the surface of a substrate having electro-optical properties, a two-arm interferometer connected to an input guide receiving incident optical radiation, the fractions of radiation propagated in the two arms combining at the output of the interferometer in an output guide, the intensity of the emerging radiation depending on the phase shift introduced into the interferometer between the fractions of radiation propagated in the two arms, wherein the phase shift is the sum of n elementary phase shifts successively created along the interferometer respectively by n digital control voltages, these n elementary phase shifts being produced in conformity with a geometrical progression of common ratio 2.

4,288,786

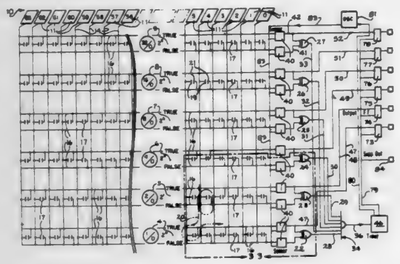
TOUCH SENSING KEYBOARD CONSTRUCTION

Ferenc Ledniczki, Foster City, and Richard J. Patak, San Jose, both of Calif., assignors to Touch Activated Switch Arrays, Inc., Santa Clara, Calif.

Filed Jan. 15, 1979, Ser. No. 3,708

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 S **2 Claims**



1. A keyboard construction comprising a predetermined number of keys disposed in an array for operation therein, said keys when operated serving to provide an associated output signal related thereto, encoding means comprising a first series of conductors operatively coupled to said keys for electrically sensing operation of said keys, a series of pairs of conductors common to said first series of conductors, each of said pairs representing a binary number, means for coupling a signal

representative of the operation of each one of said first series of conductors to one or the other conductor of each of said pairs of conductors to represent a first or second state thereof, and means coupled to said pairs of conductors for providing a binary output representation for each of said keys when so operated, means disposed downstream of said encoding means for detecting the operation of each key, and validity checking means responsive to the detection of the operation of said keys and serving to preclude an output from the system upon finding an invalid condition in the operation of said keys, said validity checking means being disposed downstream of said encoding means.

4,288,787

CONTROL KEYBOARD WITH SWITCHES OF MECHANICAL CONSTRUCTIONS

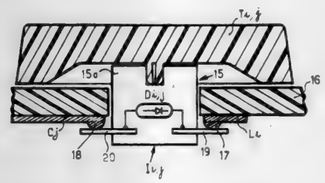
Edouard Serras-Paulet, Casa Nostra - Péch des Treilles, 82240 Puylaroque, France

Filed Apr. 3, 1979, Ser. No. 26,763

Claims priority, application France, Jan. 17, 1979, 79 01101

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 R **5 Claims**



1. A keyboard wherein each key is provided with a magnetic biasing means for urging the same back to a rest position and is operatively coupled to at least one single-pole switch, each switch comprising a movable contact part including two conducting elements electrically insulated from each other and wherein said switches are electrically connected to a system of conductors arranged in a matrix-like array with m rows and n columns, each row and each column being carried out as a conductor so that any switch having the coordinates i, j is connected between the row i and the column j of said system and adapted in the rest position of the switch to contact in engaging relationship, two terminals electrically connected to the corresponding conductors of the row and of the column of said system and a diode-like element associated with said switch being connected across both conducting elements, wherein the improvement consists in that each of said switches is of the normally closed contact type and comprises a diode-like element, said diode-like element being inserted within an insulating portion of said switch, said insulating portion forming an anchoring support keeping both conducting elements spaced from each other, said diode-like element being connected in series within the switch, the direction of connection of all said diodes being the same between the rows and the columns.

4,288,788

ELECTROSTATIC ALPHA-NUMERIC DISPLAY

Wesley A. Rogers, Grosse Pointe Park, and James J. Laggan, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 19, 1980, Ser. No. 150,896

Int. Cl.³ G08B *5/00*

U.S. Cl. 340—378.2 **4 Claims**

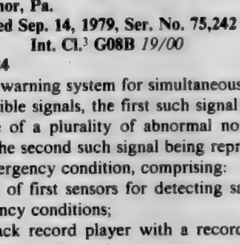
1. A display device comprising

an array of controllable bistable movable electret elements which change in appearance upon change of position so that a desired visible pattern is produced by selective positioning of the elements,

each electret element having a pivot axis about which it can rotate to either of two stable positions and two opposed edge portions spaced from the pivot axis and bearing opposite electrical charges,

a frame member having an array of windows each provided with pivot points for rotatably supporting an electret element,

pairs of conductive strips on opposite sides of the windows,



each strip disposed adjacent a charged edge portion of an electret element, whereby when voltage is applied across each pair of strips electrostatic forces are developed on the charged edges to selectively rotate or hold still the electret elements, and

means for supplying control voltages to the strips to effect a visible display pattern by selective positioning of electret elements.

4,288,789

ALARM SYSTEM WITH VERBAL MESSAGE

George C. Molinick, Box No. 111, Twin Rock, Pa. 15960, and Roger W. Shields, Ebensburg, Pa., assignors to George C. Molinick, Manor, Pa.

Filed Sep. 14, 1979, Ser. No. 75,242

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—524 **5 Claims**

1. An audible warning system for simultaneously providing two distinct audible signals, the first such signal being representative of one of a plurality of abnormal non-emergency conditions and the second such signal being representative of an abnormal emergency condition, comprising:

(a) a plurality of first sensors for detecting said abnormal non-emergency conditions;

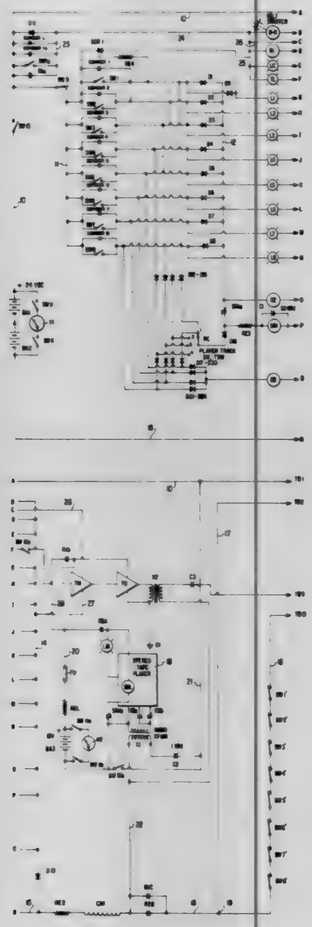
(b) a multi-track record player with a recording medium having a plurality of verbal messages prerecorded thereon in different channels corresponding to said abnormal non-emergency conditions;

(c) means for activating the record player to play the appropriate verbal message over a speaker device triggered by operation of one of said first sensors;

(d) at least one second sensor for detecting an abnormal emergency condition; and

(e) a tone generator for generating and broadcasting an

emergency warning tone over said same speaker device in response to the activation of said second sensor simulta-



neously with the playing of said appropriate prerecorded verbal message.

4,288,790

FIRE ALARM

Walter Schnell, Herzogenbuchsee, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland

Filed Jan. 10, 1980, Ser. No. 110,900

Claims priority, application Switzerland, Feb. 26, 1979, 1867/79

Int. Cl.³ G08B *17/10*

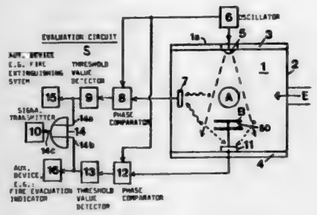
U.S. Cl. 340—628 **11 Claims**

1. A fire alarm comprising:

a measuring chamber accessible to air to be monitored for the presence of smoke and aerosol particles;

a radiation source operated in a pulsed mode for transmitting electromagnetic radiation in the measuring chamber;

an acoustical receiver for taking-up air vibrations produced by the absorption of radiation pulses by the particles; and



an evaluation circuit connected with said acoustical receiver for delivering a signal as soon as the intensity of the air vibrations exceeds a predetermined threshold.

4,288,791

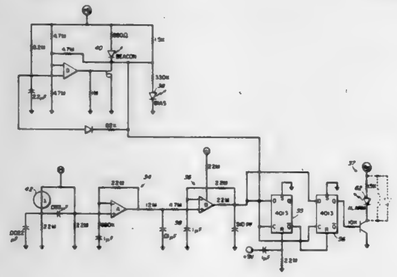
SMOKE DETECTOR AND METHOD

William J. Malinowski, Johnson St., P.O. Box 274, Bryantville, Mass. 02327

Filed Feb. 11, 1980, Ser. No. 120,635

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—630 **4 Claims**



2. A system for detecting an aerosol such as smoke or the like, comprising

(a) means defining an examination zone in which smoke and the like is adapted to pass,

(b) a photo responsive device mounted in position to monitor the zone,

(c) a first light source of relatively low intensity mounted in position to illuminate said photo responsive device and pre-bias said device by an amount corresponding to a predetermined concentration of aerosol in said zone,

(d) a second light source of relatively high intensity mounted in position to illuminate only said zone and any aerosol therein,

(e) power means for energizing said system,

(f) control means operatively connected to said power means, said light sources and said photo responsive device for cyclically operating said light sources in timed sequence of relatively long pulses of light from said first source and relatively short pulses from said second source whereby a relatively long pulse of light from said first source will illuminate said photo responsive device to pre-bias said device and generate a first output therefrom and a relatively short pulse of light from said second source after said long pulse will illuminate said zone and reflect against any aerosol present therein and onto said photo responsive device to generate a second output therefrom,

(g) detecting means for comparing said first and second electrical outputs, and,

(h) alarm means operatively connected to said detecting

means and adapted to be actuated by said detecting means in the event that said second electrical output from said device produced by said short pulse of light is at least equal to said first electrical output.

4,288,792

ELECTRONIC APPARATUS WITH TIME-DIVISION DRIVE

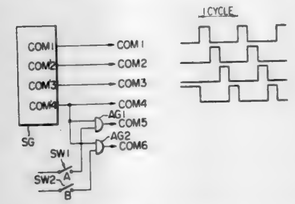
Ichiro Sado; Juji Kishimoto, both of Tokyo, and Hiroshi Murata, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1978, Ser. No. 972,281

Claims priority, application Japan, Dec. 28, 1977, 52-160620

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—756 **15 Claims**



1. An electronic apparatus having a device to be driven on the time division basis, comprising:

a plurality of objects to be driven;

signal generating means for generating a plurality of signals of mutually different phases;

means for applying the plurality of signals obtained from said signal generating means to several of said driven objects;

means for producing additional signals from a certain one of the signals generated from said signal generating means, wherein said additional signals are applied to the remaining objects to be driven, said additional signal producing means including means for selecting among said remaining objects the object to be driven by said additional signals; and

means for generating information signals;

said device including means for receiving the additional signals from said additional signal producing means and the information signals from said information signal generating means to control the operation of said one object.

4,288,793

APPARATUS CONTAINING A CYLINDER WITH A DISPLACEABLE PISTON THEREIN AND A MEASURING TRANSDUCER ARRANGED ESSENTIALLY WITHIN THE CYLINDER

Bernhard Lötscher, Andelfingen, Switzerland, assignor to Rotovolumetric AG, Ebikon, Switzerland

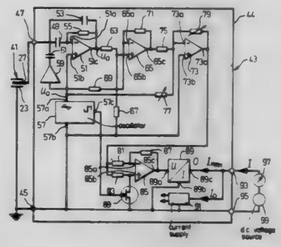
Filed Apr. 23, 1979, Ser. No. 32,335

Claims priority, application Switzerland, May 11, 1978, 5125/78

Int. Cl.³ G08C *19/10*; G01L *9/12*

U.S. Cl. 340—870.37 **9 Claims**

6. An apparatus containing a cylinder, a displaceable piston provided with a longitudinal opening and being displaceable in the cylinder by means of a flow medium, a capacitive measuring transducer arranged essentially in the cylinder, which measuring transducer contains two mutually displaceable electrically conductive parts, of which the first is secured at the cylinder and extends into the longitudinal opening of the piston and the second part is connected with the piston and from which the second part protrudes into the lengthwise opening of the first, wherein the first measuring transducer part is electrically conductively connected with metallic parts of the cylinder and piston and the second measuring transducer part is electrically insulated in relation to the cylinder and the piston as well as guided, by means of an electrical connection out of the cylinder, wherein said second measuring transducer part is provided at its surface confronting the first measuring transducer part with an electrically insulating sleeve, which, together with said first measuring transducer part forms a



sliding seat, and the lengthwise opening of said first measuring transducer part into which said second measuring transducer parts protrudes, is connected by at least one through passage, thus allowing pressure equalization with the inner space of the cylinder.

4,288,794

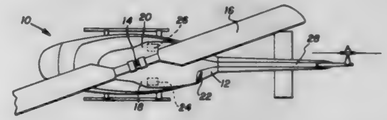
SHIELDED LOOP VOR/ILS ANTENNA SYSTEM

Osborne, Gregory W.; William C. Ripley, both of Arlington, and Robert E. Wilson, Fort Worth, all of Tex., assignors to Textron Inc., Providence, R.I.

Filed Dec. 26, 1979, Ser. No. 106,285

Int. Cl.³ H01Q *1/28, 7/04*

U.S. Cl. 343—708 **21 Claims**



1. A VOR/ILS antenna system for rotary wing aircraft eliminating modulation of signals without varying speed of a mast driven rotor, comprising:

a pair of loop antennas, each having one or more closed loop windings, mounted and spaced on said aircraft in a generally horizontal plane on opposite sides of said mast;

each said antenna having a conductive shield covering said windings and dielectrically separated therefrom, each said shield having a small gap breaking the continuity thereof and facing the gap in the other shield; and

communication means including a pair of electrical leads for each said antenna extending through said shield from said windings at a point opposite said gap.

4,288,795

ANASTIGMATIC THREE-DIMENSIONAL BOOTLACE LENS

J. Paul Shelton, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1979, Ser. No. 88,191

Int. Cl.³ H01Q *19/06*

U.S. Cl. 343—754 **6 Claims**

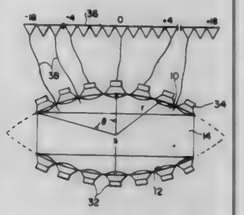
1. A three dimensional lens adapted to have electromagnetic energy transmitted thereacross for use in a planar antenna array comprising:

a first concave cap section including a plurality of radiators defining feed ports;

a second concave cap section including a plurality of radiators defining lens ports;

said concave cap sections facing each other and spaced apart on a central axis;

material filling the space between the facing concave cap sections having an index of refraction decreasing radially outwardly from a point on the central axis midway between the cap sections;



transmission lines connecting the lens ports with the planar antenna array;

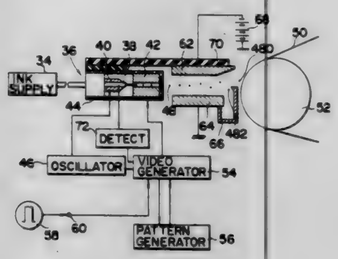
whereby electromagnetic energy passing between said feed ports and lens ports is caused to take paths through the material whose path lengths are varied due to the changing index of refraction of the material for improved off-axis focusing of the antenna array for forming simultaneous multiple directive beams.

4,288,796

PHASE DETECTION IN AN INK JET SYSTEM PRINTER OF THE CHARGE AMPLITUDE CONTROLLING TYPE

Masahiko Aiba, and Ikuo Umeda, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1978, Ser. No. 917,592
Claims priority, application Japan, Jun. 27, 1977, 52-76752; Jun. 28, 1977, 52-77501; Jun. 28, 1977, 52-77502
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 **12 Claims**



1. In an ink jet system printer of the charge amplitude controlling type including an ink droplet issuance unit and a phase detection system associated therewith, an ink liquid supply system being connected to said ink droplet issuance unit for supplying ink liquid thereto, a plurality of ink droplets are formed and emitted from a nozzle of said ink droplet issuance unit, are charged in a charging tunnel of said ink droplet issuance unit, are emitted from said ink droplet issuance unit and travel toward a record receiving medium, said phase detection system comprising:

metal filter means positioned between said ink droplet issuance unit and said ink liquid supply system, said metal filter means receiving said ink liquid from said ink liquid supply system and being in contact with said ink liquid passing therethrough, an electric current passing through said metal filter means to said ink liquid passing therethrough only when the imposition of a charge on said ink droplets passing through the charging tunnel is synchronized with the formation of said ink droplets at the nozzle; and

detection circuit means connected to said metal filter means for detecting said electric current flowing in said ink liquid passing through said metal filter means and developing an output signal representative thereof;

said ink jet system printer further including a synchronization system means responsive to said output signal from said detection circuit means for developing an output signal in response thereto,

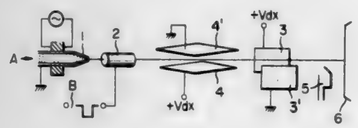
said output signal from said synchronization circuit means energizing said charging tunnel of said ink droplet issuance unit thereby synchronizing the imposition of a charge on said ink droplets in said charging tunnel with the formation of said ink droplets from said nozzle of said ink droplet issuance unit.

4,288,797

VARIABLE-CHARGE TYPE INK-JET PRINTER

Masanori Horike, Tokyo; Koichiro Jinnai, Kawasaki; Kyuhachiro Iwasaki, Fujisawa, and Yutaka Kodama, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,338
Claims priority, application Japan, Nov. 10, 1978, 53-124122
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **9 Claims**



1. A variable-charge type ink-jet printer characterized by the provision of

(a) a print head unit having a nozzle from which an ink jet issues;

(b) a charge electrode means for charging ink drops in response to the print signals;

(c) a pair of X-direction deflection electrodes; and

(d) a pair of Y-direction deflection electrodes orthogonal to said pair of X-direction deflection electrodes, said Y-direction deflection electrodes being inclined with respect to each other so that the distance therebetween increases in the X-direction, so that ink drops which are more highly charged and which therefore undergo greater X-direction deflection, move through a weaker vertical field region of the deflection electrodes, so that the vertical deflection of said drops is made less than what it would otherwise be, whereby the charged ink drops may be deflected both in orthogonal X and Y directions to fly trajectories away from the trajectory of the uncharged ink drops, the deflections in the X-direction of the charged ink drops being varied depending upon the charge imparted to the respective ink drops, the relative inclination of the Y-direction deflection electrodes being such that the Y-direction deflections of said ink drops are the same regardless of the magnitude of the charges imparted to the respective ink drops.

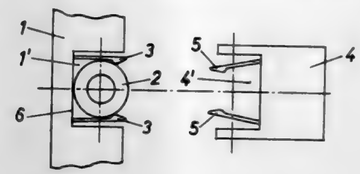
4,288,798

STYLUS CHANGING DEVICE

Walter Hollmayer, Himberg, Austria, assignor to Goerz Electro Gesellschaft m.b.H., Vienna, Austria

Filed Oct. 4, 1979, Ser. No. 81,916
Int. Cl.³ G01D *15/00*
U.S. Cl. 346—139 R **2 Claims**

1. A stylus changing apparatus for use in automatically controlled drafting machines utilising a plurality of styli comprising a fixed magazine defining a plurality of compartments for receiving styli not instantaneously in use and a displaceable carriage for the stylus in use, the carriage also defining a compartment for the stylus, wherein each compartment of the magazine and the chamber of the stylus carriage each include a stylus holding device, the holding devices in the compartments being identical and being formed by the rear wall of the compartment defining a fixed stop for the stylus and by two resilient clips, the free ends of which project into the compartment, said free ends each having an inwardly directed projection or barb formed thereon, said projections abutting against a stylus located in the compartment and resisting, in use, motion of said stylus away from said rear wall whereby transfer of a stylus between the magazine and the carriage is effected by displacing the carriage in directions parallel to its co-ordinate axes.

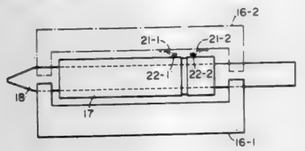


4,288,799

LIQUID JET RECORDING HEAD WITH PERMANENT JIG ALIGNMENT

Shunichi Uzawa, Naka; Shigeyuki Matsumoto; Minoru Miyazaki, both of Kawasaki; Akio Iijima, Yokohama, and Kunio Watanabe, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,269
Claims priority, application Japan, May 14, 1979, 54-58977
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **6 Claims**



1. A liquid jet recording head used for a liquid jet recording device conducting recording by projecting a liquid droplet to a predetermined direction which comprises:

recording head elements each of which comprises an inflow port side end portion having an inflow port for the liquid, an ejecting orifice side end portion having an ejecting orifice for ejecting the liquid at the end, a pressure generating portion existing between the inflow port side end portion and the ejecting orifice side end portion and communicating with them, and an electromechanical transducer connected to the pressure generating portion and capable of changing the inner pressure of the liquid in the pressure generating portion; and

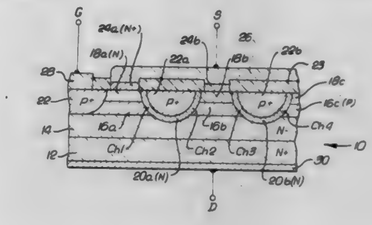
a jig comprising grooves for fixing the recording head elements and electric contacts for applying electric signals to the electromechanical transducer, the recording head element being pressed from two directions to be fixed to the groove and an electric contact being established between the electromechanical transducer and the jig.

4,288,800

JUNCTION FIELD EFFECT TRANSISTOR

Takashi Yoshida; Takeshi Matsuyama; Tamaki Kuki, and Takayuki Kodaka, all of Hamamatsushi, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Division of Ser. No. 845,202, Oct. 25, 1977, Pat. No. 4,181,542.
This application Aug. 6, 1979, Ser. No. 63,829
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **10 Claims**



1. A junction field transistor comprising:

a semiconductor substrate having one principal surface, said substrate including a first semiconductor layer of one conductivity type extending substantially in parallel with said principal surface and a second semiconductor layer of the opposite conductivity type to said one conductivity type formed on said first semiconductor layer and extending substantially in parallel with said principal surface;

a first diffused region of said one conductivity type formed in said second semiconductor layer in accordance with a predetermined channel pattern and reaching said first semiconductor layer;

a second diffused region of said opposite conductivity type formed in said first diffused region to define a channel region of said one conductivity type between said second diffused region and said second semiconductor layer, one end of said channel region being conductively coupled with said first semiconductor layer;

a first main electrode electrically connected to said first semiconductor layer;

a control electrode electrically connected to said second diffused region; and

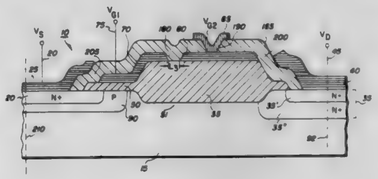
a second main electrode electrically connected to the other end of said channel region on said second semiconductor layer.

4,288,801

MONOLITHIC HVMOSFET ACTIVE SWITCH ARRAY

Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1979, Ser. No. 43,563
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—41 **9 Claims**



1. A HVMOSFET cascade switch structure having closed geometry in an integrated array on a monolithic substrate with relatively monotonicall decreasing voltage order from the center out, comprising:

(a) first switch means having a first drain area formed in the substrate at its relative center with a relatively high voltage potential applied thereto, having a first source area

formed in the substrate at its relative outer periphery at a predetermined distance and in concentric relation to the first drain, and having a first gate disposed at a predetermined distance and in concentric relation above a first channel formed in the substrate interposably at a predetermined distance and in concentric relation between the relative center and the outer periphery for connection to the first drain area for operation as an active MOS load of the structure relative to the substrate; and

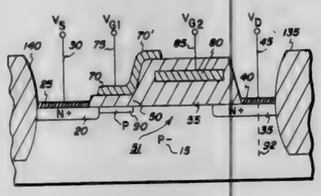
(b) second switch means having a second drain area formed in the substrate at its relative inner periphery that is operatively coincidently common with the first source area, having a fixed common ground voltage potential at a second source area formed in the substrate at the relative outer periphery at a predetermined distance and in concentric relation to the second drain, and having a second gate with a control input voltage potential applied thereto disposed at a predetermined distance and in concentric relation above a second channel formed in the substrate interposably at a predetermined distance and in concentric relation between the relative inner and outer peripheries for controlling the switching of an outputted relatively high voltage potential at the second drain area.

4,288,802

HVMOSFET DRIVER WITH SINGLE-POLY GATE STRUCTURE

Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 17, 1979, Ser. No. 43,870
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—41 **18 Claims**



1. A MOSFET component for use as a monolithic integrated array on a substrate having closed geometry including a drain area as a relative center axis introduced in the substrate, a source area introduced in the substrate relatively concentric and adjacent to the drain area, a channel area introduced in the substrate between the source area and drain areas which it is relatively concentric to, and a drift area introduced in the substrate between the channel area and drain area which it is relatively concentric to, comprising:

(a) first gate means embedded in a first layer of relatively thick oxide relatively disposed over the drift area for applying a relatively high voltage potential through the first layer to the drift area for stretching out the field lines away from the drain area; and,

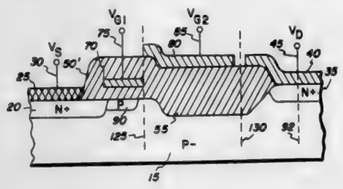
(b) second gate means embedded in a second layer of relatively relative thin oxide relatively disposed over the channel area and introduced as part of the same relatively non-overlapping layer as said first gate means for controlling the potential and for turning on and off the current between the source and drain areas.

4,288,803

HIGH VOLTAGE MOSFET WITH DOPED RING STRUCTURE

Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1979, Ser. No. 43,972
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—41 **25 Claims**



1. A high voltage MOSFET in an integrated monolithic array on a substrate with a closed geometry configuration including a drain area having a relative center axis introduced in the substrate, a source area introduced in the substate relatively adjacent to the drain area, a channel area introduced in the substrate between the source area and the drain area, and a drift area introduced in the substrate between the channel area and the drain area, comprising:

(a) field plate means relatively disposed in a first layer of relatively thick oxide over the drift area for application of a potential through the first layer of thick oxide to the drift area for controlling the breakdown voltage as between the source and drain area by contouring the field lines to bend away from the drain area;

(b) gate electrode means relatively disposed in a second layer or relatively thin field oxide over the channel area for controlling the potential and for turning on and off the potential as between the source and drain areas and;

(c) ring means implanted in the substrate to be relatively aligned with the spatial gaps occurring between said field plate means and said gate electrode means as doped areas for reducing resistance in the spatial gaps by providing a conductive path for carriers as between said gate electrode means and said field plate means.

4,288,804

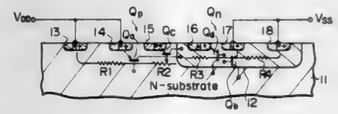
COMPLEMENTARY METAL-OXIDE SEMICONDUCTOR

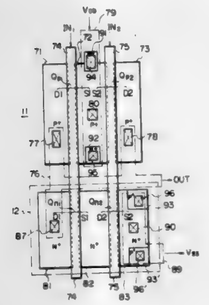
Hideo Kikuchi, Yokohama; Haruyoshi Takaoka, and Shigenori Baba, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 10, 1979, Ser. No. 102,017
Claims priority, application Japan, Dec. 27, 1978, 53/164997
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—42 **13 Claims**

1. In a field effect transistor device which includes a first portion of a substrate having a first type of conductivity, a second portion of the substrate having a second type of conductivity opposite to the first conductivity type and being contained in the first substrate portion, at least one first channel field-effect transistor formed in the second substrate portion and provided with two first regions each having the first conductivity type which act as the source and the drain thereof, at least one second channel field-effect transistor in the first substrate portion with two second regions each having the second conductivity type which act as the source and the drain thereof, a first voltage supply which applies a first voltage potential to the first substrate portion and to a selected one of said second regions of at least one of said second field-effect transistor(s) and a second voltage supply which applies a second voltage potential to the second substrate portion and to a selected one of said first regions of at least one of said first field-effect transistors, the configuration of selected ones of said two regions of each of said first and second substrate portions and said first and second substrate portions comprising at least one parasitic bipolar transistor, the improvement comprising:

at least one additional doped portion in a respective selected one of said first and second substrate portions and having the same conductivity type as the respective substrate portion in which it is formed, formed at a position sufficiently close to a respective region of the respective field-effect transistor that is directly connected to the respective voltage supply so as to reduce effectively to zero the resistance biasing the base of said at least one parasitic bipolar transistor that is associated with the respective second region that is directly connected to the respective voltage supply, each said additional doped portion being directly connected to the respective voltage supply.



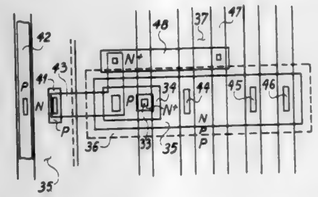


4,288,805

INTEGRATED LOGIC GATE WITH NPN INVERTER, PNP CLAMP, COUPLING SCHOTTKY DIODES AND DIFFUSED CROSSUNDER

Maurice Depey, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 14, 1979, Ser. No. 20,491
Claims priority, application France, Mar. 14, 1978, 78 07279
Int. Cl.³ H01L *27/04*; H03K *19/084, 19/091*
U.S. Cl. 357—44 **18 Claims**



1. A logic element structure suitable for high density integration including:

a first NPN transistor having an emitter coupled to circuit ground, a collector and a base;

a Schottky diode coupled to said collector of said first transistor for providing a logic element output; and

a second PNP anti-saturation transistor having a base coupled to said collector of said first transistor, a collector coupled to circuit ground and an emitter coupled to said base of said first transistor;

said logic element structure being fabricated as a monolithic integration on a semiconductor crystal and comprising:

an isolated region of N-type semiconductor material having a generally rectangular solid shape including inner and outer principal faces and lateral faces, said region being bounded on its inner principal face by a substrate and by a buried layer of N^+-type semiconductor material, said isolated region being bounded on its lateral faces by an insulating wall of P-type semiconductor material and being bounded on its principal outer face by a first region of P-type semiconductor material, this first region of P-type semiconductor material occupying the periphery of the isolated region and partially covering the insulating wall, said isolated region also being bounded on its principal outer face by a second region of P-type semiconductor material insulated from the first region of P-type semiconductor material by a minimum thickness of N-type semiconductor material, this second region of P-type semiconductor material surrounding a second region of N^+-type semiconductor material, and an N^+-type semiconductor region diffused into the insulating wall providing connection to an adjacent logic element

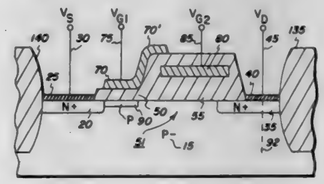
said Schottky diode comprising and being formed by a metallization on the principal outer face of the isolated region between the first and second P-type semiconductor regions.

4,288,806

HIGH VOLTAGE MOSFET WITH OVERLAPPING ELECTRODE STRUCTURE

Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 29, 1979, Ser. No. 43,288
Int. Cl.³ H01L *27/10*
U.S. Cl. 357—45 **20 Claims**



1. A high voltage metal oxide semiconductor structure in an integrated monolithic array on a substrate having closed geometry for implementation as a driver including a drain region having a relative center axis introduced in the substrate adjacent to the drain region, a source area introduced in the substrate relatively adjacent to the drain area, a channel region introduced in the substrate between the source region and the drain regions, and a drift region introduced in the substrate between the channel region and the drain region, comprising:

(a) field plate means relatively disposed in a first layer of relatively thick field oxide over the drift region, for application of a potential through the first layer to the drift region for controlling the breakdown voltage as between the source and device regions by contouring the field lines to bend away from the drain region; and

(b) gate electrode means relatively disposed in a second layer of relatively thin field oxide over the channel region and being spatially overlapped by said field plate means for controlling the potential and turning on and off the current between the source and drain regions and for reduction of series resistance generated in the spatial area between said field plate means and said gate electrode means that it relatively overlaps.

4,288,807

DARLINGTON CIRCUIT HAVING AN IMPROVED DIODE DRAIN

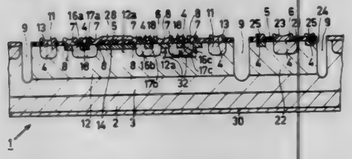
Theodoor H. Enzlin, Eindhoven, and Antonius J. Janssen, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,750

Claims priority, application Netherlands, Apr. 7, 1978, 7803706

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—46 **9 Claims**



1. A semiconductor device having a Darlington amplifier circuit comprising:

a semiconductor body having first and second bipolar transistors, each comprising an emitter and a collector region of a first conductivity type and an intermediate base region of a second conductivity type opposite to that of the first, the emitter region of said first transistor being connected to the base region of said second transistor;

a diode provided between the base and the emitter regions of said first transistor;

a surface region of said first conductivity type in the base region of the first transistor and electrically connected thereto, said surface region forming a first zone of said diode and said first zone comprising a plurality of juxtaposed sub-zones which are at least partially separated from each other by parts of the base region of the first transistor and are connected to said parts of the base region by a contact layer which extends across the p-n junction between said sub-zones and said parts of the base region;

a second region of said second conductivity type in the surface region and forming a rectifying contact with said surface region, said second region forming a second zone of said diode, and said second zone comprising a plurality of sub-zones, a sub-zone of the second zone being located in each juxtaposed sub-zone of the first zone, and each sub-zone of the second zone being connected to the emitter region of said first transistor.

4,288,808

CIRCUIT STRUCTURES INCLUDING INTEGRATED CIRCUITS

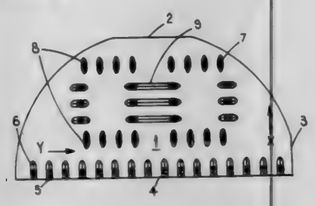
Gerald H. Hantusch, Cheadle, England, assignor to International Computers Limited, London, England

Filed Jan. 23, 1979, Ser. No. 5,918

Claims priority, application United Kingdom, Jan. 28, 1978, 03549/78

Int. Cl.³ H01L *23/48*; H05K *3/30*

U.S. Cl. 357—68 **9 Claims**



1. A method of manufacturing a circuit structure including integrated circuit comprising the steps of providing a planar member of semi-conductor material; forming on one surface of said member a plurality of recesses of V-section; forming on said one surface a plurality of electrical conductors including contact areas arranged in a predetermined pattern, each contact area having at least a portion thereof lying in one of said recesses; providing an integrated circuit chip of semi-conductor material, the chip carrying on one surface a plurality of raised electrically conductive contact pads arranged in a formation corresponding to said predetermined pattern; aligning the contact pads on the chip one with each corresponding contact area on the planar member by locating each contact pad in the recess of the corresponding contact area; and bonding each contact pad to the corresponding contact area to provide electrical contact therebetween.

3. A method of manufacturing a substrate for mounting an integrated circuit element having raised contact pads arranged in a predetermined pattern comprising the steps of providing a planar member of semi-conductor material; forming on one surface of said member a plurality of recesses of V-section serving to co-operate with the raised contact pads and thereby locate said element on the substrate; and forming on said one surface a plurality of metallic electrical contact areas arranged in said predetermined pattern, at least a portion of each contact area lying in a corresponding one of the recesses.

4,288,809

TELEVISION RECEIVER APPARATUS FOR SELECTIVELY DISPLAYING A VIDEO PICTURE OR ALPHANUMERIC DATA INFORMATION

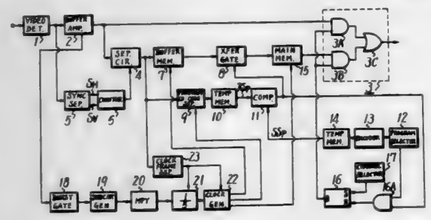
Toyoji Yabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 21, 1980, Ser. No. 152,116

Claims priority, application Japan, May 23, 1979, 54-63527

Int. Cl.³ H04N *9/32*

U.S. Cl. 358—12 **24 Claims**



23. Television receiver apparatus for receiving and selectively displaying on the display screen of a cathode ray tube a video picture derived from video signals transmitted on a broadcasting channel and having field and horizontal line intervals, or alphanumeric data information derived from alphanumeric data program signals transmitted during at least one selected horizontal line interval in each field interval, said broadcasting channel transmitting a predetermined number of alphanumeric data programs, each alphanumeric data program being transmitted over a number of said field intervals with each of said selected horizontal line intervals containing an alphanumeric data program identification code formed of alphanumeric characters representing a respective alphanumeric data program, said apparatus comprising:

alphanumeric data program separating means for separating said alphanumeric data program signals and said alphanumeric program identification codes from the received broadcasting channel;

addressable memory means having a plurality of addressable storage locations for storing respective ones of said alphanumeric program identification codes;

switch means manually operable to clear the contents of said addressable memory means;

read means, including read address counter means, operative after the contents of said addressable memory means have been cleared, to address successively each of said storage locations during a predetermined interval so as to read out the contents of each addressed storage location;

comparator means coupled to said separating means and to said addressable memory means to compare each alphanumeric program identification code read out from said addressable memory means to the alphanumeric program identification code then being received by said television receiver apparatus and to produce a comparison signal if the compared codes are equal;

write means, including write address counter means, operative after the contents of all of said storage locations have been read out, to write the alphanumeric program identification code then being received by said television receiver apparatus into the storage location addressed by said write address counter means;

write address pulse generating means for supplying periodic write address pulses to said write address counter means to increment the count thereof;

inhibit means responsive to said comparison signal to inhibit said write means from writing the alphanumeric program identification code then being received by said television receiver apparatus into the storage location addressed by said write address counter means and to inhibit the count of said write address counter means from being incremented;

read only memory (ROM) means having a plurality of sections, each associated with an alphanumeric character and each section having storage locations for storing patterns of data elements representing a respective alphanumeric character;

means for addressing the sections of said ROM means with the alphanumeric characters forming the alphanumeric program identification code read out from said addressable memory means;

means for reading out the patterns of data elements from the storage locations of the addressed section of said ROM means during predetermined portions of successive ones of said horizontal line intervals;

color signal generating means for supplying a predetermined background color signal to said cathode ray tube;

enabling means for enabling said color signal generating means during at least said predetermined portions of a preselected number of horizontal line areas such that an area of background color is displayed on the display screen of said cathode ray tube; and

color control means for controlling said color signal generating means in accordance with said patterns of data elements read out from said ROM means to modify said background color and provide a viewable display of alphanumeric program identification codes.

4,288,810

METHOD OF AND APPARATUS FOR DERIVING A PAL COLOR TELEVISION SIGNAL CORRESPONDING TO ANY DESIRED FIELD IN AN 8-FIELD PAL SEQUENCE FROM ONE STORED FIELD OR PICTURE OF A PAL SIGNAL

John O. Drewery, Coulsdon, and Richard Storey, Sutton, both of England, assignors to British Broadcasting Corporation, London, England

Filed May 29, 1979, Ser. No. 43,540

Claims priority, application United Kingdom, May 30, 1978, 23924/78; May 30, 1978, 23925/78

Int. Cl.³ H04N *9/39, 9/535*

U.S. Cl. 358—16 **15 Claims**

1. A method of deriving a PAL colour television signal corresponding to any field in an 8-field PAL sequence from one stored field or picture of a PAL signal, comprising:

providing a first selected combination of signals from more than one line of said stored field to form a first part of said signal containing at least the low-frequency components thereof;

separately providing a second selected combination of signals from more than one line of said stored field to form a second part of said signal containing only chrominance components thereof such that successive fields have the sub-carrier phase appropriate to the respective successive fields of a PAL signal; and

combining said first and second parts to form said derived signal.

4,288,811

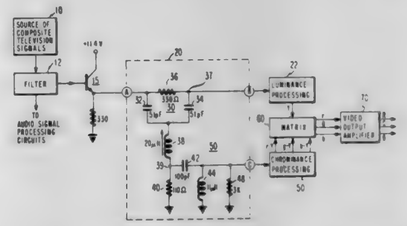
LUMINANCE AND CHROMINANCE SIGNAL SEPARATION NETWORK

Saiprasad V. Naimpally, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,926

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—31 **10 Claims**



1. In a color television receiver including a source of composite video signals containing a luminance component and a chrominance component including modulated color subcarrier, a luminance signal processing channel, and a chrominance signal processing channel, a filter circuit for separating said luminance and chrominance components comprising:

a bridged-T filter network for attenuating said chrominance component at said input of said luminance channel, including

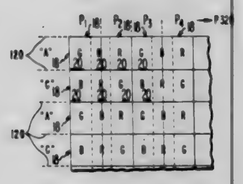
a first signal path coupled between said source of video signals and an input of said luminance channel, said first path including a first reactive impedance;

a second signal path coupled between an intermediate point in said first signal path and a point of reference potential, said second path including a second reactive impedance tuned with said first reactive impedance to the frequency of said color subcarrier and a signal tap between said second reactive impedance and said point of reference potential; and

a bandpass filter with an input coupled to said signal tap and an output coupled to said chrominance channel, said bandpass filter cooperating with said bridged-T filter to selectively pass to said chrominance channel signal frequencies

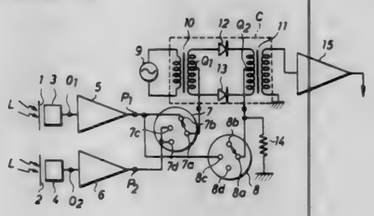
within a range of frequencies occupied by said chrominance component.

4,288,812
COLOR FILTER
Roland N. Rhodes, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 19, 1979, Ser. No. 94,286
Int. Cl.³ H04N 9/09
U.S. Cl. 358—44 **11 Claims**



1. A color filter for use with an image pickup device having a plurality of photosensors and a line scan direction, said filter comprising a plurality of horizontally repetitive sets of areas of different colors, all of the areas having a dimension in the direction of said line scan which is less than the corresponding dimension of the photosensors of said pickup device.

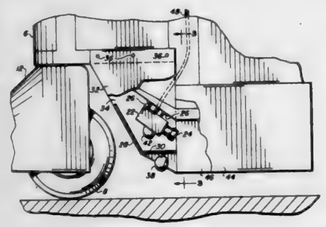
4,288,813
APPARATUS FOR AUTOMATICALLY ENGRAVING MIMEOGRAPHIC STENCIL PAPERS
Takehisa Miyashita, and Mujika Fujiwara, both of Tokyo, Japan, assignors to Gakken Co., Ltd., Tokyo, Japan
Filed Sep. 10, 1979, Ser. No. 73,844
Int. Cl.³ H04N 1/46
U.S. Cl. 358—75 **4 Claims**



1. In an apparatus for automatically engraving mimeographic stencil papers including a drum for being wound with an original and stencil papers, a light-receiving portion for reading the contents disclosed in the original and a recording portion for engraving the stencil papers, the improvement which comprises:

two light-receiving elements having color filters with different spectral characteristics, each element having an output, a comparator circuit for determining the output of the light receiving elements depending upon the magnitude of input voltages into the circuit produced by said light-receiving elements, and a switching means which selectively connects the two outputs of said light-receiving elements to the two inputs of said comparator circuit, such that the contents of every color engraved in the original is decomposed into two colors, one being black and the other any other color.

4,288,814
CLOSED CIRCUIT VIDEO GUIDANCE SYSTEM FOR FARMING VEHICLES AND METHOD
Bruce J. Talley, and Barry G. Tolbert, both of Parker, Ariz., assignors to Talley & Sons, Inc., Parker, Ariz.
Filed Feb. 4, 1980, Ser. No. 117,869
Int. Cl.³ H04N 7/18
U.S. Cl. 358—93 **8 Claims**



1. A guidance system for use in conjunction with a farming vehicle adapted to be driven through a field of crops planted in rows, the crops having relatively dense foliage making it difficult for an operator of the farming vehicle to ascertain the position of the rows, the farming vehicle having a plurality of drive wheels and at least one guide wheel, the farming vehicle also having a steering mechanism for controlling the guide wheel, the steering mechanism allowing an operator to steer the farming vehicle, the farming vehicle having a longitudinal axis corresponding to the direction in which the farming vehicle travels and also having a lateral axis perpendicular to the longitudinal axis, said guidance system comprising in combination:

a. a video camera including a lens, said lens having an optic axis;

b. attaching means for attaching said video camera to the farming vehicle and for positioning said video camera to view an area of the ground lying below the farming vehicle for differentiating the rows in which the crops are planted from furrows formed between such rows, the optic axis of said lens being positioned to lie in a plane perpendicular to the lateral axis of the farming vehicle; and

c. a video monitor attached to the farming vehicle in proximity to the steering mechanism and electrically coupled to said video camera for displaying the area of the ground viewed by said video camera and assisting the operator of the vehicle in ascertaining the position of the rows and furrows formed within the field;

whereby, an operator can steer the farming vehicle in accordance with the information displayed by said video monitor in order to maintain the guide wheel and the plurality of drive wheels within the furrows.

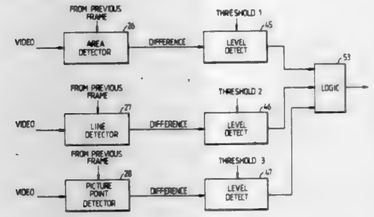
4,288,815
VIDEO PICTURE PROCESSING INCLUDING MOVEMENT DETECTION
Barry D. R. Miles, Newbury, England, assignor to Quantel Limited, Berkshire, England
Filed Mar. 14, 1980, Ser. No. 130,356
Claims priority, application United Kingdom, Mar. 22, 1979, 10114/79
Int. Cl.³ H04N 7/18
U.S. Cl. 358—105 **14 Claims**

1. A video detector system for detecting picture movement and/or noise on a video signal, said detector system including:

first detector means for detecting differences frame by frame on a portion of picture having a plurality of picture points from more than one line;

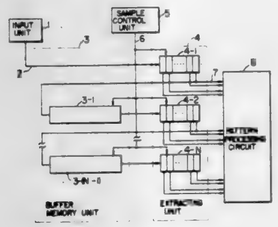
second detector means for detecting differences frame by frame on a portion of picture having a plurality of picture points from the same line;

third detector means for detecting differences frame by frame on a portion of picture comprising a single picture point, and



output means for receiving an output from said first, second and third detectors to determine that movement has occured in dependence on the outputs from said first, second and third detector means.

4,288,816
COMPRESSED IMAGE PRODUCING SYSTEM
Seiji Kashioka, Hachioji; Yoshihiro Shima, Kokubunji; Takafumi Miyatake, Tokorozawa, all of Japan; Masakazu Ejiri, San Jose, Calif., and Osamu Obata, Takasaki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 17, 1978, Ser. No. 897,133
Claims priority, application Japan, Apr. 18, 1977, 52-43554
Int. Cl.³ H04N 7/12
U.S. Cl. 358—138 **6 Claims**



1. A compressed image producing system comprising:

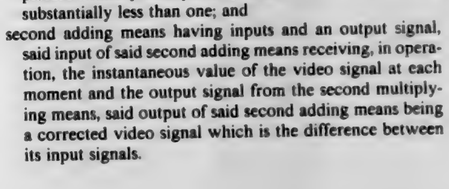
a first means for successively scanning a two-dimensional image to convert the image information on the respective scanning lines into picture element signals in synchronism with reference clock pulses;

second means operated by first sampling instruction pulses for the temporary storage of said image signals including a plurality of stages of information storages connected so that said image signals supplied from said first means to a first stage of the information storages are sequentially shifted to following stages of the information storages;

third means operated by second sampling instruction pulses for construction of partial images including a plurality of shift registers provided corresponding to said information storages, said shift registers taking in said image signals from the corresponding information storages in accordance with the input order thereof to parallelly deliver plural-bit image signals; and

fourth means for generating said reference clock pulses, said first sampling instruction pulses which control said second means so that said image signals from said first means are sampled through predetermined scanning lines for the supplying thereof to said second means and said second sampling instruction pulses which control said third means so that said image signals from said second means are sporadically sampled at a predetermined interval for the supplying thereof to said third means, said fourth means including a control circuit for shifting the timing of the generation of at least one of said first and second sampling instruction pulses in timing with the end of the image scanning operation performed by said first means, whereby for the scannings repeatedly performed on the same image, the image signals relating to the sampled picture elements different from those in the previous scanning are supplied to said third means.

4,288,817
METHOD AND A DEVICE FOR ELIMINATING FIXED ERROR DISTURBANCES IN A PYROELECTRIC VIDICON
Anders N. E. Igel, Jarfalla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 18, 1979, Ser. No. 31,267
Claims priority, application Sweden, Apr. 26, 1978, 7804820
Int. Cl.³ H04N 5/14, 5/34
U.S. Cl. 358—163 **14 Claims**



3. A device for eliminating disturbances from fixed error sources in a video signal from an infrared camera of the pyroelectric vidicon type in which a heat picture is projected onto a pyroelectric detector plate, the plate is scanned by means of a beam of electrons for producing the video signal containing information about variations in the heat picture on the plate, and a stationary heat picture is converted to a variable heat picture on the plate, said device comprising:

a picture memory having an input, an output signal, a capacity for storing a video signal corresponding to a complete scan of the detector plate, and a delay equal to the time for a complete scan of the detector plate;

first multiplying means having an input and an output signal, said input of said first multiplying means receiving, in operation, the output signal from the picture memory, said output of said first multiplying means being a signal which is, in operation, the output signal of the picture memory multipled by a factor, K, which is less than but nearly equal to one;

first adding means having inputs and an output signal, said inputs of said first adding means receiving, in operation, the instantaneous value of the video signal at each moment and the output signal from the first multiplying means, said output of said first adding means being a signal which is the sum of its input signals and which is applied to the input of the picture memory;

second multiplying means having an input and an output signal, said input of said second multiplying means receiving, in operation, the output signal from the picture memory, said output of said second multiplying means being a signal which is, in operation, the output signal from the picture memory multiplied by a reduction factor which is substantially less than one; and

second adding means having inputs and an output signal, said input of said second adding means receiving, in operation, the instantaneous value of the video signal at each moment and the output signal from the second multiplying means, said output of said second adding means being a corrected video signal which is the difference between its input signals.

4,288,818

METHOD AND SYSTEM TO SCAN MOTION PICTURE FILM TO DEVELOP TELEVISION SIGNALS

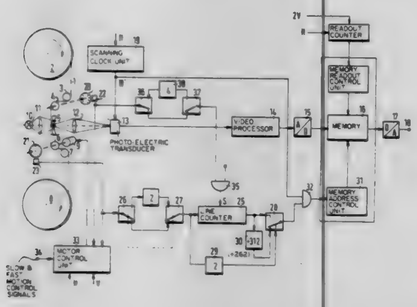
Dieter Poetsch, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 928,783

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1977, 2735685

Int. Cl.³ H04N *3/36*

U.S. Cl. 358—214 **25 Claims**



1. Method of scanning motion picture film (1) to derive television signals, comprising the steps of

continuously scanning a film frame, sequentially line by line, and deriving scanned signals;

controlling the rate of scanning of a line in accordance with a repetition rate artifically distorted with respect to television scanning standards to compensate, selectively, for anamorphically distorted images on the film, or varying width of film frame bars;

storing data represented by said scanned signals in a memory (16);

reading-out the data stored in a memory in accordance with television scanning standards;

and assigning the lines being scanned individual line addresses which are representative of the position of the scanned line in the film frame, said storing step including storing the signals in the memory, line by line, at said assigned addresses.

4,288,819

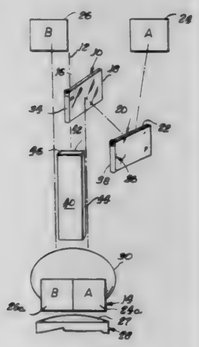
MULTI-FIELD IMAGING DEVICE

Robert T. Williams, 404 South Ardmore, Villa Park, Ill.

Filed May 10, 1979, Ser. No. 37,836

Int. Cl.³ H04N *5/25*; G02B *27/10*

U.S. Cl. 358—226 **5 Claims**



1. A multi-field imaging device for directing light from a first optical field and a separated second optical field into a video camera used for security surveillance thereby reproducing a split-screen image with the video camera, the multi-field imaging device comprising: means for positioning an image plane a predetermined distance from a lens of the video camera whereby images directed on the image plane are reproduced by the video camera; a first mirror positioned on one side of an optical axis which intersects the image plane, the first mirror having an edge adjacent to the optical axis and having a reflective surface oriented toward the image plane; a second mirror having a reflecting surface oriented to reflect light from the first optical field to the first mirror, the multi-field imaging device can be aligned so that light reflected by the first mirror from the first optical field and light from the second optical field are projected to the image plane in a juxtaposed relationship and can therefore be reproduced with the video camera; lens means positioned between the first mirror and the imaging plane for focusing images of the first optical field and the separated second optical field in the image plane; and a mask located between the lens means and the first mirror and aligned approximately along the optical axis for producing a distinct line of demarcation between the images as reproduced by the video camera.

4,288,820

TIME-AXIS PICTURE-SIGNAL CONVERTER FOR FACSIMILE AND THE LIKE

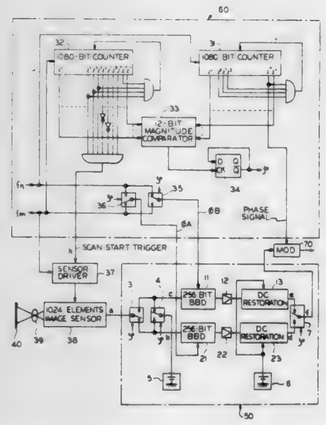
Seissku Minamibayashi; Takashi Ishikawa, and Takashi Ogawa, all of Tokyo, Japan, assignors to Nippon Electric Co. Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,781

Claims priority, application Japan, May 24, 1979, 54/64254

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—280 **3 Claims**



1. A time-axis converter for a facsimile or the like appartus of the type in which a high-speed analog picture signal from a solid-state image sensor consisting of a succession of one-line segments each including a blanking period is converted by means of an analog memory device into an analog picture signal of one-scan line suited to the transmission rate of the circuit line, said converter being characterized in that it comprises:

first clock means for producing a high-speed clock of the rate corresponding to the picture-signal output rate of the solid-state image sensor;

second clock means for producing a low-speed clock of the rate corresponding to the transmission rate of the circuit line;

first counter means for counting the high-speed clock pulses from said first clock means and adapted to be reset at a specified full count;

second counter means for counting the low-speed clock pulses from said second clock means and adapted to be reset at the same full count as that of said first counter means;

means for producing a switching signal each time the output indications of said first and second counter means coincide with each other;

a pair of analog memory devices having a predetermined number of memory elements for delaying and expanding said high-speed analog picture signal;

means for distributing said high-speed picture signal alternately to one and the other of said analog memory devices under the control of said switching signal;

means for reading out the output signal of said analog memory devices alternately under the control of said switching signal as the distribution of said high-speed picture signal to one or the other of said analog memory devices is interrupted; and

shift-pulse feeding means coupled to each of said analog memory devices for shifting the contents of the memory elements of the analog memory device alternately at the rates of the high-speed and low-speed clocks, the switching between the high-speed and low-speed clocks being effected under the control of said switching signal from the high-speed to the low-speed clock each time the supply of said high-speed picture signal to the analog memory device is started and from the low-speed to the high-speed clock each time such signal supply to the analog memory device is interrupted.

4,288,821

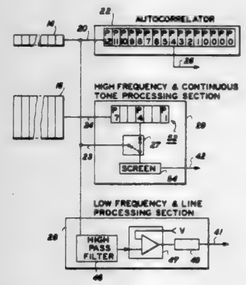
MULTI-RESOLUTION IMAGE SIGNAL PROCESSING APPARATUS AND METHOD

Pierre A. Lavallee, Penfield, and James C. Stoffel, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1980, Ser. No. 155,269

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—293 **30 Claims**



1. In an apparatus for processing image signals derived by raster scanning document originals, having reduced image signal buffer requirements, the combination of:

first and second linear scanning arrays, the image resolution of said first array being greater than the image resolution of said second array to provide image signals of different image content without resort to buffer storage.

4,288,822

SYSTEM FOR THE ANALYSIS AND THE RECORDING OF MONOCHROMIC IMAGES

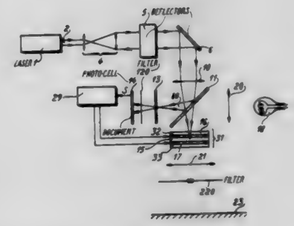
Michel Hareng; Serge Le Berre, and Pierre Leclerc, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 943,819, Sep. 19, 1978, abandoned. This application Mar. 21, 1980, Ser. No. 132,643

Claims priority, application France, Sep. 23, 1977, 77 28739

Int. Cl.³ H09N *1/22*

U.S. Cl. 358—296 **6 Claims**



1. A system for reproducing monochromic images carried by a support; said system comprising:

a liquid crystal cell comprising a layer of a material having a smectic phase; said layer being enclosed between two electrodes and maintained in said smectic phase;

only one radiation source providing a single beam;

optical means, disposed on the path of said beam, for producing from said beam an analyzing light spot on said support and a recording light spot in said liquid crystal cell; at least one of said electrodes being transparent for the wavelength of said beam;

deflecting means, inserted in said path between said radiation source and said optical means, for the scanning of said support by said analyzing spot and the synchronous scanning of said liquid crystal cell by said recording spot;

photodetecting means, for collecting the light emerging from said support and providing an electrical signal representative of said images;

electronic means, receiving said electrical signal and supplying an electrical field between said two electrodes, for controlling the diffusing power of said layer; said diffusing power being created by a local heating of said liquid crystal induced by said recording spot.

4,288,823

APPARATUS FOR AND METHOD OF DISTINGUISHING PAUSES TO CONTROL SELECTIVE REPLAY IN TAPE RECORDING/REPRODUCTION SYSTEMS

Ryuji Yamamoto, Kitasoma; Fukumori Nakahara, Tokyo, and Tadao Kasai, Koshigaya, all of Japan, assignors to Soundesign Corporation, Jersey City, N.J.

Filed Mar. 25, 1980, Ser. No. 133,731

Claims priority, application Japan, Mar. 28, 1979, 54-35644

Int. Cl.³ G11B *15/16, 15/18, 27/22*

U.S. Cl. 360—73 **24 Claims**

1. In a recording/reproduction system for selectively replaying features recorded on a recording medium, and for advancing the recording medium at any one of a selected playback speed, fast forward speed and rewind speed,

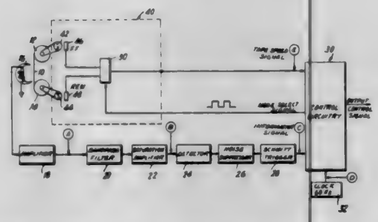
an apparatus for reliably distinguishing between inter-feature pauses between features and intra-feature pauses during features to control the selective replay of the recorded features, said apparatus comprising:

(a) recording medium sensor means for detecting the features and the pauses on the recording medium, and for generating therefrom an information signal indicative of the time duration of each detected pause;

(b) speed sensor means for detecting the advancement speed of the recording medium, and for generating therefrom a

tape speed signal indicative of the speed of the recording medium throughout the advancement thereof;

(c) time-updating means for establishing an initial decision period of predetermined time duration against which the time duration of each detected pause can be compared for distinguishing between inter-feature pauses and intra-feature pauses, and for thereupon changing, in response to the generated tape speed signal, the time duration of the



initial decision period in response to changes in the advancement speed of the recording medium; and

(d) control output means for comparing the time duration of each detected pause with the time duration of the updated decision period to distinguish between inter-feature pauses and intra-feature pauses at all advancement speeds, and for generating therefrom an output control signal to control the selective replay of the recorded features in response to detection of an inter-feature pause.

4,288,824

DEFLECTABLE TRANSDUCER MOUNTING WITH DAMPER FOR VIDEO SIGNAL REPRODUCING APPARATUS

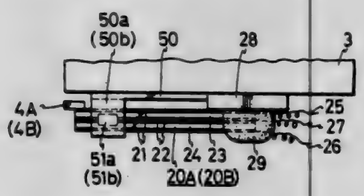
Yoshimi Watanabe, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 911,832, Jun. 2, 1978, Pat. No. 4,165,521, which is a continuation of Ser. No. 731,763, Oct. 12, 1976, abandoned. This application Mar. 21, 1979, Ser. No. 22,870

Claims priority, application Japan, Oct. 14, 1975, 50-123638

Int. Cl.³ G11B *21/18*

U.S. Cl. 360—75 **3 Claims**



1. A system for reproducing a video signal recorded in successive parallel tracks on a recording medium, said system comprising:

rotary support means, bi-morph leaf means, mounting means securing one end portion of said bi-morph leaf means to said rotary support means with said bi-morph leaf means being cantilevered therefrom so as to be movable by flexing from a rest condition in either direction transverse to the direction of said tracks, signal reproducing means for reproducing a video signal in a respective one of said tracks and being connected with the other end portion of said bi-morph leaf means so as to be movable therewith, and damper means in addition to said mounting means and being engageable with said other end portion of said bi-morph leaf means at a distance along the latter spaced from said mounting means for damping free oscillations of said bi-morph leaf means due to bending forces applied to said bi-morph leaf means.

4,288,825

MAGNETIC CARD HANDLING APPARATUS

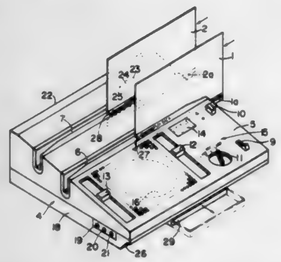
Masatoshi Hasuo, Yokohama, and Jungo Tsuji, Yachiyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 54,799

Claims priority, application Japan, Jul. 7, 1978, 53-82759

Int. Cl.³ G11B *19/02*

U.S. Cl. 360—88 **26 Claims**



1. A magnetic card handling apparatus for handling a magnetic card having at least an end, an edge and a thickness; comprising:

at least one card running groove for receiving said edge of said magnetic card;

a magnetic head adjacent one side of said groove;

a rotatable capstan adjacent the other side of said card running groove opposed to said magnetic head;

means for spacing said magnetic head and said rotatable capstan apart a first distance exceeding said thickness of said magnetic card;

detecting means for detecting the presence of said magnetic card between said magnetic head and said rotatable capstan; and

means responsive to said detecting means for decreasing the distance between said magnetic head and said rotatable capstan to a second distance smaller than said first distance whereby said magnetic card is pinched between said magnetic head and said rotatable capstan so as to be driven by the latter.

4,288,826

PAD DEVICE FOR USE IN TAPE CASSETTE

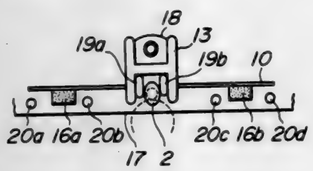
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Oct. 25, 1979, Ser. No. 87,963

Claims priority, application Japan, Oct. 27, 1978, 53-148082[U]

Int. Cl.³ G11B *15/60, 23/04*

U.S. Cl. 360—130.33 **5 Claims**



1. In a tape cassette having a cassette casing with magnetic tape therein, a capstan shaft hole provided in said casing, magnetic head insertion windows provided at least on both sides of said capstan shaft hole and tape pad means including tape pad members located to urge said magnetic tape against

magnetic heads inserted in said insertion windows, the improvement comprising a tape pad support assembly consisting essentially of a support member including a pair of legs juxtaposed on opposite sides of said capstan shaft hole and arranged to receive a capstan shaft therebetween, a pair of separated independent spring members each mounted, respectively, in one of said legs to extend in opposed directions over said insertion windows having said tape pad members mounted thereon, and means operatively supporting said support member in said cassette with said tape pads adjacent said insertion windows.

4,288,827

AUTOMATIC SWITCHING DEVICE FOR CASSETTE TAPE RECORDER WITH LOW FREQUENCY COMPENSATING MEANS

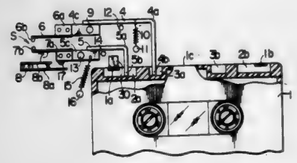
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Division of Ser. No. 841,758, Oct. 13, 1977, Pat. No. 4,158,865, which is a continuation of Ser. No. 645,458, Dec. 30, 1975, abandoned. This application Apr. 9, 1979, Ser. No. 28,095

Claims priority, application Japan, Jan. 24, 1975, 50-11244[U]; Jan. 24, 1975, 50-11245[U]; Jan. 31, 1975, 50-13564; Jan. 31, 1975, 50-15146[U]; Feb. 19, 1975, 50-23005[U]; Feb. 20, 1975, 50-21648

Int. Cl.² G11B *15/06, 15/49*

U.S. Cl. 360—137 **13 Claims**



1. An automatic switching device for use in a cassette tape recorder adapted to receive a tape cassette and including a tape head, the switching device comprising:

tape erasure prevention means including means for detecting the removal of a lug covering an erasure prevention aperture in said tape cassette;

first means for detecting the presence or absence of a first aperture in said tape cassette, the presence or absence of said first aperture being representative of the relative coercivity of the magnetic tape housed by said cassette;

second means for detecting the presence or absence of a second aperture in said tape cassette, the presence or absence of said second aperture being representative of a desired running speed;

third means responsive to said first means for controlling the biasing current to said tape head in accordance with the coercivity of the tape housed in said tape cassette as indicated by the presence or absence of said first aperture; and

fourth means responsive to said first and second means for compensating for low frequency signals recorded on said tape cassette when the presence or absence of said first and second apertures indicates that such compensation is desirable.

4,288,828

PROTECTION SYSTEM FOR ELECTRIC MOTORS

Richard J. Kuntner, Milwaukee, and James C. Vander Meer, Brookfield, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 17, 1980, Ser. No. 113,008

Int. Cl.³ H02H *7/08, 7/093*

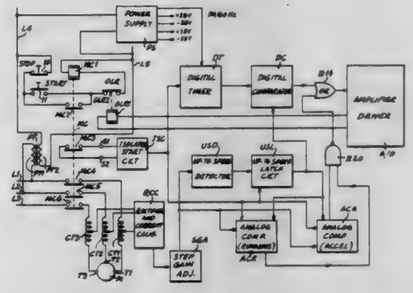
U.S. Cl. 361—31 **14 Claims**

1. In an overload protection system for an electric motor which is connectable to an electric supply source by electroresponsive means, the combination with an electroresponsive relay which when energized causes said electroresponsive means to disconnect said motor from said supply source, of

(a) means providing a control signal which varies in accordance with current drawn by said motor,

(b) means responsive to connection of the motor to said supply source to provide a timed output signal upon elapse of a preset timed interval,

(c) current overload responsive means activated by connection of said motor to said supply source to be responsive to a predetermined value of said control signal of said first mentioned means to provide an overload output signal,



(d) second current overload responsive means responsive when activated to provide another overload output signal whenever said control signal of said first mentioned means exceeds another predetermined value,

(e) means responsive to said motor attaining a predetermined running speed for deactivating said means providing said timed output signal and said first mentioned current overload responsive means, and for activating said second overload responsive means, and

(f) means responsive alternatively to said timed output signal, or either of the first mentioned or said other overload control signals to energize said electroresponsive relay.

4,288,829

PROTECTIVE CIRCUIT ON INSULATING SUBSTRATE FOR PROTECTING MOS INTEGRATED CIRCUIT

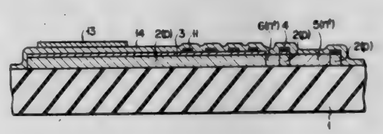
Hiroyuki Tango, Yokohama, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan

Continuation of Ser. No. 768,849, Feb. 15, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,304

Claims priority, application Japan, Feb. 18, 1976, 51-15816

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—56 **6 Claims**



1. In a protective circuit for a MOS integrated circuit comprising a MOS IC body including at least one MOS transistor at an input stage of a MOS integrated circuit, the at least one input stage transistor being made of an island-like semiconductor layer formed on an insulating substrate and having source, drain and gate electrodes; and

the improvement wherein the protective circuit is formed on the insulating substrate of the MOS IC body for protecting the MOS integrated circuit, the protective circuit comprising:

an R-C protective circuit connected between a signal input

terminal and a gate electrode of the at least one MOS input stage transistor and comprising a protective MOS transistor made of a first region of an island-like semiconductor layer of one conductivity type on an insulating substrate and having source, drain and gate electrodes, said protective MOS transistor being connected between ground and the gate electrode of the at least one MOS input stage transistor, the source electrode of said protective MOS transistor being connected to ground and the drain electrode of said protective MOS transistor being connected to the gate electrode of the at least one MOS input stage transistor;

a sinuous resistor being formed on an insulating layer on a second region of the island-like semiconductor layer which is connected to ground, overlying the insulating substrate so as to provide a stray capacitance and connected between the signal input terminl and the gate electrode of the protective MOS transistor, said resistor having a conductivity type opposite to said one conductivity type of the island-like semiconductor layer; and

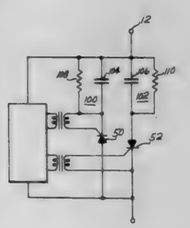
a bonding pad formed on the insulating layer on the second region of the semiconductor layer overlying the insulating substrate, said bonding pad being connected to one end of the resistor so as to provide a stray capacitance between said semiconductor layer and said bonding pad, said stray capacitances forming the capacitive component of said R-C protective circuit.

4,288,830

OVERVOLTAGE PROTECTOR

Robert G. Brasfield, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 16, 1979, Ser. No. 30,487
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—56 **1 Claim**



1. An overvoltage protector adapted to be coupled across the terminals of a power line, which power line normally carries a nominal AC voltage and is subject to induced high voltages exceeding the AC voltages, the protector comprising:

voltage sensing means for sensing the voltage on the line and generating a trigger signal upon said voltage exceeding a predetermined reference level representative of an induced high voltage;

a pair of silicon controlled switching devices connected such that the anode of one connects to the cathode of the other with the resulting common connection being adapted to be coupled to one terminal of the power line; and

a pair of circuit networks, each network comprised of a predetermined value bleeder resistor in parallel with a predetermined value capacitor, each network connected at one end to one of said silicon controlled devices with the remaining end of each network adapted to be coupled to the remaining terminal of the power line,

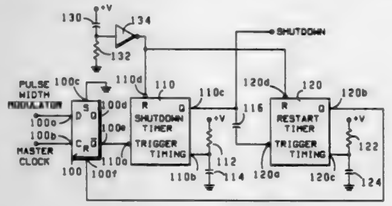
said voltage sensing means, silicon controlled switching devices and circuit networks cooperating such that an overvoltage of a first polarity on the power line is suppressed through the operation of one of said silicon controlled switching devices and its associated circuit network whereas an overvoltage of an opposite polarity on the power line is suppressed through the operation of the other silicon controlled switching device and its associated circuit network, thereby preventing an excessive voltage buildup across, and peak currents through either of said capacitors.

4,288,831

SHUTDOWN CIRCUIT FOR A SWITCHING POWER SUPPLY

Arman V. Dolikian, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 881,309, Feb. 27, 1978, abandoned.
This application Dec. 12, 1979, Ser. No. 102,683
Int. Cl.³ H02H *7/12*
U.S. Cl. 361—92 **3 Claims**



1. A shutdown circuit for a switching type power supply having a fixed reference oscillator with an output wherein the voltage produced by the supply is a function of the output from a controlled oscillator, comprising:

low voltage sense means for comparing the output of the controlled oscillator to the output of the fixed reference oscillator, and generating an inhibit signal in response to a predetermined relationship between the fixed reference oscillator output and the output from the controlled oscillator;

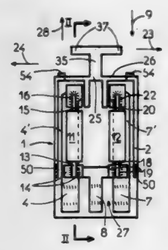
shutdown timer means coupled to the low voltage sense means for inhibiting operation of the power supply for a predetermined time interval in response to said inhibit signal.

4,288,832

TWO-SECTION PROTECTION MODULE FOR CONNECTING BLOCKS

Yves Saligny, Cluses, France, assignor to Etablissements Carpano & Pons, France

Filed May 14, 1979, Ser. No. 38,848
Claims priority, application France, Jun. 9, 1978, 78 18477
Int. Cl.³ H01H *39/00*
U.S. Cl. 361—119 **13 Claims**



1. A protection module for connecting blocks, notably of telephone systems, intended for at least one line wire, said device comprising a case made at least in part of insulating material and having first and second ends, a pair of first and second conducting terminals for each line wire and a ground conducting terminal at said first end of said case in position to

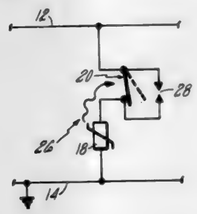
be plugged in in the same direction and to cooperate with corresponding terminals of the connecting block, said first and second conducting terminals having conducting extensions extending toward said second end of said case and having resilient end portions biased toward one another, a protection device for each line wire disposed in said case and having at one end a first terminal electrically connected with said ground terminal and, at an opposite end, a second terminal gripped resiliently between said resilient end portions of said first and second conducting terminals in direct contact therewith, said case having in said second end an orifice opening to said second terminal of said protection device and said resilient end portions of said conducting terminals, and a detachable element of a size and shape for insertion through said orifice to an inner position for cooperation with said second terminal of said protection device and said resilient end portions of said conducting terminals, said detachable element being detachable from said module by withdrawing it from said orifice and replaceable by a different detachable element.

4,288,833

LIGHTNING ARRESTOR

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 103,962
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—124 **13 Claims**



1. A lightning arrestor comprising, in combination:

A. a voltage-dependent resistor having terminals for electrical connection between a line conductor of a power distribution circuit and ground;

B. normally closed thermostatic switch means electrically connected in series with said resistor, said switch means being thermally coupled with said resistor such that heat generated by said resistor in response to excessive leakage current flowing therethrough under normal line voltage conditions causes said switch means to open and thereby interrupt the flow of said excessive leakage current; and

C. a spark gap electrically connected in series with said resistor by the opening of said switch means, said spark gap preventing the flow of said excessive leakage current through said resistor and having a predetermined breakdown voltage such as to provide effective distribution circuit overvoltage protection, said resistor acting to dissipate the energy associated with line voltage surges in excess of said breakdown voltage and to insure deionization of said spark gap as each line voltage surge subsides.

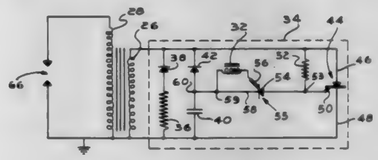
4,288,834

BREAKERLESS MAGNETO IGNITION

Bob O. Burson, East Longmeadow, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Apr. 9, 1979, Ser. No. 28,724
Int. Cl.³ F02P *3/06*
U.S. Cl. 361—256 **4 Claims**

1. Breakerless magneto ignition system including a magnetic pole carrying rotor and a stator having a ferromagnetic core with primary and secondary ignition coil windings disposed on said core, said ignition system comprising a trigger coil circumferentially spaced from a leg of said core in the direction of rotation of said rotor a distance approximately equal to the edge distance of the magneto, a gate turn-off silicon controlled rectifier having anode, cathode and gate electrodes, a capacitor connected in circuit with said primary winding to be charged by electrical pulses of one polarity generated in said primary winding, circuit means connecting the gate of said rectifier with said capacitor, said circuit means including a solid state electronic switching device having cathode and anode electrodes in series with said capacitor and the gate of said rectifier, said device also including a control electrode



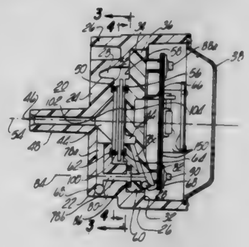
electrically connected with said trigger coil for receiving pulses of electrical energy generated in response to rotation of said magneto for switching said device to its conductive mode through its anode-cathode electrodes whereby said charge of electrical energy of one polarity stored on said capacitor is applied to the gate electrode of said gate turn-off rectifier for shunting the primary current flowing in the anode-cathode path of said rectifier through the gate electrode toward the charged capacitor causing said rectifier to be turned off, thereby opening the circuit of the primary winding to induce an ignition voltage pulse in said secondary winding.

4,288,835

PRESSURE SENSOR

Chen Yi Lee; Charles Tung-ming Wu, both of Troy; Mark A. Brooks, Sterling Heights, and Robert E. Fallis, Milford, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 16, 1979, Ser. No. 30,589
Int. Cl.³ H01G *7/00*
U.S. Cl. 361—283 **20 Claims**



1. A pressure sensor comprising:

a pressure capsule means for generating a signal indicative of the pressure of the environment applied thereto, having parallelly situated and separated first and second pressure receiving surfaces, each surface having a pressure responsive region thereon which deflect in response to said pressure of the environment to be sensed; said pressure receiving surfaces being spaced by a ring of dielectric material wherein the areas of said surfaces interior to said dielectric ring correspond to said pressure responsive regions; said capsule further including electrical contacts located outside of said dielectric ring;

housing means for enclosing said pressure capsule within a pressure receiving cavity located therein, said housing means having port means in fluid communication between

said environment and said pressure receiving cavity for communicating said pressure thereto;

support means located within said pressure receiving cavity interposing said housing and said first and said second pressure receiving surfaces;

for compressive loading said capsule wherein the loading forces imparted to each of said pressure responsive regions are directed through said directly ring;

transfer port means located within said housing means for communicating said environment to be sensed to both of said pressure responsive regions;

signal conditioning means electrically connected to said pressure capsule means responsive to said signal for generating an output signal indicative of the magnitude of said pressure.

4,288,836

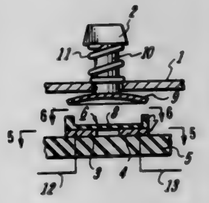
CAPACITANCE CONTROLLED KEYSWITCH

David D. Thornburg, Los Altos, Calif., and Brian Rosen, Pittsburgh, Pa., assignors to Xerox Corporation, Stamford, Conn.

Filed May 29, 1979, Ser. No. 43,519

Int. Cl.³ H01G 5/16

U.S. Cl. 361—288 **3 Claims**



1. In a capacitance controlled keyswitch including a substrate, a pair of spaced coplanar capacitor plates overlying said substrate and a dielectric layer overlying said spaced capacitor plates, the improvement comprising:

a deformable electrode mounted for movement toward and away from said capacitor plates,

means to enable three discrete states of switch operation to be selected in accordance with the position of said movable electrode relative to said capacitor plates said means comprising an actuator to move said electrode to a first switch state wherein said electrode remains in its undeformed state and is spaced from said dielectric layer, to a second switch state wherein said electrode remains substantially undeformed and is in contact with said dielectric layer, and to a third switch state wherein said electrode is in a deformed state and is in contact with said dielectric layer, and

said dielectric layer is in the form of a stepped member comprising a thin central layer and a thicker peripheral annulus, wherein said deformable electrode contacts said dielectric layer on said peripheral annulus.

4,288,837

ELECTRICAL CAPACITOR

Mineaki Nishimatsu; Sadayoshi Mukai; Yoshinori Hayashi; Osamu Yamaguchi, all c/o Nissin Electric Co., Ltd., 47, Umezu Takase-cho, Ukyo-ku, Kyoto; Akira Ito, 8, Daimachi, Ichigaya, Shinjuku-ku, Tokyo, and Yasutoshi Hara, 5-2, Utsugisaki, Nishikimachi, Iwaki, Fukushima, all of Japan

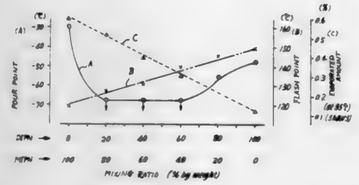
Continuation of Ser. No. 871,691, Jan. 23, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,953

Claims priority, application Japan, Jan. 24, 1977, 52-007169

Int. Cl.³ H01G 4/22

U.S. Cl. 361—315 **13 Claims**

1. An electrical capacitor comprising a capacitor element impregnated with an impregnating oil consisting essentially of a mixture of di-iso-propyl naphthalene (DIPN) and mono-iso-



propyl naphthalene (MIPN), said mono-iso-propyl naphthalene being 10% to 80% by weight of said mixture.

4,288,838

ELECTRICAL SIGNAL TRANSMISSION EQUIPMENT BAY

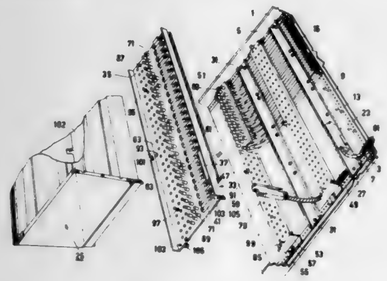
Jan Van Der Vegte, and Dirk G. Hek, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 18, 1979, Ser. No. 58,580

Claims priority, application Netherlands, Aug. 24, 1978, 7808721

Int. Cl.³ H05K 7/10

U.S. Cl. 361—383 **8 Claims**



1. An electrical signal transmission equipment bay comprising two parallel supporting beams having cable guide beams extending directly transversely of the supporting beams said cable guide beams being situated in the first vertical plane, and having cables, going into and out of the bay which are guided along the cable guide beams, said cables extending mainly parallel to said supporting beams inside the bay, the ends of a number of said cables being provided with a plurality of row connectors electrically connected to a plurality of plug-in signal processing boards, each of said plug-in signal boards positioned in one of a plurality of functional units situated in said bay, a plurality of positioning plates each one connected to a respective functional unit, successive first row connectors being situated on a positioning plate for a respective functional unit, a master printed wiring board which is connected to one of said positioning plates, and second row connectors which are connected to said one positioning plate and into which a signal processing board is plugged, wherein said supporting beams are provided with at least one mounting beam which extends transversely to the supporting beams and on which are positioned a number of coaxial connectors each connected to the end of one of said cables, said coaxial connectors cooperating, via a number of openings in a respective positioning plate, with a number of mating coaxial connectors which are provided on said signal processing boards in a respective functional unit, said at least one mounting beam being adapted for detachable suspension from said supporting beams during the positioning of said coaxial connections on said at least one mounting beam, and being adapted for subsequent rigid connection to said positioning plate prior to rigid connection of each of said positioning plates to said supporting beams.

4,288,839

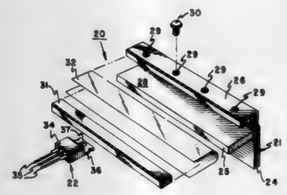
SOLID STATE DEVICE MOUNTING AND HEAT DISSIPATING ASSEMBLY

Jay M. Prager, Nashua, N.H.; Joseph F. Sadlow, North Reading, and John K. Nitzsche, Concord, both of Mass., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 18, 1979, Ser. No. 85,969

Int. Cl.³ H05K 7/20

U.S. Cl. 361—386 **12 Claims**



1. A heat dissipating and solid state device mounting assembly adapted for securely holding heat generating solid state devices and for absorbing and dissipating said heat, the assembly comprising

A. a solid state device retaining surface

a. supportingly holding solid state devices removably positioned thereon, and

b. being capable of absorbing heat generated by solid state devices secured thereto;

B. heat dissipating means conductively engaged with the device retaining surface for absorbing heat therefrom and directing the heat for remote dissipation; and

C. solid state device securing means

a. positioned in juxtaposed spaced facing relationship to the solid state device retaining surface, and

b. in movable holding engagement of the solid state devices against said retaining surface,

D. a compression bar positioned between the solid state devices and the device securing means for receiving the holding force of the securing means and applying said force substantially equally to the solid state devices;

E. a thin of an electrical nonconductor, peripherally surrounding and enveloping the solid state devices and the compression bar, thereby assuring no electrical conduction from said solid state devices to either the device retaining surface or the device securing means, while also maintaining the desired electrical spacing;

whereby the solid state devices are securely supportingly maintained in supporting contact with the device retaining surface by being sandwiched between the device securing means and said device retaining surface, thereby completely eliminating any need for fastening means extending through a mounting portion of the solid state device.

4,288,840

PRINTED CIRCUIT BOARD

Kaoru Konishikawa; Shunsuke Sasaki, both of Hirakata; Kouichi Higuchi, Neyagawa, and Fuminori Hirose, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

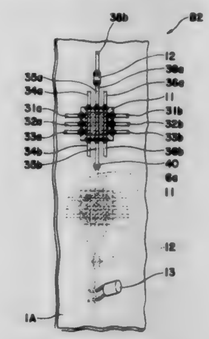
Filed Sep. 21, 1979, Ser. No. 77,760

Claims priority, application Japan, Sep. 26, 1978, 53-118828

Int. Cl.³ H05K 1/18

U.S. Cl. 361—410 **9 Claims**

1. A printed circuit board for use in electrical and electronic appliances, said board comprising a jumper electronic part including a plurality of confronting through-hole conductive members provided at respective confronting edge portions of a first electrically insulative substrate of rectangular plate-like configuration and conductive layers provided on at least one surface of said electrically insulative substrate for connecting said confronting through-hole conductive members to each other, and a second electrically insulative substrate for said printed circuit board provided thereon with sets for conductive layers crossing on X-Y coordinates in the form of a cross conductive member pattern so as to face corresponding ones of said through-hole conductive members of said jumper elec-



tronic part, with said conductive layers of at least one set of said sets of conductive layers of said second electrically insulative substrate having therein separations to thus form a separated conductive member pattern, said jumper electronic part being mounted to be soldered on said cross conductive member pattern of said second electrically insulative substrate for connecting to each other said set of separated conductor layers of said separated conductive member pattern through crossover wiring by means of said confronting through-hole conductive members and said conductive layers of said first electrically insulative substrate.

4,288,841

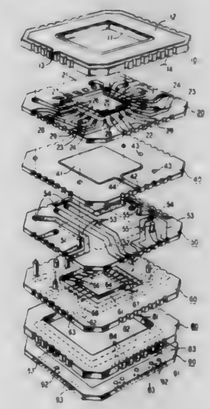
DOUBLE CAVITY SEMICONDUCTOR CHIP CARRIER

John F. Gogal, Lebanon, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 20, 1979, Ser. No. 76,972

Int. Cl.³ H05K 7/06; H01L 25/00

U.S. Cl. 361—414 **2 Claims**



1. A semiconductor device including a double cavity semiconductor chip carrier and a pair of semiconductor chips enclosed in said carrier, an array of internal terminals around

each cavity, and an array of external terminals on a surface of said carrier, each of the semiconductor chips having an array of contacts pads on one major surface,

CHARACTERIZED IN THAT

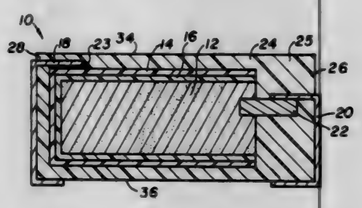
the chips carrier is made of insulative material and comprises a plurality of layers of ceramic chips fused into a unitary body having a pair of cavities coaxially disposed in opposite faces thereof, metallization patterns are defined on a horizontal surface of each of a plurality of said layers, and said layers provide (1) lateral interconnections at least partially embedded in said unitary body and (2) separate mounting and connection means to the surface of each of said semiconductor chips opposite the said one major surface, certain of said lateral interconnections are connected to said internal terminals, certain lateral interconnections are connected to said separate mounting and connecting means, wire conductors interconnect contact pads on said semiconductor chips and certain of said internal terminals, a plurality of vertical interconnecting means each extend through a plurality of said layers to interconnect certain lateral interconnections to certain external terminals.

4,288,842

SOLID CHIP CAPACITOR AND METHOD OF MANUFACTURE

Gerald A. Voyles, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 11, 1979, Ser. No. 47,020
Int. Cl.[3] H01L 23/28; H01G 9/00; B01J 17/00
U.S. Cl. 361—433 8 Claims



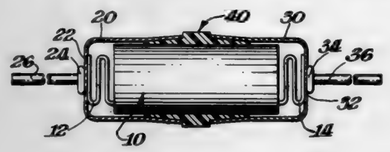
6. A polarized chip capacitor comprising an anode; a cathode connection member; an electrolyte disposed between said anode and said cathode connection member; a positive lead electrically connected to said anode; a negative lead attached to said cathode connection member; said anode, said cathode connection member, said electrolyte and portions of said leads electrically connected thereto encapsulated within an insulative material which is in the form of a substantially rectangular member in cross section having opposed end and side walls, the exposed portions of said positive and negative leads exiting individually from one each of said end walls of the rectangular member, with the positive lead exiting at a point closer to a side wall of the rectangular member than the negative lead, each lead of said positive and negative leads covers a portion of its end wall it exits from and a portion of the side wall of the rectangular member whereby said leads are wrapped around the rectangular member; and said polarized capacitor rests on and is capable of being electrically connected to a substrate through said leads.

4,288,843

CAPACITOR CONSTRUCTION WITH SELF-LOCKING CLOSURE

Walter W. Schroeder, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 30, 1979, Ser. No. 71,209
Int. Cl.[3] H01G 9/00; H02G 13/08; H05K 5/00
U.S. Cl. 361—433 10 Claims



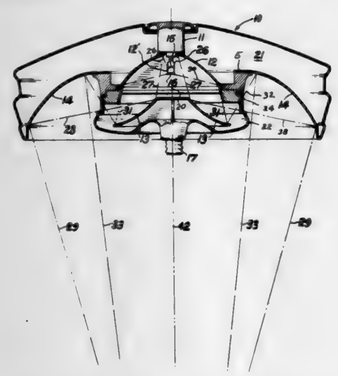
1. A sealed capacitor comprising a wound capacitor section, two open-mouth metal cans, and an insulative bushing with self-locking tapers, the open ends of said cans engaging to said bushing in a non-overlapping self-sealing arrangement, one electrode of said capacitor section being electrically connected to one of said cans, the other electrode being connected to the other of said cans.

4,288,844

ELECTRICALLY FOCUSED SURGICAL LIGHT

Kenneth J. Fisher, and William R. Miller, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Aug. 24, 1978, Ser. No. 936,240
Int. Cl.[3] A61G 13/00
U.S. Cl. 362—33 18 Claims



1. A light comprising a reflector means having an axis of symmetry,

a first light source and a second light source

means supporting said first light source and said second light source on said axis of symmetry and at predetermined distances from said reflector means and in spaced relation to each other one said light source being located closer to said reflector than the other and in spaced relation to said reflector means,

and means connected to said light source and said second light source,

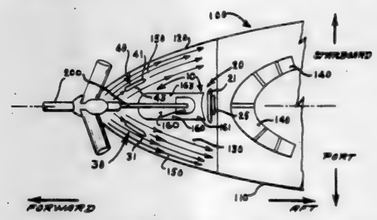
whereby a relatively small light pattern or a relatively large light pattern may be selectively directed onto an object while said reflector and said first light source and said second light source remains stationary.

4,288,845

AERIAL REFUELING RECEPTACLE FLOODLIGHTS-SPOILER AND FUSELAGE, NOSE MOUNTED

Wilma L. Finsness, Bellevue; Richard I. McMonagle, Bothell, and Edward M. Sedenquist, Seattle, all of Wash., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 8, 1979, Ser. No. 64,932
Int. Cl.[3] B64D 47/02, 37/00
U.S. Cl. 362—63 6 Claims



1. An aerial refueling receptacle floodlight illuminating system for use at night in combination with an aricraft having a longitudinal axis, a fuselage with a nose section having an upper surface and airflow lines along said upper surface, a cockpit windshield aft of said upper surface of said nose section and in alignment with said longitudinal axis, and an aerial refueling receptacle located on said upper surface of said nose section and in alignment with said longitudinal axis, with said receptacle having top and front surfaces, comprising:

a. a spoiler floodlight assembly disposed on and in said upper surface of said nose section wherein said assembly includes:

(1) an aerodynamically configurated spoiler retractably mounted substantially vertically upward on said upper surface of said nose section, aft of said refueling receptacle and forward of said cockpit windshield, and disposed transverse to said longitudinal axis;

(2) a first floodlight means for selectively illuminating said refueling receptacle, with said means disposed partially within said spoiler;

(3) and, means for retracting said spoiler into a stowed and longitudinal-like position which is essentially flush with said upper surface of said nose section;

b. a first nose fairing floodlight assembly disposed on and in said upper surface of said nose section, wherein said assembly includes:

(1) a first blade-like configurated fairing mounted substantially vertically upward on said upper surface of said nose section, forward of said cockpit windshield, adjacent to and port of said refueling receptacle, and parallel to such airflow lines along said upper surface of said nose section;

(2) and, a second floodlight means for selectively illuminating said refueling receptacle, with said means disposed partially within said first nose fairing;

c. and, a second nose fairing floodlight assembly disposed on and in said upper surface of said nose section, wherein said assembly includes:

(1) a second blade-like configurated fairing mounted substantially vertically upward on said upper surface of said nose section, forward of said cockpit windshield, adjacent to and starboard of said refueling receptacle, and parallel to said airflow lines along said upper surface of said nose section;

(2) and, a third floodlight means for selectively illuminating said refueling receptacle, with said means disposed partially within said second nose fairing floodlight assembly;

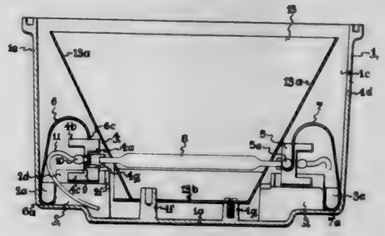
whereby, when said first, second and third floodlight means for selectively illuminating said refueling receptacle are activated, said top and side surfaces of said receptacle are adequately illuminated without glare.

4,288,846

FLOODLIGHT

Thomas A. Fletcher, Dana, and Robert L. Durham, East Flat Rock, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,093
Int. Cl.[3] F21S 3/00; H05B 33/02
U.S. Cl. 362—217 4 Claims



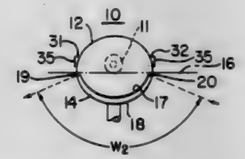
1. A floodlight comprising, in combination, a housing having a rear wall and side walls defining an interior chamber and a front opening opposite said rear wall, said rear wall having a pair of spaced socket guide portions at opposite side walls, said socket guide portions spaced from the side walls adjacent thereto defining recesses therebetween, a pair of elongated spring means each having a mounting end and a socket-holding end and being curved intermediate said ends, said pair of spring means seated at said mounting ends in said recesses for mounting the same in said housing, and a pair of socket members respectively held by said socket-holding ends of said pair of spring means in operative position adjacent said socket guide portions so that said socket members are resiliently movable in a path toward and away from each other, said mounting ends of said pair of spring means being curved and having projections frictionally engaging the housing side walls and socket guide portions defining said recesses.

4,288,847

COMPOUND BEAM ILLUMINATING

William B. Elmer, 2 Chestnut St., Andover, Mass. 01810

Filed Jun. 18, 1979, Ser. No. 49,087
Int. Cl.[3] F21V 7/09
U.S. Cl. 362—297 10 Claims



1. A luminaire comprising,

a light source,

a relatively opaque reflector having a principal light emitting opening, said light source being disposed within said reflector for directing a first primary light beam through said opening in a first principal direction of maximum illumination, and

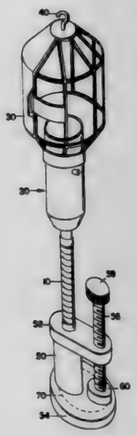
light moderating means in said reflector for directing a second secondary light beam in a direction of lesser illumination substantially orthogonal to said first principal direction and with a predetermined beam expanse extending beyond the boundaries of said first primary light beam.

4,288,848

CLAMP MOUNTED AND PORTABLE EXTENSION LAMP

Stefan Fido, 5 Primrose St., Indian Orchard, Mass. 01151

Filed Dec. 17, 1979, Ser. No. 104,361
Int. Cl.³ F21V *15/00*
U.S. Cl. 362—378 1 Claim



1. A lamp comprising in combination:
a flexible neck having an upper outboard extremity and a lower inboard extremity, the neck normally extending in a generally vertical direction, but adapted to be flexed in all directions throughout a 360 degree circle,
a socket housing mounted on the upper outboard extremity of the neck and having a bulb receiving socket,
a bulb threadedly receivable in the socket,
a bulb shield fitted to the socket housing,
a hook on the topmost extremity of the bulb shield whereby the lamp may be suspended from a support such as a pin or post or hook,
means for supplying an electric current to the socket,
a base associated with the lower inboard extremity of the neck in the form of a C clamp including a base bar to which the neck is secured, the neck and base bar extending coaxially as to each other, an upper leg and a lower leg extendable outwardly from and in spaced parallel planes normal to the axis of the base bar, a screw threadedly receivable through the upper leg, a manually engageable knob at the upper end of the screw and a clamp at the lower end of the screw for bringing the C clamp into tight damping relationship with a vertically or horizontally disposed surface, and
a permanent magnet connected fixedly to a surface of the lower leg of the C clamp for providing an effective area of magnetic force on the clamp to support same against tilting and accidental removal of the lamp from a steel or ironcontaining supporting surface when attached thereto.

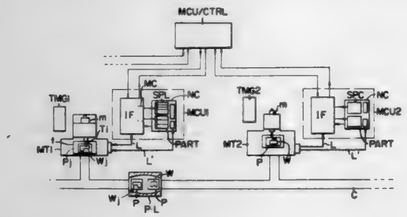
4,288,849

MACHINE TOOL CONTROL SYSTEMS

Tetsu Yoshida, and Katsunori Higashikawa, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1979, Ser. No. 9,677
Claims priority, application Japan, Feb. 8, 1978, 53-13167
Int. Cl.³ G05B *19/417*
U.S. Cl. 364—102 5 Claims

1. A machine tool control system for controlling a plurality of machine tools, said system comprising machine control units, each comprising a numerical control device and an interface unit interposed between each machine tool and the numerical control device, and respectively provided for the machine tools, said numerical control device including a first memory area which stores a first group of programs related to the machining of a workpiece and also to the selection of cutting tools suitable for the machining, and a second memory area which stores a second group of programs for executing an



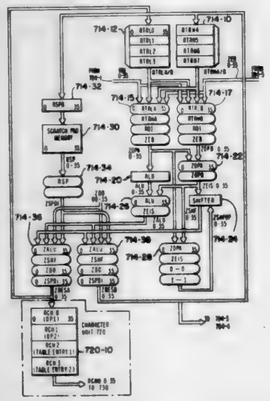
interruption instruction for retracting an abnormal tool and exchanging the abnormal tool with a substitute tool or the like operation, and a machine control unit controller which monitors sequence signals arriving at said interface unit and provides access to said first and second program groups stored in said numerical control device through said interface unit in accordance with a predetermined process program.

4,288,850

APPARATUS FOR IDENTIFICATION AND REMOVAL OF A SIGN SIGNAL CHARACTER SUPERIMPOSED

Jerry L. Kindell, Glendale, and Richard T. Flynn, Peoria, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 2, 1979, Ser. No. 392
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—200 5 Claims



1. In a data processing system including a storage unit and a central processing unit, said storage unit randomly storing groups of data signals, a predetermined number of said data signal groups being transferred to said central processing system from said storage unit in response to certain control signals for processing; wherein a preselected one of said transferred data signal groups can be include a data character consisting of a decimal integer and a sign, apparatus for removing said sign from said character in said predetermined data signal group comprising:
data signal group selection means coupled to said storage means for selecting said preselected data signal group from said transferred groups in response to other control signals;

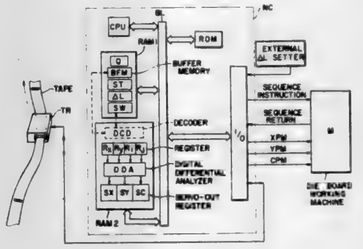
extraction means coupled to said data signal selection means for removing said sign from said character in said preselected group;
alignment means coupled to said storage means for arranging said transferred predetermined number of data signal groups in a pre-established order;
combining means coupled to said alignment means and said extraction means for storing a first and a second comparable sequence of data signal groups, said combining means including means for replacing a data group in a determined position in said first sequence with a data signal group in a comparable determined position in said second sequence in response to a switch signal, wherein said predetermined data signal groups from the alignment means are stored in said first sequence in said pre-established order, and wherein said preselected data signal group with said sign removed is stored in each position of said second sequence before being processed by the central processing system,
switching means coupled to said combining means for generating said switch signal in response to additional control signals.

4,288,851

METHOD OF DETERMINING POSITION OF OPENINGS ADAPTED TO RECEIVE FRET SAW BLADE OF NUMERICALLY CONTROLLED FRET SAW MACHINES

Takao Manabe, Shizuoka; Hitoshi Ebata, Mishima, and Shouichi Shin, Shizuoka, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,553
Int. Cl.³ G06F *15/46;* G05B *19/18;* B27B *19/00*
U.S. Cl. 364—475 6 Claims



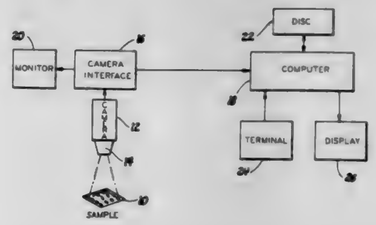
1. In a numerically controlled fret saw machine comprising:
blank drive means for clamping a flat plate shaped blank to move the same to any position on a X-Y plane of rectangular coordinates;
fret saw blade rotation means for controlling rotation of said fret saw blade such that a tip of said blade is normally oriented in directions of grooves cut through said blank by said fret saw blade;
a tool disposed on said X-Y plane with a predetermined spacing between the tool and the fret saw blade for forming openings through said blank;
drive means for driving said tool; and
a digital control device for controlling the direction of movements of said blank in X and Y axes directions of rectangular coordinates and for controlling rotation of said fret saw blade, thereby forming with said tool openings adapted to receive said fret saw blade at points respectively corresponding to cutting start points of said grooves,
a method of determining a position of each opening comprising the steps of:
producing a movement instruction data regarding a cutting start point and a cutting end point of a portion of a groove to be cut, said points defining a path A→B;
determining a point P having coordinates (XP·YP) and representing a center of said opening for receiving said fret saw blade, said point P being located on a straight line passing through a point A having coordinates (XA·YA) and a point B having coordinates (XB·YB) and said point P being spaced from said point A by one half of the width SW of said fret saw blade in a direction opposite to the direction of cutting of the groove starting from said point A when said section is straight, whereas when said section is a circular arc, said point P is selected to be a line which is tangent to said ciruclar arc at said point A and spaced from said point A by one half of the width SW of said fret saw blade.

4,288,852

METHOD AND APPARATUS FOR AUTOMATICALLY DETERMINING SHEET METAL STRAIN

Steven W. Holland, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1979, Ser. No. 98,260
Int. Cl.³ G06K *9/36;* G06F *15/20*
U.S. Cl. 364—508 5 Claims



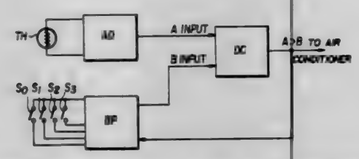
4. Apparatus for automatically determining the strain induced in a sheet metal sample by a forming operation, said sample having a grid of circles of predetermining diameter printed thereon prior to said operation, which circles are stretched into patterns of generally elliptical shape as a result of said operation, said apparatus comprising:
means for obtaining a digital representation of the average light intensity of discrete elements of the image of a portion of the sample including at least one of said patterns;
digital computer means for storing said digital representation in addressable memory locations, said computer being programmed to:
(a) determine a threshold level of light intensity which is a gradient-weighted average light intensity in transition areas of the image where the gradient of light intensity exceeds a predetermined value;
(b) segment the image into binary regions, one region type comprising contiguous image elements whose light intensity levels are less than said threshold and the other region type comprising contiguous image elements whose light intensity levels are equal to or greater than said threshold;
(c) identify a plurality of points residing on the boundary of one region type which is totally within the field of view defined by the image and is greater than a predetermined size;
(d) fit an ellipse to said points;
(e) identify those points within a predetermined tolerance distance from the fitted ellipse and refit an ellipse to the points so identified, reduce said tolerance distance and repeat this step (e) a predetermined number of times or until a predetermined root-mean-square percent error is attained;
(f) calculate at least one of the diameters of the fitted ellipse and;
(g) calculate the strain induced in the sample as a function of the calculated diameter and the predetermined diameter of said circles.

4,288,853

DIGITAL TEMPERATURE CONTROL SYSTEM

Michika Uesugi, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 26, 1979, Ser. No. 61,044
Claims priority, application Japan, Jul. 28, 1978, 53-92166
Int. Cl.³ G05D *23/00*
U.S. Cl. 364—557 **5 Claims**



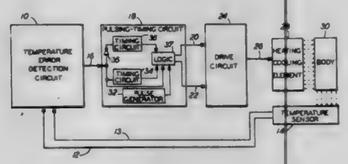
1. A digital temperature control system for controlling the temperature of a space, comprising:
- a thermal sensing element for detecting the temperature of the space and for supplying an analog signal proportional thereto,
- an analog-to-digital converter for converting an analog signal supplied by said thermal sensing element into a digital output,
- a temperature setting device for setting a desired temperature, including a plurality of switches indicative of a desired temperature setting,
- a bit pattern-to-digital converter including first means for converting the switch settings into respective sets of digital signals, and second means under the control of a control signal for arithmetically subtracting a predetermined value from the digital numbers represented by said respective sets of digital signals, said bit pattern-to-digital converter generating an output indicative of either said respective set of digital signals or said respective set of digital signals in which said predetermined value is arithmetically subtracted in dependence on the state of said control signal, and
- a digital comparator for comparing the digital output from said analog-to-digital converter with the output from said bit pattern-to-digital converter and for generating and transmitting said control signal only in case the digital output from said analog-to-digital converter is greater than the digital output from said bit pattern-to-digital converter, said control signal adapted for use in connection with a means for changing the temperature of said space to cause said temperature changing means to change the temperature of said space in dependence on the state of said control signal.

4,288,854

BI-MODAL TEMPERATURE CONTROLLER

Mark S. Burroughs, Jonestown, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Sep. 12, 1979, Ser. No. 75,290
Int. Cl.³ G05D *23/19*; F25B *29/00*
U.S. Cl. 364—557 **10 Claims**



9. A method for controlling the temperature of a body comprising the steps of:

(a) generating a digital status signal which indicates whether the temperature of the body is greater than or less than a desired temperature;

(b) timing an interval following each change of said digital status signal;

(c) generating a first pulse train and a second pulse train, said first pulse train having a duty cycle which is less than the duty cycle of said second pulse train;

(d) passing said first pulse train to a signal node prior to expiration of the time interval;

(e) passing said second pulse train to said signal node after expiration of the time interval; and

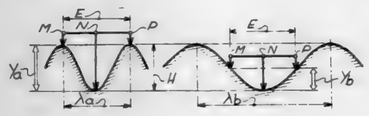
(f) heating or cooling the body in response to said digital status signal and at a rate related to the duty cycle of the signal appearing at said signal node.

4,288,855

DEVICE FOR MEASURING DEFORMATIONS OF THE TRAVEL SURFACE OF THE RAILS OF A RAILWAY

Romolo Panetti, Geneva, Switzerland, assignor to Speno International, S.A., Geneva, Switzerland

Filed Mar. 5, 1980, Ser. No. 127,394
Claims priority, application Switzerland, Mar. 6, 1979, 2164/79
Int. Cl.³ G01B *7/28*; E01B *27/00*
U.S. Cl. 364—561 **7 Claims**



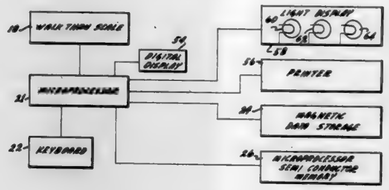
1. Device for measuring deformations of the travel surface of the rails of a railway track of at least one wavelength contained within a selected wavelength range (λ_1), comprising a traveling chassis (**1**) resting on at least one line of rails by two spaced guide rollers (**3** and **4**), the chassis being connected to a vehicle traveling over the track at a given speed (V) and being equipped with at least one group of measurement pickups giving off electric signals representing distances between a linear reference base defined by the position in space, of the said rolling chassis and the line of rails moved over, and also comprising a circuit for the processing of these signals intended to determine the value of the trough (H_1) of the said wavelength deformation, characterized by the fact that the group of measurement pickups comprises at least one first set of two pickups (**5** and **6**) arranged opposite a generatrix of the line of rails moved over at a distance from each other (E_1) less than the shortest wavelength ($\lambda_1 M$) of the selected wavelenth range (λ_1) and supplying two electric signals representing two distances respectively (h_A and h_C) between two points (A and C) of the base reference line (AC) of the base reference line (AC) and the said generatrix, and by the fact that these two pickups are connected to an electronic measurement circuit comprising a comparator (**8**) giving off an output signal representative of the difference ($\Delta_1 = h_A - h_C$) of the two said distances, an apparatus (**9**) for determining the effective average length ($\lambda_1 E$) of the wave of the deformation detected, giving off an output signal representing said magnitude, and an apparatus (**10**) for the processing of these signals (Δ_1 and $\lambda_1 E$) connected to the outputs of the comparator (**8**) and of the determination apparatus (**9**) and delivering an electric output signal representative of the trough (H_1) of the said deformation by processing of the said difference (Δ_1) in accordance with a transfer coefficient (T_1) established on basis of the ratio ($E_1/\lambda_1 E$) between the distance (E_1) between the two pickups (**5** and **6**) and the determined effective average length ($\lambda_1 E$) of the wave of the detected deformation.

4,288,856

LIVESTOCK FEEDLOT MANAGEMENT METHOD AND APPARATUS

Gerald S. Linseth, 13015 Caminito Del Rocio, Del Mar, Calif. 92014

Filed Dec. 14, 1979, Ser. No. 103,533
Int. Cl.³ A01K *5/00*; G01G *19/04*
U.S. Cl. 364—567 **5 Claims**



1. A method of culling animals having poor weight gain characteristics from a feed lot herd which comprises:
- providing each animal with an identifying number;
- entering the identifying number into a memory system;
- directing each animal individually through a walk-through scale;
- displaying a first weight for observation the weight of each animal as indicated by said scale;
- indicating which of a plurality of selected weight ranges the indicated first weight of each animall falls within;
- entering the indicated first weight of each animal in said memory system;
- actuating a detector as the animal leaves the scale to automatically open the scale entrance for the next animal;
- directing animals from said scale to at least one feeding pen;
- after a selected number of days, again directing said animal through the weighing system to obtain a second weight of each animal;
- entering the second weight in said memory system;
- comparing the first and second weights for each animal and the time period between weighings to determine the average daily weight gain for each animal;
- determining relative to a selected standard which animals have accomplished a satisfactory weight gain; and
- actuating appropriate ones of a plurality of gates at the outlet of said scale to direct animals having different weight gain characteristics to different pens;
- whereby animals having unsatisfactory weight gain characteristics are separated from the balance of the herd.

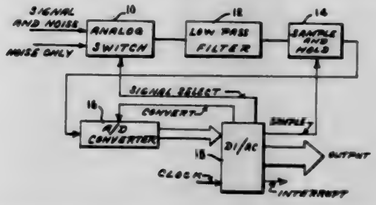
4,288,857

DIGITAL INTEGRATING/AUTO-CORRELATOR APPARATUS

Jack E. Wilterding, Aurora, and John J. Cozzens, Lakewood, both of Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 21, 1980, Ser. No. 123,334
Int. Cl.³ G06F *15/336*; G01S *9/42*
U.S. Cl. 364—728 **8 Claims**

1. A digital integrating/auto-correlator apparatus comprising in combination:
- switching means for receiving a first and second signal,
- a filter means for receiving the output from said switching means, said filter means providing a filtered output signal,
- a sample and hold means connected to said filter means to receive said filtered output signal, said sample and hold means receiving a sample control signal, said sample and hold means providing a time invariant output signal,
- an A/D converter means connected to said sample and hold means to receive said output signal therefrom, said A/D converter means receiving a convert control signal, said A/D converter means providing a digital output signal, and,
- a digital integrating/auto-correlator means receiving said digital output signal from said A/D converter means, said digital integrating/auto-correlator means receiving an externally generated clock signal for synchronizing signal processing within itself, said digital integrating/auto correlator means generating a signal select control signal which is applied to said switching means to switch either



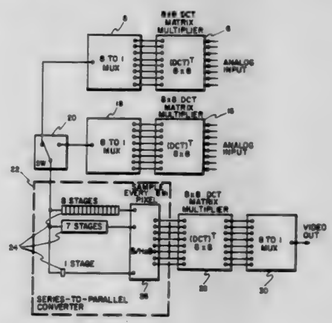
of said first or second signal to the output of said switching means, said digital integrating/auto-correlator means also generating a sample control signal to establish the sampling period within said sample and hold means and a convert control signal to establish the A/D conversion period within said A/D converter means, said digital integrating/auto-correlator means digitally integrating and correlating said digital output signal to provide a digitally correlated output signal.

4,288,858

INVERSE TWO-DIMENSIONAL TRANSFORM PROCESSOR

Pasquale A. Merola, Brookfield, Wis., and Marshall K. Quick, Whitesboro, N.Y., assignors to General Electric Company, Utica, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,643
Int. Cl.³ G06G *7/22*; G06F *15/34*
U.S. Cl. 364—826 **4 Claims**



1. An inverse two-dimensional transform processor sampling N samples of source data within an N×N sub-block of data received at a source decoder comprising:
- a plurality of matrix multiplier means accepting said source data, each of said matrix multiplier means calculating N one-dimensional transformed data samples, each of said matrix multiplier means having N input terminals and N output terminals;
- a plurality of N to 1 multiplexers, each having N input terminals and 1 output terminal, each of said multiplexers being connected to one of said matrix multiplier means so that each output terminal of one of said matrix multiplier means is connected to one of said N input terminals of one of said multiplexers;

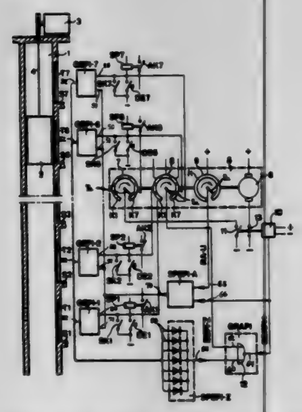
a switching means accepting sequential samples from each of said N to 1 multiplexers and ordering them so that they are in a serial order;
a series to parallel data converter means accepting said serial samples in a serial order from said switching means and transforming the order of said samples into a parallel order;
a second matrix multiplier means accepting N samples in a parallel order from said series to parallel data converter and yielding N one-dimensional transformed coefficients; and
a second N to 1 multiplexer, each input terminal of said second N to 1 multiplexer being connected to one of N output terminals of said second matrix multiplier means in order to yield said transformed coefficients from said second matrix multiplier in a serial order.

4,288,859

APPARATUS FOR PLACING IN ORDER THE SERVICING SEQUENCE OF STOREY CALLS OF ELEVATOR SYSTEMS

Stephan Zeindler, Gunzwil, and Hans G. Siiss, Udligenswil, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Nov. 2, 1978, Ser. No. 957,338
Claims priority, application Switzerland, Nov. 8, 1977, 13544/77
Int. Cl.[3] B66B *1/18*
U.S. Cl. 364—900 3 Claims



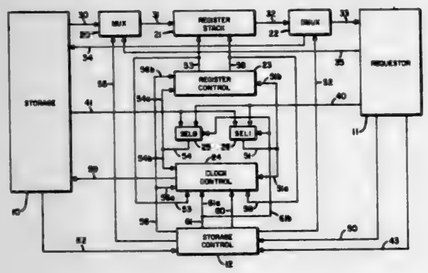
1. An apparatus for placing in order the servicing sequence of storey calls of an elevator system comprising:
storage elements for storing the storey calls;
storey transmitter means for controlling said storage elements;
a revolving scanner device for scanning the storage elements, at least one revolution of said scanner corresponding to a servicing period;
a drive for driving said scanner device;
a respective further storage element operatively associated with each storey being serviced;
each said further storage element having a first input, a second input and an output;
said first input being connected with the related storage element serving for storing a storey call;
an OR-circuit having an output composed exclusively of diodes;
a blocking device for blocking the infed and stored storey calls during at least one servicing period corresponding to a revolution of the scanner device;
said output of each further storage element being connected by means of said OR-circuit with said blocking device;
said blocking device comprising a NOR-circuit having two inputs, one of said inputs being connected to the output of said OR-circuit, the other of said inputs being connected by means of said scanner device to the first input of said further storage element, and an output;
a release device freeing the blocked storage calls after completion of a servicing period for storey servicing during the following servicing period;
said release device having a first input, a second input and an output;
said second input of each said further storage element being connected with said output of said release device;
said first input of said release device being connected with an output of the scanner device delivering information at the start of the revolution of the scanning device;
a switching device controlling said drive of said scanning device;
the second input of the release device being connected with the output of the blocking device and with the switching device;
the release of the stored storey calls and thus the initiation of a new servicing period only then being accomplished if there appears at the output of the blocking device information signaling the completion of the storey calls freed in the preceding servicing period.

4,288,860

DYNAMIC STORAGE SYNCHRONIZER USING VARIABLE OSCILLATOR AND FIFO BUFFER

John R. Trost, Anoka, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 2, 1979, Ser. No. 63,312
Int. Cl.[3] G06F *5/06*
U.S. Cl. 364—900 5 Claims



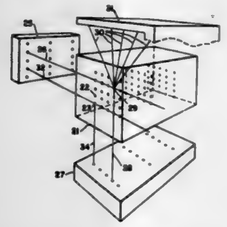
1. In a data processing system having a dynamic storage subsystem capable of being written into wherein said dynamic storage subsystem writes data in response to a first control clock and having a requestor capable of accessing said dynamic storage subsystem to write into said dynamic storage subsystem wherein said requester tranfers data to be written into said dynamic storage subsystem in response to a second control clock, the improved method of controlling the rate of transferring data to be written into said dynamic storage subsystem from said requestor to said dynamic storage subsystem comprising:
(a) transferring data to be written into said dynamic storage subsystem from said requestor to a first-in-first-out buffer memory in response to said second control clock;
(b) transferring data to be written into said dynamic storage subsystem from said first-in-first-out buffer memory to said dynamic storage subsystem in response to said first control clock;
(c) sensing constantly a change in the amount of data to be written into said dynamic storage subsystem which is stored within said first-in-first-out buffer memory;
(d) increasing the rate of said first control clock when said change in the amount of data to be written into said dynamic storage subsystem which is stored within said first-in-first-out buffer memory increases; and
(e) decreasing the rate of said first control clock when said change in the amount of data to be written into said dynamic storage subsystem which is stored within said first-in-first-out buffer memory decreases.

4,288,861

THREE-DIMENSIONAL SYSTEMS

Wyn K. Swainson, Berkeley, and Stephen D. Kramer, Oakland, both of Calif., assignors to Formigraphic Engine Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 856,434, Dec. 1, 1977, which is a continuation-in-part of Ser. No. 544,480, Jan. 27, 1975, Pat. No. 4,078,229. This application Jan. 22, 1979, Ser. No. 5,259
Int. Cl.[3] G11C *11/42, 13/04*
U.S. Cl. 365—127 11 Claims



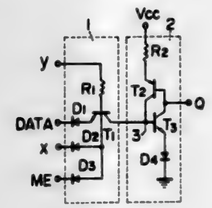
1. An optical element having inhomogeneity of refractive index which is constructed by directing into a photoreactant substantially dispersed in a fluid medium a first optical beam at a first wavelength which is matched to a characteristic spectral absorption region of said photoreactant, and directing a second optical beam of a second wavelength matched to a characteristic spectral absorption region of said photoreactant such that the first optical beam and the second optical beam intersect to generate a mono-molecular reaction in the region of beam intersection to generate a substantially persistent change in refractive inex in said region, said first and second optical beams being translatable to produce within said medium a controlled refractive index distribution useful for performing an optical function determined by a pattern of said distribution.

4,288,862

MEMORY CIRCUIT

Ichiro Ohhinata; Seiei Ohkoshi, and Hideo Suzuki, all of Yokohama, Japan, assignors to Nippon Telegraph and Telephone Public Corp. and Hitachi, Ltd., both of Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,109
Claims priority, application Japan, Dec. 21, 1977, 52-152896; Dec. 28, 1977, 52-157864
Int. Cl.[3] G11C *11/40, 15/04*
U.S. Cl. 365—181 11 Claims



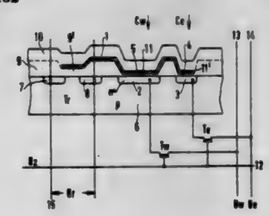
1. A memory circuit comprising
a memory cell including two complementary transistors operatively connected to form a four-layer semiconductor having an input for receiving a data signal to be stored therein,
a control input circuit including transistor means having at least one input transistor with its collector connected to the input of said memory cell,
first input means connected to said control input circuit including first, econd and third input terminals receiving respective logical signals,
second input means including a fourth input terminal receiving a data signal to be stored in said memory cell, means for connecting said fourth input terminal to an emitter of said input transistor and
said control input circuit further including control means for controlling the base current of said input transistor on the basis of a logical product of the signals applied to said first, second and third input terminals.

4,288,863

PROGRAMMABLE SEMICONDUCTOR MEMORY CELL

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 21, 1980, Ser. No. 132,587
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916884
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—182 12 Claims



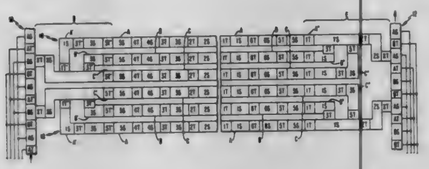
1. A programmable non-volatile semiconductor memory cell consisting of an n-channel insulated gate field effect transistor comprising a gate electrode which is floating with respect to potential, and enclosed on all sides by an insulating material and which, in its surface expansion, extends with electrode parts beyond a channel region of the insulated gate field effect transistor, which channel region is arranged on a surface of a monocrystalline semiconductor substrate, and which gate electrode is coupled capacitively by means of two electrode parts of different size via an insulated gate, to respective programming electrodes wherein:
an erase electrode to which an erase signal is capable of being applied, is created by a first planar zone forming a pn-junction with the semiconductor substrate, and which, together with a first electrode part of the gate electrode forms a first capacitance which is substantially smaller than a second capacitance between a second electrode part and a write electrode to which a write signal is capable of being applied, and wherein
between said first planar zone and a first surface portion of said gate electrode there is arranged an insulating layer which is genetically grown on the free surface of said first planar zone and has a thickness ranging between 100 and 300 angstrom units and which forms a tunnel junction at a sufficiently high existing field strength, between said first planar zone and said first surface portion of the gate electrode so that the recharging of said gate electrode is effected by tunnel currents.

4,288,864

SERIAL-PARALLEL-SERIAL CCD MEMORY SYSTEM WITH FAN OUT AND FAN IN CIRCUITS

Thomas V. Harroun, Essex Junction; Lawrence G. Heller, South Burlington, and Norbert G. Vogl, Jr., Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1979, Ser. No. 87,843
Int. Cl.³ G11C *11/40, 19/28*
U.S. Cl. 365—219 **9 Claims**



1. A serial-parallel-serial charge coupled device memory system comprising

serial input and output sections each having a charge-carrying channel,

first and second common charge-carrying channels, and

first and second adjacent subsets of a main storage section, each of said subsets including a plurality of series registers having charge-carrying channels arranged parallel to each other, each register of said plurality of series registers having an input and an output, a fan out circuit having charge-carrying channels and a common input connected to said serial input section through said first common charge-carrying channel and a plurality of outputs connected to each input of said plurality of series registers and a fan in circuit having charge-carrying channels and a common output connected to said serial output section through said second common charge-carrying channel and a plurality of inputs connected to each output of said plurality of series registers,

said serial input and output sections each including storage nodes with a transfer gate interposed between adjacent storage nodes, the common input of said fan out circuit of said first subset being coupled to a first storage node of said serial input section and the common input of said fan out circuit of said second subset being coupled to a second storage node of said serial input section, the common output of said fan in circuit of said first subset being coupled to a first storage node of said serial output section and the common output of said fan in circuit being coupled to a second storage node of said serial output section, said first storage nodes of said serial input and output sections being interconnected by said first subset and said second storage nodes of said serial input and output sections being interconnected by said second subset and a third storage node interposed between said first and second storage nodes in each of said serial input and output sections.

4,288,865

LOW-POWER BATTERY BACKUP CIRCUIT FOR SEMICONDUCTOR MEMORY

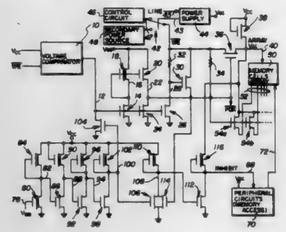
Andrew C. Graham, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Feb. 6, 1980, Ser. No. 119,293
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—229 **12 Claims**

1. A circuit for maintaining a bit pattern which is stored in a memory array of an integrated semiconductor memory circuit during a low power mode, said memory circuit including peripheral memory access circuits for reading and writing data into and from said memory array, a primary power terminal, and a control terminal which receives secondary power upon failure of a primary power source connected to power said memory circuit through said primary power terminal, said memory array having a dedicated power node, comprising in combination:

means for comparing the voltages received by said memory circuit at said primary power terminal and at said control terminal to produce a first state at an output node of said means for comparing when the voltage at said control terminal does not exceed the voltage at said primary power terminal by more than a preselected offset voltage and to produce a second state at said output node when the voltage at said control terminal exceeds the voltage at said primary power terminal by more than said preselected offset voltage,

means for coupling said primary power terminal to said memory array power node through a low impedance path when said voltage comparator output node is at said first state and through a high impedance path when said voltage comparator output node is at said second state,



means for coupling said control terminal to said memory array power node through a high impedance path when said voltage comparator output node is at said first state and through a low impedance path when said voltage comparator output node is at said second state,

means for generating a substrate bias voltage for said integrated memory circuit,

means for monitoring said substrate bias voltage to produce a first state at a monitor node when said substrate bias voltage is greater than a preset magnitude and to produce a second state when said substrate bias voltage is less than said preset magnitude, and

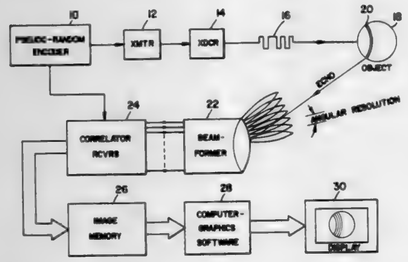
means for inhibiting said peripheral circuits when said output node of said voltage comparator is at said second state or said monitor node is at said second state to prevent said peripheral circuits from accessing said memory array.

4,288,866

ULTRASONIC IMAGE SYSTEM

George L. Sackman, Carmel Valley, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 9, 1979, Ser. No. 83,044
Int. Cl.³ G01S *7/20*
U.S. Cl. 367—11 **12 Claims**



1. An ultrasonic image system comprising:

(a) a transmitter for transmitting a large time-bandwidth product signal waveform;

(b) means for pulse modulating said transmitter to produce a coded output pulse;

(c) means for converting said coded output pulse into ultrasonic energy;

(d) a beamformer having a plurality of fine angular resolution cells for receiving the echoes of said coded output pulse reflected from an object to be imaged;

(e) means for correlating said received echoes with a replica of said coded output pulse from said pulse modulating means such that each of said resolution cells receiving said echoes responds only to the correlation between said echoes and said stored replica;

(f) means for storing the output of said correlating means for each of said range cells in the form of a three-dimensional data base of object reflectivity; and

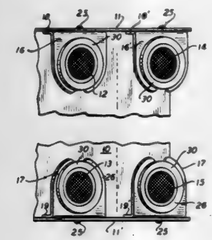
(g) means for displaying said three-dimensional data base in a graphic form which readily assists in object identification.

4,288,867

AREA INTRUSION ADJUSTABLE DETECTOR UNIT

Leo A. Guthart, Old Westbury, N.Y., assignor to Alarm Device Manufacturing Company, Syosset, N.Y.

Filed Nov. 14, 1978, Ser. No. 960,727
Int. Cl.³ G08B *13/16*
U.S. Cl. 367—93 **11 Claims**



1. A detector unit for detection of intrusion in an interior area between said detector unit and a wall spaced from said unit, comprising:

(a) a chassis frame,

(b) a transducer-transmitter,

(c) a transducer-receiver,

(d) bracket means mounting said transducer-transmitter and said transducer-receiver on said chassis frame,

(e) swiveling means engageable with said bracket means and with said chassis frame, rotatably so mounting said bracket means on said frame,

(f) means energizing said transducer-transmitter to beam ultrasonic waves into said area to be so monitored for intrusion, with the echoes of said waves so beamed returning to said transducer-receiver,

(g) said means so securing the transducer-transmitter and transducer-receiver, to thereby fix the paths of transmission and return echo waves, and

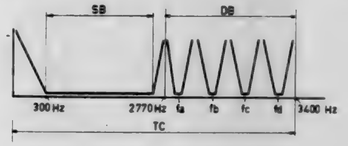
(h) means comparing the energy value of the echo waves so returned with that of the waves so beamed, for generating an alarm circuit responsive to the difference in value between the waves so beamed and the echo waves so returned.

4,288,868

SATELLITE COMMUNICATION SYSTEM FOR SPEECH AND TELEGRAPHY

Hermanus H. Grotjohann, and John R. Reynders, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,612
Claims priority, application Netherlands, Jun. 20, 1978, 7806618
Int. Cl.³ H04L *5/18*
U.S. Cl. 370—30 **4 Claims**



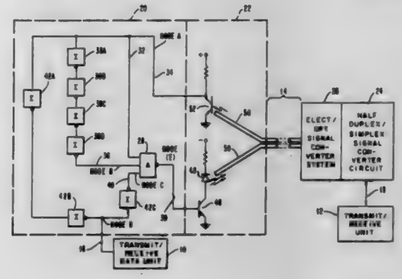
1. A communication system for the transmission on a telephony channel of speech signals located within a speech band as well as at least one data channel comprising data signals modulated on a sub-carrier in a data band which is located outside the speech band, the system comprising at least three stations each station comprising a transmitter and a receiver each operating on one of two mutually different frequencies—which belong to one frequency pair—for half-duplex data communication combined with full-duplex speech communication, characterized in that each station comprises a second receiver having a receive frequency which corresponds to the frequency of the transmitter of that station.

4,288,869

HALF-DUPLEX/SIMPLEX DIGITAL SIGNAL CONVERTER

James S. Kolodzey, Chippewa Falls, Wis.; Francis E. Noel, Jr., Knightdale, and George R. Stilwell, Jr., Raleigh, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,525
Int. Cl.³ H04L *5/16*
U.S. Cl. 370—31 **4 Claims**



1. A half-duplex/simplex digital signal converter circuit comprising:

a multiple input coincidence gate having a first input connected directly to a receiving simplex line and its output connected to a transmitting simplex line;

a first time delay circuit connecting a second input of said gate to said receiving simplex line for causing a received simplex signal to be applied to said gate after a first delay period;

a second time delay circuit connecting a third input of said gate to said receiving simplex line for causing an inverted form of a received simplex signal to be applied to said gate after a second delay period shorter than said first delay

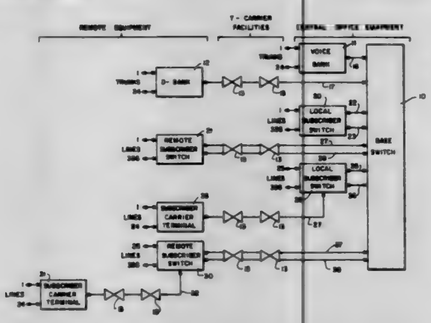
period, said second time delay circuit being connected to the half-duplex line.

4,288,870

INTEGRATED TELEPHONE TRANSMISSION AND SWITCHING SYSTEM

John C. McDonald; James R. Baichtal, both of Los Altos; Bradley A. Helliwell, Los Gatos; Alexander C. Ling, Mountain View, and Craig P. Schaffter, Sunnyvale, all of Calif., assignors to TRW, Inc., Los Angeles, Calif.

Filed Feb. 2, 1978, Ser. No. 874,521
Int. Cl.[3] H04J *3/00*
U.S. Cl. 370—56 31 Claims



1. An integrated telephone transmission system operating in a multiframe format where each frame consists of a plurality of time slots having a time slot rate, said system comprising:

a plurality of multitime-slot bidirectional data buses,

base switch means connected to said data buses for specifying selected ones of said time slots and for switching data between the specified time slots,

a plurality of subscriber lines,

first and second subscriber switch means, each of said subscriber switch means connected to some of said subscriber lines and to a first pair of said bidirectional buses for encoding data on said subscriber lines, thereby forming first encoded data and for switching said first encoded data to specified ones of said time slots on either bus of said pair of buses, whereby said base switch means switches said first encoded data to specified time slots on said plurality of buses,

said base switch means connected to receive second encoded data in other time slots on said plurality of buses for switching said second encoded data to other specified time slots on either of said pair of buses,

said first and second subscriber switch means connected to receive said second encoded data for decoding said second encoded data and for switching the resulting decoded data to specified ones of said subscriber lines,

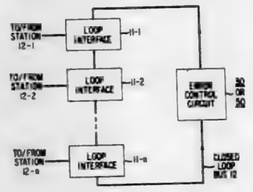
said first subscriber switch means including means for encoding data on said subscriber lines thereby forming third encoded data, interchanger means having a plurality of channel unit locations corresponding to said subscriber lines, and means for switching said third encoded data between specified ones of said locations in said interchanger means, means for decoding said switched encoded data, and means for switching the decoded data resulting from the latter operation to specified ones of said subscriber lines.

4,288,871

DIGITAL LOOP CONFERENCING SIGNAL CORRECTION ARRANGEMENT

Charles R. Baugh, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 5, 1979, Ser. No. 91,406
Int. Cl.[3] H04J *3/08;* H04M *3/56*
U.S. Cl. 370—86 7 Claims



1. An error correction circuit for use in a continuous loop communication system where a plurality of communication stations have access thereto via interface circuits associated with each station,

said error correction circuit comprising

means for sampling the combined loop signal at a particular location within said loop,

signal reduction means,

means for modifying each said sampled signal by said signal reduction means so as to provide a new combined signal, said combined signal having a smaller absolute mathematical value than said sampled signal, and

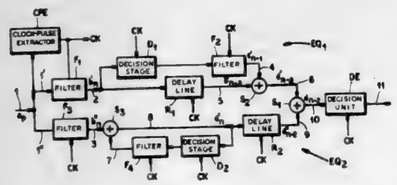
means for substituting on said loop said combined signal for said sampled signal.

4,288,872

EQUALIZER FOR THE CORRECTION OF DIGITAL SIGNALS

Giovanni Tamburelli, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed May 9, 1980, Ser. No. 148,237
Claims priority, application Italy, May 11, 1979, 67999 A/79
Int. Cl.[3] H03K *5/159;* H04B *3/04;* H04L *25/03*
U.S. Cl. 375—14 7 Claims



1. An equalizer for eliminating the effects of postcursor and precursor interference from a periodically sampled train of incoming digital signals, comprising:

receiving means connected to a transmission path carrying said incoming signals;

a first circuit branch connected to said receiving means, said first branch including first filter means for converting a given signal sample into a first linearly prefiltered signal with at least partial suppression of postcursor effects, first threshold means connected to said first filter means for deriving a first quantized pulse from said first prefiltered signal, second filter means connected to said first threshold means for generating a precursor-compensating signal from said first quantized pulse, first delay means connected to said first filter means for emitting a retarded signal corresponding to said first prefiltered signal, and first adding means connected to said first delay means and to said second filter means for algebraically combining said retarded signal with said precursor-compensating signal to produce a first purged signal;

a second circuit branch connected in parallel with said first circuit branch to said receiving means, said second branch including third filter means for converting said given signal sample into a second linearly prefiltered signal with at least partial suppression of precursor effects, second threshold means in a feedback loop with an input end downstream of said third filter means for deriving a second quantized pulse from said second prefiltered signal, fourth filter means in said feedback loop connected to said second threshold means for generating a postcursor-compensating signal from said second quantized pulse, second adding means upstream of said input end connected to said third and fourth filter means for algebraically combining said second prefiltered signal with said postcursor-compensating signal to produce a corrected feedback signal, and second delay means connected to said second adding means downstream of said input end for emitting a second purged signal temporally correlated with said first purged signal;

summing means connected to said first and second branches for algebraically combining said first and second purged signals into a resulting signal; and

decision means connected to said summing means for converting said resulting signal into a quantized output pulse.

4,288,873

ANALOGUE TO DIGITAL CONVERTERS

Michael J. Gingell, Raleigh, N.C., assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,728
Int. Cl.[3] H03K *13/01;* H04B *12/02*
U.S. Cl. 375—25 3 Claims



1. A pulse code modulated encoding arrangement comprising a linear analogue-to-digital converter having an input analogue signal coupled thereto and producing pulse code groups each containing a first number of bits, a digital high pass filter to which the analogue-to-digital converter output is applied to remove unwanted dc offset and low frequency components present in said input analogue signal and generated in said analogue-to-digital converter, and means for adding to the high pass filter output a predetermined amount of dc offset for minimizing idle noise and reducing crosstalk enhancement.

4,288,874

TIMING DATA REPRODUCTION SYSTEM

Kunihiro Yamada, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

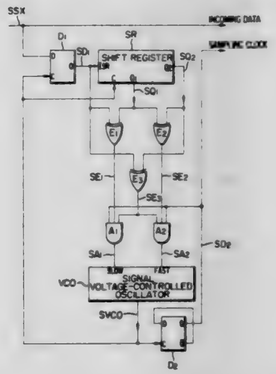
Filed May 9, 1979, Ser. No. 37,486
Claims priority, application Japan, May 15, 1978, 53/56673
Int. Cl.[3] H04L *7/00*
U.S. Cl. 375—118 8 Claims

1. A system for providing a sampling clock reference signal for information encoded in a digital data signal having a given pulse repetition rate and pulse width, comprising:

means including a variable frequency or phase oscillator for sampling said digital data signal at successive time intervals determined by the frequency of the oscillator output signal, said frequency being on the order of twice said given pulse repetition rate, so that said sampling time intervals are on the order of one-half said digital data signal pulse width;

a shift register coupled to said sampling means for storing successive groups of samples of said digital data signal, each group comprising at least two successive samples thereof;

oscillator control means including a logic circuit for converting the pattern of digital data signal samples stored in said shift register into a control signal, the value of which



is indicative of whether the phase of said digital data signal leads or lags the phase of said oscillator,

said oscillator control means further including means for varying the frequency or phase of the output signal of said oscillator in accordance with said control signal so that the phase of said oscillator is maintained in coincidence with the phase of said digital data signals; and

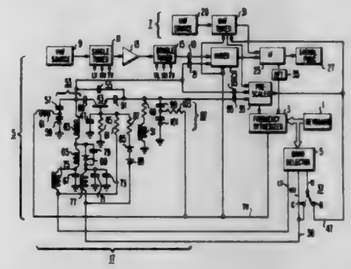
frequency divider means for synchronously dividing the frequency of the oscillator output signal in half to provide said sampling clock reference signal.

4,288,875

CONTROLLED LOCAL OSCILLATOR WITH APPARATUS FOR EXTENDING ITS FREQUENCY RANGE

George W. Carter, Greenfield, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,991
Int. Cl.[3] H04B *1/26;* H03B *5/12*
U.S. Cl. 455—197 4 Claims



1. In a tuner for tuning channels in a predetermined range of frequencies, apparatus comprising:

channel selection apparatus for generating a tuning voltage having magnitudes corresponding to selected channels;

a local oscillator for generating a local oscillator signal including a transistor having base, collector and emitter

electrodes configured as a common base amplifier, said base electrode being connected to a reference potential point; a first varactor diode responsive to said tuning voltage and at least one inductor configuration connected in a parallel combination between said collector electrode and said reference potential point; and feedback means, including a capacitor connected between said collector and emitter electrodes, for conditioning said oscillator to oscillate at a frequency substantially determined by said tuned circuit in at least a portion of said predetermined range;

RF means for receiving a plurality of RF signals and including filter means controlled in a tracking relationship with said tuned circuit means in response to said tuning voltage for selecting one of said RF signals in accordance with the magnitude of said tuning voltage;

mixer means responsive to said local oscillator signal and to a selected one of said RF signals for generating an IF signal; and

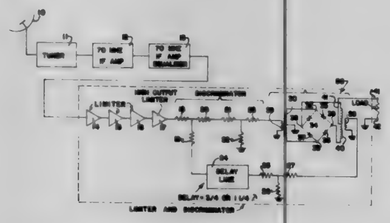
extension means, including a second varactor diode responsive to said tuning voltage connected between said emitter electrode and said reference potential point, said first and second varactor diodes being poled to exhibit capacitances which change in the same sense in accordance with the magnitude of said tuning voltage, for conditioning said oscillator to oscillate at a frequency substantially determined by said tuned circuit throughout another portion of said predetermined range in accordance with the magnitude of said tuning voltage.

4,288,876

DEMODULATOR FOR FREQUENCY MODULATED SIGNALS

William M. Lennox, Rockville, and Hank S. Lin, Silver Spring, both of Md., assignors to Microdyne Corporation

Filed Mar. 28, 1977, Ser. No. 782,202
Int. Cl.³ H04B 1/26
U.S. Cl. 455—214 **7 Claims**



1. A receiver for receiving frequency modulated television signals from a satellite comprising:

a directional antenna beamed at a satellite for receiving the frequency modulated waves,

heterodyne means for producing intermediate frequency signals that are frequency modulated in accordance with the frequency modulations on the television signals received from the satellite, said heterodyne means having an output,

limiter means in the output of the heterodyne means for limiting the amplitude of the signals in said output of said heterodyne means, said limiter means having an output,

power splitter means having an input connected to the output of the limiter means for splitting the output of said limiter means into first and second outputs,

a double balanced mixer having first and second inputs,

first isolation and attenuator means connecting the first output of said power splitter to the first input of said double balanced mixer,

a delay line having an input fed by the second output of said power splitter, said delay line having an output,

second isolation and attenuator means having an input fed by the output of said delay line and having an output feeding the second input to said double balanced mixer for transmitting the output of said delay line to the second input of the double balanced mixer,

said delay line and said second isolation and attenuator means having a combined delay, with reference to the delay of the first isolation means, which is at least three-quarters of the wavelength of the center frequency of said intermediate frequency signals and which is an integral odd multiple of said wavelength,

said double balanced mixer comprising:

(a) first and second transformers each having a primary and a secondary, said primaries respectively comprising said first and second inputs to the double balanced mixer,

(b) a bridge comprising four rectifiers connected together to form four junctions as follows: the first rectifier passing current from the first junction to the second junction, the second rectifier passing current from the second to the third junction, the third rectifier passing current from the third to the fourth junction, and the fourth rectifier passing current from the fourth junction to the first one,

(c) means connecting the secondary of said first transformer across said first and third junctions, and

(d) means connecting the secondary of said second transformer across said second and fourth junctions,

(e) each of said secondaries having a center-tap, whereby modulated signals, including the intelligence embodied in the modulation on the signals received from the satellite, appear across said two center taps, and

a load connected between said center-taps;

said heterodyne means and said limiter means including means for providing a sufficient level of power at said power splitter so that no additional amplification between the power splitter and said load is necessary; and said power splitter, said first and second isolation and attenuator means, said delay line, and said double balanced mixer processing the signals passing therethrough without amplification.

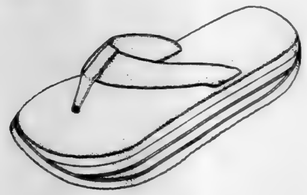
DESIGN PATENTS

GRANTED SEP. 8, 1981

ERRATA

For CLASS	See PATENT NO.
D99-001	260,602
D99-049	260,603

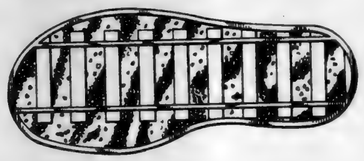
260,570
SANDAL
James K. Wong, 46-194 Nona Loop, Kaneohe, Hi. 96744
Continuation-in-part of Ser. No. 722,615, Sep. 13, 1976, Pat. No. Des. 248,427. This application Jun. 19, 1978, Ser. No. 917,007
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270



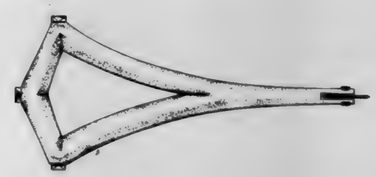
260,571
SOLE OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to AMFESCO Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 35,860
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321



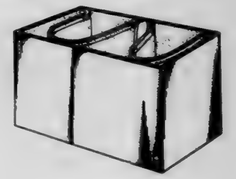
260,572
SOLE OF A SHOE
David Greenblatt, Roslyn, and Rick Spinoza, Scarsdale, both of N.Y., assignors to AMFESCO Industries, Inc., Plainview, N.Y.
Filed May 4, 1979, Ser. No. 36,047
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321



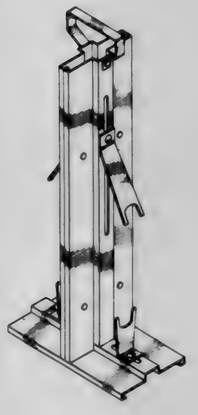
260,573
COMBINED TRACING WHEEL AND MARKING TOOL FOR DRESSMAKING
Leona R. Impastato, 27 Gray Rock La., Chappaqua, N.Y. 10514
Filed Oct. 18, 1978, Ser. No. 952,869
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—18



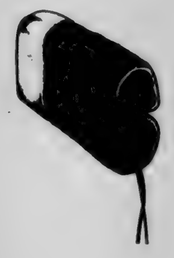
260,574
CAMERA AND LENS HOLDER
Miller Outcalt, 2036 Broadway, Santa Monica, Calif. 90404
Filed Sep. 28, 1979, Ser. No. 79,899
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33



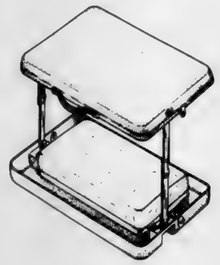
260,575
ROLLER SKATE CARRIER
Fred W. Brown, Jr., 1531 Minerva Ave., Anaheim, Calif. 92804
Filed Sep. 20, 1979, Ser. No. 77,082
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36



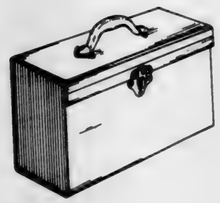
260,576
LADDER COVER
Lynn M. Roberdeaux, 10 Prince Ave., Kittery, Me. 03904
Filed Nov. 16, 1978, Ser. No. 961,219
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—41



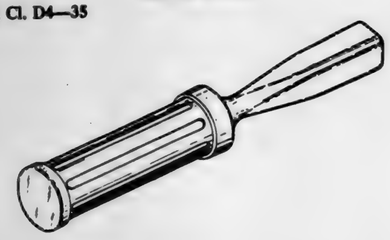
260,577
COMBINED COLLAPSIBLE BEACH REST AND CARRYING CASE
William V. Porter, P.O. Box 397, New Braunfels, Tex. 78130
Filed Sep. 17, 1979, Ser. No. 76,155
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—43



260,578
PORTABLE EXPANDING FILE CASE
Philip A. Cox, P.O. Box 189, West Heidelberg 3081, Victoria, Australia
Filed Dec. 18, 1978, Ser. No. 970,375
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52



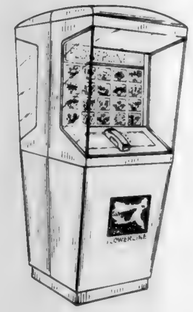
260,579
BRUSH HEAD AND HANDLE
Maurice C. Baudon, Beauvais, France, assignor to S. A. ets Lardenois, Hermes, France
Filed Oct. 4, 1979, Ser. No. 81,700
Claims priority, application France, Jul. 25, 1979, 79 296
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35



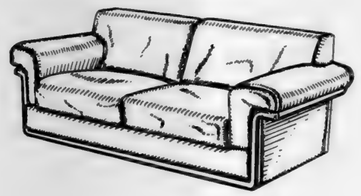
260,580
SWING SEAT
Paul K. Meeker, Kent, Ohio, assignor to Century Products, Inc., Cleveland, Ohio
Filed Nov. 16, 1978, Ser. No. 961,396
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—10



260,581
COMBINED MERCHANDISE ADVERTISING AND TELEPHONE ORDER BOOTH
Paul S. Kostoff, 24356 E. River Rd., Grosse Ile, Mich. 48318
Filed Sep. 28, 1978, Ser. No. 946,845
Term of patent 14 years
Int. Cl. D20—*02*; D25—*03*
U.S. Cl. D6—25



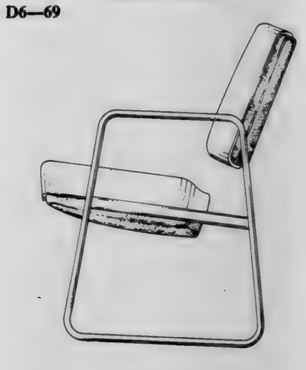
260,582
SOFA
Ernst Lüthy, Klingnau, Switzerland, assignor to C + D Consulting & Design AG, Engelberg, Switzerland
Filed May 21, 1979, Ser. No. 41,150
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



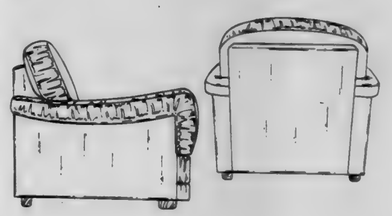
260,583
CHAIR FOR INVALIDS
William R. Brewer, 9100 Bartee Ave., Arleta, Calif. 91331
Filed Mar. 19, 1979, Ser. No. 21,627
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—64



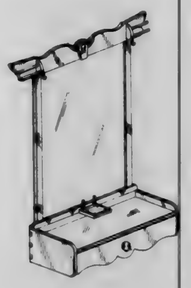
260,584
CHAIR
Don C. Albinson, Coopersburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 26, 1978, Ser. No. 909,748
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



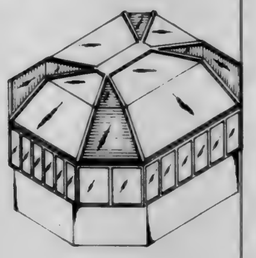
260,585
SEAT
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Mar. 5, 1979, Ser. No. 17,363
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



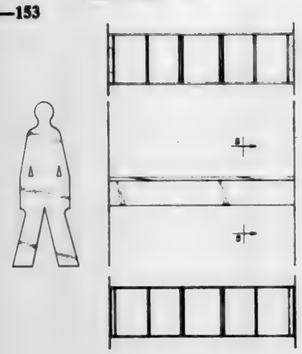
260,586
COMBINED VALET WALL RACK AND DRAWER UNIT
David Nusz, 2025 W. Mark, Layton, Utah 84041
Continuation-in-part of Ser. No. 974,128, Dec. 26, 1978, Pat. No. 257,303. This application Aug. 20, 1979, Ser. No. 67,837
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—123



260,587
KIOSK
R. Michel Perlmutter, Aurora, Colo., assignor to Grove Foods, Inc., Aurora, Colo.
Filed Oct. 25, 1979, Ser. No. 84,896
Term of patent 14 years
Int. Cl. D6—*04*; D25—*03*
U.S. Cl. D6—146



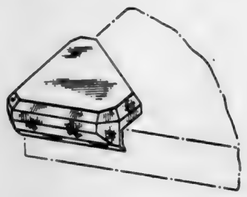
260,588
STORAGE CABINET
Kenneth E. Johnson, Sr., Waco, Tex., assignor to T-Shirts Plus, Inc., Waco, Tex.
Filed Sep. 13, 1979, Ser. No. 74,972
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153



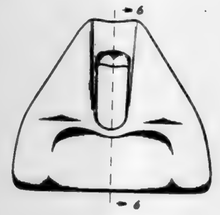
260,589
GUITAR STAND
Deborah J. O'Brien, 33 Mary St., South Burlington, Vt. 05401
Filed Sep. 11, 1978, Ser. No. 940,968
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—176



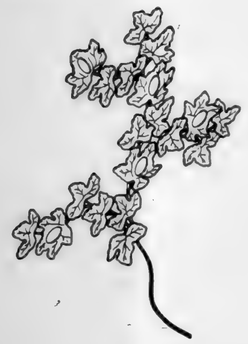
260,590
CORNER GUARD FOR FURNITURE
Haydn H. Hobson, 420 Reed Clr., Napa, Calif. 94558
Filed Jul. 6, 1979, Ser. No. 55,185
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



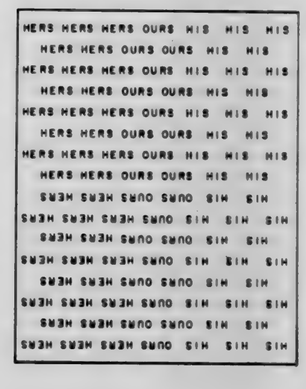
260,591
RELAXATION PAD
Clement G. Eischen, Sr., 1545 Lloyd Center, Portland, Oreg. 97232
Filed Jan. 16, 1978, Ser. No. 869,866
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



260,592
PLURAL MOUNT PICTURE FRAME
Sandra M. Comma, 2922 Stranden Rd., Baltimore, Md. 21230
Filed Jan. 17, 1980, Ser. No. 113,046
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



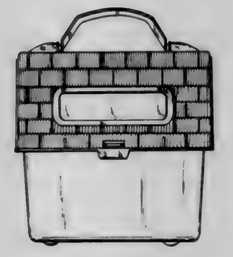
260,593
BED SHEET OR SIMILAR ARTICLE
Kevin D. Dolinar, Canonsburg, Pa.; Ruth M. Lipsitz, and Barry R. Lipsitz, both of Norwalk, Conn., assignors to Design Innovations, Norwalk, Conn.
Filed Nov. 19, 1979, Ser. No. 95,395
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—264

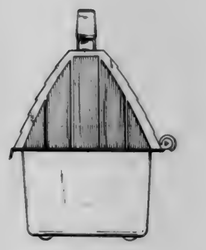


260,594
KETTLE
Kenichi Myodo, Tsubame, Japan, assignor to Shinko Kinzoku Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1979, Ser. No. 83,363
Claims priority, application Japan, Apr. 11, 1979, 54-014567
Term of patent 7 years
Int. Cl. D07—*02*
U.S. Cl. D7—66

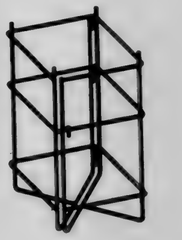


260,595
LUNCH BOX
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Oct. 22, 1979, Ser. No. 87,242
Term of patent 14 years
Int. Cl. D03—*01*
U.S. Cl. D7—76





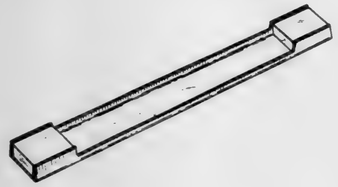
260,596
TRASH BAG HOLDER OR SIMILAR ARTICLE
Richard Vreeken, 1276 Metz Rd., Perris, Calif. 92370
Filed Oct. 25, 1979, Ser. No. 88,178
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—193



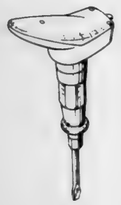
260,597
GREASE INJECTOR
Tokunari Mathuda, Kagamihara, Japan, assignor to Mathuda Chunyuki Kabushiki Kaisha, Gifu, Japan
Filed Mar. 22, 1979, Ser. No. 22,847
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14.1



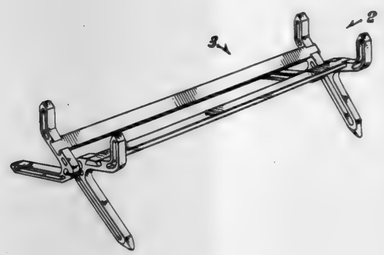
260,598
MAGNETIC DEVICE FOR THE TEMPORARY FIXATION OF CERAMIC WELDING DUCTS TO STEEL SURFACES
Jakob van Steenwijk, Eelde, Netherlands, assignor to Varios Fabrieken B. V., Groningen, Netherlands
Filed Jul. 6, 1978, Ser. No. 922,390
Claims priority, application Benelux, Jan. 11, 1978, 52416
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



260,599
RATCHET SCREWDRIVER
Siu W. Wong, Kowloon, Hong Kong, assignor to Ching Wah Metal Ware Factory Limited, Kowloon, Hong Kong
Filed Mar. 19, 1979, Ser. No. 21,984
Term of patent 7 years
Int. Cl. D8—*04*
U.S. Cl. D8—82



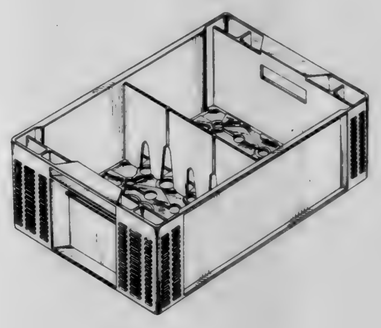
260,600
DRAIN HOSE SUPPORT FOR RECREATIONAL VEHICLES
Clyde B. Taylor, 1150 Hillcrest Dr., Pomona, Calif. 91768
Filed Mar. 19, 1979, Ser. No. 22,209
Term of patent 14 years
Int. Cl. D8—*08*; D12—*16*
U.S. Cl. D8—356



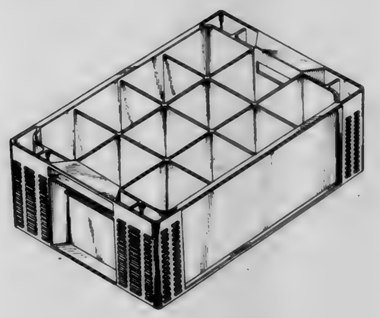
260,601
LIFTING HOOK
Yasuji Kawaguchi, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan
Filed Dec. 4, 1979, Ser. No. 100,238
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



260,602
BOTTLE AND CRATE CARRYING CASE
Marcel E. A. O'Donnal, Mexico City, Mexico, assignor to Plasticos Panamericanos, S.A. DE C.V., Mexico City, Mexico
Filed Jun. 29, 1978, Ser. No. 920,323
Claims priority, application Mexico, Feb. 16, 1978, 1904
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D99—49



260,603
BOTTLE CARRYING CASE
Marcel E. A. O'Donnal, Mexico City, Mexico, assignor to Plasticos Panamericanos, S.A. DE C.V., Mexico City, Mexico
Filed Aug. 22, 1978, Ser. No. 936,568
Claims priority, application Mexico, Feb. 23, 1978, 1912
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D99—49



260,604
INSULATED FOOD SERVICE TRAY AND COVER
Edgar Otto, Scotch Plains, N.J., assignor to Therma-Tray Corporation, South Plainfield, N.J.
Filed Jun. 27, 1978, Ser. No. 919,708
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—347



260,605
LIQUID DISPENSER
David T. Saunders, P.O. Box 32406, Tel-Aviv, Israel
Filed Apr. 26, 1978, Ser. No. 900,201
Claims priority, application United Kingdom, Nov. 4, 1977, 982170
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—300



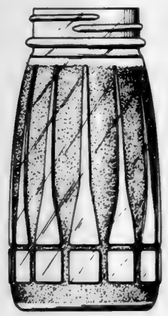
260,606
BOTTLE
Ronald Sacks, 4233 Karensue Ave., San Diego, Calif. 92122
Filed May 10, 1979, Ser. No. 38,001
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—309



260,607
CONTAINER FOR LIQUID
Raymond P. Stoy, Westport, Conn., assignor to American Home Products Corp., New York, N.Y.
Filed Mar. 23, 1979, Ser. No. 23,123
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389



260,608
JAR
James R. McKee, Jr., Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.
Filed Sep. 18, 1979, Ser. No. 76,777
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—394



260,609
BOTTLE
Andre Courreges, 27 rue Delabordere, Neuilly sur Seine, Hauts de Seine, France
Filed Nov. 3, 1978, Ser. No. 957,615
Claims priority, application France, May 3, 1978, 78 41341
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—403



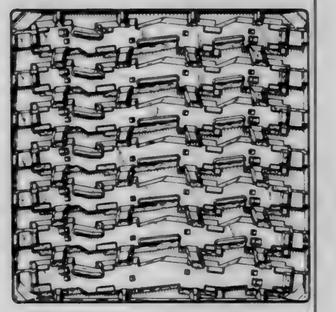
260,610
COMBINED BOTTLE AND CAP
John A. Grip, Cheesequake, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed May 10, 1978, Ser. No. 904,721
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—413



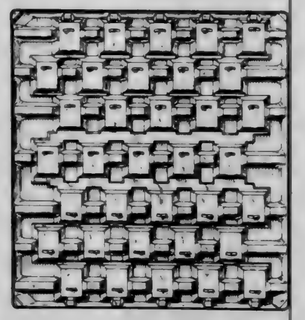
260,611
BOTTLE
Jose L. Balcells, Coral Gables, Fla., assignor to Conqueror (Wine & Spirit) & Co., Limited, London, England
Filed May 30, 1978, Ser. No. 910,878
Claims priority, application United Kingdom, Nov. 29, 1977, 982419/77
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—413



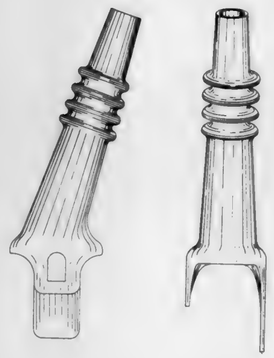
260,612
SHIPPING TRAY FOR DYNAMOELECTRIC MACHINES
Harold E. Wilkerson, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Filed Jul. 13, 1979, Ser. No. 57,301
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424



260,613
SHIPPING TRAY FOR DYNAMOELECTRIC MACHINES
Harold E. Wilkerson, De Kalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Filed Jul. 13, 1979, Ser. No. 57,302
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424



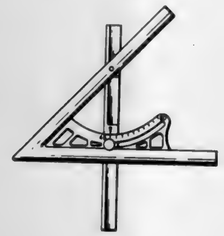
260,614
POURING SPOUT FOR A FLUID CONTAINER
Bengt O. Petersson, Stutaliden 33, S-434 00 Kungsbacka, Sweden
Filed Feb. 2, 1979, Ser. No. 8,969
Claims priority, application Sweden, Aug. 7, 1978, 1978181
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—447



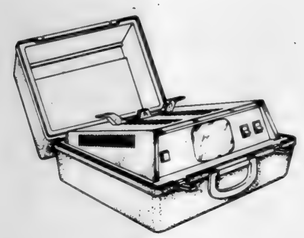
260,615
COMBINED WRISTWATCH AND BAND
Carlo Maroni, No. 24, Via Rodolfo Benini, 00191 Rome, Italy
Filed Oct. 17, 1978, Ser. No. 952,137
Claims priority, application Italy, Apr. 17, 1978, 35775/78[U]
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32



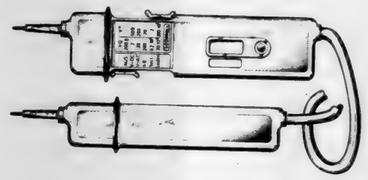
260,616
ADJUSTABLE CARPENTERS SQUARE
Richard A. Groves, 10141 Kilborne Rd., Rte. #2, Sunbury, Ohio 43074
Filed Jun. 15, 1979, Ser. No. 48,848
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



260,617
PORTABLE ELECTRONIC TESTER AND ANALYZER
Phillip N. Lawson, II, Anoka, and James A. Odom, Jr., Apple Valley, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 21, 1979, Ser. No. 96,585
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—76



260,618
ELECTRICAL TESTING INSTRUMENT
Manfred Koslar, No. 16, Schröder Strasse, 4840 Rheda-Wiedenbrück, Fed. Rep. of Germany
Filed May 8, 1979, Ser. No. 37,192
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 1111
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



260,619
ELECTRICAL TESTING INSTRUMENT
Manfred Koslar, No. 16, Schröder Strasse, 4840 Rheda-Wiedenbrück, Fed. Rep. of Germany
Filed May 8, 1979, Ser. No. 37,193
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 1111
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



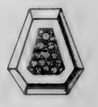
260,620
COMBINED LOCKABLE BRACELET AND KEY THEREFOR
Pierre-Alain Blum, La Chaux-de-Fonds, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Dec. 19, 1978, Ser. No. 970,960
Claims priority, application Switzerland, Jun. 19, 1978, 67104
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—3



260,621
SEGMENTAL NECKLACE
Marina Bulgari, Nafpaktos, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Feb. 21, 1979, Ser. No. 13,316
Claims priority, application Switzerland, Aug. 24, 1978, 110059
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—5

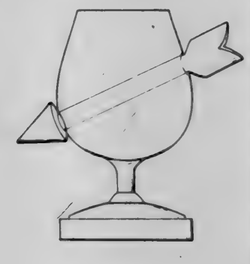


260,622
CLASP EARRING
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 12, 1979, Ser. No. 74,888
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—75





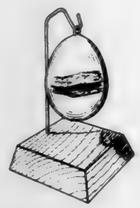
260,623
STATUE
Richard S. Gorski, 11312 Grand Oak Dr., B-18 A-10, Grand Blanc, Mich. 48439
Filed Apr. 3, 1978, Ser. No. 893,149
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157



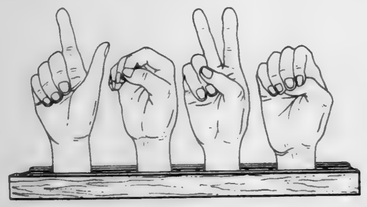
260,624
FIGURINE OF AN ANTELOPE
Jesus A. C. Santa Eulalia, and Javier B. C. Santa Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 29, 1978, Ser. No. 946,850
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158



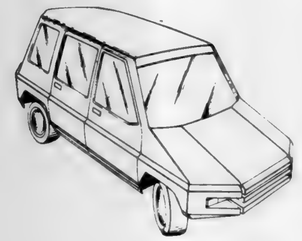
260,625
NOVELTY STATUETTE
Robert M. Schoolcraft, 354 Grand Blvd., San Mateo, Calif. 94401
Filed Sep. 4, 1979, Ser. No. 71,881
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131



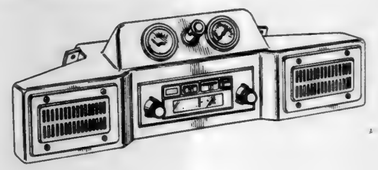
260,626
NOVELTY FIGURINE
Gabor Kadar, 4635 White Oak Ave., Encino, Calif. 91316
Filed Oct. 25, 1979, Ser. No. 87,825
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—160



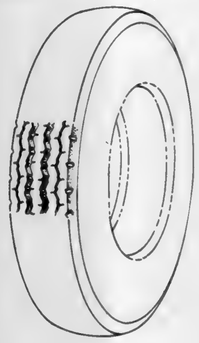
260,627
AUTOMOBILE
Morley L. Smith, Jr., Beaconsfield, Canada, assignor to Guillon, Smith, Marquart & Asso. Ltd., Montreal, Canada
Filed May 14, 1979, Ser. No. 38,869
Claims priority, application Canada, May 2, 1979, 02-05-79-1
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



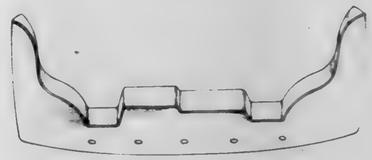
260,628
MOTORCYCLE CONSOLE
Robert K. McKeel, 415 Mulberry St., Beaver, Pa. 15009
Filed Apr. 20, 1978, Ser. No. 898,526
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



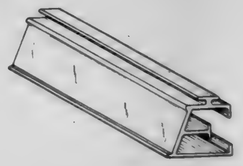
260,629
TIRE TREAD AND BUTTRESS
Philip S. Hammond, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 16, 1979, Ser. No. 21,033
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142



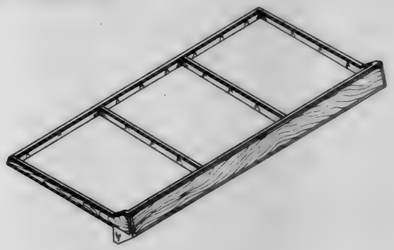
260,630
OVERHEAD CONSOLE FOR VEHICLES
Thomas L. Drafton, 4335 N. Peck, El Monte, Calif. 91731
Filed Apr. 17, 1979, Ser. No. 30,834
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



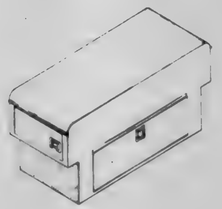
260,631
SIDE RAIL FOR A LAND VEHICLE LUGGAGE RACK
Daniel J. Kowalski, Ortonville, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed Mar. 9, 1979, Ser. No. 19,274
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



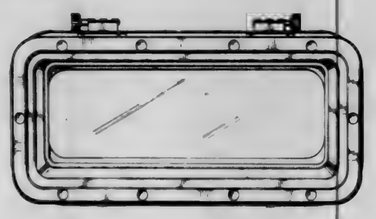
260,632
LUGGAGE RACK
Robert A. Noga, 13404 Calais Dr., Del Mar, Calif. 92014
Filed Mar. 28, 1979, Ser. No. 24,700
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



260,633
SERVICE BOX FOR A PICKUP TRUCK
Ronald D. Gorman, R.R. #2, Thunder Bay, Ontario, Canada (P7C 4U1)
Filed Jan. 9, 1980, Ser. No. 110,624
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



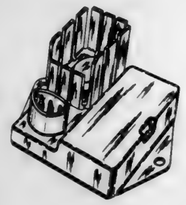
260,634
PORTHOLE
John I. Gates, Newport Beach, Calif., assignor to Clifford C. Oliver, Newport Beach, Calif., a part interest
Filed Mar. 8, 1979, Ser. No. 18,856
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—183



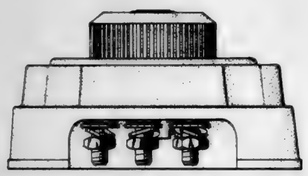
260,635
SPLIT CORE CURRENT TRANSFORMER
David L. Lockwood, Williamsville, N.Y., assignor to Clarence Controls Inc., Buffalo, N.Y.
Filed Aug. 23, 1979, Ser. No. 68,945
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—4



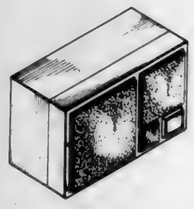
260,636
HOUSING FOR AN ELECTRONIC IGNITION CONTROL UNIT
George K. Duden, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 3, 1978, Ser. No. 930,821
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—15



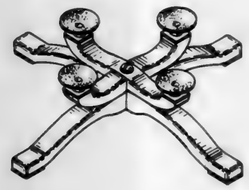
260,637
BOAT SAFETY MAIN SWITCH
Leroy F. Hollenbeck, Jr., Miami, Fla., assignor to Perko, Inc., Miami, Fla.
Filed Aug. 22, 1979, Ser. No. 68,814
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



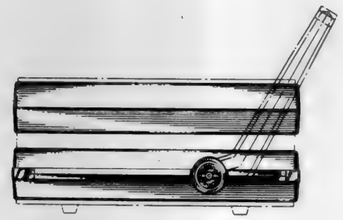
260,638
LOUDSPEAKER ENCLOSURE
Charles Barbera, 303 E. Elk St., Glendale, Calif. 91205
Filed Sep. 5, 1978, Ser. No. 939,890
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



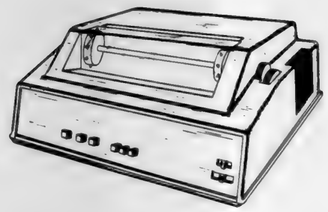
260,639
INSULATING SPEAKER SUPPORT
Barry W. Long, 10193 Parish Pl., Cupertino, Calif. 95014
Filed May 30, 1978, Ser. No. 910,487
Term of patent 14 years
Int. Cl. D14—*99;* D15—*01*
U.S. Cl. D14—38



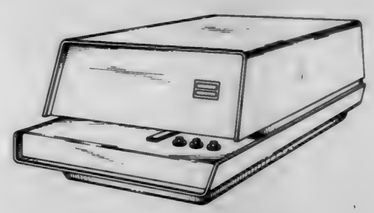
260,640
SIDE PANELS ASSEMBLY FOR READILY DISASSEMBLED INSTRUMENT HOUSING
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Filed May 10, 1979, Ser. No. 37,673
Term of patent 14 years
Int. Cl. D14—*99;* D10—*07*
U.S. Cl. D14—114



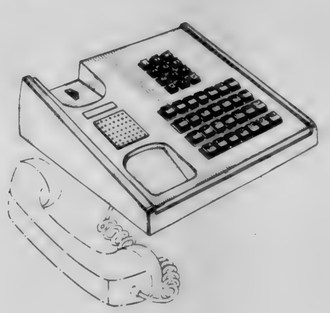
260,641
CABINET FOR AN INPUT-OUTPUT TERMINAL FOR A DATA HANDLING SYSTEM
Bruce B. Campbell, Chesapeake, and Charles E. Milliser, Waynesboro, both of Va., assignors to General Electric Company, Waynesboro, Va.
Filed Dec. 28, 1978, Ser. No. 974,208
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—105



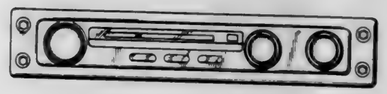
260,642
FORM PRINTER
Kenneth D. Collister, Elkhart, Ind., and James R. Flood, Edwardsburg, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Jun. 21, 1979, Ser. No. 50,676
Term of patent 14 years
Int. Cl. D14—*02;* D18—*02*
U.S. Cl. D14—111



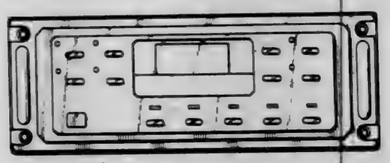
260,643
BASE FOR A TELEPHONE SET
Donald Foggia, Ocean, N.J., and Roman Pomponi, Norwalk, Conn., assignors to TIE/Communications, Inc., Shelton, Conn.
Filed Aug. 24, 1978, Ser. No. 936,335
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



260,644
AUTOMOBILE RADIO RECEIVER
Toshiyoshi Kikuhara, Soka, Japan, assignor to Clarion Co. Ltd., Tokyo, Japan
Filed Nov. 1, 1979, Ser. No. 90,455
Claims priority, application Japan, Jun. 12, 1979, 54-24324
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



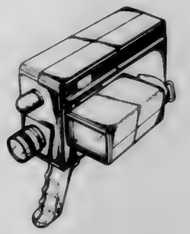
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AUTOMOBILE RADIO RECEIVER
Toshiyoshi Kikuhara, Naka, Japan, assignor to Clarion Co. Ltd., Tokyo, Japan
Filed Nov. 7, 1979, Ser. No. 91,947
Claims priority, application Japan, Jun. 22, 1979, 54-26309
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



260,646
COMBINED RADIO, CLOCK AND CALCULATOR
Toshimasa Akazawa, Machida; Kikuo Ohta, Ikoma; Toshio Igo, Hirakata, and Benito Mishiro, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Nov. 30, 1979, Ser. No. 99,189
Claims priority, application Japan, May 31, 1979, 54-22452
Term of patent 14 years
Int. Cl. D14—*03*; D10—*01*; D18—*01*
U.S. Cl. D14—73

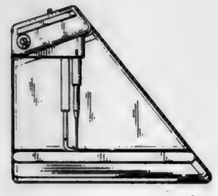


260,647
CAMERA FOR VIDEO TAPE RECORDER
Taisuke Saeki; Masaharu Katayama; Yoshinobu Kitakaze; Noriyuki Arai; Hideo Takahashi; Koya Kurokawa, and Norihiko Shimose, all of Saijyo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 11, 1978, Ser. No. 968,246
Claims priority, application Japan, Jun. 9, 1978, 53-24068
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—78

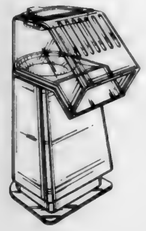


260,648
SEWING MACHINE
Eric J. Marshall, Flat 8, 5 Carlton Gardens, London S.W.1, England
Filed Mar. 23, 1979, Ser. No. 23,315
Claims priority, application United Kingdom, Nov. 25, 1978, 987429/78
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69





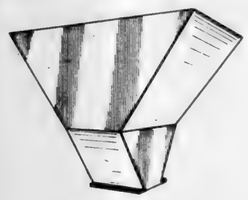
260,649
HOT AIR CORN POPPER
M. James Wondergem, West Bend, Wis., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed May 11, 1979, Ser. No. 37,983
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—105



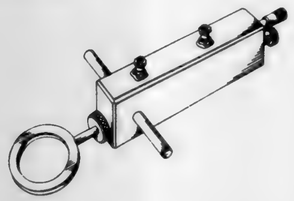
260,650
VIBRATORY FINISHING MACHINE
Steven A. Alviti, Cranston, R.I., assignor to Bel-Air Tool Corp., Warwick, R.I.
Filed Mar. 19, 1979, Ser. No. 21,953
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—147



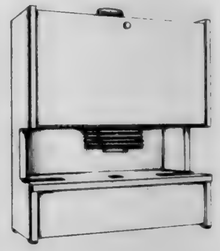
260,651
HOPPER FOR AN INSULATION BLOWING MACHINE AND THE LIKE
Robert R. Gibbons, Westminster, Colo., assignor to Insulation Technology Corporation, Northglenn, Colo.
Filed Feb. 27, 1978, Ser. No. 881,833
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—199



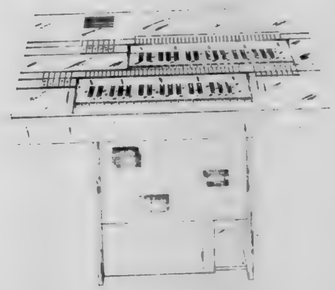
260,652
HAND-HELD HOMOGENIZER
Walter D. Kirkland, 317 Conifer Ct., Walnut Creek, Calif. 94598
Filed Oct. 2, 1978, Ser. No. 948,002
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199



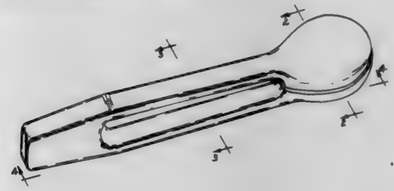
260,653
PHOTOGRAPHIC PRINTING APPARATUS
Donald R. Harrigan, P.O. Box 1598, Atlantic City, N.J. 08404
Filed Jan. 22, 1979, Ser. No. 5,177
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—27



260,654
ELECTRONIC ORGAN
Luciano Antonelli, Osimo, Italy, assignor to F. lli Antonelli s.n.c. del. Cav. Luigi Antonelli & C., Osimo, Italy
Filed Apr. 24, 1979, Ser. No. 33,007
Claims priority, application Italy, Dec. 4, 1978, 23459/78[U]
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—6



260,655
MUSICAL SPOON
Germaine Guay, 835 Gardendale, Ferndale, Mich. 48220
Filed Oct. 31, 1979, Ser. No. 89,807
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



260,656
FELT PEN
Tatsuro Funahashi, Komaki, Japan, assignor to Shachihata Industrial Co., Ltd., Nagoya, Japan
Filed Oct. 4, 1979, Ser. No. 81,913
Claims priority, application Japan, Apr. 9, 1979, 54-14301
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43



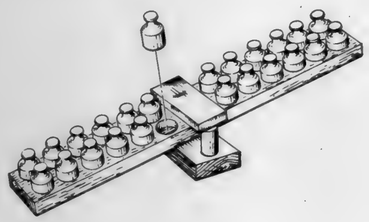
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FELT PEN
Tatsuro Funahashi, Komaki, Japan, assignor to Shachihata Industrial Co., Ltd., Nagoya, Japan
Filed Oct. 4, 1979, Ser. No. 81,918
Claims priority, application Japan, Apr. 9, 1979, 54-14302
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43



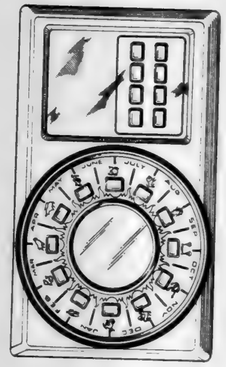
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FOUNTAIN PEN
Shigeki Chiba, Nakai, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 14, 1979, Ser. No. 94,398
Claims priority, application Japan, May 30, 1979, 54-21745
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49



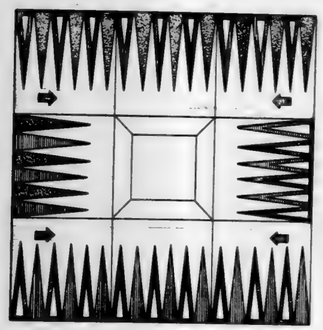
260,659
BALANCE GAME APPARATUS
Larry Stockard, #6 Leacrest, North Little Rock, Ark. 72116
Filed Jun. 4, 1979, Ser. No. 45,083
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



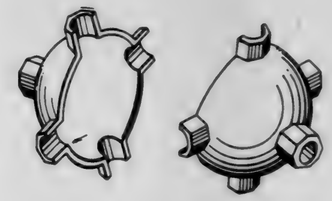
260,660
ELECTRONIC HOROSCOPE GAME CASING OR SIMILAR ARTICLE
Edward Mayer, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 5, 1979, Ser. No. 1,233
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



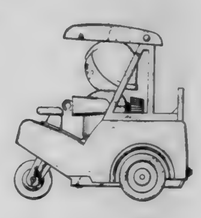
260,661
BACKGAMMON GAMEBOARD
Robert M. Thomas, 2970 Menson Rd.-15, Cumberland, R.I. 02864, and Robert E. Thomas, R.D.-3 Acorn St., Stanhope, N.J. 07874
Filed Aug. 6, 1979, Ser. No. 63,492
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—34



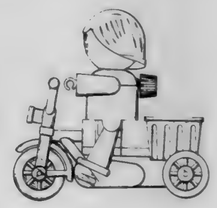
260,662
TOY CONSTRUCTION PIECE
Hiroyuki Hida, Tokyo, Japan, assignor to Mitsubishi Pencil Co. Ltd., Tokyo, Japan
Division of Ser. No. 657,256, Feb. 11, 1976, abandoned. This application Mar. 15, 1978, Ser. No. 886,925
Claims priority, application Japan, Sep. 1, 1975, 50/35263
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108



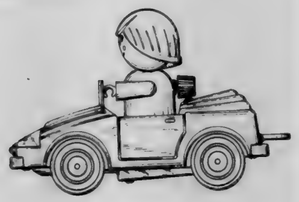
260,663
COMBINED TOY GOLF CART AND FIGURE THEREFOR
Naoharu Yamashina, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai Overseas, Tokyo, Japan
Filed Feb. 5, 1979, Ser. No. 9,051
Claims priority, application Japan, Aug. 10, 1978, 53-33917
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



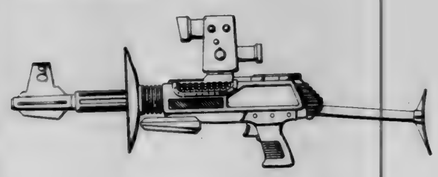
260,664
COMBINED TOY SHOPPING CAR AND FIGURE THEREFOR
Naoharu Yamashina, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai Overseas, Tokyo, Japan
Filed Feb. 5, 1979, Ser. No. 9,054
Claims priority, application Japan, Aug. 10, 1978, 33914/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



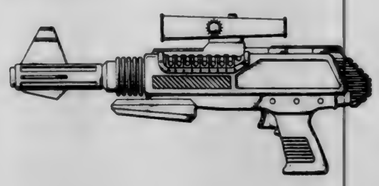
260,665
COMBINED TOY SPORTS CAR AND FIGURE THEREFOR
Naoharu Yamashina, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai Overseas, Tokyo, Japan
Filed Feb. 5, 1979, Ser. No. 9,050
Claims priority, application Japan, Aug. 10, 1978, 33918/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—136



260,666
TOY LASER WEAPON
Jerry M. McAlpin, P.O. Box 7, Bullard, Tex. 75757, and Danny R. Waites, Rte. 1, Jacksonville, Tex. 75766
Filed Apr. 10, 1979, Ser. No. 28,832
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—146



260,667
TOY LASER PISTOL
Jerry M. McAlpin, P.O. Box 7, Bullard, Tex. 75757, and Danny R. Waites, Rte. 1, Jacksonville, Tex. 75766
Filed Apr. 10, 1979, Ser. No. 28,831
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—147



260,668
DOLL
Mary A. Martin, 71 Pandora Cir., Scarborough, Ontario, Canada (M1H 1V6)
Filed Feb. 23, 1979, Ser. No. 14,615
Claims priority, application Canada, Aug. 30, 1978, 3008782
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—171



260,669
BASKETBALL RETURN FOR ATTACHMENT TO BASKETBALL HOOPS
Jerry A. Armstrong, Glenburn, N. Dak., assignor to Super Hooper Corporation, Minot, N. Dak.
Filed Oct. 12, 1979, Ser. No. 84,132
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—201



260,670
BASKETBALL RETURN FOR ATTACHMENT TO BASKETBALL HOOPS
Jerry A. Armstrong, Glenburn, N. Dak., assignor to Super Hooper Corporation, Minot, N. Dak.
Filed Oct. 12, 1979, Ser. No. 84,133
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—201



260,671
PLASTIC RACKET
Yuk Fai Lau, Kowloon, Hong Kong, assignor to Lau Tak Shing t/a Tai Way Shing Kee Plastic & Metal Manufactory, Kowloon, Hong Kong
Filed Oct. 1, 1979, Ser. No. 81,074
Claims priority, application United Kingdom, Jul. 3, 1979, 990572/79
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212



260,672
COMBINED GOLF BALL MARKER AND CARD HOLDER
Bob E. Gardner, 1532 Cape Cod Cir., Alabaster, Ala. 35007
Filed Jun. 19, 1979, Ser. No. 50,073
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234



260,673
PLAYGROUND SWING
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,361
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246



260,674
ARCHER'S BOW HOLDER
Bruce D. Simmons, Rte. 7, Box 383, and William A. Sircy, Rte. 7, Clark St., both of Franklin, Ky. 42134
Filed Dec. 13, 1979, Ser. No. 103,553
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13



260,675
FISHING ROD GRIP
Etsuo Hiraishi, Hiroshima, and Masakazu Sakamoto, Fukuyama, both of Japan, assignors to Ryobi Ltd., Fuchu, Japan
Filed Oct. 2, 1979, Ser. No. 81,283
Claims priority, application Japan, Apr. 2, 1979, 54-13395
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



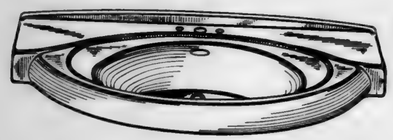
260,676
FISHING ROD GRIP
Etsuo Hiraishi, Hiroshima, and Masakazu Sakamoto, Fukuyama, both of Japan, assignors to Ryobi Ltd., Fuchu, Japan
Filed Oct. 2, 1979, Ser. No. 81,284
Claims priority, application Japan, Apr. 2, 1979, 54-13394
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



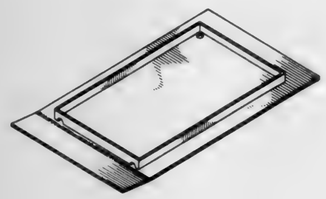
260,677
BASE PLATE FOR FAUCET
Gilles Thevenot, Baden-Baden, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik, Hemer, Fed. Rep. of Germany
Filed Jul. 23, 1979, Ser. No. 59,510
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, MR 6903
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



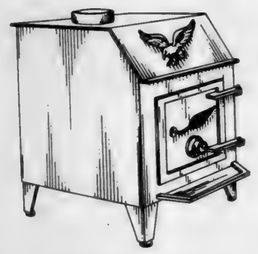
260,678
LAVATORY OR SIMILAR ARTICLE
Dorothee Hiller, Stuttgart, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Filed Aug. 10, 1979, Ser. No. 65,674
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 20 MR 1848
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—53



260,679
SOLAR COLLECTOR CELL CONTAINER AND ROOF FLASHING ASSEMBLY
Myron D. Mayerovitch, Yorba Linda, Calif., assignor to Steve Frank Mayer, Yorba Linda, Calif.
Filed Jul. 13, 1978, Ser. No. 924,456
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72



260,680
WOOD BURNING STOVE
Edmund P. Bullard, Sr., R.D. 2, Lyons, N.Y. 14489, and Gary A. Togni, 402 Palmer Dr., North Syracuse, N.Y. 13212
Filed Sep. 25, 1978, Ser. No. 945,571
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

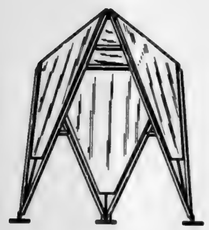


260,681
RETENTION SUTURE BRIDGE
Ingram S. Chodorow, Upper Saddle River, N.J., and J. David Dainow, New York, N.Y., assignors to Technalytics, Inc., Upper Saddle River, N.J.
Filed Jan. 2, 1979, Ser. No. 286
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—27

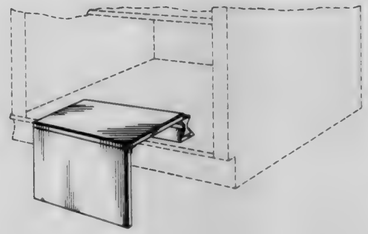




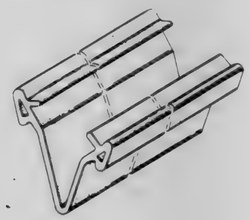
260,682
MODIFIED OCTAHEDRAL SHELTER
Harry Vest, 1764 Northwest Blvd., Apt. C, Columbus, Ohio 43212
Filed Dec. 10, 1979, Ser. No. 102,029
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—23



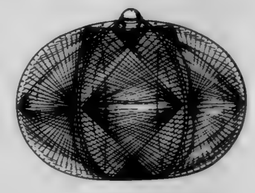
260,683
FOLDING CABINET STEP
Vera Kokoska, 310 Clark St., Hot Springs, Ark. 71901
Filed May 15, 1979, Ser. No. 39,111
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D25—65



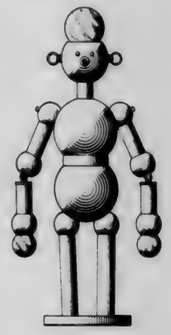
260,684
EXPANSION JOINT SEALING STRIP FOR ROADWAY JOINTS
William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.
Filed Nov. 30, 1979, Ser. No. 98,808
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



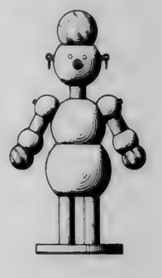
260,685
LUMINAIRE
Frederic Zurcher, Le Paquis, St. Julien en Genevois, France (74160)
Filed May 23, 1978, Ser. No. 908,840
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—91



260,686
DECORATIVE ELECTRIC LAMP
George Atrio, 8075 W. 20 Ave., Hialeah, Fla. 33014
Filed Jan. 29, 1979, Ser. No. 6,993
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—99



260,687
DECORATIVE ELECTRIC LAMP
George Atrio, 8075 W. 20 Ave., Hialeah, Fla. 33014
Filed Apr. 9, 1980, Ser. No. 138,496
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—99



260,688
LAMP BALLAST
Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 21, 1978, Ser. No. 944,920
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D26—142



260,689
COMBINED DISPOSABLE CIGARETTE LIGHTER AND CIGARETTE PACKAGE HOLDER
Bobby D. Storms, Rte. 2, Box 427, Bladenboro, N.C. 28320
Filed Sep. 13, 1978, Ser. No. 941,889
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—37



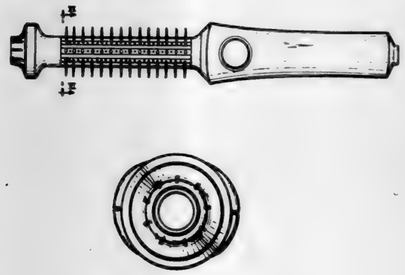
260,690
LIGHTER
Franz A. Stützer, Mühlheim, Fed. Rep. of Germany, assignor to Rowenta-Werke, GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Aug. 3, 1978, Ser. No. 930,626
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 510076
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



260,691
SOAP BAR OR SIMILAR ARTICLE
Robert Hines, Basking Ridge, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 27, 1978, Ser. No. 946,304
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—8.1



260,692
CURLING IRON
William J. Rakocy, Nutley, and Ronald L. Muller, New Milford, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed Apr. 30, 1979, Ser. No. 34,708
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



260,693
HAIR ORNAMENT
William C. Payne, 3755 E. 23rd. St., and Ellen L. Patterson, 1244 S. Normount, both of Tucson, Ariz. 85713
Filed Nov. 23, 1979, Ser. No. 96,923
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D28—41



260,694
BACK SCRATCHER
Mervin E. Mallett, P.O. Box 394, Crystal Bay, Nev. 89402
Filed Nov. 13, 1979, Ser. No. 93,286
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—99



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF SEPTEMBER, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Cale, Albert D., Jr., 4,288,447, Cl. 424-273.00R.
Cale, Albert D., Jr., 4,288,591, Cl. 544-139.000.

A.P.V. Company Limited, The: *See—*
Hessari, Manouchahr F., 4,287,945, Cl. 165-167.000.

A. Raymond: *See—*
Andre, Guy; and Besson, Gilbert, 4,287,657, Cl. 29-450.000.

A/S Niro Atomizer: *See—*
de Ruvo, Alfonso; Norman, Bo; Duffy, Geoffrey G.; Moller, Klaus; Hansen, Karl E.; Felsvang, Karsten S.; and Liborius, Erik, 4,288,317, Cl. 209-139.00A.

AB Hydro Betong: *See—*
Georgii, Hans C., 4,287,919, Cl. 140-112.000.

Abdulla, Riaz F.; and Morgan, Lawrence A., to Eli Lilly and Company. Acylation or sulfenylation process. 4,288,624, Cl. 564-345.000.

Abe, Haruo: *See—*
Kato, Takefumi; and Abe, Haruo, 4,288,720, Cl. 315-13.0ST.

Abel, Heinz, to Ciba-Geigy Corporation. Process for slop-padding textile cellulose material. 4,288,226, Cl. 8-496.000.

Abiko, Yasushi: *See—*
Miki, Tosaku; Eriguchi, Akashi; Abiko, Yasushi; and Kameda, Kinya, 4,288,441, Cl. 424-266.000.

ACF Chemiefarma N.V.: *See—*
Akkerman, Antony M.; van Bakel, Hermanus C. C. K.; and Van Breevoort-Uurbanus, Henriette G., 4,288,444, Cl. 424-267.000.

Adam, Fritz G., to ITT Industries, Inc. Programmable semiconductor memory cell. 4,288,863, Cl. 365-182.000.

Adin, Anthony; Sutton, Richard C.; and Verdone, Joseph A., to Eastman Kodak Company. Imaging elements. 4,288,531, Cl. 430-338.000.

Aerojet-General Corporation: *See—*
Buckmann, Paul S., 4,288,202, Cl. 415-142.000.

Aeroquip Corporation: *See—*
Buseth, Richard A.; and Marrison, William C., 4,287,914, Cl. 137-613.000.

Agency of Industrial Science and Technology, The: *See—*
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,288,550, Cl. 435-167.000.
Otsu, Nobuyuki; Mori, Shunji; and Saito, Taiichi, 4,288,779, Cl. 340-146.30Y.
Tango, Hiroyuki, 4,288,829, Cl. 361-56.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Meyer, Rudolf; Koepke, Gunther; and Hourticolon, Roland, 4,288,469, Cl. 427-57.000.

Agfa-Gevaert N.V.: *See—*
Carael, Frans; Claeys, Daniel A.; and Janssens, Wilhelmus, 4,288,522, Cl. 430-213.000.
Lemahieu, Raymond G.; Depoorter, Henri; and Hofman, Emiel A., 4,288,534, Cl. 430-522.000.

Agui, Hideo: *See—*
Saji, Ikutaro; Aono, Shunji; Okuda, Takao; and Agui, Hideo, 4,288,448, Cl. 424-273.00R.

Ahn, Byung D. Lock using non-rotating perforated plate key. 4,287,737, Cl. 70-467.000.

Aho, Yrjo, to Exel Oy. Ski stick handle. 4,288,101, Cl. 280-821.000.

Aho, YrjoKuninkaantie. Buckle and strap and method for the manufacture thereof, especially hand strap and buckle for a ski stick. 4,288,100, Cl. 280-821.000.

Ahrons, Richard W., to Motorola, Inc. High-impedance IGFET input circuit suitable for smoke detector I.C. 4,288,694, Cl. 250-374.000.

Aiba, Masahiko; and Umeda, Ikuo, to Sharp Kabushiki Kaisha. Phase detection in an ink jet system printer of the charge amplitude controlling type. 4,288,796, Cl. 346-75.000.

Air-Flo Co., Inc.: *See—*
Geiger, Robert G., 4,288,119, Cl. 292-262.000.

Aisan Industry Co., Ltd.: *See—*
Takada, Shigetaka; and Naruse, Kazumichi, 4,287,864, Cl. 123-440.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Katagiri, Masayoshi; and Ogura, Osamu, 4,287,811, Cl. 91-369.00A.

Akao, Hisataro, to Daicel Chemical Industries Ltd. Apparatus for continuously producing pleated semipermeable membrane elements. 4,288,278, Cl. 156-474.000.

Akiyama, Masami: *See—*
Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, 4,288,521, Cl. 430-169.000.

Akkerman, Antony M.; van Bakel, Hermanus C. C. K.; and Van Breevoort-Uurbanus, Henriette G., to ACF Chemiefarma N.V. Analgesic and morphine-antagonistic 6,7-benzomorphans. 4,288,444, Cl. 424-267.000.

Akzo NV: *See—*
Roorda, Herm J.; and Jipping, Max J., 4,288,245, Cl. 75-0.50R.

Alarm Device Manufacturing Company: *See—*
Guthart, Leo A., 4,288,867, Cl. 367-93.000.

Albert, Judith; and Davis, Robert E., to Ideal Toy Corporation. Toy doll and accessory. 4,287,681, Cl. 46-44.000.

Albert, Richard D. Laminate radiation collimator. 4,288,697, Cl. 250-505.000.

Alcan Research and Development Limited: *See—*
Carter, Bryan G., 4,288,299, Cl. 204-35.00N.

Alexander, Clifton E.; Ford, Thomas R.; and Smith, William S., to Peabody Coal Company. Safety apparatus for a mining machine. 4,287,692, Cl. 52-116.000.

Alfter, Franz-Werner; and Breitscheidel, Hans-Ulrich, to Dynamit Nobel Aktiengesellschaft. Engine hood lining for automotive vehicles. 4,288,490, Cl. 428-315.000.

Allcock, Harry R.: *See—*
United States of America, National Aeronautics and Space Administration; Allcock, Harry R.; O'Brien, John P.; Scopelianos, Angelo G.; and Fewell, Larry L., 4,288,585, Cl. 528-4.000.

Allen-Bradley Company: *See—*
Callan, John E., 4,288,744, Cl. 324-142.000.

Allen, Keith: *See—*
Sim, Terence; and Allen, Keith, 4,288,022, Cl. 228-107.000.

Allen, Paul E., to Logic Devices, Inc. Plastic mold negative pressure cooling system. 4,287,941, Cl. 165-70.000.

Allen, Robert K.; Hicks, Alan A.; and Disko, Harry, to Marvin Glass & Associates. Mechanical action toy. 4,287,680, Cl. 46-1.00R.

Allen, Roger A.; Inglis, Bruce R.; and Green, Kieron P., to Wiggins Teape Group Limited, The. Collating means. 4,287,981, Cl. 198-457.000.

Allen-Stevens Corp.: *See—*
Grenell, David, 4,288,110, Cl. 285-174.000.

Alley, Robert P.; and Tompkins, Russell E., to General Electric Company. Amorphous metal ballasts and reactors. 4,288,773, Cl. 336-160.000.

Allied Corporation: *See—*
Morrisey, John C., IV; and Smith, Ulus R., 4,288,315, Cl. 209-11.000.

Allis-Chalmers Corporation: *See—*
Quick, David C., 4,287,778, Cl. 74-15.400.

Alpers, Frederick C., to United States of America, Navy. Remote targeting system for guided missiles. 4,288,049, Cl. 244-3.140.

Alpine Research, Inc.: *See—*
Ramer, Paul C., 4,288,102, Cl. 280-823.000.

Alps Electric Co., Ltd.: *See—*
Urushiyama, Masayuki, 4,287,667, Cl. 29-837.000.

Alt, Gerhard H.; and Chupp, John P., to Monsanto Company. Alpha-chloro-alkoxymethyl-N-(2,6-dialkoxyphenyl)acetamides as effective turfgrass regulants. 4,288,242, Cl. 71-76.000.

Amadeo, James M. Protective hand wrap for athletes. 4,287,609, Cl. 2-16.000.

Amblard, Jean-Louis; and Saintemarie, Pierre M. Agricultural spreader device of modular design for pulverulent material. 4,288,008, Cl. 222-281.000.

Amerace Corporation: *See—*
Goldberg, Bruce S., 4,288,503, Cl. 429-145.000.

American Can Company: *See—*
Meyers, George L.; Seiden, Frederick C.; and Waller, Lonnie J., 4,287,704, Cl. 53-564.000.
Wilhelm, Thomas D., 4,288,026, Cl. 229-1.50B.

American Cyanamid Company: *See—*
Bright, John H., 4,288,615, Cl. 562-434.000.
Lutz, Albert W.; and Diehl, Robert E., 4,288,385, Cl. 260-465.00E.
Rauhut, Michael M.; and Tseng, Shin-Shyong, 4,288,592, Cl. 544-159.000.
Wissner, Allan; and Floyd, Middleton B., Jr., 4,288,629, Cl. 568-330.000.
Wissner, Allan; and Floyd, Middleton B., Jr., 4,288,630, Cl. 568-330.000.
Wissner, Allan; and Floyd, Middleton B., Jr., 4,288,632, Cl. 568-367.000.
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American Hoist & Derrick Company: *See—*
Thompson, Wallace M., 4,287,823, Cl. 100-129.000.

American Home Products Corporation: *See—*
Church, George A.; and Chou, Chih H., 4,288,602, Cl. 548-361.000.
Ledig, Kurt W., deceased; and Howes, David R., executor, 4,288,595, Cl. 544-250.000.

American Optical Corporation: *See—*
Hamilton, W. Duane, 4,288,710, Cl. 310-49.00R.

American Sterilizer Company: *See—*
Fisher, Kenneth J.; and Miller, William R., 4,288,844, Cl. 362-33.000.

AMF Incorporated: *See—*
Dockal, Rodney O.; and Lindsey, Harold A., 4,288,186, Cl. 409-175.000.
Hineborg, James R.; and Lopez, Efrain, 4,287,648, Cl. 29-79.000.
Hou, Kenneth C.; and Ostreicher, Eugene A., 4,288,462, Cl. 426-423.000.

AMP Incorporated: *See—*
Cobaugh, Robert F.; Lynch, James E.; and Taylor, Attalee S., 4,288,139, Cl. 339-74.00R.

Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., to Reichhold Chemicals, Inc. Water soluble pentachlorophenol and tetrachlorophenol wood treating systems. 4,288,249, Cl. 106-18.350.

Anderson, Burton C.; and Uschold, Ronald E., to Du Pont de Nemours, E. I., and Company. Fluorinated phenoxypropyl vinyl ether polymer. 4,288,574, Cl. 525-331.000.

Anderson, Harvey L.; and Randklev, Ronald M., to Minnesota Mining and Manufacturing Company. Surgical cement composition. 4,288,355, Cl. 260-29.60M.

Anderson, Jack F. Rotary tiller device. 4,287,955, Cl. 172-98.000.

Anderson Jacobson, Inc.: *See—*
Krishan, Baldev, 4,288,661, Cl. 179-2.00C.

Anderson, John A.: *See—*
Narasimhan, Mandayam J.; and Anderson, John A., 4,288,546, Cl. 435-70.000.

Anderton, John J., to GTE Products Corporation. Cable connector. 4,288,142, Cl. 339-176.00M.

Ando, Hiroyuki: *See—*
Umeda, Haruhiko; Takeuchi, Hidehiro; Uenoyama, Masaru; Ishizuki, Kotoshige; Ando, Hiroyuki; and Hara, Hideo, 4,288,091, Cl. 280-415.00A.

Andre, Guy; and Besson, Gilbert, to A. Raymond. Upholstery button and method of assembly. 4,287,657, Cl. 29-450.000.

Andreas Stihl: *See—*
Kottke, Joachim, 4,288,171, Cl. 403-218.000.

Angermair, Ernst: *See—*
Wanner, Karl; Reibetanz, Wilbert; Dohse, Hans-Peter; Baumann, Otto; Spiwokz, Dietmar; Seitz, Karl; Angermair, Ernst; and Wiesner, Herbert, 4,288,187, Cl. 409-180.000.

Anic S.p.A.: *See—*
Dozzi, Giovanni; and Cucinella, Salvatore, 4,288,381, Cl. 260-448.0AD.

Anne, Jean C.: *See—*
Papuchon, Michel; Puech, Claude; and Anne, Jean C., 4,288,785, Cl. 340-347.0DA.

Antoni, Herbert, to Paul Forkardt Kommanditgesellschaft. Force actuated jaw chuck. 4,288,085, Cl. 279-121.000.

Anzai, Nobuo; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Control system for D.C. electric motor. 4,288,729, Cl. 318-345.00C.

Anzalone, Luigi, to Pasquarella, Vincenzo. Internal combustion engine. 4,287,858, Cl. 123-43.0AA.

AOI Chemical Inc.: *See—*
Shiomoto, Kiyozo, 4,288,354, Cl. 260-28.5AS.

Aoki, Hisashi, to Kabushiki Kaisha Meiji Gomu Kasei. Pallet made of synthetic resin. 4,287,836, Cl. 108-51.100.

Aoki, Kozo: *See—*
Seoka, Yoshio; Aoki, Kozo; Yokota, Yukio; and Kubodera, Seiiti, 4,288,532, Cl. 430-385.000.

Aono, Shunji: *See—*
Saji, Ikutaro; Aono, Shunji; Okuda, Takao; and Agui, Hideo, 4,288,448, Cl. 424-273.00R.

Aoun, Joseph, to Lettera Arabica S.a.r.l. Set of signs to compose texts in arabic letters by their juxtaposition. 4,287,677, Cl. 40-595.000.

Apel, Willy: *See—*
Staab, Joachim; Apel, Willy; and Wolf, Heinz, 4,287,764, Cl. 73-431.000.

Applegate, Leslie T., to Surgical Appliance Industries, Inc. Knee brace with selectively variably positionable pads. 4,287,884, Cl. 128-80.00C.

Applegate, Leslie T., to Surgical Appliance Industries, Inc. Knee brace with resilient pad surrounding patella. 4,287,885, Cl. 128-80.00C.

Aquila, Werner: *See—*
Nissen, Axel; Rebafka, Walter; and Aquila, Werner, 4,288,636, Cl. 568-486.000.

Arai, Hajime: *See—*
Numazawa, Akio; and Arai, Hajime, 4,287,791, Cl. 74-701.000.

Arai, Masatoshi; and Futatsumori, Koji, to Shin-Etsu Chemical Co., Ltd. Novel organosilane compounds. 4,288,375, Cl. 260-348.410.

Arai, Toshimitsu. Glass cutter. 4,287,669, Cl. 30-123.300.

Arand, John K.: *See—*
Guth, Eugene D.; Daly, LeGrand A.; and Arand, John K., 4,288,408, Cl. 422-193.000.

Araseki, Takashi, to Nippon Electric Co., Ltd. Neutralization signal developing device for an echo suppressor. 4,288,664, Cl. 179-170.200.

Arco Polymers, Inc.: *See—*
Hsieh, John T. T., 4,288,578, Cl. 526-119.000.

Arimatsu, Seiji; Ishikawa, Katsukiyo; Umeda, Yasusi; and Nagata, Koichi, to Nippon Paint Co., Ltd. Toner for electrostatic photography containing resin coated silica particles. 4,288,517, Cl. 430-110.000.

Arisheva, Evgenia A.: *See—*
Arutjunian, Norair S.; Arisheva, Evgenia A.; Rogachev, Nikolai V.; and Vasilievna, Lidia G., 4,288,377, Cl. 260-397.250.

Arnhold, Hans; and Flohr, Peter, to Heinrich Kopp GmbH & Co. KG., Firma. Electrical full protection circuit breaker. 4,288,768, Cl. 335-18.000.

Arnold, John W.: *See—*
Conover, Steven M.; Loring, Robert M.; Ludwico, William A.; Arnold, John W.; and Ferber, George, 4,288,564, Cl. 521-122.000.

Arpe, Hans-Jurgen: *See—*
Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Leupold, Ernst I., 4,288,558, Cl. 518-716.000.

Arutjunian, Norair S.; Arisheva, Evgenia A.; Rogachev, Nikolai V.; and Vasilievna, Lidia G. Process for purification of wool grease. 4,288,377, Cl. 260-397.250.

Asai, Koichi; and Kawada, Tousuke, to Fuji Mfg. Co. Ltd. Method of inserting electronic components to a printed circuit board. 4,287,668, Cl. 29-838.000.

Ashby, Bruce A.; and Modic, Frank J., to General Electric Company. Platinum complex. 4,288,345, Cl. 252-431.00R.

Astilleros Espanoles, S.A.: *See—*
Gonzalez, Ramon R.; and Gomez, Gonzalo P., 4,288,223, Cl. 440-71.000.

Atalla, Martin M., to Atalla Technovations. Method and means for securing the distribution of encoding keys. 4,288,659, Cl. 178-22.080.

Atalla Technovations: *See—*
Atalla, Martin M., 4,288,659, Cl. 178-22.080.

Atlas Copco Aktiebolag: *See—*
Bergstrom, Claes-Gustav, 4,288,056, Cl. 248-542.000.

Auburn International, Inc.: *See—*
Dechene, Ronald L.; and Newton, Robert E., 4,288,741, Cl. 324-61.00R.

Audi Nsu Auto Union: *See—*
Barske, Heiko, 4,288,705, Cl. 307-10.00R.

Austen, Alfred R. Timed-action actuators. 4,288,064, Cl. 267-182.000.

Automotive Products Limited: *See—*
Parsons, David; and Hodkinson, Harold, 4,288,126, Cl. 303-6.00C.

Avigal, Yitzchak; Manassen, Joost; Hodes, Gary; and Cahen, David, to Yeda Research & Development Co., Ltd. Photo-electrochemical cell battery. 4,288,502, Cl. 429-111.000.

B. F. Goodrich Company, The: *See—*
Hallman, Robert W., 4,287,928, Cl. 152-346.000.

Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, to GNS Gesellschaft fur Nuklear-Service mbH. Transport and storage vessel for radioactive materials. 4,288,698, Cl. 250-506.000.

Baba, Shigenori: *See—*
Kikuchi, Hideo; Takaoka, Haruyoshi; and Baba, Shigenori, 4,288,804, Cl. 357-42.000.

Babano, Sotoaki, to Nippon Electric Company, Ltd. Muting circuit with operational amplifier. 4,288,753, Cl. 330-51.000.

Babcock & Wilcox Company, The: *See—*
Searles, William K.; Searles, Richard J.; and Searles, Kenneth R., 4,288,020, Cl. 228-7.000.

Babigian, Dickran: *See—*
MacDonald, Paul M., 4,288,137, Cl. 312-341.00R.

Bachrach, Benjamin I.; and Fuhrman, William J., to Ford Motor Company. Tapered extrusion die and method of forming the same. 4,287,749, Cl. 72-467.000.

Bader, Ronald S.; Rennick, Lyle V.; and Wallis, Robert H., to Compression Labs, Inc. High speed character matcher and method. 4,288,782, Cl. 340-146.30Q.

Baer, John S., to Rainwise, Inc. Digital weather station. 4,287,762, Cl. 73-170.00R.

Baer, Ted A.: *See—*
Kohn, Gustave K.; and Baer, Ted A., 4,288,621, Cl. 564-190.000.

Baetke, Russell E., to Boeing Company, The. Self-rigging cable control system and process. 4,287,788, Cl. 74-501.50R.

Bafunno, Daniel V.: *See—*
Vazquez-Cuervo, Alfonso; Richards, Frederick T.; Bafunno, Daniel V.; and Papacostas, George, 4,288,726, Cl. 318-54.000.

Baichtal, James R.: *See—*
McDonald, John C.; Baichtal, James R.; Helliwell, Bradley A.; Ling, Alexander C.; and Schaffter, Craig P., 4,288,870, Cl. 370-56.000.

Bajusz, Sandor; Ronay, Andras; and Szekely, Jozsef, to Richter Gedeon Vegyeszeti Gyar Rt. Novel enkephalin analogs and process for the preparation thereof. 4,288,432, Cl. 424-177.000.

Baker, Don R.; and Teach, Eugene G., to Stauffer Chemical Company. Cyclohexane carbonyloxybromoacetanilide. 4,288,605, Cl. 560-1.000.

Baker, Donald B., to Pro-Mark Companies, The. Low fat imitation sour cream. 4,288,459, Cl. 426-43.000.

Baker, Edward G.; and Huang, John S., to Exxon Research & Engineering Co. Gas pre-injection for chemically enhanced oil recovery. 4,287,950, Cl. 166-273.000.

Baker, Larry R., to Textron, Inc. Filament-type trimmer. 4,287,670, Cl. 30-276.000.

Baker, Leroy E.; and Butterfield, Barry L., to Henningson, Durham & Richardson, Inc. Reticulately reinforced earthen dams and method for providing reinforcement. 4,288,175, Cl. 405-117.000.

Balchem Corporation: *See—*
Ciliberto, Paul; and Kramer, Stanley, 4,288,460, Cl. 426-96.000.

Baldwin, Robert J., to Lynfield, H. Geoffrey. Filing systems and other collapsible structural units. 4,288,130, Cl. 312-183.000.

Bangor Punta Corporation: *See—*
Kruger, James B., 4,287,731, Cl. 70-16.000.

Banski, Thomas J.; and Riedner, Robert J., to Outboard Marine Corporation. Separation of aluminum from articles composed of aluminum bonded to ferrous metal. 4,288,246, Cl. 75-68.00R.

Barber, Donald T., to Datafile Limited. File binding system. 4,288,170, Cl. 402-17.000.

Barnes, Edward, to BP Nutrition (UK) Limited. Fish silage. 4,288,458, Cl. 426-7.000.

Barrett, David M.: *See—*
Grass, Joseph J.; Barrett, David M.; and Wendt, Randolph N., 4,288,700, Cl. 250-523.000.

Barrett, Steven P.; and Nelson, William J., to Standard Brands Incorporated. Process for isomerizing glucose to fructose. 4,288,548, Cl. 435-94.000.

Barske, Heiko, to Audi Nsu Auto Union. Mechanism for regulating a wiper motor in a vehicle. 4,288,705, Cl. 307-10.00R.

Barthel, Alfred, to Union Carbide Corporation. Cryogenic liquid container. 4,287,720, Cl. 62-45.000.

BASF Aktiengesellschaft: *See—*
Bliesener, Jens-Uwe; Geiss, Karl-Heinz; Lenke, Dieter; and Mueller, Claus D., 4,288,449, Cl. 424-274.000.
Nissen, Axel; Rebafka, Walter; and Aquila, Werner, 4,288,636, Cl. 568-486.000.
Schuster, Ludwig; Raff, Paul; Hoffmann, Herwig; Schneider, Rolf; and Flickinger, Erich, 4,288,640, Cl. 568-855.000.

BASF Wyandotte Corporation: *See—*
Camp, Ronald L., 4,288,639, Cl. 568-625.000.
Schmolka, Irving R.; and Niu, Joseph H. Y., 4,288,232, Cl. 44-51.000.

Basilaev, Bronislav F.: *See—*
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

Bassignani, Luciano: *See—*
Re, Luciano; Brant, Alberto; and Bassignani, Luciano, 4,288,366, Cl. 260-245.20R.

Basu, Samarnath; and Worrell, Wayne L., to University Patents, Inc. Chalcogenide electrochemical cell. 4,288,508, Cl. 429-218.000.

Bate, Robert T.; and Morris, Henry B., to Texas Instruments Incorporated. Method of making non-volatile semiconductor memory elements having multiple dielectric layers of silicon nitride, silicon dioxide, and rutile titanium dioxide. 4,288,470, Cl. 427-88.000.

Batiuk, Walter, to Boeing Aerospace Co. Removal of protective paper tape and maskants. 4,288,269, Cl. 156-344.000.

Battelle Development Corporation: *See—*
Ensminger, Dale, 4,287,766, Cl. 73-582.000.

Battigelli, Jean A.; and Bouquet, Francois, to Saint-Gobain Industries. Glass fiberization by centrifugal feed of glass into attenuating blast. 4,288,236, Cl. 65-14.000.

Battigelli, Jean A.; Bouquet, Francois; and Fezenko, Igor, to Saint-Gobain Industries. Glass fiberization spinner. 4,288,237, Cl. 65-14.000.

Bauer, James L.: *See—*
Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., 4,288,282, Cl. 156-630.000.

Baugh, Charles R., to Bell Telephone Laboratories, Incorporated. Digital loop conferencing signal correction arrangement. 4,288,871, Cl. 370-86.000.

Baumann, Otto: *See—*
Wanner, Karl; Reibetanz, Wilbert; Dohse, Hans-Peter; Baumann, Otto; Spiwokz, Dietmar; Seitz, Karl; Angermair, Ernst; and Wiesner, Herbert, 4,288,187, Cl. 409-180.000.

Baus, Heinz G. Method for fastening a profiled connecting section of a partition for wet rooms to a room surface, and profiled connecting section applicable thereto. 4,287,698, Cl. 52-741.000.

Baxter Travenol Laboratories, Inc.: *See—*
Groman, Ernest V.; and Sacco, Marian E., 4,288,538, Cl. 435-7.000.
Stupar, James A., 4,287,889, Cl. 128-276.000.

Bayer Aktiengesellschaft: *See—*
Bock, Manfred; Pedain, Josef; and Slawyk, Wilhelm, 4,288,586, Cl. 528-67.000.
Ebeling, Wilfried; and Tennemann, Volkmar, 4,288,230, Cl. 23-230.00A.
Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, 4,288,370, Cl. 260-343.600.
Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., 4,288,559, Cl. 521-55.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,288,446, Cl. 424-273.00P.
Mues, Volker; and Behrenz, Wolfgang, 4,288,451, Cl. 424-295.000.
Muller, Hanns P.; Rabe, Hansjurgen; and Wagner, Kuno, 4,288,566, Cl. 521-158.000.
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,288,362, Cl. 260-154.000.
Rottmaier, Ludwig; Merten, Rudolf; Dhein, Rolf; and Kreuder, Hans J., 4,288,569, Cl. 525-113.000.
Wieder, Wolfgang; and Witte, Josef, 4,288,581, Cl. 526-169.200.

Bayles, Richard A. Furniture assembly. 4,287,837, Cl. 108-154.000.

BBC Brown, Boveri & Company Limited: *See—*
Fried, Reinhard; and Kudernatsch, Gunter, 4,288,203, Cl. 417-64.000.

Beach, David L.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Process for the oligomerization of ethylene. 4,288,648, Cl. 585-523.000.

Beane, Frank T. Drain tile and pile fabric filter sleeve. 4,288,321, Cl. 210-170.000.

Beazley, Rodney T.; and Haggett, Mervyn T., to Glacier Metal Company Limited, The. Centrifugal separator. 4,288,030, Cl. 233-23.00R.

Bechstedt, Wolfgang: *See—*
Roland, Wolf-Achim; and Bechstedt, Wolfgang, 4,288,225, Cl. 8-137.000.

Beck, Frank W., to Schlegel Corporation. Weatherstrip with substrate of two different materials. 4,288,482, Cl. 428-92.000.

Beck, William M. Earring display case. 4,287,986, Cl. 206-45.190.

Becker, Jorgen, to L. & C. Steinmuller GmbH. Heat exchanger for cooling process gases which are under high pressure and temperature. 4,287,944, Cl. 165-158.000.

Becker, Karl-Heinz: *See—*
Sombroek, Johannes; Becker, Karl-Heinz; Minck, Klaus O.; and Enenkel, Hans-Joachim, 4,288,452, Cl. 424-304.000.

Becker, Werner: *See—*
Schrotz, Kurt; and Becker, Werner, 4,288,276, Cl. 156-384.000.

Beckers, Willi: *See—*
Fedders, Heinrich; and Beckers, Willi, 4,288,409, Cl. 422-219.000.

Beckman Instruments, Inc.: *See—*
Louderback, Allan L., 4,288,343, Cl. 252-408.000.

Beckstead, Jerry: *See—*
Schumann, George; and Beckstead, Jerry, 4,287,871, Cl. 126-67.000.

Bedard, Brian E.; and Geller, Gary R., to Motorola, Inc. Method of tuning apparatus by low power laser beam removal. 4,288,530, Cl. 430-315.000.

Behrenz, Wolfgang: *See—*
Mues, Volker; and Behrenz, Wolfgang, 4,288,451, Cl. 424-295.000.

Bell Telephone Laboratories, Incorporated: *See—*
Baugh, Charles R., 4,288,871, Cl. 370-86.000.
Gogal, John F., 4,288,841, Cl. 361-414.000.
Griffith, Gary L.; Johnsen, Richard G.; and Sherman, Charles J., 4,288,140, Cl. 339-74.00R.

Belloc, Andre; Florent, Jean; Lunel, Jean; Palla, Jean-Claude; and Mancy, Denise, to Rhone-Poulenc Industries. Microorganism and proteolytic enzyme derived therefrom. 4,288,556, Cl. 435-265.000.

Belony, Jean-Claude M. J. Game apparatus. 4,288,079, Cl. 273-273.000.

Bendix Corporation, The: *See—*
Kushner, Gregory A.; and Martinic, Jack, 4,287,904, Cl. 137-68.00R.
Lee, Chen Yi; Wu, Charles Tung-ming; Brooks, Mark A.; and Fallis, Robert E., 4,288,835, Cl. 361-283.000.
Seitz, William R., 4,287,865, Cl. 123-489.000.

Bennett, George H.; Osborn, Alfred W.; Bunyan, Clive N.; and Midgley, Ronald A., to Rolls-Royce Limited. Tank suitable for holding liquids. 4,287,913, Cl. 137-574.000.

Bennewitz, Matt C.: *See—*
Bennewitz, Paul F.; and Bennewitz, Matt C., 4,288,775, Cl. 338-35.000.

Bennewitz, Paul F.; and Bennewitz, Matt C. Device and method of manufacturing a relative humidity sensor and temperature sensor. 4,288,775, Cl. 338-35.000.

Benson, Samuel L., to J. I. Case Company. Two-piece grooved pin retainer. 4,288,190, Cl. 411-511.000.

Bentley-Harris Manufacturing Company: *See—*
Weil, Thomas L., 4,287,844, Cl. 112-412.000.

Berger, William R.; and Rose, Benjamin L., Jr. Domical building structure. 4,287,690, Cl. 52-81.000.

Berginski, Werner, to Leopold Kostal, Firma. Steering column jacket on the steering column of motor vehicles. 4,287,786, Cl. 74-492.000.

Bergstrom, Claes-Gustav, to Atlas Copco Aktiebolag. Device for setting the direction and/or the inclination of an elongated rock drilling apparatus. 4,288,056, Cl. 248-542.000.

Bernardi, William A. Trash bag enclosure. 4,287,637, Cl. 256-1.000.

Bernhagen, Wolfgang: *See—*
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,288,643, Cl. 585-324.000.

Berry, Doyle; and Elder, Walter S. Firehose reel and transfer device. 4,288,047, Cl. 242-86.000.

Berry, Edgar L.; and Drilling, Joseph C., to Square D Company. Fuse puller. 4,288,138, Cl. 339-45.00R.

Bertoldo, Giorgio: *See—*
Pacciarini, Antonio; and Bertoldo, Giorgio, 4,288,265, Cl. 156-126.000.

Besson, Gilbert: *See—*
Andre, Guy; and Besson, Gilbert, 4,287,657, Cl. 29-450.000.

Bethlehem Steel Corporation: *See—*
Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., 4,288,476, Cl. 427-300.000.

Betts Machine Company: *See—*
Petersen, Frank H., 4,287,910, Cl. 137-493.900.

Betz Laboratories, Inc.: *See—*
Godlewski, Irene T.; Schuck, Joseph J.; and Chisarik, Andrew S., 4,288,327, Cl. 210-698.000.

Beyer, Franz; and Schucht, Peter, to Siemens Aktiengesellschaft. Strip line directional coupler. 4,288,760, Cl. 333-116.000.

Bianchi, Giuseppe: *See—*
de Nora, Vittorio; Bianchi, Giuseppe; and Nidola, Antonio, 4,288,302, Cl. 204-105.00R.

Bidwell, Charles B.: *See—*
Sielaff, Bruce H.; Praglin, Julius; McKie, James E., Jr.; Longhenry, David K.; Curtiss, Alan C.; and Bidwell, Charles B., 4,288,543, Cl. 435-34.000.

Bieber, Larry C.; and Woodell, Jack L., to Frederick Electronics Corporation. Apparatus for generating telex signaling sequences in a distributed processing telex exchange. 4,288,658, Cl. 178-3.000.

Bier, Gerhard; Kottek, Dagmar; Petersen, Egon N.; Richtzenhain, Hermann; and Vollkommer, Norbert, to Dynamit Nobel Aktiengesellschaft. Bis-carbalkoxy compounds and their preparation. 4,288,607, Cl. 560-11.000.

Bilanceri, Silvio G.; Kanner, Gary L.; and Uffer, Michael B., to Black & Decker Inc. Battery charger system and method adapted for use in a sterilized environment. 4,288,733, Cl. 320-2.000.

Billig, Ernst; Jamerson, Jackie D.; and Pruett, Roy L., to Union Carbide Corporation. Heteronuclear-bridged rhodium clusters. 4,288,380, Cl. 260-429.00R.

Bilofsky, Ruth C.; and Rogers, Howard G., to Polaroid Corporation. Image-receiving elements utilizing lamellar pigment materials. 4,288,524, Cl. 430-220.000.

Biondetti, Mario: *See*—
Schneebeli, Friedrich; and Biondetti, Mario, 4,288,703, Cl. 290-52.000.

Birjukova, Ljubov M.: *See*—
Rabinovich, Georgy L.; Maslyansky, Gdal N.; Birjukova, Ljubov M.; Levitsky, Emmanuil A.; Volkova, Kira L.; Lukina, Zoya P.; and Mozhaiko, Viktor N., 4,288,347, Cl. 252-439.000.

Birt, David E.; and Clarke, Peter J., to EMI Limited. Foil video discs. 4,288,481, Cl. 428-64.000.

Biscaro, Reno P.: *See*—
Johnson, Ralph E.; and Biscaro, Reno P., 4,288,312, Cl. 204-281.000.

Black Copy Company, Inc.: *See*—
Diamond, Arthur S.; and Floersheim, Sydney N., 4,288,519, Cl. 430-137.000.

Black & Decker Inc.: *See*—
Bilanceri, Silvio G.; Kanner, Gary L.; and Uffer, Michael B., 4,288,733, Cl. 320-2.000.

Blacker, Allen P.; and Ingle, Arthur J., to Zenith Radio Corporation. Means and method for beam spot distortion compensation in TV picture tubes. 4,288,718, Cl. 313-414.000.

Bliesener, Jens-Uwe; Geiss, Karl-Heinz; Lenke, Dieter; and Mueller, Claus D., to BASF Aktiengesellschaft. N-Arylsulfonylpyrroles, their preparation, and therapeutic agents containing these compounds. 4,288,449, Cl. 424-274.000.

Bloch, Howard. Force applying apparatus. 4,287,653, Cl. 29-256.000.

Blodgett, Frederick M., Jr.: *See*—
Carson, Andrew B., Jr.; and Blodgett, Frederick M., Jr., 4,288,167, Cl. 400-121.000.

Blom, Hans; and Wiberg, Leif. District-heating line and a method of manufacturing the same. 4,288,653, Cl. 174-47.000.

Blom, Hans; and Wiberg, Leif. District-heating line. 4,288,654, Cl. 174-47.000.

Blore, Peter D.; and Wheatley, David S., to Metal Closures Venue Packaging Limited. Apparatus for producing bags of plastics material. 4,288,279, Cl. 156-498.000.

Bobear, William J., to General Electric Company. Flame resistant silicone rubber compositions and methods. 4,288,360, Cl. 260-37.0SB.

Bock, Manfred; Pedain, Josef; and Slawyk, Wilhelm, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates containing isocyanurate groups. 4,288,586, Cl. 528-67.000.

Bodenbenner, Kurt; Muller, Gerhard; and Perkow, Helmut, to Hoechst Aktiengesellschaft. Process and device for the introduction of explosive gases into a combustion chamber. 4,288,211, Cl. 431-346.000.

Bodenseewerk Geratetechnik GmbH: *See*—
Gauggel, Roland, 4,288,050, Cl. 244-3.160.

Boeck, LaVerne D.; and Kastner, Ralph E., to Eli Lilly and Company. Method of producing the A-30912 antibiotics. 4,288,549, Cl. 435-119.000.

Boehringer Ingelheim GmbH: *See*—
Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; and Kahling, Joachim, 4,288,437, Cl. 424-246.000.

Boehringer Mannheim GmbH: *See*—
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Sponer, Gisbert; and Schaumann, Wolfgang, 4,288,442, Cl. 424-267.000.

Boeing Aerospace Co.: *See*—
Batiuk, Walter, 4,288,269, Cl. 156-344.000.

Boeing Company, The: *See*—
Baetke, Russell E., 4,287,788, Cl. 74-501.50R.
Bormke, Odo S.; and Bunch, Ronald L., 4,288,313, Cl. 204-297.00W.
Brasfield, Robert G., 4,288,830, Cl. 361-56.000.
Klees, Garry, 4,287,715, Cl. 60-204.000.

Boelens, Harmannus; and Ter Heide, Roelof, to Naarden International N.V. Perfume compositions containing 3,3-dimethylbicyclo-[2,2,1]-heptane-2-carboxylic acid as a perfume. 4,288,349, Cl. 252-522.00R.

Boero, Angioletta: *See*—
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; and Minetti-Mezzetti, Enrica, 4,287,881, Cl. 126-440.000.

Boge GmbH: *See*—
Brenner, Heinz; and Hamaekers, Arno, 4,288,063, Cl. 267-8.00R.

Bogorsky, Mikhail V.: *See*—
Kuchuk-Yatsenko, Sergei I.; Chernenko, Ivan A.; Bogorsky, Mikhail V.; Kulesh, Alexandr I.; Cherednichok, Vitaly T.; and Tishura, Vladimir I., 4,288,676, Cl. 219-100.000.

Bohnengel, Andrew C., to Perfect Measuring Tape Company, The. Measuring tape dispenser. 4,288,043, Cl. 242-55.000.

Bordini, Fosco; and Mauri, Luigi, to Moplefan S.p.A. Readily thermoweldable films of polyolefins coated with lacquers based on ketonic resins. 4,288,477, Cl. 428-35.000.

Borg-Warner Corporation: *See*—
Tuzson, John J., 4,287,975, Cl. 192-82.00T.

Bormke, Odo S.; and Bunch, Ronald L., to Boeing Company, The. Hanger for handling sheet material during processing thereof. 4,288,313, Cl. 204-297.00W.

Bosard, James H. Wind driven generator with blade protecting means. 4,288,704, Cl. 290-55.000.

Boston Machine Works Company: *See*—
Morin, Robert W., 4,288,280, Cl. 156-510.000.

Boucherie, Evert C.: *See*—
van der Vlis, Adrianus; and Boucherie, Evert C., 4,288,699, Cl. 250-507.000.

Bouillon, Claude: *See*—
Koulbanis, Constantin; Bouillon, Claude; and Darmenton, Patrick, 4,288,433, Cl. 424-232.000.

Boullanger, Michelle: *See*—
Vincent, Michel; Duhault, Jacques; Boullanger, Michelle; and Remond, Georges, 4,288,453, Cl. 424-317.000.

Bouquet, Francois: *See*—
Battigelli, Jean A.; and Bouquet, Francois, 4,288,236, Cl. 65-14.000.
Battigelli, Jean A.; Bouquet, Francois; and Fezenko, Igor, 4,288,237, Cl. 65-14.000.

Bovenkerk, Harold P.; and Gigl, Paul D., to General Electric Company. Temperature resistant abrasive compact and method for making same. 4,288,248, Cl. 75-226.000.

Bowser, Donald M., to Truswal Systems Corporation. Truss assembly machine. 4,287,822, Cl. 100-35.000.

Boyce, Jay E.: *See*—
Miska, Stanley R.; and Boyce, Jay E., 4,288,483, Cl. 428-92.000.

Boyle, Patrick T., to Maryland Cup Corporation. Means for imprinting multiple permutations and combinations of cards on cups. 4,287,824, Cl. 101-45.000.

BP Nutrition (UK) Limited: *See*—
Barnes, Edward, 4,288,458, Cl. 426-7.000.

Brabec, Michael W. Method and apparatus for screen printing. 4,287,826, Cl. 101-115.000.

Brack, Karl, to Design Cote Corp. Radiation curable release coatings. 4,288,479, Cl. 428-40.000.

Brackmann, Warren A.; and Kuhner, Albert, to Rothmans of Pall Mall Canada Limited. Treatment and opening of oriental tobacco bales. 4,287,897, Cl. 131-303.000.

Braconier, Karl, to International Packings Corporation. Hydrodynamic shaft seal. 4,288,083, Cl. 277-134.000.

Bradshaw, John: *See*—
Judd, Duncan B.; Clitherow, John W.; Price, Barry J.; and Bradshaw, John, 4,288,443, Cl. 424-267.000.

Braithwaite, David, to Emhart Industries, Inc. Plunger mounting mechanism in a glassware forming machine. 4,288,240, Cl. 65-246.000.

Brana, Miguel F.; Lopez Rodriguez, Maria L.; Castellano Berlanga, Jose M.; Soto Camara, Jose L.; and Martinez Roldan, Cristobal, to Laboratorios Made, S.A. 1,2-Diacylamino-1,2-di(4-pyridyl)ethanes and process for producing thereof. 4,288,597, Cl. 546-265.000.

Brant, Alberto: *See*—
Re, Luciano; Brant, Alberto; and Bassignani, Luciano, 4,288,366, Cl. 260-245.20R.

Brasfield, Robert G., to Boeing Company, The. Overvoltage protector. 4,288,830, Cl. 361-56.000.

Braun, Dieter; Mehren, Herbert; and Wulf, Helmut, to Daimler-Benz Aktiengesellschaft. Vehicle adapted to be guided on tracks for the public local passenger traffic with pivotal rear axle and longitudinal guide members for such axle. 4,287,830, Cl. 104-247.000.

Braverman, Milton. Extender and header card for medicinal dispensing device and fixture base converter for filling the same. 4,288,065, Cl. 269-43.000.

Brazier, Alan J., to Vax Appliances Limited. Apparatus for cleaning floor, carpets and the like. 4,287,636, Cl. 15-321.000.

Brecher, Charles: *See*—
Kilichowski, Kurt B.; Cukor, Peter; and Brecher, Charles, 4,288,513, Cl. 430-28.000.

Breck, Louis W., Jr. Automatic belt loop tacker. 4,287,842, Cl. 112-121.270.

Breitscheidel, Hans-Ulrich: *See*—
Alfter, Franz-Werner; and Breitscheidel, Hans-Ulrich, 4,288,490, Cl. 428-315.000.

Brenner, Heinz; and Hamaekers, Arno, to Boge GmbH. Rubber elastic engine mounts or supports with hydraulic damping, especially for engine suspensions in motor vehicles. 4,288,063, Cl. 267-8.00R.

Brewer, John, to Southworth, Incorporated. Roll-away wheel truck and lift table assembly. 4,288,195, Cl. 414-608.000.

Brewer, William R.; and de Jong, Hamilton C. Multi-purpose chair for the partially disabled. 4,287,619, Cl. 4-483.000.

Bridges, James R.: *See*—
Peelman, Harold E.; and Bridges, James R., 4,288,696, Cl. 250-502.000.

Brieger, Emmet F. Formation testers. 4,287,946, Cl. 166-100.000.

Brigante, Miguel F. Free flow non-corrosive water treatment device. 4,288,323, Cl. 210-222.000.

Bright, John H., to American Cyanamid Company. Process for recovering 3-nitrobenzoic acid. 4,288,615, Cl. 562-434.000.

Bristol-Myers Company: *See*—
Oka, Masahisa; Okumura, Jun; and Naito, Takayuki, 4,288,590, Cl. 544-25.000.

British Broadcasting Corporation: *See*—
Drewery, John O.; and Storey, Richard, 4,288,810, Cl. 358-16.000.

British Steel Corporation: *See*—
Furness, Edward J.; and Wade, Philip, 4,287,744, Cl. 72-214.000.

Bromley, James E.; and Stutz, Frank, to Monsanto Company. Process for low-torque textured yarn. 4,287,713, Cl. 57-288.000.

Bronsveld, Frederik A., to Hoogovens Ijmuiden, B.V. Conveyors having a plurality of driven endless chains. 4,287,983, Cl. 198-817.000.

Brooks, Mark A.: *See*—
Lee, Chen Yi; Wu, Charles Tung-ming; Brooks, Mark A.; and Fallis, Robert E., 4,288,835, Cl. 361-283.000.

Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., to Hewlett-Packard Company. Method for producing a metallic pattern upon a substrate. 4,288,282, Cl. 156-630.000.

Brown, Lester: *See*—
Moskowitz, Paul M.; Rushansky, Yuliy; Brown, Lester; and Weinstein, Gerald, 4,287,817, Cl. 99-282.000.

Browne, Christopher R. Planter. 4,287,682, Cl. 47-81.000.

Brunken, Gerd; and Stangl, Rupert, to Sachs Systemtechnik GmbH. Key assembly for coded security system. 4,287,735, Cl. 70-395.000.

Brunner, Felix. Apparatus for controlling the quality of a picture which is to be processed in a reprapparatus. 4,288,157, Cl. 355-40.000.

Brunswick Corporation: *See*—
Kaugars, Eugene; and Ossola, George A., 4,288,075, Cl. 273-80.00B.

Buchser, William J.; Tate, Ralph; and Haag, Charles W., to Whirlpool Corporation. French door refrigerator seal. 4,288,135, Cl. 312-296.000.

Buckley, Bruce S., to Massachusetts Institute of Technology. Apparatus and method whereby wave energy is correlated with geometry of a manufactured part or the like or to positional relationships in a system. 4,287,769, Cl. 73-627.000.

Buckmann, Paul S., to Aerojet-General Corporation. Fan having internal polyhedral strut frame. 4,288,202, Cl. 415-142.000.

Bucsky, Gyorgy; Kiss, Zoltan; and Tatrai, Lajos, to Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezet. Instrumental measuring method for determining the size-distribution of grained material. 4,287,757, Cl. 73-61.400.

Buehler, Charles K.: *See*—
Rogan, John B.; and Buehler, Charles K., 4,288,580, Cl. 526-138.000.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,288,622, Cl. 564-194.000.

Buhler-Miag GmbH: *See*—
Essmann, Wolfgang; and Schnellbacher, Kurt, 4,288,318, Cl. 209-139.00R.

Bunch, Ronald L.: *See*—
Bormke, Odo S.; and Bunch, Ronald L., 4,288,313, Cl. 204-297.00W.

Bunker Ramo Corporation: *See*—
Buszkiewicz, Bruno C.; and Storcel, Joseph A., 4,287,777, Cl. 74-2.000.

Bunyan, Clive N.: *See*—
Bennett, George H.; Osborn, Alfred W.; Bunyan, Clive N.; and Midgley, Ronald A., 4,287,913, Cl. 137-574.000.

Burger, Horst. Rinsing method and apparatus for car-washing installation. 4,288,255, Cl. 134-6.000.

Burlington Industries, Inc.: *See*—
Leach, Jack, 4,287,607, Cl. 2-2.500.

Burns, Arthur L.: *See*—
Pohl, Walter J.; and Burns, Arthur L., 4,287,939, Cl. 165-11.00R.

Burroughs Corporation: *See*—
Sprenkle, George J., 4,287,666, Cl. 29-753.000.
Wallace, Harry L.; and Thomas, John D., 4,288,069, Cl. 271-245.000.

Burroughs, Mark S., to Western Electric Co., Inc. Bi-modal temperature controller. 4,288,854, Cl. 364-557.000.

Burroughs Wellcome Co.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,288,365, Cl. 260-243.300.

Burson, Bob O., to R. E. Phelon Company, Inc. Breakerless magneto ignition. 4,288,834, Cl. 361-256.000.

Burzlauer, Gert: *See*—
Eichinger, Johann; and Burzlauer, Gert, 4,287,973, Cl. 192-54.000.

Buseth, Richard A.; and Marrison, William C., to Aeroquip Corporation. Self sealing coupling with full flow relief valve. 4,287,914, Cl. 137-613.000.

Bush Universal, Inc.: *See*—
Stanton, Leo F., 4,287,628, Cl. 12-40.500.

Buszkiewicz, Bruno C.; and Storcel, Joseph A., to Bunker Ramo Corporation. Semi-automatic contact insertion tool. 4,287,777, Cl. 74-2.000.

Butler Greenwich Inc.: *See*—
Butler, Richard A., Jr.; and Crowley, Bucky, 4,288,273, Cl. 156-361.000.

Butler, Richard A., Jr.; and Crowley, Bucky, to Butler Greenwich Inc. Method and apparatus for making corrugated board. 4,288,273, Cl. 156-361.000.

Butterfield, Barry L.: *See*—
Baker, Leroy E.; and Butterfield, Barry L., 4,288,175, Cl. 405-117.000.

Buttner, Horace J. Electrical conductor alignment and retaining assembly. 4,288,670, Cl. 200-303.000.

C. Cretors and Company: *See*—
Cretors, Charles D., 4,288,686, Cl. 219-512.000.

Cahen, David: *See*—
Avigal, Yitzchak; Manassen, Joost; Hodes, Gary; and Cahen, David, 4,288,502, Cl. 429-111.000.

Cajon Company: *See*—
Gallagher, Bernard J.; Wennerstrom, Erling G.; and Houdek, Mark R., 4,288,103, Cl. 285-39.000.

Cale, Albert D., Jr., to A. H. Robins Company, Inc. Antihyperglycemic 4-substituted 2-iminoimidazolidine compositions. 4,288,447, Cl. 424-273.00R.

Cale, Albert D., Jr., to A. H. Robins Company, Inc. 4-Substituted 2-iminoimidazolidine compounds. 4,288,591, Cl. 544-139.000.

California Processing Machinery: *See*—
Meissner, Konrad E., 4,288,461, Cl. 426-231.000.

Callan, John E., to Allen-Bradley Company. Summing watt-hour transducer. 4,288,744, Cl. 324-142.000.

Camp, Ronald L., to BASF Wyandotte Corporation. Alpha-olefin oxide-modified liquid polyether thickeners. 4,288,639, Cl. 568-625.000.

Campbell, Charles D., to Signet Optical Corporation. Resin ophthalmic lenses having a prismatic segment. 4,288,149, Cl. 351-170.000.

Campbell, George L., to Syracuse Tank & Manufacturing. Method for producing a helically wound pipe having a predetermined diameter. 4,287,739, Cl. 72-34.000.

Campbell, Glenn M., Jr.; and Newkirk, Raymond K., to Newkirk, Raymond K. Temperature control apparatus. 4,288,271, Cl. 156-359.000.

Canadian Patents & Dev. Limited: *See*—
Seguin, Herb J. J.; Tulip, John; and Nam, Kyong H., 4,288,758, Cl. 331-94.5PE.

Canon Kabushiki Kaisha: *See*—
Ikawa, Kazuo, 4,288,722, Cl. 315-151.000.
Kutsuwada, Noboru; Saito, Minoru; Namiki, Ryoichi; and Kusunoki, Katsuo, 4,288,514, Cl. 430-54.000.
Matsumoto, Seiichi; Yokota, Hideo; and Matsuda, Mutsuhide, 4,288,151, Cl. 354-25.000.
Sado, Ichiro; Kishimoto, Juji; and Murata, Hiroshi, 4,288,792, Cl. 340-756.000.
Sakurada, Nobuaki; Shinoda, Nobuhiko; Mashimo, Yukio; Ito, Tadashi; and Ito, Fumio, 4,288,154, Cl. 354-23.00D.
Uzawa, Shunichi; Matsumoto, Shigeyuki; Miyazaki, Minoru; Iijima, Akio; and Watanabe, Kunio, 4,288,799, Cl. 346-140.00R.

Carael, Frans; Claeys, Daniel A.; and Janssens, Wilhelmus, to Agfa-Gevaert N.V. Non-photosensitive receptor material suited for producing black-and-white silver images and dye images and a process for the production of such images therewith. 4,288,522, Cl. 430-213.000.

Caravito, Vito A.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Multiple ring tire. 4,287,927, Cl. 152-302.000.

Cardin, Hubert H.: *See*—
Goins, James R.; and Cardin, Hubert H., 4,287,873, Cl. 126-194.000.

Cardini, Giuliano: *See*—
Zotti, Aldo; and Cardini, Giuliano, 4,288,554, Cl. 435-247.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See*—
Eichinger, Johann; and Burzlauer, Gert, 4,287,973, Cl. 192-54.000.
Erhardt, Manfred; Fendt, Werner; and Huber, Manfred, 4,287,659, Cl. 29-568.000.

Carlo, Dennis J.: *See*—
Karkhanis, Yashwant D.; and Carlo, Dennis J., 4,288,557, Cl. 435-272.000.

Carlson, Roland W.: *See*—
Walters, Ronald G.; and Carlson, Roland W., 4,288,695, Cl. 250-445.00T.

Carr, Peter; and Chi, Chen H., to Energy Development Associates, Inc. Control of edge effects of oxidant electrode. 4,288,507, Cl. 429-209.000.

Cars & Concepts, Inc.: *See*—
Chrysler, Richard R., 4,287,654, Cl. 29-401.100.

Carson, Andrew B., Jr.; and Blodgett, Frederick M., Jr., to General Electric Company. Printhead and blades therefor. 4,288,167, Cl. 400-121.000.

Carstab Corporation: *See*—
Zestermann, Mary J.; and Hussar, John F., 4,288,361, Cl. 260-45.8NZ.

Carter, Bryan G., to Alcan Research and Development Limited. Enhanced hydrothermal sealing of anodized aluminum. 4,288,299, Cl. 204-35.00N.

Carter, George W., to RCA Corporation. Controlled local oscillator with apparatus for extending its frequency range. 4,288,875, Cl. 455-197.000.

Cartridge Actuated Devices, Inc.: *See*—
Soo-Hoo, Edward, 4,288,005, Cl. 222-5.000.

Cassels, Ian G., to Ferranti Limited. Lasers angular rate sensor. 4,288,163, Cl. 356-350.000.

Castellano Berlanga, Jose M.: *See*—
Brana, Miguel F.; Lopez Rodriguez, Maria L.; Castellano Berlanga, Jose M.; Soto Camara, Jose L.; and Martinez Roldan, Cristobal, 4,288,597, Cl. 546-265.000.

Castner, Raymond P.: *See*—
Gerkey, Kenneth S.; and Castner, Raymond P., 4,287,655, Cl. 29-407.000.

Caterpillar Tractor Co.: *See*—
Grim, George B., 4,288,215, Cl. 432-103.000.
Livesay, Richard E.; and Wright, Paul L., 4,288,172, Cl. 403-317.000.
Wells, Alan W., 4,288,128, Cl. 308-36.200.

Cedendahl, Bengt E., to Saab-Scania Aktiebolag. Apparatus for facilitating gear changing in mechanical gearboxes. 4,287,784, Cl. 74-473.00R.

Cellu-Craft Products Company: *See*—
Jacques, Pierre, 4,287,876, Cl. 126-426.000.

Centola, Paolo: *See—*
Codignola, Franco; Vergini, Giorgio; Gronchi, Paolo; and Centola, Paolo, 4,288,641, Cl. 568-855.000.

Centro Ricerche Fiat S.p.A.: *See—*
Palazzetti, Mario; Boero, Angioletta; Demichelis, Francesca; and Minetti-Mezzetti, Enrica, 4,287,881, Cl. 126-440.000.

Century Brass Products, Inc.: *See—*
Wisyanski, Thomas W., 4,288,033, Cl. 236-93.00A.

Cerberus AG: *See—*
Schnell, Walter, 4,288,790, Cl. 340-628.000.

Cessou, Maurice, to Institut Francais du Petrole. Method and apparatus for recovering products of low pumpability. 4,287,903, Cl. 137-13.000.

Chambers, Bruce J. Method and means for threading dowels. 4,287,627, Cl. 10-88.000.

Champion International Corporation: *See—*
Peterson, David S., 4,288,027, Cl. 229-43.000.

Chang, Sir-Sea; Chern, Sheng-Laang; Ting, Gann; and Kuo, Tsai-Shu, to Institute of Nuclear Energy Research. Post treatment method for the recovery of uranium from wet-process phosphoric acid. 4,288,412, Cl. 423-10.000.

Charpentier, Michel: *See—*
Chauvat, Dominique; and Charpentier, Michel, 4,288,783, Cl. 340-149.00A.

Chatterjea, Probir K.; and Shore, Daniel B., to International Harvester Company. Two-stage concentric hydraulic brake booster. 4,287,813, Cl. 91-434.000.

Chatterji, Debajyoti; and Park, Dong-Sil, to Electric Power Research Institute, Inc. Sulfur electrode container and methods of manufacture. 4,287,664, Cl. 29-623.200.

Chauvat, Dominique; and Charpentier, Michel, to Chauvat, Dominique; Charpentier, Michel; and S.A. Emile Chauvat et Sofranq Reunis, a part interest to each. Device for selectively authorizing passage through a door. 4,288,783, Cl. 340-149.00A.

Chemetron Corporation: *See—*
Students, Peter A., 4,287,719, Cl. 62-10.000.

Chemische Werke Huls AG: *See—*
Springmann, Hermann, 4,288,389, Cl. 260-504.00S.

Cherednichok, Vitaly T.: *See—*
Kuchuk-Yatsenko, Sergei I.; Chernenko, Ivan A.; Bogorsky, Mikhail V.; Kulesh, Alexandr I.; Cherednichok, Vitaly T.; and Tishura, Vladimir I., 4,288,676, Cl. 219-100.000.

Chern, Sheng-Laang: *See—*
Chang, Sir-Sea; Chern, Sheng-Laang; Ting, Gann; and Kuo, Tsai-Shu, 4,288,412, Cl. 423-10.000.

Chernenko, Ivan A.: *See—*
Kuchuk-Yatsenko, Sergei I.; Chernenko, Ivan A.; Bogorsky, Mikhail V.; Kulesh, Alexandr I.; Cherednichok, Vitaly T.; and Tishura, Vladimir I., 4,288,676, Cl. 219-100.000.

Chevron Research Company: *See—*
Lewis, Robert A.; and Honnen, Lewis R., 4,288,612, Cl. 560-159.000.
Stanton, Garth M., 4,288,336, Cl. 252-33.000.

Chi, Chen H.: *See—*
Carr, Peter; and Chi, Chen H., 4,288,507, Cl. 429-209.000.

Chianelli, Russell R.; and Pecoraro, Theresa A., to Exxon Research & Engineering Co. Method of preparing chalcogenides of group VIII by low temperature precipitation from monaqueous solution, the products produced by said method and their use as catalysts. 4,288,422, Cl. 423-509.000.

Chiba, Seiichi: *See—*
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; Shimogawa, Toshiaki; and Chiba, Seiichi, 4,288,098, Cl. 280-806.000.

Chibayaku Groceries, Incorporated: *See—*
Kubo, Shinji; and Yamada, Norio, 4,287,760, Cl. 73-149.000.

Ching, Ta-Yen, to General Electric Company. UV Stabilizers, coating compositions and composite structures obtained therefrom. 4,288,631, Cl. 568-333.000.

Chisarik, Andrew S.: *See—*
Godlewski, Irene T.; Schuck, Joseph J.; and Chisarik, Andrew S., 4,288,327, Cl. 210-698.000.

Chou, Chih H.: *See—*
Church, George A.; and Chou, Chih H., 4,288,602, Cl. 548-361.000.

Christini, James N.; Kim, Tai K.; and McClintic, Robert P., to GTE Products Corporation. Calciner with tapered reverse feed spiral. 4,288,216, Cl. 432-112.000.

Christini, James N.; Kim, Tai K.; and McClintic, Robert P., to GTE Products Corporation. Rotary calciner feed spiral. 4,288,217, Cl. 432-112.000.

Chrysler, Richard R., to Cars & Concepts, Inc. Method of modifying the roof of a vehicle to receive removable roof panels. 4,287,654, Cl. 29-401.100.

Chu, Chin-Chiun, to Mobil Oil Corporation. Shape selective reactions with alkaline earth-modified zeolite catalysts. 4,288,647, Cl. 585-467.000.

Chupp, John P.: *See—*
Alt, Gerhard H.; and Chupp, John P., 4,288,242, Cl. 71-76.000.

Church, George A.; and Chou, Chih H., to American Home Products Corporation. Selective oxidation of 1,2-diphenyl-4-(2-phenylthio)ethyl)-3,5-pyrazolidinedione to the sulfinyl compound. 4,288,602, Cl. 548-361.000.

Ciba-Geigy AG: *See—*
Long, William E., 4,288,598, Cl. 546-288.000.
Rosner, Manfred, 4,288,620, Cl. 564-144.000.

Ciba-Geigy Corporation: *See—*
Abel, Heinz, 4,288,226, Cl. 8-496.000.

Haas, Georges; Rossi, Alberto; Jaeggi, Knut A.; and Sele, Alex, 4,288,450, Cl. 424-283.000.

Hurter, Rudolf, 4,288,363, Cl. 260-155.000.

Kirchmayr, Rudolf; Fussenegger, Werner; and Illy, Hugo, 4,288,560, Cl. 521-90.000.

Loew, Peter; and Zink, Rudolf, 4,288,589, Cl. 542-466.000.

Lohse, Friedrich; Gutekunst, Ferdinand; Schmid, Rolf; and Schmitter, Andre, 4,288,565, Cl. 521-135.000.

McCracken, Philip G.; Myatt, Hal; and Petree, Harris E., 4,288,594, Cl. 544-204.000.

Nachbur, Hermann; and Rohringer, Peter, 4,288,489, Cl. 428-265.000.

Rody, Jean, 4,288,593, Cl. 544-198.000.

Schaffner, Karl; Wehrli, Hansuli; Muller, Beat; and Scartazzini, Riccardo, 4,288,364, Cl. 260-239.00A.

Spivack, John D., 4,288,391, Cl. 260-927.00R.

Zahir, Abdul-Cader; and Wyler, Siegfried, 4,288,583, Cl. 526-262.000.

Cilderman, Janis J.; and Kirincich, Joseph G., to Otis Elevator Company. Method for fabricating and installing thermoset sheave inserts. 4,287,651, Cl. 29-159.00R.

Ciliberto, Paul; and Kramer, Stanley, to Balchem Corporation. Noncaking, water-soluble, granular coated food ingredient. 4,288,460, Cl. 426-96.000.

Cisco, Terry C.; and Grimaila, Algert G., to Whittaker Corporation. Radiation detector for use in nuclear reactors. 4,288,291, Cl. 176-19.00R.

Claeys, Daniel A.: *See—*
Carael, Frans; Claeys, Daniel A.; and Janssens, Wilhelmus, 4,288,522, Cl. 430-213.000.

Clarion Co., Ltd.: *See—*
Mikoshiba, Nobuo; and Minagawa, Shoichi, 4,288,765, Cl. 333-195.000.

Clark, Charles R.: *See—*
McClaflin, Gifford G.; and Clark, Charles R., 4,287,902, Cl. 137-13.000.

Clark, Ralph E., to Morehouse Industries, Inc. Air chiller/drier. 4,287,724, Cl. 62-272.000.

Clarke, Peter J.: *See—*
Birt, David E.; and Clarke, Peter J., 4,288,481, Cl. 428-64.000.

Clitherow, John W.: *See—*
Judd, Duncan B.; Clitherow, John W.; Price, Barry J.; and Bradshaw, John, 4,288,443, Cl. 424-267.000.

Clover, William M., Jr., to Kirstine, Dale J. Multi-compartment container. 4,288,006, Cl. 222-42.000.

Cobaugh, Robert F.; Lynch, James E.; and Taylor, Attalee S., to AMP Incorporated. Trifurcated card edge terminal. 4,288,139, Cl. 339-74.00R.

Coburn, O. W.: *See—*
Rasmussen, Hans W., 4,288,423, Cl. 423-510.000.

Coca-Cola Company, The: *See—*
Gudnason, Geir V.; and Stell, Joseph E., 4,288,551, Cl. 435-168.000.

Codignola, Franco; Vergini, Giorgio; Gronchi, Paolo; and Centola, Paolo, to Societa Italiana Serie Acetica Sintetica S.p.A. Process for the preparation of 1,4-butynediol and related catalyst. 4,288,641, Cl. 568-855.000.

Coetzer, Johan; and Thackeray, Michael M., to South African Inventions Development Corp. Cathode for an electrochemical cell and an electrochemical cell. 4,288,506, Cl. 429-199.000.

Cohen, Samuel, to Ecopol. Electrolytic device. 4,288,309, Cl. 204-225.000.

Coin Acceptors, Inc.: *See—*
Krejci, Wayne, 4,287,974, Cl. 192-56.00R.

Colby, Edward B., Jr.: *See—*
McIntosh, Kenneth W.; and Colby, Edward B., Jr., 4,287,930, Cl. 152-357.00R.

Cole, Donald G.: *See—*
Rahm, Joseph A.; and Cole, Donald G., 4,288,415, Cl. 423-82.000.
Rahm, Joseph A.; and Cole, Donald G., 4,288,417, Cl. 423-83.000.

Collagen Corporation: *See—*
Scribner, Herbert C., Jr., 4,288,498, Cl. 428-473.000.

Collette, Roderick E., to Pawling Rubber Corporation. Interlocking rubber mat. 4,287,693, Cl. 52-177.000.

Colvin, Floyd W.: *See—*
Singh, Prithipal; Khanna, Pyare L.; and Colvin, Floyd W., 4,288,553, Cl. 435-188.000.

Cominco Ltd.: *See—*
Johnson, Ralph E.; and Biscaro, Reno P., 4,288,312, Cl. 204-281.000.

Compression Labs, Inc.: *See—*
Bader, Ronald S.; Rennick, Lyle V.; and Wallis, Robert H., 4,288,782, Cl. 340-146.30Q.

Comstock, Lowell R.; and Smith, Percy L., to Union Carbide Corporation. Polyester compositions. 4,288,571, Cl. 525-170.000.

Cone, Richard E., to Questor Corporation. High chair tray attachment mechanism. 4,288,123, Cl. 297-154.000.

Conoco, Inc.: *See—*
Mazza, Raymond L., 4,287,953, Cl. 166-301.000.
McClaflin, Gifford G.; and Clark, Charles R., 4,287,902, Cl. 137-13.000.

Conover, Steven M.; Loring, Robert M.; Ludwico, William A.; Arnold, John W.; and Ferber, George, to Mobay Chemical Corporation; and General Motors Corporation. Process for the production of microcellular elastomeric moldings and the resultant products. 4,288,564, Cl. 521-122.000.

Container Corporation of America: *See—*
House, Richard F., 4,287,988, Cl. 206-365.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Huinink, Heinrich, 4,287,929, Cl. 152-354.00R.

Cookson, Alan H.: *See—*
Kemeny, George A.; and Cookson, Alan H., 4,288,652, Cl. 174-21.00C.

Cooper, George W., to Fruehauf Corporation. Device for sensing the tension in a load carrying line. 4,287,759, Cl. 73-862.450.

Cooper, Hill M., Jr.; Cooper, William B.; and Cooper, Robert M. Sawmill work feeding and product handling apparatus. 4,287,798, Cl. 83-155.000.

Cooper, Robert M.: *See—*
Cooper, Hill M., Jr.; Cooper, William B.; and Cooper, Robert M., 4,287,798, Cl. 83-155.000.

Cooper, William B.: *See—*
Cooper, Hill M., Jr.; Cooper, William B.; and Cooper, Robert M., 4,287,798, Cl. 83-155.000.

Copenhafer, William C.; and Rauh, Francis, to Intermountain Research & Develop. Corp. Enhanced recovery of sodium carbonate from NaCl-containing sodium carbonate solutions. 4,288,419, Cl. 423-190.000.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Thermoplastic compositions of epichlorohydrin rubber and poly(alkyl methacrylate) resin. 4,288,570, Cl. 525-133.000.

Corbett, Robert L., Jr. Cooling apparatus for diffusers. 4,287,940, Cl. 165-48.00R.

Corbic, Yves J., to Gatrun Anstalt. Method and installation for packaging in a sterile medium. 4,287,702, Cl. 53-425.000.

Cornell, G. Howard. Corner joint formation for building log. 4,287,694, Cl. 52-233.000.

Cornell, William H.: *See—*
Siedenstrang, Roy W.; and Cornell, William H., 4,288,399, Cl. 264-25.000.

Councell, Graham D. Microwave actuated steam generator. 4,288,674, Cl. 219-10.55A.

Cox, Robert P.; and Tarradellas, Norbert R., to Lummus Company, The. Recovery of aromatics from styrene production off-gas. 4,288,234, Cl. 55-48.000.

Coxsey, Darrell W. Safety apparatus. 4,287,963, Cl. 182-231.000.

Coyle, Forrest E.: *See—*
Patel, Jayant M.; Wolfe, Jerome K.; Coyle, Forrest E.; and Farley, James R., 4,288,667, Cl. 200-48.00R.

Cozzens, John J.: *See—*
Wilterding, Jack E.; and Cozzens, John J., 4,288,857, Cl. 364-728.000.

Craft, Donald I.; and Kramer, Morton, to General Electric Company. Foamable polyester composition. 4,288,561, Cl. 521-90.000.

Cramer, Jurgen: *See—*
Mitzlaff, Michael; Cramer, Jurgen; and Pistorius, Rudolf, 4,288,300, Cl. 204-59.00R.

Cretors, Charles D., to C. Cretors and Company. Thermostat for popcorn cooking containers or the like. 4,288,686, Cl. 219-512.000.

Crites, Roger C., to McDonnell Douglas Corp. Vibrating electret reed voltage generator. 4,288,735, Cl. 322-2.00A.

Cromer, Charles F.: *See—*
Fischer, William H.; Cromer, Charles F.; and Rostron, Joseph R., 4,288,668, Cl. 200-150.00G.

Crosby, John; Holland, David; Laidler, Dale A.; and Milner, David J., to Imperial Chemical Industries Limited. Process for the preparation of cyclopropane carboxylic acid esters. 4,288,387, Cl. 260-465.00D.

Crossley, Roger, to John Wyeth & Brother Limited. Anti-ulcer treatment method. 4,288,439, Cl. 424-263.000.

Crowley, Bucky: *See—*
Butler, Richard A., Jr.; and Crowley, Bucky, 4,288,273, Cl. 156-361.000.

Crystal Systems Inc.: *See—*
Schmid, Frederick, 4,287,869, Cl. 125-16.00R.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Di Vita, Pietro, 4,288,143, Cl. 350-96.210.
Tamburelli, Giovanni, 4,288,872, Cl. 375-14.000.

Csiba, Jan: *See—*
Stensson, Bo G.; Harstrom, Jan O.; and Csiba, Jan, 4,287,968, Cl. 188-74.000.

Cucinella, Salvatore: *See—*
Dozzi, Giovanni; and Cucinella, Salvatore, 4,288,381, Cl. 260-448.0AD.

Cukor, Peter: *See—*
Kilichowski, Kurt B.; Cukor, Peter; and Brecher, Charles, 4,288,513, Cl. 430-28.000.

Cummins Engine Company, Inc.: *See—*
Oldfield, Thomas A.; Smith, Edward D.; and Furukawa, Hideo, 4,287,717, Cl. 60-606.000.

Curtin, Larry E., to W. R. Grace & Co. Contactless web turning guide. 4,288,015, Cl. 226-97.000.

Curtis Instruments, Inc.: *See—*
Finger, Eugene P., 4,288,734, Cl. 320-48.000.

Curtiss, Alan C.: *See—*
Sielaff, Bruce H.; Praglin, Julius; McKie, James E., Jr.; Longhenry, David K.; Curtiss, Alan C.; and Bidwell, Charles B., 4,288,543, Cl. 435-34.000.

Curtiss, George R., to Rotor Tool Company, The. Adjustable blade wrench. 4,287,795, Cl. 81-57.260.

Dacam Corporation: *See—*
Hart, William F., 4,287,699, Cl. 53-48.000.

Dahle, Gerald, to Wilhelm Dahle Buro- und Zeichengeratefabrik. Pivoted stapler assemblies. 4,288,019, Cl. 227-144.000.

Dahlgren, Harold P. Ink metering apparatus. 4,287,828, Cl. 101-363.000.

Dahlgrun, Rolf: *See—*
Heitmann, Uwe; Lorenzen, Heinz-Christen; Wahle, Gunter; and Dahlgrun, Rolf, 4,287,754, Cl. 73-38.000.

Dahm, Manfred: *See—*
Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., 4,288,559, Cl. 521-55.000.

Daicel Chemical Industries Ltd.: *See—*
Akao, Hisataro, 4,288,278, Cl. 156-474.000.

Daicel Ltd.: *See—*
Takeuchi, Tadashi; and Yamabe, Taiji, 4,288,145, Cl. 350-96.340.

Daidotokushuko: *See—*
Sekiwa, Seiichiro; Kawate, Kenji; and Jinnouchi, Hidenobu, 4,288,258, Cl. 148-13.000.

Daiichi Seiyaku Co., Ltd.: *See—*
Miki, Tosaku; Eriguchi, Akashi; Abiko, Yasushi; and Kameda, Kinya, 4,288,441, Cl. 424-266.000.

Daikin Kogyo Co., Ltd.: *See—*
Ohsaka, Yohnosuke; and Tohzuka, Takashi, 4,288,376, Cl. 260-348.230.

Dailey, Alvin. Variable gear ratio transmission. 4,287,792, Cl. 74-863.000.

Daimler-Benz Aktiengesellschaft: *See—*
Braun, Dieter; Mehren, Herbert; and Wulf, Helmut, 4,287,830, Cl. 104-247.000.
Hass, Jurgen, 4,288,031, Cl. 236-34.500.
Hoffmann, Rudiger; and Feichtiger, Dieter, 4,287,915, Cl. 137-625.500.
Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, 4,288,025, Cl. 228-173.00F.
Schuster, Hans-Dieter; Jans, Karl; and Ohlendorf, Rolf, 4,287,716, Cl. 60-276.000.

Daiwa Seiko, Inc.: *See—*
Yamamoto, Shigeru, 4,287,678, Cl. 43-24.000.

Daly, LeGrand A.: *See—*
Guth, Eugene D.; Daly, LeGrand A.; and Arand, John K., 4,288,408, Cl. 422-193.000.

Dana Corporation: *See—*
Storgard, David N., 4,287,908, Cl. 137-255.000.

Dankworth, Juergen; Hartenstein, Helmut; and Hertling, Ludwig, to Joh. A. Benckiser GmbH. Granulated composition comprising a polymer phosphate and an alkali metal aluminum silicate, process of making and method of using same. 4,288,340, Cl. 252-99.000.

Darmenton, Patrick: *See—*
Koulbanis, Constantin; Bouillon, Claude; and Darmenton, Patrick, 4,288,433, Cl. 424-232.000.

Dartmouth College: *See—*
Walsh, John E., 4,288,742, Cl. 324-61.00R.

Datafile Limited: *See—*
Barber, Donald T., 4,288,170, Cl. 402-17.000.
Pfeffer, George B., 4,288,272, Cl. 156-361.000.

Davis, Brian R.; and Rahm, Joseph A., to NL Industries, Inc. Process for manufacturing titanium compounds. 4,288,416, Cl. 423-82.000.

Davis, Brian R.; and Rahm, Joseph A., to NL Industries, Inc. Process for manufacturing titanium dioxide. 4,288,418, Cl. 423-83.000.

Davis, Jesse B. Roll leaf coating apparatus. 4,288,275, Cl. 156-367.000.

Davis, Michael A.: *See—*
Neirinckx, Rudi D.; and Davis, Michael A., 4,288,424, Cl. 424-1.000.

Davis, Robert E.: *See—*
Albert, Judith; and Davis, Robert E., 4,287,681, Cl. 46-44.000.

Dawson, Max. Portable boat dock. 4,287,625, Cl. 9-1.600.

Day, Janet A.; and Searle, Robert J. G., to Shell Oil Company. 2-Cyano-2-carboxy-3-azabicyclo[3.1.0]hexane, hydrates, esters, and salts thereof. 4,288,367, Cl. 260-326.270.

De Rotterdamsche Droogdok Maatschappij B.V.: *See—*
van der Vlis, Adrianus; and Boucherie, Evert C., 4,288,699, Cl. 250-507.000.

Deatherage, Robert L., to Maytag Company, The. Appliance control housing and console construction. 4,288,133, Cl. 312-279.000.

Dechamps, Antonius J.: *See—*
Heijs, Karel A. G.; Dechamps, Antonius J.; and de Jong, Robert L., 4,288,319, Cl. 209-166.000.

Dechene, Ronald L.; and Newton, Robert E., to Auburn International, Inc. Electrical measurement of fluid void fraction for fluid having capacitive and resistive conductive components. 4,288,741, Cl. 324-61.00R.

Deck, Alphonse; and Lefaucheur, Claude, to Pneumatiques, Caoutchouc Manufacture et Plastiques. Safety tire with sidewall support members having two parts with different flexibilities. 4,287,924, Cl. 152-153.000.

Dejneka, Tamara: *See—*
Sundeen, Joseph E.; Dejneka, Tamara; and Hauck, Frederic P., 4,288,456, Cl. 424-330.000.

de Jong, Feike: *See—*
van Zon, Arie; de Jong, Feike; and Torny-Schutte, Gerridina J., 4,288,333, Cl. 252-8.55B.

de Jong, Hamilton C.: *See—*
Brewer, William R.; and de Jong, Hamilton C., 4,287,619, Cl. 4-483.000.

de Jong, Robert L.: *See—*
Heijs, Karel A. G.; Dechamps, Antonius J.; and de Jong, Robert L., 4,288,319, Cl. 209-166.000.

Del Barba, Bruno, to IRMAC S.p.A. Single-cylinder circular hosiery knitting machine with device for making ribbed knitwear fabrics. 4,287,726, Cl. 66-24.000.

Delcoigne, Adrien; and Lanneau, Jacques, to Saint Gobain Industries. Process for making plaster board. 4,288,263, Cl. 156-42.000.

DeMarthe, Jean-Michel; Gandon, Louis; and Georgeaux, Andre, to Societe Miniere et Metallurgique de Penarroya. Hydrometallurgical process for treatment of sulphur ores. 4,288,304, Cl. 204-111.000.

Demichelis, Francesca: *See—*
Palazzetti, Mario; Loero, Angioletta; Demichelis, Francesca; and Minetti-Mezzetti, Enrica, 4,287,881, Cl. 126-440.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Tanji, Hiroaki; Saito, Mitsuaki; and Ishii, Masaji, 4,288,717, Cl. 313-336.000.

Dennison Manufacturing Company: *See—*
Russell, David B., 4,288,017, Cl. 227-67.000.

de Nora, Vittorio; Bianchi, Giuseppe; and Nidola, Antonio, to Diamond Shamrock Technologies S.A. Method for electrowinning metal. 4,288,302, Cl. 204-105.00R.

Denton, Arthur M., to Scovill Inc. Door closer permitting free-swing and regular-closer modes. 4,287,639, Cl. 16-48.500.

Denver Plastics, Inc.: *See—*
Wanderer, Herbert J., 4,287,996, Cl. 217-108.000.

Depey, Maurice, to Thomson-CSF. Schottky transistor logic with PNP clamp and diffused crossunder. 4,288,805, Cl. 357-44.000.

Depoorter, Henri: *See—*
Lemahieu, Raymond G.; Depoorter, Henri; and Hofman, Emiel A., 4,288,534, Cl. 430-522.000.

Deptolla, Udo: *See—*
Fabinski, Walter; and Deptolla, Udo, 4,288,693, Cl. 250-345.000.

Derderian, Edward J. Apparatus for separating adhering dried fruits and the like. 4,288,314, Cl. 209-3.000.

de Ruvo, Alfonso; Norman, Bo; Duffy, Geoffrey G.; Moller, Klaus; Hansen, Karl E.; Felsvang, Karsten S.; and Liborius, Erik, to A/S Niro Atomizer. Method and a system for separating an aqueous suspension containing fibrous particles into fractions of different average characteristics. 4,288,317, Cl. 209-139.00A.

Design Cote Corp.: *See—*
Brack, Karl, 4,288,479, Cl. 428-40.000.

Despic, Aleksandar R.: *See—*
Jovanovic, Budimir B.; Despic, Aleksandar R.; and Drazic, Dragutin M., 4,288,500, Cl. 428-650.000.

Developak Corporation: *See—*
Evers, Jack R., 4,288,014, Cl. 226-44.000.

Devine, Thomas H. Underwater air pocket work unit. 4,288,176, Cl. 405-188.000.

Devos, Francis; and Huchette, Michel, to Roquette Freres. Process for the recovery of α-hydroxy- and α-amino-carboxylic acids from sugar-containing media. 4,288,619, Cl. 562-554.000.

Dhein, Rolf: *See—*
Rottmaier, Ludwig; Merten, Rudolf; Dhein, Rolf; and Kreuder, Hans J., 4,288,569, Cl. 525-113.000.

Diamond, Arthur S.; and Floersheim, Sydney N., to Black Copy Company, Inc. Dual purpose electrophotographic magnetic toner and process of making. 4,288,519, Cl. 430-137.000.

Diamond, Julius, to William H. Rorer, Inc. Ethynylbenzene compounds and derivatives thereof. 4,288,457, Cl. 424-353.000.

Diamond Shamrock Technologies S.A.: *See—*
de Nora, Vittorio; Bianchi, Giuseppe; and Nidola, Antonio, 4,288,302, Cl. 204-105.00R.

Diaz, Jose O. Remailable envelope. 4,288,028, Cl. 229-73.000.

Diazit Company, Inc.: *See—*
Patrick, Henry W., 4,288,155, Cl. 354-300.000.

Dickey, Jimmy R., to Offshore Power Systems. Condenser vacuum load compensating system. 4,287,718, Cl. 60-687.000.

Di Costanzo, Pasquale F.; and Spector, George. Waist band for pants. 4,287,645, Cl. 24-301.000.

Diehl GmbH & Co.: *See—*
Ruchel, Peter, 4,288,257, Cl. 148-11.50C.

Diehl, Robert E.: *See—*
Lutz, Albert W.; and Diehl, Robert E., 4,288,385, Cl. 260-465.00E.

Disko, Harry: *See—*
Allen, Robert K.; Hicks, Alan A.; and Disko, Harry, 4,287,680, Cl. 46-1.00R.

Di Vita, Pietro, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and apparatus for splicing optical fibers. 4,288,143, Cl. 350-96.210.

Doak, Roni K. Coathanger suspender. 4,288,012, Cl. 294-143.000.

Dockal, Rodney O.; and Lindsey, Harold A., to AMF Incorporated. Pit cutter apparatus. 4,288,186, Cl. 409-175.000.

Dodonov, Jury I. Microwave magnetron-type device. 4,288,721, Cl. 315-39.510.

Dohse, Hans-Peter: *See—*
Wanner, Karl; Reibetanz, Wilbert; Dohse, Hans-Peter; Baumann, Otto; Spiwokz, Dietmar; Seitz, Karl; Angermair, Ernst; and Wiesner, Herbert, 4,288,187, Cl. 409-180.000.

Dolikian, Arman V., to Motorola, Inc. Shutdown circuit for a switching power supply. 4,288,831, Cl. 361-92.000.

Dominion Engineering Works Limited: *See—*
Greding, Robert, 4,288,044, Cl. 242-67.10R.

Donnelly, Bernard P. Modularized unit load and disposable pallet therefor. 4,287,991, Cl. 206-597.000.

Donohue, John A., to Standard Oil Company (Indiana). Methyl-substituted polyphenylcarboxylic acids. 4,288,588, Cl. 528-348.000.

Dosmond, Rene. Central heating and/or sanitary or industrial hot-water production installation. 4,287,723, Cl. 62-238.600.

Doulet, Clayton J. Body-attachable bag for transporting articles. 4,287,971, Cl. 190-48.000.

Dow Chemical Co., The: *See—*
Kresta, Jiri; and Shen, Chen S., 4,288,562, Cl. 521-121.000.
McDonald, Charles J., 4,288,390, Cl. 564-204.000.
Priddy, Duane B., 4,288,379, Cl. 260-410.600.
Thompson, Leonard R., 4,288,296, Cl. 203-6.000.

Dow Corning Corporation: *See—*
Huebner, David J.; and Weyenberg, Donald R., 4,288,356, Cl. 260-29.6NR.

Dozier, Alfred R. Mounting and excitation system for reaction in the plasma state. 4,287,851, Cl. 118-723.000.

Dozzi, Giovanni; and Cucinella, Salvatore, to Anic S.p.A. Method for the synthesis of alkoxyalanates of alkaline-earth metals. 4,288,381, Cl. 260-448.0AD.

Dragerwerk AG: *See—*
Eckstein, Wolfgang; and Rabenecker, Horst, 4,287,750, Cl. 73-1.00G.

Dragerwerk Aktiengesellschaft: *See—*
Hinz, Claus-Dieter; and Pasternack, Adalbert, 4,287,887, Cl. 128-202.260.

Drake, Charles A.; and Turk, Stanley D., to Phillips Petroleum Co. Dinitriles, diamines, and polyamides. 4,288,625, Cl. 564-372.000.

Drake, Charles A., to Phillips Petroleum Company. Process for hydrogenation of unsaturated dinitriles. 4,288,626, Cl. 564-491.000.

Dravo Corporation: *See—*
Karnofsky, George B.; and Slovski, John, 4,288,297, Cl. 203-81.000.

Drazic, Dragutin M.: *See—*
Jovanovic, Budimir B.; Despic, Aleksandar R.; and Drazic, Dragutin M., 4,288,500, Cl. 428-650.000.

Drewery, John O.; and Storey, Richard, to British Broadcasting Corporation. Method of and apparatus for deriving a PAL color television signal corresponding to any desired field in an 8-field PAL sequence from one stored field or picture of a PAL signal. 4,288,810, Cl. 358-16.000.

Drilling, Joseph C.: *See—*
Berry, Edgar L.; and Drilling, Joseph C., 4,288,138, Cl. 339-45.00R.

Dubois, Jean C.: *See—*
Picquendar, Jean E.; Marchal, Michel; Dubois, Jean C.; and Duda, Eugene, 4,288,528, Cl. 430-297.000.

Duda, Eugene: *See—*
Picquendar, Jean E.; Marchal, Michel; Dubois, Jean C.; and Duda, Eugene, 4,288,528, Cl. 430-297.000.

Dudleston, Alan R.; and Stemper, Harry, to Outboard Marine Corporation. Engine throttle control for marine propulsion devices and the like. 4,287,789, Cl. 74-516.000.

Duffy, Geoffrey G.: *See—*
de Ruvo, Alfonso; Norman, Bo; Duffy, Geoffrey G.; Moller, Klaus; Hansen, Karl E.; Felsvang, Karsten S.; and Liborius, Erik, 4,288,317, Cl. 209-139.00A.

Dugot, Richard, to Instrument Development Corp. Vehicle pass-by and community noise monitor. 4,287,771, Cl. 73-647.000.

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Duncan, Lloyd P. Milking device. 4,287,853, Cl. 119-14.550.

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Anderson, Burton C.; and Uschold, Ronald E., 4,288,574, Cl. 525-331.000.
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Graham, William F., 4,288,359, Cl. 260-32.8EP.
McShane, Herbert F., Jr., 4,288,577, Cl. 525-453.000.
Miller, Lester I.; and Smearing, Thomas J., 4,288,351, Cl. 260-21.000.
Squire, Edward N., 4,288,374, Cl. 260-347.910.

Durand, Guy, to Le Grand S.A. Coil loop type cable tie. 4,287,644, Cl. 24-16.0PB.

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Rogers, Jerrold J.; and Durecka, John, 4,288,738, Cl. 323-271.000.

Durham, Robert L.: *See—*
Fletcher, Thomas A.; and Durham, Robert L., 4,288,846, Cl. 362-217.000.

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Hartung, Helmut, 4,288,268, Cl. 156-245.000.

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Duval, Leonard A. Method and apparatus for cleaning fine waste material mixed with oil and water. 4,288,329, Cl. 210-772.000.

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Alfter, Franz-Werner; and Breitscheidel, Hans-Ulrich, 4,288,490, Cl. 428-315.000.
Bier, Gerhard; Kottek, Dagmar; Petersen, Egon N.; Richtzenhain, Hermann; and Vollkommer, Norbert, 4,288,607, Cl. 560-11.000.

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Montferme, Daniel, 4,287,980, Cl. 198-425.000.

E. R. Squibb & Sons, Inc.: *See—*
Haugwitz, Rudiger D., 4,288,368, Cl. 260-326.350.
Sundeen, Joseph E.; Dejneka, Tamara; and Hauck, Frederic P., 4,288,456, Cl. 424-330.000.

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Miller, Harold J., 4,288,040, Cl. 241-263.000.

Eastman Kodak Company: *See—*
Adin, Anthony; Sutton, Richard C.; and Verdone, Joseph A., 4,288,531, Cl. 430-338.000.
Myers, Drewfus Y., Jr.; and Hawks, George H., III, 4,288,511, Cl. 430-17.000.

Poshkus, Gerald M., 4,288,533, Cl. 430-496.000.
Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., 4,288,358, Cl. 260-31.80M.

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Kuntner, Richard J.; and Vander Meer, James C., 4,288,828, Cl. 361-31.000.

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Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.

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Eckert, Alton B., Jr.; Malin, Richard A.; McFiggans, Robert B.; and Pengue, Leonard M., to Pitney Bowes Inc. Printing control system. 4,287,825, Cl. 101-91.000.

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Cohen, Samuel, 4,288,309, Cl. 204-225.000.

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Lettner, Kurt; Egger, Eugen; and Unger, Rudolf, 4,287,861, Cl. 123-198.00E.

Egli, Werner H.; Kuhlmann, Dennis; and Wier, Jack E., to Honeywell Inc. Helmet-mounted sighting system. 4,287,809, Cl. 89-41.0EA.

Eichinger, Johann; and Burzlauer, Gert, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Shiftable friction clutch in particular for gear drives. 4,287,973, Cl. 192-54.000.

Eigenmann, Ludwig. Method of forming surface markings on roadway areas, and roadway areas produced thereby. 4,288,487, Cl. 428-213.000.

Eiloo, Gary A.: *See—*
Kaye, Robert M.; Eiloo, Gary A.; and Tucker, Thomas, 4,288,748, Cl. 324-326.000.

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Kashioka, Seiji; Shima, Yoshihiro; Miyatake, Takafumi; Ejiri, Masakazu; and Obata, Osamu, 4,288,816, Cl. 358-138.000.

Ejiri, Yoshihiro: *See—*
Nakai, Taiichiro; Furusawa, Kahei; Nunokawa, Makoto; and Ejiri, Yoshihiro, 4,288,144, Cl. 350-96.230.

Elder, Walter S.: *See—*
Berry, Doyle; and Elder, Walter S., 4,288,047, Cl. 242-86.000.

Electric Power Development Co. Ltd.: *See—*
Ito, Hayami; Nagai, Chiaki; Nakabayashi, Yasuyuki; Igarashi, Kihachiro; Mouri, Kunihiko; and Ikeda, Takashi, 4,288,420, Cl. 423-239.000.
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.

Electric Power Research Institute, Inc.: *See—*
Chatterji, Debajyoti; and Park, Dong-Sil, 4,287,664, Cl. 29-623.200.
Fischer, William H.; Cromer, Charles F.; and Rostron, Joseph R., 4,288,668, Cl. 200-150.00G.
Wootton, Roy E., 4,288,651, Cl. 174-17.0GF.

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Abdulla, Riaz F.; and Morgan, Lawrence A., 4,288,624, Cl. 564-345.000.
Boeck, LaVerne D.; and Kastner, Ralph E., 4,288,549, Cl. 435-119.000.

Eliseeva, Irina P.: *See—*
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

Ellis, Claude E., to Sterling Drug, Inc. Corrosion resistant assembly and method of making it. 4,288,109, Cl. 285-158.000.

Ellis, Leonard C., to Virginia Chemicals Inc. Acid field test kit for refrigeration oils containing a leak detector. 4,288,402, Cl. 422-61.000.

Elmer, William B. Compound beam illuminating. 4,288,847, Cl. 362-297.000.

Elsner, Emil; and Heinen, Leo, to Korf-Stahl AG. Continuous casting method with rotary melt movement. 4,287,933, Cl. 164-452.000.

Emerit, Andre A. C. Source of vacuum and device for maintaining a negative pressure in an enclosure. 4,287,819, Cl. 99-472.000.

Emerson Electric Co.: *See—*
Freund, William R., Jr.; and Grebe, John C., Jr., 4,287,773, Cl. 73-861.120.
Grebe, John C., Jr.; and Freund, William R., Jr., 4,287,774, Cl. 73-861.170.

Emeury, Jean-Marie L.: *See—*
Pascal, Helene M.; and Emeury, Jean-Marie L., 4,288,638, Cl. 568-584.000.

Emhart Industries, Inc.: *See—*
Braithwaite, David, 4,288,240, Cl. 65-246.000.
Voyles, Gerald A., 4,288,842, Cl. 361-433.000.

EMI Limited: *See—*
Birt, David E.; and Clarke, Peter J., 4,288,481, Cl. 428-64.000.
Haque, Promod, 4,288,264, Cl. 156-67.000.

Empire of Carolina, Inc.: *See—*
Sollenberger, Edward, 4,287,964, Cl. 185-38.000.

Enenkel, Hans-Joachim: *See—*
Sombroek, Johannes; Becker, Karl-Heinz; Minck, Klaus O.; and Enenkel, Hans-Joachim, 4,288,452, Cl. 424-304.000.

Energy Detection Company: *See—*
Moffet, John N.; and Moffet, John D., 4,287,761, Cl. 73-153.000.

Energy Development Associates, Inc.: *See—*
Carr, Peter; and Chi, Chen H., 4,288,507, Cl. 429-209.000.
Hart, Thomas G., 4,288,301, Cl. 204-101.000.

Energy Equipment Company Limited, The: *See—*
Harman, Maurice, 4,288,214, Cl. 432-58.000.

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Schumann, George; and Beckstead, Jerry, 4,287,871, Cl. 126-67.000.

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Engel, Michael R., to Minnesota Mining and Manufacturing Company. Durable, polishable direct filling material. 4,288,221, Cl. 433-202.000.

Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; and Kahling, Joachim, to Boehringer Ingelheim GmbH. 2-[(Amino)-arylmethylene]-benzo[b]thiophen-3(2H)-ones. 4,288,437, Cl. 424-246.000.

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Grunewald, Heinz L.; and Wellbrock, Jurgen, 4,287,730, Cl. 68-140.000.

Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, to Honda Giken Kogyo Kabushiki Kaisha. Front wheel suspension mechanism for vehicle. 4,288,096, Cl. 280-694.000.

Enright, Dorothy P.: *See—*
Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., 4,288,582, Cl. 526-240.000.

Ensminger, Dale, to Battelle Development Corporation. Inspection of solder joints by acoustic impedance. 4,287,766, Cl. 73-582.000.

Enterprise Construction Services, Inc.: *See—*
Feutz, Roger A., 4,288,111, Cl. 285-183.000.

Environmental Sciences Associates, Inc.: *See—*
Matson, Wayne R., 4,288,303, Cl. 204-105.00R.

Envirotech Corporation: *See—*
Mar, Danny M., 4,288,229, Cl. 23-230.0PC.

Enzlin, Theodoor H.; and Janssen, Antonius J., to U.S. Philips Corporation. Darlington circuit having an improved diode drain. 4,288,807, Cl. 357-46.000.

Epper, Wolfgang; and Heckmann, Wolfgang, to Klockner-Humboldt-Deutz AG. Separator with pressure-responsive discharge. 4,288,029, Cl. 233-20.00A.

Epperly, Harrison R. Brake shoe salvaging means. 4,287,652, Cl. 29-233.000.

Erbstoesser, Steven R., to Exxon Production Research Company. Method of selective diversion in deviated wellbores using ball sealers. 4,287,952, Cl. 166-284.000.

Erhardt, Manfred; Fendt, Werner; and Huber, Manfred, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Method and apparatus for exchanging tools in hobbing machines. 4,287,659, Cl. 29-568.000.

Eriguchi, Akashi: *See—*
Miki, Tosaku; Eriguchi, Akashi; Abiko, Yasushi; and Kameda, Kinya, 4,288,441, Cl. 424-266.000.

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Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

Escher Wyss Limited: *See—*
Schneebeli, Friedrich; and Biondetti, Mario, 4,288,703, Cl. 290-52.000.

Esco Manufacturing Company: *See—*
McClain, James E.; and Scott, Howard L., 4,288,737, Cl. 323-254.000.

Esselte Pendaflex Corporation: *See—*
Schrotz, Kurt; and Becker, Werner, 4,288,276, Cl. 156-384.000.

Essmann, Wolfgang; and Schnellbacher, Kurt, to Buhler-Miag GmbH. Pneumatic separator for flowable particulate materials. 4,288,318, Cl. 209-139.00R.

Estradier, Francoise: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,288,622, Cl. 564-194.000.

Etablissement Dentaire Ivoclar: *See—*
Jorgensen, Knud D., 4,288,472, Cl. 427-133.000.

Etablissements Carpano & Pons: *See—*
Saligny, Yves, 4,288,832, Cl. 361-119.000.

Etablissements Tornier: *See—*
Tornier, Alain, 4,287,617, Cl. 3-1.913.

Etzel, James E., to Purdue Research Foundation. Disinfectant chlorinated cyanurate containing compositions and method of use. 4,288,430, Cl. 424-153.000.

Eusemann, Robert; Handke, Gunther; and Koller, Manfred, to Fichtel & Sachs AG. Hydro-pneumatic damping device. 4,287,970, Cl. 188-269.000.

Euteco Impianti S.p.A.: *See—*
Zotti, Aldo; and Cardini, Giuliano, 4,288,554, Cl. 435-247.000.

Evans, Robert F. Cooling a drilling tool component with a separate flow stream of reduced-temperature gaseous drilling fluid. 4,287,957, Cl. 175-17.000.

Evaporator Technology Corporation: *See—*
Houston, James E. 4,288,285, Cl. 159-1.00C.

Evers, Jack R., to Developak Corporation. Dancer roll assembly. 4,288,014, Cl. 226-44.000.

Ewing, Lloyd; Redmon, David T.; Thayer, Paul M.; Schmit, Frank L.; and Roche, William H., to Water Pollution Control Corp. Sewage aeration system. 4,288,394, Cl. 261-122.000.

Ewing, Lloyd; Redmon, David T.; and Roche, William H., to Water Pollution Control Corporation. Diffusion element with boundary zone treatment. 4,288,395, Cl. 261-122.000.

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Foll, Ake L.; and Widell, Stig G., 4,288,428, Cl. 424-78.000.

Exel Oy: *See—*
Aho, Yrjo, 4,288,101, Cl. 280-821.000.

Extracorporeal Medical Specialites, Inc.: *See—*
Porter, Christopher H.; and Taylor, John A., 4,288,494, Cl. 428-398.000.

Exxon Production Research Company: *See—*
Erbstoesser, Steven R., 4,287,952, Cl. 166-284.000.

Exxon Research & Engineering Co.: *See—*
Baker, Edward G.; and Huang, John S., 4,287,950, Cl. 166-273.000.
Chianelli, Russell R.; and Pecoraro, Theresa A., 4,288,422, Cl. 423-509.000.
Gardner, Irwin J., 4,288,575, Cl. 525-333.000.
Matthias, Dan W.; and Thornton, Richard D., 4,288,709, Cl. 310-49.00R.
Sims, J. Robert, Jr., 4,288,406, Cl. 422-131.000.
Weiss, Robert A.; and Lundberg, Robert D., 4,288,352, Cl. 260-23.50A.

Fabinski, Walter; and Deptolla, Udo, to Hartmann & Braun Aktiengesellschaft. Nondispersive infrared gas analyzer. 4,288,693, Cl. 250-345.000.

Fahrenschon, Franz; Meier, Alfred; and Thinschmidt, Hans, to Siemens Aktiengesellschaft. Circuit arrangement for telephone exchange systems, especially subscriber extension station installations, with additional data traffic, for example with teleprinter equipment. 4,288,662, Cl. 179-3.000.

Failla, Stephen J.; and Perry, Raymond S., to Plastic Components, Inc. Corner bead and installation tool. 4,288,016, Cl. 227-30.000.

Fallis, Robert E.: *See—*
Lee, Chen Yi; Wu, Charles Tung-ming; Brooks, Mark A.; and Fallis, Robert E., 4,288,835, Cl. 361-283.000.

Farkas, Laszlo. Friction and rack and pinion locomotive. 4,287,831, Cl. 105-29.00R.

Farley, James R.: *See—*
Patel, Jayant M.; Wolfe, Jerome K.; Coyle, Forrest E.; and Farley, James R., 4,288,667, Cl. 200-48.00R.

Farmer, Robert F., III; and Sokol, Phillip E., deceased (by Sokol, Eunice, legal representative), to Gillette Company, The. Conditioning shampoo composition and ingredient therefor. 4,288,427, Cl. 424-70.000.

Fasano, Michael, to Porta Systems Corp. Test cord for telephone circuits. 4,288,660, Cl. 179-1.0PC.

Fedders, Heinrich; and Beckers, Willi, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Tubular reactor for carrying out catalytic processes. 4,288,409, Cl. 422-219.000.

Federal-Mogul Corporation: *See—*
Ryanen, Robert M., 4,288,129, Cl. 308-218.000.

Feeney, George W.; and Stevenson, William O., to Goodyear Tire & Rubber Company, The. Adhesive composition and method of preparation. 4,288,567, Cl. 525-99.000.

Feichtiger, Dieter: *See—*
Hoffmann, Rudiger; and Feichtiger, Dieter, 4,287,915, Cl. 137-625.500.

Felsvang, Karsten S.: *See—*
de Ruvo, Alfonso; Norman, Bo; Duffy, Geoffrey G.; Moller, Klaus; Hansen, Karl E.; Felsvang, Karsten S.; and Liborius, Erik, 4,288,317, Cl. 209-139.00A.

Fendt, Werner: *See—*
Erhardt, Manfred; Fendt, Werner; and Huber, Manfred, 4,287,659, Cl. 29-568.000.

Feniger, Arnold R. Eyeglass case. 4,287,985, Cl. 206-5.000.

Ferber, George: *See—*
Conover, Steven M.; Loring, Robert M.; Ludwico, William A.; Arnold, John W.; and Ferber, George, 4,288,564, Cl. 521-122.000.

Ferment, George R.; and Woerner, Douglas C., to GAF Corporation. Flexible sheet-type covering material and process for making same. 4,288,486, Cl. 428-141.000.

Ferranti Limited: *See—*
Cassels, Ian G., 4,288,163, Cl. 356-350.000.
Leather, Russell A., 4,288,141, Cl. 339-97.00R.

Ferraris Development and Engineering Company Limited: *See—*
Hutton, Stanley P., 4,287,775, Cl. 73-861.790.

Feucht, Fritz: *See—*
Schroder, Gerhard; and Feucht, Fritz, 4,288,054, Cl. 248-225.100.

Feutz, Roger A., to Enterprise Construction Services, Inc. Joint construction for sheet metal ducts. 4,288,111, Cl. 285-183.000.

Fewel, Kenneth J., to Hutson Corporation, The. Vibratory actuator incorporating hydrodynamic journal bearing. 4,288,165, Cl. 366-124.000.

Fewell, Larry L.: *See—*
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Fezenko, Igor: *See—*
Battigelli, Jean A.; Bouquet, Francois; and Fezenko, Igor, 4,288,237, Cl. 65-14.000.

Fiat Auto S.p.A.: *See—*
La Rocca, Aldo V., 4,288,678, Cl. 219-121.0LE.
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Fiber Industries, Inc.: *See—*
Wilkes, William W., 4,288,207, Cl. 425-72.00S.

Fichtel & Sachs AG: *See—*
Eusemann, Robert; Handke, Gunther; and Koller, Manfred, 4,287,970, Cl. 188-269.000.

Fido, Stefon. Clamp mounted and portable extension lamp. 4,288,848, Cl. 362-378.000.

Filtrox Maschinenbau AG: *See—*
Strub, Fritz, 4,288,330, Cl. 210-777.000.

Finger, Eugene P., to Curtis Instruments, Inc. Bidirectional integrator. 4,288,734, Cl. 320-48.000.

Finsness, Wilma L.; McMonagle, Richard I.; and Sedenquist, Edward M., to United States of America, Air Force. Aerial refueling receptacle floodlights-spoiler and fuselage, nose mounted. 4,288,845, Cl. 362-63.000.

Fischer, Bruno; and Vollath, Rainer, to International Standard Electric Corporation. Method of manufacturing luminescent screens for color picture tubes. 4,288,512, Cl. 430-24.000.

Fischer, Jurgen: *See—*
Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, 4,288,698, Cl. 250-506.000.

Fischer, William H.; Cromer, Charles F.; and Rostron, Joseph R., to Electric Power Research Institute, Inc. Circuit interrupter using a minimum of dielectric liquid. 4,288,668, Cl. 200-150.00G.

Fisher, Kenneth J.; and Miller, William R., to American Sterilizer Company. Electrically focused surgical light. 4,288,844, Cl. 362-33.000.

Fisher, Leslie G.; and Waite, John S., to GKN Transmissions Limited. Universal joint outer member. 4,287,650, Cl. 29-148.40R.

Flanagan, Charles J.: *See—*
Norton, Edward J.; and Flanagan, Charles J., 4,287,675, Cl. 36-129.000.

Flanagan, Joseph E.; and Gray, John C., to Rockwell International Corporation. Gun propellants containing polyglycidyl azide polymer. 4,288,262, Cl. 149-19.600.

Fleck, John A.; and Meredith, Michael D., to Weyerhaeuser Company. Apparatus for mixing chemicals into pulp at a refiner inlet. 4,288,288, Cl. 162-261.000.

Flecknoe-Brown, Anthony: *See—*
Keith, Donald G.; and Flecknoe-Brown, Anthony, 4,288,401, Cl. 264-550.000.

Fleischer, Joachim: *See—*
Herchenbach, Horst; Ramesohl, Hubert; and Fleischer, Joachim, 4,288,213, Cl. 432-14.000.

Fletcher, Thomas A.; and Durham, Robert L., to General Electric Company. Floodlight. 4,288,846, Cl. 362-217.000.

Flickinger, Erich: *See—*
Schuster, Ludwig; Raff, Paul; Hoffmann, Herwig; Schneider, Rolf; and Flickinger, Erich, 4,288,640, Cl. 568-855.000.

Flinders University of South Australia, The: *See—*
Whitford, Darryl R., 4,288,727, Cl. 318-112.000.

Floersheim, Sydney N.: *See—*
Diamond, Arthur S.; and Floersheim, Sydney N., 4,288,519, Cl. 430-137.000.

Flohr, Peter: *See—*
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Florent, Jean: *See—*
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Floyd, Middleton B., Jr.: *See—*
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Flynn, Richard T.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,288,850, Cl. 364-200.000.

FMC Corporation: *See—*
Persoons, Gustaaf M.; and Wijts, Corneel C., 4,287,707, Cl. 56-12.800.
Saller, Erik, 4,288,293, Cl. 201-6.000.

Fogarty, Thomas J. Endarterectomy method. 4,287,890, Cl. 128-303.00R.

Foley, Edward J.: *See—*
Grzywinski, Gerald G.; and Foley, Edward J., 4,288,480, Cl. 428-40.000.

Foley, James P., to Roanwell Corporation. Noise canceling transmitter. 4,288,663, Cl. 179-122.000.

Foll, Ake L.; and Widell, Stig G., to Ewos Aktiebolaget. Udder disinfectant and method of disinfecting teats. 4,288,428, Cl. 424-78.000.

Foolen, Jan A., to Single Buoy Moorings Inc. Rotatable swivel for one or more conduits. 4,288,106, Cl. 285-136.000.

Ford Motor Company: *See—*
Bachrach, Benjamin I.; and Fuhrman, William J., 4,287,749, Cl. 72-467.000.
Terner, Leslie L.; Van Alsten, Roy L.; and Moskowitz, David, 4,288,495, Cl. 428-446.000.

Ford, Thomas R.: *See—*
Alexander, Clifton E.; Ford, Thomas R.; and Smith, William S., 4,287,692, Cl. 52-116.000.

Formigraphic Engine Corporation: *See—*
Swainson, Wyn K.; and Kramer, Stephen D., 4,288,861, Cl. 365-127.000.

Forsheda Gummifabrik AB: *See—*
Nordin, Olof, 4,288,104, Cl. 285-45.000.

Forsythe, Alan K.: *See—*
Green, Charles J.; and Forsythe, Alan K., 4,287,906, Cl. 137-118.000.

Fortescue, George H., to Lockheed Corporation. Optical probe for detecting transitory and repetitive light signals. 4,288,161, Cl. 356-73.000.

Fowler, Douglas, to Fowler, Douglas. Apparatus for washing egg incubating and/or hatching trays and buggies therefor. 4,287,901, Cl. 134-56.00R.

Fraim, Freeman W.: *See—*
Gupta, Bhupendra K.; Shefsiek, Paul K.; and Fraim, Freeman W., 4,288,062, Cl. 266-88.000.

Franzen, Gustav, to Palitex Project Company GmbH. Pneumatically disengageable self-threading yarn brake mechanism in a hollow spindle assembly of a textile yarn processing machine and related method. 4,287,712, Cl. 57-279.000.

Frederick Electronics Corporation: *See—*
Bieber, Larry C.; and Woodell, Jack L., 4,288,658, Cl. 178-3.000.

Frees, Kenneth A., to Missouri Research Laboratories Inc. Industrial truck. 4,287,966, Cl. 187-9.00R.

Freund, William R., Jr.; and Grebe, John C., Jr., to Emerson Electric Co. Bidirectional magnetic flowmeter. 4,287,773, Cl. 73-861.120.

Freund, William R., Jr.: *See—*
Grebe, John C., Jr.; and Freund, William R., Jr., 4,287,774, Cl. 73-861.170.

Frey, Gunter, to Knecht Filterwerke GmbH. Diaphragm device for damping vibrations in flowing liquids. 4,287,917, Cl. 138-30.000.

Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Sponer, Gisbert; and Schaumann, Wolfgang, to Boehringer Mannheim GmbH. Inhibiting adrenergic β-receptors with piperidinopropyl derivatives. 4,288,442, Cl. 424-267.000.

Fried. Krupp GmbH: *See—*
Kruger, Heinrich; and Tack, Hans, 4,288,179, Cl. 407-114.000.

Fried, Reinhard; and Kudernatsch, Gunter, to BBC Brown, Boveri & Company Limited. Multi-flow gas dynamic pressure-wave machine. 4,288,203, Cl. 417-64.000.

Friedrich Deckel Aktiengesellschaft: *See—*
Geiger, Michael; Schneider, Manfred; and Lutzkendorf, Jorg, 4,288,192, Cl. 414-223.000.

Friedrichsfeld GmbH: *See—*
Heimke, Gunther; Piester, Dietrich; and Jahnke, Klaus, 4,287,616, Cl. 3-1.900.

Fries, Carl, Jr., to International Paper Company. Apparatus for automatically dispensing non-round flexible containers. 4,288,003, Cl. 221-1.000.

Frost, May: *See—*
Frost, Robert T.; and Frost, May, 4,287,705, Cl. 54-44.000.

Frost, Robert T.; and Frost, May. Saddles. 4,287,705, Cl. 54-44.000.

Fruehauf Corporation: *See—*
Cooper, George W., 4,287,759, Cl. 73-862.450.

Frungel, Frank. Laser ceilometer with safety power-reduction feature. 4,288,158, Cl. 356-4.000.

Frymaster Corporation, The: *See—*
Moore, Lewis F.; and Price, George M., 4,287,818, Cl. 99-355.000.

Fuchs, Julius J., to Du Pont de Nemours, E. I., and Company. Propenimidates, their preparation and rearrangement to pyrimidines. 4,288,383, Cl. 260-453.0RW.

Fuhrman, William J.: *See—*
Bachrach, Benjamin I.; and Fuhrman, William J., 4,287,749, Cl. 72-467.000.

Fuhrmann, Wilhelm; and Sofranko, Andrew J., to Schloemann-Siemag, Inc. Rolling mill screwdown. 4,287,745, Cl. 72-248.000.

Fuji Mfg. Co. Ltd.: *See—*
Asai, Koichi; and Kawada, Tousuke, 4,287,668, Cl. 29-838.000.

Fuji Photo Film Co., Ltd.: *See—*
Oda, Kazutaka; and Okishi, Yoshio, 4,288,526, Cl. 430-272.000.
Seoka, Yoshio; Aoki, Kozo; Yokota, Yukio; and Kubodera, Seiiti, 4,288,532, Cl. 430-385.000.

Fuji Seal Industry Co., Ltd.: *See—*
Fujio, Masaaki, 4,287,700, Cl. 53-292.000.

Fuji Xerox Co., Ltd.: *See—*
Ozawa, Takashi; and Takenouchi, Mutsuo, 4,288,702, Cl. 250-578.000.

Fujieda, Toshio: *See—*
Nemoto, Susumu; and Fujieda, Toshio, 4,288,194, Cl. 414-586.000.

Fujii, Hiroyuki: *See—*
Kobayashi, Masatoshi; Shimakawa, George; Hara, Yukio; and Fujii, Hiroyuki, 4,288,284, Cl. 156-651.000.

Fujii, Tadashiro; Yaginuma, Satoshi; Muto, Naoki; and Hayashi, Mitsuo, to Toyo Jozo Kabushiki Kaisha. Antibiotic planothiocins. 4,288,429, Cl. 424-117.000.

Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,288,599, Cl. 546-345.000.

Fujikawa, Tetsuzo; Takada, Toshiyuki; and Misawa, Kichiji, to Kawasaki Jukogyo Kabushiki Kaisha. Two-cycle engine. 4,287,860, Cl. 123-73.0PP.

Fujio, Masaaki, to Fuji Seal Industry Co., Ltd. Machine for fitting a sleeve seal of a flat form over a container. 4,287,700, Cl. 53-292.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Nakai, Yoshiharu, 4,288,435, Cl. 424-246.000.
Takaya, Takao; and Murata, Masayoshi, 4,288,436, Cl. 424-246.000.

Fujita, Toshihito; Kikuchi, Toshiaki; and Nakazawa, Koji, to Nitto Boseki Co., Ltd. Roller apparatus for cutting glass fibers. 4,287,799, Cl. 83-347.000.

Fujitsu Limited: *See—*
Kikuchi, Hideo; Takaoka, Haruyoshi; and Baba, Shigenori, 4,288,804, Cl. 357-42.000.

Fujiwara, Minoru; Yamada, Tominori; and Tamura, Tstsuji, to Mitsui Engineering and Shipbuilding Co., Ltd. High-speed bevel gear transmission system. 4,287,790, Cl. 74-665.0GB.

Fujiwara, Mujika: *See—*
Miyashita, Takehisa; and Fujiwara, Mujika, 4,288,813, Cl. 358-75.000.

Fukuda, Hiroyuki: *See—*
Haga, Toshikatsu; Fukuda, Hiroyuki; Shinoda, Hiroshi; and Hayakawa, Hideharu, 4,288,251, Cl. 501-105.000.

Fukukita, Hiroshi: *See—*
Hayakawa, Yoshihiro; and Fukukita, Hiroshi, 4,287,768, Cl. 73-626.000.

Fuller, Willard A., to Hooker Chemicals & Plastics Corp. Kraft mill recycle process. 4,288,286, Cl. 162-30.00R.

Funado, Akira: *See—*
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,287,821, Cl. 99-646.00C.

Furness, Edward J.; and Wade, Philip, to British Steel Corporation. Taper rolling machine. 4,287,744, Cl. 72-214.000.

Furukawa, Hideo: *See—*
Oldfield, Thomas A.; Smith, Edward D.; and Furukawa, Hideo, 4,287,717, Cl. 60-606.000.

Furusawa, Kahei: *See—*
Nakai, Taiichiro; Furusawa, Kahei; Nunokawa, Makoto; and Ejiri, Yoshihiro, 4,288,144, Cl. 350-96.230.

Furuta, Akihiro: *See—*
Sano, Takezo; Inoue, Haruo; and Furuta, Akihiro, 4,288,529, Cl. 430-308.000.

Fusco, Andrew. Light and alarm device. 4,288,784, Cl. 340-326.000.

Fussenegger, Werner: *See—*
Kirchmayr, Rudolf; Fussenegger, Werner; and Illy, Hugo, 4,288,560, Cl. 521-90.000.

Futagami, Mikio: *See—*
Kanazawa, Hiroyuki; and Futagami, Mikio, 4,288,357, Cl. 260-31.20N.

Futatsumori, Koji: *See—*
Arai, Masatoshi; and Futatsumori, Koji, 4,288,375, Cl. 260-348.410.

G.D. Societa per Azioni: *See—*
Seragnoli, Enzo, 4,287,797, Cl. 83-74.000.

G. Siempelkamp GmbH & Co.: *See—*
Holz, Karl-Heinz, 4,288,274, Cl. 156-364.000.

Gach, Peter P.: *See—*
Luker, Charles E.; and Gach, Peter P., 4,288,000, Cl. 220-281.000.

GAF Corporation: *See—*
Ferment, George R.; and Woerner, Douglas C., 4,288,486, Cl. 428-141.000.

Gaines, Cecil A. Solar and central fireplace heating system. 4,287,877, Cl. 126-427.000.

Gakken Co., Ltd.: *See—*
Miyashita, Takehisa; and Fujiwara, Mujika, 4,288,813, Cl. 358-75.000.

Galasan, Felixberto A.: *See—*
Roldness, David J.; Galasan, Felixberto A.; and Watson, Thomas H., 4,287,833, Cl. 105-378.000.

Gallagher, Bernard J.; Wennerstrom, Erling G.; and Houdek, Mark R., to Cajon Company. Fluid fitting having gripping bass means for chucking. 4,288,103, Cl. 285-39.000.

Gallagher, John J. Stratified fluid interface recorder. 4,287,756, Cl. 73-61.10R.

Gana, John; and Torlay, Dwight L., to United States Steel Corporation. Refractory insulated member and method of installation thereof in a reheat furnace. 4,288,219, Cl. 432-234.000.

Gandon, Louis: *See—*
DeMarthe, Jean-Michel; Gandon, Louis; and Georgeaux, Andre, 4,288,304, Cl. 204-111.000.

Gardner, Irwin J., to Exxon Research & Engineering Co. Conjugated diene butyl elastomer copolymer. 4,288,575, Cl. 525-333.000.

Garritsen, Petrus G. S.; MacVicar, Douglas J.; Young, Daniel P.; and Sojda, John G., to Inco Limited. Process for electrowinning nickel or cobalt. 4,288,305, Cl. 204-112.000.

Gartside, Robert J.; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Low residence time solid-gas separation device and system. 4,288,235, Cl. 55-196.000.

Gassman, Horst-Detlef; and Wohlwend, Ernst, to Hilti Aktiengesellschaft. Method of setting fastening elements in a hard receiving material. 4,287,656, Cl. 29-432.000.

Gatrun Anstalt: *See—*
Corbic, Yves J., 4,287,702, Cl. 53-425.000.

GATX Tank Erection Corporation: *See—*
Heisterberg, Milton W., 4,287,999, Cl. 220-222.000.
Gaudioso, Stephen L., to Xerox Corporation. Polyester resin containing magnetic toner material and process for its use in flash fuser. 4,288,516, Cl. 430-107.000.
Gauggel, Roland, to Bodenseewerk Geratetechnik GmbH. Steering device for missiles. 4,288,050, Cl. 244-3.160.
Geiger, Michael; Schneider, Manfred; and Lutzkendorf, Jorg, to Friedrich Deckel Aktiengesellschaft. Tool-changing mechanism. 4,288,192, Cl. 414-223.000.
Geiger, Robert G., to Air-Flo Co., Inc. Door locking cable. 4,288,119, Cl. 292-262.000.
Geiss, Karl-Heinz: *See—*
Bliesener, Jens-Uwe; Geiss, Karl-Heinz; Lenke, Dieter; and Mueller, Claus D., 4,288,449, Cl. 424-274.000.
Geller, Gary R.: *See—*
Bedard, Brian E.; and Geller, Gary R., 4,288,530, Cl. 430-315.000.
General Electric Company: *See—*
Alley, Robert P.; and Tompkins, Russell E., 4,288,773, Cl. 336-160.000.
Ashby, Bruce A.; and Modic, Frank J., 4,288,345, Cl. 252-431.00R.
Bobear, William J., 4,288,360, Cl. 260-37.0SB.
Bovenkerk, Harold P.; and Gigl, Paul D., 4,288,248, Cl. 75-226.000.
Carson, Andrew B., Jr.; and Blodgett, Frederick M., Jr., 4,288,167, Cl. 400-121.000.
Ching, Ta-Yen, 4,288,631, Cl. 568-333.000.
Craft, Donald I.; and Kramer, Morton, 4,288,561, Cl. 521-90.000.
Fletcher, Thomas A.; and Durham, Robert L., 4,288,846, Cl. 362-217.000.
Gillette, Stephen F., 4,288,770, Cl. 335-173.000.
Grass, Joseph J.; Barrett, David M.; and Wendt, Randolph N., 4,288,700, Cl. 250-523.000.
Howell, Edward K., 4,288,769, Cl. 335-173.000.
Howell, Edward K., 4,288,833, Cl. 361-124.000.
MacBeth, Ian H., 4,288,772, Cl. 336-58.000.
Merola, Pasquale A.; and Quick, Marshall K., 4,288,858, Cl. 364-826.000.
Niemann, Roy A., 4,288,681, Cl. 219-125.110.
Olashaw, William F., 4,288,656, Cl. 174-71.00B.
Otto, Charles W., 4,287,662, Cl. 29-596.000.
Pohl, Walter J.; and Burns, Arthur L., 4,287,939, Cl. 165-11.00R.
Poling, Ronald W., 4,287,780, Cl. 74-100.00P.
Stark, Charles J., Jr., 4,288,603, Cl. 556-422.000.
Thompson, Paige W., 4,287,746, Cl. 72-338.000.
Will, Fritz G., 4,288,683, Cl. 219-290.000.
Wilson, James W. A.; and Steigerwald, Robert L., 4,288,732, Cl. 318-723.000.
General Microwave Corporation: *See—*
Hopfer, Samuel, 4,288,761, Cl. 333-116.000.
Hopfer, Samuel, 4,288,763, Cl. 333-164.000.
General Motors Corporation: *See—*
Conover, Steven M.; Loring, Robert M.; Ludwico, William A.; Arnold, John W.; and Ferber, George, 4,288,564, Cl. 521-122.000.
Graham, Donald E., 4,288,730, Cl. 318-599.000.
Holland, Steven W., 4,288,852, Cl. 364-508.000.
Milbrandt, Carlton A.; and Schoen, Roy C., 4,288,666, Cl. 200-47.000.
Rogers, Wesley A.; and Laggan, James J., 4,288,788, Cl. 340-378.200.
Staub, Vincent M., Jr., 4,287,978, Cl. 192-113.00B.
Vazquez-Cuervo, Alfonso; Richards, Frederick T.; Bafunno, Daniel V.; and Papacostas, George, 4,288,726, Cl. 318-54.000.
General Products Company, Inc.: *See—*
McKann, H. Smith, 4,287,684, Cl. 49-468.000.
General Trailer Company, Inc.: *See—*
Schmidt, Kenneth J., 4,287,958, Cl. 177-136.000.
Generale de Fluide: *See—*
Murtin, Fernand R. C., 4,288,749, Cl. 324-464.000.
George Koch Sons, Inc.: *See—*
Koch, Robert L., II, 4,287,671, Cl. 34-23.000.
Georgeaux, Andre: *See—*
DeMarthe, Jean-Michel; Gandon, Louis; and Georgeaux, Andre, 4,288,304, Cl. 204-111.000.
Georgii, Hans C., to AB Hydro Betong. Process in the manufacture of space frameworks, and a machine for the manufacture thereof. 4,287,919, Cl. 140-112.000.
Geppert, John M. Solar collector. 4,287,880, Cl. 126-439.000.
Gerkey, Kenneth S.; and Castner, Raymond P., to Westinghouse Electric Corp. End effector position and identification system for steam generator servicing machine. 4,287,655, Cl. 29-407.000.
Gerry, Martin E. Inductive-capacitive cyclic charge-discharge ignition system. 4,288,723, Cl. 315-209.00R.
Gertisser, Berthold; and Henzi, Beat, to Sandoz Ltd. Basic phenoxazine dyestuffs. 4,288,227, Cl. 8-655.000.
Gestrelius, Stina M., to Novo Industri A/S. Immobilized intracellular enzymes. 4,288,552, Cl. 435-174.000.
Gewirtz, William. Illusion creating device. 4,288,072, Cl. 272-8.00N.
GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H.: *See—*
Hojas, Hans; Leutgob, Alois; and Gsottbauer, Johann, 4,287,738, Cl. 72-20.000.
Gibson, Robert J. Farrowing pen. 4,287,855, Cl. 119-20.000.
Gigl, Paul D.: *See—*
Bovenkerk, Harold P.; and Gigl, Paul D., 4,288,248, Cl. 75-226.000.
Gillette Company, The: *See—*
Farmer, Robert F., III; and Sokol, Phillip E., deceased, 4,288,427, Cl. 424-70.000.
Gillette, Stephen F., to General Electric Company. Thermal override for static trip circuit breakers. 4,288,770, Cl. 335-173.000.
Gingell, Michael J., to International Standard Electric Corporation. Analogue to digital converters. 4,288,873, Cl. 375-25.000.
Giuffre, Luigi; and Spaziante, Placido M., to Vertac, Inc. Reversible adducts of isocyanates with boron compounds. 4,288,382, Cl. 260-453.00A.
GKN Transmissions Limited: *See—*
Fisher, Leslie G.; and Waite, John S., 4,287,650, Cl. 29-148.40R.
Glacier Metal Company Limited, The: *See—*
Beazley, Rodney T.; and Haggett, Mervyn T., 4,288,030, Cl. 233-23.00R.
Gladu, Yves, to NL CHEM Canada Inc. Predispersed slurry of titanium dioxide. 4,288,254, Cl. 106-300.000.
Glaxo Group-Limited: *See—*
Judd, Duncan B.; Clitherow, John W.; Price, Barry J.; and Bradshaw, John, 4,288,443, Cl. 424-267.000.
Glickson, David A., to Marvin Glass & Associates. Pneumatic seesaw apparatus. 4,288,071, Cl. 272-1.00R.
GNS Gesellschaft fur Nuklear-Service mbH: *See—*
Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, 4,288,698, Cl. 250-506.000.
Gobl, Horst, to Linde AG. Thermally insulated vessel, especially for liquefied gases. 4,288,002, Cl. 220-438.000.
Godlewski, Irene T.; Schuck, Joseph J.; and Chisarik, Andrew S., to Betz Laboratories, Inc. Copolymers for the control of the formation and deposition of materials in aqueous mediums. 4,288,327, Cl. 210-698.000.
Goebels, Hermann-Josef: *See—*
Leiber, Heinz; Jonner, Wolf-Dieter; and Goebels, Hermann-Josef, 4,288,127, Cl. 303-111.000.
Goerz Electro Gesellschaft m.b.H.: *See—*
Hollmayer, Walter, 4,288,798, Cl. 346-139.00R.
Goettert, Edward J.; and Gutman, Gustav, to Minnesota Mining and Manufacturing Company. Photothermographic stabilizers. 4,288,536, Cl. 430-619.000.
Gogal, John F., to Bell Telephone Laboratories, Incorporated. Double cavity semiconductor chip carrier. 4,288,841, Cl. 361-414.000.
Gohringer, Willi; Hachtel, Friedrich; and Muller, Wolf E. Cigarette dispenser with a lighting arrangement. 4,288,004, Cl. 221-147.000.
Goins, James R.; and Cardin, Hubert H., to White Consolidated Industries, Inc. Oven door hinge. 4,287,873, Cl. 126-194.000.
Goldberg, Bruce S., to Amerace Corporation. Laminated microporous article. 4,288,503, Cl. 429-145.000.
Goldberger, W. M.: *See—*
Markel, Richard F.; and Goldberger, W. M., 4,288,407, Cl. 422-143.000.
Golynkina, Valentina B.: *See—*
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.
Gomez, Gonzalo P.: *See—*
Gonzalez, Ramon R.; and Gomez, Gonzalo P., 4,288,223, Cl. 440-71.000.
Gomez-Olea, Mariano. Magnet-electronic lock system. 4,287,733, Cl. 70-276.000.
Goncharov, Evgeny S.; Prilutsky, Anatoly N.; and Shevchuk, Viktor I. Directional-action mechanical vibrator and a mechanical system for converting rotary motion into reciprocating motion. 4,287,779, Cl. 74-26.000.
Gonzalez-Dorner, Alberto C.: *See—*
Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., 4,288,559, Cl. 521-55.000.
Gonzalez, Ramon R.; and Gomez, Gonzalo P., to Astilleros Espanoles, S.A. Tubular duct for a ship propeller. 4,288,223, Cl. 440-71.000.
Goodwin, Robert J.: *See—*
Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., 4,288,249, Cl. 106-18.350.
Goodyear Tire & Rubber Company, The: *See—*
Caravito, Vito A.; and Rye, Grover W., 4,287,927, Cl. 152-302.000.
Feeney, George W.; and Stevenson, William G., 4,288,567, Cl. 525-99.000.
McIntosh, Kenneth W.; and Colby, Edward B., Jr., 4,287,930, Cl. 152-357.00R.
Gorbunov, Oleg P.: *See—*
Redikultsev, Jury V.; Gorbunov, Oleg P.; and Lomakin, Alexandr M., 4,288,404, Cl. 422-107.000.
Goschel, Wilhelm, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method and apparatus for controlling a satellite. 4,288,051, Cl. 244-164.000.
Gould Inc.: *See—*
Prager, Jay M.; Sadlow, Joseph F.; and Nitzsche, John K., 4,288,839, Cl. 361-386.000.
Gozzo, Franco; Paolucci, Paride; and Longoni, Angelo, to Montedison S.p.A. N-Methyl-carbamates of 3,5-dimethyl-4-(N'-monosubstituted)-aminophenols exerting an insecticidal and acaricidal action. 4,288,611, Cl. 560-133.000.
Grad, John E.: *See—*
Grunert, Kurt A.; McKean, William J.; and Grad, John E., 4,288,669, Cl. 200-281.000.

Graham, Andrew C., to Mostek Corporation. Low-power battery backup circuit for semiconductor memory. 4,288,865, Cl. 365-229.000.
Graham, Donald E., to General Motors Corporation. Proportional and integral solenoid armature positioning control system. 4,288,730, Cl. 318-599.000.
Graham, William F., to Du Pont de Nemours, E. I., and Company. Epoxy imide compositions. 4,288,359, Cl. 260-32.8EP.
Grantham, Frederick W. Automatic moisture controller with stack sensor. 4,287,753, Cl. 73-29.000.
Grass, Joseph J.; Barrett, David M.; and Wendt, Randolph N., to General Electric Company. Cable handling device for diagnostic x-ray apparatus. 4,288,700, Cl. 250-523.000.
Gray, Gary M., to J. T. Baker Chemical Co. Method for the preparation of (E)-4-bromo-2-methylbut-2-en-1-al. 4,288,635, Cl. 568-483.000.
Gray, John C.: *See—*
Flanagan, Joseph E.; and Gray, John C., 4,288,262, Cl. 149-19.600.
Gray, Larry J.: *See—*
Widmer, Gerald L.; Gray, Larry J.; and Pardee, Richard H., 4,288,034, Cl. 239-168.000.
Grebe, John C., Jr.; and Freund, William R., Jr., to Emerson Electric Co. Magnetic flowmeter with ultrasonically cleaned electrodes. 4,287,774, Cl. 73-861.170.
Grebe, John C., Jr.: *See—*
Freund, William R., Jr.; and Grebe, John C., Jr., 4,287,773, Cl. 73-861.120.
Greding, Robert, to Dominion Engineering Works Limited. Paper reel synchronizing system. 4,288,044, Cl. 242-67.10R.
Green, Charles J.; and Forsythe, Alan K., to Sprague Devices, Inc. Control valve. 4,287,906, Cl. 137-118.000.
Green, Kieron P.: *See—*
Allen, Roger A.; Inglis, Bruce R.; and Green, Kieron P., 4,287,981, Cl. 198-457.000.
Grenell, David, to Allen-Stevens Corp. End fittings for flexible metallic conduits. 4,288,110, Cl. 285-174.000.
Griffin, Ernest E.: *See—*
Lowry, Joseph M.; and Griffin, Ernest E., 4,287,709, Cl. 56-16.900.
Griffin, William J. Cabinet-mounted bathroom-scale. 4,288,131, Cl. 312-245.000.
Griffith, Gary L.; Johnsen, Richard G.; and Sherman, Charles J., to Bell Telephone Laboratories, Incorporated. Printed wiring board interconnection apparatus. 4,288,140, Cl. 339-74.00R.
Grigorov, Sergei S.; and Nazyrov, Ravil N. Electrode for connecting to an internal organ of human body. 4,287,896, Cl. 128-786.000.
Grim, George B., to Caterpillar Tractor Co. Method and apparatus for preheating a rotatable fluidizable bed. 4,288,215, Cl. 432-103.000.
Grimaila, Algert G.: *See—*
Cisco, Terry C.; and Grimaila, Algert G., 4,288,291, Cl. 176-19.00R.
Groff, Edwin I.; and Groff, Edwin T. Method of making pretzels of selected spiral pitch. 4,288,463, Cl. 426-500.000.
Groff, Edwin T.: *See—*
Groff, Edwin I.; and Groff, Edwin T., 4,288,463, Cl. 426-500.000.
Groman, Ernest V.; and Sacco, Marian E., to Baxter Travenol Laboratories, Inc. Test method and composition therefor. 4,288,538, Cl. 435-7.000.
Gronchi, Paolo: *See—*
Codignola, Franco; Vergini, Giorgio; Gronchi, Paolo; and Centola, Paolo, 4,288,641, Cl. 568-855.000.
Gropper, George. Cleaning pad. 4,287,633, Cl. 15-209.00B.
Gross, Glenn, to Norlin Industries, Inc. Digital envelope modulator for digital waveform. 4,287,805, Cl. 84-1.260.
Grossman, Robert D. Adjustable container. 4,288,011, Cl. 224-42.420.
Grotjohann, Hermanus H.; and Reynders, John R., to U.S. Philips Corporation. Satellite communication system for speech and telegraphy. 4,288,868, Cl. 370-30.000.
Grove, William S., to PPG Industries, Inc. 2',5'-Dioxo-1'-pyrrolydinyl 5-(2-halo-4-trifluoromethylphenoxy)-2-halo-, cyano- or nitrobenzoates. 4,288,243, Cl. 71-95.000.
Grund, Christian: *See—*
Lemelson, Jerome H.; and Grund, Christian, 4,288,689, Cl. 235-435.000.
Gruner, Garrett: *See—*
Tompson, Clement R.; and Gruner, Garrett, 4,287,909, Cl. 137-312.000.
Grunert, Kurt A.; McKean, William J.; and Grad, John E., to Westinghouse Electric Corp. Electric control device. 4,288,669, Cl. 200-281.000.
Grunewald, Heinz L.; and Wellbrock, Jurgen, to Engelhardt & Forster. Bearing support for a washing machine drum. 4,287,730, Cl. 68-140.000.
Grzywinski, Gerald G.; and Foley, Edward J., to Scott Paper Company. Pressure sensitive adhesive composition and coated product. 4,288,480, Cl. 428-40.000.
Gsottbauer, Johann: *See—*
Hojas, Hans; Leutgob, Alois; and Gsottbauer, Johann, 4,287,738, Cl. 72-20.000.
GTE Laboratories Incorporated: *See—*
Kilichowski, Kurt B.; Cukor, Peter; and Brecher, Charles, 4,288,513, Cl. 430-28.000.
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Anderton, John J., 4,288,142, Cl. 339-176.00M.
Christini, James N.; Kim, Tai K.; and McClintic, Robert P., 4,288,216, Cl. 432-112.000.
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MacInnis, Martin B.; and Kim, Tai K., 4,288,413, Cl. 423-54.000.
Marlor, Richard C., 4,288,713, Cl. 313-117.000.
Gucwa, P. R.: *See—*
Sydansk, R. D.; and Gucwa, P. R., 4,287,951, Cl. 166-281.000.
Gudnason, Geir V.; and Stell, Joseph E., to Coca-Cola Company, The. Process for the purification of sugar syrups. 4,288,551, Cl. 435-168.000.
Guenther, Bernard. Base construction for grain bins and the like including moisture sealing means. 4,287,691, Cl. 52-97.000.
Guillemin, Claude; and Mayen, Christian, to Prolabo. Sample/standard injection head for fluid-phase chromatograph. 4,288,322, Cl. 210-198.200.
Gulf Oil Corporation: *See—*
Karim, Khalid A.; and Rea, James H., 4,288,572, Cl. 525-176.000.
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Gulf Research & Development Company: *See—*
Beach, David L.; and Kobylinski, Thaddeus P., 4,288,648, Cl. 585-523.000.
Gulf & Western Manufacturing Company: *See—*
Lankston, Robert J., 4,288,001, Cl. 220-316.000.
Gulton Industries, Inc.: *See—*
Mounteer, Carlyle A.; and Poteet, Ronald L., 4,287,772, Cl. 73-720.000.
Gump, William E. Mounting bracket. 4,288,055, Cl. 248-226.100.
Gupta, Bhupendra K.; Shefsiek, Paul K.; and Fraim, Freeman W., to Holcroft. Apparatus for control and monitoring of the carbon potential of an atmosphere in a heat-processing furnace. 4,288,062, Cl. 266-88.000.
Gurbin, Florian. Sluice gate. 4,288,059, Cl. 251-58.000.
Gurolnick, Richard C. Cartridge package. 4,288,197, Cl. 414-786.000.
Gurylev, Sergei M.: *See—*
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.
Gutekunst, Ferdinand: *See—*
Lohse, Friedrich; Gutekunst, Ferdinand; Schmid, Rolf; and Schmitter, Andre, 4,288,565, Cl. 521-135.000.
Guth, Eugene D.; Daly, LeGrand A.; and Arand, John K., to L. A. Daly Company. Apparatus for the diacritic cracking of hydrocarbon feeds for the selective production of ethylene and synthesis gas. 4,288,408, Cl. 422-193.000.
Guthart, Leo A., to Alarm Device Manufacturing Company. Area intrusion adjustable detector unit. 4,288,867, Cl. 367-93.000.
Gutman, Gustav: *See—*
Goettert, Edward J.; and Gutman, Gustav, 4,288,536, Cl. 430-619.000.
Haag, Charles W.: *See—*
Buchser, William J.; Tate, Ralph; and Haag, Charles W., 4,288,135, Cl. 312-296.000.
Haas, Georges; Rossi, Alberto; Jaeggi, Knut A.; and Sele, Alex, to Ciba-Geigy Corporation. Process for the preparation of novel benzopyrane derivatives. 4,288,450, Cl. 424-283.000.
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Hach, Clifford C., 4,288,308, Cl. 204-195.00R.
Hach, Clifford C., to Hach Chemical Company. Continuous pH meter. 4,288,308, Cl. 204-195.00R.
Hachtel, Friedrich: *See—*
Gohringer, Willi; Hachtel, Friedrich; and Muller, Wolf E., 4,288,004, Cl. 221-147.000.
Hack, Kurt: *See—*
Hartmannsgruber, Max; Nigg, Egon; and Hack, Kurt, 4,287,711, Cl. 57-130.000.
Hadgis, Gregory S. Key ring clip lock for pump handles. 4,287,736, Cl. 70-458.000.
Haga, Ryoichi: *See—*
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,288,550, Cl. 435-167.000.
Haga, Shozi; and Ootani, Hisao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic clutch release mechanism. 4,287,977, Cl. 192-91.00A.
Haga, Toshikatsu; Fukuda, Hiroyuki; Shinoda, Hiroshi; and Hayakawa, Hideharu, to Kureha Kagaku Kogyo Kabushiki Kaisha; and NGK Insulators, Ltd. Reinforced electrocast zirconia refractories. 4,288,251, Cl. 501-105.000.
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, to Robert Bosch GmbH. Alternator-rectifier construction where sheet metal diode support plates support a bearing. 4,288,711, Cl. 310-68.00D.
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, to Robert Bosch GmbH. Alternator structure for assembly with a mobile internal combustion engine, particularly for automotive use. 4,288,712, Cl. 310-91.000.
Haggard, Archie K., to Haggard I. D. Wiper, Inc. Tubular member interior wiper. 4,287,948, Cl. 166-170.000.
Haggard I. D. Wiper, Inc.: *See—*
Haggard, Archie K., 4,287,948, Cl. 166-170.000.
Haggett, Mervyn T.: *See—*
Beazley, Rodney T.; and Haggett, Mervyn T., 4,288,030, Cl. 233-23.00R.
Hagiwara, Hiroshi: *See—*
Kudo, Yoshihiko; and Hagiwara, Hiroshi, 4,288,421, Cl. 423-395.000.

Hagiwara, Tatsuo: *See—*
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.

Haines, Robert G., to Union Carbide Corporation. Method of controlling mollusc pest. 4,288,455, Cl. 424-327.000.

Hall, Bobby E., to Halliburton Company. Methods and compositions for treating subterranean formations. 4,288,332, Cl. 252-8.55C.

Halliburton Company: *See—*
Hall, Bobby E., 4,288,332, Cl. 252-8.55C.
Peelman, Harold E.; and Bridges, James R., 4,288,696, Cl. 250-502.000.

Hallman, Robert W., to B. F. Goodrich Company, The. Puncture-sealing tire. 4,287,928, Cl. 152-346.000.

Hamaekers, Arno: *See—*
Brenner, Heinz; and Hamaekers, Arno, 4,288,063, Cl. 267-8.00R.

Hamilton, Rex. Wheelchair-carried transfer stool. 4,288,124, Cl. 297-217.000.

Hamilton, W. Duane, to American Optical Corporation. Drive mechanism. 4,288,710, Cl. 310-49.00R.

Hammond, Dennis A., to Dustbane Enterprises Limited. Retaining means for mop head. 4,287,632, Cl. 15-150.000.

Handke, Gunther: *See—*
Eusemann, Robert; Handke, Gunther; and Koller, Manfred, 4,287,970, Cl. 188-269.000.

Hansen, Arne H., to Meyertech Incorporated. Fitting with biased locking device for coupling pipes. 4,288,114, Cl. 285-317.000.

Hansen, Finn; and Lodder, Bernhard, to Wavin B.V. Cage construction for use in breeding fur-bearing animals. 4,287,854, Cl. 119-17.000.

Hansen, Karl E.: *See—*
de Ruvo, Alfonso; Norman, Bo; Duffy, Geoffrey G.; Moller, Klaus; Hansen, Karl E.; Felsvang, Karsten S.; and Liborius, Erik, 4,288,317, Cl. 209-139.00A.

Hanson, Douglas R. Device for perforating bakery goods such as English muffins. 4,287,801, Cl. 83-871.000.

Hantschk, Gunther, to Netzsch-Mohnopumpen GmbH. Method and device for the manufacture of helical rotor blanks for helical gear machines. 4,287,743, Cl. 72-98.000.

Hantusch, Gerald H., to International Computers Limited. Circuit structures including integrated circuits. 4,288,808, Cl. 357-68.000.

Haque, Promod, to EMI Limited. Detector construction. 4,288,264, Cl. 156-67.000.

Hara, Hideo: *See—*
Umeda, Haruhiko; Takeuchi, Hidehiro; Uenoyama, Masaru; Ishizuki, Kotoshige; Ando, Hiroyuki; and Hara, Hideo, 4,288,091, Cl. 280-415.00A.

Hara, Yasutoshi: *See—*
Nishimatsu, Mineaki; Mukai, Sadayoshi; Hayashi, Yoshinori; Yamaguchi, Osamu; Ito, Akira; and Hara, Yasutoshi, 4,288,837, Cl. 361-315.000.

Hara, Yukio: *See—*
Kobayashi, Masatoshi; Shimakawa, George; Hara, Yukio; and Fujii, Hiroyuki, 4,288,284, Cl. 156-651.000.

Harada Yukihiro: *See—*
Ida, Shiuichiro; Ohshima, Shoichi; Hirashima, Syunichi; and Harada Yukihiro, 4,287,783, Cl. 74-467.000.

Hardin, Roy T., Jr.; and Kurinko, Carl D., to United States of America, Energy. Connecting apparatus for limited rotary of rectilinear motion (II). 4,288,292, Cl. 176-87.000.

Hareng, Michel; Le Berre, Serge; and Leclerc, Pierre, to Thomson-CSF. System for the analysis and the recording of monochromic images. 4,288,822, Cl. 358-296.000.

Harman, Maurice, to Energy Equipment Company Limited, The. Arrangements for feeding fluidizing gas to a fluidized bed combustion apparatus. 4,288,214, Cl. 432-58.000.

Harri, Eugen: *See—*
Traber, Rene P.; Hofmann, Hans; Harri, Eugen; and Max, Kuhn, 4,288,431, Cl. 424-177.000.

Harrison, William H. Brake assembly for skateboard. 4,288,088, Cl. 280-87.04A.

Harroun, Thomas V.; Heller, Lawrence G.; and Vogl, Norbert G., Jr., to International Business Machines Corporation. Serial-parallel-serial CCD memory system with fan out and fan in circuits. 4,288,864, Cl. 365-219.000.

Harstrom, Jan O.: *See—*
Stensson, Bo G.; Harstrom, Jan O.; and Csiba, Jan, 4,287,968, Cl. 188-74.000.

Hart, Thomas G., to Energy Development Associates, Inc. Method of forming hydrogen. 4,288,301, Cl. 204-101.000.

Hart, William F., to Dacam Corporation. Carrier applicator. 4,287,699, Cl. 53-48.000.

Hartenstein, Helmut: *See—*
Dankworth, Juergen; Hartenstein, Helmut; and Hertling, Ludwig, 4,288,340, Cl. 252-99.000.

Hartmann & Braun Aktiengesellschaft: *See—*
Fabinski, Walter; and Deptolla, Udo, 4,288,693, Cl. 250-345.000.
Staab, Joachim; Apel, Willy; and Wolf, Heinz, 4,287,764, Cl. 73-431.000.

Hartmann, Willy: *See—*
Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, 4,288,370, Cl. 260-343.600.

Hartmannsgruber, Max; Nigg, Egon; and Hack, Kurt, to Zinser Textilmaschinen GmbH, Firma. Mountable tube for a textile spindle. 4,287,711, Cl. 57-130.000.

Hartung, Helmut, to Düsseldorfer Lackgrosshandlung Otto Hartung GmbH. Method of producing a protective helmet. 4,288,268, Cl. 156-245.000.

Hashimoto, Hideo; and Kaneda, Tokuzo, to Ricoh Co., Ltd. Sheet feeding device. 4,288,068, Cl. 271-125.000.

Hashimoto, Shunichi: *See—*
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,288,244, Cl. 71-118.000.

Hass, Jurgen, to Daimler-Benz Aktiengeselischaft. Thermostatic control valve. 4,288,031, Cl. 236-34.500.

Hasuo, Masatoshi; and Tsuji, Jungo, to Sony Corporation. Magnetic card handling apparatus. 4,288,825, Cl. 360-88.000.

Hatano, Masashi: *See—*
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.

Hauck, Frederic P.: *See—*
Sundeen, Joseph E.; Dejneka, Tamara; and Hauck, Frederic P., 4,288,456, Cl. 424-330.000.

Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Dithioacylproline derivatives. 4,288,368, Cl. 260-326.350.

Hauni-Werke Korber & Co. KG: *See—*
Heitmann, Uwe; Lorenzen, Heinz-Christen; Wahle; Gunter; and Dahlgrun, Rolf, 4,287,754, Cl. 73-38.000.
Henle, Karl; and von Wichert, Nils, 4,287,703, Cl. 53-449.000.

Hawks, George H., III: *See—*
Myers, Drewfus Y., Jr.; and Hawks, George H., III, 4,288,511, Cl. 430-17.000.

Hayakawa, Hideharu: *See—*
Haga, Toshikatsu; Fukuda, Hiroyuki; Shinoda, Hiroshi; and Hayakawa, Hideharu, 4,288,251, Cl. 501-105.000.

Hayakawa, Shigeru: *See—*
Wasa, Kiyotaka; Tohda, Takao; Yokoyama, Kazuo; Hirota, Eiichi; and Hayakawa, Shigeru, 4,288,307, Cl. 204-192.00D.

Hayakawa, Yoshihiro; and Fukukita, Hiroshi, to Matsushita Electric Industrial Company, Limited. Beam deflection method and apparatus for sector scan ultrasound imaging systems. 4,287,768, Cl. 73-626.000.

Hayashi, Mitsuo: *See—*
Fujii, Tadashiro; Yaginuma, Satoshi; Muto, Naoki; and Hayashi, Mitsuo, 4,288,429, Cl. 424-117.000.

Hayashi, Moriyoshi: *See—*
Matsubara, Isamu; and Hayashi, Moriyoshi, 4,287,697, Cl. 52-403.000.

Hayashi, Yoshiaki: *See—*
Kinoshita, Harumi; Hayashi, Yoshiaki; and Saito, Tadao, 4,288,478, Cl. 428-35.000.

Hayashi, Yoshinori: *See—*
Nishimatsu, Mineaki; Mukai, Sadayoshi; Hayashi, Yoshinori; Yamaguchi, Osamu; Ito, Akira; and Hara, Yasutoshi, 4,288,837, Cl. 361-315.000.

Heckman, Russell W.; and Nickey, George A., to Owens-Illinois, Inc. Power preconditioning for electrostatic application. 4,288,466, Cl. 427-28.000.

Heckmann, Wolfgang: *See—*
Epper, Wolfgang; and Heckmann, Wolfgang, 4,288,029, Cl. 233-20.00A.

Heijs, Karel A. G.; Dechamps, Antonius J.; and de Jong, Robert L., to N.V. Papierfabriek Gennep. Method of and arrangement for de-inking fiber. 4,288,319, Cl. 209-166.000.

Heiman, John H. Machine for forming curved conduits. 4,287,742, Cl. 72-49.000.

Heimke, Gunther; Plester, Dietrich; and Jahnke, Klaus, to Friedrichsfeld GmbH. Auditory ossicle prosthesis. 4,287,616, Cl. 3-1.900.

Heindl, Christine: *See—*
Leibenzeder, Siegfried; and Heindl, Christine, 4,287,848, Cl. 118-401.000.

Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, to Bayer Aktiengesellschaft. Halogenovinyl-substituted tetra-hydrofuran-2-ones. 4,288,370, Cl. 260-343.600.

Heinen, Leo: *See—*
Elsner, Emil; and Heinen, Leo, 4,287,933, Cl. 164-452.000.

Heinrich Kopp GmbH & Co. KG., Firma: *See—*
Arnhold, Hans; and Flohr, Peter, 4,288,768, Cl. 335-18.000.

Heisterberg, Milton W., to GATX Tank Erection Corporation. Secondary seal for floating roof storage tank. 4,287,999, Cl. 220-222.000.

Heitmann, Uwe; Lorenzen, Heinz-Christen; Wahle, Gunter; and Dahlgrun, Rolf, to Hauni-Werke Korber & Co. KG. Apparatus for and method of multiple testing of wrappers of cigarettes or the like. 4,287,754, Cl. 73-38.000.

Hek, Dirk G.: *See—*
Van Der Vegte, Jan; and Hek, Dirk G., 4,288,838, Cl. 361-383.000.

Heller, Lawrence G.: *See—*
Harroun, Thomas V.; Heller, Lawrence G.; and Vogl, Norbert G., Jr., 4,288,864, Cl. 365-219.000.

Helliwell, Bradley A.: *See—*
McDonald, John C.; Baichtal, James R.; Helliwell, Bradley A.; Ling, Alexander C.; and Schaffter, Craig P., 4,288,870, Cl. 370-56.000.

Henderson, Richard E. Cover assembly for attic fans. 4,287,815, Cl. 98-43.00R.

Henig, Hans. Process and apparatus for drying pieces in bulk in a plating barrel. 4,287,672, Cl. 34-28.000.

Henk, Keith L., to Pako Corporation. Variable volume peristaltic pump. 4,288,205, Cl. 417-477.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Roland, Wolf-Achim; and Bechstedt, Wolfgang, 4,288,225, Cl. 8-137.000.
Wilsberg, Heinz-Manfred, 4,288,339, Cl. 252-90.000.

Henle, Karl; and von Wichert, Nils, to Hauni-Werke Korber & Co. KG. Method and apparatus for filling and sealing containers. 4,287,703, Cl. 53-449.000.

Hennessy, Michael J. Fecal examining device. 4,288,316, Cl. 209-17.000.

Henningson, Durham & Richardson, Inc.: *See—*
Baker, Leroy E.; and Butterfield, Barry L., 4,288,175, Cl. 405-117.000.

Henzi, Beat: *See—*
Gertisser, Berthold; and Henzi, Beat, 4,288,227, Cl. 8-655.000.

Herchenbach, Horst; Ramesohl, Hubert; and Fleischer, Joachim, to Klockner-Humboldt-Deutz AG. Method and apparatus for the heat treatment of fine-grained material. 4,288,213, Cl. 432-14.000.

Hercules Incorporated: *See—*
Richwine, John R., 4,288,576, Cl. 525-349.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Koch, Klaus, 4,288,405, Cl. 422-111.000.

Hernqvist, Karl G., to RCA Corporation. CRT With means for suppressing arcing therein. 4,288,719, Cl. 313-457.000.

Herriott, Leslie V. Combination lock mechanism. 4,287,734, Cl. 70-333.00A.

Hertling, Ludwig: *See—*
Dankworth, Juergen; Hartenstein, Helmut; and Hertling, Ludwig, 4,288,340, Cl. 252-99.000.

Hessari, Manouchahr F., to A.P.V. Company Limited, The. Plate heat exchanger. 4,287,945, Cl. 165-167.000.

Hesse, Heinz: *See—*
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,288,711, Cl. 310-68.00D.
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,288,712, Cl. 310-91.000.

Hetz, Heinz K., to Yarway Corporation. Steam trap including interchangeable body member and insert assembly. 4,288,032, Cl. 236-56.000.

Hewett, Charley L., to Kem-O-Kleen, Inc. Monoflow ball valve and system. 4,287,912, Cl. 137-516.270.

Hewlett-Packard Company: *See—*
Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., 4,288,282, Cl. 156-630.000.

Heymes, Rene, to Roussel Uclaf. Cephalosporanic acid derivatives. 4,288,434, Cl. 424-246.000.

Hibino, Yozo; Oizumi, Junichi; Nishida, Hideo; Nakano, Yoshiyuki; and Ohmachi, Hiroshi, to Hitachi, Ltd. Method of controlling multistage centrifugal compressor equipment. 4,288,198, Cl. 415-1.000.

Hicks, Alan A.: *See—*
Allen, Robert K.; Hicks, Alan A.; and Disko, Harry, 4,287,680, Cl. 46-1.00R.

Higashikawa, Katsunori: *See—*
Yoshida, Tetsu; and Higashikawa, Katsunori, 4,288,849, Cl. 364-102.000.

Higgins, Raymond: *See—*
Hutchings, Graham J.; and Higgins, Raymond, 4,288,372, Cl. 260-346.750.

Higuchi, Kouichi: *See—*
Konishikawa, Kaoru; Sasaki, Shunsuke; Higuchi, Kouichi; and Hirose, Fuminori, 4,288,840, Cl. 361-410.000.

Hill, Richard F.: *See—*
Weber, Willis W.; Hill, Richard F.; and Weeks, Thomas J., Jr., 4,288,410, Cl. 422-233.000.

Hill, Roy K., to Sperry Corporation. Mark sensing detector. 4,288,701, Cl. 250-569.000.

Hilti Aktiengesellschaft: *See—*
Gassman, Horst-Detlef; and Wohlwend, Ernst, 4,287,656, Cl. 29-432.000.

Himmetsberger, Alois: *See—*
Wittmann, Heinz; and Himmetsberger, Alois, 4,288,095, Cl. 280-625.000.

Hineborg, James R.; and Lopez, Efrain, to AMF Incorporated. Tire buffing blade. 4,287,648, Cl. 29-79.000.

Hinkel, Holger; and Kraus, Georg, to International Business Machines Corporation. Ion source having improved cathode. 4,288,716, Cl. 313-230.000.

Hinz, Claus-Dieter; and Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Oxygen respirator container for an oxygen releasing chemical cartridge. 4,287,887, Cl. 128-202.260.

Hirao, Motohisa: *See—*
Kajimura, Takashi; Hirao, Motohisa; Nakamura, Michiharu; Kuroda, Takao; Yamashita, Shigeo; and Umeda, Jun-Ichi, 4,288,757, Cl. 331-94.50H.

Hirashima, Syunichi: *See—*
Ida, Shiuichiro; Ohshima, Shoichi; Hirashima, Syunichi; and Harada Yukihiro, 4,287,783, Cl. 74-467.000.

Hiromae, Yoshitaka; Nakamura, Kazuo; Wada, Toshiya; and Katoh, Hirotada, to Nippon Steel Corporation. Insulating coating compositions applied on electrical steel sheets. 4,288,492, Cl. 428-336.000.

Hirose, Fuminori: *See—*
Konishikawa, Kaoru; Sasaki, Shunsuke; Higuchi, Kouichi; and Hirose, Fuminori, 4,288,840, Cl. 361-410.000.

Hirose, Yasunori, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with timbre selection. 4,287,804, Cl. 84-1.190.

Hirota, Eiichi: *See—*
Senno, Harufumi; Sakakima, Hiroshi; Yanagiuchi, Yukihiro; Inoue, Tsuneo; Yamaguchi, Masatsugu; and Hirota, Eiichi, 4,288,260, Cl. 148-121.000.
Wasa, Kiyotaka; Tohda, Takao; Yokoyama, Kazuo; Hirota, Eiichi; and Hayakawa, Shigeru, 4,288,307, Cl. 204-192.00D.

Hirschorn, Martin: *See—*
Ingard, Uno; Morgan, James A.; and Hirschorn, Martin, 4,287,962, Cl. 181-224.000.

Hisazumi, Nobuyuki; Yamamoto, Masataka; and Uehara, Tsutomu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Laminated packing material with a high gas-impermeablility and an advantageous workability. 4,288,488, Cl. 428-214.000.

Hitachi, Ltd.: *See—*
Hibino, Yozo; Oizumi, Junichi; Nishida, Hideo; Nakano, Yoshiyuki; and Ohmachi, Hiroshi, 4,288,198, Cl. 415-1.000.
Kajimura, Takashi; Hirao, Motohisa; Nakamura, Michiharu; Kuroda, Takao; Yamashita, Shigeo; and Umeda, Jun-Ichi, 4,288,757, Cl. 331-94.50H.
Kashioka, Seiji; Shima, Yoshihiro; Miyatake, Takafumi; Ejiri, Masakazu; and Obata, Osamu, 4,288,816, Cl. 358-138.000.
Ohhinata, Ichiro; Ohkoshi, Seiei; and Suzuki, Hideo, 4,288,862, Cl. 365-181.000.
Sakata, Shinji; Yokota, Hirakazu; Shimizu, Tasuku; and Otawara, Yasuhiko, 4,288,677, Cl. 219-121.0ED.
Umezaki, Hiroshi; Nishida, Hideki; Tsumita, Norikazu; Yamada, Hirozi; Kaneko, Katsuhiro; and Koiso, Nagatugu, 4,288,283, Cl. 156-643.000.

Hitachi Metals, Ltd.: *See—*
Yamashita, Keitaro; and Noguchi, Kohji, 4,288,515, Cl. 430-100.000.

Hitco: *See—*
Lewis, Kenneth W.; and Shaffer, Robert C., 4,288,568, Cl. 525-111.000.

Hodes, Gary: *See—*
Avigal, Yitzchak; Manassen, Joost; Hodes, Gary; and Cahen, David, 4,288,502, Cl. 429-111.000.

Hodkinson, Harold: *See—*
Parsons, David; and Hodkinson, Harold, 4,288,126, Cl. 303-6.00C.

Hoechst Aktiengesellschaft: *See—*
Bodenbenner, Kurt; Muller, Gerhard; and Perkow, Helmut, 4,288,211, Cl. 431-346.000.
Mitzlaff, Michael; Cramer, Jurgen; and Pistorius, Rudolf, 4,288,300, Cl. 204-59.00R.
Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Leupold, Ernst I., 4,288,558, Cl. 518-716.000.
Sprintschnik, Gerhard; and Uhlig, Fritz, 4,288,520, Cl. 430-169.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Martin, Lawrence L.; and Worm, Manfred, 4,288,623, Cl. 564-307.000.

Hoeh, Frederick W., deceased (by Hoeh, Inga, executrix), to Westinghouse Electric Corp. Method of making a convoluted tubular envelope for a compact electric discharge lamp. 4,288,239, Cl. 65-110.000.

Hoeh, Inga, executrix: *See—*
Hoeh, Frederick W., deceased, 4,288,239, Cl. 65-110.000.

Hoenisch, Walter H., to King-Seeley Thermos Co. Ice transport and dispensing system. 4,287,725, Cl. 62-344.000.

Hoffman-La Roche Inc.: *See—*
Kramer, Michael J.; and Tilley, Jefferson W., 4,288,454, Cl. 424-321.000.

Hoffman, Luther A.; and Schmidt, Friedrich W., to Sharpoint, Inc. Suture holder. 4,287,987, Cl. 206-63.300.

Hoffmann, Herwig: *See—*
Schuster, Ludwig; Raff, Paul; Hoffmann, Herwig; Schneider, Rolf; and Flickinger, Erich, 4,288,640, Cl. 568-855.000.

Hoffmann-La Roche Inc.: *See—*
Olson, Gary L., 4,288,614, Cl. 560-240.000.

Hoffmann, Rudiger; and Feichtiger, Dieter, to Daimler-Benz Aktiengesellschaft. Control valve for pneumatic conduits. 4,287,915, Cl. 137-625.500.

Hofler, Alois, to Lifehaus Corporation of Texas. Prefabricated building. 4,287,695, Cl. 52-241.000.

Hofman, Emiel A.: *See—*
Lemahieu, Raymond G.; Depoorter, Henri; and Hofman, Emiel A., 4,288,534, Cl. 430-522.000.

Hofmann, Hans: *See—*
Traber, Rene P.; Hofmann, Hans; Harri, Eugen; and Max, Kuhn, 4,288,431, Cl. 424-177.000.

Hojas, Hans; Leutgob, Alois; and Gsottbauer, Johann, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H. Method of controlling the continuous movement of stock being rolled in a rolling mill train. 4,287,738, Cl. 72-20.000.

Holcroft: *See—*
Gupta, Bhupendra K.; Shefsiek, Paul K.; and Fraim, Freeman W., 4,288,062, Cl. 266-88.000.

Holladay, Joseph W., to Jo-Pat, Incorporated. Embroidery thread organizer. 4,288,010, Cl. 223-106.000.

Holland, David: *See—*
Crosby, John; Holland, David; Laidler, Dale A.; and Milner, David J., 4,288,387, Cl. 260-465.00D.

Holland, Gerhard; and Nowak, Rudolf. Process for the selective production of a plurality of individual pure halides and/or halide mixtures from a mixture of solid oxides. 4,288,411, Cl. 423-1.000.

Holland, Steven W., to General Motors Corporation. Method and apparatus for automatically determining sheet metal strain. 4,288,852, Cl. 364-508.000.

Hollandsche Beton Groep N.V.: *See—*
Jansz, Joost W., 4,288,178, Cl. 405-228.000.
Holley, Danforth; and Holley, Danforth E., to Holly International Company. Portable solar heater structure. 4,287,878, Cl. 126-429.000.
Holley, Danforth E.: *See—*
Holley, Danforth; and Holley, Danforth E., 4,287,878, Cl. 126-429.000.
Hollmayer, Walter, to Goerz Electro Gesellschaft m.b.H. Stylus changing device. 4,288,798, Cl. 346-139.00R.
Holly International Company: *See—*
Holley, Danforth; and Holley, Danforth E., 4,287,878, Cl. 126-429.000.
Holmes, Robert E., to Tektronix, Inc. Passivated thin-film hybrid circuits. 4,288,776, Cl. 338-308.000.
Holy, Norman L.; and Nalesnik, Theodore E., to Western Kentucky University. Production of cyclic ethers. 4,288,369, Cl. 260-333.000.
Holz, Karl-Heinz, to G. Siempelkamp GmbH & Co. Method of and apparatus for applying veneer foils to a board. 4,288,274, Cl. 156-364.000.
Homma, Hiroshige: *See—*
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,288,438, Cl. 424-251.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,288,096, Cl. 280-694.000.
Honeywell Inc.: *See—*
Egli, Werner H.; Kuhlmann, Dennis; and Wier, Jack E., 4,287,809, Cl. 89-41.0EA.
Honeywell Information Systems Inc.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,288,850, Cl. 364-200.000.
Honnen, Lewis R.: *See—*
Lewis, Robert A.; and Honnen, Lewis R., 4,288,612, Cl. 560-159.000.
Hoogovens Ijmuiden, B.V.: *See—*
Bronsveld, Frederik A., 4,287,983, Cl. 198-817.000.
Hooker Chemicals & Plastics Corp.: *See—*
Fuller, Willard A., 4,288,286, Cl. 162-30.00R.
Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Detergent product containing deodorant compositions. 4,288,341, Cl. 252-107.000.
Hopfer, Samuel, to General Microwave Corporation. Microstrip coupler for microwave signals. 4,288,761, Cl. 333-116.000.
Hopfer, Samuel, to General Microwave Corporation. Analog phase shifter. 4,288,763. Cl. 333-164.000.
Horeth, Dietmar: *See—*
Mayr, Ulrich; Horeth, Dietmar; and Kusmierz, Hans, 4,288,168, Cl. 400-322.000.
Hori, Kiyoharu, to Rion Co., Ltd. Electropalatograph. 4,287,895, Cl. 128-777.000.
Horie, Hideo: *See—*
Kanisawa, Hideo; Kitahata, Tamio; and Horie, Hideo, 4,288,535, Cl. 430-569.000.
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, to Ricoh Co., Ltd. Variable-charge type ink-jet printer. 4,288,797, Cl. 346-75.000.
Horino, Takeshi: *See—*
Kiyama, Yosito; Tachibana, Shinichi; Yamashita, Riichiro; and Horino, Takeshi, 4,288,688, Cl. 235-384.000.
Horn, James M.; Johnston, Byron E.; Napier, Roger P.; and Williams, Thomas N., to Mobil Oil Corporation. Process for the preparation of dialkyl phosphoric acids. 4,288,392, Cl. 260-983.000.
Hornung, Ewald. Screwing heads. 4,287,923, Cl. 81-429.000.
Horstmann, Harald: *See—*
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,288,446, Cl. 424-273.00P.
Horton, James A., to Jersey Nuclear-Avco Isotopes, Inc. Laser pulse shaping. 4,288,691, Cl. 250-281.000.
Hotta, Masashi, to Shimano Industrial Company, Limited. Heat insulating box. 4,287,943, Cl. 165-104.190.
Hou, Kenneth C.; and Ostreicher, Eugene A., to AMF Incorporated. Method for removing cationic contaminants from beverages. 4,288,462, Cl. 426-423.000.
Houdek, Mark R.: *See—*
Gallagher, Bernard J.; Wennerstrom, Erling G.; and Houdek, Mark R., 4,288,103, Cl. 285-39.000.
Houdeshell, Donald D. Three speed fluid flow control valve. 4,287,911, Cl. 137-513.700.
Hourticolon, Roland: *See—*
Meyer, Rudolf; Koepke, Gunther; and Hourticolon, Roland, 4,288,469, Cl. 427-57.000.
House, Richard F., to Container Corporation of America. Syringe sheath guide. 4,287,988, Cl. 206-365.000.
Houston, James E., to Evaporator Technology Corporation. Apparatus for forming a vortex. 4,288,285, Cl. 159-1.00C.
Howell, Edward K., to General Electric Company. Ambient temperature responsive trip device for static trip circuit breakers. 4,288,769, Cl. 335-173.000.
Howell, Edward K., to General Electric Company. Lightning arrestor. 4,288,833, Cl. 361-124.000.
Howes, David R., executor: *See—*
Ledig, Kurt W., deceased; and Howes, David R., executor, 4,288,595, Cl. 544-250.000.
Hoya Corporation: *See—*
Yamashita, Toshiharu, 4,288,250, Cl. 501-78.000.
Hsieh, John T. T., to Arco Polymers, Inc. High efficiency catalyst for high bulk density polyethylene. 4,288,578, Cl. 526-119.000.
Huang, John S.: *See—*
Baker, Edward G.; and Huang, John S., 4,287,950, Cl. 166-273.000.
Huber, Manfred: *See—*
Erhardt, Manfred; Fendt, Werner; and Huber, Manfred, 4,287,659, Cl. 29-568.000.
Hubner, Armin: *See—*
Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, 4,288,370, Cl. 260-343.600.
Huchette, Michel: *See—*
Devos, Francis; and Huchette, Michel, 4,288,619, Cl. 562-554.000.
Huebner, David J.; and Weyenberg, Donald R., to Dow Corning Corporation. Polysiloxane emulsion elastomers reinforced with emulsified organo-silicone copolymers. 4,288,356, Cl. 260-29.6NR.
Huinink, Heinrich, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire. 4,287,929, Cl. 152-354.00R.
Hulbert, Clarence E., Jr.: *See—*
Rasmussen, Hans W., 4,288,423, Cl. 423-510.000.
Hunt, Robert T. Throttle setting device. 4,287,785, Cl. 74-488.000.
Hunter, James B.; and McGuire, George, to Johnson Matthey Inc. Catalyst for catalytic heat exchange. 4,288,346, Cl. 252-437.000.
Hurter, Rudolf, to Ciba-Geigy Corporation. Novel azo dyes having 2-amino-5-aminomethyl-7-sulfo naphthalene coupling moiety. 4,288,363, Cl. 260-155.000.
Hussar, John F.: *See—*
Zestermann, Mary J.; and Hussar, John F., 4,288,361, Cl. 260-45.8NZ.
Hutchings, Graham J.; and Higgins, Raymond, to Imperial Chemical Industries Limited. Production of maleic anhydride. 4,288,372, Cl. 260-346.750.
Hutson Corporation, The: *See—*
Fewel, Kenneth J., 4,288,165, Cl. 366-124.000.
Hutton, Stanley P., to Ferraris Development and Engineering Company Limited. Fluid flow measuring apparatus. 4,287,775, Cl. 73-861.790.
Hydra-Mac, Inc.: *See—*
Steiger, Bruce W., 4,287,961, Cl. 180-68.00R.
Hydril Company: *See—*
Krause, William F.; and Turner, Edwin C., 4,287,954, Cl. 166-322.000.
ICI Australia Limited: *See—*
Keith, Donald G.; and Flecknoe-Brown, Anthony, 4,288,401, Cl. 264-550.000.
Ida, Shiuichiro; Ohshima, Shoichi; Hirashima, Syunichi; and Harada Yukihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Mechanism for lubricating bearings of a counter shift gear for a gear transmission. 4,287,783, Cl. 74-467.000.
Ideal Toy Corporation: *See—*
Albert, Judith; and Davis, Robert E., 4,287,681, Cl. 46-44.000.
Igarashi, Isao: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,287,859, Cl. 123-51.0BA.
Igarashi, Kihachiro: *See—*
Ito, Hayami; Nagai, Chiaki; Nakabayashi, Yasuyuki; Igarashi, Kihachiro; Mouri, Kunihiko; and Ikeda, Takashi, 4,288,420, Cl. 423-239.000.
Igel, Anders N. E., to U.S. Philips Corporation. Method and a device for eliminating fixed error disturbances in a pyroelectric vidicon. 4,288,817, Cl. 358-163.000.
Iglesias, Gilberto. Anti-backflow valve for a faucet. 4,287,905, Cl. 137-102.000.
Iijima, Akio: *See—*
Uzawa, Shunichi; Matsumoto, Shigeyuki; Miyazaki, Minoru; Iijima, Akio; and Watanabe, Kunio, 4,288,799, Cl. 346-140.00R.
Iizumi, Tomomitsu, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Control valve. 4,287,812, Cl. 91-420.000.
Ikawa, Kazuo, to Canon Kabushiki Kaisha. Electronic flash device. 4,288,722, Cl. 315-151.000.
Ikeda, Kazuhiro: *See—*
Yoshida, Ikio; Kage, Kouzou; Ikeda, Kazuhiro; and Sato, Yasuo, 4,288,751, Cl. 328-173.000.
Ikeda, Takashi: *See—*
Ito, Hayami; Nagai, Chiaki; Nakabayashi, Yasuyuki; Igarashi, Kihachiro; Mouri, Kunihiko; and Ikeda, Takashi, 4,288,420, Cl. 423-239.000.
Ikenaka, Yoshiharu: *See—*
Sakaguchi, Ryo; and Ikenaka, Yoshiharu, 4,288,181, Cl. 408-15.000.
Ikuta, Yasuhiro; and Matsuo, Masashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engine. 4,287,866, Cl. 123-568.000.
Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., to Bayer Aktiengesellschaft. Flame resistant foam. 4,288,559, Cl. 521-55.000.
Illy, Hugo: *See—*
Kirchmayr, Rudolf; Fussenegger, Werner; and Illy, Hugo, 4,288,560, Cl. 521-90.000.
IMA - Industria Macchine Automatiche S.p.A.: *See—*
Romagnoli, Andrea, 4,288,224, Cl. 493-345.000.
Imada, Takahiko: *See—*
Saima, Tooru; Ohya, Isao; Imada, Takahiko; Sato, Hideo; and Katsuma, Shinichi, 4,288,290, Cl. 176-19.00R.
Imai, Keiji: *See—*
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.

Imai, Takashi: *See—*
Yamanaka, Tohr; and Imai, Takashi, 4,288,642, Cl. 568-903.000.
Imamura, Akio; and Katada, Naota, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument of time division multiplexed type. 4,287,802, Cl. 84-1.010.
Imoto, Tadasi: *See—*
Norota, Susumu; Kiriyama, Tsutomu; and Imoto, Tadasi, 4,288,484, Cl. 428-113.000.
Imperial Chemical Industries Limited: *See—*
Crosby, John; Holland, David; Laidler, Dale A.; and Milner, David J., 4,288,387, Cl. 260-465.00D.
Hutchings, Graham J.; and Higgins, Raymond, 4,288,372, Cl. 260-346.750.
Roberts, Norman L.; and Whittaker, Graham, 4,288,600, Cl. 546-345.000.
Snowden, Paul; and Steel, Margaret L., 4,288,397, Cl. 264-8.000.
Thorpe, David, 4,288,563, Cl. 521-122.000.
Inada, Kiyotaka: *See—*
Sakamoto, Yoshiyasu; Tamura, Yoichi; Kawaguchi, Kiyohiko; and Inada, Kiyotaka, 4,288,162, Cl. 356-335.000.
Inazaki, Norihisa: *See—*
Kawabata, Shigeo; and Inazaki, Norihisa, 4,288,747, Cl. 324-207.000.
Inco Limited: *See—*
Garritsen, Petrus G. S.; MacVicar, Douglas J.; Young, Daniel P.; and Sojda, John G., 4,288,305, Cl. 204-112.000.
Industrial Acoustics Company: *See—*
Ingard, Uno; Morgan, James A.; and Hirschorn, Martin, 4,287,962, Cl. 181-224.000.
Industrie Pirelli S.p.A.: *See—*
Pacciarini, Antonio; and Bertoldo, Giorgio, 4,288,265, Cl. 156-126.000.
Ingard, Uno; Morgan, James A.; and Hirschorn, Martin, to Industrial Acoustics Company. Packless silencer. 4,287,962, Cl. 181-224.000.
Ingle, Arthur J.: *See—*
Blacker, Allen P.; and Ingle, Arthur J., 4,288,718, Cl. 313-414.000.
Ingle, James E., to Kerr-McGee Corporation. Mining apparatus having an improved coupling assembly. 4,288,125, Cl. 299-30.000.
Inglis, Bruce R.: *See—*
Allen, Roger A.; Inglis, Bruce R.; and Green, Kieron P., 4,287,981, Cl. 198-457.000.
Inman, Hubert W., to Raybestos-Manhattan, Inc. Composite mold for making rubber covered rolls and method for making same. 4,288,058, Cl. 249-134.000.
Inman, Richard. Self propelled pallet truck. 4,287,959, Cl. 180-12.000.
Inoue, Haruo: *See—*
Sano, Takezo; Inoue, Haruo; and Furuta, Akihiro, 4,288,529, Cl. 430-308.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,288,675, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Cutting area responsive EDM method and apparatus with cyclically interrupted pulse trains. 4,288,675, Cl. 219-69.00M.
Inoue, Tsuneo: *See—*
Senno, Harufumi; Sakakima, Hiroshi; Yanagiuchi, Yukihiro; Inoue, Tsuneo; Yamaguchi, Masatsugu; and Hirota, Eiichi, 4,288,260, Cl. 148-121.000.
Institut Francais du Petrole: *See—*
Cessou, Maurice, 4,287,903, Cl. 137-13.000.
Institute of Nuclear Energy Research: *See—*
Chang, Sir-Sea; Chern, Sheng-Laang; Ting, Gann; and Kuo, Tsai-Shu, 4,288,412, Cl. 423-10.000.
Institute of Technical Sciences of the Serbian Academy of Sciences and Art: *See—*
Jovanovic, Budimir B.; Despic, Aleksandar R.; and Drazic, Dragutin M., 4,288,500, Cl. 428-650.000.
Instrument Development Corp.: *See—*
Dugot, Richard, 4,287,771, Cl. 73-647.000.
Interlake, Inc.: *See—*
Marsden, Brian W. H., 4,288,295, Cl. 202-150.000.
Mossell, Alan T.; Simmons, James R.; and Middleton, Charles G., 4,288,270, Cl. 156-359.000.
Intermountain Research & Develop. Corp.: *See—*
Copenhafer, William C.; and Rauh, Francis, 4,288,419, Cl. 423-190.000.
International Business Machines Corporation: *See—*
Harroun, Thomas V.; Heller, Lawrence G.; and Vogl, Norbert G., Jr., 4,288,864, Cl. 365-219.000.
Hinkel, Holger; and Kraus, Georg, 4,288,716, Cl. 313-230.000.
Kolodzey, James S.; Noel, Francis E., Jr.; and Stilwell, George R., Jr., 4,288,869, Cl. 370-31.000.
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., 4,288,256, Cl. 148-1.500.
Stoffel, Axel, 4,287,661, Cl. 29-571.000.
Vinal, Albert W., 4,288,708, Cl. 307-309.000.
International Computers Limited: *See—*
Hantusch, Gerald H., 4,288,808, Cl. 357-68.000.
International Harvester Company: *See—*
Chatterjea, Probir K.; and Shore, Daniel B., 4,287,813, Cl. 91-434.000.
Oban, Harold C.; and Peterson, Charles M., 4,288,086, Cl. 280-5.00A.
International Nickel Company, Inc., The: *See—*
Shaw, Stuart W., 4,288,247, Cl. 75-171.000.
International Packings Corporation: *See—*
Braconier, Karl, 4,288,083, Cl. 277-134.000.
International Paper Company: *See—*
Fries, Carl, Jr., 4,288,003, Cl. 221-1.000.
International Standard Electric Corporation: *See—*
Fischer, Bruno; and Vollath, Rainer, 4,288,512, Cl. 430-24.000.
Gingell, Michael J., 4,288,873, Cl. 375-25.000.
International Telephone and Telegraph Corporation: *See—*
Swanson, Arthur F., 4,288,657, Cl. 174-87.000.
Interox Chemicals Limited: *See—*
McCrudden, Joseph E.; and Smith, Alan, 4,288,388, Cl. 260-502.00R.
Inventing S.A.: *See—*
Wallsten, Hans I., 4,288,473, Cl. 427-209.000.
Inventio AG: *See—*
Zeindler, Stephan; and Suss, Hans G., 4,288,859, Cl. 364-900.000.
Iowa State University Research Foundation, Inc.: *See—*
Larock, Richard C., 4,288,613. Cl. 560-231.000.
IRMAC S.p.A.: *See—*
Del Barba, Bruno, 4,287,726, Cl. 66-24.000.
Iron Removal Specialists, Inc.: *See—*
Montgomery, John R., 4,288,328, Cl. 210-713.000.
Ishibashi, Kazuhisa, to Toyo Seikan Kaisha, Ltd. High frequency induction heating apparatus. 4,288,673, Cl. 219-10.690.
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, to Agency of Industrial Science and Technology, The. Treating process of garbage contained wastes. 4,288,550, Cl. 435-167.000.
Ishida, Tokuji, to Minolta Camera Kabushiki Kaisha. Diaphragm control device for cameras. 4,288,150, Cl. 354-23.00D.
Ishigaki, Isao: *See—*
Machi, Sueo; Ishigaki, Isao; and Sugo, Takanobu, 4,288,467, Cl. 427-44.000.
Ishihara Sangyo Kaisha Ltd.: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,288,599, Cl. 546-345.000.
Ishii, Masaji: *See—*
Tanji, Hiroaki; Saito, Mitsuaki; and Ishii, Masaji, 4,288,717, Cl. 313-336.000.
Ishii, Shohju: *See—*
Koshimaru, Hajime; and Ishii, Shohju, 4,287,747, Cl. 72-358.000.
Ishii, Yohio: *See—*
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,288,634, Cl. 568-454.000.
Ishikawa, Katsukiyo: *See—*
Arimatsu, Seiji; Ishikawa, Katsukiyo; Umeda, Yasusi; and Nagata, Koichi, 4,288,517, Cl. 430-110.000.
Ishikawa, Takashi: *See—*
Minamibayashi, Seisaku; Ishikawa, Takashi; and Ogawa, Takashi, 4,288,820, Cl. 358-280.000.
Ishizuki, Kotoshige: *See—*
Umeda, Haruhiko; Takeuchi, Hidehiro; Uenoyama, Masaru; Ishizuki, Kotoshige; Ando, Hiroyuki; and Hara, Hideo, 4,288,091, Cl. 280-415.00A.
Islas, John J., to Victor United, Inc. Compound bow. 4,287,867, Cl. 124-24.00R.
Isomura, Yasuo: *See—*
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,288,438, Cl. 424-251.000.
Ito, Akira: *See—*
Nishimatsu, Mineaki; Mukai, Sadayoshi; Hayashi, Yoshinori; Yamaguchi, Osamu; Ito, Akira; and Hara, Yasutoshi, 4,288,837, Cl. 361-315.000.
Ito, Fumio: *See—*
Sakurada, Nobuaki; Shinoda, Nobuhiko; Mashimo, Yukio; Ito, Tadashi; and Ito, Fumio, 4,288,154, Cl. 354-23.00D.
Ito, Hayami; Nagai, Chiaki; Nakabayashi, Yasuyuki; Igarashi, Kihachiro; Mouri, Kunihiko; and Ikeda, Takashi, to Electric Power Development Co. Ltd.; and Kawasaki Jukogyo Kabushiki Kaisha. Removal of nitrogen oxides and sulfur oxides by ammonia. 4,288,420, Cl. 423-239.000.
Ito, Kunio: *See—*
Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, 4,288,521, Cl. 430-169.000.
Ito, Noriki: *See—*
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,288,438, Cl. 424-251.000.
Ito, Tadashi: *See—*
Sakurada, Nobuaki; Shinoda, Nobuhiko; Mashimo, Yukio; Ito, Tadashi; and Ito, Fumio, 4,288,154, Cl. 354-23.00D.
ITT Industries, Inc.: *See—*
Adam, Fritz G., 4,288,863, Cl. 365-182.000.
Iwasaki, Kyuhachiro: *See—*
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,288,797, Cl. 346-75.000.
Iwatsu Electric Co., Ltd.: *See—*
Kato, Takefumi; and Abe, Haruo, 4,288,720, Cl. 315-13.0ST.
IXL Manufacturing Co., Inc.: *See—*
Keathley, Bob N., 4,287,640, Cl. 16-110.00R.
J. H. Fenner & Co. Limited: *See—*
Watts, Gilbert E., 4,288,474, Cl. 427-290.000.
J. I. Case Company: *See—*
Benson, Samuel L., 4,288,190, Cl. 411-511.000.
J. M. Huber Corporation: *See—*
Wagner, Joseph E., III; and Williams, Lloyd E., 4,288,342, Cl. 252-140.000.
J. T. Baker Chemical Co.: *See—*
Gray, Gary M., 4,288,635, Cl. 568-483.000.

Jaccard, Andre R.; and Voss, Karl H. Meat tenderizing apparatus. 4,287,642, Cl. 17-25.000.
Jacobs, Paul G. Wet and dry vacuum cleaner. 4,287,635, Cl. 15-321.000.
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Haas, Georges; Rossi, Alberto; Jaeggi, Knut A.; and Sele, Alex, 4,288,450, Cl. 424-283.000.
Jahnke, Klaus: *See*—
Heimke, Gunther; Plester, Dietrich; and Jahnke, Klaus, 4,287,616, Cl. 3-1.900.
Jamerson, Jackie D.: *See*—
Bilig, Ernst; Jamerson, Jackie D.; and Pruett, Roy L., 4,288,380, Cl. 260-429.00R.
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Ozaki, Yoshiaki, 4,287,843, Cl. 112-277.000.
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Schuster, Hans-Dieter; Jans, Karl; and Ohlendorf, Rolf, 4,287,716, Cl. 60-276.000.
Janssen, Antonius J.: *See*—
Enzlin, Theodoor H.; and Janssen, Antonius J., 4,288,807, Cl. 357-46.000.
Janssens, Wilhelmus: *See*—
Carael, Frans; Claeys, Daniel A.; and Janssens, Wilhelmus, 4,288,522, Cl. 430-213.000.
Jansz, Joost W., to Hollandsche Beton Groep N.V. Apparatus for generating a retropulsive force on a body such as a pile. 4,288,178, Cl. 405-228.000.
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Machi, Sueo; Ishigaki, Isao; and Sugo, Takanobu, 4,288,467, Cl. 427-44.000.
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Jensen, Per, to Solberg, Rino. Apparatus for grinding plane, annular surfaces, especially on faying rings in gate valves. 4,287,688, Cl. 51-241.0VS.
Jersey Nuclear-Avco Isotopes, Inc.: *See*—
Horton, James A., 4,288,691, Cl. 250-281.000.
Jinnai, Koichiro: *See*—
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,288,797, Cl. 346-75.000.
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Jipping, Max J.: *See*—
Roorda, Herm J.; and Jipping, Max J., 4,288,245, Cl. 75-0.50R.
Jo-Pat, Incorporated: *See*—
Holladay, Joseph W., 4,288,010, Cl. 223-106.000.
Joh. A. Benckiser GmbH: *See*—
Dankworth, Juergen; Hartenstein, Helmut; and Hertling, Ludwig, 4,288,340, Cl. 252-99.000.
John Wyeth & Brother Limited: *See*—
Crossley, Roger, 4,288,439, Cl. 424-263.000.
Johnsen, Richard G.: *See*—
Griffith, Gary L.; Johnsen, Richard G.; and Sherman, Charles J., 4,288,140, Cl. 339-74.00R.
Johnson, Alfred L., Jr.; and Peckham, Victor A., to LaJet Energy Company. Curved reflector with adjustable focal length. 4,288,146, Cl. 350-295.000.
Johnson, Bruce K., to Polaroid Corporation. Automatic strobe camera. 4,288,153, Cl. 354-27.000.
Johnson, Clarence. Force transducer. 4,287,776, Cl. 73-862.520.
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Johnson, Glenn W., Jr. Self-sealing valve. 4,287,920, Cl. 141-85.000.
Johnson, John. Indoor barbeque cooking device. 4,287,870, Cl. 126-25.00C.
Johnson, Matthey & Co., Limited: *See*—
Enga, Bernard E., 4,287,856, Cl. 122-4.00D.
Johnson Matthey Inc.: *See*—
Hunter, James B.; and McGuire, George, 4,288,346, Cl. 252-437.000.
Johnson, Ralph E.; and Biscaro, Reno P., to Cominco Ltd. Cathode and edge stick assembly. 4,288,312, Cl. 204-281.000.
Johnston, Byron E.: *See*—
Horn, James M.; Johnston, Byron E.; Napier, Roger P.; and Williams, Thomas N., 4,288,392, Cl. 260-983.000.
Jones, Barry E.: *See*—
Leonard, Ian C. A.; and Jones, Barry E., 4,287,808, Cl. 87-44.000.
Jones, Brenton E.: *See*—
Reusser, Robert E.; and Jones, Brenton E., 4,288,496, Cl. 428-447.000.
Jonner, Wolf-Dieter: *See*—
Leiber, Heinz; Jonner, Wolf-Dieter; and Goebels, Hermann-Josef, 4,288,127, Cl. 303-111.000.
Jorgensen, Knud D., to Etablissement Dentaire Ivoclar. Method of producing uniform synthetic resin coatings on working casts for dental applications. 4,288,472, Cl. 427-133.000.
Joshi, Ashok V.; and Sholette, William P., to Ray-O-Vac Corporation. High energy density solid state cell. 4,288,505, Cl. 429-191.000.
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Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., 4,288,358, Cl. 260-31.80M.
Jubinville, Roland C. Spray gun. 4,288,036, Cl. 239-345.000.
Judd, Duncan B.; Clitherow, John W.; Price, Barry J.; and Bradshaw, John, to Glaxo Group Limited. Substituted furan compounds and pharmaceutical compositions containing them. 4,288,443, Cl. 424-267.000.
Jugl, Herbert F.: *See*—
Leonard, Murray; and Jugl, Herbert F., 4,288,210, Cl. 431-263.000.
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Julian, Victor J.; and Julian, Kenneth A., 4,288,504, Cl. 429-179.000.
Julian, Victor J.; and Julian, Kenneth A. Sealed battery cable termination. 4,288,504, Cl. 429-179.000.
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Schwartze, Hansjurgen, 4,288,107, Cl. 285-137.00R.
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Oldfield, Thomas A.; Smith, Edward D.; and Furukawa, Hideo, 4,287,717, Cl. 60-606.000.
Umeda, Haruhiko; Takeuchi, Hidehiro; Uenoyama, Masaru; Ishizuki, Kotoshige; Ando, Hiroyuki; and Hara, Hideo, 4,288,091, Cl. 280-415.00A.
Kabushiki Kaisha Meiji Gomu Kasei: *See*—
Aoki, Hisashi, 4,287,836, Cl. 108-51.100.
Kabushiki Kaisha Suwa Seikosha: *See*—
Kobayashi, Masatoshi; Shimakawa, George; Hara, Yukio; and Fujii, Hiroyuki, 4,288,284, Cl. 156-651.000.
Kage, Kouzou: *See*—
Yoshida, Ikio; Kage, Kouzou; Ikeda, Kazuhiro; and Sato, Yasuo, 4,288,751, Cl. 328-173.000.
Kagome, Ltd.: *See*—
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,287,821, Cl. 99-646.00C.
Kahling, Joachim: *See*—
Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; and Kahling, Joachim, 4,288,437, Cl. 424-246.000.
Kainz, Norbert. Apparatus for conveying tennis balls to a ball-throwing machine. 4,288,074, Cl. 273-29.00A.
Kajimura, Takashi; Hirao, Motohisa; Nakamura, Michiharu; Kuroda, Takao; Yamashita, Shigeo; and Umeda, Jun-Ichi, to Hitachi, Ltd. Semiconductor laser device. 4,288,757, Cl. 331-94.50H.
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. N,N-Dialkylamino diphenylamines and the use thereof in compositions for dyeing keratinic fibers. 4,288,622, Cl. 564-194.000.
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Miki, Tosaku; Eriguchi, Akashi; Abiko, Yasushi; and Kameda, Kinya, 4,288,441, Cl. 424-266.000.
Kameyama, Tsutomu, to Taisho Pharmaceutical Co., Ltd. Furoindoles. 4,288,596, Cl. 546-198.000.
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Nakai, Yoshiharu, to Fujisawa Pharmaceutical Co., Ltd. 3,7-Disubstituted-3-cephem-4-carboxylic acid compounds and pharmaceutical antibacterial compositions containing them. 4,288,435, Cl. 424-246.000.
Kanazawa, Hiroyuki; and Futagami, Mikio, to Sumitomo Chemical Co. Ltd.; and Nippon Sheet Glass. Coating composition and method for the improvement of surface hardness of article by the use thereof. 4,288,357, Cl. 260-31.20N.
Kanda, Kaoru, to Sigma Corporation. Appliance for adhering a sensing marker on a medium for recording information. 4,288,281, Cl. 156-540.000.
Kaneda, Tokuzo: *See*—
Hashimoto, Hideo; and Kaneda, Tokuzo, 4,288,068, Cl. 271-125.000.
Kaneko, Katsuhiro: *See*—
Umezaki, Hiroshi; Nishida, Hideki; Tsumita, Norikazu; Yamada, Hirozi; Kaneko, Katsuhiro; and Koiso, Nagatugu, 4,288,283, Cl. 156-643.000.
Kaneko, Katsumi: *See*—
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,288,634, Cl. 568-454.000.
Kanisawa, Hideo; Kitahata, Tamio; and Horie, Hideo, to Konishiroku Photo Industry Co., Ltd. Process for preparing silver halide photographic emulsions. 4,288,535, Cl. 430-569.000.
Kanner, Gary L.: *See*—
Bilanceri, Silvio G.; Kanner, Gary L.; and Uffer, Michael B., 4,288,733, Cl. 320-2.000.
Kanzaka, Yoshihiro, to Yoshida Kogyo, K.K. Automatically locking slider for slide fastener. 4,287,646, Cl. 24-205.14R.
Kappus, Helmut: *See*—
Rodermund, Gerd; and Kappus, Helmut, 4,287,647, Cl. 28-147.000.
Karim, Khalid A.; and Rea, James H., to Gulf Oil Corporation. Blends of ethylene-alkyl acrylate copolymers with certain polyesters. 4,288,572, Cl. 525-176.000.

Karim, Khalid A.; and Rea, James H., to Gulf Oil Corporation. Blends of low density ethylene polymers with certain polyesters. 4,288,573, Cl. 525-177.000.
Karkhanis, Yashwant D.; and Carlo, Dennis J., to Merck & Co., Inc. Antigenic complex from *N. gonorrhoeae*. 4,288,557, Cl. 435-272.000.
Karnofsky, George B.; and Slovski, John, to Dravo Corporation. Process for rectification of miscella from extraction of oleaginous seeds. 4,288,297, Cl. 203-81.000.
Karube, Isao: *See*—
Suzuki, Shuichi; and Karube, Isao, 4,288,544, Cl. 435-39.000.
Kasai, Tadao: *See*—
Yamamoto, Ryuji; Nakahara, Fukumori; and Kasai, Tadao, 4,288,823, Cl. 360-73.000.
Kashioka, Seiji; Shima, Yoshihiro; Miyatake, Takafumi; Ejiri, Masakazu; and Obata, Osamu, to Hitachi, Ltd. Compressed image producing system. 4,288,816, Cl. 358-138.000.
Kashiwagi, Masatoshi: *See*—
Tanaka, Mutsuhiro; and Kashiwagi, Masatoshi, 4,288,497, Cl. 428-447.000.
Kashiwagi, Takashi, to Process Shizai Co., Ltd. Recording material. 4,288,509, Cl. 430-5.000.
Kastner, Ralph E.: *See*—
Boeck, LaVerne D.; and Kastner, Ralph E., 4,288,549, Cl. 435-119.000.
Katada, Naota: *See*—
Imamura, Akio; and Katada, Naota, 4,287,802, Cl. 84-1.010.
Katagiri, Masayoshi; and Ogura, Osamu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Brake booster. 4,287,811, Cl. 91-369.00A.
Katakura, Masayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrically variable impedance circuit. 4,288,707, Cl. 307-264.000.
Kato, Hidetoshi: *See*—
Niimi, Masayoshi; Torii, Koshi; and Kato, Hidetoshi, 4,288,728, Cl. 318-139.000.
Kato, Taizo. Tool holder or spindle. 4,288,183, Cl. 408-142.000.
Kato, Takefumi; and Abe, Haruo, to Iwatsu Electric Co., Ltd. Method of erasing information in a scan converter storage tube. 4,288,720, Cl. 315-13.0ST.
Kato, Yoji: *See*—
Noguchi, Masaaki; Tanaka, Taro; and Kato, Yoji, 4,287,862, Cl. 123-310.000.
Katoh, Hirotada: *See*—
Hiromae, Yoshitaka; Nakamura, Kazuo; Wada, Toshiya; and Katoh, Hirotada, 4,288,492, Cl. 428-336.000.
Katou, Hisao; and Sakata, Yoshiya. Electrode type steam vaporizer. 4,288,684, Cl. 219-295.000.
Katsuma, Shinichi: *See*—
Saima, Tooru; Ohya, Isao; Imada, Takahiko; Sato, Hideo; and Katsuma, Shinichi, 4,288,290, Cl. 176-19.00R.
Kattenbroek, Hendrik J.; and Plug, Jan, to Moba Holding Barneveld. Apparatus for consecutively discharging objects from containers. 4,287,982, Cl. 198-706.000.
Kaugars, Eugene; and Ossola, George A., to Brunswick Corporation. Ultra light weight golf club shaft. 4,288,075, Cl. 273-80.00B.
Kawabata, Shigeo; and Inazaki, Norihisa, to Nippon Kokan Kabushiki Kaisha. Self-scanning apparatus having improved measuring range for measuring contour of a metallic body. 4,288,747, Cl. 324-207.000.
Kawada, Tousuke: *See*—
Asai, Koichi; and Kawada, Tousuke, 4,287,668, Cl. 29-838.000.
Kawaguchi, Kiyohiko: *See*—
Sakamoto, Yoshiyasu; Tamura, Yoichi; Kawaguchi, Kiyohiko; and Inada, Kiyotaka, 4,288,162, Cl. 356-335.000.
Kawamura, Kazumi: *See*—
Yamada, Shigeyasu; Kawamura, Kazumi; and Nakamura, Shuji, 4,288,714, Cl. 313-142.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo; Takada, Toshiyuki; and Misawa, Kichiji, 4,287,860, Cl. 123-73.0PP.
Ito, Hayami; Nagai, Chiaki; Nakabayashi, Yasuyuki; Igarashi, Kihachiro; Mouri, Kunihiko; and Ikeda, Takashi, 4,288,420, Cl. 423-239.000.
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.
Kawate, Kenji: *See*—
Sekiwa, Seiichiro; Kawate, Kenji; and Jinnouchi, Hidenobu, 4,288,258, Cl. 148-13.000.
Yoshimoto, Hiromu; Okumura, Michitoshi; and Kawate, Kenji, 4,288,261, Cl. 148-131.000.
Kaye, Alan S., to United Kingdom Atomic Energy Authority. CO_2 Laser. 4,288,756, Cl. 331-94.50G.
Kaye, Robert M.; Eiloo, Gary A.; and Tucker, Thomas. Method for testing metal detectors. 4,288,748, Cl. 324-326.000.
Keathley, Bob N., to IXL Manufacturing Co., Inc. Tool handle and method of making same. 4,287,640, Cl. 16-110.00R.
Keefer, Bowie G. Rotary shaft driven reverse osmosis method and apparatus. 4,288,326, Cl. 210-637.000.
Keiper Dynavit GmbH & Co.: *See*—
Lautenschlager, Peter; and Teichmann, Michael, 4,287,894, Cl. 128-687.000.
Keith, Donald G.; and Flecknoe-Brown, Anthony, to ICI Australia Limited. Thermoplastic forming process. 4,288,401, Cl. 264-550.000.
Kellersohn, Rudolf: *See*—
Konrad, Klaus-Dieter; Kellersohn, Rudolf; Steck, Hans; and Schaub, Josef, 4,288,266, Cl. 156-158.000.
Kem-O-Kleen, Inc.: *See*—
Hewett, Charley L., 4,287,912, Cl. 137-516.270.
Kemeny, George A.; and Cookson, Alan H., to Westinghouse Electric Corp. Corrugated outer sheath gas-insulated transmission line. 4,288,652, Cl. 174-21.00C.
Kepco, Inc.: *See*—
Nercessian, Sarkis, 4,288,739, Cl. 323-275.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Fedders, Heinrich; and Beckers, Willi, 4,288,409, Cl. 422-219.000.
Kerr-McGee Corporation: *See*—
Ingle, James E., 4,288,125, Cl. 299-30.000.
Kertz, Charles A., to Kertz, Susanna A. Steering wheel attachment. 4,287,621, Cl. 5-440.000.
Kertz, Susanna A.: *See*—
Kertz, Charles A., 4,287,621, Cl. 5-440.000.
Kettenes, Dirk K.: *See*—
Nieuwland, Kees N.; and Kettenes, Dirk K., 4,288,350, Cl. 252-522.00R.
Khanna, Pyare L.: *See*—
Singh, Prithipal; Khanna, Pyare L.; and Colvin, Floyd W., 4,288,553, Cl. 435-188.000.
Khlamenko, Albert S.: *See*—
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.
Khodyrev, Vladimir I.: *See*—
Selivanov, Anatoly G.; Yakovlev, Grigory P.; Khodyrev, Vladimir I.; and Zhivetin, Valery V., 4,287,674, Cl. 34-201.000.
Kieferle, Wolfgang; and Waschle, Franz. Process for forming a metal or alloy layer and device for executing same. 4,288,306, Cl. 204-192.00R.
Kielbania, Andrew J., Jr., to Rohm and Haas Company. Polymers adherent to polyolefins. 4,288,499, Cl. 428-518.000.
Kihlberg, Yngve R.: *See*—
Lagerquist, Sven G. R.; and Kihlberg, Yngve R., 4,287,938, Cl. 165-3.000.
Kikuchi, Hideo; Takaoka, Haruyoshi; and Baba, Shigenori, to Fujitsu Limited. Complementary metal-oxide semiconductor. 4,288,804, Cl. 357-42.000.
Kikuchi, Toshiaki: *See*—
Fujita, Toshihito; Kikuchi, Toshiaki; and Nakazawa, Koji, 4,287,799, Cl. 83-347.000.
Kilichowski, Kurt B.; Cukor, Peter; and Brecher, Charles, to GTE Laboratories Incorporated. Photoresist of polyvinyl alcohol and ferric dichromate. 4,288,513, Cl. 430-28.000.
Kim, Kyoung S.: *See*—
Johnson, Francis; and Kim, Kyoung S., 4,288,608, Cl. 560-53.000.
Kim, Tai K.: *See*—
Christini, James N.; Kim, Tai K.; and McClintic, Robert P., 4,288,216, Cl. 432-112.000.
Christini, James N.; Kim, Tai K.; and McClintic, Robert P., 4,288,217, Cl. 432-112.000.
MacInnis, Martin B.; and Kim, Tai K., 4,288,413, Cl. 423-54.000.
Kimura, Yoshio: *See*—
Misumi, Atsushi; and Kimura, Yoshio, 4,287,969, Cl. 188-134.000.
Kindell, Jerry L.; and Flynn, Richard T., to Honeywell Information Systems Inc. Apparatus for identification and removal of a sign signal character superimposed. 4,288,850, Cl. 364-200.000.
King-Seeley Thermos Co.: *See*—
Hoenisch, Walter H., 4,287,725, Cl. 62-344.000.
Kinoshita, Harumi; Hayashi, Yoshiaki; and Saito, Tadao, to Yoshino Kogyosho Co., Ltd. Parison and method for forming parisons for biaxial orientation blow molding. 4,288,478, Cl. 428-35.000.
Kirchmayr, Rudolf; Fussenegger, Werner; and Illy, Hugo, to Ciba-Geigy Corporation. Process for foaming plastics. 4,288,560, Cl. 521-90.000.
Kirincich, Joseph G.: *See*—
Cilderman, Janis J.; and Kirincich, Joseph G., 4,287,651, Cl. 29-159.00R.
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. N-Benzylhaloacetamide derivatives, and their production and use. 4,288,244, Cl. 71-118.000.
Kiriyama, Tsutomu: *See*—
Norota, Susumu; Kiriyama, Tsutomu; and Imoto, Tadasi, 4,288,484, Cl. 428-113.000.
Kirstine, Dale J.: *See*—
Clover, William M., Jr., 4,288,006, Cl. 222-42.000.
Kishimoto, Juji: *See*—
Sado, Ichiro; Kishimoto, Juji; and Murata, Hiroshi, 4,288,792, Cl. 340-756.000.
Kiss, Zoltan: *See*—
Bucsky, Gyorgy; Kiss, Zoltan; and Tatrai, Lajos, 4,287,757, Cl. 73-61.400.
Kitahata, Tamio: *See*—
Kanisawa, Hideo; Kitahata, Tamio; and Horie, Hideo, 4,288,535, Cl. 430-569.000.
Kiyama, Yosito; Tachibana, Shinichi; Yamashita, Riichiro; and Horino, Takeshi, to Mitsubishi Jukogyo Kabushiki Kaisha; and Matsushita Tsushin Kogyo Kabushiki Kaisha. Toll road terminal machine. 4,288,688, Cl. 235-384.000.

Klausbruckner, Gert; and Sieber, Konrad, to Steinbock GmbH. Arrangement for forming and handling collective loads. 4,288,193, Cl. 414-342.000.

Kleebaur, Karl: *See—*
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,288,711, Cl. 310-68.00D.
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,288,712, Cl. 310-91.000.

Klees, Garry, to Boeing Company, The. Supersonic jet engine and method of operating the same. 4,287,715, Cl. 60-204.000.

Klein, Gary S., to Voplex Corporation. Intermittent adhesive applicator. 4,287,846, Cl. 118-212.000.

Klein, Herbert H., to Unarco Industries, Inc. Wedgable storage rack. 4,287,994, Cl. 211-191.000.

Klein, Schanzlin & Becker AG: *See—*
Viertler, Albin, 4,288,204, Cl. 417-243.000.

Klepsch, Kristian, to Klepsch Kunst GmbH & Co. KG Galerie. Process and mould for the manufacture of multi-walled hollow bodies, especially of glass. 4,288,238, Cl. 65-23.000.

Klepsch Kunst GmbH & Co. KG Galerie: *See—*
Klepsch, Kristian, 4,288,238, Cl. 65-23.000.

Klie, Wolfgang: *See—*
Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, 4,288,025, Cl. 228-173.00F.

Kling, Jane A. Doll with removable organs. 4,288,222, Cl. 434-272.000.

Klockner-Humboldt-Deutz AG: *See—*
Epper, Wolfgang; and Heckmann, Wolfgang, 4,288,029, Cl. 233-20.00A.
Herchenbach, Horst; Ramesohl, Hubert; and Fleischer, Joachim, 4,288,213, Cl. 432-14.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Zenker, Walter, 4,287,781, Cl. 74-375.000.

Klotz, Al. Artificial minnow bait with swinging keel weight. 4,287,679, Cl. 43-42.090.

Knaack, Howard L.; and Weger, Kenneth F., Jr., to Knaack Manufacturing Company. Storage cabinet. 4,288,134, Cl. 312-290.000.

Knaack Manufacturing Company: *See—*
Knaack, Howard L.; and Weger, Kenneth F., Jr., 4,288,134, Cl. 312-290.000.

Knecht Filterwerke GmbH: *See—*
Frey, Gunter, 4,287,917, Cl. 138-30.000.

Knetzger, Robert C., to Mattel, Inc. Electronic game. 4,288,537, Cl. 434-169.000.

Knight, Allan R.; and Mathur, Indresh. Membrane support assembly for electrolytic cell and method of making same. 4,288,310, Cl. 204-252.000.

Knowles, Albert: *See—*
Rines, Robert H.; and Knowles, Albert, 4,287,852, Cl. 119-3.000.

Kobayashi, Masatoshi; Shimakawa, George; Hara, Yukio; and Fujii, Hiroyuki, to Matsushima Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Method of producing housing element for quartz crystal oscillator. 4,288,284, Cl. 156-651.000.

Kobayashi, Takehiro: *See—*
Morimoto, Yoshinori; and Kobayashi, Takehiro, 4,288,046, Cl. 242-84.21R.

Kobylinski, Thaddeus P.: *See—*
Beach, David L.; and Kobylinski, Thaddeus P., 4,288,648, Cl. 585-523.000.

Koch, Gene C., to Timex Corporation. Electro-optical composition of the guest-host type. 4,288,147, Cl. 350-349.000.

Koch, Klaus, to Hermann Berstorff Maschinenbau GmbH. Coal hydrogenation apparatus having means for monitoring and controlling hydrogenation pressure. 4,288,405, Cl. 422-111.000.

Koch, Robert L., II, to George Koch Sons, Inc. Method of curing coated articles. 4,287,671, Cl. 34-23.000.

Kodaka, Takayuki: *See—*
Yoshida, Takashi; Matsuyama, Takeshi; Kuki, Tamaki; and Kodaka, Takayuki, 4,288,800, Cl. 357-22.000.

Kodama, Yutaka: *See—*
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,288,797, Cl. 346-75.000.

Koepke, Gunther: *See—*
Meyer, Rudolf; Koepke, Gunther; and Hourticolon, Roland, 4,288,469, Cl. 427-57.000.

Kohler, Henry A., to Truly Magic Products, Inc. Roller construction for paper feeding. 4,287,649, Cl. 29-130.000.

Kohn, Gustave K.; and Baer, Ted A., to Zoecon Corporation. Substituted 2,2-dimethylcyclopropaneamides. 4,288,621, Cl. 564-190.000.

Koiso, Nagatugu: *See—*
Umezaki, Hiroshi; Nishida, Hideki; Tsumita, Norikazu; Yamada, Hirozi; Kaneko, Katsuhiro; and Koiso, Nagatugu, 4,288,283, Cl. 156-643.000.

Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, to Konishiroku Photo Industry Co., Ltd. Process for the production of photosensitive plates for printing. 4,288,521, Cl. 430-169.000.

Kokubo, Eiichi; and Sugai, Takatoshi, to Laurel Bank Machine Co., Ltd. Coin discharge machine. 4,287,900, Cl. 133-4.00A.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Nakai, Taiichiro; Furusawa, Kahei; Nunokawa, Makoto; and Ejiri, Yoshihiro, 4,288,144, Cl. 350-96.230.

Koller, Manfred: *See—*
Eusemann, Robert; Handke, Gunther; and Koller, Manfred, 4,287,970, Cl. 188-269.000.

Kollonitsch, Janos; and Marburg, Stephen, to Merck & Co., Inc. Fluorination process. 4,288,601, Cl. 548-344.000.

Kolodzey, James S.; Noel, Francis E., Jr.; and Stilwell, George R., Jr., to International Business Machines Corp. Half-duplex/simplex digital signal converter. 4,288,869, Cl. 370-31.000.

Komamiya, Kogaku; and Suzuki, Hajime. Checking paper for sheet combustion type oxygen concentration measuring instrument. 4,288,403, Cl. 422-83.000.

Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: *See—*
Veigel, Helmut, 4,288,184, Cl. 408-185.000.

Konesky, Leo L. Hair comb. 4,287,898, Cl. 132-11.00R.

Konishikawa, Kaoru; Sasaki, Shunsuke; Higuchi, Kouichi; and Hirose, Fuminori, to Matsushita Electric Industrial Co., Ltd. Printed circuit board. 4,288,840, Cl. 361-410.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kanisawa, Hideo; Kitahata, Tamio; and Horie, Hideo, 4,288,535, Cl. 430-569.000.
Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, 4,288,521, Cl. 430-169.000.
Okamoto, Syuzi; and Mukai, Naoto, 4,287,984, Cl. 198-847.000.

Konrad, Klaus-Dieter; Kellersohn, Rudolf; Steck, Hans; and Schaub, Josef, to Ruhrchemie Aktiengesellschaft. Method for heated tool butt welding of tube and pipe of thermoplastic materials. 4,288,266, Cl. 156-158.000.

Kopetskaya, Diana L.: *See—*
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

Korf-Stahl AG: *See—*
Elsner, Emil; and Heinen, Leo, 4,287,933, Cl. 164-452.000.

Koshimaru, Hajime; and Ishii, Shohju, to Nissan Motor Co., Ltd. Process of closed extrusion shaping of a metal rod material and an apparatus therefor. 4,287,747, Cl. 72-358.000.

Kostylev, Anatoly A.: *See—*
Ljublinsky, Efim Y.; Smirnov, Viktor A.; and Kostylev, Anatoly A., 4,287,936, Cl. 164-329.000.

Kottek, Dagmar: *See—*
Bier, Gerhard; Kottek, Dagmar; Petersen, Egon N.; Richtzenhain, Hermann; and Vollkommer, Norbert, 4,288,607, Cl. 560-11.000.

Kotthaus, Erich; and Spiess, Hans J., to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Clamping apparatus for clamping cutter blades of a gear cutting machine at a grinding machine. 4,287,686, Cl. 51-225.000.

Kottke, Joachim, to Andreas Stihl. Mount for a holding structure of a free-cutting device. 4,288,171, Cl. 403-218.000.

Koulbanis, Constantin; Bouillon, Claude; and Darmenton, Patrick, to L'Oreal. Cosmetic compositions having a slimming action. 4,288,433, Cl. 424-232.000.

Kramer, Michael J.; and Tilley, Jefferson W., to Hoffman-La Roche Inc. Antiviral 1-adamantyl-3-(phenylsulfonyl)thioureas. 4,288,454, Cl. 424-321.000.

Kramer, Morton: *See—*
Craft, Donald I.; and Kramer, Morton, 4,288,561, Cl. 521-90.000.

Kramer, Stanley: *See—*
Ciliberto, Paul; and Kramer, Stanley, 4,288,460, Cl. 426-96.000.

Kramer, Stephen D.: *See—*
Swainson, Wyn K.; and Kramer, Stephen D., 4,288,861, Cl. 365-127.000.

Kraus, Georg: *See—*
Hinkel, Holger; and Kraus, Georg, 4,288,716, Cl. 313-230.000.

Krause, William F.; and Turner, Edwin C., to Hydril Company. Subsurface safety valve. 4,287,954, Cl. 166-322.000.

Kreft, Wolfgang, to Volkswagenwerk Aktiengesellschaft. Accelerometer and evaluation circuit. 4,287,765, Cl. 73-517.00R.

Kreissig, Ernst; and Steinmann, Friedrich, to Schweizerische Lokomotive-und Maschinenfabrik. Transversely torsionally interconnected railway vehicle trucks. 4,287,832, Cl. 105-176.000.

Krejci, Wayne, to Coin Acceptors, Inc. Clutch assembly for vending control system. 4,287,974, Cl. 192-56.00R.

Kresta, Jiri; and Shen, Chen S., to Dow Chemical Co., The. Initiators for isocyanate reactions. 4,288,562, Cl. 521-121.000.

Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Ultrasonic section surface examination equipment. 4,287,767, Cl. 73-625.000.

Kretztechnik Gesellschaft m.b.H.: *See—*
Kretz, Carl, 4,287,767, Cl. 73-625.000.

Kreuder, Hans J.: *See—*
Rottmaier, Ludwig; Merten, Rudolf; Dhein, Rolf; and Kreuder, Hans J., 4,288,569, Cl. 525-113.000.

Krishan, Baldev, to Anderson Jacobson, Inc. Interface circuitry for acoustic coupler compensation. 4,288,661, Cl. 179-2.00C.

Krob, Erwin; and Svoboda, Josef, to TMC Corporation. Sole-support mechanism for the sole of a ski boot. 4,288,093, Cl. 280-605.000.

Kropp, James E., to Minnesota Mining and Manufacturing Company. Water-activatable crosslinked adhesive and energy control film made therewith. 4,288,493, Cl. 428-350.000.

Kruger, Heinrich; and Tack, Hans, to Fried. Krupp GmbH. Cutting tool bit. 4,288,179, Cl. 407-114.000.

Kruger, James B., to Bangor Punta Corporation. Handcuffs. 4,287,731, Cl. 70-16.000.

Kubach, Elizabeth V.: *See—*
Kubach, John S.; and Kubach, Elizabeth V., 4,287,794, Cl. 81-3.310.

Kubach, John S.; and Kubach, Elizabeth V. Container opening tool. 4,287,794, Cl. 81-3.310.

Kubicek, Donald H., to Phillips Petroleum Company. Oxidation of thiols employing cobalt molybdate/triethylamine catalyst. 4,288,627, Cl. 568-26.000.

Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, to Yamanouchi Pharmaceutical Co., Ltd. Nitrogen-containing heterocyclic ring derivatives and analgesic and anti-inflammatory compositions and methods employing them. 4,288,438, Cl. 424-251.000.

Kubo, Shinji; and Yamada, Norio, to Chibayaku Groceries, Incorporated. Method and equipment to measure fat content of meat. 4,287,760, Cl. 73-149.000.

Kubodera, Seiiti: *See—*
Seoka, Yoshio; Aoki, Kozo; Yokota, Yukio; and Kubodera, Seiiti, 4,288,532, Cl. 430-385.000.

Kuchuk-Yatsenko, Sergei I.; Chernenko, Ivan A.; Bogorsky, Mikhail V.; Kulesh, Alexandr I.; Cherednichok, Vitaly T.; and Tishura, Vladimir I. Method of continuous flash butt welding and hydraulic drive of continuous flash butt-welding machine for realization of this method. 4,288,676, Cl. 219-100.000.

Kudernatsch, Gunter: *See—*
Fried, Reinhard; and Kudernatsch, Gunter, 4,288,203, Cl. 417-64.000.

Kudo, Yoshihiko; and Hagiwara, Hiroshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process of treating exhaust gas containing nitrogen oxides and sulfur dioxide. 4,288,421, Cl. 423-395.000.

Kugel, Christoph: *See—*
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,288,711, Cl. 310-68.00D.
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,288,712, Cl. 310-91.000.

Kuhlmann, Dennis: *See—*
Egli, Werner H.; Kuhlmann, Dennis; and Wier, Jack E., 4,287,809, Cl. 89-41.0EA.

Kuhner, Albert: *See—*
Brackmann, Warren A.; and Kuhner, Albert, 4,287,897, Cl. 131-303.000.

Kuki, Tamaki: *See—*
Yoshida, Takashi; Matsuyama, Takeshi; Kuki, Tamaki; and Kodaka, Takayuki, 4,288,800, Cl. 357-22.000.

Kulesh, Alexandr I.: *See—*
Kuchuk-Yatsenko, Sergei I.; Chernenko, Ivan A.; Bogorsky, Mikhail V.; Kulesh, Alexandr I.; Cherednichok, Vitaly T.; and Tishura, Vladimir I., 4,288,676, Cl. 219-100.000.

Kulhanek, James A., to Towmotor Corporation. Apparatus for moving a member. 4,287,787, Cl. 74-493.000.

Kumar, Arun, to Rockwell International Corporation. Method of increasing the fatigue life of titanium alloy parts. 4,287,740, Cl. 72-40.000.

Kuniyoshi, Yasunobu: *See—*
Okada, Takashi; and Kuniyoshi, Yasunobu, 4,288,754, Cl. 330-260.000.

Kuntner, Richard J.; and Vander Meer, James C., to Eaton Corporation. Protection system for electric motors. 4,288,828, Cl. 361-31.000.

Kunz, Johann: *See—*
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,288,711, Cl. 310-68.00D.

Kuo, Tsai-Shu: *See—*
Chang, Sir-Sea; Chern, Sheng-Laang; Ting, Gann; and Kuo, Tsai-Shu, 4,288,412, Cl. 423-10.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Haga, Toshikatsu; Fukuda, Hiroyuki; Shinoda, Hiroshi; and Hayakawa, Hideharu, 4,288,251, Cl. 501-105.000.
Hisazumi, Nobuyuki; Yamamoto, Masataka; and Uehara, Tsutomu, 4,288,488, Cl. 428-214.000.
Kudo, Yoshihiko; and Hagiwara, Hiroshi, 4,288,421, Cl. 423-395.000.
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Himromitsu; and Suzuki, Kinzaburo, 4,288,555, Cl. 435-254.000.

Kurick, James F., to Libbey-Owens-Ford Company. Glass sheet shipping packages. 4,287,990, Cl. 206-448.000.

Kurinko, Carl D.: *See—*
Hardin, Roy T., Jr.; and Kurinko, Carl D., 4,288,292, Cl. 176-87.000.

Kuroda, Nobuyuki: *See—*
Miyoshi, Mitsuji; Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Matsuno, Mitsuo, 4,288,579, Cl. 526-124.000.

Kuroda, Takao: *See—*
Kajimura, Takashi; Hirao, Motohisa; Nakamura, Michiharu; Kuroda, Takao; Yamashita, Shigeo; and Umeda, Jun-Ichi, 4,288,757, Cl. 331-94.50H.

Kurt Manufacturing Company, Inc.: *See—*
Lenz, John O., 4,288,185, Cl. 409-121.000.

Kusama, You: *See—*
Miyama, Masao; and Kusama, You, 4,288,287, Cl. 162-135.000.

Kushner, Gregory A.; and Martinic, Jack, to Bendix Corporation, The. Valve assembly having a predetermined shear line. 4,287,904, Cl. 137-68.00R.

Kusmierz, Hans: *See—*
Mayr, Ulrich; Horeth, Dietmar; and Kusmierz, Hans, 4,288,168, Cl. 400-322.000.

Kusters, Eduard. Belt arrangement and press equipped therewith for the continuous manufacture of wood chipboard and similar materials. 4,288,208, Cl. 425-371.000.

Kusumi, Takenori; and Nakanishi, Koji, to Suntory Limited. Therapeutic compositions containing 4-nitroisoxazole. 4,288,445, Cl. 424-272.000.

Kusunoki, Katsuo: *See—*
Kutsuwada, Noboru; Saito, Minoru; Namiki, Ryoichi; and Kusunoki, Katsuo, 4,288,514, Cl. 430-54.000.

Kutsuwada, Noboru; Saito, Minoru; Namiki, Ryoichi; and Kusunoki, Katsuo, to Canon Kabushiki Kaisha. Method for controlling image formation in electrophotography by pre-exposure step. 4,288,514, Cl. 430-54.000.

Kuwakado, Satosi: *See—*
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; Shimogawa, Toshiaki; and Chiba, Seiichi, 4,288,098, Cl. 280-806.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Suzuki, Shuichi; and Karube, Isao, 4,288,544, Cl. 435-39.000.

Kyrias, George M. Cost-effective solar heating system. 4,287,883, Cl. 126-445.000.

L. A. Daly Company: *See—*
Guth, Eugene D.; Daly, LeGrand A.; and Arand, John K., 4,288,408, Cl. 422-193.000.

L. & C. Steinmuller GmbH: *See—*
Becker, Jorgen, 4,287,944, Cl. 165-158.000.

Laboratorios Made, S.A.: *See—*
Brana, Miguel F.; Lopez Rodriguez, Maria L.; Castellano Berlanga, Jose M.; Soto Camara, Jose L.; and Martinez Roldan, Cristobal, 4,288,597, Cl. 546-265.000.

Lagerquist, Sven G. R.; and Kihlberg, Yngve R. Method for exchanging heat and a device for carrying out said method. 4,287,938, Cl. 165-3.000.

Laggan, James J.: *See—*
Rogers, Wesley A.; and Laggan, James J., 4,288,788, Cl. 340-378.200.

Laidler, Dale A.: *See—*
Crosby, John; Holland, David; Laidler, Dale A.; and Milner, David J., 4,288,387, Cl. 260-465.00D.

LaJet Energy Company: *See—*
Johnson, Alfred L., Jr.; and Peckham, Victor A., 4,288,146, Cl. 350-295.000.

Landau, Ronald W. Strong focusing megatron. 4,288,289, Cl. 176-3.000.

Lane, Emma J. Bed cover holder and serving tray combination. 4,287,622, Cl. 5-505.000.

Langner, Fred R. Chute return mechanism for a photocopier collator. 4,288,070, Cl. 271-296.000.

Lanier, Jerry W., to Southwire Company. Cable end sealing method. 4,288,471, Cl. 427-120.000.

Lankston, Robert J., to Gulf & Western Manufacturing Company. Closure arrangement for pressure device. 4,288,001, Cl. 220-316.000.

Lanneau, Jacques: *See—*
Delcoigne, Adrien; and Lanneau, Jacques, 4,288,263, Cl. 156-42.000.

LaPorte Industries Limited: *See—*
Robinson, Michael, 4,288,650, Cl. 13-2.00P.

Laporte, Jean C.; and Laporte, Jean M., to S.A.R.L. Laporte Cibelec. Apparatus for target practice. 4,288,080, Cl. 273-406.000.

Laporte, Jean M.: *See—*
Laporte, Jean C.; and Laporte, Jean M., 4,288,080, Cl. 273-406.000.

La Rocca, Aldo V., to Fiat Auto S.p.A. Apparatus for treating metal workpieces with laser radiation. 4,288,678, Cl. 219-121.0LE.

La Rocca, Aldo V., to Fiat Auto S.p.A. Method of microdrilling metal workpieces using a power laser. 4,288,679, Cl. 219-121.0LL.

Larock, Richard C., to Iowa State University Research Foundation, Inc. Cyclopentanone synthesis. 4,288,613, Cl. 560-231.000.

Larrison, John E., to Orthodyne Electronics. Parts storage and handling system. 4,288,023, Cl. 228-110.000.

LaSalle Machine Tool, Inc.: *See—*
Vandenkieboom, John; and Myers, Douglas, 4,288,182, Cl. 408-129.000.

Lass, John L., to Square D Company. Cable lock assembly for outlet box. 4,288,655, Cl. 174-65.00R.

Laughlin, Gordon J., to United States of America, Navy. Wideband 180° hybrid junctions. 4,288,762, Cl. 333-117.000.

Laurel Bank Machine Co., Ltd.: *See—*
Kokubo, Eiichi; and Sugai, Takatoshi, 4,287,900, Cl. 133-4.00A.

Lautenschlager, Peter; and Teichmann, Michael, to Keiper Dynavit GmbH & Co. Apparatus for producing a series of impulses corresponding to a succession of pulse beats. 4,287,894, Cl. 128-687.000.

Lavallee, Pierre A.; and Stoffel, James C., to Xerox Corporation. Multi-resolution image signal processing apparatus and method. 4,288,821, Cl. 358-293.000.

Laws, Awbrey C. System for groundwater flow control. 4,288,174, Cl. 405-43.000.

Le Grand S.A.: *See—*
Durand, Guy, 4,287,644, Cl. 24-16.0PB.

Leach, Jack, to Burlington Industries, Inc. Ballistic vests. 4,287,607, Cl. 2-2.500.

Leandris, Sergio, to Precision Mecanique Labinal. Device for fitting the ends of electrical conductors or similar elements into a box. 4,287,665, Cl. 29-705.000.

Leather, Russell A., to Ferranti Limited. Insulation displacement contact for an electrical connector. 4,288,141, Cl. 339-97.00R.

Le Berre, Serge: *See—*
Hareng, Michel; Le Berre, Serge; and Leclerc, Pierre, 4,288,822, Cl. 358-296.000.

Leclerc, Pierre: *See—*
Hareng, Michel; Le Berre, Serge; and Leclerc, Pierre, 4,288,822, Cl. 358-296.000.

Ledig, Kurt W., deceased; and by Howes, David R., executor, to American Home Products Corporation. 7-(Substituted)-7H-pyrrolo[3,2-f]quinazoline-1,3-diamines. 4,288,595, Cl. 544-250.000.

Ledniczki, Ferenc; and Patak, Richard J., to Touch Activated Switch Arrays, Inc. Touch sensing keyboard construction. 4,288,786, Cl. 340-365.00S.

Lee, Chen Yi; Wu, Charles Tung-ming; Brooks, Mark A.; and Fallis, Robert E., to Bendix Corporation, The. Pressure sensor. 4,288,835, Cl. 361-283.000.

Lee, Martin J.; and Ornstein, Leonard, to Technicon Instruments Corporation. Method and apparatuses for electrophoretic immunoassay. 4,288,425, Cl. 424-1.000.

Lee, Patrick S., to Sperry Corporation. Average value tachometer for a disc drive servo and the like. 4,288,731, Cl. 318-618.000.

Lee, Wen-Fong. Automatic magnetic switch. 4,288,767, Cl. 335-6.000.

Lefaucheur, Claude: *See*—
Deck, Alphonse; and Lefaucheur, Claude, 4,287,924, Cl. 152-153.000.

Leibenzeder, Siegfried; and Heindl, Christine, to Siemens Aktiengesellschaft. Apparatus for the manufacture of epitaxial $Ga_{1-x}Al_xAs$:Si film. 4,287,848, Cl. 118-401.000.

Leiber, Heinz; Jonner, Wolf-Dieter; and Goebels, Hermann-Josef, to Robert Bosch GmbH. Anti-lock control system. 4,288,127, Cl. 303-111.000.

Leifeld, Ferdinand, to Trutzschler GmbH & Co. Carding element. 4,287,643, Cl. 19-114.000.

Lemahieu, Raymond G.; Depoorter, Henri; and Hofman, Emiel A., to Agfa-Gevaert, N.V. Photographic silver halide materials containing light-absorbing dyes. 4,288,534, Cl. 430-522.000.

Lemelson, Jerome H. Apparatus and method for controlling the internal structure of matter. 4,288,398, Cl. 264-23.000.

Lemelson, Jerome H.; and Grund, Christian. Automatic vehicle identification system and method. 4,288,689, Cl. 235-435.000.

Le Mer, Gerard. Metal cupboard. 4,288,136, Cl. 312-297.000.

Lemke, Werner: *See*—
Hageniocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,288,711, Cl. 310-68.00D.

Lemkey, Franklin D.: *See*—
Pearson, David D.; and Lemkey, Franklin D., 4,288,259, Cl. 148-32.000.

Lemonon, Claire: *See*—
Tinet, Claude; and Lemonon, Claire, 4,288,510, Cl. 430-11.000.

Lenke, Dieter: *See*—
Bliesener, Jens-Uwe; Geiss, Karl-Heinz; Lenke, Dieter; and Mueller, Claus D., 4,288,449, Cl. 424-274.000.

Lennox, William M.; and Lin, Hank S., to Microdyne Corporation. Demodulator for frequency modulated signals. 4,288,876, Cl. 455-214.000.

Lenz, John O., to Kurt Manufacturing Company, Inc. Outboard tracing station for carving machine. 4,288,185, Cl. 409-121.000.

Leodolter, Walter, to McDonnell Douglas Corporation. Tooling for superplastic forming diffusion bonding processes. 4,288,021, Cl. 228-15.100.

Leonard, Ian C. A.; and Jones, Barry E., to National Research Development Corp. Drive mechanism. 4,287,808, Cl. 87-44.000.

Leonard, Murray; and Jugl, Herbert F., to Vernitron Corporation. Gas collector/igniter for grills. 4,288,210, Cl. 431-263.000.

Leopold Kostal, Firma: *See*—
Berginski, Werner, 4,287,786, Cl. 74-492.000.

Lettera Arabica S.a.r.l.: *See*—
Aoun, Joseph, 4,287,677, Cl. 40-595.000.

Lettner, Kurt; Egger, Eugen; and Unger, Rudolf, to Steyr-Daimler-Puch Aktiengesellschaft. Reciprocating internal-combustion engine. 4,287,861, Cl. 123-198.00E.

Leupold, Ernst I.: *See*—
Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Leupold, Ernst I., 4,288,558, Cl. 518-716.000.

Leutgob, Alois: *See*—
Hojas, Hans; Leutgob, Alois; and Gsottbauer, Johann, 4,287,738, Cl. 72-20.000.

Lever Brothers Company: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,288,341, Cl. 252-107.000.

Levitsky, Emmanuil A.: *See*—
Rabinovich, Georgy L.; Maslyansky, Gdal N.; Birjukova, Ljubov M.; Levitsky, Emmanuil A.; Volkova, Kira L.; Lukina, Zoya P.; and Mozhaiko, Viktor N., 4,288,347, Cl. 252-439.000.

Lewis, Kenneth W.; and Shaffer, Robert C., to Hitco. Elastomers containing chemically bonded metal atoms. 4,288,568, Cl. 525-111.000.

Lewis, Robert A.; and Honnen, Lewis R., to Chevron Research Company. Deposit control additives. 4,288,612, Cl. 560-159.000.

Libbey-Owens-Ford Company: *See*—
Kurick, James F., 4,287,990, Cl. 206-448.000.

Liborius, Erik: *See*—
de Ruvo, Alfonso; Norman, Bo; Duffy, Geoffrey G.; Moller, Klaus; Hansen, Karl E.; Felsvang, Karsten S.; and Liborius, Erik, 4,288,317, Cl. 209-139.00A.

Licari, Vito. Adjustable rack for hanging articles. 4,287,993, Cl. 211-105.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Nutz, Karl-Diether; and Moser, Helmut, 4,288,740, Cl. 323-303.000.

Lieberman, Samuel, to Shann, Thomas P. Water tap filter. 4,288,325, Cl. 210-449.000.

Lifehaus Corporation of Texas: *See*—
Hofler, Alois, 4,287,695, Cl. 52-241.000.

Lin, Hank S.: *See*—
Lennox, William M.; and Lin, Hank S., 4,288,876, Cl. 455-214.000.

Linde AG: *See*—
Gobl, Horst, 4,288,002, Cl. 220-438.000.

Lindsey, Harold A.: *See*—
Dockal, Rodney O.; and Lindsey, Harold A., 4,288,186, Cl. 409-175.000.

Lindsey, Hiram E., Jr., to MWL Tool and Supply Company. Setting tools and liner hanger assembly. 4,287,949, Cl. 166-212.000.

Ling, Alexander C.: *See*—
McDonald, John C.; Baichtal, James R.; Helliwell, Bradley A.; Ling, Alexander C.; and Schaffter, Craig P., 4,288,870, Cl. 370-56.000.

Linguenheld, Louis: *See*—
Soula, Gerard; and Linguenheld, Louis, 4,288,386, Cl. 260-465.00F.

Linseth, Gerald S. Livestock feedlot management method and apparatus. 4,288,856, Cl. 364-567.000.

Lint, James D.: *See*—
Marzec, Willy; and Lint, James D., 4,288,041, Cl. 242-4.00R.

Litton Systems, Inc.: *See*—
Wilson, Albert, 4,288,320, Cl. 209-382.000.

Livesay, Richard E.; and Wright, Paul L., to Caterpillar Tractor Co. Keeper assembly. 4,288,172, Cl. 403-317.000.

Ljublinsky, Efim Y.; Smirnov, Viktor A.; and Kostylev, Anatoly A. Ingot casting apparatus. 4,287,936, Cl. 164-329.000.

Lockheed Corporation: *See*—
Fortescue, George H., 4,288,161, Cl. 356-73.000.

Lodder, Bernhard: *See*—
Hansen, Finn; and Lodder, Bernhard, 4,287,854, Cl. 119-17.000.

Lodzinski, Fred P., to Nekoosa Papers Inc. Optical property measurement system and method. 4,288,160, Cl. 356-73.000.

Loew, Peter; and Zink, Rudolf, to Ciba-Geigy Corporation. Cationic dyes. 4,288,589, Cl. 542-466.000.

Logic Devices, Inc.: *See*—
Allen, Paul E., 4,287,941, Cl. 165-70.000.

Lohse, Friedrich; Gutekunst, Ferdinand; Schmid, Rolf; and Schmitter, Andre, to Ciba-Geigy Corporation. Storable, solid mixture for the preparation of plastics which are based on epoxide resin and are stable to hydrolysis, the use of this mixture for the preparation of such plastics and plastics obtained in this way. 4,288,565, Cl. 521-135.000.

Lomakin, Alexandr M.: *See*—
Redikultsev, Jury V.; Gorbunov, Oleg P.; and Lomakin, Alexandr M., 4,288,404, Cl. 422-107.000.

Long, William E., to Ciba-Geigy AG. Pyridine-2,3,6-triones. 4,288,598, Cl. 546-288.000.

Longhenry, David K.: *See*—
Sielaff, Bruce H.; Praglin, Julius; McKie, James E., Jr.; Longhenry, David K.; Curtiss, Alan C.; and Bidwell, Charles B., 4,288,543, Cl. 435-34.000.

Longoni, Angelo: *See*—
Gozzo, Franco; Paolucci, Paride; and Longoni, Angelo, 4,288,611, Cl. 560-133.000.

Lonnstedt, Bo G. Fastening means for fitting an accessory, especially an ear muff, to a safety helmet. 4,287,614, Cl. 2-423.000.

Lopez, Efrain: *See*—
Hineborg, James R.; and Lopez, Efrain, 4,287,648, Cl. 29-79.000.

Lopez Rodriguez, Maria L.: *See*—
Brana, Miguel F.; Lopez Rodriguez, Maria L.; Castellano Berlanga, Jose M.; Soto Camara, Jose L.; and Martinez Roldan, Cristobal, 4,288,597, Cl. 546-265.000.

L'Oreal: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,288,622, Cl. 564-194.000.
Koulbanis, Constantin; Bouillon, Claude; and Darmenton, Patrick, 4,288,433, Cl. 424-232.000.

Lorenzen, Heinz-Christen: *See*—
Heitmann, Uwe; Lorenzen, Heinz-Christen; Wahle, Gunter; and Dahlgrun, Rolf, 4,287,754, Cl. 73-38.000.

Loring, Robert M.: *See*—
Conover, Steven M.; Loring, Robert M.; Ludwico, William A.; Arnold, John W.; and Ferber, George, 4,288,564, Cl. 521-122.000.

Lotscher, Bernhard, to Rotovolumetric AG. Apparatus containing a cylinder with a displaceable piston therein and a measuring transducer arranged essentially within the cylinder. 4,288,793, Cl. 340-870.370.

Louderback, Allan L., to Beckman Instruments, Inc. Method for increasing shelf-life of a serum bilirubin reference composition and composition produced thereby. 4,288,343, Cl. 252-408.000.

Louwenaar, David W. Solar shield. 4,287,683, Cl. 49-463.000.

Lowry, Joseph M.; and Griffin, Ernest E. Carriage for a grass trimming device. 4,287,709, Cl. 56-16.900.

Lowther, Lou Y. Auxiliary flotation gear for fishing boats. 4,287,624, Cl. 9-1.100.

Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., to Milchem Incorporated. Aqueous drilling fluid additive, composition and process. 4,288,582, Cl. 526-240.000.

Ludwico, William A.: *See*—
Conover, Steven M.; Loring, Robert M.; Ludwico, William A.; Arnold, John W.; and Ferber, George, 4,288,564, Cl. 521-122.000.

Lugo, Julio I. Game apparatus. 4,288,078, Cl. 273-264.000.

Luik, Manfred. Parking aid. 4,288,777, Cl. 340-51.000.

Luker, Charles E.; and Gach, Peter P., to Sunbeam Plastics Corporation. Child-resistant lid for a pail. 4,288,000, Cl. 220-281.000.

Lukina, Zoya P.: *See*—
Rabinovich, Georgy L.; Maslyansky, Gdal N.; Birjukova, Ljubov M.; Levitsky, Emmanuil A.; Volkova, Kira L.; Lukina, Zoya P.; and Mozhaiko, Viktor N., 4,288,347, Cl. 252-439.000.

Lummus Company, The: *See*—
Cox, Robert P.; and Tarradellas, Norbert R., 4,288,234, Cl. 55-48.000.

Lundberg, Robert D.: *See*—
Weiss, Robert A.; and Lundberg, Robert D., 4,288,352, Cl. 260-23.50A.

Lundstrom, Linda. Adjustable garment. 4,287,611, Cl. 2-237.000.

Lunel, Jean: *See*—
Belloc, Andre; Florent, Jean; Lunel, Jean; Palla, Jean-Claude; and Mancy, Denise, 4,288,556, Cl. 435-265.000.

Lutz, Albert W.; and Diehl, Robert E., to American Cyanamid Co. 2,6-Dinitroaniline herbicides and use thereof. 4,288,385, Cl. 260-465.00E.

Lutzkendorf, Jorg: *See*—
Geiger, Michael; Schneider, Manfred; and Lutzkendorf, Jorg, 4,288,192, Cl. 414-223.000.

Lynch, Bobby R., to Tri-L Manufacturing, Inc. Hay bale handling mechanism. 4,288,191, Cl. 414-24.500.

Lynch, James E.: *See*—
Cobaugh, Robert F.; Lynch, James E.; and Taylor, Attalee S., 4,288,139, Cl. 339-74.00R.

Lynfield, H. Geoffrey: *See*—
Baldwin, Robert J., 4,288,130, Cl. 312-183.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Vogt, Anton, 4,287,931, Cl. 164-7.200.

M.R.E. Enterprises, Inc.: *See*—
Rogers, Dan C.; and Maggio, Joseph A., 4,288,007, Cl. 222-66.000.

MacBeth, Ian H., to General Electric Company. Dielectric liquid impregnated with gases for use in transformers. 4,288,772, Cl. 336-58.000.

MacDonald, Paul M., to Babigian, Dickran. Drawer slide system. 4,288,137, Cl. 312-341.00R.

MacDonald, Robert D., to Masco Corporation. Self-closing hinge. 4,287,641, Cl. 16-139.000.

MacFarland, David R.: *See*—
Turley, Richard J.; and MacFarland, David R., 4,288,587, Cl. 528-57.000.

Machi, Sueo; Ishigaki, Isao; and Sugo, Takanobu, to Japan Atomic Energy Research Institute. Method of producing a membrane of graft copolymer. 4,288,467, Cl. 427-44.000.

Machlowitz, Roy A.: *See*—
McAleer, William J.; Markus, Henry Z.; and Machlowitz, Roy A., 4,288,539, Cl. 435-7.000.

MacInnis, Martin B.; and Kim, Tai K., to GTE Products Corporation. Separating molybdenum values from an aqueous solution containing tungsten by solvent extraction. 4,288,413, Cl. 423-54.000.

MacVicar, Douglas J.: *See*—
Garritsen, Petrus G. S.; MacVicar, Douglas J.; Young, Daniel P.; and Sojda, John G., 4,288,305, Cl. 204-112.000.

Madorsky, Alexandr S.: *See*—
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

Magee, Walter L.; and Telschow, Jeffrey E., to Stauffer Chemical Company. Method for the production of tetraalkyl silicates. 4,288,604, Cl. 556-470.000.

Magers, Thomas A.; Sheats, John E.; and Tabb, David L., to Miles Laboratories, Inc. Ascorbate resistant composition, test device and method for detecting a component in a liquid test sample. 4,288,541, Cl. 435-14.000.

Maggio, Joseph A.: *See*—
Rogers, Dan C.; and Maggio, Joseph A., 4,288,007, Cl. 222-66.000.

Magnitsky, Viktor V.: *See*—
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezet: *See*—
Bucsky, Gyorgy; Kiss, Zoltan; and Tatrai, Lajos, 4,287,757, Cl. 73-61.400.

Makita, Himromitsu: *See*—
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Himromitsu; and Suzuki, Kinzaburo, 4,288,555, Cl. 435-254.000.

Makovec, Francesco: *See*—
Rovati, Luigi; Makovec, Francesco; and Senin, Paolo, 4,288,609, Cl. 560-117.000.

Malin, Richard A.: *See*—
Eckert, Alton B., Jr.; Malin, Richard A.; McFiggans, Robert B.; and Pengue, Leonard M., 4,287,825, Cl. 101-91.000.

Malinowski, William J. Smoke detector and method. 4,288,791, Cl. 340-630.000.

Mallory, William R.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,288,365, Cl. 260-243.300.

Manabe, Takao; Ebata, Hitoshi; and Shin, Shouichi, to Toshiba Kikai Kabushiki Kaisha. Method of determining position of openings adapted to receive fret saw blade of numerically controlled fret saw machines. 4,288,851, Cl. 364-475.000.

Manassen, Joost: *See*—
Avigal, Yitzchak; Manassen, Joost; Hodes, Gary; and Cahen, David, 4,288,502, Cl. 429-111.000.

Mancy, Denise: *See*—
Belloc, Andre; Florent, Jean; Lunel, Jean; Palla, Jean-Claude; and Mancy, Denise, 4,288,556, Cl. 435-265.000.

Manini nee Gallichi, Anna. Circular knitting machines. 4,287,729, Cl. 66-149.00S.

Mansfield, Thomas L., to Reynolds Metals Company. Probes for the ultrasonic treatment or inspection of molten aluminum. 4,287,755, Cl. 73-61.00R.

Mar, Danny M., to Envirotech Corporation. Determination of total organic carbon in a plurality of aqueous samples containing halide ion. 4,288,229, Cl. 23-230.0PC.

Marathon Oil Company: *See*—
Sydansk, R. D.; and Gucwa, P. R., 4,287,951, Cl. 166-281.000.

Marburg, Stephen: *See*—
Kollonitsch, Janos; and Marburg, Stephen, 4,288,601, Cl. 548-344.000.

Marchal, Michel: *See*—
Picquendar, Jean E.; Marchal, Michel; Dubois, Jean C.; and Duda, Eugene, 4,288,528, Cl. 430-297.000.

Markel, Richard F.; and Goldberger, W. M. Method and apparatus for treating material in a fluidized bed. 4,288,407, Cl. 422-143.000.

Markle, David A.: *See*—
Offner, Abe; and Markle, David A., 4,288,148, Cl. 350-453.000.

Markus, Henry Z.: *See*—
McAleer, William J.; Markus, Henry Z.; and Machlowitz, Roy A., 4,288,539, Cl. 435-7.000.

Marlor, Richard C., to GTE Products Corporation. Lamp having opaque coating. 4,288,713, Cl. 313-117.000.

Marrison, William C.: *See*—
Buseth, Richard A.; and Marrison, William C., 4,287,914, Cl. 137-613.000.

Marrs, Carl. Paint remover for paint rollers and paint brushes. 4,287,631, Cl. 15-105.000.

Marsch, Hans-Dieter: *See*—
Severin, Manfred; and Marsch, Hans-Dieter, 4,287,839, Cl. 110-331.000.

Marsden, Brian W. H., to Interlake, Inc. Coke oven with apparatus for partially drying and preheating coal. 4,288,295, Cl. 202-150.000.

Martin, Lawrence L.; and Worm, Manfred, to Hoechst-Roussel Pharmaceuticals Inc. 1-Aryl-4-amino-cyclohexan-1-ols. 4,288,623, Cl. 564-307.000.

Martinez Roldan, Cristobal: *See*—
Brana, Miguel F.; Lopez Rodriguez, Maria L.; Castellano Berlanga, Jose M.; Soto Camara, Jose L.; and Martinez Roldan, Cristobal, 4,288,597, Cl. 546-265.000.

Martinic, Jack: *See*—
Kushner, Gregory A.; and Martinic, Jack, 4,287,904, Cl. 137-68.00R.

Marton, Miksa. Pad assembly for vacuum rotary sander. 4,287,685, Cl. 51-170.00T.

Marvin Glass & Associates: *See*—
Allen, Robert K.; Hicks, Alan A.; and Disko, Harry, 4,287,680, Cl. 46-1.00R.
Glickson, David A., 4,288,071, Cl. 272-1.00R.

Maryland Cup Corporation: *See*—
Boyle, Patrick T., 4,287,824, Cl. 101-45.000.
Winstead, Thomas W., 4,288,400, Cl. 264-210.100.

Marzec, Willy; and Lint, James D., to Varian Associates, Inc. Shuttleless toroidal core winder. 4,288,041, Cl. 242-4.00R.

Masco Corporation: *See*—
MacDonald, Robert D., 4,287,641, Cl. 16-139.000.

Mashimo, Yukio: *See*—
Sakurada, Nobuaki; Shinoda, Nobuhiko; Mashimo, Yukio; Ito, Tadashi; and Ito, Fumio, 4,288,154, Cl. 354-23.00D.

Maslyansky, Gdal N.: *See*—
Rabinovich, Georgy L.; Maslyansky, Gdal N.; Birjukova, Ljubov M.; Levitsky, Emmanuil A.; Volkova, Kira L.; Lukina, Zoya P.; and Mozhaiko, Viktor N., 4,288,347, Cl. 252-439.000.

Massachusetts Institute of Technology: *See*—
Buckley, Bruce S., 4,287,769, Cl. 73-627.000.

Masuda, Tatsuo: *See*—
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,288,096, Cl. 280-694.000.

Mathur, Indresh: *See*—
Knight, Allan R.; and Mathur, Indresh, 4,288,310, Cl. 204-252.000.

Matson, Wayne R., to Environmental Sciences Associates, Inc. Electrochemical processing system. 4,288,303, Cl. 204-105.00R.

Matsubara, Isamu; and Hayashi, Moriyoshi, to Yoshida Kogyo K. K. Wall panel attachment apparatus. 4,287,697, Cl. 52-403.000.

Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Automatic range finder system. 4,288,152, Cl. 354-25.000.

Matsuda, Mutsuhide: *See*—
Matsumoto, Seiichi; Yokota, Hideo; and Matsuda, Mutsuhide, 4,288,151, Cl. 354-25.000.

Matsumoto, Hiroshi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,288,244, Cl. 71-118.000.

Matsumoto, Seiichi; Yokota, Hideo; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Power source switch for use in camera circuit to detect a focused condition. 4,288,151, Cl. 354-25.000.

Matsumoto, Shigeyuki: *See—*
Uzawa, Shunichi; Matsumoto, Shigeyuki; Miyazaki, Minoru; Iijima, Akio; and Watanabe, Kunio, 4,288,799, Cl. 346-140.00R.

Matsunaga, Fujihisa; Shinohara, Yoshiyuki; Okubo, Isamu; Nakamura, Takayuki; and Tanaka, Seiichi, to Mitsui Petrochemical Industries, Ltd. Process for preparation of aromatic hydroperoxides. 4,288,637, Cl. 568-575.000.

Matsuno, Mitsuo: *See—*
Miyoshi, Mitsuji; Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Matsuno, Mitsuo, 4,288,579, Cl. 526-124.000.

Matsuo, Masashi: *See—*
Ikuta, Yasuhiro; and Matsuo, Masashi, 4,287,866, Cl. 123-568.000.

Matsushima Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Masatoshi; Shimakawa, George; Hara, Yukio; and Fujii, Hiroyuki, 4,288,284, Cl. 156-651.000.

Matsushima, Yoshihisa: *See—*
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,288,634, Cl. 568-454.000.

Matsushita Electric Industrial Company, Limited: *See—*
Hayakawa, Yoshihiro; and Fukukita, Hiroshi, 4,287,768, Cl. 73-626.000.
Konishikawa, Kaoru; Sasaki, Shunsuke; Higuchi, Kouichi; and Hirose, Fuminori, 4,288,840, Cl. 361-410.000.
Senno, Harufumi; Sakakima, Hiroshi; Yanagiuchi, Yukihiro; Inoue, Tsuneo; Yamaguchi, Masatsugu; and Hirota, Eiichi, 4,288,260, Cl. 148-121.000.
Wasa, Kiyotaka; Tohda, Takao; Yokoyama, Kazuo; Hirota, Eiichi; and Hayakawa, Shigeru, 4,288,307, Cl. 204-192.00D.

Matsushite Tsushin Kogyo Kabushiki Kaisha: *See—*
Kiyama, Yosito; Tachibana, Shinichi; Yamashita, Riichiro; and Horino, Takeshi, 4,288,688, Cl. 235-384.000.

Matsuura, Kazuo: *See—*
Miyoshi, Mitsuji; Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Matsuno, Mitsuo, 4,288,579, Cl. 526-124.000.

Matsuura, Toshitaka: *See—*
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Matsuura, Yoshio: *See—*
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.

Matsuyama, Takeshi: *See—*
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Mattel, Inc.: *See—*
Knetzger, Robert C., 4,288,537, Cl. 434-169.000.

Matthias, Dan W.; and Thornton, Richard D., to Exxon Research & Engineering Co. High performance stepper motor. 4,288,709, Cl. 310-49.00R.

Mattson, John P., to Solarspan, Inc. Black liquid absorbing solar collector. 4,287,882, Cl. 126-445.000.

Maurer, Spencer B. Impact wrench mechanism and pivot clutch. 4,287,956, Cl. 173-93.500.

Mauri, Luigi: *See—*
Bordini, Fosco; and Mauri, Luigi, 4,288,477, Cl. 428-35.000.

Max, Kuhn: *See—*
Traber, Rene P.; Hofmann, Hans; Harri, Eugen; and Max, Kuhn, 4,288,431, Cl. 424-177.000.

Mayen, Christian: *See—*
Guillemin, Claude; and Mayen, Christian, 4,288,322, Cl. 210-198.200.

Mayes, Clell C. Damper system. 4,287,875, Cl. 126-288.000.

Mayr, Ulrich; Horeth, Dietmar; and Kusmierz, Hans, to Siemens Aktiengesellschaft. Arrangement for driving a printer carriage in teletypewriters or data printers. 4,288,168, Cl. 400-322.000.

Maytag Company, The: *See—*
Deatherage, Robert L., 4,288,133, Cl. 312-279.000.

Mazza, Raymond L., to Conoco, Inc. Method of removing conduit from curved borehole. 4,287,953, Cl. 166-301.000.

McAleer, William J.; Markus, Henry Z.; and Machlowitz, Roy A., to Merck & Co., Inc. Bacterial or bacterial antibody assay. 4,288,539, Cl. 435-7.000.

McAlexander, Joseph C., III: *See—*
Reese, Edmund A.; White, Lionel S., Jr.; and McAlexander, Joseph C., III, 4,288,706, Cl. 307-577.000.

McCabe, Francis J. Inside/outside link. 4,287,638, Cl. 16-48.500.

McCarthy, Jon J.: *See—*
Schamber, Frederick H.; and McCarthy, Jon J., 4,288,692, Cl. 250-310.000.

McCaulay, David A., to Standard Oil Company (Indiana). Isobutylene polymerization process. 4,288,649, Cl. 585-533.000.

McClaflin, Gifford G.; and Clark, Charles R., to Conoco, Inc. Method of transporting viscous hydrocarbons. 4,287,902, Cl. 137-13.000.

McClain, James E.; and Scott, Howard L., to Esco Manufacturing Company. Regulator-compensator control. 4,288,737, Cl. 323-254.000.

McClean Anderson, Inc.: *See—*
McLarty, J. Lowrie, 4,288,267, Cl. 156-175.000.

McClintic, Robert P.: *See—*
Christini, James N.; Kim, Tai K.; and McClintic, Robert P., 4,288,216, Cl. 432-112.000.
Christini, James N.; Kim, Tai K.; and McClintic, Robert P., 4,288,217, Cl. 432-112.000.

McConnell, Harold. Motorcycle conversion kit. 4,287,960, Cl. 180-16.000.

McConnell, Richard L.: *See—*
Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., 4,288,358, Cl. 260-31.80M.

McCoy, David R.; and Naylor, Carter G., to Texaco Development Corporation. Process for secondary recovery of hydrocarbons. 4,288,334, Cl. 252-8.55D.

McCracken, Philip G.; Myatt, Hal; and Petree, Harris E., to Ciba-Geigy Corporation. Caustic-free process for the production of monochlorodiamino-s-triazines. 4,288,594, Cl. 544-204.000.

McCrudden, Joseph E.; and Smith, Alan, to Interox Chemicals Limited. Bleaching composition. 4,288,388, Cl. 260-502.00R.

McDonald, Charles J., to Dow Chemical Co., The. Preparation of N-(aminomethyl)-α,β-ethylenically unsaturated carboxamides and their polymers. 4,288,390, Cl. 564-204.000.

McDonald, John C.; Baichtal, James R.; Helliwell, Bradley A.; Ling, Alexander C.; and Schaffter, Craig P., to TRW, Inc. Integrated telephone transmission and switching system. 4,288,870, Cl. 370-56.000.

McDonnell Douglas Corp.: *See—*
Crites, Roger C., 4,288,735, Cl. 322-2.00A.
Leodolter, Walter, 4,288,021, Cl. 228-15.100.

McFiggans, Robert B.: *See—*
Eckert, Alton B., Jr.; Malin, Richard A.; McFiggans, Robert B.; and Pengue, Leonard M., 4,287,825, Cl. 101-91.000.

McGuire, George: *See—*
Hunter, James B.; and McGuire, George, 4,288,346, Cl. 252-437.000.

McIntosh, Kenneth W.; and Colby, Edward B., Jr., to Goodyear Tire & Rubber Company, The. Tire and method of reinforcement. 4,287,930, Cl. 152-357.00R.

McKann, H. Smith, to General Products Company, Inc. Threshold with adjustable weather seal. 4,287,684, Cl. 49-468.000.

McKean, William J.: *See—*
Grunert, Kurt A.; McKean, William J.; and Grad, John E., 4,288,669, Cl. 200-281.000.

McKie, James E., Jr.: *See—*
Sielaff, Bruce H.; Praglin, Julius; McKie, James E., Jr.; Longhenry, David K.; Curtiss, Alan C.; and Bidwell, Charles B., 4,288,543, Cl. 435-34.000.

McLarty, J. Lowrie, to McClean Anderson, Inc. Preliminary and end winding method and apparatus. 4,288,267, Cl. 156-175.000.

McMenamin, Hugh, IV. Fountain tooth brush with snap-on closure. 4,288,169, Cl. 401-175.000.

McMonagle, Richard I.: *See—*
Finsness, Wilma L.; McMonagle, Richard I.; and Sedenquist, Edward M., 4,288,845, Cl. 362-63.000.

McShane, Herbert F., Jr., to Du Pont de Nemours, E. I., and Company. Novel urethanediols and polyurethanes therefrom. 4,288,577, Cl. 525-453.000.

Meadows, Lacy C.: *See—*
Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., 4,288,476, Cl. 427-300.000.

Meek, Lloyd F. Wheel chair table clamp. 4,288,122, Cl. 297-153.000.

Meeker, Brian L. Method and apparatus for impregnating a fibrous web. 4,288,475, Cl. 427-294.000.

Mehren, Herbert: *See—*
Braun, Dieter; Mehren, Herbert; and Wulf, Helmut, 4,287,830, Cl. 104-247.000.

Meier, Alfred: *See—*
Fahrenschon, Franz; Meier, Alfred; and Thinschmidt, Hans, 4,288,662, Cl. 179-3.000.

Meissner, Konrad E., to California Processing Machinery. Method of selective pitting for fruits of the drupe type. 4,288,461, Cl. 426-231.000.

Meng, Karl: *See—*
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,288,446, Cl. 424-273.00P.

Merck & Co., Inc.: *See—*
Karkhanis, Yashwant D.; and Carlo, Dennis J., 4,288,557, Cl. 435-272.000.
Kollonitsch, Janos; and Marburg, Stephen, 4,288,601, Cl. 548-344.000.
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Lennox, William M.; and Lin, Hank S., 4,288,876, Cl. 455-214.000.

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Whitford, Darryl R., 4,288,727, Cl. 318-112.000.

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Ishida, Tokuji, 4,288,150, Cl. 354-23.00D.
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Frees, Kenneth A., 4,287,966, Cl. 187-9.00R.

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Moriya, Takehiko, 4,287,995, Cl. 215-228.000.

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Kiyama, Yosito; Tachibana, Shinichi; Yamashita, Riichiro; and Horino, Takeshi, 4,288,688, Cl. 235-384.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Miyama, Masao; and Kusama, You, 4,288,287, Cl. 162-135.000.

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Fujiwara, Minoru; Yamada, Tominori; and Tamura, Tstsuji, 4,287,790, Cl. 74-665.0GB.

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Matsunaga, Fujihisa; Shinohara, Yoshiyuki; Okubo, Isamu; Nakamura, Takayuki; and Tanaka, Seiichi, 4,288,637, Cl. 568-575.000.
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Sekiguchi, Hideki; Miyoshi, Michizo; and Yonemura, Katsutoshi, 4,288,393, Cl. 261-108.000.

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Kattenbroek, Hendrik J.; and Plug, Jan, 4,287,982, Cl. 198-706.000.

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Conover, Steven M.; Loring, Robert M.; Ludwico, William A.; Arnold, John W.; and Ferber, George, 4,288,564, Cl. 521-122.000.

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Chu, Chin-Chiun, 4,288,647, Cl. 585-467.000.
Horn, James M.; Johnston, Byron E.; Napier, Roger P.; and Williams, Thomas N., 4,288,392, Cl. 260-983.000.
Schoennagel, Hans J., 4,288,348, Cl. 252-441.000.

Modic, Frank J.: *See—*
Ashby, Bruce A.; and Modic, Frank J., 4,288,345, Cl. 252-431.00R.

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Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. Pyrazol-5-ones. 4,288,446, Cl. 424-273.00P.

Moller, Klaus: *See—*
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Monsanto Company: *See—*
Alt, Gerhard H.; and Chupp, John P., 4,288,242, Cl. 71-76.000.
Bromley, James E.; and Stutz, Frank, 4,287,713, Cl. 57-288.000.
Coran, Aubert Y.; and Patel, Raman, 4,288,570, Cl. 525-133.000.

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Gozzo, Franco; Paolucci, Paride; and Longoni, Angelo, 4,288,611, Cl. 560-133.000.
Montferme, Daniel, to E. P. Remy et Cie. Device for distributing containers into several rows and machine using such a device. 4,287,980, Cl. 198-425.000.
Montgomery, John R., to Iron Removal Specialists, Inc. Use of specially prepared iron floc to oxidize and remove iron in water treatment processes. 4,288,328, Cl. 210-713.000.
Moody, Warren E. Reusable reserve battery system. 4,288,501, Cl. 429-70.000.
Moore, Donald H. Door latch assembly. 4,288,120, Cl. 292-341.180.
Moore, Lewis F.; and Price, George M., to Frymaster Corporation, The. Automatic fryer for breaded products. 4,287,818, Cl. 99-355.000.
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Bordini, Fosco; and Mauri, Luigi, 4,288,477, Cl. 428-35.000.
Moreau, Joel P. Safety barrier which is especially useful for motorways. 4,288,061, Cl. 256-13.100.
Morehouse Industries, Inc.: *See—*
Clark, Ralph E., 4,287,724, Cl. 62-272.000.
Morgan, Charles R., to W. R. Grace & Co. Dual UV/thermally curable acrylate compositions with pinacol. 4,288,527, Cl. 430-288.000.
Morgan, James A.: *See—*
Ingard, Uno; Morgan, James A.; and Hirschorn, Martin, 4,287,962, Cl. 181-224.000.
Morgan, Lawrence A.: *See—*
Abdulla, Riaz F.; and Morgan, Lawrence A., 4,288,624, Cl. 564-345.000.
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Morimoto, Yoshinori; and Kobayashi, Takehiro, to Ryobi, Ltd. Spinning reel with anti-reversal mechanism. 4,288,046, Cl. 242-84.21R.
Morin, Robert W., to Boston Machine Works Company. Tape applying machine. 4,288,280, Cl. 156-510.000.
Moriya, Takehiko, to Mitsubishi Gas Chemical Company, Inc. Container sealing member with oxygen absorbent. 4,287,995, Cl. 215-228.000.
Morris, Henry B.: *See—*
Bate, Robert T.; and Morris, Henry B., 4,288,470, Cl. 427-88.000.
Morrisey, John C., IV; and Smith, Ulus R., to Allied Corporation. Benefication of fluorspar ores. 4,288,315, Cl. 209-11.000.
Morrison, Robert I., to MPD Enterprises of Delavan, Inc. Simplified snowmobile support dolly. 4,288,087, Cl. 280-47.320.
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., to Burroughs Wellcome Co. Pyrido derivatives. 4,288,365, Cl. 260-243.300.
Morrison, Russell J., to Whirlpool Corporation. Automatic washer timer dial protective shield. 4,288,671, Cl. 200-304.000.
Morton, Edward W., to Westinghouse Electric Corp. Lightweight fluorescent lamp ballast. 4,288,725, Cl. 315-245.000.
Moser, Helmut: *See—*
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Moskowitz, David: *See—*
Terner, Leslie L.; Van Alsten, Roy L.; and Moskowitz, David, 4,288,495, Cl. 428-446.000.
Moskowitz, Paul M.; Rushansky, Yuliy; Brown, Lester; and Weinstein, Gerald, to Salton, Inc. Apparatus for use in preparing infusions. 4,287,817, Cl. 99-282.000.
Mossell, Alan T.; Simmons, James R.; and Middleton, Charles G., to Interlake, Inc. Heat-sealing strapping machine. 4,288,270, Cl. 156-359.000.
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Graham, Andrew C., 4,288,865, Cl. 365-229.000.
Motorola, Inc.: *See—*
Ahrons, Richard W., 4,288,694, Cl. 250-374.000.
Bedard, Brian E.; and Geller, Gary R., 4,288,530, Cl. 430-315.000.
Dolikian, Arman V., 4,288,831, Cl. 361-92.000.
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Mouri, Kunihiko: *See—*
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Morrison, Robert I., 4,288,087, Cl. 280-47.320.
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Bliesener, Jens-Uwe; Geiss, Karl-Heinz; Lenke, Dieter; and Mueller, Claus D., 4,288,449, Cl. 424-274.000.
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Muijs, Herman M.: *See—*
Shepley, John D.; and Muijs, Herman M., 4,288,331, Cl. 252-8.900.
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Okamoto, Syuzi; and Mukai, Naoto, 4,287,984, Cl. 198-847.000.
Mukai, Sadayoshi: *See—*
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Mullen, William T. Expansible caulking material. 4,287,696, Cl. 52-309.700.
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Schaffner, Karl; Wehrli, Hansuli; Muller, Beat; and Scartazzini, Riccardo, 4,288,364, Cl. 260-239.00A.
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Fujii, Tadashiro; Yaginuma, Satoshi; Muto, Naoki; and Hayashi, Mitsuo, 4,288,429, Cl. 424-117.000.
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Lindsey, Hiram E., Jr., 4,287,949, Cl. 166-212.000.
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Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, to Electric Power Development Co. Ltd.; and Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for production of stable slurry of milled coal and a hydrocarbon oil. 4,288,166, Cl. 366-149.000.
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Seguin, Herb J. J.; Tulip, John; and Nam, Kyong H., 4,288,758, Cl. 331-94.5PE.
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Kutsuwada, Noboru; Saito, Minoru; Namiki, Ryoichi; and Kusunoki, Katsuo, 4,288,514, Cl. 430-54.000.
Napier, David. Jar carrier having U-shaped jar retainers. 4,288,013, Cl. 294-87.200.
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Horn, James M.; Johnston, Byron E.; Napier, Roger P.; and Williams, Thomas N., 4,288,392, Cl. 260-983.000.
Narasimhan, Mandayam J.; and Anderson, John A., to University of Minnesota, The Regents of the. Process for the large scale production of pituitary hormones by serial secondary suspension culture. 4,288,546, Cl. 435-70.000.
Nardi, Giovanni, to Whitehead Motofides, S.p.A. Lock for motor vehicle doors. 4,288,117, Cl. 292-52.000.
Naruse, Kazumichi: *See—*
Takada, Shigetaka; and Naruse, Kazumichi, 4,287,864, Cl. 123-440.000.
National Ham Company: *See—*
Urban, Robert F., 4,287,820, Cl. 99-538.000.
National Research Development Corp.: *See—*
Leonard, Ian C. A.; and Jones, Barry E., 4,287,808, Cl. 87-44.000.
National Steel Corporation: *See—*
Peters, Gordon L.; and Smith, John R., 4,287,741, Cl. 72-42.000.
Naylor, Carter G.: *See—*
McCoy, David R.; and Naylor, Carter G., 4,288,334, Cl. 252-8.55D.
Nazyrov, Ravil N.: *See—*
Grigorov, Sergei S.; and Nazyrov, Ravil N., 4,287,896, Cl. 128-786.000.
Neary, John R. Method and apparatus for tensioning a drum. 4,287,806, Cl. 84-458.000.
Neeff, Rutger: *See—*
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,288,362, Cl. 260-154.000.
Neely, Allen B., Jr. Alfalfa harvesting and processing apparatus. 4,287,708, Cl. 56-13.500.
Neely, James E., to PPG Industries, Inc. Method of making low temperature curable silicate compositions. 4,288,252, Cl. 106-74.000.
Neirinckx, Rudi D.; and Davis, Michael A. Generator for ionic gallium-68 based on column chromatography. 4,288,424, Cl. 424-1.000.
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Lodzinski, Fred P., 4,288,160, Cl. 356-73.000.
Nelson, John R., to Research, Development & Marketing. Foldable bucksaw. 4,287,922, Cl. 145-32.00R.
Nelson, William J.: *See—*
Barrett, Steven P.; and Nelson, William J., 4,288,548, Cl. 435-94.000.
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Nercessian, Sarkis, to Kepco, Inc. Dynamic load for testing regulated power supplies. 4,288,739, Cl. 323-275.000.
Netzsch-Mohnopumpen GmbH: *See—*
Hantschk, Gunther, 4,287,743, Cl. 72-98.000.
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Zehnder, Jurg; and Neumeier, Erich, 4,287,834, Cl. 105-420.000.
New Balance Athletic Shoe, Inc.: *See—*
Norton, Edward J.; and Flanagan, Charles J., 4,287,675, Cl. 36-129.000.
Newage Engineers Limited: *See—*
Wright, Michael J., 4,288,736, Cl. 322-28.000.
Newberry, Robert H. Chuck collar. 4,288,084, Cl. 279-60.000.
Newbold, Robert W., Jr., to Plas-Tanks Industries, Inc. Reinforced plastic container with an integral heating element and a method of forming the same. 4,287,663, Cl. 29-611.000.
Newkirk, Raymond K.: *See—*
Campbell, Glenn M., Jr.; and Newkirk, Raymond K., 4,288,271, Cl. 156-359.000.
Newman, David P., to Yellow Springs Instrument Company, Inc., The. Optical temperature transducer. 4,288,159, Cl. 356-44.000.
Newton, Cleland O.; and Paige, Edward G. S., to United States of America, Army. Surface acoustic wave time chirp devices. 4,288,750, Cl. 328-158.000.
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Dechene, Ronald L.; and Newton, Robert E., 4,288,741, Cl. 324-61.00R.
NGK Insulators, Ltd.: *See—*
Haga, Toshikatsu; Fukuda, Hiroyuki; Shinoda, Hiroshi; and Hayakawa, Hideharu, 4,288,251, Cl. 501-105.000.
NGK Spark Plug Co., Ltd.: *See—*
Takami, Akio; Matsuura, Toshitaka; and Saito, Tsutomu, 4,288,774, Cl. 338-34.000.
Yamada, Shigeyasu; Kawamura, Kazumi; and Nakamura, Shuji, 4,288,714, Cl. 313-142.000.
NHK Spring Co., Ltd.: *See—*
Misumi, Atsushi; and Kimura, Yoshio, 4,287,969, Cl. 188-134.000.
Nicholas, Keith H., to U.S. Philips Corporation. Methods of manufacturing semiconduetor devices. 4,287,660, Cl. 29-571.000.
Nick, Albert T. Expansion and contraction joint assembly. 4,288,173, Cl. 404-49.000.
Nickey, George A.: *See—*
Heckman, Russell W.; and Nickey, George A., 4,288,466, Cl. 427-28.000.
Nidola, Antonio: *See—*
de Nora, Vittorio; Bianchi, Giuseppe; and Nidola, Antonio, 4,288,302, Cl. 204-105.00R.
Niemann, Roy A., to General Electric Company. Apparatus for fabricating isolated phase bus. 4,288,681, Cl. 219-125.110.
Nieuwland, Kees N.; and Kettenes, Dirk K., to Polak's Frutal Works B.V. Perfume compositions containing dialkyl delta-lactones. 4,288,350, Cl. 252-522.00R.
Nigg, Egon: *See—*
Hartmannsgruber, Max; Nigg, Egon; and Hack, Kurt, 4,287,711, Cl. 57-130.000.
Niimi, Masayoshi; Torii, Koshi; and Kato, Hidetoshi, to Nippondenso Co., Ltd. Electric vehicle control apparatus. 4,288,728, Cl. 318-139.000.
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., to International Business Machines Corporation. Method of making FET containing stacked gates. 4,288,256, Cl. 148-1.500.
Nippert Company, The: *See—*
Nippert, Russell A., 4,288,024, Cl. 228-155.000.
Nippert, Russell A., to Nippert Company, The. Method for making a bimetal resistance welding electrode. 4,288,024, Cl. 228-155.000.
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Araseki, Takashi, 4,288,664, Cl. 179-170.200.
Babano, Sotoaki, 4,288,753, Cl. 330-51.000.
Minamibayashi, Seisaku; Ishikawa, Takashi; and Ogawa, Takashi, 4,288,820, Cl. 358-280.000.
Yoshida, Ikio; Kage, Kouzou; Ikeda, Kazuhiro; and Sato, Yasuo, 4,288,751, Cl. 328-173.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hirose, Yasunori, 4,287,804, Cl. 84-1.190.
Imamura, Akio; and Katada, Naota, 4,287,802, Cl. 84-1.010.
Yoshida, Takashi; Matsuyama, Takeshi; Kuki, Tamaki; and Kodaka, Takayuki, 4,288,800, Cl. 357-22.000.
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Kawabata, Shigeo; and Inazaki, Norihisa, 4,288,747, Cl. 324-207.000.
Nemoto, Susumu; and Fujieda, Toshio, 4,288,194, Cl. 414-586.000.
Nippon Oil Company, Limited: *See—*
Miyoshi, Mitsuji; Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Matsuno, Mitsuo, 4,288,579, Cl. 526-124.000.
Nippon Oil Seal Industry, Co., Ltd.: *See—*
Jinnouchi, Takeshi, 4,287,814, Cl. 92-43.000.
Nippon Paint Co., Ltd.: *See—*
Arimatsu, Seiji; Ishikawa, Katsukiyo; Umeda, Yasusi; and Nagata, Koichi, 4,288,517, Cl. 430-110.000.
Nippon Seiko Kabushiki Kaisha: *See—*
Ueda, Takeo, 4,288,097, Cl. 280-802.000.
Nippon Sheet Glass: *See—*
Kanazawa, Hiroyuki; and Futagami, Mikio, 4,288,357, Cl. 260-31.20N.
Nippon Soken, Inc.: *See—*
Noguchi, Masaaki; Tanaka, Taro; and Kato, Yoji, 4,287,862, Cl. 123-310.000.
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; Shimogawa, Toshiaki; and Chiba, Seiichi, 4,288,098, Cl. 280-806.000.
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,287,751, Cl. 73-23.000.
Nippon Steel Corporation: *See—*
Hiromae, Yoshitaka; Nakamura, Kazuo; Wada, Toshiya; and Katoh, Hirotada, 4,288,492, Cl. 428-336.000.
Nippon Telegraph and Telephone Public Corp.: *See—*
Ohhinata, Ichiro; Ohkoshi, Seiei; and Suzuki, Hideo, 4,288,862, Cl. 365-181.000.
Nippondenso Co., Ltd.: *See—*
Niimi, Masayoshi; Torii, Koshi; and Kato, Hidetoshi, 4,288,728, Cl. 318-139.000.
Nishida, Hideki: *See—*
Umezaki, Hiroshi; Nishida, Hideki; Tsumita, Norikazu; Yamada, Hirozi; Kaneko, Katsuhiro; and Koiso, Nagatugu, 4,288,283, Cl. 156-643.000.
Nishida, Hideo: *See—*
Hibino, Yozo; Oizumi, Junichi; Nishida, Hideo; Nakano, Yoshiyuki; and Ohmachi, Hiroshi, 4,288,198, Cl. 415-1.000.

Nishimatsu, Mineaki; Mukai, Sadayoshi; Hayashi, Yoshinori; Yamaguchi, Osamu; Ito, Akira; and Hara, Yasutoshi. Electrical capacitor. 4,288,837, Cl. 361-315.000.
Nishimura, Shigeyuki: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,288,599, Cl. 546-345.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, to Ishihara Sangyo Kaisha Ltd. Process for producing pyridine derivatives having a trifluoromethyl group at β-position thereof. 4,288,599, Cl. 546-345.000.
Nissan Motor Co., Ltd.: *See—*
Koshimaru, Hajime; and Ishii, Shohju, 4,287,747, Cl. 72-358.000.
Nissen, Axel; Rebafka, Walter; and Aquila, Werner, to BASF Aktiengesellschaft. Preparation of citral. 4,288,636, Cl. 568-486.000.
Nitto Boseki Co., Ltd.: *See—*
Fujita, Toshihito; Kikuchi, Toshiaki; and Nakazawa, Koji, 4,287,799, Cl. 83-347.000.
Nitzsche, John K.: *See—*
Prager, Jay M.; Sadlow, Joseph F.; and Nitzsche, John K., 4,288,839, Cl. 361-386.000.
Niu, Joseph H. Y.: *See—*
Schmolka, Irving R.; and Niu, Joseph H. Y., 4,288,232, Cl. 44-51.000.
NL CHEM Canada Inc.: *See—*
Gladu, Yves, 4,288,254, Cl. 106-300.000.
NL Industries, Inc.: *See—*
Davis, Brian R.; and Rahm, Joseph A., 4,288,416, Cl. 423-82.000.
Davis, Brian R.; and Rahm, Joseph A., 4,288,418, Cl. 423-83.000.
Rahm, Joseph A.; and Cole, Donald G., 4,288,415, Cl. 423-82.000.
Rahm, Joseph A.; and Cole, Donald G., 4,288,417, Cl. 423-83.000.
Noel, Francis E., Jr.: *See—*
Kolodzey, James S.; Noel, Francis E., Jr.; and Stilwell, George R., Jr., 4,288,869, Cl. 370-31.000.
Noguchi, Kohji: *See—*
Yamashita, Keitaro; and Noguchi, Kohji, 4,288,515, Cl. 430-100.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Two-stroke cycle gasoline engine. 4,287,859, Cl. 123-51.0BA.
Noguchi, Masaaki; Tanaka, Taro; and Kato, Yoji, to Nippon Soken, Inc. Otto-cycle internal combustion engine. 4,287,862, Cl. 123-310.000.
Nordin, Olof, to Forsheda Gummifabrik AB. Pipe section, preferably a concrete pipe section. 4,288,104, Cl. 285-45.000.
Norin, Claude P. Helmet having a withdrawable shield. 4,287,615, Cl. 2-424.000.
Norlin Industries, Inc.: *See—*
Gross, Glenn, 4,287,805, Cl. 84-1.260.
Norman, Bo: *See—*
de Ruvo, Alfonso; Norman, Bo; Duffy, Geoffrey G.; Moller, Klaus; Hansen, Karl E.; Felsvang, Karsten S.; and Liborius, Erik, 4,288,317, Cl. 209-139.00A.
Norota, Susumu; Kiriyama, Tsutomu; and Imoto, Tadasi, to Teijin Limited. Novel fibrous assembly and process for production thereof. 4,288,484, Cl. 428-113.000.
Norton, Edward J.; and Flanagan, Charles J., to New Balance Athletic Shoe, Inc. Counter for athletic shoe. 4,287,675, Cl. 36-129.000.
Novo Industri A/S: *See—*
Gestrelius, Stina M., 4,288,552, Cl. 435-174.000.
Nowak, Rudolf: *See—*
Holland, Gerhard; and Nowak, Rudolf, 4,288,411, Cl. 423-1.000.
Numazawa, Akio; and Arai, Hajime, to Toyota Jidosha Kogyo Kabushiki Kaisha. Power transmission unit for automotive vehicles. 4,287,791, Cl. 74-701.000.
Nunokawa, Makoto: *See—*
Nakai, Taiichiro; Furusawa, Kahei; Nunokawa, Makoto; and Ejiri, Yoshihiro, 4,288,144, Cl. 350-96.230.
Nutz, Karl-Diether; and Moser, Helmut, to Licentia Patent-Verwaltungs-G.m.b.H. Constant current switch. 4,288,740, Cl. 323-303.000.
N.V. Papierfabriek Gennep: *See—*
Heijs, Karel A. G.; Dechamps, Antonius J.; and de Jong, Robert L., 4,288,319, Cl. 209-166.000.
Oban, Harold C.; and Peterson, Charles M., to International Harvester Company. Fuel tank arrangement for a tractor. 4,288,086, Cl. 280-5.00A.
Obata, Osamu: *See—*
Kashioka, Seiji; Shima, Yoshihiro; Miyatake, Takafumi; Ejiri, Masakazu; and Obata, Osamu, 4,288,816, Cl. 358-138.000.
Oberhardt, Bruce J., to Technicon Instruments Corporation. Whole blood analyses and diffusion apparatus therefor. 4,288,228, Cl. 23-230.00R.
Obinata, Akio, to Orion Machinery Co., Ltd. Heating apparatus. 4,288,218, Cl. 432-222.000.
O'Brien, John P.: *See—*
United States of America, National Aeronautics and Space Administration; Allcock, Harry R.; O'Brien, John P.; Scopelianos, Angelo G.; and Fewell, Larry L., 4,288,585, Cl. 528-4.000.
Oda Gosen Kogyo Kabushiki Kaisha: *See—*
Takai, Isao, 4,287,714, Cl. 57-336.000.
Oda, Kazutaka; and Okishi, Yoshio, to Fuji Photo Film Co., Ltd. Light-sensitive printing plates with discontinuous over-coating. 4,288,526, Cl. 430-272.000.
Odawara, Yoji: *See—*
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,288,550, Cl. 435-167.000.
Offner, Abe; and Markle, David A., to Perkin-Elmer Corporation, The. Beam-splitting optical system. 4,288,148, Cl. 350-453.000.
Offshore Power Systems: *See—*
Dickey, Jimmy R., 4,287,718, Cl. 60-687.000.
Ogawa, Atsushi, to Trio Kabushiki Kaisha. Stereo demodulator with high frequency de-emphasis compensation. 4,288,752, Cl. 329-50.000.
Ogawa, Takashi: *See—*
Minamibayashi, Seisaku; Ishikawa, Takashi; and Ogawa, Takashi, 4,288,820, Cl. 358-280.000.
Ogura, Osamu: *See—*
Katagiri, Masayoshi; and Ogura, Osamu, 4,287,811, Cl. 91-369.00A.
O'Hare, Louis R. Wind tower turbine. 4,288,200, Cl. 415-2.00R.
Ohhinata, Ichiro; Ohkoshi, Seiei; and Suzuki, Hideo, to Nippon Telegraph and Telephone Public Corp.; and Hitachi, Ltd. Memory circuit. 4,288,862, Cl. 365-181.000.
Ohkado, Michio, to Sharp Kabushiki Kaisha. Door lock mechanism of microwave oven. 4,288,118, Cl. 292-201.000.
Ohkoshi, Seiei: *See—*
Ohhinata, Ichiro; Ohkoshi, Seiei; and Suzuki, Hideo, 4,288,862, Cl. 365-181.000.
Ohlendorf, Rolf: *See—*
Schuster, Hans-Dieter; Jans, Karl; and Ohlendorf, Rolf, 4,287,716, Cl. 60-276.000.
Ohmachi, Hiroshi: *See—*
Hibino, Yozo; Oizumi, Junichi; Nishida, Hideo; Nakano, Yoshiyuki; and Ohmachi, Hiroshi, 4,288,198, Cl. 415-1.000.
Ohmi, Hidehiko, to Toyo Seikan Kaisha, Ltd. Apparatus for distributing lining material in cap shells. 4,287,847, Cl. 118-215.000.
Ohsaka, Yohnosuke; and Tohzuka, Takashi, to Daikin Kogyo Co., Ltd. Process for preparing hexafluoropropene oxide. 4,288,376, Cl. 260-348.230.
Ohshima, Shoichi: *See—*
Ida, Shiuichiro; Ohshima, Shoichi; Hirashima, Syunichi; and Harada Yukihiro, 4,287,783, Cl. 74-467.000.
Ohta, Minoru: *See—*
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,287,751, Cl. 73-23.000.
Ohya, Isao: *See—*
Saima, Tooru; Ohya, Isao; Imada, Takahiko; Sato, Hideo; and Katsuma, Shimichi, 4,288,290, Cl. 176-19.00R.
Oizumi, Junichi: *See—*
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Oka, Masahisa; Okumura, Jun; and Naito, Takayuki, to Bristol-Myers Company. 7-[Dα-(4-Hydroxy-1,5-naphthyridine-3-carboxamido)-α-arylacetamido]-3-(N,N-dimethyl-aminomethylpyridinium) methyl-3-cephem-4-carboxylates. 4,288,590, Cl. 544-25.000.
Okada, Takashi; and Kuniyoshi, Yasunobu, to Sony Corporation. Filter circuit. 4,288,754, Cl. 330-260.000.
Okamoto, Nobukazu: *See—*
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,288,634, Cl. 568-454.000.
Okamoto, Syuzi; and Mukai, Naoto, to Konishiroku Photo Industry Co., Ltd. Belt with plural layers used in the automatic document feeding apparatus. 4,287,984, Cl. 198-847.000.
Okishi, Yoshio: *See—*
Oda, Kazutaka; and Okishi, Yoshio, 4,288,526, Cl. 430-272.000.
Okita, Toshimichi, to Sony Corporation. Microwave circuit. 4,288,766, Cl. 333-204.000.
Okubo, Isamu: *See—*
Matsunaga, Fujihisa; Shinohara, Yoshiyuki; Okubo, Isamu; Nakamura, Takayuki; and Tanaka, Seiichi, 4,288,637, Cl. 568-575.000.
Okuda, Takao: *See—*
Saji, Ikutaro; Aono, Shunji; Okuda, Takao; and Agui, Hideo, 4,288,448, Cl. 424-273.00R.
Okumura, Jun: *See—*
Oka, Masahisa; Okumura, Jun; and Naito, Takayuki, 4,288,590, Cl. 544-25.000.
Okumura, Michitoshi: *See—*
Yoshimoto, Hiromu; Okumura, Michitoshi; and Kawate, Kenji, 4,288,261, Cl. 148-131.000.
Olah, George A., to PCUK Produits Chimiques Ugine Kuhlmann. Regioselective preparation of β-isopropylnaphthalene over superacidic solid or supported perfluorinated sulfonic acid catalysts. 4,288,646, Cl. 585-458.000.
Olashaw, William F., to General Electric Company. Bolted/welded joint for switchboard run-in connector. 4,288,656, Cl. 174-71.00B.
Oldfield, Thomas A.; Smith, Edward D.; and Furukawa, Hideo, to Cummins Engine Company, Inc.; and Kabushiki Kaisha Komatsu Seisakusho. Turbocharged internal combustion engine. 4,287,717, Cl. 60-606.000.
Olin Corporation: *See—*
Pryor, Michael J.; and Tyler, Derek E., 4,287,937, Cl. 164-418.000.
Turley, Richard J.; and MacFarland, David R., 4,288,587, Cl. 528-57.000.
Olson, Gary L., to Hoffmann-La Roche Inc. Process for the preparation of esters of 5-formyl-3-methyl-2,4-pentadien-1-ol. 4,288,614, Cl. 560-240.000.
Olympus Optical Company Limited: *See—*
Sato, Masaaki, 4,288,826, Cl. 360-130.330.
Sato, Masaaki, 4,288,827, Cl. 360-137.000.
Ong, Lip H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Signal processing devices. 4,288,764, Cl. 333-165.000.

Ootani, Hisao: *See—*
Haga, Shozi; and Ootani, Hisao, 4,287,977, Cl. 192-91.00A.
Oppenheimer, Edgar D.; Udall, Humfrey N.; and Rudd, Wallace C., to Thermatool Corp. Solar panel elements and method of manufacture thereof. 4,287,947, Cl. 165-183.000.
Orion Machinery Co., Ltd.: *See—*
Obinata, Akio, 4,288,218, Cl. 432-222.000.
Ornstein, Leonard: *See—*
Lee, Martin J.; and Ornstein, Leonard, 4,288,425, Cl. 424-1.000.
Orogil: *See—*
Rivier, Georges, 4,288,335, Cl. 252-32.70E.
Orthodyne Electronics: *See—*
Larrison, John E., 4,288,023, Cl. 228-110.000.
Osborn, Alfred W.: *See—*
Bennett, George H.; Osborn, Alfred W.; Bunyan, Clive N.; and Midgley, Ronald A., 4,287,913, Cl. 137-574.000.
Osborne, Gregory W.; Ripley, William C.; and Wilson, Robert E., to Textron Inc. Shielded loop VOR/ILS antenna system. 4,288,794, Cl. 343-708.000.
Osburn, Carlton M.: *See—*
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Oshio, Hiromichi: *See—*
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,288,244, Cl. 71-118.000.
Ossola, George A.: *See—*
Kaugars, Eugene; and Ossola, George A., 4,288,075, Cl. 273-80.00B.
Ostby & Barton Company: *See—*
Plante, James E.; and Pfeifer, Warren E., 4,288,745, Cl. 324-158.00F.
Ostreicher, Eugene A.: *See—*
Hou, Kenneth C.; and Ostreicher, Eugene A., 4,288,462, Cl. 426-423.000.
Ota, Hiroshi; Sakuma, Noboru; Takarabe, Takeki; and Takiguchi, Isao, to Tokyo Keiki Company Limited. Lightweight materials having a high dielectric constant and their method of manufacture. 4,288,337, Cl. 252-512.000.
Otawara, Yasuhiko: *See—*
Sakata, Shinji; Yokota, Hirakazu; Shimizu, Tasuku; and Otawara, Yasuhiko, 4,288,677, Cl. 219-121.0ED.
Otis Elevator Company: *See—*
Cilderman, Janis J.; and Kirincich, Joseph G., 4,287,651, Cl. 29-159.00R.
Otis Engineering Corporation: *See—*
Setterberg, John R., Jr., 4,288,082, Cl. 277-125.000.
Otoshi, Kazuo, to Tatsumi Seiki Co., Ltd. Flat bed knitting machine. 4,287,727, Cl. 66-75.200.
Otsu, Nobuyuki; Mori, Shunji; and Saito, Taiichi, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method and apparatus for character reading. 4,288,779, Cl. 340-146.30Y.
Ottestad, Nils T. Method and device for conditioning of breathing air for divers. 4,288,396, Cl. 261-128.000.
Otto, Charles W., to General Electric Company. Method of assembling. 4,287,662, Cl. 29-596.000.
Outboard Marine Corporation: *See—*
Banski, Thomas J.; and Riedner, Robert J., 4,288,246, Cl. 75-68.00R.
Dudleston, Alan R.; and Stemper, Harry, 4,287,789, Cl. 74-516.000.
Owens-Illinois, Inc.: *See—*
Heckman, Russell W.; and Nickey, George A., 4,288,466, Cl. 427-28.000.
Oyague, Ralph; and Spector, George. Foldable gameboard and disc playing piece apparatus. 4,288,076, Cl. 273-126.00R.
Oyokota, Shigeru: *See—*
Ueda, Hiroshi; and Oyokota, Shigeru, 4,288,771, Cl. 335-230.000.
Ozaki, Yoshiaki, to Janome Sewing Machine Co., Ltd. Electric sewing machine with a speed control system. 4,287,843, Cl. 112-277.000.
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Bajusz, Sandor; Ronay, Andras; and Szekely, Jozsef, 4,288,432, Cl. 424-177.000.
Richtzenhain, Hermann: *See—*
Bier, Gerhard; Kottek, Dagmar; Petersen, Egon N.; Richtzenhain, Hermann; and Vollkommer, Norbert, 4,288,607, Cl. 560-11.000.
Richwine, John R., to Hercules Incorporated. 2,5-Dimercapto-1,3,4-thiadiazole as a cross-linker for saturated, halogen-containing polymers. 4,288,576, Cl. 525-349.000.
Ricoh Co., Ltd.: *See—*
Hashimoto, Hideo; and Kaneda, Tokuzo, 4,288,068, Cl. 271-125.000.
Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,288,797, Cl. 346-75.000.
Yamada, Kunihiro, 4,288,874, Cl. 375-118.000.
Riddell, Inc.: *See—*
Schulz, Arthur M., 4,287,613, Cl. 2-413.000.
Riedner, Robert J.: *See—*
Banski, Thomas J.; and Riedner, Robert J., 4,288,246, Cl. 75-68.00R.
Rines, Robert H.; and Knowles, Albert. Fish growth acceleration and density-increasing apparatus and method. 4,287,852, Cl. 119-3.000.
Rion Co., Ltd.: *See—*
Hori, Kiyoharu, 4,287,895, Cl. 128-777.000.
Ripley, William C.: *See—*
Osborne, Gregory W.; Ripley, William C.; and Wilson, Robert E., 4,288,794, Cl. 343-708.000.
Rittscher, Dieter: *See—*
Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, 4,288,698, Cl. 250-506.000.
Rivier, Georges, to Orogil. Novel metallic dithiophosphates and their use as additives for lubricating oils. 4,288,335, Cl. 252-32.70E.
Roanwell Corporation: *See—*
Foley, James P., 4,288,663, Cl. 179-122.000.
Roark, Charles F. Water heating system using solar energy. 4,287,879, Cl. 126-437.000.
Robert Bosch GmbH: *See—*
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,288,711, Cl. 310-68.00D.
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,288,712, Cl. 310-91.000.
Leiber, Heinz; Jonner, Wolf-Dieter; and Goebels, Hermann-Josef, 4,288,127, Cl. 303-111.000.
Poetsch, Dieter, 4,288,818, Cl. 358-214.000.
Schelhas, Peter, 4,288,037, Cl. 239-434.500.

Wanner, Karl; Reibetanz, Wilbert; Dohse, Hans-Peter; Baumann, Otto; Spiwokz, Dietmar; Seitz, Karl; Angermair, Ernst; and Wiesner, Herbert, 4,288,187, Cl. 409-180.000.

Roberts, Norman L.; and Whittaker, Graham, to Imperial Chemical Industries Limited. Preparation of 2-chloro-5-trifluoromethylpyridine and 2-chloro-5-perchlorofluoromethylpyridines. 4,288,600, Cl. 546-345.000.

Robichaud, Eileen. Nail form device. 4,287,899, Cl. 132-73.000.

Robinson, Michael, to LaPorte Industries Limited. Electrical insulation device. 4,288,650, Cl. 13-2.00P.

Robison, Harry I. Chemical heat pump and method. 4,287,721, Cl. 62-94.000.

Roche, William H.: *See—*
Ewing, Lloyd; Redmon, David T.; Thayer, Paul M.; Schmit, Frank L.; and Roche, William H., 4,288,394, Cl. 261-122.000.
Ewing, Lloyd; Redmon, David T.; and Roche, William H., 4,288,395, Cl. 261-122.000.

Rockwell International Corporation: *See—*
Flanagan, Joseph E.; and Gray, John C., 4,288,262, Cl. 149-19.600.
Kumar, Arun, 4,287,740, Cl. 72-40.000.

Roder, Walter, to R + S Stanzformen GmbH. Apparatus for cutting mould notches for strip steel cutting tools. 4,288,680, Cl. 219-121.0LG.

Rodermund, Gerd; and Kappus, Helmut. Process and apparatus for making pompons. 4,287,647, Cl. 28-147.000.

Rody, Jean, to Ciba-Geigy Corporation. Polyalkylpiperidine derivatives of s-triazines. 4,288,593, Cl. 544-198.000.

Rogachev, Nikolai V.: *See—*
Arutjunian, Norair S.; Arisheva, Evgenia A.; Rogachev, Nikolai V.; and Vasilievna, Lidia G., 4,288,377, Cl. 260-397.250.

Rogan, John B.; and Buehler, Charles K., to Standard Oil Company (Indiana). Catalyst and process for the polymerization of alpha-olefins. 4,288,580, Cl. 526-138.000.

Rogers, Dan C.; and Maggio, Joseph A., to M.R.E. Enterprises, Inc. Structure for holding a reservoir in an inverted position for gravity dispensing of a liquid. 4,288,007, Cl. 222-66.000.

Rogers, Howard G.: *See—*
Bilofsky, Ruth C.; and Rogers, Howard G., 4,288,524, Cl. 430-220.000.

Rogers, Jerrold J.; and Durecka, John, to Tektronix, Inc. Dual-mode amplifier. 4,288,738, Cl. 323-271.000.

Rogers, Olbert W. Method and apparatus for electroplating or electroforming metal objects. 4,288,298, Cl. 204-4.000.

Rogers, Wesley A.; and Laggan, James J., to General Motors Corporation. Electrostatic alpha-numeric display. 4,288,788, Cl. 340-378.200.

Rohm and Haas Company: *See—*
Kielbania, Andrew J., Jr., 4,288,499, Cl. 428-518.000.

Rohringer, Peter: *See—*
Nachbur, Hermann; and Rohringer, Peter, 4,288,489, Cl. 428-265.000.

Roland, Wolf-Achim; and Bechstedt, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Fluid, cold-stable, two-component washing compositions and method of washing textiles. 4,288,225, Cl. 8-137.000.

Roldness, David J.; Galasan, Felixberto A.; and Watson, Thomas H., to Pullman Incorporated. Auto carrier railway car. 4,287,833, Cl. 105-378.000.

Roles, David J.: *See—*
Znamirowski, Henry; and Roles, David J., 4,288,132, Cl. 312-257.00R.

Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, to Bayer Aktiengesellschaft. Monoazo pigments containing a quinazo linonylacetoacetanilide coupling component. 4,288,362, Cl. 260-154.000.

Rolfe, Keith O.; and Smith, Clifford E. Container for transported goods. 4,287,997, Cl. 220-1.500.

Rolls-Royce Limited: *See—*
Bennett, George H.; Osborn, Alfred W.; Bunyan, Clive N.; and Midgley, Ronald A., 4,287,913, Cl. 137-574.000.

Romagnoli, Andrea, to IMA - Industria Macchine Automatiche S.p.A. Apparatus for securing a suspension thread to filter bags for infusion products. 4,288,224, Cl. 493-345.000.

Romhild, Werner, to Tidland GmbH. Device for controlling the tension of a web. 4,288,045, Cl. 242-75.530.

Ronay, Andras: *See—*
Bajusz, Sandor; Ronay, Andras; and Szekely, Jozsef, 4,288,432, Cl. 424-177.000.

Ronen, Ram S., to Xerox Corporation. Monolithic HVMOSFET active switch array. 4,288,801, Cl. 357-41.000.

Ronen, Ram S., to Xerox Corporation. HVMOSFET Driver with single-poly gate structure. 4,288,802, Cl. 357-41.000.

Ronen, Ram S., to Xerox Corporation. High voltage MOSFET with doped ring structure. 4,288,803, Cl. 357-41.000.

Ronen, Ram S., to Xerox Corporation. High voltage MOSFET with overlapping electrode structure. 4,288,806, Cl. 357-45.000.

Roorda, Herm J.; and Jipping, Max J., to Akzo NV. Process for producing agglomerates of metal containing ores and the product of the process. 4,288,245, Cl. 75-0.50R.

Roper Corporation: *See—*
Znamirowski, Henry; and Roles, David J., 4,288,132, Cl. 312-257.00R.

Roquette Freres: *See—*
Devos, Francis; and Huchette, Michel, 4,288,619, Cl. 562-554.000.

Rose, Benjamin L., Jr.: *See—*
Berger, William R.; and Rose, Benjamin L., Jr., 4,287,690, Cl. 52-81.000.

Rose, Scott D.: *See—*
Rose, William A.; and Rose, Scott D., 4,288,077, Cl. 273-246.000.

Rose, William A.; and Rose, Scott D. Horse race lottery game. 4,288,077, Cl. 273-246.000.

Rosen, Brian: *See—*
Thornburg, David D.; and Rosen, Brian, 4,288,836, Cl. 361-288.000.

Rosenberg, Avner. Fluid flow control device particularly useful as a drip-irrigation emitter. 4,288,035, Cl. 239-271.000.

Rosner, Manfred, to Ciba-Geigy AG. Process for the production of 4-acylamido-2-nitro-1-alkoxybenzenes. 4,288,620, Cl. 564-144.000.

Ross, Carl H.: *See—*
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Sponer, Gisbert; and Schaumann, Wolfgang, 4,288,442, Cl. 424-267.000.

Rossi, Alberto: *See—*
Haas, Georges; Rossi, Alberto; Jaeggi, Knut A.; and Sele, Alex, 4,288,450, Cl. 424-283.000.

Rostron, Joseph R.: *See—*
Fischer, William H.; Cromer, Charles F.; and Rostron, Joseph R., 4,288,668, Cl. 200-150.00G.

Rothmans of Pall Mall Canada Limited: *See—*
Brackmann, Warren A.; and Kuhner, Albert, 4,287,897, Cl. 131-303.000.

Rotoflow Corporation, Inc.: *See—*
Swearingen, Judson S., 4,287,758, Cl. 73-862.490.

Rotor Tool Company, The: *See—*
Curtiss, George R., 4,287,795, Cl. 81-57.260.

Rotork Limited: *See—*
Smith, Frederick A., 4,288,665, Cl. 200-18.000.

Rotovolumetric AG: *See—*
Lotscher, Bernhard, 4,288,793, Cl. 340-870.370.

Rotta Research Laboratorium S.p.A.: *See—*
Rovati, Luigi; Makovec, Francesco; and Senin, Paolo, 4,288,609, Cl. 560-117.000.

Rottmaier, Ludwig; Merten, Rudolf; Dhein, Rolf; and Kreuder, Hans J., to Bayer Aktiengesellschaft. Power lacquer binders and process for the preparation thereof. 4,288,569, Cl. 525-113.000.

Roussel Uclaf: *See—*
Heymes, Rene, 4,288,434, Cl. 424-246.000.

Rovati, Luigi; Makovec, Francesco; and Senin, Paolo, to Rotta Research Laboratorium S.p.A. Quaternary ammonium derivatives of adamantane with antimicrobic activity. 4,288,609, Cl. 560-117.000.

Rovin, Herman. Apparatus for cutting and hemming bed sheets and the like. 4,287,841, Cl. 112-121.110.

RSV-Gusto Engineering B.V.: *See—*
Schoonmade, Wim, 4,288,177, Cl. 405-196.000.

Ruchel, Peter, to Diehl GmbH & Co. Brass material and a process for the preparation thereof. 4,288,257, Cl. 148-11.50C.

Rudd, Wallace C.: *See—*
Oppenheimer, Edgar D.; Udall, Humfrey N.; and Rudd, Wallace C., 4,287,947, Cl. 165-183.000.

Ruhrchemie Aktiengesellschaft: *See—*
Konrad, Klaus-Dieter; Kellersohn, Rudolf; Steck, Hans; and Schaub, Josef, 4,288,266, Cl. 156-158.000.
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,288,643, Cl. 585-324.000.

Rumanowski, Edmund J., to Stauffer Chemical Company. Purification of pyrethroid intermediate compounds by selective partial saponification. 4,288,610, Cl. 560-124.000.

Ruschek, Gerhard, to VDO Adolf Schindling AG. Electric regulating device. 4,287,782, Cl. 74-405.000.

Rushansky, Yuliy: *See—*
Moskowitz, Paul M.; Rushansky, Yuliy; Brown, Lester; and Weinstein, Gerald, 4,287,817, Cl. 99-282.000.

Russell, David B., to Dennison Manufacturing Company. Method and apparatus for dispensing fasteners. 4,288,017, Cl. 227-67.000.

Rustman, James C.: *See—*
Mindel, Michael J.; Miller, Michael E.; Rustman, James C.; and Palmer, Richard C., 4,287,689, Cl. 51-320.000.

Ryanen, Robert M., to Federal-Mogul Corporation. Bearing cage. 4,288,129, Cl. 308-218.000.

Rye, Grover W.: *See—*
Caravito, Vito A.; and Rye, Grover W., 4,287,927, Cl. 152-302.000.

Ryobi, Ltd.: *See—*
Morimoto, Yoshinori; and Kobayashi, Takehiro, 4,288,046, Cl. 242-84.21R.

S.A.R.L. Laporte Cibelec: *See—*
Laporte, Jean C.; and Laporte, Jean M., 4,288,080, Cl. 273-406.000.

Saab-Scania Aktiebolag: *See—*
Cedendahl, Bengt E., 4,287,784, Cl. 74-473.00R.

SAB Industri AB: *See—*
Stensson, Bo G.; Harstrom, Jan O.; and Csiba, Jan, 4,287,968, Cl. 188-74.000.

Sacco, Marian E.: *See—*
Groman, Ernest V.; and Sacco, Marian E., 4,288,538, Cl. 435-7.000.

Sachs Systemtechnik GmbH: *See—*
Brunken, Gerd; and Stangl, Rupert, 4,287,735, Cl. 70-395.000.

Sackman, George L., to United States of America, Navy. Ultrasonic image system. 4,288,866, Cl. 367-11.000.

Sadanandan, Kunissery P.: *See—*
Pacharis, George H.; and Sadanandan, Kunissery P., 4,287,807, Cl. 411-42.000.

Sadlow, Joseph F.: *See—*
Prager, Jay M.; Sadlow, Joseph F.; and Nitzsche, John K., 4,288,839, Cl. 361-386.000.

Sado, Ichiro; Kishimoto, Juji; and Murata, Hiroshi, to Canon Kabushiki Kaisha. Electronic apparatus with time-division drive. 4,288,792, Cl. 340-756.000.

Sado, Ryoichi, to Shin-Etsu Polymer Company, Ltd. Gaskets for electric shielding. 4,288,081, Cl. 277-1.000.

Saegusa, Nobuaki: *See—*
Sakaki, Masakatsu; and Saegusa, Nobuaki, 4,287,976, Cl. 192-84.00C.

Saima, Tooru; Ohya, Isao; Imada, Takahiko; Sato, Hideo; and Katsuma, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for exchanging control rod drive mechanism in a nuclear reactor. 4,288,290, Cl. 176-19.00R.

Sainsbury, Arthur W., Jr. Curtain and window shade hardware. 4,288,057, Cl. 248-546.000.

Saint-Gobain Industries: *See—*
Battigelli, Jean A.; and Bouquet, Francois, 4,288,236, Cl. 65-14.000.
Battigelli, Jean A.; Bouquet, Francois; and Fezenko, Igor, 4,288,237, Cl. 65-14.000.
Delcoigne, Adrien; and Lanneau, Jacques, 4,288,263, Cl. 156-42.000.

Saintemarie, Pierre M.: *See—*
Amblard, Jean-Louis; and Saintemarie, Pierre M., 4,288,008, Cl. 222-281.000.

Saito, Minoru: *See—*
Kutsuwada, Noboru; Saito, Minoru; Namiki, Ryoichi; and Kusunoki, Katsuo, 4,288,514, Cl. 430-54.000.

Saito, Mitsuaki: *See—*
Tanji, Hiroaki; Saito, Mitsuaki; and Ishii, Masaji, 4,288,717, Cl. 313-336.000.

Saito, Tadao: *See—*
Kinoshita, Harumi; Hayashi, Yoshiaki; and Saito, Tadao, 4,288,478, Cl. 428-35.000.

Saito, Taiichi: *See—*
Otsu, Nobuyuki; Mori, Shunji; and Saito, Taiichi, 4,288,779, Cl. 340-146.30Y.

Saito, Tsutomu: *See—*
Takami, Akio; Matsuura, Toshitaka; and Saito, Tsutomu, 4,288,774, Cl. 338-34.000.

Saji, Ikutaro; Aono, Shunji; Okuda, Takao; and Agui, Hideo, to Sumitomo Chemical Company, Limited. N-Substituted imidazole derivatives, and their use. 4,288,448, Cl. 424-273.00R.

Sakaguchi, Ryo; and Ikenaka, Yoshiharu, to Rex Industries Co., Ltd. Die-head of cutting machines. 4,288,181, Cl. 408-15.000.

Sakai, Kazumasa, to TRIO Kabushiki Kaisha. Protective circuit for a direct-coupled amplifier. 4,288,755, Cl. 330-298.000.

Sakaki, Masakatsu; and Saegusa, Nobuaki, to Sankyo Electric Company Limited. Electromagnetic clutches. 4,287,976, Cl. 192-84.00C.

Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Novel rhodium compounds and process for producing the same. 4,288,634, Cl. 568-454.000.

Sakakima, Hiroshi: *See—*
Senno, Harufumi; Sakakima, Hiroshi; Yanagiuchi, Yukihiro; Inoue, Tsuneo; Yamaguchi, Masatsugu; and Hirota, Eiichi, 4,288,260, Cl. 148-121.000.

Sakamoto, Yoshiyasu; Tamura, Yoichi; Kawaguchi, Kiyohiko; and Inada, Kiyotaka, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha. Measuring particle size distribution. 4,288,162, Cl. 356-335.000.

Sakata, Shinji; Yokota, Hirakazu; Shimizu, Tasuku; and Otawara, Yasuhiko, to Hitachi, Ltd. Welding method of turbine diaphragm. 4,288,677, Cl. 219-121.0ED.

Sakata, Yoshiya: *See—*
Katou, Hisao; and Sakata, Yoshiya, 4,288,684, Cl. 219-295.000.

Sakuma, Noboru: *See—*
Ota, Hiroshi; Sakuma, Noboru; Takarabe, Takeki; and Takiguchi, Isao, 4,288,337, Cl. 252-512.000.

Sakurada, Nobuaki; Shinoda, Nobuhiko; Mashimo, Yukio; Ito, Tadashi; and Ito, Fumio, to Canon Kabushiki Kaisha. Digital information indicating system. 4,288,154, Cl. 354-23.00D.

Salazar, Maria V. Weight reducing belt. 4,287,893, Cl. 128-556.000.

Saligny, Yves, to Etablissements Carpano & Pons. Two-section protection module for connecting blocks. 4,288,832, Cl. 361-119.000.

Saller, Erik, to FMC Corporation. Form coke production with recovery of medium BTU gas. 4,288,293, Cl. 201-6.000.

Salton, Inc.: *See—*
Moskowitz, Paul M.; Rushansky, Yuliy; Brown, Lester; and Weinstein, Gerald, 4,287,817, Cl. 99-282.000.

Sandoz Ltd.: *See—*
Gertisser, Berthold; and Henzi, Beat, 4,288,227, Cl. 8-655.000.
Traber, Rene P.; Hofmann, Hans; Harri, Eugen; and Max, Kuhn, 4,288,431, Cl. 424-177.000.

Sanford, Robert B. Canister set. 4,287,921, Cl. 141-360.000.

Sankyo Electric Company Limited: *See—*
Sakaki, Masakatsu; and Saegusa, Nobuaki, 4,287,976, Cl. 192-84.00C.

Sanner, Medford D., to Recognition Equipment Incorporated. Illumination system. 4,288,690, Cl. 250-216.000.

Sanner, Sidney N. Sailboat having multiple hulls. 4,287,845, Cl. 114-39.000.

Sano, Takezo; Inoue, Haruo; and Furuta, Akihiro, to Sumitomo Chemical Company Limited. Use of photo-curable composite materials to make a stencil. 4,288,529, Cl. 430-308.000.

Sanscord Australia Pty. Limited: *See—*
Perkins, Rex H., 4,287,967, Cl. 187-24.000.

Sarkisian, Robert. Adjustable sign mounting bracket. 4,288,053, Cl. 248-218.400.

Sasaki, Shunsuke: *See—*
Konishikawa, Kaoru; Sasaki, Shunsuke; Higuchi, Kouichi; and Hirose, Fuminori, 4,288,840, Cl. 361-410.000.

Sato, Hideo: *See—*
Saima, Tooru; Ohya, Isao; Imada, Takahiko; Sato, Hideo; and Katsuma, Shinichi, 4,288,290, Cl. 176-19.00R.

Sato, Masaaki, to Olympus Optical Company Limited. Pad device for use in tape cassette. 4,288,826, Cl. 360-130.330.

Sato, Masaaki, to Olympus Optical Company Ltd. Automatic switching device for cassette tape recorder with low frequency compensating means. 4,288,827, Cl. 360-137.000.

Sato, Yasuo: *See—*
Yoshida, Ikio; Kage, Kouzou; Ikeda, Kazuhiro; and Sato, Yasuo, 4,288,751, Cl. 328-173.000.

Saulnier, Charly J., to Parker-Hannifin Corporation. Quick connector coupling for semi-rigid hose. 4,288,113, Cl. 285-238.000.

Savage, David H. Carrier for sheet of photographic paper. 4,288,156, Cl. 354-312.000.

Scartazzini, Riccardo: *See—*
Schaffner, Karl; Wehrli, Hansuli; Muller, Beat; and Scartazzini, Riccardo, 4,288,364, Cl. 260-239.00A.

Schaeffer, David J.: *See—*
Tigwell, David C.; and Schaeffer, David J., 4,288,206, Cl. 417-517.000.

Schaffner, Karl; Wehrli, Hansuli; Muller, Beat; and Scartazzini, Riccardo, to Ciba-Geigy Corporation. Fragmentation procedure for preparing 3-amino-azetidinones. 4,288,364, Cl. 260-239.00A.

Schaffter, Craig P.: *See—*
McDonald, John C.; Baichtal, James R.; Helliwell, Bradley A.; Ling, Alexander C.; and Schaffter, Craig P., 4,288,870, Cl. 370-56.000.

Schamber, Frederick H.; and McCarthy, Jon J., to Tracor Northern, Inc. Beam current normalization in an X-ray microanalysis instrument. 4,288,692, Cl. 250-310.000.

Schaub, Josef: *See—*
Konrad, Klaus-Dieter; Kellersohn, Rudolf; Steck, Hans; and Schaub, Josef, 4,288,266, Cl. 156-158.000.

Schaumann, Wolfgang: *See—*
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Sponer, Gisbert; and Schaumann, Wolfgang, 4,288,442, Cl. 424-267.000.

Scheck, Gerald W.: *See—*
Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., 4,288,282, Cl. 156-630.000.

Schelhas, Peter, to Robert Bosch GmbH. Fuel injection valve. 4,288,037, Cl. 239-434.500.

Schiff, Charles M. Retracting arrow rest. 4,287,868, Cl. 124-41.00A.

Schiff, Peter. Cannula for intra-aortic balloon devices and the like. 4,287,892, Cl. 128-349.00B.

Schlegel Corporation: *See—*
Beck, Frank W., 4,288,482, Cl. 428-92.000.
Miska, Stanley R.; and Boyce, Jay E., 4,288,483, Cl. 428-92.000.

Schlienger, Max P., to Retech, Inc. Apparatus for fastening flanged tubular members. 4,288,116, Cl. 285-364.000.

Schloemann-Siemag, Inc.: *See—*
Fuhrmann, Wilhelm; and Sofranko, Andrew J., 4,287,745, Cl. 72-248.000.

Schmid, Frederick, to Crystal Systems Inc. Charging system for cutting blade. 4,287,869, Cl. 125-16.00R.

Schmid, Manfred; Sommer, Werner; and Vinnemann, Antonius, to Sulzer Morat GmbH. Thread guidance in mesh-forming machines with rotating thread guides. 4,287,728, Cl. 66-125.00R.

Schmid, Rolf: *See—*
Lohse, Friedrich; Gutekunst, Ferdinand; Schmid, Rolf; and Schmitter, Andre, 4,288,565, Cl. 521-135.000.

Schmidt, Friedrich W.: *See—*
Hoffman, Luther A.; and Schmidt, Friedrich W., 4,287,987, Cl. 206-63.300.

Schmidt, Hans-Joachim; Wunder, Friedrich; Arpe, Hans-Jurgen; and Leupold, Ernst I., to Hoechst Aktiengesellschaft. Process for the manufacture of oxygen-containing carbon compounds from synthesis gas. 4,288,558, Cl. 518-716.000.

Schmidt, Kenneth J., to General Trailer Company, Inc. Vehicle suspension with flexible transversal beam. 4,287,958, Cl. 177-136.000.

Schmit, Frank L.: *See—*
Ewing, Lloyd; Redmon, David T.; Thayer, Paul M.; Schmit, Frank L.; and Roche, William H., 4,288,394, Cl. 261-122.000.

Schmitter, Andre: *See—*
Lohse, Friedrich; Gutekunst, Ferdinand; Schmid, Rolf; and Schmitter, Andre, 4,288,565, Cl. 521-135.000.

Schmolka, Irving R.; and Niu, Joseph H. Y., to BASF Wyandotte Corporation. Ester containing fuel composition. 4,288,232, Cl. 44-51.000.

Schneebeli, Friedrich; and Biondetti, Mario, to Escher Wyss Limited. Large diameter hydroelectric machine. 4,288,703, Cl. 290-52.000.

Schneider, Abraham: *See—*
Janoski, Edward J.; Schneider, Abraham; and Ware, Richard E., 4,288,644, Cl. 585-360.000.

Schneider, Hans, to Sulzer Brothers Limited. Process for the precision molding of castings. 4,287,932, Cl. 164-516.000.

Schneider, Manfred: *See—*
Geiger, Michael; Schneider, Manfred; and Lutzkendorf, Jorg, 4,288,192, Cl. 414-223.000.

Schneider, Rolf: *See—*
Schuster, Ludwig; Raff, Paul; Hoffmann, Herwig; Schneider, Rolf; and Flickinger, Erich, 4,288,640, Cl. 568-855.000.

Schnell, Walter, to Cerberus AG. Fire alarm. 4,288,790, Cl. 340-628.000.

Schnellbacher, Kurt: *See—*
Essmann, Wolfgang; and Schnellbacher, Kurt, 4,288,318, Cl. 209-139.00R.

Schnitzer, Leo. Burner-boiler combination and an improved burner construction therefor. 4,287,857, Cl. 122-23.000.

Schoen, Roy C.: *See—*
Milbrandt, Carlton A.; and Schoen, Roy C., 4,288,666, Cl. 200-47.000.

Schoennagel, Hans J., to Mobil Oil Corporation. Separately supported polymetallic reforming catalyst. 4,288,348, Cl. 252-441.000.

Schoonmade, Wim, to RSV-Gusto Engineering B.V. Walking platform construction. 4,288,177, Cl. 405-196.000.

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Schumann, George; and Beckstead, Jerry, to Energy Research International. Zero clearance mobile home fireplace unit. 4,287,871, Cl. 126-67.000.

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Schwarz, Gunter. Irrigating appliance for female hygiene. 4,287,888, Cl. 128-239.000.

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Kreissig, Ernst; and Steinmann, Friedrich, 4,287,832, Cl. 105-176.000.

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Scott, George B. Base for free standing merchandiser. 4,288,052, Cl. 248-188.600.

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Grzywinski, Gerald G.; and Foley, Edward J., 4,288,480, Cl. 428-40.000.

Scovill Inc.: *See—*
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Searle, Robert J. G.: *See—*
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Searles, Kenneth R.: *See—*
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Selivanov, Anatoly G.; Yakovlev, Grigory P.; Khodyrev, Vladimir I.; and Zhivetin, Valery V. Drying installation. 4,287,674, Cl. 34-201.000.

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Sendzimir, Tadeusz. Variable capacity strip accumulator rotatable on a horizontal axis. 4,288,042, Cl. 242-55.000.

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Senno, Harufumi; Sakakima, Hiroshi; Yanagiuchi, Yukihiro; Inoue, Tsuneo; Yamaguchi, Masatsugu; and Hirota, Eiichi, to Matsushita Electric Industrial Co. Ltd. Method of heat treatments of amorphous alloy ribbons. 4,288,260, Cl. 148-121.000.

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Seragnoli, Enzo, to G.D. Societa per Azioni. Device for feeding and adjusting a continuous web and for cutting it into portions. 4,287,797, Cl. 83-74.000.

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Setterberg, John R., Jr., to Otis Engineering Corporation. Well sealing system. 4,288,082, Cl. 277-125.000.

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Lewis, Kenneth W.; and Shaffer, Robert C., 4,288,568, Cl. 525-111.000.

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Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

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Ohkado, Michio, 4,288,118, Cl. 292-201.000.

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Shaw, Stuart W., to International Nickel Company, Inc., The. Nickel-base superalloys. 4,288,247, Cl. 75-171.000.

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Magers, Thomas A.; Sheats, John E.; and Tabb, David L., 4,288,541, Cl. 435-14.000.

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Day, Janet A.; and Searle, Robert J. G., 4,288,367, Cl. 260-326.270.
Shepley, John D.; and Muijs, Herman M., 4,288,331, Cl. 252-8.900.
van Zon, Arie; de Jong, Feike; and Torny-Schutte, Gerridina J., 4,288,333, Cl. 252-8.55B.
Wagstaff, Nigel, 4,288,645, Cl. 585-415.000.

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Shepherd, John V.; and Sutton, Eric M. Photosensitive materials. 4,288,525, Cl. 430-253.000.

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Molinick, George C.; and Shields, Roger W., 4,288,789, Cl. 340-524.000.

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Kobayashi, Masatoshi; Shimakawa, George; Hara, Yukio; and Fujii, Hiroyuki, 4,288,284, Cl. 156-651.000.

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Hotta, Masashi, 4,287,943, Cl. 165-104.190.

Shimizu, Tasuku: *See—*
Sakata, Shinji; Yokota, Hirakazu; Shimizu, Tasuku; and Otawara, Yasuhiko, 4,288,677, Cl. 219-121.0ED.

Shimoda Kogyo, Ltd.: *See—*
Takemori, Kanji, 4,287,992, Cl. 211-49.00D.

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Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; Shimogawa, Toshiaki; and Chiba, Seiichi, 4,288,098, Cl. 280-806.000.

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Sado, Ryoichi, 4,288,081, Cl. 277-1.000.

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Manabe, Takao; Ebata, Hitoshi; and Shin, Shouichi, 4,288,851, Cl. 364-475.000.

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Beyer, Franz; and Schucht, Peter, 4,288,760, Cl. 333-116.000.
Fahrenschon, Franz; Meier, Alfred; and Thinschmidt, Hans, 4,288,662, Cl. 179-3.000.
Leibenzeder, Siegfried; and Heindl, Christine, 4,287,848, Cl. 118-401.000.
Mayr, Ulrich; Horeth, Dietmar; and Kusmierz, Hans, 4,288,168, Cl. 400-322.000.
Utner, Ferdinand, 4,288,468, Cl. 427-45.100.
Weyns, Arthur, 4,287,770, Cl. 73-632.000.
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Thoma, Hans, 4,287,810, Cl. 91-299.000.

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Kanda, Kaoru, 4,288,281, Cl. 156-540.000.

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Sih, John C., to Upjohn Company, The. Esters of prostacyclin-type compounds. 4,288,606, Cl. 560-8.000.

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Silvey, E. Ray. Universal saw chain grinding machine. 4,287,793, Cl. 76-25.00A.

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Simmons, Graham M. A. Liquid measuring device. 4,288,009, Cl. 222-442.000.

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Mossell, Alan T.; Simmons, James R.; and Middleton, Charles G., 4,288,270, Cl. 156-359.000.

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Japikse, Cornelis H.; and Simon, Irwin B., 4,288,378, Cl. 260-409.000.

Sims, J. Robert, Jr., to Exxon Research & Engineering Co. Process energy recovery. 4,288,406, Cl. 422-131.000.

Singbartl, Gunther, to Wabco Westinghouse GmbH. Measuring sensor. 4,288,746, Cl. 324-174.000.

Singh, Prithipal; Khanna, Pyare L.; and Colvin, Floyd W., to Syva Company. Disopyramide compounds for conjugating proteins used in immunoassays for disopyramide. 4,288,553, Cl. 435-188.000.

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Foolen, Jan A., 4,288,106, Cl. 285-136.000.

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Sohnle, Rudiger: *See—*
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Farmer, Robert F., III; and Sokol, Phillip E., deceased, 4,288,427, Cl. 424-70.000.
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Solberg, Rino: *See—*
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Sollenberger, Edward, to Empire of Carolina, Inc. Timer. 4,287,964, Cl. 185-38.000.
Sombroek, Johannes; Becker, Karl-Heinz; Minck, Klaus O.; and Enenkel, Hans-Joachim, to Merck Patent Gesellschaft mit beschrankter Haftung. 1-Aryloxy-3-nitratoalkylamino-2-propanols and use as β-receptor blocker. 4,288,452, Cl. 424-304.000.
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Hasuo, Masatoshi; and Tsuji, Jungo, 4,288,825, Cl. 360-88.000.
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Watanabe, Yoshimi, 4,288,824, Cl. 360-75.000.
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Yamamoto, Ryuji; Nakahara, Fukumori; and Kasai, Tadao, 4,288,823, Cl. 360-73.000.
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Coetzer, Johan; and Thackeray, Michael M., 4,288,506, Cl. 429-199.000.
Southwire Company: *See—*
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Ward, George C., 4,287,934, Cl. 164-482.000.
Southworth, Incorporated: *See—*
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Oyague, Ralph; and Spector, George, 4,288,076, Cl. 273-126.00R.
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Sperry Corporation: *See—*
Hill, Roy K., 4,288,701, Cl. 250-569.000.
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Spivack, John D., to Ciba-Geigy Corporation. Alkylated 2,2'-biphenylene phosphites. 4,288,391, Cl. 260-927.00R.
Spiwokz, Dietmar: *See—*
Wanner, Karl; Reibetanz, Wilbert; Dohse, Hans-Peter; Baumann, Otto; Spiwokz, Dietmar; Seitz, Karl; Angermair, Ernst; and Wiesner, Herbert, 4,288,187, Cl. 409-180.000.
Sponer, Gisbert: *See—*
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Sponer, Gisbert; and Schaumann, Wolfgang, 4,288,442, Cl. 424-267.000.
Sprague Devices, Inc.: *See—*
Green, Charles J.; and Forsythe, Alan K., 4,287,906, Cl. 137-118.000.
Sprague Electric Company: *See—*
Schroeder, Walter W., 4,288,843, Cl. 361-433.000.
Spraker, Philip W., to Sybron Corporation. Microbiological process for removing oleaginous material from wastewater and microbiological combination capable of same. 4,288,545, Cl. 435-42.000.
Sprenkle, George J., to Burroughs Corporation. Side-loading wire wrapping assembly for semiautomatic wiring machines. 4,287,666, Cl. 29-753.000.
Springer, Helmut: *See—*
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,288,643, Cl. 585-324.000.
Springmann, Hermann, to Chemische Werke Huls AG. Process for separating sulfonic acids from the reaction products obtained when parafins are reacted with sulfur dioxide, oxygen and water in the presence of ultra-violet light. 4,288,389, Cl. 260-504.00S.
Sprintschnik, Gerhard; and Uhlig, Fritz, to Hoechst Aktiengesellschaft. Process of manufacturing light-sensitive copying material based on diazonium salt condensation products. 4,288,520, Cl. 430-169.000.
Square D Company: *See—*
Berry, Edgar L.; and Drilling, Joseph C., 4,288,138, Cl. 339-45.00R.
Lass, John L., 4,288,655, Cl. 174-65.00R.
Squire, Edward N., to Du Pont de Nemours, E. I., and Company. Synthesis of 3-buten-1-ol, 3,4-dichlorobutan-1-ol and 3-chlorotetrahydrofuran. 4,288,374, Cl. 260-347.910.
Staab, Joachim; Apel, Willy; and Wolf, Heinz, to Hartmann & Braun Aktiengesellschaft. Fluid analyzer construction and housing. 4,287,764, Cl. 73-431.000.
Stalteri, Franco. Process and apparatus for the production of synthetic chamois leather footwear. 4,287,629, Cl. 12-142.00R.
Standard Brands Incorporated: *See—*
Barrett, Steven P.; and Nelson, William J., 4,288,548, Cl. 435-94.000.
Standard Oil Company (Indiana): *See—*
Donohue, John A., 4,288,588, Cl. 528-348.000.
McCaulay, David A., 4,288,649, Cl. 585-533.000.
Rogan, John B.; and Buehler, Charles K., 4,288,580, Cl. 526-138.000.
Ury, George B., 4,287,752, Cl. 73-23.100.
Stangl, Rupert: *See—*
Brunken, Gerd; and Stangl, Rupert, 4,287,735, Cl. 70-395.000.
Stanton, Garth M., to Chevron Research Company. Process for preparing overbased alkaline earth metal sulfonates. 4,288,336, Cl. 252-33.000.
Stanton, Leo F., to Bush Universal, Inc. Apparatus for stiffening shoe insoles. 4,287,628, Cl. 12-40.500.
Stark, Charles J., Jr., to General Electric Company. Silylated catechol compositions. 4,288,603, Cl. 556-422.000.
Staub, Vincent M., Jr., to General Motors Corporation. Annular friction disc with radial grooving. 4,287,978, Cl. 192-113.00B.
Stauffer Chemical Company: *See—*
Baker, Don R.; and Teach, Eugene G., 4,288,605, Cl. 560-1.000.
Magee, Walter L.; and Telschow, Jeffrey E., 4,288,604, Cl. 556-470.000.
Rumanowski, Edmund J., 4,288,610, Cl. 560-124.000.
Shim, Kyung S., 4,288,628, Cl. 568-65.000.
Walker, Francis H., 4,288,373, Cl. 260-347.300.
Walker, Francis H., 4,288,384, Cl. 260-464.000.
Steck, Hans: *See—*
Konrad, Klaus-Dieter; Kellersohn, Rudolf; Steck, Hans; and Schaub, Josef, 4,288,266, Cl. 156-158.000.
Steel, Margaret L.: *See—*
Snowden, Paul; and Steel, Margaret L., 4,288,397, Cl. 264-8.000.
Steiger, Bruce W., to Hydra-Mac, Inc. Variable capacity radiator system for off-highway vehicles. 4,287,961, Cl. 180-68.00R.
Steigerwald, Robert L.: *See—*
Wilson, James W. A.; and Steigerwald, Robert L., 4,288,732, Cl. 318-723.000.
Steinbock GmbH: *See—*
Klausbruckner, Gert; and Sieber, Konrad, 4,288,193, Cl. 414-342.000.
Steinmann, Friedrich: *See—*
Kreissig, Ernst; and Steinmann, Friedrich, 4,287,832, Cl. 105-176.000.
Stell, Joseph E.: *See—*
Gudnason, Geir V.; and Stell, Joseph E., 4,288,551, Cl. 435-168.000.
Stemper, Harry: *See—*
Dudleston, Alan R.; and Stemper, Harry, 4,287,789, Cl. 74-516.000.
Stensson, Bo G.; Harstrom, Jan O.; and Csiba, Jan, to SAB Industri AB. Device at a brake actuator. 4,287,968, Cl. 188-74.000.
Sterling Drug, Inc.: *See—*
Ellis, Claude E., 4,288,109, Cl. 285-158.000.
Stevens, Roy W., to Research Corporation. Serological test for syphilis. 4,288,426, Cl. 424-1.000.
Stevenson, William G.: *See—*
Feeney, George W.; and Stevenson, William G., 4,288,567, Cl. 525-99.000.
Stewart Stamping Corp.: *See—*
Wolfthal, Maurice, 4,287,748, Cl. 72-405.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Lettner, Kurt; Egger, Eugen; and Unger, Rudolf, 4,287,861, Cl. 123-198.00E.
Stilwell, George R., Jr.: *See—*
Kolodzey, James S.; Noel, Francis E., Jr.; and Stilwell, George R., Jr., 4,288,869, Cl. 370-31.000.
Stoffel, Axel, to International Business Machines Corporation. Method for making an improved polysilicon conductor structure utilizing reactive-ion etching and thermal oxidation. 4,287,661, Cl. 29-571.000.

Stoffel, James C.: *See—*
Lavallee, Pierre A.; and Stoffel, James C., 4,288,821, Cl. 358-293.000.
Stoll, Kurt. Connecting piece for supply lines carrying gaseous or fluid media. 4,288,112, Cl. 285-238.000.
Stone & Webster Engineering Corporation: *See—*
Gartside, Robert J.; and Woebcke, Herman N., 4,288,235, Cl. 55-196.000.
Storcel, Joseph A.: *See—*
Buszkiewicz, Bruno C.; and Storcel, Joseph A., 4,287,777, Cl. 74-2.000.
Storey, Richard: *See—*
Drewery, John O.; and Storey, Richard, 4,288,810, Cl. 358-16.000.
Storgard, David N., to Dana Corporation. Fuel tank selector valve. 4,287,908, Cl. 137-255.000.
Stork Brabant B.V.: *See—*
Vertegaal, Jacobus G., 4,288,212, Cl. 432-8.000.
Stover, Harry L. Microwave transformer. 4,288,759, Cl. 333-24.00R.
Stratton, David W. Slipper tray and footrest. 4,287,835, Cl. 108-26.000.
Streit, Kenneth F., to Techplastics, Inc. Collar coupled plastic conduit. 4,288,108, Cl. 285-137.00R.
Strub, Fritz, to Filtrox Maschinenbau AG. Support with rotary symmetric openings for filter aid, method and apparatus. 4,288,330, Cl. 210-777.000.
Students, Peter A., to Chemetron Corporation. Carbon dioxide snow hood with J-horn. 4,287,719, Cl. 62-10.000.
Stupar, James A., to Baxter Travenol Laboratories, Inc. Suction catheter having a non-stressed vacuum regulator. 4,287,889, Cl. 128-276.000.
Stutz, Frank: *See—*
Bromley, James E.; and Stutz, Frank, 4,287,713, Cl. 57-288.000.
Styles, Virgil L.: *See—*
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,288,365, Cl. 260-243.300.
Sugai, Takatoshi: *See—*
Kokubo, Eiichi; and Sugai, Takatoshi, 4,287,900, Cl. 133-4.00A.
Sugimura, Kazuo; and Sugimura, Nobuyuki. Semispherical shape valve device in bladder type accumulators. 4,287,916, Cl. 138-30.000.
Sugimura, Nobuyuki: *See—*
Sugimura, Kazuo; and Sugimura, Nobuyuki, 4,287,916, Cl. 138-30.000.
Sugo, Takanobu: *See—*
Machi, Sueo; Ishigaki, Isao; and Sugo, Takanobu, 4,288,467, Cl. 427-44.000.
Sullivan, Michael T. Duct jointing system. 4,288,115, Cl. 285-363.000.
Sulzer Brothers Limited: *See—*
Schneider, Hans, 4,287,932, Cl. 164-516.000.
Sulzer Morat GmbH: *See—*
Schmid, Manfred; Sommer, Werner; and Vinnemann, Antonius, 4,287,728, Cl. 66-125.00R.
Sumitomo Chemical Co. Ltd.: *See—*
Kanazawa, Hiroyuki; and Futagami, Mikio, 4,288,357, Cl. 260-31.20N.
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,288,244, Cl. 71-118.000.
Saji, Ikutaro; Aono, Shunji; Okuda, Takao; and Agui, Hideo, 4,288,448, Cl. 424-273.00R.
Sano, Takezo; Inoue, Haruo; and Furuta, Akihiro, 4,288,529, Cl. 430-308.000.
Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See—*
Sakamoto, Yoshiyasu; Tamura, Yoichi; Kawaguchi, Kiyohiko; and Inada, Kiyotaka, 4,288,162, Cl. 356-335.000.
Sunbeam Corporation: *See—*
Wolter, Gilbert R., 4,287,673, Cl. 34-97.000.
Sunbeam Plastics Corporation: *See—*
Luker, Charles E.; and Gach, Peter P., 4,288,000, Cl. 220-281.000.
Sundeen, Joseph E.; Dejneka, Tamara; and Hauck, Frederic P., to E. R. Squibb & Sons, Inc. Compositions containing 1-aryl-5-(2-propenylamino)-1-penten-3-ones and method for treating inflammatory conditions. 4,288,456, Cl. 424-330.000.
Suntech, Inc.: *See—*
Janoski, Edward J.; Schneider, Abraham; and Ware, Richard E., 4,288,644, Cl. 585-360.000.
Suntory Limited: *See—*
Kusumi, Takenori; and Nakanishi, Koji, 4,288,445, Cl. 424-272.000.
Suominen, Heikki S. Tubular insulating curtain and method of manufacture. 4,288,485, Cl. 428-116.000.
Surgical Appliance Industries, Inc.: *See—*
Applegate, Leslie T., 4,287,884, Cl. 128-80.00C.
Applegate, Leslie T., 4,287,885, Cl. 128-80.00C.
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V. Laminated plastic material. 4,288,491, Cl. 428-332.000.
Suss, Hans G.: *See—*
Zeindler, Stephan; and Suss, Hans G., 4,288,859, Cl. 364-900.000.
Sutton, Eric M.: *See—*
Shepherd, John V.; and Sutton, Eric M., 4,288,525, Cl. 430-253.000.
Sutton, James O., II. Computer controlled backhoe. 4,288,196, Cl. 414-699.000.
Sutton, Richard C.: *See—*
Adin, Anthony; Sutton, Richard C.; and Verdone, Joseph A., 4,288,531, Cl. 430-338.000.
Suzuki, Hajime: *See—*
Komamiya, Kogaku; and Suzuki, Hajime, 4,288,403, Cl. 422-83.000.
Suzuki, Hideo: *See—*
Ohhinata, Ichiro; Ohkoshi, Seiei; and Suzuki, Hideo, 4,288,862, Cl. 365-181.000.
Suzuki, Kinzaburo: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Himromitsu; and Suzuki, Kinzaburo, 4,288,555, Cl. 435-254.000.
Suzuki, Shuichi; and Karube, Isao, to Kyowa Hakko Kogyo Co., Ltd. Method and apparatus for measuring microorganism activity. 4,288,544, Cl. 435-39.000.
Svoboda, Josef, to TMC Corporation. Safety ski binding. 4,288,094, Cl. 280-623.000.
Svoboda, Josef: *See—*
Krob, Erwin; and Svoboda, Josef, 4,288,093, Cl. 280-605.000.
Swainson, Wyn K.; and Kramer, Stephen D., to Formigraphic Engine Corporation. Three-dimensional systems. 4,288,861, Cl. 365-127.000.
Swanson, Arthur F., to International Telephone and Telegraph Corporation. Free-spring wire connector. 4,288,657, Cl. 174-87.000.
Swearingen, Judson S., to Rotoflow Corporation, Inc. Shaft mounting device and method. 4,287,758, Cl. 73-862.490.
Swiss Aluminium Ltd.: *See—*
Eckel, Wolf-Dietrich; and Schulz, Eckhard, 4,288,353, Cl. 260-28.00R.
Zehnder, Jurg; and Neumeier, Erich, 4,287,834, Cl. 105-420.000.
Sybron Corporation: *See—*
Spraker, Philip W., 4,288,545, Cl. 435-42.000.
Sydansk, R. D.; and Gucwa, P. R., to Marathon Oil Company. Process for improving conformance and flow profiles in a subterranean sandstone formation. 4,287,951, Cl. 166-281.000.
Syracuse Tank & Manufacturing: *See—*
Campbell, George L., 4,287,739, Cl. 72-34.000.
Syva Company: *See—*
Singh, Prithipal; Khanna, Pyare L.; and Colvin, Floyd W., 4,288,553, Cl. 435-188.000.
Szekely, Jozsef: *See—*
Bajusz, Sandor; Ronay, Andras; and Szekely, Jozsef, 4,288,432, Cl. 424-177.000.
Tabb, David L.: *See—*
Magers, Thomas A.; Sheats, John E.; and Tabb, David L., 4,288,541, Cl. 435-14.000.
Tachibana, Shinichi: *See—*
Kiyama, Yosito; Tachibana, Shinichi; Yamashita, Riichiro; and Horino, Takeshi, 4,288,688, Cl. 235-384.000.
Tack, Hans: *See—*
Kruger, Heinrich; and Tack, Hans, 4,288,179, Cl. 407-114.000.
Taisho Pharmaceutical Co., Ltd.: *See—*
Kameyama, Tsutomu, 4,288,596, Cl. 546-198.000.
Tajima, Yoshio: *See—*
Miyoshi, Mitsuji; Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Matsuno, Mitsuo, 4,288,579, Cl. 526-124.000.
Takada, Shigetaka; and Naruse, Kazumichi, to Aisan Industry Co., Ltd. Air-fuel mixture ratio control device. 4,287,864, Cl. 123-440.000.
Takada, Toshiyuki: *See—*
Fujikawa, Tetsuzo; Takada, Toshiyuki; and Misawa, Kichiji, 4,287,860, Cl. 123-73.0PP.
Takai, Isao, to Oda Gosen Kogyo Kabushiki Kaisha. False-twisting system. 4,287,714, Cl. 57-336.000.
Takami, Akio; Matsuura, Toshitaka; and Saito, Tsutomu, to NGK Spark Plug Co., Ltd. Gas detector. 4,288,774, Cl. 338-34.000.
Takano, Suwaji: *See—*
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,288,096, Cl. 280-694.000.
Takaoka, Haruyoshi: *See—*
Kikuchi, Hideo; Takaoka, Haruyoshi; and Baba, Shigenori, 4,288,804, Cl. 357-42.000.
Takarabe, Takeki: *See—*
Ota, Hiroshi; Sakuma, Noboru; Takarabe, Takeki; and Takiguchi, Isao, 4,288,337, Cl. 252-512.000.
Takasago Perfumery Co., Ltd.: *See—*
Yamanaka, Tohr; and Imai, Takashi, 4,288,642, Cl. 568-903.000.
Takaya, Takao; and Murata, Masayoshi, to Fujisawa Pharmaceutical Co., Ltd. 3,7-Disubstituted-3-cephem-4-carboxylic acid compounds. 4,288,436, Cl. 424-246.000.
Takei, Toshihiro: *See—*
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; Shimogawa, Toshiaki; and Chiba, Seiichi, 4,288,098, Cl. 280-806.000.
Takemori, Kanji, to Shimoda Kogyo, Ltd. Rack structure. 4,287,992, Cl. 211-49.00D.
Takenouchi, Mutsuo: *See—*
Ozawa, Takashi; and Takenouchi, Mutsuo, 4,288,702, Cl. 250-578.000.
Takeuchi, Hidehiro: *See—*
Umeda, Haruhiko; Takeuchi, Hidehiro; Uenoyama, Masaru; Ishizuki, Kotoshige; Ando, Hiroyuki; and Hara, Hideo, 4,288,091, Cl. 280-415.00A.
Takeuchi, Tadashi; and Yamabe, Taiji, to Daicel Ltd. Fiber for optical communications. 4,288,145, Cl. 350-96.340.
Takiguchi, Isao: *See—*
Ota, Hiroshi; Sakuma, Noboru; Takarabe, Takeki; and Takiguchi, Isao, 4,288,337, Cl. 252-512.000.
Talley, Bruce J.; and Tolbert, Barry G., to Talley & Sons, Inc. Closed circuit video guidance system for farming vehicles and method. 4,288,814, Cl. 358-93.000.
Talley & Sons, Inc.: *See—*
Talley, Bruce J.; and Tolbert, Barry G., 4,288,814, Cl. 358-93.000.

Tamburelli, Giovanni, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Equalizer for the correction of digital signals. 4,288,872, Cl. 375-14.000.

Tamura, Tstsuji: *See—*
Fujiwara, Minoru; Yamada, Tominori; and Tamura, Tstsuji, 4,287,790, Cl. 74-665.0GB.

Tamura, Yoichi: *See—*
Sakamoto, Yoshiyasu; Tamura, Yoichi; Kawaguchi, Kiyohiko; and Inada, Kiyotaka, 4,288,162, Cl. 356-335.000.

Tanaka, Kunihiko: *See—*
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Nakai, Yoshiharu, 4,288,435, Cl. 424-246.000.

Tanaka, Minoru. Method of making and ornamenting shirts and shorts. 4,287,612, Cl. 2-243.00R.

Tanaka, Mutsuhiro; and Kashiwagi, Masatoshi, to Mitsui Petrochemical Industries Ltd. Silicone-coated article and process for production thereof. 4,288,497, Cl. 428-447.000.

Tanaka, Seiichi: *See—*
Matsunaga, Fujihisa; Shinohara, Yoshiyuki; Okubo, Isamu; Nakamura, Takayuki; and Tanaka, Seiichi, 4,288,637, Cl. 568-575.000.

Tanaka, Takeshi: *See—*
Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, 4,288,521, Cl. 430-169.000.

Tanaka, Taro: *See—*
Noguchi, Masaaki; Tanaka, Taro; and Kato, Yoji, 4,287,862, Cl. 123-310.000.

Tanaka, Yukiyasu: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,287,859, Cl. 123-51.0BA.

Tango, Hiroyuki, to Agency of Industrial Science and Technology. Protective circuit on insulating substrate for protecting MOS integrated circuit. 4,288,829, Cl. 361-56.000.

Taniguchi, Fumio. Fastening device for papers. 4,288,018, Cl. 227-76.000.

Tanji, Hiroaki; Saito, Mitsuaki; and Ishii, Masaji, to Denki Kagaku Kogyo Kabushiki Kaisha. Thermionic cathode apparatus. 4,288,717, Cl. 313-336.000.

Tarradellas, Norbert R.: *See—*
Cox, Robert P.; and Tarradellas, Norbert R., 4,288,234, Cl. 55-48.000.

Tarran, Phil K. Emergency rescue axe device. 4,287,623, Cl. 7-158.000.

Tate, Ralph: *See—*
Buchser, William J.; Tate, Ralph; and Haag, Charles W., 4,288,135, Cl. 312-296.000.

Tatrai, Lajos: *See—*
Bucsky, Gyorgy; Kiss, Zoltan; and Tatrai, Lajos, 4,287,757, Cl. 73-61.400.

Tatsumi Seiki Co., Ltd.: *See—*
Otoshi, Kazuo, 4,287,727, Cl. 66-75.200.

Taylor, Attalee S.: *See—*
Cobaugh, Robert F.; Lynch, James E.; and Taylor, Attalee S., 4,288,139, Cl. 339-74.00R.

Taylor, David W., to Microfuels, Inc. Coal treatment process. 4,288,231, Cl. 44-1.0SR.

Taylor, John A.: *See—*
Porter, Christopher H.; and Taylor, John A., 4,288,494, Cl. 428-398.000.

Taylor, Lloyd D., to Polaroid Corporation. Diffusion control layers in diffusion transfer photographic products. 4,288,523, Cl. 430-215.000.

Teach, Eugene G.: *See—*
Baker, Don R.; and Teach, Eugene G., 4,288,605, Cl. 560-1.000.

Technicare Corporation: *See—*
Walters, Ronald G.; and Carlson, Roland W., 4,288,695, Cl. 250-445.00T.

Technicon Instruments Corporation: *See—*
Lee, Martin J.; and Ornstein, Leonard, 4,288,425, Cl. 424-1.000.
Oberhardt, Bruce J., 4,288,228, Cl. 23-230.00R.

Techplastics, Inc.: *See—*
Streit, Kenneth F., 4,288,108, Cl. 285-137.00R.

Teichmann, Michael: *See—*
Lautenschlager, Peter; and Teichmann, Michael, 4,287,894, Cl. 128-687.000.

Teijin Limited: *See—*
Norota, Susumu; Kiriyama, Tsutomu; and Imoto, Tadasi, 4,288,484, Cl. 428-113.000.

Tektronix, Inc.: *See—*
Holmes, Robert E., 4,288,776, Cl. 338-308.000.
Rogers, Jerrold J.; and Durecka, John, 4,288,738, Cl. 323-271.000.

Telschow, Jeffrey E.: *See—*
Magee, Walter L.; and Telschow, Jeffrey E., 4,288,604, Cl. 556-470.000.

Tennemann, Volkmar: *See—*
Ebeling, Wilfried; and Tennemann, Volkmar, 4,288,230, Cl. 23-230.00A.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Tanaka, Kunihiko; Teraji, Tsutomu; and Nakai, Yoshiharu, 4,288,435, Cl. 424-246.000.

Ter Heide, Roelof: *See—*
Boelens, Harmannus; and Ter Heide, Roelof, 4,288,349, Cl. 252-522.00R.

Terner, Leslie L.; Van Alsten, Roy L.; and Moskowitz, David, to Ford Motor Company. Article coated with beta silicon carbide and silicon. 4,288,495, Cl. 428-446.000.

Texaco Development Corporation: *See—*
McCoy, David R.; and Naylor, Carter G., 4,288,334, Cl. 252-8.55D.

Texas Instruments Incorporated: *See—*
Bate, Robert T.; and Morris, Henry B., 4,288,470, Cl. 427-88.000.
Puccini, Richard E., 4,288,672, Cl. 200-314.000.
Reese, Edmund A.; White, Lionel S., Jr.; and McAlexander, Joseph C., III, 4,288,706, Cl. 307-577.000.

Textron, Inc.: *See—*
Baker, Larry R., 4,287,670, Cl. 30-276.000.
Osborne, Gregory W.; Ripley, William C.; and Wilson, Robert E., 4,288,794, Cl. 343-708.000.

Thackeray, Michael M.: *See—*
Coetzer, Johan; and Thackeray, Michael M., 4,288,506, Cl. 429-199.000.

Thayer, Paul M.: *See—*
Ewing, Lloyd; Redmon, David T.; Thayer, Paul M.; Schmit, Frank L.; and Roche, William H., 4,288,394, Cl. 261-122.000.

Theodoru, Alexander S.; and Theodoru, Stefan G. Pattern recognition system. 4,288,780, Cl. 340-146.30Z.

Theodoru, Stefan G.: *See—*
Theodoru, Alexander S.; and Theodoru, Stefan G., 4,288,780, Cl. 340-146.30Z.

Thermatool Corp.: *See—*
Oppenheimer, Edgar D.; Udall, Humfrey N.; and Rudd, Wallace C., 4,287,947, Cl. 165-183.000.

Thiessen, Henry F. Attachment apparatus for side-by-side bicycles. 4,288,089, Cl. 280-209.000.

Thinschmidt, Hans: *See—*
Fahrenschon, Franz; Meier, Alfred; and Thinschmidt, Hans, 4,288,662, Cl. 179-3.000.

Thoma, Hans, to SIG - Schweizerische Industrie-Gesellschaft. Drive for a pneumatic hammer. 4,287,810, Cl. 91-299.000.

Thomas, John D.: *See—*
Wallace, Harry L.; and Thomas, John D., 4,288,069, Cl. 271-245.000.

Thompson, Harris A. Remote pressure sensor tube for the alarm system of a respirator. 4,287,886, Cl. 128-202.220.

Thompson, Leonard R., to Dow Chemical Company, The. Decomposition inhibitors for high temperature storage and distillation of chlorinated phenols. 4,288,296, Cl. 203-6.000.

Thompson, Paige W., to General Electric Company. Device for closing a metallic tube. 4,287,746, Cl. 72-338.000.

Thompson, Wallace M., to American Hoist & Derrick Company. Slush pulp baler. 4,287,823, Cl. 100-129.000.

Thomson-Brandt: *See—*
Tinet, Claude; and Lemonon, Claire, 4,288,510, Cl. 430-11.000.

Thomson-CSF: *See—*
Depey, Maurice, 4,288,805, Cl. 357-44.000.
Hareng, Michel; Le Berre, Serge; and Leclerc, Pierre, 4,288,822, Cl. 358-296.000.
Papuchon, Michel; Puech, Claude; and Anne, Jean C., 4,288,785, Cl. 340-347.0DA.
Picquendar, Jean E.; Marchal, Michel; Dubois, Jean C.; and Duda, Eugene, 4,288,528, Cl. 430-297.000.

Thornburg, David D.; and Rosen, Brian, to Xerox Corporation. Capacitance controlled keyswitch. 4,288,836, Cl. 361-288.000.

Thornton, Richard D.: *See—*
Matthias, Dan W.; and Thornton, Richard D., 4,288,709, Cl. 310-49.00R.

Thorpe, David, to Imperial Chemical Industries Limited. Process for the manufacture of a glass fibre-reinforced plastics article and a glass fibre paste or slurry for use in the process. 4,288,563, Cl. 521-122.000.

Tidland GmbH: *See—*
Romhild, Werner, 4,288,045, Cl. 242-75.530.

Tigwell, David C.; and Schaeffer, David J. Automatic multiple water sampler. 4,288,206, Cl. 417-517.000.

Tilley, Jefferson W.: *See—*
Kramer, Michael J.; and Tilley, Jefferson W., 4,288,454, Cl. 424-321.000.

Timex Corporation: *See—*
Koch, Gene C., 4,288,147, Cl. 350-349.000.

Tinet, Claude; and Lemonon, Claire, to Thomson-Brandt. Process of making an optically recordable and readable information carrier and the carrier obtained by this process. 4,288,510, Cl. 430-11.000.

Ting, Gann: *See—*
Chang, Sir-Sea; Chern, Sheng-Laang; Ting, Gann; and Kuo, Tsai-Shu, 4,288,412, Cl. 423-10.000.

Tishura, Vladimir I.: *See—*
Kuchuk-Yatsenko, Sergei I.; Chernenko, Ivan A.; Bogorsky, Mikhail V.; Kulesh, Alexandr I.; Cherednichok, Vitaly T.; and Tishura, Vladimir I., 4,288,676, Cl. 219-100.000.

TMC Corporation: *See—*
Krob, Erwin; and Svoboda, Josef, 4,288,093, Cl. 280-605.000.
Svoboda, Josef, 4,288,094, Cl. 280-623.000.
Wittmann, Heinz; and Himmetsberger, Alois, 4,288,095, Cl. 280-625.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,288,634, Cl. 568-454.000.

Tobin, Leo W., Jr. Gang mower assembly. 4,287,706, Cl. 56-7.000.

Tohda, Takao: *See—*
Wasa, Kiyotaka; Tohda, Takao; Yokoyama, Kazuo; Hirota, Eiichi; and Hayakawa, Shigeru, 4,288,307, Cl. 204-192.00D.

Tohzuka, Takashi: *See—*
Ohsaka, Yohnosuke; and Tohzuka, Takashi, 4,288,376, Cl. 260-348.230.

Tokyo Keiki Company Limited: *See—*
Ota, Hiroshi; Sakuma, Noboru; Takarabe, Takeki; and Takiguchi, Isao, 4,288,337, Cl. 252-512.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Katakura, Masayuki, 4,288,707, Cl. 307-264.000.
Saima, Tooru; Ohya, Isao; Imada, Takahiko; Sato, Hideo; and Katsuma, Shinichi, 4,288,290, Cl. 176-19.00R.
Sekiguchi, Hideki; Miyoshi, Michizo; and Yonemura, Katsutoshi, 4,288,393, Cl. 261-108.000.
Uesugi, Michika, 4,288,853, Cl. 364-557.000.

Tolbert, Barry G.: *See—*
Talley, Bruce J.; and Tolbert, Barry G., 4,288,814, Cl. 358-93.000.

Tommaso, Helio, to Produtos Eletricos Corona Ltda. Flow-activated resistance heater for water. 4,288,685, Cl. 219-309.000.

Tompkins, Russell E.: *See—*
Alley, Robert P.; and Tompkins, Russell E., 4,288,773, Cl. 336-160.000.

Tompson, Clement R.; and Gruner, Garrett. Valve for developing variable output pressure. 4,287,909, Cl. 137-312.000.

Tomura, Yasutomo: *See—*
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Hatano, Masashi; Hagiwara, Tatsuo; Mikamo, Masaaki; Ebihara, Yoshimasa; Tomura, Yasutomo; and Imai, Keiji, 4,288,166, Cl. 366-149.000.

Torii, Koshi: *See—*
Niimi, Masayoshi; Torii, Koshi; and Kato, Hidetoshi, 4,288,728, Cl. 318-139.000.

Torlay, Dwight L.: *See—*
Gana, John; and Torlay, Dwight L., 4,288,219, Cl. 432-234.000.

Tornier, Alain, to Etablissements Tornier. Femoral pin for hip prosthesis. 4,287,617, Cl. 3-1.913.

Torny-Schutte, Gerridina J.: *See—*
van Zon, Arie; de Jong, Feike; and Torny-Schutte, Gerridina J., 4,288,333, Cl. 252-8.55B.

Toshiba Kikai Kabushiki Kaisha: *See—*
Manabe, Takao; Ebata, Hitoshi; and Shin, Shouichi, 4,288,851, Cl. 364-475.000.
Yoshida, Tetsu; and Higashikawa, Katsunori, 4,288,849, Cl. 364-102.000.

Toth, James M., to Republic Steel Corporation. Method and apparatus for viewing glowing objects. 4,288,164, Cl. 356-445.000.

Toth, Tibor E., to Union Carbide Corporation. Welding system with reversible drive motor control. 4,288,682, Cl. 219-137.710.

Touch Activated Switch Arrays, Inc.: *See—*
Ledniczki, Ferenc; and Patak, Richard J., 4,288,786, Cl. 340-365.00S.

Towmotor Corporation: *See—*
Kulh .ek, James A., 4,287,787, Cl. 74-493.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Fujii, Tadashiro; Yaginuma, Satoshi; Muto, Naoki; and Hayashi, Mitsuo, 4,288,429, Cl. 424-117.000.

Toyo Seikan Kaisha, Ltd.: *See—*
Ishibashi, Kazuhisa, 4,288,673, Cl. 219-10.690.
Ohmi, Hidehiko, 4,287,847, Cl. 118-215.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Haga, Shozi; and Ootani, Hisao, 4,287,977, Cl. 192-91.00A.
Ida, Shiuichiro; Ohshima, Shoichi; Hirashima, Syunichi; and Harada Yukihiro, 4,287,783, Cl. 74-467.000.
Ikuta, Yasuhiro; and Matsuo, Masashi, 4,287,866, Cl. 123-568.000.
Katagiri, Masayoshi; and Ogura, Osamu, 4,287,811, Cl. 91-369.00A.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,287,859, Cl. 123-51.0BA.
Numazawa, Akio; and Arai, Hajime, 4,287,791, Cl. 74-701.000.
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; Shimogawa, Toshiaki; and Chiba, Seiichi, 4,288,098, Cl. 280-806.000.

Traber, Rene P.; Hofmann, Hans; Harri, Eugen; and Max, Kuhn, to Sandoz Ltd. Cyclosporin derivatives, their production and pharmaceutical compositions containing them. 4,288,431, Cl. 424-177.000.

Tracor Northern, Inc.: *See—*
Schamber, Frederick H.; and McCarthy, Jon J., 4,288,692, Cl. 250-310.000.

Treace, Harry T., to Richards Manufacturing Company, Inc. Container for medical device. 4,288,066, Cl. 269-270.000.

Trevarrow, David. Apparatus for truing bolting surfaces of wheels and the like. 4,288,180, Cl. 408-2.000.

Tri-L Manufacturing, Inc.: *See—*
Lynch, Bobby R., 4,288,191, Cl. 414-24.500.

Trio Kabushiki Kaisha: *See—*
Ogawa, Atsushi, 4,288,752, Cl. 329-50.000.
Sakai, Kazumasa, 4,288,755, Cl. 330-298.000.

Trost, John R., to Sperry Corporation. Dynamic storage synchronizer using variable oscillator and FIFO buffer. 4,288,860, Cl. 364-900.000.

Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., to Eastman Kodak Company. Blends of propylene/1-butene or 1-pentene/higher α-olefin copolymers, compatible tackifying resins and plasticizing oils useful as hot-melt, pressure-sensitive adhesives. 4,288,358, Cl. 260-31.80M.

Trukhtenkova, Nina E.: *See—*
Surzhenko, Evgeny M.; Basilaev, Bronislav F.; Molotkov, Roman V.; Madorsky, Alexandr S.; Shalun, Grigory B.; Golynkina, Valentina B.; Ershova, Margarita A.; Eliseeva, Irina P.; Trukhtenkova, Nina E.; Gurylev, Sergei M.; Kopetskaya, Diana L.; Pechko, Evgeny Y.; Khlamenko, Albert S.; and Magnitsky, Viktor V., 4,288,491, Cl. 428-332.000.

Truly Magic Products, Inc.: *See—*
Kohler, Henry A., 4,287,649, Cl. 29-130.000.

Trummlitz, Gunter: *See—*
Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; and Kahling, Joachim, 4,288,437, Cl. 424-246.000.

Truswal Systems Corporation: *See—*
Bowser, Donald M., 4,287,822, Cl. 100-35.000.

Trutzschler GmbH & Co.: *See—*
Leifeld, Ferdinand, 4,287,643, Cl. 19-114.000.

TRW, Inc.: *See—*
McDonald, John C.; Baichtal, James R.; Helliwell, Bradley A.; Ling, Alexander C.; and Schaffter, Craig P., 4,288,870, Cl. 370-56.000.

Tseng, Shin-Shyong: *See—*
Rauhut, Michael M.; and Tseng, Shin-Shyong, 4,288,592, Cl. 544-159.000.

Tsuchiya, Toshio: *See—*
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,288,096, Cl. 280-694.000.

Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; Shimogawa, Toshiaki; and Chiba, Seiichi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Piston return stop device for tensioning device of seat belt. 4,288,098, Cl. 280-806.000.

Tsuji, Jungo: *See—*
Hasuo, Masatoshi; and Tsuji, Jungo, 4,288,825, Cl. 360-88.000.

Tsujii, Yasuhiro: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,288,599, Cl. 546-345.000.

Tsumita, Norikazu: *See—*
Umezaki, Hiroshi; Nishida, Hideki; Tsumita, Norikazu; Yamada, Hirozi; Kaneko, Katsuhiro; and Koiso, Nagatugu, 4,288,283, Cl. 156-643.000.

Tucker, Thomas: *See—*
Kaye, Robert M.; Eiloo, Gary A.; and Tucker, Thomas, 4,288,748, Cl. 324-326.000.

Tulip, John: *See—*
Seguin, Herb J. J.; Tulip, John; and Nam, Kyong H., 4,288,758, Cl. 331-94.5PE.

Turcotte, Hector. Reagent for the early detection of cancer. 4,288,540, Cl. 435-7.000.

Turk, Stanley D.: *See—*
Drake, Charles A.; and Turk, Stanley D., 4,288,625, Cl. 564-372.000.

Turley, Richard J.; and MacFarland, David R., to Olin Corporation. Preparation of noncellular polyurethane compositions. 4,288,587, Cl. 528-57.000.

Turner, Edwin C.: *See—*
Krause, William F.; and Turner, Edwin C., 4,287,954, Cl. 166-322.000.

Tuzson, John J., to Borg-Warner Corporation. Clutch with fusible material as protective element. 4,287,975, Cl. 192-82.00T.

Tyler, Derek E.: *See—*
Pryor, Michael J.; and Tyler, Derek E., 4,287,937, Cl. 164-418.000.

Ube Industries, Ltd.: *See—*
Ueno, Toyoaki; and Uchida, Masashi, 4,287,935, Cl. 164-314.000.

Uchida, Masashi: *See—*
Ueno, Toyoaki; and Uchida, Masashi, 4,287,935, Cl. 164-314.000.

Udall, Humfrey N.: *See—*
Oppenheimer, Edgar D.; Udall, Humfrey N.; and Rudd, Wallace C., 4,287,947, Cl. 165-183.000.

Ueda, Hiroshi; and Oyokota, Shigeru, to Minolta Camera Kabushiki Kaisha. Electromagnetic driven device. 4,288,771, Cl. 335-230.000.

Ueda, Takeo, to Nippon Seiko Kabushiki Kaisha. Shoulder belt for seat belt device. 4,288,097, Cl. 280-802.000.

Uehara, Tsutomu: *See—*
Hisazumi, Nobuyuki; Yamamoto, Masataka; and Uehara, Tsutomu, 4,288,488, Cl. 428-214.000.

Ueno, Toyoaki; and Uchida, Masashi, to Ube Industries, Ltd. Vertical die casting machine. 4,287,935, Cl. 164-314.000.

Uenoyama, Masaru: *See—*
Umeda, Haruhiko; Takeuchi, Hidehiro; Uenoyama, Masaru; Ishizuki, Kotoshige; Ando, Hiroyuki; and Hara, Hideo, 4,288,091, Cl. 280-415.00A.

Uesugi, Michika, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital temperature control system. 4,288,853, Cl. 364-557.000.

Uffer, Michael B.: *See—*
Bilanceri, Silvio G.; Kanner, Gary L.; and Uffer, Michael B., 4,288,733, Cl. 320-2.000.

Uhde GmbH: *See—*
Severin, Manfred; and Marsch, Hans-Dieter, 4,287,839, Cl. 110-331.000.

Uhlig, Fritz: *See—*
Sprintschnik, Gerhard; and Uhlig, Fritz, 4,288,520, Cl. 430-169.000.

Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, to Kagome, Ltd. Aseptic storage tank. 4,287,821, Cl. 99-646.00C.

Umeda, Haruhiko; Takeuchi, Hidehiro; Uenoyama, Masaru; Ishizuki, Kotoshige; Ando, Hiroyuki; and Hara, Hideo, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for coupling a tractor, a dump trailer and a dump truck. 4,288,091, Cl. 280-415.00A.

Umeda, Ikuo: *See—*
Aiba, Masahiko; and Umeda, Ikuo, 4,288,796, Cl. 346-75.000.

Umeda, Jun-Ichi: *See—*
Kajimura, Takashi; Hirao, Motohisa; Nakamura, Michiharu; Kuroda, Takao; Yamashita, Shigeo; and Umeda, Jun-Ichi, 4,288,757, Cl. 331-94.50H.

Umeda, Yasusi: *See—*
Arimatsu, Seiji; Ishikawa, Katsukiyo; Umeda, Yasusi; and Nagata, Koichi, 4,288,517, Cl. 430-110.000.

Umezaki, Hiroshi; Nishida, Hideki; Tsumita, Norikazu; Yamada, Hirozi; Kaneko, Katsuhiro; and Koiso, Nagatugu, to Hitachi, Ltd. Method of forming a microscopic pattern. 4,288,283, Cl. 156-643.000.

Unarco Industries, Inc.: *See—*
Klein, Herbert H., 4,287,994, Cl. 211-191.000.

Unger, Rudolf: *See—*
Lettner, Kurt; Egger, Eugen; and Unger, Rudolf, 4,287,861, Cl. 123-198.00E.

Union Carbide Corporation: *See—*
Barthel, Alfred, 4,287,720, Cl. 62-45.000.
Billig, Ernst; Jamerson, Jackie D.; and Pruett, Roy L., 4,288,380, Cl. 260-429.00R.
Comstock, Lowell R.; and Smith, Percy L., 4,288,571, Cl. 525-170.000.
Haines, Robert G., 4,288,455, Cl. 424-327.000.
Toth, Tibor E., 4,288,682, Cl. 219-137.710.
Weber, Willis W.; Hill, Richard F.; and Weeks, Thomas J., Jr., 4,288,410, Cl. 422-233.000.

Uniroyal Ltd.: *See—*
Mishra, Anupama, 4,288,584, Cl. 526-348.400.

United Kingdom Atomic Energy Authority: *See—*
Kaye, Alan S., 4,288,756, Cl. 331-94.50G.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Ong, Lip H., 4,288,764, Cl. 333-165.000.

United States of America
Air Force: *See—*
Finsness, Wilma L.; McMonagle, Richard L.; and Sedenquist, Edward M., 4,288,845, Cl. 362-63.000.
Wilterding, Jack E.; and Cozzens, John J., 4,288,857, Cl. 364-728.000.
Army: *See—*
Newton, Cleland O.; and Paige, Edward G. S., 4,288,750, Cl. 328-158.000.
Energy: *See—*
Hardin, Roy T., Jr.; and Kurinko, Carl D., 4,288,292, Cl. 176-87.000.
Mittell, Larry C., 4,288,060, Cl. 251-215.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Allcock, Harry R.; O'Brien, John P.; Scopelianos, Angelo G.; and Fewell, Larry L. Carboranylcyclotriphosphazenes and their polymers. 4,288,585, Cl. 528-4.000.
Moynihan, Philip I.; and Young, Donald L. Fluidized bed coal combustion reactor. 4,287,838, Cl. 110-234.000.
Navy: *See—*
Alpers, Frederick C., 4,288,049, Cl. 244-3.140.
Laughlin, Gordon J., 4,288,762, Cl. 333-117.000.
Sackman, George L., 4,288,866, Cl. 367-11.000.
Shelton, J. Paul, 4,288,795, Cl. 343-754.000.

U.S. Philips Corporation: *See—*
Enzlin, Theodoor H.; and Janssen, Antonius J., 4,288,807, Cl. 357-46.000.
Grotjohann, Hermanus H.; and Reynders, John R., 4,288,868, Cl. 370-30.000.
Igel, Anders N. E., 4,288,817, Cl. 358-163.000.
Nicholas, Keith H., 4,287,660, Cl. 29-571.000.
Sieben, Joannus H. F. C., 4,288,048, Cl. 242-198.000.
Van Der Vegte, Jan; and Hek, Dirk G., 4,288,838, Cl. 361-383.000.
van Overveld, Johan B. J.; van der Kooi, Auke G.; and van Stratum, Antonius J. A., 4,288,715, Cl. 313-174.000.

United States Steel Corporation: *See—*
Gana, John; and Torlay, Dwight L., 4,288,219, Cl. 432-234.000.

United Technologies Corporation: *See—*
Pearson, David D.; and Lemkey, Franklin D., 4,288,259, Cl. 148-32.000.
Wilson, Gregory S., 4,288,201, Cl. 415-115.000.

University of Minnesota, The Regents of the: *See—*
Narasimhan, Mandayam J.; and Anderson, John A., 4,288,546, Cl. 435-70.000.

University Patents, Inc.: *See—*
Basu, Samarnath; and Worrell, Wayne L., 4,288,508, Cl. 429-218.000.

Upjohn Company, The: *See—*
Johnson, Garland A.; and Peuler, Jacob D., 4,288,542, Cl. 435-15.000.
Sih, John C., 4,288,371, Cl. 260-346.220.
Sih, John C., 4,288,606, Cl. 560-8.000.
Sih, John C., 4,288,616, Cl. 562-503.000.
Sih, John C., 4,288,617, Cl. 562-503.000.
Sih, John C., 4,288,618, Cl. 562-503.000:
Youngdale, Gilbert A., 4,288,440, Cl. 424-263.000.

Urban, Robert F., to National Ham Company. Spiral meat slicer. 4,287,820, Cl. 99-538.000.

Urdanoff, Howard D. Skimming apparatus. 4,288,324, Cl. 210-242.100.

Urushiyama, Masayuki, to Alps Electric Co., Ltd. Method of mounting an electrical component. 4,287,667, Cl. 29-837.000.

Ury, George B., to Standard Oil Co. (Indiana). Apparatus and method for analyzing the hydrocarbon type composition of gasoline. 4,287,752, Cl. 73-23.100.

Uschold, Ronald E.: *See—*
Anderson, Burton C.; and Uschold, Ronald E., 4,288,574, Cl. 525-331.000.

USM Corporation: *See—*
Pacharis, George H.; and Sadanandan, Kunissery P., 4,287,807, Cl. 411-42.000.

Utner, Ferdinand, to Siemens Aktiengesellschaft. Process for encapsulating electrical components by vortex sintering. 4,288,468, Cl. 427-45.100.

Uzawa, Shunichi; Matsumoto, Shigeyuki; Miyazaki, Minoru; Iijima, Akio; and Watanabe, Kunio, to Canon Kabushiki Kaisha. Liquid jet recording head with permanent jig alignment. 4,288,799, Cl. 346-140.00R.

Van Alsten, Roy L.: *See—*
Terner, Leslie L.; Van Alsten, Roy L.; and Moskowitz, David, 4,288,495, Cl. 428-446.000.

van Bakel, Hermanus C. C. K.: *See—*
Akkerman, Antony M.; van Bakel, Hermanus C. C. K.; and Van Breevoort-Uurbanus, Henriette G., 4,288,444, Cl. 424-267.000.

Van Breevoort-Uurbanus, Henriette G.: *See—*
Akkerman, Antony M.; van Bakel, Hermanus C. C. K.; and Van Breevoort-Uurbanus, Henriette G., 4,288,444, Cl. 424-267.000.

Vandenkieboom, John; and Myers, Douglas, to LaSalle Machine Tool, Inc. Machining apparatus tool feed and retract system. 4,288,182, Cl. 408-129.000.

van der Kooi, Auke G.: *See—*
van Overveld, Johan B. J.; van der Kooi, Auke G.; and van Stratum, Antonius J. A., 4,288,715, Cl. 313-174.000.

van der Lely, Cornelis. Hay machine for working crop lying on the ground. 4,287,710, Cl. 56-372.000.

Vander Meer, James C.: *See—*
Kuntner, Richard J.; and Vander Meer, James C., 4,288,828, Cl. 361-31.000.

Van Der Vegte, Jan; and Hek, Dirk G., to U.S. Philips Corporation. Electrical signal transmission equipment bay. 4,288,838, Cl. 361-383.000.

van der Vlis, Adrianus; and Boucherie, Evert C., to De Rotterdamsche Droogdok Maatschappij B.V. Storage rack for the storage of fuel elements of nuclear reactors. 4,288,699, Cl. 250-507.000.

van Overveld, Johan B. J.; van der Kooi, Auke G.; and van Stratum, Antonius J. A., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,288,715, Cl. 313-174.000.

van Stratum, Antonius J. A.: *See—*
van Overveld, Johan B. J.; van der Kooi, Auke G.; and van Stratum, Antonius J. A., 4,288,715, Cl. 313-174.000.

van Zon, Arie; de Jong, Feike; and Torny-Schutte, Gerridina J., to Shell Oil Company. Dissolving barium sulfate scale with aqueous solutions of salts of phosphomethyl and amino-substituted macrocyclic polyethers. 4,288,333, Cl. 252-8.55B.

Varian Associates, Inc.: *See—*
Marzec, Willy; and Lint, James D., 4,288,041, Cl. 242-4.00R.

Vasilievna, Lidia G.: *See—*
Arutjunian, Norair S.; Arisheva, Evgenia A.; Rogachev, Nikolai V.; and Vasilievna, Lidia G., 4,288,377, Cl. 260-397.250.

Vax Appliances Limited: *See—*
Brazier, Alan J., 4,287,636, Cl. 15-321.000.

Vazquez-Cuervo, Alfonso; Richards, Frederick T.; Bafunno, Daniel V.; and Papacostas, George, to General Motors Corporation. Permanent magnet motor control system. 4,288,726, Cl. 318-54.000.

VDO Adolf Schindling AG: *See—*
Ruschek, Gerhard, 4,287,782, Cl. 74-405.000.

Veigel, Helmut, to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH. Boring tool. 4,288,184, Cl. 408-185.000.

Velling, Gunter. Method for the cooling of solid residues of gasification. 4,288,294, Cl. 201-39.000.

Venable, Joseph M., to Pamrod, Incorporated. Water insensitive bonded perlite structural materials. 4,288,253, Cl. 106-84.000.

Verdone, Joseph A.: *See—*
Adin, Anthony; Sutton, Richard C.; and Verdone, Joseph A., 4,288,531, Cl. 430-338.000.

Vereinigte Baubeschlagfabriken Gretsch and Co., GmbH: *See—*
Schroder, Gerhard; and Feucht, Fritz, 4,288,054, Cl. 248-225.100.

Vergini, Giorgio: *See—*
Codignola, Franco; Vergini, Giorgio; Gronchi, Paolo; and Centola, Paolo, 4,288,641, Cl. 568-855.000.

Vernitron Corporation: *See—*
Leonard, Murray; and Jugl, Herbert F., 4,288,210, Cl. 431-263.000.

Vertac, Inc.: *See—*
Giuffre, Luigi; and Spaziante, Placido M., 4,288,382, Cl. 260-453.00A.

Vertegaal, Jacobus G., to Stork Brabant B.V. Method and apparatus for fixing a binding agent. 4,288,212, Cl. 432-8.000.

Vickers Limited: *See—*
Sim, Terence; and Allen, Keith, 4,288,022, Cl. 228-107.000.

Victor United, Inc.: *See—*
Islas, John J., 4,287,867, Cl. 124-24.00R.

Viertler, Albin, to Klein, Schanzlin & Becker AG. Support for multistage compressors. 4,288,204, Cl. 417-243.000.

Vigano', Vittorio. Machine for folding sheets. 4,288,067, Cl. 493-420.000.

Vinal, Albert W., to International Business Machines Corp. Differentially modulated avalanche area magnetically sensitive transistor. 4,288,708, Cl. 307-309.000.

Vincent, Michel; Duhault, Jacques; Boullanger, Michelle; and Remond, Georges; to Science Union et Cie. Derivatives of arylalkanoic acids, compositions and use. 4,288,453, Cl. 424-317.000.

Vinnemann, Antonius: *See—*
Schmid, Manfred; Sommer, Werner; and Vinnemann, Antonius, 4,287,728, Cl. 66-125.00R.

Virginia Chemicals Inc.: *See—*
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Vogl, Norbert G., Jr.: *See—*
Harroun, Thomas V.; Heller, Lawrence G.; and Vogl, Norbert G., Jr., 4,288,864, Cl. 365-219.000.

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Rabinovich, Georgy L.; Maslyansky, Gdal N.; Birjukova, Ljubov M.; Levitsky, Emmanuil A.; Volkova, Kira L.; Lukina, Zoya P.; and Mozhaiko, Viktor N., 4,288,347, Cl. 252-439.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Kreft, Wolfgang, 4,287,765, Cl. 73-517.00R.

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Vollkommer, Norbert: *See—*
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von Wichert, Nils: *See—*
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Voplex Corporation: *See—*
Klein, Gary S., 4,287,846, Cl. 118-212.000.

Voss, Karl H.: *See—*
Jaccard, Andre R.; and Voss, Karl H., 4,287,642, Cl. 17-25.000.

Voyles, Gerald A., to Emhart Industries, Inc. Solid chip capacitor and method of manufacture. 4,288,842, Cl. 361-433.000.

W. R. Grace & Co.: *See—*
Curtin, Larry E., 4,288,015, Cl. 226-97.000.
Morgan, Charles R., 4,288,527, Cl. 430-288.000.

Wabco Westinghouse GmbH: *See—*
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Wada, Robert T.: *See—*
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Wada, Shozo: *See—*
Sakakibara, Tadamori; Matsushima, Yoshihisa; Nagashima, Yukio; Okamoto, Nobukazu; Kaneko, Katsumi; Ishii, Yohio; and Wada, Shozo, 4,288,634, Cl. 568-454.000.

Wada, Toshihiko: *See—*
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Hiromae, Yoshitaka; Nakamura, Kazuo; Wada, Toshiya; and Katoh, Hirotada, 4,288,492, Cl. 428-336.000.

Wade, Philip: *See—*
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Wagner, Kuno: *See—*
Muller, Hanns P.; Rabe, Hansjurgen; and Wagner, Kuno, 4,288,566, Cl. 521-158.000.

Wagstaff, Nigel, to Shell Oil Company. Process for the preparation of aromatic hydrocarbons and hydrogen from propane. 4,288,645, Cl. 585-415.000.

Wahle, Gunter: *See—*
Heitmann, Uwe; Lorenzen, Heinz-Christen; Wahle, Gunter; and Dahlgrun, Rolf, 4,287,754, Cl. 73-38.000.

Waite, John S.: *See—*
Fisher, Leslie G.; and Waite, John S., 4,287,650, Cl. 29-148.40R.

Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Carrier stopping device for power-and-free conveyor. 4,287,829, Cl. 104-172.00S.

Walchhuetter, Ulrico. Apparatus for coating ceramic tiles or the like to be advanced to roller tunnel kilns. 4,287,849, Cl. 118-602.000.

Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., to Bethlehem Steel Corporation. One side coating of continuous strand. 4,288,476, Cl. 427-300.000.

Walker, Francis H., to Stauffer Chemical Company. Certain N,N'-bis-tetrahydrofuryl-2-halo-succinamides. 4,288,373, Cl. 260-347.300.

Walker, Francis H., to Stauffer Chemical Company. N-Cyanoalkyl haloacetamides herbicidal antidotes. 4,288,384, Cl. 260-464.000.

Wallace, Harry L.; and Thomas, John D., to Burroughs Corporation. Cam operated document stop for high speed item sorter. 4,288,069, Cl. 271-245.000.

Wallace Murray Corporation: *See—*
Zinn, Michael J., 4,288,687, Cl. 235-92.00T.

Waller, Lonnie J.: *See—*
Meyers, George L.; Seiden, Frederick C.; and Waller, Lonnie J., 4,287,704, Cl. 53-564.000.

Wallis, Robert H.: *See—*
Bader, Ronald S.; Rennick, Lyle V.; and Wallis, Robert H., 4,288,782, Cl. 340-146.30Q.

Wallsten, Hans I., to Inventing S.A. Process for applying a coating to both sides of a running paper web. 4,288,473, Cl. 427-209.000.

Walsh, John E., to Dartmouth College; and Walsh, John E., part interest to each. Electrical moisture sensor. 4,288,742, Cl. 324-61.00R.

Walters, Ronald G.; and Carlson, Roland W., to Technicare Corporation. Computerized tomographic scanner with shaped radiation filter. 4,288,695, Cl. 250-445.00T.

Waltke, Robert W., to Pennwalt Corporation. Dental casts having vertical adjustments. 4,288,220, Cl. 433-74.000.

Wanderer, Herbert J., to Denver Plastics, Inc. Flexible closures and closure for bung openings. 4,287,996, Cl. 217-108.000.

Wanner, Karl; Reibetanz, Wilbert; Dohse, Hans-Peter; Baumann, Otto; Spiwokz, Dietmar; Seitz, Karl; Angermair, Ernst; and Wiesner, Herbert, to Robert Bosch GmbH. Arrangement for producing grooves. 4,288,187, Cl. 409-180.000.

Ward, George C., to Southwire Company. Continuous casting mold. 4,287,934, Cl. 164-482.000.

Ware, Richard E.: *See—*
Janoski, Edward J.; Schneider, Abraham; and Ware, Richard E., 4,288,644, Cl. 585-360.000.

Warner, Brian H.: *See—*
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Warner, Gordon R. Combined inking and moistening roller. 4,287,827, Cl. 101-141.000.

Wasa, Kiyotaka; Tohda, Takao; Yokoyama, Kazuo; Hirota, Eiichi; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Method of making a magnetic head. 4,288,307, Cl. 204-192.00D.

Waschle, Franz: *See—*
Kieferle, Wolfgang; and Waschle, Franz, 4,288,306, Cl. 204-192.00R.

Washington, Raymond J. Sack bag holder. 4,287,701, Cl. 53-390.000.

Waskow, Eberhard, to Weserhutte Aktiengesellschaft. Single-roll crusher. 4,288,039, Cl. 241-198.00A.

Watanabe, Eiki: *See—*
Anzai, Nobuo; and Watanabe, Eiki, 4,288,729, Cl. 318-345.00C.

Watanabe, Kunio: *See—*
Uzawa, Shunichi; Matsumoto, Shigeyuki; Miyazaki, Minoru; Iijima, Akio; and Watanabe, Kunio, 4,288,799, Cl. 346-140.00R.

Watanabe, Yoshimi, to Sony Corporation. Deflectable transducer mounting with damper for video signal reproducing apparatus. 4,288,824, Cl. 360-75.000.

Water Pollution Control Corp.: *See—*
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Ewing, Lloyd; Redmon, David T.; and Roche, William H., 4,288,395, Cl. 261-122.000.

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Wavin B.V.: *See—*
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Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, to Ruhrchemie Aktiengesellschaft. Process for preparing 2,3-dimethylbutene-2. 4,288,643, Cl. 585-324.000.

Weber, Willis W.; Hill, Richard F.; and Weeks, Thomas J., Jr., to Union Carbide Corporation. Apparatus for preparing aluminum alkoxides. 4,288,410, Cl. 422-233.000.

Weeks, Thomas J., Jr.: *See—*
Weber, Willis W.; Hill, Richard F.; and Weeks, Thomas J., Jr., 4,288,410, Cl. 422-233.000.

Weger, Kenneth F., Jr.: *See—*
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Wehinger, Egbert: *See—*
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Wehrli, Hansuli: *See—*
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Weidner, Barry. Tree transplanting method and apparatus therefor. 4,287,840, Cl. 111-1.000.

Weil, Thomas L., to Bentley-Harris Manufacturing Company. Bulky composite fabric and method of making same. 4,287,844, Cl. 112-412.000.

Weinhaus, Robert S. Magnetically secured display apparatus. 4,287,676, Cl. 40-10.00R.

Weinstein, Gerald: *See—*
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Weisbrich, Alfred L. TARP Yaw track means for rotors. 4,288,199, Cl. 415-2.00R.

Weiss, Robert A.; and Lundberg, Robert D., to Exxon Research & Engineering Co. Electrically conductive polymeric compositions. 4,288,352, Cl. 260-23.50A.

Wellbrock, Jurgen: *See—*
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Morton, Edward W., 4,288,725, Cl. 315-245.000.
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Weyns, Arthur, to Siemens Aktiengesellschaft. Method for the manufacture of ultrasonic transducers. 4,287,770, Cl. 73-632.000.

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Morrison, Russell J., 4,288,671, Cl. 200-304.000.

White Consolidated Industries, Inc.: *See—*
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White, Lionel S., Jr.: *See—*
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Whitford, Darryl R., to Flinders University of South Australia, The; and Minister of Transport, State of South Australia, The. Modular motor and control means and method. 4,288,727, Cl. 318-112.000.

Whitman, William C. Heat storage apparatus. 4,287,942, Cl. 165-104.140.

Whittaker Corporation: *See—*
Cisco, Terry C.; and Grimaila, Algert G., 4,288,291, Cl. 176-19.00R.

Whittaker, Graham: *See—*
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Widell, Stig G.: *See—*
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Widmer, Gerald: *See—*
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Widmer, Gerald L.; Gray, Larry J.; and Pardee, Richard H., to Widmer, Gerald. Boom shock and tilt system. 4,288,034, Cl. 239-168.000.

Wiechert, Edelbert, to Siemens Aktiengesellschaft. Transport car, particularly for transporting files, with frontally arranged bumper. 4,288,121, Cl. 293-4.000.

Wiedemann, Fritz: *See—*
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Wier, Jack E.: *See—*
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Wilhelm Dahle Buro- und Zeichengeratefabrik: *See—*
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Wilhelm, Thomas D., to American Can Company. Container structure. 4,288,026, Cl. 229-1.50B.

Wilkes, William W., to Fiber Industries, Inc. Apparatus for producing melt-spun filaments. 4,288,207, Cl. 425-72.00S.

Will, Fritz G., to General Electric Company. Insulating porous matrices for electrode boilers. 4,288,683, Cl. 219-290.000.

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Williams, Robert M. Waste material processing apparatus. 4,288,038, Cl. 241-52.000.

Williams, Robert T. Multi-field imaging device. 4,288,819, Cl. 358-226.000.

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Wilsberg, Heinz-Manfred, to Henkel Kommanditgesellschaft auf Aktien. Spray cleaner composition for the spot treatment of textiles before washing. 4,288,339, Cl. 252-90.000.

Wilson, Albert, to Litton Systems, Inc. Vibrating screen with screen deck unclogging mechanism. 4,288,320, Cl. 209-382.000.

Wilson, Gregory S., to United Technologies Corporation. Vane cooling structure. 4,288,201, Cl. 415-115.000.

Wilson, Hugh R. Variable work holding device for grinding gemstones. 4,287,687, Cl. 51-229.000.

Wilson, James W. A.; and Steigerwald, Robert L., to General Electric Company. Forced commutated starting circuit for load commutated inverter drive system. 4,288,732, Cl. 318-723.000.

Wilson, Robert E.: *See—*
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Wilterding, Jack E.; and Cozzens, John J., to United States of America, Air Force. Digital integrating/auto-correlator apparatus. 4,288,857, Cl. 364-728.000.

Winstead, Thomas W., to Maryland Cup Corporation. Method for the continuous formation of biaxially oriented thermoplastic materials and forming articles therefrom by intermittent forming means interfaced therewith. 4,288,400, Cl. 264-210.100.

Wissner, Allan; and Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Hydroxymethyl-11-deoxy-15-hydroxy-prosten-1-ol-derivatives. 4,288,629, Cl. 568-330.000.

Wissner, Allan; and Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Hydroxymethyl-11,15-dihydroxy-prosten-1-ol-derivatives. 4,288,630, Cl. 568-330.000.

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Wisyanski, Thomas W., to Century Brass Products, Inc. Control valve assembly. 4,288,033, Cl. 236-93.00A.

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Wolfthal, Maurice, to Stewart Stamping Corp. Rotary transfer press apparatus. 4,287,748, Cl. 72-405.000.

Wolter, Gilbert R., to Sunbeam Corporation. Hair dryer diffuser. 4,287,673, Cl. 34-97.000.

Wong, James K. C. Tire traction device. 4,287,926, Cl. 152-225.00C.

Woodell, Jack L.: *See—*
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Wootton, Roy E., to Electric Power Research Institute, Inc. Dielectric gas selected from binary mixtures of SF_6, SO_2 and CF_3CFCF_2. 4,288,651, Cl. 174-17.0GF.

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Worthy, Howard G. Fuel feeding system for aircraft. 4,287,907, Cl. 137-255.000.

Wright, Michael J., to Newage Engineers Limited. Control systems for electric generators. 4,288,736, Cl. 322-28.000.

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Yabe, Toyoji, to Sony Corporation. Television receiver apparatus for selectively displaying a video picture or alphanumeric data information. 4,288,809, Cl. 358-12.000.

Yaginuma, Satoshi: *See—*
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Yamada, Kunihiro, to Ricoh Co., Ltd. Timing data reproduction system. 4,288,874, Cl. 375-118.000.

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Yamada, Shigeyasu; Kawamura, Kazumi; and Nakamura, Shuji, to NGK Spark Plug Co., Ltd. Spark plug for internal combustion engine. 4,288,714, Cl. 313-142.000.

Yamada, Tominori: *See—*
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Yamamoto, Haruo. Fermentative process for preparing antibiotics of the gentamicin class. 4,288,547, Cl. 435-80.000.

Yamamoto, Masataka: *See—*
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Yamamoto, Ryuji; Nakahara, Fukumori; and Kasai, Tadao, to Soundesign Corporation. Apparatus for and method of distinguishing pauses to control selective replay in tape recording/reproduction systems. 4,288,823, Cl. 360-73.000.

Yamamoto, Shigeru, to Daiwa Seiko, Inc. Fishing rod line guide. 4,287,678, Cl. 43-24.000.

Yamamoto, Toshio; and Yuge, Shizuo, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing apparatus. 4,287,850, Cl. 118-657.000.

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Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,288,438, Cl. 424-251.000.

Yamashita, Keitaro; and Noguchi, Kohji, to Hitachi Metals, Ltd. Process for reversal development using inductively chargeable magnetic powdery developer. 4,288,515, Cl. 430-100.000.

Yamashita, Riichiro: *See—*
Kiyama, Yosito; Tachibana, Shinichi; Yamashita, Riichiro; and Horino, Takeshi, 4,288,688, Cl. 235-384.000.

Yamashita, Shigeo: *See—*
Kajimura, Takashi; Hirao, Motohisa; Nakamura, Michiharu; Kuroda, Takao; Yamashita, Shigeo; and Umeda, Jun-Ichi, 4,288,757, Cl. 331-94.50H.

Yamashita, Toshiharu, to Hoya Corporation. Glass filter for contrast enhancement in CRT displays. 4,288,250, Cl. 501-78.000.

Yanagiuchi, Yukihiro: *See—*
Senno, Harufumi; Sakakima, Hiroshi; Yanagiuchi, Yukihiro; Inoue, Tsuneo; Yamaguchi, Masatsugu; and Hirota, Eiichi, 4,288,260, Cl. 148-121.000.

Yardley Products Corp.: *See—*
Ziaylek, Theodore, Jr., 4,288,189, Cl. 411-180.000.

Yarway Corporation: *See—*
Hetz, Heinz K., 4,288,032, Cl. 236-56.000.

Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, to Nippon Soken, Inc. Gas detector. 4,287,751, Cl. 73-23.000.

Yeda Research & Development Co., Ltd.: *See—*
Avigal, Yitzchak; Manassen, Joost; Hodes, Gary; and Cahen, David, 4,288,502, Cl. 429-111.000.

Yellow Springs Instrument Company, Inc., The: *See—*
Newman, David P., 4,288,159, Cl. 356-44.000.

Yokohama Rubber Co., Ltd., The: *See—*
Mito, Jun, 4,287,626, Cl. 9-8.00R.

Yokomichi, Isao: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,288,599, Cl. 546-345.000.

Yokota, Hideo: *See—*
Matsumoto, Seiichi; Yokota, Hideo; and Matsuda, Mutsuhide, 4,288,151, Cl. 354-25.000.

Yokota, Hirakazu: *See—*
Sakata, Shinji; Yokota, Hirakazu; Shimizu, Tasuku; and Otawara, Yasuhiko, 4,288,677, Cl. 219-121.0ED.

Yokota, Tethuya: *See—*
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,287,821, Cl. 99-646.00C.

Yokota, Yukio: *See—*
Seoka, Yoshio; Aoki, Kozo; Yokota, Yukio; and Kubodera, Seiiti, 4,288,532, Cl. 430-385.000.

Yokoyama, Kazuo: *See—*
Wasa, Kiyotaka; Tohda, Takao; Yokoyama, Kazuo; Hirota, Eiichi; and Hayakawa, Shigeru, 4,288,307, Cl. 204-192.00D.

Yonemura, Katsutoshi: *See—*
Sekiguchi, Hideki; Miyoshi, Michizo; and Yonemura, Katsutoshi, 4,288,393, Cl. 261-108.000.

Yoshida, Ikio; Kage, Kouzou; Ikeda, Kazuhiro; and Sato, Yasuo, to Nippon Electric Co., Ltd. Wave translating circuit. 4,288,751, Cl. 328-173.000.

Yoshida Kogyo K. K.: *See—*
Matsubara, Isamu; and Hayashi, Moriyoshi, 4,287,697, Cl. 52-403.000.
Shimono, Muchiji, 4,287,918, Cl. 139-35.000.

Yoshida Kogyo, K.K.: *See—*
Kanzaka, Yoshihiro, 4,287,646, Cl. 24-205.14R.

Yoshida, Takashi; Matsuyama, Takeshi; Kuki, Tamaki; and Kodaka, Takayuki, to Nippon Gakki Seizo Kabushiki Kaisha. Junction field effect transistor. 4,288,800, Cl. 357-22.000.

Yoshida, Tetsu; and Higashikawa, Katsunori, to Toshiba Kikai Kabushiki Kaisha. Machine tool control systems. 4,288,849, Cl. 364-102.000.

Yoshikumi, Chikao; Wada, Toshihiko; Makita, Himromitsu; and Suzuki, Kinzaburo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for the cultivation of Basidiomycetes. 4,288,555, Cl. 435-254.000.

Yoshimoto, Hiromu; Okumura, Michitoshi; and Kawate, Kenji. Method for the heat treatment of aluminum strip. 4,288,261, Cl. 148-131.000.

Yoshinaga, Sadao, to Prince Industrial Development Co., Ltd. Gas cigarette lighter with solar cell. 4,288,209, Cl. 431-255.000.

Yoshino Kogyosho Co., Ltd.: *See—*
Kinoshita, Harumi; Hayashi, Yoshiaki; and Saito, Tadao, 4,288,478, Cl. 428-35.000.

Young, Daniel P.: *See—*
Garritsen, Petrus G. S.; MacVicar, Douglas J.; Young, Daniel P.; and Sojda, John G., 4,288,305, Cl. 204-112.000.

Young, Donald L.: *See—*
United States of America, National Aeronautics and Space Administration; Moynihan, Philip I.; and Young, Donald L., 4,287,838, Cl. 110-234.000.

Young, Harold K.: *See—*
Wald, Herbert; Young, Harold K.; and Meadows, Lacy C., 4,288,476, Cl. 427-300.000.

Youngdale, Gilbert A., to Upjohn Company, The. Pyridinones. 4,288,440, Cl. 424-263.000.

Yu, Hwa N.: *See—*
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., 4,288,256, Cl. 148-1.500.

Yuge, Shizuo: *See—*
Yamamoto, Toshio; and Yuge, Shizuo, 4,287,850, Cl. 118-657.000.

Zahir, Abdul-Cader; and Wyler, Siegfried, to Ciba-Geigy Corporation. Curable mixtures based on maleimides and 1-propenyl-substituted phenols. 4,288,583, Cl. 526-262.000.

Zehnder, Jurg; and Neumeier, Erich, to Swiss Aluminium Ltd. Stops of a draft gear housing of a rail car central coupler arranged in a center sill. 4,287,834, Cl. 105-420.000.

Zeindler, Stephan; and Suss, Hans G., to Inventio AG. Apparatus for placing in order the servicing sequence of storey calls of elevator systems. 4,288,859, Cl. 364-900.000.

Zema, Fred. Electric mouth organ holder. 4,287,803, Cl. 84-1.060.

Zenith Radio Corporation: *See—*
Blacker, Allen P.; and Ingle, Arthur J., 4,288,718, Cl. 313-414.000.

Zenker, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Transmission with double friction clutch. 4,287,781, Cl. 74-375.000.

Zestermann, Mary J.; and Hussar, John F., to Carstab Corporation. Substituted oxazolines as stabilizers. 4,288,361, Cl. 260-45.8NZ.

Zhivetin, Valery V.: *See—*
Selivanov, Anatoly G.; Yakovlev, Grigory P.; Khodyrev, Vladimir I.; and Zhivetin, Valery V., 4,287,674, Cl. 34-201.000.

Ziaylek, Theodore, Jr., to Yardley Products Corp. Threaded insert. 4,288,189, Cl. 411-180.000.

Zimmermann, John, to Somerville Belkin Industries Limited. Dew worm carton. 4,287,998, Cl. 229-16.00R.

Zink, Rudolf: *See—*
Loew, Peter; and Zink, Rudolf, 4,288,589, Cl. 542-466.000.

Zinn, Michael J., to Wallace Murray Corporation. Multipoint digital tachograph. 4,288,687, Cl. 235-92.00T.

Zinser Textilmaschinen GmbH, Firma: *See—*
Hartmannsgruber, Max; Nigg, Egon; and Hack, Kurt, 4,287,711, Cl. 57-130.000.

Znamirowski, Henry; and Roles, David J., to Roper Corporation. Metal cabinet for assembly by the user from knocked-down condition. 4,288,132, Cl. 312-257.00R.

Zoecon Corporation: *See—*
Kohn, Gustave K.; and Baer, Ted A., 4,288,621, Cl. 564-190.000.

Zotti, Aldo; and Cardini, Giuliano, to Euteco Impianti S.p.A. Process for the cultivation of yeast cells. 4,288,554, Cl. 435-247.000.

Zucker, Yehuda. Electronic theft prevention apparatus for vehicles. 4,288,778, Cl. 340-64.000.

Zur, Henry C. Multi-feature and variable function body supporting assembly and sideguards. 4,287,620, Cl. 5-68.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF SEPTEMBER, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Albrecht, Konrad: *See—*
Frensch, Heinz; Albrecht, Konrad; and Taubel, Norbert, Re. 30,740, Cl. 424-276.000.

Aoki, Eiichiro: *See—*
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Okumura, Takatoshi, Re. 30,736, Cl. 84-1.110.

Beecham Group Limited: *See—*
Gardner, Derek V., Re. 30,739, Cl. 260-345.200.

Boeing Company, The: *See—*
Ihlenfeldt, Eugene T.; and Marshall, David E., Re. 30,735, Cl. 73-361.000.

Bridges, Jack; and Taflove, Allen, to IIT Research Institute. Apparatus and method for in situ heat processing of hydrocarbonaceous formations. Re. 30,738, Cl. 166-248.000.

Caron, La Verne A., to Chrysler Corporation. Electronic circuit for use in a variety of engine control systems. Re. 30,737, Cl. 123-415.000.

Chrysler Corporation: *See—*
Caron, La Verne A., Re. 30,737, Cl. 123-415.000.

DLM, Inc.: *See—*
Eckert, Ronald P., Re. 30,734, Cl. 40-497.000.

Eckert, Ronald P., to DLM, Inc. Revolving self-service display stand. Re. 30,734, Cl. 40-497.000.

Frensch, Heinz; Albrecht, Konrad; and Taubel, Norbert, to Hoechst Aktiengesellschaft. Insecticidal composition for ultra low volume application. Re. 30,740, Cl. 424-276.000.

Gardner, Derek V., to Beecham Group Limited. Anorexic chromans. Re. 30,739, Cl. 260-345.200.

Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Okumura, Takatoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Tone wave generator in electronic musical instrument. Re. 30,736, Cl. 84-1.110.

Hoechst Aktiengesellschaft: *See—*
Frensch, Heinz; Albrecht, Konrad; and Taubel, Norbert, Re. 30,740, Cl. 424-276.000.

Ihlenfeldt, Eugene T.; and Marshall, David E., to Boeing Company, The. Automatic thermocouple reference junction compensator. Re. 30,735, Cl. 73-361.000.

IIT Research Institute: *See—*
Bridges, Jack; and Taflove, Allen, Re. 30,738, Cl. 166-248.000.

Marshall, David E.: *See—*
Ihlenfeldt, Eugene T.; and Marshall, David E., Re. 30,735, Cl. 73-361.000.

Nakada, Akira: *See—*
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Okumura, Takatoshi, Re. 30,736, Cl. 84-1.110.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Okumura, Takatoshi, Re. 30,736, Cl. 84-1.110.

Okumura, Takatoshi: *See—*
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Okumura, Takatoshi, Re. 30,736, Cl. 84-1.110.

Quenot, Michel, to Stanley-Mabo S.A. Blade-holding cutting device. Re. 30,733, Cl. 30-162.000.

Stanley-Mabo S.A.: *See—*
Quenot, Michel, Re. 30,733, Cl. 30-162.000.

Suzuki, Tsutomu: *See—*
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Okumura, Takatoshi, Re. 30,736, Cl. 84-1.110.

Taflove, Allen: *See—*
Bridges, Jack; and Taflove, Allen, Re. 30,738, Cl. 166-248.000.

Taubel, Norbert: *See—*
Frensch, Heinz; Albrecht, Konrad; and Taubel, Norbert, Re. 30,740, Cl. 424-276.000.

LIST OF DESIGN PATENTEES

Akazawa, Toshimasa; Ohta, Kikuo; Igo, Toshio; and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Combined radio, clock and calculator. 260,646, 9-8-81, Cl. D14-73.000.

Albinson, Don C., to Westinghouse Electric Corp. Chair. 260,584, 9-8-81, Cl. D6-69.000.

Alviti, Steven A., to Bel-Air Tool Corp. Vibratory finishing machine. 260,650, 9-8-81, Cl. D15-147.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground swing. 260,673, 9-8-81, Cl. D21-246.000.

Ament, Duane S.: *See—*
Ament, Donald S.; and Ament, Duane S., 260,673, Cl. D21-246.000.

American Cyanamid Company: *See—*
Grip, John A., 260,610, Cl. D9-413.000.
Hines, Robert, 260,691, Cl. D28-8.100.

American Home Products Corp.: *See—*
Stoy, Raymond P., 260,607, Cl. D9-389.000.

American Standard Inc.: *See—*
Hiller, Dorothee, 260,678, Cl. D23-53.000.

AMFESCO Industries, Inc.: *See—*
Greenblatt, David; and Spinoza, Rick, 260,571, Cl. D2-321.000.
Greenblatt, David; and Spinoza, Rick, 260,572, Cl. D2-321.000.

Antonelli, Luciano, to F. lli Antonelli s.n.c. del. Cav. Luigi Antonelli & C. Electronic organ. 260,654, 9-8-81, Cl. D17-6.000.

Appel, Mel; and Kress, George, to Appel, Mel. Lunch box. 260,595, 9-8-81, Cl. D7-76.000.

Arai, Noriyuki: *See—*
Saeki, Taisuke; Katayama, Masaharu; Kitakaze, Yoshinobu; Arai, Noriyuki; Takahashi, Hideo; Kurokawa, Koya; and Shimose, Norihiko, 260,647, Cl. D14-78.000.

Armstrong, Jerry A., to Super Hooper Corporation. Basketball return for attachment to basketball hoops. 260,669, 9-8-81, Cl. D21-201.000.

Armstrong, Jerry A., to Super Hooper Corporation. Basketball return for attachment to basketball hoops. 260,670, 9-8-81, Cl. D21-201.000.

Atrio, George. Decorative electric lamp. 260,686, 9-8-81, Cl. D26-99.000.

Atrio, George. Decorative electric lamp. 260,687, 9-8-81, Cl. D26-99.000.

Balcells, Jose L., to Conqueror (Wine & Spirit) & Co., Limited. Bottle. 260,611, 9-8-81, Cl. D9-413.000.

Ball Corporation: *See—*
McKee, James R., Jr., 260,608, Cl. D9-394.000.

Barbera, Charles. Loudspeaker enclosure. 260,638, 9-8-81, Cl. D14-33.000.

Barr, Josef J. Clasp earring. 260,622, 9-8-81, Cl. D11-75.000.

Baudon, Maurice C., to S. A. ets Lardenois. Brush head and handle. 260,579, 9-8-81, Cl. D4-35.000.

Bel-Air Tool Corp.: *See—*
Alviti, Steven A., 260,650, Cl. D15-147.000.

Berkline Corporation, The: *See—*
Long, Stapleton, 260,585, Cl. D6-71.000.

Blum, Pierre-Alain, to Interdica S.A. Combined lockable bracelet and key therefor. 260,620, 9-8-81, Cl. D11-3.000.

Bowls, Thurman: *See—*
Wotowiec, Joseph P.; and Bowls, Thurman, 260,688, Cl. D26-142.000.

Bowman Construction Supply, Inc.: *See—*
Bowman, William E., 260,684, Cl. D25-74.000.

Bowman, William E., to Bowman Construction Supply, Inc. Expansion joint sealing strip for roadway joints. 260,684, 9-8-81, Cl. D25-74.000.

Brewer, William R. Chair for invalids. 260,583, 9-8-81, Cl. D6-64.000.

Brown, Fred W., Jr. Roller skate carrier. 260,575, 9-8-81, Cl. D3-36.000.

Bulgari, Marina, to Zoldia Anstalt. Segmental necklace. 260,621, 9-8-81, Cl. D11-5.000.

Bullard, Edmund P., Sr.; and Togni, Gary A. Wood burning stove. 260,680, 9-8-81, Cl. D23-97.000.

C + D Consulting & Design AG: *See—*
Luthy, Ernst, 260,582, Cl. D6-63.000.

Campbell, Bruce B.; and Milliser, Charles E., to General Electric Company. Cabinet for an input-output terminal for a data handling system. 260,641, 9-8-81, Cl. D14-105.000.

Century Products, Inc.: *See—*
Meeker, Paul K., 260,580, Cl. D6-10.000.

Chiba, Shigeki, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Fountain pen. 260,658, 9-8-81, Cl. D19-49.000.

Ching Wah Metal Ware Factory Limited: *See—*
Wong, Siu W., 260,599, Cl. D8-82.000.

Chodorow, Ingram S.; and Dainow, J. David, to Technalytics, Inc. Retention suture bridge. 260,681, 9-8-81, Cl. D24-27.000.

Chrysler Corporation: *See—*
Duden, George K., 260,636, Cl. D13-15.000.

Clarence Controls Inc.: *See—*
Lockwood, David L., 260,635, Cl. D13-4.000.

Clarion Co. Ltd.: *See—*
Kikuhara, Toshiyoshi, 260,644, Cl. D14-68.000.
Kikuhara, Toshiyoshi, 260,645, Cl. D14-70.000.

Collister, Kenneth D.; and Flood, James R., to Miles Laboratories, Inc. Form printer. 260,642, 9-8-81, Cl. D14-111.000.

Comma, Sandra M. Plural mount picture frame. 260,592, 9-8-81, Cl. D6-234.000.

Conqueror (Wine & Spirit) & Co., Limited: *See—*
Balcells, Jose L., 260,611, Cl. D9-413.000.

Courreges, Andre. Bottle. 260,609, 9-8-81, Cl. D9-403.000.

Cox, Philip A. Portable expanding file case. 260,578, 9-8-81, Cl. D3-52.000.

Dainow, J. David: *See—*
Chodorow, Ingram S.; and Dainow, J. David, 260,681, Cl. D24-27.000.

Dart Industries Inc.: *See—*
Wondergem, M. James, 260,649, Cl. D15-105.000.

Design Innovations: *See—*
Dolinar, Kevin D.; Lipsitz, Ruth M.; and Lipsitz, Barry R., 260,593, Cl. D6-264.000.

Dolinar, Kevin D.; Lipsitz, Ruth M.; and Lipsitz, Barry R., to Design Innovations. Bed sheet or similar article. 260,593, 9-8-81, Cl. D6-264.000.

Drafton, Thomas L. Overhead console for vehicles. 260,630, 9-8-81, Cl. D12-155.000.

Duden, George K., to Chrysler Corporation. Housing for an electronic ignition control unit. 260,636, 9-8-81, Cl. D13-15.000.

Eischen, Clement G., Sr. Relaxation pad. 260,591, 9-8-81, Cl. D6-201.000.

F. lli Antonelli s.n.c. del. Cav. Luigi Antonelli & C.: *See—*
Antonelli, Luciano, 260,654, Cl. D17-6.000.

Flood, James R.: *See—*
Collister, Kenneth D.; and Flood, James R., 260,642, Cl. D14-111.000.

Foggia, Donald; and Pomponi, Roman, to TIE/Communications, Inc. Base for a telephone set. 260,643, 9-8-81, Cl. D14-60.000.

Four Star Corporation: *See—*
Kowalski, Daniel J., 260,631, Cl. D12-157.000.

Friedrich Grohe Armaturenfabrik: *See—*
Thevenot, Gilles, 260,677, Cl. D23-32.000.

Funahashi, Tatsuro, to Shachihata Industrial Co., Ltd. Felt pen. 260,656, 9-8-81, Cl. D19-43.000.

Funahashi, Tatsuro, to Shachihata Industrial Co., Ltd. Felt pen. 260,657, 9-8-81, Cl. D19-43.000.

Gardner, Bob E. Combined golf ball marker and card holder. 260,672, 9-8-81, Cl. D21-234.000.

Gates, John I., to Oliver, Clifford C., a part interest. Porthole. 260,634, 9-8-81, Cl. D12-183.000.

General Electric Company: *See—*
Campbell, Bruce B.; and Milliser, Charles E., 260,641, Cl. D14-105.000.
Wilkerson, Harold E., 260,612, Cl. D9-424.000.
Wilkerson, Harold E., 260,613, Cl. D9-424.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 260,688, Cl. D26-142.000.

Gibbons, Robert R., to Insulation Technology Corporation. Hopper for an insulation blowing machine and the like. 260,651, 9-8-81, Cl. D15-199.000.

Goodyear Tire & Rubber Company, The: *See—*
Hammond, Philip S., 260,629, Cl. D12-142.000.

Gorman, Ronald D. Service box for a pickup truck. 260,633, 9-8-81, Cl. D12-157.000.

Gorski, Richard S. Statue. 260,623, 9-8-81, Cl. D11-157.000.

Greenblatt, David; and Spinoza, Rick, to AMFESCO Industries, Inc. Sole of a shoe. 260,571, 9-8-81, Cl. D2-321.000.

Greenblatt, David; and Spinoza, Rick, to AMFESCO Industries, Inc. Sole of a shoe. 260,572, 9-8-81, Cl. D2-321.000.

Grip, John A., to American Cyanamid Company. Combined bottle and cap. 260,610, 9-8-81, Cl. D9-413.000.

Grove Foods, Inc.: *See—*
Perlmutter, R. Michel, 260,587, Cl. D6-146.000.

Groves, Richard A. Adjustable carpenters square. 260,616, 9-8-81, Cl. D10-65.000.

Guay, Germaine. Musical spoon. 260,655, 9-8-81, Cl. D17-22.000.

Guillon, Smith, Marquart & Asso. Ltd.: *See—*
Smith, Morley L., Jr., 260,627, Cl. D12-91.000.

Hammond, Philip S., to Goodyear Tire & Rubber Company, The. Tire tread and buttress. 260,629, 9-8-81, Cl. D12-142.000.

Harrigan, Donald R. Photographic printing apparatus. 260,653, 9-8-81, Cl. D16-27.000.

Hida, Hiroyuki, to Mitsubishi Pencil Co. Ltd. Toy construction piece. 260,662, 9-8-81, Cl. D21-108.000.

Hiller, Dorothee, to American Standard Inc. Lavatory or similar article. 260,678, 9-8-81, Cl. D23-53.000.

Hines, Robert, to American Cyanamid Company. Soap bar or similar article. 260,691, 9-8-81, Cl. D28-8.100.

Hiraishi, Etsuo; and Sakamoto, Masakazu, to Ryobi Ltd. Fishing rod grip. 260,675, 9-8-81, Cl. D22-23.000.

Hiraishi, Etsuo; and Sakamoto, Masakazu, to Ryobi Ltd. Fishing rod grip. 260,676, 9-8-81, Cl. D22-23.000.

Hobson, Haydn H. Corner guard for furniture. 260,590, 9-8-81, Cl. D6-191.000.

Hollenbeck, Leroy F., Jr., to Perko, Inc. Boat safety main switch. 260,637, 9-8-81, Cl. D13-32.000.

Honeywell Inc.: *See—*
Lawson, Phillip N., II; and Odom, James A., Jr., 260,617, Cl. D10-76.000.

Igo, Toshio: *See—*
Akazawa, Toshimasa; Ohta, Kikuo; Igo, Toshio; and Mishiro, Benito, 260,646, Cl. D14-73.000.

Impastato, Leona R. Combined tracing wheel and marking tool for dressmaking. 260,573, 9-8-81, Cl. D3-18.000.

Insulation Technology Corporation: *See—*
Gibbons, Robert R., 260,651, Cl. D15-199.000.

Interdica S.A.: *See—*
Blum, Pierre-Alain, 260,620, Cl. D11-3.000.

John J. Madison Company, Inc.: *See—*
Santa Eulalia, Jesus A. C.; and Santa Eulalia, Javier B. C., 260,624, Cl. D11-158.000.

Johnson, Kenneth E., Sr., to T-Shirts Plus, Inc. Storage cabinet. 260,588, 9-8-81, Cl. D6-153.000.

Kabushiki Kaisha Bandai Overseas: *See—*
Yamashina, Naoharu, 260,663, Cl. D21-134.000.
Yamashina, Naoharu, 260,664, Cl. D21-134.000.
Yamashina, Naoharu, 260,665, Cl. D21-136.000.

Kadar, Gabor. Novelty figurine. 260,626, 9-8-81, Cl. D11-160.000.

Katayama, Masaharu: *See—*
Saeki, Taisuke; Katayama, Masaharu; Kitakaze, Yoshinobu; Arai, Noriyuki; Takahashi, Hideo; Kurokawa, Koya; and Shimose, Norihiko, 260,647, Cl. D14-78.000.

Kawaguchi, Yasuji, to Kubota, Ltd. Lifting hook. 260,601, 9-8-81, Cl. D8-367.000.

Kikuhara, Toshiyoshi, to Clarion Co. Ltd. Automobile radio receiver. 260,644, 9-8-81, Cl. D14-68.000.

Kikuhara, Toshiyoshi, to Clarion Co. Ltd. Automobile radio receiver. 260,645, 9-8-81, Cl. D14-70.000.

Kirkland, Walter D. Hand-held homogenizer. 260,652, 9-8-81, Cl. D15-199.000.

Kitakaze, Yoshinobu: *See—*
Saeki, Taisuke; Katayama, Masaharu; Kitakaze, Yoshinobu; Arai, Noriyuki; Takahashi, Hideo; Kurokawa, Koya; and Shimose, Norihiko, 260,647, Cl. D14-78.000.

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CLASSIFICATION OF PATENTS

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25 C 4,287,870
67 4,287,871
110 D 4,287,872
194 4,287,873
242 4,287,874
288 4,287,875
426 4,287,876
427 4,287,877
429 4,287,878
437 4,287,879
439 4,287,880
440 4,287,881
445 4,287,882
4,287,883

CLASS 128

80 C 4,287,884
4,287,885
202.22 4,287,886
202.26 4,287,887
239 4,287,888
276 4,287,889
303 R 4,287,890
347 4,287,891
349 B 4,287,892
556 4,287,893
687 4,287,894
777 4,287,895
786 4,287,896

CLASS 131

303 4,287,897

CLASS 132

11 R 4,287,898
73 4,287,899

CLASS 133

4 A 4,287,900

CLASS 134

6 4,288,255
56 R 4,287,901

CLASS 137

13 4,287,902
4,287,903
68 R 4,287,904
102 4,287,905
118 4,287,906
255 4,287,907
4,287,908
312 4,287,909
493.9 4,287,910
513.7 4,287,911
516.27 4,287,912
574 4,287,913
613 4,287,914
625.5 4,287,915

CLASS 138

30 4,287,916
4,287,917

CLASS 139

35 4,287,918

CLASS 140

112 4,287,919

CLASS 141

85 4,287,920
360 4,287,921

CLASS 145

32 R 4,287,922

CLASS 148

1.5 4,288,256
11.5 C 4,288,257
13 4,288,258
32 4,288,259
121 4,288,260
131 4,288,261

CLASS 149

19.6 4,288,262

CLASS 152

153 4,287,924
221 4,287,925
225 C 4,287,926
302 4,287,927
346 4,287,928
354 R 4,287,929
357 R 4,287,930

CLASS 156

42 4,288,263
67 4,288,264
126 4,288,265
158 4,288,266
175 4,288,267
245 4,288,268
344 4,288,269
359 4,288,270
4,288,271
361 4,288,272
4,288,273
364 4,288,274
367 4,288,275
384 4,288,276
425 4,288,277
474 4,288,278
498 4,288,279
510 4,288,280
540 4,288,281
630 4,288,282
643 4,288,283
651 4,288,284

CLASS 159

1 C 4,288,285

CLASS 162

30 R 4,288,286
135 4,288,287
261 4,288,288

CLASS 164

7.2	4,287,931
314	4,287,935
329	4,287,936
418	4,287,937
452	4,287,933
482	4,287,934
516	4,287,932

CLASS 165

3	4,287,938
11 R	4,287,939
48 R	4,287,940
70	4,287,941
104.14	4,287,942
104.19	4,287,943
158	4,287,944
167	4,287,945
183	4,287,947

CLASS 166

100	4,287,946
170	4,287,948
212	4,287,949
248	Re.30,738
273	4,287,950
281	4,287,951
284	4,287,952
301	4,287,953
322	4,287,954

CLASS 172

98	4,287,955

CLASS 173

93.5	4,287,956

CLASS 174

17 GF	4,288,651
21 C	4,288,652
47	4,288,653
	4,288,654
65 R	4,288,655
71 B	4,288,656
87	4,288,657

CLASS 175

17	4,287,957

CLASS 176

3	4,288,289
19 R	4,288,290
	4,288,291
87	4,288,292

CLASS 177

136	4,287,958

CLASS 178

3	4,288,658
22.08	4,288,659

CLASS 179

1 PC	4,288,660
2 C	4,288,661
3	4,288,662
122	4,288,663
170.2	4,288,664

CLASS 180

12	4,287,959
16	4,287,960
68 R	4,287,961

CLASS 181

224	4,287,962

CLASS 182

231	4,287,963

CLASS 185

38	4,287,964

CLASS 187

8.75	4,287,965
9 R	4,287,966
24	4,287,967

CLASS 188

74	4,287,968
134	4,287,969
269	4,287,970

CLASS 190

48	4,287,971

CLASS 192

54	4,287,972
	4,287,973
56 R	4,287,974
82 T	4,287,975
84 C	4,287,976
91 A	4,287,977
113 B	4,287,978

CLASS 198

425	4,287,979
	4,287,980
457	4,287,981
706	4,287,982
817	4,287,983
847	4,287,984

CLASS 200

18	4,288,665
47	4,288,666
48 R	4,288,667
150 G	4,288,668
281	4,288,669
303	4,288,670
304	4,288,671
314	4,288,672

CLASS 201

6	4,288,293
39	4,288,294

CLASS 202

150	4,288,295

CLASS 203

6	4,288,296
81	4,288,297

CLASS 204

4	4,288,298
35 N	4,288,299
59 R	4,288,300
101	4,288,301
105 R	4,288,302
	4,288,303
111	4,288,304
112	4,288,305
192 D	4,288,307
192 R	4,288,306
195 R	4,288,308
225	4,288,309
252	4,288,310
279	4,288,311
281	4,288,312
297 W	4,288,313

CLASS 206

5	4,287,985
45.19	4,287,986
63.3	4,287,987
365	4,287,988
387	4,287,989
448	4,287,990
597	4,287,991

CLASS 209

3	4,288,314
11	4,288,315
17	4,288,316
139 A	4,288,317
139 R	4,288,318
166	4,288,319
382	4,288,320

CLASS 210

170	4,288,321
198.2	4,288,322
222	4,288,323
242.1	4,288,324
449	4,288,325
637	4,288,326
698	4,288,327
713	4,288,328
772	4,288,329
777	4,288,330

CLASS 211

49 D	4,287,992
105	4,287,993
191	4,287,994

CLASS 215

228	4,287,995

CLASS 217

108	4,287,996

CLASS 219

10.55 A	4,288,674
10.69	4,288,673
69 M	4,288,675
100	4,288,676
121 ED	4,288,677
121 LE	4,288,678
121 LG	4,288,680
121 LL	4,288,679
125.11	4,288,681
137.71	4,288,682
290	4,288,683
295	4,288,684
309	4,288,685
512	4,288,686

CLASS 220

1.5	4,287,997
222	4,287,999
281	4,288,000
316	4,288,001
438	4,288,002

CLASS 221

1	4,288,003
147	4,288,004

CLASS 222

5	4,288,005
42	4,288,006
66	4,288,007
281	4,288,008
442	4,288,009

CLASS 223

106	4,288,010

CLASS 224

42.42	4,288,011

CLASS 226

44	4,288,014
97	4,288,015

CLASS 227

30	4,288,016
67	4,288,017
76	4,288,018
144	4,288,019

CLASS 228

7	4,288,020
15.1	4,288,021
107	4,288,022
110	4,288,023
158	4,288,024
179 F	4,288,025

CLASS 229

1.5 B	4,288,026
16 R	4,287,998
43	4,288,027
73	4,288,028

CLASS 233

20 A	4,288,029
23 R	4,288,030

CLASS 235

92 T	4,288,687
386	4,288,688
435	4,288,689

CLASS 236

34.5	4,288,031
56	4,288,032
93 A	4,288,033

CLASS 239

160	4,288,034
271	4,288,035
345	4,288,036
434.5	4,288,037

CLASS 241

52	4,288,038
198 A	4,288,039
263	4,288,040

CLASS 242

4 R	4,288,041
55	4,288,042
	4,288,043
67.1 R	4,288,044
75.53	4,288,045
84.21 R	4,288,046
86	4,288,047
195	4,288,048

CLASS 244

3.14	4,288,049
3.16	4,288,050
164	4,288,051

CLASS 248

188.6	4,288,052
211.4	4,288,053
225.1	4,288,054
226.1	4,288,055
542	4,288,056
546	4,288,057

CLASS 249

134	4,288,058

CLASS 250

216	4,288,690
281	4,288,691
310	4,288,692
345	4,288,693
374	4,288,694
445 T	4,288,695
502	4,288,696
505	4,288,697
506	4,288,698
507	4,288,699
523	4,288,700
569	4,288,701
578	4,288,702

CLASS 251

58	4,288,059
215	4,288,060

CLASS 252

8.55 B	4,288,333
8.55 C	4,288,332
8.55 D	4,288,334
8.9	4,288,331
32.7 E	4,288,335
33	4,288,336
70	4,288,338
90	4,288,339
99	4,288,340
107	4,288,341
140	4,288,342
408	4,288,343
	4,288,344
431 R	4,288,345
437	4,288,346
439	4,288,347
441	4,288,348
512	4,288,337
522 R	4,288,349
	4,288,350

CLASS 256

1	4,287,637
13.1	4,288,061

CLASS 260

21	4,288,351
23.5 A	4,288,352
28 R	4,288,353
28.5 AS	4,288,354
29.6 M	4,288,355
29.6 NR	4,288,356
31.2 N	4,288,357
31.8 M	4,288,358
32.8 EP	4,288,359
37 SB	4,288,360
45.8 NZ	4,288,361
154	4,288,362
155	4,288,363
239 A	4,288,364
243.3	4,288,365
245.2 R	4,288,366
326.27	4,288,367
326.35	4,288,368
333	4,288,369
343.6	4,288,370
345.2	Re.30,739
346.22	4,288,371
346.75	4,288,372
347.3	4,288,373
347.91	4,288,374
348.23	4,288,376
348.41	4,288,375
397.25	4,288,377
409	4,288,378
410.6	4,288,379
429 R	4,288,380
448 AD	4,288,381
453 A	4,288,382
453 RW	4,288,383
464	4,288,384
465 D	4,288,387
465 E	4,288,385
465 F	4,288,386
502 R	4,288,388
504 S	4,288,389
927 R	4,288,391
983	4,288,392

CLASS 261

108	4,288,393
122	4,288,394
	4,288,395
128	4,288,396

CLASS 264

8	4,288,397
23	4,288,398
25	4,288,399
210.1	4,288,400
550	4,288,401

CLASS 266

88	4,288,062

CLASS 267

8 R	4,288,063
182	4,288,064

CLASS 269

43	4,288,065
270	4,288,066

CLASS 271

125	4,288,068
245	4,288,069
296	4,288,070

CLASS 272

1 R	4,288,071
8 N	4,288,072
123	4,288,073

CLASS 273

29 A	4,288,074
80 B	4,288,075
126 R	4,288,076
246	4,288,077
264	4,288,078
273	4,288,079
406	4,288,080

CLASS 277

1	4,288,081
125	4,288,082
134	4,288,083

CLASS 279

60	4,288,084
121	4,288,085

CLASS 280

5 A	4,288,086
47.32	4,288,087
87.04 A	4,288,088
209	4,288,089
293	4,288,090
415 A	4,288,091
605	4,288,092
	4,288,093
623	4,288,094
625	4,288,095
694	4,288,096
802	4,288,097
806	4,288,098
817	4,288,099
821	4,288,100
	4,288,101
823	4,288,102

CLASS 285

39	4,288,103
45	4,288,104
55	4,288,105
136	4,288,106
137 R	4,288,107
	4,288,108
158	4,288,109
174	4,288,110
183	4,288,111
238	4,288,112
	4,288,113
317	4,288,114
363	4,288,115
364	4,288,116

CLASS 290

52	4,288,703
55	4,288,704

CLASS 292

52	4,288,117
201	4,288,118
262	4,288,119
341.18	4,288,120

CLASS 293

4	4,288,121

CLASS 294

87.2	4,288,013
143	4,288,012

CLASS 297

153	4,288,122
154	4,288,123
217	4,288,124

CLASS 299

30	4,288,125

CLASS 303

6 C	4,288,126
111	4,288,127

CLASS 307

10 R	4,288,705
264	4,288,707
309	4,288,708
577	4,288,706

CLASS 308

36.2	4,288,128
218	4,288,129

CLASS 310

49 R	4,288,709
	4,288,710
68 D	4,288,711
91	4,288,712

CLASS 312

183	4,288,130
245	4,288,131
257 R	4,288,132
279	4,288,133
290	4,288,134
296	4,288,135
297	4,288,136
341 R	4,288,137

CLASS 313

117	4,288,713
142	4,288,714
174	4,288,715
230	4,288,716
336	4,288,717
414	4,288,718
457	4,288,719

CLASS 315

13 ST	4,288,720
39.51	4,288,721
151	4,288,722
209 R	4,288,723
219	4,288,724
245	4,288,725

CLASS 318

54	4,288,726
112	4,288,727
139	4,288,728
345 C	4,288,729
599	4,288,730
618	4,288,731
723	4,288,732

CLASS 320

2	4,288,733
48	4,288,734

CLASS 322

2 A	4,288,735
28	4,288,736

CLASS 323

254	4,288,737
271	4,288,738
275	4,288,739
303	4,288,740

CLASS 324

61 R	4,288,741
	4,288,742
127	4,288,743
142	4,288,744
158 F	4,288,745
174	4,288,746
207	4,288,747
326	4,288,748
464	4,288,749

CLASS 328

158	4,288,750
173	4,288,751

CLASS 329

50	4,288,752

CLASS 330

51	4,288,753
260	4,288,754
298	4,288,755

CLASS 331

94.5 G	4,288,756
94.5 H	4,288,757
94.5 PE	4,288,758

CLASS 333

24 R	4,288,759
116	4,288,760
	4,288,761
117	4,288,762
164	4,288,763
165	4,288,764
195	4,288,765
204	4,288,766

CLASS 335

6	4,288,767
18	4,288,768
173	4,288,769
	4,288,770
230	4,288,771

CLASS 336

58	4,288,772
160	4,288,773

CLASS 338

34	4,288,774
35	4,288,775
308	4,288,776

CLASS 339

45 R	4,288,138
74 R	4,288,139
	4,288,140
97 R	4,288,141
176 M	4,288,142

CLASS 340

51	4,288,777
64	4,288,778
146.3 Q	4,288,781
	4,288,782
146.3 Y	4,288,779
146.3 Z	4,288,780
149 A	4,288,783
326	4,288,784
347 DA	4,288,785

365 R	4,288,787
365 S	4,288,786
378.2	4,288,788
524	4,288,789
628	4,288,790
630	4,288,791
756	4,288,792
870.37	4,288,793

CLASS 343

708	4,288,794
754	4,288,795

CLASS 346

75	4,288,796
	4,288,797
139 R	4,288,798
140 R	4,288,799

CLASS 350

96.21	4,288,143
96.23	4,288,144
96.34	4,288,145
295	4,288,146
349	4,288,147
453	4,288,148

CLASS 351

170	4,288,149

CLASS 354

23 D	4,288,150
	4,288,154
25	4,288,151
	4,288,152
27	4,288,153
300	4,288,155
312	4,288,156

CLASS 355

40	4,288,157

CLASS 356

4	4,288,158
44	4,288,159
73	4,288,160
	4,288,161
335	4,288,162
350	4,288,163
445	4,288,164

CLASS 357

22	4,288,800
41	4,288,801
	4,288,802
	4,288,803
42	4,288,804
44	4,288,805
45	4,288,806
46	4,288,807
68	4,288,808

CLASS 358

12	4,288,809
16	4,288,810
31	4,288,811
44	4,288,812
75	4,288,813
93	4,288,814
105	4,288,815
138	4,288,816
163	4,288,817
214	4,288,818
226	4,288,819
280	4,288,820
293	4,288,821
296	4,288,822

CLASS 360

73	4,288,823
75	4,288,824
88	4,288,825
130.33	4,288,826
137	4,288,827

CLASS 361

31	4,288,828
56	4,288,829
	4,288,830
92	4,288,831
119	4,288,832
124	4,288,833
256	4,288,834
283	4,288,835
288	4,288,836
315	4,288,837
383	4,288,838
386	4,288,839
410	4,288,840
414	4,288,841
433	4,288,842
	4,288,843

CLASS 362

33	4,288,844
63	4,288,845
217	4,288,846
297	4,288,847
378	4,288,848

CLASS 364

102	4,288,849
200	4,288,850
475	4,288,851
508	4,288,852
557	4,288,853
	4,288,854
561	4,288,855
567	4,288,856
728	4,288,857
826	4,288,858
900	4,288,859
	4,288,860

CLASS 365

127	4,288,861
181	4,288,862
182	4,288,863
219	4,288,864
229	4,288,865

CLASS 366

124	4,288,165
149	4,288,166

CLASS 367

11	4,288,866
93	4,288,867

CLASS 370

30	4,288,868
31	4,288,869
56	4,288,870
86	4,288,871

CLASS 375

14	4,288,872
25	4,288,873
118	4,288,874

CLASS 400

121	4,288,167
322	4,288,168

CLASS 401

175	4,288,169

CLASS 402

17	4,288,170

CLASS 403

218	4,288,171
317	4,288,172

CLASS 404

49	4,288,173

CLASS 405

43	4,288,174
117	4,288,175
188	4,288,176
196	4,288,177
228	4,288,178

CLASS 407

114	4,288,179

CLASS 408

2	4,288,180
15	4,288,181
129	4,288,182
142	4,288,183
185	4,288,184

CLASS 409

121	4,288,185
175	4,288,186
180	4,288,187

CLASS 410

97	4,288,188

CLASS 411

42	4,287,807
180	4,288,189
511	4,288,190

CLASS 414

24.5	4,288,191
223	4,288,192
342	4,288,193
586	4,288,194
608	4,288,195
699	4,288,196
786	4,288,197

CLASS 415

1	4,288,198
2 R	4,288,199
	4,288,200
115	4,288,201
142	4,288,202

CLASS 417

64	4,288,203
243	4,288,204
477	4,288,205
517	4,288,206

CLASS 422

61	4,288,402
83	4,288,403
107	4,288,404
111	4,288,405
131	4,288,406
143	4,288,407
193	4,288,408
219	4,288,409
233	4,288,410

CLASS 423

1	4,288,411
10	4,288,412
54	4,288,413
79	4,288,414
82	4,288,415
	4,288,416
83	4,288,417
	4,288,418
190	4,288,419
239	4,288,420
395	4,288,421
509	4,288,422
510	4,288,423

CLASS 424

1	4,288,424
	4,288,425
	4,288,426
70	4,288,427
78	4,288,428
117	4,288,429
153	4,288,430
177	4,288,431
	4,288,432
232	4,288,433
246	4,288,434
	4,288,435
	4,288,436
	4,288,437
251	4,288,438
263	4,288,439
	4,288,440
266	4,288,441
267	4,288,442
	4,288,443
	4,288,444
272	4,288,445
273 P	4,288,446
273 R	4,288,447
	4,288,448
274	4,288,449
276	Re.30,740
283	4,288,450
295	4,288,451
304	4,288,452
317	4,288,453
321	4,288,454
327	4,288,455
330	4,288,456
353	4,288,457

CLASS 425

72 S	4,288,207
371	4,288,208

CLASS 426

7	4,288,458
43	4,288,459
96	4,288,460
231	4,288,461
423	4,288,462
500	4,288,463
548	4,288,464
582	4,288,465

CLASS 427

28	4,288,466
44	4,288,467
45.1	4,288,468
57	4,288,469
88	4,288,470
120	4,288,471
133	4,288,472
209	4,288,473
290	4,288,474
294	4,288,475
300	4,288,476

CLASS 428

35	4,288,477
	4,288,478
40	4,288,479
	4,288,480
64	4,288,481
92	4,288,482
	4,288,483
113	4,288,484
116	4,288,485
141	4,288,486
213	4,288,487
214	4,288,488
265	4,288,489
315	4,288,490
332	4,288,491
336	4,288,492
350	4,288,493
398	4,288,494
446	4,288,495
447	4,288,496
	4,288,497
473	4,288,498
518	4,288,499
650	4,288,500

CLASS 429

70	4,288,501
111	4,288,502
145	4,288,503
179	4,288,504
191	4,288,505
199	4,288,506
209	4,288,507
218	4,288,508

CLASS 430

5	4,288,509
11	4,288,510
17	4,288,511
24	4,288,512
28	4,288,513
54	4,288,514
100	4,288,515
107	4,288,516
110	4,288,517
122	4,288,518
137	4,288,519
169	4,288,520
	4,288,521
213	4,288,522
215	4,288,523
220	4,288,524
253	4,288,525
272	4,288,526
288	4,288,527
297	4,288,528
308	4,288,529
315	4,288,530
338	4,288,531
385	4,288,532
496	4,288,533
522	4,288,534
569	4,288,535
619	4,288,536

CLASS 431

255	4,288,209
263	4,288,210
346	4,288,211

CLASS 432

8	4,288,212
14	4,288,213
58	4,288,214
103	4,288,215
112	4,288,216
	4,288,217
222	4,288,218
234	4,288,219

CLASS 433

74	4,288,220
202	4,288,221

CLASS 434

169	4,288,537
272	4,288,222

CLASS 435

7	4,288,538
	4,288,539
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14	4,288,541
15	4,288,542
34	4,288,543
39	4,288,544
42	4,288,545
70	4,288,546
80	4,288,547
94	4,288,548
119	4,288,549
167	4,288,550
168	4,288,551
174	4,288,552
188	4,288,553
247	4,288,554
254	4,288,555
265	4,288,556
272	4,288,557

CLASS 440

71	4,288,223

CLASS 455

197	4,288,875
214	4,288,876

CLASS 493

345	4,288,224
420	4,288,067

CLASS 501

78	4,288,250
105	4,288,251

CLASS 518

716	4,288,558

CLASS 521

55	4,288,559
90	4,288,560
	4,288,561
121	4,288,562
122	4,288,563
	4,288,564
135	4,288,565
158	4,288,566

CLASS 525

99	4,288,567
111	4,288,568
113	4,288,569
133	4,288,570
170	4,288,571
176	4,288,572
177	4,288,573
331	4,288,574
333	4,288,575
349	4,288,576
453	4,288,577

CLASS 526

119	4,288,578
124	4,288,579
138	4,288,580
169.2	4,288,581
240	4,288,582
262	4,288,583
348.4	4,288,584

CLASS 528

4	4,288,585
57	4,288,587
67	4,288,586
348	4,288,588

CLASS 542

466	4,288,589

CLASS 544

25	4,288,590
139	4,288,591
159	4,288,592
198	4,288,593
204	4,288,594
250	4,288,595

CLASS 546

198	4,288,596
265	4,288,597
288	4,288,598
345	4,288,599
	4,288,600

CLASS 548

344	4,288,601
361	4,288,602

CLASS 556

422	4,288,603
470	4,288,604

CLASS 560

1	4,288,605
8	4,288,606
11	4,288,607
53	4,288,608
117	4,288,609
124	4,288,610
133	4,288,611
159	4,288,612
231	4,288,613
240	4,288,614

CLASS 562

434	4,288,615
503	4,288,616
	4,288,617
	4,288,618
554	4,288,619

CLASS 564

144	4,288,620
190	4,288,621
194	4,288,622
204	4,288,390
307	4,288,623
345	4,288,624
372	4,288,625
491	4,288,626

CLASS 568

26	4,288,627
65	4,288,628
330	4,288,629
	4,288,630
333	4,288,631
367	4,288,632
	4,288,633
454	4,288,634
483	4,288,635
486	4,288,636
575	4,288,637
584	4,288,638
625	4,288,639
855	4,288,640
	4,288,641
903	4,288,642

CLASS 585

324	4,288,643
360	4,288,644
415	4,288,645
458	4,288,646
467	4,288,647
523	4,288,648
533	4,288,649

CLASSIFICATION OF DESIGNS

D2—	270	260,570		201	260,591		447	260,614	D13—	4	260,635	D19—	43	260,656	D23—	32	260,677
	321	260,571		234	260,592	D10—	32	260,615		15	260,636			260,657		53	260,678
		260,572		264	260,593		65	260,616		32	260,637		49	260,658		72	260,679
D3—	18	260,573	D7—	66	260,594		76	260,617	D14—	33	260,638		59	260,659		97	260,680
	33	260,574		76	260,595		78	260,618		38	260,639	D21—	13	260,660	D24—	27	260,681
	36	260,575		193	260,596			260,619		60	260,643		34	260,661	D25—	23	260,682
	41	260,576	D8—	14.1	260,597	D11—	3	260,620		68	260,644		108	260,662		65	260,683
	43	260,577		71	260,598		5	260,621		70	260,645		134	260,663		74	260,684
	52	260,578		82	260,599		75	260,622		73	260,646			260,664	D26—	91	260,685
D4—	35	260,579		356	260,600		131	260,625		78	260,647		136	260,665		99	260,686
D6—	10	260,580		367	260,601		157	260,623		105	260,641		146	260,666			260,687
	25	260,581	D9—	300	260,605		158	260,624		111	260,642		147	260,667		142	260,688
	63	260,582		309	260,606		160	260,626		114	260,640		171	260,668	D27—	37	260,689
	64	260,583		347	260,604	D12—	91	260,627	D15—	69	260,648		201	260,669		42	260,690
	69	260,584		389	260,607		114	260,628		105	260,649			260,670	D28—	8.1	260,691
	71	260,585		394	260,608		142	260,629		147	260,650		212	260,671		35	260,692
	123	260,586		403	260,609		155	260,630		199	260,651		234	260,672		41	260,693
	146	260,587		413	260,610		157	260,631			260,652		246	260,673		99	260,694
	153	260,588			260,611			260,632	D16—	27	260,653	D22—	13	260,674	D99—	49	260,602
	176	260,589		424	260,612			260,633	D17—	6	260,654		23	260,675			260,603
	191	260,590			260,613		183	260,634		22	260,655			260,676			

CLASSIFICATION OF PLANTS

P.—	74	4,764		78	4,765												

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 :	4,288,021		4,288,314		4,287,731		4,287,959		4,288,743		4,288,762
	4,288,870		4,288,336		4,287,825		4,288,156		4,288,819		4,288,876
01 :	4,288,173		4,288,343		4,287,857		4,288,471		4,288,831	25 :	4,287,628
	4,288,328		4,288,373		4,287,937		4,288,551	18 :	4,287,652		4,287,637
04 :	4,287,620		4,288,384		4,287,941	16 :	4,287,679		4,287,671		4,287,769
	4,287,641		4,288,408		4,288,033		4,287,722		4,287,689		4,287,869
	4,287,739		4,288,461		4,288,042	17 :	Re.30,734		4,287,717		4,287,882
	4,287,785		4,288,519		4,288,075		Re.30,738		4,287,720		4,287,899
	4,287,826		4,288,537		4,288,148		4,287,613		4,287,855		4,288,017
	4,288,814		4,288,553		4,288,199		4,287,662		4,287,879		4,288,057
	4,288,850		4,288,568		4,288,259		4,287,673		4,287,904		4,288,137
05 :	4,287,960		4,288,605		4,288,273		4,287,719		4,288,000		4,288,153
06 :	4,287,619		4,288,612		4,288,293		4,287,746		4,288,047		4,288,174
	4,287,623		4,288,621		4,288,462		4,287,752		4,288,119		4,288,235
	4,287,625		4,288,646		4,288,543		4,287,777		4,288,135		4,288,280
	4,287,631		4,288,658		4,288,587		4,287,780		4,288,190		4,288,303
	4,287,635		4,288,659		4,288,604		4,287,789		4,288,430		4,288,325
	4,287,648		4,288,661		4,288,656		4,287,805		4,288,541		4,288,424
	4,287,653		4,288,670		4,288,769		4,287,813		4,288,549		4,288,479
	4,287,740		4,288,674		4,288,770		4,287,889		4,288,624		4,288,513
	4,287,753		4,288,697		4,288,780		4,287,909		4,288,687		4,288,523
	4,287,758		4,288,723		4,288,781		4,287,922		4,288,811		4,288,524
	4,287,759		4,288,724		4,288,833		4,287,926		4,288,842		4,288,538
	4,287,772		4,288,731	10 :	4,288,342		4,287,975		4,288,875		4,288,561
	4,287,827		4,288,759		4,288,359		4,287,988	19 :	4,287,609		4,288,672
	4,287,833		4,288,782		4,288,383		4,287,994		4,287,627		4,288,713
	4,287,835		4,288,786		4,288,574		4,287,999		4,288,133		4,288,741
	4,287,838		4,288,801		4,288,576		4,288,015		4,288,613		4,288,745
	4,287,851		4,288,802		4,288,577		4,288,027	20 :	4,288,001		4,288,772
	4,287,870		4,288,803	11 :	4,287,756		4,288,034		4,288,089		4,288,791
	4,287,883		4,288,806		4,287,792		4,288,052	21 :	4,287,692		4,288,834
	4,287,890		4,288,836	12 :	4,287,618		4,288,071		4,287,939		4,288,843
	4,287,957		4,288,856		4,287,630		4,288,086		4,288,013		4,288,848
	4,287,989		4,288,861		4,287,687		4,288,108		4,288,077	26 :	Re.30,737
	4,288,006		4,288,866		4,287,713		4,288,128		4,288,138		4,287,654
	4,288,014	08 :	4,287,683		4,287,718		4,288,134		4,288,369		4,287,749
	4,288,023		4,287,705		4,287,763		4,288,172	22 :	4,287,701		4,287,863
	4,288,041		4,287,708		4,287,816		4,288,197		4,287,818		4,287,865
	4,288,049		4,287,868		4,287,877		4,288,206		4,288,406		4,287,878
	4,288,060		4,287,886		4,287,905		4,288,215		4,288,578		4,287,914
	4,288,092		4,287,912		4,287,907		4,288,222	23 :	4,287,762		4,287,991
	4,288,116		4,287,951		4,287,956		4,288,264		4,287,962		4,288,028
	4,288,124		4,287,972		4,288,007		4,288,270		4,288,195		4,288,053
	4,288,146		4,287,996		4,288,011		4,288,295		4,288,480		4,288,062
	4,288,147		4,288,[illegible]		4,288,084		4,288,504		4,288,498		4,288,069
	4,288,149		4,288,140		4,288,201		4,288,548	24 :	4,287,824		4,288,111
	4,288,161		4,288,200		4,288,323		4,288,580		4,288,079		4,288,129
	4,288,169		4,288,282		4,288,455		4,288,588		4,288,132		4,288,180
	4,288,176		4,288,308		4,288,501		4,288,649		4,288,400		4,288,182
	4,288,202		4,288,414	13 :	4,287,798		4,288,655		4,288,427		4,288,196
	4,288,229		4,288,857		4,287,823		4,288,657		4,288,476		4,288,232
	4,288,262	09 :	4,287,651		4,287,901		4,288,686		4,288,527		4,288,233
	4,288,291		4,287,706		4,287,934		4,288,718		4,288,733		4,288,296

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33 : 4,287,675
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43 : 4,287,898
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44 : 4,288,710
45 : 4,287,721
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47 : 4,287,873
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48 : 4,287,624
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49 : 4,288,423
50 : 4,288,742
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53 : Re.30,735
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DESIGN PATENTS

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PLANT PATENTS

06 : 4,764
41 : 4,765

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PATENTS

September 15, 1981

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

September 15, 1981 Volume 1010 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,780,497, Re. S.N. 269,822, Filed June 2, 1981, Cl. 55/71, ADSORPTION OF FLUORINE AND FLUORINE COMPOUNDS ON ALUMINA, Wolf Muhlrad, Owner of Record: *Air Industrie, Courbevoie, France,* Attorney or Agent: John T. Synnestvedt, et al., Ex. Gp.: 177

4,022,262, Re. S.N. 267,954, Filed May 28, 1981, Cl. 411/302, SEALING LOCKNUT, Donald J. Gunn, Owner of Record: *Crouse-Hinds Co., Syracuse, New York,* Attorney or Agent: Richard C. Sughrue, et al. Ex. Gp.: 355

4,139,784, Re. S.N. 269,520, Filed June 1, 1981, Cl. 307/221D, CCD INPUT CIRCUITS, Donald Jon Sauer, Owner of Record: *RCA Corp., Princeton, N.J.,* Attorney or Agent: Samuel Cohen, et al., Ex. Gp.: 254

4,152,831, Re. S.N. 266,625, Filed May 22, 1981, Cl. 30/231, TOOL HOLDER, Peter O. Davies, Owner of Record: *Tullen Industries Ltd., Auckland, New Zealand,* Attorney or Agent: John Clark Holman, et al., Ex. Gp.: 323

4,155,735, Re. S.N. 264,771, Filed May 18, 1981, Cl. 65/30E, ELECTROMIGATION METHOD FOR MAKING STAINED GLASS PHOTOMASKS, Fred M. Ernsberge, Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: Dennis G. Millman, Ex. Gp.: 173

4,156,193, Re. S.N. 265,432, Filed May 20, 1981, Cl. 455/76, CRYSTALLESS SCANNING RADIO RECEIVER AND TRANSMITTER, William Baker, Owner of Record: *Masco Corp., of Indiana, Cumberland, Ind.,* Attorney or Agent: Sidney Neuman et al., Ex. Gp.: 233

4,156,433, Re. S.N. 267,430, Filed May 26, 1981, Cl. 135/4R, PORTABLE SHELTER, Bryan J. Beaulieu, Owner of Record: *Inventor,* Attorney or Agent: Orrin M. Haugen, Ex. Gp.: 354

4,175,277, Re. S.N. 265,039, Filed May 18, 1981, Cl. 361/120, VOLTAGE SURGE PROTECTOR, Paul Zuk, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 212

4,207,976, Re. S.N. 268,745, Filed June 1, 1981, Cl. 206/246, CIGARETTE PACKAGE, Rodney W. Herman, Owner of Record: *Inventor,* Attorney or Agent: John D. Gould, et al., Ex. Gp.: 241

4,213,793, Re. S.N. 266,631, Filed May 26, 1981, Cl. 106/286.8, PROCESS FOR DESULFURIZATION OF COAL AND ORES, Arthur E. Starbuck, Owner of Record: *Inventor,* Attorney or Agent: Theodore, J. Bielen, Jr., et al., Ex. Gp.: 142

4,253,691, Re. S.N. 267,062, Filed May 26, 1981, Cl. 294/1.21, PET LITTER REMOVER AND BAGGER, William Y. Liu, Owner of Record: *Inventor,* Attorney or Agent: Robert L. Slater, Jr., Ex. Gp.: 313

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,464,799, Reexam. No. 90/000,043, Requested: Aug. 3, 1981, Cl. 422/91, GAS DETECTOR, Charles L. Kimbell, Owner of Record: *Inventor,* Attorney or Agent: Harold Levine & Alfred Hall, Ex. Gp.: 173, Requester: Robert W. Canterbury, Crisman & Moore, Dallas, Tex.

3,521,412, Reexam. No. 90/000,058, Requested: Aug. 20, 1981, Cl. 51/317, METHOD OF HONING BY EXTRUDING, Ralph W. McCarty, Owner of Record: *Extrude Hone Corp.,* Attorney or Agent: Baldwin, Egan, et al., Ex. Gp.: 323, Requester: Dynetics Corp., c/o Richard Stevens, Boston, Mass.

3,808,340, Reexam. No. 90/000,057, Requested: Aug. 17, 1981, Cl. 426/92, MEAT COATED PRODUCT, Hugh C. Palmer, Owner of Record: *Kal Kan Foods Inc.,* Attorney or Agent: Davis, Hoxie, Faithfull & Hapgood, Ex. Gp.: 172, Requester: Kal Kan Foods, Inc., Vernon, Calif.

3,850,752, Reexam. No. 90/000,056, Requested: Aug. 14, 1981, Cl. 435/7, PROCESS FOR THE DEMONSTRATION AND DETERMINATION OF LOW MOLECULAR COMPOUNDS AND OF PROTEINS CAPABLE OF BINDING THESE COMPOUNDS SPECIFICALLY, Antonius Hermanus Wilhelmus Maria Schuurs, Bauke Klass Van Weemen, Owner of Record: *Akzona Inc.,* Attorney or Agent: Robert H. Falk, Esq., Ex. Gp.: 176, Requester: Akzona Inc., Asheville, N.C.

3,964,405, Reexam. No. 90/000,055, Requested: Aug. 14, 1981, Cl. 111/6, PERENNIAL WEED CONTROL BY DEEP PLACEMENT OF VOLATILE SOIL FUMIGANTS, William A. Haglund & Theodore P. Reiling, Owner of Record: *Inventors,* Attorney or Agent: Roy E. Mattern Jr., Ex. Gp.: 330, Requester: David R. Murphy, Quaintance & Murphy, Arlington, Va.

Vacancy Announcement
Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of $50,113 per annum, which is the current statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

Qualifications: Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;
2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Crystal Plaza 2, Room 9C05
2011 Jefferson Davis Hwy.
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

July 27, 1981.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 15, 1981

D. 259,484	4,245,088	4,261,809	4,272,051
D. 259,524	4,245,850	4,262,460	4,272,717
3,769,775	4,247,906	4,262,633	4,273,132
4,022,889	4,248,620	4,262,844	4,273,230
4,027,021	4,250,443	4,263,247	4,273,513
4,066,779	4,250,815	4,263,428	4,273,601
4,115,433	4,251,492	4,263,899	4,273,608
4,148,406	4,251,616	4,264,266	4,273,718
4,168,810	4,252,554	4,265,271	4,273,772
4,173,553	4,252,920	4,265,641	4,273,904
4,177,446	4,254,000	4,265,668	4,273,909
4,179,196	4,254,381	4,265,866	4,273,976
4,190,283	4,254,463	4,267,761	4,274,320
4,191,774	4,254,512	4,267,801	4,274,391
4,197,797	4,255,708	4,268,545	4,274,522
4,208,650	4,256,550	4,268,820	4,274,541
4,210,287	4,256,927	4,268,843	4,274,579
4,211,879	4,257,087	4,269,005	4,274,781
4,212,088	4,257,198	4,269,198	4,275,077
4,216,135	4,257,614	4,269,589	4,275,082
4,221,564	4,257,878	4,269,700	4,275,319
4,221,565	4,258,126	4,269,717	4,275,334
4,221,764	4,258,401	4,269,811	4,275,452
4,226,836	4,258,577	4,269,956	4,275,567
4,230,550	4,258,579	4,270,065	4,275,600
4,235,354	4,258,649	4,270,164	4,275,771
4,235,962	4,258,677	4,270,202	4,276,198
4,238,281	4,258,711	4,270,300	4,276,220
4,238,629	4,259,224	4,270,407	4,276,237
4,241,029	4,259,228	4,270,489	4,276,243
4,241,132	4,260,148	4,270,841	4,276,283
4,241,960	4,260,225	4,270,864	4,276,434
4,241,994	4,260,464	4,271,084	4,276,554
4,243,542	4,260,591	4,271,313	4,276,713
4,243,721	4,261,261	4,271,318	4,276,784
4,243,746	4,261,292	4,271,364	
4,244,180	4,261,304	4,271,497	
4,244,297	4,261,673	4,271,678	

Disclaimers

3,822,119.—*Kenneth J. Frech,* Tallmadge and James J. Tazuma, Stow, Ohio. ANTI-POLLUTION ANTI-KNOCK GASOLINE. Patent dated July 2, 1972. Disclaimer filed July 8, 1981, by the assignee, *The Goodyear Tire & Rubber Co.*

Hereby enters this disclaimer to claims 1 through 9 of said patent.

3,911,774.—*Lewis F. Jennings, McHenry, and Kenneth W. Bower,* Des Plaines, Ill. POWERED ADJUSTABLE TRIMMER CONSTRUCTION. Patent dated Oct. 14, 1975. Disclaimer filed July 16, 1981, by the assignee, *Uarco Inc.,*

Hereby enters this disclaimer to claim 1 of said patent.

3,999,386.—*Stanley W. Crull and Donald J. MacIntosh,* Ames, Iowa. OVERSPEED PROTECTION CONTROL FOR AN ENGINE. Patent dated Dec. 28, 1976. Disclaimer filed June 22, 1981, by the assignee, *Sundstrand Corp.,*

Hereby enters this disclaimer to claim 3 of said patent.

4,067,591.—*Harry Celms,* Battle Creek, Mich. BASE FOR NESTABLE SHOPPING CART. Patent dated Jan. 10, 1978. Disclaimer filed July 14, 1981, by the assignee, *Roblin Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6 and 14 of said patent.

4,152,235.—*John V. Dobson,* Hartlepool, England. ION SELECTIVE ELECTRODE. Patent dated May 1, 1979. Disclaimer filed June 29, 1981, by the assignee, *National Research Development Corp.*

Hereby entes this disclaimer to claims 1–17, inclusive of said patent.

4,178,843.—*Hugh F. Groth; Guilbert M. Hunt,* Brecksville, *Thomas E. Lipinski;* Bath; and *Anthony D. Szpak,* Parma, Ohio. PORTABLE CORN POPPER. Patent dated Dec. 18, 1979. Disclaimer filed Feb. 17, 1981, by the assignee, *Wear-Ever Aluminum, Inc.*

Hereby enters this disclaimer to claim 4 of said patent.

4,182,468.—*Griffith L. Hoerner,* Santa Monica, Calif. COMBINED CLOSURE AND RUMBLE SEAT FOR AUTOMOBILES. Patent dated Jan. 8, 1980. Disclaimer filed June 29, 1981, by the inventor.

Hereby enters this disclaimer to claims 4–9 inclusive of said patent.

4,219,422.—*Erich Knothe, Bovenden and Gerhard Lorenz, Krebeck,* Germany. APPARATUS FOR MASS TRANSFER BETWEEN FLUIDS, PROVIDED WITH AN INTERPOSED SELECTIVELY PERMEABLE DIAPHRAGM UNIT. Patent dated Aug. 26, 1980. Disclaimer filed July 6, 1981, by the assignee, *Sartorius GmbH.*

Hereby enters this disclaimer to claim 11 of said patent.

4,251,540.—*Erik Regel; Wilfried Draber and Karl H. Buchel, Wuppertal, Peter Kraus, Koeln, and Wilhelm Brandes, Leichlingen,* All of Fed. Rep. of Germany. COMBATING CROP DAMAGING FUNGI WITH ALPHA-(4-BIPHENYLYL)-BENZYL-AZOLIUM SALTS. Patent dated Feb. 17, 1981. Disclaimer filed Mar. 5, 1981, by the assignee, *Bayer Aktiengesellschaft.*

The term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

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Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

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Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG
Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6–175,541. Method for Detecting the Presence of a Gas in an Atmosphere. Filed Aug. 5, 1980.

Patent application 6–192,669. High Altitude Platform Air Drop System. Filed Oct. 1, 1980.

Patent application 6–198,322. Laser Doppler Attitude Measurement. Filed Oct. 20, 1980.

Patent application 6–200,664. High Peak Power, High PRF Laser System. Filed Oct. 27, 1980.

Patent application 6–201,678. Two-Degree-of-Freedom Gyro with Radiant Energy Pickoffs. Filed Oct. 29, 1980.

Patent application 6–202,811. Method and Device for Producing Nuclear Fusion. Filed Oct. 31, 1980.

Patent application 6–204,744. Flow Compensated Gas Comparison Probe. Filed Nov. 7, 1980.

Patent application 6–216,232. High Speed Rectangle Function Generator. Filed Dec. 15, 1980.

Patent application 6–216,417. Switch Actuator. Filed Dec. 15, 1980.

Patent application 6–217,361. Optical Dosimeter. filed Dec. 17, 1980.

Patent application 6–217,890. Domed Environmental Protective Cover for Rocket Systems. Filed Dec. 18, 1980.

Patent application 6–218,597. Rocket Motor Igniter for Precision Centroid of thrust. Filed Dec. 19, 1980.

Patent application 6–220,474. Hypersonic Wedge Nozzle for Chemical Lasers. Filed Dec. 29, 1980.

Patent application 6–224,603. Thyratron Switch for Narrow Pulses. Filed Jan. 12, 1980.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent 4,255,149. Abrasion Resistance and Strength of Cotton-Containing Fabric made Resilient with N-Methylolacrylamide-Type Reagent. Filed Jan. 31, 1979. Patented Mar. 10, 1981. Not available NTIS.

Patent 4,260,638. Method of Peeling Fruits and Vegetables with Carboxylic Acids. Filed Dec. 13, 1979. Patented Apr. 7, 1981. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent 4,262,194. High Resolution Electron Microscope Cold Stage. Filed Dec. 18, 1979. Patented Apr. 14, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
Patent Counsel for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6–214,839. Rotating Squid Magnetometers and Gradiometers. Filed Dec. 10, 1978.

Patent application 6–224,711. Electronic Score Pad. Filed Jan. 12, 1981.

Patent application 6–232,444. Controlled Porosity Sheet for thermionic Dispenser Cathode and Method of Manufacture. Filed Feb. 6, 1981.

Patent 4,246,780. Force Sensing System. Filed Apr. 30, 1979. Patented Jan. 27, 1981. Not available NTIS.

Patent 4,252,285. Dynamic Seal for Slotted Cylinder. Filed Apr. 30, 1979. Patented Feb. 24, 1981. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6–224,232. Dual Laser Optical System and Method for Studying Fluid Flow. Filed Jan. 12, 1981.

Patent application 6–229,239. A Cycling Joule Thomson Refrigerator. Filed Jan. 28, 1981.

Errata

"All reference to Patent No. Re. 30,681 to James L. Furlette of Florida and Donald A. Stadler of Michigan for TORQUE LIMITING COUPLING appearing in the Official Gazette of July 21, 1981 should be deleted since no patent was granted."

"All reference to Patent No. 4,279,303 to Steven R. Erbstoesser of Texas for POLYURETHANE BALL SEALERS FOR WELL TREATMENT FLUID DIVERSION appearing in the Official Gazette of July 21, 1981 should be deleted since no patent was granted."

"All reference to Patent No. 4,281,772 to Sheldon L. Wilde, Thomas J. McCandless and Robert M. Saunders all of Indiana for COMPOSITE CLOSURE appearing in the Official Gazette of August 4, 1981 should be deleted since no patent was granted."

"All reference to Patent No. 4,283,193 to Dietrich Hildebrand of Germany for PROCESS FOR DYEING CELLULOSE MATERIALS WITH REACTIVE DYESTUFFS BY THE EXHAUSTION METHOD appearing in the Official Gazette of August 11, 1981 should be deleted since no patent was granted."

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Illinois	Chicago Public Library	(312) 269-2814
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 25, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-11-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-03-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-07-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-31-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	11-01-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,139,622 to 3,142,840, inclusive

Plant Patents ..... Numbers 2,416 to 2,430, inclusive

REISSUES

SEPTEMBER 15, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,741

MINIATURIZED PRINTER CONTROL ASSEMBLY

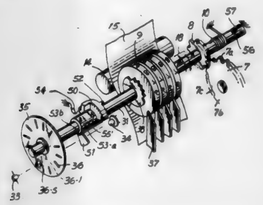
Norio Nakagaki, and Shigeru Sawada, both of Shiojiri, Japan, assignors to Shinshu Seiki Kabushiki Kaisha, Tokyo, Japan

Original No. 4,170,937, dated Oct. 16, 1979, Ser. No. 871,585, Jan. 23, 1978. Application for reissue Apr. 9, 1980, Ser. No. 138,611

Claims priority, application Japan, Jan. 24, 1977, 52/6524

Int. Cl.³ B41J *1/44*

U.S. Cl. 101—99 **12 Claims**



1. In a printer including a plurality of print rings having print characters circumferentially disposed therearound, said print characters being selectively positioned in a print position by rotation of each of said print rings in a first rotational direction from a stand-by position to a print position during a print cycle and rotational drive means including motor means adapted, in response to being energized, to rotatably drive said print rings at least from said stand-by position to a print position during each print cycle, the improvement comprising a detection means for detecting the rotary position of said print rings and for generating a character selection timing pulse for each of the available rotational positions of each said print ring during each print cycle, said rotational positions of each of said print rings corresponding to a print character circumferentially disposed about said print rings, print selection means associated with each of said print rings for selectively positioning each of said print rings at respective predetermined print positions during each print cycle, in response to said character selection timing pulses produced by said detection means being applied thereto, said detection means being constructed and arranged to produce a stand-by signal representative of each print ring being returned to a stand-by position at the end of each print cycle, said detection means further including shutter means for preventing said detection means from producing said stand-by signal until a first predetermined interval of time after the last of said character selection timing pulses is generated in each print cycle.

Re. 30,742

CONTAINER DEPALLETIZING APPARATUS

Roman J. Weier, North St. Paul, Minn., assignor to Wyard Industries, Inc., Forest Lake, Minn.

Original No. 3,543,949, dated Dec. 1, 1970, Ser. No. 782,884, Dec. 11, 1968. Application for reissue Apr. 17, 1978, Ser. No. 897,298

Int. Cl.² B65G *59/02*

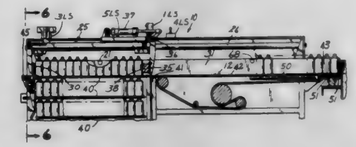
U.S. Cl. 414—119 **10 Claims**

1. Container depalletizing apparatus comprising:

a. lift mechanism for receiving a pallet therein having a plurality of tiers of containers stacked thereon and moving the pallet vertically approximately the height of a tier of containers to be depalletized;

b. conveying means operatively mounted adjacent the lift mechanism for receiving tiers of containers from pallets positioned in said lift mechanism and conveying them to a desired location;

c. sweep means mounted adjacent said lift mechanism for engaging at least a rear side of the tier of containers to be depalletized and urging said tier of containers onto said conveying means;



d. container restraining means having a tier engaging position for engaging the leading containers of the uppermost tier *and pushing said containers in the tier tightly together toward said sweep means* and a disengaged position; and

e. means connecting said restraining means to said sweep means for movement of said restraining means with said [seep] *sweep* means to prevent tipping of individual containers in said tier.

Re. 30,743

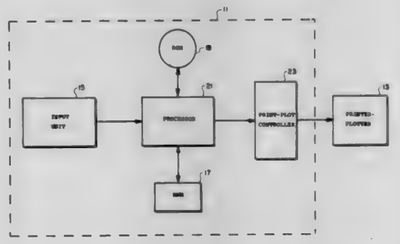
THERMAL PRINTER-PLOTTER SYSTEM FOR MULTI-DIRECTIONAL PRINTING AND PLOTTING

David J. Shelley, Corvallis, Oreg.; Rick A. Warp, San Diego, and Majid Azmoon, Poway, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Original No. 4,070,680, dated Jan. 24, 1978, Ser. No. 716,033, Aug. 20, 1976. Application for reissue Oct. 26, 1978, Ser. No. 955,069

Int. Cl.³ G01D *15/10*; H05B *1/00*

U.S. Cl. 346—76 PH **12 Claims**



1. A system for forming visual output [manifestations] *images* on a web, comprising:

head means having a *non-linear* plurality of print elements engaging said web, each element being located at the intersection of first and second [coordinate positions] *coordinates of position* in the head, with no [element occupying] *two elements having* the same first coordinate [position] and no [element occupying] *two elements having* the same second coordinate [position];

drive means coupled to at least one of the web and the head means for providing relative motion [of] *between* the head means [with respect to] *and* the web along *at least one of the* two orthogonal coordinates *of the web*; and

logic means disposed to receive data and coupled to the drive means and to the *print elements of the* head means for forming visual output [manifestations] *images* on the

web in one of four directions along the two orthogonal coordinates *of the web* by causing the drive means to move at least one of the web and head means to a selected position *in selected steps* and energizing selected *print* elements of the head means to form selected portions of the visual output [manifestations] *images* in response to said data *at each position of the head means relative to the web.*

Re. 30,744

DIGITAL MEMORY APPARATUS

Robert H. Cole, Canoga Park, Calif.; Robert Feuer, Wayne, N.J.; Samuel Nissim, Malibu, and George V. Podraza, Canoga Park, both of Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Original No. 3,518,635, dated Jun. 30, 1970, Ser. No. 662,457, Aug. 22, 1967. Application for reissue May 5, 1971, Ser. No. 140,541

Int. Cl.[3] **G11C** *7/00, 11/40*

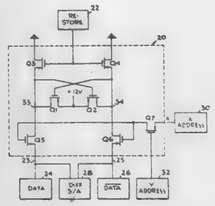
U.S. Cl. 365—227 **28 Claims**

1. A binary memory cell comprising:

first and second semiconductors each capable of being either forward biased or off biased;

means interconnecting said first and second semiconductors for holding said first semiconductor off biased in response to said second semiconductor being forward biased and for holding said second semiconductor off biased in response to said first semiconductor being forward biased;

data control means for selectively applying forward and off biasing binary data signals to said first and second semiconductors, said data control means including first and second complementary data signal sources and normally open first and second switches for respectively connecting said first and second semiconductors to said first and second data signal sources, each of said switches comprising a field effect transistor having a gate, a source, and a drain; and



a switch control means coupled to the gates of said first and second switches having at least first and second electrodes and responsive to first and second signals respectively concurrently applied thereto for closing said normally open switches.

PLANT PATENTS

GRANTED SEPTEMBER 15, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,766

EUONYMUS PLANT—CORDOLT VARIETY

Clifford D. Corliss, Ipswich, Mass., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 19, 1980, Ser. No. 150,963

Int. Cl.[3] **A01H** *5/12*

U.S. Cl. Plt.—63 **1 Claim**

1. A new and distinct variety of *Euonymus fortunei* which is a branch mutation of the Emerald Gaiety variety, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

(a) a low and broad dense dwarf growth habit rendering the plant suitable for use as a mounding ground cover,

(b) smaller variegated leaves which when mature are deep green with ivory margins giving the overall plant an attractive silvery appearance when viewed from a distance,

(c) vigorous growth characteristics,

(d) the ability to thrive under a wide range of climatic conditions, and

(e) the ability to be sheared within prescribed limits or shaped to a specific form.

PATENTS

GRANTED SEP. 15, 1981

ERRATA

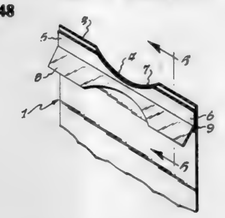
For CLASS	See PATENT NO.
411–451	4,289,058
411–531	4,289,059
411–034	4,289,060
411–034	4,289,061
411–034	4,289,062
411–187	4,289,181
277–027	4,289,264
369–072	4,289,316
164–122	4,289,570
518–714	4,289,709
518–717	4,289,710
164–503	4,289,946
430–270	4,290,075

PATENTS

GRANTED SEPTEMBER 15, 1981

GENERAL AND MECHANICAL

4,288,877
DISPOSABLE PROTECTIVE GARMENT
Harlan A. Klepfer, 16 Meadowstream Ct., Snyder, N.Y. 14226
Filed Dec. 14, 1979, Ser. No. 103,486
Int. Cl.[3] A41B *27/12*
U.S. Cl. 2—48 **7 Claims**



1. A protective garment in the form of a bib, napkin or apron comprising a body of flexible sheet material having an upper edge,

a pressure-sensitive adhesive extending substantially continuously transversely across said garment at its upper portion,

said adhesive having a width extending downwardly from said upper edge for an appreciable distance,

an overlay covering said pressure-sensitive adhesive and adapted to protect said adhesive from unwanted contact,

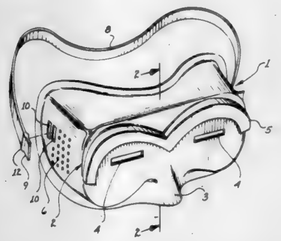
and means for facilitating the removal of said overlay,

wherein said upper edge has a relatively shallow neck cutout portion at its central portion and shoulder pieces at either side of said neck cutout portion and wherein the width of said adhesive extends from slightly below said upper edge of said shoulder pieces to below said cutout portion,

wherein said overlay extends beyond said adhesive at said upper edge to facilitate removal of said overlay from said adhesive, and

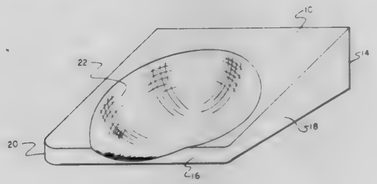
wherein the bottom edge portion of said overlay remains adhered to the bottom edge portion of said adhesive under normal conditions of use after removing said overlay from the remainder of said adhesive.

4,288,878
PAINTER'S PROTECTIVE DEVICE
Andrew J. Helmbreck, Mesa, Ariz., assignor to Russell C. Rogge, Scottsdale, Ariz., a part interest
Filed Feb. 23, 1979, Ser. No. 14,786
Int. Cl.[3] A61F *9/02*
U.S. Cl. 2—427 **2 Claims**



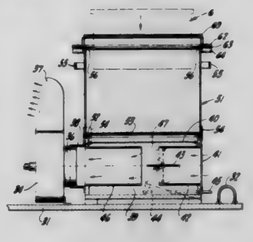
1. A painter's protective device comprising a mask adapted to cover the forehead, eyes and nose of a wearer and having eye holes, a visor integral with said mask and projecting outwardly from the forehead portion of the mask above the eye holes and curving downwardly centrally and at the ends to the sides of the mask and said eye holes, and means for retaining said mask on the wearer's head.

4,288,879
MATERNITY PILLOW
Johnny L. Pate, 514 N.E. 14th Ave., Cape Coral, Fla. 33904
Filed Sep. 6, 1979, Ser. No. 72,910
Int. Cl.[3] A47G *9/00*; A61G *7/00*
U.S. Cl. 5—431 **1 Claim**



1. A pillow for support of the expanded abdomen of a pregnant woman while she is lying on one of her sides, comprising a substantially wedge-shaped resilient body having a front surface, a rear surface greater in height than said front surface, a pair of identical parallel side surfaces, a lower surface, and an upper surface with an elliptically shaped cavity which intersects said front surface to form a generally arc-shaped opening to said cavity in the plane of said front surface and which becomes progressively deeper along an axis parallel to said side surfaces in the direction of said rear surface.

4,288,880
BEE VACUUM DEVICE AND METHOD OF HANDLING BEES
Norman E. Gary, and Kenneth Lorenzen, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed Nov. 13, 1979, Ser. No. 93,587
Int. Cl.[3] A01K *51/00, 57/00*
U.S. Cl. 6—12 R **4 Claims**



1. A device for removing bees from comb frames comprising a chamber having walls; means in one of said walls defining an elongated entrance opening of a configuration and size closely to receive the comb frame; vacuum means for subjecting the interior of said chamber to a subatmospheric pressure; and means for preventing the passage of bees from said chamber through said vacuum means, including a plate defining said entrance opening as a relatively narrow, elongated slot having substantially parallel sides, and in which said plate is supported by and removable from the top of said chamber.

4,288,881

BRIDGE LAYING APPARATUS

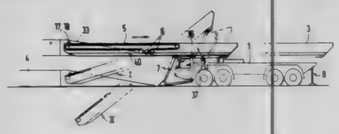
Jürgen Mahncke, Korntal; Hans Weigele, Stuttgart, and Dieter Hotz, Ditzingen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,865

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846182

Int. Cl.³ E01D *15/12*

U.S. Cl. 14—2.4 **18 Claims**



1. Bridge laying apparatus comprising a vehicle with devices for supporting at least two bridge sections, said bridge sections being joinable into a bridge and being superimposable for transport, as well as devices for joining of said bridge sections and laying of the bridge, wherein the bridge includes plural tracks connected to one another via crossbeams and the said devices are arranged and guided between said bridge tracks, characterized in that a laying beam with a launching girder releasably engaged therewith forms the laying device, said laying device being supported in a longitudinally displaceable manner via a guide means mounted to the vehicle and comprising roller pairs arranged on both sides of the launching girder, a respective one of these roller pairs serving for guiding and supporting the bridge on the laying beam and the other roller of the roller pairs serving for guiding and supporting the launching girder in the bridge, wherein said laying beam is displaceably attached to said vehicle, and wherein said launching girder is operable to remain with said bridge, upon disengagement of its releasable engagement with the laying beam.

4,288,882

ENDOSCOPE SHEATH CLEANING DEVICE

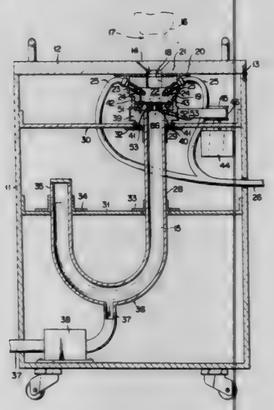
Haruo Takeuchi, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1980, Ser. No. 110,756

Claims priority, application Japan, Jan. 17, 1979, 54/4080

Int. Cl.³ B08B *9/02, 3/02;* **A46B** *13/04*

U.S. Cl. 15—88 **15 Claims**



1. An endoscope sheath cleaning device comprising:
a housing;
an upper plate covering the housing;
an insertion hole formed in the upper plate to allow for insertion of an endoscope sheath into the cleaning device;
a nozzle head disposed under the upper plate and having a lateral wall;
endoscope sheath cleaning means disposed under the nozzle head to resiliently contact a peripheral surface of an endoscope sheath inserted into the cleaning device through the insertion hole;
nozzles provided in the lateral wall of the nozzle head and each having a nozzle opening directed to the endoscope sheath cleaning means;
rotation means for rotating the endoscope sheath cleaning means;
a guide tube disposed in the housing and having two ends with one end positioned higher than the other end and aligned with the insertion hole, said guide tube having a lower portion; and
a drain tube connected to the lower portion of the guide tube for draining a washing liquid in the guide tube.

4,288,883

COMBINED TOOTH BRUSH AND GUM MASSAGING

Josef Dolinsky, Salzstr. 4, 8960 Kempten, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,390

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847261

Int. Cl.³ A46B *9/04;* **A61H** *13/00*

U.S. Cl. 15—110 **5 Claims**



1. In a toothbrush comprising a handle portion and a head portion at one end thereof, the head portion having a plurality of longitudinally aligned rows of bristles, a plurality of longitudinal rows of massaging elements longitudinally straddling the rows of bristles, the improvement comprising the width of the plurality of rows of bristles approximating twice the height of a tooth whereby the toothbrush is limited to movement in a longitudinal direction only during the cleaning process.

4,288,884

MOP HAVING SKIP SLIT ABSORPTIVE ELEMENT

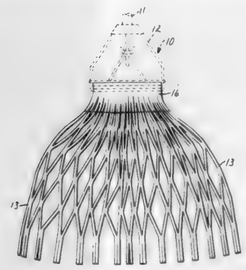
Jerold O. Bahls, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 13, 1980, Ser. No. 121,008

Int. Cl.³ A47L *13/16, 13/20*

U.S. Cl. 15—244 R **8 Claims**

8. In a mop comprising an absorptive element, a handle and a frame adapted to fasten said absorptive element to one end of said handle, the improvement characterized by said absorptive element comprising rectangular substantially flat strips of cellulose sponge material approximately 3 to 20 mm thick, each of said strips having a first portion capable of being fastened by said mop frame and opposed substantially equal drapable portions on either side of said first portion, wherein each of said drapable portions have an outer end opposite said first portion and are slit from said outer end toward but not into said first portion to provide a pattern of spaced parallel disconnected slits throughout the drapable portion, with individual slits approximately 70 to 250 mm long and being spaced apart in the same row about 3 to 40 mm, and with adjacent parallel slits being approximately 3 to 16 mm apart and being off-set from one another to provide a lattice formed by side-by-side



connected strips of said cellulose foam material, and a reinforcing web formed of a three-dimensional nonwoven lofty abrasive material partially embedded in one side of said first portion and being coextensive with said one side of said first portion and extending from drapable portion up to 130 mm of the distance from said first portion to said outer end.

4,288,885

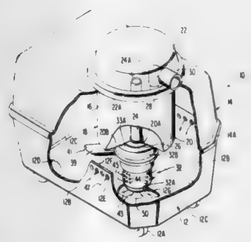
HOT WATER VACUUM EXTRACTION MACHINE WITH REVERSE FAN COOLED VACUUM MOTOR

Carl Parise, Sparks, Nev., assignor to Parise & Sons, Inc., Sparks, Nev.

Filed Mar. 27, 1980, Ser. No. 134,732

Int. Cl.³ A47L *7/00*

U.S. Cl. 15—321 **4 Claims**



1. In a hot water vacuum extraction machine including:
an enclosed housing,
a dump bucket assembly vertically mounted within said housing and including an upright open ended dump bucket and an inverted cup-shaped cover sealingly fitted at its periphery to the top of said dump bucket,
a hose coupling projecting within said dump bucket assembly interior for returning by vacuum application to the interior of said dump bucket assembly, water and entrained dirt for separation from the air within said dump bucket,
an opening within the bottom of said dump bucket,
a riser tube sealably mounted to said dump bucket bottom and surrounding said opening and extending vertically within said dump bucket,
an electric motor driven vacuum pump assembly mounted vertically within said housing beneath said dump bucket, said vacuum pump assembly including:
an enclosed cylindrical housing having opposed upper and lower end walls and a cylindrical sidewall,
said upper end wall bearing a vacuum intake opening for sealable engagement with the bottom of said dump bucket riser tube,
a vacuum pump air discharge pipe extending from said casing cylindrical sidewall, through the interior of said vacuum extraction machine housing and opening to the exterior thereof,
cooling air flow ports within said housing, cooling air flow ports within said casing cylindrical side-wall intermediate of said ends, and cooling air passage means within the lower end wall of said vacuum pump assembly casing,
an electric motor mounted within said casing including fixed motor coils and a rotor mounted via a rotor shaft for rotation about a vertical axis and bearing at one end of said shaft adjacent the lower end wall of said casing,
a fan for causing forced air flow through the interior of said casing and over the motor coils within said casing, with said cooling air passing through said sidewall cooling air ports and said cooling air passage means of said lower end wall, respectively,
the improvement wherein:
said vacuum pump assembly casing end wall comprises an annular shroud including a cylindrical shroud sidewall surrounding said fan,
said fan mounted to said vertical axis shaft includes a plurality of fan blades which extend radially within said annular shroud and terminate just short of said shroud sidewall and form a minimal air gap therebetween with said shroud annular sidewall and said blades being of such pitch and the direction of rotation of said motor being such that air flow is forced downwardly through said cylindrical casing of said vacuum pump assembly, over said motor windings for discharge through the lower end of said shroud annular wall, with said cooling air required to enter said housing through said cooling air ports within said hot water vacuum extraction machine housing and through the openings within said cylindrical casing sidewall of said vacuum pump assembly prior to discharge from the bottom of said vacuum pump assembly casing, whereby, the cooling air is warmed and dried prior to entering the ports of said vacuum pump assembly cylindrical casing sidewall and in exiting causes a blowing effect to disperse any water underlying the lower end of said vacuum pump assembly casing, and wherein the minimal gap between the tips of the fan blades and the shroud cylindrical sidewall functions to reduce air turbulence with a subsequent reduction in the production of heat in this area due to recirculation of exhaust air.

4,288,886

AIR BROOM

Frederick Siegler, 444 S. Citrus, Los Angeles, Calif. 90036

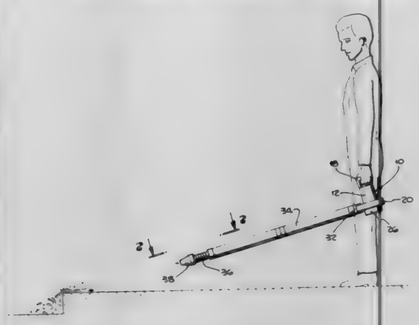
Filed Aug. 23, 1979, Ser. No. 65,996

Int. Cl.³ A47L *5/24*

U.S. Cl. 15—330 **8 Claims**

1. An air broom system comprising:
a housing,
a portable power unit in said housing and having a rotary power output with a longitudinal axis of rotation,
a rotary air impeller in said housing connected to said power output for rotation thereby,
said housing having an air inlet and an air outlet in flow communication with said air impeller,
an elongated tubular wand having an end in flow communication with one of said inlet and outlet of said housing and extending outwardly therefrom,
said housing having a carrying handle at an upper portion thereof and from which the housing with said power unit and air impeller, and said elongated tubular wand are suspended with the longitudinal axis of rotation of the motor generally upright, the weight of the housing, power

unit and air impeller, as an entirety, relative to the weight and leverage of the outwardly extending tubular wand, being such that the wand extends outwardly and downwardly toward the ground and terminates close to, but



above the ground when the air broom system is held by the handle in operation by a standing person,

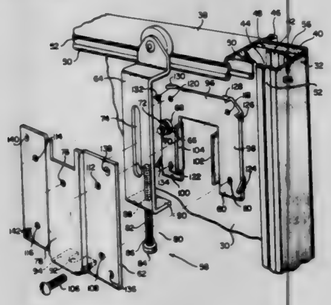
said handle and wand being distinctly separate and extending from opposite ends of the housing along the rotational axis of said motor.

4,288,887

FRAME CORNER CONNECTOR

Larry K. Johnson, and Kenneth L. Gates, both of Sterling, Ill., assignors to Lawrence Brothers, Inc., Sterling, Ill.

Filed Nov. 19, 1979, Ser. No. 95,421
Int. Cl.³ A47N *15/00*; E05D *13/02*
U.S. Cl. 16—105 **13 Claims**



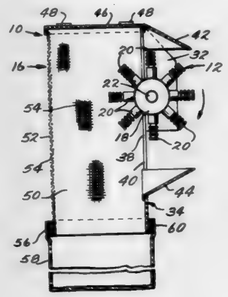
1. A corner connector for use with framed sections disposed at right angles and interconnected to form a corner joint, said frame sections having a flange projecting inwardly relative to said corner joint, and having an enlarged lip along the free edge thereof, said corner connector comprising: a first clamp section; a second clamp section superposed with said first clamp section and including indenting means protruding toward said first clamp section; means for engaging said flange interjacent said first clamp section and said second clamp section; whereby said indenting means will bear against and bitingly engage said flange and span the enlarged lip thereby rigidly connecting said frame sections.

4,288,888

DEVICE FOR REMOVING FEATHERS FROM GAME FOWL

Ralph H. Herolzer, 752 Chateau Ave., Cincinnati, Ohio 45204

Filed Dec. 11, 1979, Ser. No. 102,344
Int. Cl.³ A22C *21/02*
U.S. Cl. 17—11.1 R **9 Claims**



1. A device for removing feathers from game fowl and poultry comprising

a rotor including a hub disposed with its axis extending generally horizontally and a multiplicity of resilient feather removing fingers extending generally radially outwardly from said hub in annularly and axially spaced relation with respect to one another,

a feather catching housing including a front wall structure providing (1) exterior cover for an upper and rearward portion of the rotor, (2) exterior access to a lower and forward portion thereof, (3) a finger passage for the lower portion of the rotor, and (4) a feather receiving opening extending downwardly from said finger passage,

said housing having wall means extending rearwardly of said front wall structure providing (1) a feather enclosure for the upper and rearward portion of said rotor covered by said front wall structure which extends downwardly below said feather receiving opening and (2) a multiplicity of air openings of a size insufficient to pass feathers and of a number sufficient to allow for the low velocity flow of air outwardly of the feather enclosure,

means at the lower end of said feather enclosure for operatively connecting a feather catching bag therewith with an open end in operative relation rearwardly and below said feather receiving opening, and

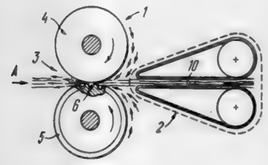
means for rotating said rotor in a direction and at a speed such that the resilient fingers in the lower and forward portion thereof move arcuately downwardly and rearwardly so as to engage the upper and forward portion of a game fowl held in engagement therewith so that the feathers thereof engaged by the resilient fingers will be moved (1) by such engagement and (2) by the accompanying relatively high velocity flow of air established by the movement of the fingers through said finger passage through said feather receiving opening into said feather enclosure for deposit into the open end of a bag while the accompanying air flows at relatively low velocity outwardly of the enclosure through said multiplicity of air openings.

4,288,889

APPARATUS FOR DRAFTING FIBERS

Valentin N. Tikhonov, ulitsa Sh. Rustaveli, 55, kv. 28; Vitaly I. Zhestkov, Chilanzar, kvartal 19, dom 26, kv. 41; Gennady N. Shlykov, Chilanzar, kvartal 19, dom 31, kv. 3; Vasily M. Diachkov, Chilanzar, kvartal 7, dom 18"V", kv. 8; Viktor M. Mukhin, ulitsa B. Khmelnitskogo, 69, korpus 5, kv. 31, and Gennady V. Zhigalov, ulitsa Bogdana Khmelnitskogo 69, korpus 2, kv. 6, all of Tashkent, U.S.S.R.

Filed Sep. 5, 1979, Ser. No. 72,674
Int. Cl.³ D01H *5/74*
U.S. Cl. 19—236 **5 Claims**



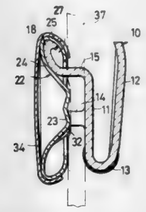
1. An apparatus for isolating fibers of a fibrous material and for feeding isolated fibers to a subsequent operation comprising: a feeding pair of rolls; and an outlet pair of rolls, the outlet pair of rolls including a cylindrical roll with a profiled peripheral surface and a pressure roll in contact with said cylindrical roll along generatrix lines to define a zone of pinching of the fibrous material for isolating individual fibers, linear velocity of said outlet pair of rolls being many times greater than the linear velocity of said feeding pair of rolls, and said profiled peripheral surface being formed by alternating spaced projections arranged at points of intersection of helical lines, one group of said helical lines including a plurality of parallel righthand helical lines, and another group of said helical lines including a plurality of parallel lefthand helical lines, the ratio of angles of inclination of these lines to the generatrix of the roll being from 1.0 to 1.8, and the spacing of the projections along the righthand helical lines being different from the spacing of the projections along the lefthand helical lines when the ratio is 1.0.

4,288,890

HOOK FOR A HOOK-AND-EYE FASTENER

Yoshihiro Kanazaka, Nyuzen, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 12, 1980, Ser. No. 148,729
Claims priority, application Japan, Jun. 15, 1979, 54-81930[U]
Int. Cl.³ A44B *13/00, 1/42*
U.S. Cl. 24—227 **6 Claims**



1. A hook for a hook-and-eye fastener, comprising:

(a) a body including a base having a plurality of prongs projecting therefrom at spaced intervals; and

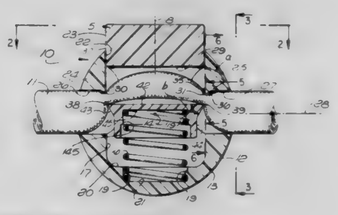
(b) a retainer including a central raised portion, an intermediate flaring portion extending outwardly from said central raised portion, and a peripheral bent lip portion extending from said intermediate flaring portion inwardly toward said central raised portion, said intermediate and bent lip portions jointly defining a retainer pocket surrounding said central raised portion, said central raised portion having a plurality of spaced ridges, each of said prongs being located between two of the adjacent ridges and having a bent end portion disposed in said retainer pocket, said base including a plurality of tongues each projecting radially outwardly between two of the adjacent prongs and lying in substantially the same plane as said base.

4,288,891

CORD LOCK HAVING DEPRESSABLE PLUNGER

Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91101

Filed Mar. 7, 1977, Ser. No. 775,170
Int. Cl.³ F16G *11/00*
U.S. Cl. 24—115 G **13 Claims**



1. The combination comprising:

a body containing a passage;

a plunger mounted slidably in said passage for movement relative to said body along a predetermined axis, and having an end portion which is accessible from the outside of the body for manually pressing the plunger inwardly along said axis from a cord gripping position to a released position; and

a spring yieldingly resisting such inward axial sliding movement of the plunger;

said body and plunger having apertures through which a cord or cords can extend generally transversely of said axis and which in said released position of the plunger are essentially opposite one another to free the cord or cords for longitudinal movement, and which are defined in part by relatively movable edges of the body and plunger between which the cord or cords are clamped in said gripping position of the plunger to lock the cord or cords against longitudinal movement;

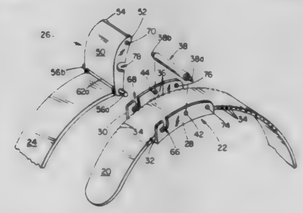
at least one of said edges, as viewed in planes containing said axis and extending through a corresponding one of said apertures in the vicinity of its center, being of sharpened sectional configuration defined by faces which converge toward one another at an acute angle substantially less than 90 degrees.

4,288,892

BUCKLE

John H. Mardirossian, Warwick, R.I., assignor to Paul Levinger, Providence, R.I.

Filed Dec. 18, 1978, Ser. No. 970,549
Int. Cl.² A44B *11/20, 11/25*
U.S. Cl. 24—206 B **12 Claims**



1. The combination of a first band end and a coupling mem-

ber of a buckle mountable in different positions longitudinally of said band end to receive a second band end therein for coupling said ends together,

said first band end having a plurality of indentations at each side edge arranged longitudinally thereof,

said member having a channel shape with a bottom wall and opposed sidewalls dimensioned to receive therebetween a portion of said first band end with one of its large surfaces engaging said bottom wall, said member having teeth located therein to lie opposite at least some of said indentations at each side of said first band end disposed therein at different relative longitudinal positions and dimensioned to penetrate at least some of said indentations when said first band end is pressed toward said bottom wall, and a pair of opposite presser members one fixed to each said sidewall in position to press the corresponding edge of said first band end toward said bottom wall to engage said teeth in said indentations.

4,288,893

METHOD OF COOLING STUFFER CRIMPED YARN

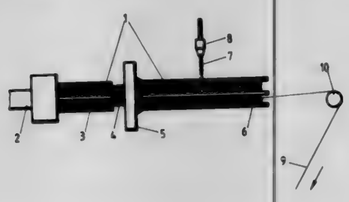
Heiko Herold, Neuss; Richard Herold; Rudolf J. Klee, both of Dormagen, and Edgar Muschelknautz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 13,895

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807490

Int. Cl.³ D02G *1/12*

U.S. Cl. 28—266 **2 Claims**



1. In process of texturizing yarn wherein yarn at an elevated temperature is formed into a wad in a stuffer section including an array of rod guide means and thereafter cooled, the improvement for cooling said yarn wad which comprises passing without guiding support said wad into a cooling section which cooling section is not directly connected to said stuffer section, pushing said wad through said cooling section equipped with an array of rod guide means, directing onto said wad a liquid jet which does not decompose to droplets while said wad is in said cooling section, thereafter removing yarn from said wad and deflecting the yarn as the same is removed from said wad to centrifuge liquid therefrom whereby a virtually dry yarn may be wound.

4,288,894

METHOD OF MANUFACTURING PRESSURE VESSELS BY HEAT FORMING

Alfonse A. Jacobellis, Woodland Hills, Calif., assignor to Greer Hydraulics, Incorporated, Chatsworth, Calif.

Filed Sep. 24, 1979, Ser. No. 78,013

Int. Cl.³ B21D *53/00*; B21K *29/00*; B23P *15/26*

U.S. Cl. 29—157 R **6 Claims**

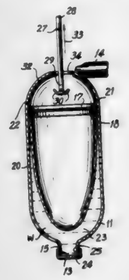
1. The method of manufacturing a pressure vessel for use as a hydraulic accumulator which comprises the steps of providing a cylindrical metal member, inwardly deforming a first end of said member to define a generally hemispherical portion having a central oil port,

providing a bladder assembly including a metallic retainer ring carrying a resilient, distensible elastomeric bladder member,

inserting said bladder assembly into the interior of said metal member through the other end of said member and advancing said retainer ring to an intemediate position within said member,

weldingly connecting said retainer ring to inner wall portions of said member about a circumferential weld line to divide said member into two chambers separated by said bladder assembly,

introducing a source of cooling fluid into said chamber



through said other end to induce an outward gaseous flow originating at a point adjacent said bladder and directed radially outwardly in directions conforming to the configuration of said bladder, while simultaneously heating and inwardly deforming the wall adjacent said other end of said cylindrical metal member at positions progressively nearer said other end while maintaining said cooling fluid flow, to cause said wall to assume a generally hemispherical configuration and reduce the diameter of said other end to define a central gas port,

and thereafter withdrawing said source of cooling fluid through said central port.

4,288,895

BEARINGS

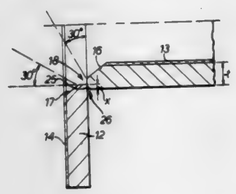
Brian D. Campbell, Harrow Weald, England, assignor to The Glacier Metal Company, Limited, Middlesex, England

Continuation of Ser. No. 849,465, Nov. 7, 1977, abandoned. This application Jun. 29, 1979, Ser. No. 53,518

Claims priority, application United Kingdom, Nov. 10, 1976, 46708/76

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—149.5 C **15 Claims**



1. A method of making a flanged half-bearing in which a semi-cylindrical shell having an outer face and an inner face, and a semi-annular end flange having an outer face and an inner face, are held with the inner face of the flange in contact with one axial end of the shell over a partial thickness comprising less than the entire thickness of the shell, said partial thickness encompassing said inner face of said shell and a laser beam is applied around a semi-circular path where the inner face of the flange is in contact with the end of the shell adjacent said inner face of said shell to weld the flange and shell together.

4,288,896

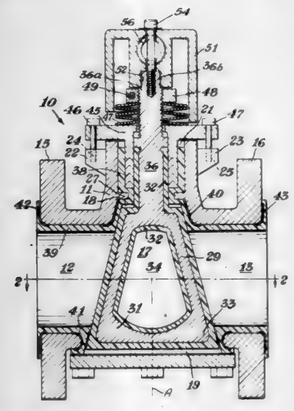
METHOD FOR MANUFACTURING AN IMPROVED PLUG VALVE

Walter H. West, Bay City, and E. D. Prueter, Saginaw, both of Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 925,082, Jul. 17, 1978, Pat. No. 4,219,046. This application Dec. 17, 1979, Ser. No. 104,491

Int. Cl.³ B23P *15/00*; B29D *3/02*; F16K *5/02*

U.S. Cl. 29—157.1 R **2 Claims**



1. An improved method for the preparation of a plug valve, the steps of the method comprising providing plug valve body having a plug receiving cavity intermediate an entrance and exit port, the plug receiving cavity having a first region of lesser diameter and a second region of greater diameter, disposing within the body first and second rigid foraminous annular members, the members being disposed in the plug-receiving cavity, said first annular member being disposed in the region of lesser diameter and the second annular member being disposed in the region of greater diameter, embedding the annular members within a plastic lining thereby lining the plug receiving cavity and ports of the valve body, the plastic lining thereof having a service temperature, providing a plug suitable for use with the plug body, the plug being finished to a desired degree of taper, disposing the plug within the body, tensioning the plug into the plug-receiving cavity of the valve body, raising the temperature of the valve body and plug above the service temperature of the plastic lining of the valve body and forcing the plug into the cavity to thereby deform the liner of the valve body to conform to the valve plug and subsequently cooling body and plug below the service temperature of the valve body lining.

4,288,897

METHOD OF PRODUCING A NUCLEATE BOILING SURFACE ON A HEAT TRANSFER MEMBER

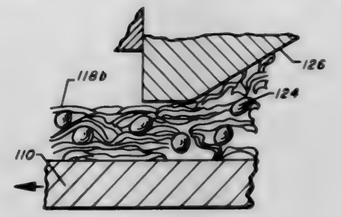
James G. Withers, Jr., Decatur, Ala., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 966,438, Dec. 4, 1978, Pat. No. 4,219,078. This application Nov. 5, 1979, Ser. No. 91,327

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.4 **4 Claims**

1. A method of producing a nucleate boiling surface on a heat transfer member comprising the steps of: placing a layer of open cell reticulated organic foam into contact with the member; plating the foam layer and the underlying member with a metallic coating so as to surround the strands of the foam and integrally bond them to the member; heating the metallic coating to at least partially pyrolyze the strands of the foam so as to produce a reticulated array of connected, at least partially hollow metal strands which are periodically open to the atmosphere; engaging at least a substantial portion of the hollow metal strands with a plurality of solid particles with sufficient pressure to at least partially deform said hollow metal strands and reduce their internal diameter and their



ability to transport liquid between spaced openings along their length.

4,288,898

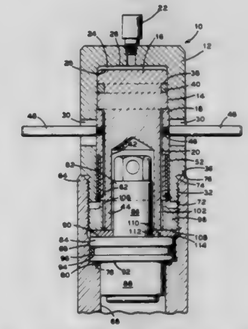
CONTROL ROD DRIVE MECHANISM CLOSURE DEVICE

Marty E. Adcock, Logan, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 22, 1979, Ser. No. 86,986

Int. Cl.³ B66F *3/24*

U.S. Cl. 29—240 **10 Claims**



1. A device for compressing a first member within a second member comprising a body portion having a bore therein and being attachable to said second member, piston means slidably receivable within said bore in said body portion and having a bore therein for the receipt of said first member, a sleeve member adjacent said piston means and axially movable therewith, and means for pressurizing said bore within said body portion causing axial movement of said piston means and said sleeve member resulting in the compression of said first member within said second member.

4,288,899

DISC BRAKE PISTON DEPRESSING TOOL

Edward A. McKee, 104 Rock Levee Rd., Scott City, Mo. 63780

Filed Sep. 24, 1979, Ser. No. 78,361

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—256 **18 Claims**

1. A tool for moving the piston into the cylinder bore of a disc brake caliper housing having a support bracket with two sections spaced with respect to each other to define an opening disposed opposite to said piston, said tool comprising:

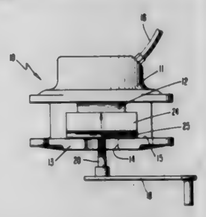
(a) a threaded shaft means having a piston engaging means rotatably connected at a fixed location at one end of the shaft means and a shaft rotating means rigidly secured to the other end thereof, and

(b) brace means threadingly engage said shaft means to be

movable with respect to the piston engaging means at a location intermediate the two ends of the shaft means,

(c) said brace means including a first bar of material having a structural configuration to abut the inside surface of the support bracket sections and a length effective to span the opening to position said shaft means within said opening beween said sections,

(d) said piston engaging means including a second bar of material having two ends and a piston contacting surface



means therebetween, said piston contacting surface means being effective to exert pressure against opposing edges of the piston when the shaft rotating means is rotated while the brace means abuts the inside surface of the support bracket,

(e) said one end of the shaft means being rotatably located on the side opposite said piston contacting surface means of the second bar of material at the geometric center of said second bar of material.

4,288,900

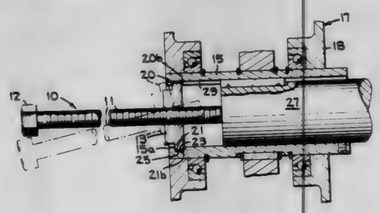
PULLER TOOL

John S. Overton, Malvern, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed May 27, 1980, Ser. No. 153,127

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—263 **3 Claims**



1. In a tool for removing from a shaft a sleeve that is supported thereon and has an annular internal groove spaced inwardly from an end of the sleeve and an internal slot leading from the end of the sleeve to the groove, a threaded rod adapted to be projected into the sleeve and positioned with an end in abutment with the end of the shaft, a puller plate threaded on said rod, said plate having a central body portion of generally rectangular configuration, and means defining a flange at each end of said body portion, the length of each flange measured longitudinally of said rod being less than the width of the internal groove in the sleeve, and the width of one flange being less than the width of the other and adapting said one flange to be moved through the slot to a position in alignment with the groove.

4,288,901

METHOD OF MANUFACTURING AND CALIBRATING A DISPLACEMENT MEASURING SENSOR

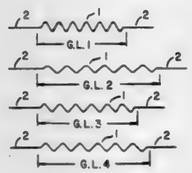
Clarence O. Babcock, 5 S. Flower, Lakewood, Colo. 80226

Division of Ser. No. 790,013, Apr. 22, 1977, Pat. No. 4,170,897.

This application Jun. 27, 1979, Ser. No. 52,471

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—407 **1 Claim**



1. A method for manufacturing and calibrating a helical wire sensor, which comprises the steps of:

(a) winding a small diameter high strength wire into a helical coil;

(b) applying a first elongation to the coil to form a helical sensor of a selected geometry, with a given flexibility, elastic displacement range, and sensitivity which is inversely proportional to the displacement range;

(c) determining a vibratory more for the elongated coil having such selected geometry;

(d) applying a second elongation to the coil which is less than the first, and obtaining a second vibratory mode determination; and

(e) comparing said first and second vibratory modes to corresponding displacements to calibrate the helical wire sensor prior to use.

4,288,902

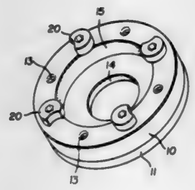
METHOD OF FORMING A NOTCHED EDGE LOCK SCREW

Louis J. Franz, 313 Crane Ave., Royal Oak, Mich. 48067

Filed Oct. 5, 1979, Ser. No. 82,140

Int. Cl.³ F16B *19/02*

U.S. Cl. 29—407 **2 Claims**



1. A method of forming a notched edge lock screw having a threaded shank and a head provided with a notch, and being of the type used for locking a die part insert within a retainer which is provided with a socket for receiving a portion of the insert, and with the insert having a lock-screw head receiving groove aligned with a seating surface formed on the retainer and the seating surface surrounding a threaded lock screw shank receiving opening so that the base of the lock screw head tightly engages the seating surface when a portion of the screw head overlaps the retainer socket and is received within the insert groove for locking within the retainer socket, and the screw head base is spaced a short distance from the seating surface when the screw is loosened relative to the threaded opening for aligning the notch formed on the screw head with the adjacent socket edge portion and insert edge portion so that the insert is unlocked, comprising:

forming an un-notched master screw, which otherwise is a substantial duplicate of the lock screw, with a substantial number of segment markings equally spaced around the peripheral edge portions of its head, so that the head circumference is visually divided into a large number of segments;

applying said master screw into a pre-existing retainer threaded opening and observing the markings which delineate the portion of the socket which is overlapped by the head of the master screw when the master screw is tightly in place;

machining a notch in a lock screw corresponding to, but circumferentially offset relative to, the observed marked overlapping master screw head portions, so as to position the notch with one of its ends at the retainer socket defining wall, so that the notch extends roughly perpendicularly away from the retainer socket defining wall when the lock screw head is tightly in contact with the retainer seat surface;

and thereafter, threadedly applying said lock screw to said preexisting retainer opening for use therein.

4,288,903

METHOD FOR PRODUCING STUFFING FOR A SPRING-TYPE MATTRESS

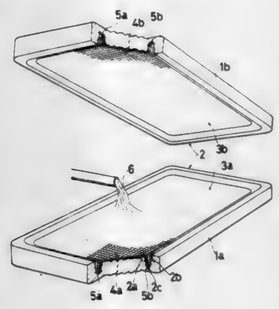
Tamio Matsuda, Nishio, and Sakuichi Tanikawa, Aichi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 22, 1979, Ser. No. 68,569

Claims priority, application Japan, Sep. 8, 1978, 53-110886

Int. Cl.³ B29D *27/04;* **B23P** *17/00*

U.S. Cl. 29—416 **4 Claims**



1. A method for producing stuffing to form a spring-type mattress assembly including at least one spring member utilizing upper and lower mold members, which comprises:

forming grooves along the entire circumferential edge portions of said upper and lower mold member;

fixing a dense seat member on a flat surface of said lower mold member and a relatively less dense seat member on a flat surface of said upper mold member;

bending edge portions of each of said seat members into said grooves of said upper and lower mold members;

inserting and fixing elastic plates within said grooves of said upper and lower mold members;

pouring a predetermined quantity of an undiluted solution of plastics to be foamed onto said flat surface of said lower mold;

tightly contacting said upper and lower mold members together for therein expanding and forming said undiluted solution of plastics into a resulting mass, thereby forming a stuffing member integrally composed of said resulting mass, each of said seat members and said plates;

horizontally and symmetrically cutting and dividing said stuffing member into a first part and a second comparatively hard part;

turning said first and second parts of said stuffing member over and assembling them so as to engage respective elastic plates of said first and second parts and cover said at least one spring; and

covering said two parts of said stuffing member by an outer decorative member to form said mattress assembly.

4,288,904

METHOD AND APPARATUS FOR THE REVERSAL OR REPLACEMENT OF HAMMERS IN HAMMER MILLS

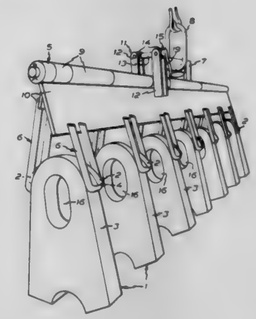
Ernst R. Lindberg, Svedala, Sweden, assignor to Svedala-Arbra AB, Svedala, Sweden

Filed Mar. 2, 1979, Ser. No. 17,163

Claims priority, application Sweden, Mar. 3, 1978, 7802439

Int. Cl.³ B66C *1/30;* **B02C** *13/00;* **B23P** *19/04*

U.S. Cl. 29—426.3 **8 Claims**



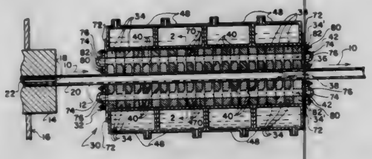
1. Method for replacement of hammers in a hammer mill in which at least one series of hammers, after mounting in the hammer mill, is pivotally suspended in a row on a bar which extends through holes in the hammers and is connected to the rotor of the hammer mill, which method comprises the steps for removal of said row of hammers, of manipulating a gripping device having a series of gripping members with spacing equal to the prescribed spacing between the hammers, and grasping the hammers in the row by means of these gripping members by engagement with the hammers at their upper end portions, such that the hammers are held, by means of the gripping members substantially in unchanged mutual positions; lifting said gripping device with the row of fixedly retained hammers a distance sufficient for relieving the bar of the weight of the hammers; releasing said bar from said row of hammers and lifting the hammer row out of the hammer mill; and that, for remounting the hammers, the method comprises the steps of placing the hammers in a row on a base outside the hammer mill such that the hammers in the row have the same mutual spacing as said prescribed spacing; bringing the gripping device with its gripping members into engagement with the hammers at their upper end portions, such that the holes in the hammers are positioned to allow the insertion of the bar, lifting the hammers and lowering them into the hammer mill to a position in which the bar can be inserted into the row of aligned holes in the row of hammers and can be connected to the rotor without the bar being loaded with the weight of the hammers; and lowering the gripping device such that the hammers are supported on the bar, and then releasing the gripping device from the hammers and lifting the gripping device out of the hammer mill.

4,288,905

METHOD OF FABRICATING VACUUM SIZING APPARATUS

Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512

Division of Ser. No. 863,886, Dec. 23, 1977, Pat. No. 4,181,487.
This application Sep. 10, 1979, Ser. No. 73,650
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—526 R **8 Claims**



1. A method of fabricating a vacuum sizing apparatus comprising the steps of:

(a) forming a plurality of structural segments which, when arranged side-by-side, have inner wall portions extending contiguously to define a sizing surface, with adjacent ones of the segments having side walls extending in mating engagement and intersecting the sizing surface;

(b) forming a plurality of vacuum channel grooves in the side walls of the segments, the grooves being configured and arranged such that when the segments are positioned in said side-by-side arrangement, each of the grooves will define at least a part of a vacuum channel opening through the sizing surface;

(c) clamping the segments together in said side-by-side arrangement; and,

(d) providing conduit means for communicating the grooves with a vacuum source.

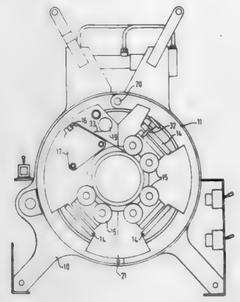
4,288,906

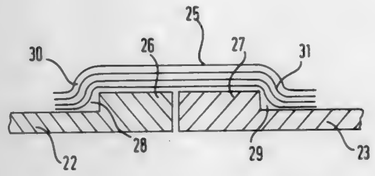
PIPE JOINTING

Philip J. Cocks, and Derek A. Newton, both of Warwickshire, England, assignors to Dunlop Limited, West Midlands, England

Filed Oct. 22, 1979, Ser. No. 87,036
Claims priority, application United Kingdom, Oct. 25, 1978, 41948/78
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—526 R **16 Claims**

1. A method of forming a joint between pipes having respective increased diameter end formations the method comprising winding a ductile metal strip wider than the two end formations over the end formations, bending the lateral portions of the strip downward toward the pipes behind the formations so that the formations are locked together by an enclosure formed





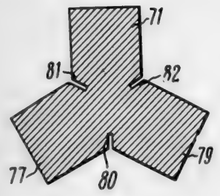
by the wound and deformed strip which has reduced diameter lateral portions on opposite sides of the formations.

4,288,907

METHOD OF MAKING BILLETS

Julian M. Chumanov, ulitsa Rozy Ljuxemburg, 65, kv. 33, Donetsk; Anatoly L. Liberman, Teply stan, 5 mikroraion, korpus 65, kv. 259, Moscow; Vladimir I. Listopad, Schelkovsky proezd, 7, korpus 1, kv. 51, Moscow; Vasily V. Polyakov, Kosinskaya ulitsa, 18, korpus 3, kv. 19, Moscow; Vyacheslav F. Gubaidulin, ulitsa Schorsa, 23, kv. 16; Grigory M. Shulgin, ulitsa Izjumovskaya, 5, kv. 232, both of Donetsk; Dmitry P. Evteev, ulitsa Chelyabinskaya, 10/2, kv. 137, Moscow; Sergei P. Efimenko, bulvar Pushkina, 29, kv. 18, Donetsk; Veniamin V. Fulmakht, ulitsa Novolesnaya, 6, kv. 16, Moscow; Vladimir P. Slednev, ulitsa Artema, 147 "V", kv. 16, Donetsk; Viktor I. Pogorzhelsky, ulitsa Mironovskaya, 26, kv. 57, Moscow; Valentin B. Shum, ulitsa Artema, 169, kv. 21, and Anatoly A. Tolpa, ulitsa Tkachenko, 85, both of Donetsk, all of U.S.S.R.

Filed Jun. 28, 1978, Ser. No. 919,785
Int. Cl.³ B22D *11/126*
U.S. Cl. 29—527.6 **10 Claims**



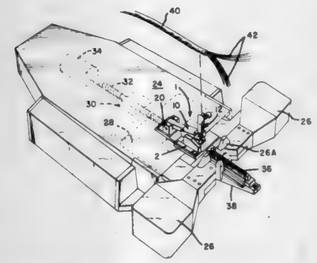
1. A method of making billets, comprising the steps of forming a composite billet having a central portion and at least three ray members disposed symmetrically relative to the central longitudinal axis of said composite billet; each ray member being partially defined by a pair of opposed bases, a first one of which is situated at the juncture of the ray member with the central portion of said composite billet and a second one of which is situated at the side of the ray member opposite to the first base; providing that the ray members of said composite billet are free of any zone in which chemical constituents are segregated by forming each ray member with the first base of each ray member at the place of its juncture with the central portion of said composite billet being 0.72 to 2.3 times the height of said ray member, the second base being 0.5 to 1.0 times the height of said ray member so that any such segregation zone is localized in the central portion of said composite billet; forming stress raisers in the form of indentations at the region of the juncture of respective pairs of adjacent ray members, said indentations having a depth of about 0.07 to 0.2 times the height of the ray member and having a width of about 0.02 to 0.1 times the height of the ray member; and concurrently severing said ray members of the composite billet from said central portion.

4,288,908

CABLE CLAMPING AND ORIENTING APPARATUS

John G. Hatfield, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 26, 1979, Ser. No. 88,691
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—564.1 **7 Claims**



1. Apparatus comprising a frame mounting a holder for an electrical connector, indexing means, a wire connecting mechanism linked to said indexing means for indexed traverse in respect to said connector and successive indexed alignment with terminals of said connector, said wire connecting mechanism being operative for connecting individual wires with respective said terminals, and a cable clamp movable with said wire connecting mechanism for holding a multiple wire cable during connection of the individual wires thereof with said terminals, characterized in that said clamp and said frame are linked by cam means for moving said clamp and said cable held thereby relative longitudinally and transversely of said connector during said traverse of said wire connecting mechanism.

4,288,909

AUTOMATIC TOOL CHANGER FOR MACHINE TOOL

Ervin J. Kielma, West Allis; Albin J. Schabowski, Milwaukee, and John T. Currer, Wauwatosa, all of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Oct. 25, 1978, Ser. No. 954,438
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **3 Claims**

1. In a machine tool having an automatic tool changer for changing the tools used to operate on a workpiece;

a bed;

a column slidably supported by said bed for movement in a rectilinear path of travel;

a spindlehead carried by said column for movement therewith along said rectilinear path of travel;

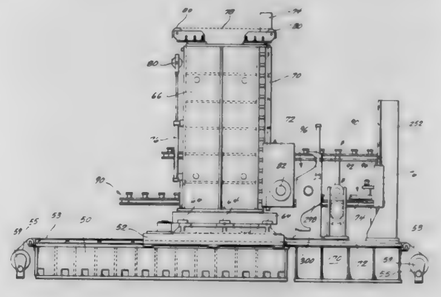
a spindle rotatably supported by said head and adapted to receive a rotary cutting tool for operating on a workpiece, the improvement comprising:

a frame slidably supported by said bed and being attached to said column for movement with said column in said rectilinear path of travel;

a tool storage magazine mounted on said frame and adapted to carry a plurality of vertically positioned cutting tools for use in said spindle;

means associated with said magazine for selecting the next tool to be used in said spindle; and

tool transfer means mounted on said frame in position to transfer tools between said tool storage magazine and said spindle, whereby said magazine and said tool transfer means are carried by said bed but move with said column by reason of their mounting on said frame so that they always remain in proper position relative to said spindle



along said rectilinear path of travel for completing a tool interchange operation

a tilt adapted to receive a tool;

a tool gripper arm movably supported by said frame for transferring a tool from said magazine to said tilt unit in a vertical position and to return the tools from said tilt unit to said magazine; and

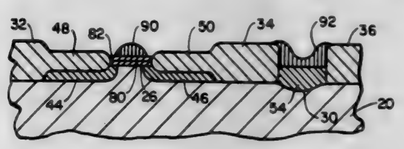
means connected to pivot said tilt unit between a vertical position for receiving tools from said tool gripper arm and a horizontal position for locating a tool in position to be engaged by said tool transfer means for transfer to said spindle and to receive a previously used tool from said transfer means for return to said magazine.

4,288,910

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 16, 1979, Ser. No. 30,255
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **9 Claims**



1. A method of manufacturing devices on a semiconductor wafer **23** of a first conductivity type having formed on the body **20** of the wafer **23** a masking medium **22**, removing selected portions of the masking medium **22** to expose the surface of the body **20** thereby defining field regions **31** on the surface of the wafer and forming a field insulator **32**, **34**, **36**, at the exposed locations on the surface of the body **20**, wherein the improvement comprises the steps of:

A. Removing selected portions of the remaining masking

medium **22** so as to define source/drain regions **29** and interconnect runs **28** on the surface of the wafer **23**,

B. Doping the source/drain regions **29** and interconnect runs **28** to a second conductivity type **44**, **46**,

C. Forming an insulator **48**, **50** over the doped source/drain regions **29** and interconnect runs **28**,

D. Removing the masking medium **22** covering an electrical contact area **30**,

E. Doping the electrical contact area **30** to a second conductivity type **54**,

F. Preparing the gate and contact area **26**, **30** for reception of electrical conductors **60**, **61**, and

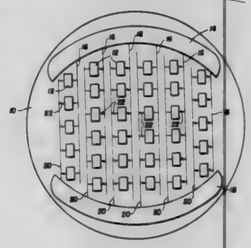
G. Placing electrical conductors **60**, **61** at selected locations on the wafer **23** surface to provide electrical contact with the gate and contact area **26**, **30**.

4,288,911

METHOD FOR QUALIFYING BIASED INTEGRATED CIRCUITS ON A WAFER LEVEL

Kenneth A. Ports, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 21, 1979, Ser. No. 106,127
Int. Cl.³ H01L *21/66, 21/423*
U.S. Cl. 29—574 **23 Claims**



1. A method for qualifying radiation hard integrated circuits at the wafer level comprising:

electrically interconnecting the dice containing said integrated circuits on the wafer electrically;

electrically biasing the dice on said wafer;

irradiating the wafer with gamma ray radiation while said dice are electrically biased;

annealing said dice sufficiently to remove radiation damage; and

testing the circuitry on said dice.

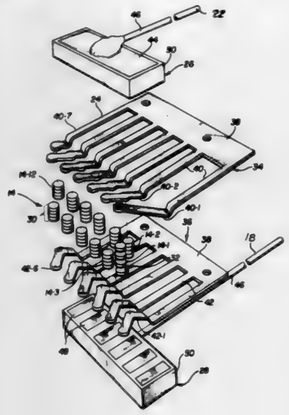
4,288,912

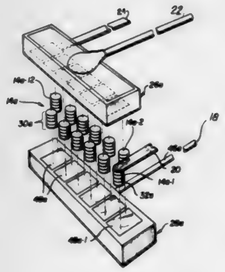
METHOD OF CONSTRUCTING AND PROCESSING A DIODE CAPACITOR ASSEMBLY

Walter L. Wills, Mesquite, Tex.; Herchel A. Vaughn, Winter Park, Fla., and Larry L. Miller, Garland, Tex., assignors to Varo Semiconductor, Inc., Garland, Tex.

Filed Sep. 11, 1978, Ser. No. 941,005
Int. Cl.³ H01L *21/603, 25/16*
U.S. Cl. 29—577 C **8 Claims**

1. A process for making a diode/capacitor assembly comprising the steps of: providing a plurality of semiconductor diodes each having an anode end and a cathode end, electrically and mechanically joining selected anode ends and cathode ends of said plurality of diodes to multiple-plate capacitor means to define an electrical circuit configuration of diodes





and capacitors, and thereafter etching and passivating the assembled diodes and capacitors as a group.

4,288,913

METHOD OF FORMING IN SITU GELLED ANODE

Frank E. Parsen, Irvington, and Teresita O. Graham, Dobbs Ferry, both of N.Y., assignors to Duracell International Inc., Bethel, Conn.

Filed Dec. 26, 1979, Ser. No. 106,995
Int. Cl.³ H01M *6/04*
U.S. Cl. 29—623.5 **11 Claims**

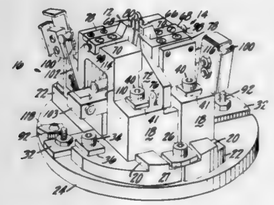
1. A method for forming a cell having a substantially homogeneously gelled anode comprising the steps of mixing a powdered anode metal with a gelling agent, and with liquid means other than the gelling agent for maintaining, during subsequent gelling, a homogeneous mixture of the powdered metal, said gelling agent and a liquid, said gelling agent being capable of gelling the powdered anode metal when in the presence of an aqueous electrolyte solution; and then dispensing the resulting ungelled mixture into an electrolyte solution in an electrochemical cell, whereby the substantially homogeneously gelled anode is formed in situ.

4,288,914

ADJUSTABLE MECHANISM FOR CUTTING AND CLINCHING ELECTRICAL COMPONENT LEADS

Stanley R. Vancelette, Manchester, N.H., assignor to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 942,286, Sep. 14, 1978, abandoned. This application Oct. 30, 1980, Ser. No. 202,245
Int. Cl.³ B23P *19/00;* **B21F** *1/00*
U.S. Cl. 29—741 **1 Claim**



1. A cut-clinch assembly for acting on component leads inserted through spaced receiving holes of a circuit board, comprising:

a pair of cut-clinch units arranged in side-by-side relation;

means mounting the units for movement toward and from the circuit board and for angular adjustment about an inserting axis normal to the board, each of the units comprising a fixed knife and a relatively movable knife cooperative therewith to shear a lead and then to clinch it against the board;

a mechanism for actuating the movable knives;

means for adjusting operating positions of the units in a direction parallel to a line interconnecting said receiving holes, and

means for adjusting an operating position of the units in a direction normal to said line;

each cut-clinch unit comprising a block for supporting a non-conductive holder of the fixed knife and a lead guide block having at least a portion extending above said knife and engageable with the board at opposite sides of a lead-receiving hole, and a pair of shims of selected thickness insertable one between the block and an underside of said holder and the other between the block and an underside of said lead guide block to adjust the distance between an upper surface of said movable knife and an under surface of said circuit board to permit adjustment of the lead length and angle the lead makes with the board after cutting, and to adjust the distance between the knives to establish a proper clearance therebetween, respectively.

4,288,915

COMMUTATOR PULLER

Printes G. Bell, Bellwood, Ill., assignor to Bell-Terry Automotive Electric, Inc., Chicago, Ill.

Filed Sep. 28, 1979, Ser. No. 80,011
Int. Cl.³ H02K *15/00*
U.S. Cl. 29—762 **5 Claims**

1. A commutator puller for extracting a commutator from an armature having a shaft, windings and commutator comprising:

a frame;

plunger means movably mounted for axial movement with respect to said frame;

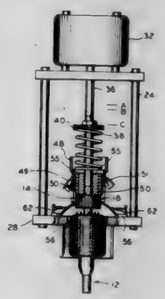
power means operatively connected to said plunger means, said power means being selectively operable to move said plunger means axially toward said armature to disconnect said commutator from said armature;

gripping means operatively connected to said plunger means to hold said commutator against axial movement relative to said plunger means; and

means to release said commutator from said gripping means; said gripping means comprising teeth means pivotally mounted to said frame adjacent said plunger means;

actuator means adapted to contact said teeth means and force said teeth means against said commutator; and

first spring means operatively connected to said plunger means and said actuator means, whereby movement of said plunger means towards said shaft forces said actuator



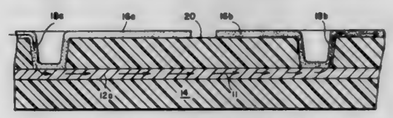
means against said teeth means to pivot said teeth means into contact with said commutator, said teeth means holds said commutator in place while said plunger means forces said shaft away from said commutator, said plunger means moves away from said shaft after said commutator is extracted from said armature, and said teeth means then releases said commutator.

4,288,916

METHOD OF MAKING MASS TERMINABLE SHIELDED FLAT FLEXIBLE CABLE

Surendra Verma, Irvine, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 963,599, Nov. 24, 1978, Pat. No. 4,209,215. This application Dec. 26, 1979, Ser. No. 106,988
Int. Cl.³ H01B *13/20;* **H05K** *3/00;* **H01R** *43/04*
U.S. Cl. 29—828 **12 Claims**



1. A process of producing a mass terminable shielded electrical cable having a plurality of side by side spaced-apart conductors enclosed in insulation comprising the steps of:

establishing repeated electrical contacts between electrically conductive shield material on the insulation and at least one of the conductors; and

creating a gap in said electrically conductive material for enabling terminations to be made respectively to the conductors and to the electrically conductive material, the repeated electrical contacts maintaining electrical continuity of the electrically conductive material across the gap.

4,288,917

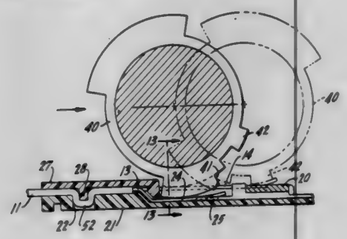
METHOD OF FORMING CONNECTOR-CABLE WITH CRIMPED ELECTRICAL TERMINATIONS

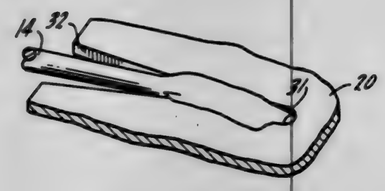
Edward P. Brandeau, Willimantic, Conn., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 918,813, Jun. 26, 1978, Pat. No. 4,173,388, which is a continuation of Ser. No. 771,109, Feb. 23, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,368

Int. Cl.³ H01R *43/02*

U.S. Cl. 29—860 **5 Claims**





1. In the method of making a cable termination assembly, the steps comprising, bending a flat, insulated multiple wire cable near one end into a sharply angled rib, using said rib as an anchor when cutting the cable insulation and pulling the cut insulation toward but not completely free of the ends of said cable wires so that the cable can be handled without disarranging the stripped wires by manipulating the partially stripped insulation, fitting said cable end in a connector body using said rib and a locking groove in the body as indexing members, and simultaneously laying said wires in proper position for termination within said body.

4,288,918

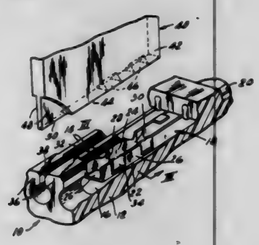
METHOD AND APPARATUS FOR MAKING A CRIMPED, INSULATION-PIERCE ELECTRICAL CONNECTION

John P. Nijman, West Hill, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 875,856, Feb. 7, 1978, Pat. No. 4,159,156, which is a continuation of Ser. No. 703,637, Oct. 7, 1976, abandoned. This application Mar. 26, 1979, Ser. No. 24,114

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—868 **21 Claims**



1. In a method of terminating an insulated conductor in an insulation-piercing contact portion in which a conductor is engaged by an insertion blade and pressed into an insulation-piercing notch formed by at least one insulation-piercing contact jaw which extends at an angle to a supporting member, the improvement therein comprising the steps of:

cutting a section of the contact jaw; and

simultaneously with the step of cutting, folding the cut section over the conductor.

6. A tool for inserting and securing an insulated conductor in an insulation-piercing portion of an electrical contact, which portion has an outwardly open notch for receiving a conductor transversely of the axis of the conductor and a pair of spaced apart contact jaws defining at least a portion of the notch, said tool comprising:

a blade including an end surface for engaging and pressing a conductor into the notch; and

a pair of cutters carried spaced apart on said blade for engaging respective contact jaws to cut and convergently peel portions of the contact jaws over the conductor.

4,288,919

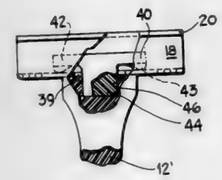
SAFETY RAZOR WITH MEANS TO SLIDABLY MOUNT CARTRIDGE

Joseph M. Rait, 1100 Amherst St., Buffalo, N.Y. 14216

Filed Apr. 19, 1979, Ser. No. 31,470

Int. Cl.³ B26B *21/06, 21/52*

U.S. Cl. 30—47 **3 Claims**



2. A safety razor assembly comprising a receptor, a handle extending generally perpendicularly from said receptor and means for retaining a blade cartridge on said receptor, said receptor and said handle including interengaging slot and neck means for providing sliding engagement between said handle and said receptor in a line parallel to the longitudinal axis of said receptor and cooperating abutment means on said slot and neck means to limit the extent of the sliding movement.

4,288,920

SHAVING SYSTEM WITH PIVOTALLY MOUNTED RAZOR CARTRIDGE

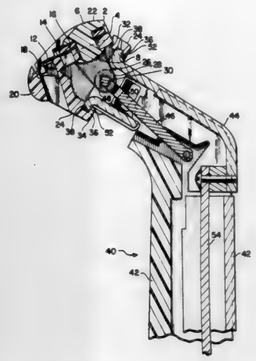
Paul W. Douglass, Winchester, and Robert A. Trotta, Winthrop, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 13, 1979, Ser. No. 93,692

Int. Cl.³ B26B *21/14*

U.S. Cl. 30—47 **9 Claims**

1. A shaving system comprising a handle and a blade assembly, the handle comprising first and second connecting means extending from an end thereof, said first handle connecting means being disposed within said second handle connecting means, the blade assembly comprising a first body portion having thereon a first blade assembly connecting means and a second body portion having thereon a second blade assembly connecting means, the first blade assembly connecting means being pivotally connected to the first handle connecting means, and the second blade assembly connecting means being fixedly connected to the second handle connecting means, said blade assembly first body portion being pivotally joined to said blade assembly second body portion, said second handle connecting means being movable in directions transverse to the axis of a grip portion of said handle.



extending further down from the shaft toward the bottom surface than the blades and with said spacer elements abutting the flat bottom surface so as to prevent rotation of the blades about the shaft; and

blade position locking means adjustably locking and unlocking the extending elements against the outer sides of the side walls whereby the blade support member can be positioned toward the front opening and locked in position so the razor blades will extend out past the planar, flat bottom surface for cutting and whereby the blade support member can be positioned toward the back opening and locked in this back position so the razor blades will be maintained back within the parallel side walls where the cutting edges of the blades are not available for cutting.

4,288,921

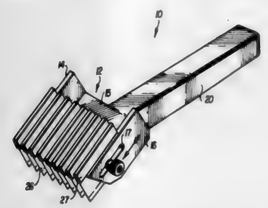
ADJUSTABLE FISH SCORER

Oden H. Rhynes, 311 S. West Ave., Republic, Mo. 65738

Filed May 2, 1979, Ser. No. 35,339

Int. Cl.³ B26B *3/00*

U.S. Cl. 30—304 **8 Claims**



1. A razor blade holding device adapted for holding a plurality of parallel spaced, replaceable single edge razor blades, said device being adjustable for positioning and locking the cutting edges of the blades at various cutting depths when used for scoring fish and for safely retracting the blades to a position where no blade cutting edges are exposed when not in use comprising:

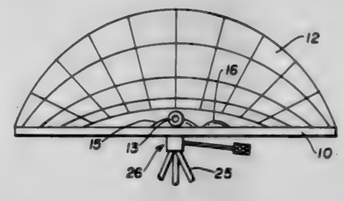
a blade holding body having a planar, flat bottom surface and two upwardly extending spaced parallel side walls defining a front and back opening;

a handle attached to said blade holding body;

an elongated slot in each of said side walls having a longitudinal axis in a direction parallel to the plane of the planar, flat bottom;

a plurality of single edge razor blades each having a bottom blade cutting edge and a U-shaped safety backing plate providing an edge on each side of the blade adjacent the blade edge opposite the cutting edge;

blade securing means to secure (a) said plurality of single edge razor blades in a parallel, spaced apart relation between the two parallel side walls of the body and to maintain the blade cutting edges in approximately the same plane from the planar, flat bottom surface, said blade securing means comprising a blade support member extending between the elongated slots in both side walls with a slot extending element extending out through the slot in each side wall and a plurality of spacer elements slidably mounted on said support member between said side walls, said spacer elements being positioned between the razor blades and under the edge of the U-shaped safety backing plate of each blade with said spacer elements



1. A device useful for investigating annual solar exposure of a specific site comprising:

a flat table having arcurate means adapted to receive a stiff, flexible material;

a transparent screen made of stiff, flexible material fixed to said arcurate means with said transparent screen having markings indicating the line of travel of the sun at a given latitude for selected dates of the year, and having markings indicating the position of the sun at selected times of the day with respect to the north-south orientation of said table;

a wide angle viewer fixed to said table in a position to view said screen, with the axis of the wide angle viewer perpendicular to the tangent of said screen at the solar noon position;

a compass fixed to said table with its north-south axis aligned parallel to the axis of said wide angle viewer; and

a level positioned to indicate the horizontal orientation of the upper surface of said table.

4,288,922

DEVICE TO INDICATE SOLAR EXPOSURE

Donald F. Lewis, deceased, late of 105 Rockwood St., Grass Valley, Calif. 95945 (by Sheri Lewis, administrator)

Filed Apr. 25, 1979, Ser. No. 33,110

Int. Cl.³ G01C *1/00*

U.S. Cl. 33—1 DD **3 Claims**

4,288,923

TAPE MEASURE

Werner Duda, West Sayville, N.Y., assignor to Roe International, Inc., Patchogue, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,296

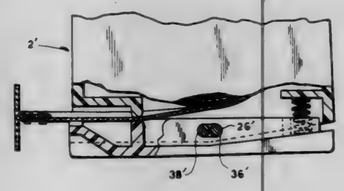
Int. Cl.³ G01B *3/08*

U.S. Cl. 33—138 **9 Claims**

1. A tape measure comprising:

a housing having an opening defined therein; an extensible measuring tape coiled within said housing including a free end extending through said opening and adapted to move between retracted and extended positions; a hook member mounted on said free end of the tape; a braking lever pivotally mounted on said housing and having a first end portion including a free end positioned to engage said hook member when said measuring tape is in its retracted position; spring means extending perpendicularly to said lever

for normally biasing said first end portion of said lever into engagement with said tape to prevent movement thereof; and separate means for absorbing the shock of impact when said hook member engages the free end of said lever during the return of said tape to said retracted position, including a pivot pin mounted in said lever for pivotally mounting said lever on said housing and permitting longitudinal movement of the lever in the direction of tape retraction perpendicularly to said spring means and relative to the pivot pin, said lever having enlarged openings formed therein of substantially larger dimension in the direction of tape retraction than the diameter of said



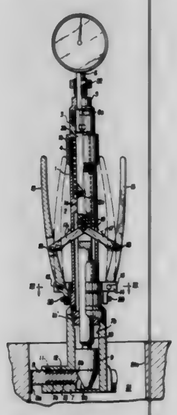
pivot pin on which said lever is pivotally mounted, and said housing having a pair of opposed openings formed therein facing said brake lever and having a diameter substantially equal to the diameter of said pivot pin; said pivot pin having free ends pivotally mounted in said housing openings and held thereby against lateral movement, whereby said lever is pivotally mounted by said pivot pin on said housing, and a shock absorbing member of a deformable, resilient material located in said enlarged opening of said lever and engaged between said pivot pin and said lever for absorbing shock caused by the longitudinal movement of the lever relative to the fixed pivot pin upon said impact.

4,288,924

INSIDE DIMENSION MEASURING GAUGE

Ichiro Mizuno, and Masao Nakahara, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Mitutoyo Seisakusho, Tokyo, Japan

Filed Dec. 20, 1979, Ser. No. 105,709
Claims priority, application Japan, Jan. 25, 1979, 54-8482[U]
Int. Cl.³ G01B *5/12*
U.S. Cl. 33—147 F **17 Claims**



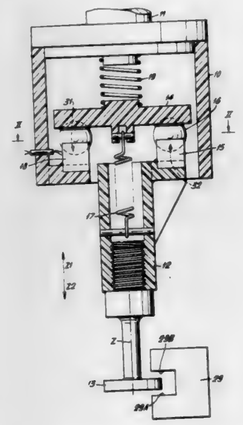
1. An inside dimension measuring gauge comprising:
a tubular body;
a spindle within said tubular body slidably movable in the axial direction of the tubular body;
an indicating means fixed to the first end of the tubular body, the indicating means including a contact plunger touching an end of the spindle;
a plurality of measuring contacts situated with respect to the tubular body to move with the spindle in a direction normal to the spindle;
a pair of levers pivoted to said tubular body; and
links connecting the levers to said spindle for inducing axial motion of the spindle in response to a compression or expansion of the levers, the links being pivotally connected to the levers and pivotally connected to said spindle.

4,288,925

PROBE FOR USE IN MEASURING APPARATUS

David R. McMurtry, Wotton-under-Edge, England, assignor to Rolls-Royce Limited and Renishaw Electrical Limited, both of London, England

Continuation of Ser. No. 864,151, Dec. 23, 1977, abandoned, which is a continuation of Ser. No. 858,024, Dec. 6, 1977, abandoned. This application May 17, 1979, Ser. No. 39,786
Claims priority, application United Kingdom, Dec. 24, 1976, 54032/76; May 28, 1977, 22656/77
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—174 L **18 Claims**



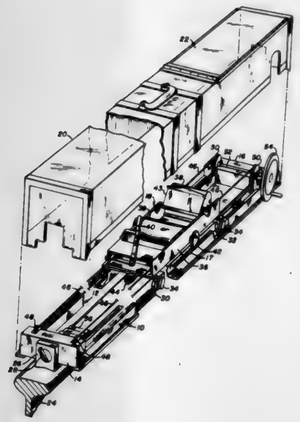
1. A probe for use in measuring apparatus, comprising a housing having a first two-dimensional seat therein, an intermediate member in said housing, bias means connected between the housing and the intermediate member to urge the intermediate member into engagement with the first seat thereby to support the intermediate member on the first seat, in a rest position, the intermediate member being tiltable on, and being linearly separable from, the first seat when displaced from said rest position in opposition to the bias means, a second two-dimensional seat provided on the intermediate member and facing in a direction opposite to that in which the first seat faces, a stylus holder, a further bias means connected between the stylus holder and the intermediate member to urge the stylus holder into engagement with the second seat thereby to support the stylus holder on the second seat in a rest position, the stylus holder being tiltable on, and being linearly separable from, the second seat when displaced from said rest position in opposition to the further bias means, and means responsive to the separation of the intermediate member and stylus holder from said first and second seats, respectively.

4,288,926

LONGITUDINAL RAIL PROFILOMETER

Lennart E. Long, Waltham, Mass.; Roger K. Steele, Pueblo, Colo.; David F. Coleman, West Medford, and Ralph A. Gustafson, Norton, both of Mass., assignors to The United States of America as represented by the Secretary of Transportation, Washington, D.C.

Filed Nov. 2, 1979, Ser. No. 90,744
Int. Cl.³ G01B *5/20, 5/28*
U.S. Cl. 33—174 P **7 Claims**



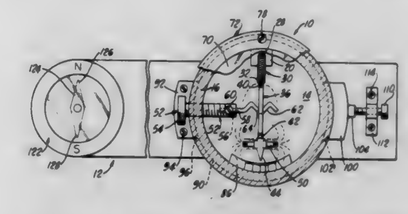
1. Apparatus for measuring wear related undulations in a rail comprising:
means defining a reference plane comprising a pair of parallel beams, and a pair of transverse end members inter-connecting said beams adjacent the ends thereof;
sensor-recorder means mounted for movement on said beams comprising:
a movable rail contacting sensor, said sensor following undulations of a rail during movement of said sensor-recorder means along said beams, the movements of said sensor being relative to the plane defined by said reference plane defining means;
recorder means;
means coupled to said sensor for producing signals commensurate with vertical movements of said sensor and delivering said signals to said recorder means;
carriage means supported on said beams by roller means, said carriage means in turn supporting said sensor means, said recorder means and said signal producing means; and means for imparting motion to said sensor-recorder means comprising:
at least a first pair of pulleys, said pulleys of said pair mounted at spacially displaced points on said reference plane defining means;
elongated drive means passing around said pulleys, said drive means being flexible,and being secured at opposite ends to said sensor-recorder means; and
means for manually rotating one of said pulleys to cause said sensor-recorder means to move along said beams between said displaced points.

4,288,927

TERRESTRIAL MAGNETISM RESPONSIVE METHOD AND DEVICE INCLUDING A SOFT IRON BAR ON A FREE END OF A MAGNET

Raymond F. Stockton, 1780 Foothill Dr., Vista, Calif. 92083

Continuation-in-part of Ser. No. 829,265, Aug. 31, 1977, Pat. No. 4,217,699. This application Aug. 20, 1979, Ser. No. 68,119
Int. Cl.³ G01C *17/08;* G01V *3/08*
U.S. Cl. 33—355 R **12 Claims**



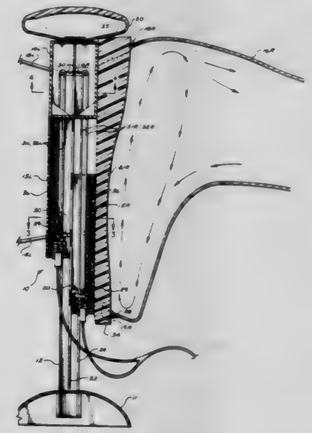
1. In a terrestrial magnetism responsive device adapted for working a northwardly or southwardly seeking magnet in any heading, comprising:
(a) a support member,
(b) a sensitive resilient member having one end secured to said support member,
(c) a pole seeking magnet having a free end for working in a selected heading,
(d) a non-seeking pole of the magnet secured adjacent the last pole to said resilient member adjacent its other end,
(e) said magnet extending substantially horizontally from said resilient member and being movable horizontally on said resilient member, and
(f) a soft iron member attached adjacent the free end of the magnet and being balanced thereon to allow the magnet to be moved substantially horizontally.

4,288,928

METHOD FOR HEATING SKI BOOTS

Donald J. Stern, Bellingham, Wash., assignor to Allsop Automatic, Inc., Bellingham, Wash.

Division of Ser. No. 94,824, Nov. 16, 1979, Pat. No. 4,263,502. This application Jul. 22, 1980, Ser. No. 171,197
Int. Cl.³ A43B *7/02;* H05B *3/06*
U.S. Cl. 36—2.6 **9 Claims**



1. The method of heating a ski boot of the type havng a flat planar sole portion comprising the steps of:
(a) removably clamping the ski boot to a vertically extending planar surface with the flat planar sole portion of the ski

boot in flat surface-to-contact with the vertically extending planar surface and extending vertically from toe to heel; and,

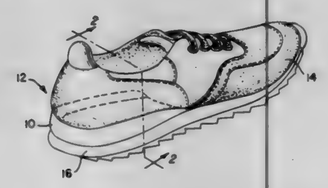
(b) heating at least the lower portion of the vertically extending planar surface so as to conductively heat that portion of the flat planar sole of the ski boot in surface-to-surface contact therewith and so as to generate convective air currents within the interior of the ski boot and thereby convectively heat the entire inner surface of the ski boot while maintaining the flat planar sole portion of the ski boot firmly clamped against the vertically extending planar surface to prevent warpage thereof.

4,288,929

MOTION CONTROL DEVICE FOR ATHLETIC SHOE

Edward J. Norton, Kingston, N.H., and Kenneth W. Graham, Melrose, Mass., assignors to New Balance Athletic Shoe, Inc., Lawrence, Mass.

Filed Jan. 15, 1980, Ser. No. 112,207
Int. Cl.³ A43B *23/08*
U.S. Cl. 36—69 **16 Claims**



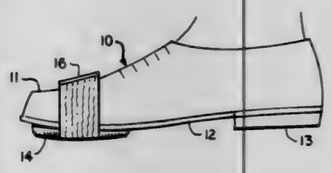
1. For use in footwear, a control device adapted to reside in a disposition above the sole of the footwear at least in the region of the heel and provide support for the lasted upper of the footwear, said control device including a body having a base with relatively flat upper and lower surfaces, and a wall extending upwardly from the upper surface around the heel and along both a medial and lateral side of the body, said wall throughout its length being of a height to confine the heel and along the medial side and around the heel the wall extends substantially vertically from the upper surface, and said lateral side has greater slope, said body being formed of a yieldable, but relatively sturdy material for support of the foot in a neutral plane, and said medial wall introducing a degree of rigidity in the maintenance of a normal range of motion of the foot during a running cycle.

4,288,930

REMOVEABLE TAPS

Donald G. Bornell, 860 Riven Rock Rd., Santa Barbara, Calif. 93108

Filed Jan. 7, 1980, Ser. No. 109,971
Int. Cl.³ A43B *5/12*
U.S. Cl. 36—132 **2 Claims**



1. A removeable tap for shoes having a sole and toe for tap dancing on a floor comprising:

(a) a tap body having an inner side and an outer side and having an outline generally in the shape of a shoe toe with a solid web inside the outline and having a pair of slots on opposite sides of the body, the inner side of the tap body being thinned between the slots and the outer side being thinned outboard of the slots to accommodate the thickness of the strap as it is passed through one slot across the inside of the tap body to the other slot so that the hard tap body will be in contact with the floor and sole of the shoe;

(b) a strap having a thickness passing through the slots and having ends that overlap over the top of the shoes;

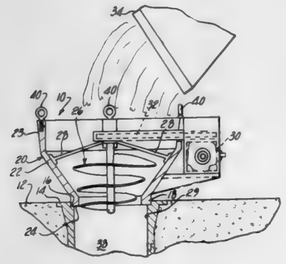
(c) and press-together pull-apart fastener patches on adjacent surfaces of the strap ends to achieve adjustment as well as fastening of the strap over the toe of the shoe.

4,288,931

METHOD AND CONVEYOR FOR SNOW REMOVAL

Glenn D. Rhodes, 4475 Dow Ridge Rd., Orchard Lake, Mich. 48033

Filed Nov. 19, 1979, Ser. No. 95,824
Int. Cl.³ E01H *5/00*
U.S. Cl. 37—10 **2 Claims**



1. Apparatus for removing snow comprising means for moving snow into a sewer manhole opening, said means including:

(a) an open ended hopper for receiving snow deposited therein, said hopper having an outlet adapted to be fit within said sewer manhole opening;

(b) an auger conveyor means within the hopper extending at least to the proximity of the outlet adapted to move snow in substantially its deposited form through the hopper and into said sewer manhole opening; and

(c) a motive power means for operating said auger conveyor means whereby snow is rapidly transferred to the sewer manhole opening without requiring a change of state of the snow.

4,288,932

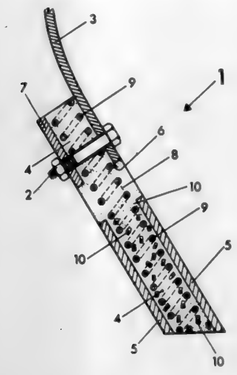
SNOW REMOVAL BAR FOR THE SNOW REMOVAL PLATE OF A SNOW PLOW

Walter Küper, Am Varenholt 56,, 4630 Bochum-Stiepel, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,832
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904251
Int. Cl.³ E01H *5/06*
U.S. Cl. 37—42 VL **6 Claims**

1. A snow removal bar for the snow removal plate of a snow removal plow of the type including a rubber or plastic element which is reinforced with steel plates disposed on both sides thereof and which has an upper edge which is mounted on the lower edge of the snow removal plate with bolts, the improvement comprising:

said element being reinforced by steel plates disposed on both sides thereof only in the lower portion of said element which comes into contact with the road, said element also having a central portion disposed above said lower portion which is reinforced by elastic reinforcements which are embedded in said element and extend from said upper edge of said element to the lower portion thereof.

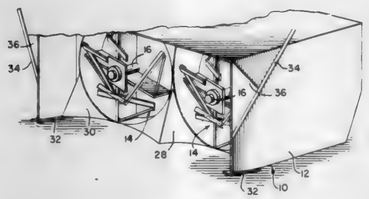


4,288,933

SNOWBLOWER

Walter Fair, Box 306, 150 W. Main, Menno, S. Dak. 57045

Filed Jan. 29, 1980, Ser. No. 116,405
Int. Cl.³ E01H *5/09*
U.S. Cl. 37—43 B **13 Claims**



1. A snowblower comprising a blower housing means having a forward end, snowblower fan means rotatably mounted within said housing means to engage snow passing into the forward end of said housing means, and snow discharge means mounted upon said housing means and adapted to receive snow from said snowblower fan means, said snow blower fan means including a fan body having a flat, circular surface extending in a first plane, a plurality of fan blades on said fan body extending outwardly from adjacent the center of said fan body, each said fan blade projecting from said flat circular surface and having a forward portion positioned outwardly from said first plane, and elongated ice chopper bars mounted upon said fan body and extending transversely across said fan blades, each said chopper bar being in contact with the forward portion of a fan blade at a point intermediate the ends of said chopper bar, the chopper bars being positioned to extend at an acute angle to said first plane.

4,288,934

IRONING MANGLE

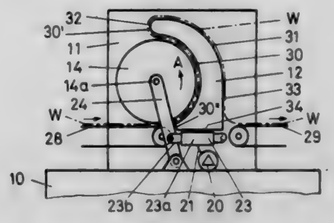
Rene Gasser, Wolfhausen, Switzerland, assignor to Maschinenfabrik Ad. Schulthess & Co. Aktiengesellschaft, Zurich, Switzerland

Filed Oct. 17, 1979, Ser. No. 85,755
Int. Cl.³ D06F *61/00, 63/00*
U.S. Cl. 38—44 **15 Claims**

1. An ironing mangle, comprising:

a heating member for transferring heat to a fabric which is conveyed thereover, said heating member being disposed in a vertical configuration and including a concave surface having two end edges and which forms a substantially semi-cylindrical cut-out section, and at least one other surface over which said fabric is conveyed for maximizing the heat transfer from said heating member to said fabric; and

a pressing member for applying pressure to said concave surface, in response to a force applied thereto, when said fabric is conveyed thereover,



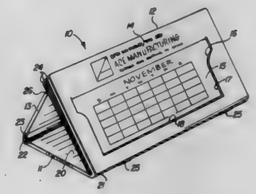
wherein said two end edges are arranged so that the angle between the plane connecting said end edges and a vertical plane passing through either of said end edges is in the range of 0° to 30° so that the force of gravity acts to disengage said pressing member from said concave surface when said force applied to said pressing member is removed.

4,288,935

DISPLAY BOOK APPARATUS

Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751

Filed Nov. 30, 1979, Ser. No. 99,075
Int. Cl.³ G09D *3/04*
U.S. Cl. 40—120 **9 Claims**



1. A display and book combination comprising:

a base panel;

an upright support panel hinged to the back of said base panel with a flexible hinge whereby said upright support panel can be folded flat and angularly moved to an upright position;

a display panel hinged to said base panel and supported on the top edge of said upright support panel when in an upright position and adapted to be folded flat parallel to said base panel and upright support panel when said base panel is folded flat;

a plurality of book pages secured adjacent to the hinged area between said display panel and said base panel and supported by said upright support panel in an angular position between said upright support and said display panel and adapted to be folded flat between said base panel, upright support panel, and display panel when said upright support panel is folded flat; and

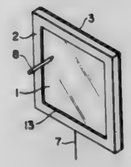
said display panel and said plurality of book pages being selectively rotatable forward whereby the back of said display panels and book pages can be selectively positioned before a user.

4,288,936

WALL-HANGING TYPE MAGNETIC DISPLAYING DEVICE

Hiroyasu Okutsu, Zama, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,708
Claims priority, application Japan, Oct. 16, 1978, 53/141982[U]
Int. Cl.³ G09F *19/00*
U.S. Cl. 40—426 **12 Claims**



1. A wall-hanging type magnetic displaying device comprising:

A. A displaying panel comprising:

a. a hanging panel disposed parallel to a panel having a magnetic displaying section incorporating a liquid in which magnetic particles are dispersed, a predetermined space being provided between said hanging panel and said panel having a magnetic displaying section;

b. an erasing magnet member, means for moving said erasing magnet member including means for biasing said erasing magnet member in one direction and, means fixedly secured to at least one of said panels for retaining said biasing means;

c. said erasing magnet member having an elongated magnet arranged with the elongate direction perpendicular to the downward direction of said device hung and connected to one end of said biasing means so that said magnet is positioned at rest at an upper or lower end portion of said panel due to bias in one direction;

d. guide means provided on at least one of said panels for guiding said erasing magnet member; and

e. operating means connected to one of said means for biasing and erasing magnet member so that said operating means extends along the downward direction of the device to move said erasing magnet member in a direction opposite to the bias direction and wherein upon release of said operating means said erasing magnet member reciprocates due to said bias to be restored to the rest position; and

B. a displaying magnet adapted to move the magnetic particles in said dispersed liquid.

4,288,937

DISPLAY STRUCTURE

Gary R. Virsen, Rte. 2, Box 42, Rogers, Minn. 55374

Continuation-in-part of Ser. No. 936,723, Aug. 25, 1978, Pat. No. 4,214,392. This application Oct. 25, 1979, Ser. No. 88,189
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—605 **2 Claims**

1. A display structure comprising, in combination:

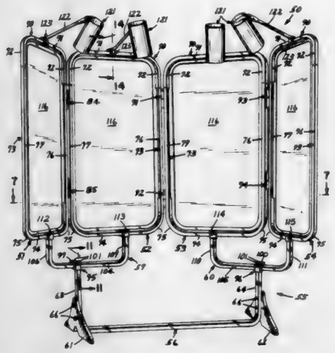
a plurality of rectangular frames pivotally interconnected for angular relative movement about at least one vertical axis, said frames including horizontal bottom frame portions;

a primary U-shaped support;

a secondary U-shaped support having a horizontal bottom portion;

means pivoted in an end of said primary support and slidable along said horizontal portion of said secondary support; and

means pivoted in ends of said secondary support and slidable along said horizontal bottom frame portions, whereby said



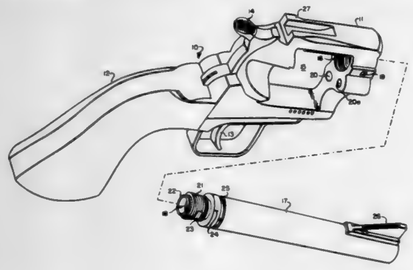
frames are mounted on said supports in angularly adjustable mutual relation.

4,288,938

FIREARM WITH INTERCHANGEABLE BARRELS AND AMMUNITION CYLINDERS

Harvey R. Kahn, Port Jefferson, N.Y., assignor to Alan I. Gerald Corporation, North Haven, Conn.

Filed May 4, 1979, Ser. No. 35,992
Int. Cl.³ F41C *1/00, 21/22*
U.S. Cl. 42—59 **5 Claims**



1. In a firearm of the type having a frame for mounting a multiple chamber ammunition cylinder, said frame having a rear sight mounted thereon, and a threaded frame bore for removably mounting a barrel, a plurality of said ammunition cylinders with each of said cylinders being adapted for use with a different caliber ammunition, means for selectively mounting any one of said plurality of cylinders for revolution on said frame, a plurality of barrels, each said barrel having a different diameter barrel bore therethrough corresponding to a different caliber of ammunition associated with one of said plurality of cylinders, each barrel having a thread engageable in said frame bore and located at one end of said barrel for allowing selective mounting of each said barrel in said frame bore, longitudinal barrel extension means located on said one end of each respective barrel and being operative when said respective barrel is fully threadedly engaged in said frame bore for interfering with the mounting and revolution of any said cylinder in said frame which cylinder corresponds to a caliber of ammunition larger than the caliber of the barrel bore of said respective barrel, an improvement which comprises a plurality of interacting safety features including a barrel alignment mark located adjacent each said barrel thread on each of said barrels, a frame alignment mark located on said frame for alignment with said barrel alignment marks when each said barrel is fully threadedly engaged in said threaded frame bore to insure full

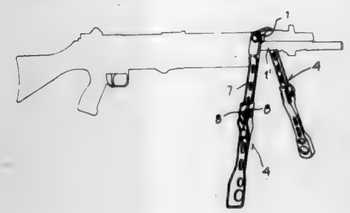
threaded engagement and thereby the operativeness of each said extension means, and a forward sight mounted at the other end of each of said barrels and being operatively oriented with respect to said rear sight for allowing the aiming of said firearm when each respective barrel is fully threadedly engaged in said frame bore, the orientation of each said forward sight thereby also insuring the full threaded engagement of its respective barrel and the operativeness of said extension means.

4,288,939

ADJUSTABLE LEGS SUPPORT FOR AUTOMATIC WEAPONS

Pier C. Beretta, Gardone V.T., Italy, assignor to Fabbrica d'Armi Pietro Beretta S.p.A., Gardone V.T., Italy

Filed Mar. 29, 1979, Ser. No. 25,020
Claims priority, application Italy, Apr. 4, 1978, 6966/78[U]
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **9 Claims**



1. An adjustable leg support for automatic weapons, said support comprising a sleeve defining coupling means that is adapted to engage a tubular part of the weapon, two lateral wings integral with said sleeve, said wings being diametrically opposed to each other and positioned on opposite sides of said coupling means, two elongaged folding rods each having one end pivotally mounted on said wings and angularly displaceable from a parallel position to a perpendicular position with respect to the longitudinal axis of said sleeve, said parallel and perpendicular positions being limited by shoulders provided on said wings, and spring-loaded arresting means mounted on said rods and arranged to engage said wings, each of said folding rods comprising first and second rodlike elements pivotally coupled to each other at their contiguous extremities, the opposite extremity of each said first rod-like element being mounted on said respective wing, each said second rod-like element being adapted to move angularly from an alignment position to a non-alignment position relative to said respective first rod-like element, said opposite extremity of each said first rod-like element being pivoted on a lateral ear of said sleeve and wherein its contiguous extremity includes two arcuate portions that are provided with a plurality of angularly spaced apart notches on the periphery thereof, each said second rod-like element being coupled to said respective arcuate portions on said first rod-like elements by means of a transverse pin, said second rod-like elements each including a spring-loaded, pivotally mounted lever having at least one terminal projection facing toward and engaging one of said notches of said arcuate protions on said first rod-like elements so as to define the angular relationship of said second rod-like elements with respect to said respective first rod-like elements.

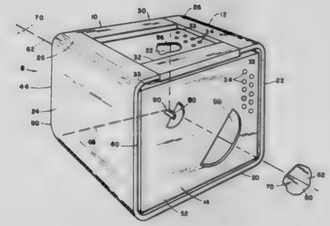
4,288,940

RODENT TRAP GUARD

Rick A. Ensey, Fairfield Bay, Ark. 72088

Filed Mar. 27, 1980, Ser. No. 134,654
Int. Cl.³ A01M *23/00*
U.S. Cl. 43—58 **9 Claims**

1. A rodent trap guard and trap assembly comprising a trap having end walls at least one of which has an entrance opening therethrough, said trap having a top wall having at least one viewing hole therethrough for viewing the interior of the trap from the outside, and a guard, said guard having a hollow housing for receiving a trap comprising a bottom section, right and left side sections, each of said sections being formed of material which is strong enough for substantial rigid protection from collision with forklift trucks and their contents, said right and left side sections extending upwardly from said bottom section, at least one end of said housing a opening in registry



with said trap entrance opening being rodent access, said guard having a top guard section comprising means extending between said right and left side guard sections for covering the top of said trap, said top guard section having a guard viewing opening therethrough disposed in registry with said trap viewing opening, said top guard section being substantially stronger than said trap top section for protective purposes.

4,288,941

TRICK ROPE HAVING APPEARANCE OF WORKING LASSO

James C. Easland, DeSmet, S. Dak., assignor to Easland Industries, Inc., DeSmet, S. Dak.

Filed Mar. 26, 1980, Ser. No. 134,342
Int. Cl.³ A63B *69/00*
U.S. Cl. 46—47 **1 Claim**



1. A trick rope toy comprising a continuous loop consisting of flexible material, said loop being of pre-determined size and having the appearance of the loop of a working lasso, a stem of flexible material, a swiveled handle rotatably fixed at one end of said stem, means affixing the remaining end of said stem to said loop material without the use of attaching pieces to produce an attached loop having good balance while maintaining said appearance.

4,288,942

AERODYNAMIC DEVICE

Thomas H. Nicholl, 1204 W. 27th, Kansas City, Mo. 64108

Filed Aug. 3, 1979, Ser. No. 63,365
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—74 D **6 Claims**

1. An aerodynamic device adapted to provide an upwardly resulting force thereon through rotation of the device about a longitudinal axis thereof comprising:

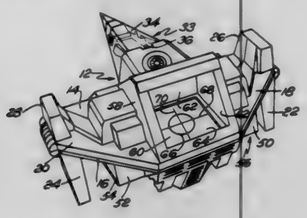
(a) a first disk member having a central portion and a substantially flat circular surface area whose outer boundary is defined by a predetermined radius, said central portion having an air inlet opening therethrough;

(b) said first disk member having a rim circumscribing said flat circular surface area;
(c) a surface of curvature extending from said boundary and curving downwardly to the point of juncture with said rim to form an upper convex surface and a lower concave surface of the first disk member;
(d) a second impervious disk member spaced apart by means from said first member concave surface such that an outer periphery thereof is spaced radially inwardly of said rim defining an annular discharge aperture therebetween;



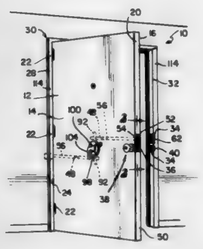
(e) spacer means comprising a plurality of radially spaced impeller vanes positioned between said first disk member concave surface and said second disk member and substantially extending outwardly from said air inlet opening to said discharge aperture; said vanes defining therebetween a plurality of air passages from said air inlet opening to said air discharge aperture such that upon rotation of said device air between said first disk member and said second disk member is urged outwardly by said vanes and discharged downwardly through said air discharge aperture thereby producing a resultant upward force on said device.

4,288,943
SIMULATED FIRING AND SIGHTING SYSTEM
George W. Ptaszek, P.O. Box 260, Pascoag, R.I. 02859, and Robert H. Hudson, 103 Valley St., Seekonk, Mass. 02771
Filed Dec. 5, 1979, Ser. No. 100,487
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—227 **5 Claims**



1. A hobby model simulated aircraft vehicle comprising a fighter fuselage having
stub wings incorporating manual handles, one at either side of said fuselage;
optical focusing means having an axis generally below and generally parallel to the longitudinal extent of the fuselage;
a simulated cockpit having a screen generally parallel to the longitudinal extent of the fuselage above the optical axis of said focusing means to be viewed at right angles thereto from above and having target locating means to transfer a target viewed along the axis of said focusing means at generally right angles thereto onto said screen to be viewed vertically from above;
manual means to light said screen to simulate laser firing when the target is desirably focused on the screen by manipulation of said manual handles.

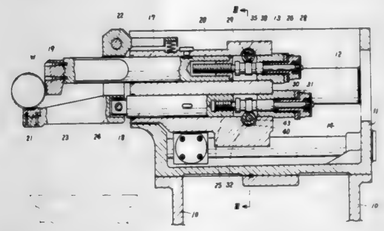
4,288,944
SECURITY DOOR
Terrence P. Donovan, 7834 Providence Cir., Indianapolis, Ind. 46250
Filed Jun. 4, 1979, Ser. No. 44,862
Int. Cl.³ E05C *9/00*
U.S. Cl. 49—395 **17 Claims**



1. A security door system comprising a door having an interior side and an exterior side, and a perimetrally extending door edge, a cavity provided in the door, the cavity opening into the interior side, a bolt actuator mechanism housing, the housing located in the cavity so as not to be accessible from the door exterior side, the bolt actuator mechanism including an actuator spindle and an arm mounted for movement about the spindle axis, the arm including a distal end, a passageway provided between the cavity and the door exterior side, the actuator spindle extending through the first passageway, a passageway provided between the cavity and the door edge for reciprocably housing a bolt, a lost motion connector for connecting the interior end of the bolt to the distal end of the arm, the lost motion connector including a slot in the distal end of the arm, means on the door jamb providing a receiver for the bolt exterior end, exterior and interior handles on the actuator spindle to permit movement of the bolt from the exterior and interior sides of the door, a lock mechanism for selectively inhibiting movement of the actuator mechanism, the lock mechanism including a second bolt for projection into the slot in the distal end of the arm to prevent movement of the arm about the spindle axis, the bolt actuator mechanism housing sized for insertion into the cavity, the actuator mechanism housing being box-like and sufficiently closed to prevent tampering with the actuator mechanism.

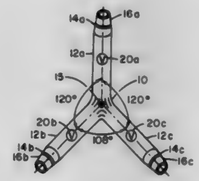
4,288,945
REST APPARATUS
Kenichi Munekata, Kariya; Michio Fujita, and Yasuhiro Hattori, both of Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Nov. 30, 1979, Ser. No. 98,743
Claims priority, application Japan, Dec. 8, 1978, 53-152196
Int. Cl.³ B24B *41/06*
U.S. Cl. 51—238 S **4 Claims**

1. A rest apparatus for supporting a cylindrical portion of a workpiece to be machined comprising:
a base;
a support head fixedly mounted on said base;
a pilot shaft supported at the opposite ends thereof by said support head and provided with a piston portion;
a rest housing having a cylinder bore to form a hydraulic cylinder with said piston portion of said pilot shaft so as to be moved toward and away from the workpiece;
a guide shaft supported at opposite ends thereof by said support head in vertically parallel relationship with said pilot shaft for guiding said rest housing;
a pair of rest shafts slidably but non-rotatably received in said rest housing in parallel laterally offset relationship with said pilot shaft;
a pair of rest shoes operatively connected to one of the ends of said pair of rest shafts for horizontally and vertically supporting the workpiece, a first one of said rest shoes including a first support area for the horizontal support of said workpiece and a second one of said rest shoes including a second support area for the vertical support of said work, said first support area being adapted to support said workpiece in a horizontal plane located in a range extending from the axis of said workpiece to the vertical height immediately above said axis; and



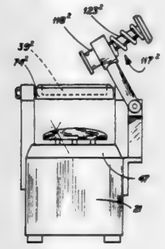
feed means operatively connected to said pair of rest shafts for feeding said pair of rest shoes toward the center of the workpiece,
wherein the axis of said pilot shaft is in a horizontal plane which lies between said rest shafts and intersects said first support area.

4,288,947
MODULAR INFLATABLE DOME STRUCTURE
Yen T. Huang, 9405 Pinewood Dr., Dallas, Tex. 75231
Filed Aug. 28, 1978, Ser. No. 937,483
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—2 **6 Claims**



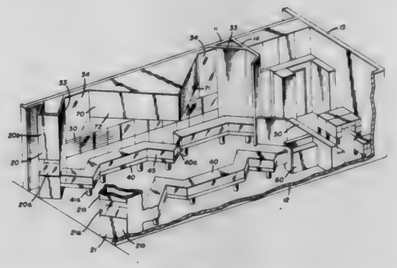
1. A joining device comprising connecting branches extending from a central axis to form a rigid Y shape forming acute angles from the plane perpendicular to a vertical axis through the vertex of the Y, the branches forming angles of 120°, 120°, and 108°, with one another, and further comprising a female groove on each branch and a sealing ring to fit into the female groove over any material sought to be connected to the branch.

4,288,946
PRECISION BLOCKING OF LENS BLANKS
Bela J. Bicskei, 7 Hemenway Rd., Framingham, Mass. 01701
Continuation-in-part of Ser. No. 956,244, Oct. 31, 1978, Pat. No. 4,227,349. This application Jan. 26, 1979, Ser. No. 6,689
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—284 E **5 Claims**



1. The method of blocking a lens blank at a prescribed optical position comprising the steps of:
(a) adjusting a lens blank in an instrument until said lens blank satisfies a prescribed optical condition; and
(b) pivoting a pivotable member of said instrument from the side thereof to said lens blank without disturbing the position of said lens blank; and
(c) using a plunger mechanism of said pivotable member to bring a releasable block and a double-faced adhesive strip into contact with the lens blank to adhesively secure the block to the blank.

4,288,948
RETAIL STORE
Ronald J. Harris, Toronto, Canada, assignor to Sterling Merchandise Co., Akron, Ohio
Filed Feb. 15, 1980, Ser. No. 121,831
Int. Cl.³ E04H *3/04*
U.S. Cl. 52—28 **8 Claims**



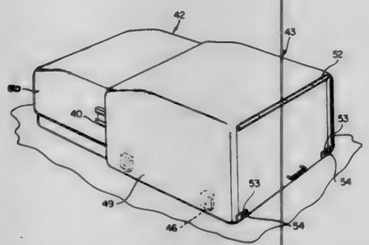
1. A store for retail sales, comprising;
(A) perimeter walls enclosing at least two sides of the store area;
(B) wall cases disposed along at least a portion of said perimeter walls;
(C) a plurality of freestanding show cases
(1) spaced from said perimeter walls and
(2) being disposed in end to end relationship so that their faces form an irregular pattern;
(D) a ceiling bearing a reflective surface; and
(E) a canopy
(1) suspended from said ceiling in overhanging relationship with at least some of said freestanding show cases
(2) and having a configuration conforming to at least a portion of the irregular pattern formed by said show cases.

4,288,949

MODULAR GARAGE STRUCTURE

John Latimer, 903 S. Ashland, Apt. 1007-B, Chicago, Ill. 60607

Filed Jul. 18, 1979, Ser. No. 58,722
Int. Cl.³ E04B *1/343*; E04H *6/04*
U.S. Cl. 52—67 **2 Claims**



1. A garage for a vehicle having a front end and a rear end comprising:

a two piece contoured structure having a first stationary enclosure member and a second movable enclosure member;

said first stationary enclosure member having a top and two longitudinal contoured sidewalls and a transverse contoured end wall adjoining said sidewalls, said first member being open at one transverse end and cross-sectionally and longitudinally dimensioned to receive the front of the vehicle;

said second contoured enclosure member having a top and two longitudinal sidewalls being open at both transverse ends, and having a slightly larger cross-sectional dimension than said first member;

a U-shaped base plate having two longitudinal extensions projecting along the sidewalls and beyond the open transverse end of said first member to serve as a frame work for transporting the garage from location to location and further having means for anchoring the base plate to the ground in a fixed location;

track members carried by the extensions of said base plate and slide members connected to said second member and mounted on said track members slidably connecting the second member to the first member so that an operator can manually slide the second member from a retracted position in which the first and second enclosure members are substantially overlapping to permit ingress and egress of the vehicle, to an extended position in which the second member is adjacent to the first member thereby completely enclosing the vehicle; and

a door adjoining the longitudinal sides of the second enclosure member which can be opened to admit the vehicle when said enclosure members are retracted and closed with the members in the extended position.

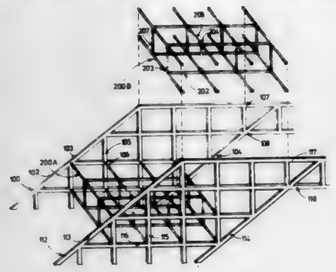
4,288,950

MULTIPLE-BUILDING CONSTRUCTION SYSTEM AND METHOD OF ERECTING SAME

Abraham Agassi, 28 King David St., Tel Aviv, and Amnon Levy, Kibbutz Givat, Chaim-Ihud, both of Israel

Filed Aug. 30, 1979, Ser. No. 63,415
Int. Cl.³ E04H *1/04*
U.S. Cl. 52—79.12 **19 Claims**

1. A three-dimensional multiple-building construction system for a plurality of three-dimensional, multiple-room housing units, characterized in that said system comprises a three-order hierarchy of frame members, the first order frame members including a superstructure framework channelling substantially the complete load of the system to the ground, the second order frame members including at least one intermediate box-like framework defining a three-dimensional open grid of beams and columns, the third order frame members including further beams and columns attached to the beams and columns of the intermediate block-like framework and define components of the plurality of three-dimensional multiple-room housing units, such that the load of the housing units



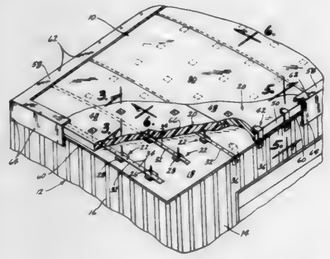
attached to the third order frame members are transmitted from the latter members to the second order frame members, from the latter to the first order frame members, and from the latter to the ground.

4,288,951

AUXILIARY INSULATED ROOF SYSTEM

Denny L. Carlson; David C. Brissey, both of Iowa City, and Lee W. Vriezelaar, Pella, all of Iowa, assignors to Scientific Applications Incorporated, Mount Pleasant, Iowa

Filed Nov. 14, 1979, Ser. No. 94,222
Int. Cl.³ E04B *7/00*; E04D *13/16*
U.S. Cl. 52—94 **13 Claims**



3. In combination with a building structure including opposite upstanding sidewalls, opposite upstanding end walls and a roof surface operatively connected to and extended between upper ends of said sidewalls and end walls, an auxiliary insulated roof structure comprising

a generally continuous panel structure of insulation material,

support means interposed between said panel structure and roof surface for maintaining said panel structure in clearance relation above said roof surface, and

fastening means secured to said panel structure and building sidewalls for fixing said panel structure in position on said roof surface,

said support means comprising a plurality of insulated support blocks,

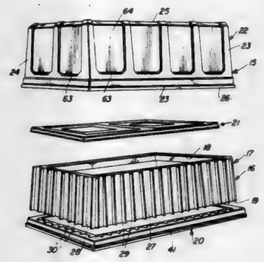
each block comprising a base plate, an elongated stud secured to and extended from one side of said base plate at a generally perpendicular angle thereto, and a block of insulation material secured to the opposite side of said base plate.

4,288,952

BURIAL VAULTS

Gerald L. Work, Spokane, Wash., assignor to Wilbert, Inc., Forest Park, Ill.

Filed Nov. 27, 1979, Ser. No. 97,716
Int. Cl.³ E04H *13/00*
U.S. Cl. 52—138 **16 Claims**



1. A burial vault comprising:

(a) a composite base including

(1) a generally flat and rectangular-shaped supporting platform having

a. an upper surface; and including

1. a main body portion having

(a) a generally horizontally extending marginal or peripheral flange extending outwardly therearound and having

(b) a downwardly and generally vertically extending marginal or peripheral flange surrounding the said main body portion of the said generally flat and rectangular-shaped supporting platform

(2) an inner upright wall structure having a generally rectangular-shaped frame resting on the said upper surface of the said generally horizontally extending marginal or peripheral flange portion of the said main body portion of the said supporting platform; and including

a. generally vertically extending side walls; and

b. generally vertically extending end walls;

c. the said generally vertically extending side walls and end walls of the said inner upright wall structure having lower marginal or peripheral edge portions; and the said inner upright wall structure having

d. an open upper end or top; and

e. an open lower end; and including

f. a generally horizontally extending marginal or peripheral flange portion extending around and laterally outwardly from the said lower marginal or peripheral edge portions of the side walls and end walls of the said inner upright wall structure;

(3) a generally flat and rectangular-shaped closure plate member arranged over and closing the said open upper end or top of the said generally rectangular-shaped frame of the said inner upright wall structure;

(b) a dome-shaped outer cover member arranged over and enclosing the said inner upright wall structure and the said supporting platform; and including

(1) generally vertically extending side walls and end walls and the said side walls and end walls of the said dome-shaped outer cover member having

a. lower and downwardly extending marginal or peripheral edge portions extending below and outwardly of the said main body portion of the said generally flat and rectangular-shaped supporting platform and outwardly of the said generally horizontally extending marginal or peripheral flange portion of the said inner upright wall structure and outwardly of the said downwardly and generally vertically extending marginal or peripheral flange of the said main body portion of the said generally flat and rectangular-shaped supporting platform;

(2) a closed top wall; and having

(3) an open bottom;

(c) first sealing means for hermetically sealing the said generally rectangular-shaped frame of the said inner upright wall structure to the said generally flat and rectangular-shaped supporting platform;

(d) first fastening means for mechanically fastening the said generally horizontally extending marginal or peripheral flange portion of the said generally rectangular-shaped frame of the said inner upright wall structure to the said generally horizontally extending marginal or peripheral flange of the said generally flat and rectangular-shaped supporting platform;

(e) second sealing means for hermetically sealing the said dome-shaped outer cover member to the said generally flat and rectangular-shaped supporting platform;

(f) second fastening means for mechanically fastening the said lower and downwardly extending marginal or peripheral edge portions of the dome-shaped outer cover member to the said downwardly and generally vertically extending marginal or peripheral flange of the said main body of the said generally flat and rectangular-shaped supporting platform; the said generally rectangular-shaped frame of the said inner upright wall structure having

(g) marginal or peripheral upper edge portions; the said closure plate member including

(h) marginal or peripheral outer edge portions having formed thereon

(1) an inverted and generally U-shaped marginal or peripheral flange having formed therein

(2) a marginal or peripheral downwardly facing groove; and

(i) the said marginal or peripheral upper edge portions of the said generally rectangular-shaped frame of the said inner upright wall structure extending into the said downwardly facing marginal or peripheral

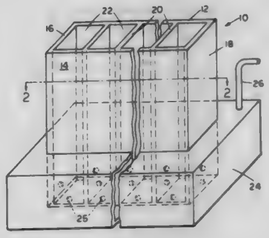
groove in the said inverted and generally U-shaped marginal or peripheral flange on the said closure plate member.

4,288,953

THERMAL AND OPTICAL MULTI-MODE WINDOW

Carl Whiteford, 3 High Point Rd., Westport, Conn. 06880

Filed May 15, 1980, Ser. No. 150,208
Int. Cl.³ E06B *7/12*
U.S. Cl. 52—171 **7 Claims**



1. A thermal and optical multi-mode window comprising:

A. A window panel constructed to be dimensionally and structurally received within a window frame and normally adopted to be retained therein, said window panel comprising

(1) a plurality of layers of relatively thin transparent material disposed in spaced apart parallel relationship, and

(2) a plurality of transversely disposed, spaced apart web members formed of the same material as said layers of material and extending between said layers of material

thereby dividing the space between said layers of material into a plurality of spaced apart voids,

B. a source of clear liquid having an index of refraction which is matched to the index of refraction of said material,

C. means providing liquid flow communication between said liquid source and said plurality of voids, and

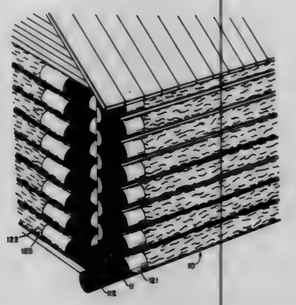
D. means for causing said liquid to flow from said liquid source into said voids to fill the latter whereby said window panel changes from optically diffuse to optically clear.

4,288,954

SIMULATED LOG SIDING

Royce L. O'Donnell, 2721 E. Kelton La., Phoenix, Ariz. 85032

Filed Oct. 4, 1979, Ser. No. 81,650
Int. Cl.³ E04B *1/10*; E04C *2/26*
U.S. Cl. 52—233 **6 Claims**



1. The method of simulating a log wall siding comprising the steps of:

forming a skeletal structure to the general configuration associated with lengths of log used in a log wall structure;

applying a first coating to said skeletal structure, said first coating having a light color serving to simulate caulking between logs;

applying a second coating over said first coating, avoiding the region between logs which is normally caulked, said second coating having a dark color serving to simulate the shadowed interior of the bark interstices of a natural log; and

applying a third but open-coat over said second coating said third coating having a color serving to simulate the bark of a natural log, said open-coat application serving to allow said second coating to show through such that said second and third coating combine to simulate the effect of bark and its dark interstices.

4,288,955

STRUCTURAL BUILDING ELEMENT

Carl C. Hiatt, 2500 Roxbury La., Fort Smith, Ark. 72903, and Nils L. Larson, 7837 Reynolda Sta., Winston-Salem, N.C. 27109

Continuation of Ser. No. 849,510, Nov. 7, 1977, abandoned, and a continuation-in-part of Ser. No. 625,478, Oct. 24, 1975, Pat. No. 4,056,910. This application Jun. 5, 1979, Ser. No. 45,681
Int. Cl.³ E04B *5/00*
U.S. Cl. 52—309.1 **26 Claims**

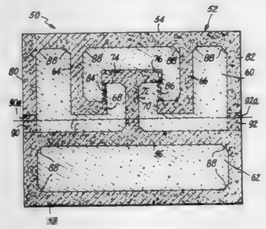
1. A building element comprising:

(a) a continuous phase of cementitious material including:

1. a matrix having a first density, and

2. at least one zone dispersed within the matrix having a second density lower than the first density, wherein said continuous phase of cementitious material extends throughout said matrix and said lower density zone; and wherein

(b) the matrix includes a first wall section and a generally parallel and opposing second wall section, said first wall section having at least one first lateral section extending away therefrom at least half the distance between said first and second wall sections but terminating short of said opposing second wall section at a lower density zone disposed between the terminal end of the lateral section and the second wall section, and said second wall section



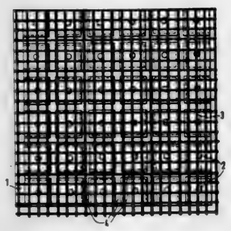
having at least one second lateral section, spaced longitudinally from said first lateral section, extending away therefrom at least half the distance between said first and second wall sections but terminating short of said opposing first wall section at a lower density zone disposed between the terminal end of the lateral section and the first wall section.

4,288,956

INSULATING-SLABS AND THEIR USE

Friedrich Heck, Heckenpfad 15, Bad Dürkheim, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,509
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 2850861
Int. Cl.³ E04B *1/62*; E04C *2/22*; E04B *1/80*; E04F *13/04*
U.S. Cl. 52—309.12 **29 Claims**



1. A hard-foam plastic slab having two major surfaces, one of which has:

(a) plural grooves and lands between adjacent grooves,

(b) fastening elements which have a base and a head end and also serve as spacers, which are secured at their bases to the lands and are dispersed at intervals over the one surface, and

(c) a reinforcing web affixed to the head ends of the fastening elements at a substantially uniform distance from said one surface.

4,288,957

FLOOR SYSTEM

M. Dennis Meehan, St. Louis County, Mo., assignor to The Binkley Company, Warrenton, Mo.

Filed Jun. 7, 1979, Ser. No. 46,331
Int. Cl.³ E04B *5/00*; B62D *25/20*
U.S. Cl. 52—460 **10 Claims**

1. A floor system for a trailer or the like comprising a plurality of elongate sheet metal floor panels extending side-by-side lengthwise of the trailer across substantially the entire width of the trailer on floor supporting means of the trailer, each of said metal floor panels comprising upper and lower panel means, said upper panel means comprising an upper panel member having a relatively wide web member above said floor supporting means, a pair of flanges extending down from the web member at opposite sides of the web member, and a pair of relatively narrow fastening lips extending laterally outwardly from the flanges at the lower edges of the flanges and bearing on said floor supporting means, said lower panel means comprising a series of channel sections on the underside of the web member of the upper panel member and extending longitudinally of the latter, each channel section comprising a web bearing on said floor supporting means and flanges extending up from the web at opposite sides of the web to the underside of the web member of the upper panel member, said floor panels being mounted on said floor supporting means one alongside another from one side of the trailer to the other with the relatively narrow fastening lips at adjacent sides of adjacent floor panels being relatively closely adjacent one another



for defining, in conjunction with the opposing flanges extending up from the fastening lips, upwardly opening generally rectangular recesses extending longitudinally of the trailer between adjacent floor panels, said recesses being substantially narrower than the sheet metal floor panels and spaced at substantially equal intervals transversely with respect to the trailer from one side of the trailer to the other, wood flooring members substantially narrower than said floor panels extending longitudinally in said recesses between adjacent floor panels and bearing on the lips, said flooring members projecting upwardly above the web members of said upper panel members, fasteners extending through the wood flooring members for fastening the latter to said floor supporting means, a pair of outboard wood flooring members extending longitudinally of the trailer at opposite sides of the floor system adjacent the sides of the trailer, said outboard wood flooring members being substantially narrower than the sheet metal floor panels and bearing on the fastening lips at the outboard sides of the floor panels adjacent the sides of the trailer, and fasteners extending through said outboard wood flooring members for fastening said members to the floor supporting means.

4,288,958

HORIZONTAL SIDING PANEL SYSTEM WITH VERTICAL STRINGERS

Alexander A. Chalmers, Warren, and J. Lynn Gailey, Newton Falls, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jun. 18, 1979, Ser. No. 49,850
Int. Cl.³ E04D *1/06, 3/362*
U.S. Cl. 52—478 **13 Claims**

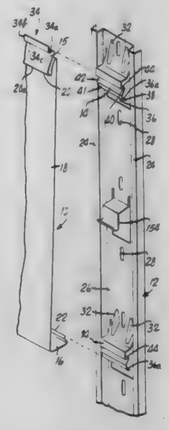
1. A siding system comprising

(a) a plurality of vertically elongated stringers each having a plurality of outwardly projecting and downwardly opening resilient clips spaced at regular intervals along its length, and

(b) a plurality of horizontally elongated siding panels each having a top margin with an outwardly and downwardly projecting longitudinal lip extending therealong and a bottom margin bent inwardly and then upwardly to provide an upwardly opening longitudinal channel flange on the inner side of the panel,

(c) said stringers being mounted in spaced parallel relation on a wall and so aligned with each other that their respective clips are in horizontal rows, and

(d) said panels being disposed in parallel overlapping array, one above another, outwardly of said stringers on said wall, with the top margin of each panel inserted under and held by a horizontal row of the clips and the channel



flange of the panel interlocked with the lip of the next lower panel in the array;

wherein the improvement comprises:

(e) each of said panels having a longitudinal locking projection extending along the top margin of the panel and spaced above the lip thereof, and

(f) the inner surface of each of said clips defining two vertically spaced inwardly opening locking seats for successively engaging the locking projection of a panel when the panel top margin is inserted progressively upwardly under the clip.

4,288,959

ROOFING OR SIDING ARTICLE

John B. Murdock, 10 Manchester Rd., Moylan, Pa. 19065

Filed May 21, 1979, Ser. No. 40,587
Int. Cl.³ E04D *1/28*
U.S. Cl. 52—518 **7 Claims**



1. A weather and fire-resistant roofing or siding article such as a shingle or panel having high thermal insulation value, comprising:

(a) a body having opposed inner and outer surfaces composed of insulating board comprising fiber, binder and about 50 to about 90% by weight expanded perlite;

(b) said body having a butt section and an adjacent nailing section, the butt section being substantially uniformly the maximum thickness of the article and having a non-tapered outer surface to be exposed to the weather, said nailing section being of the same thickness as the butt

section at the juncture with said butt section, having a non-tapered outer surface, and having an inner surface tapered in thickness in a portion thereof from said maximum thickness to a minimum thickness at one edge thereof remote from said juncture; and

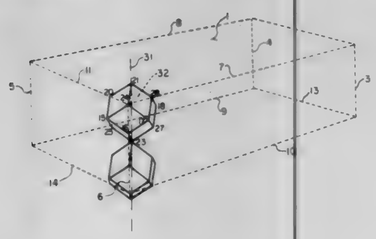
(c) a water and weather-resistant coating comprising asphalt and roofing granules on the outer surface of said uniform thickness butt section to be exposed to the weather.

4,288,960

INTERLOCKING BUILDING BLOCK

Olivier W. Auras, 2 Rue Du Nord, Martigny (Valais), Switzerland (1920)

Filed Aug. 1, 1977, Ser. No. 820,671
Int. Cl.³ E04B *5/04*; E04C *2/04*
U.S. Cl. 52—604 **4 Claims**



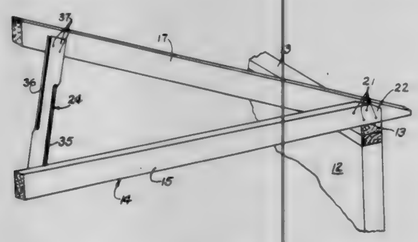
1. A building block having the general shape of a six sided rectangular solid and an outline corresponding to the agglutination of a plurality of interlocked identical elements each having the form of a symmetrical rhombic dodecahedron wherein each said rhombic dodecahedron is positioned so that two of its diagonally opposite vertices are in an axis parallel to a first edge of said rectangular solid and each of the faces parallel to said axis is in a plane forming a forty-five degree angle with the other edges of said rectangular solid which are perpendicular to said first edge.

4,288,961

RIGID STEEL BRACE FOR OFFSET TRUSSES

Kenneth T. Snow, Jr., 837 Prince Charles La., Schaumburg, Ill. 60195, and Robert N. Snow, 1631 Mulberry Ct., Elgin, Ill. 60120

Filed Mar. 24, 1980, Ser. No. 132,833
Int. Cl.³ E04B *7/08*
U.S. Cl. 52—738 **1 Claim**



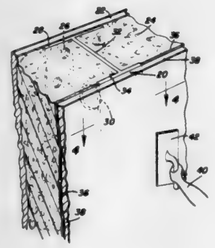
1. A brace for reinforcing an offset truss at a location spaced intermediate the heel joint of cross tie joist and roof rafter and a centrally disposed ridge board at the top center of the truss, comprising, a generally narrow elongated steel strip, said strip formed with a deep concave rib running longitudinally thereof and extending from a first end to a location beyond the center of the strip but stopping short of the other second end of said strip, said strip further formed with a deep convex rib disposed generally parallel to and spaced laterally from said concave rib and extending from the second end to a location beyond the center of the strip but stopping short of the first end of the strip, the first end of said strip having a flat surface on the top side thereof and the second end of said strip having a flat surface on the other under side thereof, means attaching the flat surface on one side of the strip at one end to the side of the roof rafter and means attaching the flat surface on the other side of the strip at the other end to the side of the cross tie joist.

4,288,962

METHOD OF FORMING STRUCTURAL WALLS AND ROOFS

Harvey H. Kavanaugh, 17 W. Cervantes St., Pensacola Beach, Fla. 32501

Filed Feb. 27, 1979, Ser. No. 15,732
Int. Cl.³ B32B *3/26*; E04C *2/26*; E04B *1/76*
U.S. Cl. 52—743 **1 Claim**



1. The method of forming a structural wall in place comprising the following steps:

(a) erecting vertically in spaced relation a plurality of support studs;

(b) placing a section of plasterboard on the side of the support studs facing the interior side of the structural wall;

(c) spraying a layer of high density expanded cellular foam to the plasterboard from the side exterior to the structural wall to substantially fill the space between the studs;

(d) allowing the foam layer to cure to form a solid insulating layer;

(e) spraying a layer of bonding agent over the exterior exposed surface of said insulating layer so that the inner surface of the bonding agent and stud are coplanar;

(f) spraying a layer of cementitious material to said bonding agent and inner surface of the stud in a continuous thickness of at least one-half inch without including reinforcements; and

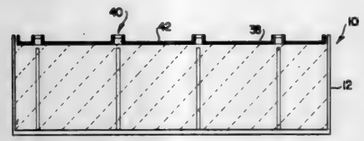
(g) allowing said cementitious layer to cure to form a smooth, hard, durable exterior wall layer, said support stud being a metal I-beam having substantially parallel flanges in the plane of said structural wall, the flanges being joined by a web, the I-shaped beam being of unitary construction, said cementitious material being a mixture of Portland cement, hydrated lime, calcium chloride, calcium stearate, and alkali-resistant fiber glass filaments approximately one-half inch in length, and said expanded cellular foam is a polyurethane synthetic resin, said metal stud being aluminum and the outer flange having a width less than the width of the interior flange, the interior flange being perforated to facilitate bonding of the plasterboard with the foam layer, said inner perforated flange having a plurality of perforations in staggered configuration along the I-shaped beam, and the web of said beam is perforated to allow passage therethrough of electrical conduit, plumbing and the like.

4,288,963

TRIANGULAR COLUMN ARRANGEMENT AND METHOD

Gysbert J. R. van der Meulen, 14 Floor, The Strand Tower, 66 Strand St., Cape Town, Cape Province, South Africa

Filed Mar. 27, 1979, Ser. No. 24,423
Claims priority, application South Africa, Mar. 30, 1978, 78/1818
Int. Cl.³ E04G *21/14*
U.S. Cl. 52—745 **2 Claims**



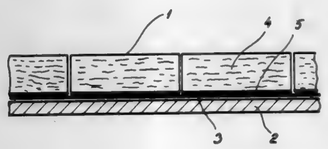
1. A method of erecting a roof slab, comprising casting a plurality of structural support columns at the vertices of contiguous, congruent, equilateral triangles, the columns extending upwardly from a base, and casting a roof slab on said base, the columns passing upwardly through apertures in the slab, the roof slab being cast with a plurality of reinforced zones the centres of which are at the vertices of contiguous, congruent, triangles, the plurality of reinforced zones being arranged in a pattern reproducing the pattern of apertures but displaced circumferentially with respect thereto, lifting the roof slab with respect to the base until it is clear of the columns, rotating the roof slab until each reinforced zone is above one of the columns, and lowering the roof slab onto the columns.

4,288,964

METHOD FOR THE INSULATION OF ROOFS

Jorgen S. Petersen, Roskilde, Denmark, assignor to Rockwool International A/S, Hedehusene, Denmark

Filed Mar. 19, 1979, Ser. No. 21,758
Claims priority, application Denmark, Mar. 12, 1978, 1261/78; Jun. 15, 1978, 2693/78
Int. Cl.³ E04B *5/00*
U.S. Cl. 52—747 **5 Claims**



1. In a method for insulating roofs having a water-impermeable membrane on the exposed surface thereof whereby insulating material, in the form of slabs, is placed on top of the water-impermeable membrane; the improvement which comprises utilizing insulating slabs consisting of mineral wool with fibres which are mutually bonded at their intersections by means of a resin and wherein the surfaces of the slabs facing the water-impermeable membrane are provided with a vapour-impermeable foil.

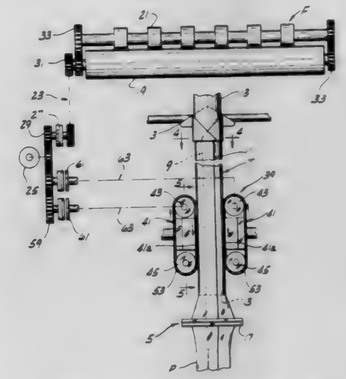
4,288,965

FORM-FILL-SEAL PACKAGING METHOD AND APPARATUS

Robert C. James, Sheboygan, Wis., assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Aug. 27, 1979, Ser. No. 69,828
Int. Cl.³ B65B *9/06*, *57/04*
U.S. Cl. 53—451 **32 Claims**

1. The method of forming, filling and sealing packages wherein a web of flexible packaging material is pulled from a supply and fed over means for forming it into tubing, and wherein product to be packaged is provided in the tubing and sealing operations are performed on the tubing to seal it to form packages, characterized in that the web is pulled from the supply, measured for each sealing operation, and fed toward the forming means by applying a forward force to the web



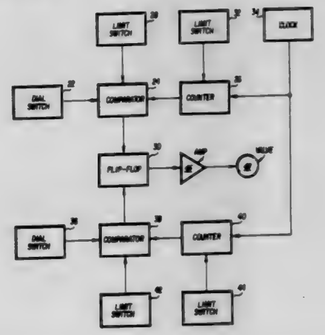
between the supply and the forming means, and a forward force is applied separately to the tubing to draw the tubing forward, the latter force being applied to the tubing at a rate such as to pull the material forward over the forming means with the material under tension to maintain it taut, the measurement of the web for each sealing operation being effected before the forming of the web by the forming means.

4,288,966

METHOD OF VACUUM TIMING CONTROL

Dwight W. Aten, Lebanon Township, Warren County, N.J., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed Jul. 3, 1979, Ser. No. 54,509
Int. Cl.³ B65B *43/00*
U.S. Cl. 53—469 **10 Claims**



1. A method for inserting material into an envelope using an inserting machine, said envelope having a front panel, a back panel, and a flap connected to said front panel to overlap said back panel, the method including the steps of:

transporting the envelope towards an inserting station of said machine on a transport means of said machine;

deflecting at least portions of selected pieces of insertion material from stacks of insertion material respectively contained at a plurality of insertion supply stations proximate said transport means, said deflection being accomplished by applying to said selected pieces for a period of time a vacuum, said vacuum being applied through a

suction means situated at each insertion supply station of said machine;

extracting said selected pieces from each insertion supply station and depositing said selected pieces on said transport means;

inserting said selected pieces into said envelope at said inserting station; and,

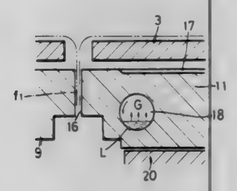
selectively adjusting for each individual insertion supply station the period of time for the application of said vacuum through said suction means.

4,288,967

CENTER SEALING DEVICE FOR A PLASTIC FILM IN A PACKAGING APPARATUS

Kiyoshi Seko, Nagoya, and Mamoru Ichikawa, Aichi, both of Japan, assignors to Fuji Machinery Co. Ltd. and Japan Packaging Machinery Manu. Assn., both of, Japan, part interest to each

Filed Nov. 30, 1979, Ser. No. 98,720
Int. Cl.³ B65B *51/26, 9/06, 51/28*
U.S. Cl. 53—550 **5 Claims**



1. In a center sealing device for a packaging apparatus including a pair of rotatable heating roller means placed on a feeding path of a continuous cylindrical film spacedly containing products and capable of being sealed by heat, said heating roller means holding lapped axial ends of said film therebetween for continuously sealing said ends of every two adjacent packages by heat, said heating roller means comprising:

outer peripheral surfaces having a predetermined width for contacting said lapped ends of said film and sealing the same by heat;

a sealed chamber substantially uniform in section thereof in each of said heating roller means in the vicinity of said roller means adjacent to said outer periphery and extending coaxially along the entire circumference thereof, said chamber being at a reduced pressure;

a heat transferring working liquid sealedly introduced into said sealed chamber to partially fill said chamber;

a heat source adjacent to each of said heating roller means and said sealed chambers for vaporizing said working liquid;

said vapor from said working liquid being condensed on the upper inner wall surface of said sealed chamber so as to discharge condensed latent heat for substantially maintaining said outer peripheral surfaces at a predetermined temperature.

4,288,968

END SEALING DEVICE FOR A PLASTIC FILM IN A PACKAGING APPARATUS

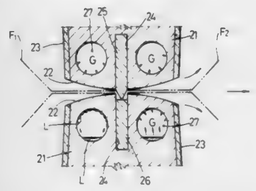
Kiyoshi Seko, Nagoya, and Mamoru Ichikawa, Aichi, both of Japan, assignors to Fuji Machinery Co., Ltd. and Japan Packaging Machinery Manu. Assn., both of, Japan, part interest to each

Filed Dec. 3, 1979, Ser. No. 99,847
Int. Cl.³ B65B *51/30, 51/28, 9/06*
U.S. Cl. 53—550 **6 Claims**

1. In an end sealing device for a packaging apparatus including a pair of heat sealing members placed on a feeding path of a continuous cylindrical film spacedly containing products and capable of being sealed by heat, said heat sealing members holding said film therebetween for successively sealing ends of every two adjacent packages by heat, said heat sealing members comprising:

heat sealing surfaces for sealing said ends of every two adjacent packages and being longer in width than said cylindrical film;

a sealed chamber provided in each of said heat sealing members adjacent said heat sealing surface along substantially the entire length thereof, said sealed chamber being maintained at a reduced pressure;



a heat source provided within said heat sealing member; and

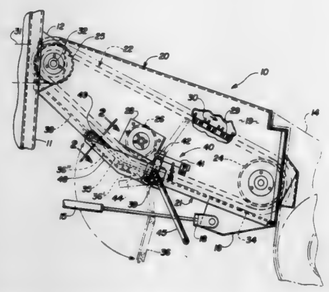
a heat transferring working liquid sealedly introduced into said sealed chamber so as to partially fill said chamber, said liquid being heated by said heat source to generate a high temperature condensable gas, said condensable gas of said working liquid being condensed in the inner wall surface of said sealed chamber nearest said heat sealing surface contacting said film so as to discharge condensed latent heat for maintaining the entire heat sealing surface at a substantially constant temperature.

4,288,969

STONE TRAP SEAL

Kenneth R. Underhill, Strasburg, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 31, 1980, Ser. No. 135,841
Int. Cl.³ A01F *12/10*
U.S. Cl. 56—10.2 **5 Claims**



1. In an infeed housing attachable on a first inlet end to a harvesting attachment and on a second outlet end to a combine having two opposing sidewalls connecting a top surface and a bottom surface thereby defining a flow passage for crop material, the bottom surface further having a trapdoor mounted thereto moveable between a first closed position and a second opened position and cooperative with the bottom surface and a foreign object detecting system to selectively create a discontinuity in the flow passage for the ejection of detected foreign objects, the improvement comprising:

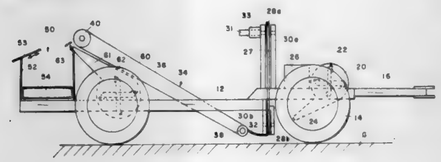
sealing means formed into each of the opposing sidewalls and cooperative with the trapdoor in the closed position to prevent the loss of crop material therebetween during the operation of the combine, the sealing means further comprising an elongate indentation in each of the opposing sidewalls having an inner surface and an outer surface, the inner surface being of predetermined radius nearest the trapdoor, said trapdoor having first and second opposing edges adjacent the opposing sidewalls, the distance between said opposing indentations being less than the distance between said first and second edges of said trapdoor, so that both said first and second edges of said trapdoor engage the respective said indentation when said trapdoor is moved to said first closed position to seal said trapdoor and prevent the escape of crop material between said first and second edges and the respective said sidewall during the passage of crop material over said bottom surface.

4,288,970

ASPARAGUS HARVESTER

Lewis L. Wilde, 17139 Bailey Rd., Bailey, Mich. 49303

Filed Sep. 7, 1979, Ser. No. 73,556
Int. Cl.³ A01D *45/00*
U.S. Cl. 56—327 A **3 Claims**



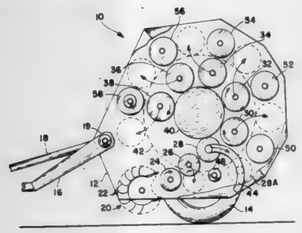
2. An asparagus harvester comprising a vehicle, a recirculatory bandsaw stalk cutter at the front of said vehicle, with its lower pass horizontal, cutter cleaning means downstream of said cutter lower pass for cleaning said cutter of dirt and debris, said cutter cleaning means being driven in engagement with said cutter, an elevator conveyor to the rear of said lower pass, front blower means above and forwardly of said lower pass, with its outlet directed rearwardly generally toward said lower pass, to transfer cut asparagus stalks to said elevator conveyor, hopper means beneath the discharge end of said elevator conveyor, debris separator means between said discharge end and said hopper means comprising a separator blower having a controlled outlet nozzle oriented upwardly and rearwardly beneath said discharge end for blowing falling debris away from falling asparagus stalks.

4,288,971

ROUND BALER

John R. McClure, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Apr. 2, 1980, Ser. No. 136,668
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **7 Claims**



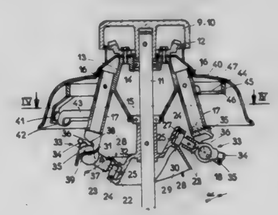
1. In a round baler machine for forming cylindrical bales of windrowed agricultural crop material comprising a wheel mounted frame, power means and means for raising the crop onto the frame and into contact with multiple rotating rollers which impart motion to the crop material to form a bale of cylindrical shape completely enclosed within the machine, the improvement comprising: means for shifting at least a portion of the rollers from a closely grouped position at the beginning of the formation of the bale to a position of expanded grouping as the final size of the bale is reached; and means for restraining the shifting rollers in their expansion paths to create compressive force on the bale wherein the final expanded grouping position of the shifting rollers is such that they act in cooperation with the stationary rollers to rotate and compress the bale in its final size and position.

4,288,972

HAYMAKING MACHINES FOR TEDDING AND WINDROWING

Guy Rostoucher, Saverne, France, assignor to Kuhn S. A., Saverne, France

Filed Apr. 1, 1980, Ser. No. 136,398
Claims priority, application France, Apr. 6, 1979, 79 09250
Int. Cl.³ A01D *79/00*
U.S. Cl. 56—370 **10 Claims**



1. A haymaking machine for tedding and windrowing, comprising in combination:

a frame,

at least one raking wheel drivably mounted on said frame for rotation about a center axis,

cam means centered about said center axis, forming an endless loop within a predetermined axial range therearound, and rigid with said frame,

a plurality of support bearings,

a plurality of tool-carrying arms operatively connected to said raking wheel and mounted in said support bearings, respectively, said arms being switchable between

a tedding position, in which said arms project radially outwards, and

a windrowing position, in which said arms extend in a direction substantially tangential of a circle inscribed in said raking wheel,

each arm being oscillatable about its longitudinal axis, and including cam follower means connected near the inner end of each arm,

guidance means adjacent said cam means for guiding each cam follower means into engagement with said cam means in said windrowing position from any position occupied by each cam follower means near the periphery of said cam means, and

guide means, including a pin disposed at an end of each tool-carrying arm, facing said center axis, and stop means located near said axis and provided with a guide slot for receiving said pin,

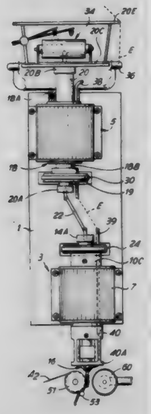
whereby each arm operatively oscillates about its longitudinal axis within a predetermined angle in said windrowing position, and is free from oscillation in said tedding position.

4,288,973

MACHINE FOR PRODUCING CHENILLE YARN

Fedora Tani, Florence, Italy, assignor to Chenil Cont GS S.R.L.

Filed Aug. 10, 1979, Ser. No. 65,711
Int. Cl.[3] D02G *3/42*
U.S. Cl. 57—24 5 Claims



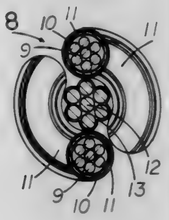
1. In a machine for producing chenille yarn, at least one yarn-forming assembly including means for feeding at least one pair of binding yarns and at least one effect yarn, a winding member, means for forming turns of the effect yarn on the winding member, cutter means, and means for moving the cutter means towards and away from said winding member into and out of engagement with the effect yarn at selected intervals as said yarns are fed to said winding member in order to cut the turns of effect yarn when the cutter is moved towards the winding member and to leave them intact when it is moved away from the winding member to provide respectively for the formation of yarn having alternating chenille and boucle portions.

4,288,974

DULLED CONDUCTOR AND MAKING SAME

Thomas Eistrat, 1020 S. Almansor St., Alhambra, Calif. 91801

Continuation-in-part of Ser. No. 869,850, Jan. 16, 1978, Pat. No. 4,149,367, and Ser. No. 12,168, Feb. 14, 1979, Pat. No. 4,198,807. This application Dec. 5, 1979, Ser. No. 100,787
The portion of the term of this patent subsequent to Apr. 17, 1996, has been disclaimed.
Int. Cl.[3] D07B *7/14*
U.S. Cl. 57—223 20 Claims



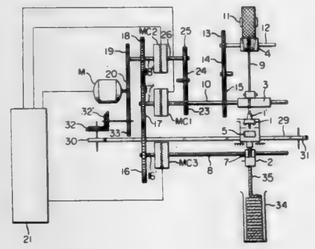
1. A covered plurality of insulated conductors, which comprise:
(a) a cover;
(b) a plurality of insulated conductors within the cover;
(c) a non-specular or dulled exterior on the surface of the cover.

4,288,975

METHOD AND APPARATUS FOR STARTING A SPINNING MACHINE

Yoshiaki Yoshida; Osamu Suzuki, both of Ohbu; Keiji Onoue, and Kazuo Seiki, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 17, 1980, Ser. No. 131,132
Claims priority, application Japan, Mar. 22, 1979, 54/32315
Int. Cl.[3] D01H *15/02, 1/30*
U.S. Cl. 57—263 5 Claims



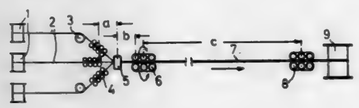
1. A method for starting-up an open-end spinning machine for yarn ending, comprising:
(a) increasing the speed of the spinning rotor from a stopped position to a predetermined speed approaching its operating speed;
(b) momentarily decreasing the speed of the spinning rotor to that of a substantially lower speed in order to effect the yarn ending;
(c) increasing the speed of the spinning rotor to its normal operating speed while the yarn-feed direction is reversed for yarn ending; and
(d) again reversing the yarn-feed direction to return it to its normal operating direction thereby initiating the feed of the sliver.

4,288,976

APPARATUS FOR THE SZ-TWISTING OF POWER CABLE CONDUCTORS WITH SECTOR-SHAPED CONDUCTOR CROSS SECTION

Dieter Vogelsberg, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,195
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833703
Int. Cl.[3] H01B *13/04*
U.S. Cl. 57—293 6 Claims



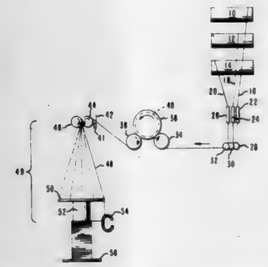
1. In apparatus for the SZ twisting of power cable conductors with a sector-shaped conductor section, which includes:
stationary conductor supplies;
a twisting closer with a control guide for each conductor arranged ahead thereof;
a twisting device rotating with alternating direction of rotation, and
a pulling-off and take up device arranged after the twisting device,
the improvement comprising:
(a) the distance between the engagement point of each control guide with a cable conductor and the first engagement point of the twisting device gripping the material to be twisted tensionally from the outside with the material to be twisted being small than, or at most equal to, the length of lay of the material to be twisted, given by the pull-off velocity and the speed of rotation of the twisting device, and being preferably smaller than, or at most equal to, one-half the length of lay; and
(b) the free distance between the twisting device and the nearest device gripping the material to be twisted in the circumferential direction from the outside in a torsion proof manner being very much larger than the length by which a longitudinal section of the twisted material is advanced during an interval of constant direction of rotation of the twisting device.

4,288,977

PROCESS FOR MAKING INTEGRATED RACKET STRINGS FROM MONOFILAMENTS

Thomas J. Csaky, Richmond; Sibbley P. Gauntt, Bon Air, and Ralph L. Heard, Jr., Richmond, all of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 10, 1980, Ser. No. 139,112
Int. Cl.[3] D01H *13/30;* D02G *3/40*
U.S. Cl. 57—297 4 Claims



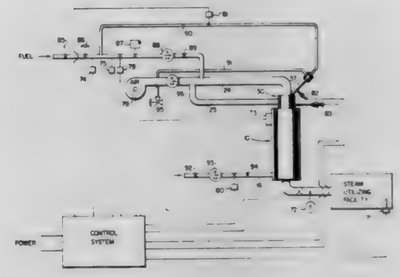
1. An improved process for making an integrated twisted string comprised of a middle flattened monofilament sandwiched between two outer flattened monofilaments, with each monofilament having a denier within the range of 3,000 to 8,000 and two opposite flattened sides throughout its length including the steps of aligning the monofilaments edge-to-edge and forwarding them into a twisting zone through a slot guide having a slot width which is greater than the thickness of the thickest of the monofilaments to allow free passage of all monofilaments but less than the total thickness of two adjacent monofilaments or the width of a monofilament so that said monofilaments cannot cross over one another in said slot or back twist through the slot as they are forwarded into the twisting zone, compensating for the greater lengths required for the two outer monofilaments in the resulting twisted string configuration by separately controlling the speeds and tensions of the monofilaments on their way to said zone, twisting the monofilaments together in the twisting zone, and bonding them to one another by means of a heat-activated adhesive resin to form an integrated twisted string, wherein the improvement comprises the sequential steps of: (1) applying to the surface of at least the monofilament which is to become the middle monofilament a continuous dry thin coating of a heat-activated adhesive resin; (2) aligning the three monofilaments edge-to-edge in a common plane slightly separated from one another and with one monofilament positioned between the other two monofilaments and forwarding under separately controlled speeds and tensions the thus aligned and separated monofilaments into a twisting zone through said slot formed between two axially parallel freely-rolling cylindrical surfaces; (3) compensating for the excess length in the two outer monofilaments by forwarding them at a positively controlled speed and allowing the speed of the middle monofilament to be freely controlled by being drawn into the twisting zone through said slot at a relative rate determined by the speed of the two outer monofilaments and by the twisting action in said zone while maintaining a tension on the middle monofilament which is no greater than the tension maintained on each of the two outer monofilaments as they enter said zone so that the speed of the middle monofilament entering said zone is always slightly less by the required amount than that of the two outer monofilaments; (4) twisting said monofilaments together into a string in said zone in a sandwiched configuration with each flattened side of the twisted coated middle monofilament maintaining continuous contact throughout its length in the string with a flattened side of the corresponding adjacent outer monofilament; and (5) heating the twisted string under controlled tension at a temperature which activates said adhesive resin and bonds the monofilaments together.

4,288,978

VAPOR GENERATOR

William G. Wyatt, Arlington, Tex., assignor to Vapor Energy, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 907,694, May 19, 1978. This application May 8, 1979, Ser. No. 37,029
Int. Cl.[3] F02C *7/26*
U.S. Cl. 60—39.05 2 Claims



1. A vapor generator comprising:
an enclosed combustion chamber;
means for delivering a mixture of fuel gas and combustion supporting gas to said combustion chamber;
means for delivering water to said combustion chamber for vaporization by heat derived from burning;
means for withdrawing combustion products and vaporized water from said combustion chamber;
a pilot burner positioned to deliver a pilot flame into said combustion chamber;
means for delivering a combustion supporting gas to said pilot burner;
means for delivering fuel gas to said pilot burner;
means for igniting the fuel gas in said pilot burner;
means for commencing delivery of combustion supporting gas and water to said combustion chamber at a first selected time;
means for commencing delivery of fuel gas to said pilot burner and for operating said igniting means at a second selected time later than said first selected time;
means for commencing delivery of fuel gas to said combustion chamber at a third selected time later than said second selected time;
means for detecting the presence of a flame in said combustion chamber;
means for disabling operation of said means for delivering fuel gas to said pilot burner and said pilot burner igniting means upon detection of a flame in said combustion chamber by said detecting means;
means for disabling operation of said means for delivering combustion supporting gas, fuel gas, pilot fuel gas, and said pilot fuel igniting means, at a fourth selected time later than said third selected time;

means for recommencing delivery of combustion supporting gas and water to said combustion chamber at a new first selected time following operation of said disabling means; and

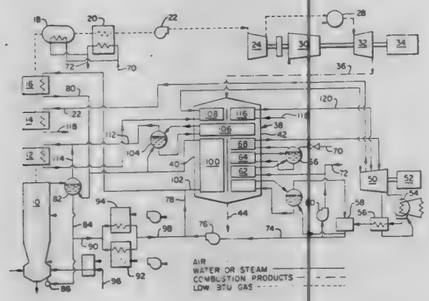
means for actuating each of said means for commencing delivery at a new selected second and third later times and for disabling operation of all of said means if no flame is detected in said combustion chamber after actuation thereof.

4,288,979

COMBINED CYCLE POWER PLANT INCORPORATING COAL GASIFICATION

Gregory N. Liljedahl, Tariffville, and Bruce K. Moffat, Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 21, 1979, Ser. No. 77,708
Int. Cl.³ F02C *3/28, 6/18*
U.S. Cl. 60—39.12 **3 Claims**



1. A power generating plant comprising a coal gasifier in which gaseous fuel is generated, an air heater which supplies heated air to the gasifier, a gas cleanup complex downstream of the gasifier, a booster fan downstream of the gas cleanup complex, a booster fan inlet heater upstream of the booster fan, a fuel gas compressor downstream of the booster fan, a gas turbine fired by said gaseous fuel, a heat recovery steam generator heated by the exhaust gases from the gas turbine, the heat recovery steam generator having two parallel gas passes through which the exhaust gases flow, one of the gas passes containing a high pressure steam generator, a steam turbine having high pressure, intermediate pressure, and low pressure steam stages, the high pressure steam generator supplying steam to the high pressure stage of the steam turbine, the other gas pass containing a high pressure reheater and a low pressure steam generator, the reheater supplying steam to the intermediate pressure stage of the steam turbine, and the low pressure steam generator supplying steam to the booster fan inlet heater, and also to the low pressure stage of the steam turbine.

4,288,980

COMBUSTOR FOR USE WITH GAS TURBINES

Hermann Ernst, Saint Cloud, Minn., assignor to Brown Boveri Turbomachinery, Inc., Saint Cloud, Minn.

Filed Jun. 20, 1979, Ser. No. 50,176
Int. Cl.³ F23R *3/06, 3/26, 3/36, 3/54*
U.S. Cl. 60—39.23 **13 Claims**

1. A reverse flow combustor for providing hot combustion gases comprising,

a. hollow outer casing means closed at one end to form a head cavity adjacent the closed end,

b. hollow annular inner casing means connected in the outer casing means in spaced relation thereto to define therewith an annular head cavity extension space, and a discharge outlet for said combustor,

c. said inner casing means also defining, a primary combustion zone, and a secondary combustion zone in communication with said primary combustion zone and said discharge outlet,

d. an inlet assembly mounted in said outer casing means for communication with said head cavity to receive combustion air therefrom,

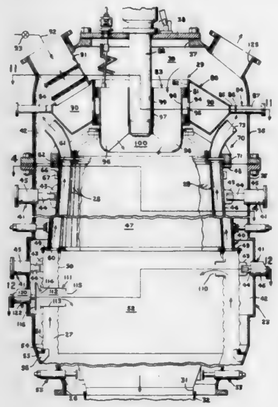
e. a liquid fuel inlet connected to said outer casing means,

f. a gaseous fuel inlet connected to said outer casing means,

g. means operative to control alternately, simultaneously and selectively the flow of liquid fuel and gaseous fuel to said combustor,

h. said inlet assembly connected to said liquid fuel inlet and gaseous fuel inlet and disposed to provide a mixture of at least one of said fuels and air to said primary combustion zone,

i. air inlet means for said combustor at the end of the outer casing remote from the head cavity including, air flow passage means to pass combustion air entering said combustor in a direction counter to the flow of combustion gases,



j. cooling means removably and replaceably connectible to the inner wall of said inner casing means and disposed about the primary combustion zone, including, a plurality of circumferentially disposed cooling tubes having one end connected to the air flow passage means to receive air entering the combustor and the opposite end having an outlet disposed to discharge the air to the head cavity in the outer casing,

k. adjustable metering means connected to the inner casing means to provide predetermined quantities of additional air for mixture and temperature control of combustion gases in the secondary combustion zone of the combustor, and,

l. said adjustable metering means includes, a fixed orifice bleed means for metering a predetermined quantity of air to said secondary combustion zone during all operating modes of the combustor.

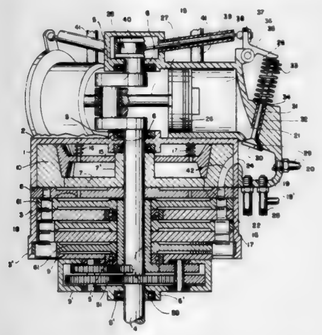
4,288,981

TURBINE-TYPE ENGINE

Elwood H. Wright, 7320 6th Ave., Tacoma, Wash. 98406

Filed Jun. 16, 1978, Ser. No. 916,096
Int. Cl.³ F02C *5/00*
U.S. Cl. 60—39.38 **1 Claim**

1. A turbine-type engine comprising, in combination, a casing, a rotor shaft revolubly mounted in a casing, a plurality of combustion chambers mounted about the casing, a control rotor fixed against relative rotation of the shaft and having a cylindrical flange fitted revolubly in the casing and formed with a series of laterally spaced circumferentially directed bands of impeller vanes and with passages through the flange between the vanes; the first of the series of bands of impellers being extended only partially about the cylinder, a blade-type rotor mounted on a sleeve that is rotatably mounted about the said shaft, and located so that the passages through the control rotor extend to passages between vanes of the blade-type rotor, so that pressurized gases from the combustion chambers are directed to the vanes of the blade-type rotor so as to rotate said rotor, said combustion chambers mounted in the casing about the control rotor, means for independently admitting fuel charges and compressed air to the chambers, means in each chamber for igniting the charges, delivery passages from the chambers directed tangentially against the control rotor in the



plane of the partial band of impellers and passages; and water injecting means for injecting a fine spray of water in each of said combustion chambers independently of the injection of fuel charges in the corresponding combustion chamber so that water spray may be injected in each combustion chamber after detonation of the fuel therein, so as to generate in the combustion chamber, while cooling said chamber, usable steam pressure producing power incident to the dissipation of the internal heat of said engine against said impeller vanes and against the vanes of the blade-type rotor, in which

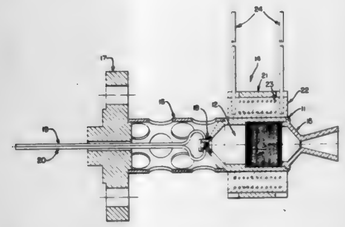
the blade-type rotor is fixed to the sleeve and the sleeve is rotatably linked by gears to the shaft.

4,288,982

LOW THRUST MONOPROPELLANT ENGINE

Robert A. Frosh, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and John D. Kuenzly, Redondo Beach, Calif.

Continuation of Ser. No. 819,029, Jul. 25, 1977, abandoned. This application Dec. 20, 1978, Ser. No. 971,474
Int. Cl.³ F02K *9/44*
U.S. Cl. 60—200 R **10 Claims**



1. A thruster for orienting spacecraft, comprising:

a thruster body;

a screen pack surrounded by and connected to said thruster body; and

means for injecting a propellant into said thruster body, including:

a plurality of injector tubes discrete from the thruster body; and

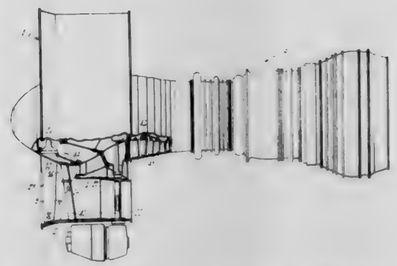
an injector shall having an infundibuliform cavity with a discharge aperture, receptive means for connecting said injector tubes to said shell and a plurality of opposed limitation means disposed to atomize and tangentially discharge a propellant directly into the cavity.

4,288,983

TURBOFAN ENGINE HAVING CORE SUPERCHARGING STAGE

Thomas E. O'Rourke, Jr., Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 19, 1978, Ser. No. 952,869
Int. Cl.³ F02K *3/06*
U.S. Cl. 60—226 R **7 Claims**



1. In a turbofan engine of the type having a bypass flow path and a core flow path which are separated by a core case and of the type having a fan stage upstream of the core case, the improvement comprising in combination:

an island splitter spaced radially apart from said core case at a locaton downstream of the fan stage placing said core flow path in communication with said bypass flow path immediately downstream of the island splitter; and

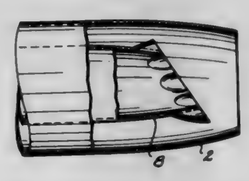
a supercharging stage mechanically coupled to the fan stage and extending outwardly into proximity with the core case such that the mechanically coupled supercharging stage is adapted to work only upon medium gases of the core flow path.

4,288,984

NOISE SUPPRESSING TURBOFAN NOZZLES AND METHOD

Waman V. Bhat, Redmond, and Charles P. Wright, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 19, 1978, Ser. No. 943,973
Int. Cl.³ F02K *1/46, 3/06*
U.S. Cl. 60—262 **17 Claims**



1. In a turbofan including a primary exhaust nozzle, core means for producing a primary exhaust flow through the primary exhaust nozzle, a fan nozzle encircling the primary exhaust nozzle such that the primary exhaust nozzle, at a location forward of its discharge end, is generally circular and concentric within the fan nozzle, and fan means for producing a fan flow through the fan nozzle, the velocity of the primary exhaust flow produced by the core means being greater than the

velocity of the fan flow produced by the fan means, the improvement comprising the fan nozzle and the primary exhaust nozzle being constructed and arranged relatively so that at the discharge end of the rearmost nozzle the upright thickness of the fan flow below the primary exhaust flow is greater than the lateral thickness of the fan flow at a location laterally of the primary exhaust flow for suppressing jet noise perceived below the turbofan.

4,288,985

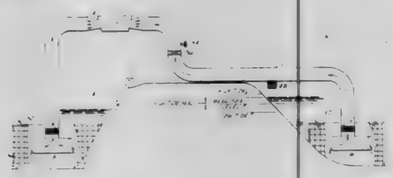
APPARATUS FOR GENERATING ENERGY FROM THE RISE AND FALL OF TIDES

Richard G. Dyck, 1120 Longfellow Dr., Beaumont, Tex. 77706

Filed Dec. 10, 1979, Ser. No. 102,142

Int. Cl.³ F16D *33/00*

U.S. Cl. 60—398 **2 Claims**



1. Apparatus for generating energy from the rise and fall of the tides comprising:

a first reservoir, the first reservoir being subject to tidal flow;

a second reservoir which is separated from the first reservoir and having a depth below the level of the lowest tide of the first reservoir and a height exceeding the highest tide of the first reservoir;

a duct, airtight and chargeable with water, connecting the first reservoir with the second reservoir;

tee-shaped channel elements at each end of the duct, with the vertical portion of the channel elements communicating with the duct and the two openings of the horizontal portion of the channel elements communicating with the first and second reservoirs;

filter elements situated in the duct in the vicinity of the openings of each tee-shaped channel element;

deflection screens surrounding the vicinity of the openings of each tee-shaped channel element;

a drop filter situated along the duct;

a charging and drain valve arranged in the duct;

a shutoff valve arranged in the duct; and

a turbine positioned within the duct and adapted to be operated by the flow of water passing between the first reservoir and second reservoir as tidal flow causes a change in the level of water in the first reservoir and the water in the second reservoir is urged to seek a level of equilibrium with the water in the first reservoir.

4,288,986

WAVE POWERED GENERATOR

James G. O. Watson, 11 Culross Rd., Bryanston, Sandton, Transvaal, South Africa

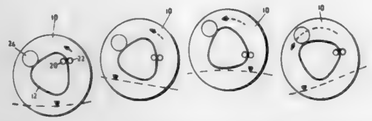
Filed Dec. 14, 1979, Ser. No. 103,717

Claims priority, application South Africa, Dec. 21, 1978, 78/7192

Int. Cl.³ E02B *9/08*

U.S. Cl. 60—501 **11 Claims**

1. A method of generating energy from waves in water consisting of supporting a buoyant body in water, causing the body alternately to rise and fall under the influence of waves in the water while constraining it to one side of its centre of gravity for rotary movement in one direction only and employing the rotary movement of the body to operate an energy converter.



4,288,987

PNEUMO-HYDRAULIC BOOSTER WITH RAPID-TRAVERSE FEATURE

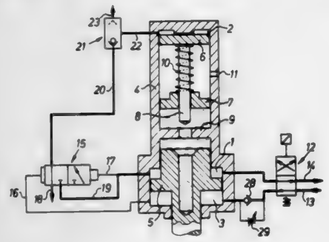
Artur Grüllmeier, Salem, Fed. Rep. of Germany, assignor to Eugen Rapp, Berg and Paul Haug, Aichwald, both of, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,450

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849113

Int. Cl.³ F15B *7/08*

U.S. Cl. 60—560 **4 Claims**



1. A pneumo-hydraulic booster having a rapid-traverse operation for driving a punching tool comprising

a housing having first, second and third chambers therein;

a first piston mounted to slide within said housing to repeatedly drive the punching tool by means of a power stroke and a return stroke;

said first and third chambers being selectively connectible to sources of pressure fluid and a venting atmosphere;

a second piston mounted to slide within said housing and positioned in tandem with said first piston, said second chamber being located on the side of said second piston remote from said first piston;

a booster valve having a first connection to said first chamber, a second connection to said third chamber, and a third connection to said second chamber, said booster valve being responsive to the pressure differential between said first and third chambers;

means actuating said first piston by directing pressure fluid into said first chamber, said first chamber thereby having a predetermined pressure to drive said first piston in a direction to establish contact with the punching tool; and said pressure differential being of a value to hold said booster valve in a first position allowing no pressure fluid to pass to said second chamber;

said pressure differential being subject to variation by contact of said first piston with the punching tool, said booster valve thereby being movable to a second position due to said variation of said pressure differential, said second position of said booster valve allowing pressure fluid to pass to said second chamber to drive said second piston in said driving direction to contact said first piston to provide an increased driving force on the punching tool.

4,288,988

METHOD AND APPARATUS FOR IMPROVING THE GAS FLOW IN AN INTERNAL COMBUSTION ENGINE EXHAUST MANIFOLD

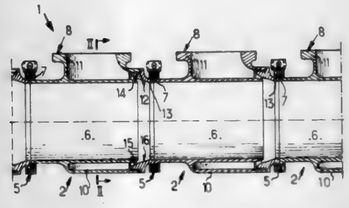
Remi Curtil, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint-Denis, France

Filed Jan. 18, 1978, Ser. No. 870,465

Claims priority, application France, Jan. 24, 1977, 77 01937

Int. Cl.³ F02B *37/00, 27/04;* **F01N** *7/10*

U.S. Cl. 60—605 **26 Claims**



8. Apparatus for reducing pressure oscillations in a stream of exhaust gases from an internal combustion engine, the engine having a plurality of cylinders arranged in each of at least one bank of cylinders, a piston in each cylinder, an exhaust port leading from each cylinder, an exhaust valve in each exhaust port, means for opening each exhaust valve during the expansion stroke of the corresponding piston and for closing the exhaust valve after the piston reaches bottom dead center, a single pipe exhaust manifold extending alongside the bank of cylinders, the manifold having an outlet end, a plurality of connecting pipes equal to the number of cylinders in said bank, each connecting pipe having an inlet end connected to the exhaust port of a corresponding cylinder and an outlet end connected to the manifold, said connections to the plurality of connecting pipes and to said supercharger turbine being the only openings for exhaust gas flow in said manifold pipe, and a supercharger turbine connected to the outlet end of the manifold, wherein the improvement comprises:

the outlet end of each connecting pipe being located closely adjacent to its inlet end, and the ratio of the cross-sectional flow area at the outlet end of each connecting pipe to the flow area at the inlet end being in the range from about 0.3 to about 0.8, such that the potential energy of the exhaust gas in the connecting pipe is maintained at a high level during the period from opening of the exhaust valve until the piston reaches bottom dead center, and

the manifold pipe having a substantially uniform flow area the diameter of which is less than the diameter of each cylinder bore by a ratio in the range from about 0.30 to about 0.75, such that a high velocity is maintained by the exhaust gases flowing in said manifold piper.

4,288,989

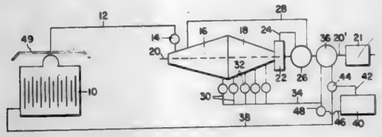
METHOD AND APPARATUS FOR OBTAINING MECHANICAL ENERGY FROM LOW TEMPERATURE HEAT SOURCES

James L. Cassidy, 66 Prospect St., Turners Falls, Mass. 01376

Continuation-in-part of Ser. No. 9,163, Feb. 5, 1979, Pat. No. 4,235,080. This application Mar. 19, 1979, Ser. No. 21,561

Int. Cl.³ F01K *9/00*

U.S. Cl. 60—685 **5 Claims**



1. A process for obtaining mechanical energy from heat sources having, in general, temperatures lower than those provided by burning fuel or fissioning fresh nuclear material, comprising:

a. generating vapor pressure from a suitable fluid having a desired low boiling point in a heat-exchanger vapor pressure generator placed in juxtaposition with a suitable low temperature heat source;

b. leading the pressurized vapor through a turbine for expansion for obtaining useful work;

c. leading the spent vapor from the turbine into an expansible chamber-type abentropic engine having working and non-working ends, the engine being of modified turbine type with blades designed to handle low pressure wet vapor as it condenses, the engine being mounted on the same shaft as the turbine which feeds it and being jacketed and insulated to preserve a constant temperature;

d. maintaining a vacuum on the non working end of the engine against which the spent exhaust vapor is forced to do useful work by virtue of its higher residual vapor pressure which brings about condensation at the boiling point of an amount of vapor proportionate to the work done and since the vapor pressure and temperature of the boiling condensate are the same as those of the condensing vapor, the engine operates continuously by virtue of the latent heat of the vapor;

e. leading the resultant condensate near its boiling point to a vapor pressure generator injection pump via valved ductwork for return to the heat exchanger vapor pressure generator to be recycled;

f. repeating the above sequence;

g. utilizing the mechanical work done as expedience may require;

h. removing the minor portion of uncondensed vapor with a vacuum pump for the purpose of producing a vacuum in the non-working end of the expansible chamber type abentropic engine; and

i. leading the removed vapor from the vacuum pump to a suitable section of the turbine for recycling therein.

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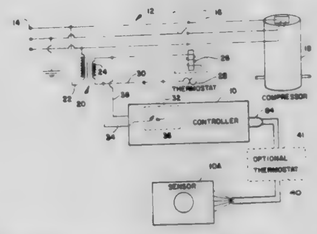
CONTROLLER FOR AN AIR CONDITIONING OR HEATING SYSTEM

Daniel R. Schulz, 1009 Hollywood Ave., Clearwater, Fla. 33519

Continuation of Ser. No. 30,369, Apr. 16, 1979, abandoned. This application Mar. 12, 1980, Ser. No. 129,690

Int. Cl.³ H02J *1/00;* **F25B** *49/00*

U.S. Cl. 62—158 **15 Claims**



1. An apparatus for activating a thermostat for an air conditioning or heating system, the thermostat controlling power from a power source to the air conditioning or heating system, comprising in combination:

a timing circuit providing a first output during a first timing period and a second output during a second timing period;

a controllable switch means connected to activate or deactivate the thermostat controlling of the air conditioning or heating system;

means for connecting said first output to said controllable switch means for deactivating the thermostat during said first timing period;

means for connecting said second output to said controllable switch means for activating said thermostat during said second timing period thereby enabling the thermostat to power the air conditioning or heating system;

thermostat line sensor means for sensing the condition of said controllable switch means and the thermostat to reset said timing circuit to said first timing period upon termination of power to the air conditioning or heating system;

power source sensor means for sensing the level of available power from the power source to reset said timing circuit to said first timing period upon a reduction in the level of the power source below a preselected minimum power level.

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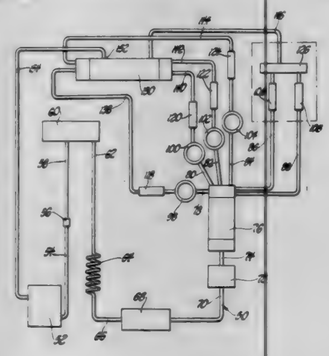
REFRIGERATION AND HEATING IMPROVEMENT

Harold R. Weeks, 1212 North St., Bowling Green, Ohio 43402

Filed Mar. 30, 1976, Ser. No. 671,746

Int. Cl.³ F25B *39/04*; F25D *23/12*

U.S. Cl. 62—183 **9 Claims**



1. In a refrigeration device for food and beverages, the improvements comprising:

a compressor;

a primary condenser;

a secondary condenser;

a plurality of evaporators;

a fan operable to transmit heat away from said secondary condenser; means operable to conduct heat from said primary condenser to a heating device for food and beverages;

means operable to actuate said fan responsive to pressure in a refrigerant conduit conducting refrigerant from one of the aforesaid devices responsive to said refrigerant being above a predetermined pressure threshold;

said evaporators being arrayed in a plurality of subarrays;

a first one of said subarrays of evaporators maintaining a temperature substantially different from the temperature in another one of the subarrays of said evaporators.

4,288,992

CURTAIN FOR OPEN FRONT FREEZER OR REFRIGERATOR

Carlyle R. Eliason, 905 W. Inkster, Kalamazoo, Mich. 49008, assignor to Eliason Corporation, Kalamazoo, Mich.

Filed Feb. 19, 1980, Ser. No. 122,647

Int. Cl.³ A47F *3/04*; F25D *23/02*

U.S. Cl. 62—256 **17 Claims**

1. In a display-type, refrigerated food cabinet having an access opening communicating with the atmosphere, curtain structure for substantially covering said access opening, comprising:

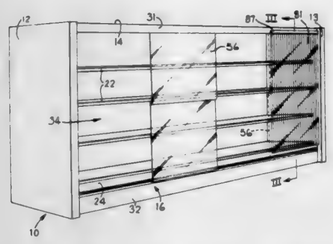
a first curtain comprising a flexible sheet having first and second spaced and substantially parallel edges, said sheet being prestressed to roll up on itself around an axis substantially parallel with said first edge, said sheet being self-supporting in a tightly rolled position when suspended from said first edge thereof;

means for attaching said first edge of said sheet to said cabinet along and substantially parallel to one edge of said access opening, said sheet in its rolled position being confined near said one edge of said access opening to permit free access to the inside of said cabinet through said access opening, the distance between said first and second edges of said sheet when unrolled being sufficient for covering said access opening from said one edge to the other edge of said access opening to obstruct air movement between the inside and outside of said cabinet;

engaging means for releasably locating said second edge of said sheet near the other edge of said access opening in said covering position of said sheet;

a second curtain comprising a plurality of side-by-side elongate strips of flexible transparent sheet material, said strips being fixed together at their upper ends but not their lower ends;

means for attaching the upper ends of said strips to said cabinet and extending along and substantially parallel to the upper edge of said access opening with said strips depending across said access opening, the depending portions of said strips being laterally displaceable one from another for permitting physical access to the inside of said cabinet, said strips when undisturbed covering said access opening from the top substantially to the bottom thereof to obstruct air movement between the inside and



outside of the cabinet while permitting visual inspection therethrough of the inside of the cabinet, said first and second curtains in their closed positions being spaced one in front of the other across said access opening with an air layer therebetween to act as a thermal barrier across said access opening.

15. In a refrigerator of the kind having an openfront cabinet, said cabinet having upper and lower front wall portions extending the width of the cabinet and respectively bounding the top and bottom of an access opening into the cabinet, said upper and lower front wall portions substantially sharing a common plane;

air curtain means for providing a refrigerated stream of air crossing said access opening in spaced relation behind said common plane, said air curtain means including an air outlet slot in said cabinet behind said upper front wall portion and an air return slot in said cabinet behind said lower front wall portion, said slots extending the width of said cabinet for providing a substantially planar downwardly moving curtain of air spaced behind the front wall of said cabinet;

the improvement comprising:

a strip curtain fixed with respect to said upper front wall portion of said cabinet and depending therefrom into close spaced relation to the upper edge of said lower front wall portion of said cabinet, said strip curtain comprising a plurality of side-by-side elongated strips of flexible transparent sheet material, said strips being fixed together at the upper ends thereof but not at the lower ends thereof;

means for attaching the upper ends of said strips to said cabinet and extending substantially parallel to the upper edge of the access opening of said cabinet, with said strips depending across said access opening, the depending portions of the strips being laterally displaceable one from another for permitting physical access to the inside of said cabinet, said strips when undisturbed covering said access opening from the top thereof substantially to the bottom thereof to obstruct air movement between the inside and outside of the cabinet while permitting visual inspection therethrough of the inside of the cabinet, said strip curtain being spaced forwardly from said air curtain means, the lower ends of said strips being spaced above the upper edge of said lower front wall portion by a vertically narrow space extending widthwise of said access opening, the lower ends of said strips lying adjacent the front edge of said air return slot of said air curtain means, the space being provided so as to prevent the lower ends of the strips from being displaced or sucked into the air return grill and to permit a modest flow of air through the gap between the strip ends and cabinet edge wall.

4,288,993

REFRIGERATOR

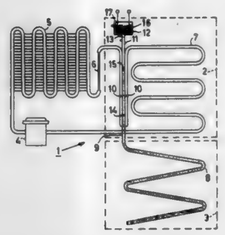
Adrianus J. van Mensvoort, and George A. A. Asselman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,956

Claims priority, application Netherlands, Oct. 5, 1978, 7810047

Int. Cl.³ F25D *11/02*

U.S. Cl. 62—333 **2 Claims**



1. A refrigerator comprising a freezing compartment; a refrigerating compartment; a primary refrigerating system containing a primary refrigerant and including a primary evaporator disposed in the freezing compartment; a secondary refrigerating system containing a secondary refrigerant and a control gas and including a secondary evaporator disposed in the refrigerating compartment and a secondary condensor disposed in the freezing compartment in heat-exchange contact with the primary evaporator, said secondary refrigerating system being constituted as a tube closed off at the outer end of the secondary evaporator portion thereof; a reservoir containing a reversible control gas getter and having a supply duct connected to the outer end of the secondary condensor portion of the secondary refrigerating system tube; and a breakable seal arranged in the supply duct of the reservoir to enable the reservoir to be connected to said secondary condensor portion without contamination of the control gas getter.

4,288,994

GOLFBALL CENTER FREEZER

David B. Burgener, Lombard, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Aug. 18, 1980, Ser. No. 179,379

Int. Cl.³ F25D *25/02*

U.S. Cl. 62—381 **15 Claims**

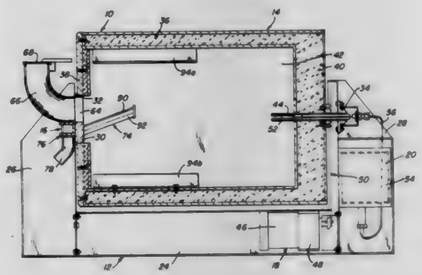
1. A freezer for cooling normally resilient spherical objects to a substantially rigid state and for selectively delivering the objects in the rigid state to a work station at ambient temperature, said freezer including:

a hollow rotatable drum adapted to receive and continuously tumble a batch of said spherical objects in random order;

drive means for rotating said drum at a preselected speed;

cooling means for maintaining the interior of said drum at a predetermined subfreezing temperature calculated to provide the desired degree of rigidity to the objects within a preselected cool-down time;

a dispenser at one end of said drum, said dispenser compris-



ing rack means within the drum for successively arranging a number of objects from the random batch into an ordered series, and an object metering mechanism for selectively dispensing singular objects from said series through a proximal endwall of the drum;

a conveyor communicating with said metering means for transporting said dispensed objects from said dispenser to said work station, whereby after said preselected cool-down time, objects in a uniform substantially rigid state may be presented one-at-a-time to the work station at a rate independent of the residence time for the objects in the freezer.

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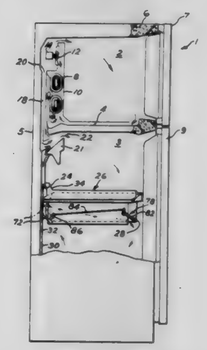
HOUSEHOLD REFRIGERATOR MOVABLE STORAGE ASSEMBLY

Bernard J. Grimm, and Richard A. Dossett, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 26, 1979, Ser. No. 97,477

Int. Cl.³ F25D *25/02*

U.S. Cl. 62—382 **8 Claims**



1. In a refrigerator having a fresh food compartment having side and rear walls, an air duct having an air outlet opening in the fresh food compartment for delivering refrigerated air to the fresh food compartment, a movable storage assembly hav-

ing air flow control means in the fresh food compartment comprising:

a removable storage pan;

a shroud for the pan having a bottom wall and two side walls and open at the front and rear, said shroud cooperating with the pan to provide an air flow path therebetween;

a cover for the pan secured to the shroud;

an air director pivotally attached to the rear of the shroud;

control means including a movable control mechanism assembly, a linkage member having at one end cooperating with the air director to move the air director to open and closed positions to regulate the amount of cold air flowing around the storage pan upon movement of the linkage member, and the other end having means responsive to movement of the control mechanism for moving the linkage member; and

attachment means for removably securing the storage assembly to the inside of the fresh food compartment.

4,288,996

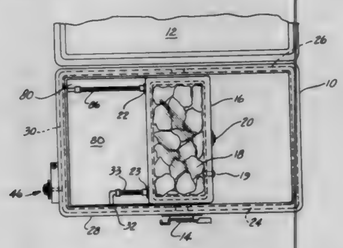
PORTABLE SUBLIMATION REFRIGERATOR-FREEZER

Walter Roncaglione, 2881 NE. 35th Ct., Fort Lauderdale, Fla. 33308

Continuation-in-part of Ser. No. 946,496, Oct. 18, 1978, Pat. No. 4,195,491. This application Nov. 28, 1979, Ser. No. 97,999

Int. Cl.³ F25D *3/12*

U.S. Cl. 62—384 **12 Claims**



1. A sublimation refrigerator, comprising: an insulated outer container including a cover movable between an open position and a closed position; an inner container for a sublimating solid adapted to be disposed within the outer container, the inner container having a removable cover; a freezer compartment supported within the outer container and having a movable cover; a first elongated cooling coil extending along the interior side walls of the outer container and having one of its ends connected to the interior of the container for the sublimating solid; a second elongated cooling coil disposed within said freezer compartment and having its input ends connected to the interior of the container for the sublimating solid and its output end vented to the atmosphere; and manually adjustable restricting valve means connecting the output end of the first coil to the exterior of the outer container whereby a sublimating solid may be disposed within the inner container, the valve adjusted so as to control the relative flow of gas generated by sublimation of the solid through said first and second coils, and the temperature within the freezer compartment may be maintained at a lower value than the temperature within the outer container exteriorly of the freezer compartment.

4,288,997

COOLING SYSTEM FOR SHIPPING CASKS

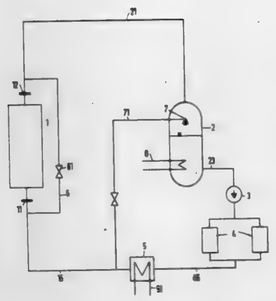
Eckart Friesen, Dreieich; Hans P. Thogersen, and Roland Kühnel, both of Dietzenbach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim (Ruhr), Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,524

Claims priority, application Fed. Rep. of Germany, May 4, 1978, 2814796

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—434 **4 Claims**



1. Cooling system having a container for transporting heat-emitting parts without temperature shock after removal from nuclear installations, comprising a closed loop for carrying water and steam or water alone, and means for connecting the container to said loop, said loop having disposed therein a heatable mixing condenser for regulating pressure and temperature in said loop, a filter installation for removing possible radioactive contamination from the water, a cooler for cooling water in said loop, a pump, and valve-control means for controlling pressure and temperature in said loop.

4,288,998

POLYLOBE DRIVE ELEMENT

Andrew C. Schnur, Lafayette, and Donald M. Wilhelm, Novato, both of Calif., assignors to California Pellet Mill Company, San Francisco, Calif.

Continuation of Ser. No. 912,226, Jun. 5, 1978, abandoned. This application Apr. 12, 1979, Ser. No. 29,291

Int. Cl.³ F16D *3/18*

U.S. Cl. 64—9 R **7 Claims**

1. A shaft drive element comprising:

a male coupling member having a cross section defined by segments of a logarithmic spiral joined end to end;

a female coupling member having a cross section defined by segments of the same spiral of greater radius joined end to end; and

one half of said segments are of a clockwise spiral, and one half of said segments are of a counterclockwise spiral for both the male and female coupling member.

4,288,999

APPARATUS TO LESSEN THE ENTANGLEMENT OF TUBULAR FABRICS

Larry D. Sterling, and Wilbert Melvin, Jr., both of Dover, Del., assignors to International Playtex, Inc., Stamford, Conn.

Filed Feb. 5, 1979, Ser. No. 8,986

Int. Cl.³ D06B *23/00*; B65B *11/58, 67/08*

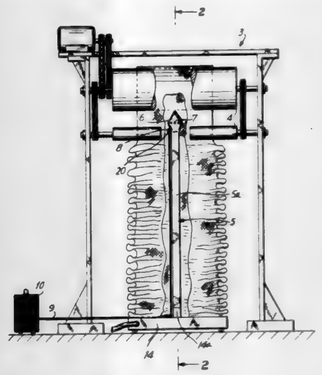
U.S. Cl. 68—13 R **8 Claims**

1. An apparatus for preparing a tubular extent of fabric for processing comprising:

hoop inserter means for positioning a length of hooping material along an axis; and

means for continuously delivering a tubular extent of fabric axially along the axis of said hoop inserter means to form a collapsed donut-shaped tubular extent of fabric about said length of hooping material;

said hoop inserter means and hooping material having a length sufficient for the ends of said hooping material to extend from both ends of said collapsed tubular extent of



fabric so that said ends of said hooping material can be joined to form an endless hoop about said collapsed donut-shaped tubular extent of fabric for lessening the entanglement of said tubular extent of fabric during subsequent fabric treatment processing.

4,289,000

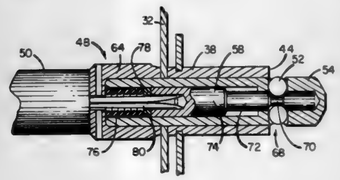
PICK-RESISTANT TUBULAR LOCK AND KEY FOR OPERATING THE SAME

Anker J. Nielsen, Jr., Holden, Mass., assignor to Omco, Inc., Holden, Mass.

Filed Aug. 13, 1979, Ser. No. 66,479

Int. Cl.³ E05B *67/36*

U.S. Cl. 70—34 **8 Claims**



1. In a conventional tubular lock having an elongated tubular lock housing which has an axial key hole in its rear wall, two diametrically opposed ball wells formed transversely through the lock housing, the ball wells opening at the inner and the outer cylindrical surfaces of the hollow lock housing, a locking ball sliding in each ball well and being prevented from outward escape therefrom, a cylindrical plunger having a concave cupped rear face, the plunger sliding within the elongated lock housing and slidably engaging the undersides of the locking balls, the plunger being exteriorly shaped to urge the balls outwardly as the plunger slides forwardly to its locking position, and to release the balls so that they drop inwardly as the plunger slides rearwardly to its unlocking position, and a compression spring positioned in the lock housing between the rear wall of the lock housing and the rear face of the plunger, the spring normally biasing the plunger to its locking position, the improvement therein comprising: a washer having a periphery shaped and sized to telescopically fit coaxially within the hollow lock housing and positioned between the rear wall of the lock housing and the rear face of the plunger, said washer having a non-circular central opening through which a conventional expanding key having a circular profile cannot be inserted.

4,289,001

KEY-OPERATED DEVICE FOR ACCESS CONTROL SYSTEM

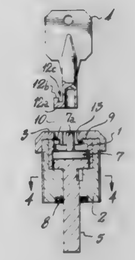
John C. Corfield, Lacey Green, England, assignor to Unimax Switch Limited, Maidenhead, England

Filed Jan. 15, 1980, Ser. No. 112,329

Claims priority, application United Kingdom, Jan. 26, 1979, 2813/79

Int. Cl.³ E05B *15/06*

U.S. Cl. 70—346 **7 Claims**



1. A key-operated device comprising a fixed hollow body having a plate-like wall, said wall having therein a key-hole for the admission of an end of a key inserted on an axis traversing said wall and passing through said key-hole, an actuating member mounted within said body to be rotatable about said axis, said member having therein a recess open towards said key-hole and having at that end thereof which is adjacent said plate-like wall an annular flange directed inwardly towards said axis, said flange having an innermost edge and having at least one notch formation capable of being engaged to transmit torque to said flange to rotate said member, a basically cylindrical wall provided on said body around said key-hole and extending axially inwardly from said plate-like wall to overlie said innermost edge of said flange on said member, a key comprising a stem lying on an axis and at least one lug projecting laterally from said stem and including a portion extending parallel to but offset from the axis of said stem, said stem being adapted to enter said key-hole, and said plate-like wall and axially extending wall being shaped to provide clearance for said lug, whereby on insertion of said key into said key-hole said axially extending portion of said lug can be caused to enter said body and said recess in said member and to engage said notch in said flange in a position radially outwards of said axially extending wall to transmit torque to said flange in order to rotate said member about said axis.

4,289,002

KEY FOR A CYLINDER LOCK AND METHOD FOR MAKING SAME

Heinrich Gretler, Hinwil, Switzerland, assignor to Bauer Kaba AG Sicherheits-Schliessyteme, Switzerland

Continuation of Ser. No. 720,784, Sep. 7, 1976, abandoned. This application Mar. 2, 1978, Ser. No. 882,882

Claims priority, application Switzerland, Sep. 11, 1975, 11820/75

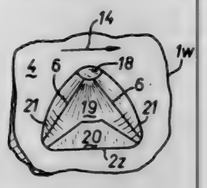
Int. Cl.³ E05B *27/06*

U.S. Cl. 70—358 **10 Claims**

1. In a key for a cylinder lock, the key comprising an elongated blade having a blade surface with a plurality of recesses therein to receive tumbler pins of the lock, the lock having a plurality of tumbler pins forming a permutation inclined relative to said blade surface, the improvement wherein at least one recess of said plurality of recesses includes

a planar base portion spaced inwardly from said blade surface,

a planar side wall portion spaced from said base portion and lying adjacent to said blade surface and inclined relative



thereto, said planar side wall portion having substantially the shape of an isosceles triangle and lying in a plane parallel to the longitudinal dimension of said blade; and

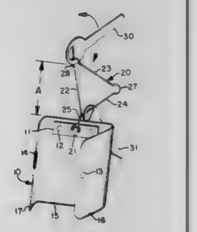
a conical side wall surface portion extending between said base portion and said planar side wall portion.

4,289,003

KEY HOLDER

Tayhugh L. Yang, 401 Robert E. Lee Blvd., New Orleans, La. 70124

Filed May 10, 1979, Ser. No. 37,659
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—456 B **18 Claims**



1. A key holder for holding a plurality of keys, having holes in them at their bases, comprising:

a backing;

a triangularly shaped, rigid, at least generally flat, loop keyholder means forming a flat, triangularly shape having a base and two interconnecting legs for holding the keys when looped through the holes in them; and

attachment means connected to the apex corner of said triangular shaped loop means for attaching said loop means at said legs to said backing, but allowing it to pivot about said backing at said apex corner.

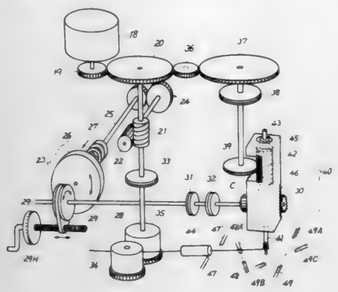
4,289,004

COIL SPRING MANUFACTURING MACHINE

Reijiro Itaya, Tokyo, Japan, assignor to Kabushiki Kaisha Itaya Seisaku Sho, Tokyo, Japan

Filed May 29, 1979, Ser. No. 42,960
Claims priority, application Japan, Feb. 19, 1979, 54-18109
Int. Cl.³ B21F *3/04*
U.S. Cl. 72—7 **4 Claims**

1. A computer controlled apparatus for producing coil springs comprising computer means, wire supply means, a single driving motor, a drivable winding mandrel movable axially for pitch setting, an axially elongated gear for axially supporting said mandrel, a first gear unit including a first gear, second and third gear units with each of said gear units being provided a magnetic clutch, said driving motor being operationally coupled with said axially elongated gear for rotatably supporting said mandrel through said first gear unit, and an axial gear for axially moving said mandrel through said second gear unit, said wire supply means being operative to supply wire through said third gear unit and said magnetic clutches



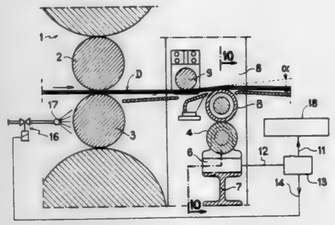
are operative in response to said computer means for controlling said first, second and third gear units respectively.

4,289,005

PROCESS AND DEVICE FOR CONTROLLING THE FLATNESS OF A COLD-ROLLED METAL SHEET

Pierre M. Cabaret, Paris; Maurice B. Daboust, Mont Louis sur Loire, and Pierre R. Engerran, Creil, all of France, assignors to Union Siderurgique du Nord et de l'est de la France (USINOR), Paris, France

Filed Apr. 10, 1979, Ser. No. 28,917
Claims priority, application France, Apr. 13, 1978, 78 10906
Int. Cl.³ B21B *37/04*
U.S. Cl. 72—12 **23 Claims**



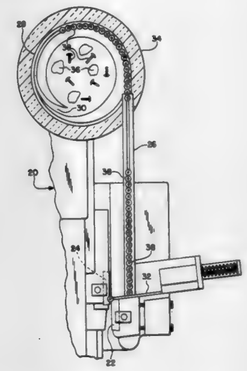
1. A process for controlling the flatness of a moving metal sheet subjected to a cold-rolling operation, comprising measuring tensions in different regions of the width of the sheet by means of coaxial substantially adjoining rollers which engage the sheet and extend transversely of the direction of movement of the sheet, said regions being at least three in number with a corresponding number of said rollers, calculating the sum of the tensions measured in the respective regions by said rollers, calculating from the result obtained the theoretical tension in each region by taking into account an axial extent to which the sheet engages each roller so that said theoretical tension corresponds to a tension uniformly distributed along the width of the sheet, comparing said theoretical tension with the tension effectively measured in each region and exerting, if required, correcting actions on the sheet as a function of the results of said comparison.

4,289,006

APPARATUS FOR PRODUCING THREADED SELF-TAPPING STAINLESS STEEL SCREWS

Charles R. Hallengren, Deerfield, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 8, 1979, Ser. No. 1,976
Int. Cl.³ B21H *3/06*; B21K *1/56*
U.S. Cl. 72—38 **5 Claims**



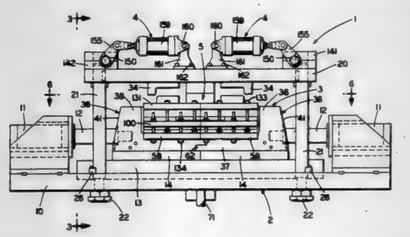
1. In an apparatus for producing self-tapping threaded fasteners from 300 series nickel-chromium stainless steel material, including a pair of opposing thread-rolling die members adapted to move relative to one another with a fastener blank positioned between opposing thread-forming faces thereof, rail means adapted to feed a plurality of headed fastener blanks in succession between said pair of opposing thread-rolling die members, said rail means including two parallel portions spaced by a distance greater than the shank diameter but less than the minimum head dimension to support the blanks by means of their heads with the shanks positioned between said two portions, an insulating tunnel means surrounding at least a predetermined extent of said rail means, means for supplying fluid refrigerant to the fastener blanks as they pass through said insulating tunnel means to chill said blanks to a temperature substantially below 0° F. so that said blanks are in a chilled condition as they are deformed in the thread-rolling die members to produce self-tapping threaded fasteners having a thread hardness in the range of RC 45–50 while maintaining a core hardness in the area of RC 30.

4,289,007

APPARATUS FOR HYDRAULICALLY FORMING SHEET METAL PULLEYS

Derald H. Kraft, Canton, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Filed Dec. 5, 1979, Ser. No. 100,649
Int. Cl.³ B21D *26/04*
U.S. Cl. 72—58 **17 Claims**



1. Apparatus for hydraulically forming a grooved pulley from a cup-shaped sheet metal blank having a bottom hub wall and a side wall, said apparatus including:

(a) base means;

(b) a pair of die holding members mounted on the base means for reciprocal movement toward and away from each other on said base means;

(c) internal die means adapted to support a sheet metal blank between the die holding members;

(d) groove-forming die means mounted on each of the die holding members for capturing a blank supported by the internal die means and for forming at least a single groove in the side wall of the blank;

(e) pin means operatively engageable with the die holding members for clamping the die holding members and groove-forming die means in a closed position in the horizontal direction;

(f) a plurality of post means mounted on the base means and extending vertically upwardly therefrom;

(g) means for supplying fluid to the interior of a captured blank when the die holding members and die means are in closed position;

(h) ram means mounted on the post means for reciprocal vertical axial movement therealong;

(i) hub wall engaging die means mounted on the ram means and engageable with the bottom hub wall of a blank for axially compressing a captured blank in cooperation with hydraulic bulging of the side wall outwardly toward the groove-forming die means when the ram means moves downwardly toward a die vertical closed position;

(j) locking means operatively engageable with the post means and ram means for locking the hub wall engaging die means in a vertically closed die position when the ram means is at the end of its axial compression stroke; and

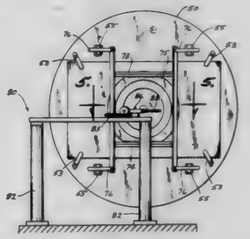
(k) means for increasing the pressure of the hydraulic fluid trapped in the compressed blank to final form the pulley groove.

4,289,008

APPARATUS FOR FORMING A UNIVERSAL CHASE TOP

Thomas L. Steele, Jesup, Iowa, assignor to John S. Schmitz and Roger W. Theobald, both of Omaha, Nebr.

Filed Jan. 28, 1980, Ser. No. 116,137
Int. Cl.³ B21D *22/14*
U.S. Cl. 72—83 **1 Claim**



1. An apparatus used in the fabrication of a chase top for a fireplace exhaust pipe comprising:

a flat circular metal disc containing an outer ring of apertures and an inner ring of apertures, said disc being normal to and centered on a central axis;

a circular wooden chuck containing a centrally disposed circular opening and a ring of apertures therein which coincide with said outer ring of apertures on said metal disc, said chuck being normal to and centered on said central axis;

a plurality of securing means for fastening said chuck to said metal disc wherein said securing means being disposed through said outer ring of apertures on said metal disc and through said ring of apertures on said chuck;

a circular tooling element having an outside diameter corresponding to the diameter of said circular opening in said chuck and containing a tapered circular opening and a plurality of apertures which coincide with said inner ring of apertures on said metal disc, said tooling element being normal to and centered on said central axis;

a plurality of fastening means for fastening said tooling element to said metal disc wherein said fastening means are disposed through said inner ring apertures in said metal disc and into said plurality of apertures on said tooling element;

a plurality of clamps pivotally attached to said chuck and a plurality of mounting brackets rigidly attached to said chuck;

a reinforcing plate means for releasably securing an apertured flat sheet of metal to said chuck for cooperation with said plurality of mounting brackets, said reinforcing plate means being normal to and centered on said central axis;

means for rotating said metal disc about said central axis thereby rotating said chuck, said tooling element, said flat sheet of metal and said reinforcing plate means;

a base member containing a plurality of apertures;

a pivot arm;

a pivot rod rigidly connected to said pivot arm and projecting downwardly from said pivot arm, said pivot rod extending through one of the apertures on said base member;

a second pivot arm containing a plurality of apertures;

a second pivot rod rigidly connected to said first pivot arm and projecting upwardly from said first pivot arm, said second pivot rod extending through one of the apertures on said second pivot arm; and

a movable deforming element rotatably disposed on said second pivot arm, said deforming element being a cylinder having a height less than the diameter and having both circumferential edges rounded, said deforming element being positioned adjacent to said circular opening in said tooling element and adapted to deform said flat sheet of metal whereby said flat sheet of metal is bent to conform to said tapered opening in said tooling element as said flat sheet of metal is rotated about said central axis.

4,289,009

PROCESS AND DEVICE FOR THE MANUFACTURE OF BLISTERS WITH HIGH BARRIER PROPERTIES

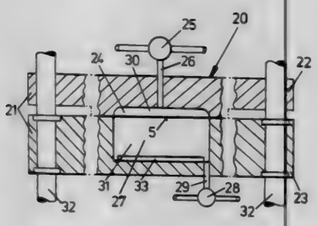
Werner Festag, and Hans-Ueli Müller, both of Schaffhausen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 21, 1979, Ser. No. 40,980

Claims priority, application Switzerland, Jun. 2, 1978, 6065/78

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—60 **16 Claims**



1. Device for manufacturing blisters from metal-plastic composite foil which comprises a clamping facility including two separable parts between which a metal-plastic composite foil is firmly clamped, one part of which is a pressure resistant plate and the other part of which is a die having a base and a recess therein corresponding to the desired blister shape, wherein said pressure resistant plate includes at least one pressure supply line for supplying a fluid medium thereto for deforming said foil into said recess, said line connected to a closed chamber formed with the help of the foil held fast in the clamping facility, and said die being provided with a lubricating layer in the base thereof so that said foil is smoothly elongated or stretched into said recess and over said lubricating layer thereby obtaining improved blister volume and larger drawing ratio.

4,289,010

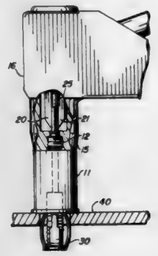
UNIVERSAL ADAPTER FOR SCREW ANCHOR INSTALLATION

Dale R. Badger, 7609 W. Heatherbrae, Phoenix, Ariz. 85033, assignor to Dale R. Badger and Spencer Norman, both of Phoenix, Ariz.

Filed May 12, 1980, Ser. No. 148,921

Int. Cl.³ B21J *15/34*

U.S. Cl. 72—114 **7 Claims**



1. An adapter for modifying an installation tool of the type used to install blind rivets and having internal jaws for gripping and pulling on a pull shaft inserted therebetween in the operation of such tool, said adapter modifying the tool from one for installing blind rivets to one for installing squash nuts and including in combination:

a universal installer head for connection to the tool and having a longitudinal hole therethrough in alignment with the internal jaws of the tool for permitting free passage of a pull shaft through said head; and

a pull shaft having a threaded end for engagement with a squash nut and a jaw engaging end for passage through the hole in said head to a position in the tool where the jaw engaging end may be gripped and pulled by the jaws in the installation tool.

4,289,011

CONTINUOUS PIPE ROLLING PROCESS

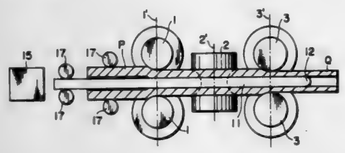
Seishiro Yoshiwara, and Hirokichi Higashiyama, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 94,316

Claims priority, application Japan, Nov. 17, 1978, 53-141073; Dec. 19, 1978, 53-156666

Int. Cl.³ B21B *17/04*

U.S. Cl. 72—208 **7 Claims**



1. A process of rolling a tubular blank into a pipe by elongation, diameter and wall thickness reduction which comprises passing the blank continuously through a mill having a plurality of roll sets each comprising grooved driven rolls providing substantially circular passes of progressively reduced diameters, and supporting the interior of the tubular blank with a mandrel during its passage through said roll sets, the improved process comprising holding the tail end of the mandrel with pushing means, starting rolling by pushing the mandrel into the tubular blank, stopping the pushing of the mandrel between the time when the front end of the workpiece has passed the last roll center line in the first half roll set group and the time when the front end of the workpiece has reached before the roll center line of the last roll set and continuing the rolling of the workpiece holding the tail end of the mandrel.

4,289,012

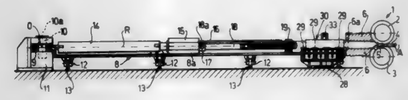
DEVICE FOR INSERTING AND PUSHING A BAR INTO A PRESS-PIERCING MILL

Aurindo Nessi, Albate (Como), Italy, assignor to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Nov. 28, 1978, Ser. No. 964,273

Int. Cl.³ B21B *17/06, 25/02*

U.S. Cl. 72—209 **7 Claims**



1. A device whereby a square bar is inserted and pushed into a press-piercing mill (PPM), the bar being disposed along the rolling and drilling axis of the mill, the apparatus being characterised in that it comprises:

a first thrust means (**20**) having a first direction of action (R_1) and thrusting the bar (**7**) at a speed set for introducing the bar into the press-piercing mill (PPM);

a second thrust means (**14**) having a second direction of action (R) and thrusting the bar (**7**) at a speed set for rolling and simultaneously drilling the bar (**7**) in the press-piercing mill (PPM), and

an actuator (**34**) for simultaneously moving the first and second thrust means (**20, 14**) from a position in which the first direction of action (R_1) coincides with the PPM rolling axis (A) and the second direction of action (R) is at a distance from the rolling (A) to a position in which the first direction of action (R_1) is at a distance from the rolling axis (A) and the second direction of action (R) coincides with the axis (A) and vice versa.

4,289,013

CROWN CONTROL FOR ROLLING MILL

Siegfried H. Hunke, Thomaston, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Aug. 29, 1979, Ser. No. 70,783

Int. Cl.³ B21B *29/00, 31/30*

U.S. Cl. 72—243 **5 Claims**

1. In a mill having a housing, a plurality of work rolls and at least one segmented backing bearing for each work roll, the backing bearing portions being supported on a backing bearing shaft through a plurality of saddles resting against the housing, screw-down mechanism associated with each end of the backing bearing shaft, and

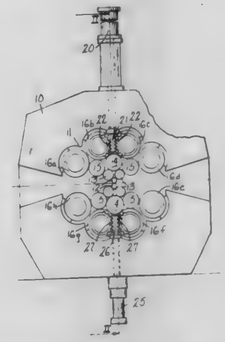
crown adjusting means in line with each saddle, each said means comprising:

an eccentric ring between the shaft and the saddle,

pinion teeth fixed to said eccentric ring,

a rack engageable with said pinion teeth,

a hydraulic cylinder and piston mounted on the housing, the piston being operatively connected to the rack, and



means for coordinated actuation of said cylinders and pistons.

4,289,014

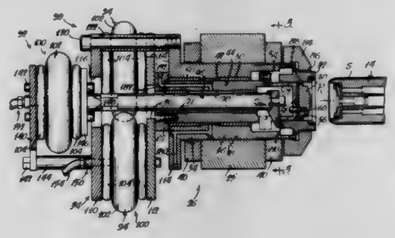
DOUBLE ACTION DOMER ASSEMBLY

Edward G. Maeder, Minnetonka, and John M. Tovey, Circle Pines, both of Minn., assignors to National Can Corporation, Chicago, Ill.

Filed Oct. 11, 1979, Ser. No. 83,950

Int. Cl.³ B21D *22/24*

U.S. Cl. 72—348 **15 Claims**



1. A domer assembly for use with a punch reciprocal along a path on a frame of an ironing machine to reform an end wall of a container comprising a center domer element and an annular element surrounding said center domer element, a domer support member and an annular support member respectively cooperating with said center domer element and said annular element, first compressible means connected with said domer support member and said frame and biasing said domer element toward said punch, second compressible means connected with said annular support member and said frame and biasing said annular element toward said punch, each compressible means comprising an expandable and compressible resilient member with at least one of said compressible means being constantly exposed for visual inspection, and separate pressurizing means for respective compressible means.

4,289,015

CHAIN LINK TOOL

Thomas M. Porter, Concord, Mass., assignor to H. K. Porter, Inc., Somerville, Mass.

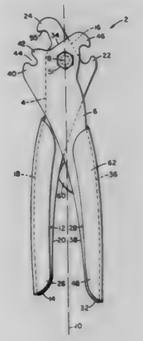
Filed Feb. 29, 1980, Ser. No. 125,972

Int. Cl.³ B21D *37/12*

U.S. Cl. 72—384 **3 Claims**

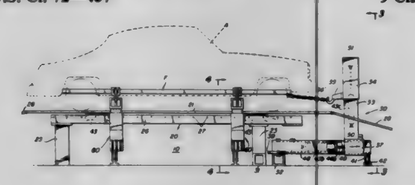
1. A chain link tool for closing the eye portions of a generally U-shaped cross-chain connecting link about a substantially transversely disposed portion of a side chain and for removing

cross-chain links which are so attached comprising a first lever member and a second lever member, each said lever member including a proximal handle portion and a distal head portion; the distal head portion of the first lever member comprising first and second corresponding flat elements disposed in spaced stacked relation, each said element having a substantially straight outer edge, an inner edge curved away from the outer edge of said element as it rises from the handle portion, a forward edge, first and second projections arising from the section of the forward edge adjacent the inner edge defining a slightly upwardly slanted groove therebetween and a third, downwardly hooked, projection extending outwardly of the section of the outer edge adjacent the forward edge; the distal head portion of the second lever member comprising a single flat element having a substantially straight outer edge, an inner edge curved away from the outer edge of said single element,



a forward edge, a fourth projection arising from the forward edge of the single element adjacent its inner edge, and a fifth, downwardly hooked projection extending outwardly of the outer edge of the single element adjacent its forward end; said single element of said second lever member being pivotally mounted adjacent the base of the fifth projection to the areas adjacent the bases of the third projection of the first and second elements of the first lever in the space therebetween such that the third and fourth projections form a pair of jaws on one side of the tool adapted to close the respective eyes of the cross-chain link said jaws moving apart as the handles are moved apart and conversely, and such that said groove and said fifth projection on the other side of the tool are adapted to receive the transverse portion of the side chain and grasp the curved end of the cross-chain link respectively when the handles are apart and to disengage the cross-chain connecting link as the handles are moved together.

4,289,016
AUTOMOBILE FRAME ALIGNMENT APPARATUS
Charles E. Hare, 2200 Joppa Rd., Baltimore, Md. 21234
Filed Jul. 25, 1979, Ser. No. 60,473
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—457 **9 Claims**



1. An automobile body and frame straightening apparatus comprising:

an elevated ramp support means for supporting an automobile above the ground;

a plurality of automobile body frame support means to rigidly support the automobile against movement while being repaired; and

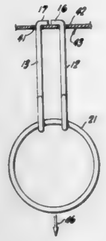
at least two automobile body and frame pullers for straightening the body and frame of an automobile;

said ramp support means having a top surface, a pair of sides, first and second ends, and a pair of channel means to support said automobile body frame support means, said channel means positioned under said ramp means top surface and on said sides of said ramp means;

said automobile body frame support means including a channel means supported body, a vertically telescopic means in said body and a horizontally telescopic means supported on said vertically telescopic means, a clamp means on said horizontally telescopic means for engaging and rigidly supporting said automobile frame against movement, where said vertically telescopic means raises said horizontally telescopic means to the height of the automobile frame and said horizontally telescopic means moves said clamp means into position to engage the automobile frame, a ground engaging means on said body means to stabilize said automobile body frame support means;

said automobile body and frame puller means including at least one ground support under said first end of said ramp support means, a horizontal beam member pivotally mounted on said ground support means for movement along said first end and along at least one side of said ramp support means, a vertical body member slidable on said horizontal beam member to apply a pulling force to said automobile body and frame, a vertically telescopic member in said vertical body member having means to connect to said automobile body and frame to pull on the damaged area of the automobile, where said horizontal beam member is moved along said ground support means and pivoted to align with the damaged area, and said vertically telescopic member is aligned and connected with the damaged area prior to said vertical body member applying a pulling force to said damaged automobile body and frame.

4,289,017
BODY PULLER
Joseph L. Guidry, 334 Innesbrook St., Santa Rosa, Calif. 95401
Filed Aug. 27, 1979, Ser. No. 70,091
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—462 **5 Claims**



1. A tool for applying a force to the back side of sheet material having at least one aperture therein comprising

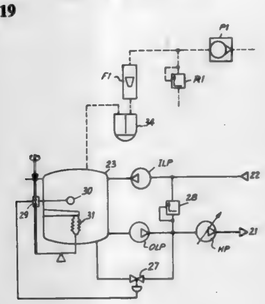
a ring, and

first and second arms having the inner ends thereof looped about said ring for sliding engagement therewith,

said arms each having a lateral projection at the outer end thereof with such projections extending in opposite directions normal to the plane of the looped end of the arm from which the projection extends,

whereby insertion of the outer ends of the arms through an aperture in sheet material and pulling said ring away from the material will cause the projections on said arms to rotate into opposed alignment engaging the backside of said material.

4,289,018
METHOD AND APPARATUS FOR MEASURING DEGASIFICATION
Olivier Hellouin de Menibus, Etampes, France, assignor to AMS, S.A., Fresnes, France
Filed Aug. 16, 1979, Ser. No. 67,113
Int. Cl.³ G01N *7/14*
U.S. Cl. 73—19 **7 Claims**



1. A method of measuring the amount of gas in a liquid system which comprises a tank and a vacuum pump, said method comprising the steps of:

(a) maintaining the temperature of said system at a predetermined level;

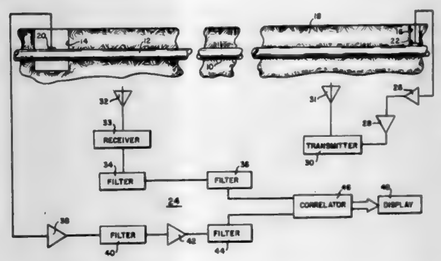
(b) operating said pump to exert a predetermined level of suction over said liquid to desolubilize gas from said liquid;

(c) separating said desolubilized gas leaving said liquid from said liquid by a gas-liquid separator;

(d) measuring the flow rate of said separated gas from said separator; and

(e) determining the amount of gas remaining in said liquid as a function of said flow rate.

4,289,019
METHOD AND MEANS OF PASSIVE DETECTION OF LEAKS IN BURIED PIPES
Thomas N. Claytor, Woodridge, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 30, 1979, Ser. No. 89,346
Int. Cl.³ G01M *3/24*
U.S. Cl. 73—40.5 A **9 Claims**



1. A method of detecting the location of a leak in a buried pipe that contains a fluid, the method comprising the steps of:

detecting acoustic waves of a first particular type produced by the leak and propagated to a first location;

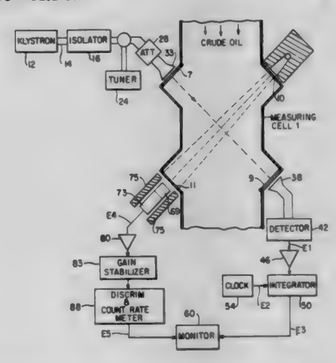
detecting acoustic waves of a second particular type produced by the leak and propagated to a second location;

transmitting the detected acoustic waves from the second location to the first location; and

determining a cross-correlation between the detected acoustic waves from the first location and the detected acoustic waves from the second location;

which cross-correlation is a measure of the location of the leak with respect to the first and second locations.

4,289,020
MICROWAVE-GAMMA RAY WATER IN CRUDE MONITOR
Hans J. Paap, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Dec. 26, 1979, Ser. No. 106,584
Int. Cl.³ G01N *22/00*
U.S. Cl. 73—61.1 R **10 Claims**



1. A system for measuring the percent quantity of water in crude oil flowing in a pipe line comprising cell means arranged with pipe line so that the crude oil flows through the cell means, microwave transmission means spatially arranged with the cell means for transmitting microwave energy through the crude oil flowing through the cell means, source means spacially related to the cell means for emitting gamma rays through the crude oil flowing through the cell means, receiver means spatially arranged with the cell means for receiving the transmitted energy and for providing a signal corresponding to the received microwave energy, detector means for detecting the gamma rays that passed through the crude oil and providing a corresponding signal, and monitor means connected to the receiver means and to the detector means for providing an indication of the quantity of water in the crude oil.

4,289,021
TONGS HAVING TORQUE INDICATOR THEREON
Paul M. Nelson, Houston, Tex., assignor to Wilson Industries, Inc., Houston, Tex.
Filed Aug. 16, 1979, Ser. No. 67,181
Int. Cl.³ G01L *5/24*
U.S. Cl. 73—862.25 **7 Claims**

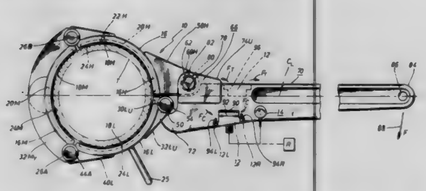
1. A tongs for making and breaking a joint between adjacent threaded members in oil field applications, comprising:

jaws for grippingly engaging one of the threaded members;

a handle by which an actuating force is applied to the jaws to effect the making or breaking of the joint, the handle having a cut-out portion therein, the cut-out portion being disposed in the extremity of the handle proximal the jaws;

a single sensing unit mounted within the cut-out portion in a force-receiving relationship with respect to the handle for generating a signal functionally related to the force applied to the handle to effect the making or breaking of the

joint, the sensing unit being free to move slightly in a lateral direction both perpendicular to and parallel to the longitudinal axis of the handle and in a direction both forward and away from the handle; and



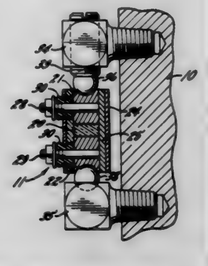
a readout device responsive to the signal generated by the sensing unit for generating a visual indication in predetermined units representative of the magnitude of the actuating force applied to the handle.

4,289,022

LOAD MONITORING SYSTEM WITH MEANS FOR GENERATING TIMING SIGNALS

Frank R. Dybel, and William P. Dybel, both of 981 Wingate Rd., Olympia Fields, Ill. 60461

Filed Jul. 20, 1979, Ser. No. 59,471
Int. Cl.³ G01L *1/16*
U.S. Cl. 73—862.64 **7 Claims**



1. A load monitoring system for monitoring loads that are cyclically applied to a force carrying member comprising:

(a) a transducer mounted on the force carrying member for generating an electrical load signal substantially proportional to the load exerted on the force carrying member; and

(b) timing signal generating means including a plurality of timers connected in cascade fashion, each timer operable to produce a timing signal output, the first of the cascaded timers being initiated by the load signal generated by the transducer to produce timing signals in predetermined timed relationship to the application of the load to the force carrying member.

4,289,023

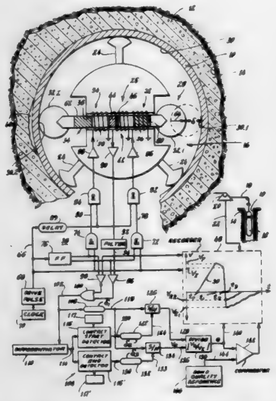
PERCUSSION METHOD AND APPARATUS FOR THE INVESTIGATION OF A CASING CEMENT IN A BOREHOLE

Dennis Rader, Houston, Tex., assignor to Schlumberger Technology Corp., New York, N.Y.

Filed Sep. 19, 1979, Ser. No. 76,834
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **19 Claims**

1. A method for evaluating the cement bond behind a casing cemented in a borehole, comprising the steps of

applying an impulse to an element disposed to impact on a segment of an inner surface of the casing to bounce the element off said surface, said impulse terminating prior to contact of the element with the inner casing surface so that said element is moving freely prior to contact with the casing; and



measuring the motion of the element for a time period including the element's motion prior to and after the bouncing of said element off said inner wall to enable measurement of the rebound of said element by said casing.

4,289,024

WELL CASING FREE-POINT INDICATOR

Edward R. Basham, Fort Worth, and L. Max Mosely, Arlington, both of Tex., assignors to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Dec. 26, 1979, Ser. No. 107,332
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **10 Claims**



1. In a free-point locator apparatus adapted to sense strain imposed by stress applied to well conduit the combination of:

(a) a closed loop armature disposed within the downhole tool of said apparatus and provided with at least one winding, with each said winding respectively would around an arcuate segment of said armature to respectively generate a pulsating magnetic flux field in response to an electrical current impressed through said winding;

(b) a diode respectively provided in series with said winding to limit electrical current passing through said winding to direct current and thereby develop a pulsating magnetic flux field corresponding to said electrical current;

(c) a permanent magnet for generating a constant magnetic flux field between its poles and disposed in a position where a portion of said constant flux field occupies a space common with a portion of said pulsating flux field for mutual influence therebetween; and

(d) said constant flux field and said pulsating flux field being

relatively positioned in a sense such that the resulting electrical current passing through each said winding is a pulsating direct current of a designated amplitude which changes corresponding to change in position between said permanent magnet and said armature;

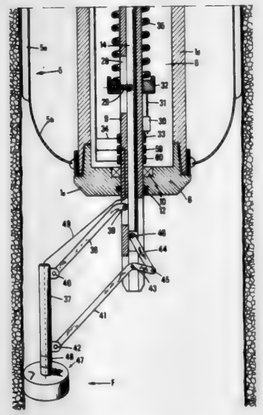
(e) said resulting current being adapted to pass through a conductor from each said winding to the earth's surface.

4,289,025

SONDE WITH ROTATABLE PAD FOR CARRYING OUT LOGGING MEASUREMENTS IN A BOREHOLE

Guy Norel, La Celle Saint Cloud, and Robert Desbrandes, Sevres, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 11, 1980, Ser. No. 120,037
Claims priority, application France, Feb. 9, 1979, 79/03565
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—152 **7 Claims**



1. A sonde for carrying out logging measurements in a borehole, comprising a body having an outer diameter smaller than the diameter of the borehole, means for centering said sonde body in the borehole, at least one measuring device comprising a transducer, handling means for displacing said measuring device from a position of contact with the borehole wall to a position spaced apart from said wall and vice-versa, means for rotating said measuring device about the sonde axis, means for detecting the angular position of said measuring device with respect to a reference direction, and connecting means for transmitting the signals delivered by the sonde, wherein said measuring device comprises a shaft whose axis, maintained in a plane parallel to the sonde axis is inclined to said axis by an angle comprised between 0° and 90°, and at least one wheel carried by said shaft and freely rotatable thereabout, said wheel delimiting a sealed chamber whose characteristics are accurately known, said transducer being carried by said shaft within said wheel.

4,289,026

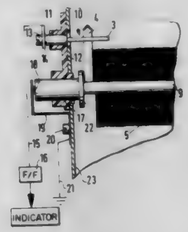
LEVEL INDICATING DEVICE

Jürgen Neumann, Liederbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 28, 1979, Ser. No. 79,932
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843937
Int. Cl.³ G01F *23/00*; G03G *15/08*
U.S. Cl. 73—290 R **11 Claims**

1. An electrostatic copying apparatus which includes a device for indicating that the level of a dosable material has fallen below a predetermined level in a dosing container having a shaft mounted horizontally for rotation inside of the container and a dosing brush having a radius mounted on the shaft, said level indicating device comprising:

an elastic contact tongue radially fixed to the shaft for rotation therewith, said contact tongue having an overall length which is greater than the radius of the brush, said contact tongue being sufficiently elastic so that it assumes a bent configuration under the drag of the dosable material, the bent configuration having a first radius when rotated in contact over a predetermined portion of its length with the dosable material, and so that it assumes an extended configuration having a second radius when



rotated so that it is not in contact over said predetermined portion of its length with the dosable material;

a contact pin mounted at a distance from the shaft greater than said first radius but not greater than said second radius, said second radius being sufficiently large with respect to said distance at which said contact pin is mounted so that said contact pin is contacted by said contact tongue in its extended configuration, said contact pin being mounted stationary on one of the walls of the container above the dosing brush; and

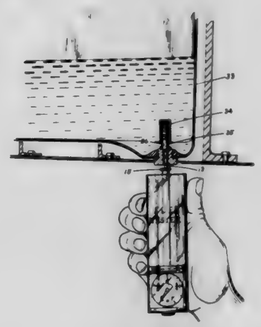
means for producing a signal when said contact tongue contacts said contact pin.

4,289,027

AIRCRAFT FUEL TESTER

Donald Gleaves, 50 Somerset St., Huntington Station, N.Y. 11746, and Walter Green, 6001 Arlington Blvd, Apt. 406, Falls Church, Va. 22046

Filed Dec. 20, 1979, Ser. No. 104,771
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—299 **8 Claims**



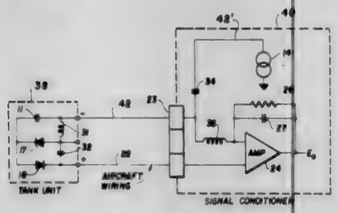
1. A guage to measure fuel level in the fuel tanks of high wing airplanes where the gauge used to measure fuel level has a mechanism which is activated by means of the fuel pressure against it and which in turn activates a pointer on a dial which indicates the level of fuel in the tank wherein the improvement comprises:

(a) a hollow standpipe, with the upper end narrowing down to a perforated pin slightly smaller than the opening in the fuel tank sump valve, when the pin is pushed into the opening of the wing tank sump valve, and
(b) which when pushed into the wing tank sump valve opens the valve sufficiently to allow fuel to flow into the opening in which the pin is inserted and through the perforations in the pin into the hollow standpipe while a collar fits tight against the opening in the valve preventing fluid from leaking out, and
(c) and continues to flow down through the standpipe through the opening in the base where it presses against a pressure means mechanism with the full weight of the level of fuel in the fuel tank, and
(d) which pressure means mechanism moves an indicator means registering the level of fuel in the wing tank, and
(e) which measurement of the fuel level in the high wing fuel tanks is taken by inserting the device into the fuel tank sump valve while standing under the wing of the aircraft.

4,289,028
FUEL QUANTITY GAUGE

Irwin Wallman, Shelburne, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,679
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **5 Claims**

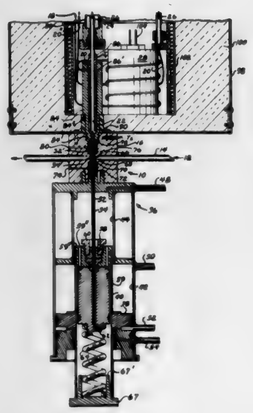


1. A capacitance type fuel quantity gauge for a fuel tank, comprising in combination:
a tank unit, including: a probe capacitor, the capacitance of which varies in accordance with the fuel quantity gauged; a pair of oppositely poled diodes, each having a side connected to one side of the probe capacitor; AC blocking means connected to the opposite side of the probe capacitor and to the other side of one of the diodes; and DC blocking means connected between the other side of the diodes;
a signal conditioner, including: AC voltage source; signal processing means; DC blocking means connected to the AC voltage source and the signal processing means; and AC blocking means connected to the DC blocking means of the signal conditioner and to the signal processing means; and
a conductor connected to the connection of the DC blocking means of the tank unit to one of the pair of diodes and to the signal processing means; and
a multiplexing conductor connected to the connection of the AC blocking means of the tank unit to the opposite side of the probe capacitor and to the AC blocking means and DC blocking means of the signal conditioner,
whereby the AC signal voltage from the AC signal source and the DC signal return voltage from of the diodes are carried by the multiplexing conductor.

4,289,029
HIGH TEMPERATURE INJECTION AND VAPORIZATION SYSTEM FOR GAS CHROMATOGRAPHY

Robert W. Sampson, Arlington Heights, and Francis H. Franke, Elk Grove Village, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 2, 1979, Ser. No. 90,818
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.11 **11 Claims**

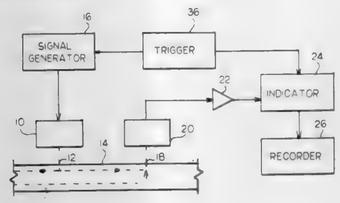


1. A gas chromatograph injection system for injecting a measured sample of fluid from a relatively low temperature sample stream into a relatively high temperature vaporization zone through which a carrier gas is flowing comprising a sample block having inlet and outlet ports for the sample stream and a sample flow channel portion therebetween, a tubular closed end syringe member having an aperture in the side thereof immediately adjacent its closed end and a plunger selectively movable toward and away from said closed end to draw fluid samples of a predetermined volume into said syringe through said aperture, packing and guiding means in said sample block to guide the movement of said tubular syringe member on opposite sides of said sample flow channel and prevent leakage, means for partially withdrawing said plunger while said syringe aperture is in the flow channel to collect a measured volume of sample, means to move said syringe and withdrawn plunger together into said vaporization zone, means to force said plunger toward said closed end to expel all of said measured sample into said vaporization zone, means to return said syringe and plunger to its original position, means to heat said vaporization zone to a temperature of at least 450° F., means to fixedly mount said vaporization zone closely adjacent to and in closed communication with said sample block and in axial alignment with the path of movement of said syringe member while insulating it so that when the temperature of all surface areas in the vaporization zone which contact the sample vapor is greater than 450° F. the temperature in the sample block will not exceed about 400° F., said vaporization zone being contained within an enlarged cross-sectioned portion of a heat conductive member, said member being joined to said sample block by a portion of reduced cross-section, and thermal insulation means surrounding said member along a portion thereof which is intermediate said portion of enlarged cross-section and said sample block.

4,289,030
NONDESTRUCTIVE TESTING UTILIZING HORIZONTALLY POLARIZED SHEAR WAVES

George A. Alers, Albuquerque, N. Mex.; Robert B. Thompson, and Carmine F. Vasile, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 1, 1979, Ser. No. 63,027
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—588 **7 Claims**

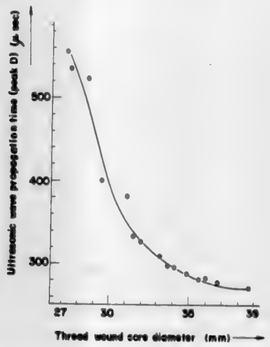


1. A nondestructive test method for detecting an imperfection in an object near a symmetric discontinuity, comprising the steps of:
generating a horizontally polarized shear wave in the object and directed toward the symmetric discontinuity; and
monitoring the object to detect a horizontally polarized shear wave reflected from the imperfection,
the method thereby being adapted to detect imperfections in the object which reflect a horizontally polarized shear wave, while exhibiting relative insensitivity to the presence in the object of discontinuities which do not reflect a horizontally polarized shear wave.

4,289,031
METHOD OF MEASURING HARDNESS OF FLEXIBLE THREAD-WOUND GOLF BALLS OR INNER CORES THEREOF

Ichiro Tominaga, and Teruo Sasaki, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Oct. 31, 1979, Ser. No. 89,733
Claims priority, application Japan, Nov. 4, 1978, 53-136103
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—597 **6 Claims**

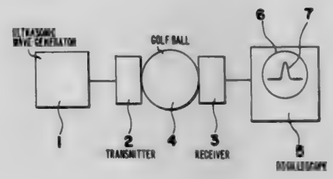


1. A method of measuring hardness of a flexible thread-wound golf ball which comprises the steps of holding the flexible thread wound golf ball to be measured between a transmitter coupled to means for oscillating ultrasonic wave and a receiver coupled to means for detecting the ultrasonic wave received by said receiver, applying from said transmitter, the ultrasonic wave having predetermined frequency to said flexible thread-wound golf ball, and measuring the hardness of said flexible thread-wound golf ball selectively by or based on the propagation time of the ultrasonic wave passing through the central portion of said flexible thread-wound golf ball.

4,289,032
METHOD OF DISCRIMINATING KINDS OF GOLF BALLS

Ichiro Tominaga, and Teruo Sasaki, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Inc., Kobe, Japan

Filed Oct. 31, 1979, Ser. No. 89,736
Claims priority, application Japan, Nov. 8, 1978, 53-137638
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—599 **5 Claims**

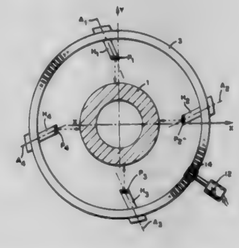


1. A method of discriminating solid golf balls from thread-wound golf balls which comprises the steps of holding the golf ball to be discriminated between a transmitter coupled to means for oscillating ultrasonic wave and a receiver coupled to means for detecting the ultrasonic wave received by said receiver, applying from said transmitter, the ultrasonic wave having a frequency which can propagate through said solid golf ball, but can not propagate through said thread-wound golf ball, to said golf ball to be discriminated, and detecting presence of the ultrasonic wave reaching said receiver through said golf ball to be discriminated by said ultrasonic wave detecting means.

4,289,033
ULTRASONIC TEST APPARATUS FOR TUBES AND RODS

Reinhard Prause, St. Augustin, and Udo Schlengermann, Erftstadt, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Inc., Stratford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,027
Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2820142
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—622 **5 Claims**



1. An ultrasonic test apparatus for testing tubes and rods in which ultrasonic energy after traversing a coupling medium obliquely enters the surface of the respective workpiece and is propagated therein comprising:
transducer means disposed for transmitting ultrasonic energy toward the workpiece to be tested;
mounting means for supporting said transducer means and causing said transducer means to be adjustably movable along an axis which is inclined by an angle ω relative to a

perpendicular axis intersecting the surface of the workpiece;

said angle ω when testng tubes substantially corresponding to the angle of incidence α of the ultrasonic energy upon the workpiece and which for a maximum predetermined wall thickness to diameter ratio of the tubes provides an angle of refraction β of the ultrasonic energy, and when testing rods the angle α is selected to provide an angle of refraction β of greater than 35°, and

said transducer means being spaced from the workpiece surface for causing the transit time of the ultrasonic energy in the coupling medium to be longer than the maximum transit time of the ultrasonic energy in the workpiece.

4,289,034

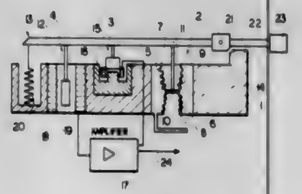
DEVICE FOR CONVERTING PNEUMATIC OR HYDRAULIC PRESSURE INTO AN ELECTRIC CURRENT AND VICE VERSA

Lorenz Twisselmann, Isernhagen, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,131

Int. Cl.³ G01L *9/10*

U.S. Cl. 73—701 **12 Claims**



1. In a device for converting one signal into another signal according to a compensation principle, with a pressure transducer with a pressure-dependent moveable element, an electromagnetic force transducer, a moveable part of the force transducer standing in connection with the element, and a position indicator transmitter which converts the movement of the pressure transducer into a control signal for one of the transducers, the improvement wherein

the pressure transducer comprises two bellows with slightly different operative surfaces respectively, each of said surfaces being fixed on one end thereof, and the other ends of said operative surfaces being connected with one another and with the moveable element, and

said surfaces being subjected to the same pressure,

a lever rotatably mounted at a fulcrum,

said moveable element and the moveable part of the force transducer engage said lever at different positions of said lever and said position indicator transmitter has a moveable part, the latter engages said lever at another position of said lever remote from said fulcrum,

said lever has two arms, a single of said arms respectively being on each side of said fulcrum,

the moveable element, the moveable part of the force transducer, and said moveable part of said position indicator transmitter engage on one of said arms of said lever, and

a counterweight is disposed on the other of said arms of said lever.

4,289,035

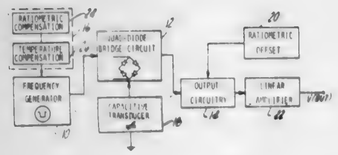
COMPENSATED CAPACITIVE TRANSDUCER DEMODULATOR CIRCUIT

Chen Y. Lee, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 878,056, Feb. 15, 1978, abandoned. This application Nov. 30, 1978, Ser. No. 965,453

Int. Cl.³ G01L *19/04*

U.S. Cl. 73—708 **21 Claims**



1. A capacitive transducer and demodulator combination circuit comprising:

a capacitive transducer for measuring the variances of a physical parameter, said transducer adapted to transform the variances into changes of capacitance of the transducer;

a frequency generator means for supplying an alternating carrier voltage;

a quad-diode demodulator electrically connected to receive from said frequency generator means the alternating carrier voltage and further connected to said transducer such that the changes in capacitance modulate said carrier, said demodulator detecting said carrier and generating an output voltage signal representative of the variances in the measured physical parameter; and

compensation network means, electrically connected to said frequency generator, for varying the amplitude of the carrier voltage oppositely to the amplitude changes in the output signal produced by the compensable errors of the demodulator and transducer.

4,289,036

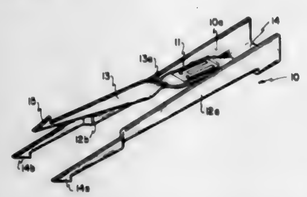
GAUGE FOR MEASURING THE MOUTH OPENING DISPLACEMENT OF FRACTURE TOUGHNESS TEST SPECIMENS

Lynn M. Barker, Salt Lake City, Utah, assignor to Terra Tek, Inc., Salt Lake City, Utah

Filed Mar. 24, 1980, Ser. No. 133,524

Int. Cl.³ G01L *1/22*

U.S. Cl. 73—799 **4 Claims**



1. A gauge for measuring the mouth opening displacement of fracture toughness test specimens consisting of,

a clip gauge formed from a single sheet of suitable material that is cut and bent appropriately to form a base wherefrom center and outside prongs extend in essentially parallel planes;

means secured to the prong ends opposite to said base for directly engaging opposite slot faces across a test specimen mouth;

strain gauge means secured to said center prong so as to sense flexure thereof as a change in electrical resistance; and

means, connected to said strain gauge means, for translating changes in electrical resistance to specimen mouth opening displacement.

4,289,037

METHOD OF STRESS GRADING TIMBER, AND MACHINE FOR STRESS GRADING TIMBER

George W. Vinopal, Pretoria, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

Filed Jan. 29, 1980, Ser. No. 116,433

Claims priority, application South Africa, Feb. 7, 1979, 79/0530

Int. Cl.³ G01N *3/32*

U.S. Cl. 73—808 **14 Claims**



1. A method of stress grading timber which comprises:

continuously moving a length of timber;

stressing the moving length by applying a transverse load thereto, the length being supported by two supports between which the load is applied and the load causing a deflection of the timber length;

measuring the load and/or deflection;

stressing the moving length differently by thereafter applying a different load to the timber length at the same position while supported in the same fashion to obtain a different deflection; and

measuring the different load and/or the different deflection;

the timber length being freely supported as a simple beam during each stressing thereof so that it is substantially unconstrained during the stressing except by the load and the two supports between which the load is applied, the original load and the original deflection being related to the different load and different deflection according to predetermined criteria, thereby to grade the timber length.

4,289,038

FAIL-SAFE ATTACHMENT FOR AN ACTUATOR

Donald L. Hore, Bristol, England, assignor to Rotork Limited, Bath, England

Filed Mar. 19, 1979, Ser. No. 22,056

Claims priority, application United Kingdom, Apr. 7, 1978, 13758/78

Int. Cl.³ G05G *17/00*; F03G *1/00*

U.S. Cl. 74—2 **9 Claims**

1. A part-turn actuator having a rotatable output member and a cam plate mounted on said output member for rotation therewith to actuate at least one switch for the control of the actuator, said actuator having a fail-safe mechanism comprising:

a rotatable spring operated cam plate coupling;

means for manually setting said spring and for rotating said cam plate coupling in one direction of rotation to an inoperative position;

latch means for holding said cam plate coupling in said inoperative position;

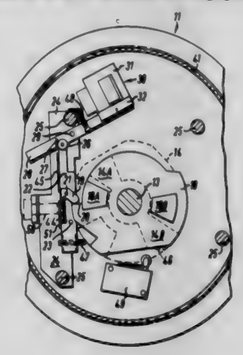
said fail-safe mechanism being independent of the normal operation of the actuator when said cam plate coupling is held in its inoperative position;

said latch means comprising:

a first movable lever positioned by electrical means;

a second movable lever having one end engageable with said first movable lever, a pawl pivotally mounted to said lever;

said electrical means, when energized, holding said first movable lever in an inoperative position urging said second movable lever in a direction for engaging said pawl to



said cam plate coupling, latching it in an inoperative position, said pawl being pivotally movable to allow rotation of said cam plate coupling in said one direction of movement to latch said cam plate coupling by said pawl in its inoperative position, said mechanism being rendered operative by an interruption of electrical current to said electrical means, the deenergization of said electrical means releasing said first movable lever to allow movement of said first movable lever from its inoperative position to a position for releasing said second lever disengaging said pawl, whereby said cam plate coupling is released so as to rotate in its other direction to engage drivably the switch cam plate moving the output member of the actuator to a predetermined fail-safe position by the stored energy of the spring force.

4,289,039

RELEASE MECHANISM FOR A VALVE OF A FIRE EXTINGUISHING INSTALLATION

Josef Trunner, Mönchaltorf, and Marinus Both, Männedorf, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,053

Claims priority, application Switzerland, Apr. 10, 1978, 3814/78

Int. Cl.³ F16K *31/56*

U.S. Cl. 74—2 **8 Claims**

1. A release mechanism for a valve of a fire extinguishing installation having a linearly movable element which, upon release of a pre-biased spring, moves out of a rest position and actuates the valve, comprising:

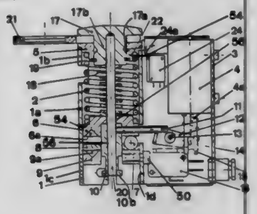
two cooperating mutually spaced ball pressure plates;

a spring defining said pre-biased spring cooperating with said ball pressure plates;

a plurality of balls arranged between said ball pressure plates for maintaining said ball pressure plates in spaced relationship from one another and for biasing said spring;

each of said ball pressure plates have recesses for receiving said balls;

said ball pressure plates being rotatable relative to one another so that said balls latch into said recesses of the ball pressure plates and enable the spring to at least partially relax;
said spring comprising a helical spring which in its biased state is loaded both in axial compression and in torsion;
one of said ball pressure plates defining a movable ball pressure plate;



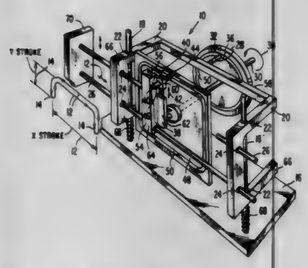
a loading pin connected with said movable ball pressure plate;
an electromagnetically actuatable release catch means cooperating with said loading pin; and
said loading pin, upon rotation of said movable ball pressure plate, latching at said electromagnetically actuatable release catch means in order to load said helical spring.

4,289,040

LINEAR MOTION DEVICE

Michael Haluko, Jr., Lawrenceville, N.J., assignor to Kinematics, Inc., Princeton, N.J.

Filed Aug. 27, 1979, Ser. No. 70,088
Int. Cl.³ F16H *25/12, 37/12*
U.S. Cl. 74—50 **15 Claims**



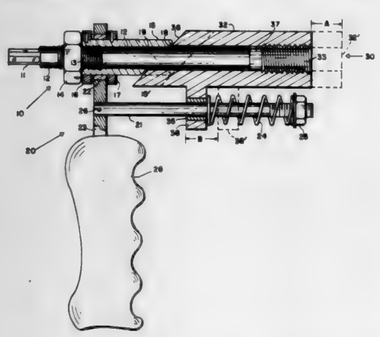
1. A linear motion device, for providing a lateral movement stroke and a selective vertical lifting and dropping, which comprises:
(a) a base member;
(b) a vertical shaft means fixedly secured with respect to said base member and extending vertically upward therefrom;
(c) a yoke member movably secured to said vertical shaft means to allow vertical movement of said yoke member therealong, said yoke member including a yoke pin extending outwardly therefrom;
(d) a drive shaft being rotatably driven;
(e) a lift cam means fixedly secured with respect to said drive shaft to be rotatably movable therewith, said lift cam defining a lift channel therein positioned to receive said yoke pin of said yoke member therein to operably control the vertical movement of said yoke member along said vertical shaft means responsive to the profile of said lift channel defined within said lift cam means;
(f) a crank means secured to said drive shaft to be rotatable therewith, said crank means including a crank pin being radially reciprocally movable with respect to said crank shaft, said crank pin also being rotatably movable responsive to rotation of said crank means and said crank shaft, said crank pin including a first projection and a second projection;
(g) a plate cam fixedly secured with respect to said base member, said plate cam defining a plate cam channel therein adapted to receive said first projection of said crank pin therein to operably control the radial reciprocation of said crank pin with respect to said crank shaft, during rotation thereof, responsive to the profile of said plate cam channel;
(h) a horizontal shaft means movably secured with respect to said yoke member to allow relative horizontal movement with respect thereto, said horizontal shaft means being vertically movable responsive to vertical movement of said yoke member; and
(i) a vertical guide means fixedly secured to said horizontal shaft means to be horizontally and vertically movable therewith, said vertical guide means defining a vertical guide channel therein adapted to receive said second projection of said crank pin therein, said vertical guide channel extending in a vertical direction to cause horizontal movement of said horizontal shaft means responsive to the horizontal component of movement of said second projection of said crank pin and to prevent vertical movement of said horizontal shaft means responsive to the vertical component of movement of said second projection of said crank pin, vertical movement of said horizontal shaft means being controlled by vertical movement of said yoke member.

4,289,041

RECIPROCATOR FOR USE WITH ROTARY DRILLS

Joseph M. Valdespino, 5023 Golf Club Pkwy., Orlando, Fla. 38208

Filed May 4, 1979, Ser. No. 36,096
Int. Cl.³ F16H *25/12, 25/16*
U.S. Cl. 74—56 **2 Claims**



1. A device for driving a tool with a reciprocating motion and adapted to be operated from a rotary power source comprising:
a stationary frame having a shaft bearing therein;
a hand grip attached to said frame for holding of said device by a user;
a cylindrical sleeve-like eccentric member having an angular forward surface, said forward surface cut at a selected acute angle with respect to the longitudinal axis of said eccentric member with the periphery, formed by the junction of said cylindrical eccentric member and the face formed by said forward surface cut, being rounded to form a broad contact area, said eccentric member disposed on and concentric with said shaft and rigidly attached thereto, said shaft and said eccentric disposed in said shaft bearing and rotatable with respect thereto, said front end of said shaft projecting from said angular forward surface;

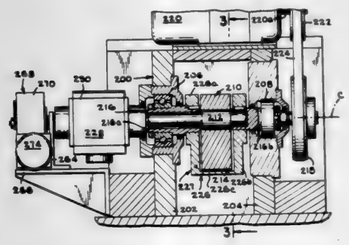
a cylindrical sleeve-like tool driving member having an angular rear surface thereof cut at said selected acute angle, and a forward end having internal threads therein for accepting a tool holding chuck, said driving member slidably disposed on and concentric with said front end of said shaft, said driving member having a diameter greater than the diameter of said eccentric member;
a downward projecting slide block attached to said cylindrical driving member, said slide block having a rod bearing therethrough;
a guide rod attached to said frame and slidably engaged with said rod bearing of said slide block; and
an external, adjustable compression spring, connected to said guide rod and said slide block, and adapted to urge said angular rear surface of said driving member into contact with said broad contact area of said eccentric member, said spring adjustable to vary the length of the reciprocating stroke of said tool;
whereby rotation of said shaft causes said broad contact area of said eccentric member to rotate against said angular rear surface of said driving member so as to slide said driving member alternately forward on said shaft against the compression of said spring and rearward on said shaft in response to the tension in said spring, thereby resulting in a longitudinally reciprocating motion of said driving member.

4,289,042

VIBRATOR WITH ECCENTRIC WEIGHTS

William R. Brown, Blairsville, Pa., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 899,042, Apr. 24, 1978, Pat. No. 4,211,121, which is a division of Ser. No. 719,634, Sep. 1, 1976, abandoned. This application Mar. 19, 1979, Ser. No. 21,388
Int. Cl.³ F16H *33/00, 1/30*
U.S. Cl. 74—61 **7 Claims**



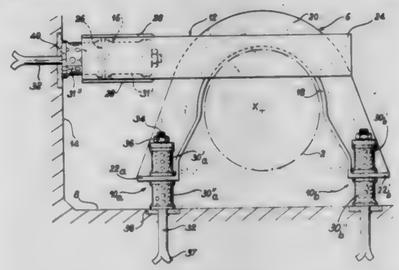
1. A vibrator comprising a gearbox, a first rotatable shaft member terminating at said gearbox, a first eccentric weight connected to said first shaft member, a rotatable hollow shaft member mounted on the first shaft member and terminating at the gearbox, a second eccentric weight connected to said hollow shaft member, means to drive one of said rotatable members, a first control shaft and a second control shaft coaxially mounted in said gearbox on an axis common to the rotatable shaft members, a first bevel gear train in said gearbox connecting said first control shaft to said first rotatable shaft member and a second bevel gear train in said gearbox connecting said second control shaft to said rotatable hollow shaft member.

4,289,043

PROTECTIVE DEVICE FOR AN INERTIA WHEEL ROTATING

Andre Chabre, 74 Rue Dombasle, 75075 Paris; Gerard de Saint-Ours, Cote de Chantepie, Chais Saint Mars 91780, and Bernard Vrillon, 15 rue des Ecoles, 91320 Wissous, all of France

Filed Jan. 24, 1979, Ser. No. 6,122
Claims priority, application France, Jan. 30, 1978, 78 02497
Int. Cl.³ F16P *1/00*
U.S. Cl. 74—609 **3 Claims**



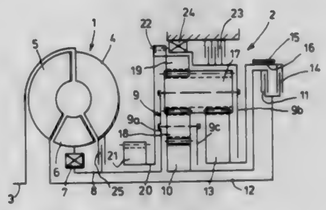
1. A protective device for an inertia wheel rotatable about an axis and being mounted inside an enclosure comprising, at least two anchoring frames, wherein: said device is provided with a cowling of generally semi-cylindrical form having an axis parallel to said wheel and which surrounds the latter, said cowling being further defined respectively by first and second longitudinal edges and a top, said device also comprising a horizontal arm having first and second ends, said first end being rigidly fixed near the top of said cowling and at least three shock absorber assemblies, a first of the said assemblies being fixed between the second end of the said arm and one of said frames and operating in a horizontal direction, a second and third of said assemblies of said shock absorbers being fixed between said first and second edges of the said cowling and another of said frames and being operable in directions perpendicular to the said arm, and each of said respective shock absorber assemblies being operable in both directions.

4,289,044

MOTOR VEHICLE TRANSMISSION

Heinz Dorpmund, Wolfsburg, and Gerd Oberpichler, Brunswick, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,904
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830543
Int. Cl.³ F16H *47/08, 57/10*
U.S. Cl. 74—688 **5 Claims**



1. A motor vehicle transmission comprising:
(1) a hydrodynamic torque converter including a driving impeller connected to an input shaft, a stator and and output turbine;
(2) and a planetary gear train and control system in a stationary gear housing, including:

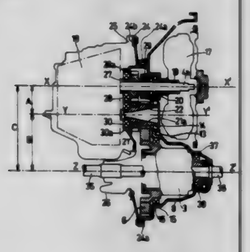
(a) a first sun gear;
(b) a second sun gear arranged on the side of said first sun gear away from said torque converter;
(c) an inertial ring gear having a power output;
(d) a planetary gear carrier;
(e) a first planetary gear mounted on said planetary gear carrier and meshing with said first sun gear;
(f) a second planetary gear mounted on said planetary gear carrier and meshing with said first planetary gear, said second sun gear and said inertial gear;
(g) first controllable clutch means for interconnecting said first sun gear and said impeller by said output turbine;
(h) second controllable clutch means for interconnecting said second sun gear and said impeller by said output turbine;
(i) third controllable clutch means for interconnecting said planetary gear carrier and said impeller;
(j) a first freewheel arranged radially outward from said planetary gear train, connecting said planetary gear carrier and said housing;
(k) a second freewheel connecting said stator and said planetary gear carrier;
(l) a first controllable brake arranged radially outward from said gear train and selectively connecting said housing and said planetary gear carrier;
(m) and a second controllable brake arranged on the side of said gear train away from said torque converter and selectively connecting said housing and said second sun gear.

4,289,045

HOUSINGS OF GEARBOXES FOR POWER UNITS

Roger Brissabois, Clamart, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 30, 1978, Ser. No. 873,575
Claims priority, application France, Jan. 31, 1977, 77 02560; Sep. 14, 1977, 77 27809
Int. Cl.³ F16H *37/08, 57/02*
U.S. Cl. 74—701 **30 Claims**



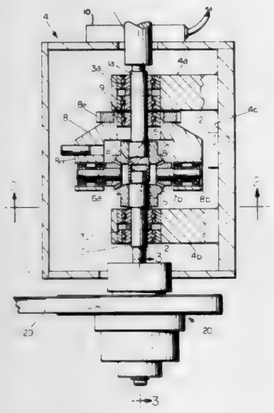
1. A housing for a transmission which includes a gearbox, coupling means and a differential with a crown gear and shaft, said housing including a plurality of bearing support means,
a first said bearing support means located and configured to receive interchangeably the following components:
I. a bearing member for an input shaft of an automatic gearbox, a reaction support means of a hydrokinetic torque converter (FIG. 2) and a sealing member therefor, and
II. a bearing member for a primary shaft of a manual-shift gearbox together with a sealing member therefor and a support means for a clutch release bearing assembly;
a second said bearing support means being located and configured to support interchangeably the following components:
III. one end of an intermediate pinion means coupling said automatic gearbox with said crown gear of the differential, and
IV. an end pinion of a secondary shaft of said manual-shift gearbox coupling said gearbox with said crown gear of the differential;
third and fourth said bearing support means, each being located and configured to receive bearings for supporting the crown gear for rotation, whereby said housing may be used for a manual shift gearbox together with a mechanical clutch as well as for an automatic gearbox with a hydrokinetic torque converter.

4,289,046

APPARATUS FOR SYNCHRONIZING SPEED AND ANGULAR POSITION OF POWER DRIVEN MACHINES

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 20, 1979, Ser. No. 68,233
Int. Cl.³ F16H *1/44, 35/06*
U.S. Cl. 74—711 **3 Claims**



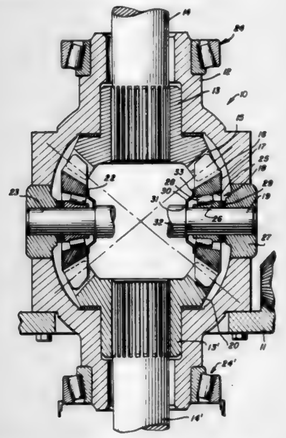
1. A mechanism for synchronizing two motor driven apparati both in rotational speed and in angular position relative to each other, comprising, in combination:
(1) a pair of shafts respectively driven in opposite directions by drive trains respectively connected to said apparti, and rotating at equal rotational speeds when rotational speed synchronism of said apparati exists, said shafts being disposed in axially spaced, concentric relationship;
(2) rotationally adjustable means for the controlling the speed of one apparatus;
(3) planetary gearing means disposed between said shafts and interconnecting same and having a rotatable output member movable upon the occurence of any rotational speed difference between the said shafts;
(4) means connecting said rotatable output member to said rotationally adjustable means for adjusting the speed of said one apparatus in a direction to bring the rotational velocity of said one apparatus into rotational synchronism with the other said apparatus;
(5) means for limiting the rotational movement of said rotatable output member to less than 360°, whereby torque is transmitted from one said shaft to the other whenever said rotatable output member reaches the extreme of its rotation in either direction; and
(6) a torque responsive clutch incorporated in one of said drive trains, said clutch being disengagable by any significant torque produced on said one drive train by said planetary gearing means, said clutch being re-engagable only in a selected angular relationship between the said one shaft and its respective motor driven apparatus.

4,289,047

DIFFERENTIAL GEAR POSITIONING MEANS

Michael F. Hopkins, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01010, § 371, Date Nov. 13, 1979, § 102(e), Date Nov. 13, 1979, PCT Pub. No. WO81/01450, PCT Pub. Date May 28, 1981.
This PCT application filed Nov. 13, 1979, Ser. No. 116,744
Int. Cl.³ F16H *1/40, 1/38*
U.S. Cl. 74—713 **9 Claims**



1. A differential gear assembly (10) comprising:
a driver bevel gear (13);
a driven bevel gear (17) meshing with said driver bevel gear and defining therewith an acute tooth contact pressure angle relative to the axis of rotation of the driven bevel gear;
a shaft (19) coaxial of said axis;
a plurality of tapered roller bearings (28) rotatively supporting said driven bevel gear coaxially on said shaft, said roller bearings being disposed at an angle to said shaft axis coordinated with the pressure and pitch angles of said meshing bevel gears such that the axial thrust of said roller bearings on said shaft is less than the thrust parallel to said shaft axis developed by the meshing level gears; and
spring biasing means acting between said driven bevel gear and said shaft for maintaining said driven gear in contact with said tapered roller bearings in the absence of driving force from said driver gear acting on said driven gear.

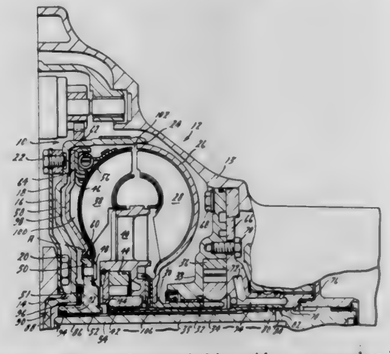
4,289,048

LOCK-UP SYSTEM FOR TORQUE CONVERTER

Steve A. Mikel, and Alfred P. Blomquist, both of Farmington Hills, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 11, 1978, Ser. No. 940,934
Int. Cl.³ F16H *3/44;* F16D *33/00, 35/00*
U.S. Cl. 74—733 **9 Claims**

1. A lock-up system for a hydrokinetic torque converter assembly of a multiple gear ratio automatic transmission for a vehicle, said torque converter assembly being of the type including an annular front cover member rotatively drivingly engageable with a prime mover, impeller means carried for rotation with the cover member, and turbine means fluidly connected in driving relationship with the impeller means and drivingly engaged with the input shaft of the multiple gear ratio transmission, said lock-up system comprising:
A. means defining a hub portion of said turbine means including diametral surface extending axially therefrom toward said front cover member;
B. a piston member having a bore slidingly received on said diametral surface for axial movement therealong and defining a first fluid chamber adjacent said cover member and a second fluid chamber adjacent said turbine means;
C. means defining a radially extending forwardly facing flat annular surface proximate the outer periphery of said piston member;
D. sliding seal means carried by said piston member for engagement with said diametral surface and including:
1. means defining an annular groove in said piston bore for receiving said seal member, said groove having an outer diametral surface tapered outward from said hub portion diametral surface in the direction of said front cover member;
2. an elastomeric sealing member of circular cross section carried in said groove; and
3. an antifriction back-up disc carried in said groove adjacent said sealing member;
E. torque isolation means for drivingly interconnecting said piston member and said turbine means;



F. a friction disc member carried by said cover member in juxtaposition with said piston member flat annular surface whereby movement of said piston member from a free position wherein said friction disc is spaced from said annular surface to a locking position wherein said friction disc lockingly engages said annular surface effects mechanical interlocking of said cover member and said input shaft; and
G. fluid control means for circulating fluid to and from said chambers and for switching the pressure differential between said first and second chambers between;
1. an unlocked condition wherein the fluid pressure in said first chamber exceeds the fluid pressure in said second chamber thereby positioning said piston member in said free position; and
2. a locked condition wherein the fluid pressure in said second chamber exceeds the fluid pressure in said first chamber thereby urging said piston member to said locking position.

4,289,049

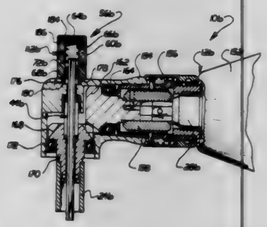
BOLT HOLDING MACHINE WRENCH

Edward J. Rebish, Euclid, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Oct. 1, 1979, Ser. No. 80,196
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—56 **17 Claims**

1. A power tool for use in tightening a connection between internally and externally threaded fastener elements, said power tool comprising a casing, a motor disposed within said casing, said motor including a rotatable drive member, a rotatable socket drive element connected with said rotatable drive member in said motor and adapted to be connected with a socket which engages the internally threaded fastener element, said socket drive element having a central passage extending therethrough, a retainer rod extending through the central

passage in said socket drive element, said retainer rod having a first end portion which projects axially outwardly from said socket drive element and is connectable with the externally threaded fastener element to hold the externally threaded fastener element against rotation during rotation of the internally threaded fastener element by the socket and a second end portion which extends through an opening in said casing, and means for holding said retainer rod against rotation with said socket drive member and for applying an axially directed force to said retainer rod to urge said retainer rod toward said externally threaded fastener element, said means for holding said retainer rod against rotation and for applying an axially directed force to said retainer rod including a tubular wall having first and second open end portions, first connector means for releasably connecting the first end portion of said tubular wall to said casing with the opening in said casing aligned with the opening in the first end portion of said tubular wall, a cover member, second connector means for releasably connecting said cover member with said tubular wall with said cover member extending across the opening in the second end portion of said tubular wall, said cover member and said tubular wall cooperating to at least partially define a piston chamber which has an open end portion disposed in alignment with the opening in said casing, a piston disposed in said chamber, said



piston having an outer side surface which is disposed in sliding engagement with an inner side surface of said tubular wall, said piston being movable in said chamber between an initial position in which said piston is disposed adjacent to said first end portion of said tubular wall and a retracted position in which said piston is spaced from said first end portion of said tubular wall, means for connecting said retainer rod with said piston, and spring means for urging said piston toward the initial position, said piston being movable against the urging of said spring means from the initial position toward the retracted position under the influence of force transmitted to said retainer rod from the externally threaded fastener element during tightening of the connection between the internally and externally threaded fastener elements, said first connector means being releasable to enable said tubular wall, piston, retainer member and spring means to be removed from said power tool, said second connector means being releasable to enable said cover member to be disconnected from said tubular wall and connected with said casing to block the opening in said casing upon removal of said tubular wall, piston, retainer member and spring means from said power tool, said second connector means including means for connecting said cover member with said casing to hold said cover member across the opening in said casing after removal of said tubular wall, piston, retainer member and spring means.

4,289,050

EXPANSION TOOL

Vincent J. Scafaro, 4715 W. Laurel La., Glendale, Ariz. 85304

Filed Jun. 29, 1979, Ser. No. 53,256

Int. Cl.³ B25B *7/02*

U.S. Cl. 81—311 **7 Claims**

1. An expansion tool for spreading the side walls of a longitudinal track member, said track member having a base and first and second side walls extending therefrom comprising:

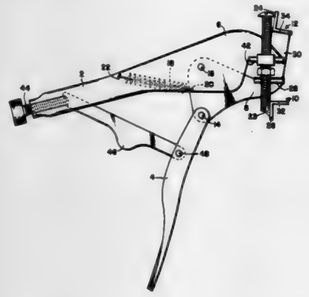
a first member having a first handle portion and a first jaw portion;

a second member having a second handle portion and a second jaw portion;

means coupling said first and second members at points intermediate thereof for moving said second jaw portion towards said first jaw portion when said first and second handle portions are compressed;

first and second spreading members coupled to said first and second jaw portions respectively, said second jaw portion forcing said second spreading member away from said first spreading member when said first and second handle portions are compressed;

said first spreading member comprising a base member coupled to said first jaw portion for engaging transversely the base of said track;



said first spreading member further comprising a first contact member coupled to said base member and extending substantially perpendicularly therefrom for engaging one of said first and second side walls;

said first spreading member further comprising a first overhang member coupled to an edge of said first contact member opposite said base member, said first overhang member extending substantially perpendicularly from said first contact member and in a direction away from said base member;

said second spreading member comprising a second contact member for engaging the other of said first and second side walls; and

adjusting means for coupling said second contact member to said second jaw portion and capable of altering the position of said second contact member with respect to said second jaw portion.

4,289,051

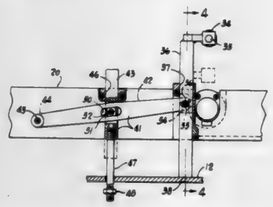
OBJECT CENTERING AND MOVING MECHANISM

Valdas S. Ramunas, Euclid, Ohio, assignor to Acme-Cleveland Corporation, Highland Heights, Ohio

Filed May 23, 1979, Ser. No. 41,696

Int. Cl.³ B23B *13/02, 25/06*

U.S. Cl. 82—45 **21 Claims**



1. An object centering and moving mechanism for round or

hexagonal objects having a center line and a finite range of sizes comprising, in combination,

a fixed frame,

a movable frame movable in a first path on said fixed frame,

first caliper means on said movable frame to engage one side of any said object,

second caliper means complementarily cooperable with said first caliper means to engage the opposite side of the object and capable of being spaced from said first caliper means a distance sufficient to accept said finite range of sizes of objects,

support means including said first and second caliper means to support any said object on said movable frame,

means including said support means to locate the center line of any said object in said first path,

a linkage acting between said first and second caliper means,

stop means acting between said fixed frame and said linkage,

and said linkage including a 2:1 mechanical advantage of twice the relative motion between said first and second caliper means compared with the relative motion between said stop means and said fixed frame, whereby said movable frame may be moved in said first path to move any said object and to move said linkage to a point whereat said first and second caliper means engage any said object prior to or at the same time as the stop means engaging said fixed frame to establish the center line of any said object at a fixed reference point along said first path regardless of the diameter of said object.

4,289,052

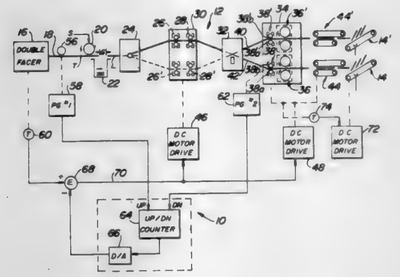
WEB GAP CONTROL FOR CORRUGATOR

A. Brent Woolston, Palmyra, and Donald J. Evans, Cherry Hill, both of N.J., assignors to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Oct. 5, 1979, Ser. No. 82,268

Int. Cl.³ B26D *7/06, 7/32;* **B65H** *29/66*

U.S. Cl. 83—26 **15 Claims**



1. A method of imbricating box blanks delivered successively onto a stacker conveyor in a corrugator, wherein a moving web is severed into leading and trailing portions and the box blanks are cut from the leading and trailing web portions, so that the box blanks cut from the trailing portion of the severed web do not disturb those cut from the leading portion of the severed web on the stacker conveyor, comprising:

driving the stacker conveyor continuously,

monitoring the size of the gap between the leading and trailing severed web portions as the portions move through the corrugator, and

controlling the speed of the leading portion of the severed web to prevent the gap from exceeding an upper limit beyond which the first blank cut from the trailing portion of the severed web disturbs the last blank cut from the leading portion of the severed web on the stacker conveyor.

7. A method of imbricating box blanks delivered successively onto a stacker conveyor in a corrugator, wherein a moving web is severed into leading and trailing portions and the box blanks are cut from the leading and trailing web portions, so that the box blanks cut from the trailing portion of the severed web do not disturb those cut from the leading portion of the severed web on the stacker conveyor, comprising:

automatically monitoring the size of the gap between the leading and trailing severed web portions as the portions move through the corrugator,

stopping the stacker conveyor when said gap reaches an upper limit beyond which a first blank cut from the trailing web portion disturbs a second blank cut from the leading web portion at the stacker conveyor, and

re-starting the stacker conveyor when the gap size falls below said upper limit without closing said gap.

4,289,053

DEVIATION DETECTING APPARATUS FOR A BANDSAW BLADE FOR HORIZONTAL BANDSAW MACHINES

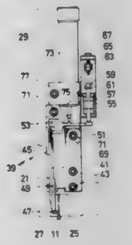
Mitsuyoshi Sawamura, Kobe, Japan, assignor to Amada Company, Limited, Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,501

Claims priority, application Japan, Sep. 16, 1978, 53-112896

Int. Cl.³ B23D *53/00, 59/00*

U.S. Cl. 83—62.1 **4 Claims**



1. A deviation detecting apparatus for a bandsaw blade in a bandsaw machine comprising: arm means pivotally mounted at a location adjacent to the linear path of travel of the blade through the cutting zone; biasing means consisting of a spring-loaded axially movable rod yieldably urging said arm means into slidable contact with one side of said blade, said arm means thus being pivotally movable in response to lateral deviations of said blade from said path; and control means responsive to pivotal movement of said arm means for generating a control signal indicative of said blade deviation.

4,289,054

CIRCULAR SAW WITH MEANS FOR OPENING UP THE CUT SLIT

Paul Pieper, and Walter Cordier, both of Menden, Fed. Rep. of Germany, assignors to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,282

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1978, 2838656

Int. Cl.³ B23D *45/04*

U.S. Cl. 83—113 **12 Claims**

1. An improved cutting tool arrangement for cutting a workpiece comprising:

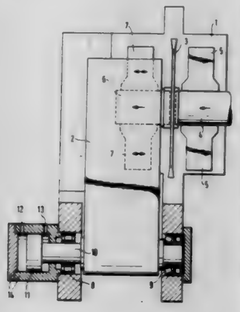
a movable saw blade,

drive means for moving said saw blade,

arm means for supporting said saw blade and said drive means and for effecting transverse movement of the saw blade relative to the workpiece to cut the workpiece into two portions and for effecting retraction of the saw blade relative to the workpiece,

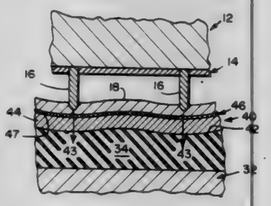
means for effecting movement of one of said workpiece portions away from the other workpiece portion,

displacement means for displacing said arm means laterally of said transverse movement and for moving said saw blade away from the other workpiece portion, and



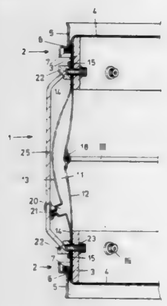
sequencing means for activating said displacement means after said one portion has moved away from said other portion, whereby said arm means are displaced before said saw blade is retracted to reduce contact of said saw blade with the other workpiece portion during retraction.

4,289,055
ROTARY DIE ANVIL
Don F. Von Schriltz, 1747 Pomeroy St., Santa Clara, Calif. 95051
Filed Jan. 7, 1980, Ser. No. 110,118
Int. Cl.³ B23D *25/12*; B26D *1/40*
U.S. Cl. 83—659 **6 Claims**



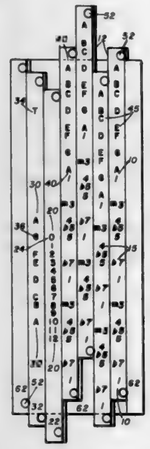
1. In a cylindrical anvil of the type useful with a rotatable die cylinder having a die board with cutting means thereupon, said anvil being rotatably mounted and spaced from said die cylinder, an improvement comprising:
an axially extending cylindrical core;
a compressible first layer being bonded to said core concentrically about and axially extending substantially the entire length of said core;
a hard second layer being bonded to said first layer concentrically about and axially extending along substantially the entire length of said first layer; and,
a hard third layer concentrically disposed about and axially extending along substantially the entire length of said second layer, said second and third layers being of different hardnesses with said third layer being the harder and having a Rockwell C hardness of at least about 60, said third layer being coated upon said second layer, said second and third layers together being of sufficient construction to be radially inwardly deflectable responsive to forces imposed by said cutting means of die board, said first layer having a bulk compliance sufficient to permit the deflection of said second and third layers.

4,289,056
PERCUSSION KIT
Stephen F. Shier, 18 Cressy Ave., Windsor Gardens, Australia (5087)
Filed Sep. 25, 1979, Ser. No. 78,750
Claims priority, application Australia, Sep. 28, 1978, PD6148
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—412 **4 Claims**



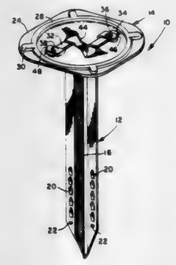
1. A percussion instrument having an upper playing surface supported by an upper ring, a lower ring, and a wall interconnecting said rings, characterized in that said wall comprises a flexible inflatable wall, and means to admit air to said inflatable wall to pressurize the wall for erection, and release said air for said wall to collapse to move said rings toward each other for transport and storage.

4,289,057
PATTERN COMPOSER FOR FINGERBOARD INSTRUMENT INSTRUCTION
Robert R. Whitlock, 2227 Charleston Pl., Hyattsville, Md. 20783
Continuation-in-part of Ser. No. 734,885, Oct. 22, 1976, Pat. No. 4,175,468. This application Dec. 7, 1979, Ser. No. 101,185
Int. Cl.³ G09B *15/02*
U.S. Cl. 84—485 SR **8 Claims**



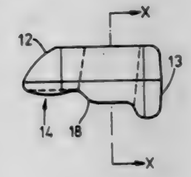
1. An apparatus for composing patterns of allowable locations for fingering a musical stringed fingerboard instrument to sound musical tones, comprising:
a plurality of first bases, a plurality of substantially parallel and substantially adjacent first series of at least one type of first indicia on said first bases, each said first series extending in substantially a single dimension representing the direction of extension of the strings of said stringed fingerboard instrument, each said series representing at least one course of said stringed fingerboard instrument and having a single course coordinate, string stop coordinates along said single dimension representing string stops along said course characteristic of musical intervals used in fingering said stringed fingerboard instrument, the direction of increasing said string stop coordinates representing the direction of increasing musical pitch on the stringed fingerboard instrument, said first indicia of each said first series being located at coordinates of said single dimension, said coordinates in said single dimension of said first indicia forming a mapping image of allowable locations for fingering said course of said stringed fingerboard instrument to sound certain musical tones within the chromatic scale, said first series being repositionable with respect to each other in a direction substantially along said single dimension, string stop coordinates of said single dimension of each of said substantially adjacent series having such spacings as to substantially align in said various repositionings with string stop coordinates of remaining said series of said plurality of first series;
whereby patterns for a plurality of courses may be composed by aligning said string stop coordinates of said plurality of series in accordance with the desired tuning.

4,289,058
SHEET METAL NAIL
Joseph H. Paskert, Lakewood, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Jan. 25, 1979, Ser. No. 6,409
Int. Cl.³ E01B *9/12*; F16B *15/06*
U.S. Cl. 411—451 **21 Claims**



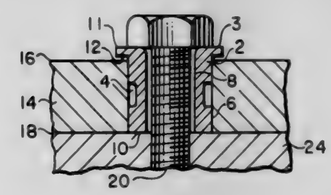
1. A sheet metal nail assembly comprising a one-piece shank portion manually self-retainingly assembleable to a generally flat one-piece head portion, said shank portion and said head portion each defining engaging means adapted to be non-threadably self-retainingly interengaged upon a fractional turn rotation of said shank portion relative to said head portion, the engaging means defined by said shank portion comprising a pair of generally coplanar wing members extending in opposite directions from said shank portion, and the engaging means defined by said head portion comprising a pair of generally coplanar tabs extending in opposite directions generally parallel with and spaced from a surface of said head portion, said tabs spaced from said surface by a distance generally equal to or less than the thickness of said wing members, each of said wing members adapted to be received between said surface and one of said tabs, one of each of said wing members and each of said tabs having a projection extending therefrom and the other of each of said wing members and each of said tabs having an aperture formed therein adapted to receive one of said projections, said projections spaced apart by a distance substantially equal to the distance separating said apertures.

4,289,059
HOOK BOLT ADAPTER
Gordon H. S. Alderton, Bingley, England, assignor to Henry Lindsay Limited, Shipley, England
Filed Jul. 16, 1979, Ser. No. 57,755
Claims priority, application United Kingdom, Jul. 24, 1978, 30901/78; Oct. 16, 1978, 40654/78
Int. Cl.³ F16B *43/02*
U.S. Cl. 411—531 **9 Claims**



1. An adapter for use with a bolt in order to convert the latter into a hookbolt by cooperating with a head of the bolt, the adapter defining a passage through which the stem of the bolt can be taken, in which the adapter comprises:
a nose portion which projects laterally of the passage to form a hook for the bolt in use of the adapter;
an engagement surface provided on the nose portion which extends away from the stem of the bolt and which faces in the direction from the head of the bolt and along the stem of the bolt to engage the surface of a flange to which the bolt is to be hooked in use, the engagement surface being curved with a centre or centres of curvature spaced from said surface in a direction opposite to said first mentioned direction;
and ribs provided on said engagement surface and extending parallel to each other away from the stem of the bolt, said ribs being made to be deformable so that the engagement surface as a whole can adjust its surface shape to correspond with any irregularities which may be present in the surface of the flange which it engages in use.

4,289,060
DEVICE AND ASSEMBLY FOR MOUNTING PARTS
John E. Emmett, Farmington Hills, Mich., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.
Continuation-in-part of Ser. No. 898,555, Apr. 21, 1978, which is a continuation-in-part of Ser. No. 839,046, Nov. 3, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,613
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—34 **20 Claims**



1. A tubular insert adapted for use in mounting a part onto a base member, said insert having a hollow inner core for receiving a fastener, said insert having a flange on one end for engaging a fastener, and said insert further having at least one annular groove formed around the external cylindrical surface thereof to permit said insert to collapse uniformly in an axial direction responsive to a compressive force exerted in an axial direction against the end of said insert and said insert having a sufficient wall thickness at said groove that the wall yields at said groove when the fastener develops the desired compres-

sive force, whereby a substantial portion of said compressive force is absorbed by said insert and whereby the insert functions without being dependent on exerting lateral forces on an external surface due to lateral motion of the external surface of said insert.

4,289,061

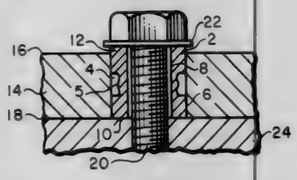
DEVICE AND ASSEMBLY FOR MOUNTING PARTS

John E. Emmett, Farmington Hills, Mich., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 898,555, Apr. 21, 1978, which is a continuation-in-part of Ser. No. 839,046, Nov. 3, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,614

Int. Cl.³ F16B *13/06*

U.S. Cl. 411—34 **24 Claims**



1. A tubular insert adapted for use in mounting a part onto a base member, said insert having a hollow inner core for receiving a fastener and further having at least one annular groove formed around the external cylindrical surface thereof to permit said insert to collapse uniformly in an axial direction responsive to a compressive force exerted in an axial direction against the end of said insert and said insert having a sufficient wall thickness at said groove that the wall yields at said groove when the fastener develops the desired compressive force, whereby a substantial portion of said compressive force is absorbed by said insert and whereby the insert functions without being dependent on exerting lateral forces on an external surface due to lateral motion of the external surface of said insert.

4,289,062

EXPANSION DOWEL

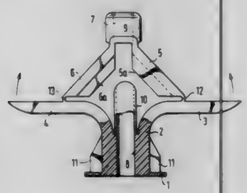
Erwin Schiefer, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Apr. 27, 1979, Ser. No. 34,147

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819862

Int. Cl.³ F16B *13/04*

U.S. Cl. 411—34 **6 Claims**



1. Expansion dowel for insertion into an opening in a receiving member, such as a plate, wall, hollow block or similar structural member having a hollow space inwardly of the surface through which the dowel is inserted, the dowel has a leading end which is inserted first through the opening so that at least a portion of the dowel extending from the leading end extends into the hollow space, and a trailing end, the dowel comprises an axially extending tubular shaft portion extending from the trailing end toward the leading end, a flange portion located at and extending transversely of and outwardly from said shaft portion at the trailing end, said shaft portion having a bore extending axially therethrough, a pair of flexible expansion arms connected to said shaft portion, a pair of webs with each said web connected to a different one of said expansion arms and said webs being interconnected, the dowel has an inserting position with the expansion arms and webs extending in the axial direction of said shaft portion and located closely together, and an expansion position with each said expansion arm and said web connected to it extending transversely outwardly from the axis of said shaft portion, wherein the improvement comprises that said expansion arms have a first end connected to said shaft portion at a location spaced from the trailing end of the dowel and a free second end spaced longitudinally from the first end in the axial direction of said shaft portion when the dowel is in the inserting position, said webs each have a first end and a second end spaced longitudinally apart with the first end flexibly connected to the associated said expansion arm and the second end connected to the second end of the other said web, in the inserting position said expansion arms and webs extend in generally paraallel relation along the axis of said shaft portion and in the expansion position said webs extend at an acute angle to the portion of the associated said expansion arm extending between the first end of said expansion arm and the junction of said web and the associated said expansion arm, the portion of said expansion arm extending from the junction with said web to the second end thereof extends approximately perpendicularly to the axis of said shaft portion, and the first end of each said web having a reduced thickness portion connected to the associated said expansion arm at a location approximately mid-way between the first and second ends of said expansion arm with the reduced thickness portion forming the flexible connection between said web and said expansion arm.

4,289,063

HYDRAULIC DRIVING DEVICE

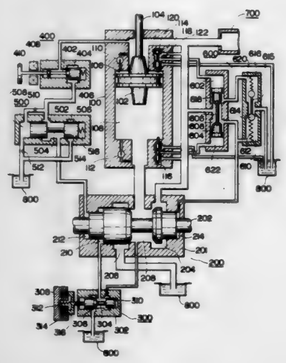
Ichiro Nakamura, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,359

Claims priority, application Japan, Jul. 20, 1977, 52-86011

Int. Cl.³ F01L *25/02*; **F15B** *13/042*

U.S. Cl. 91—306 **7 Claims**



1. A hydraulic driving device comprising:
a cylinder;
a piston which slides within said cylinder;
a main control valve which includes a valve body and a spool sliding within said valve body and which is formed between said valve body and said spool with a first oil chamber communicating with a high oil pressure source, a second oil chamber communicating with a low oil pressure source and a third oil chamber communicating with either of said first and second oil chambers and a chamber in said cylinder, said chamber in said cylinder communicating with either of said first oil chamber and said second oil chamber through said third oil chamber in correspondence with a position of said spool driven by oil pressure changes within the respective oil chambers;
characterized in that said main control valve is further formed with a fourth oil chamber, a fifth oil chamber and a sixth oil chamber, and said spool is provided with first surfaces upon which oil pressures in said fourth and fifth oil chambers act in a first direction connecting said first oil chamber and said chamber in said cylinder when these fourth and fifth oil chambers communicate with said high oil pressure source and second surfaces upon which oil pressures in said first and sixth oil chambers act in a second direction connecting said second oil chamber and said chamber in said cylinder; and
said hydraulic driving device further comprising:
a first valve and first signal producing means for impressing a first signal to actuate said first valve, said first valve communicating said third oil chamber and said fourth oil chamber while said first signal is not impressed and communicating said fourth oil chamber and said low oil pressure source when said first signal is impressed, and
a valve arrangement, having at least a second valve, and second signal producing means for impressing a second signal to actuate said second valve, said valve arrangement communicating said fifth oil chamber and said high oil pressure source while said second signal is impressed and communicating said fifth oil chamber and said low oil pressure source when said second signal is released,
wherein said main control valve, first valve and valve arrangement includes means for enabling said spool to complete a movement in said first or second direction for opening or closing said communication between said chamber in said cylinder and said first or second chamber in response to said first or second signal even if said first or second signal is terminated after a short interval and prior to completion of said movement.

4,289,065

SPACERS FOR CAGE PRESSES

John P. Krebser, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Mar. 21, 1980, Ser. No. 132,707

Int. Cl.³ B30B *9/06*

U.S. Cl. 100—129 **4 Claims**



1. Spacers for use in a cylindrical cage of a continuous screw press having axially extending and radially spaced screen bars, said spacers being positioned between said radially spaced screen bars at uniformly spaced locations axially along said cylindrical cage, each said spacer being formed of a single L-shaped piece of sheet material the thickness of which is substantially the desired minimum spacing between adjacent said screen bars, each said spacer being positioned between adjacent screen bars so that a leg portion of said spacer extends substantially radially inward to a position adjacent innermost edge portions of said screen bars, and a foot portion of said spacer extends substantially tangentially between adjacent screen bars and in engagement therewith, all of said spacers being secured to an associated screen bar by an adjacent leg portion.

4,289,064

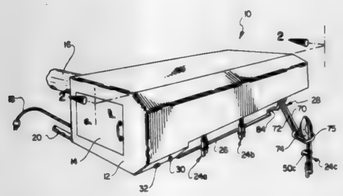
AUTOMATED COOKER

Stephen L. Rosenblatt, 2500 Haven La., Salt Lake City, Utah 84117

Continuation-in-part of Ser. No. 34,219, Apr. 30, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,637

Int. Cl.³ A47J *37/04*

U.S. Cl. 99—334 **20 Claims**



1. An automated cooker for sandwiches and the like, said cooker comprising:
heating means for cooking said sandwiches as they pass therethrough;
one or more sandwich holders for individually carrying each sandwich, each holder comprising handle means and means for enclosing the sandwich to be cooked;
conveyor means for transporting said sandwich holders through said heating means;
a motor for driving said conveyor means;
a switch for turning on said motor; and
means for triggering said switch, said triggering means being placed such that it will be activated by the handle means of any sandwich holder attached to said conveyor means.

4,289,066

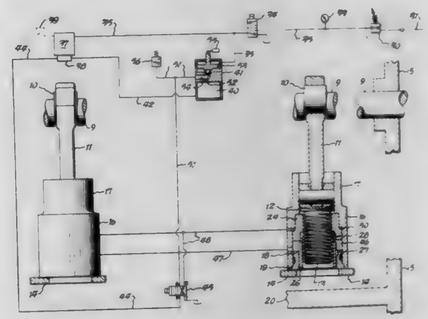
HYDRAULIC POSITION CONTROL FOR MECHANICAL POWER PRESS SLIDES

Norbert J. Proga, Eastlake, Ohio, assignor to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed May 5, 1980, Ser. No. 146,651

Int. Cl.³ B30B *1/26*

U.S. Cl. 100—53 **3 Claims**



1. A power press comprising frame means including a bed, a reciprocable slide supported by said frame for movement toward and away from said bed, drive means for reciprocating said slide including connecting rod means, overload responsive slide shut height adjusting means acting between said slide and said connecting rod means, said adjusting means including a cylinder on said slide means and a piston slidable therein and pivotally connected with said connecting rod, said piston having threaded connection with a portion of said cylinder for shut height adjustment, an hydraulic withdrawal and overload piston in said slide connected cylinder, a worm wheel at the base of each of said slide means cylinders, an annular hydraulic

chamber between the top of each worm wheel and the lower end of each overload piston, and a second hydraulic chamber between an upwardly facing portion of each overload piston and said slide connected cylinder, and valve means alternatively operable to apply hydraulic fluid under predetermined pressure to said first hydraulic cylinder to transmit force from said overload piston to said worm wheel to effect working strokes of of said slide or to apply hydraulic pressure to the space between said overload piston and said slide cylinder to raise the latter to give access to the die on the bed of the press.

4,289,067

PRESS FOR RENDERING FATTY BONES

Gyula Hanak, Brussels, Belgium, assignor to PB Gelatines, Brussels, Belgium

Filed May 31, 1979, Ser. No. 44,284
Claims priority, application France, May 31, 1978, 78 16163
Int. Cl.³ B30B *9/12*
U.S. Cl. 100—117 **12 Claims**



1. In a multistage continuous rotary press assembly, including a cylindrically shaped casing and including a rotary drive arbor passing therethrough and supported at the ends thereof and carrying a continuous screw collar in each stage with the outer diameter of the screw collar in each stage being slightly less than the inside diameter of the casing, and with the inner diameter of the screw collar in each stage increasing in the direction of feeding circulation of the product material being treated, said press assembly further comprising: said screw collar having a shape to define transition zones between adjacent pair of stages in the area between the end of the screw collar in an upstream stage portion and the beginning of the screw collar in the next succeeding downstream stage portion; material impingement means disposed within each transition zone, said material impingement means having upstream edges oriented for dividing material entering the transition zone from the adjacent upstream stage as it passes through the transition zone to the next adjacent downstream stage, said impingement means comprising first impingement portions located in the transition zones at the upstream stage portions and having said upstream edges, and second impingement portions located spaced from the upstream stage portion in the transition zones at the downstream stage portions and having said upstream edges.

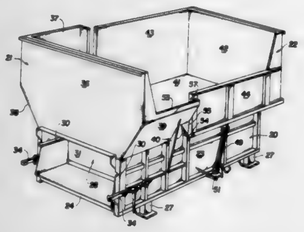
4,289,068

DUMP COMPACTOR FOR REFUSE

Richard J. Heinrich, Rte. 3, Box 452, Staunton, Va. 24401

Filed May 27, 1980, Ser. No. 153,423
Int. Cl.³ B30B *15/30*
U.S. Cl. 100—215 **8 Claims**

1. A refuse receiving and compacting apparatus comprising in combination a horizontal axis ram-type compactor unit forming a base for the apparatus, said compactor unit having a discharge end adapted for coupling releasably to a refuse transport receptacle, a hopper bin fixed on top of the compactor unit near said discharge end and having a bottom outlet opening in registration with a top opening of the compactor unit forwardly of the ram of the compactor unit, the hopper bin being open at its top and rear and including front and side walls, a coacting dumping bin mounted on top of said compactor unit rearwardly of the hopper bin and in tandem relation thereto, the dumping bin being open at its top and front and having bottom, side and rear walls, means hingedly connecting the forward end of the dumping bin to the compactor unit, and power means coupled between the dumping bin and compactor unit to raise and lower the dumping bin around the axis of the first-named means, the side walls of said hopper bin and dumping bin being constructed and arranged for scissoring



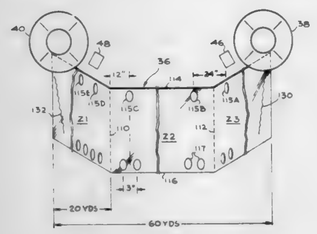
action without interference during the raising and lowering of the dumping bin, and the side walls of the hopper bin and dumping bin along one side of the apparatus being of reduced height compared to the opposite side walls and the front and rear walls of the two bins to promote side loading of the apparatus when the dumping bin is in a level position.

4,289,069

METHOD FOR PRODUCING A MULTIPLE COLOR HARD COPY IMAGE

Raymond F. Melissa; Lorne H. Grummett, both of Costa Mesa, and Joseph J. Fischer, Santa Ana, all of Calif., assignors to Trilog, Inc., Irvine, Calif.

Filed Apr. 18, 1979, Ser. No. 31,076
Int. Cl.³ B41J *7/70*
U.S. Cl. 101—93.01 **5 Claims**



1. A method of producing a composite multiple color image on the surface of an elongated web comprising the successive steps of:

positioning a first selected color zone of a multiple color zone ribbon immediately adjacent to said web surface in a print station defined by a plurality of individually actuatable substantially identical dot hammers;

selectively impacting said dot hammers against said web surface and ribbon in said print station with a first multitude of successive impacts to print substantially identically shaped dots on said web surface with the color of said first selected color zone, said dots spaced sufficiently closely so as to partially overlap one another;

repositioning said ribbon to position a second selected color zone of said ribbon in said print station;

selectively impacting said dot hammers against said web surface and ribbon in said print station to print substantially identically shaped dots on said web surface with the color of said second selected color zone, at least some of said dots printed with the color of said second selected color zone overlaying some of said dots printed with the color of said first selected color zone;

repositioning said ribbon to position a third selected color zone of said ribbon in said print station;

selectively impacting said dot hammers against said web surface and ribbon in said print station to print substantially identically shaped dots on said web surface with the color of the third selected color zone, at least some of said dots printed with said third selected color zone overlaying some of said dots printed with the color of said first or second selected color zones; and

incrementally moving said web in a first direction past said print station after at least one of said first multitude of successive impacts to thus create a two dimensional dot pattern in said first color on said web surface; and

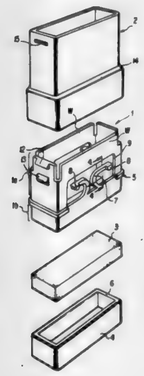
moving said web in a second direction opposite to said first direction prior to said step of impacting to print said web surface with the color of said second selected color zone.

4,289,070

RUBBER STAMP

Francis W. MacGregor, New Britain, Conn., assignor to Cosco Industries, Inc., New Britain, Conn.

Filed Jun. 26, 1979, Ser. No. 52,449
Int. Cl.³ B41K *1/42*
U.S. Cl. 101—327 **12 Claims**



1. A stamp which comprises:

an inner member comprising a generally tubular body having a ridge thereon above its lower end;

an inkable pad in the inner member having an indicia-bearing portion extending below the lower end of the inner member;

a sleeve member comprising a tubular body carried on the inner member in telescoping relationship therewith and having a flange engageable with the ridge, the sleeve member being movable with respect to the inner member between a lowered position where its flange engages the ridge on the inner member and its lower end extends beneath the indicia-bearing portion of the inkable pad and a raised position where its lower end is substantially level with the indicia-bearing portion for exposing said portion; and

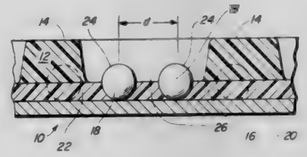
means for biasing the sleeve member to its lowered position comprising a resilient finger integral with the inner member, disposed in an aperture in a side wall of the inner member, and extending generally in the plane of the wall, the finger having a projection at the end thereof extending laterally outwardly toward the sleeve member and being engageable with the flange on the sleeve member.

4,289,071

SHALLOW RELIEF NON-BOTTOMING PHOTOPOLYMER PRINTING PLATE

Robert W. Hallman, San Diego; Koichi Kimoto, Oceanside, and Sakuo Okai, Carlsbad, all of Calif., assignors to Napp Systems (USA), Inc., San Marcos, Calif.

Continuation of Ser. No. 863,775, Dec. 23, 1977, abandoned.
This application Sep. 12, 1979, Ser. No. 74,700
Int. Cl.³ B41N *1/06*; B41C *1/00*
U.S. Cl. 101—395 **5 Claims**



1. A shallow relief, non-bottoming printing plate comprising a water-developable photopolymerized layer having a thickness less than 0.020 inch and supported on a substrate, and a binder layer having a thickness from about 5 to 60 microns and carrying a plurality of dispersed ink repellant, polytetrafluroethylene particles interposed between said substrate and said photopolymerized layer, said binder layer being selected from the group consisting of (a) styrene-butadiene copolymers, (b) polyesters, (c) glyoxal, or mixtures of (a), (b), or (c), with partially hydrolyzed polyvinyl acetate, said photopolymerized layer having raised image areas and recessed background areas, and said dispersed particles being present in said binder layer in a size and concentration sufficient to create an array of protuberances in the background areas having an average height between about 5 to 70 microns and an average distance between protuberances of about 5 to 1000 microns.

4,289,072

EARTH FRACTURING APPARATUS

Thomas A. Edgell, 703 S. College, Apt. #2, Tyler, Tex. 75701; Alfred R. Foote, Winona, Tex., and Charles P. Steele, Hallsville, Tex., assignors to Thomas A. Edgell, Tyler; Roberta K. Tillinghast, Houston and James W. Fair, Tyler, all of, Tex., a part interest

Filed Dec. 13, 1979, Ser. No. 103,109
Int. Cl.³ E21B *43/11*
U.S. Cl. 102—318 **12 Claims**



1. An improved earth fracturing apparatus of the type having an elongated casing containing a laterally directed charge

located at a central portion of said casing and additional explosive devices positioned on opposite sides of said charge, said improvement comprising:

a rod positioned within said casing and extending longitudinally thereof;

means for supporting said rod at one end of the casing;

a plurality of detonating means supported by said rod, said detonating means being spaced along said rod at positions adjacent said additional explosive devices; and

means for actuating said detonating means to set off the additional explosive devices and the laterally directed charge.

4,289,073

WARHEAD WITH A PLURALITY OF SLAVE MISSILES

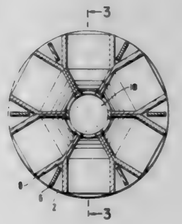
Rudolf Romer, Kaarst; Hendrik R. Lips, Duesseldorf; Benjamin Furch, Unterluess, and Hans Orth, Ratingen, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,143

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835817

Int. Cl.³ F42B *13/02*

U.S. Cl. 102—476 **7 Claims**



1. In a warhead having a casing, a plurality of slave missiles containing explosive material disposed in firing tubes mounted in the casing and directed radially thereof, a parachute connected to the warhead and causing a directional, braked descent thereof in the target area, a proximity fuse on the warhead causing the ejection of the slave missiles from the warhead, the improvement wherein the warhead is of disc-shaped construction, the casing of the warhead having a cover plate at each end thereof, each cover plate having an outwardly open depression therein, a central propellant tube in the casing receiving a propellant charge, radial range spacers and radial firing tubes disposed between the cover plates and the radial range spacers, and means connecting the propellant tube to the radially inner ends of the slave missiles whereby the slave missiles are ejected from the warhead upon the firing of the propellant charge in the propellant by the proximity fuse.

4,289,074

CONSTRUCTION OF TRUCK FOR ATTRACTIVE TYPE MAGNETICALLY LEVITATED VEHICLE

Shinji Nakamura, Kawasaki, and Katsuyoshi Yamakawa, Kunitachi, both of Japan, assignors to Japan Air Lines Co., Ltd., Tokyo, Japan

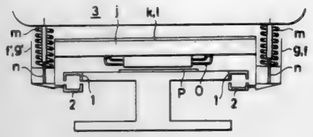
Filed Aug. 11, 1978, Ser. No. 933,038

Claims priority, application Japan, Sep. 22, 1977, 52-114058

Int. Cl.³ B61B *13/08*

U.S. Cl. 104—284 **3 Claims**

1. A truck for an attractive type magnetically levitated vehicle which is to be levitated by the attraction of electromagnets, comprising four electromagnet means positioned at the vertex points of a rectangular plane figure for being opposed to a pair of left and right armature rails laid on the ground, and I-beam type girders having a vertical web and horizontal flanges connecting said electromagnet means and extending along the four sides of said rectangular plane figure, said girders being resistive to bending but being sufficiently twistable for permitting said truck as a whole to twist sufficiently for accommodating movement of the magnets out of



the plane of said rectangular plane figure to maintain the individual magnets in good magnetic relation to said rails, and shock absorber means at the corners of said rectangular plane figure for attaching said truck to the vehicle.

4,289,075

STEERING ARTICULATED CAR

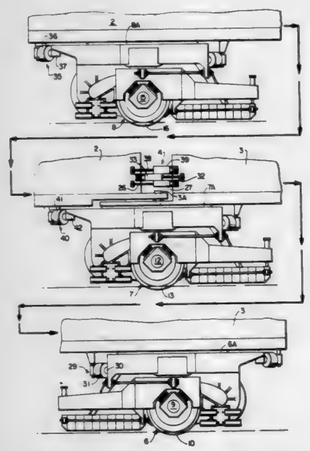
Roy E. Smith, Kingston, Canada, assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada

Filed Jul. 14, 1978, Ser. No. 924,544

Claims priority, application Canada, Jul. 12, 1978, 307239

Int. Cl.³ B61D *3/10;* **B61F** *3/12, 5/44, 5/50*

U.S. Cl. 105—4 R **6 Claims**



1. An articulated railway vehicle comprising first and second pivotally connected body portions, at least three spaced, independently controlled wheel sets supporting said vehicle, each of said wheel sets being attached to said vehicle for pivotal movement about respective substantially vertical, horizontally displaced axial pivots, sensing means for sensing changes in the relative angle between said first and said second body portions, actuating means for effecting pivotal movement of each of said wheel sets, and means connecting said sensing means and said respective actuating means for positioning said wheel sets by said actuating means to a substantially radial alignment when said articulated vehicle travels curved railway track.

6. An articulated truck for a railway vehicle comprising first and second pivotally connected truck portions, said truck having three wheel sets attached to said truck for pivotal movement about respective substantially vertical axial pivots, sensing means for sensing changes in the relative angle between said first and second portions, actuating means for effecting pivotal movement of each of said wheel sets, and means connecting said sensing means and said respective actuating means for positioning said wheel sets by said actuating means to a substantially radial alignment when said articulated truck travels curved railway track.

4,289,076

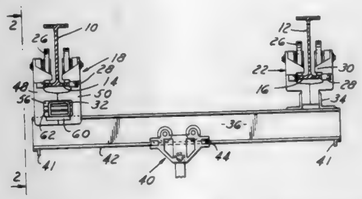
SELF ALIGNING CARRIER HEAD AND TRUCK ASSEMBLY

John F. Miller, P.O. Box 277, Howell, Mich. 48843

Filed May 29, 1979, Ser. No. 43,376

Int. Cl.³ B61D *15/00;* **B61F** *13/00;* **B66C** *17/04*

U.S. Cl. 105—163 R **9 Claims**



1. A trolley assembly riding a pair of rails comprising in combination:

a first carrier head with a first wheel for riding the first rail of said pair, the first carrier head joined to a load bearing connector upon which a load may be carried;

a second carrier head with a second wheel riding on the second rail of said pair operably joined to the load bearing connector by a non-movable restraining means for restraining longitudinal movement between the load bearing connector and the second carrier head, and said restraining means passing through a stationary recess in the load bearing connector and having a free length greater than the length of the recess to allow unresisted lateral movement relative the carrier head of the load bearing connector along the restraining means; and

said second carrier head further having separate from the restraining means a connecting support surface on which a lower surface of the load bearing connector rests in continual surface to surface contact.

4,289,077

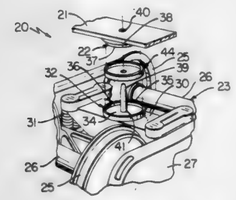
RAILWAY CENTER BEARING WEAR LINER

Donald L. Kleykamp, Springboro, Ohio, and Homer N. Holden, Sylva, N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed May 24, 1979, Ser. No. 42,256

Int. Cl.³ B61F *5/16;* **F16C** *17/04, 17/10*

U.S. Cl. 105—199 C **10 Claims**



1. In a cup-shaped wear resistant liner for a center plate structure of a railway vehicle defined by a planar disc-like bottom portion adjoined by a tubular peripheral flange portion extending upwardly from the periphery of said bottom portion, each of said portions being made primarily of polymeric material, the improvement wherein one of said portions being made of a material having a particular wear characteristic and the other of said portions being made of a material having a wear characteristic that is different from the wear characteristic of said one portion, said portions being fixed together to define a unitary structure.

4,289,078

TILTING DUMPING BOTTOM SECTION RAILWAY CAR

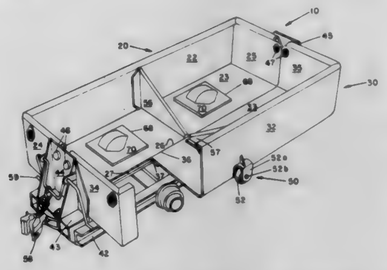
Robert S. Anderson, Huntington, W. Va., assignor to ACF Industries, Inc., New York, N.Y.

Division of Ser. No. 832,926, Sep. 13, 1977, Pat. No. 4,168,929.

This application Feb. 21, 1979, Ser. No. 12,993

Int. Cl.³ B61D *7/12, 7/32, 9/08, 9/14*

U.S. Cl. 105—241.2 **15 Claims**



1. An open top, bottom dump railway car comprising: a car body divided longitudinally into at least two transversely spaced car body sections; said car body sections including respective transversely spaced side walls, at least one end wall and bottom walls having inner edges abutting in closed position to define the bottom of the car; said side walls and bottom walls making at least a right angle; each said end wall pivotally mounted on a vertically extending support supported by a rail car underframe; said body sections extending outboard of the wheels; said bottom walls located below the top of said wheels in closed position; well means in said bottom walls to allow said wheels to extend above said bottom walls; the entire volume of said body sections located outboard of said wheels available for lading carrying capacity; each of said body sections pivotable from the closed position to an open position in which the inner edges of said bottom walls are spaced apart to allow discharge of lading.

4,289,079

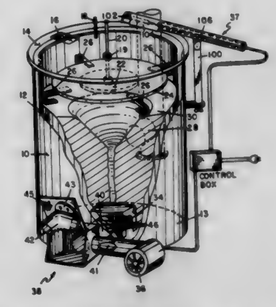
SAWDUST FURNACE

Gwido K. Swistun, Shadacee Rd., Saco, Me. 04072

Filed Mar. 31, 1980, Ser. No. 136,172

Int. Cl.³ F23G *3/00*

U.S. Cl. 110—255 **6 Claims**



1. An improved sawdust-burning furnace of the type having an inner shell, an outer shell disposed concentrically around said inner shell, further being slightly higher than said inner shell, a bottom member closing said outer shell at the base thereof, a cover member adapted to cover said outer shell and inner shell in which sawdust is packed having a vertical channel and a lower horizontal channel interconnected therewith and an exhaust aperture defined in said outer shell adapted for

interconnection to a flue connector, wherein the improvements comprise:

said cover having an aperture defined in a central portion thereof;

a suspension rod adapted to slidably be inserted through said cover member aperture;

a flame deflector adapted to be interconnected to the base of said suspension rod, said flame deflector including support means adapted to rest upon sawdust placed in said furnace;

air intake means including a firebox disposed inside said inner shell, a bleeder tube interconnecting said firebox through the walls of said inner and outer shells to the outside of said outer shell having air vent means also disposed between said inner and outer shells; and

means to provide air to said bleeder tube.

4,289,080

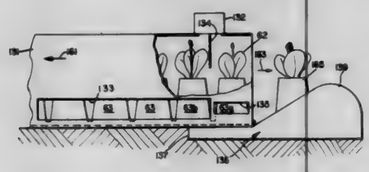
HIGH-SPEED TRANSPLANTER

Percy A. Penley, Basking Ridge, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,308

Int. Cl.³ A01C *11/02*

U.S. Cl. 111—3 **27 Claims**



1. In a high speed transplanter for transplanting seedlings grown in grow blocks which are arranged on said transplanter as a plurality of files of seedling blocks which contain at least one seedling and of dud blocks which lack a seedling, wherein said transplanter comprises a frame which is rotatively supported by wheels and a block movement means, including a delivery tube, for advancing said plurality of files, longitudinally aligned and disposed end-to-end, rearwardly and downwardly toward a furrow in soil therebeneath, the improvement for replacing each said dud block with a following grow block which is statistically likely to be a seedling block, whereby planting efficiency can be increased by producing a more perfect stand, comprising:

A. a seedling sensing means for sequentially detecting the presence of a seedling in each seedling block of said plurality of files;

B. a signaling means, connected to said seedling sensing means, for indicating a dud block in which said presence is not detected; and

C. a block advancement means for additionally advancing any said file, in which said each dud block is indicated, through a distance equalling the length of at least one block, whereby a selected following block is planted in addition to said dud block.

4,289,081

COULTER DEVICE FOR DIRECT SEED DRILLS

Paul Koronka, Upwaltham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 18, 1978, Ser. No. 970,875

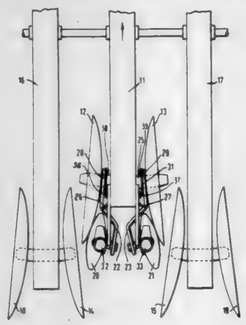
Claims priority, application United Kingdom, Dec. 21, 1977, 53186/77; May 25, 1978, 22433/78

Int. Cl.³ A01C *5/06*

U.S. Cl. 111—88 **7 Claims**

1. A drill comprising:

a plurality of first frame members extending rearwardly with respect to the forward direction of travel of said drill, each of said plurality of first frame members being disposed in a spaced apart, substantially parallel orientation with respect to one another and each having a free end: a plurality of first, rotatable, dished discs for cutting slots into the soil, one pair of each of said first discs being mounted to one of each said first frame members at the respective said free end thereof, said first discs of each of said one pair of first discs being mounted to opposite sides of said free end and having convex surfaces facing each other; a plurality of third, rotatable, dished discs of smaller diameter then said first discs, one rearwardly overlapping each individual one of said first discs and having a concave surface facing the convex surface its associated first disc, the front peripheral edge of each said third disc being in close proximity thereto, each of said third discs being mounted to a cranked arm having its remote end constructed to embrace, and be rotatable about, an axle connection between its respective first disc and first frame member; a plurality of seed delivery tubes each having a seed delivery orifice and each having its seed delivery



orifice disposed vertically above the concave surface a respective third disc and rearwardly of an upright plane containing a respective axle connection between a first disc and first frame member, and a plurality of second frame members extending in a rearward direction and disposed in a spaced apart, substantially parallel orientation with respect to one another and disposed alternately between members of said plurality of first frame members, each of said second frame members having a free end positioned rearwardly of said free ends of said first frame members, and a plurality of second rotatable, dished discs, for intercepting the soil displaced by the said plurality of first discs and to mechanically guide the soil so that it tumbles into the slots cut by said first discs, one pair each of said second discs being mounted to one of each of said free ends of said second frame members, so that each individual said second disc is rearwardly overlapping the closest member said plurality of first discs, having a concave surface facing a concave surface of said member of said plurality of said first discs.

4,289,082

KNIFE BLOCK FOR TUFTING MACHINES

James E. Stoker, Chickamauga, and John C. Powell, Rising Fawn, both of Ga., assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

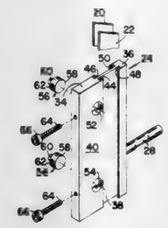
Filed Jan. 11, 1980, Ser. No. 111,359

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R **6 Claims**

1. A knife block for a tufting machine comprising an elongated body member having a pair of longitudinally extending spaced flange portions connected together by a web, a knife receiving channel defined on each side of said web, each channel including a pair of longitudinally extending facing grooves in the flanges adjacent said web, at least one circular bore

extending transversely through one of said flanges and opening onto the grooves disposed in said one flange, a cylindrical clamping member positioned in each bore and having a smaller diameter than said bore, said clamping member having a radial recess intermediate the extremities thereof and opening away from the other of said flanges, and screw means threadedly



extending through said one flange into each bore and receivable within said recess for engaging said clamping member in said recess and forcing same toward the other flange, said screw member having a smaller cross sectional configuration then the recess for permitting tiltable movement of the clamping member into abuttment with a knife disposed in each of the grooves in said one flange.

4,289,083

AUTOMATIC MACHINE FOR ZIG-ZAG STITCHING OF TUBULAR ELEMENTS

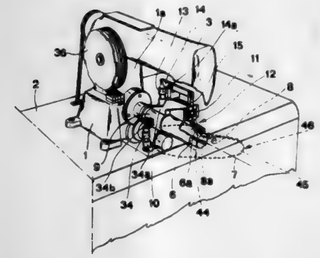
Mario Ciucani, Via dell'Universita, 16-Fermo, Italy

Filed Nov. 27, 1979, Ser. No. 97,705

Claims priority, application Italy, Nov. 30, 1978, 3608 A/78

Int. Cl.³ D05B *3/04*

U.S. Cl. 112—157 **8 Claims**



2. An automatic machine for zig-zag stitching of tubular elements, which machine is capable of zig-zag stitching trimmings on mocassin-type footwear and capable of fixing transversal reinforcing bands to the vamp of said footwear, said machine comprising:

a base support with a projecting head to support a needle;

a machine cylinder positioned beneath the projecting head, and having a crochet located within, which crochet is capable of coacting with said needle to form stitches in the material being operated on by said machine;

a work plane on which to lay said material being operated on and a pressure foot, both of which are moveable relative to said cylinder; where the pressure foot operates in conjunction with said work plane to grip said material and move said material under said needle in phase with the movement of said needle;

means for moving said work plane and said pressure foot relative to said cylinder;

one or more cam means splined on a shaft which is rotated by the machine's motorization means, wherein said one or more cam means are means for controlling the means for moving said work plane and said pressure foot relative to said cylinder.

4,289,084

SEWING MACHINE WITH STITCH TYPE IDENTIFYING DEVICE

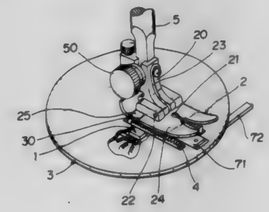
Hideaki Takenoya, and Yoshinobu Tonomura, both of Hachioji, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

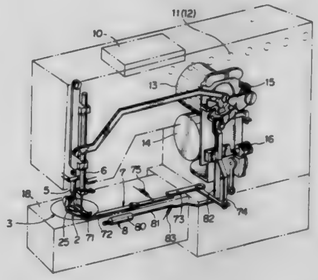
Filed Jun. 14, 1979, Ser. No. 48,434

Claims priority, application Japan, Jun. 15, 1978, 53-71518

Int. Cl.³ D05B *3/02, 29/00*

U.S. Cl. 112—158 E **14 Claims**





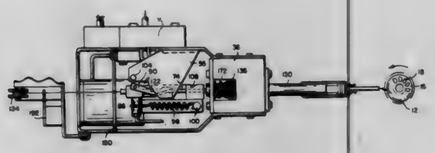
1. In a sewing machine which can produce zigzag stitches using a laterally moving reciprocating needle and a needle plate having an elongated hole into which the needle may be dropped, which can further produce straight stitches using a laterally stationary reciprocating needle and a needle plate having a circular hole into which the needle may be dropped, and which can still further produce embroidery stitches by deactivating a feed dog, and which can accept a plurality of presser feet which are each adapted to a specific stitching application such as zigzag stitching, straight stitching and embroidery stitching, an improvement comprising: a first means attached to the sewing machine and cooperating with the presser foot attached thereto and producing a presser foot signal, the first means operating in a manner that the presser foot signal produced by the first means is determined by the presser foot which is attached to the machine; a lateral control means attached to the machine and cooperating with the needle to control lateral movement thereof in response to a lateral movement controlsignal; a needle plate adjusting means moving a plate bearing a circular hole to and from a position in which the circular hole is centrally located in the elongated hole in response to a needle plate signal; a feed dog means cooperating with the feed dog, the feed dog means activating and deactivating the feed dog in response to a feed dog signal; and a control circuit connected to the first means and responding to the presser foot signal, the control circuit operating in a manner that when a presser foot is attached to the machine, an appropriate lateral movement control signal, an appropriate needle plate signal and an appropriate feed dog signal are generated, whereby lateral needle movement, needle plate hole

shape and feed dog operation are made consistant with the presser foot employed.

4,289,085
BOBBIN LOADING APPARATUS FOR SEWING MACHINES

Herman Rovin, Rte. 3, Box 370A, Piedmont, S.C. 29673

Filed Sep. 19, 1979, Ser. No. 76,938
Int. Cl.³ D05B *45/00, 65/00*
U.S. Cl. 112—181 **15 Claims**

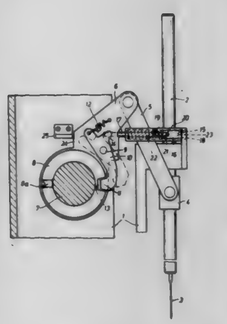


1. Apparatus for presenting thread to a rapidly rotating bobbin comprising a carriage supported for linear reciprocal movement relative to the bobbin, means for effecting reciprocal movement of the carriage, and a thread carrier mounted on the carriage, for movement with and relative to the carriage, means for withholding forward movement of the thread carrier during a portion of the forward movement of the carriage, means for disabling the last-named means at a predetermined forward position of the carriage, and means for propelling the thread carrier forwardly relative to the carriage to advance the thread carrier to thread loading position.

4,289,086
NEEDLE BAR COUPLING IN AN EMBROIDERING MACHINE

Kurt Bolldorf, Kaiserslautern, and Ernst Brückner, Neuwied, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,947
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 7927287
Int. Cl.³ D05B *55/16*
U.S. Cl. 112—221 **4 Claims**

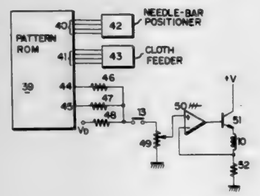


1. A needle bar coupling in an embroidering machine having a plurality of needle bars driven by a crank operated by a drive shaft, comprising coupling connected to the needle bar and connected to said drive shaft being rotatable by said drive shaft to move said needle bar, a coupling connected between said crank and said drive shaft fixed to said drive shaft for rotation therewith and having a drive groove, a pawl pivoted on said crank and having a tooth engageable in said drive groove, and a contact member mounted adjacent said pawl and being movable to engage said pawl to move it so that the tooth is disengaged from the groove of said coupling, spring means biasing said pawl in the direction to engage said tooth in said groove.

4,289,087
SEWING MACHINE WITH THREAD-TENSION CONTROL SYSTEM

Hideaki Takenoya; Kazuo Watanabe; Tamotsu Nakagawa, and Yoshinobu Tonomura, all of Hachioji, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 907,294, Mar. 6, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 80,070
Int. Cl.³ D05B *47/04*
U.S. Cl. 112—254 **20 Claims**



1. In a sewing machine of the type provided with pattern selector means operated by the user for implementing selected ones of a plurality of differently configured stitch-patterns, in combination, electromechanical thread-tension varying means operative for varying the tension of the thread fed to the sewing needle of the machine in response to a variable electrical tension command signal; and tension command signal generating means operative for furnishing to the electromechanical thread-tension varying means an electrical tension command signal, and including means for automatically selecting different values for the tension command signal, and thereby different values of thread tension produced by the thread-tension varying means, without the user of the machine needing to separately command said different values for the tension command signal, the means automatically selecting different values for the tension command signal being responsive to user operation of the pattern selector means, whereby the automatic selection of different values for the tension command signal is performed automatically as an incident to the user selecting different stitch-patterns.

4,289,088
STERILITY INDICATING DEVICE

John V. Scibelli, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Filed Apr. 29, 1980, Ser. No. 145,214
Int. Cl.³ G01K *11/06*
U.S. Cl. 116—218 **9 Claims**

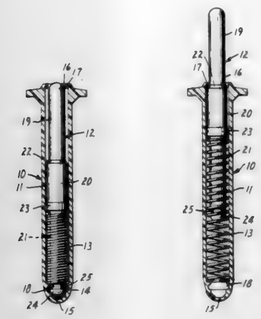
1. A device for indicating the attainment of sterility in a steam autoclave comprising

an elongate hollow element having means for permitting steam to enter the hollow portion thereof;

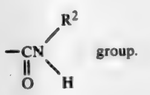
an indicating means within said hollow element that is movable relative to said hollow element;

a biasing means for causing movement of said indicating means relative to said hollow element; and

a restraining means within said hollow element for preventing movement of said indicating means until the attainment of a predetermined temperature in the presence of steam, whereupon said restraining means fuses and permits said biasing means to move said indicating means relative to said hollow element thereby indicating the attainment of sterility, said restraining means having the formula



wherein R^1 is a lower alkyl group containing from 1 to about 4 carbon atoms, and R^2 is selected from hydrogen and lower alkyl groups containing from 1 to about 4 carbon atoms, and wherein said $-OR^1$ is located ortho or meta to said

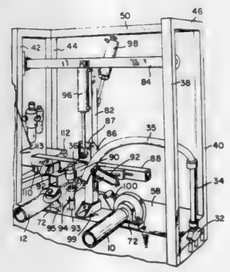


group.

4,289,089
TIRE SEALANT APPLICATOR

Kenneth L. Tacke, Woodinville; Lyle D. Galbraith, and Hudson Stewart, both of Kirkland, all of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Division of Ser. No. 933,579, Aug. 14, 1978, Pat. No. 4,206,008, which is a continuation of Ser. No. 745,194, Nov. 26, 1976, abandoned. This application Dec. 3, 1979, Ser. No. 99,569
Int. Cl.³ B05B *13/06*
U.S. Cl. 118—306 **7 Claims**



7. An apparatus for positioning a sealant application device in the interior of a tire comprising:

a frame;

tire support means located adjacent said frame for supporting and rotating a tire;

arm means pivotally connected adjacent one end thereof for swinging movement between an advanced position wherein it is generally perpendicular to the axis of rotation of said tire and a retracted position remote from said tire;

means attached to said frame for engaging and positioning said arm when it is in said advanced position;

carriage means mounted on said arm means between said pivotal connection and said stop means for reciprocative movement along said arm means between a first position removed from the tire interior and a second position proximate to the tire interior when said arm means is in the advanced position;

means for mounting said sealant application device on said carriage means;

tire spreading means mounted on said carriage means for spreading the beads of a tire apart when said carriage means is in the second position;

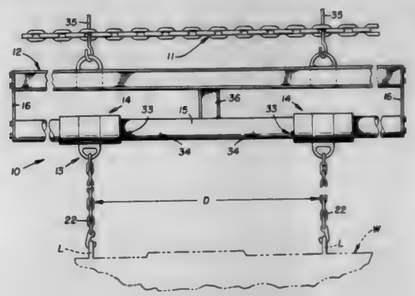
first actuator means for moving said arm means between said advanced and retracted positions; and

second actuator means for moving said carriage between said first and second positions, whereby said sealant application device may be inserted into the interior of a tire by movement of said arm means into its advanced position followed by movement of said carriage means from its first position to its second position.

4,289,090
ELECTROSTATICALLY ISOLATED CARRIER FOR PAINTING APPARATUS

Thomas L. Bagby, Washington, and Gale C. Coombs, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01131, § 371, Date Dec. 26, 1979, § 102(e), Date Dec. 26, 1979, PCT Pub. No. WO/01804, PCT Pub. Date Jul. 9, 1981.
This PCT application filed Dec. 26, 1979, Ser. No. 117,729
Int. Cl.³ B05B *5/02*
U.S. Cl. 118—630 **8 Claims**



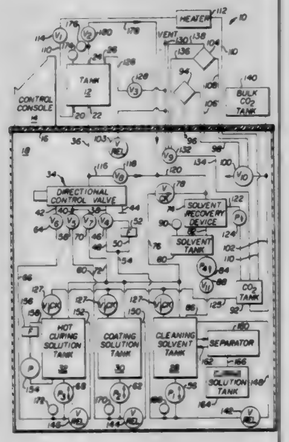
1. In an electrostatic painting apparatus (10) having a conveyor (11) and a carrier (12) attached to said conveyor and having suspension means (13) for attaching a metallic workpiece thereto, the improvement comprising said suspension means including at least one pair of adjustable bracket means (14) for attachment to a workpiece (W) and for sliding movements on said carrier to selectively adjust the longitudinal spacing (D) between the bracket means, each of said bracket means including a nonmetallic and electrically insulating first sleeve (18) slidably mounted on a support rail (15) of said carrier, a second sleeve (20) mounted on said first sleeve and carrying electrical contact means (26) thereon, workpiece attachment means (19) being attached to the second sleeve, and electrical power means operatively associated with said workpiece through said contact means, second sleeve and attachment means.

4,289,091

CLOSED APPARATUS FOR COATING THE INTERIOR OF A TANK

Hubert H. Warner, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1978, Ser. No. 973,042
Int. Cl.³ B05C *3/02*
U.S. Cl. 118—642 **13 Claims**



1. A closed apparatus (10) for coating the interior of a first tank (12), comprising:

first means (20, 22, 24, 26) for connecting the first tank (12) to the apparatus (10) and providing a substantially closed system;

second means (92, 110, 114, 126, 128) for supplying a diluting gas to the first tank (12), controllably purging air from the first tank (12), and reducing the oxygen level therein;

third means (30, 62, 60, 34, 36, 178, 180, 120, 74, 80) for applying a coating solution that can form deleterious fumes to the interior of the first tank (12), draining the coating solution from the first tank (12), forming a film on the interior of the first tank (12), and containing the fumes within the closed apparatus (10), said third means including a second tank (30) for containing a supply of the coating solution, conduit means (60, 34, 36) for connecting the first and second tanks (12, 30), and a reversible pump (62) disposed in series with said conduit means (60, 34, 36); and

fourth means (32, 68, 66, 34, 36, 184) for heating and hardening the film while containing the fumes within the apparatus (10), and wherein said fourth means (32, 68, 66, 34, 36, 184) includes a third tank (32) for containing a supply of hot curing solution, second conduit means (66, 34, 36) for connecting the first and third tanks (12, 32), and a second reversible pump (68) disposed in series with said second conduit means (66, 34, 36).

4,289,092

LIQUID DEVELOPMENT FOUNTAIN

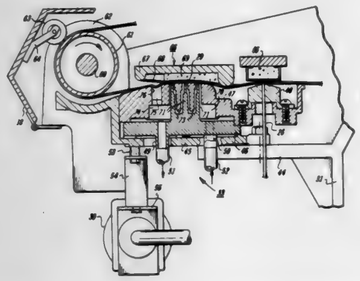
John L. McChesney, Cupertino, and Thomas A. Tacklind, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,674
Int. Cl.³ G03G *15/10*
U.S. Cl. 118—660 **15 Claims**

1. A liquid development system for marking a record member moving in one direction and bearing a latent image, including means for storing liquid developer, fountain means having an inlet and an outlet, supply means connecting said storing means with said inlet, return means connecting said outlet with said storing means, the liquid developer flowing through said fountain from said inlet to said outlet generally in said one direction, said development system being characterized by said fountain means comprising

an upper surface for guiding said record member for movement thereagainst,

a development zone defined by a plurality of openings in said upper surface in the form of spaced, substantially parallel slots in said upper surface communicating with the interior of said fountain, said slots extending transversely to said one direction, and



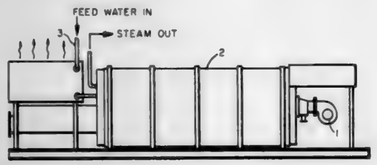
internal baffle means positioned to define a sinusoidal passageway extending from said inlet to said outlet through the interior of said fountain for directing the liquid developer to repetitively contact said record member through said slots.

4,289,093

STEAM GENERATOR

Robert W. Coggins, and Bert B. Miles, both of Tulsa, Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 30, 1979, Ser. No. 89,674
Int. Cl.³ F22B *5/02*
U.S. Cl. 122—197 **6 Claims**



1. A steam generator, including,

a shell in the form of a right angle cylinder horizontally extended,

a burner mounted at the first end of the shell to propagate a body of flame along the axis of the shell for a substantial length of the shell,

a source of feed water,

a first set of water and/or steam tube reaches connected to the source of feed water and mounted to extend the length of the shell and spaced equally about the circumference of the internal wall of the shell, and

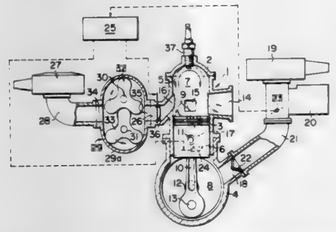
a second set of water and/or steam tube reaches connected to the source of feed water and mounted to extend the length of the shell and spaced equally about the circumference of the internal wall of the shell with each of the reaches of the second set paired with a reach of the first set of reaches about the circumference of the shell.

4,289,094

TWO-STROKE CYCLE GASOLINE ENGINE

Toshio Tanahashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 31, 1979, Ser. No. 71,491
Int. Cl.³ F02B *1/08*
U.S. Cl. 123—69 R **12 Claims**



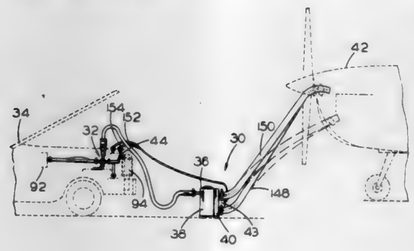
1. A two-stroke cycle gasoline engine comprising a cylinder bore, a piston slidably received in said cylinder bore so as to define a cylinder chamber, an exhaust port which opens from said cylinder chamber towards the atmosphere, a first scavenging port which has a relatively large opening area and injects fuel-air mixture into said cylinder chamber when uncovered by said piston, a second scavenging port which injects air into said cylinder chamber, a carburetor having a throttle valve for controlling engine load, a first passage which conducts fuel-air mixture from said carburetor towards said first scavenging port, a second passage which conducts air towards said second scavening port, a controller, a first control valve at a middle portion of said first passage connected to be controlled by said controller and which controls said first passage so as to throttle it when the engine load is below a predetermined relatively low value, and to open it when the engine load is above said predetermined relatively low value, and a second control valve at a middle portion of said second passage connected to be controlled by said controller and which controls said second passage so as substantially to interrupt it when engine load is below said predetermined relatively low value and to open it when the engine load is above said predetermined relatively low value.

4,289,095

PREHEATER FOR AIRCRAFT ENGINES

Ronald R. Scherr, 505 Little Broadway, Lemay, Mo. 63125

Filed Jul. 5, 1979, Ser. No. 54,848
Int. Cl.³ F16K *11/00*; B60H *1/04*
U.S. Cl. 123—142.5 R **17 Claims**



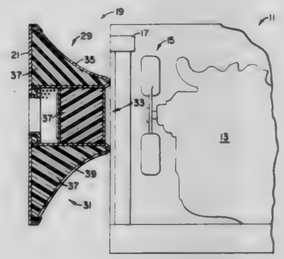
1. A preheater for aircraft engines to facilitate cold weather starting which comprises a preheater housing having a radiator means receiving hot engine coolant fluid therein, hose means for passing said hot fluid from an automobile engine heater system to said radiator and returning said fluid to said automobile engine heating system, blower means in said preheater housing for passing ambient air through said radiator to heat said air and forcing said heated air through ducts adapted to be directed to said aircraft engine to warm the engine and its lubrication systems to reduce the viscosity of the lubricant in said system, the blower means being powered by an electric motor and the source of electrical power being provided by electrical leads having means connecting said leads to the battery of the automobile, a selector valve means being provided in said automobile intermediate a first hot water inlet hose leading to the automobile heater and intermediate a second hot water outlet hose leading from the automobile heater, said selector valve means being further provided with ports adapted to be connected to said hose means passing to said perheater radiator and means are provided for removably connecting hose means to said valve ports, said hose means and radiator being filled with an engine coolant compatible with the engine coolant in said automobile, said hose connecting means automatically closing the ends of said hoses when they are removed from said valve ports whereby the preheater housing and hosing may be readily transferred to another automobile provided with said selector valve means.

4,289,096

ACCOUSTIC NOISE SUPPRESSION APPARATUS NOISE SUPPRESSION MEANS

David D. Latham; Cyril W. Von Fumetti, and Wayne R. Miller, all of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 2, 1979, Ser. No. 54,282
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—198 E **9 Claims**



1. An accoustic noise suppression apparatus for suppressing accoustic noise associated with the operation of a partially encased liquid-cooled internal combustion engine having a radiator in fluid communication with said engine, a fan to generate air flow through said radiator and encasement opening opposite said radiator, comprising:

(a) a housing fixably mounted to said encasement opposite said radiator and generally perpendicular to said air flow through said radiator and encasement opening, said housing having a back panel and opposing side panels;

(b) accoustic energy absorption material;

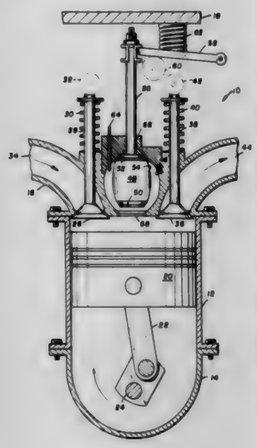
(c) first means for receiving a portion of said air flow and accoustic noise passing through said radiator and encasement opening, said first means to alter a portion of said air flow path to exhaust said air flow in a generally vertical direction to the environment and allowing a portion of said accoustic noise to encounter a portion of said accoustic energy absorption material, said first means securely mounted in said housing; and

(d) second means for receiving another portion of said air flow and accoustic noise passing through said radiator altering said air flow path by channeling said air flow to exhaust said air flow through an opening in said back panel of said housing to the environment and allowing said accoustic noise to encounter a portion of said accoustic energy absorption material, said second means being securely mounted in said housing.

4,289,097
SIX-CYCLE ENGINE

Charles P. Ward, 5609 Selford Rd., Arbutus, Md. 21227

Filed Nov. 13, 1979, Ser. No. 94,040
Int. Cl.³ F02B 19/02, 75/02
U.S. Cl. 123—292 7 Claims

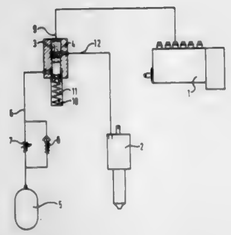


1. A six-cycle engine comprising:
a housing structure;
a cylinder means, said cylinder means being encased in said housing structure;
a crankcase means, said crankcase means being affixed to said housing structure;
a crankshaft means, said crankshaft means being positioned in said crankcase means;
a valve system means, said valve system means consisting of an air intake valve, a compression chamber valve, and an exhaust gas valve, said valve system means being affixed to said housing structure;
a compression chamber, said compression chamber being spherical-like in configuration, said compression chamber being centrally located over and adjacent to said cylinder means and located within said valve system means; and
a head means, said head means being affixed to and enclosing external portions of said valve system means; wherein said spherical-like compression chamber communicates with said cylinder means through an aperture therebetween, said compression chamber valve being located within said compression chamber and being so arranged so as to periodically at predetermined times for predetermined periods open and close said aperture by which said compression chamber communicates with said cylinder means, said compression chamber valve having a valve stem affixed thereto and passing through a wall of said compression chamber;
and wherein the configuration of said compression valve being barrel-like and having a slightly smaller diameter than that of said compression chamber,
a first end of said barrel-like compression valve seating in said aperture when communication between said compression chamber and said cylinder means is to be closed, a second end of said barrel-like compression valve seating around said valve stem of said compression valve at said wall when communication between said compression chamber and said cylinder means is to be open and said first end of said compression valve is lifted from said aperture.

4,289,098
DEVICE FOR CONTROLLING PRELIMINARY INJECTION

Helmut Norberg, Stuttgart, and Richard Kinzel, Bensheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 31, 1979, Ser. No. 62,596
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834633
Int. Cl.³ F02M 45/04
U.S. Cl. 123—299 4 Claims

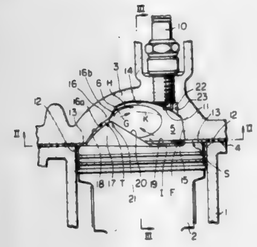


1. A device for controlling the preliminary injection by intermediate relief for internal combustion engines including an injection pump, an injection nozzle, a housing having a uniform inner bore and a control slide valve slidable within said uniform housing bore, said control slide valve including a central bore, and upper, middle, and lower shoulders thereon, said shoulders forming a narrow central annular groove and a wider lower annular groove, said central bore including an axially aligned throttle directly opposite said upper shoulder thereon; said housing including an upper annular groove and a lower annular groove; a feed line connecting with said uniform bore in said housing for feeding fuel between said injection pump and said uniform inner bore, a spring for urging said control slide valve into a rest position, said control slide valve being displaceable from said rest position against the force of said spring by the fuel fed from said injection pump via said feed line to said uniform housing bore, a delivery line connecting with said upper annular groove in said housing for feeding fuel between said upper housing bore and said injection nozzle, a working chamber disposed upstream of said control slide valve, a fuel reservoir, a relief line connecting with said lower annular groove in said housing for feeding fuel between said lower housing bore and said reservoir, said control slide valve including means for displacing, during a first portion of a sliding movement of said control slide valve from said rest position, a preliminary injection quantity of fuel from said working chamber through said central bore in said control slide valve into said delivery line, said lower annular groove on said control slide opening-up said relief line in order to terminate said preliminary injection, said upper shoulder on said control slide valve closing the passage between said working chamber and said delivery line, said control slide valve including means for connecting said feed line directly with said delivery line, during a second portion of said sliding movement of said control slide valve, for purposes of principal injection, characterized in that said middle shoulder on said control slide valve closes-off temporarily the passage between said relief line and said working chamber so that said control slide valve is isolated from reservoir pressure and is thereby braked until the passage between said relief line and said working chamber is re-established before again interrupting the direct passage between said delivery line and said feed line during the return movement of said control slide valve to said rest position.

4,289,099
COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Kiyoshi Nakanishi, Susono; Kazuhiko Ito, Toyota; Takeshi Okumura, Susono; Isamu Iezuka, and Masao Yasukawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 17, 1979, Ser. No. 39,963
Claims priority, application Japan, Jul. 20, 1978, 53-87663
Int. Cl.³ F02B 23/08
U.S. Cl. 123—307 11 Claims

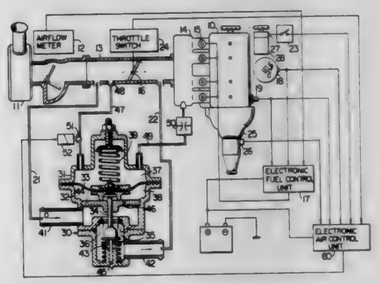


1. An internal combustion engine comprising:
a cylinder block having a cylinder bore therein;
a cylinder head mounted on said cylinder block and having an inner wall;
a first raised portion having on its lower end a flat bottom face and being formed on the periphery of the inner wall of said cylinder head so as to project downwards;
a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face, the inner wall of said cylinder head and the top face of said piston defining a combustion chamber therebetween, said first raised portion having a substantially vertical side wall exposed to the combustion chamber;
an intake valve movably mounted on said cylinder head for leading a combustible mixture into said combustion chamber;
an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;
a spark plug having a spark plug recess located in said combustion chamber, said recess extending outwardly beyond a straight line extending between the peripheries of the intake and exhaust valves;
a first squish area spouting out a first squish flow as said piston reaches the end of its compression stroke, said first squish area comprising an annular area between said flat peripheral portion of the top face of said piston and the flat bottom face of said cylinder head, said first squish area extending substantially along the entire periphery of said top face of said piston;
a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said combustion chamber, said rear face being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves foward in the upper interior of said combustion chamber in the direction opposite to the spouting direction of said first squish flow;
said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said combustion chamber, said first squish area extending inward from the periphery of said top face of said piston to a continuous sinuous inner periphery which extends around and is almost vertically under said intake valve, said exhaust valve, and said spark plug recess and adjacent to said second raised portion;
a third raised portion formed on the inner wall of said cylinder head above said second raised portion and having a bottom wall which cooperates with said rear face of said second raised portion for creating said second squish area therebetween; and,
a surface area ratio of the sum of said first and second squish areas formed on the inner wall of said cylinder head and said first and second squish areas formed on the top face of said piston to the sum of the cross-sectional area of said cylinder bore and the surface area of the inner wall of said cylinder head, except for the surface area of the vertical side wall of said first raised portion, being in the range of 30 percent to 50 percent.

4,289,100
APPARATUS FOR CONTROLLING ROTATION SPEED OF ENGINE

Masumi Kinugawa; Norio Omori, and Motoharu Sueishi, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 20, 1978, Ser. No. 971,215
Claims priority, application Japan, Jan. 20, 1978, 53-5362; Jan. 20, 1978, 53-5783[U]
Int. Cl.³ F02D 9/02
U.S. Cl. 123—339 7 Claims



1. In an automotive engine system having a throttle valve for controlling the amount of air flowing into an engine therethrough and fuel supply means for supplying said engine with fuel in accordance with the amount of air flowing into said engine, an apparatus comprising:
an air valve for controlling the amount of additional air flow bypassing said throttle valve from upstream to downstream of said throttle valve;
an electromagnetic mechanism coupled to said air valve, for controlling an opening degree of said air valve in response to an input electric signal;
temperature sensor means for sensing the temperature of said engine;
speed sensor means for sensing the rotation speed of said engine;
an air-conditioner switch means for detecting whether a compressor of an air-conditioner is coupled to said engine as a load of said engine;
a transmission switch means for detecting that an automatic transmission for said engine has changed its shift position from a neutral position to a drive position, and generating a detection output signal indicative of said shift;
reference generating means for generating a reference rotation speed signal indicative of a desired idling rotation speed of said engine in response to the temperature sensed by said temperature sensor means and a detection output signal of said air-conditioner switch means;
comparing means for comparing the rotation speed sensed by said speed sensor means with said reference rotation speed generated by said reference generating means; and

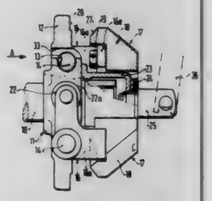
driver means, responsive to an output signal of said comparing means, for generating the input signal to said electromagnetic valve to increase and decrease the amount of the additional air flow so that the idling rotation speed becomes the desired one, said driver means further responsive to either one of the detection output signals of said air conditioner switch means and said transmission switch means, for generating the input signal to said electromagnetic mechanism to increase the amount of the additional air flow independent of the output signal of said comparing means when said air-conditioner switch means detects that said compressor is coupled to said engine, or when said transmission switch means detects that said automatic transmission has changed its shift position to the drive position.

4,289,101

CENTRIFUGAL RPM GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Peter Knorreck, Weissach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 129,920
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916869
Int. Cl.³ F02D *1/04*
U.S. Cl. 123—364 **6 Claims**



1. A centrifugal rpm governor for internal combustion engines, having at least two flyweights the mass of each of which is embodied as a separately manufactured part, and fastened firmly by securing screws to one lever arm of a bell crank, the other lever arm of which engages a governor sleeve and includes a bearing point in the region of the connection between said two lever arms, each flyweight being pivotably supported via a bearing bolt on a flange of a flyweight carrier, characterized in that one of said lever arms of said bell crank is embodied as an angle bracket open toward said flyweight carrier, said angle bracket having mutually parallel arms which laterally enclose said flange of said flyweight carrier and each of said parallel arms having a bearing bore which functions as a bearing point and said angle bracket further including a cross-piece which connects said two parallel arms, said cross-piece having an end face oriented away from said bearing bores, said end face further being firmly screwed to said flyweight mass with extremely high initial mechanical stress, and further wherein said flyweight mass is at the yielding-stress threshold of the substance from which said securing screws are made.

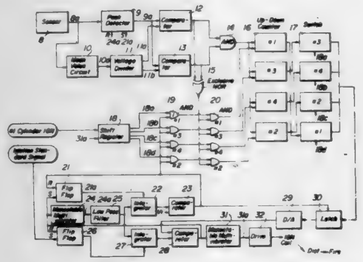
4,289,102

ENGINE SPARK TIMING CONTROLLING DEVICE

Masaaki Katsumata; Michio Onoda; Yasuo Takagi, all of Yokohama, and Kenji Yoneda, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 27, 1979, Ser. No. 61,432
Claims priority, application Japan, Aug. 1, 1978, 53/93967
Int. Cl.³ F02D *5/04*; F02P *5/04*; G01L *23/22*
U.S. Cl. 123—425 **5 Claims**

1. An engine ignition timing controlling device for an engine having a plurality of cylinders comprising a resonant type vibration sensor for detecting the knocking level of an engine and having a resonant frequency which is within the knocking frequency range of said engine, a means for detecting the mean vibrational level of the engine, means for sampling a peak value of an output signal of the sensor for a period of time which is inversely proportional to the engine speed and holding the sampled peak value until an ignition time for the next cylinder is reached, a means for comparing the mean vibrational level detected by said detecting means with said peak value sampled by said sampling and holding means, a means for generating an ignition standard signal corresponding to a driving condition



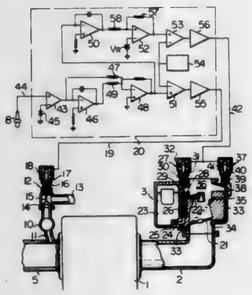
of the engine, a means for determining a retardation angle of ignition timing with respect to the ignition standard signal in accordance with an output signal of the comparing means, a means for generating an ignition timing signal based on the output signal of the determining means, wherein retardation angle of ignition timing with respect to said ignition standard signal is controlled when knocking occurs to optimize the knocking of the engine.

4,289,103

ALTITUDE COMPENSATING DEVICE OF AN INTERNAL COMBUSTION ENGINE

Kazuo Shinoda, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 25, 1980, Ser. No. 210,304
Claims priority, application Japan, Nov. 30, 1979, 54-154171
Int. Cl.³ F02B *33/00*; F02M *7/00*
U.S. Cl. 123—440 **10 Claims**



1. An altitude compensating device of an internal combustion engine comprising an intake passage, a fuel feed apparatus arranged in said intake passage, an exhaust passage, and an air pump driven by said engine and connected to said exhaust passage via a secondary air feed passage, said device comprising:

a detector arranged in said exhaust passage for detecting the overall air-fuel ratio to produce a detecting signal;

a first comparator for comparing said detecting signal with a first reference voltage to produce an output signal, the potential of which is a high level when the total air-fuel ratio is less than the stoichiometric air-fuel ratio, but is a low level when the total air-fuel ratio is greater than the stoichiometric air-fuel ratio;

a first integrator for integrating the output signal of said first comparator;

an adder for adding an output signal of said first integrator to the output signal of said first comparator;

first means for generating a first train of pulses, each having a width which is proportional to the level of the output signal of said adder;

secondary air feed control means arranged in said secondary air feed passage and actuated in response to said first train of pulses for increasing the amount of the secondary air fed into said exhaust passage from said air pump in accordance with an increase in the width of the pulse of said first train of pulses;

a second integrator for integrating the output signal of said adder to produce an output signal having a level which corresponds to the mean value of the output signal of said adder and is increased in accordance with an increase in altitude, the time constant of said second integrator being greater than that of said first integrator;

second means for generating a second train of pulses, each having a width which is proportional to the level of the output signal of said second integrator, and;

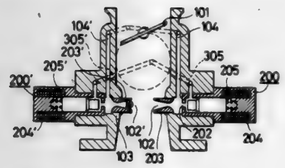
air-fuel ratio control means arranged in said fuel feed apparatus and actuated in response to said second train of pulses for increasing the air-fuel ratio of a mixture formed by said fuel feed apparatus to reduce the difference between the air-fuel ratio of said mixture and the stoichiometric air-fuel ratio when the altitude is higher than a predetermined level.

4,289,104

AIR-FUEL MIXTURE SUPPLYING DEVICE FOR INTERNAL COMBUSTION ENGINES

Shigetaka Takada, Ohbu; Masaaki Nomura, Okazaki, and Manabu Itoh, Anjo, all of Japan, assignors to Aisan Industry Co., Ltd., Aichi, Japan

Filed Sep. 25, 1979, Ser. No. 78,741
Claims priority, application Japan, Oct. 2, 1978, 53-121316
Int. Cl.³ F02M *51/06*
U.S. Cl. 123—471 **2 Claims**



1. In an air-fuel mixture supplying device for an internal combustion engine, having a throttle valve disposed in the intake system of the engine, a venturi portion provided at a downstream side of the throttle valve, a pair of sonic nozzle ports each opening at one of their ends, respectively, into both lateral sides of the venturi portion, mixing chambers provided at the other ends of the sonic nozzle ports and air bleed passages communicating with the other ends of the sonic nozzle ports and with a portion of the intake system upstream from the throttle valve, causing bleed air to pass into the venturi portion through said sonic nozzles ports, the mixing chambers being communicatable with the bleed air, the improvement comprising

the openings of said one ends of said sonic nozzle ports oppose each other such that the centers thereof are located in a common vertical plane,

a fuel injector connected to the mixing chamber at the other end of one of said sonic nozzle ports,

each of said sonic nozzle ports has an angle of divergence ranging between 8° and 22°,

said openings of said sonic nozzle ports at said one ends oppose each other such that the centers thereof are located in said common vertical plane as well as in a common horizontal plane,

another fuel injector communicates with the mixing chamber at the other end of the other of said sonic nozzle ports,

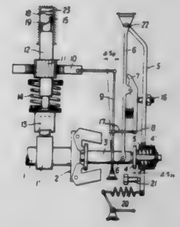
means for actuating said fuel injectors, respectively, so as to have non-overlapping periods of actuation such that air-fuel mixture from one of said sonic nozzle ports, respectively, is injected into the venturi portion and strikes pure air bleed injected into the venturi portion from the other of said sonic nozzle ports, respectively, and alternatingly.

4,289,105

FUEL INJECTION PUMP FOR A COMPRESSION-IGNITION ENGINE

John Noraberg, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Jan. 16, 1979, Ser. No. 3,971
Claims priority, application Austria, Jan. 17, 1978, 330/78
Int. Cl.³ F02M *59/26*
U.S. Cl. 123—500 **2 Claims**



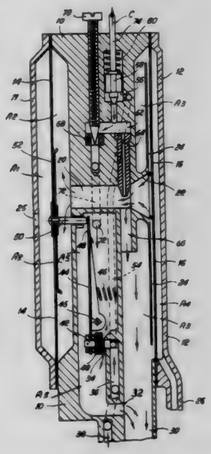
1. In a fuel injection pump for a compression-ignition engine which includes a fuel injection cylinder having an internal cylindrical bore, at least one control port communicating with said bore to supply fuel thereto or remove fuel therefrom, and a piston which is mounted so as to be axially reciprocated within said bore, as well as rotated therewithin, said piston including an upper control edge which determines initiation of fuel injection and a lower control edge which determines termination of fuel injection as the upper and lower control edges move past said control port, and with rotation of said piston determining the relative timing of movement of the control edges past said control port, the improvement wherein the upper and the lower control edges of said piston, when viewed in a vertical cross-section, extend with respect to an imaginary plane at the upper end of the piston perpendicular to the axis of said bore and in a direction between the respective axial points along said control edges which lie in the zone between the axial line along the piston which corresponds to a zone of the partial load area of the piston near the full load area thereof and the axial line which corresponds to the full load area, the partial load area being that portion of the piston which cooperates with the respective control bore during the partial load operation of the compression-ignition engine, as follows: the upper control edge curving upwardly towards said imaginary plane and the lower control edge curving downwardly and including a portion nearest the full load area which curves at a lower angle of inclination than the corresponding curved portion of said upper control edge.

4,289,106

PRESSURE REGULATOR FOR COMBUSTIBLE GASES, IN PARTICULAR FOR INTERNAL-COMBUSTION MOTORS

Pietro Parietti, Via Emilia Pavese 120, Piacenza, Italy

Filed Jul. 9, 1979, Ser. No. 55,726
Claims priority, application Italy, Jul. 21, 1978, 25988 A/78
Int. Cl.³ F02M *21/02*
U.S. Cl. 123—527 **15 Claims**



1. A pressure regulator having an inlet duct and an outlet duct for connection between a source of gaseous fuel under constant pressure and a fuel intake duct of an internal combustion engine, respectively, said regulator comprising a first assembly having a first membrane operatively connected at one side to a check valve and having said one side in communication via a central duct with one side of a second membrane and with said inlet duct, said one side of the second membrane cooperating with an adjacent rim of said central duct, a nozzle for introducing a jet of the gaseous fuel from said inlet duct into said central duct behind said rim, and a duct aligned with the nozzle so as to provide a path for said jet out of said central duct towards said inlet duct, the arrangement being such that a reduction of gaseous fuel pressure on said one side of the second membrane deforms said second membrane to cover said rim causing a reduction of gaseous fuel pressure in said central duct complemented by a reduction of gaseous fuel pressure therein caused by said jet, the reduced pressure being transferred to said one side of said first membrane to deform said first membrane in a manner to open said check valve, said check valve being located in a passage between said inlet duct and said outlet duct.

4,289,107

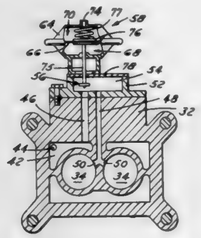
ENGINE CARBURETOR THROTTLE BLADE POSITIONING CONTROL

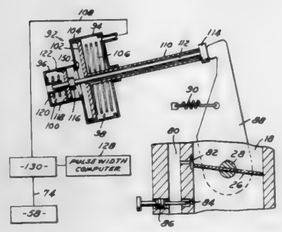
Douglas J. Peters, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1979, Ser. No. 107,979
Int. Cl.³ F02M *25/06, 3/00*
U.S. Cl. 123—571 **8 Claims**

1. An engine carburetor throttle valve position control comprising, in combination, a caburetor mounted on an engine and having an induction passage open to atmospheric pressure at one end and adapted to be connected to the engine intake manifold at the opposite end and including a throttle valve rotatably mounted across the passage movable open from an essentially closed throttle engine idle speed position and having a return movement, for controlling flow through the passage, spring means biasing the throttle valve towards the closed position, first vacuum controlled servo means having stop means extending into the path of movement of the throttle valve in a closing direction to predetermine the idle speed position of the throttle valve, passage means connecting a source of vacuum to the servo to vary the position of the stop means and thereby vary the idle speed setting of the throttle valve,

an exhaust gas recirculation (EGR) passage means connecting engine exhaust gases to the induction passage below the closed position of the throttle valve, a spring closed, vacuum opened EGR flow control valve mounted in the EGR passage means for a variable movement between





open and closed positions to control the volume of EGR gas flow, a second vacuum controlled servo means connected to the EGR valve for moving the EGR valve to an open position, means connecting the second servo means to the passage means, and

control means to control flow of vacuum to the first and second servo means to control opening of the EGR valve and to determine the idle speed setting of the throttle valve, the control means comprising a switching means alternately movable to supply vacuum to the first servo means while cutting off flow of vacuum to the second servo means and vice-versa.

4,289,108

EXHAUST GAS RECIRCULATION RATE CONTROL DEVICE

Giichi Shioyama, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 22, 1980, Ser. No. 123,569
Claims priority, application Japan, Feb. 23, 1979, 54-19845
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **8 Claims**

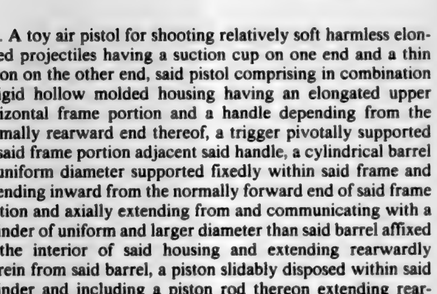
1. In an exhaust gas recirculation system for an internal combustion engine having a valve for controlling a flow rate of exhaust gas recirculated from an exhaust gas outlet to an intake air inlet of the engine, a control device comprising:

(a) first sensor for measuring a flow rate of intake air to the engine;

(b) second sensor for measuring the rotational speed of the engine;

(c) first calculating means for determining fuel injection time from the output of the first sensor;

(d) memory in which is stored a two-dimensional look-up table of exhaust gas recirculation rates for a lattice of points representing values of rotational speed of the engine and fuel injection time; and



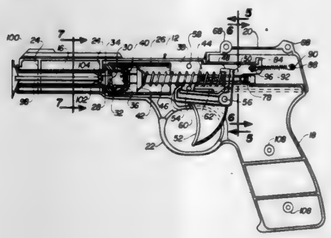
(e) second calculating means adapted to refer to the look up table and determine data corresponding to the fuel injection time calculated and the rotational speed of the engine measured, and supplying the data for control of the valve.

4,289,109

TOY AIR PISTOL WITH HOLLOW BREECH SLIDE

Bruce M. D'Andrade, Whitehouse Station, N.J., assignor to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 25, 1980, Ser. No. 143,849
Int. Cl.³ F41B *11/00*
U.S. Cl. 124—67 **5 Claims**



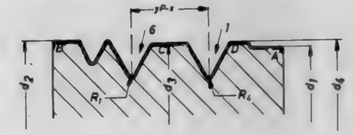
1. A toy air pistol for shooting relatively soft harmless elongated projectiles having a suction cup on one end and a thin piston on the other end, said pistol comprising in combination a rigid hollow molded housing having an elongated upper horizontal frame portion and a handle depending from the normally rearward end thereof, a trigger pivotally supported by said frame portion adjacent said handle, a cylindrical barrel of uniform diameter supported fixedly within said frame and extending inward from the normally forward end of said frame portion and axially extending from and communicating with a cylinder of uniform and larger diameter than said barrel affixed to the interior of said housing and extending rearwardly therein from said barrel, a piston slidably disposed within said cylinder and including a piston rod thereon extending rearwardly and axially from said barrel, a coiled compression spring surrounding said piston rod, a sear on one end of said trigger and a yoke on the other end extending perpendicularly to the axis of said cylinder, a transverse shoulder member on said piston rod adjacent and rearwardly of said piston and said piston rod extending through and rearwardly beyond said yoke on said trigger, the opposite end of said compression spring respectively abutting said shoulder member thereon and said yoke, and a simulated hollow breech slide having parallel opposite generally flat sides slidably supported by and external of the rearward portion of said upper horizontal frame portion above said handle for manual engagement and slidable movement along said horizontal frame portion, said opposite sides of said breech slide being provided with internal surfaces which slidably engage external surfaces of said rearward portion of said upper horizontal frame portion to provide the slidable support for said breech slide, and the rearward portion of said piston rod having a slot extending longitudinally from the rearward end thereof toward said piston, and a pin fixed transversely to and extending between said opposite sides of said breech slide rearwardly of said yoke and extending through said slot, whereby when said breech slide is moved rearward, said piston and piston rod are moved rearward and thereby compress said spring between said shoulder and yoke until said sear on said trigger latchingly engages said shoulder on said piston rod to cock the pistol for firing by pulling said trigger to disengage said sear from said shoulder and cause said piston to be instantly shot forward to compress air in said cylinder and discharge the same into said barrel against the piston on said projectile when positioned longitudinally in said barrel.

4,289,110

SHAPING ROLL

Erwin Junker, Talstrasse 78, 7611 Nordrach-Baden, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 85,056
Int. Cl.³ B24B *53/06*; B23G *5/00*
U.S. Cl. 125—11 CD **4 Claims**



1. A shaping roll for forming a grinding wheel of a longitudinal feed thread grinding machine used for the manufacture of threads including a conically tapered first thread portion and a cylindrical second thread portion, said shaping roll having:

a first groove having flank and radius configurations corresponding to the conically tapered first thread portion to be formed;

a first cylindrical end surface adjacent said first groove and having a first diameter;

a second groove having flank and radius configurations corresponding to the cylindrical second thread portion to be formed;

a second cylindrical end surface adjacent said second groove and having a second diameter;

the depth of said first groove being less than the depth of said second groove;

the bottoms of said first and second grooves being spaced by an axial distance equal to an integral multiple of the pitch of the thread to be formed less an amount equal to the pitch distortion of the thread to be formed at the area of transition between the last thread of the conically tapered first thread portion and the cylindrical second thread portion;

said first diameter of said first cylindrical end surface being greater than said second diameter of said second cylindrical end surface; and

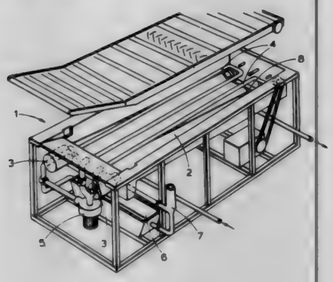
an intermediate cylindrical surface positioned axially between said first and second grooves and haing a diameter less than said first diameter and greater than said second diameter.

4,289,111

FRYING APPARATUS

Michael E. Duncan, Bletchley; Philip J. Whittington, Chinnor, and Michael P. Kimber, Henley on Thames, all of England, assignors to DCA Industries Limited, Bucks, England

Filed Sep. 18, 1979, Ser. No. 76,547
Claims priority, application United Kingdom, Feb. 20, 1979, 05981/79
Int. Cl.³ A47J 27/00
U.S. Cl. 126—391 **7 Claims**



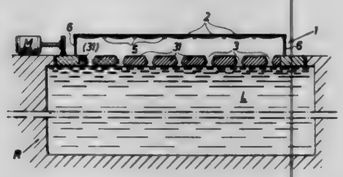
1. Frying apparatus comprising:
a frying kettle adapted to contain a frying medium;
a pre-heater tank for preheating said fryer medium connected to said kettle to pass frying medium thereto;
at least one heat exchanger tube removably fitted in said kettle;
a high intensity suction burner for each tube adapted to produce combustion in said tube;
means for connecting each said burner to its respective tube;
a suction device connected to all of said tubes operable to produce a forced flow of combustion gases in said tubes and exhaust said gases from said tubes; and
an additional heat exchanger tube fitted in said pre-heater and adapted to receive hot gases from said suction device.

4,289,112

HEAT STORING SOLAR COLLECTOR DEVICE

Rutger A. Roseen, Nyköping, Sweden, assignor to Studsvik Energiteknik AB, Nyköping, Sweden

Filed Oct. 16, 1978, Ser. No. 951,334
Claims priority, application Sweden, Nov. 1, 1977, 7712327
Int. Cl.³ F24J 3/02
U.S. Cl. 126—415 **19 Claims**



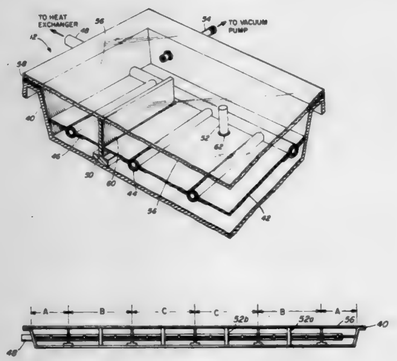
1. In a heat storing solar collector device comprising a liquid reservoir (R), an insulating lid (1) floating on the surface of the liquid (L), and solar collector means (2) over the lid, adapted to heat the liquid (L) of the reservoir (R), wherein the improvement comprises a plurality of spaced apart apertures (3) located in the lid (1) and wherein said collector means includes a plurality of lenses for concentrating incident solar radiation energy into respective concentrated radiation energy beams, the solar collector means (2) being oriented so that the radiation energy beams pass through respective apertures, whereby radiation energy is absorbed directly in the liquid mass (L) of the reservoir to heat the liquid mass.

4,289,113

EVACUATED FLAT-PLATE SOLAR COLLECTORS

Peter G. Whittemore, 47 Elm Ct., Cohasset, Mass. 02025

Filed Jul. 27, 1979, Ser. No. 61,498
Int. Cl.³ F24J 3/02
U.S. Cl. 126—418 **16 Claims**



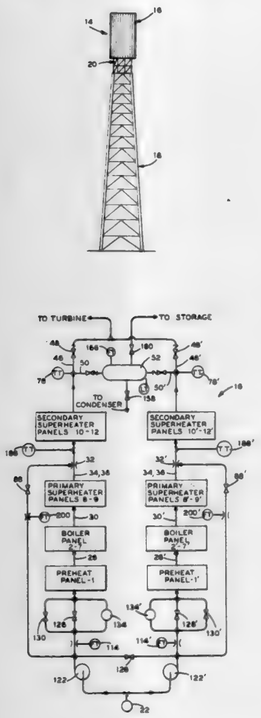
1. In a solar collector for the conversion of solar radiation to thermal energy, which solar collector comprises:
(a) a peripheral frame member;
(b) a lower sheet member;
(c) a single, upper, thin, glass sheet member;
(d) the frame member and lower and upper sheet members forming a shallow, sealed chamber adapted to be evacuated to a subatmospheric pressure or at a subatmospheric pressure;
(e) a chamber absorber means containing a fluid, to permit the fluid to absorb solar radiation passing through the upper, thin, glass sheet member, and to convert the solar radiation to thermal energy in the fluid, to increase the temperature of the fluid;
(f) means to introduce fluid, at one low temperature, into the absorber means and means to remove a higher temperature fluid from the absorber means;
(g) means to support the upper, thin, glass sheet member, the improvement which comprises
a plurality of spaced-apart, generally parallel, glass sheet support elements within the chamber, and extending substantially the length of the chamber and positioned in a symmetrical, but nonlinear, manner with respect to the longitudinal center line of the chamber, so that the distance between the longitudinal support elements decreases as the support elements extend outwardly in position toward the peripheral edge of the frame member, so that the support elements dampen the harmonic vibrations of the supported, upper thin, glass sheet element, prior to the occurrence of stress fractures in the glass sheet element, thereby preventing fracture of the glass sheet element, when the chamber is under subatmospheric pressure.

4,289,114

CONTROL SYSTEM FOR A SOLAR STEAM GENERATOR

Allan J. Zadiraka, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 12, 1978, Ser. No. 941,700
Int. Cl.³ F24J 3/02; F03G 7/02; F22G 5/12
U.S. Cl. 126—421 **4 Claims**



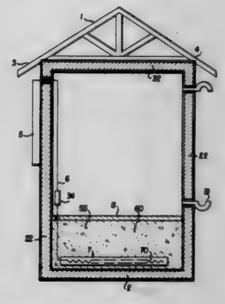
1. A control system having a solar steam generator comprising:
a series of solar-heated panels connected together to allow fluid flow therethrough, said series of panels forming a boiler section, a primary superheater section, and a secondary superheater section of a boiler assembly;
first means for measuring the temperature of the fluid at the outlet of the secondary superheater section and establishing a signal indicative thereof;
second means for measuring the temperature of the fluid at the outlet of said primary superheater section and establishing a signal indicative thereof;
means for controllably adding attemperation fluid into said secondary superheater section of said series of solar-heated panels;
a set point station establishing a signal indicative of desired fluid temperature exiting from said series of solar-heated panels;
a comparison station for comparing the signal from said set point station with the signal from said first temperature measuring means to establish an error signal indicative of any difference between the compared signals; and
a summing station for adding the error signal from said comparison station to the signal from said second temperature measuring means to establish a control signal for controlling said attemperation means.

4,289,115

HEATING AND COOLING OF A HEAVILY INSULATED BUILDING THROUGH THE USE ONLY OF SOLAR ENERGY

Edward J. O'Hanlon, Assembly Point, Lake George, N.Y. 12845

Continuation of Ser. No. 827,339, Apr. 7, 1978, abandoned. This application May 4, 1979, Ser. No. 35,973
Int. Cl.³ F24J 3/02
U.S. Cl. 126—430 **7 Claims**



1. An assembly for maintaining a substantially constant living temperature in a shelter of the type defined by a plurality of highly insulated side walls extending partially beneath ground and partially above ground and joined at one end by a basement floor of highly insulative material and at an opposite end by a ceiling of highly insulative material with a floor extending between said side walls to divide said shelter into a subterranean area containing a heat storage material and separate area adaptable for human occupation located substantially above said subterranean portion and in heat transfer relationship therewith, comprising:
said shelter having a roof extending above said ceiling and joining said plurality of said walls, with at least one solar heat collector assembly mounted on said roof and facing outwardly from said shelter;
at least one heat collector assembly located adjacent to a surface of said ceiling defining said separate area;
each of said heat collector assemblies including at least one heat conductive conduit mounted therein adaptable for receiving a quantity of a working refrigerent fluid capable of boiling when subjected to a source of heat such as solar rays striking said heat collectors;
a plurality of separate container assemblies each positioned within said heat storage material located in said highly insulated subterranean area of said shelter;
each of said container assemblies including at least one heat conductive conduit adaptable for receiving working refrigerent fluid with each conduit being in heat transfer relationship with a portion of said heat storage material;
separate connector means providing a fluid passageway directly between a circuit mounted in a heat collector and a conduit mounted in a container assembly for reversibly transporting a quantity of said working refrigerent fluid therebetween.

4,289,116

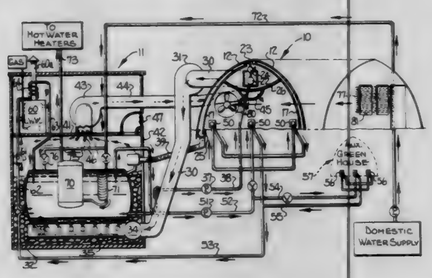
SOLAR HEATING SYSTEM FOR A GREENHOUSE OR OTHER BUILDING

Robert H. Williams, Maggie Valley, N.C., assignor to Meadowbrook Resort, Inc., Maggie Valley, N.C.

Filed Oct. 16, 1979, Ser. No. 85,380
Int. Cl.³ F24J 3/02; A01G 9/00
U.S. Cl. 126—431 **29 Claims**

1. In a building having walls defining an enclosed interior, at least one of said walls including a light transmissive area for admitting light into the interior of the building, the combina-

tion therewith of a solar heat collector positioned at a light transmissive area of said wall, said collector comprising a plurality of elongate narrow strips of a radiation absorptive, heat conductive material having an outwardly facing surface exposed for receiving solar radiation and being heated thereby, said strips extending longitudinally downwardly and being positioned in laterally spaced relation from one another for admitting light therebetween into the building while also serving for partially shading the interior of the building, means cooperating with the upper end portions of said strips for directing a stream of heat transfer liquid onto said outwardly facing surface of the strips for flowing downwardly therealong in contact with the strips for transferring heat therefrom, and conduit means cooperating with the lower end portions of the strips for receiving the heated liquid as it flows from said heat conductive strips and directing the liquid to a predetermined location to permit utilization of the heat content thereof.

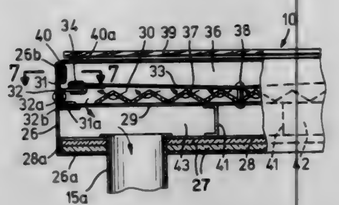


4,289,117

SOLAR PANEL UNIT AND SYSTEM FOR HEATING CIRCULATING AIR

Harry L. Butcher, 3081 E. 7110 South, Salt Lake City, Utah 84121

Filed Feb. 1, 1979, Ser. No. 8,438
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—436 **13 Claims**



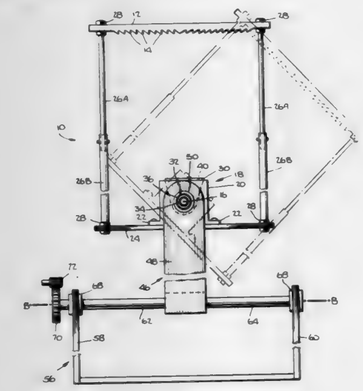
1. A substantially rectangular, solar panel unit for heating circulating air, comprising a heat collector plate freely mounted peripherally for expansion and contraction; a backing plate spaced below the collector plate to provide heat collector space; air-flow directing means sandwiched between the collector plate and the backing plate; a transparent outer panel spaced above the collector plate to provide dead air space for transmitting solar rays to the collector plate while inhibiting heat loss; peripheral walls enclosing the heat collector space and the dead air space to provide corresponding substantially closed chambers; thermal insulation material spaced and secured below the backing plate to provide space for air circulation; walls dividing the air circulation space into mutually parallel cool air and heated air passages, respectively, along mutually opposite sides of the unit; air flow ports leading into the heat collector chamber from the cool air passage along one side of said collector chamber; air flow ports leading from the heat collector chamber into the heated air passage along the other side of said collector chamber, the cool air and the heated air passages being adapted to be open at their ends, respectively, for air flow intercommunication with adjoining units in a solar heating system; and means mounting said heat collector plate for free expansion and contraction while substantially preventing flow of air into the dead air chamber.

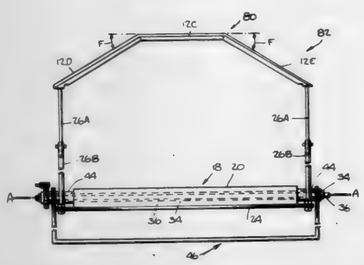
4,289,118

SOLAR ENERGY SYSTEM WITH PIVOTING LENS AND COLLECTOR AND CONDUIT SYSTEM THEREFOR

Virgil Stark, New York, N.Y., assignor to North American Utility Construction Corp., New York, N.Y.

Filed Jun. 29, 1978, Ser. No. 920,288
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—440 **4 Claims**





1. Apparatus for concentrating and collecting solar energy comprising an elongated collector including an elongated container in which at least one elongated conduit extends along a first elongated axis, elongated Fresnel-type lens means having prisms extending generally parallel to said first axis for concentrating the solar energy in an elongated focus, and first support means for supporting said lens means above said at least one conduit, said container having an elongated solar energy-transmitting aperture extending generally parallel to said first axis and facing said lens means, said at least one conduit being disposed below said aperture, said first support means including connecting means interconnecting said lens means and said container at first and second spaced apart locations for pivotal movement of said interconnected lens means and container with respect to said at least one conduit about said first axis so that said aperture faces said lens means during said pivotal movement and the elongated focus of the lens means is located substantially in or on and substantially along said at least one conduit, the products of the weights times the distances of components above and below said first axis being substantially equal whereby the moments above and below said first axis are substantially equal and said apparatus is substantially balanced about said first axis, said apparatus further conprising second support means for supporting the interconnected container and lens means between said first and second locations for pivotal movement of the interconnected lens means and container about an axis transverse to said first axis.

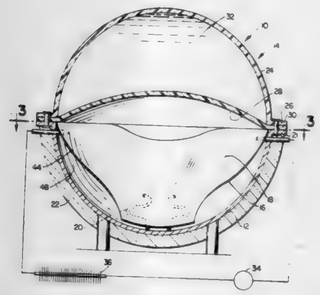
4. Apparatus for concentrating and collecting solar energy comprising an elongated collector including an elongated container in which at least one elongated conduit extends along a first elongated axis, lens means comprising at least three elongated Fresnel-type lenses having prisms extending generally parallel to said first axis, each for concentrating the solar energy in an elongated focus, a central Fresnel-type lens having prisms extending substantially parallel to said first axis, a second Fresnel-type lens adjacent to one end of said central Fresnel-type lens and having prisms extending in the same direction as the prisms of said central lens and inclined downwardly at an angle thereto towards said collector, and a third Fresnel-type lens adjacent to the other end of said central Fresnel-type lens and having prisms extending in the same direction as the prisms of said central Fresnel-type lens and inclined downwardly at an angle thereto towards said collector and opposed to said second Fresnel-type lens, first supporting means for supporting said lens means above said at least one conduit, said container having an elongated solar energy-transmitting aperture extending generally parallel to said first axis and facing said lens means, said at least one conduit being disposed below said aperture, said first support means including connecting means interconnecting said lens means and said container for pivotal movement of said interconnected lens means and container with respect to said at least one conduit about said first axis so that said aperture faces said lens means during said pivotal movement and the elongated focus of at least one of the Fresnel-type lenses is located substantially in or on and substantially along said at least one conduit, the products of the weights times the distances of components above and below said first axis being substantially equal whereby the moments above and below said first axis are substantially equal and said apparatus is substantially balanced about said first axis.

4,289,119

SOLAR COLLECTOR

Donald R. Meyer, Sr., North Haven, Conn., assignor to Soloptics, Inc., Meriden, Conn.

Filed Feb. 22, 1979, Ser. No. 13,920
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—440 **16 Claims**



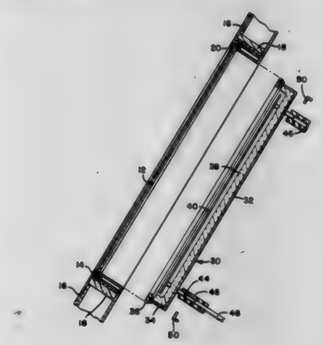
1. A solar collector comprising a collector body, means securing said collector body in fixed and static position on the surface of the earth at a fixed latitudinal and longitudinal position, energy absorbing means disposed in fixed position on said collector body and having an energy absorbing surface for receiving and absorbing solar energy, lense means mounted in fixed position on said collector body for continuously focusing rays of the sun on said absorbing surface throughout the year including the solar days of the summer and winter solstice at said fixed latitudinal and longitudinal position, said absorbing surface having a peripheral shape defined by locii of centroids of the focii of said rays of the sun focused on said absorbing means by said lense means during said solar days of the summer and winter solstice as determined by the fixed and static position of said collector body at said fixed latitudinal and longitudinal position.

4,289,120

SOLAR HEAT COLLECTING APPARATUS

William H. Ward, 2 Albion La., Cincinnati, Ohio 45246

Filed Aug. 2, 1979, Ser. No. 63,301
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **6 Claims**



1. A solar heat collecting device comprising:

a wall or roof portion of a structure defining an opening therein;

a box-like housing of generally rectangular cross section substantially coextensive with and positionable in said opening defined in said wall or roof and having a substantially planar base portion and four upstanding side walls connected thereto;

insulation means disposed inside said housing and extending substantially coextensive with the base portion thereof;

solar heat collection means disposed within said housing above said insulation means parallel to said base portion of said housing and having means for circulating a heat conducting fluid therethrough to and from a remote location;

a transparent cover member extending beyond said side wall portions of said housing and permanently securable to the outer surface of said wall or roof of said structure and overly covering said opening defined in said wall or roof of substantially coextensive rectangular cross section as said housing;

means fixedly securing said cover member to said wall or roof; and

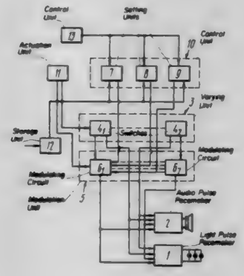
means for mounting said housing within said opening defined in said wall or roof for removal into the interior of said structure for service and maintenance of said solar heat collection means without removal of said transparent cover member from said wall or roof of said structure.

4,289,121

METHOD FOR CONTROLLING FUNCTIONAL STATE OF CENTRAL NERVOUS SYSTEM AND DEVICE FOR EFFECTING SAME

Leonid I. Kupriyanovich, ulitsa Dunaevskogo, 4, kv. 61, Moscow, U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 71,854
Claims priority, application U.S.S.R., Nov. 26, 1978, 2686052
Int. Cl.³ A61M *21/00*
U.S. Cl. 128—1 C **14 Claims**



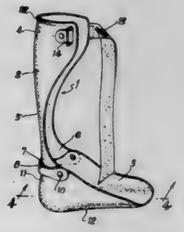
1. A method for controlling the functional state of the central nervous system through exposure of a patient to simultaneous effects of a rhythmic audio signal and a rhythmic light signal, comprising the steps of: determining the change of the biorhythm frequency in the course of a transition to one of the extreme stable states of the central nervous system; setting an initial light signal and an initial audio signal; synchrononously varying the frequency, amplitude and duration of the rhythmic audio and light signals within the established intervals of frequency change of biorhythms; and varying the pitch of the audio signal and the color of the light signal in accordance with the change of the intervals.

4,289,122

ANKLE-FOOT ORTHOSIS

Randy D. F. Mason, 3825 Sierra Morena, Carlsbad, Calif. 92008, and William Vuletich, 1210 Caminito Septimo, Cardiff, Calif. 92007

Filed Apr. 23, 1979, Ser. No. 32,568
Int. Cl.³ A61F *3/00, 5/04*
U.S. Cl. 128—80 E **4 Claims**



1. An ankle-foot brace securable to a patient's leg for controlling the ankle movement which comprises:

a unitary plantar element made of hard, thin-sheeted material having an upward projection shaped and dimensioned to wrap intimately around the heel and ankle area;

a unitary leg element made of hard thin-sheeted material having an upper portion shaped and dimensioned to wrap intimately around the calf, a shank extending downward from said upper portion along the back of the lower leg, a broadening lower portion at the lower end of said shank partially extending over said projection and over both sides of said ankle area, and means for securing said upper portion to the leg;

means for pivotally attaching the upward projection of the plantar element to the broadening lower portion of the leg element at ankle level about the normal flexure axis of the ankle; and

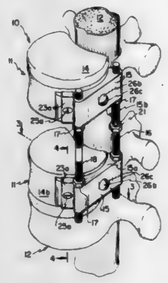
means integral with said plantar element and said leg element for limiting the backward movement of the leg element in relation to the plantar element.

4,289,123

ORTHOPEDIC APPLIANCE

Harold K. Dunn, 3848 Cliff Dr., Salt Lake City, Utah 84109

Filed Mar. 31, 1980, Ser. No. 135,328
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—84 R **7 Claims**



1. An improved orthopedic appliance consisting of,

a pair of brackets each contoured on one surface to closely fit to a vertebral body portion of a human vertebra, which brackets include oppositely threaded holes formed therethrough that are aligned when the brackets are properly installed to the vertebral body portions;

means for securing each said bracket to a separate vertebral body portion consisting of, a U-shaped staple that includes means for securing it to a saddle portion of each said bracket such that legs of said staple extend outwardly from said bracket contoured surface, and, means, additional to said staple, for connecting each said bracket to said vertebral body portion; and

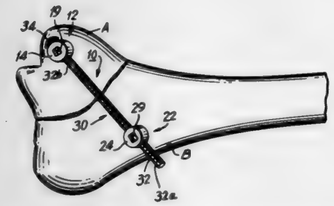
a spacing adjustment rod having oppositely threaded ends arranged to turn into said oppositely threaded holes in said brackets.

4,289,124

SURGICAL APPLIANCE FOR THE FIXATION OF FRACTURED BONES

Robert E. Zickel, 75 Villard Ave., Hastings-on-Hudson, N.Y. 10706

Filed Sep. 18, 1978, Ser. No. 943,213
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 D **3 Claims**



1. A surgical appliance for the fixation of fractured bones,

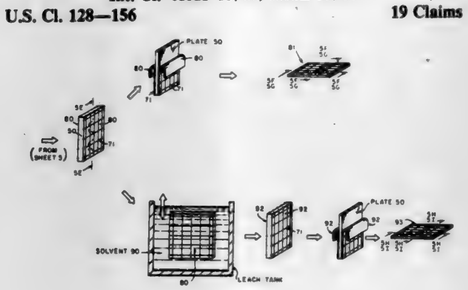
comprising a first anchoring member having a threaded shaft adapted to be embedded into one segment of a fractured bone, said first anchoring member having a substantially cylindrical head portion extending from said threaded shaft and including a channel therethrough for receiving a bolt; a second anchoring member having a threaded shaft adapted to be embedded into another segment of said fractured bone, said second anchoring member having a substantially cylindrical head portion extending from said second-mentioned threaded shaft and including a channel therethrough for receiving said bolt, one of said channels being threaded, each of said substantially cylindrical head portions further including a receptacle therein for receiving an insertion tool which, when rotated, drives the threaded shaft of the respective anchoring member into said respective segment of said fractured bone; and a bolt having a shaft and a head, at least a portion of said shaft being provided with screw threads which mate with the threads of said one channel, the shaft of said bolt being adapted to pass through the channel of said first anchoring member and to be threadedly received in the channel of said second anchoring member such that said shaft, when received by both channels of the cylindrical head portions of said anchoring members, extends substantially perpendicular to the threaded shafts of each of said anchoring members, so as to exert a compressional force on said one and other segments of said fractured bone when said bolt is tightened.

4,289,125

POLYMERIC SHEETS

John H. Hung, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 735,671, Nov. 1, 1976, Pat. No. 4,175,557, Continuation-in-part of Ser. No. 634,908, Nov. 24, 1975, Pat. No. 4,034,751. This application Jun. 26, 1979, Ser. No. 52,221
Int. Cl.³ A61F *13/06;* A61L *15/01*
U.S. Cl. 128—156 **19 Claims**



1. A drapable synthetic burn dressing having (1) a fabric texture on one surface thereof which provides a reservoir for debris from a burn and (2) substantially uniform physiologic properties approximating those of human skin, comprising:

(a) a first layer of cured high-release non-sticking silicone rubber, having a thickness of about 1 mil or less and forming one surface of the burn dressing;

(b) a second layer of cured silicone rubber having a tensile strength and tear strength for a 25 mil thick cured film thereof of at least about 400 pounds per square inch and at least about 20 pounds per inch, respectively, joined to the first layer of silicone rubber; the first and second layers of silicone rubber having a total thickness of about 2 mils or less and forming an ultra-thin, pinhole-free, substantially non-porous and voidsfree membrane; and

(c) a third layer of fabric texture joined to the second layer of silicone rubber and forming the other surface of the burn dressing;

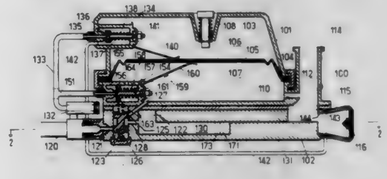
the burn dressing having a water vapor phase transfer rate of about 2 to 10 mg./hr.-cm.², a two dimensional elongation of at least about 100% in each direction, and anti-microbial barrier layer properties.

4,289,126

PRESSURE REGULATOR FOR BREATHING APPARATUS

Ali A. Seireg, and Amr M. S. Baz, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 2, 1979, Ser. No. 35,317
Int. Cl.³ B63C *11/00;* A62B *7/04*
U.S. Cl. 128—204.24 **15 Claims**



1. A pressure regulator for use with breathing apparatus which provides breathing mixture at a substantially constant pressure above ambient and which also provides breathing mixture at a substantially lower control pressure, comprising:

(a) a case having interior walls defining a breathing chamber therein, and a breathing port and an exhaust port in said case both of which are in communication with said breathing chamber;

(b) a pneumatically operable main supply valve communicating with said breathing port and adapted to receive breathing mixture and switchable to open to supply breathing mixture to said breathing port;

(c) a low pressure control valve adapted to receive control pressure breathing mixture at a pressure substantially less than that supplied to said main supply valve, said control valve being biased closed and switchable to open to supply a low pressure breathing mixture control signal;

(d) means responsive to the pressure in said breathing chamber for opening said control valve when the pressure in said breathing chamber drops below ambient;

(e) fluidic control means responsive to the control pressure output signal from said control valve for providing a pneumatic output signal to switch said main supply valve to its open position providing breathing mixture to said breathing port, said fluidic control means also responsive to pressure in said breathing chamber for switching said main supply valve to its closed position when the pressure in said breathing chamber exceeds ambient pressure;

(f) passageways formed in the walls of said exhaust port which are adapted to direct breathing mixture flowing therethrough outwardly to provide power assist to draw used breathing mixture therethrough;

(g) an exhalation assist valve communicating with said exhaust port passageway and adapted to receive breathing mixture under pressure, including a valve body formed in said case and having a valve opening formed therein for receiving breathing mixture under pressure which is directed through said valve body to said passageways in said exhaust port, and a valve closure member biased by a spring to close off said valve opening and switchable to open to supply breathing mixture to said passageways in said exhaust port; and

(h) means responsive to pressure in said breathing chamber for switching said exhalation assist valve open when the pressure in said breathing chamber is above ambient, whereby exhalation by the diver will increase the pressure in said breathing chamber above ambient and will result in breathing mixture under pressure being directed to said exhaust port to assist the exhalation of the used breathing mixture therefrom, said means responsive to pressure including a flexible diaphragm mounted across a cavity

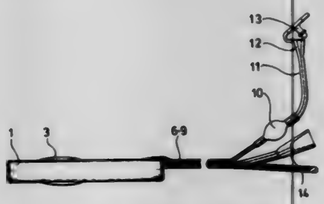
formed in said case which is in communication with said breathing chamber, said flexible diaphragm being mounted to said valve closure member of said exhalation assist valve such that pressure above ambient in said breathing chamber will cause said flexible diaphragm to force said valve closure member away from said valve opening against the force of said spring biasing the same closed.

4,289,127
BREATHING APPARATUS STABILIZER
Byron G. Nelson, P.O. Box 6457, Lake Charles, La. 70606
Filed Oct. 29, 1979, Ser. No. 89,035
Int. Cl.³ A61M *15/06*
U.S. Cl. 128—207.14 **4 Claims**



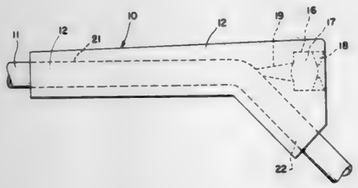
1. In a breathing apparatus of the kind which fits inside the mouth of a human between cheek and teeth, which kind has tube means for air flow, said tube means having at least one upstream air opening proximate the lips, said tube means adapted and being of a length sufficient to extend from the front of the mouth back down the side of the mouth between cheek and teeth to the rear of the mouth adjacent the molars, said tube means having at least one downstream air opening adapted to communicate the interior of said tube means with said rear of said mouth, said downstream air opening being located at a point adjacent the molars, with said upstream opening in combination with said downstream opening being sized to permit a flow of respirated air through said tube means approximate the flow of air said human could achieve through normal nasal breathing; an improvement comprising stabilizing means affixed and extending laterally from said tube means, said stabilizing means being adapted to fit between the cheek and jaw gum and adapted to contact the jaw gum.

4,289,128
LARYNGEAL TUBE
Heinz Rüsch, Waiblingen, Fed. Rep. of Germany, assignor to Willy Rusch GmbH & Co. KG., Kernen, Fed. Rep. of Germany
Filed Jun. 15, 1979, Ser. No. 49,021
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828447
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.15 **21 Claims**



1. In a laryngeal tube for use during surgery on a patient: means for insertion in the larynx including a first tube, inflatable cuff means, located around at least a portion of said first tube, for holding the first tube in the larynx when the cuff means is inflated,
elongated means extending from said first tube to the mouth when the first tube is in the larynx including (a) means for inflating the cuff means comprising a second tube which when in use extends at least part of the distance from the mouth of the patient to said cuff means, and (b) ventilation means for providing respiration to the patient comprising a third tube extending from the mouth far enough down the throat to provide a respiratory function to the patient,
the improvement comprising:
said elongated means being attached to said including stiffening means to enable said first tube to be placed down the throat of said patient without the use of a surgical instrument and said second and third tubes being attached to said elongated means to prevent said second and said third tubes from interfering with the surgery.

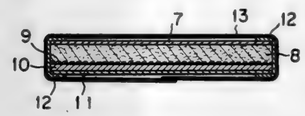
4,289,129
INJECTION SITE APPARATUS
Roger S. Turner, 620 Carpenter La., Philadelphia, Pa. 19119
Filed Nov. 1, 1979, Ser. No. 90,499
Int. Cl.³ A61M *5/14*
U.S. Cl. 128—214 G **28 Claims**



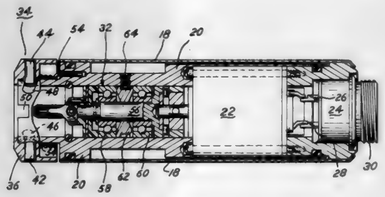
1. An injection site apparatus of the type adapted to be connected to a flexible tube of an intravenous delivery set, comprising:
a tube housing,
a recessed channel in said tube housing for receiving and retaining a continuous unbroken portion of said flexible tube,
said recessed channel having a straight outlet portion and an adjoining inlet portion formed at an angle thereto for retaining said flexible tube at said angle in said recessed channel,
a piercable hypodermic needle closure receiver on said tube housing,
a primary needle guide connecting said piercable closure receiver with a portion of said recessed channel,
a piercable closure mounted on said piercable closure receiver adapted to be punctured by a hypodermic needle, and
a secondary needle guide provided on said piercable closure receiver adjacent said piercable closure,
said hypodermic needle being insertable through said piercable closure and said needle guides to be guided into the center of said flexible tube.

4,289,130
ABSORBENT MATERIAL FOR SANITARY PRODUCTS
Akira Usami, Sakai; Toshiaki Uebayashi, Himeji; Koji Sato, Kyoto, and Tomoko Goda, Kochi, all of Japan, assignors to Daicel Ltd., Osaka and Fuji Sanitary Industries Co., Ltd., Kochi, both of, Japan
Filed Aug. 21, 1979, Ser. No. 68,534
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—287 **11 Claims**

1. In a sanitary product having a multilayered structure comprising a covering layer suitable for contact with the human body, a liquid excretion-leakproof layer and an absorbent layer interposed between the covering layer and the liquid excretion-leakproof layer, the improvement comprising employing as the absorbent layer, a layer of cellulose acetate fibers or a mixture of cellulose acetate fibers and cellulose fibers, the cellulose acetate fibers having an irregular cross-section and having a filament denier of less than 8 deniers.



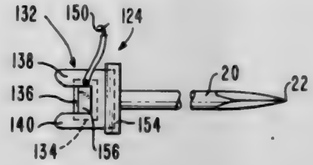
4,289,131
SURGICAL POWER TOOL
Rene E. Mueller, Osceola, Ind., assignor to Ergo Instruments, Inc., Granger, Ind.
Filed May 17, 1979, Ser. No. 39,756
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **10 Claims**



1. A surgical power tool comprising a drive unit including an outer housing, an inner sleeve disposed therein, a power supply unit in said sleeve, a bearing in said sleeve, an intermediate shaft operatively connected to said power unit and journaled in said bearing in said sleeve, and a seal structure on said shaft and in said sleeve for excluding moisture from said power supply unit; and a drive shaft assembly releasably attached to said drive unit and having a portion of a diameter slidable into said sleeve, a slot in the forward end edge of said sleeve, and a pin projecting outwardly from said portion of said drive shaft assembly and slidable into said slot when said portion is inserted in said sleeve, a latching mechanism for securing said drive shaft assembly to said drive unit, said mechanism having an annular shaped rotatable cap around said sleeve and having at least one slot therein for registering with the slot in said sleeve, and a groove in said sleeve inclining outwardly in the direction in which said cap is rotated to align said slots, and a pin extending inwardly from said cap into said inclined groove for positioning said cap to firmly hold said drive shaft assembly in said sleeve, and an instrument attachment head on said drive shaft assembly for receiving a medical instrument to be operated by said drive unit.

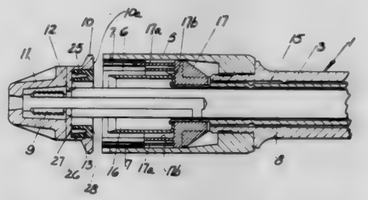
4,289,132
SURGICAL INSTRUMENT AND METHOD OF USING THE SAME
Robert D. Rieman, 2641 NE. 27th Ter., Fort Lauderdale, Fla. 33306
Filed Jun. 25, 1979, Ser. No. 51,746
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.14 **10 Claims**

10. A surgical instrument for detaching a posterior portion of a meniscus in a knee comprising
a slender rigid rod having a sharp point at one end for being inserted through an anterior incision, inside a collateral ligament and then outward by penetration through skin tissue at a location behind the collateral ligament;
a cartilage cutting tool mounted on the other end of the rod for being manipulated by a portion of the rod extending outside of the skin tissue to perform a surgical procedure; and



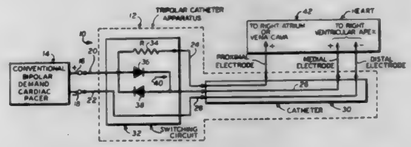
said cartilage cutting tool including an insulative blade holder, a metal blade mounted in the blade holder, and an insulation coated electrical wire connected to the blade for connecting the blade to an electrical surgical generator.

4,289,133
CUT-THROUGH BACKUP WASHER FOR THE SCALPEL OF AN INTRALUMANAL SURGICAL STAPLING INSTRUMENT
Robert G. Rothfuss, Bellevue, Ky., assignor to Senco Products, Inc., Cincinnati, Ohio
Filed Feb. 28, 1980, Ser. No. 125,566
Int. Cl.³ B31B *1/00*
U.S. Cl. 128—334 C **12 Claims**



1. In a surgical stapling instrument having a scalpel; the improvement comprising: a backup member for said scalpel, said backup member having a pair of parallel spaced walls, said walls having corresponding edges, said corresponding edges being joined by a thin web, said web providing a backup surface for said scalpel severable by said scalpel, said walls and web constituting an integral, one piece structure of semi-rigid material.

4,289,134
TRIPOLAR CATHETER APPARATUS
Robert I. Bernstein, Tenafly, N.J., assignor to Electro-Catheter Corporation, Rahway, N.J.
Filed Jul. 23, 1979, Ser. No. 59,523
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **32 Claims**



1. A tripolar catheter apparatus connectable to a bipolar demand cardiac pacer having a common pacer terminal pair for providing both cardiac depolarization sensing and cardiac stimulation in a human patient dependent on the mode of said

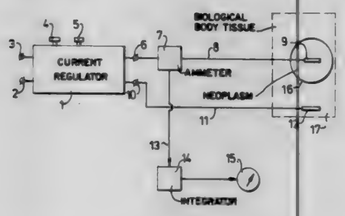
pacer, said sensing being provided in a sensing mode and said stimulation being provided in a stimulation mode, said catheter being insertable through a portion of the patient's curculatory system into the heart, said tripolar catheter apparatus comprising a first catheter terminal connected to one pacer terminal of said pacer common terminal pair, a second catheter terminal connected to the other pacer terminal of said pacer common terminal pair, a first proximal electrode, a second medial electrode, a third distal electrode and switch means responsive to the provision of a cardiac stimulus from said pacer, said switch means being connected between said first catheter terminal and said medial and proximal electrodes for selecting either said medial or proximal electrode dependent on the provision of said cardiac stimulus from said pacer, said distal electrode being connected to said other catheter terminal irrespective of said selection of said medial or distal electrode, said distal and medial electrodes comprising intra-ventricular electrodes, said proximal electrode comprising an extra-ventricular electrode, said switch means being responsive to the provision of said cardiac stimulus from said pacer in said pacer stimulating mode for providing said stimulus to the heart between said intra-ventricular distal and medial electrodes during the presence of said cardiac stimulus, said switch means being responsive to said pacer sensing mode for providing said depolarization sensing from the heart between said intra-ventricular distal electrode and said extra-ventricular proximal electrode, whereby said bipolar demand cardiac pacer is usable as a tripolar demand cardiac pacer.

4,289,135

APPARATUS FOR DESTROYING A SELECTED PART OF BIOLOGICAL TISSUE

Björn Nordenström, Rönninge, and Jerker Olsson, Bandhagen, both of Sweden, assignors to Tekniska Rontgencentralen AB, Sweden

Filed Nov. 19, 1979, Ser. No. 95,420
Claims priority, application Sweden, Nov. 23, 1978, 7812092
Int. Cl.[3] A61N *1/20*
U.S. Cl. 128—419 R **5 Claims**



1. An apparatus for destroying a neoplasm such as a tumor in a biological body tissue, said apparatus including at least two electrodes, means to connect said electrodes to a source of direct current, one of said electrodes arranged to be inserted in said neoplasm and the other arranged to be placed in electrically conductive contact with said body tissue at a distance from the neoplasm, current measuring means located between said source of direct current and one of said electrodes, integrating circuit means connected to said current measuring means for time-integrating the current passing between the electrodes, and an indicator connected to the integrating circuit means for indicating the total amperesecond applied to the neoplasm and body tissue during a treatment period.

4,289,136

PERCUTANEOUS PAIN ALLEVIATOR METHODS

Donald D. Rienzo, Sr., 511 Wolf Hill Rd., Dix Hills, N.Y. 11746

Filed Nov. 13, 1979, Ser. No. 94,034
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—421 **5 Claims**



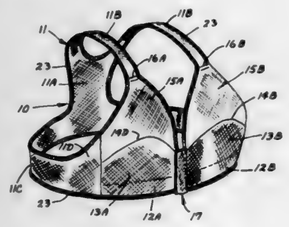
1. The method of alleviating pain at a portion of the body of a user comprising the steps of generating periodically recurring electrical pulse signals, applying said pulse signals to a base electrode and at least one other electrode, positioning the base electrode at the site of the body experiencing the pain, scanningly applying one of said other electrodes to various portions of the body, at each point of application measuring the amplitude of the electrical pulse signals fed between said base electrode and said one of said other electrodes, indicating the point of application yielding the maximum amplitude of the electrical pulse signals, thereafter positioning at least one of said other electrodes at the indicated point of application for a given period of time while said base electrode remains positioned at the site of the body experiencing the pain, whereby the electrical pulse signals block the pain at that site of the body.

4,289,137

SPORTS BRASSIERE

Dorothy G. Dell, and Christine H. Clifford, both of Rte. 1, Box 560, Waldo, Fla. 32694

Filed Aug. 15, 1979, Ser. No. 66,815
Int. Cl.[3] A41C *3/02*
U.S. Cl. 128—482 **5 Claims**



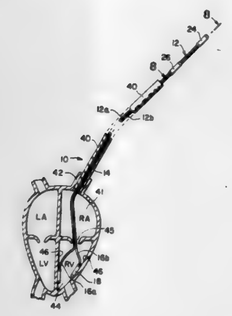
1. A brassiere comprising an underbust band portion, a back member and strap support including side bands attached to said underbust band and passing toward the back of a wearer, shoulder straps for passing up over the shoulders of a wearer, and a pair of bust cups attached to said underbust band and to said straps, said bust cups each comprising two portions including a lower portion and an upper portion, the lower portion of said bust cups being of easily yieldable fabric, and the upper portions of said breast cups being made of a material which resists substantial upward movement of the breast of a wearer under inertial forces caused by sports activities of the wearer, said back member comprising a single substantially vertical band positioned near the center of the back of a wearer, said shoulder straps being attached to and extending from said vertical band, and the side bands also extending from said vertical band.

4,289,138

ELECTRODE ASSEMBLY FOR TEMPORARY PACING AND HEART MEASUREMENTS

Kenneth Halvorsen, Huntington Beach, Calif., assignor to Medical Testing Systems, Inc., Fountain Valley, Calif.

Filed Jun. 9, 1980, Ser. No. 157,504
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—642 **10 Claims**



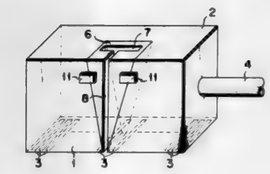
1. An electrode assembly for insertion into a catheter and establishing an electrical connection to an electronic circuit, said assembly comprising:
- a plurality of wires, each of said wires insulated from each other and each of said wires being electrically conductive and extending together side-by-side and having different lengths at one end thereof;
- an insulated other wire binding said plurality of wires together for substantially their entire length except for a free end at said one end of each of said wires;
- an end portion of each of said free ends being bared of insulation;
- an electrically conductive ferrule positioned on each of said bared portions on each of said free ends of said wires, said ferrules being spaced apart axially of each other when axially aligned with said free ends of said wires inside said catheter; and
- a conductive means for connecting the other ends of each of said wires to said electronic circuit.

4,289,139

ULTRASONIC TRANSDUCER PROBE

Susumu Enjoji, and Koji Saito, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 22, 1979, Ser. No. 14,076
Claims priority, application Japan, Feb. 22, 1978, 53-18534
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 **12 Claims**



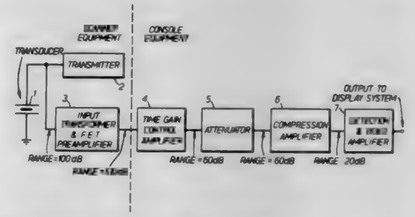
1. An ultrasonic transducer probe for use in injecting a cannula through a region of a subject to be examined comprising:
- a carrier with a plurality of ultrasonic transducer elements arranged proximate to an application surface of said carrier adapted to be positioned on the body surface of the subject,
- a guide cavity formed in said carrier, said guide cavity extending to said application surface to form an application opening in said application surface proximate to said transducer elements,
- a cannula guide block sized to removably and securedly fit within said guide cavity and having at least one guide slot bored therethrough for guiding the cannula, said guide slot communicating with the application opening in said application surface but not communicating with any portion of said carrier itself when said cannula guide block is fit within said guide cavity, and
- a slit communicating with said guide slot along its full length and further communicating with the exterior of said carrier to permit the removal of said ultrasonic transducer probe from the subject after a cannula is inserted through said probe and into the body of the subject,
- whereby the cannula guide block can be removed from said carrier and sterilized independently of said carrier.

4,289,140

SIGNAL PROCESSING SYSTEM

David A. Carpenter, 44 Bellambi St.; George Kossoff, 38 Lower Cliff Ave., both of Northbridge, 2063, New South Wales, and George D. Radovanovich, 4 Ethie Ave., Beacon Hill, 2100, New South Wales, all of Australia

Continuation-in-part of Ser. No. 903,562, May 8, 1978, abandoned. This application Aug. 31, 1979, Ser. No. 71,098
Claims priority, application Australia, May 6, 1977, PD0005
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 **5 Claims**



1. In an echoscope including in series:
- a transducer to receive echoes of an earlier transmitted non-electrical signal and to convert the received echoes into representative electrical signals;
- a time gain compensation amplifier to amplify said electrical signals in dependence upon the relative delay time between transmission of the original non-electrical signal and receipt of the echo; and
- compression means to limit the amplitude range of the signals received from the time gain compensation amplifier;
- the improvement wherein said compression means comprises:
  - a plurality of amplitude limiting means connected in series to pass signals applied to the first such means while compressing the amplitudes of those applied signals which exceed a characteristic value for each such means, the electrical parameters of each amplitude limiting means being selected such that the characteristic applied signal amplitude values for the amplitude limiting means are successively smaller,
  - an adder connected to produce an adder output signal being the sum of adjustable proportions of the output signals from at least the first and last of said series connected amplitude limiting means; and
  - a switch for selectively producing a final output signal

comprising either an output from said last amplitude limiting means or said adder output signal.

4,289,141

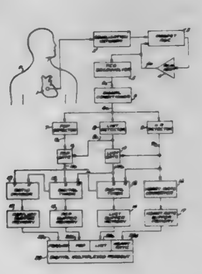
METHOD AND APPARATUS FOR EXTRACTING SYSTOLIC VALVULAR EVENTS FROM HEART SOUNDS

Denny C. Cormier, Miami, Fla., assignor to Cormier Cardiac Systems, Inc., Miami, Fla.

Continuation of Ser. No. 813,248, Jul. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 715,895, Aug. 19, 1976, Pat. No. 4,094,308. This application Apr. 30, 1979, Ser. No. 34,688

Int. Cl.³ A61B *00/00*

U.S. Cl. 128—713 **9 Claims**



1. A system for deconvolving the phonocardiogram (PCG) to extract the systolic valvular events, SVE(t), from said PCG for determination of the systolic time intervals (STI), comprising:

transducer means for converting heart sounds into an electrical phonocardiogram (PCG), electrical means having a transfer function matching the inverse of the Fourier transformation for the transient response wavelet, TRW(f), associated with the fundamental mechanical-acoustical properties of the heart as transduced by said transducer means

means applying said PCG to said electrical means

further means responsive to signals produced by said electrical means for generating signals corresponding to said SVE(t) to define the temporal boundaries of the STI.

4,289,142

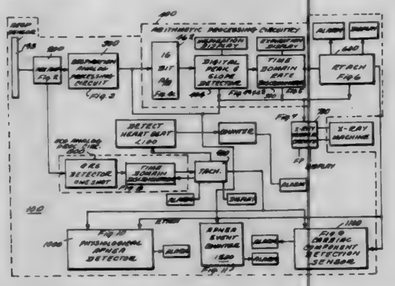
PHYSIOLOGICAL OCCURRENCE, SUCH AS APNEA, MONITOR AND X-RAY TRIGGERING DEVICE

Kenneth L. Kearns, 12822 N. 26th Dr., Phoenix, Ariz. 85029

Filed Nov. 24, 1978, Ser. No. 963,352

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—716 **112 Claims**



1. An apnea monitor comprising:

means, for generating a respiration rate signal indicative of the rate of respiration;

means, for generating a heart rate signal indicative of the rate of heart beats; and

means, responsive to said respiration rate signal and said heart rate signal, for generating an apnea alarm signal when the respiration rate decreases by a predetermined amount in successive periods, and said heart rate decreases in a predetermined number of successive periods.

4,289,143

METHOD OF AND APPARATUS FOR AUDIOMETRICALLY DETERMINING THE ACOUSTIC IMPEDANCE OF A HUMAN EAR

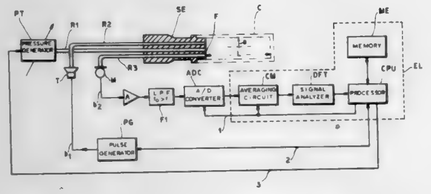
Franco Canavesio, and Rodolfo Ceruti, both of Turin, Italy, assignors to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jan. 9, 1980, Ser. No. 110,801

Claims priority, application Italy, Jan. 12, 1979, 67058 A/79

Int. Cl.³ A61B *5/12*

U.S. Cl. 128—746 **7 Claims**



1. A method of determining the acoustic impedance of a human ear, comprising the steps of:

(a) tightly fitting a channeled probe to a first cylindrical calibrating cavity of radius a_1 and a length L_1;

(b) placing said cavity, via a channel of said probe, under a predetermined static air pressure P_i;

(c) transmitting to said cavity, via a channel of said probe, a short acoustic pulse encompassing a wide spectrum of audible frequencies;

(d) receiving back from said cavity, via another channel of said probe, an acoustic response signal and transforming an electrical wave converted into terms of a Fourier series representing a first set of amplitude samples $S_{1i}(\omega_x)$ of a plurality of constituent frequencies $f_x=\omega_x/2\pi$;

(e) storing the amplitude samples $S_{1i}(\omega_x)$ obtained in step (d);

(f) repeating steps (a) through (e) with said probe fitted to a second cylindrical calibrating cavity of radius a_2 and length L_2, thereby obtaining and storing a second set of amplitude samples $S_{2i}(\omega_x)$;

(g) repeating steps (a) through (d) with said probe fitted to the pinna of a human ear to be tested, thereby detecting a third set of amplitude samples $S_{xi}(\omega_x)$; and

(h) calculating the acoustic impedance $Z_{xi}(\omega_x)$ for said air pressure P_i and for different frequencies f_x from the corresponding stored amplitude samples $S_{1i}(\omega_x)$, $S_{2i}(\omega_x)$, the corresponding detected amplitude samples $S_{xi}(\omega_x)$, the propagation speed v of sound in air, and a fixed parameter γ, according to the following formula:

$$Z_{xi}(\omega_x) = \frac{\gamma P_i}{j\pi v a_1^2} \cot\frac{\omega_x L_1}{v} \cdot \frac{\frac{S_{xi}(\omega_x)}{S_{1i}(\omega_x)}\left[\frac{S_{1i}(\omega_x)}{S_{2i}(\omega_x)} - 1\right]}{\frac{a_2^2 \cot\frac{\omega_x L_1}{v}}{a_1^2 \cot\frac{\omega_x L_2}{v}} - 1 - \frac{S_{xi}(\omega_x)}{S_{1i}(\omega_x)}\left[\frac{a_2^2 \cot\frac{\omega_x L_1}{v}}{a_1^2 \cot\frac{\omega_x L_2}{v}} - \frac{S_{1i}(\omega_x)}{S_{2i}(\omega_x)}\right]}$$

4,289,144

A-V SIDEARM LEAD

Byron L. Gilman, Maple Grove, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 10, 1980, Ser. No. 111,049

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—785 **15 Claims**



1. Atrial-ventricular sidearm transvenous pacing lead for supplying stimulating signals to an atrium cavity and a ventricular cavity comprising:

a. ventricular lead including first a space-wound coil, insulation covering said first space-wound coil, a ventricular electrode secured to a distal end of said first space-wound coil and a proximal tip secured to a proximal end;

b. atrial lead including a second space-wound coil slideably mounted in coaxial relation over said first space-wound coil and insulation covering said second space-wound coil and a proximal tip secured to the proximal end; and

c. atrial sidearm lead including a space-wound coil having a geometrical memory shape, means connecting said distal end of said sidearm lead to said distal end of said atrial lead, insulation covering said space-wound coil of said lead, and an atrial electrode affixed to a pacing tip of said atrial sidearm lead whereby said ventricle lead coaxially slides within said atrial lead for positioning of said ventricular electrode into said ventricular cavity and said atrial electrode into said atrial cavity.

4,289,145

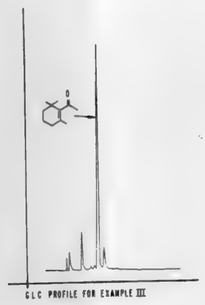
USE OF ACYL TRIMETHYL CYCLOHEXENE DERIVATIVES IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF SMOKING TOBACCO OR SMOKING TOBACCO ARTICLE

Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; John B. Hall, Rumson; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Ronald Schreck, Keyport; Edward J. Granda, Englishtown, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

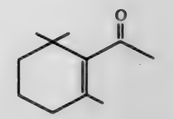
Division of Ser. No. 88,451, Oct. 26, 1979, Pat. No. 4,250,332. This application Jun. 5, 1980, Ser. No. 156,647

Int. Cl.³ A24B *3/12, 15/30*

U.S. Cl. 131—276 **3 Claims**



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of adding to smoking tobacco an organoleptic property modifying amount of the compound having the structure:



4,289,146

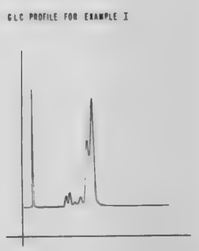
USE OF 2,4,6-TRIMETHYLCYCLOHEXANEMETHANOL AND DERIVATIVES FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF SMOKING TOBACCO AND SMOKING TOBACCO ARTICLES

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

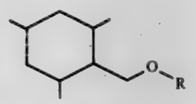
Division of Ser. No. 82,076, Oct. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Oct. 9, 1980, Ser. No. 195,675

Int. Cl.³ A24B *3/12*

U.S. Cl. 131—276 **3 Claims**



1. The process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of adding to smoking tobacco an aroma or taste augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and R is hydrogen or acetyl.

4,289,147

PROCESS FOR OBTAINING DEPROTEINIZED TOBACCO FREED OF NICOTINE AND GREEN PIGMENT, FOR USE AS A SMOKING PRODUCT

Samuel G. Wildman, Santa Monica, Calif., and Shuh J. Sheen, Lexington, Ky., assignors to Leaf Proteins, Inc., Carson, Calif.

Filed Nov. 15, 1979, Ser. No. 94,584

Int. Cl.³ A24B *15/20, 15/24, 15/30, 3/14*

U.S. Cl. 131—290 **30 Claims**

1. A process for treating tobacco leaves to obtain a tobacco product suitable for use in a smoking product from which proteins, nicotine and tar have been removed comprising the steps:

(a) converting the leaves to a pulp comprising a mixture of a coarse solid material portion and a liquid portion, the

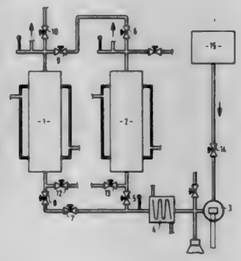
liquid portion containing water-soluble plant material and a suspension of finely particulate material;
(b) separating the coarse solid material from the liquid portion;
(c) separating the finely particulate material from the liquid portion;
(d) separating water-soluble protein and nicotine from said liquid portion;
(e) separating pigmented material from said coarse solid material and said finely particulate material;
(f) separating green pigmented components of said pigmented material from non-green pigmented components; and
(g) recombining the depigmented coarse solid material, the liquid portion from which protein and nicotine have been removed and the non-green pigmented components.

4,289,148

PROCESS FOR IMPROVING THE FILLING CAPACITY OF TOBACCO

Klaus-Dieter Ziehn, Hunnenbarg 19, D-2080 Pinneberg, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,382
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903300
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **15 Claims**



1. In a process for improving the filling capacity of tobacco comprising treating the tobacco with gas under pressure and subsequent heating after relief of the pressure, the improvement comprising treating the tobacco with nitrogen or argon at a working pressure between 300 and 1000 bar and at a working temperature in the range 0° to 50° C. followed, after pressure relief, by brief treatment at a temperature of 100° to 400° C. or by microwave heating thereby improving the filling capacity of the tobacco.

4,289,149

CIGARETTE PROTECTOR

George S. Kyriakou, 43-43 91st Pl., Elmhurst, N.Y. 11373

Filed Apr. 2, 1980, Ser. No. 136,521
Int. Cl.³ A24F *7/02*
U.S. Cl. 131—175 **1 Claim**



1. A cigarette protector comprising an elongated inner tube having a series of perforations formed on the surface thereof and defining therein a hollow elongated cavity for reception therein of a cigarette, said perforations being in fluid communication with said hollow cavity, said inner tube having a first end and a second end spaced longitudinally from said first end; an outer elongated tube also having a series of perforations formed on the surface thereof and defining an elongated hollow cavity therein, said elongated outer tube having a diameter greater than the diameter of said inner tube for receiving therein said inner tube, said outer tube having a longitudinal length greater than the longitudinal length of said inner tube, said outer tube having a first end near said first end of said inner tube but spaced therefrom in a direction away from said second end of said inner tube, and a second end axially aligned with and coplanar with said second end of said inner tube, whereby when said inner tube is mounted within said outer tube, a hollow space exists between said first end of said inner tube and said first end of said outer tube which is defined by the inner surface of said outer tube; said inner tube having a pair of spacer collars, one said spacer collar being mounted at said first end of said inner tube, and the other of said spacer collars being mounted at said second end of said inner tube, whereby said inner tube is spaced from and aligned with said outer tube, said pair of spacer collars bearing against the inner circumferential surface of said outer tube; said inner tube further comprising an inner ring projecting from the inner circumferential surface of said inner tube and projecting into said hollow elongated cavity of said inner tube for positioning therein in a stable and firm manner a cigarette, said ring being positioned midway between said first and second ends of said inner tube; a mouthpiece having an elongated first portion having an axial opening formed therein, and a second portion of larger diameter than said first portion, said opening formed in said first portion extending part way into said second portion, said second portion also having formed therein an axial opening of larger diameter than said opening in said first portion, said second portion having a reduced end forming thereabout a shoulder for abuttment against said first end of said outer tube, said reduced portion having an outer diameter approximately equal to the inner diameter of said outer tube for snugly fitting said second portion of said mouthpiece in said first end of said outer tube, said larger diameter opening of said second portion receiving therein the end of a cigaretter adjacent said first end of said outer tube, said axial opening of larger diameter of said second portion extending from a first location within said hollow space between and spaced from said first ends of said inner and outer tubes and a second location beyond said first end of said outer tube in a direction away from the second end thereof; and a removable end cap mounted at said second end of said inner tube, said removable cap having an enlarged portion formed with an axial bore and a plurality of radial bores, and a reduced portion of smaller diameter than said enlarged portion to define therebetween a shoulder portion, said reduced portion fitting snugly within said hollow cavity of said inner tube at said second end thereof, and said shoulder portion abutting against the outward end surfaces of said second ends of said inner and outer tubes and said spacer collar positioned at said second end of said inner tube, said reduced portion also having an axial bore formed therein in alignment with said axial bore of said enlarged portion of said removable cap, whereby a cigarette burning in said inner tube is protected from causing damage to the surroundings.

4,289,150

PROTECTIVE COVER AND METHOD FOR TREATING HAIR

David D. Kimball, 4677 Wallace La., Salt Lake City, Utah 84117

Filed May 21, 1979, Ser. No. 40,798
Int. Cl.³ A45D *7/00*
U.S. Cl. 132—7 **17 Claims**

1. A protective cover for use in dyeing selected locks of hair of a patron while shielding the remaining portion of hair from the liquid dye applied to said locks of hair, said protective cover comprising:

an outer layer fabricated from material adapted to absorb excess liquid dye that may be applied to said locks of hair;
a liquid impervious liner adapter to be placed adjacent the scalp of a patron, said liner and outer layer being fabricated from materials that are easily punctured to permit withdrawal of said locks of hair through the points of



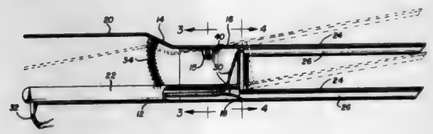
puncture, and said liner and outer layers being joined together and supplied as an essentially flat piece of material that may be folded or cut to fit the scalp of a patron;
adhesive tabs for securing the folds of said protective cover once it has been folded to fit the scalp of a patron; and
pre-printed indicia placed on said protective cover as a guide to folding or cutting the cover.

4,289,151

TWIN CURLING IRON

Jessie M. Pope, 3300 West Warren, Detroit, Mich. 48208

Filed Jun. 29, 1979, Ser. No. 53,175
Int. Cl.³ A45D *2/24*
U.S. Cl. 132—37 R **3 Claims**



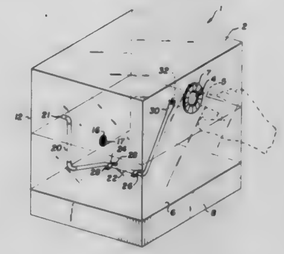
1. A twin curling iron including a pair of elongated levers pivotally connected intermediate their opposite ends and defining first and second pairs of corresponding lever ends, said first pair of lever ends each including a pair of generally parallel end portions spaced apart and disposed in a single plane generally paralleling the longitudinal extent of the corresponding levers, a first pair of said end portions defining elongated channel members opening laterally in the same direction paralleling said plane with a first channel member opening toward the second and the second opening away from the first channel member, the other pair of said end portions defining elongated presser members seated in said channel members with one of said presser members disposed between said channel members and said second channel member disposed between said presser members, said levers being relatively pivotable to laterally swing said presser members in said plane outwardly of said channel members and the spacing between said channel members being sufficient to enable said one presser member to be swung outwardly of the corresponding channel member without contacting the other channel member, one pair of said end portions having electrical resistance heating means operatively associated therewith for heating said one pair of end portions.

4,289,152

NAIL CLEANER

Leo M. Fuhre, 6905 Arcola St., Burnaby, British Columbia, Canada (V5E 1H5)

Filed May 24, 1979, Ser. No. 42,381
Int. Cl.³ A45D *29/17*; **A61H** *35/00*
U.S. Cl. 132—74.5 **6 Claims**



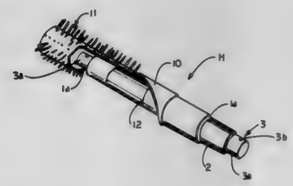
1. A fingernail cleaning apparatus comprising:
a housing with a bottom and an aperture above the bottom for inserting a finger;
a pump mounted on the housing having an intake port connecting the pump to the housing near the bottom thereof for the intake of liquid from the housing and a discharge port for the discharge of liquid from the pump;
a nozzle member connected to the discharge port having a discharge orifice located inwardly from the housing aperture; and
a pointed projection disposed within the orifice oriented generally parallel to the flow of liquid through the orifice for pushing the skin near the fingertip away from the fingernail when the fingertip is pressed against the nozzle member to provide access for liquid issuing from the orifice to a space behind the fingernail without affecting the directionality of liquid issuing from the orifice so as to affect a complete cleaning of the space.

4,289,153

HAIR STYLING DEVICE

Anthony Paccione, 1681 65th St., Brooklyn, N.Y. 11204

Continuation-in-part of Ser. No. 930,024, Aug. 21, 1978, abandoned. This application May 28, 1980, Ser. No. 153,972
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—85 **2 Claims**



1. A hair styling device comprising, an elongated handle member having a rigid hollow body divided into two chambers by a common end wall for storage of two kinds of liquid therein, said hollow body being open at longitudinally opposed ends thereof, each of said open ends communicating with a respective one of said chambers for permitting said chambers each to be charged with liquid, two cap members detachably fastened to said respective open ends of the hollow body, said cap members each having therein pump and nozzle assemblies for selectively spraying liquid from the chambers, and a hair manipulative member including an elongated hollow casing and bristles attached to the casing and extending outwardly

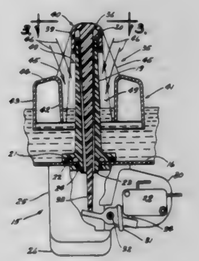
therefrom, said hollow casing having at least one opening at a longitudinal end adapted for receiving therethrough either one of said two chambers of said handle member to be snugly and firmly engaged therewith, so that one of the chambers of the handle member is exchangably situated in the hair manipulative member and the other chamber extending outwardly therefrom is used as a handle of the device.

4,289,154

SELF-CLEANING FLOAT MECHANISM

Lawrence L. Quayle, Lambs Grove, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Nov. 29, 1979, Ser. No. 98,601
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—56 D **9 Claims**



1. A liquid level control device for a washing apparatus having a liquid container including a bottom wall and means within said container for spraying liquid, the combination comprising: a standpipe extending generally vertically from said bottom wall and having an open upper end disposed above the liquid operating level and a lower end providing an opening through said bottom wall; liquid supply control means outside said container including actuating means adjacent the lower end of said standpipe; and vertically movable control means operably associated with said standpipe and including a buoyant portion radially spaced from said standpipe, a cap portion axially spaced above said buoyant portion and enclosing the open upper end of said standpipe to prevent entry of spraying liquid thereinto, angularly spaced means for interconnecting said buoyant portion and said cap portion in said axially spaced apart relationship and defining an open area therebetween to permit spraying liquid to flow therethrough, and an elongated stem portion extending downwardly from said cap portion and through said standpipe for engagement with said actuating means.

4,289,155

APPARATUS FOR CLEANING A SWIMMING POOL

Chester A. Sable, Vista, Calif., assignor to Anthony Pools, Div. of Anthony Indus., City of Commerce, Calif.

Filed May 11, 1980, Ser. No. 145,589
Int. Cl.³ B08B *9/08, 3/02*
U.S. Cl. 134—167 R **5 Claims**



1. In apparatus for cleaning a swimming pool including a flexible conduit connected to a source of pressurized water, one or more hoses connected to said conduit, means powered by the pressurized water to drive the hoses about the pool, and float means for supporting the drive means, hoses and conduit in the water, the improvement comprising:

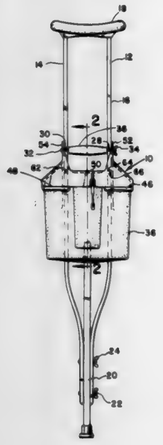
the float means includes a float member of selectively variable buoyancy that is adjusted to such buoyancy as to locate the hoses, drive means, conduit and float means below the upper surface of the pool water.

4,289,156

CRUTCH ATTACHMENT

George Ulics, 1300 Venice, Dearborn, Mich. 48124

Filed Sep. 10, 1979, Ser. No. 73,912
Int. Cl.³ A45B *1/00*; A61H *3/02*
U.S. Cl. 135—66 **7 Claims**



1. For use with a crutch having a pair of spaced side rails, a handle disposed between said side rails at right angles thereto, elongated fastener means passing through said handle and having its ends supported on said side rails, a container comprising:

compartment means having an open top and a wall; and

a pair of tabs connected to said wall, said tabs being spaced a distance accommodating the distance between the side rails so as to be disposed adjacent thereto, said tabs having aligned openings for receiving the fastener means such that the compartment means depends from said fastener means; and

in which the side rails have a first pair of aligned openings receiving the fastener means, and a second pair of openings suited for receiving the fastener means to adjust the position of the handle on the side rails, and including tooth means integrally carried on the tabs and receivable in the second pair of openings to cooperate with the fastener means in preventing motion of the container with respect to the crutch side rails.

4,289,157

VALVE WITH HEAT-RESPONSIVE BEARING ASSEMBLY PROVIDING BACK SEAT ARRANGEMENT

John K. McGee, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 28, 1979, Ser. No. 79,953
Int. Cl.³ F16K *41/02, 17/38*
U.S. Cl. 137—72 **3 Claims**

1. For a normally non-rising stem valve having a valve stem which passes out of a chamber in a valve housing through a bonnet having a passageway in which a packing assembly normally seals between the valve stem and the bonnet and in which a bearing assembly journals the valve stem for rotation

relative to the bonnet and a retainer means secures the bearing assembly relative to the bonnet against substantial axial movement of said valve stem and of said bearing assembly,

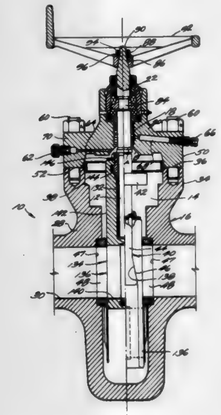
the improvement wherein:

the retaining means includes a bonnet gland secured to said bonnet and surrounding the bearing assembly;

the retaining means further includes a retainer secured to the bonnet gland relatively exteriorly of the bearing assembly; and

the retaining means further includes a body of relatively low temperature fusible material physically axially interposed between said retainer and the bearing assembly, said body being in the form of a washer-like annulus;

said improvement further comprising channel means out through which said fusible material may run when subjected to a predetermined amount of relatively low temperature heat, so that when the fusible material has run out, the valve stem is free to rise to a limited extent; and



said improvement further comprises an annular first metal sealing surface circumferentially provided on said valve stem and a second metal sealing surface provided on said bonnet within said chamber, which two sealing surfaces normally remain spaced axially apart but which become annularly engaged in a sealed condition upon rising of said valve stem by said limited extent;

the bonnet gland comprising a tubular member having an internally threaded outer end portion and said retainer comprising an externally threaded tubular retaining gland threaded into the outer end portion of the bonnet gland;

said valve stem including a radially outwardly projecting flange and said bearing assembly including a first bearing ring below and in contact with that flange and a second bearing ring above and in contact with that flange; and

a tubular spacer means interposed between the second bearing ring and the annulus of fusible material.

4,289,158

SUCTION CONTROL APPARATUS

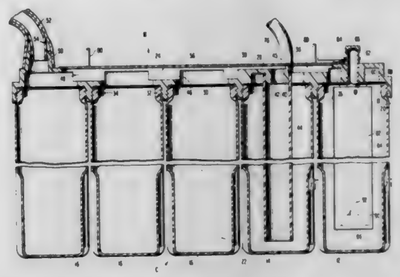
John R. Nehring, Woodcliff Lake, N.J., assignor to C. R. Bard, Inc., Murry Hill, N.J.

Division of Ser. No. 722,099, Sep. 10, 1976, abandoned. This application Mar. 5, 1979, Ser. No. 17,616
Int. Cl.³ A61M *1/00*
U.S. Cl. 137—205 **21 Claims**

1. A suction control apparatus comprising:

a suction control container adapted to receive a predetermined quantity of liquid thereby defining an air chamber above the level of liquid therein, said air chamber being in fluid communication with a vacuum source; and

a passage for communicating atmospheric air external to said apparatus into said suction control container to a location below the level of liquid in said container, said air flowing from said location into said air chamber of said suction control container for controlling the negative pressure of said vacuum source; said passage including means for reducing the loss of liquid from said suction control con-



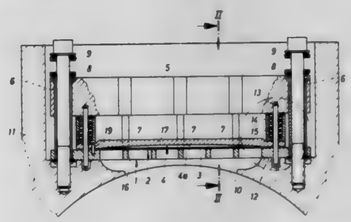
tainer due to liquid entrainment in the air flowing through the container and for attenuating noise in said suction control apparatus, said latter means including means for transmitting said atmospheric air into said air chamber without contact with the liquid in the suction control container during said transmission of air.

4,289,159

OUTLET VALVE FOR A GAS COMPRESSOR

Horst Ehemann, Neuenstadt, and Max Ruf, Neckarsulm, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union, Neckarsulm, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,828
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849075
Int. Cl.³ F16K *15/16*
U.S. Cl. 137—454.4 **2 Claims**



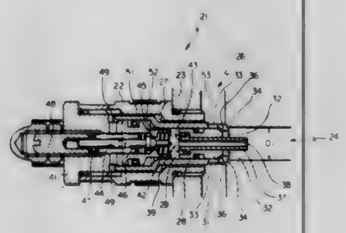
1. A compressor having a housing and an outlet valve which comprises: a valve seat having through apertures for working fluid; a resilient valve plate with spring closing tongues to cover said through apertures; a limit member which limits the lift of the valve plate and is curved concavely on a side thereof which faces the valve plate and which has apertures offset with respect to said through apertures; first spring means for resiliently urging the valve seat against an abutment face on the housing; a pressure member arranged between the first spring means and the limit member; first spacer means between the pressure member and the valve seat to fix the distance therebetween; second spring means between the pressure member and the limit member to urge the ends of the valve plate against the valve seat, at least one of said ends being movably mounted between the valve seat and the limit member; and second spacer means between the pressure member and the limit member to limit the lift of the latter relative to the valve seat to a fraction of a millimeter.

4,289,160

PRESSURE CONTROL VALVE

Haruhiko Kawasaki, Sagamihara; Hideshi Koiwai, Toda, and Shizuo Matsumura, Konosu, all of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1980, Ser. No. 121,609
Claims priority, application Japan, Feb. 20, 1979, 54-19567
Int. Cl.³ F16K *17/18*
U.S. Cl. 137—491 **5 Claims**



1. A pressure control valve including:
- a housing defining a pressure port, a relief port and a back pressure chamber;
- a relief poppet biased to block communication between the pressure port and the relief port, a first end of the relief poppet communicating with the pressure port and a second end of the relief poppet communicating with the back pressure chamber;
- a piston poppet formed with a bore and slidably extending through the relief poppet; and
- a pilot poppet biased to block communication between the back pressure chamber and the relief port, the pilot poppet being moved when a pressure in the back pressure chamber is above a biasing force to unblock communication between the back pressure chamber and the relief port, the piston poppet being moved by a pressure difference between the pressure port and the back pressure chamber to abut against the pilot poppet and seal the bore, the relief poppet being moved by said pressure difference to unblock communication between the pressure port and the relief port;

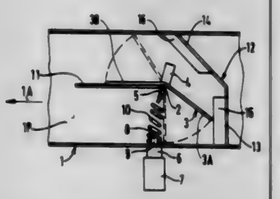
the pressure control valve being characterized in that $A_P/A_R \geqq 1.1$ where A_R is an area of the piston poppet exposed to pressure in the pressure port and A_P is an area of the pilot poppet exposed to pressure in the back pressure chamber.

4,289,161

FLUID FLOW REGULATOR

Emil Siegwart, Michael-Blatter-Str. 6, D-6603 Sulzbach-Neuweiler, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,562
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758352
Int. Cl.³ G05D *7/01*
U.S. Cl. 137—499 **17 Claims**



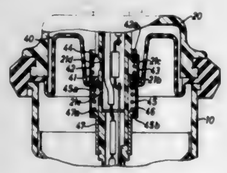
1. A fluid flow regulator, comprising a tubular housing defining a passage for the flow of a fluid medium in a predetermined direction; shaft means mounted in said housing and defining a pivot axis extending substantially diametrically of said passage; a valving element mounted on said shaft means in said passage, said element including two mutually inclined sections and being turnable by the fluid medium between spaced apart first and second end positions in which said element respectively permits and prevents the flow of fluid medium through said passage, one of said sections being substantially parallel to the axis of said housing in one end position and the other of said sections being substantially normal to the axis of said housing in the other end position of said valving element; and means for restricting the flow of fluid medium in said passage upstream of said valving element, as considered in said direction, said flow restricting means defining at least one channel whose cross-sectional area is less than the cross-sectional area of said passage and which directs at least one stream of fluid medium against said valving element.

4,289,162

FLUID RESERVOIR FOR BRAKE MASTER CYLINDER

Yoshihisa Nomura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 28, 1980, Ser. No. 135,096
Claims priority, application Japan, Jun. 29, 1979, 54/90579[U]
Int. Cl.³ F15B *7/10*
U.S. Cl. 137—572 **5 Claims**



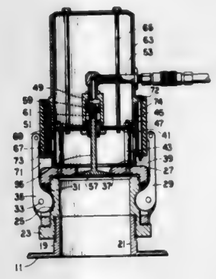
1. A fluid reservoir for mounting on a brake master cylinder, the reservoir comprising:
- a casing for storing an amount of brake fluid therein, said casing having an upper opening;
- a cap detachably coupled over the upper opening of said casing to close said casing, said cap being provided at the center thereof with a vertical rod extending axially into said casing and having a pair of axially spaced recesses at its intermediate portion;
- an extendable diaphragm seal member coupled in a fluid-tight manner within said casing to subdivide the interior space of said casing into an upper chamber vented through a portion of said cap and a lower chamber located above the liquid surface of the brake fluid, said diaphragm seal member being provided at its inner periphery with an annular valve part movable along the intermediate portion of said vertical rod and cooperating with the recesses of said rod to permit the flow of air to and from the lower chamber;
- resilient means for normally retaining the valve part of said diaphragm seal member between the recesses of said rod to close the lower chamber wherein said resilient means comprises first and second coil springs concentrically assembled with said vertical rod, said first spring being loaded to bias the valve part of said diaphragm seal member in the downward direction, and said second spring being loaded to bias the valve part of said diaphragm seal member in the upward direction; and
- a cylindrical spring receiver concentrically assembled with said vertical rod to contain said first spring therein and secured at its lower end to the valve part of said diaphragm seal member, and an annular retainer engaged with a stepped portion of said vertical rod and received by an upper end portion of said receiver in such a manner that upward movement of said receiver is guided by said retainer, and wherein said first spring is disposed with a predetermined load between the lower end of said receiver and said retainer.

4,289,163

VENT VALVE FOR A MOBILE TANK

Leslie E. Pierson, 3629 Layton, Haltom City, Tex. 76117

Filed May 21, 1979, Ser. No. 40,749
Int. Cl.³ F16K *24/00, 35/00*
U.S. Cl. 137—587 **5 Claims**



1. In a mobile tank for transporting liquids, having a discharge port and a manually operable discharge valve adjacent its bottom for discharging liquid, an improved means to reduce negative pressure in the tank while unloading the liquid, comprising;
- valve means, mounted to the tank adjacent its top in an aperture, having an open position for communicating the interior of the tank with the exterior, and a closed position for closing the aperture; the valve means having a valve seat separating the interior of the tank from the exterior and a reciprocal valve head carried on the interior side of the valve seat for seating against the valve seat when the valve means is in the closed position;
- a manually operable air valve mounted in a line extending from a source of air pressure to the valve means, the valve means being responsive to said air pressure for moving from the closed position to the open position;
- said manually operable air valve having a handle that is movable from a closed position to an open position for selectively supplying said air pressure to the valve means; and
- mounting means for mounting the air valve to the tank so that the air valve handle physically interferes with coacting handle means on said discharge valve during the opening movement of the discharge valve when the air valve is in said closed position preventing said discharge valve from opening, said air valve handle movable to a position when said air valve is moved towards said open position such that said air valve handle no longer interfers with said discharge handle means to allow said discharge valve to be moved to the open position.

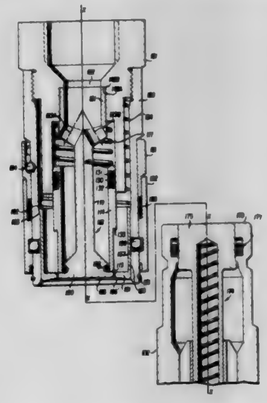
4,289,164

COUPLING DEVICE

Kjell R. Ekman, Zug, Switzerland, assignor to Ekman Engineering AG, Zug, Switzerland

Continuation-in-part of Ser. No. 884,668, Mar. 8, 1978, Pat. No. 4,219,048, which is a continuation-in-part of Ser. No. 691,105, May 28, 1976, abandoned. This application Apr. 18, 1980, Ser. No. 141,734
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.03 **21 Claims**

1. A coupling device for supplying fluid from a pressurized source to an output conduit without fluid leakage, said coupling device comprising:
- a first coupling part having a flow passageway extending therethrough;
- a second coupling part having a further flow passageway extending therethrough, said flow passageways forming a continuous flow passageway through said coupling device as said coupling parts are detachably coupled to one another to permit fluid flow through said coupling device;
- a first valve body extending within said first coupling part in a direction parallel to a longitudinal axis through said first coupling part, said first valve body being fixedly attached to said first coupling part and including a first, enlarged end portion formed thereon;
- a second valve body slidably disposed within said second coupling part and including a second end portion contacting said first, enlarged end portion as said first and second coupling parts are detachably coupled to one another;
- a hollow casing slidably arranged within said first coupling part so as to selectively surround portions of said first valve body, said hollow casing including a cylindrically-shaped surface portion perpendicularly spaced from said longitudinal axis a distance which is less than a perpendicular distance between a side surface of a flange mounted on said first, enlarged end portion and said longitudinal axis, providing for selective contact between said hollow



casing and said side surface of said flange to block fluid flow completely through said first coupling part;

said hollow casing further including an outer surface having a raised surface portion extending in a radially outwardly direction toward a surrounding portion of said first coupling part, with biasing means positioned between an interior portion of said first coupling part and a portion of said hollow casing for biasing said hollow casing into surface contact with said side surface of said flange;

said coupling device further including a cover assembly slidably disposed within said first coupling part and encircling said casing, said cover assembly including an elongated flange extending in a radially inwardly direction from a first end of said cover surrounding said first, enlarged end portion, said cover assembly further including a second end axially spaced from said first, enlarged end portion;

said elongated flange having an inner end surface spaced from said longitudinal axis a perpendicular distance less than a perpendicular distance between said raised surface portion and said longitudinal axis, said elongated flange further including a first side wall portion facing said raised surface portion and extending in a direction substantially perpendicular to said longitudinal axis and said elongated flange including a second side wall surface facing away from said raised surface and inclined toward said first side

surface as the distance towards said inner end surface decreases; and said coupling device includes

further biasing means extending between an interior wall portion of said first coupling part and said second end of said cover member for biasing said elongated flange into a position radially aligned with said flange mounted on said first, enlarged end portion;

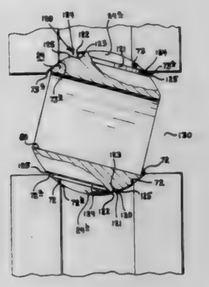
whereby said second coupling part contacts and presses said elongated flange toward said further biasing means as said coupling parts are detachably coupled to one another, with said elongated flange contacting said raised surface portion of said hollow casing to slide said hollow casing out of contact with said first, enlarged end portion to allow fluid flow through said first coupling part.

4,289,165

EQUALIZING BALL VALVE MEMBER

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 17, 1979, Ser. No. 39,836
Int. Cl.³ F16K *13/22*
U.S. Cl. 137—625.32 **27 Claims**



1. An equalizing ball valve member for use in valve apparatus to control fluid flow through said apparatus comprising: a spherical body having a bore therethrough defining a flow passage through said body and at least one side sealing surface on said body for coacting with a spherical annular seat surface for permitting fluid flow through said apparatus when said ball valve member is rotated to a position aligning said bore within said annular seat surface and for closing said apparatus to fluid flow when said ball valve member is rotated to a position at which said bore is misaligned from said annular seat surface and said side sealing surface on said ball valve member is engaged with said annular seat surface; and said spherical body being provided with equalizing flow course means on said side sealing surface over an area smaller than the area within the inner edge of said annular seat surface to permit limited fluid flow past said valve member while remaining in intimate contact with said annular seat surface at a position of rotation of said valve member between a closed position and prior to rotation of said ball valve member to a position at which said bore communicates through said annular seat surface.

4,289,166

CLOG-PROOF CHECK VALVE

Harold R. Haines, Utica, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

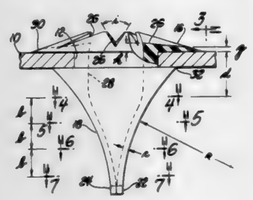
Filed Nov. 5, 1979, Ser. No. 91,426
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—846 **7 Claims**

1. A clog-resistant drain valve of soft elastomeric material formed integrally with a stem and an enlarged head in a shape resembling a mushroom;

a. the stem of the valve in its elastomeric free state tapering at a lower end to an elongated flat edge;

b. the head of the valve having a peripheral groove adapted to receive the edges of an opening in a surface to be drained by the valve;

c. a substantially vertical drain passage centered and originating in the head in substantially circular cross-sectional form, and in the free state terminating at the tapered lower end in a generally flat edge; said drain passage in said preformed free state being progressively larger in overall perimeter commencing from the beginning of the taper and going towards said terminal lower flat edge;



d. the elastomeric material being sufficiently soft to permit opening of the tapered edge for ready passage of entrained solids which would otherwise clog the drain; and

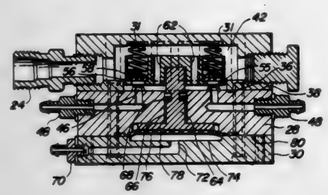
e. the tapered portion of said passage when open having a preformed cross-section which progressively increases without circumferential stretching as drained refuse moves toward and passes through the extreme lower edge.

4,289,167

NON-DRIP FLUID DELIVERY SYSTEM

Thomas G. Switall, Wheeling, Ill., assignor to Ryco Graphic Manufacturing, Inc., Wheeling, Ill.

Continuation of Ser. No. 955,977, Oct. 30, 1978, abandoned.
This application Aug. 25, 1980, Ser. No. 180,858
Int. Cl.³ F16K *11/04*
U.S. Cl. 137—869 **2 Claims**



2. A non-drip fluid delivery system, comprising:

(a) a supply of fluid under pressure;

(b) a plurality of outlet lines;

(c) a single valve means for said plurality of outlet lines for simultaneously interrupting the flow of fluid from said supply to each of the outlet lines, said valve means including;

(1) a valve body having a top and bottom, a cylindrical chamber therein, said chamber being closed at the top of the body and open at the bottom of the body, and means for introducing the supply of fluid into said chamber;

(2) a valve manifold securely mounted to the bottom of said valve body for closing the open end of the cylindrical chamber and defining therewith a valve cylinder, said manifold including a through orifice in communication with the cylinder, a plurality of outlet channels being disposed in said manifold in communication with said valve cylinder, said channels being in one-to-one corresponding communication with the plurality of outlet lines;

(3) sealing means disposed intermediately of the valve body and valve manifold;

(4) a single piston disposed in said cylinder intermediate of the means for introducing the fluid supply and the outlet channels and movable between a first position and a second position in said cylinder, said valve piston when in first position being in simultaneous closing engagement with each of said outlet lines and when in said second position being out of engagement with the outlet lines to permit the flow of fluid from said supply into each of the outlet lines; and

(5) a valve plunger extending through said valve manifold through orifice and positioned for operative engagement with said piston;

(d) valve operating means for selectively moving said piston between its first position and second position for simultaneously opening and closing all of said outlet lines, said valve operating means comprising:

(1) a valve control cover having a recess, and being securely mounted to said valve manifold such that said annular recess faces said valve manifold;

(2) a diaphragm disposed in said annular recess; and

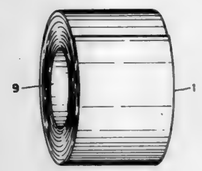
(3) means for selectively supplying air under pressure to said diaphragm, the diaphragm being responsive to air pressure applied there against for displacing the valve plunger and moving the valve piston from the first position to the second position.

4,289,168

METHOD FOR MAKING PIPE OF FABRIC IMPREGNATED WITH RESIN

Guy B. E. Lecourt, Massy, France, and Claude L. L. Portalier, Marly Le Roi, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Sep. 17, 1979, Ser. No. 75,997
Claims priority, application France, Sep. 22, 1978, 78 27205
Int. Cl.³ F16L *9/16*; B29D *23/12*; B23D *23/13*
U.S. Cl. 138—109 **10 Claims**



1. A method for making a tubular hollow body from fabric impregnated with a thermosetting resin, comprising:

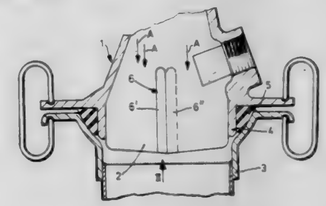
forming a coil of dry, thermosetting resin impregnated fabric, inserting the coil into a hollow mold having two open ends, inserting a preheated mandrel into the coil through a first of said open ends, said mandrel having a conical portion and a cylindrical portion, causing turns of the coil to shift axially and form a conical shape larger than said coil as initially inserted in said mold, inserting a presser sleeve into the mold through the second open end, said sleeve surrounding said cylindrical portion and cooperating with said mandrel and said hollow mold to exert pressure on said coil and to shape said coil while maintaining the temperature of the coil above the softening point of the resin but below a temperature at which significant further polymerization will occur, and then further polymerizing said resin.

4,289,169

HEAT-EXPANDABLE MULTI-PASSAGE PIPE HAVING PARTS FOR INTENDED BREAKAGE

Detlef Banholzer, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 95,934
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916030
Int. Cl.³ D03D *13/00*; F01N *7/00*; F28F *7/00*; B65D *65/28*
U.S. Cl. 138—117 **3 Claims**



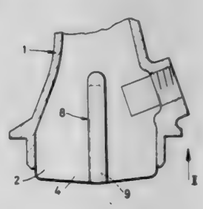
1. In a heat-expandable tube-like component including a tubular wall having a length dimension and defining an inner space; and a septum attached to the tubular wall and dividing the inner space into separate, longitudinally extending passages; the improvement wherein said septum has a weakened portion comprising means defining a first groove-like recess in one face of said septum; said first groove-like recess extending substantially parallel to said length dimension; and means defining a second groove-like recess in another, opposite face of said septum; said second groove-like recess extending slightly offset from and parallel to said first groove-like recess; further wherein portions of said septum flanked by said first and second groove-like recesses are sufficiently weak to break under the effect of forces derived from heat-caused expansion of said component; and further wherein said recesses being so arranged with respect to one another that upon breakage of the septum portions flanked by said recesses the septum halves obtained by the breakage are adapted to glide past one another.

4,289,170

COMPONENT SUBJECTED TO THERMAL STRESSES AND HAVING PARTS FOR INTENDED BREAKAGE

Karl Pape, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 95,935
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850614
Int. Cl.³ D03D *13/00*; F01N *7/00*; F28F *7/00*; B65D *65/28*
U.S. Cl. 138—117 **4 Claims**



1. In a wall-like component being supported at opposite ends and exposed to thermal stresses, the improvement comprising

(a) an elongated bilateral enlargement extending substantially parallel to a plane in which the component lies; said enlargement being oriented substantially perpendicularly to an imaginary distance line between said opposite ends;

(b) means defining an elongated cavity extending within and codirectionally with said enlargement; said cavity being offset with respect to said enlargement in the direction of one of said ends of said component; said cavity having a

dimension measured in a direction perpendicular to said plane; said dimension being greater than the thickness of a component portion adjoining said enlargement, whereby upon breakage of parts of said enlargement under the effect of forces derived from heat-caused expansion of the component, there being obtained a free edge of said component portion and a trough-like part formed together by remaining parts of said enlargement and said cavity for receiving said free edge.

4,289,171

TUBULAR PACKAGING SHEATH AND PROCESS FOR ITS MANUFACTURE

Felix Rassbach, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,103

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822886

Int. Cl.³ F16L *11/02*; B32B *1/08*

U.S. Cl. 138—145 **16 Claims**

1. A packaging material, comprising a fibrous web wherein at least a part of the fibers forming said base web include at least a partial coating of a mixture of chemical substances which comprise a major proportion by weight of a chemical binder based on a synthetic water-soluble heat-curable cationic resin precondensate and of a minor proportion by weight of at least one coloring chemical substance, and a layer of regenerated cellulose impregnating and coating said fibrous base web which is at least partially coated with said mixture of chemical substances, said packaging material being produced by a method comprising the steps of applying to at least one surface of said fibrous web a liquid containing a solids constituent comprised of said mixture of chemical substances, removing the liquid volatile constituent of said liquid, thereafter impregnating and coating the fibrous web with a viscose solution, and regenerating said viscose to produce said regenerated cellulose impregnated and coated fibrous web.

4,289,172

REINFORCED BITUMEN PIPES AND PROCESS FOR THEIR MANUFACTURE

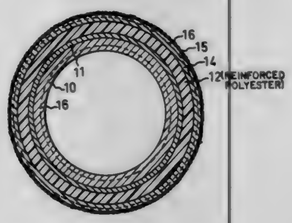
Stig O. M. Ekström, Kungsgatan 28, S-211 49 Malmö, Sweden

Filed May 1, 1979, Ser. No. 34,884

Claims priority, application Sweden, May 31, 1978, 7806324

Int. Cl.³ F16L *9/14*

U.S. Cl. 138—149 **12 Claims**



1. A reinforced bitumen pipe, characterized in that it has an insulating glass fiber layer which on its inner side is united with an inner bitumen layer partially penetrating into the glass fiber layer and which on its outer side is united with a strength-providing layer of reinforced thermosetting resin partially penetrating into the glass fiber layer without reaching the bitumen layer, said strength-providing layer being coated on its outer side with an outer bitumen layer.

4,289,173

PAPERMAKERS FABRICS

Terence Miller, Chorley, England, assignor to Scapa-Porritt Limited, Blackburn, England

Continuation of Ser. No. 871,460, Jan. 23, 1978, which is a continuation of Ser. No. 735,986, Oct. 27, 1976, abandoned. This application Jan. 21, 1980, Ser. No. 109,661

Claims priority, application United Kingdom, Oct. 30, 1975, 44800/75

Int. Cl.³ D03D *23/00*

U.S. Cl. 139—383 A **7 Claims**



1. A single layer forming fabric for supporting and draining water from a water laden web of cellulosic fibers in the wet end of a papermaking machine having a wet end and a dryer end, said fabric comprising: in at least one of the machine and cross-machine directions, first common direction yarns formed wholly from polyester material so as to impart dimensional stability in at least the or each direction in which said yarns extend, said woven structure also including further common direction yarns extending essentially parallel and lying in substantially the same plane with said first yarns, said further yarns being formed wholly from a synthetic material different from and of greater wear resistance than said polyester material of said first yarns, said first and further yarns being arranged adjacently in an alternating relationship throughout the fabric.

4,289,174

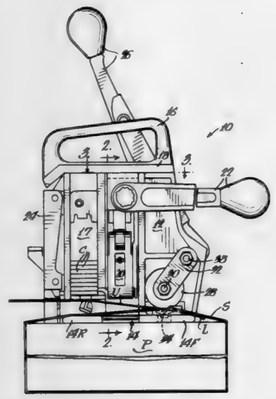
POSITIVE SEALING ASSEMBLY FOR HAND OPERATED STRAPPING TOOL

Robert J. Massion, Cary, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Sep. 24, 1979, Ser. No. 77,940

Int. Cl.³ B21F *9/02*

U.S. Cl. 140—93.4 **17 Claims**



1. A strapping tool of the type which crimps or notches a seal around overlapping strap ends extending in opposite directions in a tensioned strap loop around an article being tied, said tool comprising:

a main frame;

a sealer jaw assembly mounted for at least opening and closing movement about said seal relative to said frame;

a sealer jaw assembly actuator means for actuating the sealer jaw assembly; said sealer jaw assembly actuator means including

(1) a reciprocative drive member adapted to be moved between a retracted position in which said jaw assembly is opened relative to said seal and an extended position in which said jaw assembly is engaged to crimp or notch said seal around the overlapping strap ends;

(2) a rack on said drive member;

(3) a pinion mounted for engaging said rack for at least a portion of its circumference and adapted to be rotated about its axis in a first direction to move said drive member to said extended position and adapted to be rotated about its axis in a second, opposite direction to move said drive member to said retracted position;

(4) a pawl mounted on said frame to pivot about an axis in said first and second directions and biased against rotation in both directions to an initial position; and

(5) means mounted on said pinion for rotating therewith to pivot said pawl about the axis in said second direction when said pinion is rotated in said first direction and for engaging said pawl to prevent rotation of said pinion in said second direction during engagement with said rack unless and until said pinion has been rotated through a predetermined angle.

4,289,175

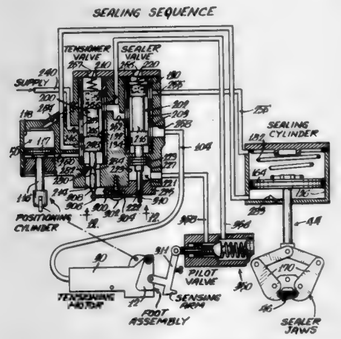
TENSION SENSING MECHANISM FOR POWER-OPERATED PUSH-TYPE STRAPPING AND SEALING TOOL

David E. Crittenden, Hoffman Estates; Barry R. Angarola, Schaumburg; Robert J. Nix, Park Ridge, and William A. Meier, Hoffman Estates, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Nov. 13, 1979, Ser. No. 93,386

Int. Cl.³ B65B *13/22, 13/34*

U.S. Cl. 140—93.4 **10 Claims**



1. A strapping tool for first tensioning a strap looped around an article with both overlapping strap portions threaded through a crimpable or notchable seal and with one strap free end doubled over and restrained between the seal and the article during tensioning and for then crimping or notching the seal around the tensioned overlapping strap portions, said tool comprising:

a. a frame adapted to rest upon said article;

b. an arm pivotally mounted on said frame for pivoting movement in a first direction and in a second, opposite direction;

c. an abutment means on said arm for engaging said seal during tensioning;

d. means for biasing said arm in said first direction during tensioning;

e. tensioning means mounted on said frame for engaging one of the overlapping portions of the strap and for pulling the same through the seal to tension the loop whereby the tension reaction urges said frame relative to the seal to force said arm abutment means against the seal and, at a predetermined tension level, causes said arm to overcome said biasing means and pivot relative to said frame in said second direction;

f. means for crimping or notching said seal around the overlapping portions of the strap; and

g. control means responsive to the pivoting movement of said arm in said second direction for operating said crimping or notching means.

4,289,176

BATTERY FILLER

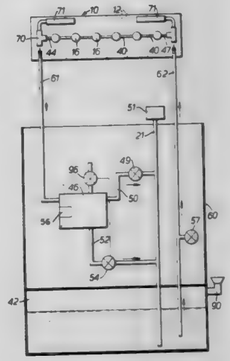
Christopher P. Evans, Bolton, England, assignor to Chloride Group Limited, London, England

Filed Oct. 4, 1979, Ser. No. 82,224

Claims priority, application United Kingdom, Oct. 9, 1978, 39775/78; May 29, 1979, 18584/79

Int. Cl.³ B65B *3/34*

U.S. Cl. 141—35 **14 Claims**



1. A battery filler comprising:

a reservoir,

conduit means for leading fluid from the reservoir to one or more cells of a battery,

a filling device for each of said cells which prevents further liquid entering each of said cells when a predetermined level has been reached,

a pump coupled to the conduit means downstream of said cells for drawing fluid by suction from the reservoir to said cells,

a sump in the conduit means between said cells and the pump,

a level-responsive switch in the sump arranged to initiate emptying of the conduit means by the pump when the liquid in the sump reaches a predetermined level,

a drain valve from the sump closed during filling and open after filling is completed in response to operation of said level-responsive switch,

a trolley upon which the conduit means, the pump, the sump, said level-responsive switch and said drain valve are mounted, and

means enabling the trolley to be moved from battery to battery.

4,289,177

TREE PROCESSING APPARATUS

Howard A. Hammond, Grayslake, Ill., and Paul H. Whitcomb, Woodstock, Canada, assignors to Eaton Corporation, Cleveland, Ohio

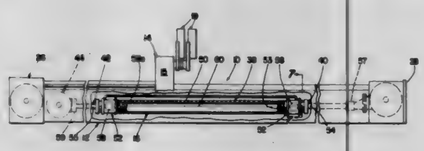
Filed Jan. 17, 1980, Ser. No. 112,770

Int. Cl.³ B27L *1/00*

U.S. Cl. 144—2 Z **9 Claims**

7. Apparatus for processing trees comprising an elongated boom, a processing head movable along said boom and operable to delimb a tree disposed adjacent said boom and parallel to

the longitudinal axis thereof, and drive means mounted on said boom including a hydraulic cylinder disposed along the horizontal axis of the boom for moving said processing head along the boom, said hydraulic cylinder comprising a body member; a first piston assembly having a first piston within said cylinder body and a first piston rod extending through a first end of said cylinder body; a second piston assembly having a second piston within said cylinder body and a second piston rod extending from the opposite end of said cylinder body, said piston assemblies defining a first chamber between said first piston and said first end, a second chamber between said second piston and said opposite end and a third chamber between said first and second pistons; conduit means connecting said first and second chambers; first passage means formed in said first piston rod for conducting fluid to said first chamber; and second passage means formed in said first piston rod for conducting fluid to said third chamber.



4,289,178

LIQUID PRESSURE CONTROL SYSTEM

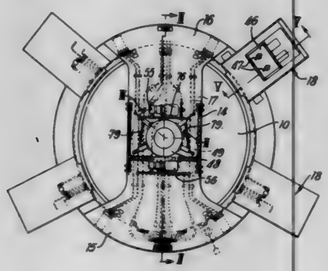
Bernard T. Rogers, Braes, Ullapool, Ross-shire, Scotland

Filed Dec. 18, 1978, Ser. No. 970,344

Claims priority, application United Kingdom, Dec. 19, 1977, 52799/77

Int. Cl.³ B27L *11/00*

U.S. Cl. 144—188 **15 Claims**



1. A liquid pressure control system for effecting advance of a slave member in steps along a path in a timed relationship with a succesion of discrete actions by a master device, comprising at least one pump and a liquid pressure operable slave actuator device which has a movable part by which the slave member is carried; said pump comprising a housing; a pump chamber formed in the housing, a liquid displacer housed movably within the pump chamber, a liquid pressure inlet connectable to a source of liquid pressure and which is arranged within the pump housing such that liquid pressure can be drawn into the pump chamber from said source by movement of the displacer, and a liquid pressure outlet which is in communication with a space of the slave actuator device and through which liquid is displaced under pressure from within the pump chamber to said space by movement of the displacer; and control means responsive to said succession to control the position of said displacer, said control means being adapted to move said displacer within the chamber in synchronism with said succession to displace from the pump chamber to the space of the slave actuator device a volume of liquid sufficient to effect a step of the slave member in a timed relationship with an action of said succession, whereby the slave member is positioned at a new location on said path for the next discrete action of said succession so that a predetermined spatial relationship between the master device and the slave member is established before each action of said succession and after the previous action of said succession, and to refill the pump chamber between each such displacement.

4,289,179

VENEER REINFORCING UNIT AND A VENEER REINFORCING DEVICE USING THE SAME

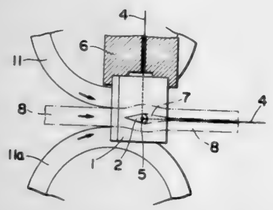
Yoshinori Koba, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Aichi, Japan

Filed Oct. 26, 1979, Ser. No. 88,574

Claims priority, application Japan, Oct. 26, 1978, 53-132252; Nov. 6, 1978, 53-137098

Int. Cl.³ B27L *5/02*

U.S. Cl. 144—211 **31 Claims**



1. A veneer reinforcing unit comprising a first cutter having a cutting edge thereon; a second cutter provided on at least one side of said first cutter and having thereon a cutting edge extending perpendicularly from said first cutter and oriented substantially in a same cutting direction as the edge of the first cutter, said first cutter extending in a first plane, said second cutter extending in a second plane which intersects the first plane; and means on said second cutter defining means for guiding a cord to a downstream side of the second cutter into a cut made by the second cutter.

4,289,180

BANDSAW MILL

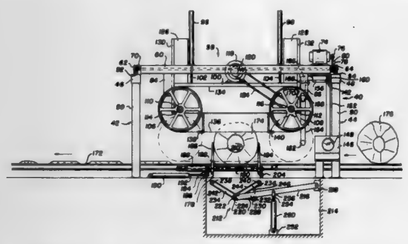
Frank Weinzierl, 2667 E. 57th Ave., Vancouver, British Columbia, Canada (V5S 2A9)

Filed Sep. 13, 1979, Ser. No. 75,348

Claims priority, application Canada, Oct. 27, 1979, 314525

Int. Cl.³ B27B *13/00, 29/00*

U.S. Cl. 144—312 **12 Claims**



1. A bandsaw mill comprising:

means for securing a log to be sawn in a generally horizontal position, said means for securing including a pair of spaced-apart clamp members extending from a clamp axis beneath the position of the log and perpendicular to the log axis, the clamp members being simultaneously rotatable about the clamp axis between a generally vertical position for securing the log and a lowered position for moving the log to a position between the clamp members, the clamp members being movable towards each other along the clamp axis for securing the log between the clamp members;

a bandwheel mounting frame;

two vertical bandwheels for receiving and guiding a bandsaw, the bandwheels being mounted on the frame for rotation about horizontally spaced-apart axes;

a bridge for suspending the frame above the position of the log with the axes of the bandwheels being generally parallel to a longitudinal axis of the log, the position of the log being between the bandwheels;

a mechanism for raising and lowering the frame; and

means for moving the bridge longitudinally along the position of the log.

4,289,181

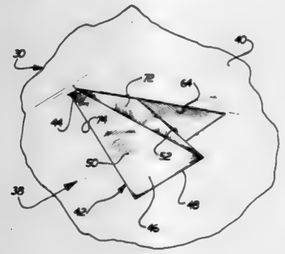
FASTENER

Terry D. Capuano, Hinckley, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Apr. 4, 1979, Ser. No. 26,889

Int. Cl.³ F16B *39/282*

U.S. Cl. 411—187 **2 Claims**



1. A fastener element for use in applying a force against a member, said fastener element comprising a body, thread means connected with said body for engaging a mating thread, said thread means cooperating with the mating thread during relative rotation between said body and the member in a first direction to urge said body toward the member to thereby tend to increase the force applied against the member, said thread means cooperating with the mating thread during relative rotation between said body and the member in a second direction to tend to decrease the force applied against the member, and retainer means connected with said body for retarding rotation between said body and the member in the second direction, said retainer means including a resiliently deflectable spring finger having a relatively narrow base portion which is integrally formed with said body and a relatively wide free end portion which penetrates the member under the influence of forces applied to said retainer means by said body upon initiation of rotation between said body and the member in the second direction, said spring finger including a first pair of side surfaces which extend transversely to each other and intersect at said free end portion of said spring finger, said first pair of side surfaces flaring outwardly from relatively narrow end portions at said base to relatively wide end portions which intersect at said free end portion of said spring finger, said spring finger further including a second pair of side surfaces which extend between said base and said free end portion of said spring finger and which intersect said first pair of side surfaces, said second pair of surfaces tapering outwardly from said base to sharp peaks at said free end portion of said spring finger.

4,289,182

PNEUMATIC TIRES FOR LARGE SIZE AND HIGH SPEED MOTORCYCLES

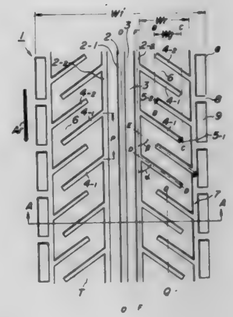
Takeshi Sato, Akigawa, and Hiroshi Kojima, Hino, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 17, 1979, Ser. No. 104,218

Claims priority, application Japan, Dec. 29, 1978, 53-162193

Int. Cl.³ B60C *11/04*

U.S. Cl. 152—209 R **8 Claims**



1. A pneumatic tire for motorcycles comprising, a tread extending about a crown of a toroidal carcass along a sectional profile of said carcass from a center of the crown to both sides thereof to such an extent that the tread has a width larger than a maximum width between sidewalls of the tire, said tread including a circumferential center groove located at the equatorial center line of the tread, a pair of circumferential central side grooves located adjacent and symmetrically on each side of said center groove, a pair of circumferential shoulder grooves located at shoulder portions adjacent to tread edges, circumferential ribs divided by said center groove and said central side grooves, and a pair of staggered ribs defined by said central side grooves, said staggered ribs having bending portions, said shoulder grooves and oblique grooves, said oblique grooves comprising first oblique grooves extending from said central side grooves toward the tread edges and terminating at top ends which do not reach the tread edges, and second oblique grooves which extend from shoulder grooves toward the central side grooves and terminate at top ends which do not reach the central side grooves and substantially parallel to the first grooves, each center line of said first and second oblique grooves inclined at an angle of 40° to 80° with respect to the center line of each central side grooves, bottoms of first oblique grooves at parts opening to each of the central side grooves and bottoms of the second oblique grooves at parts opening to each of the shoulder grooves are formed with projected platforms respectively, each bending portion of each staggered rib adjacent to the central side groove provided with a small groove aligned in parallel with the central side groove, and a pitch length defined by a circumferential interval between first oblique grooves is in the range of 1/40 to 1/60 of the total circumferential length of the tread.

4,289,183

NOISELESS LUG TIRES

Masaru Abe, Sayama; Yoshihiro Sakai, Kawasaki; Yasutaka Enoki, Higashimurayama, and Noriyasu Sawada, Mitaka, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,740

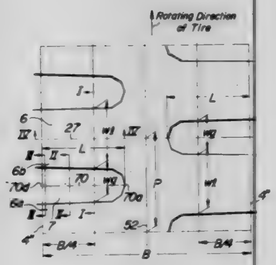
Claims priority, application Japan, Jan. 13, 1979, 54/3190

Int. Cl.³ B60C *11/04*

U.S. Cl. 152—209 B **5 Claims**

1. In a lug tire comprising a number of lugs circumferentially

arranged along the periphery of a tread and spaced apart from each other and a number of transverse grooves which are the same in number as said lugs and delimiting said lugs, each of said transverse grooves being opened to only one of two shoulders of the tire and arranged at the left and right sides of the equatorial line of the tire and forming a pair of transverse grooves, each of said transverse grooves having a ratio Wg/Wl of equal to or smaller than 1.0 where Wg is a width of said transverse groove measured at a periphery passing a midpoint between the equatorial line of the tire and the shoulder of the tire and Wl is a width of said lug measured in the same manner as Wg, the improvement comprising; sides of left and right tread halves are divided by said equatorial line which is distant apart from a center line of a road defined by traffic regulations in order to reduce noise to the side of the road closest to the side of the road driven on, each of said transverse grooves as a whole is not inclined toward said opening thereof at a kickout side of each lug, but inclined toward said opening thereof at a stepin side of each lug at an angle of at most 22°, said angle being formed between a segment for connecting two ends of a center line of said transverse groove passing midpoints of widths of said transverse groove measured along the periphery of said tread on the one hand and the meridian line of the tire on the other hand, each portion of said center line of said



transverse groove in a substantially total region of a length L of said transverse groove extending along the meridian line of the tire inclined with respect to the meridian line of the tire at an angle within a range from at most 15° measured in a direction opposite to said inclined direction of said transverse groove as a whole to at most 60° measured in the same direction as said inclined direction and each portion of said center line of said transverse groove in a region extending at least 60% of said length L of said transverse groove is inclined with respect to the meridian line of the tire at an angle as defined above and within a range from at most 2° measured in a direction opposite to said inclined direction of said transverse groove as a whole to at most 30° measured in the same direction as said inclined direction, and in a region extending from the inner end of each of said transverse grooves to a position which is at least 75% of the length L of said transverse groove, said inclination of said transverse groove as a whole at the stepin side of each lug toward said opening of each of said transverse grooves is increased in response to the advance of tread wear, the groove center line is inclined away from the direction of advancement to facilitate the escape of air on the side of the vehicle closest to the curb or further from the center line of the road, and a slope is given to groove sidewalls to maintain the escape of air during wear life of the tire.

4,289,184

PNEUMATIC RADIAL TIRE FOR HEAVY LOAD VEHICLES INCLUDING IMPROVED BEAD PORTION REINFORCING CONSTRUCTION

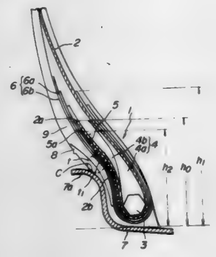
Kenichi Motomura, Kodaira; Hikaru Tansei, Higashimurayama, and Masaru Abe, Sayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jan. 15, 1980, Ser. No. 112,259

Claims priority, application Japan, Feb. 20, 1979, 54/20394[U]

Int. Cl.³ B60C *15/06*

U.S. Cl. 152—354 R **6 Claims**



1. A pneumatic radial tire for heavy load vehicles including an improved bead portion reinforcing construction, comprising; at least one carcass ply wound around a bead core from the inside toward the outside thereof to form a turn-up region and composed of radially or semi-radially arranged cords, a rubber stiffener interposed between the carcass ply and the turn-up region thereof and substantially triangular in section, said rubber stiffener extending from the bead core outwardly in the radial direction of the tire, a strengthening layer arranged along the turn-up region of the carcass ply and composed of at least one metal cord layer, and a reinforcing layer surrounding both the strengthening layer and the turn-up region of the carcass ply composed of at least two organic fiber cord layers, the cords of one layer crossing with the cords of the other layer, said reinforcing layer extending continuously from a height which is higher than both the outer upper end of the strengthening layer in the radial direction and the upper end of the turn-up region of the carcass ply to the inner surface of the carcass ply, said cords of the reinforcing layer extending along the outside of the carcass ply and are inclined on a circle formed by the upper end of the turn-up region of the carcass ply at an angle of 50° to 70° with respect to the radial plane of the tire, said cords of the reinforcing layer have an air gap ratio δ to 38% to 60% measured at a region where they cross with a line tangent to a curved surface of a rim flange and extending in parallel with the rotary axis of the tire and given by:

$$\delta = \frac{b - c}{b} \times 100\%$$

where, b is a distance between the two midlines of two adjacent cords, measured perpendicular to the cords, and c is a cord diameter.

4,289,185

VEHICLE TIRES HAVING A REMOVABLE TREAD

Carlo Franchini, and Luigi Maiocchi, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Nov. 21, 1978, Ser. No. 962,670

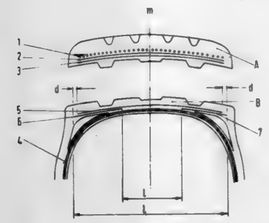
Claims priority, application Italy, Dec. 23, 1977, 31171 A/77

Int. Cl.³ B60C *9/00*

U.S. Cl. 152—361 DM **7 Claims**

1. A vehicle tire having a removable tread comprising a tread ring provided with a circumferentially inextensible annular reinforcing structure having substantially the same width as

said tread ring, and a casing with a radial metallic carcass, said casing supporting said tread ring in a radially outer position and maintaining the tread in its position centered with respect to the center plane of the carcass when the casing is under inflation pressure, said casing being provided with an annular breaker structure arranged in a radially outer position with respect to the carcass and being characterized in that said breaker structure comprises only one strip of metallic fabric arranged astride said center plane and substantially as wide as said annular reinforcing structure of the tread ring, the cords of said strip being all parallel to one another and inclined in a predetermined sense with respect to the circumferential direc-



tion of the tire at an angle ranging between 45° and 80°, and two tapes of metallic fabric, arranged with one at each lateral part of said strip, the axially outer edges of said tapes being substantially coincident with the axially outer edges of said strip to thereby leave free, between their axially inner edges, a central zone centered with respect to the center plane of the casing of a width between 8% and 69% of the maximum width of said breaker structure, the cords of said tapes being parallel to one another in each tape and being inclined at the same angle with respect to the circumferential direction of the tire, but in opposite senses with respect to the direction of the cords of said strip at an angle ranging between 45° and 80° with respect to the circumferential direction of the tire.

4,289,186

SEALING MEANS FOR PNEUMATIC TIRE AND WHEEL RIM ASSEMBLIES

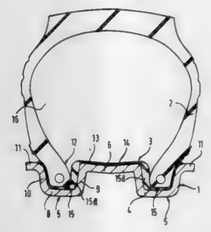
Ralph Wilde, Near Leamington Spa, England, assignor to Dunlop Limited, West Midlands, England

Filed Feb. 28, 1980, Ser. No. 125,631

Claims priority, application United Kingdom, Mar. 7, 1979, 08018/79

Int. Cl.³ B60C *5/16, 19/04*

U.S. Cl. 152—379.3 **8 Claims**



1. A pneumatic tire and wheel rim assembly in which said rim has a pair of axially spaced bead seats defined by grooves in each of which a respective one of a pair of substantially inextensible axially spaced tire beads is located and retained and sealing means comprising a pair of elastomeric seal elements each of which acts between a respective one of said tire beads and the associated groove whereby each tire bead is held under compression in an axial direction in the associated groove so that the seal elements seal the beads to the rim by axial compression.

4,289,187

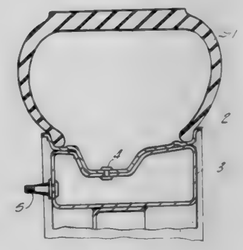
PNEUMATIC WHEELS FOR VEHICLES

Evgeny I. Rivin, 1114 Pierre Ave., Windsor, Ontario, Canada (N9A 2L4)

Continuation-in-part of Ser. No. 830,073, Sep. 2, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,497

Int. Cl.³ B60C *23/10, 29/00*

U.S. Cl. 152—418 **3 Claims**



1. In a vehicle having a body, wheels rotatably supported on the body, and inflated fluid tires on the wheel, the improvement comprising: a fluid chamber supported on the wheel; and a structure defining a bi-directional energy dissipating orifice connecting the interior of the chamber with the pressurized volume within the tire, the structure defining the orifice having a viscous permeability

$$\phi = B\frac{v_r \mu l}{n p_o A}\frac{w_o}{\sqrt{\left(\frac{v_r}{v_t}+1\right)\left(\frac{v_r}{v_t}+2\right)}}$$

where $1.4 \leqq B \leqq 7$ depending on typical excitation from the road surface, where ϕ = viscous permeability of the connective canal, v_r = the volume of the chamber; μ = the dynamic viscosity of media inside the cavity, l = the length of the connective canal, n = the polytropic exponent of the fluid, ρ_o = the initial pressure in the tire cavity, A = the cross sectional area of the orifice, w_o = the angular natural frequency of the tire, v_t = the volume of the tire, whereby rapid increases in the pressure within the tire as a result of the impact of the tire with obstacles causes fluid flow through the orifice, into the chamber, dissipating a substantial portion of the fluid energy in thermal form and thereby reducing the shock transmitted to the vehicle.

4,289,188

METHOD AND APPARATUS FOR MONITORING ETCHING

Tatsumi Mizutani, Kokubunji; Kazuyoshi Ueki, Ohme; Shinya Iida, Tama, and Hideo Komatsu, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,939

Claims priority, application Japan, May 28, 1979, 54/65031

Int. Cl.³ H01L *21/306;* **C23F** *1/00*

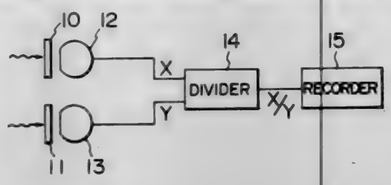
U.S. Cl. 156—626 **12 Claims**

1. A method for monitoring etching process for etching a workpiece by ions or radical sproduced by glow display plasma, comprising the steps of:

correcting a specific spectrum intensity, which is dependent

on the process of said etching process, of atoms or molecules produced in said plasma by another spectrum intensity which is independent of the process of said etching process; and

monitoring a resulting signal intensity.

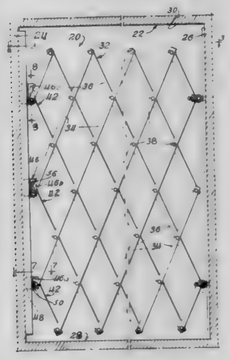


4,289,189

FOLDING GATE

Joseph Catalano, 2212 Beach Dr., Fox River Grove, Ill. 60021

Filed Mar. 7, 1979, Ser. No. 18,316
Int. Cl.[3] E06B 3/92
U.S. Cl. 160—160 1 Claim



1. In a folding gate which includes a web including a pair of sets of strips, the strips of each set lying essentially in a plane and being parallel and the sets being fitted together with the planes fitted flat together and the strips in the respective sets in mutually angular relation, the strips of the two sets being pivotally secured together at points of their intersection, the joined ends of the strips forming scallops at the ends of the web, and there being a plurality of such scallops at each end, the web being extensible and contractible longitudinally and the web decreasing and increasing in transverse direction respectively in response to its being extended and contracted,

the construction comprising, means for mounting the web on a jamb of a doorway including

(a) a single rail in the form of an angle iron uniform in shape throughout its length having a pair of legs thereby also extending throughout its length, the legs being at an angle to each other, one of the legs being adapted for fitting flat to and securement to an element of the jamb extending transverse to the doorway and itself thereby extending transverse to the doorway, the other leg constituting a supporting element directed in the longitudinal direction of the doorway when the rail is mounted on the jamb, and having a flat surface extending throughout the full length of the rail and also its own full extent in said longitudinal direction, that is clear and unencumbered,

(b) a plurality of hinges separate from each other and each having a pair of leaves connected together by a pintle, the leaves being flat pieces, a first leaf of each pair being fitted in flat face-to-face engagement, throughout substantial area, with the flat surface of said supporting element of the rail and secured thereon by weld, the hinges being spaced apart along the length of the rail according to their points of connection with the web which are pre-determined according to the construction of the web, as stated below, the supporting element being unobstructed and uniform throughout its height except for the application of the hinges thereto,

a second leaf of each pair of leaves of the hinges being pivotally connected with the web at said scallops at the end of the web,

one of said second leaves of the hinges having a hole without material elongation in any direction receiving a corresponding pivoting element in the web and that hinge being thereby operable for retaining the corresponding portion of the web against movement in transverse direction, and the other said second leaves of the hinges having elongated holes receiving corresponding pivoting elements in the web and thereby enabling transverse movement of corresponding portions of the web,

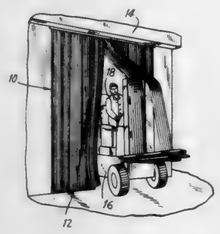
said hinges being of identical outline size and shape and distinguished from each other by the size and shape of the holes therein, and the elongated holes being so elongated in the direction of the pintles.

4,289,190

PLASTIC STRIP CLOSURES AND METHODS OF PROTECTING THE SAME

Robert Catan, Smithtown, N.Y., assignor to Dynaforce Corporation, Old Bethpage, N.Y.

Filed Jan. 26, 1979, Ser. No. 6,851
Int. Cl.[3] A47H 1/00, 23/00
U.S. Cl. 160—332 10 Claims



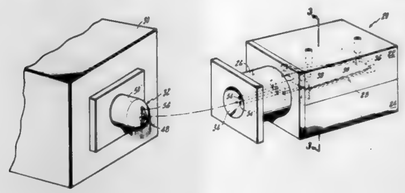
1. A closure for an opening, said closure comprising a plurality of strips, and means to suspend said strips in depending and overlapping relation to obturate said opening, said strips being of flexible material to permit the passage of objects through the opening, said strips being substantially transparent and including projections thereon for engagement by said objects, said strips having opposite planar faces with the projections being located on only one of said faces, the strips having lateral edges and having selected of said projections closely adjacent said lateral edges and other of the projections betwen said edges, said projections being ribs extending longitudinally along said strips, said ribs being spaced at an order of magnitude of about two inches whereby to maximize clarity of said closure and minimize scratching thereof, said strips being arranged in generally two planes, the strips in each plane substantially covering the strips in the other plane but being staggered relative thereto, the ribs on the strips in each plane protruding away from the strips in the other plane whereby the faces of the strips facing one another are planar.

4,289,191

INJECTION MOLDING THERMOPLASTIC PATTERNS HAVING CERAMIC CORES

Richard A. Myllymaki, Quaker Hill, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1980, Ser. No. 136,599
Int. Cl.[3] B22C 7/02, 7/06
U.S. Cl. 164—45 9 Claims



1. In the process of fabrication of a ceramic investment casting mold containing a thin and brittle ceramic core, wherein a thermoplastic polymer is injection molded into a die to form an expendable pattern in a die cavity, wherein a portion of the mold defines a shape of the airfoil of a gas turbine, the improvement which comprises simultaneously injecting the polymer on either side of the core from an end of the die through at least two sprues with balanced flow that minimizes hydrostatic force on the core.

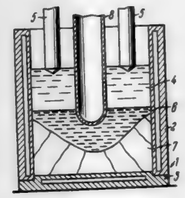
5. In apparatus for injection molding the combination comprising a single port nozzle having a surface relief channel intersecting the port and a multiple ports die, the nozzle and die defining a liquid carrying cavity when mated, the portion of the nozzle which defines the cavity having a higher surface area than the portion of the die which defines the cavity.

4,289,192

METHOD AND APPARATUS FOR PRODUCING A SOLID-SECTION INGOT BY ELECTROSLAG REMELTING

Rudolf S. Dubinsky, ulitsa Politekhnicheskaya, 5, kv. 209; Boris I. Medovar, ulitsa Anri Barbjusa, 22/26, kv. 109, and Georgy A. Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106, all of Kiev, U.S.S.R.

Filed Apr. 19, 1979, Ser. No. 31,485
Int. Cl.[3] B22D 27/02
U.S. Cl. 164—470 14 Claims



1. A method for producing a solid-section ingot by electroslag remelting, including:

remelting at least one consumable metal electrode in a slag bath in a melting container to form in said container a molten metal bath progressively crystallizing into an ingot so that the interface between the crystallized metal and the molten metal constituting the metal bath forms the bottom of the bath, the slag-metal bath interface moving upwardly as the molten metal is fed into the melting container;

bringing a cooled body into contact with the molten metal constituting the metal bath so that said cooled body is disposed on the vertical axis of symmetry of said melting container;

maintaining said cooled body in contact with the molten metal till the melting operation is complete by moving said cooled body upwardly at a speed close to a predetermined solidifying rate to avoid contact with the crystallized metal; and

removing said cooled body from the metal bath after the melting operation is complete.

6. An electroslag remelting apparatus for producing a solid-section ingot by remelting at least one consumable metal electrode in a slag bath, comprising:

a bottom plate;

a movable open-ended mold defining an inner space therein and disposed over said bottom plate for vertical movement and supported in its lowermost position on said bottom plate and forming therewith a melting container;

a lifting device installed adjacent said melting container and operatively connected with said movable mold;

a liquid metal level detector installed in the wall of said movable mold commands wherefrom ensure the controlling of the vertical movement of said movable mold in accordance with the movement of the slag-metal interface relative to the detector in the course of the melting operation; and

a cooled body disposed inside said movable mold on the vertical axis of symmetry of said melting container, said cooled body comprising supporting members secured to the top end face of said movable mold and an extension projecting downwardly from said end face for a length less than the height of said movable mold, the extension of said cooled body including a wide portion disposed below the level of said liquid metal level detector, a narrow portion disposed above said wide portion, and an intermediate portion whose surface is shaped similar to a cone and connects said narrow and wide portions, thereby providing for flow of molten metal drops down from the surface of said cooled body.

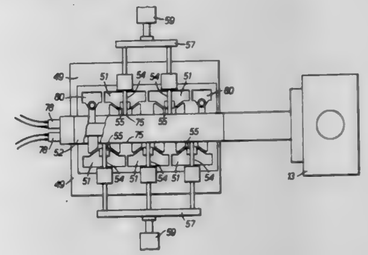
7. An apparatus according to claim 6, wherein said extension of said cooled body is made in the form of a grating composed of pipes.

4,289,193

ACCUMULATOR PLATE ASSEMBLY METHODS

Thomas B. Stamp, "Laurentides", Haymes Rd., Cleeve Hill, Cheltenham, Gloucestershire, England

Filed Jun. 25, 1979, Ser. No. 52,011
Claims priority, application United Kingdom, Jun. 23, 1978, 27779/78
Int. Cl.[3] B22D 19/04, 23/04, 25/04
U.S. Cl. 164—109 1 Claim



1. A method of casting a metal component and simultaneously attaching said component to a battery plate, comprising locating a portion of the plate in a mold cavity, supplying molten metal from one end into an elongated supply duct by means of a positive displacement pump to cause the level of metal in said duct to rise and the metal to spill over a weir into said cavity, continuously cooling the cavity and continuously heating the duct, and after filling the cavity removing molten metal from the same supply end of the duct by means of said

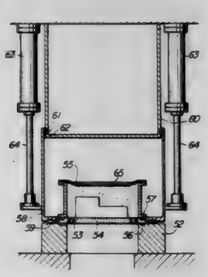
positive displacement pump thereby to reduce the level of metal in the duct and to reduce the level of metal in the mold cavity back to the level of the weir, and after the metal in the cavity has solidified, removing the battery plate from the mold cavity with the cast metal component attached.

4,289,194

MOLDING MACHINE

Nagato Uzaki, Toyokawa; Yasutaro Kawamura, Okazaki; Kimikazu Kaneto, Toyokawa, and Masaharu Hasizume, Chiryu, all of Japan, assignors to Sintokogio Ltd., Nagoya, Japan

Filed Sep. 19, 1979, Ser. No. 77,124
Claims priority, application Japan, Apr. 11, 1979, 54/44609
Int. Cl.³ B22C *15/06, 15/08*
U.S. Cl. 164—170 **16 Claims**



1. A molding machine comprising:
a pattern provided with a plurality of vent bores formed at desired portions thereof;
a molding flask arranged to be combined with said pattern;
means for sealingly covering said molding flask and said pattern combined with said molding flask so as to form a closed space above said pattern; and
means, mounted in said covering means, for supplying compressed air into said closed space, said compressed air being discharged from said closed space to the outside through said vent bores, wherein said covering means comprises a cover member, and a hollow cylindrical member defining an upper end opening and a lower end opening, said cover member being air-tightly, slidably engaged in said cylinder member through said upper end opening, said lower end opening being defined by a flange extending radially inwardly of said cylindrical member such that said lower end opening has an opening area less than that of said upper end opening so as to form an effective pressure receiving chamber defined by said cylindrical member, flange, and cover member whereby said compressed air supplied to said chamber through openings in said cover means will forcedly push said cylindrical member in the direction towards said pattern.

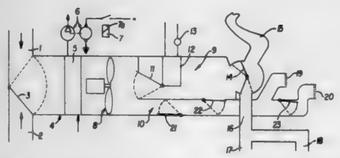
4,289,195

CLIMATE CONTROL DEVICE FOR THE PASSENGER COMPARTMENT OF MOTOR VEHICLE

Dominique Bellot, Rueil, and Alain Cohenca, Meudon, both of France, assignors to Regie National des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 7, 1979, Ser. No. 73,293
Claims priority, application France, Sep. 29, 1978, 78 27998
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—12 **12 Claims**

1. A climate control device for the passenger compartment of a motor vehicle including a heating radiator, comprising:
fan means,
an air distribution conduit disposed in the passenger compartment, an air mixing shutter positioned at an opening of the air distribution conduit which diverts a variable amount of the air flow from the fan means to the heating radiator,
a defrosting conduit and a conduit with outlets at a floor portion of the passenger compartment,
a distribution shutter placed between said defrosting conduit and said conduit with outlets at the floor portion of the passenger compartment,
electronic probes for measuring the temperature inside and outside the passenger compartment,
a microcalculator, connected to said electronic probes, which includes a memory containing a formula for the interior temperature required as well as a law for the flow



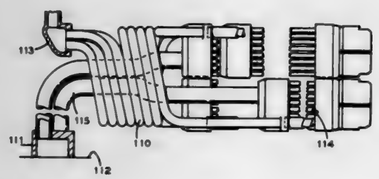
from the fan means, both as a function of the outside temperature, the calculator being programmed for receiving temperature measurement data and processing such data so as to generate signals which depend upon the comparison between the required temperature law and the measured inside temperature and means for generating signals therefrom,
a plurality of micromotors controlling the mixing and distribution shutters in response to signals generated from said means for generating signals, and
means for controlling feed of the heating radiator and signals commanding the supply of electricity to the fan means in accordance with said flow law.

4,289,196

MODULAR HEAT EXCHANGERS FOR CONSOLIDATED NUCLEAR STEAM GENERATOR

Felix S. Jabsen; Donald C. Schluderberg, and Arnold E. Paulson, all of Lynchburg, Va., assignors to The Babock & Wilcox Company, New Orleans, La.

Division of Ser. No. 626,820, Oct. 29, 1975, Pat. No. 4,124,064, which is a division of Ser. No. 327,349, Jan. 29, 1973, Pat. No. 3,941,187, which is a continuation-in-part of Ser. No. 162,359, Jul. 14, 1971, abandoned. This application Aug. 24, 1978, Ser. No. 936,426
Int. Cl.³ F28F *9/22*; F22B *37/22*
U.S. Cl. 165—83 **2 Claims**



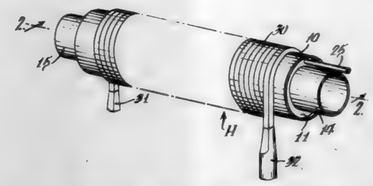
1. A group of modular heat exchangers each of the heat exchangers comprising a steam header, a feedwater header spaced from the steam header, said headers each forming respectively a steam chamber and a feedwater chamber, a feedwater tube that passes through the steam chamber to establish fluid communication with the feedwater chamber, a shroud positioned around the feedwater tube, said steam header and feedwater header having surface recesses for confining the shroud, a feedwater manifold and coiled feedwater manifold tubing in fluid communication with the feedwater manifold and the shrouded feedwater tube in at least some of the modular heat exchangers.

4,289,197

HEAT EXCHANGER

Thomas J. McNamara, 1384 Brown St., Des Plaines, Ill. 60016

Filed Mar. 12, 1979, Ser. No. 19,758
Int. Cl.³ F28D *3/04*
U.S. Cl. 165—115 **14 Claims**



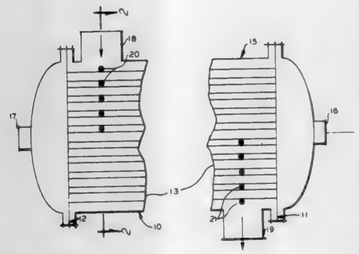
1. A heat exchanger comprising, a horizontally-disposed elongate shell, a partition within and extending lengthwise of said shell to form upper and lower compartments within the shell, end closures for said shell with at least one end closure having a flow passage communicating with one of the compartments of said shell, a fluid port communicating with the other of said compartments, means providing for gravity fluid flow from the upper compartment into said lower compartment by flow onto the interior surface of the shell along the length thereof, and fluid containment means substantially enclosing the exterior of the shell for substantially the entire length of the shell to place fluid in the fluid containment means in heat exchange relation with said shell wall.

4,289,198

HEAT EXCHANGER

Richard K. Young, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 9, 1978, Ser. No. 959,283
Int. Cl.³ F28D *7/00*
U.S. Cl. 165—159 **7 Claims**



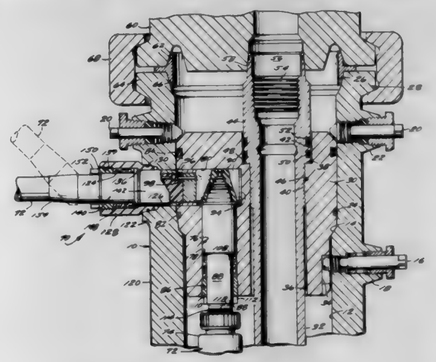
1. A shell and tube heat exchanger comprising in combination:
a longitudinal shell,
tube sheets at opposite ends of said shell,
a plurality of tubes in a bundle of generally cylindrical form extending between said tube sheets,
means to introduce fluid to said tubes and withdraw fluid from said tubes at the faces of said tube sheets,
shell inlet means to introduce fluid to the interior of said shell external of said tubes, and shell outlet means to withdraw fluid therefrom, and
a stream distributing means or baffle comprising a flow deflecting means positioned transverse of the tubes and filling substantially all of the space between adjacent rows of tubes in a direction perpendicular to the axis of the shell inlet and/or shell outlet which means are located between the centerline of a pass of the exchanger and the shell inlet and/or shell outlet and in substantial alignment with the longitudinal axis of the shell inlet and/or shell outlet and the space between rows of tubes beyond said centerline of said pass of the exchanger, and in substantial alignment with said flow deflecting means, being substantially devoid of flow directing means to provide improved shell side fluid distribution of the inlet and/or outlet by distributing a fluid entering and/or exiting the shell side of the exchanger so that at least a portion of the entering or exiting fluid is directed toward the adjacent tube sheet.

4,289,199

WELLHEAD SIDEWALL ELECTRICAL PENETRATOR

John K. McGee, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

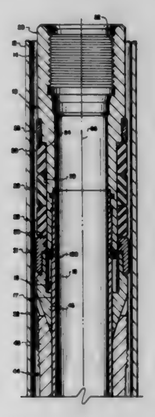
Filed Sep. 28, 1979, Ser. No. 79,954
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—65 R **4 Claims**



1. A wellhead sidewall communications line penetrator arrangement for linking a communication line that is to extend within a well to a down hole device with a communication line which is to extend outside the well to a remotely located control site,
said penetrator arrangement comprising:
a tubing head having a throughbore with a tubing hanger seat therein:
a tubing hanger having a throughbore means for hangingly supporting a tubing string;
said tubing hanger further having a shoulder for seating the tubing hanger on said tubing hanger seat, and means cooperable with the tubing head for providing and fixing a predetermined angular orientation of the tubing hanger relative to the tubing head;
means defining a penetrator passageway extending into the tubing hanger from the axially lower end of the tubing hanger and laterally, at least generally horizontally, out of the tubing hanger through the side of the tubing hanger below the axially upper end of the tubing hanger;
sealing means for sealing between the tubing head throughbore and the tubing hanger in such a sense as to seal off a vicinity surrounding where the penetrator passageway emerges out the side of the tubing hanger;
means defining a penetrator passageway extension in the form of a bore extending laterally, at least generally horizontally, through the tubing head from the throughbore of the tubing head to the exterior of the tubing head;
a first penetrator portion comprising a body means having a lower end and an outer end and with at least one communication line communicating member extending from said lower end to said outer end, said at least one communication line member being provided with a communication line connector means at each end thereof;
said first penetrator portion being configured for installation in said penetrator passageway so that its lower end is accessable from the axially lower end of tubing hanger and so that its outer end lies within said penetrator pas-

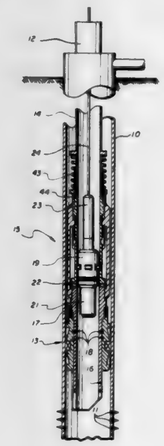
sageway near the outer end of said penetrator passageway;
packing and packing activation means installable about said first penetrator portion in said penetrator passageway for forming a circumferential seal between said first penetrator portion and said tubing hanger within said penetrator passageway;
a further penetrator portion comprising a body having an inner end and an outer end with at least one communication line communicating member extending from said inner end to said outer end, said at least one communication line member being provided with a communication line connector means at each end thereof;
said communication line connector means at the lower end of said first penetrator portion being configured for connection with said communication line that is to extend within said well;
said communication line connector means at the outer end of said first penetrator portion being configured for connection with said communication line connector means at the inner end of said further penetrator portion;
said communication line connector means at the outer end of said further penetrator portion being configured for connection with said communication line that is to extend outside said well to a remotely located control site;
packing and packing activation means installable about said further penetrator portion in said penetrator passageway extension for forming a circumferential seal between said further penetrator portion and said tubing head within said penetrator passageway;
said penetrator passageway including a vertical leg which intersects a lateral leg within the tubing hanger; and
said first penetrator portion comprising a vertical penetrator element extending in the vertical leg of the penetrator passageway, and a lateral penetrator element extending only in the lateral leg of the penetrator passageway, the vertical and lateral penetrator elements being operatively plugged together within the penetrator passageway via connector means provided on each of said vertical and lateral penetrator elements.

4,289,200
RETRIEVABLE WELL APPARATUS
Hiram H. Fisher, Jr., Houston, Tex., assignor to Baker International Corporation, Orange, Calif.
Filed Sep. 24, 1980, Ser. No. 190,308
Int. Cl.³ E21B *33/124, 23/06, 33/129*
U.S. Cl. 166—120 **8 Claims**



1. A retrievable apparatus adapted to be inserted in a first subterranean conduit means such as a well to provide a seal in the annulus formed between the first conduit means and a second conduit means disposed therein comprising:
tubular mandrel means adaptable to be sealingly associated with the second conduit means having first seal urging means at one end of the mandrel means;
housing means disposed around the end of the mandrel means opposite the first seal urging means and including second seal urging means, the housing means being moveable relative to the mandrel means whereby the first and second seal urging means will apply in axial compression force to annular sealing means disposed therebetween;
annular sealing means disposed between the first and second seal urging means adapted to be urged outwardly into sealing engagement with the first conduit means in response to axial compression by the urging means, and to contract when such axial compression is removed;
a selectively releasable latching system cooperatively coupled between the housing and the end of the mandrel means opposite the first urging means for permitting movement of the housing relative to the mandrel means to move the first seal urging means toward the second seal urging means and thereby apply a compressive force to the sealing means therebetween and then holding the relative positions of the mandrel means and housing means until selectively released to remove the compressive force on the sealing means and permit retrieval of the apparatus, the latching system including:
ratchet means for permitting relative movement between the housing and the ratchet means in a direction to apply a compressive force to the sealing means and hold the compressive force on the sealing means, and
selectively releasable coupling means coupling the ratchet means to the mandrel means, the coupling means including sleeve means disposed within the mandrel means and axially shiftable from a first position to a second position to decouple the ratchet means from the mandrel means and thereby release the compressive force held on the sealing means.

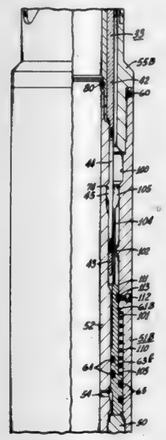
4,289,201
WELL TEST APPARATUS
John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Aug. 20, 1979, Ser. No. 68,213
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—183 **7 Claims**



1. A well test apparatus comprising,
a by-pass valve having a tubular body with a tailpipe adapted to sealingly engage a well packer,

said valve having a bore extending therethrough and a landing nipple configuration in said bore,
a locking mandrel in said nipple configuration,
said mandrel having seal means sealing with the bore through said body,
said body having ports therein on opposite sides of said seal means,
a sleeve valve member reciprocal with and seatingly engaging said body,
said sleeve valve member providing with said body a by-pass passageway interconnecting said ports to by-pass fluid about said locking mandrel,
said sleeve valve member controlling flow through said passageway,
said sleeve valve member having pressure responsive areas responsive to the differential in pressure in said bore and exterior of said valve,
resilient means urging said valve member against the force exerted by exterior pressure, and
a transducer fitting in said locking mandrel.

4,289,202
WELL TUBING COUPLING APPARATUS
William D. Henderson, Frisco, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Aug. 20, 1979, Ser. No. 67,746
Int. Cl.³ E21B *43/00;* **F16L** *35/00*
U.S. Cl. 166—212 **22 Claims**

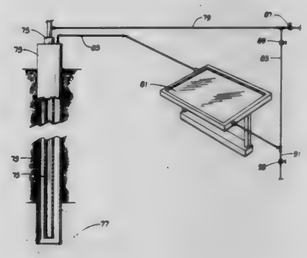


1. Apparatus for releasably coupling an upper tubing string with a lower tubing string in a well bore comprising; a lower tubular body section connectible on the upper end of a lower tubing string; an upper tubular body section connectible on the lower end of an upper tubing string; said lower and upper body sections being disconnectible and connectible together by longitudinal movement only of one of said sections relative to the other of said sections; and locking means on said upper and on said lower body sections each operable by hydraulic pressure for disconnecting said upper section from said lower section and for reconnecting said upper section with said lower section.

4,289,203
OIL DISPLACEMENT METHOD USING SHEAR-THICKENING COMPOSITIONS
Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 868,965, Jan. 12, 1978, Pat. No. 4,212,747.
This application Jan. 8, 1980, Ser. No. 110,438
Int. Cl.³ E21B *33/138, 43/22, 43/267*
U.S. Cl. 166—274 **10 Claims**

1. A process for displacing oil within a subterranean formation which comprises
injecting into the formation through an injection well an aqueous shear-thickening composition comprising
(a) a small but effective amount of a high molecular weight polyalkylene oxide and
(b) a small but effective amount of a synthetic resin comprising the reaction product formed by heating an aqueous alkaline mixture of an aldehyde having from one to four carbon atoms and a phenol compound,
the amounts of (a) and (b) being sufficient to form a sher-thickening composition that is fluid in a quiescent state but becomes gel-like in character on agitation, and
(c) the balance of the composition being water
at a pressure sufficient to force said composition into the more permeable portions of said formation and temporarily plug same and
introducing into the formation a drive fluid at a pressure sufficient to force oil from the less permeable oil-rich zones of the formation toward a production well and to the surface.

4,289,204
SOLAR HEAT TREATING OF WELL FLUIDS
Orvel L. Stewart, Ardmore, Okla., assignor to Sun Tech Energy Corporation, Oklahoma City, Okla.
Filed May 3, 1979, Ser. No. 35,494
Int. Cl.³ E21B *37/00, 43/24*
U.S. Cl. 166—303 **3 Claims**



1. A method of treating an oil well flow line that conducts well fluids for removing paraffin from the flow line, comprising the steps of:
a. diverting the well fluids from the flow line at a location upstream of the portion of the flow line to be treated;
b. heating the diverted well fluids by solar heating means; and
c. returning the heated well fluids to the flow line upstream of the portion of the flow line to be treated and downstream of the point of diverting.

4,289,205

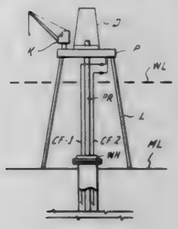
WELL SAFETY SYSTEM METHOD AND APPARATUS

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 2,197, Jan. 9, 1979. This application Dec. 12, 1979, Ser. No. 102,650

Int. Cl.³ E21B *31/00*

U.S. Cl. 166—315 **4 Claims**



1. A method of retrieving a full opening subsurface safety valve from a subsurface tubing hanger in a well, including the steps of:

elevating the well tubing at the wellhead for separating a safety joint connected with the well tubing above the safety valve to release the upper well tubing;

elevating the upper well tubing a sufficient distance to realign a connector;

manipulating the upper well tubing to reconnect with the portion of the well tubing below the safety joint;

releasing a tubing holddown below the safety joint to enable retrieval of the subsurface safety valve; and

retrieving the safety joint, holddown and subsurface safety valve with the well tubing from the subsurface tubing hanger.

4,289,206

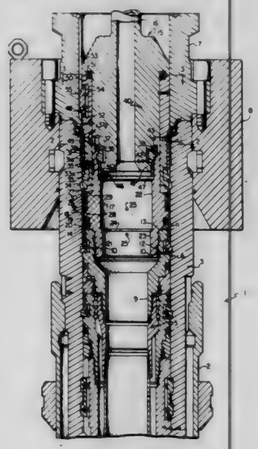
REMOTE MULTIPLE STRING WELL COMPLETION

Kerry G. Kirkland, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Aug. 20, 1979, Ser. No. 67,745

Int. Cl.³ E21B *23/00, 33/076*

U.S. Cl. 166—348 **6 Claims**



1. For use in installing multiple string underwater well apparatus of the type comprising a tubular support structure located under water above the well bore and having an internal support surface and rotational orientation reference means located above the support surface, the combination of

a tubular hanger body adapted to be landed on the support surface and having

stop surface means comprising an annular series of circularly spaced upwardly directed stop surfaces lying in a common place at right angles to the longitudinal axis of the hanger body;

seal means carried by the hanger body for sealing between the hanger body and a surrounding portion of the tubular support structure after the hanger body has been landed, the seal means comprising

an energizable seal ring surrounding the hanger body,

an actuating sleeve slidably embracing the hanger body above the seal ring, and

means restraining the actuating ring from rotational movement relative to the hanger body, and

a handling tool comprising

a main body connectable to a handling string and provided with an annular series of circularly spaced downwardly projecting lugs dimensioned and disposed to engage the respective stop surfaces of said stop surface means when the handling tool is in a first rotational position relative to the hanger body and to extend between adjaent respective pairs of the stop surfaces when the handling tool is in a second rotational position relative to the hanger body,

means releasably securing the main body of the handling tool to the hanger body with the main body occupying said first position and with the main body being capable of rotation about its longitudinal axis relative to the hanger body,

a tubular body slidably embracing the main body of the handling tool and having a lower end dimensioned to engage the upper end of the actuating sleeve of the seal means,

means interconnecting the tubular body and the actuator sleeve and operative to prevent relative rotation therebetween,

locator means carried by the tubular body and capable of coacting with the rotational orientation reference means of the tubular support structure, and

means releasably securing the tubular body to the main body of the handling tool whereby, after the handling tool has been manipulated to land the hanger body on the internal surface of the tubular support structure in a rotational position determined by coaction of the locator means and the rotational orientation reference means, the main body of the handling tool can be rotated to its second position to allow the handling tool to be moved downwardly to force the actuating sleeve downwardly to energize the seal ring.

4,289,207

FIRE EXTINGUISHING SYSTEM

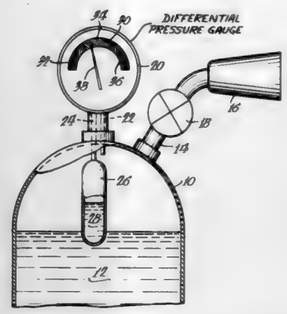
Gregory M. Wernert, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 5, 1979, Ser. No. 8,981

Int. Cl.³ A62C *11/00*

U.S. Cl. 169—30 **3 Claims**

1. In a fire extinguishing system including a pressure vessel (**10**) filled to a desired fill density with a non-solid fire extinguishing material (**12**) having a vapor pressure that fluctuates with temperature, a controllable outlet (**14,16,18**) from said vessel, and a pressure sensing device (**20**) for monitoring the pressure in said vessel, the improvement wherein said pressure sensing device includes a differential pressure sensing device (**20**) having two input ports (**22,24**), one (**22**) of said ports being in fluid communication with the interior of said pressure vessel, and a sealed second vessel (**26**) in sufficiently close proximity to said pressure vessel so as to be exposed to the same ambient temperatures as the pressure vessel and filled with said fire extinguishing material (**28**) substantially to said desired fill density, the other (**24**) of said ports being in fluid communication with the interior of said second vessel.



4,289,208

DEVICE FOR CONTROLLING AGRICULTURAL IMPLEMENTS MOUNTED ON AN AGRICULTURAL VEHICLE

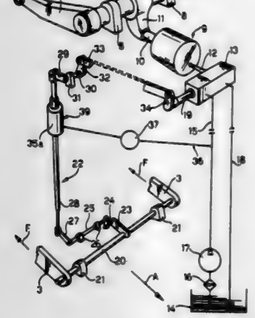
Giuseppe Roncarolo, Modena, Italy, assignor to Fiat Trattori S.p.A., Modena, Italy

Filed May 8, 1979, Ser. No. 37,084

Claims priority, application Italy, Jul. 12, 1978, 68648 A/78

Int. Cl.³ A01B *63/111*

U.S. Cl. 172—7 **4 Claims**



1. Device for controlling agricultural implements mounted on agricultural vehicles, comprising, in combination:

linkage means for articulation of said implement to said vehicle, adapted to permit vertical movement of said implement in a longitudinal plane relative to said vehicle;

a hydraulic single-acting actuator having a rod connected to said linkage means for controlling said vertical movement;

hydraulic supply means for said actuator;

a hydraulic distributor, interposed between said supply means and said actuator, for controlling the operation of said actuator, said distributor having a control member movable between a rest position, in which said actuator is not supplied with hydraulic fluid and said implement is lowered, and a working position, in which said actuator is supplied with hydraulic fluid to effect lifting of said implement;

a resiliently deformable element connected to said linkage means, and supported by a fixed structure of said vehicle, such that the deformation of said deformable element results from reaction forces transmitted from the ground to said implement, and

mechanical transmission means interposed between said deformable element and said distributor control member, to urge said control member into its working position, so as to effect lifting of said implement when said reaction force exceeds a predetermined value,

wherein the improvement consists in said device further comprising:

an auxiliary hydraulic actuator, means connecting said actuator to said supply means and to said distributor whereby the said auxiliary actuator will be operated when said distributor control member is moved into its said working position,

said auxiliary actuator being included in said mechanical transmission means which connects said resilient bar to said distributor control member so as to urge said distributor control member into its said rest position.

4,289,209

IMPACT DEVICE WITH FLUID TOOL ROTATION MOTOR

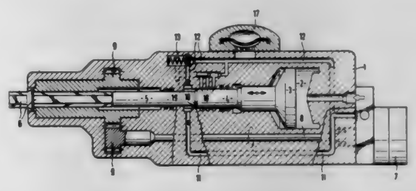
Pekka Salmi, Tampere, Finland, assignor to Oy Tampella AB, Finland

Filed Aug. 7, 1979, Ser. No. 64,649

Claims priority, application Finland, Aug. 8, 1978, 782422

Int. Cl.³ B25D *16/00, 9/12*

U.S. Cl. 173—107 **8 Claims**



1. A rock drilling machine including a cylinder and a striking piston fitted to reciprocate therein in response to a pressure medium travelling through a first duct, a rotation motor drivable by a pressure medium travelling through a second duct, wherein said first and second ducts are not connected, a pump piston and a pump cylinder with the pump piston arranged to travel in the pump cylinder and being permanently connected to the striking piston, the pump cylinder being concentric with the cylinder carrying said striking piston and being positioned at an axial distance therefrom, said pump piston being arranged to pump pressure medium to said rotation motor during a work stroke of the striking piston.

4,289,210

IMPACT DRILL BIT ACTUATOR

William H. Schoeffler, P.O. Box 91105, Lafayette, La. 70509

Filed Feb. 27, 1980, Ser. No. 125,125

Int. Cl.³ E21B *1/00, 4/10*

U.S. Cl. 175—319 **10 Claims**

1. A well drilling assembly comprising;

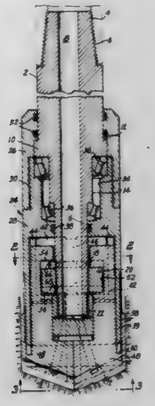
a vertically extending rotatable drive member having a cam fixed to the lower end thereof;

a housing rotatably mounted on the lower end portion of said drive member about said cam;

a plurality of pairs of diametrically opposed and radially extending chisel blades carried by and axially slidable on said housing and having cam follower means thereon;

said cam being configured to sequentially lift said pairs of diametrically opposed chisel blades, one pair at a time, and then forcibly project them downwardly, upon relative rotation between said drive member and housing, while leaving the remaining chisel blades in their lower position;

said cam comprising a cylindrical body concentric to the axis of said drive member and having upper and lower

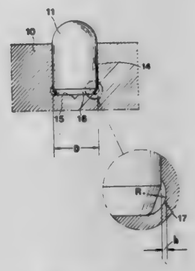


axial end faces; a pair of diametrically opposed camming elements on each of said axial faces.

4,289,211
ROCK DRILL BIT

Karl L. G. Lumen, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Continuation-in-part of Ser. No. 880,993, Feb. 24, 1978, Pat. No. 4,181,187. This application Oct. 11, 1979, Ser. No. 83,664
Claims priority, application Sweden, Mar. 3, 1977, 7702345; Austria, May 28, 1979, 3859/79
Int. Cl.³ E21C *13/00, 13/08*
U.S. Cl. 175—410 **4 Claims**

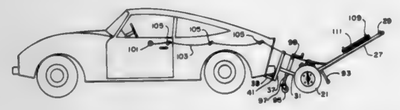


1. A rock drill bit comprising:
a steel body including a front peripheral surface, said surface having a plurality of holes extending longitudinally inwardly from said surface, said holes each including:
a steel cylindrical wall portion,
a steel bottom wall portion defining the longitudinally inner end of said hole, and
a radially enlarged steel transition wall portion extending between a longitudinally inner end of said cylindrical wall portion and a radially outward end of said bottom wall portion,
a plurality of hard metal inserts mounted in said holes and projecting outwardly of said surface, said inserts each including a side surface comprising:
a cylindrical surface portion directly abutting against said cylindrical wall portion of said hole, said cylindrical surface portion extending longitudinally inwardly at least as far as said longitudinally inner end of said cylindrical wall portion of said hole, and
a radially disposed bottom surface portion defining a longitudinally inner end of said insert,
said transition wall portion of said hole extending from said longitudinally inner end of said cylindrical wall portion of said hole in a direction having at least a radially outward component, then extending in a direction having longitudinally inward and radially outward components, thereafter extending in a direction having longitudinally inward and radially inward components and finally adjoining said bottom wall portion, so as to contain no abrupt concave corners which cause localized stress concentrations in the wall of the hole and subsequent fatique failure therein;
the ratio of:
the radial distance from the cylindrical surface of said insert to the radially outermost part of said transition wall, to
the diameter of said cylindrical surface of said insert,
being in the range of from 1:25 to 1:75.

4,289,212
SELF-PROPELLED BATTERY POWERED CART FOR PUSHING DISABLED VEHICLES

Erich A. Immel, 6525 Fairmount Ave., El Cerrito, Calif. 94530

Filed May 29, 1979, Ser. No. 42,990
Int. Cl.³ B62D *51/04*
U.S. Cl. 180—19 R **2 Claims**

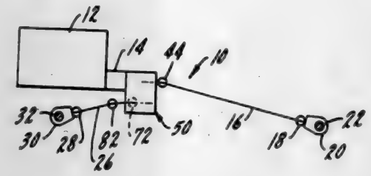


1. A battery powered cart for pushing a disabled automobile or other large unpowered vehicle comprising
a frame having a battery and electric drive motor mounted thereon,
an electrical switch means for utilizing current from said battery to activate said electric drive motor,
a transversely disposed axle secured to said frame,
a drive wheel mounted on each of the outer ends of said axle with each drive wheel having a means for engaging said axle,
means engaging the drive shaft of said electric drive motor to said axle whereby rotation of said drive shaft will cause said axle to rotate,
a portion of said frame projecting forward of said axle and being formed for contacting and pushing a vehicle, said forwardly projecting portion including at least two upwardly projecting vehicle push bars which are tubular in shape and which are adapted to slidably receive mating tubular members of an accessory attachment whereby said accessory attachment can be attached to the cart by downward insertion of its tubular members over said upwardly projecting push bars,
said frame and axle being aranged such that upon operation of the cart said portion of said frame contacting the vehicle will make contact at a point that is higher off the ground than the axis of said axle whereby pushing against said vehicle will cause said frame to rotate backwards about said axle whereby a portion of the weight of said vehicle will be imposed on said cart to enhance the frictional contact of the drive wheels with the ground to provide greater traction for pushing said vehicle,
said frame being formed such that the length of the frame from said axle to the vehicle contact point is sufficient to place said contact point above yet relatively close in height to said axle so as to prevent the cart from rotating over backwards about said axle when pushing a vehicle, and
a third wheel rotatably fixed to said frame at a point forward of said drive wheels to provide an optional third rolling ground contact point to stabilize the rotation of said frame about said axle.

4,289,213
ANGULAR OUTPUT TRANSFER CASE

Robert L. Seaman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 21, 1979, Ser. No. 106,056
Int. Cl.³ B60K *17/34*
U.S. Cl. 180—233 **17 Claims**

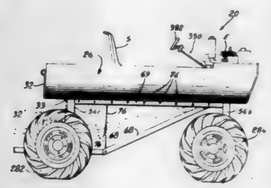


1. Apparatus including a transfer case, said transfer case comprising a housing, an input shaft extending into said housing and supported for rotation on an input axis, a first output shaft extending out of said housing and supported for rotation on a first output axis, an intermediate shaft supported in said housing for rotation on an intermediate axis, means coupling said input shaft with said first output and intermediate shafts for transferring torque therebetween, a second output shaft extending out of said housing and supported for rotation on a second output axis, said intermediate and second output axes determining a fixed angle, a single cardan joint in said housing, said single cardan joint coupling said intermediate and second output shafts and having said fixed angle as its included angle, and yoke means rotatable with and slidable relative to said second output shaft.

4,289,214
MULTI-PURPOSE VEHICLE

William G. Spence, Airport Rd., Mansonville, Quebec, Canada (J0E 1X0)

Filed Apr. 3, 1978, Ser. No. 892,974
Claims priority, application United Kingdom, Jan. 28, 1978, 03579/78
Int. Cl.³ B60K *17/30*; B60D *1/16*
U.S. Cl. 180—234 **20 Claims**

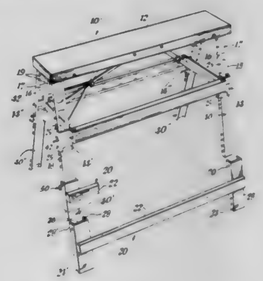


1. In a multi-purpose vehicle comprising a generally rectangular frame supported by a pair of front wheels and a pair of rear wheels each of said wheels adapted to be driven and steered, said frame having a pair of longitudinally extending frame members and a pair of members transverse to said longitudinally extending frame members comprising a front and a rear frame member, the improvement comprising spaced-apart connecting means formed in each of said longitudinally extending frame members along the length thereof, a tow bar having at least one pair of arms joined at one end of each arm, each of the free ends of said arms being freely pivotally secured respectively in a selected one of said connecting means in each of said longitudinally extending frame members, and flexible means proximate the juncture of said pair of arms and intermediate said free ends of said pair of arms and said pair of rear wheels for selectively varying the division of the vertical force at said juncture of said pair of arms of said tow bar as between said pair of rear wheels and said pair of front wheels.

4,289,215
DETACHABLE STEP

David M. Robinson, Margate, Fla., assignor to Goldblatt Tool Company, Kansas City, Kans.

Filed Mar. 20, 1979, Ser. No. 22,309
Int. Cl.³ F16M *11/00*
U.S. Cl. 182—92 **1 Claim**



1. A step structure for attachment to a saw horse having a pair of support legs each in the form of a channel member which includes a front wall with a plurality of openings spaced along the length thereof and a pair of sides projecting from the front wall, said step structure comprising:
a rigid rung;
a pair of support brackets on opposite end portions of said rung, each support bracket being in the form of a channel having a front wall and a pair of sides engagable with the front wall and sides of the corresponding support leg when said brackets are applied to said legs; and
a pin secured to said front wall of each support bracket and projecting above said front wall, said pins being insertable in each of the openings of the support legs to fasten the rung in extension between said support legs at a plurality of elevations, each pin having an L shaped configuration and presenting a horizontal portion extending through the opening and a vertical portion engaging a back surface of the front wall of the support leg to maintain the brackets on said support legs.

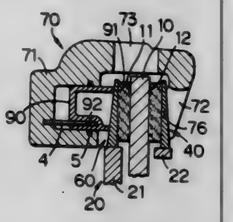
4,289,216
DISC BRAKE

Kenji Shirai; Hidetoshi Shimizu, and Junichi Tanoue, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki, Toyota, Japan

Filed Feb. 12, 1980, Ser. No. 120,788
Claims priority, application Japan, Apr. 6, 1979, 54-42355; Jun. 30, 1979, 54-83263
Int. Cl.³ F16D *55/14*
U.S. Cl. 188—72.2 **14 Claims**

1. In a disc brake including
a rotary disc having a friction surface on either side thereof near the periphery;
a pair of braking pad assemblies, each of which composed of a pad member and a backing plate for supporting the same, said backing plate being provided with a torque giving surface;
a torque receiving member disposed position-fixedly and provided with torque receiving surfaces abuttable with each of said torque giving surfaces; and
an actuator for urging said pair of braking pad assemblies onto said rotary disc with acting surfaces thereof respec-

tively abuttable on the backing plate of said pair of braking pad assemblies, said disc brake comprising,
a gap between at least one of the friction surfaces of said rotary disc and the acting surface corresponding thereto of said actuator being made progressively larger into a wedge shape toward the axis of said rotary disc;
at least a part of said torque giving surface of the braking pad assembly and said torque receiving surface in confrontation to the same being so slant as to produce a component



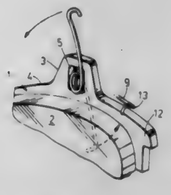
for moving said braking pad assembly, in the wedge shaped gap, in a direction away from the axis of said rotary disc caused by an accompanying rotational torque acting on said braking pad assembly in case of brake applying;
a stopper means for regulating the limit of the movement of said braking pad assembly; and
a spring means for biasing said braking pad assembly in a direction toward the axis of said rotary disc.

4,289,217

FRICTION PAD ASSEMBLIES FOR DISC BRAKES

Helmut Heibel, Moschheim, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 20, 1979, Ser. No. 59,174
Claims priority, application United Kingdom, Jul. 28, 1978, 31473/78
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.38 **11 Claims**



1. A friction pad assembly comprising a backing plate and a pad of friction material secured thereto, a wire spring with oppositely directed outwardly extending arms connected by a coiled region, being located with the coiled region in a recess in the backing plate, the said arms extending from the recess on opposite sides of the backing plate.

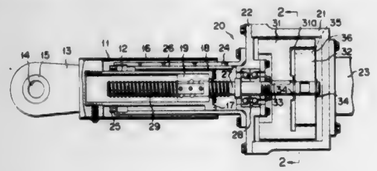
4,289,218

MECHANICAL MOTION-SNUBBING DEVICE

Takayuki Urano, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Jun. 21, 1979, Ser. No. 50,771
Claims priority, application Japan, Oct. 6, 1978, 53-122729
Int. Cl.³ B60T *7/12*
U.S. Cl. 188—134 **10 Claims**

1. A mechanical motion-snubbing device comprising:
a pair of telescoped members mounted for relative axial movement with respect to each other, said telescoped members being non-rotatable relative to each other about the longitudinal axes thereof;
movement-converting means for converting the relative axial movement of said telescoped members into a rotation;
a shaft supported by one of said paired telescoped members so as to be rotated by said movement-converting means, said shaft being axially fixed;
a first inertia member fixed to the shaft;
a second inertia member freely rotatable on an axis of said shaft, said second inertia member being axially fixed and being arranged for unrestrained rotation relative to said first inertia member over a given angle of rotation thereof in both opposite directions of rotation;
a plurality of segmental cutouts formed in one of said first and second inertia members, said cutouts being formed substantially equiangularly in the circumferential direction of said one inertia member, each of said cutouts defining a pair of collision planes spaced from each other in said circumferential direction; and
a corresponding plurality of segmental projections formed on the other of said first and second inertia members



substantially equiangularly in the circumferential direction of said other inertia member so as to fit into respective corresponding cutouts with a predetermined space left therebetween, each of said projections defining a pair of collision planes spaced from each other in said circumferential direction and facing corresponding collision planes of the cutouts, the circumferential spacing between collision planes of a given projection being less than the circumferential spacing between collision planes of the respective cutout by a given distance, said second inertia member being rotatable unrestrained relative to said first inertia member over said given angle which corresponds to said given distance; whereby upon application of sudden opposing external forces exceeding a given value, the first inertia member rotates relative to said second inertia member such that collision planes of each projection alternately strike against a corresponding collision plane of a respective cutout, whereby said inertia members rotate in respective opposite directions in an alternating manner to produce a composite inertia moment of the first and second inertia members to absorb energy of said opposing external forces.

4,289,219

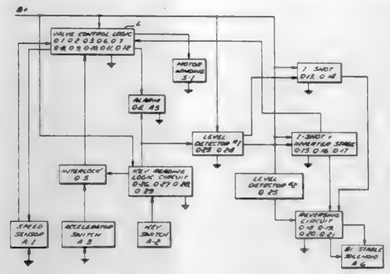
CONTROL SYSTEM FOR VEHICLE BRAKE VALVE

Gregory Csurgay, and Willes W. Reeder, both of Fort Lauderdale, Fla., assignors to Fail Safe Industries, Inc., Lantana, Fla.

Filed Nov. 2, 1979, Ser. No. 90,759
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—2 **29 Claims**

1. In an automotive vehicle brake system having hydraulic brake means, and valve means operatively connected to control the hydraulic pressure in said brake means, said valve means having an open first position in which it is operable either to relieve said hydraulic pressure or to apply a pressure increase to said brake means, said valve means having at least one additional position in which it acts as a one-way check valve operable to apply a pressure increase to said brake means but not to relieve pressure in said brake means, the improvement which comprises:

electrically energizable means for controlling the position of said valve means;
and control circuit means operatively connected to said



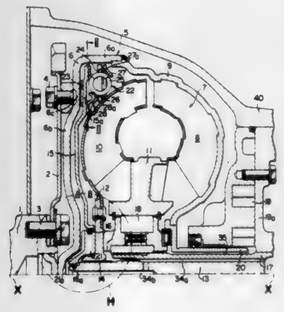
electrically energizable means to effect the positioning of said valve means in said open position when the vehicle is moving and in said additional position after the vehicle stops.

4,289,220

HYDRAULIC COUPLING WITH A LOCK-UP CLUTCH

Kiyoshi Onuma, Toyota, and Hajime Arai, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 12, 1979, Ser. No. 84,431
Int. Cl.³ F16D *3/66*
U.S. Cl. 192—3.3 **8 Claims**



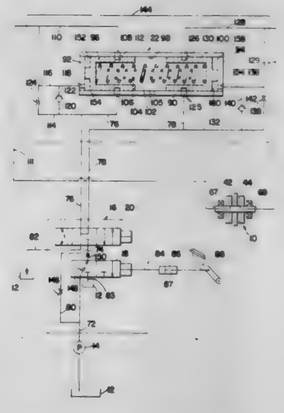
1. A transmission comprising:
an input member;
an output member;
a housing mounted to said input member, said housing having a front wall portion including a cylindrical peripheral wall portion, a disk-shaped end wall portion and a rear portion formed as an impeller, said end wall portion having an annular portion which operates as a first clutch member;
a turbine received in said housing between said end wall portion and said impeller and drivingly connected to said output member;
a disk provided between said end wall portion of said housing and said turbine so as to define a first chamber between said disk and said end wall portion and a second chamber between said disk and said turbine, said disk having an annular portion which operates as a second clutch member;
a buffering means provided between outer peripheral portions of said disk and said turbine, said buffering means drivingly connecting said outer peripheral portions with each other;
a first fluid passage for communicating fluid to said first chamber; and
a second fluid passage for communicating fluid to said second chamber;
said buffering means comprises a first annular plate element mounted to said outer peripheral portion of said turbine and having first and second circumferentially elongated openings, second and third annular plate elements having individually third and fourth circumferentially elongated openings and frictionally engaged on opposite faces of said first annular plate element and connected with each other by a pin which is passed through said first opening so as to allow for a predetermined frictional relative rotary movement between said first annular plate element and the combination of said second and third annular plate elements, and a compression coil spring located in said second, third, and fourth opening so as to be supported and to effect a buffering connection between said first annular plate element and the combination of said second and third annular plate elements, said disk being directly connected to the combination of said second and third annular plate elements so as to be bufferingly connected to said turbine through the assembly of said first, second, and third annular plate elements and said coil spring.

4,289,221

HYDRAULIC CONTROL SYSTEM

J. Bruce Chambers, Yardley, Pa., and Richard J. Dotter, Sr., Trenton, N.J., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1978, Ser. No. 961,891
Int. Cl.³ F16D *25/10*
U.S. Cl. 192—3.57 **9 Claims**



1. In a control system for actuating a pair of dependent hydraulic clutches, said clutches comprising a first clutch piston, means defining a first pressure chamber behind said first clutch piston, a second clutch piston, means defining a second pressure chamber behind said second clutch piston, and means connecting said first and second clutch pistons whereby both clutch pistons move in response to pressurization of either of said first and second pressure chambers; a source of pressurized hydraulic fluid; a shift valve operable to selectively connect said source with said first and second pressure chambers, an accumulator valve assembly operable to control the flow of pressurized hydraulic fluid from said shift valve to said first and second pressure chambers; and conduit means connecting said source to said shift valve, said shift valve to said accumulator valve and said accumulator valve to said first and second chambers; the improvement wherein said accumulator valve assembly comprises a valve body; a first accumulator piston received within said valve body for controlling fluid flow to

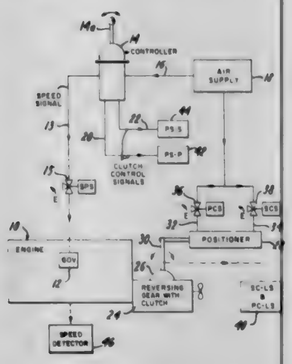
said first pressure chamber; a second accumulator piston received within said valve body for controlling fluid flow to said second pressure chamber, said first and second accumulator pistons being disposed in back-to-back relationship within a cylindrical bore formed in said valve body; means defining first and second inlet ports formed through said valve body into said cylindrical bore; means defining first and second outlet ports formed through said valve body into said cylindrical bore; means formed on said first accumulator piston for connecting said first inlet and outlet ports when said first accumulator piston is in a first position, for blocking flow between said first inlet and outlet ports when said first accumulator piston is in a second position, and for reconnecting said first and second inlet and outlet ports when said first accumulator piston is in a third position; means formed on said second accumulator piston for connecting said second inlet and outlet ports when said said accumulator piston is in a second position, for blocking flow between said second inlet and outlet ports when said second accumulator piston is in a second position, and for reconnecting said second inlet and outlet ports when said second accumulator piston is in a third position; and a first spring received between said first and second accumulator pistons to bias said pistons apart in said bore; said system including first and second inlet conduit means connecting said shift valve with said first and second inlet ports respectively, first outlet conduit means connecting said first outlet port with said first clutch pressure chamber, and second outlet conduit means connecting said second outlet port with said second clutch pressure chamber.

4,289,222

ENGINE-CLUTCH CONTROL INTERLOCK SYSTEM

William F. Esthimer, Walpole, Mass., assignor to Bird-Johnson Company, Walpole, Mass.

Filed Sep. 27, 1979, Ser. No. 79,595
Int. Cl.³ B60K *41/02*
U.S. Cl. 192—0.033 **3 Claims**



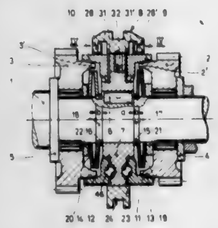
1. In a power train that includes an engine having an engine speed control means for controlling the speed of the engine in response to an engine speed control signal generated and selectively conducted to the speed controller and a clutch having a clutch control means for engaging and disengaging the clutch in response to a clutch actuator signal, an engine and clutch control interlock system comprising means for monitoring engine speed and producing a speed signal indicative of whether the engine is running at a speed above or below a selected nominal idle speed; means for generating and monitoring a clutch control signal and producing a clutch control status signal indicative of whether or not a clutch control signal is being generated; means for monitoring the operating status of the clutch and producing a clutch status signal indicative of whether the clutch is engaged or disengaged; means responsive to the clutch control status signal and the speed signal for conducting the clutch actuator signal to the clutch control means of a disengaged clutch only when a clutch control signal is generated and the engine is running below the nominal idle speed; and means responsive to the clutch status signal for permitting a speed control signal to be conducted to the speed control means only after the clutch is engaged.

4,289,223

SHIFTABLE FRICTION CLUTCH FOR GEAR DRIVES

Richard Strehler, Unterfoehring, and Max Bartl, Munich, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 41,923
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828722
Int. Cl.³ F16D *21/04, 43/21*
U.S. Cl. 192—48.91 **4 Claims**



1. In a shiftable friction clutch for gear drives comprising a shift collar axially movably supported on a carrier sleeve mounted on a shaft and which must be coupled to a gear, at least one axially movable friction ring constituting a first clutch half and cooperating with a second clutch half through clutch friction surfaces, said first clutch half being axially movably supported through rolling elements engaging inclined surfaces on axially mutually facing sides of said carrier sleeve and said friction ring, said inclined surfaces being inclined with respect to the plane of rotation, the improvement comprising wherein said carrier sleeve is mounted for axial movement on said shaft and wherein a supporting spring is provided on the side of said carrier sleeve remote from said clutch friction surfaces between said carrier sleeve and said shaft for limiting the maximum transmittable torque when said clutch friction surfaces are in engagement with each other.

4,289,224

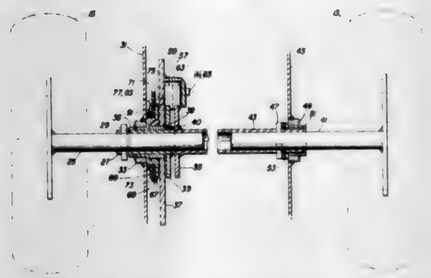
INDEPENDENT WHEEL DRIVE

Dale R. Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Sep. 4, 1979, Ser. No. 72,272
Int. Cl.³ F16D *41/16*; B60K *23/06*
U.S. Cl. 192—50 **2 Claims**

1. A drive system mounted to a vehicle, said drive system in communication with the vehicle power unit, comprising:
(a) a first axle rotatably mounted to said vehicle;
(b) a second axle rotatably mounted to said vehicle;
(c) a first sprocket fixably mounted around a portion of said first axle;
(d) a second sprocket fixably mounted around a portion of said second axle;
(e) a main sprocket rotatably mounted around a portion of one of said axles, said main sprocket in communication with said vehicle power unit such that said vehicle power unit can cause said main sprocket to rotate, said first, second, and main sprocket being mounted generally parallel to each other;
(f) a first pawl rotatably mounted to said main sprocket and positioned to enable a driving engagement with said first sprocket;

(g) a second pawl rotatably mounted to said main sprocket and positioned to enable a driving engagement with such second sprocket;
(h) a first friction disk;
(i) a second friction disk placed beside said first friction disk;
(j) a ring having retaining wall and fixably mounted around one of said axles, said first and second friction disk rotatably mounted around said ring, one of said disk to abut said retaining wall;
(k) a compressing means for pressing said disk against each other and said retaining wall;
(l) a first pin fixably mounted to said first pawl, said pin to extend through said first enlarged opening in said main



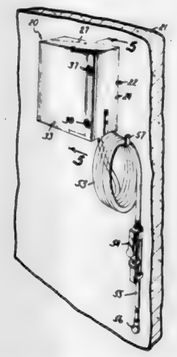
sprocket and entering an opening in said first friction disk, such that said first pin can cause said first pawl to rotate;
(m) a second pin fixably mounted to said second pawl, said pin to extend through a second enlarged opening in said main sprocket and entering an opening in said second friction disk, such that said second pin can cause said second pawl to rotate;
whereby rotation at said main sprocket causes first and second pins in cooperation with said first and second friction disk to rotate said first and second pawls sufficient to engage the respective first and second sprockets, by advancing one of said axles relative to said other axle said advanced axle is allowed to free-wheel by revising the influence of hard friction disk to cause disengagement of said pawl.

4,289,225

AIR COMPRESSOR AND DISPENSER

Owen R. Scholta, Burnsville, Minn., assignor to Thorne Industries, Inc., Bloomington, Minn.

Filed Mar. 12, 1979, Ser. No. 19,869
Int. Cl.³ G07F *15/12, 17/06*
U.S. Cl. 194—9 T **8 Claims**



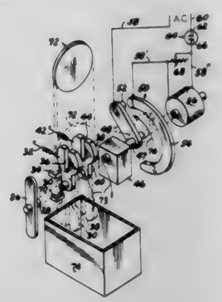
1. An apparatus for compressing and dispensing compressed gas comprising:
a housing adapted to be secured to a support, said housing having a chamber, a doorway open to the chamber, door means movably mounted on the housing for closing the doorway, lock means cooperating with the door means for holding the door means in a closed position covering the doorway, holding the door means in a closed position covering the doorway,
an electric motor located in the housing chamber,
means mounting the motor on the housing,
gas compressor means located in the chamber and drivably connected to the motor,
said gas compressor means and said motor having communicating passages therethrough for directing cooling gas into proximity to said gas compressor means and said motor,
said gas compressor means having a guide for directing gas into said passages of the compressor means, and also having intake means for gas to be compressed open to said chamber,
said housing having a bottom wall, a gas inlet opening in said bottom wall located adjacent the guide for directing gas into the gas compressor means,
said motor having gas impelling means for carrying cooling gas from the guide through the gas compressor and motor and discharging the gas therefrom into said chamber,
said gas in the chamber being drawn into the gas intake means on operation of said gas compressor means,
conduit means connected to the gas compressor means to carry compressed gas to a desired location externally of said housing,
control means located in the housing chamber operable to connect the motor to an electric power source whereby the motor operates the gas compressor means to compress gas and deliver gas to the desired location,
said control means including switch means and coin operated timer means to operate the switch means a limited period of time in response to actuation of the timer means with a coin, and means mounting the control means on the housing.

4,289,226

ELECTRIC VEHICLE BATTERY RECHARGING STATION

Rudolph P. Wilkinson, 320 Lincoln Center, Ardmore, Okla. 73401

Filed Dec. 3, 1979, Ser. No. 99,244
Int. Cl.³ G07F *15/12*
U.S. Cl. 194—84 **4 Claims**



1. An electric energy vending apparatus, comprising:
a closed housing having a coin slot for receiving coins or tokens;
normally open circuit means including a switch having a movable contact slidably contacting an arcuate stationary contact contained by said housing and including leads connected with a source of electrical energy;
an electrical outlet having terminals interposed in said circuit means;

coin receiving means including first and second coin or token nesting levers manually rotatable in one direction through a first predetermined arc for closing said circuit means,

said coin receiving means including first and second rods coaxially journalled horizontally by said housing and respectively connected at one end with one end portion of said first and second levers, respectively,

a gear train connected with the other end of said second rod,

a driven shaft connecting said gear train with said movable switch contact for movement of the latter through a second predetermined arc as a function of the angular rotation of said levers, and,

spring means normally biasing said first and second levers toward a coin or token receiving position; and,

wattmeter means interposed in said circuit and drivably connected with said driven shaft for biasing said switch open after a predetermined time interval.

4,289,227

BELT CONVEYER TRANSPORTATION SYSTEM UTILIZING MAGNETIC ATTRACTION

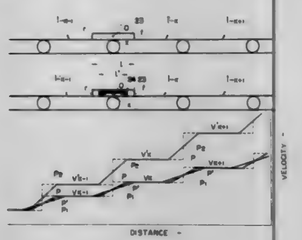
Kazumi Matsui, Yokohama; Takashi Takasue, Kawaguchi, and Masami Iwasaki, Tokyo, all of Japan, assignors to Furukawa Electric Co. Ltd., Tokyo, Japan

Division of Ser. No. 791,141, Apr. 26, 1977, Pat. No. 4,197,934. This application Aug. 29, 1979, Ser. No. 70,823

Claims priority, application Japan, Apr. 28, 1976, 51-47880; May 25, 1976, 51-59590; Jun. 15, 1976, 51-69276; Jul. 6, 1976, 51-79426; Aug. 25, 1976, 51-100647; Sep. 30, 1976, 51-116509; Oct. 6, 1976, 51-119313; Oct. 12, 1976, 51-121341; Nov. 10, 1976, 51-134185; Jan. 11, 1977, 52-1133

Int. Cl.³ B65G *17/00*; B61B *13/14*; B61K *1/00*

U.S. Cl. 198—334 **5 Claims**



1. A belt conveyor type transportation system by magnetic attraction comprising at least one conveyor line including a plurality of conveyor units arranged successively, each of said conveyor units comprising endless belt means including a magnetic material as a constituent element encircled around on a pair of a driving wheel and idle wheel to be driven thereabout at a respective speed independent of the speeds of the other units, and at least one moving body disposed on said conveyor line, said moving body including magnet means for magnetically attracting said magnetic belts, whereby said moving body is moved forcibly along said conveyor line by following the circulating speed of the magnetic belt means of each of said conveyor units, said belt means having a length corresponding to the distance between shafts at both ends of conveyor units and being equal to the length of said magnet means for attaining linear, continuous acceleration without frictional slippage, said magnet means being constantly energized to produce magnetic attraction strong enough to overcome the friction force due to the load added to the magnet belt means by the magnet means, said magnet means being attracted by magnetic force towards the surface of the magnet belt means and being in facing relation therewith at less than a predetermined gap, said magnet means being constructed so that magnetic attaction between two conveyor units is made when the magnet means passes through a portion between the two conveyor units, the ratio of the magnetic attraction between the two units varying gradually with the movement of the magnet means, such that when the velocities of the magnetic belts of both units are different, the velocity of the moving body is varied linearly and gradually from the velocity of one unit to the velocity of the other unit accompanied with slip wherein a plurality of said conveyor lines each including said moving body and a plurality of said conveyor units having, in terms of their own magnetic belt speeds, steplike speed differences with one another, are arranged along at least one side of a car travel line of a continuously operated transportation system, the traveling distance of the moving body required for the moving body speed to synchronize with the conveyor units having different speeds being dependent on the positional dimension of the magnetic means facing the magnetic belt.

4,289,228

CONVEYING DEVICE FOR A PACKING MACHINE OR THE LIKE

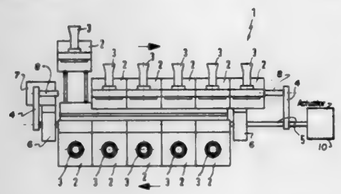
Werner Reim, Waldbronn; Hermann Gernlein, and Helmuth Zimmermann, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 101,298

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853103

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—339 **8 Claims**



1. A device for the intermittent conveyance of articles, comprising first and second parallel spaced apart linear guideways facing at an angle to each other, a plurality of cassettes, each adapted to receive an article slidably mounted on said first and second guideways, and means for intermittently displacing said cassettes linearly along said guideways and for tilting said cassettes from one of said guideways to the other, whereby said cassettes move cyclically on the device, said means for intermittently displacing and tilting said cassettes comprising a shaft extending parallel to said first and second guideways, an actuator for moving said shaft linearly along its axis and for rotating said shaft about its axis, and arm means connected at each end of said shaft and engageable with said cassettes for displacing and tilting said cassettes.

4,289,229

CONVEYOR TABLE SLAB STOP ARRANGEMENT

Norman L. Keller, Pittsburgh, Pa., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 26, 1979, Ser. No. 88,497

Int. Cl.³ B65G *13/075*

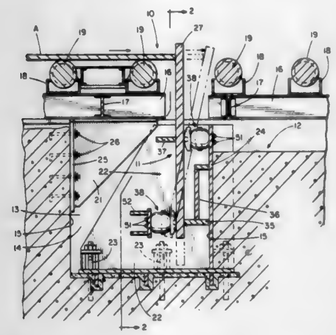
U.S. Cl. 198—633 **25 Claims**

12. For a conveyor arrangement having a plurality of horizontally spaced conveyor members adapted to support and convey products in a horizontal direction, an improved stop mechanism for stopping the movement of said products comprising:

a stop element mounted on said arrangement vertically movable between a first blocking position for stopping the movement of said products and a second non-blocking position,

actuating means for moving said stop element between said blocking and non-blocking positions, and

shock absorbing means in the arrangement engaging said stop element comprising horizontally spaced elastomeric shock absorbers disposed on opposite sides of said stop element,



means operatively associated with the stop element and providing for horizontal displacement of the stop element upon impact thereof by the products,

whereby blocking of said products by said stop element horizontally displaces the upper portion of said stop element transmitting shock forces thereby generated to said shock absorbing means.

4,289,230

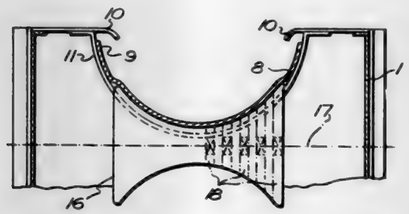
TROUGHED BELT CONVEYORS

Terence McGee, 7 Weaver St., Kirkstall Rd., Leeds 4, Yorkshire, England

Filed Jan. 19, 1978, Ser. No. 870,796

Int. Cl.² B65G *15/60, 15/08*

U.S. Cl. 198—811 **7 Claims**



1. A troughed belt conveyor comprising an endless travelling belt supported in its load carrying stretch upon a skid base which is curved in cross-section to cause the belt to assume an upwardly concave cross-sectional shape, the belt being arranged to travel along and in sliding contact with said base, waisted rollers located at least adjacent the infeed and outfeed ends of the said base, said waisted rollers having their concave surfaces projecting sufficiently above the skid base to support the belt at those locations slightly clear of said skid base, said skid base being provided along its length with a first series of spaced apart cut-outs through which project horizontally disposed rollers, and a second series of cut-outs through which project inclined rollers, said second series of cut-outs and their inclined rollers alternating with said first series of cut-outs along the length of the skid base and said second series comprising pairs of opposed cut-outs located on opposite sides of the skid base, said horizontally disposed rollers and said inclined rollers supporting the endless belt clear of the skid base at selected points and being carried by means secured to said skid base.

4,289,231

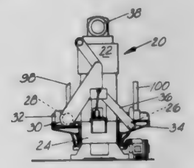
ARTICLE FEEDING APPARATUS

Elton G. Kaminski, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Filed Jul. 12, 1979, Ser. No. 56,835

Int. Cl.³ B65G *23/06*

U.S. Cl. 198—834 **9 Claims**



9. In an apparatus having a belt passing over at least two cylindrical drums, and having means for intermittently driving one, at least, of said drums for feeding a series of articles along a path so as to present them in succession to a plurality of operating stations where operations are performed on said articles in sequence, said belt having a series of equally spaced article receiving apertures to fit said articles; one of said drums constituting a low inertia idler drum comprising a pair of spaced side plates fixed to a non-rotatable shaft, opposed coaxial pairs of first roller bearing means mounted on said side plates, the axes of said first roller bearing means being substantially parallel to the axis of said non-rotatable shaft, said opposed coaxial pairs of first bearing means comprising three coaxial opposed pairs of roller bearings mounted 120° apart around said plates, a sleeve rotatably mounted around said first roller bearing means, said sleeve being provided with a peripheral flange at both edges thereof and with axially aligned sprocket teeth about its periphery so that no slippage can occur between said belt and said idler drum, and opposed pairs of second roller bearing means bearing against said peripheral flanges of said sleeve, to provide axial guiding of said sleeve, and having axes substantially perpendicular to the axis of said shaft, said opposed pairs of second idler bearing means comprising three opposed pairs of roller bearings mounted 120° apart around said side plates.

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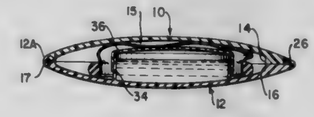
DIAPHRAGM CASE OR THE LIKE

Paula Seibel, 307 W. 105th St., Apt. 4B, New York, N.Y. 10025, and Wayne J. Stettler, Philadelphia, Pa., assignors to Paula Seibel, New York, N.Y.

Filed Jun. 20, 1979, Ser. No. 50,343

Int. Cl.³ A45C *11/00*; B65D *85/16*

U.S. Cl. 206—37 **1 Claim**



1. A diaphragm case, comprising:

top and bottom closure halves, each said half having the approximate external shape of a shell and including:

(a) an internal circular depression

(b) a flat ledge around said depression, with the flat ledges of the two sections adapted to engage each other when the case is closed,

(c) a vertically displaced section shaped to conform generally to the edge of a shell at the front of each closure half, each of said displaced sections forming in conjunction

with the opposite closure half a shell like construction when closed, and

(d) a locking projection on the flat ledge adapted to snap engage a complementary depression in the vertically displaced section of the other half,

an integrally formed container extending upwardly from the center of the bottom section and adapted to hold a contraceptive ointment,

air-tight closure means for said container,

means for pivotally securing said half sections together, said means being positioned opposite said vertically displaced sections,

a contraceptive ointment in said container, and

a flexible diaphragm within said case and enveloping said container.

4,289,233

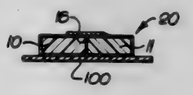
PACKAGING OF MUTUALLY REACTIVE SUBSTANCES

Francis G. Firth, Los Angeles, Calif., assignor to Applied Plastics Co., Inc., El Segundo, Calif.

Continuation of Ser. No. 905,449, May 12, 1978, abandoned, which is a division of Ser. No. 747,612, Dec. 6, 1976, Pat. No. 4,116,742. This application Oct. 15, 1979, Ser. No. 85,128

Int. Cl.[3] **B65D** *81/32, 25/08*

U.S. Cl. 206—221 **3 Claims**



1. A plastic hand kneadable package comprising

(a) first and second extruded, mutually reactive self-supporting plastic masses which are kneadable together, said first mass consisting essentially of an admixture of filler, thixotropic material and reactive epoxy resin having an epoxy equivalent weight of 190 or less, the second mass consisting essentially of a reactive, non-flowing admixture of a polyfunctional amine and filler,

(b) said masses extended in close side-by-side horizontally spaced apart relation, the masses being lengthwise elongated in parallel relation and having rectangular cross sections, and

(c) a thin, flexible barrier between said masses blocking them against touching one another until such time as the masses are intentionally kneaded together for reaction, the barrier being in sprayed-on dried film state and being coated on a vertical side of at least one of the masses, the masses horizontally separated by the thickness of the film, the barrier characterized as essentially impermeable to reactive ingredients in the masses, the barrier consisting essentially of a film former dissolved in a solvent, the barrier being elongatable,

(d) the barrier having a thickness characterized as resulting from spray application only of the barrier onto at least one vertically extending side of one of the self-supporting masses while said one mass is progressively advancing relative to the spray, the barrier having a height dimension at least several times greater than the barrier thickness, the barrier height dimension being the same throughout the lengths of the masses,

(e) and a wrapping about said masses and barrier and having overlapping extents accessible adjacent flat surfaces of the masses which extend toward the barrier.

4,289,234

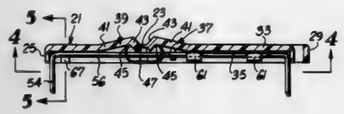
CIGARETTE PACKAGE CLOSURE

Roger M. Rutschke, Laguna Beach, Calif.

Filed Jun. 16, 1980, Ser. No. 160,141

Int. Cl.[3] **A25F** *15/00, 27/00;* **B65D** *85/10, 43/24*

U.S. Cl. 206—259 **10 Claims**



1. A cigarette package closure for selectively closing one end of a cigarette package comprising:

frame means insertable into the cigarette package for installing the closure on the package;

a one-piece cover of self hinging plastic material for covering the end of the cigarette package;

means for mounting the cover on the frame means;

said cover including a closure section, a lid and hinge means of said self-hinging plastic material for hingedly joining the lid to the closure section for pivotable movement between a closed position in which the lid assists in closing the end of the cigarette package when the closure is installed on the cigarette package and an open position in which the lid exposes a portion of the end of the cigarette package when the closure is installed on the cigarette package;

said cover having an outer surface and an inner surface, said inner surface having first and second inner surface regions located so that by urging such inner surface regions in a predetermined direction relative to each other, the lid is urged toward the open position;

spring means confronting the inner surface for urging the inner surface regions in said predetermined direction whereby the lid is biased toward the open position; and

releasable latch means at least partially on the lid for releasably retaining the lid in the closed position.

4,289,235

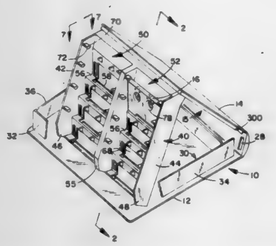
MAGNETIC CASSETTE STORAGE CASE

Robert A. Egly, 1630 Marguerite Ave., Corona del Mar, Calif. 97625

Filed Sep. 17, 1979, Ser. No. 76,252

Int. Cl.[3] **B65D** *85/67, 5/50*

U.S. Cl. 206—387 **13 Claims**



1. A container for holding magnetic memory cassettes comprising:

a first cover;

a second cover hinged to said first cover;

an insert pivotally attached to one of said covers to allow said insert to be folded inwardly between said first and second cover having a plurality of ledges upon which said cassettes can rest;

a web between said first and second cover forming a hinge-like member therebetween so that the covers can be folded inwardly and opened outwardly;

a wall on one of said covers surrounding at least a portion of the periphery thereof on the internal side between said covers in their overlying relationship for purposes of surrounding the insert at least in part;

backing for receiving cassettes thereagainst when they are on said ledges; and,

protuberances for frictionally engaging a portion of said cassettes when they are placed on said ledges.

4,289,236

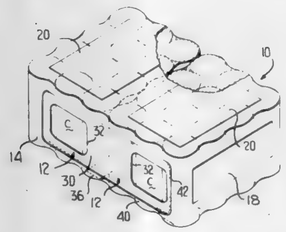
CASE CAN PACKAGE AND METHOD OF FORMING SAME

Robert H. Ganz, Saddle River, and John H. Myers, Emerson, both of N.J., assignors to Ganz Brothers, Inc., Bergenfield, N.J.

Filed Sep. 26, 1979, Ser. No. 79,050

Int. Cl.[3] **B65D** *75/38;* **B65B** *53/02;* **B65D** *85/62*

U.S. Cl. 206—432 **9 Claims**



4. A case can package comprising two one-half case can packages disposed in side by side relation, said one-half case can packages being identical and each one-half case can package including cans arranged in rows and columns and a package film surrounding said cans and shrunk tightly around said cans in interlocking relation therewith to form a readily handleable unit, and an overwrap film surrounding two one-half case can packages and shrunk tightly around said one-half can packages in interlocking relation therewith to form a readily handleable case can package, and a selected one of said package film and said overwrap film having a surface with a resist coating thereon opposing the other of said films and substantially preventing bonding of said overwrap film to said package films whereby said overwrap film is readily removable from said one-half case can packages without damaging said package films, the package film of each of said one-half case can packages defining at opposite ends thereof an open area, and said overwrap film defining at opposite ends of said case can package a similar opening generally aligned with said package film openings and of a greater height and width.

4,289,237

FIREWOOD PACKAGE

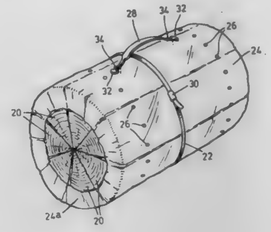
Anthony Cutrara, 76 Montressor Dr., Willowdale, Ontario, Canada (M2P 1Z4)

Filed Nov. 20, 1979, Ser. No. 96,107

Int. Cl.[3] **B65D** *85/20*

U.S. Cl. 206—443 **8 Claims**

1. A firewood package comprising: a plurality of lengths of firewood arranged generally parallel to one another; a strap tightly encircling said firewood lengths and holding the same together to form a unitary bundle of generally cylindrical shape, the firewood lengths being sized so that said bundle can be conveniently carried; a film of a plastic material secured around the generally curved surface of the bundle and extending around peripheral regions only of opposed ends of the bundle, the remainder of said bundle ends being exposed to atmosphere, said film being formed with a plurality of perforations to permit air circulation into and through the bundle by way of said perforations and open ends of the bundle; and a carrying handle attached to said bundle; and a carrying handle



attached to said bundle and accessible from externally of the film of plastic material for facilitating carrying of the bundle.

4,289,238

READINESS RECEPTACLE FOR RESPIRATORS

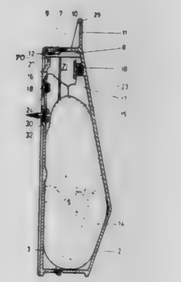
Ernst Warncke, Lübeck; Joachim Schlobohm, Oldesloe, and Jürgen Behnke, Lübeck, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,936

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843652

Int. Cl.[3] **B65D** *3/26, 77/30*

U.S. Cl. 206—527 **13 Claims**



1. A readiness receptacle for housing a device such as a respirator which comprises a first shell portion hingedly connected to a second shell portion, said connected shell portion defining a space in which the device is disposed in a tearable bag closed on all sides, at least one of said shell sections being pivotable to open said receptacle, a tear strap connected to said tearable bag having a portion connected to each of said shell portions for tearing open said tearable bag, means on one of said shell portions for mounting said receptacle on a wall structure, a handle on the other of said shell portions being engageable to pivot at least one of said shell portions to simultaneously open said receptacle and tear open said tearable bag, and a latch means for latching said shell portions together.

4,289,239

CARTON HAVING NOVEL END PANEL CONSTRUCTION

George L. Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

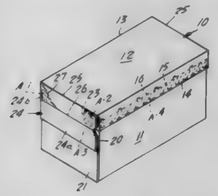
Division of Ser. No. 884,193, Mar. 7, 1978, Pat. No. 4,203,355. This application Jan. 10, 1980, Ser. No. 110,835

Int. Cl.[3] **B65D** *5/18, 5/28, 5/54, 5/66*

U.S. Cl. 206—625 **7 Claims**

1. A fully assembled, unopened, carton of the type provided with a bottom wall panel, opposed front and rear wall panels,

end wall panels, and a top closure panel, each said end wall panel being defined by a pair of folded overlapped flaps on ends of said front and rear wall panels and a flap on said bottom wall panel folded onto said overlapped flaps; said carton comprising: closure flaps on the opposed edges of said top closure panel which are disposed toward said end wall panels, said closure flaps extending downwardly over a portion of corre-



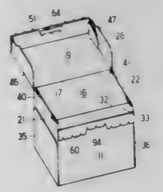
sponding ones of said folded flaps on said front, rear, and bottom wall panels, and terminating at free edges of said closure flaps; closure flap extensions abutting said free edges of said closure flaps and extending downwardly over additional portions of said folded flaps; and means affixing each said closure flap extension on the corresponding one of said end wall panels, to those of said additional portions which lie immediately adjacent said closure flap extensions.

4,289,240

FLIP-LOCK RECLOSABLE CARTON

David C. Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 1, 1979, Ser. No. 80,550
Int. Cl.³ B65D *5/54, 5/66*
U.S. Cl. 206—624 **12 Claims**



1. A carton having a cover portion which is hingedly reclosable over a receptacle portion, comprising:

(a) a front receptacle panel having top, bottom and side edges;

(b) a pair of receptacle end panels connected at their front edges to the side edges of said front panel and extending rearwardly therefrom with their top edges at the top edge of said front panel;

(c) a bottom receptacle panel having front, rear, and side edges and being connected at its front edge to the bottom edge of said front panel and extending rearwardly therefrom;

(d) a rear receptacle panel having top, bottom and side edges and being connected at its bottom edge to the rear edge of said bottom panel and extending upwardly therefrom;

(e) a relatively narrow reinforcing flap hingedly connected to the top edge of said front panel along the length thereof and extending rearwardly therefrom;

(f) a top cover panel having front, rear, and side edges and being hingedly connected at its rear edge to the top edge of said rear panel and extending frontwardly therefrom;

(g) a front cover flap having top, bottom, and side edges and being connected at its top edge to the front edge of said top panel and extending downwardly therefrom over a portion of said front panel; and

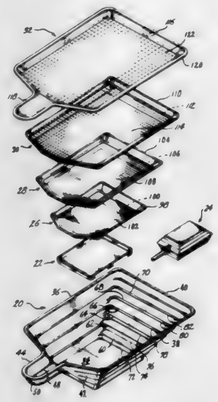
(h) an extension flap connected to the bottom edge of said front cover flap and lying between said front cover flap and said front panel and being secured to said front panel along its length, a centrally disposed portion of said extension flap being connected to said front flap by a hinge line and being bounded by a cut line of weakness in said extension flap to define a locking tab which is not secured to said front panel, the remainder of said extension flap being connected to said front cover flap by a cut line of weakness.

4,289,241

GOLD PAN AND CLASSIFIER

Jay J. Litrap, 3207 Belvidere SW., Seattle, Wash. 98126

Filed Mar. 10, 1980, Ser. No. 128,514
Int. Cl.³ B07B *1/32*
U.S. Cl. 209—44 **25 Claims**



1. A container for separation of a first granular material from a second granular material having a specific gravity less than said first granular material comprising:

a generally rectangular base portion having a forward end and a rearward end, the longitudinal dimension of said base lying in the fore and aft direction of said base,

a pair of side panels joined to and extending divergently upwardly from opposite longitudinal sides of said base,

a front panel joined to and extending upwardly and forwardly from the forward end of said base, said front panel increasing in width as it extends upwardly in proportion to the divergency of said side panels, the forward edge portions of said side panels being joined to respective ones of the side edge portions of said front panel, said front panel having a plurality of ridges and valleys extending thereacross, each of said valleys having a substantially constant depth relative to an adjacent ridge, the ridge lines of said ridges being substantially parallel to each other and substantially parallel to the corner junction between said front panel and said base, and

a rear panel extending upwardly from the rearward edge of said base, said rear panel increasing in width as it extends upwardly in proportion to the divergency of said side panels, the side edge portions of said rear panel being joined to respective rearward edge portions of said side panels.

24. A method for separating a mixture of a first granular material and a second granular material having a specific gravity less than that of the first material comprising the steps of

confining said mixture in a trough-like container in an elongated mass having a relatively flat upper surface and a longitudinal axis,

covering said mixture with water and vibrating said container to cause said first material to settle toward the bottom of said trough-like container, leaving the second material adjacent the flat upper surface thereof,

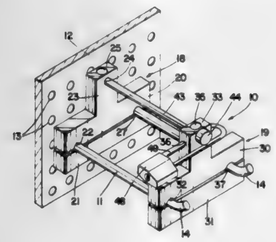
confining said water over and adjacent said mixture so that, as said container is moved, the water passes over said mass in a direction generally orthogonal to the longitudinal axis of said mass, said water alternately running off said mass in a layer having a uniform depth along the longitudinal extent of said mass, and running over said mass in a layer having a relatively uniform depth along the longitudinal extent of said mass, said water as it runs off said mass carrying at least a portion of said second material from the top of said mass.

4,289,242

DISPLAY SECURITY DEVICE

David L. Kenyon, 1727 W. Royalton Rd., Broadview Hts., Ohio 44147

Filed Aug. 31, 1979, Ser. No. 71,777
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—4 **11 Claims**



1. A security device for use with a hanger extending from a board, the device comprising:

two split bar units mounted on the hanger, one bar unit mounted near the end of the hanger adjacent to the board, the other bar unit mounted on the hanger near the opposite end thereof, each split bar unit comprising two bar portions secured together by releasable fastening means, each bar unit having a passage extending therethrough;

a removable rod inserted through the passage in each bar unit and extending between the bar units, the rod preventing release of the fastening means; and

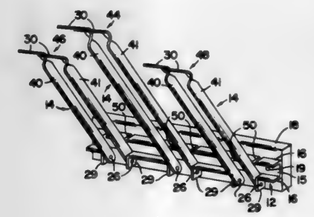
lock means for preventing removal of the rod from the passages in the bar units.

4,289,243

SUPPORT DRIVE PRIMARILY DESIGNED FOR FOOTWEAR

Nicholas A. Arbuzoff, P.O. Box 885-ONECO, Bradenton, Fla. 33558

Filed Jan. 8, 1979, Ser. No. 1,674
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—35 **2 Claims**



1. A support device of the type primarily designed to dispose footwear in exposed, supported position for drying, said support device comprising: base means dimensioned and configured for secure mounting engagement with a predetermined surface, a plurality of pairs of spaced support arms disposed in spaced relation along the length of said base means, each one of said pairs of support arms individually secured to said base and disposed to extend outwardly therefrom in spaced relation to said base means, each of said support arms comprising a substantially elongated, generally flat, rectangular configuration, each of said support arms pivotally connected substantially adjacent one end thereof and comprising a footwear engaging distal end at the opposite end thereof and movable in a plane disposed substantially transverse to the longitudinal axis of said base means between an open and a closed position, said open position defined by outward, angularly oriented disposition of said arms relative to said base means, said closed position defined by a substantially co-planar relation between the longitudinal axis of said support arms and said base means, each of said support arms having a substantially 90° twist formed therein about its longitudinal axis substantially adjacent said footwear engaging distal end so that said distal end lies on a plane orthogonally disposed to said plane disposed substantially traverse to the longitudinal axis of said base means, the portion of each said support arm intermediate its distal end and said twisted portion angularly disposed relative to the longitudinal axis of said support arm so that it lies in a substantially horizontal plane thereby support footwear in an optimal position to achieve maximal drinage and hence quick drying, and whereby the major portion of said support arm resists warping due to its specific orientation parallel to said plane disposed substantially transverse to the longitudinal axis of said base means, said base means comprises a laterally extending base wall and at least two side walls connected to and extending outwardly from said base wall to thereby define a substantially laterally extending elongated channel means extending between said side walls along a major portion of the length thereof, said side walls disposed in vertically spaced relation therebetween so that one of said side walls lies in a horizontal plane spaced upwardly of the other of said side walls lying in a horizontal plane parallel thereto, at least one pair of longitudinally spaces support arm receiving slots formed in said upper one of said side walls, each of said slots complementally formed relative to said support arms to snugly receive predetermined ones of said support arms, said lower wall having at least one pair of longitudinally spaced depending mounting flanges in substantial vertical alignment with predetermined ones of said slots so that each of said pairs of support arms is pivotally connected substantially adjacent one end thereof to predetermined ones of said depending mounting flanges to the end that disposing said support arm in a substantially upstanding or closed position results in said support arms being folded transversly into said channel means and being snugly longitudinally spaced slots individual to each support arm.

4,289,244

SUPPORTING APPARATUS FOR MEDICAL BOTTLES AND THE LIKE

Douglas L. Frankhouser, Fountain Valley; Louis Schnitz, and Joseph C. Greenstadt, both of Los Angeles, all of Calif., assignors to The Lightron Corporation, Huntington, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,687
Int. Cl.³ A61B *19/00*
U.S. Cl. 211—117 **10 Claims**

1. A supporting apparatus for bottles and the like comprising an upper elongate rod member, a lower elongate tubular rod member receiving said upper member and movable longitudinally therealong, a first lock member mounted on the upper portion of said lower rod member and movable into locking engagement with said upper rod member to lock said members together and thereby adjust the overall effective length of said rod members, operating means engaging said first lock member for shifting said first lock member into locking engagement with said upper rod member, a body structure slidable along said lower member and adapted to support one or more bottles,

a second lock member carried by said body structure and engaging said lower member to releasably secure said body structure to said lower member at different locations along said lower member, lock releasing means on said lower member for releasing said first lock member from said upper member including an actuator disposed on and slidable along the exterior of said lower member below said body structure, a release rod in said lower member connected to said actuator and having an



upper portion thereon engageable with said first lock member to shift said first lock member from locking engagement with said upper rod member in response to upward movement of said actuator and release rod along said lower member, and means for moving said actuator and release rod downwardly along said lower member to enable said operating means to reshift said first lock member into locking engagement with said upper rod member.

4,289,245

MERCHANDISE DISPLAY STAND

Joseph Hasulak, 2932 N. 2nd St., Phoenix, Ariz. 85012

Filed Dec. 20, 1978, Ser. No. 971,235

Int. Cl.³ A47F *5/05*

U.S. Cl. 211—133 **11 Claims**



1. A merchandise display stand including, in combination:

an elongated center post member; and

a plurality of display members adapted to be stacked upon one another on said post member, each of said display members formed from a flat blank of material having first, second, and third spaced-apart openings therein in first, second, and third portions thereof, said first portion being the center portion and said second portion being on one side of said center portion and said third portion being on the other side of said center portion, with said first, second, and third openings located on a common line through the centers thereof, the second and third openings being located at equal distances from the first opening, a first pair of spaced-apart parallel score lines on each of said display members between said first and second openings and a second pair of spaced-apart parallel score lines on each of said display members between said first and third openings, the distance between said first and second score lines being the same as the distance between said third and fourth score lines and all of said score lines being parallel to one another, said display member being adapted to be folded on said first and second score lines to cause said first and second portions of said display member to overly one another, and said display member being adapted to be folded on said third and fourth score lines to cause said first and third portions of said display member to overly one another with the first, second, and third openings having a common axis therethrough so that said center post member may be passed through the openings to sustain said display members for displaying articles therein.

4,289,246

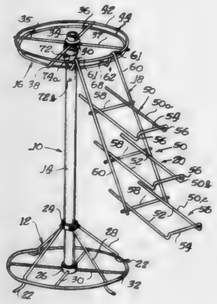
FREE STANDING MERCHANDISER

George B. Scott, 1375 Phoenix Dr., Des Plaines, Ill. 60018

Filed May 24, 1979, Ser. No. 42,012

Int. Cl.³ B61G *1/00*; E04G *5/06*

U.S. Cl. 211—205 **5 Claims**



1. A freestanding merchandiser of the type consisting of a stand, a column upstanding from the stand, support means carried at the upper end of the column, and a carrier detachably connected to the support means and having framework suited to hold merchandise to be frontally displayed, the improved combination comprising said support means being in the form of two elongated elements spaced apart and offset both vertically and horizontally from one another, where one of the elements is disposed forwardly of the other of the elements, said elements being in the form of rings with the upper ring having a larger diameter than the lower one of the rings, said carrier having a pair of mounting arms upstanding rearwardly from the framework, and a hook configuration formed on the upper end of each arm from an uppermost part of the arm, a first contiguous arm segment angled relative to the upper arm part and defining therebetween a downwardly facing V-Bend superimposed on the upper side of said upper ring, and a second contiguous arm segment to extend rearwardly and radially toward said column and in a direction away from the V-Bend and from the uppermost arm part and disposed under said lower ring; said first contiguous arm segment fitting between the two spaced support rings, and the second contiguous arm segment underlying the lower support ring.

4,289,247

ARRANGEMENT FOR ARRESTING AND RELEASING AN INTERMEDIATE BUFFER COUPLING

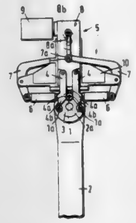
Werner Brand, Leverkusen; Jaroslav Zavadil, and Wolfgang Heuer, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Waggonfabrik Uerdingen AG, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 29, 1979, Ser. No. 89,037

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846860

Int. Cl.³ B61G *9/20*

U.S. Cl. 213—20 **7 Claims**



1. An arrangement for horizontal central arresting and releasing of an intermediate buffer coupling, particularly for rail vehicles, the arrangement comprising in combination a horizontally swingable coupling rod having a central longitudinal plane and a rear end; a guide member provided at said rear end of said coupling rod and following the swinging of the latter; two rocking levers each pivotally mounted on a vehicle and having a first abutment face and a second abutment face; a roller supported on said guide member and located in said central longitudinal plane of said coupling rod and between said rocking levers so as to abut against said first abutment faces of the latter; said guide member being provided with two auxiliary rollers each located at the respective side of said central longitudinal plane and cooperating with a respective one of said second abutment faces; and an actuating device connected to said rocking levers and operative for opening of said rocking levers in the sense of allowing free movement of the intermediate buffer coupling.

4,289,248

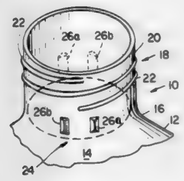
CONTAINER CLOSURE ASSEMBLY HAVING INTERMEDIATE POSITIONING MEANS

Robert W. Lynn, Oxnard, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Oct. 15, 1979, Ser. No. 84,883

Int. Cl.³ B65D *41/04*

U.S. Cl. 215—330 **4 Claims**



1. In combination, a container having an open neck portion formed with threadable engaging means and a removable closure formed with mating threadable engaging means, said closure including an open end covering said neck portion and a closed end for sealing said container closed; a pair of projections on said neck portion located between the neck portion/container interface and the threadable engaging means, said projections being disconnected from said threadable engaging means and being laterally spaced apart from each other in a plane substantially perpendicular to the longitudinal axis of said container; at least one protuberance on the inside wall of said closure located between the open end thereof and the mating threadable engaging means, said projections being spaced to allow said protuberance to nestle therebetween when the closure is threaded on said neck portion, said projections being shaped to allow said protuberance to pass thereover in either direction when said closure is threaded on or off of said neck portion, said protuberance requiring an applied force to enable same to pass over each projection so that said closure can be partially unthreaded from said neck portion but yet remain connected thereto.

4,289,249

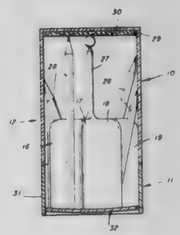
CONTAINER

Herman S. Cripe, 2030 Hillsdale, Kalamazoo, Mich. 49007

Continuation of Ser. No. 395,289, Sep. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 175,479, Aug. 27, 1971, abandoned. This application Jan. 23, 1976, Ser. No. 651,932

Int. Cl.² B65D *85/00*, *43/00*

U.S. Cl. 220—22 **2 Claims**



1. An upright cylindrical container for pencils which comprises a base portion having a bottom and an outside wall defining one half of a hollow cylinder and a cover portion having a top and an outside wall defining the other half of the hollow cylinder, said base and cover portion having the same inside diameter;

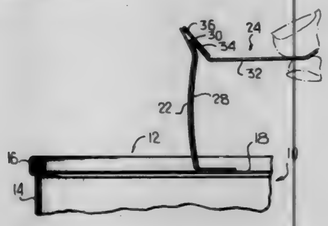
a plurality of radially extending partitions mounted within the base portion, dividing the base portion into a plurality of compartments adapted to receive therein one end of a plurality of pencils, said compartments being so proportioned to the pencils that the other ends thereof project above the outside wall of the base portion, at least three of said partitions projecting above the outside wall of the base portion and extending outwardly all the way to the inner circumference of said cylinder so that the outer edges thereof frictionally engage said cover portion at at least three separate points about the inner circumference thereof;

the depth of the several compartments of the base portion being determined by the height of the outside wall and said depth being selected to allow the pencils to flare outwardly while at the same time retaining the pencils within the compartment;

the height of the outside wall of the base portion relative to the radius of the base portion being such as to limit outward flaring of pencils in said container to about 45 degrees from the vertical for ready selection by the user;

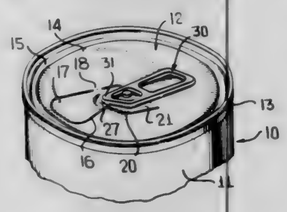
the height of said cylinder being sufficient to retain pencils in an upright position within said container when said container is closed, and the height of the outside wall of said cover portion being substantially greater than the height of the outside wall of the base portion, and wherein the bottom of the hollow base portion is concave so that the compartments are deeper near the center than they are near the outside wall.

4,289,250
EASY OPENING CONTAINER WITH TAB HAVING SEPARATE OPENING ELEMENT
Thomas F. Jordan, Oak Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.
Filed Apr. 28, 1980, Ser. No. 144,006
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **7 Claims**



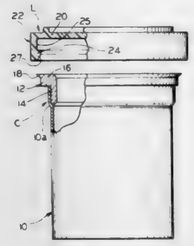
1. An easy opening container component comprising a panel, a line of weakness in said panel defining a displaceable panel portion, and an opening device, said opening device including a pull member, said pull member being reversely folded and including first and second portions integrally connected along a transverse hinge line, said first portion overlying said displaceable panel portion and being permanently secured thereto with said hinge line being in spaced adjacent relation to an adjoining portion of said line of weakness, said second portion generally overlying said first portion and including a grip part remote from said hinge line, and an opening element permanently secured to said second portion adjacent said hinge line and projecting beyond said hinge line, said opening element terminating in a force applying end generally aligned with said line of weakness adjoining portion.

4,289,251
NON-DETACH EASY OPENING CONTAINER UNIT
Leonard A. Maliszewski, Western Springs, Ill., assignor to The Continental Group, Inc., Stamford, Conn.
Filed May 9, 1980, Ser. No. 148,468
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **19 Claims**



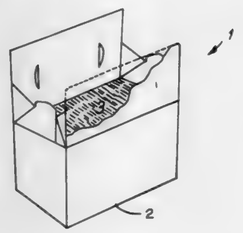
1. An easy opening container unit comprising a container panel, a first line of weakness in said container panel defining a first displaceable panel portion for forming a dispensing opening, a second line of weakness in said container panel adjacent said first line of weakness defining a second displaceable panel portion permanently joined to said container panel along a second hinge line for forming a hinge panel, and an opening tab fixedly secured to said second displaceable panel portion for hinging therewith relative to said container panel and having means for applying a displacing pressure on said first displaceable panel portion.

4,289,252
HERMETICALLY SEALED CONTAINER
Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed Jul. 21, 1980, Ser. No. 170,827
Int. Cl.³ B65D *39/00*
U.S. Cl. 220—308 **8 Claims**



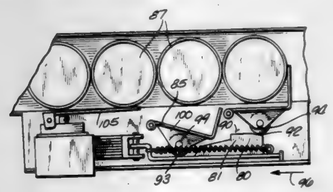
1. In a hermetically sealable body and lid arrangement for a container, the combination of:
(a) a lid formed of relatively soft, flexible, molded plastic material and including:
(i) a top wall;
(ii) an annular rim depending from said top wall;
(iii) an annular flange extending radially inward from a lower portion of said rim and defining therewith and with said top wall an annular recess;
(b) a tubular container body open at the top;
(c) a container rim formed of relatively hard, non-flexible, plastic material and including:
(i) an annular skirt secured within an upper marginal portion of said body;
(ii) an annular flange extending radially outward from an upper portion of said rim for receipt with the recess of said lid;
(iii) an annular sealing bead projecting radially outward from said flange and presenting a pointed sharp peripheral edge adapted to dig into the rim of said lid to effect a seal between said lid and container.

4,289,253
METHOD FOR WARMING AND DAMPING OF NON-WOVEN, DISPOSABLE, STRENGTH TREATED NAPKINS OR TOWELS
Karl G. B. Andersson, Halmstad, Sweden, assignor to Duni Bila AB, Sweden
Continuation of Ser. No. 672,649, Apr. 1, 1976, abandoned. This application Oct. 4, 1977, Ser. No. 839,312
Claims priority, application Sweden, Apr. 10, 1975, 7504128
Int. Cl.³ A47K *10/24*
U.S. Cl. 221—1 **1 Claim**



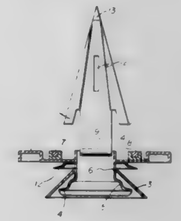
1. A method for warming and dampening of non-woven, disposable wet strength napkins or towels comprising:
providing a trough-shaped box having a waterproof coating therein and having water-tight corner sections and an open end;
placing a plurality of non-woven disposable wet strength treated napkins upright in said box in side by side relationship with one end of each of said napkins facing said open end of said trough-shaped box;
heating a predetermined quantity of water to approximately its boiling point;
pouring said predetermined quantity of heated water through said open end into said trough-shaped box over said plurality of napkins to collectively and completely warm and dampen said plurality of napkins in said trough-shaped box, said predetermined quantity of water being large enough so that each of said napkins is entirely dampened but small enough so that the napkins do not drip upon dispensing; and
dispensing said dampened and warmed napkins directly from said trough-shaped box.

4,289,254
ARTICLE DISPENSER WITH CAM ACTUATED GATE
Carl E. Spring, La Crosse, Wis., assignor to La Crosse Cooler Company, La Crosse, Wis.
Filed Nov. 26, 1979, Ser. No. 97,270
Int. Cl.³ G07F *11/34*
U.S. Cl. 221—295 **5 Claims**



1. In a coin operated vending machine having a frame, a magazine supported on said frame with a sloping guide surface for supporting and delivering by gravity the leading container from a row of containers, the improvement comprising a leading container gate, means for supporting said leading container gate on said frame for movement between an advanced leading container blocking position and movement to a retracted leading container release position, a row gate, means for supporting said row gate on said frame for movement between a row blocking position and a row advance position, means for operating said leading container gate and row gate to separate and release the leading container from the row and hold back the row of containers during separation, said means including a slide having first, second and third gate position controlling surfaces, said second surface being inclined and transverse with respect to said first surface and the direction of reciprocating movement of the slide and said third surface being offset from the axis of reciprocation, said first surface being at a steeper angle than said second surface to provide a fast rise time for the row gate to catch a can prior to movement thereof and wherein said third surface has a portion inclined forwardly in the direction of the path of movement of the container to urge said slide to the retracted position and toward the longitudinal axis of the slide, and means for supporting the slide on said frame for reciprocating movement between an extended and retracted position, and motor means for reciprocating said slide in a standby and vend cycle whereby said leading container gate is supported on said third surface during standby and said row gate is supported on said first surface and, upon energization of the motor means, said row gate will move into a row blocking position upon lateral movement of said slide toward said row gate as said inclined surface coacts with said gate and then said leading container gate dropping from said third surface portion by gravity and the weight of the container when the slide reaches the vend position to remove the gate from the path of the first container and upon release of the container the slide returning to the standby position.

4,289,255
OIL FILTER CAP
Clarence W. Strampe, 901 S. Ruth #49, Sioux Falls, S. Dak. 57106
Filed Oct. 18, 1979, Ser. No. 86,251
Int. Cl.³ B67B *7/26*; F01M *11/04*
U.S. Cl. 222—81 **5 Claims**

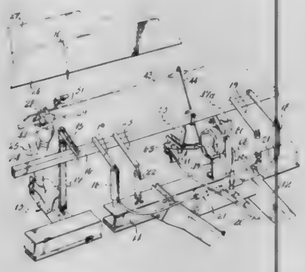


1. An oil filler cap comprising in combination:
a tube with latching means on a lower portion thereof for attachment to an oil inlet on a car,
a hardened tip on a top portion of said tube used to puncture an oil can,
a flared skirt medial portion tapering towards said tip of said tube between said upper and lower portions provided with openings therethrough, whereby when an oil can is punctured on said tip and forced on said flared skirt medial portion, the puncture is enlarged and oil passes through said openings down said tube and into the oil inlet of the car, an overlying protective cap extending over said tip and tapering medial portion whereby when not in use said tip is not exposed and oil vapors are contained within said cap, said latching means comprises an outwardly flared terminus on the lowermost portion of said tube, at least two tab members extending outwardly from said terminus, and a pinch plate above said terminus extending outwardly from said tube whereby said terminus is placed below the oil inlet and said pinch plate thereabove, said tab members oriented to pass through the inlet and when rotated will force and secure said pinch plate down and around said inlet, and said pinch plate comprises an annular flange extending outwardly from said tube having diametrically opposed ears along an outer periphery thereof, an outer lip integral with said ears, a recessed annular top groove within said outer lip, a concentric annular upstanding channel member within said groove and a circular recess within said channel member.

4,289,256
TRAMLINING DEVICE FOR SEED DRILL
Alfred J. Bailey, Coventry, United Kingdom, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Oct. 1, 1979, Ser. No. 80,899
Claims priority, application United Kingdom, Oct. 7, 1978, 39713/78
Int. Cl.³ A01C *7/18*
U.S. Cl. 222—52 **13 Claims**

1. A tramlining device for use with a seed drill having a hopper and a series of coulters mounted on a frame with means for raising and lowering said coulters, comprising, bout registering means for registering a number of successive bouts, indexing means responsive to raising of the coulters at the end of successive bouts and operative to index said bout registering means between successive registered bout numbers, individual inhibiting means each adapted to be changed between an inop-

erative state in which the discharge of seed or other granular material is permitted from a respective drill spout and an operative state in which such discharge is inhibited, and linkage means which responds to selected bout numbers registered by said bout registering means to change the state of said inhibiting means, the linkage means including a separate fluid pressure operated actuator to change the state of each inhibiting means and valve means controlled by the bout registering means for supplying pressurized fluid to said actuator at selected registered bout numbers.



4,289,257

DEVICE FOR MELTING A SOLID BODY OF ADHESIVE MATERIAL

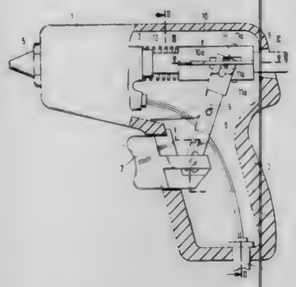
Armin Herb, Peissenberg; Franz Popp, and Hanspeter Ruoff, both of Munich, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 9, 1979, Ser. No. 82,724

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844931

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146 HE **8 Claims**



1. Device for melting a body of thermoplastic adhesive material and for effecting a dosed discharge of the molten material comprising a housing having a first end from which the molten material is discharged and a second end through which a solid body of the adhesive material is introduced into the housing, a melting chamber within said housing for supplying molten material for discharge from the first end of said housing, a feed apparatus within said housing between said melting chamber and the second end of said housing for stepwise feeding the solid body of adhesive material into the melting chamber, said feed apparatus including a carriage slidably mounted in said housing for movement in the direction between the first and second ends of said housing, a clamping device located within said housing and displaceable between a release position out of engagement with the solid body of the adhesive material and a holding position in clamping engagement with the solid body of adhesive material, a rocker lever pivotally mounted in said housing and disposed in engagement with said feed apparatus for displacing said clamping device into the holding position and for moving said feed apparatus, and means on said housing for pivoting said rocker lever, the improvement comprising that said clamping device includes a pair of symmetrical oppositely disposed clamping jaws, each said clamping jaw being articulated to said carriage, and an actuating arm attached to each said clamping jaw and in engagement with said rocker lever so that when said means pivot said rocker lever said clamping jaws are displaced into the holding position in clamping engagement with the body of adhesive material and said feed apparatus is displaced toward the first end of said housing, each said clamping jaw includes said actuating arm formed integrally with said clamping jaw and formed therefrom in a tab-like manner extending laterally outwardly away from the other said clamping jaw, and said arm being articulated to said rocker lever, each said clamping jaw includes a sharp-edged projection extending laterally inwardly from said clamping jaw toward the other said clamping jaw for engaging into the surface of the solid body for assuring gripping contact with the solid body when it is moved toward said melting chamber, said feeding apparatus includes a longitudinal guide secured to and extending outwardly from each of the opposite sides of said carriage, said housing having grooves therein into which said longitudinal guides project for guiding said feeding apparatus in the movement thereof between the first and second ends of said housing.

4,289,258

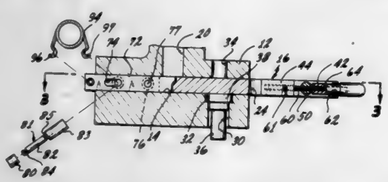
SAFETY CHARGE MEASURING DEVICE FOR CARTRIDGE LOADING MACHINES

Charles R. Ransom, C'Arco P.O. Box 308, Highland, Calif. 92346

Filed Dec. 17, 1979, Ser. No. 104,137

Int. Cl.³ F42B *33/02*; G01F *11/18*

U.S. Cl. 222—308 **5 Claims**



1. In apparatus for measuring and dispensing flowable material; in combination, a member having a channel formed in it, a sliding member constructed to slide in the channel, there being a receiving opening for dispensed material, the first member having a passageway for conducting material to the receiving opening, mechanism for adjusting the size of the receiving opening, the sliding member having a slot having an end in it, the mechanism including a secondary slide member having an end positioned in the slot whereby the receiving opening is formed between the end of the slot and the end of the secondary slide member, means holding the secondary slide member whereby its position can be adjusted to adjust the size of the said receiving opening and means for locking the adjusted position of the secondary slide member, said holding means being constructed so as to require movement of the secondary slide member out of the slot for adjustment, and means for dispensing from the receiving opening, the secondary member having pivotal mounting in the slot whereby it can be swung laterally out of the slot.

4,289,259

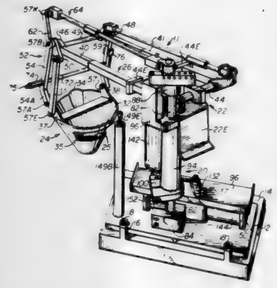
AUTOMATIC LADLER

John W. O'Brien, 607 S. Kelly St., Harrison, Ark. 72601

Filed Nov. 23, 1979, Ser. No. 97,433

Int. Cl.³ B22D *41/04, 41/06*

U.S. Cl. 222—590 **23 Claims**



1. An automatic ladler device comprising:
a supportive base adapted to be disposed upon a supporting plane;
ladle means for containing molten metal;
platform means for radially moving said ladle means between metal filling and metal discharge position;
elongated ladle support arms means pivotally coupled to said platform means for controllably suspending said ladle means from said platform means;
linkage means for pivotally coupling said ladle means to said ladle support arm means;
rigid, rotatable stanchion means extending vertically upwardly from said base for operatively mounting said platform means above said base;
means for raising and lowering said ladle support arm means whereby to raise and lower said ladle means;
means for rotating said stanchion means whereby to move said platform means and said ladle means radially between metal filling and metal discharge positions; and
means for discharging molten metal from said ladle means.

4,289,260

ROOF CARRIER FOR MOTOR VEHICLES

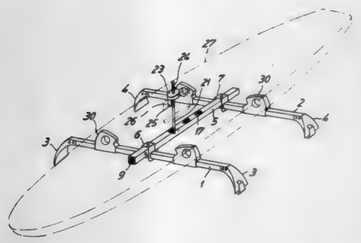
Reinhold Zoor, Dachau, Fed. Rep. of Germany, assignor to Heinrich Wunder KG, Dachau, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,020

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836311

Int. Cl.³ B60R *9/08*

U.S. Cl. 224—315 **14 Claims**



1. A roof carrier for use on motor vehicles, comprising a supporting structure mounted at the roof of a motor vehicle when in use and including a plurality of interconnected elements including a longitudinally extending element and at least one transversely extending element; at least one holder assemblable with said supporting structure; and means for securing said holder to said supporting structure when assembled therewith, including a sliding member mounted on one of said elements for displacement between a withdrawn and an engaging position and so acting on said holder as to hold the latter in engagement with said one element only in said engaging position, and means for locking said sliding member at least in said engaging position.

4,289,261

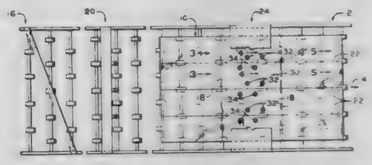
METHOD OF THERMALLY INDUCING BENDING MOMENT FORCES TO SEVER A GLASS SHEET ALONG A SCORE

J. Robert Dahlberg, Jeannette, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1980, Ser. No. 127,692

Int. Cl.³ B26F *3/06*; C03B *33/09*

U.S. Cl. 225—2 **5 Claims**



1. A method of severing a sheet of refractory material having a thickness of less than about 0.120 inches (0.305 centimeters) comprising the steps of:
contacting a surface of the sheet with scoring means to define a contacted sheet surface and to impose a score in the sheet having a depth of at least about 80% of the sheet thickness; and
heating portions of the contacted sheet surface on each side of the score to a temperature greater than the temperature of the opposite sheet surface to thermally induce bending moment forces about the score to sever the sheet along the score.

4,289,262

STRUCTURE OF DISPENSER FOR DISPENSING WEB-LIKE MATERIAL

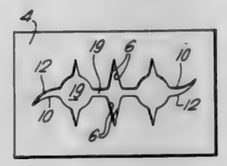
Oscar P. Finkelstein, 14/18 Ein Rogel St., Jerusalem, Israel

Filed Aug. 13, 1979, Ser. No. 66,064

Claims priority, application Switzerland, Aug. 23, 1978, 8917/78

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—106 **14 Claims**



1. In a dispenser apparatus for tearable web-like material, the improvement comprising:
an aperture in a wall of the dispenser, said aperture having a plurality of zones wide enough for at least two fingers simultaneously to reach through said zones and into the dispenser to grasp the material and a plurality of slots, the edges of each of said slots converging in a sharp angle at an apex; and
the material being a continuous, hollow, cylindrical roll drawable through said zones and toward said apex; whereby individual pieces of said material of a desirable

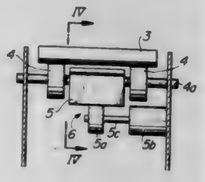
length may be detached from said roll of material when pulled toward said apex.

4,289,263

APPARATUS FOR FEEDING A STRIP OF CONTINUOUS FORMS

Takamasa Namba; Hidekata Yanagawa, both of Tokyo; Nobuo Fujimoto, Seto; Takehiko Mori, and Takayoshi Yamada, both of Owariasahi, all of Japan, assignors to Hitachi, Ltd. and Japan Air Lines Company Limited, both of Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,454
Claims priority, application Japan, Oct. 25, 1978, 53/130525
Int. Cl.³ B65H *23/04*; G03B *1/48*
U.S. Cl. 226—196 **5 Claims**



1. An apparatus for feeding a strip of continuous forms including forms arranged in at least two layers and having a plurality of series of perforations extending widthwise of the strip and arranged at regular intervals lengthwise of the strip, comprising:

a. a guide formed with a bend for forming a bent portion in said strip in a position corresponding to one of said plurality of series of perforations;

b. a member located inwardly of the bent portion of said strip; and

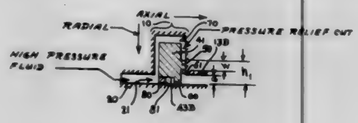
c. drive means for moving at least one of said guide and said member relative to the other to bring the bent portion of the strip into contact with the member.

4,289,264

UNIFORM LOAD PISTON RING

James J. Rawlins, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 23, 1979, Ser. No. 23,416
Int. Cl.³ F16K *41/00*
U.S. Cl. 277—27 **1 Claim**



1. A uniform circumferential load piston ring (40), in combination with a piston (10) having a peripheral groove (11) with a downstream radially-extending wall (12B) forming one surface upon which said piston ring (40) will contact in a sealing manner; a cylinder (20) coaxially oriented with and surrounding said piston (10), with said cylinder (20) having an axially-extending peripheral surface (21) forming another surface upon which said piston ring (40) will contact in a sealing manner, wherein said piston (10) and said cylinder (20) are movable relative to each other; and, a fluid under high pressure in an annular passage (G) flowing to said groove (11) which is in communication with said passage (G); and, wherein said piston ring (40) comprises a ring body (41) having:

a. a first protrusion (50) annular-shaped and extending axially from said ring body (40) in a downstream direction and forming an area of sealing contact with said downstream radially-extending wall (12B) of said piston (10), with said protrusion (50) forming a pressure relief cut, and with said protrusion (50) having an axially-extending surface (51) which is located such as to be prevented from entering said annular passage (G);

b. a second protrusion (60) unsegmented, annular-shaped, and extending radially from said ring body (41), with said second protrusion (60) having an axially-extending surface (61) in contact with and forming a seal with said axially-extending inner surface (21) of said cylinder (20);

c. and, a third protrusion (80) annular shaped and extending radially from said ring body (41), with said third protrusion (80) having an axially-extending surface (81) in contact with said axially-extending inner surface (21) of said cylinder (20), and with said third protrusion (80) located axially upstream of said second protrusion (60);

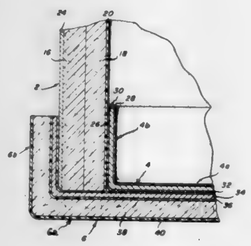
whereby the inability of said surface (51) of said first protrusion (50) to enter said annular passage (G) assures an area of constant sealing contact between waid first protrusion (50) and said downstream radially-extending wall (12B) of groove (11), despite eccentric shifting and lateral movement between each piston (10) and said cylinder (20), thereby said load caused by said fluid under high pressure is uniformly and circumferentially distributed and exerted on said ring body (41).

4,289,265

COMPOSITE END CONSTRUCTION FOR COMPOSITE CONTAINERS, SUCH AS OIL CANS

Donald H. Ellerbrock, Florissant, Mo., assignor to Boise Cascade Corporation, Boise, Id.

Filed Dec. 28, 1979, Ser. No. 107,891
Int. Cl.³ B65D *3/10*
U.S. Cl. 229—5.5 **12 Claims**



1. An improved composite container for liquids, such as oil, comprising

(a) a tubular vertically-arranged composite body member including at least one fibrous body wall layer, and an inner liner layer;

(b) a membrane-type end closure member closing the bottom end of said body member, said end closure member being formed of a flexible relatively thin material and including a horizontal planar disk-shaped central panel portion extending transversely across the lower extremity of said body member, and an annular peripheral flange portion extending upwardly from the peripheral edge of said central panel portion, said flange portion being arranged concentrically within, and bonded to the inner circumferential surface of, said body member, the lower surface of said end closure central panel portion being generally coplanar with the lower extremity of said tubular body member; and

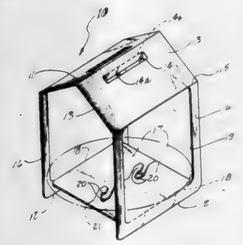
(c) an outer support cap mounted in protective supporting relation below said closure member, said support cap having at least one fibrous layer and including a horizontal planar disk-shaped central panel portion in contiguous engagement with the lower extremity of said tubular body member, and an annular peripheral flange portion extending upwardly concentrically about, and bonded to the external surface of, the lower end of said body member, the central panel portion of said outer support cap extending in contiguous supporting relation below the central panel portion of said membrane-type end closure member.

4,289,266

ARTICLE CARRIER

Raymond V. Maroszek, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 19, 1979, Ser. No. 105,115
Int. Cl.³ B65D *5/02*
U.S. Cl. 229—28 BC **6 Claims**



1. A carrier for one or more stackable articles, formed from a blank of flexible and resilient material of generally rectangular configuration wherein a first score line is provided intermediate the short ends of said blank about which said blank is folded so that regions of said blank adjacent said first score line are divergent at an angle, said blank having a pair of apertures in said divergent regions of said blank, said apertures being uniformly spaced from said first score line, said blank further having a pair of openings in confronting side wall portions thereof intersecting said divergent regions along provided parallel score lines, and panel portions on said side wall portions cut thereform to form at least portions of said openings and folded toward one another about second score lines that are distal from said first score line, are spaced from said short ends, and are parallel to one another, so that said panel portions are substantially coplanar, are spaced from said short ends, and extend perpendicular to the plane of said parallel side wall portions, and means fastening said panel portions to one another in provision of an article carrier, wherein articles may be carried singly or stacked upon one another and supported on said fastened panel portions, while projecting through, and retained by portions of said wall portions defining, said openings.

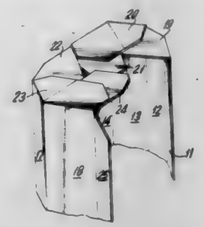
4,289,267

EIGHT-SIDED PREFABRICATED CONTAINER HAVING AN AUTOMATIC BOTTOM

Larry Mayea, New York, N.Y., assignor to Arkay Packaging Corporation, New York, N.Y.

Filed May 1, 1980, Ser. No. 145,630
Int. Cl.³ B65D *5/10, 5/36*
U.S. Cl. 229—39 R **9 Claims**

1. An eight-sided container comprising at least one sheet of flexible material, said flexible being divided by fold lines into eight-side panels, said fold lines being positioned such that when the terminal ends of said flexible material are secured together, said flexible material forms a tubular wall structure having eight sides; a collapsible end structure, comprising a plurality of six flaps hingedly extending from one end of a plurality of the side panels at an angular relationship thereto, a first and second pair of said flaps extending from a first and second pair of side panels which are oppositely deposed from each other when said container is in an erected position, the first flap of said first and second pairs of flaps being fixably attached to the second flap of said first and second pair of flaps, said flaps being adapted to interlock with each other to form a bottom portion of said eight-sided container when said container is opened to an erected position without the need for any additional manipulative steps, wherein said bottom portion is capable of being collapsed to a flat position within said container when said container is in a storage position.

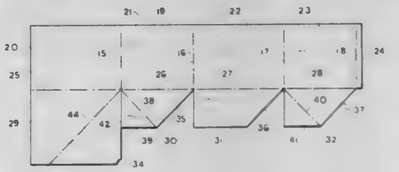


4,289,268

FOLDABLE CARTON

Richard E. Paige, New York, N.Y., assignor to The Paige Company Containers, Inc., New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,617
Int. Cl.³ B65D *5/08, 5/36*
U.S. Cl. 229—41 B **9 Claims**



1. A foldable carton comprising side walls and end walls hingedly connected together along their side edges, a bottom panel hingedly connected to the lower edge of each wall, the bottom panels of two adjacent side and end walls being hingedly connected together and the bottom panels of the other two adjacent side and end walls being hingedly connected together, the bottom panels being folded between the side and end walls when the carton is in its collapsed condition and the bottom panels swinging downwardly to a position perpendicular to the side and end walls when the carton is erected, one of the bottom panels being larger than the others, the larger bottom panel overlying and being supported by all the other bottom panels when the carton is in its erected condition, the larger bottom panel having a hinge line along which it can bend in a direction away from the bottom panel to which it is hinged during movement of the large bottom panel when the carton is folded and unfolded between its collapsed and erect conditions, the hinge line extending at an acute angle to the hinge between the larger bottom panel and its respective carton wall, and the larger bottom panel being in flat unfolded condition when the carton is in its collapsed condition.

4,289,269

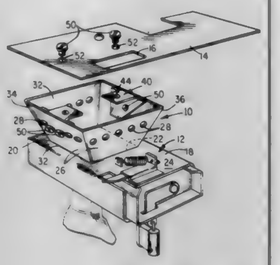
UNIVERSAL FUNNEL AND MOUNTING BRACKET FOR COIN RECEPTACLES OF COIN OPERATED MACHINES

August M. Sciortino, 1838 Weeg Way, Park Ridge, Ill. 60068

Continuation-in-part of Ser. No. 13,370, Feb. 23, 1979, abandoned. This application May 23, 1979, Ser. No. 41,755
Int. Cl.³ G07B *15/00*
U.S. Cl. 232—16 **6 Claims**

1. A funnel for installation upon a mounting plate of a coin

operated machine comprising, a frame member having at least four substantially identical panels of frustoconical perimetric configuration, said panels being secured end to end to define an entrance and a smaller opening opposite thereto, at least a pair of opposite panels each carrying at least one aperture spaced



inwardly of the entrance, apertured clip means and fastening means for securing said clip means to each of said opposite panels via said apertures, said clip means including a base oriented for positioning flush with said entrance with an angled leg secured to said panels flush to the surface thereof whereby to locate said entrance in condition to receive coins.

4,289,270

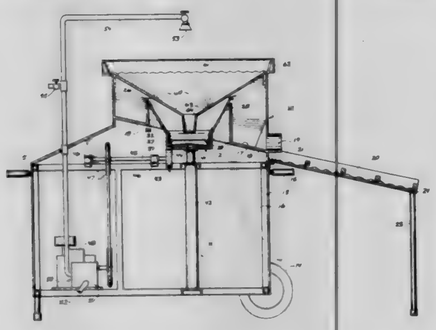
PORTABLE CONCENTRATOR

Arthur E. Warsinske, Spokane, Wash., assignor to Jack G. Riley, Spokane, Wash.

Filed Feb. 19, 1980, Ser. No. 122,031

Int. Cl.³ B04B *1/04, 7/12*

U.S. Cl. 233—27 **12 Claims**



8. A concentrator for heavy particulates, comprising:

a frame;

a bowl on the frame having an open upper end defined by a continuous peripheral wall and a closed bottom end defined by a horizontal bottom wall;

bearing means releasably mounting the bowl to the frame for free rotational movement about an upright center axis;

drive means releasably engaging the bowl for rotating the bowl about the center axis;

a pan releasably received within the bowl and having a continuous peripheral upright wall complementary to the bowl wall adjacent the closed bottom thereof, said upright wall extending axially from an open top edge to a horizontal bottom wall spanning the pan at a bottom end thereof; and

flange means within the pan forming an annular pocket within the pan adjacent the juncture of the peripheral wall of the pan and its bottom wall.

4,289,271

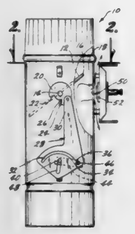
DAMPER CONSTRUCTION FOR A GAS FIRED COMBUSTION APPARATUS

James T. Barth, Wisconsin Rapids, Wis., assignor to Barth, Inc., Wisconsin Rapids, Wis.

Continuation-in-part of Ser. No. 922,780, Jul. 7, 1978, Pat. No. 4,225,080. This application Jul. 9, 1979, Ser. No. 56,029

Int. Cl.³ G05D *23/00;* **F23N** *3/00*

U.S. Cl. 236—1 G **3 Claims**



1. A thermally controlled damper for a gas fired combustion apparatus comprising,

a stack connected to the combustion apparatus and adapted to conduct waste gases of combustion,

a damper pivotally mounted within the stack and being movable from a closed position to an open position,

a thermally responsive element disposed in the stack upstream of the damper,

a linkage means operatively connecting said thermally responsive element and said damper whereby a predetermined increase in temperature in the stack will actuate said thermally responsive element to cause said linkage means to move said damper from the closed position to the open position,

said stack having an opening formed therein upstream of said damper,

a temperature responsive safety mechanism positioned outwardly of said stack opening and being spaced therefrom whereby ambient air will pass around said temperature responsive safety mechanism and into said stack opening when sufficient draft exists in said stack and whereby heated gases of combustion will pass outwardly through said stack opening towards said temperature responsive safety mechanism when insufficient draft exists in said stack,

said temperature responsive safety mechanism being responsive to a predetermined elevated temperture and being operably connected to said combustion apparatus whereby said temperature responsive safety mechanism will cause the operation of the combustion apparatus to be terminated when the temperature of the said safety mechanism senses a predetermined temperature level,

said stack being substantially vertically disposed and is cylindrical in shape and wherein said damper is elliptical in shape,

said damper being disposed at an acute angle with respect to the axis of the stack when in its closed position and being generally parallel to the axis of the stack when in its open position,

said damper having a portion of its upper peripheral edge thereof spaced from the inner wall of the stack when the damper is in its closed position to provide a vent opening therebetween,

said stack opening being positioned upstream of and generally immediately below said vent opening.

4,289,272

TEMPERATURE CONTROL APPARATUS

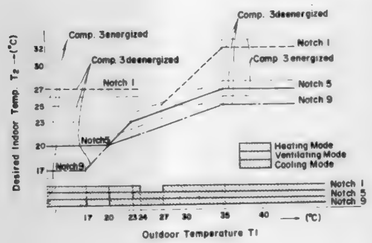
Fujio Murase; Hidenosuke Matsumoto, both of Kusatsu; Hiroshi Fujieda, Kashihara; Teruhisa Takano, Osaka, and Kenichiro Imasu, Shiga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 23, 1979, Ser. No. 23,237

Claims priority, application Japan, Mar. 31, 1978, 53/38373; Apr. 3, 1978, 53/39402; Apr. 3, 1978, 53/39403; Apr. 3, 1978, 53/39404

Int. Cl.³ G05D *23/00;* **F25B** *29/00*

U.S. Cl. 236—91 D **10 Claims**



1. A temperature control apparatus which comprises, in combination, an outdoor temperature detector for detecting the outdoor temperature of the outside of a space to be air-conditioned, an indoor temperature detector for detecting the indoor temperature in the space to be air-conditioned, a storage device for storing a plurality of desired indoor temperatures each of which is expressed by a linear function of the outdoor temperature and for storing a plurality of desired indoor temperatures each comprised of a fixed value, a comparing means operatively connected to and responsive to said indoor and outdoor temperature detectors and said storage device for comparing the detected indoor temperature with a selected one of said desired indoor temperatures, and a control device operatively connected to and responsive to said comparing means for controlling the operation of an air-conditioning apparatus;

wherein said storage device stores the linear function of $(y=ax+b)$, wherein a represents a coefficient and b represents a constant and x represents the outdoor temperature and y represents the desired indoor temperature, said coefficient and constant being varied by manipulating an indoor temperature adjustment to any one of a plurality of adjustment notches;

and wherein means are provided for switching between any one of said plurality of desired indoor temperatures comprised of a fixed value, corresponding to the indoor temperature adjustment notches, and any one of said plurality of desired indoor temperature expressed by the linear function and corresponding to the indoor temperature adjustment notches.

4,289,273

PLATE AND METHOD FOR LAYING RAILWAY LEVEL CROSSINGS

Fritz Schmidt, Johann-Strauss-Str. 18, Waldkraiburg, Fed. Rep. of Germany (D-8264)

Filed Jun. 20, 1978, Ser. No. 917,348

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727644

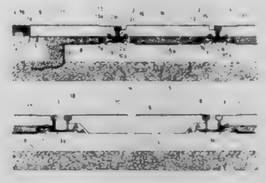
Int. Cl.³ E01C *9/04*

U.S. Cl. 238—8 **25 Claims**

1. A plate for laying as a road surface between the rails of a railway track crossing, the plate comprising resilient rubber material delimited by at least three side and end edges, the length and relative orientation of said side and end edges defining a section of said road surface;

said edges including at least one side edge shaped for interlocking relation with a complementary shaped side edge of an adjacent plate, and end edges shaped for interlocking relation with a respective inwardly facing side of one of said rails;

said plate being resiliently deformable for insertion into said section of road surface and being self-returning to a non-deformed condition in which said interlocking relation of said edges is obtained so that said plate is held in a desired



position with respect to the rails, the interlocking of the at least one side edge with the side edge of an adjacent plate and the interlocking of the end edges with the rails being the only means to restrict vertical movement of said plate, outer side edges of plates forming outer edges of the road surface being contacted by blocking means for restricting movement of the road surface in the longitudinal direction of the rails.

4,289,274

RAIL TRACK

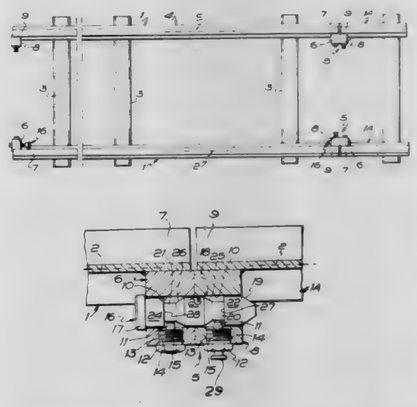
Richard C. Hudson, and Andrew W. Howarth, both of Barnsley, England, assignors to Gyro Mining Transport Limited, Barnsley, England

Filed Feb. 1, 1979, Ser. No. 8,706

Claims priority, application United Kingdom, Sep. 6, 1978, 35736/78

Int. Cl.³ E01B *11/38*

U.S. Cl. 238—249 **13 Claims**



1. A rail length to form part of a rail track comprising: a fastening element secured at each rail end to be joined, said element being provided with a through bore extending parallel to the longitudinal axis of said associated rail length, one said element providing a male fastening element at one end of said rail length, said male fastening element housing in part a connecting pin having an enlarged head at one end and a pair of axially spaced necks along the length thereof, and the other of said elements providing a female fastening element at the other end of said rail length, said female fastening element including a through bore being adapted to receive a portion of the connecting pin of the male fastening element of an adjacent, simi-

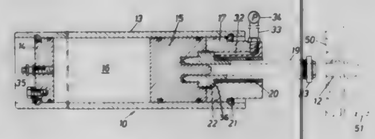
lar rail length, and a resiliently mounted projection carried by each said fastening element located in position to intersect each respective bore and to be engaged with an associated neck on said connecting pin, carried by said female fastening element said projection including head means engageable to provide for selective withdrawal of said projection from the bore, thereby radially displacing said projection to a location in which it lies clear of said bore for disengagement from a mating rail length.

4,289,275

METHOD AND DEVICE FOR BREAKING A HARD COMPACT MATERIAL

Erik V. Lavon, Saltsjö-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Division of Ser. No. 805,520, Jun. 10, 1977, Pat. No. 4,195,885.
This application Nov. 13, 1979, Ser. No. 93,910
Claims priority, application Sweden, Jun. 28, 1976, 7607337
Int. Cl.[3] B05B 1/08
U.S. Cl. 239—101 **22 Claims**



1. A cannon for shooting an elongated fluid mass body of a relatively incompressible fluid comprising:
a storage chamber for storing the fluid,
means operatively associated with said storage chamber for substantially continuously exerting a thrust load upon the fluid in said storage chamber,
means for successive supply of said fluid to said storage chamber against the effect of said thrust load,
a barrel means coupled to said storage chamber for forming fluid received from said storage chamber into an elongated coherent fluid mass body, and
valve means which includes two cooperating members coupled between said storage chamber and said barrel means, and means for causing said valve means to suddenly open a passage between said storage chamber and said barrel means to permit the fluid from said storage chamber to be discharged through said barrel means as said elongate mass body, said means for causing said valve means to suddenly open comprising means for accelerating said two cooperating members of said valve means relative to one another, said valve means being arranged to open said passage only after said two cooperating members have moved relative to each other a predetermined distance, the maximum pressure in said storage chamber during said discharge of fluid from said storage chamber being of the same order of magnitude as the maximum pressure during the supplying of fluid to said storage chamber.

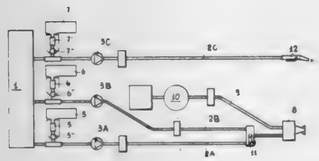
4,289,276

IMPROVED APPARATUS FOR CLEANING VEHICLES

Ezio Bollina, Bologna, and Rubens Basaglia, Galliera, both of Italy, assignors to B & B Bologna di Basaglia Rubens e Bollina Ezio S N C, Bologna, Italy

Filed Oct. 22, 1979, Ser. No. 87,070
Claims priority, application Italy, Nov. 3, 1978, 3583 A/78
Int. Cl.[3] B08B 3/08
U.S. Cl. 239—305 **1 Claim**

1. The vehicle cleaning apparatus comprising:
three flow lines, each connected to a source of water;
three containers, a first for an alkaline liquid cleaner, a second for an acid liquid cleaner, and a third for a water-repellent rinsing liquid;
means connecting each of said containers to a respecive flow line for adding the corresponding liquid to the said line, each of said connecting means including proportionate metering dosage means and a shut-off valve;
pump means in each of said lines downstream of the point of connection of the corresponding container therewith;
pressure regulator means in each of said lines downstream of the corresponding pump means;
a compressed air spray nozzle;
valve means for selectively alternatively connecting said nozzle to said lines containing a mixture of water and liquid cleaner;



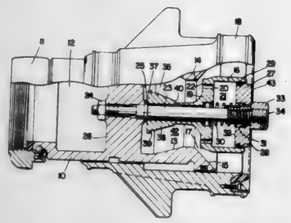
means including a compressor for supplying compressed air to said nozzle to finely atomize the mixture of liquid cleaner and water issuing therefrom; and
a nozzle detachably connectable to the line containing a mixture of water and the rinsing liquid for rinsing a vehicle subsequent to cleaning by successive applications of the two liquid cleaning mixtures by the spray nozzle and also detachably connectable to said compressed air supply for drying the vehicle subsequent to rinsing.

4,289,277

CONSTANT PRESSURE NOZZLE WITH MODULATION EFFECT

George G. Allenbaugh, Wadsworth, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio

Filed Apr. 7, 1980, Ser. No. 137,834
Int. Cl.[3] B05B 1/32
U.S. Cl. 239—452 **10 Claims**



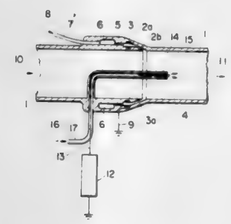
1. In an automatic pressure-regulating mechanism for a flow nozzle, the combination of:
a nozzle body presenting a discharge orifice,
a piston rod fixedly secured within said body and extending downstream therein,
an open-ended baffle cylinder slidably mounted on said piston rod for reciprocable movement thereon relatively to said orifice,
said cylinder having a closed end in the path of fluid flow discharge through said nozzle body,
said cylinder having an opposite open end downstream of said closed end and out of the path of fluid flow through said body,
a piston slidably contained in the open end of said cylinder and secured to said rod,
spring means interposed between said piston and said cylinder to yieldably maintain said baffle cylinder in a predetermined orifice-restricting position,
said closed end of said cylinder presenting a pressure-responsive first baffle face to the fluid flow, whereby said cylinder is displaced in opposition to said spring to enlarge said discharge orifice in response to increased fluid pressure thereon,
an extension provided on said cylinder upstream of said first baffle face and presenting a second baffle face opposed to the direction of fluid flow and movable with said cylinder, and
a stem connecting said first baffle face to said second baffle face by a stepped portion to create a low-pressure zone between said faces in response to discharge fluid flow, whereby to modulate any increased displacing force on said first baffle face in response to increased fluid pressure in said nozzle body.

4,289,278

POWDER ELECTRO-CHARGING DEVICE AND ELECTROSTATIC POWDER PAINTING DEVICE

Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Co., Ltd., Yamaguchi, Japan

Filed Aug. 22, 1979, Ser. No. 68,677
Claims priority, application Japan, Sep. 1, 1978, 53-107336
Int. Cl.[3] B05B 5/02
U.S. Cl. 239—706 **31 Claims**



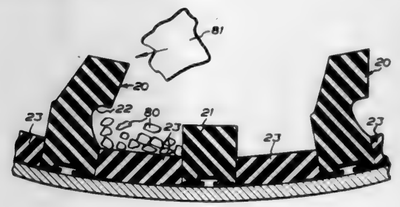
1. A powder charging device characterized in that said device comprises a duct for conveying powder as suspended in gas, an annular electrode chamber positioned outside of said duct and communicating with said duct through a slit extending substantially along the entire inner circumference of said duct, a ring electrode disposed within said electrode chamber and having a substantially large radius of curvature in cross-section, a corona discharge electrode disposed at the center of said duct, means for introducing gas into said duct through said slit, and means for applying a voltage between said respective electrodes.

4,289,279

MILL LINING

Bertil Brandt, Paris, France, assignor to Trelleborg AB, Trelleborg, Sweden

Continuation of Ser. No. 905,510, May 12, 1978, abandoned.
This application Nov. 7, 1979, Ser. No. 92,151
Claims priority, application France, May 16, 1977, 77 05693
Int. Cl.[3] B02C 17/22
U.S. Cl. 241—102 **10 Claims**



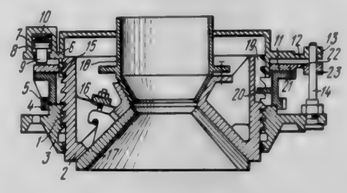
1. A mill lining for a mill drum mounted for rotation about an axis, comprising shell plates and lifter bars made of elastomer material, said lifter bars extending substantially in the axial direction of the mill drum and projecting, as seen from the inner surface of said shell plates, inwardly into the mill drum, said lifter bars having longitudinal incisions in their impact sides facing forwardly in the direction of rotation of the mill drum, said incisions being radially inward of the inner surface of said shell plates and spaced radially outwardly from the inner end of the lifter bars to enable said lifter bars to flex primarily at the location of said incisions when material to be milled impacts said lifter bars.

4,289,280

CRUSHER BOWL CLAMPING DEVICE

Evgeny S. Mitrofanov, ulitsa Kibalchicha, 4, korpus 1, kv. 17; Boris G. Ivanov, ulitsa Basseinaya, 5, kv. 8; Nikolai A. Ivanov, Novoizmailovsky prospekt, 19, kv. 96, all of Leningrad; Gennady A. Kaljunov, ulitsa Festivalnaya, 23, kv. 4, and Isaak Y. Khinich, ulitsa Kosmonavtov, 43-b, kv. 71, both of Sverdlovsk, all of U.S.S.R.

Filed Sep. 13, 1979, Ser. No. 75,336
Int. Cl.[3] B02C 2/04
U.S. Cl. 241—207 **2 Claims**



1. A crusher bowl clamping device comprising:
a stationary carrier ring threadably connected with a crushing bowl;
a cylindrical bush mounted on the top end of said carrier ring;
a flange arranged above said cylindrical bush and threadably connected to said crushing bowl, said flange carrying hydraulic jacks with piston rods to provide thrust in the threaded connection between said crushing bowl and said carrier ring;
said flange being locked against rotation about said carrier ring; and
said piston rods of said hydraulic jacks being continuously biased against said carrier ring, so as to thrust load the threaded connection between said flange and said carrier ring with the crushing bowl.

4,289,281

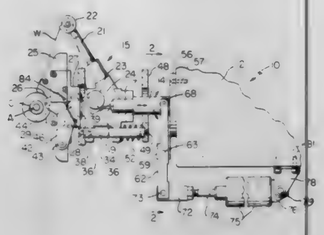
APPARATUS FOR WINDING ARMATURES

Robert D. George, and Robert C. Gray, both of Dayton, Ohio, assignors to Mechaneer, Inc., Dayton, Ohio

Filed Nov. 5, 1979, Ser. No. 90,991
Int. Cl.[3] H05K 15/09
U.S. Cl. 242—7.05 B **13 Claims**

1. In apparatus for automatically winding coils of wire on an armature core mounted on a shaft supporting a commutator and for connecting wire leads to the commutator, said apparatus including a rotary shaft, a winding form member positioned adjacent the armature core, a flier assembly supported for rotation with said shaft and relative to said form member, and a movable wire deflector member associated with said form member, the improvement comprising a deflector member actuator carried by said flier assembly for rotation therewith

and movable in an axial direction relative to said shaft, and means for moving said actuator in said axial direction while



said flier assembly is rotating to effect movement of said wire deflector member relative to said form member.

4,289,282

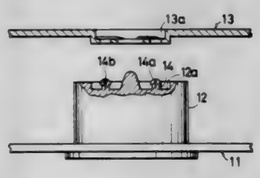
TAPE REEL

Kaname Kohno, Tokyo, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

Continuation-in-part of Ser. No. 16,732, Mar. 1, 1979, abandoned. This application Jan. 31, 1980, Ser. No. 117,212

Int. Cl.³ B65H *75/18*

U.S. Cl. 242—71.8 **4 Claims**



1. A tape reel comprising a lower reel member comprising a disc-like portion and a hub which are designed as an integral part, a disc-like upper reel member, protrusions formed in said hub, and engaging portions which are formed in said upper reel member in such a shape as to be thin on one side and thick on the other side as measured in the direction perpendicular to the surface of said disc-like upper reel member, a notch being formed on the thick side of said engaging portions, whereby said upper and lower reel members can be fixed firmly to each other under attracting force produced by engagement between said protrusions and said engaging portions when said upper reel member is assembled with said lower reel member, and said upper reel member is rotated so as to engage said protrusion with the notch of said engaging portions.

4,289,283

LEG AND SADDLE OF FISHING REEL

Yoshinori Morimoto, Fuchu, Japan, assignor to Ryobi Ltd., Fuchu, Japan

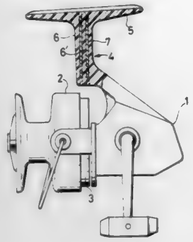
Filed Sep. 12, 1979, Ser. No. 74,621

Claims priority, application Japan, Oct. 16, 1978, 53-142406[U]

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 R **11 Claims**

1. In a fishing reel including a main reel body for supporting a spool and a rotor, and a reel mounting member which consists of a saddle portion and a leg portion extending between the saddle and the main reel body, said main reel body and said reel mounting member being integrally formed by synthetic resin, the improvement comprising; a reinforcing member centrally disposed in said leg portion, said reinforcing member



being formed by preimpregnation of fibers which direct along the longitudinal direction thereof.

4,289,284

TAPE CONTROL APPARATUS

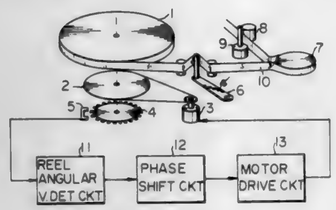
Hitoshi Sakamoto, Zama, and Kazuhiro Takano, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 969,194

Claims priority, application Japan, Dec. 15, 1977, 52-149935

Int. Cl.³ B65H *59/38;* **G03B** *1/04;* **G11B** *15/32*

U.S. Cl. 242—186 **11 Claims**



4. Apparatus for controlling the torque applied by a motor to a supply reel so that tape drawn from said supply reel by a tape transport system is transported with a substantially constant tape tension, said apparatus comprising: means for detecting the rotational speed of said supply reel and generating an output signal which varies with a change in said rotational speed and which has a rate of change corresponding to the rate of said change of the rotational speed; means receiving said output signal for generating a motor control signal which varies in response to changes in said output signal with the relationship of the variation of said motor control signal to the variation of said output signal being dependent on said rate of change of the output signal; and means for controlling the torque applied by said motor in dependence on said motor control signal, in which said means for generating a motor control signal includes an input terminal receiving said output signal an amplifier having inverting and non-inverting inputs and an output, first and second resistors connected between said input terminal and said inverting input and between said input terminal and said non-inverting input, respectively, a feedback resistor connected between said output of the amplifier and said inverting input, and a capacitor connected to said noninverting input of said amplifer.

4,289,285

MAGNETIC TAPE CASSETTE

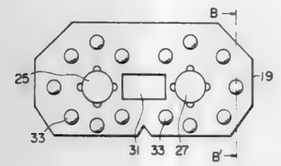
Toshihiko Ishida, Komoro, and Takateru Satou, Saku, both of Japan, assignors to TDK Electronics Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 697,995, Jun. 21, 1976, abandoned. This application Apr. 25, 1980, Ser. No. 143,725

Claims priority, application Japan, May 27, 1975, 50-71056

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—199 **9 Claims**



1. In a separation sheet for a magnetic tape cassette comprising a sheet to be positioned between an inner wall and the tape reels of a cassette, the improvement in which the sheet is formed with at least one dome-like protrusion, in which said sheet is formed with an additional protrusion on a side of said sheet opposite from that containing said dome-like protrusion and shaped to fit into a window formed in said inner wall of said cassette.

4,289,286

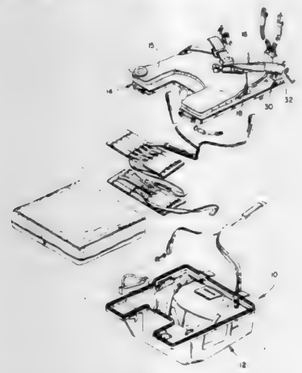
REPLACEABLE HARNESS BRACKET ASSEMBLY

Dominic J. Spinosa, Wantagh, and Frank Knoll, Huntington Station, both of N.Y., assignors to East/West Industries, Inc., Farmingdale, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,856

Int. Cl.³ B64D *25/00*

U.S. Cl. 244—1 R **24 Claims**



1. A disconnect device for an aircraft survival kit including a container and a lid secured thereto with a torso harness and anti-rotation strap associated therewith, said disconnect device comprising:

A. a body adapted to be mounted relative to said kit,

B. support means extending outwardly from said body and including a cavity adapted to receive an end of the harness therein,

C. locking means adapted to extend through said support means and said end of the harness to provide securement of the harness to the kit so as to obtain removal of the harness from the disconnect device for replacement thereof when said locking means is disengaged such that the lid may remain secured to the container when the harness is replaced,

D. said support means includes a pair of spaced apart arms integrally joined with said body and defining said cavity for receiving said end of the harness therebetween,

E. said locking means includes a pair of socket holes extending through said support means, and a fastener extending through said arms and said end of said harness,

F. anti-rotation means adapted to be coupled to said kit in fixed spaced relationship to said body for retaining the strap of the harness,

G. securing means for said anti-rotation means so as to permit removal of the strap when replacement of the harness is desired, and

H. one pair of said body and said anti-rotation means is provided for each said kit.

4,289,287

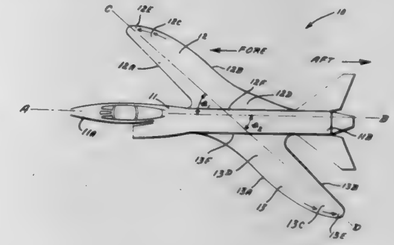
FIXED SKEWED WING AIRBORNE VEHICLE

Richard D. Child, Huntington Beach, Calif., and Jan R. Tulinus, Newport News, Va., assignors to The Unites States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 621,330, Oct. 10, 1975, abandoned. This application Jun. 17, 1977, Ser. No. 807,618

Int. Cl.³ B64C *3/10*

U.S. Cl. 244—45 R **1 Claim**



1. In an airborne vehicle of the fixed-wing type intended for use at supersonic speeds, wherein said airborne vehicle has a fuselage with a longitudinal axis, a starboard wing section, a port wing section, and a span-wise axis common to both said wing sections, and wherein each said wing section has a leading edge, a trailing edge, an outboard end, and an inboard end, and also wherein each said wing section has a tip at said outboard end and a root area at said inboard end, the improvement comprising:

(a). said wing sections fixedly disposed, with said starboard wing section disposed fore and said port wing section disposed aft, and with said common span-wise axis of said starboard and said port sections disposed in a skewed position at an angle of **45** degrees to said longitudinal axis of said fuselage;

(b). said leading edge and said trailing edge of each said wing section, at said root area thereof, configurated to blend with and to said fuselage;

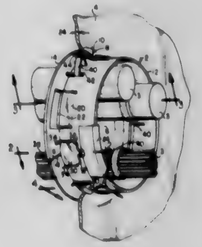
(c). and, said tip of said fore disposed starboard wing section is so configurated that said trailing edge thereof is swept forwardly and said leading edge thereof is essentially straight relative to said trailing edge and said tip of said aft disposed port wing section is so configurated that said leading edge thereof is swept rearwardly and said trailing edge thereof is essentially straight relative to said leading edge.

4,289,288

WIRE ROUTING APPARATUS

N. Keith Gransberry, Birdsboro, and Allen C. Haggerty, Media, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 2, 1978, Ser. No. 947,345
Int. Cl.[2] F16L *5/00*
U.S. Cl. 248—56 6 Claims



1. A routing apparatus for connecting cables and the like to a wall having a hole therein, which comprises:

a split ring grommet having a slit along its longitudinal axis which includes, a cylindrical body having a flange at one end thereof, an edge at the opposite end thereof, and spring biased means for engaging the wall between said spring biased means and said flange;

means, operably connected to said grommet, for securing the portions of the grommet opposing said slit to one another;

means, operably connected to said grommet, for increasing the diameter of said grommet by increasing the width of said slit which includes a spring biased member having opposing ends which are inserted into first slots in said grommet, said spring biased member being positioned to over-lap said slit; and

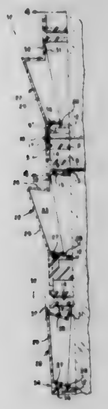
means, operably connected to said grommet, for connecting the cables and the like to the inner portion of said cylinder.

4,289,289

SHELF SUPPORT MEMBER INCORPORATING INTEGRAL LIVE HINGE

Sherman A. Overman, Hollister, Calif., assignor to Monterey Shelf, Inc., Hollister, Calif.

Filed Oct. 22, 1979, Ser. No. 87,216
Int. Cl.[3] A47B *57/08*
U.S. Cl. 248—235 7 Claims



1. A shelf support strip, comprising:

(a) an elongated base member formed from injection-molded synthetic resinous material; and

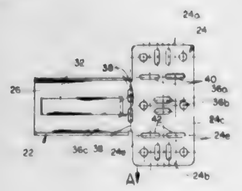
(b) a series of integral injection-molded synthetic resinous material shelf support members longitudinally spaced on said base member and pivotal thereon between a retracted position and an extended shelf-support position to provide a shelf support surface perpendicular to said elongated base member when in extended shelf-support position and a force transferring portion connecting said perpendicular shelf support surface to a force transferring surface separable from said elongated base member when said shelf support members are in retracted position but abutting said base member when said shelf support member is in extended shelf-support position whereby a force imposed on said shelf support surface is transferred to said elongated base member through said force transferring portion and said force transferring surface.

4,289,290

UNIVERSAL DRAWER SLIDE MOUNTING BRACKET

Calvin K. Miller, Grand Rapids, Mich., assignor to Knape & Vogt Manufacturing Co., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 850,407, Nov. 10, 1977, Pat. No. 4,141,525. This application Jan. 25, 1979, Ser. No. 6,454
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.[3] A47B *88/00*
U.S. Cl. 248—251 2 Claims



1. An omni orientation mounting bracket for selective multiple position use to support a drawer rail assembly, comprising:

a one piece bracket having a channel sleeve to interfit with a drawer rail, and a mount plate for cabinet attachment; said channel sleeve having a back panel and a pair of side panels transverse to said back panel, said panels forming an open front end to receive a mounting rail in said channel sleeve; said mount plate being integrally joined with said channel sleeve at said back panel along a linear juncture, and having a plurality of peripheral edges; said mount plate having plate portions and at least two bend lines, one of which bend lines is along said linear juncture and the other of said bend lines between said plate portions to allow said mount plate portions to be positioned in selected orientation relative to said channel sleeve; said bend lines having aligned spaced orifices and isthmuses therealong; and a spring clip projecting from said back panel into said channel sleeve with one end of said spring clip being integral with said back panel and the remainder thereof projecting toward said open end to form a slot between said spring clip and said back panel.

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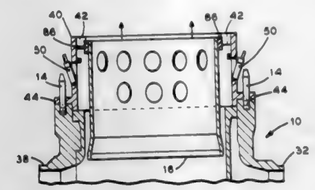
RETRACTABLE STORAGE LUG

Donald L. Goddard, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 18, 1978, Ser. No. 970,776
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—293 14 Claims

1. A support device for stacking and storing articles comprising a pair of parallel support plates, a pair of opposed independent coplanar pins extending inwardly from the plates, support means disposed between the plates and pivotally suspended by the pins, the pins partially extending through the

support means, a cylindrical member slidably and coaxially disposed within the support means, the member slidably and rotatably engaging the pins, a weight attached to the member,



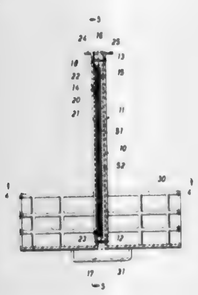
means for rotating the member and means for affixing the device to the article to be stored.

4,289,292

VARIABLY SUPPORTED CONTAINER

Varughese Kunjumon, 3706 N. Greenwood, Victoria, Tex. 77901

Filed Jun. 15, 1979, Ser. No. 48,972
Int. Cl.[3] F16M *11/00*
U.S. Cl. 248—333 10 Claims



1. Apparatus for suspending articles from a support at a plurality of elevations, comprising

a first guide member means attachable to said support,

a second guide member means in slidably coaxial engagement with said first guide member means,

container means attached to said second guide member means for containing said articles,

spring means connected between said first and second guide member means for urging said second guide member means toward said support,

locking means for preventing said slidably coaxial engagement when said first and second guide member means are substantially separated comprising a portion of said first guide member means defining a groove and extension means carried by said second guide member means in matingly slidable engagement with said groove.

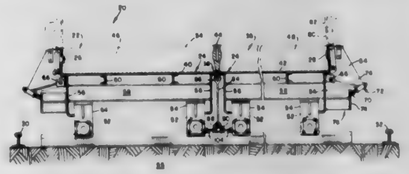
4,289,293

COMBINATION BED CONCRETE CASTING APPARATUS

Jerry L. Cashion, Nashville, Tenn., assignor to Span-Deck, Inc., Franklin, Tenn.

PCT No. PCT/US79/00707, § 371 Date Sep. 7, 1979, § 102(e) Date Sep. 7, 1981, PCT Pub. No. WO80/00672, PCT Pub. Date Apr. 17, 1980.
Continuation-in-part of Ser. No. 947,866, Oct. 2, 1978, abandoned. This PCT application filed Sep. 7, 1979, Ser. No. 83,993
Int. Cl.[3] B28B *7/02*
U.S. Cl. 249—74 20 Claims

1. A combination bed casting aparatus for casting either a single elongated concrete structural member in a single elongated casting bed section or for simultaneously casting two elongated concrete structural members in side-by-side parallel elongated casting bed sections comprising a longitudinally extending bottom wall form and oppositely disposed side wall forms, the bottom wall form being divided longitudinally into two supporting sections for supporting the structural member(s) to be cast, the two sections adapted to be positioned in abutting relationship to form with said side wall forms the single casting bed section and spaced from each other by an elongated intermediate wall form, first means for positioning said sections and second means for positioning the intermediate wall form between said two supporting sections and generally



parallel to the side wall forms to form with each supporting section and an associated side wall form the side-by-side casting bed sections, said supporting sections and its associated side wall form being moveable transversely to the longitudinal axis of the casting apparatus wherein said second means comprises a lifting mechanism for pivotally positioning the intermediate form by the lifting mechanism in a first position below said moveable section when said two supporting sections are positioned in abutting relationship for forming the single casting bed section and in a second position above and between said supporting sections when said one of the two supporting sections and its associated side wall forms have been moved transversely to form the side-by-side casting bed sections.

4,289,294

WELLHEAD FLOW CONTROL DEVICES

Douglas K. McLean, Dallas, Tex., assignor to Double-E, Inc., Dallas, Tex.

Filed Jan. 14, 1980, Ser. No. 111,604
Int. Cl.[3] F16K *31/143, 41/02*
U.S. Cl. 251—62 41 Claims

1. In a flow control device for a wellhead which passes a polished rod of a pump sucker rod string

a valve for controlling the wellhead flow comprising a body providing an axial flow passage and circumambient closure seat, and a coacting closure ram guided for axial reciprocating movement relative to said closure seat; said closure seat and said closure ram being configured for coaxial association with the polished rod;

said closure ram comprising an elongated body, a compressible packing mounted at the closure end of said body for seating in said closure seat, and retaining means for axially retaining said packing on said body;

said closure seat comprising a shoulder confronting a peripheral portion of said ram packing;

and operator means for moving said ram to a first position into sealing engagement with said closure seat wherein said packing is urged into sealing engagement with said polished rod, and to a second position wherein said packing is displaced and unsealed from said closure seat and said polished rod.

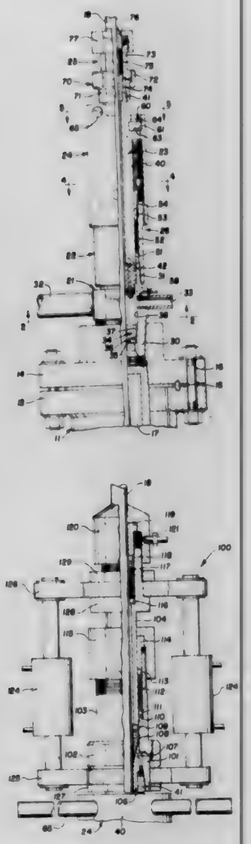
24. A device as set forth in claim 1 characterized by

said valve body comprising a sleeve portion at its upper end;

an operator sleeve disposed over said valve body sleeve portion for axial movement relative thereto; a thrust coupling mounted between said operator sleeve and said ram body, for transferring axial thrust forces therebetween; and means for reciprocating said operator sleeve relative to said valve body;

a packing gland for said ram body comprising said ram body

upper cylindrical portion, and an annular externally threaded packing nut threaded into the distal end of said valve body sleeve portion;



said packing nut having external peripheral indentions for engagement by a driving tool to effect rotation thereof; and said operator sleeve having a plurality of axially spaced access holes for said driving tool.

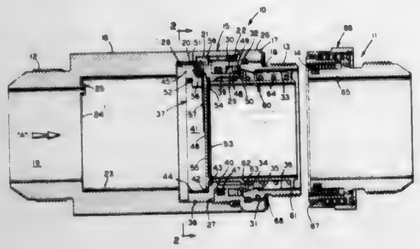
4,289,295

SELF-SEALING CONNECTOR

Alan R. Allread, Jackson, Mich.

Filed Nov. 6, 1978, Ser. No. 958,132
Int. Cl.³ F16L *37/28*
U.S. Cl. 251—149.2 **14 Claims**

1. In a valve connector of the type having a pair of interconnectable body members, each having a central passage extending therethrough, a valve member pivotally mounted in the passage of one of the body members wherein the valve member is in a position closing the passage when the body members are uncoupled and in a position opening the passage when the body members are coupled and connecting means for interconnecting the body members, the improvement comprising:
(a) a piston axially slidably mounted within said one body member and having a central aperture with the passage in said one body member;
(b) said valve member being pivotally mounted on said piston over the central aperture therein and pivotal between positions closing and opening the central aperture;
(c) means for urging said piston to a first position whereat said valve member closes the aperture in said piston when said body members are in the uncoupled state;
(d) means for pivoting said valve member from its closed position to its open position when said body members are in the coupled state; and



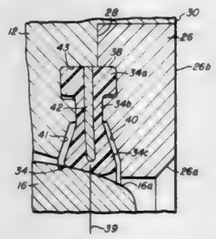
(e) means for axially moving said piston and said open valve member to a second position interlocking said valve member to said one body member when said body members are in the coupled state.

4,289,296

BIDIRECTIONAL AXIALLY PLIANT PRESSURE ASSISTED SEAT FOR A VALVE

Bernd Krause, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Mar. 23, 1979, Ser. No. 23,298
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—306 **4 Claims**



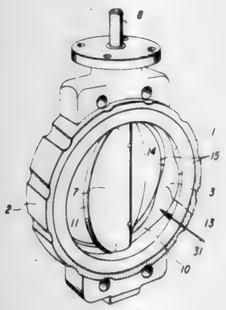
1. A butterfly valve with a pressure assisted seat member, which comprises:
(a) a valve body having a central bore therethrough;
(b) a disc member mounted in said bore and movable between an open and closed position about an axis transverse to said bore and having a peripheral sealing surface;
(c) an annular recess circumscribing said bore and disposed in radial alignment with said sealing surface of said disc member when said disc member is closed;
(d) a symmetrical seat member formed of a fluorinated hydrocarbon polymer supported in and extending radially inward from said annular recess to selectively and sealingly interface with said sealing surface on said disc member, said seat member including:
(i) a first portion secured within said annular recess;
(ii) a second portion disposed radially inward with respect to said first portion and having an axial dimension which is smaller than the axial dimension of said first portion;
(iii) a third portion disposed radially inward with respect to said second portion and having an axial dimension which is greater than the axial dimension of said second portion;
(e) means for compressingly engaging the second portion of said seat member, said seat member cooperating with said disc member to axially flex the seat member at the second portion, said engaging means serving to concentrate axial flexure at that location;
(f) a continuous support membrane within said seat extending radially inward from said first portion of said seat member into said third portion of said seat member, said support membrane having a dimension in the radial direction which is greater than its axial dimension and being axially pliant to urge the seat member to a predetermined position in response to axial deflections; and
(g) side walls extending radially inward from said annular recess which are proximate to said seat but axially spaced from the third portion thereof, said side walls being operative to limit axial movement of said seat.

4,289,297

BUTTERFLY VALVE

Mikimaro Nakanishi, Yao, Japan, assignor to Tomoe Technical Research Company, Osaka, Japan

Filed Apr. 8, 1980, Ser. No. 138,351
Claims priority, application Japan, Apr. 20, 1979, 54/48042; May 15, 1979, 54/58717
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—306 **6 Claims**



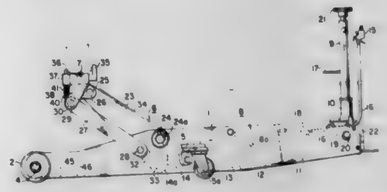
1. A butterfly valve comprising:
an annular valve body,
a disk-shaped valve member having a rotation axis and pivotally mounted on said annular valve body at each end of said rotation axis to open or shut a fluid path defined by said annular valve body, and
a seat ring having an annular sealing surface disposed between said valve body and said valve member to ensure shutting of the fluid path by said valve member,
said sealing surface having two first surfaces each being in the vicinity of the corresponding end of said rotation axis and two second surfaces each extending from one of said first surfaces to the other first surface, each of said second surfaces having substantially a maximum width in the middle position between said first surfaces, the width of each of said second surfaces gradually enlarging from the position adjacent to said first surfaces to said middle position of the said second surface wherein peripheral edges formed on each side of each second surface define said width, said peripheral edges each having a curve defined with a part of a trigonometric function.

4,289,298

HYDRAULIC LIFTING JACK HAVING A SAFETY LIFTING SADDLE

Tamotsu Kameda, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Dec. 27, 1979, Ser. No. 107,666
Int. Cl.³ B66F *5/04*
U.S. Cl. 254—8 B **7 Claims**



1. A lifting jack, comprising: a base; an elevator which is mounted to the base so as to be raisable and lowerable; a lifting saddle disposed at the free end of the elevator; power means adapted to raise and lower the elevator; at least one movable stop means mounted to the lifting saddle so as to be movable in a substantially vertical direction; and actuating means coupled to said movable stop means and adapted to automatically raise said movable stop means to project above the lifting saddle upper surface when the elevator is raised, and further adapted to automatically lower said movable stop means so as not to project above the lifting saddle upper surface when the elevator is lowered beyond a certain point.

4,289,299

HYDRAULIC LIFTING JACK INCLUDING A SAFETY DEVICE FOR AN ELEVATOR THEREIN

Tamotsu Kameda, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Dec. 31, 1979, Ser. No. 108,644
Int. Cl.³ B66F *5/04*
U.S. Cl. 254—8 B **2 Claims**



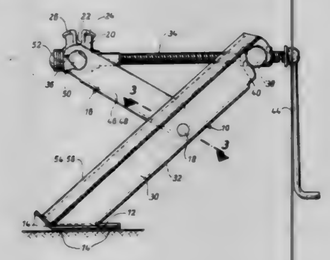
1. A lifting jack having a pair of frame plates, with an elevator pivotally mounted to said pair of frame plates; and having a lifting saddle arranged at the free end of said elevator; and a power unit, mounted to said pair of frame plates, for lifting said elevator, and comprising: a safety device for the elevator including support block means pivotally mounted to said elevator, step block means having a front slope surface and a plurality of stop steps in said front slope surface, and said step block means being secured to said pair of frame plates; a lever coupled to said support block means, and spring means; said lever being adapted to move said support block means between an engaging position wherein said support block means engages with said step block means and a disengaging position wherein said support block means is disengaged from said step block means, and said spring means being adapted to retain said support block means in either the engaged position or the

disengaged position in such a manner that in being moved between the engaged and disengaged positions, said support block passes through a dead point, whereby should said elevator fall, the engagement of said support block means with said step block means prevents the collapse of the lifting jack.

4,289,300
CAR JACK

Dieter Weisser, Tuttlingen, and Franz Hafner, Wurmlingen, both of Fed. Rep. of Germany, assignors to E.A. Storz GmbH & Co., KG, Tuttlingen, Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 97,911
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851980
Int. Cl.³ B66F *3/12*
U.S. Cl. 254—126 **10 Claims**



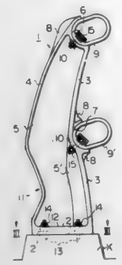
1. A car jack comprising a column having a top end and a bottom end, a load-carrying arm, a cross-pivoting shaft, a screw spindle, a base, a crank handle, a screw spindle nut, and a screw spindle abutment, said column being formed of metal section of U-shaped cross-section, said metal section of said column having side walls with internal flat side portions and edge parts outwardly bent and shaped as beads with edges, wherein said bottom end of said column is attached to said base, said load-carrying arm is supported on said cross-pivoting shaft which is attached to said column and is pivotable by said screw spindle operable by said crank handle, said screw spindle is pivotably supported by said screw spindle nut and by said screw spindle abutment at said column and on said load-carrying arm, said beads extend at least over part of the length of said column side walls, and said bead edges are disposed substantially in the plane of said internal flat side portions of said respective side walls.

4,289,301
POST FOR A GUARD RAIL

Noboru Akabame, Tama, and Hitoshi Yoshino, Tokyo, both of Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed Oct. 9, 1979, Ser. No. 83,168
Claims priority, application Japan, Oct. 13, 1978, 53-125091; Jan. 31, 1979, 54-10009
Int. Cl.³ E01F *15/00*
U.S. Cl. 256—13.1 **15 Claims**

1. A post for a guard rail to be secured on a curb arranged at a side of a highway, said post comprising:
- a post body formed of metal and having an I-shape in horizontal cross-section with a front flange and a rear flange formed on the front and rear portions of a web;
- at least one fitting portion on said front flange facing the highway for receiving said guard rail;
- said post having a mechanical neutral plane which is an S-shaped curve; and
- a first portion of the mechanical neutral plane of substantially the upper half portion of said post body being upwardly inclined towards the highway, and a second portion of the mechanical neutral plane of substantially the



lower half portion of said post body having a curved plane protruding towards the highway.

4,289,302
FENCE ARRANGEMENT

J. L. Montgomery, 2565 Cherosen Rd., Louisville, Ky. 40205

Filed Jan. 7, 1980, Ser. No. 110,227
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—19 **2 Claims**



1. A precast fence arrangement including first and second elongate post means of cast, hardened material having a multiplicity of faces including wire mesh reinforcement within said post and inset a selected inset distance from the selected closest faces of the post and extending longitudinally along a portion of the length of the posts where the post means include at least one pair of inset blind notch means of selected peripheral configuration each in aligned relation with respect to a traverse plane through said post and each in a different one of said selected faces thereof where the depth of said notches is less than the corresponding selected inset distance; and elongate rail of cast, hardened material with first and second opposite ends of pheripheral configuration adapted to be received in the notch means of adjacent post means.

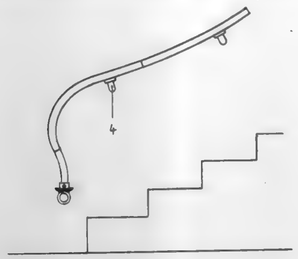
4,289,303
HAND-RAIL ELEMENT FOR STAIRCASE

Wilfried Hamm, IM Wiesengrund 28, 4330 Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 56,930
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 7901946[U]
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—69 **3 Claims**

1. A hand-rail assembly for a staircase comprising a plurality of hand-rail elements, each element having a soft metal core of tubular shape with a thin side wall thickness such that the metal core is easily bent by hand, each element having a pliable foamed polyurethane covering surrounding said tubular core and having a thickness at least approximately equal to the

diameter of said core, a plurality of nipples connecting said hand-rail elements end-to-end, each nipple having opposed male threaded portions threadably received in the adjacent end

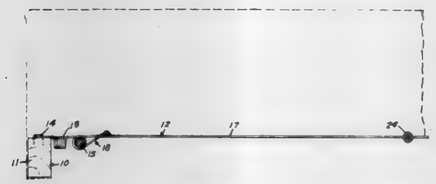


portions of two end-to-end hand-rail elements, each nipple having a flange, and each pliable covering having one end recessed to receive said flange.

4,289,304
SEAT CONSTRUCTION

Stephen E. Muzzell, Ferndale, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Continuation of Ser. No. 40,690, May 21, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,628
Int. Cl.³ F16F *3/02*
U.S. Cl. 267—112 **17 Claims**

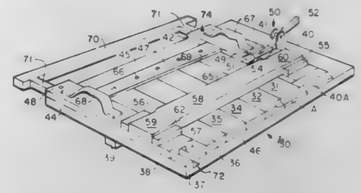


1. A seat construction comprising a frame having spaced parallel rails,
- a spring assembly comprising a pair of transversely spaced longitudinally extending wires,
- each said wire having a resilient layer thereon,
- said spring assembly including a plurality of transversely extending wires having portions wound only partially about said layers of said longitudinally extending wires,
- said spring assembly including an auxiliary longitudinal wire positioned on said transverse wires, spaced between and extending parallel to said first-mentioned longitudinal wires and substantially coplanar therewith,
- each transverse wire having a free end extending over and engaging on the adjacent auxiliary longitudinal wire to tend to hold and lock the transverse wires firmly in position relative to the first-mentioned longitudinal wires and to form a connection between the auxiliary longitudinal wire and the first-mentioned longitudinal and transverse wires of the spring assembly,
- and a plurality of tension springs having one end connected to a first-mentioned longitudinally extending wire of said spring assembly and the other end to a rail of said frame.

4,289,305
WORK PIECE HOLDER FOR WOODWORKING MACHINE

Gary W. Penner, 700 Ranchitos del Sol, Aptos

Filed Dec. 14, 1979, Ser. No. 103,569
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—43 **7 Claims**

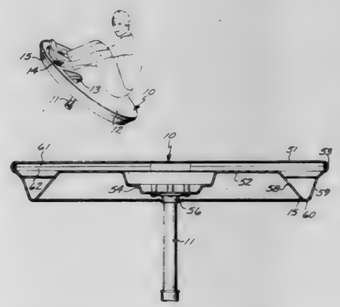


1. A work piece holder for a woodworking machine wherein said machine has a power-driven cutting tool, a table adjacent the cutting tool over which the work pieces are progressed, a guide on said table for guiding the work pieces and a power feeder having power-driven wheels for contacting and feeding the work past the cutting tool, said work holder comprising:
- a base on which a plurality of work pieces are placed;
- a first ledge on one side of said base forming an edge against which the work pieces are aligned;
- clamping means for exerting and edgewise pressure on said work pieces to hold them tightly in alignment with said ledge;
- a holding member fitting over the work pieces and aligned with the power-driven wheels of the power feeder and including a top surface on which the wheels can ride; and
- means for guiding said work piece holder along said table guide to bring the work pieces into contact with said cutting tool.

4,289,306
EXERCISE WHEEL

Ross T. Thomas, 1507 Lincoln, Corona, Calif. 91720

Filed Oct. 29, 1979, Ser. No. 89,604
Int. Cl.³ A63G *1/12*
U.S. Cl. 272—33 R **6 Claims**



1. In an exercising device that includes a circular platform that has a periphery on which it rolls, a stub shaft projecting outwardly from the center of said platform, said stub shaft having a free end, said free end and periphery cooperating when a user is mounted on said platform to roll on a flat surface in a circular path about the contact of said free end with said flat surface by said user shifting his weight, the improvement comprising:
- a. an upper surface half that has an upper surface and a lower surface, and an outer periphery defined by a downwardly

curved first lip, a first ring of greater depth than said first lip that extends downwardly from said lower surface and is radially spaced from said first lip, said upper half having a pair of foot receiving openings and a pair of hand receiving openings therein;

b. a lower surface half of the same diameter as said upper half, said lower surface half having an upper surface and a lower surface, a periphery defined by a second curved lip that extends upwardly therefrom, a second ring that extends upwardly from said upper surface of said lower surface half, said second ring of greater depth than said second curved lip, said lower surface half having a circular convolution that extends downwardly adjacent said second curved lip, and a boss that extends downwardly from substantially the center of said lower surface half;

c. a pipe flange secured to said boss and that receives said stub shaft;

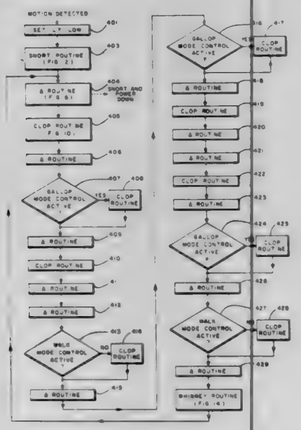
d. a circular resilient strip that in transverse cross section defines a rectangular anchor, a neck extending outwardly from said anchor, and a crescent shaped member that has said neck secured to substantially the center thereof, said upper and lower surface halves when said first and second rings are disposed in abuting contact defining a circular confined space in cooperation with said first and second lips in which said anchor is disposed with said neck extending through a gap defined between said first and second curved lips, and said crescent shaped member engaging said first and second curved lips to removably hold said first and second half surfaces together as an integral unit.

4,289,307

RIDING TOY WITH SOUND EFFECTS

Trevor J. Marshall, Jr., Westport, Conn., and Darryl R. Dworkin, Middlesex, N.J., assignors to CBS Inc., New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,740
Int. Cl.³ A63G *17/00*
U.S. Cl. 272—52.5 **22 Claims**



1. A riding toy comprising:

a model horse resiliently mounted to allow a rider thereof to cause motion of the horse having vertical and horizontal motion components;

means for detecting horizontal and vertical components of motion of said horse;

means for generating a trotting gait sound in response to the output of said vertical motion detection; and

means for generating a walk or gallop gait sound in response to said horizontal motion detection;

said means for generating said gait sounds including means for selecting, in accordance with a prescribed priority, which of said gait sounds is to be generated when said motion detection would otherwise result in the generation of more than one gait sound.

4,289,308

PORTABLE THERAPY ENCLOSURE

Anna M. Allen, and Donna I. Pudvan, both of 115 McTigue, Toledo, Ohio 43615

Filed Jan. 2, 1979, Ser. No. 190
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—70 **5 Claims**



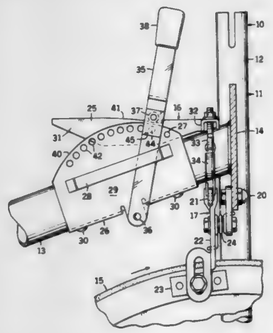
1. A demountable therapy enclosure for assisting the reestablishment of walking skills of a person comprising, in combination, four generally vertically disposed walls, said walls including front and back opposed walls and two opposed side walls, having lower marginal edges, said walls defining a rectangular volume open at the upper end, said front and back walls spaced apart at a distance which maintains the legs of a person disposed in said volume in substantially vertical orientation, said front wall having a lower marginal edge disposed above said lower marginal edges of said side walls, hinge means for pivotally interconnecting said four walls along three spaced apart hinge axes, at least one latch means for selectively securing two of said walls to one another, a generally planar base disposed beneath said walls, means for selectively engaging said said walls to said planar base, said just recited means including a pair of outward projections each adjacent a respective one of said lower marginal edges of said side walls and a pair of cooperating overhanging lips disposed on said planar base.

4,289,309

WORK CONTROL ASSEMBLY IN AN EXERCISER

Ralph L. Hoffmann, St. Louis, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.

Filed Nov. 13, 1979, Ser. No. 93,920
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—73 **5 Claims**



1. A work control assembly in an exerciser having a frame, and a driven member rotatively mounted on the frame, the assembly comprising:

(a) a brake means operatively mounted on the exerciser frame and engaging the driven member,

(b) a lever means pivotally carried by the frame and connected to the brake means for exerting braking pressure on the driven member,

(c) resilient means operatively connected between the brake means and lever means tending to resist pivotal movement of the lever means in one direction,

(d) control means movably carried by the frame and slidably engaging the lever means for pivoting the lever means and holding the lever means in a selected pivoted position against the action of the resilient means for determining the braking pressure,

(e) the lever means including a bearing margin,

(f) the control means including a pivotably mounted arm slidably engaging the lever means along the bearing margin for pivoting the lever means while slidingly engaging the lower means, and

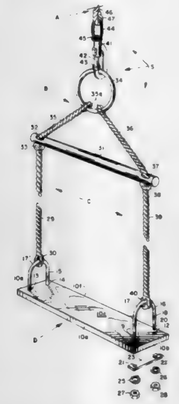
(g) the control means including a locking means for retaining the control arm in an adjusted predetermined position.

4,289,310

SWING APPARATUS

Terence S. Weakly, 701 E. King, Kingsville, Tex. 78363

Continuation of Ser. No. 838,621, Oct. 3, 1979, abandoned. This application Oct. 22, 1979, Ser. No. 87,141
Int. Cl.³ A63G *9/00*
U.S. Cl. 272—85 **1 Claim**



1. A swing apparatus for amusement and exercising, comprising:

a generally rectangular horizontal seat having two vertical, space parallel flexible cables secured thereo;

a cross bar member connected with the vertical cables to maintain the two cables spaced and parallel;

a ring means connected with the two cables;

a hook member having a spring biased closure pin for releasable receiving the ring means and an eye member attached to the hook member through a swivel joint;

a single vertical cable member having a first loop through which the eye member is connected and a second loop connected to a ring for supporting the swing apparatus;

the cross bar member having openings at opposite ends, for receiving one of the two spaced flexible cables in each of the openings;

the spaced flexible cables including a first cable secured with one side of the seat and extending upwardly through one of the openings in the cross bar member, and extending upwardly at an angle and secured to the ring means and a second cable secured to the ring means and extending downwardly at an angle to the cross bar member and downwardly to the other side of the seat and secured thereto;

the cables including knots therein just below the cross member bar openings to maintain the cross bar member horizontal at a predetermined position;

and the generally rectangular horizontal seat having inverted U-shaped connectors extending through openings at each side thereof for connecting the seat with the first and second cables; and

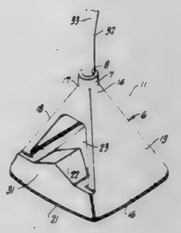
said generally rectangular, horizontal seat having rectangular recesses on the lower seat surface for receiving reinforcing strap members that have the same general dimensions as the recesses and that are connected with the inverted U-shaped connectors.

4,289,311

GOLF CLUB

Harry A. Smith, 8460 Kings Cove Dr., Salt Lake City, Utah 84121

Filed Sep. 7, 1979, Ser. No. 73,264
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—167 F **3 Claims**



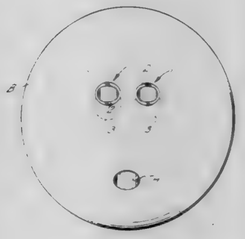
1. A golf club having a configuration substantially symmetrical on opposite sides of a central vertical plane comprising a unitary body having a lower portion and an upper portion and in said upper portion having a cylindrical socket with a bottom end and with the socket axis vertically disposed in said plane, said body in said lower portion including a ground panel substantially square in outline in a plane normal to said vertical axis, said ground panel having a forward edge margin and a rearward edge margin parallel to each other and normal to said central plane and having a pair of substantially parallel side margins extending parallel to said vertical plane and between said forward edge margin and said rearward edge margin, said ground panel being disposed with the center thereof substantially on said axis and having an upper portion spaced a substantial distance below said socket, said body including a forward solid panel substantially triangular in outline with a forward apex merging with said socket and a forward base merging with said forward edge margin of said ground panel, said body including a rearward solid panel substantially triangular in outline with a rearward apex and a rearward base merging with said socket and said rearward base merging with said rearward edge margin of said ground panel, said forward and rearward panels, said bottom end of said socket and said upper portion of said ground panel being spaced apart to leave an opening between them, and said body including a hump upstanding from at least the central portion of said upper portion of said ground panel between and spaced from said forward panel, said rearward panel and said socket and extending to at least one of said side margins of said ground panel, said hump being normal to said vertical plane and symmetrical about a vertical plane through said axis, and means defining an impact face upstanding from at least one of said side margins of said ground panel substantially midway between said forward panel and said rearward panel.

4,289,312

FINGER GRIP INSERT FOR A BOWLING BALL

Donald L. Heimbigner, 9605 SE. 6th St., Vancouver, Wash. 98664

Filed Apr. 21, 1980, Ser. No. 142,407
Int. Cl.³ A63B *37/00*
U.S. Cl. 273—63 A **2 Claims**



1. A finger grip insert for bowling balls, said insert comprising,

a tubular resilient body having an outer wall for recessed securement within a bowling ball bore, and

wall segments of the tubular resilient body extending lengthwise of said body, a first pair of said wall segments each of uniform thickness and having a curved inner wall surface concentric with the adjacent outer wall of the insert, a second pair of wall segments each of a greater thickness than that of the first pair of wall segments and each having an inner wall of less transverse curvature than the inner surfaces of said first pair of wall segments whereby adequate cushioning of an inserted finger tip bearing on one of said second walls is effected without impeding finger tip insertion or removal from the insert.

4,289,313

MANAGEMENT TEACHING GAME APPARATUS AND METHOD

Robert P. Delamontagne, 284 Westcott Blvd., Pennington, N.J. 08534

Filed Sep. 7, 1979, Ser. No. 73,200
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—256 **11 Claims**



1. A competitive management teaching game-like apparatus for teaching at least two competitive players useful information about their respective jobs comprising:

a gameboard having a first player territory representing the real life work environment of said first player, a second player territory representing the real life work environment of said second player, a path connecting said first and second player territories together and a plurality of player positions representing real life work situations located along said path, said player positions having predetermined penalty and reward values;

at least a first and second player piece;

chance means for determining the player positions of said player pieces on said path of said gameboard;

question means for posing identified questions and multiple choice answers to said identified questions concerning specific subjects related to the real life work of said players, said player positions within said first and second territories referring said first and second players to questions from said question means corresponding to different categories of subject matter, said question means posing substantially differently identified questions and answers to each player respectively;

answering means for determining the correctness of an answer to the identified question posed by said question means, said answering means comprising an electronic device preprogrammed to indicate the correctness of any one of said identified multiple choice answers to any one of said identified questions posed by said question means in such a way that both players know if a question is answered correctly, but only the player using the answering means know the content of the multiple choice answer selected;

cumulative scoring means for providing a cumulative reward corresponding to said player positions; and,

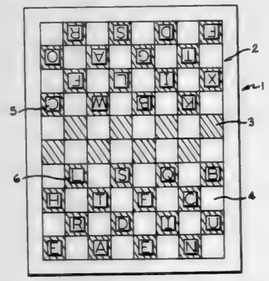
a reward means.

4,289,314

WORD FORMING CHECKERS GAME METHOD

Gary M. Berlino, 5731 Yorkshire, Detroit, Mich. 48224

Continuation of Ser. No. 806,994, Jun. 16, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,671
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—260 **1 Claim**



1. A competitive game playing method comprising the steps of:

placing a plurality of game playing pieces, each of which includes a plurality of faces each face being provided with a letter of the alphabet, with a significant number of alphabet letters being provided on the various faces and more than one different letter being provided on the various faces of each of the plurality of playing pieces, on a game playing surface having a checkered pattern of spaces;

in every second space in four laterally arranged rows with each row being offset one space from an adjacent row and being diagonally related to adjacent rows, and in two opposed sets of rows, with one letter on each piece facing upwardly;

selecting alternately in turn with an opponent, one of said pieces as a pivotal piece by inspecting more than one face of at least one piece and selecting one of said letters on one of said faces on one of said pieces to be a pivotal letter and arranging the latter said piece on said board with the selected pivotal letter facing upward;

moving said pivotal piece along a diagonal line on said surface toward opposing or friendly pieces into an open space in which said pivotal piece will be in a position in respect to the latter of said pieces wherein words in which

said pivotal piece pivotal letter plays a part will be formed with a series of letters on adjacently positioned pieces along diagonal paths; and

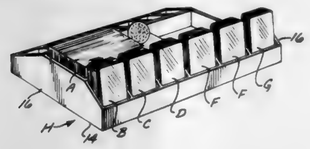
observing the number of words so formed on each such move and recording a total value thereof in accordance with a prearranged numerical value related to the number of letters in each observed word.

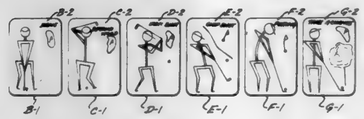
4,289,315

GOLF SIMULATING GAME

Vernon L. O'Barr, 360 Park Central, Mira Loma, Calif. 91752

Filed Jul. 28, 1980, Ser. No. 172,677
Int. Cl.³ A63F *1/04, 1/10*
U.S. Cl. 273—298 **1 Claim**





1. In a game that simulates the actual playing of a round of golf over a course for which a course card is provided that lists the holes by number, distance in yards, and par, a plurality of decks and opaque playing cards, each card in each deck having first and second sides, said first sides of said cards in each of said decks being identified by an insignia that visually indicates the same particular act in the playing of a game of golf and said second sides of said cards in each of said decks having a plurality of different printed messages thereon that indicate the degree of success achieved in carrying out said particular act identified on said first side thereof, the combination with said plurality of decks and said course card of a device that preferably permits a plurality of players grouped about a horizontal surface to play said game, said device including:

a. a tray assembly that includes a flat rectangular bottom that has a pair of end edges and first and second side edges; a pair of end walls that extend upwardly from said ends; first and second side walls of substantially less height than that of said cards that extend upwardly from said first and second side edges; third and fourth side walls that extends upwardly from said bottom and disposed inwardly a substantial distance from said first and second side walls, said third and fourth side walls of substantially greater height than said first and second side walls; a plurality of longitudinally spaced first transverse partitions that extend between said first and third side walls and in co-operation with the latter and said end walls define a plurality of playing compartments in which said plurality of decks are removably disposed in inwardly inclined positions with said first sides facing outwardly; and a plurality of longitudinally spaced, transverse second partitions that extend between said second and fourth side walls and in co-operation with the latter and said end walls define a plurality of discard compartments in which said cards are placed after being played;

b. a base that may be disposed to rest on said horizontal surface; and

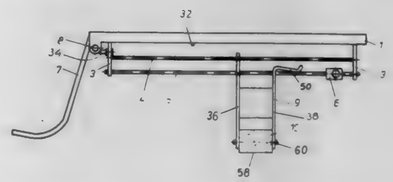
c. means for pivotally supporting said tray on said base to permit said playing compartments to be successively positioned before each player to permit him to draw a card after the hole number has been announced from said course card, the yards therefor, and par therefor, said cards as drawn by said players being laid on said horizontal surface with said second sides up until play for said hole is completed in accordance with a predetermined set of rules selected by said players such as the United States Golf Associated rules, with the laid out cards after the scores for each hole has been determined being returned to said discard compartments, and play continued successively on each of said holes as above described until all of said holes on said course card have been played, with the drawing of each card being equivalent to a stroke if golf was actually played, and the player or group of players having the lowest number of strokes being the winner.

4,289,316

APPARATUS FOR THE CLEANING OF PHONOGRAPH RECORDS

Rudolf Laeng, Friedeggstrasse 9, CH-3400 Burgdorf/Schweiz, Switzerland

Continuation-in-part of Ser. No. 835,435, Sep. 22, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,092
Int. Cl.³ G11B *3/58*
U.S. Cl. 369—72 **8 Claims**



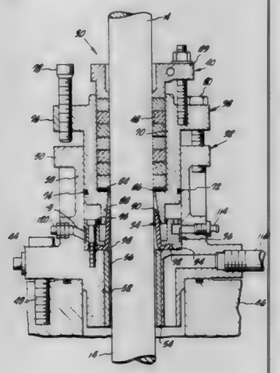
1. Apparatus for automatically selectively cleaning and neutralizing electrostatic charges on phonograph records and adapted to be mounted on a carrier, comprising the combination of: a turntable adapted to receive a phonograph record thereon for operatively turning movement, longitudinal guide means extending above and radially of the phonograph record and proportioned to be of a length at least equal to the radius of the record being played, brush means carried by said guide means and lightly engageable with the surface of the record with a normal force adapted to effect dust and dirt removal without substantial impeding effort to free rotation of the phonograph record, depending support arms slopingly extending from said guide means for carrying said brush means, connecting means forming a relatively freely slideable connection between said support arms and said guide means to permit radially traversing movement of said brush means across the surface of the record responsively of the rotation of the record, said brush means being radially movable by the record grooves whereby said brush means traverses the record in a radial sense to effect dust removal and electrostatic charge neutralization of the record, said carrier comprising a dust cover pivotably attached at one edge to the turntable chasses and swingable to an open position for changing records, said radially disposed guide means being attached to and depending from the inner surface of said dust cover, the outer end of said guide means being adjacent said one edge so that upon swinging said cover to an open position, said brush means will slide downwardly on said guide means to automatically reposition the brush means toward the outer end of said guide means, and movable record wiper means pivotally carried by said carrier and extending radially inward to said carrier, said wiper means being in engagement with the pintil of the turntable to ground charges picked up from the record during play thereof.

4,289,317

PUMP SHAFT CLOSURE

Henry Kuc, Los Angeles, Calif., assignor to Peerless Pump Division, Indian Head, Inc., Montebello, Calif.

Filed Jul. 25, 1979, Ser. No. 60,795
Int. Cl.³ F16J 15/18; F16K 1/00
U.S. Cl. 277—1 **11 Claims**



11. A method for removing the packing from a stuffing box assembly for a rotatable shaft used to drive a fluid pump, the assembly comprising:

(a) a housing concentrically disposed around the shaft;

(b) packing means for holding the packing against the shaft;

(c) a resilient sealing ring having opposing ends, the ring being within said housing and concentrically disposed around the shaft, the ring comprising an axially extending main portion and a radially extending flange, the flange being at the end of the ring closer to the fluid being pumped;

(d) retaining means for securely holding the flange against the housing so that in the absence of a radially inwardly directed force the main portion of the sealing ring is radially spaced apart from the shaft so that fluid can pass axially along the shaft and act to force the sealing ring radially away from the shaft;

(e) a seal container secured to the housing and axially movable relative to the housing, the shaft, and the sealing ring; and

(f) means for controllably displacing the seal container axially relative to the shaft for selectively (i) pressing the main portion of the sealing ring radially inwardly against the shaft for forming a static seal around the shaft or (ii) allowing the sealing ring to be spaced apart from the shaft, the method comprising the steps of stopping rotation of the shaft, displacing the container axially relative to the shaft to press the main portion of the sealing ring radially inwardly against the shaft, thereby forming a static seal around the shaft, and removing the packing.

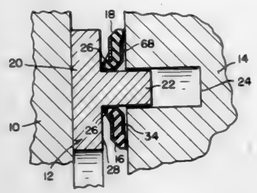
4,289,318

HYDRAULIC MOTOR BALANCING RING SEAL

Douglas A. Cather, Jr., and Martin E. Benjamin, both of Gastonia, N.C., assignors to Gartock Inc., Longview, Tex.

Filed Mar. 24, 1980, Ser. No. 133,539
Int. Cl.³ F16J 15/32, 15/34
U.S. Cl. 277—12 **48 Claims**

1. An annular elastomeric sealing ring comprising a unitary elastomeric body including a flat, radially extending central ring, a pair of sealing elements projecting axially away from opposite ends of said central ring and in opposite axial directions therefrom, said sealing elements each tapering to a sealing lip in the direction axially away from said central ring, and at least one of said sealing elements and the adjacent radial end of



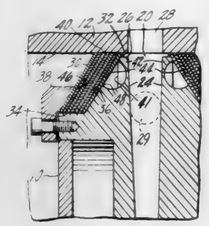
said central ring having a coextensive cylindrical surface forming one of the I.D. or the O.D. surfaces of of said sealing ring.

4,289,319

ROTARY SEAL CONSTRUCTION AND PROCESSOR

Peter Hold, Milford, Conn., and Zehev Tadmor, Teaneck, N.J., assignors to USM Corporation, Farmington, Conn.

Filed Aug. 22, 1978, Ser. No. 935,782
Int. Cl.³ B01F 7/10; F16J 15/26, 15/48
U.S. Cl. 277—59 **11 Claims**



1. In a machine for processing plastic and polymeric materials which are, or become in the course of processing, viscous liquids comprising:

A. a rotatable element comprising a rotor carrying at least one channel including opposed side walls;

B. a stationary element providing a coaxial surface cooperatively arranged with said channel to provide an enclosed processing passage;

C. means including an inlet opening to feed polymeric or plastic material to said passage;

D. means for causing relative rotation between said channel and said coaxial surface about their common axis to move said side walls in a circumferential direction from the inlet opening of said passage;

E. an outlet opening from said passage circumferentially disposed a major portion of a complete revolution from said inlet opening in the direction of rotation of said channel; and

F. a blocking member comprising an end wall and scraper portions disposed in said passage between said outlet opening and said inlet opening in the direction of rotation of said channel so that material in contact with said walls is dragged forward against said blocking member in said channel for processing and discharge;

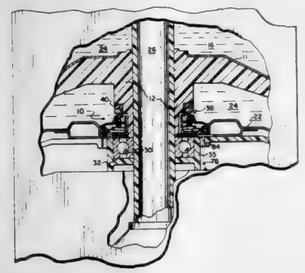
the improvement which comprises a seal structure arranged on at least one side of said channel, said structure including a plurality of annular conical members of thin, stiffly resilient sheet material of narrow width disposed between said channel and said coaxial surface, the sheet material of said annular member extending at an angle to said coaxial surface whereby each 360° of annular member is substantially a truncated cone and the cones of the plurality of annular members are in nested relation with inner edge portions of said annular members adjacent and in position to resist flow from said channel and outer edge portions adjacent to said coaxial surface member, and means for fixing said seal structures to said rotor and for acting on the annular member of each structure farthest from said channel to hold inner edge portions of said annular member farthest from said channel against being displaced by pressure from said channel and to maintain said annular members in a sealing relation with said coaxial surface and said channel with said outer edge portions adjacent said coaxial surface being free and displaceable by pressure.

4,289,320

FACE SEAL FOR WASHER TUB AND WATER PUMP

Ronald L. Altnau, Ripon, Wis., assignor to Speed Queen Company, Ripon, Wis.

Filed Jan. 22, 1980, Ser. No. 114,271
Int. Cl.³ F16J 15/34
U.S. Cl. 277—67 **1 Claim**



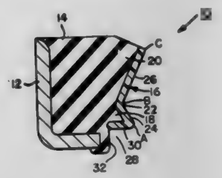
1. A face seal assembly for use with liquid retaining apparatus including a stationary lower component and a rotatable upper component rotatably mounted above said lower component, a central drive shaft extending through said lower component, bearing means surrounding said drive shaft between said shaft and said lower component for accommodating rotation of the shaft relative to the stationary lower component, a support engaging said upper component with said shaft for rotation of the upper component therewith relative to said lower component, a first annular seal, a collar surrounding said drive shaft and receiving and mounting said seal on said support in surrounding relation to said drive shaft and upwardly spaced from said bearing mean, said collar including an annular ring defining upper and lower surfaces and inner and outer annular edges, a rim integral with and depending from said inner edge peripherally thereabout, said first seal seating against the lower surface of said annular ring and against said rim, said first seal presenting a downwardly directed seal surface, said rim depending below said seal surface and terminating in an annular lower edge, a second annular seal positioned below said first seal, said second seal including an upwardly directed seal surface engaged against the seal surface of said first seal in outwardly spaced relation to said rim and in spaced relation above the lower edge of said rim, a retainer member comprising an annular base overlying said bearing means and underlying said second seal in spaced relation therebelow, said base defining an inner annular edge and an outer annular edge, a peripheral wall integral with the inner edge of the base and projecting vertically therefrom radially inward of the depending rim, said peripheral wall terminating in an upper annular edge in spaced relation above the lower edge of the rim, said annular base extending radially outward of said bearing means, and liquid draining apertures defined through said base outward of said bearing means, a resilient bellows including a lower annular lip engaged with the outer annular edge of the annular base, said bellows including an upper annular collar portion defining an annular seat receiving said second seal, and a spring positioned within said bellows and engaged between said annular base and said second seal seating collar portion for resiliently biasing said second seal against said first seal.

4,289,321

PRESSURE SHAFT SEAL AND METHOD

Douglas A. Cather, Jr., Gastonia, N.C., assignor to Garlock Inc, Longview, Tex.

Filed Feb. 27, 1979, Ser. No. 15,597
Int. Cl.³ F16J 15/32
U.S. Cl. 277—152 **14 Claims**



1. A bearing seal for rotary drill bits for preventing excess pressure buildup in a bearing by purging bearing lubricant when its pressure rises above a particular value and for excluding drilling mud from the bearing comprising:

(a) an annular metal shell;

(b) an annular elastomeric body bonded to said shell;

(c) a polytetrafluorethylene liner bonded to an I.D. surface of said elastomeric body;

(d) said seal including a first, axially inner, reversible, lubricant sealing lip and a second axially outer mud sealing lip, both of said lips being located axially within the axial ends of said shell and both of said lips being backed up by a continuous quantity of said elastomeric body located between said lips and said shell, both of said sealing lips being V-shaped in partial cross-section, said first sealing lip having a sufficient radial length with respect to its axial width at its base such that it can move, relative to the elastomeric material located between it and said shell, and reverse its direction from extending axially inwardly to extending axially outwardly; said first lip having an axial length shorter than that of said second lip;

(e) said lips having first and second loading zones respectively, said first zone being adapted to control the pressure at which said seal can open up and purge lubricant to prevent lubricant pressure build up and said second zone being adapted to exclude drilling mud and to act as a restriction to control lubricant loss after purging has begun;

(f) said liner providing first and second sealing surfaces for said first and second lips, respectively, and said liner in its as-molded configuration having an inverted V-shape in partial cross-section, with said first sealing surface being a first leg of said V and said second sealing surface being a second leg of said V, said first and second lips meeting at an annular hinge line of said liner, said first sealing surface being straight and tapering from said hinge line radially and axially inwardly and said second sealing surface being straight and tapering radially inwardly and axially outwardly, said second lip extending radially inwardly from said hinge line about twice as far as said first lip; and

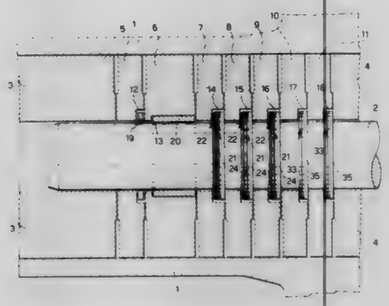
(g) said elastomeric body having an annular recess axially inwardly of said first lip and defined by first and second recess surfaces, said first recess surface extending radially outwardly from said first lip and said second recess surface extending axially inwardly from the radially outer end of said first recess surface, whereby lubricant pressure in said recess can cause said first lip to reverse its direction and move from an axially inwardly extending direction to an axially outwardly extending direction providing an obtuse angle between said first and second recess surfaces and allowing lubricant to be purged from said seal.

4,289,322

GLAND PACK FOR RECIPROCATING MACHINES OPERATING AT HIGH PRESSURE

Alessandro Traversari, and Enzo Giacomelli, both of Florence, Italy, assignors to Nuovo Pignone S.p.A., Florence, Italy

Filed Apr. 25, 1980, Ser. No. 144,174
Claims priority, application Italy, Sep. 25, 1979, 26005 A/79
Int. Cl.³ F16J *15/28, 15/48*
U.S. Cl. 277—188 A **13 Claims**



1. A gland pack for reciprocating machines operating at high pressure, constituted by a number of cylindrical gland boxes disposed adjoining each other concentric to the machine plunger and extending axially along said plunger from the head end to the crank mechanism end of said machine, said gland boxes each comprising a flat sided cavity concentric to the plunger and open towards it, in the first cavity or cavities at the head end there being housed a pressure breaking ring or rings, whereas in each of the subsequent cavities there is housed a seal assembly arranged to press a seal element against the plunger by the effect of the pressure difference between its exterior and interior, wherein said seal assembly is constituted by three flat sided rings adjoining each other along their adjacent flat sides, of which the central ring, enclosed coaxially between a first and a second metal anti-extrusion ring and constituting the seal element, is constructed of self-lubricating plastics material and is composed of a number of pseudotangentially cut segments held together by a circumferential spring, and said first metal anti-extrusion ring situated at the head end of the cavity comprises radial grooves in its flat surface on the head side, the said two first and second metal anti-extrusion rings being sized such that there is a small radial gap between them and the plunger traversing their bore, and such as to deform elastically by reducing their diameter when subjected to a differential pressure between their exterior and interior, and thus approach the surface of the plunger but without ever pressing against it.

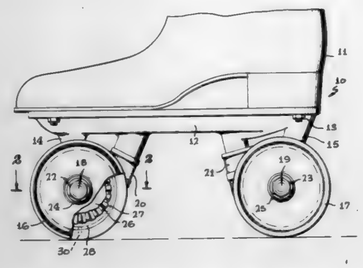
4,289,323

WHEEL IMPROVEMENT FOR ROLLER SKATES

Marvin Roberts, 7645 Densmore Ave., Van Nuys, Calif. 91406

Filed Aug. 10, 1979, Ser. No. 65,536
Int. Cl.³ A63C *17/14*
U.S. Cl. 280—11.21 **4 Claims**

1. In a roller skate having a support plate and downwardly depending trucks holding a front and a rear axle rollably mounting wheels on the opposite ends thereof, the combination comprising:
- a rotor fixed to the inside surface of a wheel;
- a stator carried on said truck having a surface in close proximity to said rotor;
- a cage having a plurality of bearings thereon rollably engagable with said rotor and said stator surface;
- means cooperatively disposed on said rotor and said stator for selectively inhibiting rotation of said wheel in a given direction;
- adjusting means operably carried on said truck for urging said stator surface into engagement with said bearings;



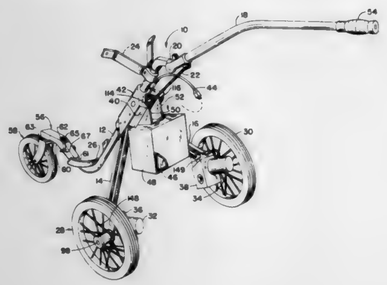
- said adjusting means including a thrust plate having a manually operated arm thereon for moving said stator towards and away from said caged bearings.

4,289,324

FOLDING TRICYCLE WHEEL FOR FOLDING GOLF CART

Edwin A. Nemeth, 1620 Beechwood Dr., Martinez, Calif. 94553, assignor to Edwin A. Nemeth, Pittsburg, Calif.

Division of Ser. No. 911,640, Jun. 1, 1978, Pat. No. 4,252,870, which is a division of Ser. No. 717,780, Aug. 25, 1976, Pat. No. 4,106,583. This application Oct. 4, 1979, Ser. No. 81,977
Int. Cl.³ B62B *3/02*
U.S. Cl. 280—38 **4 Claims**



1. A golf club carrying cart comprising:
- a collapsible frame for supporting a golf bag in an inclined position, first and second spaced apart wheels which are parallel in all positions, the frame including a main column defining an upwardly arching segment adjacent the lower end of the golf bag supporting portion of said frame; and
- a pivotal third wheel means including a support arm, a caster wheel, and means for pivotally attaching said third wheel means to said support arm, wherein said support arm is telescopically attachable to said upwardly arching segment and flexible in a first down position forming in combination with said first and second spaced wheels a tricycle support, said third wheel means being further fixable in a second up position, such that in said up position said caster wheel is conformable to said upwardly arching main column segment.

4,289,325

SKATEBOARD

Robert J. Whitacre, 13231 42 NE., Seattle, Wash. 98125

Continuation of Ser. No. 830,392, Sep. 6, 1977, abandoned, which is a continuation of Ser. No. 953,858, Oct. 23, 1978, abandoned. This application Dec. 18, 1979, Ser. No. 104,891
Int. Cl.³ A63C *17/02*
U.S. Cl. 280—87.04 A **3 Claims**



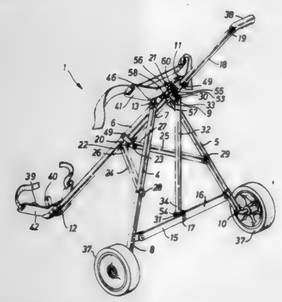
1. A skateboard comprising a central platform section; a skate wheel unit carried by and disposed under each end portion of said central section; a forward extension carried by and extending forwardly of said central section; connecting means for adjustably connecting with the forward extension and at selected portions of the length of such extension, said adjusting means comprising a plurality of longitudinally spaced openings in the forward extension; and a support rope connected with said connecting means, said support rope being connectable with a selected opening of said spaced openings in said forward extension to provide an angular relation of about 60° of the support rope to the central section, when the rope is gripped by a rider standing on the central section and with the rider's rope-engaging arm alined with the support rope, thereby providing enhancement of rider control of the skateboard and maintaining a certain angular relation of rope to rider with riders of varying heights.

4,289,326

COLLAPSIBLE TRIPODS

Peter C. Hawkes, Rugby, England, assignor to Andrews MacLaren Limited, Long Buckby, England

Filed Aug. 27, 1979, Ser. No. 70,118
Claims priority, application United Kingdom, Aug. 25, 1978, 34695/78
Int. Cl.³ B62D *3/04*
U.S. Cl. 280—646 **8 Claims**



1. A collapsible tripod (**1**, **2** or **3**) comprising:
- first, second and third elongate legs (**4**, **5** and **6**) which each have a head end and a foot end (**7** and **8**, **9** and **10**, and **11** and **12**);
- first and second upper pivot members (**13** and **14**) respectively supported on the third leg (**6**), adjacent the head end (**11**) of the third leg (**6**), and respectively engaging the head ends (**7** and **9**) of the first and second legs (**4** and **5**) for pivotal movement of the first and second legs (**4** and **5**) between a first configuration, corresponding to an extended condition of the tripod (**1**, **2** or **3**), in which the first, second and third legs (**4**, **5** and **6**) mutually diverge from their head ends (**7**, **9** and **11**) and their foot ends (**8**, **10** and **12**) are disposed at the vertices of an imaginary triangle, and a second configuration, corresponding to a collapsed condition of the tripod (**1**, **2** or **3**), in which the first and second legs (**4** and **5**) lie alongside the third leg (**6**);
- first and second bracing links (**15** and **16**) respectively pivoted to the first and second legs (**4** and **5**); and
- a first single pivot member (**17**) interconnecting the bracing links (**15** and **16**);
- characterised in that:
- an elongate actuating member (**18**), having a head end (**19**) and a foot end (**20**), is connected to the third leg (**6**) for movement relative to the third leg (**6**) between first and second positions in which the foot end (**20**) of the actuating member (**18**) is closer to and further from the head end (**11**) of the third leg (**6**);
- locking means (**21**) are provided for releasably securing the actuating member (**18**) in its first position, relative to the third leg (**6**);
- first and second lower pivot members (**22** and **23**) are supported on the actuating member (**18**), adjacent the foot end (**20**) of the actuating member (**18**);
- first and second tie members (**24** and **25**) have head ends (**26** and **27**) respectively engaging the first and second lower pivot members (**22** and **23**) and have foot ends (**28** and **29**) respectively pivoted to the first and second legs (**4** and **5**);
- a second single pivot member (**30**) is attached to the actuating member (**18**) and has a pivotal axis extending transversely of the actuating member (**18**);
- a third single pivot member (**31**) is supported by the first single pivot member (**17**); and
- a control link (**32**) has head and foot ends (**33** and **34**) respectively connected to the second and third single pivot members (**30** and **31**) so as to move the first single pivot member (**17**) between first and second positions respectively closer to and further from the head ends (**7** and **9**) of the first and second legs (**4** and **5**) during pivotal movement of the first and second legs (**4** and **5**) between their first and second configurations and during pivotal movement of the foot end (**34**) of the control link (**32**) about an axis extending perpendicular to the first single pivot member (**17**) and parallel to the pivotal axis of the second single pivot member (**30**), and so as to hold the first single pivot member (**17**) in its first position when the first and second legs (**4** and **5**) are in their first configuration and the tripod (**1**, **2** or **3**) is in its extended condition, to thereby brace the first and second legs (**4** and **5**) relative to each other.

4,289,327

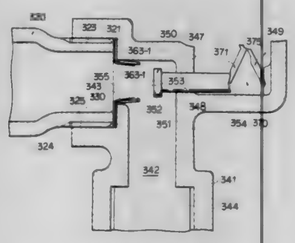
AIR BAG DEVICE FOR CARS

Motohiro Okada, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 854,337, Nov. 23, 1977, Pat. No. 4,203,616. This application Jul. 6, 1979, Ser. No. 55,458
Claims priority, application Japan, Feb. 8, 1977, 52/12882
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—737 **6 Claims**

1. An air bag device, comprising:
- a container for being charged with a gas under pressure;
- said gas container including an opening portion communicating with an air bag;
- a pressing lid;

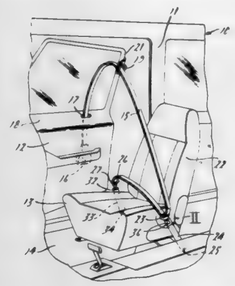
a frangible lid disposed between said pressing lid and said gas container;
said opening portion of said gas container being tightly sealed by said frangible lid;
said pressing lid being provided in an inlet portion of a passage connecting said opening portion of said container with an inlet of the air bag;
said pressing lid including a body portion having an outside diameter substantially smaller than the diameter of said inlet portion of said passage, such that the outer periphery of said body portion is substantially spaced apart inwardly from said inlet portion so as to define a definite annular space between said body portion of said pressing lid and said inlet portion of said passage;
said frangible lid being disposed so as to face said inlet portion of said passage and being supported on only a central part of one surface thereof by said body portion of said pressing lid;



said frangible lid having an outer peripheral part facing said annular space around said body portion of said pressing lid;
said body portion of said pressing lid being provided with a pressing surface contacting only said central part of said frangible lid which is sufficiently large to prevent fracture of said frangible lid by said gas under pressure only when the pressure of said gas is within a normal range;
said outer peripheral part of said frangible lid being partially fracturable when the pressure of said gas becomes abnormally high so as to permit gradual discharge of the high pressure gas through said annular space, with said central part of said frangible lid remaining supported by said body portion of said pressing lid;
means for applying pressure to said pressing lid; and
impact detecting means for releasing said link mechanism.

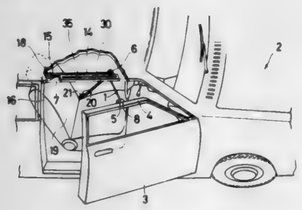
4,289,328
SEAT BELT SYSTEM
John R. Repp, Dearborn, and Donald H. Smith, Trenton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 4, 1978, Ser. No. 966,236
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—803 **2 Claims**

1. A vehicle seat belt system having an upper passive and a lower active seat occupant restraint means, comprising:
a belt retractor mechanism mounted within a vehicle door adjacent one side of the vehicle seat,
a continuous seat belt extending from the retractor mechanism through a first guide ring mounted above the retractor mechanism on a frame member of the door, and further, in door closed position, extending diagonally across the seat occupant's body and freely slidable through a second guide ring anchored to a vehicle floor mounted attachment means on the other side of the seat,
the terminal end of the seat belt carrying a buckle tongue constructed and arranged to coact with the second guide ring to prevent disengagement of the terminal end of the seat belt from the second guide ring and thereby maintaining the seat belt in its diagonally extending occupant restraint position under all operating conditions,
the seat belt diagonally extending portion automatically fitting itself across the upper body portion of the seat occupant upon the door being closed thereby providing an upper passive restraint means,
and buckle means attached to the vehicle on the one side of



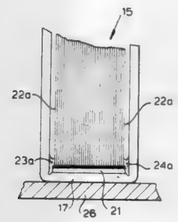
the seat to which the buckle tongue may be manually coupled upon the seat occupant further extending the seat belt across his lap thereby providing in addition to the upper passive restraint means a lower active restraint means.

4,289,329
SEAT BELT SYSTEM
Kelichiro Yabuta, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed May 24, 1979, Ser. No. 42,371
Claims priority, application Japan, May 27, 1978, 53-63748
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **4 Claims**



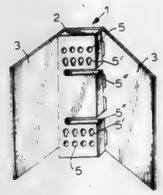
1. In an automobile including a seat, a forwardly hinged door including an upper sash portion and a roof side adjacent the upper sash portion
a seat belt system comprising:
a control arm mounted to the upper sash portion of the door for swinging movement and having a portion slidably mounted to slide along the roof side longitudinally of the automobile in response to movement of the door about its hinge axis;
a spring arranged to urge said control arm to swing rearward;
a retractor mounted within the automobile;
said spring being coupled with said control arm to effect said rearward swinging of said control arm, said spring being separate from said retractor and disposed spacedly therefrom, said spring being mounted at said upper sash portion of the door and said retractor being mounted other than at said upper sash portion;
a safety seat belt extending from said retractor and having a portion slidably carried by said control arm such that when the door is closed, said control arm extends along the roof side to allow said retractor to fasten said seat belt around the seat and as the door is opened, the opening movement of the door about its hinge causing said control arm to swing, thus extending said seat belt forwardly of the seat.

4,289,330
BOOKBINDING SYSTEM
Jerome J. Wiermanski, Wayne, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed Oct. 10, 1979, Ser. No. 83,232
Int. Cl.³ B42D *1/04*
U.S. Cl. 281—21 R **8 Claims**



1. A book cover structure of the type having a spine with front and back covers connected to the spine and separated from the spine by scribes to enable the front and back covers to flex relative to the spine, the improvement comprising a spine strip of hot melt adhesive being secured on an inside face area of said spine, and spacer means for holding sheets in engagement with said spine strip spaced outwardly of said scribes comprising a pair of cover strips of hot melt adhesive secured to inside surface areas of the front and back covers in spaced adjacency to the scribes with the scribes separating the hot melt adhesive strips on the covers from the strip of hot melt adhesive on the spine.

4,289,331
COMPILER-BINDER FOR PERIODICALS AND THE LIKE
Alexander E. Finger, and Fay Finger, both of 52 County Rd., Chelsea, Mass. 02150
Filed Jul. 2, 1979, Ser. No. 54,163
Int. Cl.³ B42D *1/06*; B42F *13/00, 1/00*
U.S. Cl. 281—47 **10 Claims**

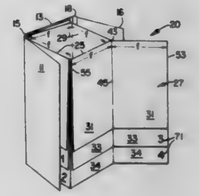


1. A compiler-binder for periodicals and the like comprising a rigid back spine and covers hinged thereto, spaced opening means formed in said rigid spine in spaced relation to the opposite ends of the spine, the opening means comprising at least a pair of holes extending in the thickness direction of the spine for receiving projections, clip means securable to the back of said periodicals and the like to be bound within the covers and having a pair of rearwardly protruding integral projections spaced for reception within the opening means, and cooperative means provided on the opening means and the projections, for locking said periodicals against movement lengthwise and in the thickness direction of the spine when the latter are inserted in the opening means, whereby the spine facilitates the binding of periodicals simulating a rigidly bound book.

4,289,332
RECORDING SHEET
Hajime Kato, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Aug. 9, 1979, Ser. No. 65,017
Claims priority, application Japan, Aug. 9, 1978, 53-96937
Int. Cl.³ B41M *5/16, 5/22*
U.S. Cl. 282—27.5 **15 Claims**

1. A recording sheet capable of forming color when brought into contact with an electron donating color former, which comprises a support having coated thereon a layer prepared from a coating composition comprising a polyvalent metal salt of an aromatic carboxylic acid, a montmorillonite clay mineral containing about 10 to 20 parts by weight of aluminum per 100 parts by weight of silicon, zinc oxide, and a binder and which contains about 30 to 60 wt% solid ingredients and has a viscosity of about 50 to 7,000 cps.

4,289,333
METHOD FOR LOCATING FEATURES ON A MAP
Ralph R. Gaetano, Bethel Park, Pa., assignor to Think, Inc., Morgantown, W. Va.
Division of Ser. No. 967,517, Dec. 7, 1978. This application Jun. 28, 1979, Ser. No. 52,859
Int. Cl.³ G09B *29/04, 29/10*
U.S. Cl. 283—35 **3 Claims**



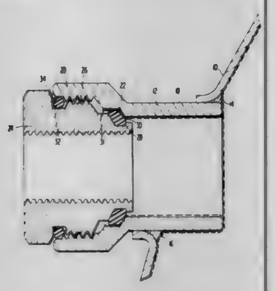
1. A sequential concentration system for locating a feature on a map, comprising:
A. a coding system which comprises:
(1) a pagination system, comprising:
(a) pages containing large areas within which are the locations of a plurality of features, including said feature to be located, and
(b) page indicators which correspond to said pages and are printed thereon,
(2) a section system, comprising:
(a) a plurality of sections into which said pages are subdivided, and
(b) overprinted section indicators within said sections, and
(3) a subsection system, comprising:
(a) a plurality of subsections into which said sections are subdivided, and
(b) overprinted subsection indicators which are printed within said subsections;
B. a directory which comprises:
(1) a feature column listing said features,
(2) a page column listing said page indicators corresponding to the locations of said features within said pages;
(3) a section column listing said section indicators corresponding to the locations of said features within said section, and
(4) a subsection column listing said subsection indicators corresponding to the locations of said features within said subsections.

4,289,334

SOCKET CONNECTION FOR AN ENAMELLED VESSEL

Harry J. Riley, Wembley, Australia, assignor to S. W. Hart & Co. Pty. Ltd., Welshpool, Australia

Filed Nov. 28, 1979, Ser. No. 98,417
Claims priority, application Japan, Sep. 6, 1979, 54/114693
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—55 **3 Claims**



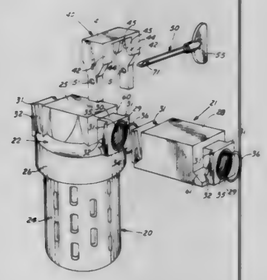
1. An internally enamelled steel vessel having a steel socket welded thereto, wherein said steel socket comprises
(a) a parallel portion adjacent said vessel;
(b) an internally threaded portion remote from said vessel; and
(c) a seat located between said parallel and threaded portions;
(d) said steel socket being internally enamelled except for said internally threaded portion thereof;
(e) a further, non-ferrous socket having an externally threaded portion having a thread matching the internal thread of said steel socket, and an external O-ring groove containing an O-ring seal, said O-ring seal being sealingly compressed against said seat in the said steel socket, said O-ring groove being located forwardly of said externally threaded portion of said non-ferrous socket so that the internal enamel of said steel socket extends outwardly of said O-ring groove and the seal formed by said O-ring seal.

4,289,335

MODULAR CLAMPING SYSTEM FOR PRESSURE FLUID COMPONENTS

Joseph M. Olbermann, Denver, Colo., assignor to Wilkerson Corporation, Englewood, Colo.

Filed Jan. 11, 1980, Ser. No. 111,350
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—91 **7 Claims**



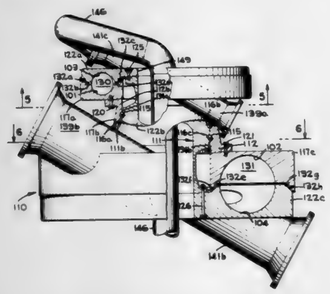
1. A clamping structure for releasably securing together two pressure fluid conducting components in sealed relationship, comprising, in combination, means on each component defining a sealing surface including a pressure fluid port therein and adapted for juxtaposed sealing engagement with a corresponding sealing surface on the other component, transversely extending flanges adjacent each of said sealing surfaces and defining on each component coplanar cam surfaces sloping away from the adjacent sealing surface, a U-shaped yoke having spaced parallel depending legs for straddling three sides of said components, means on each of said legs defining a pair of opposed sloping cam surfaces engageable with said flanges when said component sealing surfaces are positioned together for clamping said bodies together in sealed pressure fluid conducting engagement, and means for releasably securing said yoke to said components.

4,289,336

PIPE SWIVEL JOINT FOR A PLURALITY OF SEPARATE FLUIDS

Etienne Bajeux, Saligny, France, assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 26, 1979, Ser. No. 23,815
Claims priority, application France, Apr. 6, 1978, 78 10218
Int. Cl.³ F16L *39/04*
U.S. Cl. 285—136 **9 Claims**



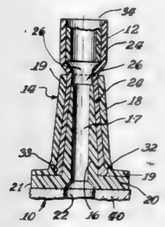
1. A swivel joint for connecting an inlet conduit with an outlet conduit, said joint comprising:
an annular inner element having a radial flange which includes an annular groove in its upper face;
an annular outer element at least partially surrounding said inner element, said outer element having a radial flange which includes an annular groove in its lower face;
an annular bearing race chamber defined by the outer surface of said inner element and the inner surface of said outer element;
bearing means mounted in said race chamber to facilitate rotational movement of said outer element relative to said inner element;
an annular fluid flow passage defined by the annular groove in the upper face of said flange of said inner element and the annular groove in the lower face of said flange of said outer element, the diameter of said flange faces defining said fluid flow passages being larger than the diameter of the inner and outer surfaces defining said bearing race chamber;
means for connecting said inlet conduit to the portion of said flow passage that is defined by the upper face of said flange of said inner element;
means for connecting said outlet conduit with the portion of said flow passage that is defined by the lower face of said flange of said outer element; and
means for sealing the fluid flow passage at the junction of said inner element and said outer element.

4,289,337

TUBING CONNECTION FOR CONTAINERS GENERALLY UTILIZING DISSIMILAR MATERIALS

Frank L. Roe, Ingleside, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 23, 1979, Ser. No. 41,838
Int. Cl.³ F16L *3/04*
U.S. Cl. 285—158 **1 Claim**



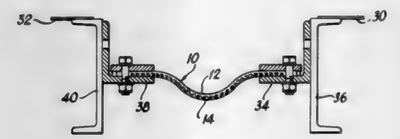
1. A connector between a flexible tube and a container, which comprises: inner and outer telescoping sleeve members, tapered along essentially their entire lengths, each of said sleeve members carrying a flange adapted for sealing about an aperture in said container, said flanges being sealed together, a flexible tubing segment, one end of said tubing segment being positioned in telescoping relation about the inner sleeve member, with said inner member occupying the bore of said flexible tube, said end of the tubing segment being also positioned within the outer tapered telescoping sleeve member, said tubing segment being firmly retained by compression between said telescoping, tapered sleeve members, the direction of tapering of said sleeve members being away from said flanges, said flanges comprising a material which is sealingly compatible with said container, said tubing segment defining a different material from the material of said sleeve members and flanges, said tubing segment also defining an opposite outer end which is telescopically connected with and sealed to a tube extension made of a material which is sealingly compatible with said tubing segment.

4,289,338

BELT TYPE EXPANSION JOINTS

Francis E. Cook, Downers Grove, Ill., assignor to Dearborn Rubber Company, Westmont, Ill.

Division of Ser. No. 922,561, Jul. 7, 1978, Pat. No. 4,250,223.
This application Jul. 7, 1980, Ser. No. 165,967
Int. Cl.³ F16L *27/10, 51/02*
U.S. Cl. 285—229 **10 Claims**



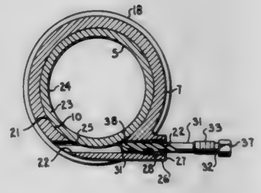
1. Apparatus for conducting hot or chemically active material comprising:
a pair of adjacent ducts having a space therebetween;
a duct connector secured to said adjacent ducts and disposed across said space between said adjacent ducts, said connector comprising a heat shield comprising a layer of metal foil secured to a layer of polyester disposed directly under said metal foil layer, said heat shield being secured to a layer of heat-stable elastomer having a heat insulating fabric embedded therein and said heat shield being vulcanized to said elastomer layer while said elastomer is in contact with said heat shield.

4,289,339

FITTING WITH TANGENTIAL LOCKING ROD FOR COUPLING PIPES

Arne H. Hansen, Doylestown, Pa., assignor to Meyertech Incorporated, Lakewood, Colo.

Filed Nov. 28, 1979, Ser. No. 98,067
Int. Cl.³ F16L *21/08*
U.S. Cl. 285—305 **9 Claims**



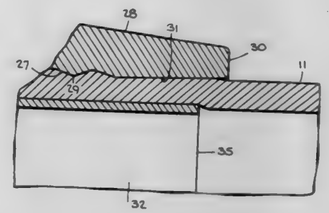
1. A pipe fitting comprising:
(a) a body having a wall defining a pipe end receiving socket with a pipe cradling interior surface;
(b) a bore extending substantially tangentially through said wall and communicating with said interior surface over less than a cross-sectional circular periphery of said bore whereupon a segment of the wall of said bore forms an intersection with said interior surface along the length of said bore; and
(c) a rotatable, cylindrical locking rod received in said bore and having a material removing, cutting tip for tangentially cutting a smooth-bored, continuous groove along said intersection in a pipe received in said socket and filling said groove to prevent removal of said pipe, said locking rod having engagement means thereon cooperating with said bore to retain said locking rod received in said bore.

4,289,340

MECHANICALLY ATTACHED END FITTING WITH INSERT FOR METAL TUBING

Irving D. Press, West Orange, and Harvey R. Nickerson, Roseland, both of N.J., assignors to Resistoflex Corporation, Roseland, N.J.

Filed Dec. 28, 1978, Ser. No. 974,068
Int. Cl.³ F16L *13/14*
U.S. Cl. 285—382.4 **9 Claims**



1. A fitting for attachment to an end of a thin walled metal tube, said fitting comprising a hard, metal body portion having a bore which can be entered for a given distance with a sliding fit from one end by the end of a metal tube, said bore having its sidewall within said given distance formed with a plurality of axially spaced circumferential grooves separated from each other and from said one end of the bore by a corresponding contiguous cylindrical land section each of finite axial length, said land sections having substantially the same inside diameter, and a hard metal tubular insert having at least a longitudinally extending portion of substantially uniform thickness throughout its length for insertion into said end of said metal

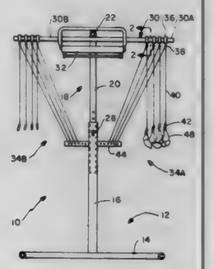
tube, said portion of said insert having a length, outside diameter and construction such that it extends axially from said end of said metal tube, when inserted in the latter and assembled to the body portion, into said metal tube with a snug fit to a point beyond that one of said grooves which is closest to said one end of the bore, and being formed of metal having sufficient malleability to permit radial expansion of at least a portion thereof.

4,289,341

APPARATUS FOR SUPPORTING MACRAME DURING FORMATION OF A PARTICULAR ARTICLE

Floyd H. Sumpter, 1766 Trudean Way, San Jose, Calif. 95132

Filed Feb. 1, 1980, Ser. No. 117,503
Int. Cl.³ D03J *3/00*
U.S. Cl. 289—16.5 **8 Claims**



1. An apparatus for supporting macrame during formation of a particular article from the supported macrame, said apparatus comprising:
(a) means including an upwardly extending support post mounted for vertical movement between different adjustably fixed positions;
(b) a horizontally extending cross-bar connected with and extending on opposite sides of said support post for vertical movement therewith, whereby to adjust the height of said cross-bar from the floor; and
(c) first and second groups of hook arrangements respectively connected with first and secod sections of said cross-bar on opposite sides of said support post and including associated hooks for engaging said macrame and suspending the latter from said cross-bar sections, each of said hook arrangements in each of said groups also including first means for individually moving its associated hook horizontally along its connected cross-bar section, whereby the points of suspension of a supported macrame can be adjusted horizontally relative to said cross-bar and second means independent of said first means for individually moving its associated hook vertically, whereby the points of suspension of a supported macrame can be adjusted vertically relative to said cross-bar, independent of their horizontal positions.

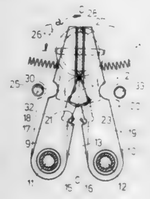
4,289,342

MOTOR VEHICLE DOOR LOCK

Wulf W. Bemm, Cologne, and Günter Weber, Wuppertal, both of Fed. Rep. of Germany, assignors to Neiman S.A., Courbevoie, France

Filed Oct. 16, 1979, Ser. No. 85,360
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846550
Int. Cl.³ E05C *3/12*
U.S. Cl. 292—49 **36 Claims**

1. A motor vehicle door lock comprising:
(a) a catch for attachment to the vehicle door frame,
(b) a pivoted locking lever for mounting on the door of said vehicle, said locking lever being movable between an engagement position and a disengaged position,
(c) two teeth on said locking lever provided one behind the other in the direction of relative movement between said catch and locking lever, said teeth being shaped to cooperate with said catch,
(d) a spring urging said locking lever into a locking position,
(e) a shaft which when the lock is mounted on the vehicle passes through the vehicle door wall,
(f) door lock operating means,
(g) transmission levers between said door lock operating means and said shaft,



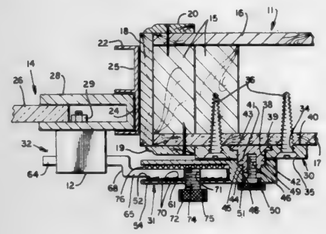
(h) a driving member secured to said shaft, which upon actuation effects a pivotal movement of said locking lever into an unlocked position against the action of the spring, whereby relative movement between the catch and the locking lever to the disengaged position can take place, and
(i) a spring which urges the driving member into a position in which the driving member is in a rest position in which the locking lever is not operated.

4,289,343

LOCK FOR SLIDABLE DOOR

Connie H. Dukes, 4122 Herschell Rd., Apt. A-6, College Park, Ga. 30337

Filed Sep. 20, 1979, Ser. No. 77,482
Int. Cl.³ E05C *19/00*
U.S. Cl. 292—117 **7 Claims**



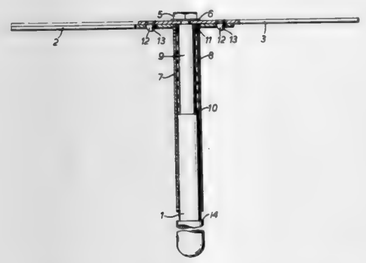
1. A lock assembly for fastening a slidable door in a stationary position with respect to its door frame comprising a mounting plate for rigid attachment to the frame of a slidable door, an elongated socket connector pivotally mounted to said mounting plate for extending from said mounting plate toward the handle of the slidable door, said socket connector including an opening extending from one end of said socket connector inwardly into said socket connector, a locking element comprising a door handle engagement portion and a tongue extending therefrom, said door handle engagement portion comprising means for connection to the handle of a door, said tongue being sized and shaped to be received in the opening of said socket connector, and means for releasably connecting together said socket connector and said tongue whereby the door handle is fastened in a fixed relationship with respect to the door frame.

4,289,344

RAKES

Peter J. D. Mitchell, 60 Betham Rd., Greenford, Middlesex, England

Filed Jul. 6, 1979, Ser. No. 55,499
Claims priority, application United Kingdom, Dec. 6, 1978, 47377/78
Int. Cl.³ A01D *7/06*
U.S. Cl. 294—2 **10 Claims**



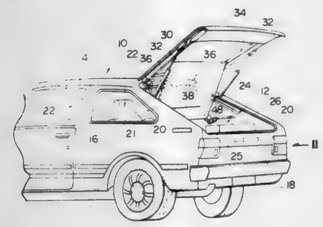
1. A hand held rake comprising a shaft handle with a head mounted at one end thereof, the head being formed by two head portions which are each provided with tines and which in a working configuration of the head extend in opposite directions substantially perpendicular to the shaft handle, said head portions being mounted on the shaft handle such that they can pivot relative to each other about an axis parallel to the handle to move between said working configuration and a stowage configuration in which the head portions are in overlying relationship with their tines facing in opposite directions, one said head portion being fixedly mounted on the shaft handle and the other said head portion being fast with a sleeve through which the shaft handle extends whereby said axis of pivoting is substantially coincident with the longitudinal axis of the handle.

4,289,345

LUGGAGE COMPARTMENT COVER APPARATUS FOR AN AUTOMOTIVE VEHICLE

Masshiro Tamamushi, Tokyo, and Kazuo Katakura, Higashikurume, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 4, 1980, Ser. No. 109,643
Claims priority, application Japan, Jan. 16, 1979, 54-4289
Int. Cl.³ B60R *7/04*
U.S. Cl. 296—37.16 **8 Claims**



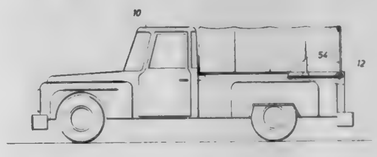
1. A luggage compartment cover apparatus for closing a luggage compartment of an automotive vehicle which has a rear opening and rear door, both side edges being gradually narrowed in the upward and frontward direction, comprising:
a luggage compartment cover having connecting means pivotably connecting said luggage compartment cover to the vehicle body at the front end thereof, said cover being expandable in the lateral direction and substantially rigid in the longitudinal direction;
a pair of sliders mounted to the rear end of said luggage compartment cover; and
a pair of guide members mounted to respective sides of the automotive vehicle rear door interior so that the lateral spacing between said guide members is narrowed in the upward and frontward direction along the side edge of the door, each of said guide members slidably receiving respective said sliders to allow same to move therealong between a first position in which said luggage compartment cover is expanded to close said luggage compartment, and a second position in which said luggage compartment cover is contracted so as not to interfere with the door opening.

4,289,346

COLLAPSIBLE PROTECTIVE COVER MECHANISM

Norman J. Bourgeois, P.O. Box 1317, Orange, Tex. 77630

Filed Dec. 18, 1978, Ser. No. 970,521
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—105 **16 Claims**



1. A collapsible and extendable telescoping protective cover mechanism for selectively covering and protecting the bed of a vehicle, said protective cover mechanism comprising:
a pair of elongated guide track elements being disposed in spaced generally parallel relation on either side of said area to be protected, each of said guide track elements defining a plurality of guide tracks;
a plurality of cover segments including generally upright and generally parallel side portions interconnected by a top portion, the lower portions of said side portions being received in movable guided relation by said guide track means, one of said cover segments adapted to be releasably secured in immovable relation with said vehicle bed and the other cover segments being movably received by said guide track means and being receivable in telescoping relation with said one cover segment, all of said cover segments being removable from said guide track means as a telescoped cover unit, exposing the entire vehicle bed; and
power actuator means being positioned adjacent each of said guide track means and being interconnected with each side of at least one of said rigid elements, said power actuator means being operative to impart telescoping movement to the side portions of said cover segments to position said cover segments in telescoped position where a majority of said area is uncovered and an extended position where substantially all of said area is covered.

4,289,347

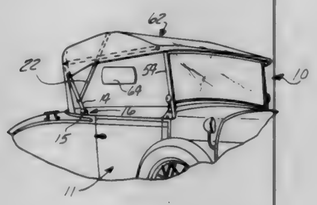
VEHICLE FOLDING TOP

Robert W. Holzwarth, Portage, Mich., assignor to The Model A and Model T Car Reproduction Corporation, Detroit, Mich.

Filed Sep. 4, 1979, Ser. No. 71,926
Int. Cl.³ B60J *7/12*
U.S. Cl. 296—107 **3 Claims**

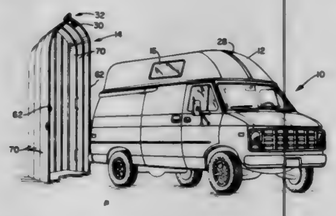
1. In a folding vehicular top assembly for deployment over a passenger compartment and wherein a flexible cover is supported on a frame comprising:
three pivotally interconnected bows, each having a cover-

contacting curved joining portion integral with a pair of parallel legs having free ends, said bows including:
a back bow having its free ends secured to the vehicle and projecting upwardly therefrom;
a center bow having its free ends pivoted to the back bow and projecting upwardly and forwardly therefrom;
a front bow having its legs substantially horizontal and broken into two substantially equal lengths hinged together at a pivot;
said center bow having a pivot located on each leg thereof above the front bow legs;



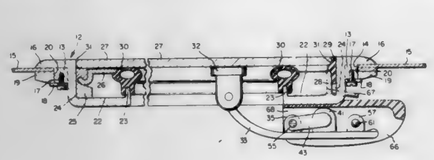
a pair of opposed short rearwardly extending legs each pivoted at its forward end to said center bow pivot and at its rear end to the adjacent rear one of the front bow legs;
a second pair of opposed short forwardly extending legs, each pivoted at its rearward end to said center bow pivot and at its forward end to the adjacent forward one of said front bow legs;
and means pivotally interconnecting the rear extremities of each of said front bow rear legs to the back bow above the pivot connection of the center bow to said back bow; and
means for releasably securing the front bow to the vehicular body.

4,289,348
VAN TOP CONVERSION AND BOAT COMBINATION
William C. Greene, 16005 114th Ave., SE., Renton, Wash. 98055
Filed Sep. 18, 1979, Ser. No. 76,667
Int. Cl.³ B60D *3/10*
U.S. Cl. 296—157 **6 Claims**



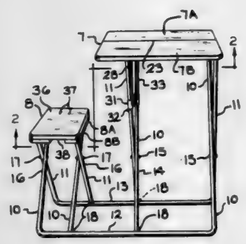
1. A vehicle top conversion and boat combination comprising: a top adapted to be permanently installed on a vehicle in a closed, sealed relationship thereto; a boat arranged to be inverted and fitted onto said top in symmetrical relationship therewith; and means for facilitating the loading and unloading of said boat onto and from said top, said boat including a bottom, gunnels, a transom and a bow; said facilitating means comprising means defining a longitudinal, exterior groove along the centerline of said top, a handle and roller assembly pivotally mounted in said bow of said boat and pivotally movable between a first position, latched to a portion of said bow and a second position, latched adjacent said top, said assembly having rollers arranged to ride in said groove when said assembly is in said first position, whereby said boat may be unloaded from said top by grasping said transom and pulling said boat away from said top with said rollers riding in said groove, first latch yoke means mounted at the bow of said boat for releasable engagement with said handle and roller assembly and for retaining said handle and roller assembly in said first position, and second latch yoke means mounted adjacent said top for releasable engagement with said handle and roller assembly and for securing said boat in said second position.

4,289,349
SUNROOF
Ioannis Symeonidis, 375 Virginia Ave., Jersey City, N.J. 07304
Filed Jul. 9, 1979, Ser. No. 55,814
Int. Cl.³ B60J *7/00*
U.S. Cl. 296—213 **6 Claims**



1. A sunroof for a car comprising a frame, said frame including an open upright channel inside said frame, said channel defined by the wall of said frame and a lip spaced away from the wall of the frame, a first gasket means around the wall of said frame, a second gasket means around the lip, a glass top, said glass top adapted to be hingably mounted within said frame and in contact with said first and second gasket means when in closed position, said glass top further adapted to be substantially in contact with at least said first gasket means along the side of the frame juxtaposed to said hinge whereby air is substantially prevented from passing between said glass top and said first gasket at said side of said frame, and a drain in said frame, said drain from the bottom of said channel through said frame, whereby rain may be carried from said channel when said glass top is in open position.

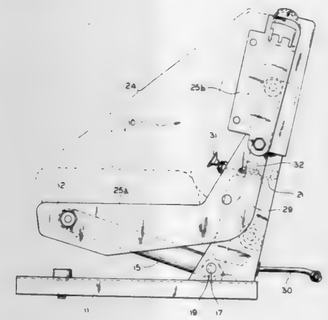
4,289,350
COMBINED FOLDING TABLE AND SEAT
Robert J. Thomas, 3451 Academy, Dearborn, Mich. 48124, and Richard J. Smith, 27005 Michigan Ave., Inkster, Mich. 48141
Filed Nov. 1, 1979, Ser. No. 90,304
Int. Cl.³ A47B *39/06, 3/02*
U.S. Cl. 297—172 **4 Claims**



1. A folding table and seat combination comprising two elongated tubular members each bent to form in the same plane a base rail, two pairs of parallel legs unequal in length, and a support section between each pair of parallel legs, each such pair of parallel legs having one leg the lower end of which is permanently attached to the base rail, pivotal means connecting together the parallel legs on the two elongated tubular members so that the support sections thereon are disposed opposite each other, a table having two hinged sections pivotally attached to the two oppositely disposed support sections between the two longer pairs of parallel legs, and a seat having two hinged sections pivotally attached to the two oppositely

disposed support sections between the two shorter pairs of parallel legs.

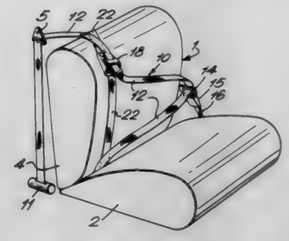
4,289,351
LOW PROFILE TRUCK SEAT
Robert J. Wahls, Spring Grove, Ill., assignor to The Freedman Seating Company, Northbrook, Ill.
Filed Oct. 1, 1979, Ser. No. 80,281
Int. Cl.³ B60N *1/06, 1/08*
U.S. Cl. 297—307 **9 Claims**



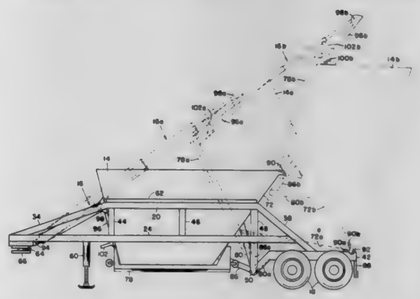
1. A suspension system for a vehicle seat of the type mounted to the floor of a vehicle, said suspension system cushioning said vehicle seat against shocks and isolating said seat from vibration, said suspension system comprising:
a horizontally extending base plate assembly attached to said floor,
said base plate assembly having front and rear edges;
an upwardly extending back plate,
said back plate integral with said base plate assembly proximate said rear edge of said base plate assembly;
a seat,
said seat including parallel spaced-apart side frame members defining a generally horizontally extending seating surface, and a seat back extending generally upwardly therefrom,
said seat further including means to pivotally link said seat to said base plate assembly,
said link means including at least one link arm extending from said base plate assembly to said seat;
means to cushion said seat from shocks,
said cushioning means including air suspension means to resiliently suspend said seat above said base plate assembly,
said air suspension means having a first end attached to said base plate assembly and a second end attached to said seat,
said air suspension means positioned rearward of said seating surface to situate said seat proximate said base plate assembly; and
said base plate assembly including means to isolate said seat from vibrations and shock.

4,289,352
SHOULDER HEIGHT ADJUSTER FOR SEAT BELT SYSTEMS
Roger A. Ashworth, Thursby, England, assignor to Kangol Magnet Limited, Carlisle, England
Filed Feb. 22, 1979, Ser. No. 14,028
Claims priority, application United Kingdom, May 26, 1978, 23047/78
Int. Cl.³ A62B *35/00;* **A47C** *31/00*
U.S. Cl. 297—473 **15 Claims**

1. A safety belt system for restraining an occupant in a vehicle seat having a back portion, the system comprising restraining belt means, said belt means extending in use diagonally across the front of the occupant from an upper first position above the occupant's shoulder at one side of the seat to a second lower position at the other side of the seat, adjustment means including a flexible strap carried by said seat back portion, and connector means slidable along and about said flexible strap and connectible with said belt means at a position thereon between said first position and said shoulder, and means independent of said strap for anchoring both ends of said belt means, whereby said adjustment means serves only to position an intermediate portion of said belt means.



4,289,353
COMBINATION BELLY DUMP/END DUMP VEHICLE
Jackie A. Merritt, P.O. Box 443, Rocksprings, Tex. 78880
Filed May 7, 1979, Ser. No. 36,313
Int. Cl.³ B60P *1/16*
U.S. Cl. 298—17.5 **6 Claims**

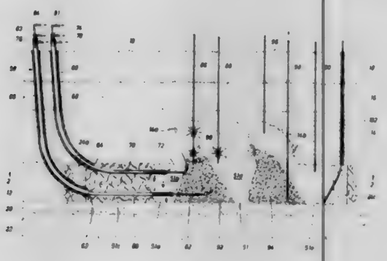


1. A combination belly dump/end dump vehicle for hauling material comprising:
a frame mounted upon wheels, said frame containing a first pivot support and a second pivot support, wherein said first pivot support is at least level with or lower than said second pivot support;
a hopper for containing said material, said hopper having gate means located upon a bottom thereof for dumping from a bottom side everything from said hopper and at least one telescopic hydraulic ram for raising a front end of said hopper, said telescopic hydraulic ram being attached to said hopper by hopper lifting means, a lower end of said hopper lifting means being rotatably attached to a front end of said hopper and an upper end of said hopper lifting means being rotatably attached to an upper end of said telescopic hydraulic ram,
said hopper being located on said frame such that upon raising a front end of said hopper said material dumps out of a rear end of said hopper and over a rear of said frame, said hopper additionally comprising a first pivot means and a second pivot means, wherein said first and second pivot means alternately engage said first and second pivot supports of said frame and at least one of said pivot means engages at least one pivot support at all times during the dumping process.

4,289,354
BOREHOLE MINING OF SOLID MINERAL RESOURCES

Bohdan M. Zakiewicz, Houston, Tex., assignor to Edwin G. Higgins, Jr., Houston, Tex.

Filed Feb. 23, 1979, Ser. No. 14,703
Int. Cl.³ E21C *43/00*
U.S. Cl. 299—4 **19 Claims**



1. A method of mining a solid substance in an underground deposit in one of a plurality of earth strata comprising the steps of:

creating void area in said one earth stratum by emplacing a plurality of explosive charges adjacent one another in said one earth stratum in a plurality of laterally spaced apart loci so as to generally define an area within said deposit to be enclosed, and detonating said charges to create said void areas, said void areas so formed being substantially continuous with one another;

introducing plugging media into said void areas to form a relatively impervious barrier enclosing said area of said deposit and isolating it from the remainder of said one earth stratum;

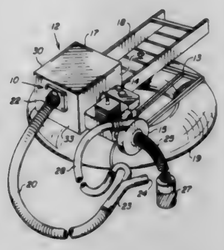
converting said solid substance within said enclosed area into flowable form by injecting conversion media into said enclosed area;

and withdrawing said converted substance from said area.

4,289,355
ATTACHMENT FLANGE FOR FLEXIBLE CONDUIT

Bobby H. Rose, Phoenix, Ariz., assignor to Gold King Mfg. Co., Phoenix, Ariz.

Filed Dec. 17, 1979, Ser. No. 104,107
Int. Cl.³ B03B *5/00*
U.S. Cl. 299—9 **4 Claims**



1. In a dredge having a pump; a sluice box; a distributor box having a front wall, a target plate fixedly mounted in the distributor box, said target plate substantially evenly distributing into the sluice box water and solids entrained in the water which impinge the target plate; and a flexible conduit having an inlet end and an outlet end, said conduit having an outer surface having a helical projection, said conduit being operationally connected to the pump; the improvements comprising:

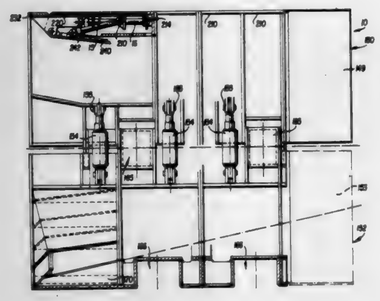
a flange mounted on said front wall of the distributor box, said flange having a bore sized to receive a flexible conduit within it, said bore having a helical indentation to receive the helical projection of the flexible conduit, the outlet end of said flexible conduit being threaded into the bore of the flange;

a bore through the front wall of the distributor box sized and positioned so that the outlet end of the flexible coupling can project into the distributor box; whereby the distance between the outlet end of the flexible conduit and the target plate can be varied by rotating the conduit relative to the flange.

4,289,356
SHIELD ASSEMBLIES FOR INSTALLATION IN UNDER-GROUND ROADWAYS AND ROCK EXCAVATING MACHINES INCLUDING SUCH SHIELD ASSEMBLIES

Terence R. Howard, Gravesend, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Nov. 30, 1979, Ser. No. 99,093
Claims priority, application United Kingdom, Dec. 15, 1978, 48634/78
Int. Cl.³ E21D *9/08*
U.S. Cl. 299—33 **11 Claims**



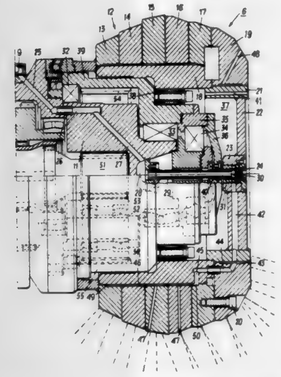
1. A shield assembly for installation in an underground roadway or tunnel, comprising an articulated upper shield assembly, a lower shield assembly, a plurality of hydraulic rams for urging the upper shield assembly upwards relatively to the lower shield assembly and a generally vertically extending telescopic guiding means extending between the lower and upper assemblies which during vertical movement of the upper shield assembly guides the upper shield assembly in a direction along the roadway or tunnel and which allows the lowermost end margins of the upper shield assembly to move outwardly relative to the adjacent end margins of the lower shield assembly whereby said shield is anchored in the roadway or tunnel.

4,289,357
HOLLOW CUTTING HEAD

Rudolf Hintermann; Alfred Zitz; Otto Schetina, and Herwig Wrulich, all of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Jan. 16, 1980, Ser. No. 112,614
Claims priority, application Austria, Feb. 9, 1979, 998/79
Int. Cl.³ E21C *35/22*
U.S. Cl. 299—81 **9 Claims**

1. A cutting assembly for a cutting machine comprising: a hollow rotatable cutting head having a forward end and a open rear end, said cutting head having nozzles on its periphery for discharging cooling water and having internal cooling water passages connecting with the nozzles; a carrier protruding into the open end of said cutting head and forming therewith an oil chamber which is closed at its forward end by a generally transverse wall forming part of said rotatable cutting head, said wall also closing a cavity which is provided in said cutting head, and which is in communication with the atmosphere via a passage; bearings in said oil chamber for rotably supporting said cutting head on the carrier; drive means supported by the carrier and gear connected to said cutting head at a location in said oil chamber; and a cooling water distribution system including a water supply tube carried by the carrier and arranged coaxially therein, said water supply tube passing through said generally transverse wall and through said cavity and opening

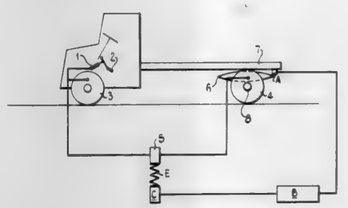


into a water distributing chamber provided within said cutting head in alignment with said water supply tube, sealing means between said water supply tube and said generally transverse wall and between said water supply tube and said water distributing chamber, and at least one longitudinally extending annual gap provided within said cutting head, said gap being connected to said water distributing chamber by at least one passage and said gap communicating with said internal cooling water passages.

4,289,358
VEHICLE BRAKING SYSTEMS

Jurgen Dufft, and Malcolm Brearley, both of Tyseley, England, assignors to Girling Limited, Birmingham, England

Filed Mar. 8, 1979, Ser. No. 19,153
Claims priority, application United Kingdom, Mar. 8, 1978, 9253/78
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—22 R **19 Claims**

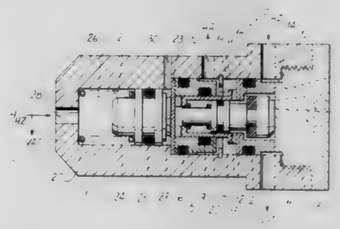


1. An arrangement for varying a preload on a control valve of a vehicle braking system in dependence upon vehicle loading, including sensing means on the sprung part of a vehicle for sensing the oscillation frequency of the sprung part of the vehicle while in motion and means for changing said pre-load in dependence upon said sensed oscillation frequency.

4,289,359
BRAKE FORCE REGULATOR FOR A MOTORCYCLE HYDRAULIC BRAKE SYSTEM

Hans-Henning Lüpertz, Darmstadt, and Volker Berisch, Hattersheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sep. 20, 1979, Ser. No. 77,426
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847571
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—6 C **15 Claims**



1. A brake force regulator for a motorcycle brake system comprising:

a control piston disposed coaxially within a housing, said control piston being slidable in response to pressure from a hand master cylinder and adapted to reduce brake pressure to a rear-wheel brake upon movement of said control piston into a fluid input chamber disposed in said housing connected to a pedal master cylinder, said movement being caused by said pressure of said hand master cylinder which increases the volume of a fluid outlet chamber disposed in said housing connected to said rear-wheel brake;

a fluid passageway disposed in said control piston connecting said inlet chamber to said outlet chamber;

a second piston having a closure member for said passageway disposed within said control piston, said second piston being movable in a closing direction of said passageway against the force of a first spring extending into a hollow space in said housng connected to atmosphere;

a return spring abuting one end of said control piston to urge said control piston into abutment with a stop in said housing adjacent said inlet chamber, said control piston having an effective area adjacent said inlet chamber subjected to pressure against the force of said return spring to cause displacement of said control piston in the direction of said outlet chamber;

means disposed within said housing adjacent said control piston which, upon attainment of a predetermined differential of pressure between the pressures prevailing in said inlet and outlet chambers, open said passageway after it has been closed during a braking operation; and

sealed areas of said control piston have their cross-sections dimensioned independently of each other.

4,289,360
BEARING DAMPER SYSTEM

Louis I. Zirin, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Aug. 23, 1979, Ser. No. 69,196
Int. Cl.³ F16C *35/067, 27/04*
U.S. Cl. 308—178 **2 Claims**

1. The invention comprising:

a rotating member;

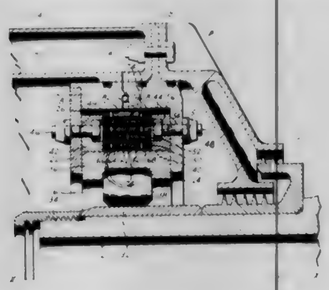
an annular bearing assembly operatively associated with and surrounding said rotating member, said bearing assembly including at least an outer annular race member;

a bearing support housing for supporting said bearing assembly during rotation of said rotating member, said housing

including an annular recess having said race member at least partially disposed therein;

an axially spaced pair of annular members disposed in said recess in said housing and fitting about said race member;

at least one shearable element fixedly connecting each of said annular members to said housing and effective for securing said annular members against movement within said recess and thereby retaining said race member concentric relative to said support housing during a first mode



of operation when said rotating member is rotating in a normal balanced condition and being subject to shearing when said rotating member is rotating in an abnormal unbalanced condition during a second mode of operation for thereby permitting relative movement of said race member and annular members within said recess; and

means for damping disposed in said recess in said bearing support housing and between said spaced pair of annular members for damping any relative movement of said race member within said recess.

4,289,361

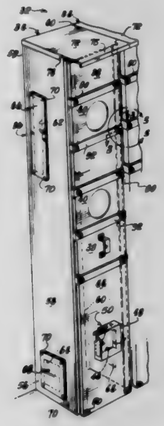
ENCLOSURE FOR METERS

Ronald J. Riedel, Diamond Bar, Calif., assignor to Ryco Mfg. Co., Industry, Calif.

Filed Jul. 16, 1979, Ser. No. 57,953

Int. Cl.³ H02B *9/00, 1/12*

U.S. Cl. 312—100 **11 Claims**



1. An enclosure for utility meters and the like comprising:

at least a first module which includes a structure having a front, first and second side portions, a back portion and a top portion; and a plurality of panels closing said front thereof, said first and second side portions respectively including first and second step shaped members adjacent to said front, each step shaped member having a first planar surface extending toward the other step shaped member, said step shaped members each including a center section and a front section, said panels including rearwardly extending side flanges cooperating with said center sections.

4,289,362

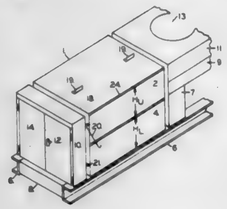
SEGMENTED DOOR FOR ENCLOSURE

Daniel E. Kramer, 2009 Woodland Dr., Yardley, Pa. 19067

Filed Jun. 12, 1979, Ser. No. 47,875

Int. Cl.³ B65D *8/14*; E05D *15/26*; A47B *43/00*

U.S. Cl. 312—138 R **3 Claims**



1. A cabinet having a top, a side and an edge common to the top and side; an opening in the side; upper door means having height H_u for opening and closing an upper portion of the opening, said door means having an upper and a lower edge and having a closed and open condition; first hinge means for allowing the upper door to rotate about a line parallel to and substantially adjacent said common edge; lower door means having a height H_L for opening and closing a lower portion of the opening, said door means having an upper and lower edge and having a closed and open condition; second hinge means connecting the upper and lower door means for allowing the lower door to rotate up and outwardly from its closed condition, said rotation occurring about a line parallel to and substantially adjacent the lower edge of the upper door; and means for providing access to said opening by positively positioning the doors in an inverted Vee relationship on said top.

4,289,363

LOCKER CONSTRUCTION AND MULTIPLE ARRANGEMENT THEREOF

Olof I. Andersson, and Jan O. Kullander, both of Säffle, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 13, 1979, Ser. No. 93,757

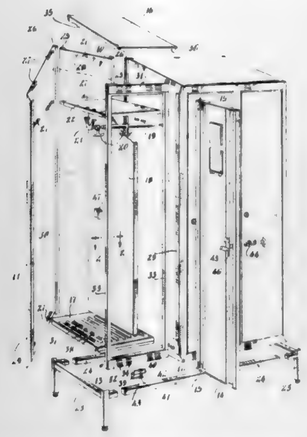
Claims priority, application Sweden, Apr. 9, 1979, 7903118

Int. Cl.³ A47F *5/08*

U.S. Cl. 312—257 R **6 Claims**

1. A locker having a rear wall, two side walls, and a frame-shaped front wall which are all interconnected to form a box-like structure, the adjacent vertical edges of said rear and side walls having bent portions which upon abutment and pivoting hook one another to form a joint which prevents separation of said side walls and rear wall, said locker additionally comprising a generally rectangular top part and bottom part, the vertical front edges of each side wall being U-shaped in cross-section in order to tightly engage the respective vertical portions

of said frame-shaped front wall, and one leg of each of said vertical front edges having a return bent part of said bent



portion that functions to retain said frame-shaped front wall in its assembled condition.

4,289,364

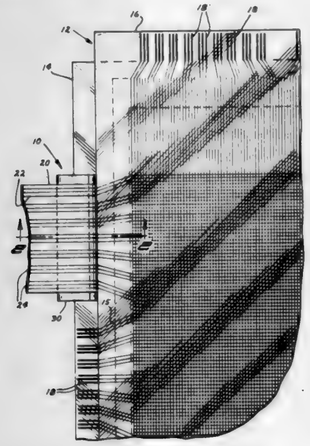
PLASMA DISPLAY PANEL FLEXIBLE CIRCUIT CONNECTION

Richard A. Strom, Eagan; Clark Bergman, St. Paul, and Paul F. Michalek, Bloomington, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 22, 1979, Ser. No. 87,134

Int. Cl.³ H01J *61/36*; H01R *13/635*

U.S. Cl. 339—17 CF **4 Claims**



1. In combination, a gas discharge display panel having a pair of glass substrates assembled to form a thin gas discharge display chamber, wherein each of said substrates has a plurality of electrical conductors extending in a parallel fashion and said substrates are assembled with said conductors in an orthogonal relationship to define gas discharge display areas and each substrate has conductor connection means extending from the discharge display chamber at edges thereof consisting of depressed conductor pathways etched in the substrate having the conductor element deposited in the bottom thereof at a location exterior to the discharge display chamber, said conductors typically spaced apart 0.8 mm and 0.2 mm in width, and wherein said exterior conductors are electrically and physically continuous extensions of said conductors defining the gas discharge display areas, and a system for the connection of said gas plasma display panel to electrical signals which comprises:

a conductor means having multiple conductors supported by an insulating medium and terminating in raised conductor elements which correspond in spacing to the spacing of the depressed conductors on said substrate, for carrying electrical signals;

clip members having a U-shaped portion with clip contact areas on the inside of the legs of the U-shaped portion and with a pair of flanges, one at the end of each leg of the U-shaped portion, each flange having an engaging portion parallel to and spaced apart from the associated leg of the U-shaped portion and a connecting portion for connecting said mating portion to the leg of said U-shaped portion, said flanges adapted for engaging with a spreading tool at said engaging portion thereof, for securing said conductor means in position by the application of spring forces on said conductor means and on said substrates, and

flexible force spreading means placed between said clip contact areas and said conductor means and said substrate to spread the force of application of said clip on connecting conductors from said conductor means and said panel.

4,289,365

DETACHABLE PLUG AND TRACK RECEPTACLE FOR ELECTRICAL CONNECTIONS

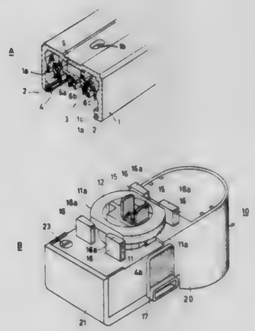
Hendrik J. Rutgers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,563

Claims priority, application Netherlands, Nov. 3, 1978, 7810941

Int. Cl.³ H01R *25/14, 41/00*

U.S. Cl. 339—21 R **13 Claims**



7. A plug for detachable connection to a receptacle of the type having at least one insulated current conductor and two flanges bounding an opening extending in a longitudinal direction, said opening having a given width and providing access to a space over the current conductor, said plug comprising:

a housing having an axially extending base;

a contact pin support having at least one contact, said support extending in an axial direction,

means for mounting the contact pin support in the housing for limited relative movement along said axial direction between a retracted position and an extended position;

means for preventing insertion of the contact pin support into the opening between the flanges of the receptacle when the housing is oriented transverse to the longitudinal direction; and

means for locking the housing to the track when the base of the housing is inserted into the track and the housing is aligned in the longitudinal direction;

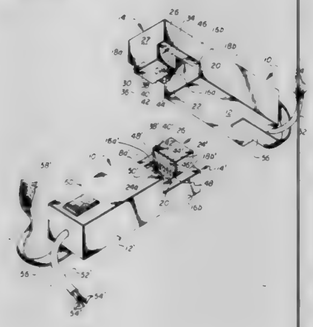
wherein the base of the housing can be inserted into the opening between the flanges only when the housing is oriented transverse to the longitudinal direction.

4,289,366

BISEXUAL ELECTRICAL CONNECTOR

Dale H. Marks, 425 Benignus, Houston, Tex. 77024

Filed Sep. 18, 1979, Ser. No. 76,773
Int. Cl.³ H01R *23/20*
U.S. Cl. 339—49 B **21 Claims**



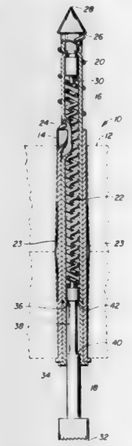
1. An electrical connector assembly comprising a pair of connector members having substantially identical connection formations matingly engageable by urging said formations toward each other in one directional mode, each of said connector members comprising a main body with connection formation extending therefrom; and each of said connection formations comprising wall means extending from said main body and defining a pair of elongate, spaced apart shoulders; each of said connection formations further including a female receptacle recessed inwardly from said shoulders therebetween and adjacent one thereof, a male projection adjacent said receptacle extending outwardly from said shoulders therebetween and adjacent the other end thereof, by a distance no greater than the depth of said female receptacle, and a respective generally planar universal face disposed at the interface of said male projection and said female receptacle and having an inner portion defining a wall of said female receptacle and an outer portion defining a wall of said male projection; each of said universal faces having a linear row of electrical contacts thereon, said connection formations further being configured to maintain a relative end-to-end order of the contacts of the respective rows of said universal faces, which order is the same whether said connection formations are identically oriented or matingly engaged; whereby, when the male projection of each of said connector members is inserted in the female receptacle of the other connector member, each of the shoulders of one connector member abuts a respective shoulder of the other connector member to form a closure about said male projections and female receptacles, and said assembly has a generally smooth, continuous outer surface extending transverse to said one directional mode and defined by flush adjacent portions of said two connector members; the main body of one of said connector members being generally in the form of a rectangular parallelepiped, and the shoulders of said one connector member extending generally lengthwise with respect to the respective main body.

4,289,367

SPRING LOADED CONNECTOR PIN

Stephen M. Everett, Livermore, Calif., assignor to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.

Filed Dec. 10, 1979, Ser. No. 102,055
Int. Cl.³ H01R *4/48*
U.S. Cl. 339—64 R **5 Claims**



1. An electrical contact assembly for electrically coupling a first contact location disposed opposing a first side of a test fixture to a second contact location disposed opposing the opposing side of the test fixture for use in testing circuits on a printed circuit board, said contact assembly comprising a first element, a second element and a third element, and first biasing means and second biasing means, said first element being fixedly mounted to said test fixture, said second element being mounted to said first element and being reciprocally movable between a first primary position having an end extending a maximum distance from said first element and a second primary position, said second element being reciprocally movable with respect to said first element, said first biasing means being disposed to bias said second element toward said first primary position, said third element being mounted only to said second element, said third element being reciprocally movable between a first secondary position and a second secondary position, said third element having an end which in said first secondary position extends a maximum distance from said second element in said first primary position, said second biasing means being disposed to bias said third element relative to said second element toward said first secondary position, and wherein there is provided an electrical conductive path between said end of said second element and said end of said third element.

4,289,368

FULL MATE INDICATOR FOR DETACHABLE CONNECTORS

Alan L. Schildkraut, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

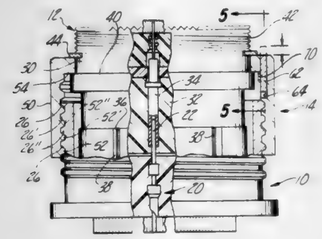
Filed Aug. 31, 1979, Ser. No. 71,441
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—89 M **5 Claims**

1. In a connector assembly of the type having first and second connector members adapted to be moved between a detached relationship and a fully mated relationship by a coupling nut rotatably mounted on the first connector member, each connector member including at least one terminal corresponding to a terminal on the other connector member, the corresponding terminals being coupled when the connector members are disposed in the fully mated relationship position, the improvement comprising:

an indicator element movably supported by said coupling nut for movement between a reference position and a signal position; and

a spring biasing said indicator element toward its reference position;

said coupling nut comprising a cylindrical shell having forward and rearward faces and an internal wall, screw thread on the internal wall and a passage disposed in the internal wall, said passage extending axially from the



rearward face of said coupling nut and being in alignment with a selected part of the second connector member;

said second connector member having external screw thread adapted to be engaged by the said internal screw thread;

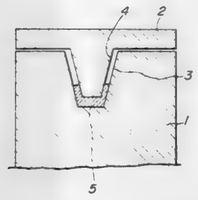
said indicator element being slidably disposed in said passage and having an actuator portion engageable with the selected part of the second connector member when the connector members are in said fully mated relationship whereby as the coupling nut is rotated, the connector members are moved to the fully mated relationship and the indicator element is moved to the signal position when the terminals are coupled.

4,289,369

EXCHANGEABLE GA-CU ELECTRODE FOR AN EVAPORATION SYSTEM

Kazuhisa Taketoshi, Sagamihara, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Division of Ser. No. 72,291, Sep. 4, 1979, Pat. No. 4,239,534. This application Feb. 15, 1980, Ser. No. 121,791
Claims priority, application Japan, Sep. 9, 1978, 53-110236
Int. Cl.³ H01R *3/08*
U.S. Cl. 339—118 R **2 Claims**



1. A set of electrodes for an evaporation system comprising:

a first electrode with a concave portion;

a second electrode with a convex portion said convex portion of said second electrode being loosely insertable into said concave portion of said first electrode, at least one of said first and second electrodes being exchangeable; and

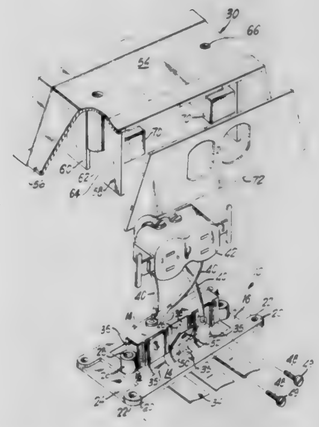
$Ga_{1-x}Cu_x$ alloy, where $0.0001 \leqq x \leqq 0.03$, contained in said concave portion of said first electrode for filling a clearance portion between said first and second electrodes, when said second electrode is loosely inserted or fitted into said first electrode so as to electrically contact said first electrode with said second electrode.

4,289,370

FLAT CONDUCTOR CABLE ELECTRICAL CONDUCTOR JUNCTION MEANS

Glenn E. Storck, Long Valley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,370
Int. Cl.³ H02B *1/06*
U.S. Cl. 339—125 R **18 Claims**



1. Electrical connector junction means for use with flat conductor cable of the type including outer insulation and a conductor therewithin, said cable adapted to lie along a floor, said electrical connector junction means comprising:

a base having a substantially flat support surface for mounting of said base on a floor and having an opening therethrough for receiving through the opening a flat conductor cable lying on the floor when said base is mounted on the floor over the flat conductor cable;

a conductor termination for making electrical contact with a conductor through the outer insulation of said cable, said conductor termination having an insulation piercing portion adjacent each side of said cable, each portion having a fastener receiving opening therethrough;

a support member secured to said base and extending above said support surface, said support member including at least one mounting surface for a terminated conductor of the flat conductor cable extending through said opening in said base; and

a fastener extending through said openings in said conductor termination portions for fastening said conductor termination and a second conductor to said mounting surface to thereby establish electrical connection between said conductor of the flat cable and said second conductor.

4,289,371

OPTICAL SCANNER USING PLANE LINEAR DIFFRACTION GRATINGS ON A ROTATING SPINNER

Charles J. Kramer, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

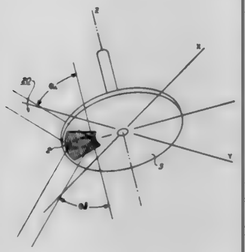
Filed May 31, 1979, Ser. No. 44,000
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—3.71 **17 Claims**

1. An optical scanning system including a spinner having formed thereon at least one plane linear diffraction grating having a constant grating period d,

a reconstruction light source of wavelength λ, which provides a beam of light directed at an angle of incidence θ_i to illuminate said grating,

means for rotating said spinner so that said grating rotates through a rotation angle θ_R and diffracts a portion of the incident light at a diffraction angle θ_d

said incidence angle θ_i having a value of between 0° and 89.445° said diffraction angle θ_d, having a value between



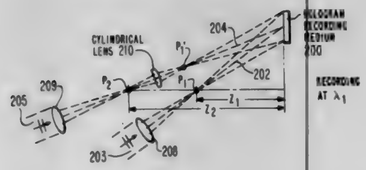
38.17° and 90°, the ratio of the wavelength λ_1 to the spacing d having a value of between 1 and 1.618.

4,289,372

TECHNIQUE FOR RECORDING A HOLOGRAM SUITABLE FOR USE IN OPTICAL RETRIEVAL SYSTEM

Burton R. Clay, Wayland, Mass., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,922
Int. Cl.³ G03H *1/04, 1/16*
U.S. Cl. 350—3.83 **9 Claims**



1. In a hologram recording system for recording an interference pattern having Fresnel properties in at least one of two orthogonal directions, on a recording medium with two angularly displaced interfering beams of coherent energy of a first given wavelength λ_1 to produce a certain type of hologram, said certain type of hologram being responsive on readout to the illumination thereof with a plane wave of coherent wave energy of a second given wavelength λ_2 which is oriented substantially normal to the plane of said hologram for diffractively deriving an output beam of coherent wave energy which coverges in at least said one of said two orthogonal directions and which has a crossover spaced a preselected distance Z_3 from the plane of said hologram; said hologram recording system comprising:

coherent wave energy translation means for simultaneously illuminating an area of said recording medium with (1) a first incident beam of said λ_1 coherent wave energy which diverges in at least said one of said two orthogonal directions from a first predetermined crossover spaced a distance substantially equal to Z_1 from the plane of said recording medium and (2) a second incident beam of said λ_1 wavelength coherent wave energy which diverges in at least said one of said two orthogonal directions from a second predetermined crossover spaced a distance substantially equal to Z_2 from the plane of said recording medium, and

wherein the respective values of distances Z_1 and Z_2 are related to the preselected distance Z_3 substantially in accordance with the following equations:

$$\frac{1}{Z_1} - \frac{1}{Z_2} = \frac{1}{\alpha Z_3}, \text{ and}$$

-continued

$$\frac{1}{Z_1^3} - \frac{1}{Z_2^3} = \frac{1}{\alpha Z_3^3},$$

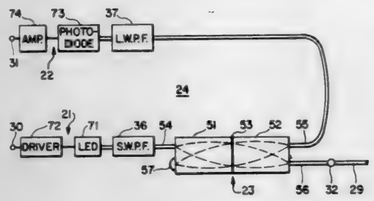
where α is equal to the ratio of λ_2 to λ_1.

4,289,373

BIDIRECTIONAL OPTICAL FIBER TRANSMISSION SYSTEM

Shigetoki Sugimoto, and Kouichi Minemura, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,223
Claims priority, application Japan, Jul. 6, 1979, 54-86238
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.16 **6 Claims**



1. A bidirectional optical fiber transmission system comprising

a first transmitter-receiver set comprising of a firsst light receiving means, a first light transmitting means which has a first light emitting diode as light source, and a first downstream-upstream dividing means which has a short wavelength pass filtering means to filter the part of the spectrum, emitted by said first light emitting diode, shorter in wavelength than a prescribed value and another filtering means to pass the light to be received, and separates the light to be transmitted and that to be received;

a second transmitter-receiver set comprising of a second light receiving means, a second light transmitting means which has, as light source, a second light emitting diode whose emission spectrum at least partly overlaps that of said first light emitting diode, and a second downstream-upstream dividing means which has a long wavelength pass filtering means to filter the part of the spectrum, emitted by said second light emitting diode, longer in wavelength than the prescribed value and another filtering means to pass the light to be received, and separates the light to be transmitted and that to be received, and

an optical fiber transmission path to connect said first and second transmitter-receiver sets.

4,289,374

METHOD OF AND DEVICE FOR PROVIDING A CONCENTRIC ENVELOPE ON AN END OF AN OPTICAL FIBER, AND FIBER HAVING AN END PROVIDED WITH A CONCENTRIC ENVELOPE IN ACCORDANCE WITH THE METHOD

Adrianus J. J. Franken; Giok D. Khoe; Gerard Kuyt; Johannes H. F. M. Van Leest; Antonius J. A. Nicia; Cornelis J. T. Potters, and Hendricus F. G. Smulders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 25, 1979, Ser. No. 78,733
Claims priority, application Netherlands, Sep. 26, 1978, 7809725
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.20 **14 Claims**

1. A method of providing an envelope on an end of an optical fiber, said envelope having an outer surface which is at least partly concentric with a light-conductive core of the fiber end, said method comprising the steps of:

positioning the fiber end opposite an optical observation means having an axis of observation;

radiating light into the fiber such that the light emerges from the fiber end and is incident on the optical observation means;

observing the light beam emerging from the optical observation means; and

displacing the fiber end transverse to the axis of observation until the observed light beam occupies a predetermined position with respect to the axis of observation;

CHARACTERIZED IN THAT the method further comprises the steps of:

providing an envelope on the fiber end;

arranging the fiber end in a support;

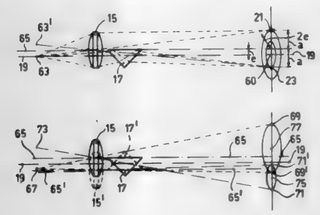
splitting the light beam emerging from the fiber end into two subbeams by a beam-splitting assembly, said beam-splitting assembly having an optical axis which is eccentric with respect to the axis of observation;

rotating the beam-splitting assembly around the axis of observation, each of said subbeams tracing a circular image, movement of the fiber end in a direction tranverse to the axis of observation causing the circular images to move transverse to the axis of observation and in opposite directions with respect to each other;

observing the circular images to determine whether they are concentric or eccentric;

moving the fiber end and the envelope transverse to the axis of observation until the circular images are concentric, if the circular images were initially eccentric, the light-conductive core then being situated on the axis of observation; and

machining at least a part of the outer surface of the envelope to be concentric with the axis of observation by means of a machining tool which rotates around the axis of observation of the optical observation means.



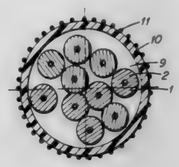
4,289,375

OPTICAL ELEMENT FOR INCORPORATION INTO OPTICAL TRANSMISSION MEANS

Axel Andersen, Gentofte; Poul U. Knudsen, Hellerup, and Knud B. Jensen, Skodsborg, all of Denmark, assignors to Aktieselskabet Nordiske Kabel-og Traadfabriker, Copenhagen, Denmark

Filed Nov. 4, 1977, Ser. No. 848,695
Claims priority, application Denmark, Nov. 9, 1976, 5052/76
Int. Cl.³ G02B *5/16*
U.S. Cl. 350—96.23 **11 Claims**

11. Optical transmission means comprising at least one optical element located in a sheath wherein said optical element consists of an optical fiber provided with a coating with a substantially circular cross section applied essentially coaxially closely around the fiber, to which coating is imparted such an adhesion to the optical fiber that a contraction tendency in the coating brought about in connection with the application of the coating affects the fiber with such an axial compressive force in its whole length that the force causes a real shortening of the fiber and a corresponding increase of the elongation at the break of the fiber, said shortening amounting to at least



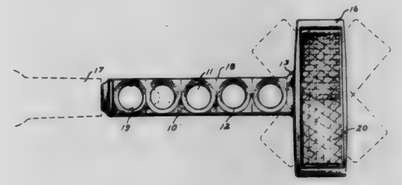
0.5% of the original length of the fiber when otherwise the element is not affected by external forces.

4,289,376

LIGHT REFLECTORS

Dragan Vukadinovic, 4812 Woodrow Ave., Parma, Ohio 44134

Filed Jul. 30, 1979, Ser. No. 61,607
Int. Cl.³ G02B *5/12*
U.S. Cl. 350—99 **1 Claim**



1. A light reflector assembly adapted to be attached to the valve of an automobile tire and secured in place by the valve cap; said light reflector assembly comprising:

a metallic strip of predetermined length having a series of equally sized and spaced holes therethrough, said holes having rims integral with the surface of said strip;

a plurality of linear indentations spanning the breadth of said strip, located between said holes and adjacent to said rims;

a segment at one end of said strip, perpendicularly bent therefrom, having a hole suitably sized to receive the threaded portion of said valve;

a disk-shaped portion at the other end of said strip, integral with said strip, having a centrally located screw therethrough, said screw connecting said strip to the back of a substancially rectangular plastic light reflector housing, said housing having a correspondingly shaped and sized light reflector situated therein.

4,289,377

PROJECTING APPARATUS

Yoshiya Matsui; Setsuo Minami, and Noritaka Mochizuki, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

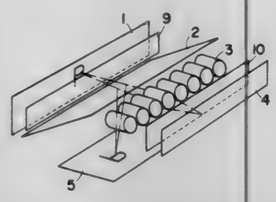
Filed Mar. 23, 1979, Ser. No. 23,268
Claims priority, application Japan, Apr. 5, 1978, 53-40053
Int. Cl.³ G03B *27/48;* G02B *27/10, 27/28*
U.S. Cl. 350—169 **4 Claims**

1. A projecting apparatus comprising:

an array of rod-shaped lenses for forming the image of an object, each of said lenses having only two lens surfaces and an axial length larger than the effective diameter thereof:

a plane mirror positioned in the vicinity of the intermediate image plane of said array of rod-shaped lenses, wherein the principal ray of light rays incident on said mirror is traced by the principal ray of light rays reflected by said plane mirror;

a polarizing beam splitter positioned obliquely to the optical axis of said lens array and being disposed between the object and the lens array; and



optical means for changing the polarizing direction of the light to a direction perpendicular thereto.

4,289,378

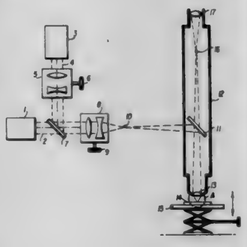
APPARATUS FOR ADJUSTING THE FOCAL POINT OF AN OPERATING LASER BEAM FOCUSED BY AN OBJECTIVE

Ernst Remy, No. 22, Georgenstrasse, 8 Munich 90, and Eberhard Unsöld, 16a, Dr. Hofmeister Strasse, 4042 Oberschleisheim, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 917,699, Jun. 21, 1978, abandoned, which is a continuation of Ser. No. 752,764, Dec. 20, 1974, abandoned. This application Oct. 15, 1979, Ser. No. 84,483

Int. Cl.³ G02B *27/14, 21/06*

U.S. Cl. 350—174 **4 Claims**



1. Apparatus for adjusting the focal spot of a working laser beam onto a microscopic target region within a transparent biological object observed under a microscope to locate that focal spot a predetermined controllable microscopic distance from an interface of said object, said apparatus comprising

(a) a microscope having an objective, an eyepiece, a support for said object and means to move said support so as to bring the target region of said object into the focusing plane of said objective;

(b) a working laser for emitting a parallel laser beam and an auxiliary laser for emitting a parallel laser beam in the visible wavelength region along separate paths;

(c) means for collinearly superimposing said two laser beams from said paths and for introducing the superimposed beams into the microscope so as to be focused jointly through said objective onto said object;

(d) first variable focusing means interposed in the path of one of said laser beams;

(e) second variable focusing means interposed in the path of said superimposed working and auxiliary laser beams, said second variable focusing means comprising a lens arrangement producing intermediate focal spots of said two laser beams and means for varying the distance of said intermediate focal spots from said microscope objective;

(f) first control means for controlling said first variable focusing means so as to produce a longitudinal spacing of predetermined distance between the focal spots produced by said objective; and

(g) second control means for controlling said second variable focusing means independently of said first variable focusing means for moving the two focal spots jointly without varying the distance therebetween;

(h) whereby the focal spot of said auxiliary laser beam may be made to appear on an interface of said object and said working laser beam may be focused said predetermined distance from said interface.

4,289,379

OPTICAL SYSTEM HAVING A VARIABLE FOCAL LENGTH

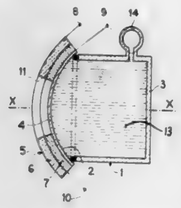
Guy Michelet, Paris, France, assignor to Quantel S.A., France

Filed Apr. 13, 1978, Ser. No. 896,079

Claims priority, application France, Apr. 27, 1977, 77 12801; Mar. 29, 1978, 78 09152

Int. Cl.³ G02B *3/14*; G02F *1/29*

U.S. Cl. 350—419 **13 Claims**



1. An optical system having a variable focal length, comprising a container defined by walls at least a part of which walls is of transparent material, an index adapting medium filling said container, the optical system having an optical axis which extends through at least a first of said walls, at least said first wall of said walls comprising a piezoelectric bimorph structure comprising interconnected adjoining layers and means for applying voltage to said interconnected layers for modifying the curvature of said first wall in accordance with the voltage applied to the bimorph structure through said voltage applying means.

4,289,380

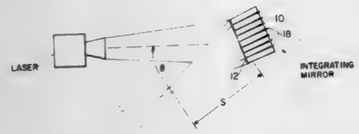
LASER BEAM LINEAR ADJUSTABLE INTEGRATING MIRROR

Thomas R. Tucker, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1980, Ser. No. 137,045

Int. Cl.³ G02B *5/08*

U.S. Cl. 350—292 **8 Claims**



1. An integrating mirror system for producing uniform intensity of reflected incident radiation at a target off-axis from the incident radiation which comprises:

a plurality of rectangular block segments;

each of said block segments having flat faces and including an edge defining a reflective front face;

means for assembling said block segments in flat face stacked adjacency with their edge defined front faces in initial general planar alignment with each other defining a substantially continuous reflective surface; and

means for changing the angle between adjacent block segments in said assembly in a uniform manner to cause an overlapping of reflected radiation at a spatial target distance.

4,289,381

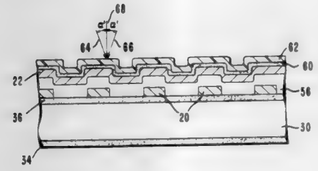
HIGH SELECTIVITY THIN FILM POLARIZER

Hugh L. Garvin, Malibu, and Douglas A. Pinnow, Pacific Palisades, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 2, 1979, Ser. No. 54,361

Int. Cl.³ G02B *5/30*; B05D *3/00*

U.S. Cl. 350—320 **4 Claims**



1. A method for making a thin film polarizer on a substrate surface comprising:

placing a first metal layer on said surface;

first photolithographically forming a grid in said first metal layer defined by the interference pattern of at least two coherent beams;

placing an insulating layer over said first metal layer;

placing a second metal layer over said insulating layer;

placing an anti-reflective coating over said second layer;

placing a photoresistive layer over said anti-reflective coating; and

second photolithographically forming a grid in said second metal layer defined by the interference pattern of at least two coherent beams, wherein said anti-reflective coating substantially prevents formation of standing waves within said photoresistive layer during said second photolithographic forming step.

4,289,382

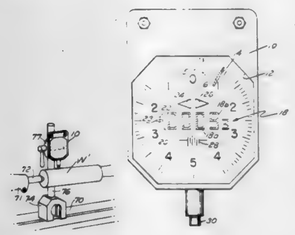
MEASUREMENT SYSTEM FOR MACHINE PARTS

Earl S. Clark, Coventry, R.I., assignor to Federal Products Corporation, Providence, R.I.

Continuation-in-part of Ser. No. 893,353, Apr. 14, 1978, abandoned, and Ser. No. 24,398, Mar. 27, 1979, abandoned. This application Dec. 28, 1979, Ser. No. 107,766

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—331 R **1 Claim**



1. A measurement system for machine parts comprising a case, a support means for movably clamping the case to the support whereby the position of the case may be varied relative to a machine part, a measuring member extending from said case for engagement with the machine part, said measuring member coupled to a transducer, said case having a configuration with at least one circular face, a plurality of groups of segments disposed in a circle around the periphery of said face, said transducer having an analog output, an analog-to-digital converter, a signal processing circuit, said circuit having an output coupled to a decoder driver for the circular segments and a decoder driver for the digital display, the central portion of said face being provided with an opening, a plurality of binary segments arranged in a predetermined manner within said opening to provide a digital display, a digital display within said opening displaying at least three significant digits, two digits of said display corresponding to the analog reading of the plurality of radially extending segments mounted in the circular pattern on said face, the third digit corresponding to an interpolated numeral of the analog display.

4,289,383

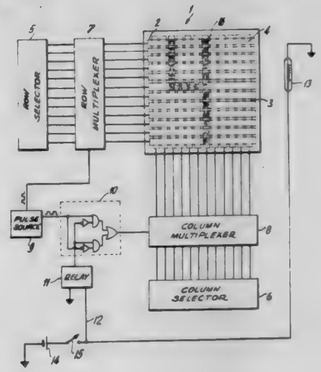
LIGHTED DOT MATRIX DISPLAY

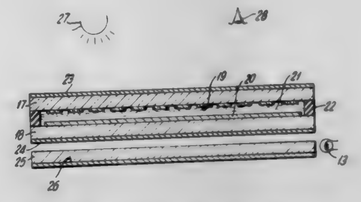
Jack Schwarzschild, Stamford, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Sep. 4, 1979, Ser. No. 71,967

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—334 **2 Claims**





1. In an electrooptic display of the type operable to provide an image viewable either in the transmissive or reflective modes, with means to selectively activate a plurality of electrooptic segments to provide said image, the improvement comprising:

illuminating means disposed to provide light at the back of said display when it functions in a transmissive mode, said illuminating means comprising an incandescent backlight,

image reversal means for electrically reversing the image on said display, and,

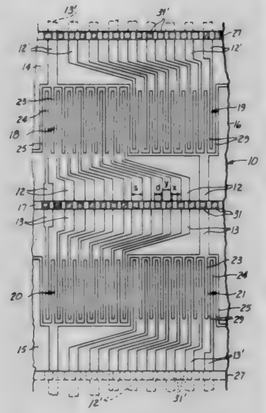
a manually actuated switch connected to simultaneously actuate said image reversal means and said illuminating means.

4,289,384

ELECTRODE STRUCTURES AND INTERCONNECTING SYSTEM

Norbert E. Samek, Sierra Madre, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 30, 1979, Ser. No. 34,893
Int. Cl.³ G02B *1/03*; H05K *1/11, 1/18*
U.S. Cl. 350—392 **31 Claims**



1. In a method of providing interconnections for several first and second electrodes extending in mutual registration on opposite faces, respectively, of the same substrate to an edge portion thereof, comprising in combination the steps of:

providing on said edge portion a plurality of electrically conductive deposits extending across said edge portion for electrically interconnecting corresponding first and second electrodes;

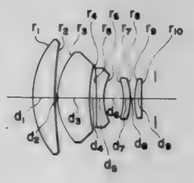
said deposits being distributed along said edge portion in a pattern including a recurring deposit width smaller than the smallest spacing between any adjacent two electrodes of either of said first and second electrodes, alternating with a recurring deposit spacing smaller than the smallest width of any of said first and second electrodes.

4,289,385

PHOTOGRAPHIC LENS WITH REAR STOP DIAPHRAGM

Masakazu Yamagata, Tsurugashima, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1980, Ser. No. 118,699
Claims priority, application Japan, Feb. 20, 1979, 54-18915
Int. Cl.³ G02B *9/60*
U.S. Cl. 350—468 **7 Claims**



1. A lens system comprising, in order from the object, a first single meniscus lens, a second single meniscus lens, a third single negative lens, a fourth single meniscus lens and a fifth single positive lens wherein:

f = 100		$F_{NO.}$	1:2.8	2ω = 24°	K = 1.049
				n_d	ν_d
r_1	45.735	d_1	10.853	1.60311	60.7
r_2	210.900	d_2	1.290		
r_3	33.385	d_3	15.872	1.51633	64.1
r_4	77.025	d_4	3.155		
r_5	3392.655	d_5	3.591	1.80518	25.4
r_6	22.917	d_6	9.900		
r_7	−33.391	d_7	3.353	1.74077	27.8
r_8	−29.895	d_8	2.321		
r_9	43.549	d_9	3.234	1.66446	35.8
r_{10}	238.081				

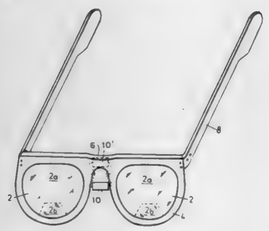
$\Sigma d = 53.569$

4,289,386

EYEGLASSES OF THE VARIABLE-LENS TYPE, AND POSITIONING MEMBER PARTICULARLY USEFUL THEREWITH

Aharon Brandstetter, 12 Oppenheimer St., Tel Aviv, Israel

Filed Oct. 23, 1979, Ser. No. 87,513
Claims priority, application Israel, Nov. 30, 1978, 56092
Int. Cl.³ G02C *5/04*
U.S. Cl. 351—128 **4 Claims**



1. A pair of eyeglasses of the variable-lens type including an eyeglass frame mounting the lenses, and a positioning member engageable with the wearer's nose for aligning the lenses of the eyeglass frame with the wearer's eyes, characterized in that the eyeglass frame includes a pair of arms pivotably supporting said positioning member, which arms are in turn pivotably mounted at their ends to the eyeglass frame to assume either a first position wherein the positioning member is above the pivotable mounting of the arm ends, or a second position wherein the positioning member is below the pivotable mounting of the arm ends, to thereby stably support the eyeglass frame in either a normal position with respect to the wearer's eyes, or in an elevated position with respect to the wearer's eyes.

4,289,387

OPHTHALMIC SPECTACLE LENSES HAVING A HYPERBOLIC SURFACE

Mohammed Jalie, Lanchbury House, 32 Ferndene Rd., London, England (SE24 OAB)

Filed Jan. 2, 1979, Ser. No. 607
Claims priority, application United Kingdom, Aug. 9, 1978, 32738/78
Int. Cl.³ G02B *3/04*; G02C *7/02*
U.S. Cl. 351—159 **6 Claims**

1. An ophthalmic spectacle lens comprising a singlet having

an optical axis and power within a range of −20 diopters to +7 diopters, the singlet having anterior and posterior surfaces which are both curved, at least one of said surfaces being of a



hyperboloidal form symmetrically disposed about said optical axis, said hyperboloidal form having in axial section a locus defined by:

$$y^2 = 2000\frac{(n'-n)x}{Fo} - px^2$$

wherein p has a value between 0 and −4 inclusive, and

$$Fo = \frac{1000(n'-n)}{ro}$$

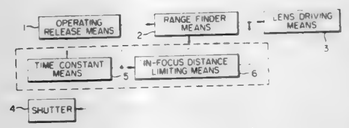
where ro is the radius of said surface at the optic axis of the lens and (n'−n) is the difference between the refractive indices of the media bounding said surface, x and y being orthogonal co-ordinates and all dimensions being in millimeters.

4,289,388

AUTOMATIC FOCUS ADJUSTING DEVICE OF A CAMERA HAVING A SELF-TIMER

Hiroshi Wakabayashi, Yokohama, and Yoshiaki Ohtsubo, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,408
Claims priority, application Japan, Sep. 29, 1979, 54/124707
Int. Cl.³ G03B *3/00, 17/40*
U.S. Cl. 354—25 **6 Claims**



1. In an automatic focus adjusting device of a camera including range finder means responsive to a release operation to detect the distance to an object lying at a position corresponding to a specific area of the phototaking picture plane, and means for driving a phototaking lens so as to be focused to the distance detected by said range finder means, said camera further including timer means and being capable of effecting said release operation in response to the operation of said timer means, the improvement comprising:

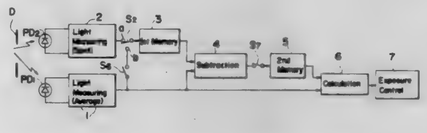
limit means operable in response to said timer means to limit the amount of movement of said phototaking lens driven by said driving means so that when the distance detected by said range finder means exceeds a predetermined distance, said phototaking lens is focused to the predetermined distance.

4,289,389

EXPOSURE CONTROL DEVICE FOR A CAMERA

Toshio Kobori, Sakai, and Masayoshi Sahara, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Continuation of Ser. No. 942,830, Sep. 12, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,098
Claims priority, application Japan, Sep. 13, 1977, 52-110780
Int. Cl.³ G03B *7/083*
U.S. Cl. 354—31 **2 Claims**



1. Exposure control device for a camera comprising:

a diaphragm aperture capable of being varied from an initial aperture size subsequent to the camera release operation;

means for measuring light through the diaphragm aperture to produce a first light measuring output;

first means for optionally storing said first light measuring output prior to the camera release operation; and

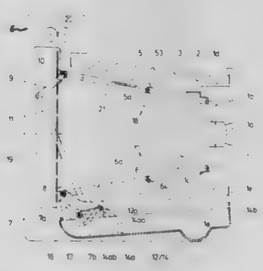
means for controlling the camera exposure based on a combination of a first light measuring output stored by said first storing means, a second light measuring output obtainable from said light measuring means within a period defined between the camera release operation and the initiation of the variation of the diaphragm aperture, and a third light measuring output obtainable from the light measuring means after the initiation of the variation of the diaphragm aperture, and said controlling means includes second means for storing the difference between the first and second light measuring outputs, and means for calculating the third light measuring output with the difference stored by said second storing means.

4,289,390

BELLOWS TYPE FOLDING CAMERA

Peter Lermann, Naring; Karl Wagner; Herbert Schultes, both of Munich, and Gunter Fauth, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,373
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934214
Int. Cl.³ G03B *17/04*
U.S. Cl. 354—187 **13 Claims**



1. A bellows type folding camera having a housing, a displaceable objective support, flexible bellows arranged between said housing and said objective support, and a mechanism for controlling the displacement of the objective support, said mechanism comprising two pairs of lower and upper struts symmetrically hinged between said housing and said objective support, each strut being formed of at least two sections hinged

one to the other to rotate about an axis between a collapsable position and an extended position in which said pairs of struts reinforce said bellows, the corresponding sections of the upper struts and respectively of the lower struts being rigidly interconnected by cross-pieces extending parallel to each other; actuation means including a cam drive arranged at one of the pairs of struts; and coupling means for directly connecting said cam drive to said one pair whereby said other pair of struts is connected to said drive via said cross-pieces.

4,289,391

SHUTTER SPEED DISPLAY FOR VIEWFINDER OF A PHOTOGRAPHIC CAMERA

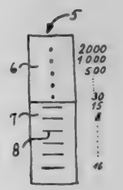
Hans J. Rodeck, Erkerode, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke GmbH & Co., Brunswick, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,775

Claims priority, application European Pat. Off., Jan. 30, 1979, 79100261

Int. Cl.³ G03B *13/02, 17/20*

U.S. Cl. 354—219 **6 Claims**



1. A viewfinder display for a photographic camera having a viewfinder, said viewfinder including a viewing opening and a line of light emitting diodes for indicating a range of camera shutter speed settings, said line having at least first and second portions, said one of said portions of said line of light emitting diodes corresponds to shutter speed settings which are not conducive to hand-held camera operation, said viewfinder display including means for visually differentiating, to an operator looking into said viewfinder, light emitted from said first portion of said line from light emitted from said second portion of said line, wherein said means comprises:

means for refracting light from said first portion of said line; and means for non-refractively passing light from said second portion of said line.

4,289,392

PENTAGONAL ROOF REFLECTING MIRROR ASSEMBLY

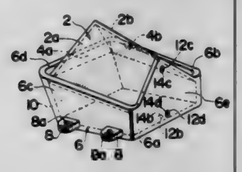
Toshio Kobori, Sakai; Yasuo Yamazaki, and Isamu Uchida, both of Kawachinagano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 25, 1980, Ser. No. 115,182

Claims priority, application Japan, Feb. 1, 1979, 54-12619[U]

Int. Cl.³ G03B *13/08*; G02B *1/00*

U.S. Cl. 354—225 **10 Claims**



1. An improved pentagonal lightweight roof type reflecting mirror assembly, for mounting on a camera, free of dust and debris on its reflecting surfaces and not subject to condensation by trapped water vapor, comprising:

a hollow, substantially airtight, plastic body member having a plurality of internal reflecting surfaces, at least one side of the body member capable of transmitting an image for internal reflection while an adjacent second side is capable of transmitting the image from the interior of the body member to a viewer, a third side of the body member is approximately diagonally juxtaposed across from the common edge of the first and second side and includes an aperture positioned outside the optical axis and extending therethrough, and

a sealing member including a ventilative foamed plastic member fixed in and extending across the aperture, the sealing member being opaque to the transmission of light onto the reflective surfaces, while transmitting water vapor.

4,289,393

CAMERA SUPPORTING DEVICE FOR LOW ANGLE OR CLOSE-UP PHOTOGRAPHY

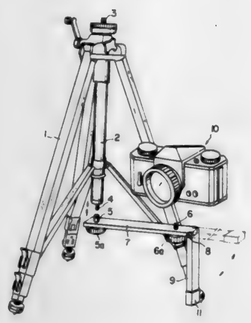
Michio Kawazoe, 30-11, 5 chome, Higashi Narita Suginamiku, Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,392

Claims priority, application Japan, Apr. 24, 1979, 54-55672[U]

Int. Cl.³ G03B *17/00*; F16M *11/26*

U.S. Cl. 354—293 **9 Claims**



1. A camera supporting device for low angle or close-up photography comprising; a tripod having a plurality of foldable legs and an elevator; a camera supporting member; means for attaching one end of said camera supporting member to the lower end of said elevator comprising a threaded screw on the lower end of said tripod elevator and a lever operated socket on one end of said supporting member having a releasable mating plug with a female threaded hole; said camera supporting member extending horizontally beyond the legs of the tripod when the tripod legs are unfolded; means for attaching a camera to the other end of said supporting member; and an adjustable stay pivotally attached to the other end of said camera supporting member, said stay adapted to be adjusted to contact the surface on which the tripod is resting thereby providing a supporting force for the camera supporting member.

4,289,394

PROCESS AND APPARATUS FOR CONVERGING DEVELOPING VAPORS IN DIAZOCOPY MACHINES

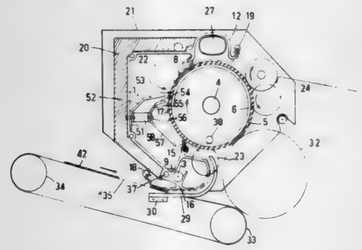
Claude Michel, Freulleville, France, assignor to Rhone-Poulenc Systemes, Creteil, France

Filed Jun. 22, 1979, Ser. No. 50,995

Claims priority, application France, Jun. 23, 1978, 78 18787

Int. Cl.³ G03D *7/00*

U.S. Cl. 354—299 **6 Claims**



1. An apparatus for developing a copy support coated with a diazo sensitive layer previously exposed through an original in an ultraviolet exposure station, said apparatus comprising:

(a) chamber means for enclosing a developing system;

(b) forming means for forming ammonia vapors within said chamber means;

(c) guide means for guiding and moving the copy support within the chamber means;

(d) converging means for converging the ammonia vapors formed by said forming means onto the copy support as the copy support is moved past the converging means and within the chamber means; and

(e) accelerating means for accelerating the ammonia vapors and concentrating the ammonia vapors onto the sensitive layer of the copy,

wherein said converging means and accelerating means is a single static converging means applying the ammonia vapors by a venturi effect created by static converging means, said converging and accelerating means not requiring any means of addition of external energy.

4,289,395

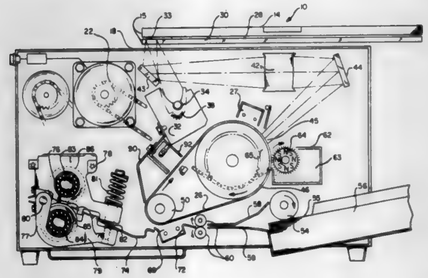
COPY SHEET DEFLECTOR FOR AN ELECTROPHOTOGRAPHIC COPIER

John J. Stelben, Greenwich, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed Dec. 28, 1979, Ser. No. 108,085

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 BE **3 Claims**



1. In a photocopy machine having operating instrumentalities for reproducing an original document onto a copy sheet and having a prescribed path of travel therethrough for the copy sheet, the combination therewith of apparatus for feeding and guiding the copy sheet along the path of travel and for preventing the copy sheet from being diverted from the path of travel and becoming entangled in the operating instrumentalities, said apparatus comprising:

A. a web of photoconductive material,

B. means supporting a portion of said web such that said portion is disposed in and moves along the path of travel of a copy sheet, at least a part of said supporting means comprising a roller

(1) around which the web passes for a portion of its circumference sufficient for the web to effect at least a partial reversal of its direction of movement around said roller, and

(2) which has a sufficiently small diameter such that a copy sheet in contact with the web will not normally follow the web around said roller,

C. a pair of rotating rollers disposed in the path of travel of the copy sheet and between which the copy sheet is intended to pass, said rollers being spaced from said supporting roller by a distance less than the length of a copy sheet,

D. guide means disposed between said supporting roller and said pair of rollers for guiding the leading edge of a copy sheet toward the nip of said pair of rollers, and

E. deflector means disposed adjacent said supporting roller and in juxtaposition with the portion thereof where said partial reversal of the web direction of movement is effected, said deflector means being sufficiently close to the web surface to prevent the trailing edge of the copy sheet from following the web along the reverse direction thereof in the event that the leading edge of the copy sheet does not pass through said pair of rollers,

whereby the copy sheet rumples in front of said deflector means on said guide means and does not become entangled in the operating instrumentalities of the photocopy machine.

4,289,396

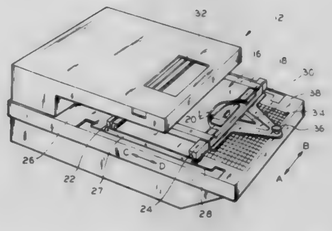
MICROFICHE READER PRINTER WITH INTERCHANGEABLE CARRIAGES

Alexander G. Jastrab, Hartford, Wis., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 19, 1979, Ser. No. 95,703

Int. Cl.³ G03B *13/28*

U.S. Cl. 355—45 **8 Claims**



1. A Microfilm reader/printer comprising a film carrier means mounted on two orthogonally oriented pairs of spaced, parallel rails whereby said carrier means may glide over said rails to any position defined by the rails, keying guideways means formed by said film carrier in association with said rails for releasably enabling said film carrier to be secured onto said rails whereby a plurality of said film carriers may be used interchangeably, means for indicating the position of any said interchangeable film carriers relative to an optical path through said reader and means for securing saidrails to said reader/printer whereby neither of said pairs of rails is removed from said reader/printer when changing film carriers.

4,289,397

LASER CEILOMETER SIGNAL PROCESSING MEANS

Irving Itzkan, Boston; Herbert P. Kent, Swampscott; Michael E. Mack, Manchester, all of Mass., and Richard G. Morton, Richland, Wash., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Jul. 20, 1979, Ser. No. 59,440

Int. Cl.³ G01C *3/08*; G06J *7/12*; G06G *7/18*

U.S. Cl. 356—5 **20 Claims**



1. In a pulsed-laser lidar, comprising a pulsed laser source for projecting toward a target a pulsed laser beam through a turbid medium bearing a distribution of suspended particles;

radiation collector means for gathering target return radiation scattered from the pulsed laser beam by the target, superimposed upon background return radiation scattered from the pulsed laser beam by the distribution of suspended particles;

electro-optical detector means for receiving said superimposed return radiations gathered by said collector means and transducing said superimposed return radiations to a corresponding electrical signal pulse waveform comprising a target signal pulse, from received and transduced target return radiation, superimposed upon a background signal waveform, from received and transduced background return radiation; and

output means for receiving and presenting said electrical signal pulse waveform as a measure of at least one target attribute such as presence, range or magnitude, the improvement comprising:

electrical signal processing means, intermediate said electro-optical detector means and said output means, said electrical signal processing means applying, to said electrical signal pulse waveform, a time-distributed signed electrical weighting function having negligible total weight within a total time interval which can contain said electrical signal pulse waveform and said time-distributed signed electrical weighting function having alternations of sign separated by time intervals of the order of the width of said target signal pulse.

4,289,398

OPTICAL TIME DOMAIN REFLECTOMETER

Roger E. Robichaud, Jemez Springs, N. Mex.

Filed Dec. 4, 1978, Ser. No. 965,889

Int. Cl.³ G01N *21/84*

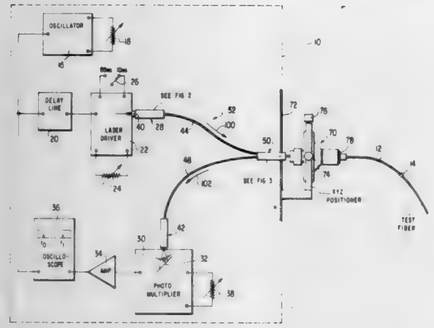
U.S. Cl. 356—73.1 **7 Claims**

1. An optical time domain reflectometer for determining the location of a discontinuity in an optical fiber waveguide comprising

a pulsed light source,

an optical detector, and

optical coupling means for coupling said optical fiber waveguide to said pulsed light source and said optical detector, said optical coupling means including first and second optical fibers each having a central core surrounded by cladding material, one end of said first optical fiber being positioned adjacent said pulsed light source and one end of said second optical fiber being positioned adjacent said



optical detector, portions of the cladding material of each of said first and second optical fibers extending from the other ends of said fibers being fused together to form a composite portion wherein the central cores of said first and second optical fibers are circular, touching and surrounded by a continuum of cladding material, said optical fiber waveguide being positioned adjacent the end of said composite portion and coaxial therewith.

4,289,399

LIGHT SIGNAL OBSERVATION DEVICE

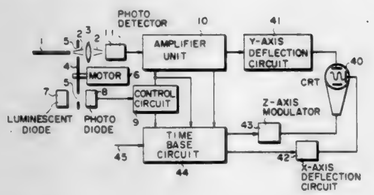
Kozo Uchida, Fussa, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed Aug. 10, 1979, Ser. No. 65,502

Claims priority, application Japan, Aug. 12, 1978, 53-98569; Aug. 12, 1978, 53-98570; Aug. 12, 1978, 53-98571; Aug. 12, 1978, 53-98572

Int. Cl.³ G01J *1/44*, *1/42*

U.S. Cl. 356—226 **34 Claims**



1. A light signal observation device comprising; in combination: light receiving means for detecting a light signal; light intermitting means for intercepting or passing therethrough the light signal incident to the light receiving means; amplifying means for amplifying the output from the light receiving means; time base signal generating means for generating a sawtooth wave in synchronism with the light signal passed by the light intermitting means and while the light signal is intercepted and for generating a luminance modulation signal in the period of generation of the sawtooth wave; and display means for displaying a light signal waveform including a 0 level on the basis of the output signal from the amplifying means and the sawtooth wave and the luminance modulation signal from the time base signal generating means.

4,289,400

APPARATUS FOR MEASURING A GRADIENT OF A SURFACE

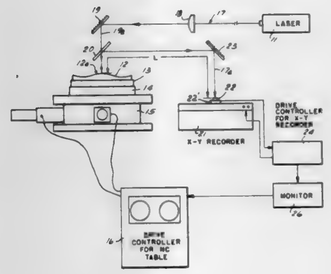
Shigeo Kubota; Tadao Ishihara, and Masahiro Kikuchi, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 882,230, Feb. 28, 1978. This application Feb. 7, 1980, Ser. No. 119,354

Claims priority, application Japan, Mar. 8, 1977, 52-137

Int. Cl.³ G01B *11/24*, *11/26*

U.S. Cl. 356—376 **7 Claims**



1. Apparatus for determining the gradient at different points on the surface of an optical lens comprising, an NC table having a deck for supporting said lens, said deck being mounted for movement in one plane, a drive and controller therefor for moving said deck of said table in said plane, a light detector, a recorder having a deck upon which said light detector is mounted, said recorder having means to record the position of said recorder deck in X and Y coordinates, means for producing a beam of light and directing it normal to said deck toward a point on a surface of said corrective lens whose gradient is to be measured, a half mirror mounted at 45 degrees to the path of said light beam and said beam passing therethrough, a second mirror mounted at 90 degrees to said half mirror and laterally offset therefrom, said beam being reflected from said surface of said lens back to said half mirror where it is deflected to said second mirror and then again deflected to form a spot on said light detector, said recorder including means for moving said light detector until the center of said light detector coincides with the center of the deflected beam, said recorder including means to record the X and Y distances which said recorder deck was required to move from reference X and Y positions to bring the center of said light detector into coincidence with the center of said light spot falling on said light detector and including means for generating ΔX and ΔY signals, a value Δl obtained from which signals according to the equation: $\Delta l^2 = X^2 + Y^2$ is proportional to the slopes of the surface of said corrective lens at said selected point in the X and Y directions and a drive controller for causing movement of said deck of said NC table to cause said light beam to strike said lens at a different point on the surface thereof, so that the slope at said different point can be obtained upon movement of said recorder deck to a position where the center of said light spot coincides with said center of said light detector to obtain ΔX and ΔY signals for said different point from which the gradient θ can be determined from the equation $\Delta l = L \tan 2\theta$, where L is the distance which said light beam travels from said lens to said light detector.

4,289,401

OPTICAL SYSTEM FOR SPECTRAL DEVICES

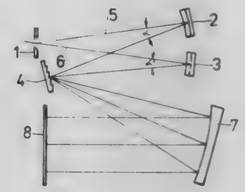
Joachim Mohr, Jena-Lobeda, German Democratic Rep., assignor to Jenoptik Jena GmbH, Jena, Jena, German Democratic Rep.

Filed Dec. 26, 1979, Ser. No. 106,069

Claims priority, application German Democratic Rep., Jan. 3, 1979, 210307

Int. Cl.³ G01J *3/18*

U.S. Cl. 356—305 **1 Claim**



1. An optical system for spectral devices, comprising subsequently in a path of rays and in mutual alignment

at least one light entrance opening,

at least two collimating reflectors for splitting said path of rays,

one dispersing member for the splitted path of rays,

said collimating reflectors being adjacently located in the dispersion direction of said dispersing member and inclinedly arranged relative to each other and at right angles to the dispersion direction, said dispersing member for producing at least two sections of a spectrum in continuation relative to each other,

a camera optics, and

at least one detector arranged in the meridional focal plane of the optical system said camera optics for imaging said sections onto said detector.

4,289,402

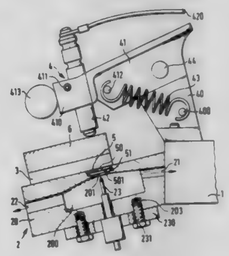
SPARK CHAMBER FOR A VACUUM EMISSION SPECTROMETER

Ehrhardt Teubner, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,200

Int. Cl.³ G01J *3/10*

U.S. Cl. 356—313 **7 Claims**



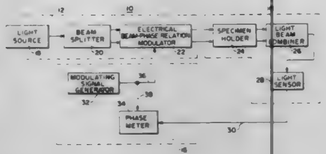
1. A spark chamber for a vacuum emission spectrometer with a housing, which accommodates an anode, as well as a sample table plate carried by the housing, on which the piece of material being inspected and making up the cathode is placed and which carries a spark centering plate, distinguished by the fact that the sample table plate (**5**) includes a moulded laminated material, whose side (**501**) facing the anode (**23**) has a polished surface.

4,289,403

OPTICAL PHASE MODULATION INSTRUMENTS

Robert W. Allington, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Filed Mar. 4, 1977, Ser. No. 774,527
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—349 **69 Claims**



1. A method of phase modulating two beams of light with respect to each other comprising the steps of:

periodically modulating the phase between first and second beams of light with respect to each other in relationship to a modulating signal at one location;

mixing said first beam of light with said second beam of light at a second location to create an interference pattern;

deriving a second signal that has a time relationship to said interference pattern, whereby said second signal indicates said modulating signal at said second location;

said step of phase modulating including the steps of transmitting said first beam of light through a material capable of passing light along a first path, transmitting said second beam of light through said material along a second path which enters and leaves said material at different locations than said first path and perturbing said material, whereby the differences between the two optical path lengths of said first and second beams of light is varied; and

the step of phase modulating further including the step of phase modulating said first and second beams of light with respect to each other by passing at least one of said first and second beams of light through a cell in which the refractive index changes with time in addition to passing said beam of light through said material capable of passing light.

4,289,404

LASER-BASED DEFLECTION MEASURING METHOD AND APPARATUS

Robert M. Kiehn, Luling, Tex., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 27, 1979, Ser. No. 79,286
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—351 **28 Claims**



1. A displacement sensor comprising

a laser including a plurality of reflectors which establish an optical path therebetween, one or more of said reflectors being partially light-transmissive;

a laser amplifier contained within said optical path for generating a laser beam therein;

an optically transmissive means disposed in said path, said optically transmissive means having an optical axis in a normal position parallel to the axis of said laser beam, and said optically transmissive means exhibiting optical anisotropy;

means responsive to an external force to displace said optical axis of said optically transmissive means from said normal position; and

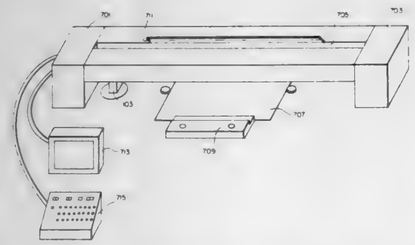
a photosensitive beat detector positioned to intercept radiant energy exiting from said optical path through one or more of said partially light-transmissive reflectors, for detecting one or more difference frequencies between different modes of operation of said laser beam, said one or more difference frequencies resulting from the displacement of said optical axis of said optically transmissive means from said normal position.

4,289,405

COLOR MONITORING SYSTEM FOR USE IN CREATING COLORED DISPLAYS

Philip E. Tobias, 1872 Watson Rd., Abington, Pa. 19001

Filed Oct. 13, 1978, Ser. No. 951,444
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—407 **10 Claims**



1. A method for determining black marker locations for use to determine what colors of a color swatch bar should be read by a scanning head comprising the steps of:

(a) advancing a scanning head over said markers to detect when the color black is read;

(b) storing in a first memory means a number which represents an acceptable width of a black marker;

(c) generating clock pulses which when accumulated represent a value that is commensurate with the distance said scanning head has been advanced;

(d) counting said clock pulses and storing the accumulated value in a second memory means;

(e) storing the count from said second memory means into a third memory means when said scanning head reads the color black;

(f) subtracting the count in said third memory means from the count in said second memory when said head ceases to read the color black;

(g) comparing the difference determined in step (f) with the value in said first memory means and if the difference is less;

(h) storing the value in said third memory means into a fourth memory means indicating that there is a black marker at the location indicated by the value in said fourth memory means.

4,289,406

LIGHT TRANSMISSION MEASUREMENT METHOD

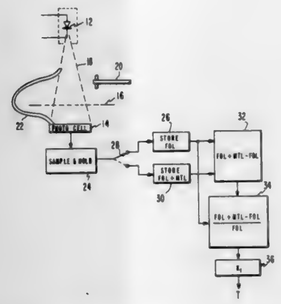
William J. Maddox, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,909
Int. Cl.³ G01N *21/84, 21/86*
U.S. Cl. 356—429 **2 Claims**

1. In a method for measuring light transmission through a continuous sheet having a series of separated aperture patterns thereon wherein a light source is positioned on one side of the sheet and a light sensor is positioned on the opposite side of the sheet, the improvement comprising

continuously bypassing a portion of the light from said light source around said sheet to said light sensor,

recording the sensor output when direct light to said sensor is obstructed, recording the sensor output when direct light to said sensor is unobstructed, and dividing the obstructed sensor output by the unobstructed sensor output to obtain a system ratio,



first measuring sensor output when direct light is blocked from said sensor,

second measuring sensor output when an aperture pattern is located between said light source and said sensor,

subtracting the first measured sensor output from the second measured sensor output to obtain an output difference,

dividing the output difference by the first measured sensor output to obtain a normalized value, and

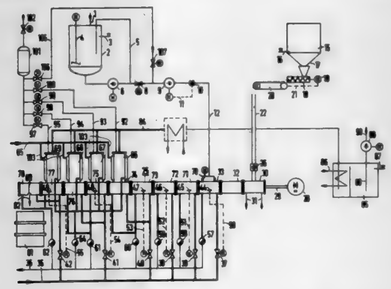
multiplying the normalized value by said system ratio to obtain the transmission ratio of a particular aperture pattern.

4,289,407

METHOD FOR BINDING LIQUID-CONTAINING RADIOACTIVE WASTES AND KNEADING MACHINE THEREFOR

Anwer Puthawala, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Division of Ser. No. 813,476, Jul. 7, 1977, Pat. No. 4,194,842.
This application Nov. 14, 1979, Ser. No. 94,197
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631326
Int. Cl.³ B29B *1/06;* **B01F** *15/06*
U.S. Cl. 366—75 **2 Claims**



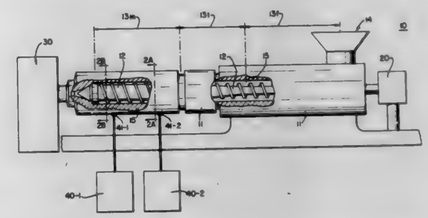
1. In apparatus for binding liquid-containing radioactive wastes in admixture with a thermoplastic material in a worm press kneading machine having a housing enclosing a worm to mix the wastes and thermoplastic material and heating means to heat the mixture, domes disposed above the housing and connected thereto into which domes vapor from the mixture is released from the housing into the domes, and vapor outlets in the domes, the improvement which comprises an external vessel containing a liquid cleaning agent and lines with control valves connecting the external vessel with the domes in the vicinity of the vapor outlets for the introduction of liquid cleaning agent.

4,289,408

MARBLEIZATION OF PLASTIC MATERIALS

James L. Langlois, Shrewsbury, Mass., assignor to The Gillette Company, Boston, Mass.

Division of Ser. No. 660,008, Feb. 23, 1976, Pat. No. 4,125,582.
This application Oct. 31, 1978, Ser. No. 956,243
Int. Cl.³ B29F *1/12*
U.S. Cl. 366—76 **10 Claims**



1. Apparatus for marbleizing molded materials, comprising

a barrel containing an injection screw for feeding the material to be molded;

means for injecting liquid colorant into the feed material where the screw is present;

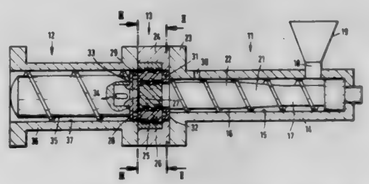
and means for reciprocating said injection screw to feed the material with said injected colorant and eject the material colorant directly into a mold to produce a marbleized part.

4,289,409

APPARATUS FOR PLASTICIZING AND EXTRUDING PLASTIC MATERIAL

Wilhelm Brand, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,162
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906324
Int. Cl.³ B29B *1/10*
U.S. Cl. 366—83 **6 Claims**



1. Multi-stage apparatus for plasticising and extruding plastic materials comprising a first stage and a second stage, a respective rotatable working member for each of said stages, a planetary roller unit having a main spindle and a plurality of planetary spindles, said planetary roller unit being included in said first stage and so drivingly connected to said rotatable working member of said first stage and said rotatable working member

of said second stage, that there is an increase or a reduction in the speed of rotation between said rotatable working member of said first stage and said rotatable working member of said second stage, dependent on the tooth ratio of said planetary roller unit.

4,289,410

WORM FEED EXTRUDER FOR PROCESSING SYNTHETICS, RUBBER AND LIKE MATERIALS

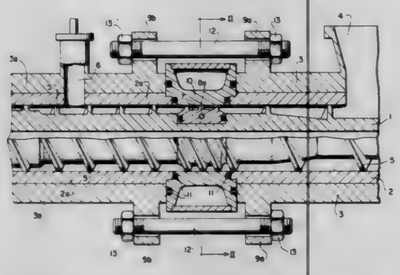
Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover Kleefeld, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,046

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856097

Int. Cl.³ B29B *1/10*

U.S. Cl. 366—88 **4 Claims**



1. A worm feed extruder for processing of synthetics, rubber, and like materials, comprising:

a cylinder; and

a feed worm arranged within said cylinder for rotation about a longitudinal axis, said feed worm being divided transversely to said longitudinal axis into a plurality of worm segments, said plurality of worm segments being mounted on a through-bolt extending along said axis;

wherein at least one said worm segment is centrally divided in the direction of said longitudinal axis into worm segment parts, said cylinder is divided transversely to said longitudinal axis into a plurality of cylinder segments, and at least one cylinder segment surrounding and extending the length of said at least one worm segment in the direction of said longitudinal axis is centrally divided in the direction of said longitudinal axis into cylinder segment parts,

whereby said at least one worm segment may be removed from said cylinder without removing all of said plurality of feed worm segments from said cylinder.

4,289,411

MULTILINGUAL INK JET PRINTER

Rorger W. Cornelius; James D. Hill, and Paul A. Quinn, Jr., all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,601

Int. Cl.³ B41J *3/04*

U.S. Cl. 400—126 **27 Claims**

1. An ink jet printer including:

a recording medium;

supply means to supply ink droplets to said recording medium to cause printing of droplets thereon as characters;

first reference means and second reference means spaced from each other along a first axis;

one of said recording medium and said supply means having movement relative to the other along the first axis in either direction;

one of said recording medium and said supply means having relative movement with respect to the other along a second axis at an angle to the first axis;

determining means to determine the position of the movable one of said recording medium and said supply means with respect to one of said first reference means and said second reference means at any time and to determine the direction of motion of the movable one of said recording medium and said supply means along the first axis with respect to one of said first reference means and said second reference means;

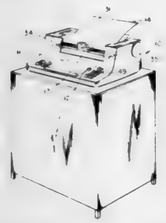
a plurality of font information holding memories;

at least one of said font information holding memories containing font information requiring printing of characters by movement of the movable one of said recording medium and said supply means in one direction along the first axis;

at least one of said font information holding memories containing font information requiring printing of characters by movement of the movable one of said recording medium and said supply means in the reverse direction to the one direction along the first axis;

selection means to select one of said font information holding memories for character printing;

and means responsive to said selection means to cause said determining means to determine the position and direction of motion of the movable one of said recording medium and said supply means with respect to one of said first reference means and said second reference means when said selection means selects one of said font information holding memories requiring printing of characters in the one direction along the first axis and with respect to the other of said first reference means and said second reference means when said selection means selects one of said font information holding memories requiring printing of characters in the reverse direction along the first axis.



4,289,412

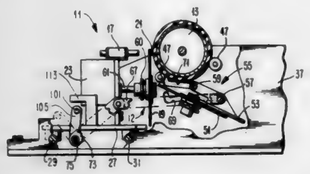
AUTOMATIC TYPEFONT LOADER

William L. Dollenmayer, Versailles, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,288

Int. Cl.³ B41J *1/32*

U.S. Cl. 400—171 **12 Claims**



1. Typefont changing apparatus and a printer comprising:

a platen for retaining a print receiving medium;

a print carrier;

positioning means for positioning said print carrier along the length of the platen to discrete printing positions;

a typefont carrying means located on said print carrier and positionable therewith for holding a typefont and for selectively presenting a preselected typeface on the held typefont to impact a document located on said platen at a printing position;

an elongated rack oriented along the length of said platen and positionable from a first position below the platen to a second loading position;

a plurality of typefont picker holder means carried by said rack along the length thereof for storing at least one typefont;

said positioning means positioning said print carrier to align said typefont carrying means adjacent a selected picker holder means;

means for elevating said rack from said first position to said second loading position for presenting said plural typefont picker holder means to said typefont carrying means for presentation or retrieval of a typefont; and,

means for effecting the exchange of a typefont between said selected picker holder means and said typefont carrying means.

4,289,413

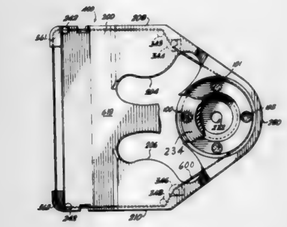
CARTRIDGE AND RIBBON FOR USE WITH A SINGLE SPOOL STENOTYPE MACHINE

Stanley Seplin, 720 Rivergate Plz., Miami, Fla. 31331

Filed Jan. 19, 1979, Ser. No. 4,730

Int. Cl.³ B41J *33/10*

U.S. Cl. 400—196 **3 Claims**



1. For use in combination with a stenograph machine having a recess of predetermined size and configuration opening upwardly and including a drive gear extending into the recess, said recess as seen in plan defining an impact plane in said recess,

a ribbon cartridge having a front and rear and said cartridge being sized and configured to be received in the recess with said front at said plane, said cartridge comprising a generally horizontally disposed shield, said shield including a downwardly extending annular skirt having a lower outturned distal end spaced from said shield a predetermined distance, a spool of an axial dimension less than said predetermined distance sized to be received and journaled about said skirt and supported on said lower outturned distal end, said spool including an annular ink pad rotatable with said spool and said pad having an outer surface and comprising means to soak up a supply of ink,

said skirt, spool and pad being sized and arranged with said outer surface being adjacent the cartridge rear,

said spool having a downwardly facing annular gear surface sized and arranged for companionate engagement with the drive gear when the cartridge is in the recess adapting the spool for rotation about the skirt when the drive gear turns;

guide means extending from the shield comprising spaced downwardly extending guide pins and defining a ribbon path about the pins and outer surface of said pad on said spool,

a taut loop form ribbon disposed about said pad and in engagement with said outer surface of said pad, said ribbon having an inside surface and an outside surface and being of a width less than said predetermined distance and said inside surface being at all times in engagement with said ink pad for movement along said path when said spool is rotated and with a portion of the outside ribbon surface at all times being at said plane,

said spool having an access opening means facing upwardly for charging ink through said opening means onto said pad to be soaked into said pad.

4,289,414

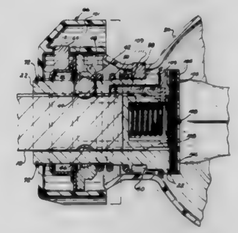
TORQUE TRANSMITTING COUPLING

Florian B. Recker, 802 First St., Dyersville, Iowa 52040

Filed Dec. 6, 1979, Ser. No. 100,826

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—12 **10 Claims**



1. A torque transmitting coupling comprising:

a housing;

an opening in said housing, a portion of said opening being non-circular, said opening being adapted to receive a non-circular portion of a shaft;

means for selectively locking the non-circular portion of said shaft into the opening in said housing, said locking means being biased to a locked position and selectively movable to an unlocked position;

said locking means comprising a plurality of bores radially disposed in said housing and a recess in said shaft, a locking element slidably disposed in each of said bores and radially movable from an inner, locking position, wherein the elements are engageable within the recess of said shaft to thereby prevent relative axial movement of the housing with respect to the shaft and an outer, unlocked position, whereby the elements permit relative axial movement of the housing and the shaft, an annular cam means slidably disposed around said housing and being axially movable between a first position holding the locking elements in their locking position and a second position allowing the locking elements to move to their unlocked position and means for biasing said cam means to said first position;

guard means rotatably disposed around said housing for preventing human contact with said housing when the housing is locked onto said shaft;

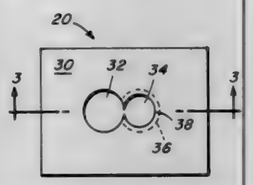
adjusting means attached to said guard means and around said housing and disposed between the housing and the guard means for selectively moving said cam means from the first to the second position thereof, said adjusting means having a plurality of depressions around the periphery thereof for contacting said locking elements when said locking elements are in the unlocked position thereof, whereby rotation of the guard means causes rotation of the adjusting means which causes rotation of said housing and whereby the opening in the housing can be aligned with the shaft for placing the housing over the shaft.

4,289,415

ADJUSTABLE COUPLING DEVICE

Lawrence W. Fishinger, Denville, N.J., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 21, 1980, Ser. No. 151,992
Int. Cl.³ F16B *7/10*
U.S. Cl. 403—104 **13 Claims**



1. An adjustable coupling device comprising:

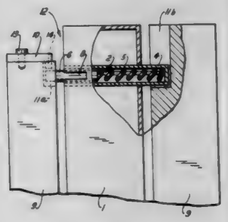
a single-piece rigid body including an unthreaded first hole therethrough of a diameter adapted to provide clearance for a first threaded rod of a predetermined diameter and a predetermined thread type and including a threaded second hole which is adapted for engaging a second threaded rod of said predetermined diameter and said predetermined thread type, said threaded second hole having a minor thread diameter which is tangent to said first hole and having an axis parallel to an axis of said first hole, whereby, when said first and second threaded rods are inserted into said first and second holes, respectively, of said adjustable coupling device, the threads of said first rod engage the threads of said second rod, said device thereby providing between said rods a coupling which can be adjusted by turning either of said rods.

4,289,416

ARRANGEMENT FOR MOUNTING AND DISMOUNTING PIVOTED LEVERS IN TOOL HOUSINGS

Hans J. Birr, Wuppertal, and Paul-Ulrich Uibel, Ennepetal, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,829
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 7906701[U]
Int. Cl.³ F16C *11/06*
U.S. Cl. 403—146 **3 Claims**



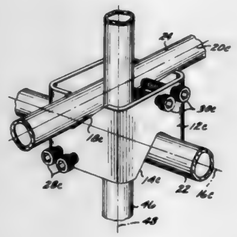
1. An arrangement for mounting and dismounting pivoted lever assemblies in tool housings, comprising a lever having two opposite lateral sides and including a projection integrally formed therewith and extending transversely therefrom, a tool housing having a recess to receive said lever and formed with two oppositely positioned elongated grooves each facing the respective opposite side of said lever, said projection being formed with an elongated blind bore having a closed end formed by said projection and extending into one of said grooves and an open end diametrically opposite to said closed end; an axle journal inserted into said open end and projecting therefrom into a second of said elongated grooves, said axle journal being adapted to move within said blind bore between a first position engaging said second groove and a second position being disengaged from said second groove; a spring mounted within said blind bore and having one end supported in said closed end of said blind bore and another end abutting said axle journal; and a sheet metal holder secured to the tool housing above said second groove for preventing an upward movement of said axle journal in said first position.

4,289,417

CLAMP

Kenneth H. Mandell, 19 Pomona Ave., Long Beach, Calif. 90803

Continuation-in-part of Ser. No. 64,038, Aug. 6, 1979, abandoned. This application May 5, 1980, Ser. No. 146,446
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—218 **3 Claims**



1. A clamp for mounting a plurality of elongated structural elements in spaced apart, right angular relation, said clamp comprising:

a tubular clamp body of rectangular cross section having a first seat formed in opposite walls of said clamp body and extending along a first axis, and a second seat formed in opposite walls of said clamp body and extending along a second axis in spaced, right angular relation to said first axis, said first and second seats being laterally open for receipt, respectively, of a pair of elongated structural elements, said clamp body further having a third seat defined by an inner corner of said clamp body and extending along a third axis in spaced, right angular relation to said first and second axes, said clamp body including openings opposite said first, second and third seats for receiving clamping means respectively, for engagement with said structural elements, respectively, for urging said structural elements against said seats.

4,289,418

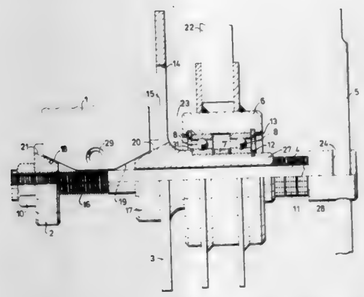
DEVICE FOR SECURING AN EXPANDABLE HUB IN A HOLE

Owe Westin; Oswald Westin, and Jan Westin, all of Föreningsgatan 11, 951 43 Lulea, Sweden

Filed Jul. 30, 1979, Ser. No. 61,627
Claims priority, application Sweden, Aug. 11, 1978, 7808581
Int. Cl.³ F16B *2/00, 7/04*
U.S. Cl. 403—369 **6 Claims**

1. In a device for securing an expandable hub in a hole, particularly, but not exclusively, the hub of a cable drum wheel in the center hole in the side of a cable drum, comprising a hub having projecting in an axial direction a part which is intended to be inserted into a hole and expanded there to bear against the walls of the hole, said part consisting of a number of radially movable tightening jaws, which are actuated by a bracing block which is operated by the effect of force, said block being provided with a number of slots corresponding to the number of jaws, said slots having an inclined guide surface, which surface acts upon a corresponding guide surface on one end of the interacting jaw in conjunction with the radial displacement of the jaw when the block is operated, both the jaws and the

block remaining unrotatable when operated, said force being applied to said bracing block to force said bracing block against said tightening jaws, the improvement consisting of a second inclined guide surface at the opposite end of each of said interacting jaws, arranged to interact with a complementary guide surface at the radially inner end of a radial oblong slot in a guide plate attached to said hub, said jaw in radial and



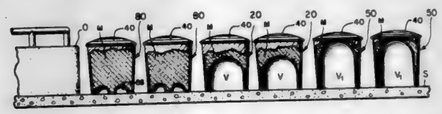
axial movement being unrotatably guided in said oblong slot, said bracing block being operated by means of a shaft running through said hub, which said plate permits an improved centering of the device when said device is inserted into the hole, said jaws having a traverse hole, and an expandable means connected through said holes whereby said jaws are radially directed against said shaft.

4,289,419

INERTIAL BARRIER SYSTEM

Bruce O. Young, and Wan Seegmiller, both of Sacramento, Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Oct. 1, 1979, Ser. No. 80,766
Int. Cl.³ E01F *15/00*
U.S. Cl. 404—6 **13 Claims**



10. An inertial barrier system for attenuating the energy of errant vehicles comprising:

a plurality of module means arranged in a selected array adjacent a hazard in the path of travel of a vehicle, each of said module means including a frangible container having a generally inverted U-shaped configuration with an opened and enlarged upper portion having a relatively large volume and a lower portion having a relatively small volume so that each container is adapted to receive a continuous mass of dispersible energy-attenuating material and to maintain the center of gravity of said mass above said lower portion, the lower portion of each of said containers further defining a central void of substantial volume for receiving a portion of the dispersing energy-attenuating material upon the initial impact of the errant vehicle against the frangible containers; and

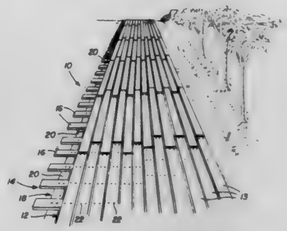
means to cover said opened portion of each container.

4,289,420

WOODEN MAT

Marvin L. Davis; Edd C. Davis, and Albert R. Green, all of Rte. 1, Box 66, Shubuta, Miss. 39360

Filed Jun. 6, 1979, Ser. No. 45,929
Int. Cl.³ E01C *5/14*
U.S. Cl. 404—35 **5 Claims**



1. A wooden mat for use in forming a temporary roadway for supporting vehicles, or the like, said mat comprising:

surface layer means directly abuttable with said vehicles, or the like, which may be positioned on said roadway, said surface layer means including a first set of longitudinally-extending, parallelly aligned wooden planks, said first set of planks lying substantially in the same plane and being in a spaced apart relationship to one another which defines a first space therebetween, said first set of planks being substantially formed of planks having equal lengths and being staggered longitudinally with respect to one another whereby the respective ends of planks in said first set of planks do not all lie in the same plane;

intermediate layer means positionable below said surface layer means and being fixedly attached thereto, said intermediate layer means including a second set of planks lying substantially in the same plane and being in a spaced apart relationship to one another which defines a second space therebetween, said second space being utilizable to position planks associated with transversely-located adjacent wooden mats therein in an interdigitated manner which results in an interlocking of said transversely-located adjacent wooden mats to thus prevent relative longitudinal movement therebetween, an offset positioning so as to provide staggered lap joints for increased stability, and a horizontal extension in width of said roadway, said second set of planks being formed substantially of planks having equal lengths and having their respective ends lying in the same plane, said second set of planks being substantially orthogonally positioned with respect to said first set of planks;

end plank means lying in the same plane as said second set of planks and being in parallel, spaced apart alignment therewith, said end plank means comprising a plank having at least one end thereof lying in the same plane as a respective set of ends of said second set of planks and further being directly fixedly connectible to said surface layer means;

lower layer means positionable below said intermediate layer means and being fixedly attached thereto, said lower layer means including a third set of planks lying substantially in the same plane and being in a spaced apart relationship to one another which defines a third space therebetween, said third set of planks being formed substantially of planks having equal lengths and having their respective ends lying in the same plane, said third set of planks being substantially orthogonally positioned with respect to said second set of planks; and

short segment means fixedly attached to said lower layer means and orthogonally positioned relative thereto, said short segment means lying in the same plane as said second set of planks and being in parallel alignment therewith, said short segment means being positionable in an

interdigitated manner between an end plank means and an intermediate layer means of a longitudinally-located adjacent wooden mat to effect both a longitudinal extension of said roadway and an interlocking of said longitudinally-located adjacent wooden mats to thus prevent relative longitudinal movement therebetween.

4,289,421

CONCRETE ROAD PAVING ASSEMBLY

William P. Sampey, and Larry A. Sampey, Sr., both of P.O. Box 2893, Morgan City, La. 70380

Filed Jun. 11, 1979, Ser. No. 47,341
Int. Cl.³ E01C *19/12*
U.S. Cl. 404—106 **2 Claims**



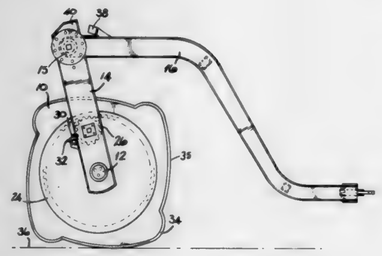
1. A lightweight paving machine comprising,
(a) a frame structure comprising multiple modular units ridgedly attached to one another wherein each modular unit comprises upper frame members separated from lower members by vertical frame members attached at their opposite ends to said upper frame member and lower frame members, respectively, said vertical frame members of adjacent modular units being attached to one another;
(b) a screed assembly comprising a frontal strike-off plate attached parallel to a front side of said frame structure and a finishing pan attached to the bottom side of said frame structure, said finishing pan comprising an adjusting assembly to adjust the crown shape formed by said finishing pan, said adjusting assembly comprising a metal bar extending from one end of said frame structure to its other end, said metal bar being positioned above said pan, two rows of threaded bolts attached at one bolt end to said pan and its opposite end passing through openings in said metal bar, one nut screwed into each of said bolts to pull said pan in a desired position, said pan being vertically adjustable on said frame structure at said pan's opposite ends;
(c) an auger attached parallel to said screed assembly and positioned in front of said frontal strike-off plate;
(d) skid guide units attached to each end of said frame structure, each comprising a flat metal plate positioned perpendicularly to said frame structure end and parallel with bottom side of said frame structure;
(e) winches attached to said frame structure; and
(f) vibrators attached to said finishing pan to impart a vibrating motion to said finishing pan.

4,289,422

COMPACTOR

Pieter B. De Klerk, Germiston, and Andries G. Velthuysen, Pretoria, both of South Africa, assignors to Fowler Holdings Limited, Pretoria, South Africa

Filed Sep. 19, 1979, Ser. No. 77,118
Claims priority, application South Africa, Sep. 25, 1978, 77/5437
Int. Cl.³ E01C *19/26*
U.S. Cl. 404—124 **6 Claims**



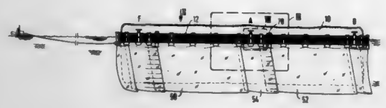
1. An impact compactor comprising a non-circular roller mounted for rotation about axle means, draft arms positioned on one or both sides of the roller and supporting between them the axle means, said draft arms extending upwardly from the axle means, a draw bar for towing the roller, said draft bar being pivotally connected through at least one torsion bar extending transversely of and above the roller to the draft arms, and a gear and pinion linkage between the roller and the draft arms.

4,289,423

PROTECTIVE SKIRT FOR AN ICEBERG

Georges L. Mougin, Paris, France, assignor to I.T.I. Limited, Paris, France

Filed Nov. 20, 1979, Ser. No. 96,037
Claims priority, application United Kingdom, Nov. 22, 1978, 45638/78
Int. Cl.³ E02B *1/00*
U.S. Cl. 405—61 **4 Claims**



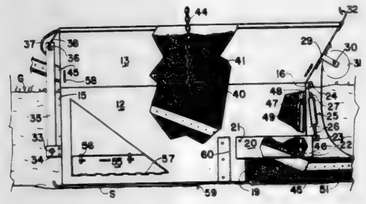
1. A protective skirt for a tabular iceberg, the skirt comprising:
a string of floating posts;
an upper protective portion in the form of panels suspended in a vertical plane between adjacent pairs of the floating posts;
a lower protective portion suspended below the floating posts; and
at least one auxiliary float;
at least one of the floating posts including panel-manipulating means for drawing in at least one of the panels suspended therefrom, whereby the length of the string of floating posts may be shortened by shortening the length of at least one of the spans between floating posts;
the lower protective portion being attached to the floating posts in such a way that it is supported by the floating posts for each span of the string of floating posts that is not capable of being shortened by panel-manipulation means;
the lower protective portion including a vertically extending division associated with each floating post that includes panel-manipulating means, with one edge of the division being supported by one of the floating posts and the other edge of the division being supported by a corresponding auxiliary float, the length of the or each span of the lower protective portion having one end supported by the auxiliary float being such that the edges of the division overlap and the degree of overlap is adjustable by moving the position of the auxiliary float relative to the string of floating posts in order to accomodate shortenings of the length of the string of floats.

4,289,424

APPARATUS FOR LAYING CONDUIT, CABLE AND THE LIKE IN OR BENEATH FILL MATERIAL

Robert J. Shefbuch, Covington, Ohio, and Marvin E. Rue, 4285 W. State, Rte. 571, West Milton,, Ohio 45383, assignors to Marvin E. Rue, West Milton, Ohio

Filed Jan. 7, 1980, Ser. No. 109,899
Int. Cl.³ F16L *1/02*
U.S. Cl. 405—179 **33 Claims**



1. A device for the rapid laying of an article in a simultaneously deposited layer of embedding material, including a structure having opposite ends, one of which is a leading end and the other a trailing end, said structure containing within the bounds thereof a hopper for holding a supply of embedding material, an article feeding tube extending through the interior of said hopper to have its inlet end located adjacent said leading end of said structure and its output end adjacent said trailing end, means defining an exit opening from said hopper and from said structure for embedding material within said hopper to discharge from said trailing end adjacent said output end of said feeding tube, the output end of said tube extending to and through said exit opening, said tube and said exit opening being arranged at said trailing end to provide that in the movement of said device over a supporting surface there is a continuing deposit on such surface of a layer of embedding material concurrently with a continuing deposit of the article issuing from said tube within or on said layer of discharged embedding material.

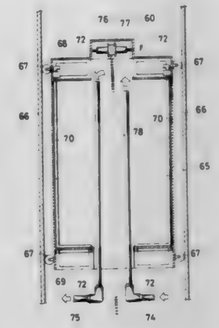
4,289,425

UNDERWATER ACCUMULATOR FOR PRESSURIZED GAS

Fumio Ootsu, 6-4, Shirahae-cho, Sasebo-shi, Nagasaki-ken, Japan (857)

Filed Dec. 1, 1978, Ser. No. 965,610
Claims priority, application Japan, Jun. 16, 1978, 53/72903
Int. Cl.³ F17C *1/00*
U.S. Cl. 405—210 **9 Claims**

1. An apparatus for accumulating pressurized gas underwater comprising:
a reservoir adapted to be placed underwater for storing pressurized gas, said reservoir having an opening through which water can flow into and out of the reservoir;
an inlet passage and an outlet passage communicating with said reservoir for respectively supplying and discharging the pressurized gas to and from said reservoir;
means cooperable with said reservoir for anchoring the reservoir underwater, comprising a winch mounted on said reservoir, a sprocket driven by said winch, a chain extending around said sprocket for being driven thereby upon actuation of said winch, a weight connected to said chain, means on said reservoir for operating said winch in response to variations in the water head at said reservoir;



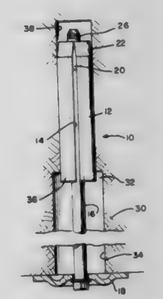
a housing adapted to be anchored underwater and a sleeve mounted in said housing, said reservoir being movably supported in said sleeve; and
a plurality of rollers rotatably mounted on said reservoir, said rollers being in rolling engagement with said sleeve.

4,289,426

FRICTION ROCK STABILIZER AND METHOD OF FORMING SAME, AND A METHOD OF STABILIZING AN EARTH STRUCTURE

Walter M. Chaiko, Titusville, N.J., assignor to Ingersoll-Rand Company, Princeton, N.J.

Filed Sep. 14, 1979, Ser. No. 75,749
Int. Cl.³ E21D *21/00, 20/00*
U.S. Cl. 405—259 **7 Claims**



1. A method of stabilizing an earth structure through a given depth thereof with a friction stabilizer having a length of less than said given depth, comprising the steps of:
forming a borehole of a given circumferential dimension and of the given depth in said earth structure;
stabilizing the earth structure along a first length of said given depth and substantially fully about the circumference of said first length by installing a friction stabilizer having a generally tubular body, which is conformable to said given circumferential dimension, and having a length substantially corresponding to said first length, fully into said borehole until it occupies substantially the entirety of said first length and frictionally engages substantially the full circumference of said first length with a given, substantially uniformly-distributed anchoring force; and
stabilizing the earth structure along the remaining length of said given depth by attaching one end of an elongate extension article to the installed stabilizer; and

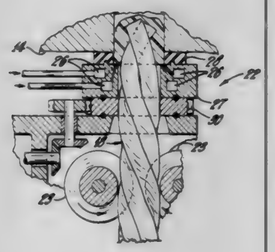
mounting an earth structure retention plate on the opposite end of said article securely against the earth structure, to lend support and stabilization to the remaining length of said depth.

4,289,427

PROCESS FOR INSTALLING ROOF BOLTS

John A. Rolston, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 7, 1979, Ser. No. 10,097
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—260 **10 Claims**



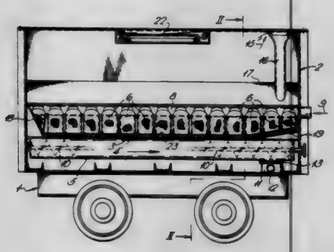
1. A process comprising:
inserting a cable into a hole in a surface of a mine shaft, said cable comprising a plurality of twisted strands wherein a plurality of said strands each have a duct extending from one end of the strand to the other to permit air to escape from the hole;
sealing the entrance of said hole around said cable;
rotating the cable in the direction to tighten the cable during its insertion into said hole and;
simultaneously with the insertion of said cable, injecting a bonding agent into said hole around said cable.

4,289,428

PARTICULATE MATTER AIR ASSISTED SCREW DISCHARGE APPARATUS

Frederick J. Hiorns, Orpington, England, assignor to The Associated Portland Cement Manufacturers Limited, London, England

Filed Aug. 2, 1977, Ser. No. 821,147
Claims priority, application United Kingdom, Aug. 6, 1976, 32849/76
Int. Cl.³ B65G *53/38*
U.S. Cl. 406—39 **11 Claims**



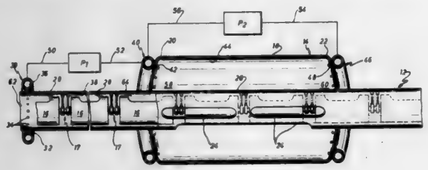
1. A mobile bulk container from which particulate solid matter is adapted to be discharged in a relatively constant manner with a minimum of raised dust comprising a closed container defining a fluidizing chamber within which the particulate matter is admixed with air, said container having a downwardly sloping floor upon which the particulate matter may rest, said sloping floor having a bottom edge terminating adjacent and along a channel, means for directing pressurized air upwardly from said floor to admix with and fluidize at least a portion of the particulate matter, a screw conveyor within said channel into which the particulate matter is collected and conveyed by said screw conveyor toward a discharge end area of said channel within said container, said screw conveyor and said channel being constructed and arranged to provide in conjunction with the collected particulate matter an air seal between the fluidized portion of the particulate matter in said fluidizing chamber and the particulate matter discharged by said screw conveyor at said discharge end area, conduit means leading from adjacent a top of said fluidizing chamber and opening into said discharge end area within said container for refluidizing the discharged solid matter at said discharge end area, a discharge opening placing said discharge area into fluid communication with atmosphere through which the refluidized particulate matter is discharged to atmosphere in the relative absence of raised dust due to the air seal between said fluidizing chamber and said discharge area, a discharge port between said discharge area and said conduit means through which the particulate material discharged by said screw conveyor enters said discharge area, and means for varying the size of said discharge port to controllably regulate the flow of the discharged material into the discharge area and hence to atmosphere.

4,289,429

METHOD AND APPARATUS FOR CONVEYING MATERIAL IN PIPELINE CAPSULES

Alexander I. Kalina, 12439 Millbanks, Houston, Tex. 77031

Continuation-in-part of Ser. No. 925,514, Jul. 17, 1978, abandoned. This application Aug. 31, 1979, Ser. No. 71,178
Int. Cl.³ B65G *51/36*
U.S. Cl. 406—105 **16 Claims**



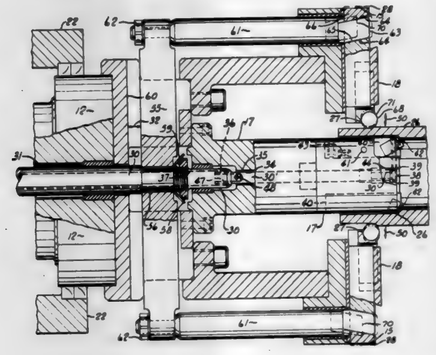
8. A pipeline capsule transportation apparatus for transporting capsules in a linked train, the apparatus comprising;
(a) an elongated pipeline having an upstream pipeline location and a downstream pipeline location remote from the upstream location;
(b) an energy transfer station downstream of the downstream pipeline location, the transfer station comprising an elongated enclosure which is associated with a length of pipeline and is in fluid communication with the length of the pipeline, the enclosure having a cross-sectional area larger than that of the pipeline;
(c) station pump means for withdrawing fluid from a downstream location of the station and pumping the fluid into an upstream location of the station to provide downstream fluid flow along the enclosure for propelling capsules passing through the length of pipeline in the enclosure; and
(d) control means for controlling the velocity of fluid between the upstream and downstream pipeline locations during use by exhausting fluid from the pipeline for the pressure to be less at the upstream pipeline location than at the downstream pipeline location, and for the pressure to increase in the pipeline from the upstream pipeline location to the downstream pipeline location.

4,289,430

METHOD AND APPARATUS FOR SIMULTANEOUSLY BORING AND TURNING UPSET PIPE END

Alex Shashaty, Leetonia, Ohio, assignor to Fairfield Machine Company, Columbiana, Ohio

Filed Mar. 14, 1979, Ser. No. 20,366
Int. Cl.³ B23B *35/00, 51/08*
U.S. Cl. 408—1 R **8 Claims**



1. A combination boring and turning machine for upset pipe ends comprising, a support frame, a spindle journaled for rotation on its axis in said frame, a motor in rotary driving engagement with said spindle, a pipe end inside boring head axially aligned with and secured to one end of said spindle, a pipe end outside turning head secured to said one end of said spindle and coaxially positioned over said boring head for clearance therebetween to coaxially receive a pipe end for simultaneous boring and turning said boring head having a plurality of circumferentially spaced pipe end boring tools and said turning head having a plurality of circumferentially spaced pipe end turning tools respectively, and means to retract said boring tools radially inward out of boring engagement with a pipe end and to retract said turning tools radially outward out of turning engagement with the same pipe end simultaneously.

6. A method of simultaneously boring and turning an upset pipe end comprising the steps of, clamping a pipe in axial alignment with an axially rotating combination ID-OD pipe end boring-turning head having respective ID and OD cutters in preparation for boring and turning an upset end of the pipe, axially engaging said rotating combination head and said pipe end and thereby simultaneously boring and turning a portion of said upset pipe end, thereafter simultaneously retracting the ID cutters radially inward and the OD cutters radially outward out of engagement with said pipe end, and then axially separating said combination head and said pipe end.

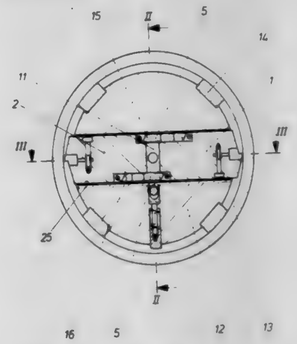
4,289,431

BORING TOOL WITH FLOATING BLADES

Garrj Berstein, Erkelenz, Fed. Rep. of Germany, assignor to Wilhelm Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

Continuation of Ser. No. 904,552, May 10, 1978, abandoned. This application Feb. 28, 1980, Ser. No. 126,852
Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723622
Int. Cl.³ B23B *51/00, 39/06*
U.S. Cl. 408—154 **18 Claims**

1. In a bearing tool, a combination comprising a tool head having an axis and being provided with a slot extending transverse to said axis; a pair of opposite cutting knives floatably mounted in said slot movable away from each other to a cutting position and toward each other to an inactive position, each of said cutting knives having an other cutting edge and an inner end face opposite a corresponding end face of the other cutting knife; biasing means cooperating with said cutting knives for biasing the same toward each other to said inactive position; spacer means having a pair of opposite faces and a face extending transverse to said opposite faces, said spacer means being movable in said tool head between two positions in one of which said opposite faces respectively engage said inner end faces of said cutting knives to hold the latter in said cutting position in which said cutting edges of said knives are spaced a fixed predetermined distance from each other and in another of which said spacer means permit said cutting knives to move toward each other to said inactive position under the influence of said biasing means; stop means arranged for engagement with the transverse face of said spacer means in said one position of the latter; and means for moving said spacer means between said one position in which said transverse face of said spacer means engages said stop means to thereby hold said cutting knives in said cutting position, and said other position in which said spacer means permits said cutting knives to move said inactive position.

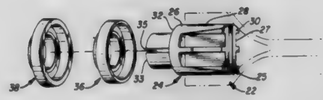


4,289,432

FLAT WOOD BIT ADAPTER

Johnny C. Elkins, 120 W. 4th St., and Marvin C. Hanz, 423 S. Irving, both of San Angelo, Tex. 76901

Filed Aug. 13, 1979, Ser. No. 66,491
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—201 **7 Claims**



6. In a flat wood bit having opposed cutting edges positioned rearwardly of a centrally located pilot bit so that the bit can be used for boring holes through a workpiece, the combination with said wood bit of an adapter for enlarging a hole previously bored into the workpiece;
said adapter having a cylindrical body of a diameter to be slidably received in close tolerance relationship within the previously bored hole of the workpiece; said body includes a forward end and a rear end;
a cavity formed centrally within said circular body for receiving the pilot bit of the wood bit therewithin; spaced upstanding keepers arranged adjacent to one another and having one end affixed to and another end extending from said rear end, said keepers each include a flat face on the nearest adjacent slide thereof;

said keepers being positioned in equally spaced relationship respective to the center of said rear end, with said cavity being located equidistance therebetween;

said keepers have outermost faces tapered towards one another in a rearward direction so that the keepers are each reduced in thickness towards said another end;

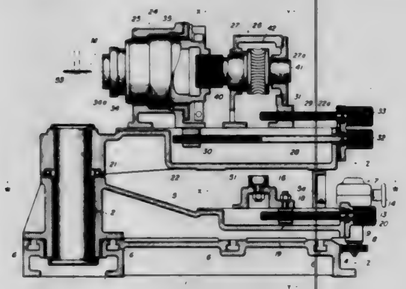
the space between said keepers being smaller than the thickness of the wood bit so that the keepers must be sprung slightly apart when the wood bit is received therebetween, thereby enabling the adapter to be removably attached to the forward, marginal end of the wood bit.

4,289,433

BEVEL GEAR CUTTING DEVICE

Toshizo Inoue, 1-6-46 Kamitakamaru 1-chome, Tarumi-ku, Kobe-shi, Hyogo-ken, Japan

Filed Sep. 27, 1979, Ser. No. 79,313
Int. Cl.³ B23F *5/20*
U.S. Cl. 409—29 **5 Claims**



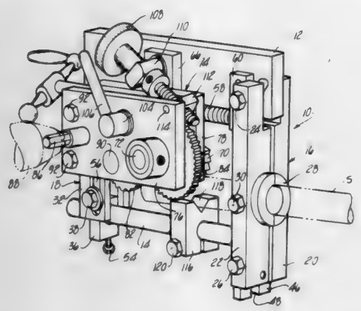
1. A bevel gear cutting device comprising a stationary machine base, a support shaft extending uprightly from said machine base, a table support member mounted at one end on said support shaft for rotation about the axis of the shaft and adjustable with respect to said machine base in alignment with the generatrix of a bevel gear blank, a holding table adjustably supported on said table support member having a rotor, a gear blank rotating and rocking mechanism support member mounted at one end on said support shaft for rotation about the axis of the shaft, a gear blank rotating mechanism slidably supported on said gear blank rotating and rocking mechanism support member and having a rotary gear blank holding member at the leading end, a gear blank rocking mechanism slidably supported on said gear blank rotating and rocking mechanism support member, a main shaft extending through said gear blank rotating mechanism and keyed to said gear blank rocking mechanism, means to rotate said gear blank rocking mechanism at a rate greater than the rotational rate of said main shaft by the number of teeth to be formed on said gear blank and including a cam plate cooperable with said rotor, adjustment means acting on said gear blank rotating mechanism to position the virtual apex of the cone shape of said gear blank on an extension of the axis of said support shaft, means for biasing said cam plate towards said rotor on the holding table, and a high speed cutter movable along the generatrix of said gear blank cone at a low speed in the same plane as the rocking plane of the axis of the cone shape of said gear blank so as to reciprocally move the cutting edge of the cutter between a position just above the conical surface of the gear blank to the deddendum to thereby cut teeth on the gear blank in conformity with the leading curved face of said cam plate.

4,289,434

PORTABLE KEY SEAT CUTTER FOR SHAFTS

Bert W. Piper, 36051 Goddard Rd., Romulus, Mich. 48174, assignor to Bert William Piper, Belleville, Mich.

Filed Sep. 24, 1979, Ser. No. 78,500
Int. Cl.³ B23C *3/30*
U.S. Cl. 409—177 **5 Claims**



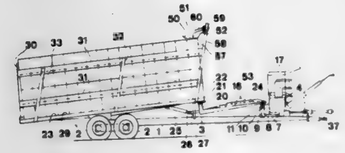
1. A portable tool for cutting a longitudinally extending key seat in a work shaft comprising, a generally rectangularly shaped, main support frame having spaced front and rear upright end bars, a lower support bar extending between and connecting the lower ends of the end bars and an upper guide bar extending between and connecting the upper ends of the end bars, said guide bar forming a rectilinear guideway between said end bars, said front end bar having an opening therein above the support bar through which the free end portion of a work shaft is adapted to be extended, means for clamping said work shaft in said opening, an upright support block mounted on said support bar and adjustable lengthwise thereof, said support block being adapted to engage and support a portion of the work shaft extending through said opening and cooperating with said front end bar for rigidly mounting the frame in a fixed position on a work shaft such that the guideway extends lengthwise of and above the shaft on which the frame is clamped, a slide mounted for rectilinear movement on said guideway, a manually rotatable lead screw extending between said end bars and parallel to said guideway, said lead screw being connected with said slide to shift the slide lengthwise of the guideway when the screw is rotated, a carriage supported on said slide for movement therewith and pivotable thereon about a horizontal axis perpendicular to the path of travel of the slide toward and away from the shaft on which the frame is mounted, means for pivoting the carriage in a vertical plane about said axis on the slide, a drive train on said carriage having an input shaft, a horizontally extending output shaft and gears interconnecting said shafts, said input shaft comprising a stub shaft adapted to be connected with the chuck of a hand-held, power driven drill, said output shaft being journalled on said carriage adjacent the front end thereof and having a rotary key seat cutter mounted thereon for rotation in the axial plane of the work shaft on which the frame is mounted, said output shaft being spaced radially from and forwardly of the pivot axis of the carriage on the slide so that the key seat cutter is displaced in a vertical plane toward and away from the axis of the work shaft in response to pivotal movement of the carriage, said drive train being driven by said input shaft and being free of a driving connection with the lead screw so that rotation of the cutter is independent of its adjustment lengthwise of the shaft, whereby, when the input shaft is connected to the rotating chuck of a hand-held drill, the cutter can be fed radially into the work shaft to cut an arcuate slot therein and can then be advanced lengthwise of the frame by rotating said lead screw to cut a key slot lengthwise of the shaft to the free end thereof.

4,289,435

AUTOMATIC BALE WAGON

Jean-Claude A. E. Boirin, Pontailler sur Saone, and Jean-Pierre Guenon, Plombieres-lez-Dijon, both of France, assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 9, 1979, Ser. No. 65,023
Claims priority, application United Kingdom, Aug. 16, 1978, 33512/78
Int. Cl.³ A01D *87/12*; B65G *57/32*
U.S. Cl. 414—39 **7 Claims**



1. In a bale wagon for picking up bales lying in a field and forming a stack thereof having a mobile chassis adapted for movement across the field: a bale pick-up means mounted on the chassis for picking up bales from the ground during movement of the bale wagon across the field; a bale transfer table mounted on the chassis for receiving bales picked up from the ground and forming a tier of bales thereon, said bale transfer table having a rearward edge and a forward edge spaced forwardly of said rearward edge, said forward and rearward edges defining a length for said bale transfer table; and a load bed mounted on said chassis rearward of said bale transfer table adjacent said rearward edge for supporting a stack of bales formed thereon by a plurality of generally upright tiers of bales, each upright tier of bales including a plurality of bales arranged in a generally vertical configuration and having a front face directed toward said bale transfer table, said bale transfer table being moveable between a bale receiving position in which said tier of bales is formed in a generally horizontal position with said front face downwardly against said bale transfer table and a generally vertical bale unloading position in which said tier of bales is transferred to said load bed in said vertical configuration to form said stack of bales, an improved bale transfer table comprising:

a generally curved load surface extending along substantially the entire length of said bale transfer table, said tier of bales being formed on said curved load surface with said front face in contact therewith when said bale transfer table is in said bale receiving position, said load surface being curved generally upwardly when said bale transfer table is in said bale receiving position, such that when said tier of bales is moved onto said load bed in said upright position by said bale transfer table said front face of said upright tier of bales is generally concave in shape.

4,289,436

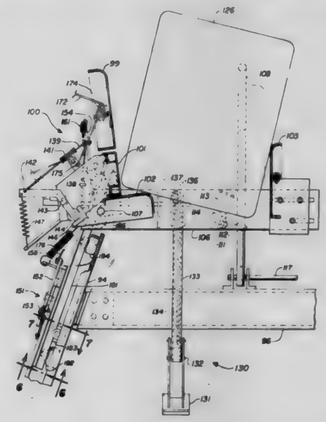
DELIVERY TRAY RELEASE MECHANISM FOR A BALE WAGON

Randall E. Zipser, Clovis, and H. Berton Stringfellow, Fresno, both of Calif., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 8, 1979, Ser. No. 64,929
Int. Cl.³ B65G *57/03*
U.S. Cl. 414—76 **4 Claims**

1. In an apparatus for stacking articles on a surface, said apparatus including a tray with a normally generally horizontal pivotal article-supporting bottom member having a latching surface thereon, a support means supporting said tray above said surface for movement between a loading position where articles are positioned on said tray and a delivery position closer to said surface where articles are deposited, and means to release said bottom member of said tray for pivotal movement and delivery of the articles, the improvement wherein said means to release comprises:

latch means affixed to said tray for pivotal movement between a latched position wherein said bottom member is held in a generally horizontal position and an unlatched position wherein said bottom member is free to pivot and deliver the articles, a roller arm having a first end and an opposing second end, said first end pivotably affixed to said tray back, and said second end supporting a roller whereby said roller may selectively move into and out of



engagement with said latching surface on said bottom member to effect latching or unlatching;

a trip foot affixed to said tray and extending therebelow between said tray and said surface; and

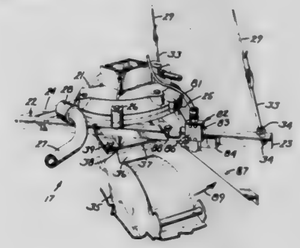
linkage means interconnecting said trip foot and said latch means so that said latch means is moved to said unlatched position when said trip foot engages said surface, said linkage means including resilient means interconnecting said trip foot and said roller arm such that activation of said trip foot moves said roller arm and roller to the unlatched position.

4,289,437

SILO UNLOADER LOWERING CONTROL

Glen D. Hansen, Maple Plain, Minn., assignor to Veda, Inc., Long Lake, Minn.

Filed Jan. 12, 1979, Ser. No. 3,014
Int. Cl.³ B65G *65/38*
U.S. Cl. 414—315 **10 Claims**



1. In a silo unloader operable to remove material from a tower silo, said unloader having a material collector and means for discharging material therefrom, said silo unloader including a portion rotatable within the silo and means for rotating the same, winch means having an electric motor, a cable con-

necting the winch means and silo unloader, means suspending the cable from the upper portion of the silo whereby upon operation of the motor the silo unloader is vertically moved in the silo, and control means electrically connected to the electric motor for controlling its operation and thereby the vertical position of the silo unloader in the silo,

the improvment wherein said control means includes a control switch non-rotatably mounted with respect to the silo unloader,

said switch having an actuator disposed in the path of and operably engagable by the rotatable portion of the silo unloader once during each revolution of said rotatable portion thereby to trigger the control switch,

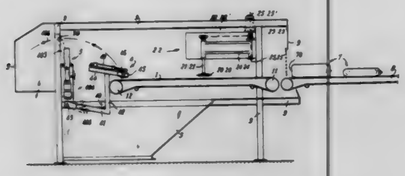
and means connected to said switch for operating said electric winch motor for a limited period of time to lower the silo unloader each time the said switch actuator triggers the control switch.

4,289,438

MACHINE FOR MECHANICALLY OPENING AND EMPTYING BAGS WHICH MAY CONTAIN A TOXIC PRODUCT

Mario V. Murer, Maurage, Belgium, assignor to Ateliers de Constructions Mecaniques Armand Colinet, Le Roeulx, Belgium

Filed Feb. 5, 1979, Ser. No. 9,719
Claims priority, application Belgium, Feb. 6, 1978, 0184
Int. Cl.³ B65G *65/04*
U.S. Cl. 414—412 **5 Claims**



1. A machine for mechanically opening and emptying bags which may contain a toxic product, comprising

(a) a conveyor arranged to bring bags placed on it to a hopper for collecting the products contained in the bags,

(b) severing means adapted for severing the front face and the two lateral faces of a bag carried by the conveyor during the advancement of the latter, without severing totally the back face of the bag, and

(c) pivoting arms disposed for pivotal movement about a fixed axis, said pivotal arms having a gripping means affixed thereto, said pivotal arms being movable between a first position wherein said gripping means grips a top portion of said severed bag when said bag is full, and a second position wherein said bag is detached after being emptied, the movement of said pivotal arms from said first position to said second position spreading said severed bag to an amount approximating two times the length of said bag, while said bag is supported upon said conveyor, said bag remaining supported by said conveyor as the products contained in said bag are emptied into said hopper.

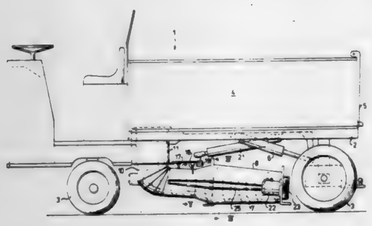
4,289,439

VEHICLE CARRIED MANURE REMOVING MACHINE

Bengt O. Hansson, Norrtälje, Sweden, assignor to Aktiebolaget Sundsvalls Specialprodukter, Sundsvall, Sweden

Filed Oct. 25, 1978, Ser. No. 954,538
Claims priority, application Sweden, Oct. 25, 1977, 7712018
Int. Cl.³ B60P *1/40*
U.S. Cl. 414—523 **7 Claims**

1. A manure removing machine carried by a vehicle and having a mechanically drived feeder screw for taking up manure and other waste material and similar, characterized in that the machine includes an elongated substantially horizontal casing (8) around the feeder screw (7) and said casing (8) has receiving mouth (9) axially disposed in the substantially horizontal section of said casing (8) an outlet end of the casing (8) is connected to a tube (10) directed substantially vertically upwards and guided in a tube socket (11) fixably mounted on said vehicle, and the upper end of the said tube socket (11) being brought to communicate with a collection box (4) carried by said vehicle, and that said feeder screw (7) and the casing (8) are together positively rotatable outward from under said vehicle about said tube (10) in a substantially horizontal plane and said feeder screw (7) and casing (8) are raised and lowered between an end position being substantially in the longitudinal axis of the vehicle chassis (2) and a short distance above a level plane through the lowest point of the vehicle



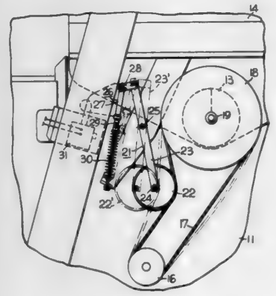
wheels (3) and a second end position in which an outer longitudinal portion of the feeder screw (7) and the casing (8) is located outside of the vertical plane through the wheels of the vehicle on the same side as the screw and casing and with the lower side of the casing (8) substantially on the same level as the plane through the lowest point of the wheels (3) further characterized in that a horizontal level arm (17) extends radially out from the tube (10) wherein said lever arm is connected to the casing (8) by a bar (18), and the outer end of the lever arm (17) is supported by a guide bar (19), which is fixably mounted in the chassis of the vehicle and is bow formed and which guide bar (19) slopes from a high point fastened with means connected to said vehicle chassis and disposed under the central portion of the vehicle, lowers somewhat at a second end to a low point aside of the said vehicle.

4,289,440

MECHANISM FOR PREVENTING OPERATION OF A BIN UNLOADING AUGER WHEN OUT OF ITS UNLOADING POSITION

Maynard E. Walberg, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 9, 1979, Ser. No. 83,117
Int. Cl.³ B60P *1/40*
U.S. Cl. 414—523 **9 Claims**



1. A harvester having a bin for the harvested crop, an unloading conveyor swingable between a transport position and a range of bin unloading positions including a driven material moving member, a drive mechanism for the material moving member including a clutch device shiftable between clutch engaged and clutch disengaged positions by a hydraulic actuator, and a control for operating the clutch device characterized by

electrically controlled valve means connected in controlling relation to said hydraulic actuator including a valve having clutch engaging and clutch disengaging positions,

a source of pressurized fluid connected to said valve,

an electric control system for said valve means including a safety switch shiftable between a first position in which said clutch device cannot be shifted from its clutch disengaged position to its clutch engaged position and a second position in which said clutch device may be shifted from its clutch disengaged position to its clutch engaged position, and

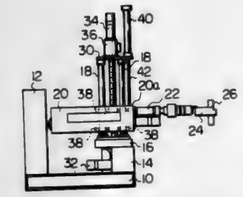
operating means for the safety switch responsive to the position of said unloading conveyor to automatically place said safety switch in said first position when said conveyor is moved out of its range of unloading positions and to automatically place said safety switch in said second position when said conveyor is in its unloading position.

4,289,441

INDUSTRIAL ROBOT

Hajimu Inaba, Hino, and Shigemi Inagaki, Musashino, both of Japan, assignors to Fijutsu Fanuc Limited, Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,616
Claims priority, application Japan, Sep. 29, 1978, 53-119155
Int. Cl.³ B25J *19/00*
U.S. Cl. 414—589 **4 Claims**



1. In an industrial robot having a robot hand, a vertically movable body on which the robot hand is mounted, a vertical drive means for causing a vertical movement of the vertically movable body guided by at least one vertical guide pillar, said vertical drive means including a feed motor, and a cylinder means for applying an upward force to said vertically movable body to thereby reduce the load applied by said vertically movable body and robot hand to said feed motor.

4,289,442

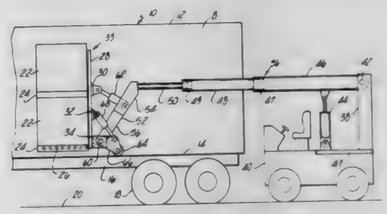
BOOM LIFT LOAD RELIEF

James L. Stevens, 14825 Arkansas St., Woodbridge, Va. 22191

Filed Oct. 26, 1979, Ser. No. 88,743
Int. Cl.³ B66F *9/10*
U.S. Cl. 414—629 **2 Claims**

1. In a cargo-transfer system comprising a storage space defined partly by a floor; a truck movable toward or away from the storage space; a boom mounted in cantilever fashion on the truck so that movement of the truck toward the storage space causes the boom to advance into the space; means for extending or retracting the boom in the direction of its length, whereby the free end of the boom can be moved back and forth within the storage space without relocating the truck; cargo-lifter mechanism carried by the free end of the boom; means supporting the boom on the truck for swinging movements in a vertical plane; and power means (44) trained between the truck and boom for swinging the boom vertically, whereby the lifter mechanism is enabled to deposit or remove cargo at various selected locations on the floor of the storage space; said cargo lifter mechanism comprising an upstanding rail structure (28) and a set of horizontally-extending forks (26) adapted to underlie a cargo pallet resting on the floor of the storage space:

the improvement comprising floor-engageable roller means carried by the cargo-lifter mechanism for substantially reducing gravitational loadings on the boom power means while cargo is being moved toward or away from its selected location on the floor of the storage space; support



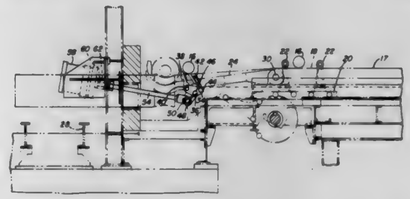
structure for the roller means comprising a downwardly-swingable arm means (66) pivotally connected to the aforementioned rail structure at a point near the rail structure lower end; the roller means being connected to the free end of the arm means for movement from an elevated position above the lower surfaces of the forks to a lowered position below the lower surfaces of the forks; and fluid power cylinder means (68) trained between the rail structure and the swingable arm means for moving the roller means between the elevated and lowered positions.

4,289,443

APPARATUS FOR SINGLY DISCHARGING CYLINDRICAL WORKPIECES FROM AN INCLINED ROLLWAY

Charles W. Jacob, Crafton Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,407
Int. Cl.³ B66F *3/04*
U.S. Cl. 414—748 **3 Claims**



1. In an apparatus for singly discharging laterally aligned cylindrical workpieces from the lower end of an inclined rollway, said apparatus including a rocker having a pivot intermediate its ends disposed beneath said rollway, an elongated stop pin pivotally attached to said rocker on the end thereof adjacent the lower end of said rollway, an elongated index pin pivotally attached to said rocker on the end thereof adjacent the upper end of said rollway, said stop and index pins projecting upwardly toward the workpieces on the upper surface of the rollway, means for oscillating said rocker about its pivot to alternately advance and retract said pins, and first and second sleeve means receiving said stop and index pins respectively and for guiding the movements thereof,

the improvement in said apparatus which comprises:

said stop pin being aligned substantially normal to the plane of said rollway,

said index pin being spaced from the stop pin toward the

upper end of the rollway and inclined at an acute angle both with respect to the lower end of said rollway and the axial direction of said stop pin so as to contact the lower most workpiece held by said stop pin on a lower quadrant of the periphery thereof facing the upper end of said rollway,

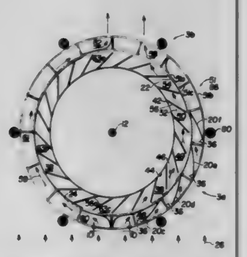
said index pin having a blunt end adjacent said workpieces, an upper surface of said blunt end being substantially parallel to the rollway surface, thus facilitating lifting of workpieces of a range of diameters over said stop pin without adjustment of the alignment of said index pin.

4,289,444

FLUID ENERGY CONVERTOR

Robert J. Monk, 1302 Green Brook Dr., De Soto, Tex. 75115, and Franz W. Loesche, 4761 Broadway, House 2-6E, New York, N.Y. 10034

Filed Mar. 1, 1979, Ser. No. 16,725
Int. Cl.³ F03D *7/06*
U.S. Cl. 415—3 **14 Claims**



1. A fluid energy convertor which produces from linear moving fluid a rotating torque used to perform useful work, comprising:

a support structure constructed to allow unrestricted entrance and exit of said fluid into and out of same;

a turbine rotatably supported by and positioned within said support structure whereupon being contacted by said moving fluid power is produced for performing useful work;

a structural assembly rigidly secured to said support structure and maintained at close clearance with said turbine when said fluid is unidirectional whereby support is provided for louvers and shrouds at fixed relative positions to the direction of said moving fluid for controlling said moving fluid which enters into said support structure;

multiple adjustable louvers pivotally supported by said structural assembly at locations where it is possible to divert maximum moving fluid quantities into said support structure and with said louvers being maintained at close clearance to said turbine and being automatically held at required open positions or required closed position by actuation means communicating with said louvers and said structural assembly whereby a controlled quantity of said fluid is diverted into said turbine;

a force induction shroud rigidly secured to said support structure at a location where maximum fluid velocity is available and where said moving fluid will travel a finite distance while in contact with said turbine and with said shroud being maintained at close clearance with said turbine whereby over said finite distance with said shroud and said turbine remained parallel and at close clearance said moving fluid will experience a velocity decrease as power from said moving fluid in the form of force and motion is imparted to said turbine;

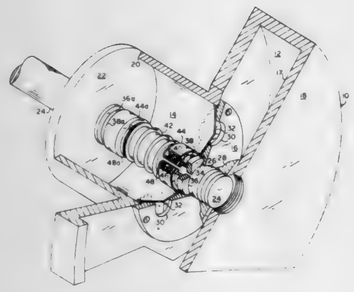
a protective shroud rigidly secured to said support structure at a location adjacent to outside turbine surfaces moving in a relative direction opposite from said moving fluid direction and maintained with clearance from said turbine whereby drag force is reduced on said turbine by diverting the moving fluid around the outside of said shroud.

4,289,445

ROTARY PUMP ASSEMBLY

James O. Sims, Rte. 2, Box 248, Hartselle, Ala. 35640

Filed Sep. 25, 1978, Ser. No. 945,558
Int. Cl.³ F04D *29/10*
U.S. Cl. 415—113 **4 Claims**



1. A rotary pump assembly comprising:

a generally circular pump enclosure;

a generally circular seal enclosure of reduced diameter to that of said pump enclosure and adapted to contain a lubricating fluid, said enclosures sharing a common wall, and said seal enclosure having a wall opposite to that of said common wall;

a rotary pump positioned within said pump enclosure and having a driven shaft which passes through said walls;

first and second stationary shaft sealing members positioned around said shaft in opposite walls of said seal enclosure, and said sealing members having facing planar seal surfaces;

first and second spaced rotating seal members around and rotating with said shaft, said first rotating seal member having a planar surface positioned adjacent to and adapted to frictionally engage said first stationary seal member, and said second rotating seal member having a planar surface adjacent to and adapted to frictionally engage with the planar surface of said second stationary seal member;

spring bias means for applying a bias to said rotating sealing members for biasing said rotating sealing members against said stationary sealing members; and

an opening in said common wall, and an annular diaphragm positioned within said seal enclosure adjacent said common wall and said opening, and being between said shaft opening and the circumference of said seal enclosure, whereby the fluid pressure in said pump enclosure adjacent said opening, being a pressure in a basically inner diameter region of said pump enclosure, is directly transmitted through said opening to said diaphragm and by said diaphragm to a fluid containable in said seal enclosure, and thereby a coordinate pressure applied as an additional bias to said rotating seal members.

4,289,446

CERAMIC FACED OUTER AIR SEAL FOR GAS TURBINE ENGINES

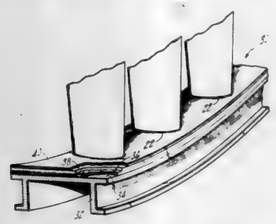
Matthew J. Wallace, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 27, 1979, Ser. No. 52,634
Int. Cl.³ F28D *19/00*
U.S. Cl. 415—174 **9 Claims**

1. An outer air seal of the type circumscribing the tips of rotor blades in the turbine section of a gas turbine engine, comprising:

a porous pad of flexible material having an arcuate contour; and

a ceramic facing material which is adhered to the low modulus pad to form a blade tip opposing surface wherein said ceramic facing material is characterized by



a modulus of elasticity at 1800° F. of approximately 1×10^6 lb/in^2;

mean tensile strength at 1800° F. of approximately 3450 lb/in^2;

coefficient of thermal expansion at 1800° F. of approximately 6.06×10^{-6} in/in-°F.; and

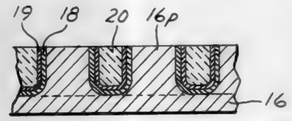
thermal conductivity at 1800° F. of approximately 5.55 Btu-in/hr-ft^2-°F.

4,289,447

METAL-CERAMIC TURBINE SHROUD AND METHOD OF MAKING THE SAME

Albert P. Sterman, Cincinnati; Charles H. Gay, Jr., Loveland; Frederick W. Tegarden, Dean T. Lenahan and Martin C. Hemsworth, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 12, 1979, Ser. No. 84,244
Int. Cl.³ F01D *25/24;* **B32B** *3/00*
U.S. Cl. 415—200 **14 Claims**



1. A turbine shroud structure of the type having a metal substrate and a ceramic sealing layer secured thereto, wherein the improvement comprises:

mechanical matrix bonding means disposed between said metal substrate and said ceramic sealing layer and bonding said ceramic sealing layer to said metal substrate with said ceramic sealing layer including an ordered pattern of very fine cracks which reduce the thermal stress in said ceramic sealing layer.

4,289,448

DEVICE FOR LIMITING THE FLAPPING MOVEMENTS OF A ROTARY-WING AIRCRAFT MAIN ROTOR

Marc A. Declerco, Pelissanne, and Gerard Margant, Aix en Provence, both of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Aug. 22, 1979, Ser. No. 68,797
Claims priority, application France, Aug. 23, 1978, 78 24480
Int. Cl.³ B64C *27/40*
U.S. Cl. 416—140 **7 Claims**

1. In a rotary-wing aircraft main rotor assembly, including a rotor hub carried on a rotor shaft and rotatable about a fixed axis of rotation and at least two rotor blades having each its root connected to said hub via mechanical attachment means including connecting joints allowing flapping movements of said corresponding blade for rotation in opposite directions in a substantially vertical plane, about a flapping axis, substantially perpendicular to an axial plane of symmetry of said corresponding blade at rest,

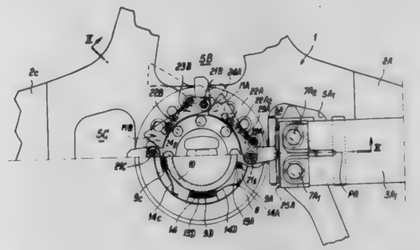
a device for limiting said flapping movements of said rotor blades comprising

for each blade, upper abutment means for limiting the upward rotary movement of said corresponding blade beyond a first predetermined position in said substantially vertical plane, said upper abutment means comprising:

a bent lever rotatably mounted on a pivot secured to a top part of said rotor hub and having a first arm the free end of which forms an abutment part and a second arm the end of which carries a predetermined weight,

a spring connecting said bent lever to said top part of said hub and being operable to normally rotate said bent lever in one direction and hold said bent lever in a predetermined position when the angular velocity of said rotor hub is below a predetermined value, said predetermined weight being operable to effect rotation of said bent lever in the opposite direct, beyond said predetermined position, when said angular velocity of said hub exceeds said predetermined value,

and bearing means carried by one of the two elements comprising said corresponding blade root and said corresponding attachment means and being engageable with said abutment part of said corresponding bent lever when said bent lever is held in said predetermined position to thereby prevent the upward rotary move-



ment of said blade beyond said first predetermined position in said substantially vertical plane wherein said corresponding pivot is parallel to said hub rotation axis near said blade axial plane of symmetry, and said first and second arms of said bent lever each rotates in a substantially horizontal plane, said first arm of said bent lever extending substantially parallel to said blade axial plane of symmetry when said bent lever is held in said predetermined position, and wherein said device also comprises lower abutment means for limiting the downward rotary movement of said corresponding blade beyond a second predetermined position in said substantially vertical plane, said upper abutment means comprising

a reciprocal ring, common for all said rotor blade and slidably mounted around said rotor shaft in a plane perpendicular to said hub rotation axis,

and for each rotor blade a bearing slide carried by one of said two elements, comprising said corresponding blade root and said corresponding attachment means, and being engageable with said reciprocal ring so that, when said corresponding blade is rotated downwards and said velocity is below said predetermined value, said corresponding blade tends to push inwards said reciprocal ring, which in turn tends to push upwards at least another of said rotor blades, at least one of said other blades being prevented from rotating upwards by its upper abutment means when said second predeter-

mined position in said substantially vertical plane is reached by said corresponding blade.

4,289,449

FAN WHEEL FOR ELECTRIC MACHINERY

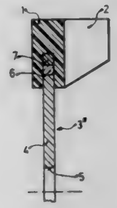
Manfred Frister, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,364

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804756

Int. Cl.³ B63H 1/16

U.S. Cl. 416—185 **4 Claims**



1. A fan wheel for electrical machinery, especially generators used in motor vehicles, including an inner support assembly mounted on the shaft of the generator an outer fan ring supported by said support assembly, and wherein said support assembly is composed of a plurality of mutually adjacent component parts which comprise a disc-like portion and coplanar exterior rings adjacent said disc-like portion and positioned adjacent one another along their radial periphery, said exterior rings as well as the outer region of said disc-like portion being completely surrounded by molded plastic material constituting said fan ring (1)

and wherein said fan ring (1) is distinct from and joined to said support assembly.

4,289,450

ROTOR FOR OPERATION IN A FLOW MEDIUM

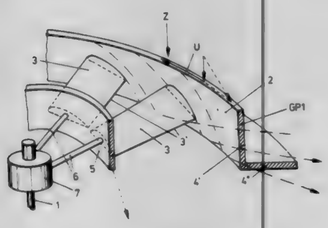
Alberto Kling, Seestrasse 38, D-8131 Berg, Fed. Rep. of Germany

Filed Oct. 23, 1979, Ser. No. 87,524

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1978, 2852554

Int. Cl.³ F03D 1/06

U.S. Cl. 416—192 **18 Claims**



1. A rotor for a wind power plant for operation without the influence of flow-guiding stationary housings or channels in a flow medium contained in a space of unlimited dimensions as compared to the rotor dimensions, comprising one set of rotor blades and a shroud arranged in the region of the periphery of the rotor having an axis and formed as an axially symmetrical outer annular shroud rotating in unison with the rotor, said outer annular shroud in a cross-section lying in an imaginary plane extending through the rotor axis having a profile the angle of attack of which is greater than its critical angle of attack with respect to a flow direction extending parallel to the rotor axis, said profile being adapted to generate a lift force under the effective flow conditions given at rotation of the rotor within the operational rotational speed range, and being oriented such that its suction side forms the inner side of the annular shroud, said profile having a downstream portion extending outwardly at a large angle away from the rotor axis and substantially transversely thereof.

4,289,451

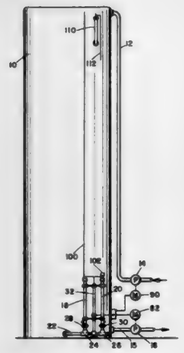
EXTERNAL TANK LEVEL CONTROL SYSTEM

Steven M. Lewis, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 30, 1979, Ser. No. 25,458

Int. Cl.³ F04B 49/04

U.S. Cl. 417—40 **10 Claims**



1. A multi-level indicator and control system comprising in combination:

a liquid reservoir for holding liquid at selected levels;

input means for supplying liquid to said reservoir;

output means for removing liquid from said reservoir; and

level control means responsive to predetermined levels of liquid in said reservoir for activating said input means and said output means for regulating flow of liquid to and from said reservoir between said levels, said level control means comprising a first vertically oriented tubular member having a height less than the height of the reservoir disposed externally of and in open communication with the interior of said reservoir, a float and a switch responsive to the float disposed in said tubular member, said float responsive to a predetermined level of liquid in said tubular member for activating said switch, said tubular member having a closed upper end when liquid rises therein so that the liquid level is a function of the liquid level in said tank above the level in said tubular member, an electrical circuit including said switch for controlling one of said input means and said output means.

4,289,452

PRESSURE COMPENSATED PUMP

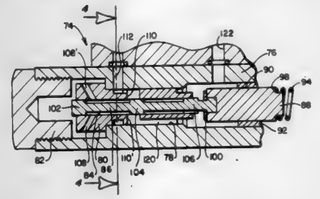
Charles A. Kubilos, Oxnard, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 5, 1979, Ser. No. 16,739

Int. Cl.³ F04B 1/26

U.S. Cl. 417—222 **4 Claims**

1. A pressure compensated piston pump comprising a casing, a barrel rotatably mounted in the casing, a plurality of bores in the barrel, a piston mounted for reciprocation in each bore, a shoe mounted on the end of each piston, a hanger pivotally mounted in the casing, a thrust plate attached to the hanger, means for connecting the pistons to the thrust plate wherein the shoes slide over the thrust plate when the barrel is rotated and the pistons reciprocate in their bores when the hanger is on-stroke, the hanger is movable between an off-stroke position in which the pump displacement is a minimum and a full on-stroke position in which the pump displacement is a maximum, means for biasing the hanger to the full on-stroke position, a stroking piston which receives fluid and moves the hanger toward the off-stroke position when the pressure of the discharge fluid exceeds a predetermined maximum, a pressure compensator valve including a spool bore, a spool movable in the bore, means for setting the maximum discharge pressure of the pump, means for sensing the discharge pressure of the pump, a first control port, a first fluid passage connecting said first control port to the stroking piston, a second control port, a second fluid passage connecting said second control port to drain, a control land formed on said spool which cooperates



with said first and second control ports to form first and second variable orifices which control the flow of fluid to and from the first and second control ports, first means for connecting discharge pressure fluid to one side of the control land, a second means for connecting low pressure fluid to the other side of the control land, and the spool is movable alternatively between a first position in which said control land blocks said first and second control ports, a second position in which said first and second control ports are open to the second connecting means and drain, and a third position in which the first and second control ports are open to the first connecting means that discharge pressure is supplied to the first control port to move the stroking piston towards the off-stroke position and simultaneously discharge pressure fluid is supplied to drain through the second control port.

4,289,453

SWASH-PLATE TYPE COMPRESSOR

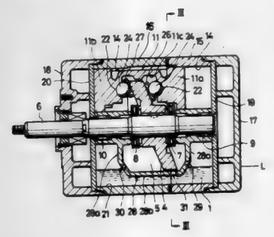
Tsunenori Shibuya, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,679

Claims priority, application Japan, Apr. 8, 1978, 53/46292[U]

Int. Cl.³ F04B 1/16

U.S. Cl. 417—269 **3 Claims**



1. In a swash-plate type compressor having a pair of horizontal cylinder blocks, combined together in an axial alignment, a drive shaft penetrating said cylinder blocks along axes thereof for rotation relative to said cylinder blocks, and a swash plate secured to said drive shaft, said combined cylinder blocks including a plurality of cylinder bores extending through the cylinder blocks axially thereof, each receiving a piston for sliding therein, and a plurality of internal spaces axially defined between adjacent cylinder bores, wherein said swash plate has an outer fringe thereof disposed in engagement with the piston thereby to rotate in unison with the drive shaft being rotated, for causing reciprocal motion of the piston within the cylinder bore to carry out a pumping action,

the improvement wherein:

the lowermost of said internal spaces is provided with a partition wall having a generally concave configuration and dividing the space into an upper chamber for receiving at least an outer fringe portion of the swash plate, and a lower chamber for storing oil, said partition wall having at least a portion thereof positioned below an oil surface level in said lower chamber, wherein said partition wall has at least one first conduit formed therein and which is positioned at a level lower than the oil surface level in the upper chamber which is an elevated level obtained due to a to-and-fro movement of the swash plate after the compressor starts until the compressor reaches a predetermined rotational speed and also at a level higher than the oil surface level in the upper chamber which is obtained after the compressor reaches said predetermined rotational speed, said at least one first conduit providing communication between said lower chamber and said upper chamber, said partition wall also having at least one second conduit formed therin and positioned at a lower level than an oil surface level in said lower chamber to provide further communication between said upper and lower chambers, said at least one second conduit having such a diameter as to allow oil to flow through said second conduit at a minimum flow rate required, whereby the first conduit acts as an oil spill port and the second conduit as an oil feeding port; and comprising

a filter material disposed on an inner wall of said upper chamber in a lower portion of said upper chamber so as to cover said second conduit, said filter material straining off metal powder and the like material.

4,289,454

ROTARY HYDRAULIC DEVICE

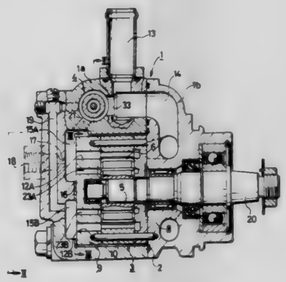
Hiroto Iwata, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 79,770

Claims priority, application Japan, Oct. 3, 1978, 53-121689

Int. Cl.³ F04B 49/00

U.S. Cl. 417—300 **6 Claims**



1. A rotary hydraulic device comprising:

(a) a vane pump disposed in a casing and including a rotationally driven rotor having a plurality of radially disposed grooves,

(b) a plurality of vanes slidably fitted into said grooves,

(c) a cam ring in slidable contact with said grooves,

(d) a pair of delivery ports formed at symmetrical positions with respect to said rotor, said ports direct a fluid into a chamber which is formed by said rotor, vanes and cam ring and discharge said fluid therefrom,

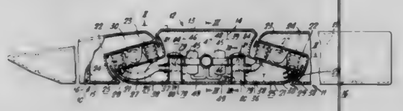
(e) a pair of independently separated delivery chambers communicate with said delivery ports, respectively,
(f) a control valve which shuts off the communication between one of said pair of delivery chambers and a hydraulic machine and returns the excess fluid from said delivery chamber to the tank side,
(g) a pressure plate including a pair of delivery ports, said pressure plate being in slidable contact with the end faces of said rotor and vanes, and
(h) a sealing member surrounds one delivery port and is interposed between said casing and said pressure plate.

4,289,455

DEVICES FOR EXTRACTING ENERGY FROM WAVES

Cecil A. Comyns-Carr, Bath, and Michael J. Platts, Willingham, both of England, assignors to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 7, 1979, Ser. No. 92,181
Claims priority, application United Kingdom, Nov. 17, 1978, 45113/78
Int. Cl.³ F03E *13/12*
U.S. Cl. 417—332 **3 Claims**



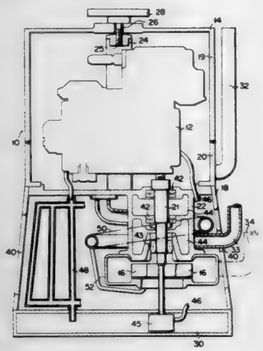
1. A device for extracting energy from sea waves and comprising:
(a) three pontoons aligned in series relationship;
(b) hinge means hingedly connecting adjacent pontoons in said series relationship;
(c) a platform provided by each pontoon at adjacent ends of the pontoons, adjacent said platforms being presented about the hinge axis of the respective hinge means and in opposing relationship to each other;
(d) a plurality of pump means distributed between adjacent pontoons, each pump means comprising a tubular bellows of rubber reinforced with fabric and having one end connected to one of the platforms and the other end thereof connected to the adjacent opposing platform, pairs of said pump means being disposed one each side of the hinge axis of the respective hinge means;
(e) a respective pump duct for each pump means, each said pump duct extending from a said pump means through one of the platforms to which said pump means is connected;
(f) a rectifying chamber for each pump means, each chamber having an inlet for the seawater in which the device is arranged to float, and a port for said seawater connected to said pump duct, and an outlet for seawater discharged from the pump means through the pump duct and the port;
(g) manifold means;
(h) branch duct means connecting each rectifying chamber to the manifold means;
(i) valve means disposed between the rectifying chambers of a said pair of pump means and connected to said rectifying chambers, said valve means being capable of connecting the said chambers so as to discharge one to another;
(j) turbine means to which the manifold means is connected; and
(k) electric generator means drivably connected to the turbine means.

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UNDERWATER PUMP

Masamitsu Ishihara, 628 Hirai, Kannami-cho,, Tagata-gun, Shizuoka-ken,, Japan

Filed Oct. 26, 1978, Ser. No. 954,770
Claims priority, application Japan, May 24, 1978, 53/62098; May 24, 1978, 53/62099; May 24, 1978, 53/62100
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—364 **6 Claims**



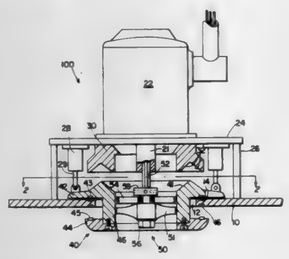
1. An underwater pump which comprises an engine received in a capsule in liquidtightness to drive impellers within an impeller casing when the pump body and engine capsule are immersed in water, said engine being connected to a suction pipe and exhaust pipe, each open at one end above the surface of the water, the exhaust pipe being cooled by the water and the lower end thereof being provided with a water-collecting section downwardly inclined from the horizontal direction to collect water deposited on the inner wall surface of the exhaust pipe and discharge same, water-collecting means disposed disposed between the lower end portion of the inclined water-collecting section and the impeller casing and designed forcefully to discharge water accumulated in the exhaust pipe by means of a negative pressure generated by water flowing into the impeller casing by the rotation of the impellers.

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COMBINATION SEA VALVE AND DEBALLAST PUMP

Carl W. Porter, 315 N. Virginia Ave., Falls Church, Va. 22046

Filed Jul. 30, 1979, Ser. No. 62,093
Int. Cl.³ F04D *27/00*
U.S. Cl. 417—424 **6 Claims**



1. An apparatus for selectively controlling the flow of a fluid through a barrier, said barrier including an opening therethrough, said apparatus comprising:
means for blocking said opening;
means for selectively translating a movable portion of said blocking means to at least one operative unblocking position; and

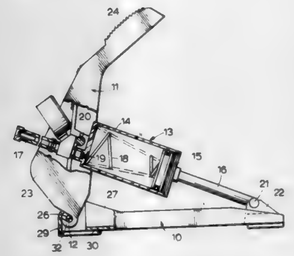
means for impelling the fluid through said barrier, said impelling means being carried by said movable portion of said blocking means;
such that when said movable portion thereof is translated to an unblocking position, actuation of said impelling means causes control of the flow of the fluid in a preselected direction through said barrier.

4,289,458

FOOT PUMPS

Ernest J. Price, Solihull, England, assignor to E. J. Price (Developments) Limited, Birmingham, England

Filed May 12, 1978, Ser. No. 905,560
Claims priority, application United Kingdom, May 13, 1977, 20095/77
Int. Cl.³ F04B *19/02, 29/00*
U.S. Cl. 417—464 **12 Claims**



1. A foot pump of the kind comprising a base member, an operating member, and a pivotal connection between said members, said operating member in use being depressed by the user's foot from a raised position, a piston-and-cylinder assembly connected between the operating member and the base member and operative to compress or expel air when the operating member is depressed from its raised position, and return spring means operative to urge the operating member towards its raised position, the invention wherein said pivotal connection comprises pivot pin means carried by one of said members and hook means carried by the other thereof; said pivot pin means and said hook means being constructed and arranged to be hooked together to form the pivotal connection between the members, said hook means being resiliently clipped onto the pivot pin means during assembly and opening in a direction that when the pump is in use the force exerted to depress the operating member and the force exerted by the spring means tends to retain the pivot pin means in the hook means rather than to urge the pivot pin means out of the hook means.

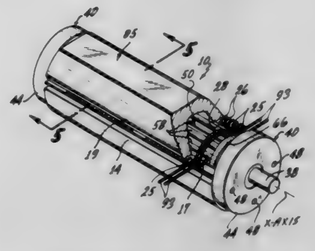
4,289,459

PROPORTIONING PUMP

William E. Neeley, 6152 Cardeno Dr., La Jolla, Calif. 92037, and Terrell F. Moose, 6119 Horton Dr., La Mesa, Calif. 92041

Filed Aug. 13, 1979, Ser. No. 65,921
Int. Cl.³ F04B *43/12, 45/08*
U.S. Cl. 417—475 **10 Claims**

1. A proportioning pump comprising:
a base;
a shaft having an x-axis and means for supporting it on said base;
at least one roller cage assembly mounted on said shaft;
said roller cage assembly comprising a pair of laterally spaced and aligned plates each having a primary bore centered on said x-axis and through which passes said shaft, spaced a predetermined radius from the longitudinal axis of said primary bores are a plurality of secondary bores whose longitudinal axes describe circles in said laterally spaced plates, roller rods are journaled in said secondary bores;
elastic tubing adapted to be peristaltically compressed by said roller rods;
the outer perimeter of each of said roller rods describes an arc of a predetermined radius r_1 from the x-axis of said primary bore when said roller cage assembly is rotated about its longitudinal axis; and
a platen pressure surface having a concave transverse curvature of a predetermined radius r_2, said radius r_2 being greater than r_1 and having its center positioned below said x-axis on a perpendicular line passing vertically through said x-axis whereby the spacing between the arc described by the outer surface of said roller rods and said pressure surface gradually decreases from a predetermined maximum to a predetermined minimum and then gradually increases back to a predetermined maximum.



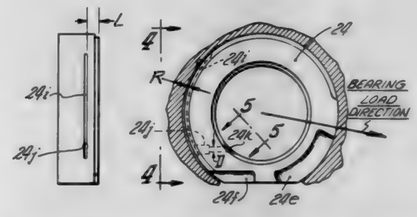
10. A proportioning pump as recited in claim 1 wherein there are at least two roller cage assemblies on said shaft and there is an intermediate mounting plate on said shaft between said roller cage assemblies, said shaft being journaled in an axial bore of said intermediate mounting plate.

4,289,460

BEARING LUBRICATION SYSTEM FOR GEAR PUMP HAVING CLEARANCE BETWEEN BEARING AND HOUSING WALL FOR PREVENTING ENTRY OF CONTAMINANTS LARGER THAN LUBRICATION PASSAGE

Godwin L. Noell, Winsted, and Paul L. Haynes, Jr., Pleasant Valley, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Jun. 28, 1979, Ser. No. 52,789
Int. Cl.³ F04C *2/18, 15/00*
U.S. Cl. 418—78 **4 Claims**



1. In a gear pump of the type having a housing with a pumping cavity therein, an inlet in fluid connection with the cavity and an outlet in fluid connection with the cavity, at least two gears disposed in the cavity such that the teeth thereof are in meshing engagement, a shaft journal connected to one of the gears and a bearing in the cavity for mounting the shaft journal for rotation in an interior portion thereof, the bearing having an outer peripheral portion closely conforming to the adjacent cavity wall and the bearing having a face in confronting rela-

tionship to a side face of the said one of the gears, the resultant loading upon the bearing when substantial discharge pressure is developed being such as to urge the bearing into firm engagement with the inlet side of the pumping cavity wall whereby a clearance volume exposed to discharge pressure is defined between the discharge side of the pumping cavity wall and the outer periphery of the bearing, the improvement comprising:

a lubrication passage in the bearing fluidly interconnecting the clearance volume with the interior portion of the bearing for directing lubricating fluid to the shaft journal;

a groove on the outer periphery of the bearing in communication with the clearance volume and the lubrication passage for supplying fluid thereto;

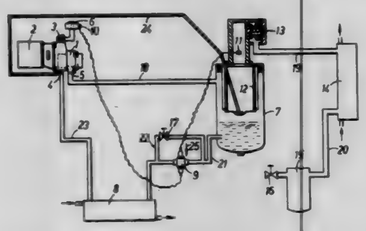
the entrance to the clearance volume adjacent the said one of the gears being of a predetermined radial dimension adequate to provide satisfactory lubrication but sufficiently small to prevent entry of centain contaminants and the lubrication passage being sized larger than the clearance entrance radial dimension so as not to be obstructed by contaminants traversing the entrance and entering the clearance volume.

4,289,461

LIQUID INJECTED COMPRESSOR WITH TEMPERATURE CONTROL OF LIQUID

Gosewinus F. van Oorschot, Breda, Netherlands, and Kaj B. I. Emanuelsson, Edegem, Belgium, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jul. 9, 1979, Ser. No. 55,952
Claims priority, application Sweden, Jul. 11, 1978, 7807707
Int. Cl.³ F04C *29/04*
U.S. Cl. 418—84 **8 Claims**



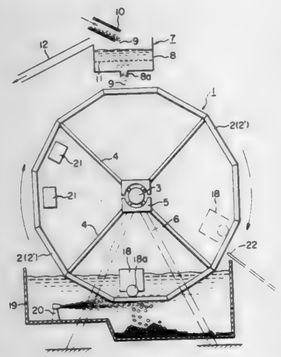
1. A liquid-injected compressor device for avoiding condensation in the outlet of the compressor, comprising a compressor (1) provided with a first inlet (3) for working medium, a second inlet (4) for injection of liquid for cooling the working medium and an outlet (5) for compressed working medium, a liquid separator (7) connected to said outlet (5) and a liquid cooler (8) connected to said liquid separator (7) and to said second inlet (4) characterized by a control valve unit (9 or 71,72,73) provided with two sensors (10,11) for regulation of said cooling, whereby one of the sensors (10) is arranged for sensing the condition of the working medium at said first inlet (3) and the other sensor (11) is arranged for sensing a condition which stands in a predetermined relation to the condition of the compressed working medium at said outlet (5) and that said sensors (10,11) are arranged to actuate the control valve unit (9 or 71,72,73) in opposite directions.

4,289,462

APPARATUS FOR MANUFACTURING VITREOUS BLAST FURNACE SLAG

Ryo Ando; Kazuyoshi Sato, both of Yokohama, and Akira Honda, Kamakura, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1979, Ser. No. 77,044
Claims priority, application Japan, Oct. 16, 1978, 53-126098
Int. Cl.³ B22C *5/08*
U.S. Cl. 425—8 **7 Claims**



1. An apparatus for manufacturing a vitreous blast furnace slag, which comprises:

a rotary drum having a center axle, and a substantially circular barrel which comprises a plurality of rectangular cooling metal members endlessly connected together, each of said plurality of cooling metal members having a plurality of narrow and deep cooling grooves on the outer surface thereof with the longitudinal direction of said cooling grooves being substantially in parallel with the rotating direction of said rotary drum, and each of said plurality of cooling grooves comprising an outwardly flaring inlet section for receiving a molten blast furnace slag and an inwardly narrowing cooling section following said inlet section, for rapidly cooling and solidifying the molten blast furnace slag into a vitreous blast furnace slag;

a driving mechanism connected to the center axle of said rotary drum for rotating said rotary drum;

a molten blast furnace slag feeder including a slag container, arranged above said rotary drum, said molten blast furnace slag feeder being adapted to receive a molten blast furnace slag discharged from a blast furnace into said slag container to to pour said molten blast furnace slag thus received into said plurality of cooling grooves of said cooling metal members at about the highest position of the barrel of said rotary drum during rotation of said rotary drum;

a stripper stationarily arranged at a prescribed position in said rotary drum adjacent to the inner surface of the barrel of said rotary drum, said stripper being adapted to take out a cooled and solidified vitreous blast furnace slag in said plurality of cooling grooves of said cooling metal member; and

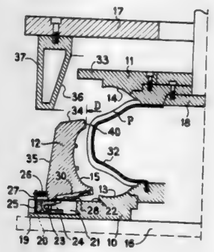
a cooling tank containing cooling water, arranged below said rotary drum so that the lower portion of the barrel of said rotary drum is immersed in the cooling water, said cooling tank being arranged and adapted to cause said plurality of cooling metal members forming the barrel of said rotary drum to successively pass through the cooling water in said cooling tank during rotation of said rotary drum, thereby cooling said cooling metal members heated by the high-temperature molten blast furnace slag poured into said cooling grooves.

4,289,463

SEGMENTED MOLD FOR TIRE CASING

Roger Le Moullac, Le Plessis Bouchard, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Continuation of Ser. No. 771,575, Feb. 24, 1977, abandoned.
This application Jul. 8, 1980, Ser. No. 166,823
Claims priority, application France, Feb. 24, 1976, 76 05184
Int. Cl.³ B29H *5/02*
U.S. Cl. 425—47 **6 Claims**



1. A segmented mold for molding tire casings which comprises a fixed lower mold part for molding one side wall of the tire, a series of molding segments for molding the tread movably mounted on said lower mold part to be slidable and swingable along radial planes, an axially movable upper mold part for molding the other side wall of the tire, and means cooperating with the segments to engage and move said segments toward each other along said radial planes, said mold further comprising in combination:

(a) elastic means interposed between the fixed lower mold part and the segments for continuously urging each of said segments toward an open position in which the segments are radially retracted and swung upward and to the outside of the mold to free a passage for the tire when the upper mold part is lifted off, said elastic means including first spring means for pulling each segment radially outward and second spring means for tilting each segment vertically upward toward an open position, and

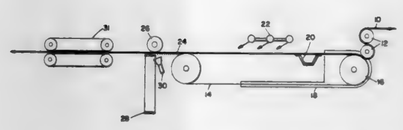
(b) means for axially moving the upper mold part operating independently of the means for moving the segments toward each other along said radial planes, thereby allowing the upper mold part to be lowered into a molding position before the operation of said means for radially moving the segments toward each other, and being removed after disengagement of said means for effecting movement of said segments toward each other.

4,289,464

RETICULATED WEB MAKING APPARATUS

John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 971,594, Dec. 20, 1978, Pat. No. 4,226,828.
This application Mar. 6, 1980, Ser. No. 129,548
Int. Cl.³ B29C *17/10*; B29D *7/02*; B29C *17/04*
U.S. Cl. 425—66 **4 Claims**



1. Apparatus for forming a reticulated web net comprising:

film supply means providing a thermoplastic polymeric film in a thermoformable condition;

perforated continuous surface means adjacent said film supply means, said film contacting the surface of said perforated continuous surface means;

pressure differential means adjacent said perforated continuous surface means to force portions of said film into the perforations of said surface thus forming pips, wherein the thickness of said continuous surface means is greater than the length of said pips;

cooling means positioned adjacent said pressure differential means and said perforated continuous surface means to harden said film;

stripping means adjacent said cooling means to strip the film from said perforated continuous surface means;

skiving means adjacent said stripping means to cut off said pips at the surface of the film thereby creating the perforated film; and

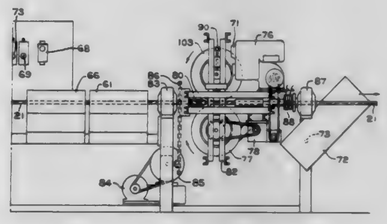
orienting means adjacent said skiving means to biaxially orient the film into a reticulated web net.

4,289,465

APPARATUS FOR FORMATION OF PULTRUDED FIBER GLASS REINFORCED TWISTED ARTICLE

Charles W. Killmeyer, deceased, late of Pittsburgh, Pa. (by Elizabeth A. Killmeyer, executrix); James E. Lane, Henrietta; Leslie L. Taylor, Jr., Forest City, and Joe T. Pearson, Lawndale, all of N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 7, 1979, Ser. No. 101,990
Int. Cl.³ B29D *3/02*
U.S. Cl. 425—111 **8 Claims**



1. Apparatus for producing a fiber reinforced pultruded rod having a plurality of twisted protrusions and grooves on its surface, comprising means to coat fibers with a resin shaping means to form the coated fibers into a rod having protrusions and grooves thereon, heating means to partially cure said rod to form a solid rod, rotatable opposed surfaces engaging said rod to pull the rod through said heating means and means to rotate said opposed rotating surface around the axis of the rod continuously to impart a twist to the rod between the shaping means and the opposed surfaces as the rod is being pulled.

4,289,466

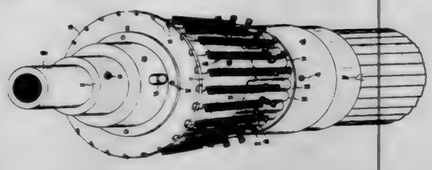
APPARATUS FOR THE CONTINUOUS MANUFACTURE OF HOLLOW TUBULAR ELEMENTS

Otto W. Weeper, Calle Bolivar No. 30, Turmero, Edo, Aragua, Venezuela

Filed May 2, 1980, Ser. No. 146,180
Int. Cl.³ B29C *3/02*
U.S. Cl. 425—112 **17 Claims**

1. An apparatus for continuously manufacturing hollow tubular elements, comprising an elongated central core having a longitudinal axis and one end portion connectable with drive means to be rotated about said longitudinal axis; a plurality of supporting elements projecting circumferentially outwardly from said central core and longitudinally spaced along the same, each supporting element being provided with a plurality of guiding means circumferentially distributed around the same and axially aligned with one another; a cam element forming a cam surface arranged circumferentially about said

longitudinal axis of said core and extending in a plane which is helical with respect to a plane transverse to said axis; a plurality of rod elements forming a substantially cylindrical molding surface, said rod elements being arranged in side-by-side relationship and extending longitudinally over the entire length of said central core in a circumferentially spaced relationship with the latter, said rod elements being aligned on said supporting elements and guided in an individual cyclic displacement by said guiding means, each of said rod elements being arranged immediately following said cam element and urged against said cam surface of the latter, said cam element with



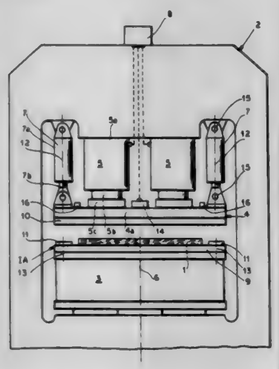
said surface being supported in a non-revolving manner on said central core so that during the rotation of said central core said cam surface remains immovable, whereby when each rod element is being displaced cyclically and biased against said immovable cam surface, it will perform a movement of extension and retraction in the direction of said longitudinal axis of said core, so that a continuous strip of a tubular body forming element can be wound helically about said molding surface with constant advance of one spiral with respect to the other and with a pitch between spirals equal to the width of the continuous strip, minus a marginal overlap portion.

4,289,467

APPARATUS FOR THE PRESSING OF MATS OF PRESSABLE MATERIAL, ESPECIALLY FOR THE PRODUCTION OF PARTICLEBOARD

Jürgen Pesch, Krefeld, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,572
Int. Cl.³ B28B *17/00*
U.S. Cl. 425—141 **5 Claims**



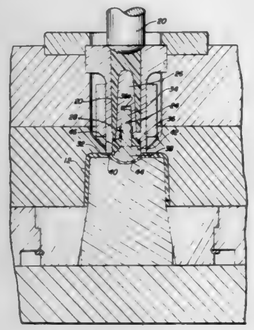
1. A platen press for the compression of a mat to produce a board, comprising:
- a support;
- a rigid fixed bed mounted on said support and adapted to receive said mat;
- at least two spacer bars disposed on said fixed bed and flanking said mat;
- a deformable movable bed juxtaposed with said fixed bed;
- main cylinder means including a plurality of main piston-and-cylinder arrangements disposed between said support and said movable bed for displacing said movable bed to compress said mat against said fixed bed;
- auxiliary cylinder means including at least two bearing cylinders aligned with said spacer bars and disposed between said movable bed and said support for clamping said movable bed against said spacer bars to effect compressive deformation of said movable bed; and
- control means including a deformation-measuring device responsive to the deformation of said movable bed for operating said main piston-and-cylinder arrangements to level deformation of said bed and thereby parallel compression of said mat.

4,289,468

HYDROSTATIC MOLD GATE

John W. von Holdt, 6864 Lexington La., Niles, Ill. 60648

Filed Apr. 27, 1979, Ser. No. 33,905
Int. Cl.³ B29F *1/05*
U.S. Cl. 425—146 **16 Claims**



1. A gate for a mold which comprises, a molding compound inlet conduit defining an outer end for communication with a source of molding compound, and an inner end for communication with a mold cavity, and a plunger member slidably mounted adjacent said molding compound inlet conduit and adapted to prevent flow through said conduit in a first sliding position, and to permit flow through said conduit in second sliding positions, said plunger defining a shaft slidably positioned in a receptacle and an enlarged end proportioned to prevent said flow through the conduit in the first position, said plunger defining a mold cavity-facing surface which is of larger cross-sectional area than the surface of the plunger opposed to said mold chamber and subject to contact with pressurized molding compound in said conduit, whereby relatively pressurized molding compound in the conduit causes said plunger to spontaneously advance to open into a second sliding position by the action of pressure on said opposed surface, and essential equalization of the pressures in the mold cavity and the conduit causes said plunger to spontaneously retract to close to its first sliding position.

13. In a multiple cavity mold system, a plurality of gates, one for each mold cavity, and a molding compound inlet conduit communicating with each cavity defining an outer end for communication with a source of molding compound and an inner end for communication with each cavity, a plunger member associated with each cavity being slidably mounted adjacent said molding compound inlet conduit and adapted to prevent flow through said conduit in a first sliding position and to permit flow through said conduit in second sliding positions, said plunger defining a shaft slidably positioned in a receptacle and an enlarged end proportioned to prevent said flow through the conduit in first position, said enlarged end defining a mold cavity-facing surface which is of larger cross-sectional area than the surface of the plunger opposed to said mold cavity and subject to contact with pressurized molding compound in

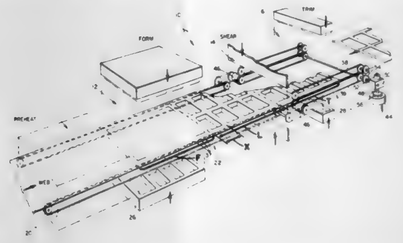
said conduit, whereby relatively pressurized molding compound in the conduit causes said plunger to spontaneously advance to open into a second sliding position by the action of pressure on said opposed surface, and essential equalization of the pressures in the mold cavity and the conduit causes said plunger to spontaneously retract to close to its first sliding position.

4,289,469

APPARATUS FOR FORMING AND TRIMMING ARTICLES FROM A WEB

Karl H. Keim, South Portland, Me., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed May 16, 1980, Ser. No. 150,310
Int. Cl.³ B29C *17/04*
U.S. Cl. 425—302.1 **13 Claims**



1. In an article forming machine adapted to produce discrete articles from a continuous web of material, the machine comprising
- a forming press for forming the articles in the web,
- a trimming station including a press for trimming the articles from the web, and
- a web transport means for advancing the web past the forming and trimming presses,
  - said forming press being constructed to form on each press cycle a plurality of articles arranged over a plurality of unit lengths in the direction of advance of the web, the improvement wherein,

said web transport means comprises
- first conveyor means for advancing the web to said forming press and thence to said trimming station,
- second conveyor means for advancing the formed web through said trimming station,
  - said first and second conveyor means including means for positively engaging the web so as to prevent longitudinal slippage of the web relative to said conveyor means,
- first drive means for driving said first and second conveyor means in unison to advance a section of formed web into said trimming station in such a manner that registry is maintained between said first and second conveyor means,
- severing means operable after said unison movement for severing the web at a location between said conveyor means to provide at said trimming station a severed section of said formed web made up of a plurality of said unit lengths, and
- second drive means for repetitively moving said severed section of web forward a single said unit length at a time within said trimming station while said first conveyor means is stationary,

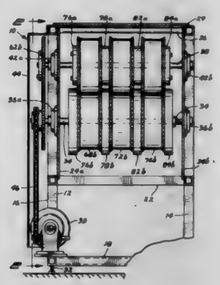
said trimming press includes die means extending over only one said unit length, said die means being operable, following each said unit-length movement of said second conveyor, to trim from said web those articles extending along said one unit length of said web.

4,289,470

LASAGNA NOODLE RIPPLER

Michael L. Johnston, Champlin; Loren J. Gordon, Osseo, and Dietrich E. Weinauer, Minnetonka, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Apr. 30, 1980, Ser. No. 145,275
Int. Cl.³ A21C *11/24*
U.S. Cl. 425—336 **18 Claims**



1. An apparatus for shaping dough ribbons into lasagna strands having opposite marginal edges undulated to provide ruffles, comprising:
- A. a support structure;
- B. a first horizontally aligned shaft rotatably mounted on said support structure;
- C. a second horizontally aligned shaft vertically oriented relative to said first shaft and parallel thereto, said second shaft rotatably mounted on said support structure;
- D. means for rotating said first shaft about its longitudinal axis;
- E. means for counter rotating said second shaft about its longitudinal axis in response to rotational movement of said first shaft;
- F. a pair of matching crimp rolls, said crimp rolls each having a pair of opposite marginal peripheral edges undulated to form fluting wherein the fluting extends equidistantly within and beyond the roll radius and wherein the crimp rolls are mounted on each shaft such that the fluting of one of the rolls is both in rotational and in lateral alignment with the fluting of the other roll;
- G. means for fixedly connecting a first crimp roll to the first shaft so that it is caused to rotate about the shaft axis as the shaft rotates;
- H. means for operatively connecting a second crimp roll to the second shaft so that said second crimp roll is caused to rotate about the shaft axis as the shaft rotates.

4,289,471

APPARATUS FOR FORMING A SHEET OF DRY WOOD PULP

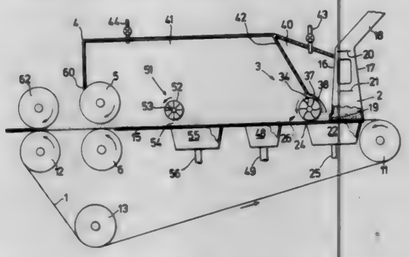
John H. Dunbar, Marlborough, and Kenneth L. Gray, Kenilworth, both of England, assignors to Courtaulds Limited, London, England

Filed Dec. 14, 1978, Ser. No. 969,580
Claims priority, application United Kingdom, Dec. 19, 1977, 52692/77
Int. Cl.³ B29C *17/10*
U.S. Cl. 425—373 **12 Claims**

1. An apparatus for forming a coherent and substantially uniform sheet of dry wood pulp comprising:
- (a) feed conveying means arranged to receive and convey the wood pulp as a layer,
- (b) a spreader having
  - (i) a first member which comprises an assembly of blades extending across the feed conveying means and rotatable so that the blades at their lowest position are closely adjacent to the feed conveying means and rotate towards

the wood pulp on the feed conveying means at a speed sufficient to blow the wood pulp off the feed conveying means and to suspend the wood pulp in air and

(ii) a second member positioned so that the wood pulp thus suspended in air has to pass between the first and second members before being discharged from the spreader and is



subjected to a fiber-separating action between the said first and second members,

(c) collection conveying means positioned to receive and convey the wood pulp discharged from the spreader, and

(d) means for consolidating the wood pulp received by the collection conveying means to form a coherent and uniform sheet.

4,289,472

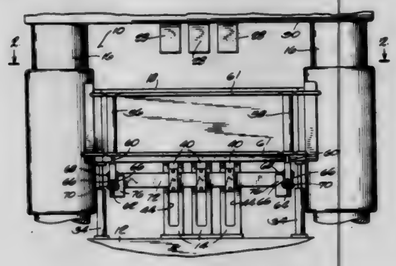
PRESS FOR REFRACTORY MATERIAL AND HAVING REMOVABLE CORE MOVING APPARATUS

Robert J. Dorsey, Chicago, Ill., assignor to Wehr Corporation, Milwaukee, Wis.

Continuation of Ser. No. 85,481, Oct. 17, 1979, abandoned. This application Sep. 23, 1980, Ser. No. 190,169

Int. Cl.³ B30B *11/02*

U.S. Cl. 425—415 **30 Claims**



1. A press for use in compressing refractory material and comprising a press bed, a mold table, means for supporting the mold table for movement toward and away from the press bed, a mold box supported by the mold table, the mold box including at least one vertically extending mold cavity, means for compressing material placed in the mold cavity, the compressing means including a plunger assembly having at least one plunger supported by the press bed and adapted to be inserted into a portion of the mold cavity, the plunger including a core therein, the core being reciprocally movable with respect to the plunger and into and out of a second portion of the mold cavity when the plunger is received in the mold cavity, and means for causing reciprocal movement of the movable core, said means for causing reciprocal movement of the movable core including a first pair of generally parallel lift bars, means for supporting the lift bars beneath the mold table and for causing vertical reciprocal movement of the lift bars, a pair of generally parallel cross bars positioned transversely to the lift bars, extending therebetween and connected thereto for movement with the pair of lift bars, and means for connecting the core to the cross bars for vertical movement with the cross bars.

4,289,473

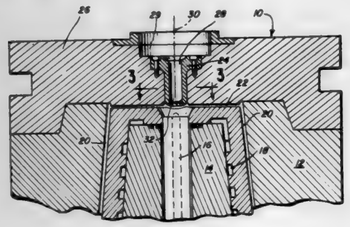
MOLD GATE PERMITTING THE INTRODUCTION OF STIFF MOLDING COMPOUND INTO A MOLD CHAMBER

John W. Von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Filed Jan. 4, 1980, Ser. No. 109,478

Int. Cl.³ B29C *1/00*

U.S. Cl. 425—567 **11 Claims**



1. In a gate member for admitting plastic material into a mold, which comprises a hollow member defining a bore having a longitudinal axis and an inner wall for separating said bore from a mold chamber positioned between mold halves, and aperture means extending through said inner wall, the improvement comprising:

said aperture means being peripherally spaced from the longitudinal axis, and defining an angle of essentially 30° to 90° to the longitudinal axis, diverging outwardly in the direction of said mold chamber, said inner wall defining a centrally positioned peak upstream of said peripherally-spaced aperture means, pointing toward said bore, and having sloping sides, to assist in directing molten plastic toward said peripherally-spaced aperture means.

7. In a gate member for admitting plastic material into a mold, which comprises a hollow member defining a bore having a longitudinal axis, and an inner wall for separating said bore from a mold chamber positioned between said mold halves, and aperture means extending through said inner wall, the improvement comprising,

said aperture means being peripherally spaced from the longitudinal axis and defining an angle to the longitudinal axis, diverging outwardly in the direction of said mold chamber, said inner wall defining rib means extending radially from a central portion of the inner wall toward the periphery thereof, to reinforce said inner wall against the pressure imparted by the injection of molding compound through said gate.

4,289,474

PROCESS OF COMBUSTING A PREMIXED COMBUSTION FUEL

Juichi Honda, Fujisawa; Michiaki Matumoto, Tokyo, and Sadao Mimori, Saitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

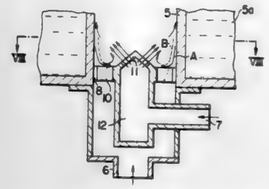
Division of Ser. No. 771,912, Feb. 25, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 44,994

Claims priority, application Japan, Mar. 1, 1976, 51-21115

Int. Cl.³ F23M *3/04*

U.S. Cl. 431—10 **12 Claims**

1. A process of combustion having a lower NO_x generation rate, comprising the steps of premixing gaseous fuel and a primary air to create a mixture within a combustibility limit with respect to the fuel, generating a flame extending in a parallelly disposed, contacting relationship with respect to a cooling wall by combustion of the mixture so as to form a maximum temperature region slightly downstream of a first reaction region in the flame, and feeding secondary air to the



maximum temperature region from a side of the flame opposite to the cooling wall toward the cooling wall.

4,289,475

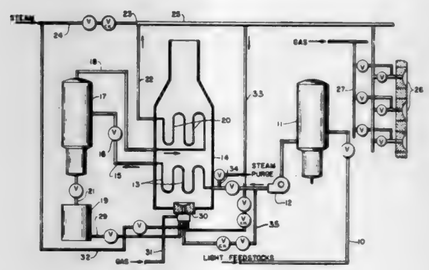
STEAM VAPORIZATION OF OIL

Fraser M. Wall, Warrington; Maurice R. Kitzen, Wyncote, and T. Frederick Kreipe, Oreland, all of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Jan. 5, 1977, Ser. No. 756,848

Int. Cl.³ F23D *11/44*; **F27B** *5/14*

U.S. Cl. 431—11 **41 Claims**



1. In a process for steam vaporization of a liquid hydrocarbon consisting essentially of oil or naptha having an API gravity of about 10–80 for introduction at a predetermined steam-hydrocarbon nozzle temperature into the nozzle of a burner, said burner being constructed for burning a gas of a predetermined Wobbe number, at a predetermined nozzle gas temperature, the steps which comprise:

preheating said liquid hydrocarbon to a preselected temperature so that it is at least partially in the vapor phase,

supplying steam in the quantity of about 0.1 to 1 pound of steam per pound of said hydrocarbon,

mixing said preheated hydrocarbon with said steam at a pressure of about 30–150 pounds per square inch gauge,

heating the resulting mixture to a mixture temperature in the range of 450° to 800° F., said mixture temperature being above the condensation temperature of the mixture at the nozzle, and said mixture temperature being such as to impart to said resulting mixture a Wobbe number essentially equivalent to the predetermined Wobbe number of said gas at said predetermined nozzle gas temperature,

delivering said hydrocarbon and steam as a vaporized mixture to the nozzle of said gas burner, and

burning said vaporized mixture in said gas burner.

27. Apparatus for burning either liquid hydrocarbon or gas comprising a gas burner having nozzle means for burning air and gas, said gas having a predetermined Wobbe number at a predetermined nozzle gas temperature, a gas conduit connected thereto, means for supplying liquid hydrocarbon to a vaporizing apparatus, means for supplying steam to said vaporizing apparatus, said vaporizing apparatus comprising means for preheating said liquid hydrocarbon to a predetermined temperature to at least partially vaporize said hydrocarbon, means for mixing said preheated hydrocarbon with steam at a ratio of about 0.1 to 1.0 pound of steam per pound of hydrocarbon under pressure in the range of about 30 to 150 pounds per square inch gauge, means for heating said mixture to a temperature in the range of about 450° to 800° F. whereby said mixture has essentially the equivalent Wobbe number as said gas at said burner nozzle, and means for feeding said heated mixture to said gas burner nozzle.

4,289,476

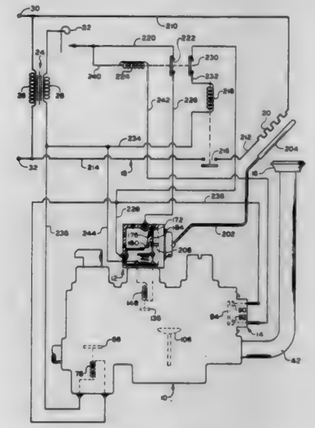
DIRECT IGNITION GAS BURNER CONTROL SYSTEM

Charles D. Visos, and Carl F. Fernstrom, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 11, 1979, Ser. No. 56,502

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—66 **4 Claims**



1. In a gas burner control system,

a burner;

an electrical resistance igniter for igniting said burner;

two valves connected fluidically in series with said burner;

a thermostatically actuated switch responsive to igniter temperature and burner flame having a "cold" contact position, a "hot" contact position, and an intermediate contact position;

circuit means for effecting opening of a first of said two valves including said thermostatically actuated switch in said "cold" contact position;

circuit means for effecting energizing of said igniter including said thermostatically actuated switch in said "cold" contact position;

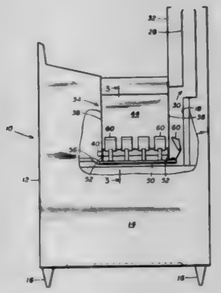
a pressure actuated switch actuated to a closed contact position when said first valve is open;

circuit means including said thermostatically actuated switch in said intermediate contact position for effecting opening of a second of said two valves so that gas flows to said burner in the event that said pressure actuated switch is actuated to an open contact position due to a momentary drop in gas pressure when said second valves opens; and

circuit means energized through said pressure actuated switch in said closed contact position when said thermostatically actuated switch is moved into said "hot" contact position for maintaining said valves open and for effecting de-energizing of said igniter under normal burner operation, for automatically initiating a new burner cycle in the event of a power or gas failure, and for providing a lock-out condition, wherein gas flow to said burner and energizing of said igniter is prevented, in the event ignition

should not initially occur or is not responded to by said thermostatically actuated switch.

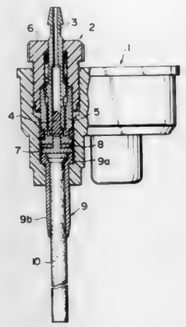
4,289,477
COOKING SYSTEM
Lewis F. Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.
Division of Ser. No. 447,091, Mar. 1, 1974, Pat. No. 3,938,948, which is a division of Ser. No. 223,443, Feb. 4, 1972, Pat. No. 3,809,062. This application Dec. 15, 1975, Ser. No. 640,740
Int. Cl.³ F23M *9/06*
U.S. Cl. 431—171 **4 Claims**



1. A burner comprising:
a gas supply manifold;
at least two orifices on the manifold for discharging gas jets in such directions that adjacent gas jets and secondary air entrained therein interact to cause turbulent intermixing of the gas and air to form a combustible mixture;
combustion means for burning the combustible mixture; and
a target mounted on the manifold positioned at least partially in the path of the interacting jets and spaced from the orifices a sufficient distance to allow said adjacent gas jets to substantially converge to form the combustible mixture before reaching the target, said target having a planar face facing generally toward said interacting jets and angled to intercept the path of the interacting jets to deflect the combustible mixture into a combustion zone and to reflect and radiate heat toward the combustion zone, said target further comprising a plurality of independent projections extending substantially normal from the planar face to enhance the turbulent mixing, and side walls on opposite sides of the planar face to enhance the deflection of the combustible mixture toward the combustion zone.

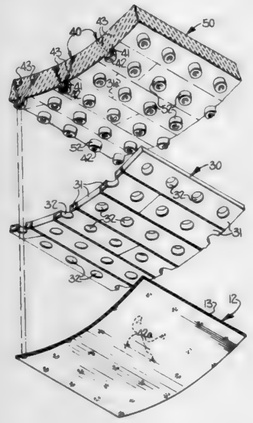
4,289,478
CIGARET GAS LIGHTER
Tomio Nitta, Yokohama, Japan, assignor to Tokai Seiki Co., Ltd., Japan
Filed Sep. 20, 1979, Ser. No. 77,379
Claims priority, application Japan, Sep. 21, 1978, 53/116190
Int. Cl.³ F23D *13/04*; F23Q *2/08*
U.S. Cl. 431—344 **3 Claims**

1. A cigarette gas lighter comprising a plastic fuel gas tank, a burner mounted on the plastic fuel gas tank, a nozzle bottom in said burner, a pin disk in said burner having a pin inserted into the nozzle bottom and a flat surface facing downwardly to the tank, a fuel take-up wick hung from the burner, said wick extending from said flat surface of the pin disk downwardly into a liquified fuel gas in the gas tank with an upper end of said wick held in direct contact with the flat surface of the pin disk, and a metal heat collecting member provided along the upper part of the wick with an upper end thereof held in direct contact with the flat surface of the pin disk and with the major portion thereof held in contact with the wick, whereby the heat of vaporization for vaporizing the liquified fuel gas is supplied to the burner by way of said metal member, and the upper ends of said wick and heat collecting member having



downwardly extending tapered portions in engagement with each other to prevent relative movement therebetween.

4,289,479
THERMALLY INSULATED ROTARY KILN AND METHOD OF MAKING SAME
Allen S. Johnson, Jr., P.O. Drawer 1037, Salisbury, N.C. 28144
Filed Jun. 19, 1980, Ser. No. 160,989
Int. Cl.³ F27B *7/28*; F27D *1/16*
U.S. Cl. 432—3 **22 Claims**

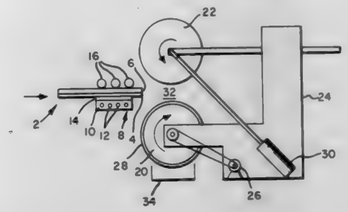


1. In a rotary kiln for heat treating aggregate and having an elongate cylindrical metal kiln wall; the combination therewith of
a wear-resistant thermal protective, annular liner extending around the interior surface of at least a substantial lengthwise portion of the kiln wall and comprising a plurality of elongate, annular liner sections,
each liner section including
a layer of thermal insulation material positioned against the interior surface of the kiln wall and including a plurality of contiguous lightweight thermal insulating blocks having openings through medial portions thereof extending generally perpendicular to the kiln wall so as to provide openings throughout said layer of insulation material,
a layer of relatively hard cast refractory material overlying said layer of insulation material and having a plurality of spaced-apart column portions of the refractory material projecting inwardly from the refractory material layer and through the openings in said layer of thermal insulation material and positioned against the interior surface of said kiln wall so that the cast refractory material is essentially supported by said column portions thereof engaging said kiln wall, and
anchor brackets secured to the interior surface of the kiln wall and projecting outwardly through said column portions and into said layer of cast refractory material so that said column portions are in surrounding relation to the respective anchor brackets and so that said anchor brackets reinforce said layer of refractory material and also firmly anchor both said layer of insulation material and said layer of refractory material to said kiln wall, and
an annular fire barrier wall of refractory material disposed between and connecting adjacent iner sections and also being positioned against and extending around the interior surface of the kiln wall and projecting therefrom a distance about equal to the combined thickness of said layers of said insulation material and refractory material of each of said liner sections.

21. A method of constructing a wear-resistant, thermal protective, annular liner on the interior surface of an elongate cylindrical metal wall of a rotary kiln of the type used for heat treating aggregate, said method comprising
providing a plurality of lightweight, substantially rectangular thermal insulating blocks with openings through medial portions thereof, building at least one annular section of the liner by the steps of
forming a layer of the insulating blocks in contiguous relationship against the interior surface of the kiln metal wall with the blocks oriented so that portions of the kiln metal wall are visible through openings in the layer of insulating blocks,
inserting end portions of anchor brackets through the openings in the layer of insulating blocks and securing such end portions to the kiln wall with outer arm portions of the anchor brackets projecting outwardly of the blocks, and
forming a layer of refractory material against the thus formed layer of insulating blocks by casting a slurry of the refractory material against the layer of insulating blocks while forming supporting columns projecting inwardly from the layer of refractory material by casting the same into and through the openings in the layer of insulating blocks, and while forming the layer of refractory material to a thickness over the layer of insulating blocks substantially embedding the outer arm portions of the anchor brackets in the refractory material for firmly anchoring both the layer of insulating blocks and the layer of refractory material to the metal wall of the kiln.

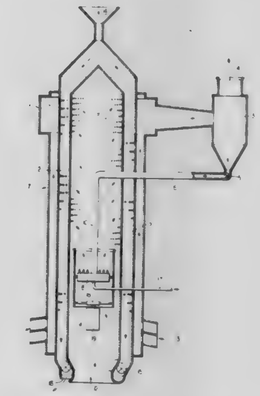
4,289,480
PROCESS FOR HEATING THIN SURFACE LAYERS
C. Bradford Jones, and Richard D. Kinard, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 2, 1979, Ser. No. 90,679
Int. Cl.³ F27B *9/28*
U.S. Cl. 432—8 **14 Claims**

1. A process for heating a thin surface layer of a thicker dielectric substrate without substantially heating the substrate mass which comprises advancing the exposed surface of the thin layer in surface-conforming contact with a continuously heated surface for 0.1 to one second at an interface pressure of



0.1 to 5 kilograms per centimeter of substrate width, the heated surface having an initial temperature of 35°–350° C.

4,289,481
FUEL AND APPARATUS FOR DRYING GRAIN
Robert A. Yano, Worthington, Ohio, assignor to Comet, Inc., Grand Island, Nebr.
Filed Jul. 6, 1979, Ser. No. 55,152
Int. Cl.³ F27D *1/08*
U.S. Cl. 432—96 **6 Claims**



1. A grain dryer having:
(a) three chamber means, the first of which has an outer shell which is intermediate of and spaced from that of each of the other two, the second of which is within the first chamber means, and the third of which surrounds a major portion of the first chamber means; a major portion of the outer shell of each of the first and second chamber means being perforated, whereas the outer shell of the third chamber means is impervious and extends beyond the perforated portion of the outer shell of the first chamber means;
(b) inlet means to introduce grain to be dried into the first chamber means and outlet means to withdraw from the same chamber means grain from which moisture has been removed, the inlet means and the outlet means being disposed at opposite ends of the first chamber means;
(c) grain-dust collecting means within the third chamber means and surrounding the first chamber means;
(d) means to conduct grain dust from the grain-dust collecting means to a grain-dust concentrating means; and
(e) means to convey grain dust concentrated in the grain-dust concentrating means into the second chamber means and through a moisture removal means to a burner means within said second chamber means.

4,289,482

FUEL LANCE STRUCTURE FOR A UNIFLOW REGENERATIVE SHAFT FURNACE

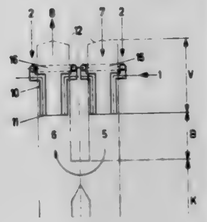
Erwin Füssl, Zürich, Switzerland, assignor to Maerz Ofenbau AG, Zürich, Switzerland

Filed Sep. 25, 1979, Ser. No. 78,765

Claims priority, application Switzerland, Feb. 28, 1979, 1963/79

Int. Cl.³ F27D *1/08*; F27B *15/00*

U.S. Cl. 432—96 **3 Claims**



1. Apparatus for calcining limestone and similar raw materials comprising: a uniflow regenerative shaft furnace fired with liquid fuel and including a pair of uninsulated fuel lances suspended in bulk quantities of said raw materials through which said liquid fuel is supplied and at least two shafts connected in flow communication by transfer duct means alternately operating one as the calcining shaft of said furnace and the other as the counterflow shaft, said fuel lances being located at a preheating zone defined by said furnace; each of said fuel lances comprising a fuel tube forming a cylindrical line for said liquid fuel through which said liquid fuel flows and a tubular jacket surrounding said fuel tube and coaxial therewith forming together with said fuel tube an annular gap therebetween; said lances being situated, respectively, in a different one of said two shafts, with the lance situated in the uniflow shaft being supplied with fuel and cooling medium and with the lance situated in the counterflow shaft being supplied with cooling medium and flushing medium; each of said shafts being provided with a blower and each lance being provided with a dosing pump for supplying fuel.

4,289,483

APPARATUS FOR THE MUTLI-STEP CALCINATION OF CEMENT-CLINKER

Herbert Deussner, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 888,696, Mar. 21, 1978, Pat. No. 4,183,762. This application Sep. 4, 1979, Ser. No. 72,095

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712238

Int. Cl.³ F27B *7/02, 3/04*

U.S. Cl. 432—106 **8 Claims**

1. An apparatus for the production of cement from raw material to the clinker stage which comprises:

a preheat heat exchanger means having means for receiving and heating raw material;

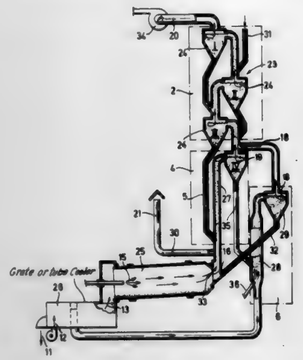
calcination heat exchanger means which comprise:

a precalcination stage means connected to receive material from said preheat heat exchanger, and

an after-calcination stage means with means for receiving material from said precalcination stage;

a gas inlet means for each of said calcination stages providing heated air therefor;

a fuel supply, burner, and air supply for supporting combustion of the burner for said after-calcination stage means of the calcination heat exchanger means; and



a fuel fired sintering kiln means connected to receive material from said after-calcination stage.

4,289,484

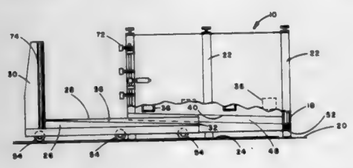
CAR BOTTOM FURNACE

Lawrence C. Lyman, Broadbrook, Conn., assignor to Industronics, Inc., South Windsor, Conn.

Filed Jan. 7, 1980, Ser. No. 109,927

Int. Cl.³ F27D *3/12*

U.S. Cl. 432—241 **8 Claims**



1. In a high temperature car bottom furnace having a furnace chamber including a pair of side walls and an end wall, and a car mounted furnace floor movable relative to said chamber between an open position spaced from said walls and a closed position operatively engaging said walls, the combination wherein said side walls have tapered bottom surfaces sloping toward said end wall, said surface floor has tapered sealing surfaces complementary to said bottom surfaces for mating with the bottom surfaces of the side walls to close the bottom of said furnace chamber, the sealing surfaces of said floor being in spaced confronting nonsealing relationship to said bottom surfaces during a major portion of the floor travel into its closed position, and a resilient compressible insulating layer secured to at least one of the mating surfaces along the full extent of each side wall for compressive engagement between said mating surfaces to seal said chamber along said side walls as the floor reaches its closed position.

4,289,485

SINTER MACHINE-PELLETIZING MACHINE WEAR AND BAFFLE PLATE FOR PALLET SIDE PLATE

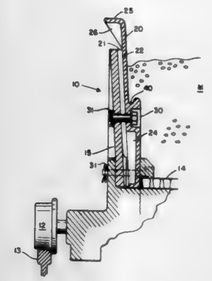
Anthony A. Latowski, Pittsburgh, and William P. Grib, Belle Vernon, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 15, 1979, Ser. No. 66,551

Int. Cl.³ F27D *3/00*

U.S. Cl. 432—245 **4 Claims**

1. Traveling grate apparatus for treating materials at elevated temperature, comprising a grate and upstanding substantially rectangular side plates at each side of said grate along the path of travel of the grate for cooperation with said grate to define a channel for carrying said material, each side plate having a J-shaped inner face to form a bench along the length of its inner face and intermediate the height thereof for holding



material so that, as the material changes in volume during the treating, it rests on said bench and provides a seal against the passage of gases along the interface of said side plate and material.

4,289,486

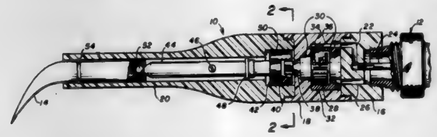
PNEUMATIC DENTAL SCALER

Roger E. Sargeant, Ashford, Conn., assignor to Innovate, Inc., Ashford Lake, Conn.

Filed Apr. 21, 1980, Ser. No. 142,097

Int. Cl.³ A61C *1/07*

U.S. Cl. 433—118 **8 Claims**



1. Dental apparatus comprising:

means for converting a flow of fluid to an output shaft rotation;

means for engaging and driving a dental tool, said driving means including a pivotally mounted elongated drive shaft, said drive shaft engaging a tool at its first end, said drive shaft first end being constrained by the pivot mounting to move linearly;

means for translating said converting means output shaft rotation to periodic movement of said driving means shaft about its pivot mounting, said translating means including an irregularly shaped member mounted on said converting means output shaft for rotation therewith, said translating means further including a contact member extending from the second end of said driving means shaft in juxtapositioned relationship to said irregularly shaped member; and

means resiliently biasing said driving means shaft to a position where there is clearance between said contact member and said irregularly shaped member during rotation of said irregularly shaped member, the application of force to the first end of said diving means shaft overcoming the resilient bias and causing said shaft to pivot whereby the second end of said shaft and said contact member are deflected and the portions of said irregularly shaped member having maximum radius will periodically engage said contact member to thereby urge said drive shaft against the resilient bias to impart vibratory motion to a tool engaged by the first end of said drive shaft.

4,289,487

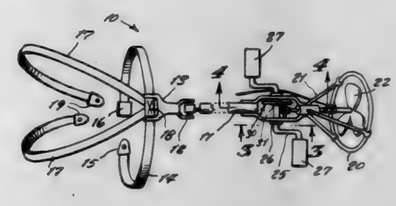
SWIMMING DEVICE

Karl W. Fattler, 33-06 31st Ave., Long Island City, N.Y. 11106

Filed Sep. 19, 1979, Ser. No. 77,048

Int. Cl.³ A63B *35/10*

U.S. Cl. 440—31 **3 Claims**



1. A swimming device, comprising in combination, a frame supported at its forward end on a waist belt, shoulder straps extending from the waist belt, a crankshaft rotatably positioned transverse to the frame, foot pedals located at opposing ends of the crankshaft, a first gear fixed onto said crankshaft and having a plurality of radially different speed controlling sections thereon, with the slower speed control section being radially inward of the faster control section, a propeller shaft extending from the rear end of said frame, a propeller fixed at the distal end to said propeller shaft, a second gear fixed at the medial end of said propeller shaft and engaging said first gear, a housing supported by said frame for protectively surrounding said propeller, biasing means for normally biasing said second gear to engage said first gear at the outermost speed control section thereof, said shaft, second gear and propeller being slidable together relative to said frame and housing in the direction of the shaft's axis, a collar formed on said propeller shaft, a hand operated rotatable winch formed on said waist belt, a cable extending from said winch and coupled to said collar, whereby the operator of said winch selectively moves the second gear against the bias to engage slower speed control sections of the first gear by winding said cable about said winch, said winch being constructed and arranged to maintain said second gear in a selected position without further restraint by the operator.

4,289,488

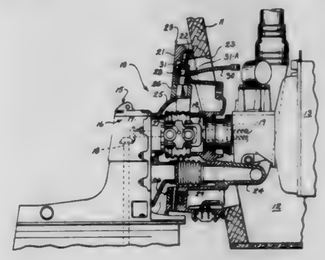
STERN DRIVE GIMBAL ARRANGEMENT

Robert B. Weronke, Oshkosh, and Herbert A. Bankstahl, Fond du Lac, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Feb. 21, 1979, Ser. No. 13,039

Int. Cl.³ B63H *25/42*

U.S. Cl. 440—57 **1 Claim**



1. A drive assembly for mounting on the transom of a watercraft, including

(A) a stern drive mounted externally of the watercraft;

(B) a gimbal housing attached to the watercraft;

(C) a gimbal ring member for pivotally attaching the stern drive to the gimbal housing for trim and steering control;

(D) a generally vertical steering swivel shaft pivotally attaching the gimbal ring member to the gimbal housing; and

(E) a steering lever attached to the upper portion of the steering swivel shaft to provide steering control of the drive unit;

wherein the improvement comprises:

(1) the gimbal ring member having a generally vertical bore with a generally square cross-section;

(2) the steering swivel shaft having a lower cross-section complementary to the cross-section of the vertical gimbal ring bore; and

(3) clamping means to clamp the sides of the vertical gimbal ring bore against the complementary sides of the swivel shaft to produce substantially full engagement between the sides of said bore and the complementary sides of said swivel shaft along the full length of the bore, said clamping means comprising:

(a) a slot in the gimbal ring extending diagonally through the cross-section of the gimbal ring bore, the slot lying in a plane including the axis of the gimbal ring bore and extending into the gimbal ring on both sides of the gimbal ring bore; and

(b) a bolt through the gimbal ring member on each side of the gimbal ring bore to force the sides of the slot together, with said bolts positioned offset toward the bottom of said gimbal ring bore to compensate for the bending of the gimbal ring as said bolts are tightened.

4,289,489

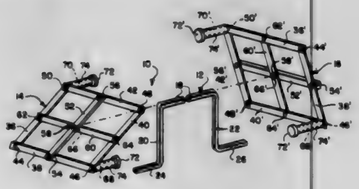
SELF-ADJUSTING VARIABLE SPEED IDLER PULLEY

Rudolph Moschetto, 264 86th St., Brooklyn, N.Y. 11209

Filed Dec. 19, 1979, Ser. No. 105,022

Int. Cl.³ F16H *55/54*

U.S. Cl. 474—52 **6 Claims**



1. Self-adjusting variable-speed idler pulley for guiding a power transmission element, which comprises:

a non-rotating pulley support shaft; and

two pulley side wall assemblies, each of said assemblies comprising:

four edge elements pivotally connected at their ends sequentially to form a parallelogram;

a side support bar pivotally connected at each of its ends to the center of one of an opposing parallel disposed pair of said four edge elements, said support bar having a centrally disposed bore of a configuration complementary to, and for mounting non-rotatably on, said pulley support shaft;

a cross-brace pivotally connected at each of its ends to the center of one of the parallely disposed pair of said four edge elements not connected by said side support bar, said cross-brace having a centrally disposed bore for mounting for free rotation on said pulley support shaft;

a pair of spindles mounted at opposite corners of said parallelogram and projecting inwardly from said side wall assembly in substantially parallel relationship to said pulley support shaft; and

a pair of sleeve members, one mounted for free rotation on each of said pair of spindles, said sleeve members adapted to carry and guide the power transmission element;

said two pulley side wall assemblies being mounted non-rotatably on said pulley support shaft in facing relationship, at an angular displacement of 45 degrees with respect to one another, so that said sleeve members on said spindles are aligned in a common plane and are disposed in changeable circular orbital relationship for guiding the power transmission element.

4,289,490

IMPROVED REAR HUB CHAIR PROTECTOR

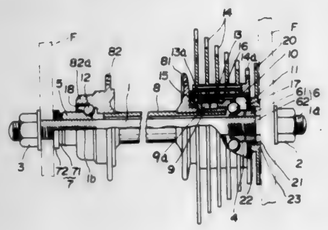
Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Dec. 3, 1979, Ser. No. 99,483

Claims priority, application Japan, Dec. 9, 1978, 53-170078[U]

Int. Cl.³ F16H *7/18*

U.S. Cl. 474—144 **6 Claims**



1. In a rear hub for a bicycle, said hub comprising a hub shaft, a pair of bearings mounted to said hub shaft, a hub shell supported rotatably to said hub shaft through said bearings, a cylindrical driving member disposed at one axial end portion of said hub shell supporting a plurality of sprockets of different diameters, a unidirectional rotary transmission mechanism for transmitting driving force from said driving member to said hub shell, and a first and a second fixing member for fixing said bearings to said hub shaft, the improvement comprising a protector having an outer periphery larger in diameter than a first sprocket of said plurality of sprockets, said first sprocket being positioned at the axial outermost side of said hub shaft, said protector having at its center a fitting bore which fits onto said first fixing member, being arranged axially outwardly of said first sprocket and between it and a fork of a bicycle, and being supported to said first fixing member, said protector preventing a driving chain from disengaging from said first sprocket.

4,289,491

APPARATUS FOR ADHESIVELY BONDING A CARTON

Peter C. Collura, and Thomas R. Baker, both of Los Altos, Calif., assignors to Kliklok Corporation, Greenwich, Conn.

Filed Jun. 25, 1979, Ser. No. 51,854

Int. Cl.³ B31B *3/60*

U.S. Cl. 493—124 **14 Claims**

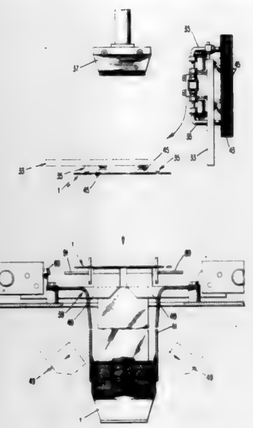
1. A carton blank feeding means for delivering a blank to a forming die comprising:

a movable frame;

at least one vacuum assisted suction cup mounted to said frame for lifting a carton blank from a stack;

means for moving said frame to transfer said carton blank carried by said suction cup from said stack into registration over said forming die and for pressing said carton blank into contact with said die, and

at least one adhesive applicator, connected to a pressurized source of liquid adhesive, for applying a spot of said adhesive to a selected portion of said carton blank while held



on said movable frame and when said carton blank is pressed into contact with said die.

4,289,492

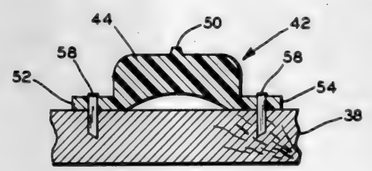
CREASING RULE

Jack R. Simpson, Toledo, Ohio, assignor to Container Graphics Corporation, Toledo, Ohio

Filed Jan. 9, 1980, Ser. No. 110,780

Int. Cl.³ B26D *3/08*

U.S. Cl. 493—371 **10 Claims**



1. A rotary cutting die for processing corrugated board, said die comprising a die plate, a creasing rule comprising an elongate, smooth, unbroken web of plastic material and having a central, longitudinally-extending ridge located on one side thereof, said web having longitudinally-extending flanges along each edge thereof and extending outwardly therefrom in opposite directions, said web having a shallow, longitudinally-extending groove centrally located on the side thereof opposite said ridge, and means for affixing said flanges to said die plate with the ridge extending outwardly therefrom.

4,289,493

APPARATUS FOR APPLYING AN OVERLAY TO A SUBSTRATE

Winfried Hedrich, Rahden, Fed. Rep. of Germany, assignor to Rahdener Maschinenfabrik August Kolbus GmbH & Co. KG, Wesphalia, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 95,093

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2850740

Int. Cl.³ B65B *49/12*

U.S. Cl. 493—389 **43 Claims**

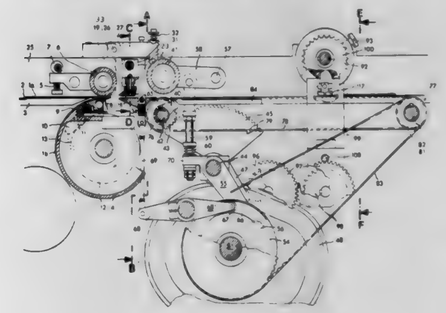
1. Apparatus for wrapping flexible sheet material around a rectangular substrate which is advanced along a path, the sheet material being adhered to a first surface of the substrate and extending beyond the edges thereof, said apparatus comprising:

wrapping means for pressing the sheet material against a second surface of the substrate, said second surface being opposite to the first surface, said wrapping means being positioned at a fixed location along the path;

means for transporting the substrate and adhered sheet material to said wrapping means along the path, said transporting means being reversible whereby the substrate may first be fed to said wrapping means in a first direction and then fed back to said wrapping means in a second direction;

first means for deflecting sheet material extending beyond a first edge of the substrate out of the direction of movement thereof prior to the feeding of the substrate and adhered sheet material to said wrapping means in the first direction whereby said sheet material will be engaged by said wrapping means and folded around a first edge of the substrate; and

second means for deflecting the sheet material extending beyond a second edge of the substrate out of the direction of movement imparted thereto by said transporting means prior to the feeding of the substrate and adhered sheet material to said wrapping means in the second direction whereby said sheet material will be engaged by said wrapping means and wrapped around the second edge of said substrate, the substrate second edge being disposed oppositely to said substrate first edge.



4,289,494

BRAKE FOR SHEET STACKS ON A FOLDING TABLE

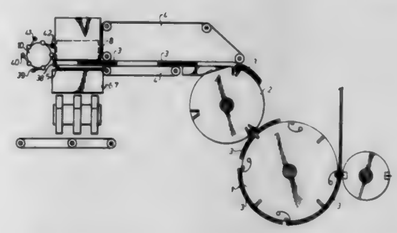
Hans B. Bolza-Schunemann, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,839

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846192

Int. Cl.³ B65H *45/00*

U.S. Cl. 493—405 **10 Claims**



1. A brake apparatus to slow-down and stop moving sheet stacks on a folding table of a web-fed rotary printing machine, said brake apparatus comprising:

a plurality of resiliently supported stop rods, each of said stop rods being disposed horizontally and generally perpendicular to the direction of movement of said sheet stacks, a leading edge portion of each of said sheet stacks contacting one of said stop rods to move said rod from a rest position;

a rotatable brake drum, means mounting each said rod on said brake drum for rotation therewith to slow-down and stop the forward movement of the sheet stacks on said folding table; means for resiliently biasing each said rod to allow it to move a distance with a stack of sheets wherein Kinetic energy is transferred from the braked stack of sheets to the rod and biasing means and

means for intermittently rotating said brake drum to position succeeding stop rods for contact by said leading edge of succeeding sheet stacks whereby each said sheet stack is braked by engagement with one of said resilient stop rods.

4,289,495

OXIDATIVE DYE COMPOSITIONS CONTAINING A 2,5-DIHYDROXYPHENYLALKANOIC ACID OR SALTS THEREOF AS ANTIOXIDANT

Andree Bugaut, Boulogne-Billancourt; Jean-Francois Grollier, Paris, and Jean-Jacques Vandenbooschc, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

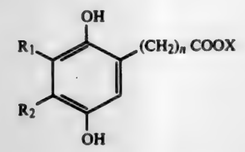
Filed Aug. 18, 1978, Ser. No. 934,830

Claims priority, application Luxembourg, Aug. 19, 1977, 77994

Int. Cl.³ A01K *7/13*

U.S. Cl. 8—406 **28 Claims**

1. A composition suitable for dyeing human hair, consisting essentially of at least one oxidative dyestuff and, as anti-oxidant, a 2,5-dihydroxyphenylalkanoic acid or a salt thereof corresponding to the general formula:



(I)

in which R_1 and R_2 are identical or different and denote hydrogen or a straight- or branched-chain alkyl group of 1 to 4 carbon atoms, X denotes hydrogen, an alkali metal, ammonium, or an alkanolamine radical and n is an integer from 1 to 4.

4,289,496

FINISHING PROCESS

Gordon H. Lister, Leeds, England, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 510,470, Sep. 30, 1974, which is a continuation-in-part of Ser. No. 182,852, Sep. 22, 1971, abandoned. This application May 5, 1980, Ser. No. 146,442

Claims priority, application United Kingdom, Sep. 22, 1970, 45144/70

Int. Cl.³ B08B *7/00*

U.S. Cl. 8—477 **13 Claims**

1. A low liquor ratio textile finishing process of the kind which comprises a step in which the textile is impregnated with a finishing liquor comprising finishing agent and water and a heating step in which the temperature of the textile is raised to a predetermined finishing temperature, the quantity of finishing liquor being such that the textile absorbs substantially all of the available liquor during the impregnation step, wherein the heating step comprises heating the impregnated textile to the predetermined finishing temperature while moving it in an atmosphere which is substantially or completely saturated with water vapor.

4,289,497

GRADIENT PHOTOCHROMIC LENS AND METHOD SELECTIVELY REDUCING PHOTOCHROMIC ACTIVITY

Richard J. Hovey, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sep. 2, 1980, Ser. No. 183,654

Int. Cl.³ D06P *5/00*

U.S. Cl. 8—506 **14 Claims**

1. An optical element exhibiting gradient photochromic response comprising:

a synthetic plastic host,

a photochromic spiroindolinenaphthooxine dye, said dye being dispersed uniformly across at least one element surface, an ultra-violet radiation absorbing material, said material being capable of inhibiting activation of said photochromic dye and said material dispersed in greater concentrations in selected portions of the element whereby photochromic activity of the dyed lens varies with the concentration of said material.

4,289,498

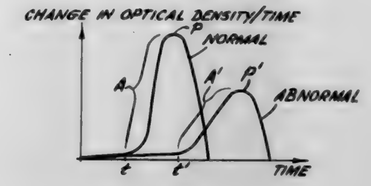
ONE-STAGE PROTHROMBIN ASSAY AND COMPOSITIONS USEFUL THEREIN

D. Joseph Baughman, Flemington, and Ann Lytwyn, New Brunswick, both of N.J., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Jan. 8, 1979, Ser. No. 1,500

Int. Cl.³ G01N *33/86*

U.S. Cl. 23—230 B **21 Claims**



1. A method for determining, for a fibrinogen-normal individual, the effectiveness of that portion of the blood clotting mechanism measured by a conventional one-stage prothrombin time test which comprises the steps of:

(a) determining the exponential rate of thrombin formation in a mixture comprising effective thrombin-forming concentrations of thromboplastin, calcium ion, and test plasma from said individual; and

(b) comparing this determined rate to a compilation of rates for plasmas of known clotting properties.

4,289,499

SELECTING PERFLUOROCARBON COMPOUNDS FOR SYNTHETIC BLOOD

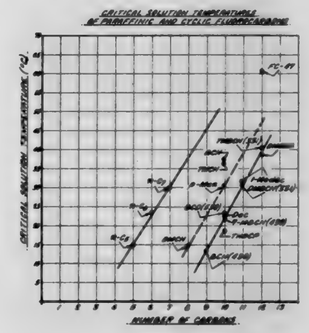
Leland C. Clark, Jr., Cincinnati, Ohio, and Robert E. Moore, Wilmington, Del., assignors to Childrens Hospital Medical Center, Philadelphia, Pa. and Suntech, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 81,584, Oct. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 950,959, Oct. 13, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,509

Claims priority, application Japan, Oct. 12, 1979, 54-130953

Int. Cl.³ A61K *31/02*

U.S. Cl. 23—230 B **5 Claims**



1. A process for selecting perfluorocarbon compounds from those having from about 9 to 12 carbon atoms for preparing synthetic blood compositions comprising:

(a) dissolving a candidate perfluorocarbon compound in a solvent;
(b) determining the critical solution temperature of said candidate perfluorocarbon; and
(c) accepting the candidate perfluorocarbon compound for preparing a synthetic blood composition when said candidate compound has a critical solution temperature of less than;
(1) a first temperature when the perfluorocarbon has nine carbon atoms;
(2) a second temperature when the perfluorocarbon has ten carbon atoms;
(3) a third temperature when the perfluorocarbon has eleven carbon atoms;
(4) a fourth temperature when the perfluorocarbon has twelve atoms; and
whereby the accepted perfluorocarbon compound has a transpiration rate in animals falling within a predetermined range.

4,289,500

METHOD OF PRODUCING HOT BRIQUETTES

Heinrich Weber, Recklinghausen; Horst Dungs, Herne; Karl-Heinz Wollenhaupt, Gelsenkirchen, all of Fed. Rep. of Germany; Yves Brasseur, Strassen; Henri Birscheidt, Lintgen, both of Luxembourg, and Franz Beckmann, Alsdorf, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,150
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916260
Int. Cl.³ C10L *5/16, 5/02*
U.S. Cl. 44—15 R **11 Claims**

1. A method of producing hot briquettes in a plurality of heating states, comprising heating a first quantity of coal components which do not soften by direct heat exchange with hot carrier gases to a temperature of about from 550° to 700° C., directing the heated coal components and gases into a first separator to separate the carrier gases from the heated first quantity of coal components, for subsequent use, preheating and drying a caking bituminous binder coal component with the separated carrier gas to a temperature ranging from 240° to 360° C., directing the heated binder coal component and the separated carrier gas to a second operator to provide a second separated carrier gas and heated and dried binder coal, directing the second separated carrier gas into direct heat exchange with a second quantity of said coal components at a temperature in the range of from 350° to 600° C., then directing the heated and predried second quantity of said coal components and the second separated carrier gas to a third separator to separate the second quantity of coal components from the second separated carrier gas, directing the separated second quantity of said coal components into heat exchange with the hot carrier gases in said first mentioned heating step, directing the separated first and second quantities of coal components of the first and third separators and the separated binder from the second separator into a mixer, mixing the separated binder and first and second quantities of coal components, and then directing the mixture into a roll press to form briquettes.

4. In a method of producing hot briquettes in a plurality of heating states of the type having the steps including, in a first heating stage, injecting a quantity of coal components, which do not soften by direct heat exchange, into a hot carrier gas to directly heat the coal components to a temperature ranging from 550° to 700° C., separating the heated coal components from the carrier gas, and then, in a second heating stage, preheating and drying a caking bituminous binder coal to a temperature ranging from 240° to 360° C. by directly heating said binder coal with said separated carrier gas, the improvement comprising the steps of reseparating the carrier gas from the heated binder coal, directly heating and predrying a second quantity of said coal components with said reseparated carrier gas, separating said heated second quantity of coal components from said reseparated carrier gas, and injecting said heated second quantity of coal components into said carrier gas in the first heating stage.

4,289,501

HYDROCARBON FUEL ADDITIVE

Eugene C. Medcalf, Bound Brook, N.J., assignor to BWM Corporation, Mount Vernon, N.Y.

Division of Ser. No. 890,552, Mar. 20, 1978. This application Apr. 21, 1980, Ser. No. 142,445
Int. Cl.³ C10L *1/20*
U.S. Cl. 44—56 **6 Claims**

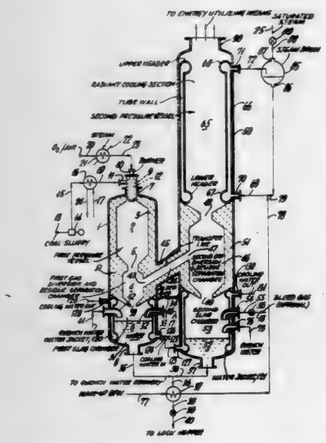
1. A clear liquid composition stable below 0° C. which comprises:
(a) about 1,000 parts by volume of a hydrocarbon fuel suitable for use in an internal combustion engine; and
(b) from about 1 to about 2 parts by volume of a solution of a halogenated hydrocarbon and a compound selected from the group consisting of naphthalene and alkyl derivatives of naphthalene.

4,289,502

APPARATUS FOR THE PRODUCTION OF CLEANED AND COOLED SYNTHESIS GAS

James R. Muenger, Beacon; Edward T. Child, Tarrytown, and Albert Brent, Huntington, all of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 43,918, May 30, 1979. This application Nov. 29, 1979, Ser. No. 98,457
Int. Cl.³ C10J *3/20*
U.S. Cl. 48—62 R **11 Claims**



1. An apparatus for continuously producing a high pressure stream of cleaned and cooled synthesis gas, reducing gas, or fuel gas comprising: a vertical cylindrical refractory lined pressure vessel containing a reaction zone comprising an unobstructed free-flow vertical cylindrical central passage, a top central inlet and a bottom central outlet; burner means mounted in said top inlet for introducing into said reaction zone reactant streams comprising solid carbonaceous fuel and free oxygen containing gas, with or without a temperature moderator; a thermally insulated first gas diversion and residue separation chamber with an upper central inlet connected to the bottom outlet of said reaction zone by way of a connecting passage; whereby the downflowing hot raw gas stream generated in said reaction zone and containing entrained residue comprising molten slag and particulate solids from the partial oxidation reaction in the reaction zone passes down through said connecting passage and expands into said first gas diversion chamber whose net internal volume is smaller than that of said reaction zone and where the velocity of the hot gas stream is reduced and a portion of said entrained residue is separated, a bottom central outlet means in said first gas diversion and residue separation chamber for discharging said separated portion of residue into a first slag chamber located below, and a side outlet from which exits about 80 to 100 vol. % of the hot raw gas stream less said separated portion of residue; a thermally insulated transfer line with the upstream end connected to the side outlet of said first gas diversion and residue separation chamber; thermally insulated second gas diversion and residue separation means whose net internal volume is greater than that of said first gas diversion and residue separation chamber and which is located in a separate vertical pressure vessel with a side inlet connected to the downstream end of said transfer line for receiving and changing the velocity of the hot gas stream and wherein a portion of the residue entrained therein is separated, said second gas diversion and residue separation means having an upper central outlet means for discharging 80 to 100 vol. % of the hot gas stream less said separated portion of residue and a bottom central outlet means for discharging said separated portion of residue into a second slag chamber located below; means defining a cylindrical vertical radiant cooling zone with a longitudinal free-flow unobstructed central passage, the lower portion of said radiant cooling zone being in communication with the upper central outlet means of said second gas diversion and residue separation means whereby hot gas from the second gas diversion and reside separation means is passed upward into the bottom of said radiant cooling zone where its velocity is reduced and where at least a portion of the residue entrained therein is separated by gravity, cooling means located along the inside wall of said radiant cooling zone for cooling by indirect heat exchange the hot gas passing upward through the radiant cooling zone, and upper outlet means for discharging cleaned and cooled synthesis gas, reducing gas, or fuel gas from said radiant cooling zone.

4,289,503

POLYCRYSTALLINE CUBIC BORON NITRIDE ABRASIVE AND PROCESS FOR PREPARING SAME IN THE ABSENCE OF CATALYST

Francis R. Corrigan, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Jun. 11, 1979, Ser. No. 47,656
Int. Cl.³ B24D *3/28*
U.S. Cl. 51—307 **39 Claims**



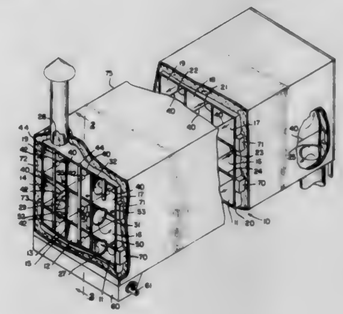
1. An improved process for making cubic boron nitride from hexagonal boron nitride powder which comprises subjecting hexagonal boron nitride to the high pressure-high temperature process:
(i) at a pressure from 55–80 kilobars;
(ii) at a temperature of 1600° C. to the reconversion temperature;
(iii) for a time sufficient to convert the hexagonal boron nitride to cubic boron nitride and sinter the cubic boron nitride; and
(iv) in the absence of catalysts and impurities which interfere with the conversion to cubic boron nitride or the sintering of cubic boron nitride;
wherein the improvement comprises a pretreatment process consisting essentially of removing boric oxide from the surface of the hexagonal boron nitride powder—and generating a coating of boron on the surfaces of the oxide-free hexagonal boron nitride—before conversion to cubic boron nitride, which pretreatment is accomplished by a process carried out at a temperature in the hexagonal boron nitride thermal decomposition range and selected from vacuum firing and heating under inert atmosphere.

4,289,504

MODULAR GAS CLEANER AND METHOD

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 914,448, Jun. 12, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,433
Int. Cl.³ B03C *3/00*
U.S. Cl. 55—11 **6 Claims**



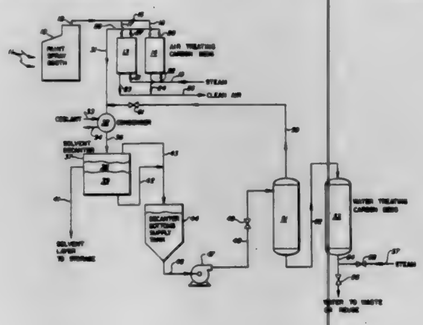
1. A method of removing wax-like particulate matter from a gas comprising:
introducing a gas with wax-like particulate matter to be removed into an inlet opening of a modular gas cleaner,
serially transporting all introduced gas to and fro through each passageway of a labyrinth comprising a plurality of generally horizontal passageways formed within the modular gas cleaner, each passageway having a small cross-sectional area and being formed by a plurality of electrically conductive partitions and including an opening at each end to force the introduced gas and particulate-like material into abrupt changes in direction in its to and fro transportation;
creating an electrostatic field and electrostatic forces between the electrically conductive partitions and electrodes centrally located within each passageway, said electrostatic field and electrostatic forces being generally transverse to the direction of gas flow and at least in part acting in the same direction as gravity, said electrostatic field having sufficient intensity to create ionization centrally of the flow path and to expose the gas and wax-like particulate matter being transported to ion bombardment within each passageway prior to passage through an outlet opening of the modular gas cleaner; and
heating the flow path to assist in charging, deposition, and collection of the wax-like particulate matter and to place the wax-like matter in a fluid state so that it may be drained from within the modular gas cleaner by gravity through drain holes formed in the partitions of the gas cleaner.

4,289,505

SOLVENT RECOVERY FROM WATER

Leslie C. Hardison, Barrington; Joseph P. Eng, Schaumburg, and Gary J. Nagl, Roselle, all of Ill., assignors to Air Resources, Inc., Palatine, Ill.

Filed Jun. 13, 1980, Ser. No. 159,303
Int. Cl.³ B01D *53/06*; C02F *1/28*
U.S. Cl. 55—59 **6 Claims**



1. A method of treating a solvent laden air stream to remove and recover water soluble and water insoluble solvent components which comprises;

passing the air stream through an air treating bed of particulate solid adsorbent material capable of removing the solvent components from the air stream,

regenerating the used air treating bed by passing steam through said air treating bed and desorbing the solvent components,

passing the resultant mixture of steam and desorbed solvent components to a condenser,

introducing the resultant condensate from the condenser into a decanter where the condensate separates into an upper solvent phase comprising primarily water insoluble solvent components with a minor amount of water soluble solvent components and a lower water phase containing primarily water soluble solvent components,

passing said lower water phase through a water treating bed of particulate solid adsorbent material capable of removing the solvent component from the water phase,

regenerating the used water treating bed by passing steam through the bed and desorbing the solvent components,

recycling the resultant mixture of steam and desorbed solvent components from said water treating bed to said condenser, whereby to increase the relative content of water soluble solvent components in said lower water phase and also said upper solvent phase, and

withdrawing said upper solvent phase containing said water insoluble solvent components and the increased content of said water soluble solvent components.

5. Apparatus for treating a solvent laden air stream to remove and recover water soluble and water insoluble solvent components which comprises:

air treating means comprising at least one air treating bed of particulate solid adsorbent material capable of removing the solvent components from the air stream,

means for passing the air stream through said air treating bed,

means for periodically passing steam through said air treating bed and desorbing the solvent components,

a condenser,

means for passing a mixture of steam and desorbed solvent components from said air treating bed to said condenser,

a decanter,

means for introducing condensate from said condenser into said decanter where the condensate separates into an upper solvent phase comprising primarily water insoluble solvent components with a minor amount of water soluble solvent components and a lower water phase containing primarily water soluble solvent components,

water treating means comprising at least one water treating bed of particulate solid adsorbent material capable of removing the solvent components from the water phase,

means for passing the water phase from said decanter through said water treating bed,

means for periodically passing steam through said water treating bed and desorbing the solvent components,

means for recycling a mixture of steam and desorbed solvent components from said water treating bed to said condenser, and

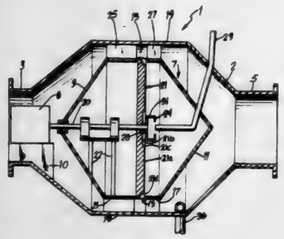
means for withdrawing said upper solvent phase from said decanter.

4,289,506

SCRUBBING APPARATUS

Arthur F. Stone, Marine View Plaza #1, Hoboken, N.J. 07030

Filed May 8, 1980, Ser. No. 148,041
Int. Cl.³ B01D *47/08*
U.S. Cl. 55—92 **78 Claims**



53. Apparatus for scrubbing a gas with a scrubbing fluid comprising rotatable impeller means having first and second axially displaced sections and an outer periphery, said first and second axially displaced sections being rotatable about a common axis and being located in first and second displaced parallel planes, scrubbing fluid supply means for supplying said scrubbing fluid to said first section of said rotatable impeller means, gas supply means for supplying said gas to be scrubbed to said second section of said rotatable impeller means, so that upon rapid rotation of said rotatable impeller means about said axis said scrubbing fluid and said gas are impelled outwardly from said first and second sections of said rotatable impeller means in said first and second displaced parallel planes, respectively, said scrubbing fluid thereby forming a rapidly rotating scrubbing fluid curtain at said outer periphery of said impeller means and in said first plane, and means for altering the direction of said gas as it flows rapidly outwardly from said second section of said rotatable impeller means out of said second plane so that said gas passes through said rapidly rotating scrubbing fluid curtain in a direction opposed to the direction of rotation of said scrubbing fluid in said first plane so as to scrub said gas with said scrubbing fluid.

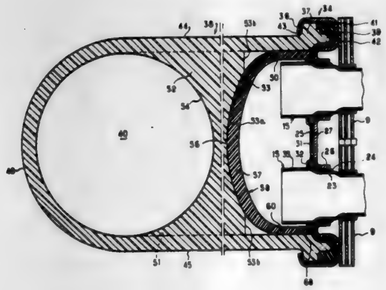
58. A method of scrubbing a gas with a scrubbing fluid which comprises supplying said gas to a first location adjacent to the axis of rotation of rotatable gas impeller means, supplying said scrubbing fluid to a second location adjacent to the axis of rotation of rotatable scrubbing fluid impeller means including an outer periphery, said axes of rotation comprising a common axis, and said first and second locations being axially displaced from each other along said common axis, thereby causing said gas and said scrubbing fluid to pass radially outward from said first and second locations, respectively, in first and second axially displaced parallel planes by rapidly rotating both said rotatable gas and scrubbing fluid impeller means about said common axis of rotation, thereby forming a rapidly rotating scrubbing fluid curtain at said outer periphery of said scrubbing fluid impeller means in said second plane, and a flow of gas in said first plane, and altering the direction of said flow of gas as it flows radially outward from said rotatable gas impeller means in said first plane so that said gas is diverted from said first plane to cross said second plane and thereby pass through said rapidly rotating scrubbing fluid curtain in said second plane in a direction opposite to that of the direction of flow of said scrubbing fluid.

4,289,507

EXPANSION TANK AND WATER BOX DEVICE FOR HEAT EXCHANGER, SUCH AS A RADIATOR OF A MOTOR VEHICLE

Patrick Cadars, Maurepas, and Bruno Hellouin di Cenival, Noisy le Roi, both of France, assignors to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jun. 13, 1979, Ser. No. 48,249
Claims priority, application France, Jun. 15, 1978, 78 17966; May 18, 1979, 79 12783
Int. Cl.³ B01D *53/00*; F01P *5/10*
U.S. Cl. 55—195 **9 Claims**



1. In a heat exchanger including a plurality of substantially parallel heat exchanging tubes and a collector plate having a plurality of openings, each of said openings being traversed, respectively, by an end of one of said tubes for the purpose of mounting the same, the combination of:

(a) an expansion tank;

(b) said expansion tank having a peripheral edge portion sealingly connected to said collector plate;

(c) a water box housed inside said expansion tank, said water box comprising a partition separate from said expansion tank;

(d) said partition of said water box dividing the space in said expansion tank into a collector chamber and a compensation chamber;

(e) said collector chamber enclosing said tube ends adjacent to said collector plate;

(f) said compensation chamber being adjacent to said expansion tank;

(g) means for holding said water box in place between said expansion tank and said collector plate when said expansion tank and collector plate are sealingly connected; and

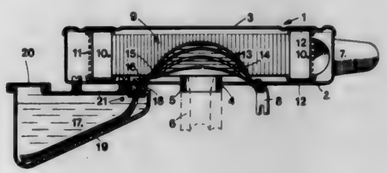
(h) said means for holding including ribs cooperating with said water box.

4,289,508

DEVICE FOR FILTERING AND FOR HUMIDIFYING THE ADMISSION AIR OF AN INTERNAL COMBUSTION ENGINE

Ramon C. Robert, 16, avenue de Chatelaine, Geneva, Switzerland

Filed Apr. 28, 1980, Ser. No. 144,560
Claims priority, application Switzerland, May 4, 1979, 4184/79
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—234 **3 Claims**



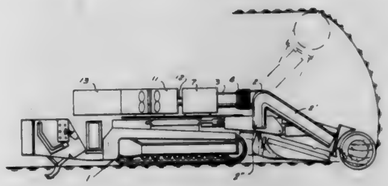
1. A device for filtering and humidifying the intake air of an internal combustion engine, comprising a casing including a top wall, bottom wall and side wall, an air inlet conduit in said side wall, an air outlet orifice in said bottom wall, a first filter in said casing in the flow path of intake air between said inlet conduit and said outlet orifice, a second filter comprising a plurality of absorbent material elements, a water tank attached to the outside of the bottom wall of said casing, conduit means connecting said tank to the interior of said casing, a portion of said second filter absorbent material elements disposed in said casing in the flow path of exit air, another portion of said absorbent material elements passing through said conduit means to said water tank and submersed therein to absorb water by capillary action and thereby humidify the air aspirated by said internal combustion engine.

4,289,509

DUST ASPIRATING ARRANGEMENT

Heinz Hölter, Beisenstrasse 39-41, 4390 Gladbeck, Fed. Rep. of Germany

Continuation of Ser. No. 930,981, Aug. 4, 1978, abandoned. This application Sep. 5, 1979, Ser. No. 72,782
Int. Cl.³ B01D *47/06*; E21C *7/08*
U.S. Cl. 55—257 PV **14 Claims**



1. In combination with an underground machine tool, a dust aspirating arrangement comprising suction means for aspirating air which contains dust generated during operation of an underground machine having the tool, said suction means including an angled tubular element which has two portions each having an inlet arranged for aspirating the dust-containing air, said portions being arranged relative to one another so that one of said portions can aspirate dust in the region adjacent to the tool whereas the other portion can aspirate dust in the region of a floor whereto dust is advanced during operation; agglomerating means communicating with said suction means and arranged for receiving the dust-containing air aspirated by the latter, said agglomerating means being provided with a moisturizing element arranged for moisturizing said dust-containing air, and with a curved stationary wall portion

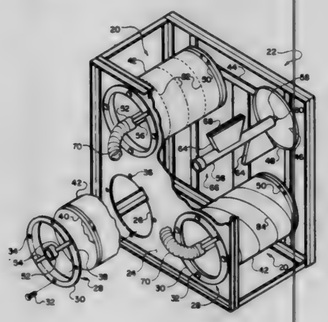
arranged for inducing the moisture and the dust-containing air toward a central region of said agglomerating means so as to produce a mixture, said curved stationary wall portion simultaneously reinforcing said agglomerating means; separating means communicating with said agglomerating means and operative for separating said mixture into its constituent dust-containing moisture and air, said separating means including a casing bounding a chamber which has a longitudinal axis, a frame member located in said chamber, and a plurality of blade members supported by said frame member, said frame member and thereby said blade members being inclined to said longitudinal axis of said chamber, said separating means having a flexible conduit which is arranged for removing the separated dust-containing moisture, said flexible conduit being bendable between a first position in which it is curved so as to form a siphon-type conduit through which the separated dust-containing moisture unimpededly flows but backflow of the same is prevented, and a second position in which it is straight so as to permit cleaning of the same; and means for removing the separated air from said separating means and located downstream of said flexible conduit.

4,289,510

INTERNAL LOADING CYLINDRICAL FILTER WITH UNSUPPORTED TUBULAR FILTER FABRIC

Marion E. Herndon, Jr., Matthews, N.C., assignor to Conor Corporation, High Point, N.C.

Filed Jan. 21, 1980, Ser. No. 113,453
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—294 **5 Claims**



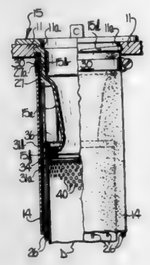
5. An internal loading cylindrical air filter apparatus comprising a pair of end plate members arranged in spaced relation to one another, a rotating cleaner nozzle means mounted between said end plate members for rotation about a horizontal axis in engagement with bearing means associated with said end plate members for said rotation and including at least one radially extending suction conduit, drive means for rotating said nozzle means, and a fabric filter element disposed in a generally circular tubular form to extend between said end plate members and about said rotating cleaner nozzle means and adjacent said radially extending conduit thereof, wherein the improvement comprises ring means for support of said filter element at the end thereof adjacent at least one of said end plate members, said ring means having means for retention thereof at said one of said end plate members and having annular means extending inwardly of said one of said plate members for said support of said filter element and means for attaching said filter element to said inwardly extending annular means during temporary disposition of said ring means exteriorly of said one end plate member.

4,289,511

BAG-TYPE FILTER APPARATUS WITH VENTURI-SUPPORTED AIR DIFFUSER

Allen S. Johnson, Jr., P.O. Drawer 1037, Salisbury, N.C. 28144

Continuation-in-part of Ser. No. 76,605, Sep. 18, 1979, Pat. No. 4,231,770. This application Jul. 23, 1980, Ser. No. 171,350
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—302 **14 Claims**



1. In a filter apparatus of the type wherein a particulate-laden gas is directed through a filter bag for filtering and retaining the particulate material on the exterior of the bag, wherein the filter bag has an outlet end communicating with a tubular venturi extending into the filter bag for discharge of the filtered gas therethrough, and wherein the filter bag is cleaned by a periodic reverse flow of a jet of air into the venturi and into and through the filter bag, and further wherein the filter bag is supported by a tubular cage positioned within the filter bag, the combination therewith of

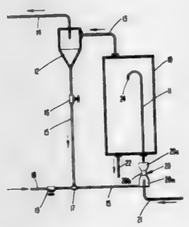
a hollow open-ended air diffusing means having openings therein and being communicatively connected to, supported by and extending from said venturi within said tubular cage for receiving in said hollow means a reverse flowing jet of air via said venturi for diffusing and distributing the air throughout the filter bag when a periodic reverse flow of a jet of air is directed into the filter bag so as to more effectively clean the filter bag while also reducing excessive flexing of the filter bag and abrasive wear thereof to thereby provide a substantial increase in the efficiency of the filter apparatus and a significant increase in the life of the filter bag.

4,289,512

HIGH PRESSURE SEPARATION DEVICE

Bernard Levresse, Lillebonne, France, assignor to Societe Chimique des Charbonnages-CdF Chimie, Paris, France

Filed Dec. 28, 1978, Ser. No. 973,940
Claims priority, application France, Dec. 28, 1977, 77 39506
Int. Cl.³ B01D *50/00;* **C08F** *6/10*
U.S. Cl. 55—315 **12 Claims**



1. A device for separating a high pressure polyphase mixture consisting of a gas charged with liquid particles, said device comprising:

(a) vertical cylindrical separator enclosure means for expanding said polyphase mixture and separating said mixture into a gas and a liquid phase, said means having an outlet at its lower end for discharging separated liquids therefrom;

(b) vertical cyclone means in communication with said enclosure means for receiving separated gases therefrom, said cyclone means having a gas outlet at its upper end for discharging separated gases therefrom and a liquid outlet at its lower end for discharging separated liquids therefrom; and

(c) means for supplying the polyphase mixture to said vertical enclosure means, said means comprising

(i) an ejector comprising a nozzle through which the polyphase mixture is fed to increase its speed, a mixing zone connected to the liquid outlet of the cyclone means for entraining the separated liquids from said cyclone means in the polyphase mixture, and a diffuser section for reducing the speed of the resultant mixture, and

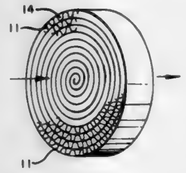
(ii) means connected to said diffuser section and opening into said enclosure means.

4,289,513

ACTIVATED SORBTION PAPER AND PRODUCTS PRODUCED THEREBY

Richard D. Brownhill, and Darcy B. Wilkinson, Jr., both of Lee, Mass., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 27, 1978, Ser. No. 890,181
Int. Cl.³ B01D *53/02, 53/04*
U.S. Cl. 55—387 **3 Claims**



1. A sorbtion device comprising the combination of:

(a) a fibrous paper base material, said base material being resiliently flexible and being characterized by:

(i) being substantially free of loose, activated sorbtion particles;

(ii) being substantially free of lumps and holes;

(b) activated sorbtion particles suitable for sorbtion of gaseous materials being dispersed in said fibrous paper base material, said sorbtion particles being selected from the group consisting of activated charcoal and activated silica, said activated sorbtion particles being substantially uniformly dispersed throughout all dimensions of said fibrous paper base material, said activated sorbtion particles being present in an amount of up to about 85 percent based on the weight of said base paper material, said particles being characterized by:

(i) a particle size of less than about 1000 microns;

(ii) an activation rating of less than about 250 percent;

(iii) the ability to be self-regenerable;

(c) a latex type binder material to bind said activated sorbtion particles to said fibrous base paper material, said binder material being substantially free of starch, said binder material being compatible with the sorbtion activity of said sorbtion paper;

(d) said fibrous paper base material being configured as an apertured structure characterized by a cross-sectional aperture density of from about 25 per square inch to about 400 per square inch; said apertured structure being further characterized by creating substantially linear, uniform parallel flow tunnels for gaseous streams passing through said apertures; said apertured structure being sized appropriately for lodging in the housing of air filtration means found on internal combustion engines; and

(e) air filtration means usable in combination with said apertured structure to provide an air filtration system for use in conjunction with an internal combustion engine whereby air entering and leaving said internal combustion engine is subjected to filtration, absorption and adsorbtion forces.

4,289,514

STACKED RE-ENTRANT ARM VAPOR-LIQUID SEPARATOR

Hudson R. Carter, Alliance; John H. Kidwell, Louisville, and William P. Prueter, Alliance, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 25, 1980, Ser. No. 162,717
Int. Cl.³ B01D *45/12;* **F22B** *37/32*
U.S. Cl. 55—398 **2 Claims**



1. A liquid-vapor separator device comprising: a vertically disposed cylindrical drum concentric with and in spaced surrounding relationship with a riser, forming an annulus therewith, and having means for discharge of a separated liquid at its lower end and means for discharge of a separated vapor at its upper end, the riser serving as a conduit for a two-phase flow of a fluid, open at its lower end to admit a liquid-vapor mixture and closed at its upper end, the riser being formed of upper and lower sections interconnected by a frusto-conical section, the upper section having an internal diameter greater than that of the lower section, a first plurality of curved arms radially disposed at the upper section of the riser, one end of each arm extending within the riser and in flow communication therewith, the opposite end of each arm extending into the annulus for discharge of the fluid and a second plurality of curved arms below the first plurality of arms and contiguous thereto.

4,289,515

PRODUCTION OF NITROGEN BY AIR SEPARATION

James D. Yearout, 270 Portofino Way #303, Redondo Beach, Calif. 90277

Filed Aug. 15, 1980, Ser. No. 178,294
Int. Cl.³ F25J *3/04*
U.S. Cl. 62—13 **18 Claims**

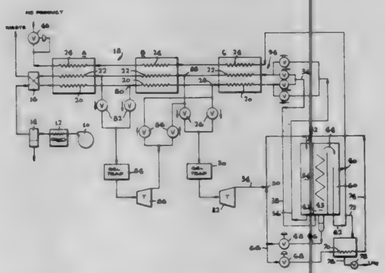
1. A process for the separation of nitrogen from air, which comprises:

compressing feed air containing water vapor and CO_2, to relatively low pressure,

passing the compressed feed air stream through a first passage of a reversing heat exchanger in heat exchange relation with an oxygen-rich waste stream passing through a second passage of said heat exchanger, whereby water vapor and CO_2 in the feed air are frozen on a surface of said first heat exchange passage,

reversing the two streams whereby the oxygen-rich waste stream flows through said first passage and said feed air

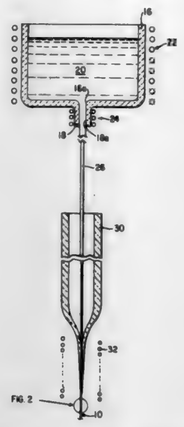
stream flows through said second passage, causing sublimation or evaporation of said water vapor and said CO_2,
at the end of this cycle, again reversing the two streams so that the compressed feed air stream passes through said first passage and the oxygen-rich waste stream passes through said second passage, and repeating the cycle at predetermined intervals,
withdrawing a portion of the feed air stream at an intermediate point in the heat exchanger,
expanding said withdrawn portion of feed air in an expander and discharging cooled expanded air,
withdrawing the remainder of said cooled feed air stream from the cold end of said heat exchanger after complete passage therethrough,
passing said cooled feed air stream upwardly in a fractionating column of a fractionating device, whereby oxygen-rich liquid is condensed, and a nitrogen overhead is produced,
withdrawing said oxygen-rich liquid from said fractionating column,



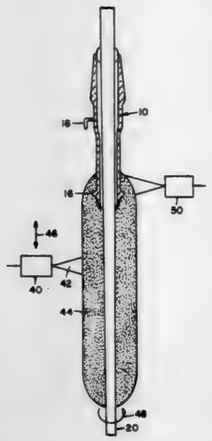
throttling said withdrawn oxygen-rich liquid to lower pressure and mixing the throttled liquid with said cooled expanded air discharged from said expander,
passing said mixture and said nitrogen overhead through separate passages in said fractionating device in countercurrent heat exchange relation with the feed air in said fractionating column, and withdrawing heat from said column,
withdrawing said mixture from said fractionating device and passing said mixture forming said waste oxygen-rich stream into the cold end of said heat exchanger through one of the first and second passages of the reversing heat exchanger as aforesaid,
said heat exchange in said reversing heat exchanger and said fractionation being carried out under conditions such that there is only a small temperature difference between the waste oxygen-rich stream entering the cold end of the exchanger and the cooled feed air stream exiting the cold end of the heat exchanger.

4,289,516
LOW LOSS OPTICAL FIBERS
David A. Krohn, Hamden, Conn., assignor to EOTEC Corporation, West Haven, Conn.
Filed Oct. 4, 1979, Ser. No. 81,771
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3 A **6 Claims**

1. A process for making an optical fiber, said process utilizing a crucible having a bottom with an orifice therein, said process comprising the step of:
melting a core material having a first refractive index;
drawing a cane of said core material from said aperture and through the interior of a tube composed of cladding material having a refractive index less than the refractive index of said batch material; and
drawing one end of said tube simultaneously with said cane so that an optical fiber is formed having a core composed of said core material and a cladding composed of said cladding material, said drawn tube end being heated sufficiently to cause said cane and said tube to fuse at their interface.



4,289,517
METHOD OF FORMING AN OPTICAL WAVEGUIDE PREFORM
Alan C. Bailey, and Stephen B. Miller, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jul. 3, 1980, Ser. No. 165,650
Int. Cl.³ C03B *19/06, 37/025*
U.S. Cl. 65—3 A **12 Claims**



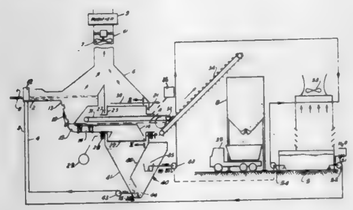
1. A method of forming a preform suitable for optical waveguides comprising the steps of
providing a hollow longitudinal preform handle defining a longitudinal aperture and having one end thereof tapered and of diminishing wall thickness for the length of said taper, and an outwardly extending protrusion adjacent said taper,
inserting a starting mandrel through said handle so that said mandrel extends beyond said handle, and
depositing particulate material over at least a portion of said mandrel and over said one end of said handle including said protrusion, whereby said particulate material comprises said preform and said protrusion is embedded therein.

4,289,518
GLASS FIBERIZATION BY CENTRIFUGAL FEED OF GLASS INTO ATTENUATING BLAST
Jean A. Battigelli, and Francois Bouquet, both of Rantigny, France, assignors to Saint-Gobain Industries, Cedex, France
Division of Ser. No. 26,617, Apr. 6, 1979, Pat. No. 4,203,745. This application Nov. 6, 1979, Ser. No. 91,838
Claims priority, application France, Dec. 8, 1978, 78 34616
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—15 **2 Claims**



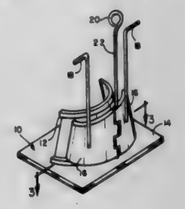
1. A hollow glass fiberizing spinner having a peripheral wall with a plurality of rows of orifices for centrifugal projection of streams of molten glass, characterized in that the spinner has a peripheral wall of thickness toward the lower edge portion thereof which is greater than the thickness in a region above the lower edge portion, the peripheral wall of the spinner being thickest at the lower edge, thinnest in an intermediate region and of intermediate thickness at the upper edge.

4,289,519
METHOD OF DEWATERING GRANULATED-SLAG SLURRY
Guido Monteyne, Lembeke, Belgium, assignor to SIDMAR Maritieme Staalnijverheid NV., Siderurgie Maritime S.A., Gent, Belgium
Continuation-in-part of Ser. No. 29,076, Apr. 11, 1979, Pat. No. 4,204,855. This application Jan. 7, 1980, Ser. No. 110,253
Claims priority, application Luxembourg, Apr. 18, 1978, 79466
The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.
Int. Cl.³ C03B *37/00*
U.S. Cl. 65—19 **8 Claims**



1. A method of treating a stream of molten slag, said method comprising the steps of continuously and concomitantly:
granulating said stream of molten slag with water to produce a granulated-slag/water slurry;
feeding said slurry at a relatively low location onto the inside surface of an endless and annular foraminous substrate;
rotating said substrate to lift said slurry to a relatively high location so that water runs off through said substrate and said slag is dewatered;
dropping the dewatered granulated slag from said substrate at said high location onto a conveyor within said annular substrate; and
transporting the dewatered slag with said conveyor away from said substrate.

4,289,520
METHOD AND APPARATUS FOR BENDING GLASS SHEETS
Nelson P. Bolton, Quakertown, Pa., assignor to Advanced Glass Systems Corporation, Quakertown, Pa.
Filed Dec. 17, 1979, Ser. No. 104,324
Int. Cl.³ C03B *23/03*
U.S. Cl. 65—104 **11 Claims**



1. A method of bending glass sheets into cylindrical or conical shapes, comprising the steps of:
(a) placing said sheet to be bent against a form conforming to the desired curvature;
(b) heating said sheet to its softening point; (c) exerting a force on at least two contact points on said sheet in a direction tangential to curves followed by said at least two contact points as said sheet is deformed, said force being exerted, and said at least two contact points being substantially unchanged with respect to said sheet, as said sheet is bent to conform to said form; and,
(d) cooling said sheet to a point below its softening point.

4. An apparatus for bending a glass sheet into a desired cylindrical or conical shape, comprising:
(a) a form rigidly mounted on a platform, said form having an axis, and said form conforming to said desired shape;
(b) a shaft rigidly mounted on said platform by a first end, said shaft disposed parallel to said axis of said form;
(c) two or more forming members having contact portions thereon and hingeably disposed on said shaft, said shaft displaced from said form at a distance such that contact between said forming portions and said glass sheet remains substantially unchanged with respect to the glass sheet as the glass is bent into the desired shape;
(d) means for exerting a force on said forming members against said glass sheet; and,
(e) means for heating said glass sheet.

4,289,521
APPARATUS FOR PRODUCING A FOAMED-GLASS OR FOAMED-CERAMIC STRIP
Konrad Schymura, Oberursel, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 6, 1980, Ser. No. 118,930
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1979, 2907363
Int. Cl.³ C03B *19/08*
U.S. Cl. 65—144 **8 Claims**

1. An apparatus for producing a shaped body of foamed glass or foamed ceramic from a foamable material, comprising:
a tunnel furnace adapted to heat said material to induce foaming and produce said body from said material;

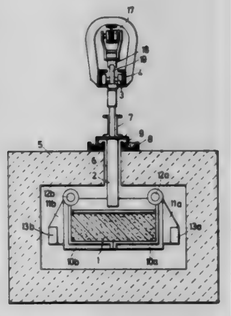
a track having a stretch disposed above said furnace, said furnace having a slot extending below said track;

a plurality of openended molds adapted to receive said material and alignable in end-to-end substantially abutting relationship in said furnace, the bottom of each mold being laterally swingable to open downwardly;

a respective trolley assigned to each mold and riding on said track;

hanger means including at least one hanger suspending each mold from the respective trolley and extending through said slot;

respective spacers connected to each hanger means shaped from the respective molds and adapted to about one another upon alignment of said molds to limit the force transmitted from mold to mold;



a pusher adapted to displace said molds into said furnace at a feed end thereof and effective to apply force in line with said spacers;

means forming a moving seal between said hangers and said furnace to substantially block said slot;

means downstream of said furnace along said path for swinging said mold bottoms laterally to open the molds downwardly;

means along said path for effecting relative vertical separation of the molds and said strand to remove said strand from said molds through the bottoms thereof;

means for severing the strand removed from said molds into blocks; and

means for returning molds from which said strand has been removed to said feed end of said furnace.

4,289,522

SUPPORT MEMBER FOR AN OPTICAL WAVEGUIDE PREFORM

Alan C. Bailey, and Stephen B. Miller, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,649

Int. Cl.³ C03B *19/06, 37/025*

U.S. Cl. 65—144 **6 Claims**

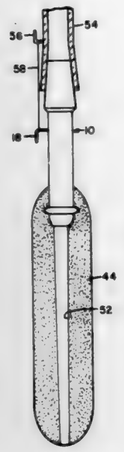
1. An article comprising

a hollow tubular member defining a substantially longitudinal aperture; said member having one end thereof tapered and of substantially diminishing wall thickness for the length of said taper, an outwardly extending protrusion disposed adjacent said one tapered end of said member,

first means for providing a substantially gas-tight connection to said member disposed at the end of said member opposite said one end whereby a gaseous medium may be flowed through said member,

second means intermediate said protrusion and said opposite end for securing said member to a source of gaseous medium, and

a porous soot preform of desired shape and size disposed from a point intermediate said outwardly extending protrusion and said second means and extending beyond said one tapered end of said hollow tubular member, said



porous soot preform being rigidly affixed to said hollow tubular member.

4,289,523

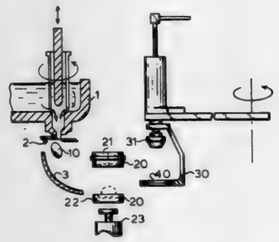
WORK TABLES IN APPARATUS FOR BLOWING HOLLOW GLASS ARTICLES

Takeyoshi Murakawa; Tetsuo Sakamoto, both of Shiga, and Yutaka Oka, Otsu, all of Japan, assignors to Nippon Electric Glass Company, Limited, Otsu, Japan

Filed Mar. 7, 1980, Ser. No. 127,948

Int. Cl.³ C03B *7/16*

U.S. Cl. 65—172 **3 Claims**



1. In a glass forming machine for forming hollow glass articles by blowing which includes a work table for receiving a charge of glass and having an orifice for permitting said received glass to depend downwardly therethrough, a blowing mold, and a blowing head for blowing the depended glass to form the hollow glass article cooperating with said blowing mold; the improvement which comprises an orifice plate member having a central opening of a diameter equal to that of a desired orifice, and said work table provided with a recess formed in the upper surface for receiving said orifice plate member therein and with a hole larger than said orifice formed at the center of said recess, the outer contour of said recess being similar to, and slightly larger than, said orifice plate member to form a gap along the circumference of said orifice plate member at room temperature, said gap being sufficient to permit said orifice plate member to loosely fit in said recess but to be filled up by the thermal expansion of said orifice plate member due to the contact with the delivered charge of glass

of an elevated temperature to fix said orifice plate member to said work table.

4,289,524

HERBICIDAL 3-(TETRAHYDROBENZOTHIAZOL-2-YL)TETRAHYDRO-1,3,5-OXADIAZIN-4-ONES

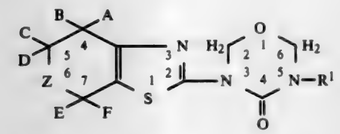
Benjamin A. Belkind, Skokie, Ill., assignor to Velsicol Chemical Coporation, Chicago, Ill.

Filed Oct. 1, 1979, Ser. No. 80,883

Int. Cl.³ A01N *43/78;* C07D *273/04*

U.S. Cl. 71—90 **9 Claims**

1. A compound of the formula



wherein R^1 is seleced from the group consisting of hydrogen and alkyl; Z is $—CHR^2—$; R^2 and R^3 are selected from the group consisting of hydrogen and alkyl; A, C and E are each independently selected from the group consisting of C1–C10 alkyl and hydrogen; B,D and F are each independently selected from the group consisting of C1–C10 alkyl, C3–C10 alkenyl, C4–C10 alkynyl, cycloalkyl, alkoxy, alkylthio, amino, cyano and hydrogen.

4,289,525

SOLID COMPOSITIONS OF A PYRAZOLIUM SALT, UREA AND A LIQUID SURFACTANT

Nunzio R. Pasarela, Bridgewater, and Choong-Gook Jang, Princeton, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.

Filed Jul. 18, 1979, Ser. No. 58,711

Int. Cl.³ A01N *43/56*

U.S. Cl. 71—92 **6 Claims**

1. A solid, particulated herbicidal composition, comprising: a ternary molecular solution of from 10% to 30% by weight of octylphenoxy polyethoxy ethanol, 33% to 66% by weight of 1,2-dimethyl-3,5-diphenylpyrazolium salt and urea in amounts sufficient to adjust the weight of said composition to 100%; and wherein the above articulated herbicidal composition may optionally coated with a fumed synthetic silica or precipitated silica having a particle-size range of 0.015 micron to 2 microns and used in amounts of 1% to 5% by weight of said composition to be coated.

4,289,526

HETEROCYCLIC COMPOUNDS, PROCESSES FOR THEIR PREPARATION, PESTICIDAL COMPOSITIONS CONTAINING THEM AND METHODS OF COMBATING PESTS

Paul A. Worthington, Maidenhead; Paul de Fraine; William G. Rathmell, both of Workingham, and Diana M. Gatehouse, Maidenhead, all of England, assignors to Imperial Chemical Industries Limited, London, England

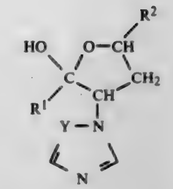
Filed Jun. 20, 1980, Ser. No. 161,558

Claims priority, application United Kingdom, Jul. 12, 1979, 24302/79

Int. Cl.³ A61K *31/41, 31/555;* C07D *405/04;* C07F *15/02*

U.S. Cl. 71—92 **7 Claims**

1. A compound having the formula:



wherein each of R^1 and R^2, which may be the same or different, is unsubstituted cycloalkyl of from 3 to 6 carbon atoms or such cycloalkyl substituted with alkyl group of from 1 to 5 carbon atoms; or unsubstituted alkyl of from 1 to 5 carbon atoms or such alkyl substituted with from 1 to 3 halogen atoms; or unsubstituted phenyl or phenyl substituted with halogen or alkyl, alkoxy, haloalkyl, or hydroxyalkyl of from 1 to 4 carbon atoms, phenyl, halophenyl, cycloalkyl of from 3 to 6 carbons, nitro, cyano, hydroxy, amino, phenoxy or benzyloxy, Y is=N—; and alkanoate ester, alkyl, aryl or aralkyl ethers, acid addition salts and copper, zinc, manganese or iron complexes thereof.

5. A composition for combating fungi and regulating plant growth comprising as an active ingredient, an effective amount of a compound as claimed in claim 1 and a carrier for the active ingredient.

4,289,527

PLANT GROWTH REGULATING PERFLUOROACYL ARYLTHIOUREIDO ISOINDOLEDIONES

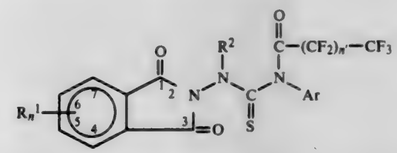
Loren W. Hedrich, Orange, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1980, Ser. No. 175,000

Int. Cl.³ A01N *43/38;* C07D *209/48*

U.S. Cl. 71—96 **28 Claims**

1. The method of regulating the growth of plants comprising applying to the plants, the seed or the soil an effective amount of a compound of the structural formula:



R^1 is C_1 to C_4 alkyl, nitro or halo and n is zero or an integer from 1 to 4;

R^2 is hydrogen, C_1 to C_4 alkyl, allyl or benzyl; n' is zero, 1 or 2 and Ar is naphthyl, phenoxybenzyl, phenyl or phenyl bearing thereon from one to three of the substituents: cyano, phenoxy, nitro, bromo, chloro, fluoro, and C_1 to C_4 alkyl, alkenyl, alkoxy, alkylthio, carbalkoxy or alkyl-substituted amino.

4,289,528

PROCESS FOR BENEFICIATING SULFIDE ORES

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Continuation-in-part of Ser. No. 921,582, Jul. 3, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,902

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.³ C22B *1/00*

U.S. Cl. 75—1 R **57 Claims**

1. In a process for the beneficiation of a sulfide ore from the gangue, excluding coal, wherein the ore is treated with a metal containing compound under conditions which cause the metal

containing compound to react substantially at the surface of the metal sulfide particles to the substantial exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values of the ore to the exclusion of the gangue in order to permit a physical separation between the metal sulfide values and the gangue, the improvement comprising:

cotreating the ore with a reducing gas during the metal containing compound treatment and wherein the reducing gas used in the cotreatment is in addition to any reducing gas which may be produced from the metal containing compound treatment.

4,289,529

PROCESS FOR BENEFICIATING SULFIDE ORES

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Continuation-in-part of Ser. No. 950,175, Oct. 10, 1978, abandoned. This application Dec. 11, 1979, Ser. No. 102,626
The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.
Int. Cl.³ C22B *1/00*
U.S. Cl. 75—1 R **63 Claims**

1. In a process for the beneficiation of a sulfide ore from gangue, excluding coal, wherein the ore is treated with a metal containing compound under conditions which cause the metal containing compound to react substantially at the surface of the metal sulfide particles to the substantial exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values of the ore to the exclusion of the gangue in order to permit a physical separation between the metal sulfide values and the gangue, the improvement comprising:

treating the ore with heat prior to its treatment with the metal containing compound.

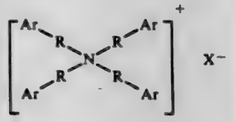
4,289,530

SYMMETRICAL QUATERNARY AMMONIUM COMPOUNDS AND THEIR USE IN HEAVY METALS RECOVERY

Guy A. Rich, Chicago, Ill., assignor to Albee Laboratories, Inc., Chicago, Ill.

Filed Jan. 18, 1980, Ser. No. 113,279
Int. Cl.³ C22B *11/04*
U.S. Cl. 75—101 BE **10 Claims**

1. The process for recovering heavy metals from solution comprising passing the metals containing solution through a bed of absorbing substrate having deposited thereon an effective amount of a quaternary ammonium compound of the formula



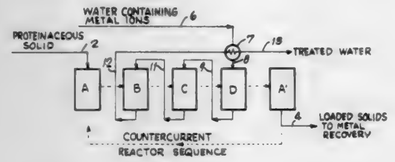
wherein each Ar is identical and is a phenyl or a condensed polynuclear aryl group having 2 to 4 aryl nuclei, each R is identical and is an alkyl of 1 to 4 carbon atoms, and X is a halogen.

4,289,531

PROCESS FOR RECOVERING PRECIOUS METALS

Hubert A. Lechavelier, Piscataway, and Walter Drobot, Montclair, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Feb. 12, 1980, Ser. No. 120,801
Int. Cl.³ C22B *11/04, 15/00, 19/00, 23/00*
U.S. Cl. 75—101 BE **11 Claims**



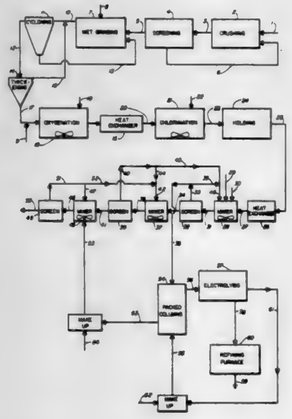
1. A process for removing metal from an aqueous medium containing in solution one or more metals selected from the group consisting of platinum, rhodium, palladium, ruthenium, gold, silver, iridium, zinc, aluminum, iron, copper, nickel and tin which comprises contacting said aqueous medium with at least one unmodified proteinaceous material selected from the group consisting of feathers, hair, hoof meal and horn meal for a period of time sufficient to convert metal in solution to water insoluble form in association with said proteinaceous material, and separating loaded proteinaceous material containing removed metal from the resulting treated aqueous medium.

4,289,532

PROCESS FOR THE RECOVERY OF GOLD FROM CARBONACEOUS ORES

Raphael F. Matson, and Bernard M. Fisher, both of New Orleans, La., assignors to Freeport Minerals Company, New York, N.Y.

Continuation-in-part of Ser. No. 99,565, Dec. 3, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 125,926
Int. Cl.³ C22B *11/08*
U.S. Cl. 75—105 **6 Claims**



1. In a process for the recovery of gold values from carbonaceous gold-containing ores by contacting an aqueous slurry of said ores with a cyanide complexing agent for the gold values, the improvement which comprises:

(a) forming said aqueous slurry of said ores in the presence of a soluble alkaline material;

(b) subjecting said aqueous slurry to oxidation comprising an oxygenation step, wherein said formed aqueous slurry is intimately contacted with an oxygen-containing gas for at least one hour, and a chlorination step, wherein the oxygenated slurry is intimately contacted with a source of hypochlorite ions for at least one hour;

(c) simultaneously contacting the oxidized aqueous slurry, in a plurality of stages, with said cyanide complexing agent and granular activated carbon, the carbon flowing in countercurrent fashion with said slurry, wherein the temperatures of the slurry is maintained between about 40° and 100° F., whereby said gold values are transferred to said granular activated carbon; and

(d) separating said granular activated carbon from said aqueous slurry.

4,289,533

DEOXIDIZING ALLOY FOR MOLTEN STEEL

Koki Gunji, Tokyo, and Takehiro Dan, Funabashi, both of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Continuation of Ser. No. 937,122, Aug. 28, 1978, abandoned. This application Dec. 28, 1979, Ser. No. 108,060
Claims priority, application Japan, Mar. 2, 1978, 53/22851
Int. Cl.³ C22C *21/00*
U.S. Cl. 75—138 **1 Claim**

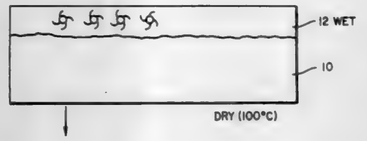
1. A deoxidizing alloy for molten steel consisting essentially of aluminum and from 2 to 10 mole %, based on the aluminum, of yttrium.

4,289,534

METAL POWDER PAINT COMPOSITION

Robert J. Deffeyes, Arlington, and Harris W. Armstrong, Fort Worth, both of Tex., assignors to Graham Magnetics, Inc., North Richland Hills, Tex.

Division of Ser. No. 793,384, May 3, 1977, Pat. No. 4,186,244. This application Jul. 30, 1979, Ser. No. 62,016
Int. Cl.³ C09D *5/24*
U.S. Cl. 106—1.14 **14 Claims**



1. In a paint composition comprising a liquid vehicle and a non-conductive metal powder composition, the improvement comprising said metal powder composition being formed of (a) a metal powder substrate and (b) organic groups chemically bonded to said metal powder substrate and forming a protective barrier between the metal particles, said metal powders being thermally convertable into fusible metal powder and subsequently into a conductive mass, upon the destruction of said protective barrier.

4,289,535

HEAT SENSITIVE COATING

Barry L. Marginean, Scottsville, and Warren A. Hookway, Jr., Pittsford, both of N.Y., assignors to Labelon Corporation, Canandaigua, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,364
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—19 **13 Claims**

1. A heat-sensitive coating composition for a thermo-responsive printing or recording record material for thermal printing devices which comprises:

a color-forming amount of a finely divided solid chromogenous basic 3,3-bisarylphthalane derivative, and

a color-developing amount of a finely divided solid phenol derivative which at thermal printing temperature is at least partially fluidizable and capable of a color-forming reaction with the chromogenous 3,3-bisarylphthalane derivative distributed in a carrier composition comprising a substantially water soluble anionic polysaccharide gum and a stability enhancing amount of sucrose benzoate.

4,289,536

GLASS FIBER REINFORCED CEMENTS AND PROCESS FOR MANUFACTURE OF SAME

Ernst Dereser, Goe, Belgium, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 953,142, Oct. 25, 1978, abandoned. This application Mar. 19, 1980, Ser. No. 131,348
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—99 **26 Claims**

1. A fiber reinforced cementitious product comprising a cement as a continuous phase and fibers dispersed as reinforcement in the continuous phase, with said product including flocculating agent and a finely divided inorganic material having a surface area greater than 20 m^2/g present in (a) admixture with the cement, (b) as a size coating on the fibers or (c) both.

4,289,537

METHOD OF PRODUCING CEMENT

Howard F. Davis, Jr., Pittsburgh, and John A. Persson, Gibsonia, both of Pa., assignors to Lectromelt Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1980, Ser. No. 127,556
Int. Cl.³ C04B *7/32*
U.S. Cl. 106—100 **8 Claims**

1. A method of producing Portland cement composition melts in an electric arc furnace including the steps of:

charging a mixture of first material containing calcium oxide and a second material containing silicon dioxide into an electric arc furnace having at least two carbon electrodes, energizing the electrodes to maintain a temperature in the furnace of about 3200° F., feeding said materials into the furnace at such a rate that the conductivity thereof remains about 175 mho per meter, and maintaining a ratio of the electrode voltage to current at a level that ensures that the electrode will remain in close proximity to, but out of contact with the molten furnace bath.

4,289,538

SEALING GLASS-CERAMIC ARTICLES

Francis L. Orso, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 13, 1978, Ser. No. 942,072
Int. Cl.³ C09K *3/10*
U.S. Cl. 106—286.5 **5 Claims**

1. A sealing mixture for forming a seal between glass-ceramic materials, which seal is to be mechanically and dielectrically strong, hermetic and stable without foaming when reheated in vacuum to temperature of 900° C, and which mixture consists of a devitrifiable glass frit having a melting point greater than 930° C., antimony metal powder and sufficient vehicle to provide a sealing mixture with viscosity to effect coating of the materials,

the glass frit having a coefficient of thermal expansion sufficiently compatible with the materials being sealed and the antimony metal powder being combined with the frit in an effective amount such that, when reacted with the frit, they will yield a seal characterized by a coefficient of thermal expansion matching those of the materials being sealed and by stability without foaming when heated in a vacuum to a temperature of 900° C.

4,289,539

PHOSPHORUS-NITROGEN-OXYGEN COMPOSITION AND METHOD FOR MAKING SUCH COMPOSITION AND APPLICATIONS OF THE SAME

Pei-Ching Li, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 772,804, Feb. 28, 1977, Pat. No. 4,172,158. This application May 25, 1979, Ser. No. 42,642

Int. Cl.³ H01B *3/00; 3//02*

U.S. Cl. 106—286.8 **6 Claims**

1. A coating composition comprising gaseous phosphorus-nitrogen-oxygen material having about 16 to 27 percent by weight of oxygen; the dielectric breakdown strength on bare silicon of the amorphous film resulting from the application of said coating composition being between about 10 to 20×10^6 volts/cm based on equivalent oxide thickness.

4,289,540

HYDROLYZED STARCH-CONTAINING COMPOSITIONS

Raymond N. Yong, and Amar J. Sethi, both of Beaconsfield, Canada, assignors to Suncor Inc., Toronto, Canada

Filed Aug. 17, 1978, Ser. No. 934,560

Claims priority, application Canada, Jan. 30, 1978, 295881; Aug. 2, 1978, 308619

Int. Cl.³ C13L *1/08*

U.S. Cl. 127—33 **8 Claims**

1. A composition comprising a hydrolyzed starch obtained by the aqueous hydrolysis of wheat starch in the presence of insoluble metal salts formed in situ and an additive comprising a lower aliphatic alcohol, acetone, yeast, or lactic acid.

4,289,541

PROCESS OF CLEANING AN AUSTENITIC STEEL SURFACE

Felix Wallner, and Walter Lugscheider, both of Linz, Austria, assignors to Vereinigte Oesterreichische Eisen-und Sthl-Werke Alpine Montan Akteingesellschaft, Vienna, Austria

Continuation of Ser. No. 816,864, Jul. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 692,531, Jun. 3, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,735

Claims priority, application Austria, Sep. 25, 1975, 7356/75

Int. Cl.³ C23G *5/00;* **B24C** *1/00*

U.S. Cl. 134—7 **6 Claims**

1. A process of cleaning a surface of austenitic steel, which comprises the steps of

(a) blasting the surface with an abrasive mixture consisting, by volume, of 40% to 90% of corundum and 60% to 10% of a liquid, the corundum having an average grain size of 0.2 to 0.6 mm and corundum grains having triangular faces,

(1) the abrasive blasting mixture being accelerated and applied to the austenitic steel surface by a compressed gas under a pressure in the range of 2.5 to 5.5 atmospheres, the gas pressure increasing in direct proportion to the liquid content in the mixture, and

(2) 0.8 to 3 kg of corundum being applied per 100 cm^2 of the austenitic steel surface to be cleaned, and

(b) applying a rinsing liquid to the blasted surface before the surface has dried.

4,289,542

METHOD OF VAPOR DEGREASING

Ernest O. Roehl, Huntington Beach, Calif., assignor to Rho-Chem Corporation, Ingelwood, Calif.

Filed Jun. 30, 1980, Ser. No. 163,988

Int. Cl.³ B08B *7/00*

U.S. Cl. 134—11 **6 Claims**

1. In a method of vapor degreasing by contacting a contaminated article with vapors of a solvent consisting essentially of perchlorethylene, the improvement which comprises:

(a) adding a sufficient amount of trichlorethylene to the solvent to reduce the initial boiling point of the resultant solvent blend to about 240° F.; and

(b) conducting vapor degreasng operations with the solvent blend of step (a) at reflux temperatures and removing contaminants with said solvent until the temperature of the contaminated solvent blend reaches about 256° F.

4,289,543

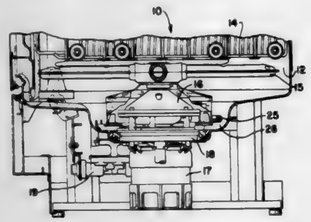
METHOD FOR PRE-CONDITIONING A WAREWASHER

Ben J. Vallor, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Aug. 9, 1979, Ser. No. 65,305

Int. Cl.³ B08B *30/00*

U.S. Cl. 134—25.2 **2 Claims**



1. A method for preconditioning a warewasher of the type in which food ware items are placed in a wash chamber and water is periodically supplied from a water supply at a temperature below the effective warewashing temperature by recirculating the water collected in a lower portion of the chamber and spraying it under pressure onto the food ware items, and the water flows by gravity from the food ware items back to the lower portion, comprising the steps of:

(a) first introducing a predetermined quantity of water from the water supply into the wash chamber of the warewasher,

(b) next statically heating the water electrically in the lower portion of the wash chamber to a temperature in the range of 140° F. to 150° F.,

(c) then, after static heating is completed, without the use of warewashing chemicals, for the first time recirculating and spraying the heated water in the wash chamber onto the food ware items for a duration sufficient to remove food soil therefrom without causing substantial foaming or disintegration of the food soil in the wash chamber as it is recirculated, and to simultaneously warm the food ware and the wash chamber to a sufficient temperature such that supply water subsequently added will not be further reduced in temperature by the food ware items, and the subsequent addition of heat in an amount less than in the static heating step will be sufficient to maintain proper washing action during subsequent recirculation for effective soil removal during a subsequent washing operation,

(d) draining the water and removed food soil from the wash chamber after said recirculating and spraying,

(e) subsequently introducing water from the water supply into the wash chamber of the warewasher in a dynamic fill in which the water is simultaneously recirculated and sprayed onto the food ware items therein,

(f) adding warewashing chemicals to the subsequently added water in the wash chamber as it is recirculated and sprayed therein onto the preconditioned food ware items within the wash chamber of the warewasher, and

(g) simultaneously adding heat to the subsequently added water in the wash chamber at a rate sufficient to raise the water temperature to and maintain the water temperature at an effective warewashing temperature during washing, but at a rate lower than in the static heating step.

4,289,544

INHIBITION OF FRETTING CORROSION OF METALS

Geoffrey Dearnaley, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, England

Filed Oct. 11, 1979, Ser. No. 83,848

Claims priority, application United Kingdom, Oct. 16, 1978, 40669/78

Int. Cl.³ C23F *15/00;* **C22F** *3/00*

U.S. Cl. 148—4 **8 Claims**

1. A process for treating a bearing surface containing titanium to inhibit fretting corrosion and improve the fretting fatigue resistance thereof, comprising the operations of depositing under reduced pressure on the said bearing surface an active species having a higher heat of formation of its oxide than titanium, and heating the bearing surface to a temperature and for a period sufficient to cause the deposited active species to migrate into the bearing surface to provide a surface region thereof containing the active species.

4,289,545

PROCESS FOR THE BORONIZING OF PIECES MADE OF METAL OR CERMET

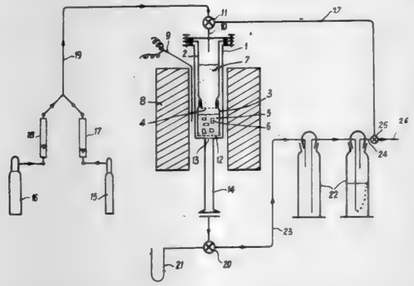
Francois H. J. Thevenot, Saint-Etienne; Patrice M. V. Goeuriot, Firminy; Julian H. Driver, Saint-Etienne, and Jean-Paul R. Lebrun, Bougival, all of France, assignors to Association pour la Recherche et le Developpement des Methodes et Processus Industriels (ARMINES), Paris, France

Filed Feb. 21, 1980, Ser. No. 123,425

Claims priority, application France, Feb. 27, 1979, 79 04991

Int. Cl.³ C23C *11/00*

U.S. Cl. 148—6.3 **15 Claims**



1. Process for the treatment by boronising pieces of a material selected from the group consisting of alloys of Fe, Ni and Co and cermets, said process comprising heating said pieces to an operating temperature in the range of 850° to 1,150° C. while in the presence of a solid boronising agent, and activating the boronising by simultaneously subjecting the pieces to the contact action of a stream of a gaseous fluorine-containing agent containing trifluoroboroxole $(BOF)_3$, under predetermined pressure and temperature conditions.

4,289,546

AQUEOUS ACIDIC LUBRICANT COMPOSITION AND METHOD FOR COATING METALS

Kenneth J. Hacias, Sterling Heights, Mich., assignor to Hooker Chemicals & Plastics Corp., Madison Heights, Mich.

Continuation-in-part of Ser. No. 64,652, Aug. 7, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,857

Int. Cl.³ C23F *7/10*

U.S. Cl. 148—6.15 R **40 Claims**

1. An aqueous acidic lubricant coating composition for treating metal surfaces prior to metal forming operations comprising an aqueous emulsion containing:

(a) from about 0.2% to about 15% by weight phosphate ions;

(b) from about 0.3% to about 16% of an emulsified organic lubricant selected from the group consisting of C_8 to C_{40} carboxylic acids and alcohols including the esters, mono and polyamide salts, mono and polyalkyl (C_1–C_{18}) amine salts thereof as well as mixtures thereof;

(c) from about 0.1% to about 10% of an emulsifying agent selected from the group consisting of N-tallow poly(-propyleneamine) having from 1 to 5 propyleneamine groups, oxazoline waxes and mixtures thereof;

(d) from about 0.1% to about 5% of a corrosion inhibitor comprising a salt of a C_7–C_{18} carboxylic acid and an aliphatic amine containing up to C_{12}; and

(e) water.

said composition having a pH above that at which excessive pickling of the metal surface occurs and below that at which insufficient reaction with the metal surface occurs to form a phosphate coating.

4,289,547

AQUEOUS ACIDIC LUBRICANT COATING COMPOSITION AND METHOD

Peter F. King, Farmington Hills, and George J. Beyer, Troy, both of Mich., assignors to Hooker Chemicals & Plastics Corp., Madison Heights, Mich.

Continuation-in-part of Ser. No. 64,682, Aug. 7, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,859

Int. Cl.³ C23F *7/10*

U.S. Cl. 148—6.15 R **21 Claims**

1. An aqueous acidic lubricant coating composition for treating metal surfaces prior to metal forming operations comprising an aqueous emulsion comtaining:

(a) from about 0.2% to about 15% by weight phosphate ions;

(b) from about 0.3% to about 16% of an emulsified organic lubricant selected from the group consisting of C_8 to C_{40} carboxylic acids and alcohols including the esters, mono and polyamide salts, mono and polyalkyl (C_1–C_{18})amine salts thereof as well as mixtures thereof;

(c) from about 0.1% to about 10% of an emulsifying agent selected from the group consisting of N-tallow poly(-propyleneamine) having from 1 to 5 propyleneamine groups, oxazoline waxes and mixtures thereof;

(d) from about 0.25% to about 3% of a chelating agent comprising ethylenediaminetetraacetic acid or the partial or tetra alkali metal or ammonium salts thereof; and

(e) water;

said composition having a pH above that at which excessive pickling of the metal surface occurs and below that at which insufficient reaction with the metal surface occurs to form a phosphate coating.

4,289,548

HIGH STRENGTH COLD FINISHED BARS

John H. Bucher; John F. Butler, both of Bethel Park, and John F. Held, Verona, all of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Aug. 19, 1977, Ser. No. 826,014

Int. Cl.³ C21D *9/52*

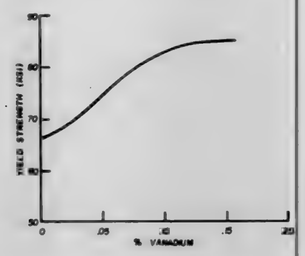
U.S. Cl. 148—12 B **11 Claims**

1. A method for producing a high strength, cold finished steel bar, comprising:

a. hot rolling a killed steel consisting essentially of 0.30% to 0.65% carbon, 0.30% to 1.65% manganese, 0.05% maximum sulfur, 0.01% to 0.35% silicon, 0.01% maximum aluminum, 0.07% to 0.15% vanadium, 0.008% to 0.025% nitrogen, balance iron, to form a bar having a yield strength between about 70 and 100 k.s.i.; and

b. cold drawing said bar to effect from 4% to 25% reduction

in its area and thereby obtain a minimum yield strength 125 k.s.i., a minimum total elongation of 5%, a minimum



reduction in area of 15%, good toughness, and good abrasion resistance.

4,289,549

RESIN BONDED PERMANENT MAGNET COMPOSITION

Kazutomo Kasai, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 23, 1979, Ser. No. 87,602
Claims priority, application Japan, Oct. 31, 1978, 53/134323; Jul. 24, 1979, 54/94001
Int. Cl.³ G03G *9/14*; H01F *1/00, 1/117*
U.S. Cl. 148—101 **9 Claims**

1. A resin-bonded permanent magnet composition comprising a permanent magnet composition of a single phase rare-earth $R_2(Co\ Cu\ Fe\ M)_{17}$ alloy, wherein: the rare earth element is present in the alloy in an amount about equal to or greater than 22.0 and less than 24.0 weight percent; copper is present in the alloy in an amount about equal to or greater than 2.5 and equal to or less than 13.0 weight percent, iron is present in an amount at least 15.0 and less than or equal to 39.0 weight percent; M is at least one element selected from the group consisting of manganese, silcon, titanium, niobium, zirconium, hafnium, tantalum, chromium, vanadium, molybdemium and aluminum and is present in the alloy in an amount about equal to or greater than 0.3 and less than or equal to 4.0 weight percent; the balance of the alloy being cobalt and including at least about 10 volume percent of a combining agent admixed with said composition, based on the total volume of the composition and combining agent.

4,289,550

METHOD OF FORMING CLOSELY SPACED DEVICE REGIONS UTILIZING SELECTIVE ETCHING AND DIFFUSION

Wolfgang M. Feist, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 25, 1979, Ser. No. 42,686
Int. Cl.³ H01L *21/20, 21/302*
U.S. Cl. 148—175 **26 Claims**

1. A method for forming a semiconductor structure comprising the steps of:

(a) forming an isolation region having an insulating material in a portion of a semiconductor layer;

(b) forming a doped region in the semiconductor layer contiguous to the isolation region;

(c) bringing an etchant into contact with a surface portion of the doped region and a contiguous surface portion of the isolation region; and



(d) selectively etching the doped region forming a depression having wall portions separated from the isolation region by portions of the doped region.

4,289,551

HIGH-ENERGY EXPLOSIVE OR PROPELLANT COMPOSITION

Guy Perrault; Roger Lavertu, both of Ste-Foy, and Jean-Francois Drolet, Loretteville, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 2, 1979, Ser. No. 773
Claims priority, application Canada, Feb. 7, 1978, 296408
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.4 **24 Claims**

1. A pour-castable composite for use as a high-energy explosive or propellant consisting essentially of:

a. a solid highly-energetic ingredient selected from cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine,

b. a hydroxy-terminated polybutadiene based binder,

c. a diisocyanate curing agent, and

d. a chemically compatible surfactant selected from the group consisting of:

(1) compounds of the formula:

$$HO(CH_2)_x-\overset{O}{\overset{\|}{C}}-N-(R)_2$$

where R is $C_xH_{(2x+1)}$, and where each x is independently an integer from 1 to 6;

and mixtures of (1) and N,N-di-(2-hydroxyethyl)-4,4-dimethylhydantoin.

4,289,552

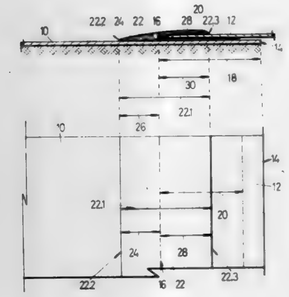
METHOD FOR THE CONTINUOUS WELDING OF THERMOPLASTIC SHEETS

Heiner I. Hammer, Rosengarten, Fed. Rep. of Germany, assignor to GFA-Gesellschaft für Flächenabdichtung mit beschränkter Haftung, Garstedt, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,615
Claims priority, application South Africa, Jul. 22, 1977, 77/4427
Int. Cl.³ B32B *31/16, 31/30*
U.S. Cl. 156—73.4 **18 Claims**

1. A welding method comprising the steps of providing a pair of thermoplastic sheets each including opposite surfaces

bridged by a terminal edge defining an edge portion, placing the edge portion of a first overlapping of the pair of sheets into overlapping relationship with the edge portion of a second overlapped of the pair of sheets and with the terminal edges thereof spaced a predetermined distance from each other and in generally parallel relationship to each other, applying a continuous linear strip of plastic welding material in thermoplastic state progressively and in generally parallel relationship to said terminal edges along a first of the opposite surfaces of the overlapping edge portion and a first of the opposite surfaces of the overlapped edge portion adjacent to the terminal



edge of the overlapping edge portion and in bridging relationship thereto and with the terminal edge of the overlapping edge portion and being disposed between opposite terminal edges of the continuous linear strip of welding material, performing the overlapping of the overlapping and overlapped edge portions in the absence of overlapping any portion of the overlapping first sheet upon itself and in the absence of overlapping any portion of the overlapped second sheet upon itself, and securing the second surfaces of the overlapping and overlapped edge portions to each other prior to applying the strip of plastic welding material by sandwiching therebetween a strip of pressure sensitive adhesive.

4,289,553

HEAT-SHRINKABLE ARTICLE

Jean-Marie E. Nolf, Beauvechain, Belgium, assignor to N.V. Raychem S.A., Kessel-lo, Belgium

Filed Oct. 30, 1978, Ser. No. 955,537
Claims priority, application United Kingdom, Nov. 8, 1977, 46516/77
Int. Cl.³ B29C *27/00*; B32B *31/00*; H01R *4/00*; H02G *13/06*
U.S. Cl. 156—86 **32 Claims**



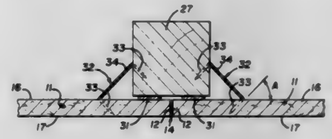
1. A heat-recoverable article which comprises a heat-shrinkable sleeve having bonded thereto by a layer of hot-melt adhesive a smooth inner lining of a continuous metal foil, the thickness of the foil being selected so that the foil has a visually even surface configuration upon heat shrinkage of the sleeve and which comprises internal reinforcing means comprising at least one longitudinally compressible coil disposed longitudinally within the sleeve.

4,289,554

METHOD FOR MAKING A MOBILE HOME CEILING CONSTRUCTION

James E. Reicherts, Oakwood Hills, and William C. Veschuroff, Palatine, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 8,919, Feb. 5, 1979. This application May 12, 1980, Ser. No. 148,891
Int. Cl.³ B32B *31/16*; B27F *7/00*; B32B *7/08*; E04B *5/57*
U.S. Cl. 156—92 **28 Claims**



1. A method of manufacturing a unitized ready-to-install mobile home ceiling structure comprising the steps of:

(A) placing a plurality of generally rectangular panels on a tunnel jig with the longer sides of the panels generally perpendicular to the longitudinal axis of the tunnel jig abutting longer sides of said panels at joints in edge-to-edge adjacent relationship forming an overall generally rectangular panel arrangement having front and back face surfaces;

(B) positioning a roof frame on the panel arrangement contacting the back face surfaces along bottom chords of truss members and along side edge rails whereby the side edge rails and outer truss members reside along the perimeter of the generally rectangular panel arrangement at the back face surface thereof;

(C) back fastening bottom chords of truss members intermediate the outer truss members to the back face of the panels by means of driving fasteners along the bottom chords at the back face surface of the panels and by means of depositing adhesive material between the bottom chords and the back face surface of the panels;

(D) front fastening the panels along substantially the full perimeter of the rectangular panel arrangement by means of driving fasteners upwardly at the front face surface of the panels along said perimeter thereof wherein said fasteners extending through the panels and penetrating the side edge rails and penetrating bottom chords of the outer truss members;

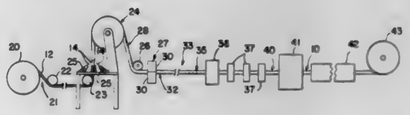
(E) transporting the roof frame and panel arrangement from the tunnel jig as a unit providing a ready-to-install unitized mobile home ceiling structure wherein the set-up time of the adhesive material does not restrict moving the unit.

4,289,555

METHOD OF MAKING POLYMERIC HOSE

Doyle V. Haren, Clyde, and William M. Edwards, Waynesville, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 956,762, Nov. 1, 1978, Pat. No. 4,212,327. This application Mar. 3, 1980, Ser. No. 126,266
Int. Cl.³ B29D *23/12*
U.S. Cl. 156—149 **6 Claims**



1. In a method of making a polymeric hose comprising the steps of, providing a polymeric inner base tube, braiding a reinforcing braid made of aramid yarn concentrically around

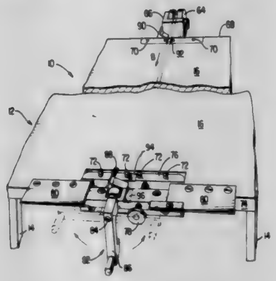
and against said base tube, said aramid yarn having great affinity for water, providing a layer of plastisol adhesive around said braid, flame curing said adhesive layer, and disposing a cover tube concentrically around said reinforcing braid and adhesive layer, the improvement comprising the steps of, applying a moisture impervious tubular film against said braid, and drying said film, said applying and drying steps being achieved following said braiding step and prior to said adhesive providing step, said film isolating said aramid yarn and resulting in a tubular zone between said cover tube and braid free of water moisture created bubbles.

4,289,556

METHOD AND APPARATUS FOR SPLICING FOLDED PAPER

Barclay Booth, Potomac, Md., assignor to Paper, Inc., Gaithersburg, Md.

Filed Aug. 6, 1979, Ser. No. 63,697
Int. Cl.³ B65H *19/00*
U.S. Cl. 156—157 **9 Claims**



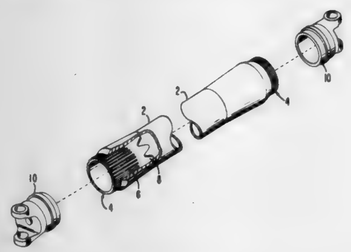
1. A method of joining together a plurality of sections of fan-folded interconnected single sheets to form a composite stack comprising:
positioning a trailing transverse edge of the last sheet of a first section of fan-folded interconnected single sheets in a predetermined position on a support surface;
positioning a leading transverse edge of the first sheet of a second section of fan-folded interconnected single sheets on the support surface in edge-to-edge abutting relation with the trailing transverse edge of the last sheet of the first section;
removing splicing tape from a tape reel and forming a row of longitudinally-extending perforations in the center of the tape as the tape is being removed;
centering the removed tape above the abutting edges of the sheets with the row of perforations centered above the abutting edges;
applying the tape to regions of the sheets adjacent the abutting edges in such manner that the tape interconnects the sheets with the row of perforations located between the abutting edges;
severing the applied tape adjacent the longitudinal edges of the interconnected sheets; and
positioning the second section on top of the first section to form a composite stack.

4,289,557

METHOD FOR MASS PRODUCING COMPOSITE SHAFTS

Jay W. Stanwood, Long Beach; William A. Clarke, Irvine, and Johannes MacLeane, Chino, all of Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Aug. 6, 1979, Ser. No. 64,299
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—171 **6 Claims**



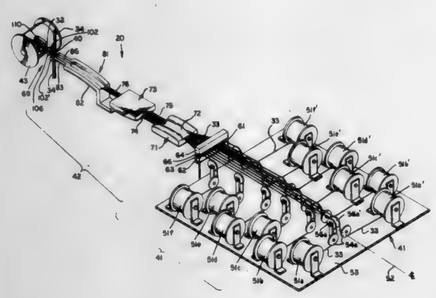
1. Method for fabricating composite fiber-adhesive shafts with metallic and joints comprising:
positioning at least two metallic sleeves at appropriate locations along an elongated tooling mandrel;
forming parallel grooves in the outside surface of each of said sleeves;
winding a first layer of fibers around said mandrel-cum-sleeves;
winding at least a second layer of fibers on top of said first layer;
curing said composite; and
removing the mandrel from within the cured composite shaft structure;
wherein said sleeves form at least part of said end joints;
wherein one end of each sleeve is tapered and cut to form a plurality of crimping members having substantially identical shapes.

4,289,558

METHODS OF AND APPARATUS FOR ORGANIZING FIBER LIGHTGUIDES INTO A PLANAR ARRAY

Bernard R. Eichenbaum, and Francis J. Topolski, both of Lilburn, Ga., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Murray Hill, N.J.

Filed Jun. 30, 1978, Ser. No. 921,625
Int. Cl.³ B32B *5/00*
U.S. Cl. 156—179 **10 Claims**



1. Apparatus for organizing a plurality of fiber lightguides in a reproducible manner into a planar array, which comprises:
means for advancing including payout means a plurality of fiber lightguides along separate, adjacent paths with the advance along at least portions of the paths being in the same direction and with their longitudinal axes generally in a single plane;
means for taking up the plurality of fiber lightguides; and
means interposed between the payout means and the taking up means for converging the fiber lightguides that are being advanced and for organizing them continguously into a planar array having a predetermined lateral ordering, said converging and organizing means including a first surface having a length which extends along said paths of travel and which has a curvature that is convex in the direction of advance and a curvature that is concave in another direction transverse to the direction of advance, said first surface being effective to apply forces to the fiber lightguides being advanced therealong to converge and organize the fiber lightguides into contiguous parallel relation in a single layer array in which the lightguides have said predetermined lateral ordering, said converging and organizing means also including a second surface having an infinite radius of curvature at least in a direction transverse to the direction of advance and being adapted to receive said single layer of fiber lightguides in contiguous parallel relation and to reform the single layer into a planar array.

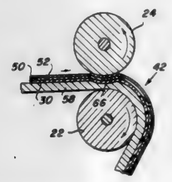
9. A method of organizing a plurality of fiber lightguides in a reproducible manner into a planar array, which comprises the steps of:
advancing a plurality of fiber lightguides along separate, adjacent paths with the advance along at least portions of the paths being in the same direction and with their longitudinal axes generally in a single plane;
causing the fiber lightguides that are being advanced to be arrayed into a single layer in which they are arrayed contiguously in the predetermined lateral ordering by guiding the fiber lightguides into engagement with and along a first surface having a length which extends along said paths, which is generally convex in the direction of advance, and which is generally concave in another direction transverse to the direction of advance; and
causing the single layer contiguous array of fiber lightguides to be guided into engagement with and past a second surface having an infinite radius of curvature at least in a direction transverse to their direction of advance to reform the single layer of contiguous fiber lightguides into a planar array of contiguous fiber lightguides.

4,289,559

PROCESS AND APPARATUS FOR HEAT LAMINATING FILM TO A SUBSTRATE

Shirley D. Murphy, Rte. 6, Box 336A, New Bern, N.C. 28560

Filed Oct. 18, 1979, Ser. No. 85,878
Int. Cl.³ B44C *1/16*
U.S. Cl. 156—238 **20 Claims**



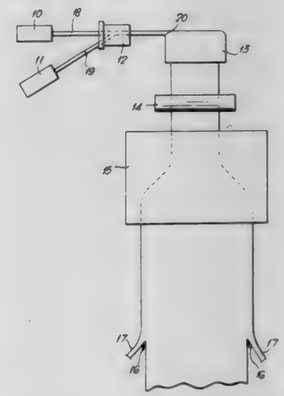
1. A process for laminating a heat sensitive film to a substrate comprising the steps of
(a) positioning the heat sensitive film on the upper surface of the substrate
(b) placing the lower surface of the substrate on a hard, smooth, flexible supporting surface
(c) applying heat and pressure to the heat sensitive film and substrate to a degree that a laminating groove is formed in the hard, smooth, flexible supporting surface, for receiving the film and substrate, in which groove the film and substrate are laminated together
(d) removing the heat and pressure while maintaining the laminated material in engagement with the supporting surface until the heat is partially dissipated therefrom, and
(e) disengaging the laminated material from the supporting surface.

4,289,560

METHOD OF MAKING LAMINATES OF THERMOPLASTIC POLYMERS BY A SINGLE-CHANNEL COEXTRUSION PROCESS AND MELT INJECTOR BLOCK FOR USE THEREIN

Phillip R. Simons, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 22, 1979, Ser. No. 87,072
Claims priority, application United Kingdom, Oct. 23, 1978, 41619/78
Int. Cl.³ B29D *9/00*
U.S. Cl. 156—244.18 **7 Claims**



1. A melt injector block for use in a single channel coextrusion process which comprises a primary channel for a primary stream of molten thermoplastic polymer, one or more secondary channels for one or more secondary streams of molten thermoplastic polymer, and a unified channel for a composite stream, characterised in that at the or each confluence where a secondary channel enters the primary channel the melt injector block also contains guides which commence in the primary channel and continue past the confluence into the unified channel and the primary channel enters the secondary channel between the guides.

4,289,561

METHOD FOR PREPARING A PLURALITY OF LABELS

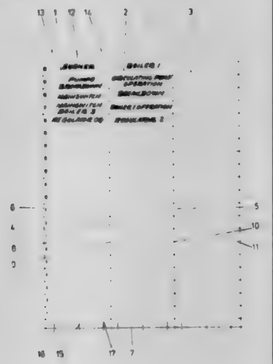
Walter Holzknecht, Konrad Adenauerstrasse 6, D-808 Fürstenfeldbruck, Fed. Rep. of Germany

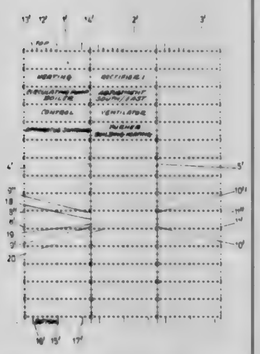
Filed Sep. 19, 1979, Ser. No. 78,588
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841515
Int. Cl.³ B32B *31/00*; A44C *3/00*; B26D *7/06*; B65H *39/02*
U.S. Cl. 156—265 **12 Claims**

1. Method of preparing a large number of labels using a base sheet having a front and rear face, the method comprising the steps of:
(1) placing markings on said front face for rows and columns and placing symbols of the labels on said front face of said base sheet arranged in said rows and columns;
(2) forming a composite sheet by cementing at least one reinforcement sheet onto said base sheet;
(3) cutting said composite sheet along a first outer edge

parallel to said rows and along a second side edge perpendicular to said first outer edge;

(4) laying said composite sheet with one of said first and second edges against a bearing surface and cutting said composite sheet through both said base sheet and said at least one reinforcement sheet in a first direction perpendicular to said one of said first and second edges along said markings into disconnected strips;





(5) connecting said strips in their original alignment by applying a carrier material to said strips; and

(6) laying said connected strips with the remaining edge against a bearing surface and cutting said strips along said markings in a second direction perpendicular to said first direction.

4,289,562

CASE LABELER

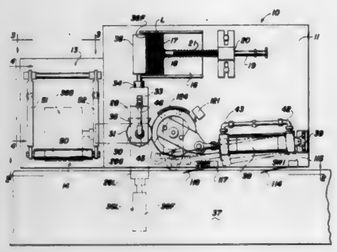
Sherril H. Chisolm, 5919 Southwest Ave., St. Louis, Mo. 63139

Filed Jul. 2, 1980, Ser. No. 165,931

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—364 **7 Claims**

1. A case labeler for presenting an adhesive label in the path of movement of a case requiring a label, said labeler comprising: a frame adjacent the path of movement of cases; a label supporting head; a magazine for supporting a supply of labels; adhesive supply means having an applicator member for transferring adhesive from said supply to the labels; operating means connected to said head for moving said head in a path from said magazine and past said applicator member into a position in the path of movement of a case; vacuum generating means connected to said head for permitting said head to engage and pull a label out of said magazine and retain label engagement past said adhesive applicator member and into a position in the path of a case; and control means operatively connected to said operating means and said vacuum generating means and including first means responsive to the approach of a case for energizing said operating means to effect movement of said head between said magazine and a position in the path of case movement, and second means responsive to the ad-



vance of a case to the position of said head in the case path for ending the generation of vacuum so the label is released to the case and adhesively secured thereto and causing said operating means to return said head to said magazine.

4,289,563

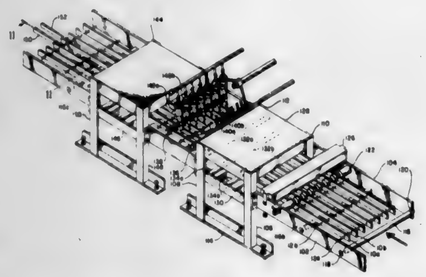
GRATING CONSTRUCTION AND ASSEMBLY METHOD AND APPARATUS

Joseph W. Wiechowski, 420 Avenida Salvador, San Clemente, Calif. 92672; Delmar S. Miller, 918 W. Balboa Blvd., Newport Beach, Calif. 92661, and Richard C. Kostner, 2060 Agate St., Orange, Calif. 92667

Division of Ser. No. 863,766, Dec. 23, 1977, Pat. No. 4,244,768. This application Apr. 21, 1980, Ser. No. 142,335

Int. Cl.³ E04C *2/22, 2/42*

U.S. Cl. 156—423 **2 Claims**



1. Apparatus for manufacturing grating from elongate polymer bonded fiber beams having a width greater than thickness and dowel rods, the beams having holes through the thickness spaced so as to permit said holes to be aligned, comprising:

means for supporting a plurality of said beams in spaced relationship with the widths in substantially parallel vertical planes, the dowel rods extending through aligned holes in said beams to form a loosely assembled grating;

a heating zone for heating the beams and dowel rods;

a gluing zone including means for applying a predetermined amount of glue to each beam-dowel rod intersection; and

means for moving a lossely assembled grating in stepwise fashion for positioning each intersection of beam and dowel rod in the heating zone and in the gluing zone.

4,289,564

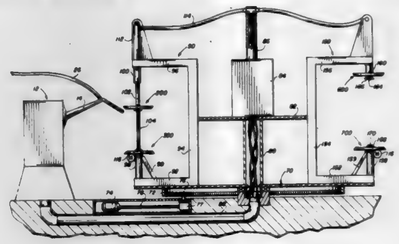
STRANDING APPARATUS

Donald E. Hanaford, Mesa, and Dale R. Oldham, Phoenix, both of Ariz., assignors to Arthur E. Thomson, Laveen, Ariz.

Filed Apr. 25, 1980, Ser. No. 143,711

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—425 **15 Claims**



1. Stranding apparatus comprising, in combination:

frame means, including a first support element and a second support element;

first plate means rotatably secured to the first support element;

second plate means rotatably secured to the second support element and spaced apart from the first plate means;

a shaft secured to the frame means for locking together the first plate means and the second plate means for joint rotary movement relative to the first and second support element, and movable vertically for unlocking the first plate means and the second plate means; and

pin means secured to the first and second plate means and movable between an outer position to receive strands and a retracted position for removal of the strands.

4,289,565

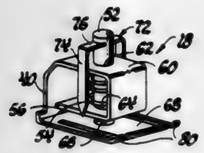
APPARATUS FOR PUNCHING HOLES IN PAPER-LIKE SHEETS AND FOR SIMULTANEOUSLY PROVIDING REINFORCING MEMBERS THEREFOR

Harold B. Wilkins, 11171 Dorchester, Apt. 122, Southgate, Mich. 48195

Filed Mar. 31, 1980, Ser. No. 135,394

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—514 **10 Claims**



1. In combination with a punch for punching holes in paper-like sheets and having at least one cylindrical punching element movably mounted on a support member of the punch, the punch including a base member having an aperture aligned with the punching element and adapted to receive a punching end of the punching element at a top support surface of the base member, the punching element moving through a punching stroke between a retracted sheet-receiving position and an extended hole-punching position, the punching element extending into the aperture of the base member so that the punching element punches a hole through a sheet inserted between the base member and the punching element, the improvement comprising:

at least one cutting member operatively associated with said punch to move during the punching stroke of the punching element, the cutting member having at least one cutting blade extending below the top support surface of the base member in the hole punching position of the punching element to cut through an inserted sheet and an overlapping perforated tape disposed between the base member and the inserted sheet between the perforations in the tape so that a piece of the tape is separated from the remainder of the tape by the cutting action of the cutting blade and so that a substantially identical second hole is punched through the separated piece of tape by the punching element, wherein the separated piece of tape defines a reinforcing member for reinforcing the area adjacent to and defining the punched hole in the sheet.

4,289,566

DEVICE FOR HEAT-SEALING AND/OR CUTTING OF THIN FOILS OF SYNTHETIC MATERIALS

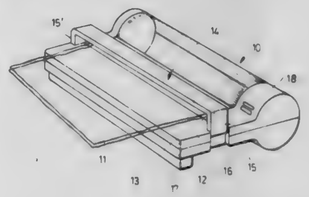
Rolf Feil, Wasserburg, Fed. Rep. of Germany, assignor to Bosch Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 40,439, May 18, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 178,748

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 7815239

Int. Cl.³ B29C *27/06*

U.S. Cl. 156—515 **4 Claims**



1. Device for heat-sealing or cutting thin foil of synthetic material between two dies which are linked to each other and can be pressed together against a restoring force comprising:

(a) a table-like support having a recess in the underside of said support parallel to the front edge of the support,

(b) a spring disposed in said recess,

(c) a base strip movable in and out of said recess, said strip movable into said recess upon the application of pressure to press said two dies together, and said strip movable out of said recess upon the release of said pressure by said spring as said restoring force,

(d) said table-like support having a pivotable edge on the underside of said support parallel to and to the rear of said base strip to permit said support to pivot on said edge when said base strip is moved into said recess,

(e) one die fixed to the top surface of said table-like support,

(f) another die disposed above said fixed die movable to press against said fixed die, said movable die having the form of a U-shaped yoke with the legs of the yoke fixedly attached to the yoke and movable therewith,

(g) transmission members comprising two-armed levers which are hinged at one end at the sides of the base strip and at the legs of the U-shaped yoke at the other end, and the levers at an intermediate point between the points of hinging are pivotally fixed to said support, whereby pressing down on the front of said support causes the base strip to move into the recess making the two-armed levers pivot around said intermediate point thereby effecting lowering of the yoke.

4,289,567

APPARATUS FOR APPLYING WEB SECTIONS TO A FLAT-LYING WORKPIECE

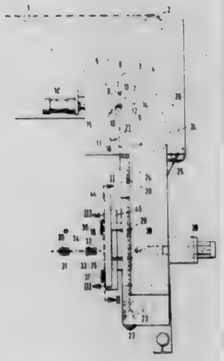
Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,914

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832391

Int. Cl.³ B32B *31/18, 31/20, 35/00*

U.S. Cl. 156—517 **7 Claims**



1. Apparatus for applying a section severed from a web withdrawn from a supply reel onto a base of a flat-lying workpiece, comprising intermittently driven rollers for feeding the web to clamping jaws, clamping jaws arranged at both sides of a web feed path, said jaws being displaceable towards and away from each other and respectively divided to define a gap which extends transversely to the feeding direction of the web, a knife guided in the gap for severing web sections, and conveyor means disposed downstream of the clamping jaws, as viewed in the direction of web feed, for bringing a severed section to a position in which transfer means receive the section, transfer means for placing a severed section on a base (35) of a flat-lying workpiece (34), the conveyor means comprising a suction belt conveyor means (11) with a plurality of spaced parallel suction belts (17 to 20), and the transfer means comprising a punch (39) carrying at is front suction bars (40 to 44) which are parallel to the suction belts (17 to 20), means for holding the base (35) spaced from the suction belt conveyor means (11) in a plane parallel to a conveying plane of the suction belt conveyor means (11), and the suction bars (40 to 44) being movable towards the base (35) at right-angles to the conveying plane of the suction belt conveyor means (11) in gaps between the suction belts (17 to 20) beyond the conveying plane and retracted behind same.

4,289,568

APPARATUS FOR AUTOMATED APPLICATION OF HEAT SENSITIVE TAPE

Alex Trotsky, Anaheim, and Alan Brimmer, La Crescenta, both of Calif., assignors to Arnold Engineering Company, Marengo, Ill.

Filed Jun. 4, 1979, Ser. No. 44,883

Int. Cl.³ B32B *31/00;* **B23P** *13/00*

U.S. Cl. 156—518 **6 Claims**

1. Apparatus for forming and applying a particularly shaped blank of heat sensitive tape to a metal strip, said apparatus including:

a frame;

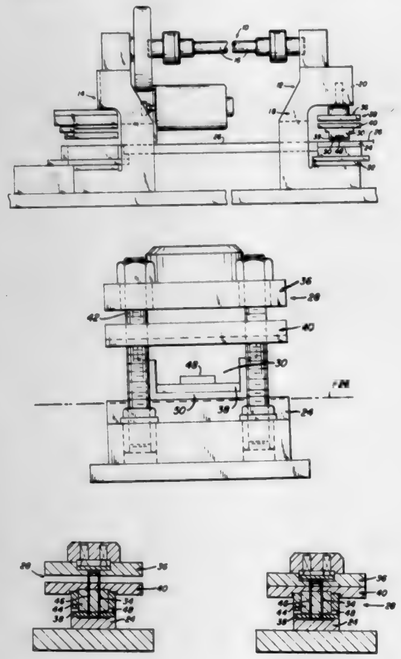
a stationary guide block mounted on said frame and having a track formed therein for supporting said strip;

a drop-through blanking die assembly having a die, a mating punch, and a cooperable stripper plate;

a tape carrier on said assembly for supporting a length of said tape in overlying relation to said die whereby said tape blank is formed upon closure of the die assembly;

means mounting said die assembly for integral reciprocal movement to and from said strip-supporting guide block whereby an air gap is established between the block and assembly during movement of the latter;

cooling means for maintaining the temperature of said die and said plate below the activating temperature of said tape;



said block being provided with heater means for maintaining the temperature of said strip above said activating temperature;

ram means for sequentially shifting said assembly to a position wherein said die engages said block and overlies the strip supported in said track, and then closing said die assembly such that the tape blank formed thereby is brought into contact with, and retained upon, the heated strip.

4,289,569

MANUFACTURE OF SEALED-END TUBULAR THERMOPLASTIC NET BAGGING

Kenneth H. Rabeneck, 3714 Stratford La., Louisville, Ky. 40207; Jerry R. Kantlehner, Rte. 1, Box 327A, and David E. Gallaher, 30001 Tattersall La., both of Prospect, Ky. 40059

Division of Ser. No. 945,020, Sep. 22, 1978, Pat. No. 4,190,690. This application Sep. 27, 1979, Ser. No. 79,526

Int. Cl.³ B65B *7/06, 7/12, 51/22*

U.S. Cl. 156—580.2 **11 Claims**

1. Apparatus for manufacturing sealed end tubular thermoplastic net bagging from a continuous rope-like feedstock of tubular thermoplastic net bagging material, comprising:

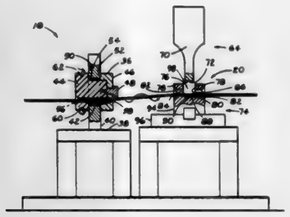
(a) a twisting station;

(b) a sealing station in the vicinity of said twisting station;

(c) means for intermittently axially advancing said feedstock through said twisting station and said sealing station, then pausing;

(d) the twisting station including means for gripping and angularly twisting said feedstock at said twisting station, sufficiently to substantially fully radially condense said feedstock in the vicinity of said twisting station;

(e) the sealing station including melting means for melting an axially short segment of said radially condensed feedstock into a single, massive integral seal nugget incorporating substantially all strands of said feedstock within said segment, said melting means including a support fixture for temporarily supporting said short segment of feedstock



during said melting, said support fixture comprising a bar having a slot formed externally therein, part way through the depth and thickness thereof so as to create two outstanding flanges respectively upstream and downstream of said slot, and means providing coaxial openings through both flanges, which openings are disposed to have said feedstock threaded therethrough, so that said segment thereof lies between said flanges; thereby producing a converted feedstock of tubular thermoplastic net bagging having a respective said seal nugget incorporated therein every so often.

4,289,570

SEED AND METHOD FOR EPITAXIAL SOLIDIFICATION

Bruce E. Terkelsen, Cheshire, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1978, Ser. No. 969,129

Int. Cl.³ C30B *21/02, 17/00*

U.S. Cl. 164—122.1 **5 Claims**

1. The method of directionally solidifying a metal melt into an article with controlled crystallographic orientation using a seed and epitaxial growth, comprising the steps of:

(a) altering the composition of at least a portion of the seed using an element which lowers the melting point and which promotes dissolution in the melt of undesirable surface compounds, where the seed is adapted to contact the melt;

(b) providing a mold to contain the seed and to receive the melt;

(c) pouring molten metal into the mold to contact the seed and thereby melt the surface portion of the seed where its composition is altered; and

(d) directionally solidifying the melt to promote epitaxial growth from the seed.

4,289,571

METHOD AND APPARATUS FOR PRODUCING CRYSTALLINE RIBBONS

David N. Jewett, Harvard, Mass., assignor to Energy Materials Corporation, Ayer, Mass.

Filed Jun. 25, 1979, Ser. No. 51,998

Int. Cl.³ C30B *15/06, 35/00*

U.S. Cl. 156—617 H **8 Claims**

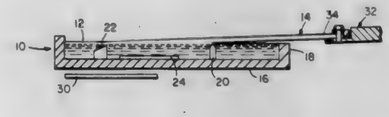
1. The method of forming a crystalline ribbon from a melt, comprising the steps of

(a) heating a melt in a crucible having a rim thereabout,

(b) placing on the surface of said melt a crystalline seed having a free edge and a distal pulling edge,

(c) controlling the temperature of said melt to allow solidification of said melt at said free edge of said seed to form a ribbon in one longitudinal rearward direction while withdrawing in a substantially opposite longitudinal forward direction said seed from said melt at a low positive acute angle with respect to the melt surface at a speed commensurate with the longitudinal growth of said ribbon,

(d) providing a separate site of attachment inwardly of the



rim of said crucible for a meniscus formed by the melt from the lower face of said ribbon as it leaves the surface of said melt to reduce spillage and freezing thereof,

(e) passively adjusting the growth rate of said ribbon to the changes in the speed of movement of said ribbon by drawing the growing end of said ribbon from the surface of said melt above a sub-surface stabilizer having an uppermost forward portion disposed closer to the melt surface than the lowermost rearward portion thereof, and,

(f) thermally isolating the crystal growing portion of said melt from the remaining portion thereof.

4,289,572

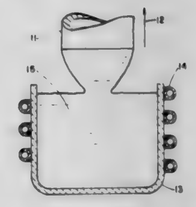
METHOD OF CLOSING SILICON TUBULAR BODIES

David H. Sawyer, Lee Township, Midland County; Joseph A. Henige, Chesaning, and Alvin W. Rauchholz, Hemlock, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 27, 1976, Ser. No. 754,481

Int. Cl.³ C30B *29/00*

U.S. Cl. 156—617 SP **5 Claims**



1. A method for modifying the shape of the end of a silicon tubular body which comprises:

(a) immersing the end of the tubular body into a silicon melt;

(b) maintaining the melt at the melting temperature of silicon until a melt meniscus forms on the body above the melt surface, indicating the body has reached its melting temperature;

(c) withdrawing the tubular body gradually from the melt while controlling the temperature to cause progressive freezing of the melt meniscus to the end of the tubular body as the tubular body is withdrawn;

(d) adjusting the temperature and withdrawal rate to cause progressive diameter reduction of the frozen portion until the immersed end of the body is reduced to the desired extent; and

(e) thereafter increasing the withdrawal rate to separate the body from the melt.

4,289,573

PROCESS FOR FORMING MICROCIRCUITS

James Economy, San Jose; James R. Lyerla, Menlo Park, and Lester A. Pederson, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 25,292, Mar. 30, 1979, abandoned. This application Mar. 3, 1980, Ser. No. 126,913

Int. Cl.³ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **4 Claims**

1. The process for forming a microcircuit comprising the steps of:

(1) forming on a substrate a resist film of resin containing hydrogen replaceable by reaction with NaOH or KOH;

(2) subjecting said resist film to lithographic processing;

(3) cross-linking said resist film;

(4) contacting the surface of said resist film with an aqueous solution of NaOH or KOH; and

(5) exposing said resist film to plasma etching.

4,289,574

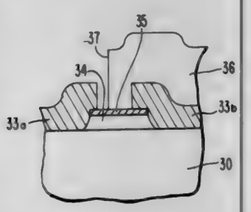
PROCESS FOR PATTERNING METAL CONNECTIONS ON A SEMICONDUCTOR STRUCTURE BY USING AN ALUMINUM OXIDE ETCH RESISTANT LAYER

Steven J. Radigan, and Robert L. Berry, both of San Jose, Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Continuation of Ser. No. 34,782, Apr. 30, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,996

Int. Cl.³ H01L *21/28;* **C23F** *1/02*

U.S. Cl. 156—643 **7 Claims**



1. A process for protecting selected portions of a semiconductor structure from a plasma etching process, the process for protecting comprising:

depositing a layer of aluminum over at least the selected portions of the semiconductor structure;

forming a layer of aluminum oxide over at least those portions of the layer of aluminum overlying the selected portions, the layer of aluminum oxide being plasma etchable at a selected power level; and

plasma etching the semiconductor structure at a power level less than the selected power level to thereby remove material from the semiconductor structure except where the layer of aluminum oxide protects the underlying semiconductor structure by substantially stopping the plasma etching process.

4,289,575

METHOD OF MAKING PRINTED WIRINGBOARDS

Masashige Matsumoto; Hideaki Kobuna; Seiji Hiraide, and Kouichi Kawai, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,713

Claims priority, application Japan, Oct. 30, 1978, 53-133423

Int. Cl.³ H05K *3/06, 3/26*

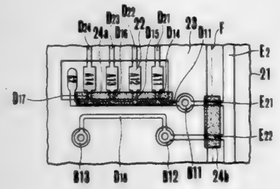
U.S. Cl. 156—656 **7 Claims**

1. A method of making a printed wiring board, comprising the steps of:

preparing an insulating substrate by etching a conductive base pattern thereon, said base pattern consisting of circuit area and electroplating current supply area for electroplating the contact region of said circuit area;

covering a first plating and etching resistant insulating film on said base pattern except for said contact region and said supply area;

covering a second plating resistant film on said supply area;



forming an overplated coating on said exposed contact region by supplying plating current thereto through said supply area;

removing said second film while allowing said first film to remain intact; and

selectively etching off only exposed portions of said conductive base pattern in said supply area.

4,289,576

METHOD FOR REMOVING COBALT-CONTAINING DEPOSITS FROM SURFACES

John M. Wilson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 27, 1980, Ser. No. 153,668

Int. Cl.³ C23F *1/00*

U.S. Cl. 156—667 **25 Claims**

1. A method of removing cobalt-containing deposits from surfaces comprising the step of contacting said deposits with a deposit removing composition for a period of time sufficient for said deposits to be dissolved therein, said composition being comprised of an aqueous acidic solution of a water soluble acid and a water soluble salt, the anionic portion of said salt being selected from the group consisting of cyano, thiocyanato, ferricyano, cyanato and mixtures thereof.

4,289,577

APPARATUS FOR CONCENTRATING POLYVINYL ALCOHOL SOLUTION

Katsuya Mabuchi, and Shigeyuki Yamamoto, both of Toyonaka, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 31, 1979, Ser. No. 108,574

Claims priority, application Japan, May 16, 1978, 53-58539

Int. Cl.³ B01D *1/12*

U.S. Cl. 159—5 **1 Claim**

1. An apparatus for concentrating polyvinyl alcohol liquid which comprises:

a supply line for supplying a liquid containing polyvinyl alcohol;

a filtering means in connection with said supply line for filtering foreign materials from said liquid;

a first tank for receiving said liquid after said liquid has passed through said filtering means;

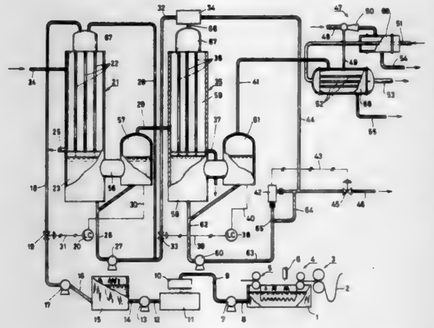
a preliminary mixing apparatus in fluid connection with said first tank;

an evaporator in fluid connection with said preliminary mixing apparatus, said evaporator including a plurality of pipes through which said liquid may flow;

a steam heating means in connection with said evaporator for heating said liquid flowing through said plurality of pipes;

a second tank in fluid connection with said evaporator, said second tank for receiving said liquid from said plurality of pipes within said evaporator;

a return pipe in fluid connection with said second tank for returning liquid contained within said second tank to said preliminary mixing apparatus such that said liquid may be combined within said preliminary mixing apparatus with said liquid from said first tank;



an outlet pipe in fluid connection with said second tank;

a viscometer in connection with said outlet pipe;

a regulating valve within said outlet pipe, said regulating valve being controlled by signals from said viscometer; and

a pipe for leading vaporized polyvinyl alcohol waste liquid outwardly from said evaporator.

4,289,578

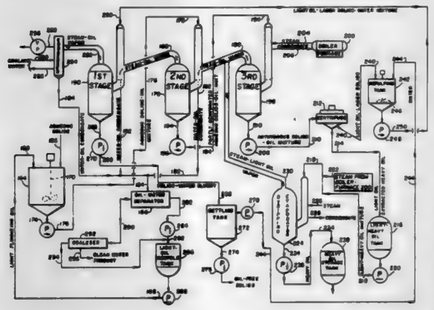
PROCESS AND APPARATUS FOR RECOVERING CLEAN WATER AND SOLIDS FROM AQUEOUS SOLIDS

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

Division of Ser. No. 719,515, Sep. 1, 1976. This application Nov. 14, 1979, Ser. No. 94,109

Int. Cl.³ B01D *1/26*

U.S. Cl. 159—47 WL **5 Claims**



1. A process for the recovery of clean water and substantially fluidizing oil-free solids from water-insoluble aqueous solids originally associated with a heavy, relatively nonvolatile oil and dehydrated in an oil medium comprising the steps of (1) admixing an aqueous slurry of said solids with a low viscosity, relatively volatile, water-immiscible light fluidizing oil to obtain a mixture which will remain fluid and pumpable after the removal of the water content therefrom; (2) subjecting the resultant oil-containing mixture to dehydration by heat evaporation whereby substantially all the water and part of the light fluidizing oil are vaporized, yielding a mixed water and light oil vapor and a substantially anhydrous solids in oil slurry; (3) condensing said mixed water and light oil vapor; (4) separating the resultant condensate into a clean water fraction and a light oil fraction; (5) expressing at least some of the relatively volatile, water-immiscible light fluidizing oil and extracted heavy oil from said substantially anhydrous solids in oil slurry; (6) slurrying the resultant solids carrying residual light fluidizing oil with water; (7) heating the resultant slurry to convert a portion of said water to blowing steam which directly contacts said solids carrying residual light fluidizing oil, thereby facilitating the removal of substantially all the light oil therefrom; (8) allowing the solids in the resultant water-solids slurry to settle under the force of gravity; (9) removing the supernatant water from the settled solids, said solids having a reduced heavy oil content; (10) dividing the expressed light oil and extracted heavy oil of step (5) into a light oil fraction and a heavy oil fraction, and (11) combining the light oil fraction of step (10) with the separated light oil fraction of step (4) and admixing those combined fractions with fresh aqueous solids and thereby recycling them through the process as fluidizing oil.

4,289,579

METHOD FOR TREATING A BULK MATERIAL WITH A FLUID

Georg L. K. Forsberg, Nylandsgatan 14, 654 65 Karlstad, Sweden

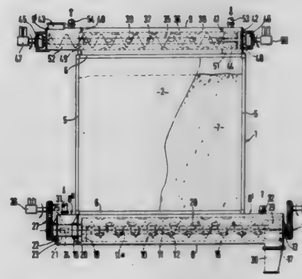
PCT No. PCT/SE78/00092, § 371 Date Aug. 10, 1979, § 102(e) Date Aug. 10, 1979, PCT Pub. No. WO79/00375, PCT Pub. Date Jun. 28, 1979.

This PCT application filed Dec. 11, 1978, Ser. No. 129,381

Claims priority, application Sweden, Dec. 12, 1977, 7714043

Int. Cl.³ D21C *1/02, 7/02*

U.S. Cl. 162—58 **5 Claims**



1. Method of treating a bulk of bulk material with a fluid, said method comprising treating the bulk material in a drum, which is surrounded by a bulk of the material to be treated, said drum including a plurality of openings distributed over the cylindrical face of the drum and a worm conveyor for said bulk material inside said drum, by feeding the bulk material into said drum through said openings while rotating said drum around its axis in said bulk of bulk material, introducing said fluid into the helicoidal space between said drum and said worm conveyor, rotating said worm conveyor at least at times in a direction opposite to that of the drum, to make the treatment of the bulk material more efficient due to the obtained loose packing of the bulk material in the drum and due to the fact that the bulk material is tumbled around, causing at least the main portion of the fluid to leave said drum through the same openings in the cylindrical face of the drum as those through which the bulk material is being fed in, and also treating material in the bulk material above the drum with the fluid passing through said openings in the drum.

4,289,580

HEAT SEAL FIBROUS WEB AND METHOD OF ITS MANUFACTURE

Colin Elston, Windsor, Conn.; Herbert A. Hoffman, and H. Joseph Murphy, both of Longmeadow, Mass., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Nov. 13, 1979, Ser. No. 93,441

Int. Cl.³ D21H *5/02*

U.S. Cl. 162—109 **17 Claims**



1. In a wet papermaking process for preparing a light weight multiphase heatsealable fibrous web material having excellent infusion characteristics comprising the steps of forming a dilute dispersion of heatsealable fibers in an aqueous dispersing medium; providing a fibrous substrate phase of non-heatsealing character; depositing said dispersion on said substrate phase while simultaneously removing a sufficient portion of said dispersing medium to form a partially dewatered heatsealable fiber phase superimposed on said substrate phase, said partially dewatered heatsealable phase having a fiber consistency of at least about one percent by weight with the remainder being substantially dispersing medium; and subsequently drying the resultant multi-phase web material to remove the dispersing medium and firmly secure the superimposed heatsealable phase to said substrate phase, the improvement wherein the heatsealable fibers are highly fibrillated synthetic thermoplastic particles and the process includes the step of disruptively dislodging and displacing portions of the heatseal particle in the partially dewatered heatseal fiber phase while superimposed on the fibrous substrate and prior to removing a major portion of the dispersing medium initially retained within said superimposed phase to provide a random array of discrete areas of reduced heatseal particle content and enhanced infusion in said multi-phase web material, the enhanced infusion areas being present throughout said heatseal phase at a concentration sufficient to occupy about 10–75 percent of the planar surface area of said heatseal fiber phase having an average diameter per area of up to 5 mm and an average planar area of at least $1\times10^{-3}cm^2$ and being substantially invisible in the dried web material, said substrate phase being substantially unaffected by the displacement of portions of the heatseal phase and being itself substantially unmodified.

4,289,581

MICROBICIDAL SLIMICIDE COMPOSITIONS FOR INDUSTRIAL USE

Sakae Katayama, Kobe, and Osamu Umekawa, Takatsuki, both of Japan, assignors to Katayama Chemical Works Co., Ltd., Osaka, Japan

Filed Mar. 23, 1979, Ser. No. 22,955

Claims priority, application Japan, Apr. 5, 1978, 53-40620; Apr. 11, 1978, 53-43697

Int. Cl.³ D21D *3/00;* **C02F** *1/50;* **A61K** *31/385*

U.S. Cl. 162—161 **13 Claims**

1. A stable microbicidal slimicide composition for industrial use which comprises 3–20 parts by weight of 4,5-dichloro-1,2-dithiol-3-one as active ingredient, at least 0.2 part by weight per 10 parts by weight of said active ingredient of a surfactant selected from the group consisting of N,N,N',N'-polyoxyethylene polyoxypropylene-ethylenediamines and alkylolamides type nonionic surfactants, and a sufficient amount of a hydrophilic organic solvent consisting essentially of a solvent selected from the group consisting of dimethylformamide, methyl cellosolve, phenyl cellosolve, diethylene glycol, dipropylene glycol, diethylene glycol monomethyl ether, and mixtures thereof to make 100 parts by weight of the composition, said composition being substantially free from water.

13. In a method for controlling slime formation in wood pulp or paper manufacture, having a water system the improvement comprising adding a slimicide composition to said water system which is composed of 3–20 parts by weight of 4,5-dichloro-1,2-dithiol-3-one as active ingredient, at least 0.2 part by weight per 10 parts by weight of said active ingredient of a surfactant selected from the group consisting of N,N,N',N'-polyoxypropylene polypropylene-ethylenediamines and alkylolamides type nonionic surfactants, and a sufficient amount of a hydrophilic organic solvent consisting essentially of a solvent selected from the group consisting of dimethylformamide, methyl cellosolve, phenyl cellosolve, diethylene glycol, dipropylene glycol, diethylene glycol monomethyl ether, and mixtures thereof to make 100 parts by weight of the composition, said composition being substantially free from water.

4,289,582

NUCLEAR REACTOR COLLECTING TANK WITH THERMAL INSULATION

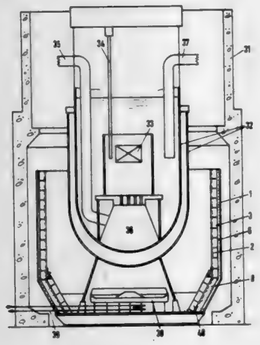
Armin Parr, Godorf; Harald Kleffner, and Harald Leder, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to INTERATOM, Internationale Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Sep. 15, 1978, Ser. No. 942,645

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741795

Int. Cl.³ G21C *9/00*

U.S. Cl. 176—38 **4 Claims**



1. Collecting tank for coolant escaping from a demolished vessel of a sodium-cooled nuclear reactor, comprising an outer steel shell having an inner lining of blocks stacked one on top of the other, frame means for holding said blocks at a side thereof within the collecting tank, support structure common to the blocks held by said frame means and, structurally independent of said outer shell, supporting said frame means, said blocks and said support structure being formed of material having different coefficients of thermal expansion and being shiftable relative to one another in accordance with said different coefficients of thermal expansion, a base ring fastened to said support structure, a roller-carrying intermediate ring disposed on said base ring and being rollably shiftable in a radial direction relative to said base ring, a support ring extending circumferentially within said outer shell and carrying said frame means, said support ring being divided into a plurality of sectors, each of which is rollably shiftable in radial direction relative to said intermediate ring, stop means carried by said base ring, and a lever for each of said sectors mounted on said intermediate ring and having one end thereof deflectable by said stop means and the other end thereof braced against said support ring.

4,289,583

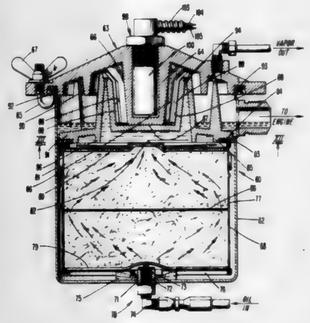
OIL RECLAMATION DEVICE

Gary C. Engel, 123 NW. 109th St., Miami Shores, Fla. 33168

Continuation-in-part of Ser. No. 852,976, Nov. 18, 1977, Pat. No. 4,189,351. This application Aug. 20, 1979, Ser. No. 68,311

Int. Cl.³ B01D *3/28, 27/08;* **C10G** *7/00*

U.S. Cl. 196—115 **28 Claims**



1. An oil reclamation device having a longitudinal axis and comprising:

(a) a housing means having a container, a cover means, an oil inlet, an oil outlet means and a vapor removal vent means,

(b) filter means and evaporator plate means disposed in said container, said filter means including rigid canister means having an upper peripheral edge,

(c) heating means attached to said cover means,

(d) said evaporator plate means including an upper and a lower side, said upper side having a vaporizing surface along which oil passes in a thin film and said lower side facing downwardly toward said canister means,

(e) said cover means including a heat transmitting member and defining an evaporation chamber between the cover means and the evaporator plate means,

(f) said lower side of the evaporator plate means including an annularly disposed outer peripheral seat for receiving resilient sealing means disposed between the evaporator plate means and the canister means, said sealing means being located along the entire periphery of the evaporator plate means to prohibit bypassing of fluids between the plate means and the container,

(g) said evaporator plate means including passageway means extending from the filter means to deliver substantially all of the oil being treated into said evaporation chamber in a thin film along the vaporizing surface, and

(h) fastening means for resiliently securing the cover means to the top of the container against the resilience of the sealing means,

(i) a portion of the inside of the cover means being in contact with a portion of the upper side of the evaporator plate means to sealingly urge the evaporator plate means against the filter means with said resilient sealing means therebetween.

4,289,584

COKE QUENCHING PRACTICE FOR ONE-SPOT CARS

David M. Chuss, and James W. Scheirer, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation of Ser. No. 20,682, Mar. 15, 1979, Pat. No. 4,201,627. This application Dec. 3, 1979, Ser. No. 99,698

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ C10B *39/12, 33/00, 39/04*

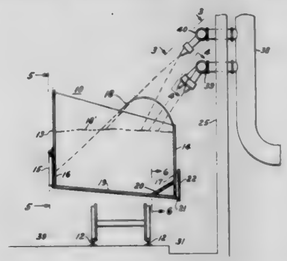
U.S. Cl. 201—39 **12 Claims**

1. A process for quenching coke in which coke is pushed from a coke oven into a one-spot quench car and the quench car is provided with openings adjacent the quench car bottom, comprising the steps of:

(a) providing a plurality of sets of full cone spray nozzles with each nozzle having a spray angle in the range of about 15° to about 25° to dispense a quench liquid in a full coverage spray pattern to quench the coke,

(b) applying the quench liquid from a first set of spray nozzles in a first pattern,

(c) substantially simultaneously with step (b) applying the



quench liquid from a second set of spray nozzles in a second pattern to impact upon areas of the coke surface not covered by the first set of spray nozzles, so that the sum of the areas contacted by the first pattern and the areas contacted by the second pattern equals about 50% to about 70% of the substantially level, exposed surface area of coke in the quench car, and

(d) providing sufficient openings to drain the quench liquid from the quench car and to prevent the buildup of quench liquid in the bottom of the quench car.

4,289,585

METHOD AND APPARATUS FOR THE WET QUENCHING OF COKE

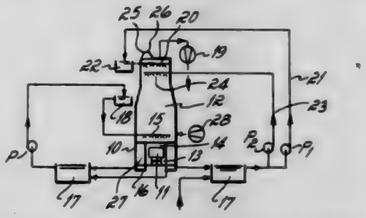
Dietrich Wagener; Claus Flockenhaus, and Manfred Blase, all of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,439

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915330

Int. Cl.³ C10B *39/10*

U.S. Cl. 202—227 **6 Claims**



1. In an apparatus for the wet quenching of coke including a quenching tower having an interior for receiving hot coke in a quenching car, first spray means above the hot coke for spraying the hot coke with quenching water in a hot coke quenching operation, second spray means in the upper portion of the tower for spraying the steam produced by spraying the hot coke with water for condensing the steam, and means at the bottom of the quenching tower for collecting the mixture of steam condensate and unevaporated quenching water, the improvement comprising third spray means located in the upper portion of the quenching tower and pump means for circulating the collected condensate-water mixture to said third spray means for spraying said condensate-water mixture

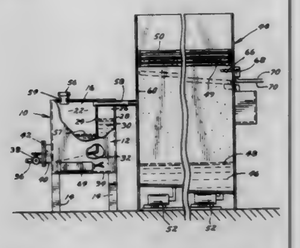
in said quenching tower between periods of the hot coke quenching operation to cool said condensate-water mixture.

4,289,586

SOLVENT RECOVERY METHOD

Winston E. Sabatka, Lakeville, Minn., assignor to Finishing Equipment, Inc., St. Paul, Minn.

Division of Ser. No. 894,045, Apr. 6, 1978, Pat. No. 4,204,913.
This application Oct. 12, 1979, Ser. No. 84,518
Int. Cl.³ B01D *3/42*; B08B *7/04*
U.S. Cl. 203—1 **6 Claims**



1. A method of safely removing from a closed boiling vessel most of a first volatile fluid having at least some volatile constituents which are flammable in vapor phase from a mixture of such fluid and not so volatile constituents in said vessel including the steps of:

(a) providing an open treatment tank with a second volatile, non-flammable fluid therein, said second fluid being so constituted when heated as to initially form a vapor phase that is heavier than air and which is more volatile than the vapor phase of the flammable constituents of said first fluid;

(b) heating said second volatile fluid in said tank to form said second fluid into a liquid phase and a vapor phase over the liquid phase;

(c) continually heating said mixture in said vessel to cause said first fluid to vaporize progressively; and

(d) introducing this vapor from said first fluid continuously into the vapor phase of said second fluid in said tank.

4,289,587

STABILIZATION OF CHLORINATED PHENOLS

Ray C. Christena, Wichita, Kans., assignor to Vulcan Materials Company, Birmingham, Ala.

Filed Apr. 29, 1980, Ser. No. 144,880
Int. Cl.³ B01D *3/34*; C07C *37/74*
U.S. Cl. 203—6 **20 Claims**

17. In a process wherein pentachlorophenol is purified by distillation, the improvement which comprises adding to the pentachlorophenol to be distilled about 0.01 to 1.0 percent, based on the weight of pentachlorophenol, of a stabilizer selected from the group consisting of C_4 to C_{30} unsaturated fatty acids, esters of such fatty acids, and epoxides.

4,289,588

FRACTIONAL DISTILLATION COLUMN PUMPAROUND HEAT REMOVAL CONTROL

James A. Hofferber, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 60,570, Jul. 25, 1979, Pat. No. 4,246,070.
This application Jul. 30, 1980, Ser. No. 173,577
Int. Cl.³ B01D *3/42*
U.S. Cl. 203—2 **10 Claims**

1. A method for controlling the internal reflux flow rate in a fractional distillation column means comprising the steps of:

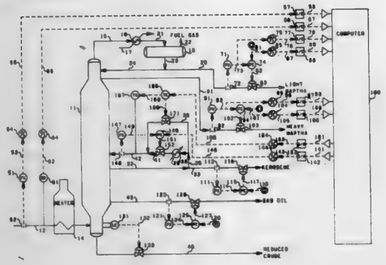
supplying a feed to said fractional distillation column means;

supplying heat to said fractional distillation column means;

withdrawing a sidedraw stream from an intermediate portion of said fractional distillation column means;

recycling at least a portion of said sidedraw stream to an intermediate portion of said fractional distillation column means as intermediate external reflux for said fractional distillation column means;

using at least computing means to establish a first signal representative of a prediction of the flow rate of said intermediate external reflux required to maintain a desired internal reflux flow rate in said fractional distillation column means;



establishing a second signal representative of the actual flow rate of said intermediate external reflux;

using computing means to compare said first signal and said second signal and establishing a third signal responsive to the difference between said first signal and said second signal; and

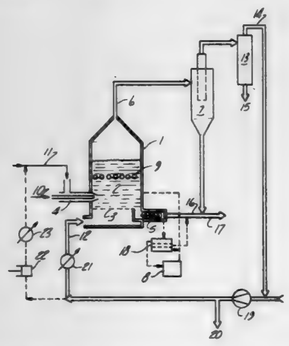
manipulating the flow rate of said intermediate external reflux in response to said third signal to thereby maintain a desired internal reflux flow rate in said fractional distillation column means.

4,289,589

SEPARATING TOLUENE DIISOCYANATE AND/OR HIGHER BOILING SOLVENTS FROM DISTILLATION RESIDUES OF THE TOLUENE DIISOCYANATE MANUFACTURE USING A FLUIDIZED BED

Waldemar Koehler, Frankenthal, Fed. Rep. of Germany; Bernd Blumenberg, East Baton Rouge, La.; Ludwig Vogel, Frankenthal, and Eckhard Hetzel, Bobenheim-Roxheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,303
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915830
Int. Cl.³ B01D *3/10*; C07C *119/04*
U.S. Cl. 203—49 **9 Claims**



9. A process for the separation of toluene diisocyanates and/or higher boiling solvents from distillation residues obtained during the reaction of toluene diamine with phosgene in the presence of solvents and subsequent distillation of the reaction solution comprising establishing a fluidizing bed by placing an initial material of an average particle size of 0.5 micron to 5000 microns into a fluidized bed reactor; feeding a fluidizing gas to establish a specified void faction of 0.4 to 0.75, at a velocity of 0.1 meter per second to 2 meters per second at normal conditions of 20° C. and 760 mmHg and which said fluidizing gas is recycling nitrogen; injecting the distillation residue containing a desired product by a two-product jet into the fluidized bed and injecting the atomizing gas into the fluidized bed with a supply pressure of 1.5 bars to 10 bars.

4,289,590

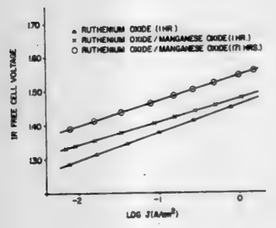
Patent Not Issued For This Number

4,289,591

OXYGEN EVOLUTION WITH IMPROVED MN STABILIZED CATALYST

Craig R. Davidson, Hampstead, N.H., and John M. Sedlak, Andover, Mass., assignors to General Electric Company, Wilmington, Mass.

Filed May 2, 1980, Ser. No. 145,955
Int. Cl.³ C25B *1/10, 1/16, 11/08, 11/16*
U.S. Cl. 204—129 **12 Claims**



1. In a method for electrolytically generating oxygen comprising:

(a) providing a catalytic cathode;

(b) providing a catalytic oxygen evolving anode;

(c) positioning a solid polymer electrolyte ion transporting membrane between the cathode and the anode, the cathode being bonded to one surface of the membrane and the anode being bonded to the other surface of the membrane; and,

(d) providing a direct potential between the cathode and the anode and supplying water to one of the electrodes to be acted on electrochemically to evolve oxygen at the anode;

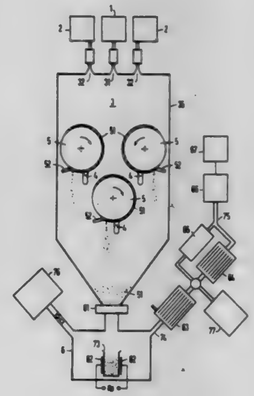
the improvement comprising providing a catalyst at the oxygen evolving anode comprising ruthenium oxide and manganese oxide.

4,289,592

METHOD OF SEPARATING ISOTOPE COMPOUNDS BY SELECTIVE EXCITATION AND REACTION IN A SOLID MATRIX

Karl Janner; Klaus Gregorius, and Reinhold Müller, all of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Apr. 11, 1978, Ser. No. 895,510
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1977, 2718030
Int. Cl.³ B01D *59/34*
U.S. Cl. 204—157.1 R **8 Claims**



1. In a method for the separation of an isotope substance from a vaporous mixture of isotope substances, by selective excitation at low temperatures of one isotope compound by electromagnetic radiation having a wavelength and energy density to effect a chemical reaction between the excited one isotope compound and an added reaction partner to produce a reaction product the improvement comprising:

(a) adiabatically expanding a body of the vaporous mixture of isotope compounds separate from the vaporous reaction partner to cool the mixture of isotope compounds to a temperature below 100K.,

(b) adiabatically expanding a body of vaporous reaction partner in excess of that required for reaction with the excited isotope compound, separate from the vaporous mixture of isotope compounds to cool the vaporous reaction partner to a temperature below 100K.,

(c) mixing the cooled mixture of isotope compounds and the cooled reaction partner together in a zone at a temperature below 100K.,

(d) condensing the reaction partner in the zone to form particles of solid matter, into which particles of the mixture of isotope compounds are incorporated,

(e) subjecting the solid matter of reaction partner and mixture of isotope compounds to electromagnetic radiation to selectively excite the one isotope compound and effect selective reaction of the excited isotope compound with the condensed reaction partner to produce a reaction product which contains predominantly the one isotope, and

(f) separating a compound of the one isotope from the reaction mixture.

4,289,593

METHOD FOR INCREASING THE ULTRA-VIOLET LIGHT TRANSMITTANCE OF ETHYLENE GLYCOL

Robert G. Briody, and Frances M. Cummings, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 25,306, Mar. 30, 1979, abandoned. This application Mar. 5, 1980, Ser. No. 127,292

Int. Cl.³ C07C *31/20*

U.S. Cl. 204—158 R **4 Claims**

1. A process for treating ethylene glycol containing ultraviolet absorbing impurities so as to improve the ultraviolet light transmittance characteristics of the ethylene glycol at wavelengths in the range of 220 to 350 nanometers by irradiating the ethylene glycol with ultraviolet radiation, at a wavelength not less than 220 nanometers, from a controllable ultraviolet radiation emission source for a time sufficient to obtain ethylene glycol having ultraviolet light transmittance characteristics suitable for use in the manufacture of polyester fibers.

4,289,594

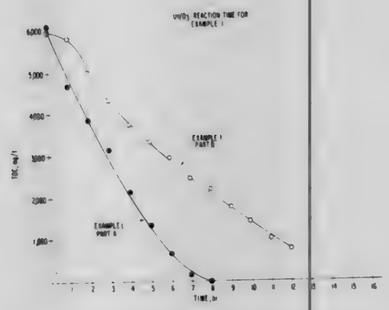
TREATMENT OF WASTE COMPOSITIONS

Warren A. Alpaugh, Chenango Forks; George J. Macur, Endwell, and James E. Sharkness, Ithaca, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 9, 1980, Ser. No. 148,345

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **17 Claims**



1. A process for treating liquid waste composition containing copper ions and an organic complexing agent for the copper ions which comprises:

reducing the concentration of copper ions in the waste composition to less than 8 ppm; then contacting the waste composition with an ozone-containing gas in an amount effective to react with and destroy said organic complexing agent; and irradiating said waste composition with ultraviolet light.

4,289,595

AMBIENT TEMPERATURE CURING PHOTOPOLYMERIZABLE EPOXIDE COMPOSITIONS UTILIZING EPOXIDE ETHERS AND METHODS

Anthony J. Tortorello, Elmhurst, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 26, 1979, Ser. No. 97,399

Int. Cl.³ C08G *59/68*

U.S. Cl. 204—159.11 **10 Claims**

1. A photopolymerizable epoxide comprising:

A. 50–99.9 percent by weight polymerizable epoxide compounds, at least 25 percent by weight of such epoxide compounds being an epoxide ether compound selected from the group consisting of 1,4-bis[(2,3-epoxypropoxy)-methyl]-cyclohexane and 1,10-decamethylenedioxy-bis-(2,3-epoxypropane); and

B. At least 0.1 percent by weight of a photoinitiator soluble in said epoxide compounds and decomposable upon exposure to electromagnetic radiation to provide a Lewis acid to initiate polymerization of said epoxide compounds, said composition being curable to a tack-free condition at ambient temperatures upon exposure to electromagnetic radiation for a period of 0.5 to 60 seconds.

4,289,596

HORIZONTAL ELECTROPHORESIS OR ISOELECTRIC FOCUSING APPARATUS AND METHOD OF USING SAME

Paul S. Satoh, Portage, Mich.. assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 29,063, Apr. 11, 1979, Pat. No. 4,234,404. This application May 27, 1980, Ser. No. 153,233

Int. Cl.³ G01N *33/16, 27/26*

U.S. Cl. 204—180 R **5 Claims**

1. A method for separating a starting species into separate fractions by electrophoresis or isoelectric focusing, in an elongated, horizontal vessel having horizontally spaced-apart electrodes therein, said vessel having an unobstructed zone along its bottom and having a multiplicity of upright, generally parallel, horizontally spaced-apart partitions defining a multiplicity of separate compartments above said zone, which comprises the steps of: depositing a quantity of said starting species carried in a liquid electrophoresis or isoelectric focusing medium in said zone to form a stationary liquid layer in said zone which layer is in contact with said electrodes; then applying an electrophoresis or isoelectric focusing potential across said electrodes for a period of time effective to cause said species to migrate electrophoretically in a horizontal direction in said layer to separate said species into fractions which are horizontally displaced from one another in a direction lengthwise of said vessel; then turning said vessel about its horizontal longitudinal axis whereby to cause said layer to flow into said compartments so that the respective fractions become separated from each other and are located in different ones of said compartments.

4,289,597

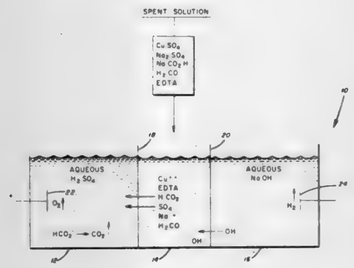
PROCESS FOR ELECTRODIALYTICALLY REGENERATING AN ELECTROLESS PLATING BATH BY REMOVING AT LEAST A PORTION OF THE REACTED PRODUCTS

David W. Grenda, Houston, Pa., assignor to Electrochem International, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 17,086, Mar. 5, 1979, abandoned. This application Feb. 19, 1980, Ser. No. 122,242

Int. Cl.³ B01D *57/02*

U.S. Cl. 204—180 R **7 Claims**



1. In a process for electrodialytically regenerating a spent electroless copper plating bath resulting from the reduction of a water soluble cupric salt in an alkaline solution under copper plating and reducing conditions, said spent solution containing alkali metal salts as reaction products,

(a) conducting said spent solution to a regeneration compartment of an electrodialytic cell,

(b) establishing and maintaining an aqueous electrolyte as the anolyte of said electrodialytic cell in an anode compartment which has in common one wall with said regeneration compartment that is composed of a permselective anionic membrane, and

(c) electrodialytically transferring anions of said alkali metal salts in the spent solution through said anionic membrane from the regeneration compartment to the anode compartment.

4,289,598

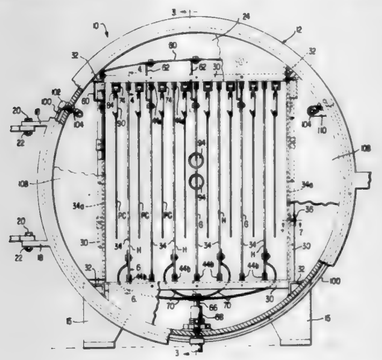
PLASMA REACTOR AND METHOD THEREFOR

Frank W. Engle, Pleasanton, Calif., assignor to Technics, Inc., Alexandria, Va.

Filed May 23, 1980, Ser. No. 152,688

Int. Cl.³ C23C *15/00;* **C23F** *1/00*

U.S. Cl. 204—192 E **19 Claims**



1. A plasma reactor suitable for conditioning workpieces in gas discharge plasma, comprising:

a vacuum vessel having a chamber therein;

a series of parallel disposed electrodes supported in said vacuum vessel chamber, said series of electrodes adapted to have alternate polarities; and

means for supporting workpieces to be conditioned in said plasma reactor between adjacent electrodes of said series of electrodes, said supporting means disposed in said vacuum vessel chamber and electrically isolated from said electrodes.

18. In the method of conditioning workpieces in a gas discharge plasma utilizing a plasma reactor having a vacuum vessel with a chamber therein and a series of parallel disposed electrodes supported in said chamber, the steps comprising:

disposing each workpiece between a pair of adjacent electrodes of said series of electrodes and electrically isolated therefrom;

causing said series of electrodes to be of alternate polarities; and

generating a gas discharge plasma in said chamber.

4,289,599

APPARATUS FOR PRODUCING ALKALINE WATER AND ACIDIC WATER

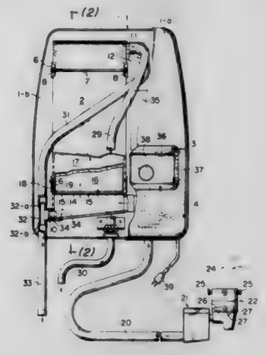
Tomotsuru Fushihara, Tokyo, Japan, assignor to Kabushiki Kaisha Kogai Boshi Sogo Kenkyusho, Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,883

Claims priority, application Japan, Nov. 30, 1979, 54-165629[U]

Int. Cl.³ C25B *9/00, 1/22;* **C02F** *1/46*

U.S. Cl. 204—275 **11 Claims**



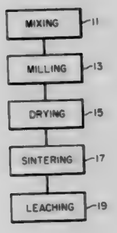
11. An apparatus for the instantaneous and continuous electrolyzation of water to produce alkaline water and acidic water which comprises a container which houses an electrolytic cell, said electrolytic cell containing a lower chamber provided with a water inlet zone and a water outlet zone, said lower chamber having a bottom which is inclined downwardly from the water inlet zone to the water outlet zone, and an upper chamber containing anode plates and cathode plates disposed in a spaced apart predetermined relationship, inlet means for introducing water into the water inlet zone of the lower chamber of said electrolytic cell, said inlet means including a quantitative valve means, first and second outlet means disposed at the upper end portion of the upper chamber for removing alkaline water and acidic water respectively, therefrom, said first outlet means provided with means for discharge from the apparatus, and said second outlet means provided with means for communicating with the water outlet zone for discharge from the apparatus, and electrical means for providing the necessary electrical power to the apparatus.

4,289,600

MICROPOROUS MEMBRANE MATERIALS

Christine A. Lazarz; Edward H. Cook, Jr., both of Niagara Falls, N.Y., and Lesleigh V. Scripa, West Willington, Conn., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 891,987, Mar. 31, 1978, Pat. No. 4,170,540. This application Aug. 7, 1979, Ser. No. 64,616
The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.
Int. Cl.³ C25B *13/08*; B29D *27/00*; C25B *1/26*
U.S. Cl. 204—296 **22 Claims**



1. A process for the preparation of a sheet material suitable for use as a separator for an electrolytic cell which comprises: (a) forming a sheet from a composition comprising a fluorocarbon polymer, a pore forming additive and a fluorinated surface active agent; (b) sintering the sheet; and (c) removing the pore forming additive, to form a microporous sheet.

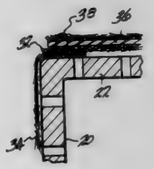
7. A product of the process of claim 1.

4,289,601

DIAPHRAGM STRUCTURE FOR ELECTROLYTIC CELLS FOR THE ELECTROLYSIS OF AQUEOUS SALT SOLUTIONS

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 30, 1979, Ser. No. 99,047
Int. Cl.³ C25B *13/08*
U.S. Cl. 204—296 **8 Claims**



1. A diaphragm for electrolytic cells for the electrolysis of aqueous salt solutions which comprises an electrochemically active porous portion attached to an electrochemically inactive fluid impervious portion, said electrochemically inactive fluid impervious portion being comprised of a fabric layer attached to a fluid impervious film layer.

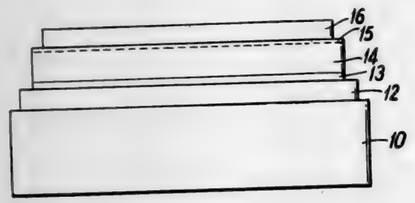
4,289,602

ELECTROCHEMICAL OXIDATION OF AMORPHOUS SILICON

Joseph L. Sansregret, Scotch Plains, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 15, 1980, Ser. No. 150,243
Int. Cl.³ C25D *5/00*; H01L *31/04*
U.S. Cl. 204—32 S **7 Claims**

1. A method for producing a device comprising hydrogenated amorphous silicon, comprising the steps of:
etching a surface region of said silicon to provide a standard surface;
anodizing said etched surface in an electrolyte comprising an anodizing anion in solution with a solvent having a dielectric constant greater than or equal to about 25 wherein an electrolysis current is maintained between a cathode elec-



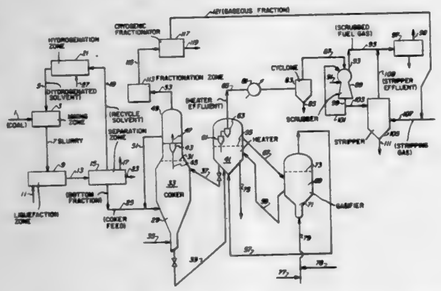
trode and the silicon layer, immersed in said electrolyte and comprising an anode electrode, for a time sufficient to electrochemically grow an oxide layer of SiOx from the surface region of the silicon layer ranging in thickness from about 10 A to about 50 A; and applying a Schottky junction forming metal to said oxide layer.

4,289,603

CRYOGENIC FRACTIONATOR GAS AS STRIPPING GAS OF FINES SLURRY IN A COKING AND GASIFICATION PROCESS

Charles W. DeGeorge, Chester, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 30, 1978, Ser. No. 910,450
Int. Cl.² C10G *1/04, 9/32*; C10K *1/08*
U.S. Cl. 208—8 LE **18 Claims**



1. In an integrated coking and gasification process comprising the steps of:
(a) reacting a carbonaceous material in a coking zone containing a bed of fluidized solids maintained at fluid coking conditions to produce coke and a vapor phase product including hydrocarbons, said coke depositing on said fluidized solids;
(b) separating from said vapor phase product a gas comprising hydrogen and nitrogen and methane;
(c) introducing a portion of said solids with the coke deposit thereon into a heating zone operated at a temperature greater than said coking zone temperature to heat said portion of solids;
(d) recycling a first portion of heated solids from said heating zone to said coking zone;
(e) introducing a second portion of said heated solids to a fluid bed gasification zone maintained at a temperature greater than said heating zone;
(f) reacting said second portion of heated solids in said gasification zone with steam and an oxygen-containing gas to produce a hot gaseous stream comprising hydrogen;
(g) introducing said hot gaseous stream comprising hydrogen and entrained solids into said heating zone;
(h) passing an additional stream of solids from said gasification zone to said heating zone;
(i) recovering from said heating zone the resulting cooled gaseous stream comprising hydrogen, acidic gases and entrained solids;
(j) separating at least a portion of said entrained solids from said cooled gaseous stream of step (i);
(k) scrubbing the resulting gaseous stream containing said solids with a liquid to form a liquid-solids slurry containing acidic gases and recovering a scrubbed fuel gas;
(l) contacting the liquid-solids slurry with a stripping gas in a stripping zone to remove at least a portion of the acidic gases from said slurry and then passing the vaporous effluent from the stripping zone to a gas cleanup unit, the improvement which comprises passing at least a portion of said separated gas of step (b) to said stripping zone of step (l).

4,289,604

METHOD OF PRODUCING AN ISOTROPIC COKE

Georg Kölling, Essen-Bredeney; Gerhard Pietzka, Vockenhausen; Ingo Romey, Hünxe, and Harald Tillmanns, Kelkheim, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Meitingen and Sigri Elektrographit GmbH, Essen, both of, Fed. Rep. of Germany

Filed Mar. 31, 1977, Ser. No. 783,030
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614541
Int. Cl.³ C10B *55/00*
U.S. Cl. 208—106 **2 Claims**

1. Method for manufacturing an isotropic coke, which comprises subjecting tar from
(a) low temperature carbonization of bitumen,
(b) having a hydrogen content of more than 5.5%,
(c) a carbon content of less than 88% and a softening point above 60° C., to
(d) filtration to remove solid particles therefrom, and
(e) heating the filtrate to a temperature between about 900° C. and 1300° C., to convert the filtrate to an isotropic coke characterized by a thermal volume expansion coefficient of about 13.5×10^{-6}/K and a degree of anisotropy of less than 1.2,
(f) wherein said filtrate is heated to 350° C. with a temperature gradient of 100° to 300° C./hr, from 350° to 460° C. with a gradient of 5° to 50° C./hr and from 460° to 900° to 1300° C. with a gradient of more than 50° C./hr.

4,289,605

CATALYTIC CRACKING OF METAL CONTAMINATED MINERAL OIL FRACTIONS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 935,890, Aug. 23, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,252
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—113 **11 Claims**

1. In a process for catalytic cracking of a metal-containing hydrocarbon charge by contacting the charge at cracking temperature with a particle form solid cracking catalyst whereby components of the charge are converted to lower boiling hydrocarbons with concurrent deposition on the catalyst of metals from the charge and of an inactivating carbonaceous contaminant, regenerating catalytic cracking activity of the contaminated catalyst by burning carbonaceous deposit therefrom while retaining metals deposited on the catalyst, and contacting catalyst so regenerated with additional such charge, whereby the catalyst accumulates metal to detriment of the cracking reaction and declines in regenerated activity over repeated cycles of charge contact and regeneration; the average activity and metals content of the catalyst inventory being maintained at substantially constant equilibrium values by replacing a portion of the catalyst inventory with fresh catalyst of activity above and metals content below said equilibrium values;
the improvement whereby said equilibrium values of activity and metals content are decoupled which comprises replacing a portion of said catalyst aforesaid by adding part of such replacement as catalyst of activity above and metals content below said equilibrium values and the remainder as inert porous solid particles of metals content below said equilibrium value and physical characteristics like that of said catalyst and varying the ratio between fresh catalyst and inert particles for separate control of said equilibrium value.

4,289,606

HYDROCARBON CRACKING WITH MIXTURE OF ZEOLITES Y AND ZSM-5

Elroy M. Gladrow, and William E. Winter, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 44,394, May 31, 1979, Pat. No. 4,239,654. This application Mar. 19, 1980, Ser. No. 131,646
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 **12 Claims**

1. A catalytic cracking process which comprises contacting a hydrocarbonaceous feed at catalytic cracking conditions in the absence of added hydrogen with a catalyst comprising:
(a) an ultrastable Y-type crystalline alumino-silicate zeolite having less than about 1 weight percent rare earth metals, calculated as the elemental metal, based on the zeolite;
(b) a small pore crystalline ZSM-5 type zeolite; and
(c) a catalytic inorganic oxide matrix.

4,289,607

CATALYTIC CONVERSION WITH CRYSTALLINE ZEOLITE PRODUCT CONSTITUTING ZSM-5/ZSM-11 INTERMEDIATES

George T. Kokotailo, Woodbury, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 28,482, Apr. 9, 1979, Pat. No. 4,229,424. This application Jun. 5, 1980, Ser. No. 156,702
Int. Cl.³ C10G *11/02, 35/04*; C07C *2/68*
U.S. Cl. 208—120 **18 Claims**

1. A process for conversion of an organic charge which comprises contacting the same under conversion conditions with a catalyst comprising a crystalline porous tectosilicate characterized by a structure intermediate that of ZSM-5 and ZSM-11 having in its sodium form, an X-ray diffraction pattern substantially as shown in Table 1 and having a unit cell parameter of at least about 40 Angstroms.

5. The process of claim 1 wherein reformates are upgraded.

7. The process of claim 1 wherein said conversion involves alkylation of aromatic hydrocarbon.

4,289,608

PROCESS FOR CATALYTICALLY CRACKING METALS-CONTAINING HYDROCARBON FEEDSTOCKS

Dennis P. McArthur, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 7, 1978, Ser. No. 967,225
Int. Cl.³ C10G *9/16*; B01J *8/24*; C01B *1/09*
U.S. Cl. 208—121 **22 Claims**

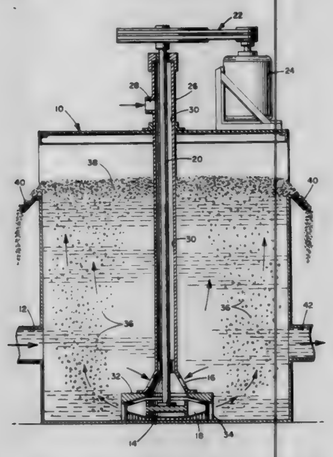
1. In a catalytic cracking process wherein a metal contaminants-containing hydrocarbon feedstock is converted in a catalytic cracking reaction zone to more valuable hydrocarbons of lower average molecular weight and boiling point by contact with cracking catalysts particles at an elevated temperature, the improvement comprising adding one or more organic aluminum compounds into the hydrocarbon feedstock entering the catalytic cracking reaction zone, said feedstock containing between about 5 and 50 wppm of metals contaminants.

4,289,609

PROCESS FOR REMOVING SOLID ORGANIC MATERIALS AND OTHER IMPURITIES FROM WET-PROCESS PHOSPHORIC ACID

Ralph E. Worthington, Winter Haven; Donald A. Luke, Temple Terrace, and Stanton L. Reese, Lakeland, all of Fla., assignors to Uranium Recovery Corporation, Mulberry, Fla.

Filed May 2, 1978, Ser. No. 902,105
Int. Cl.³ B03B *1/02*
U.S. Cl. 209—11 **19 Claims**



1. A process for removing solid organic material from wet-process phosphoric acid derived from the acidulation of uncalcined phosphate rock by froth flotation comprising:

(a) mixing the wet-process phosphoric acid and introducing gas into the wet-process phosphoric acid during the mixing to produce a foam containing at least a portion of the solid organic material; and

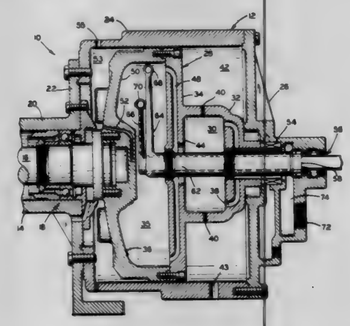
(b) withdrawing the foam from the phosphoric acid.

4,289,610

APPARATUS FOR PUMPING AND CONDITIONING DRILLING FLUID

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Mar. 23, 1979, Ser. No. 23,207
Int. Cl.³ B04B *11/00*; B01D *45/12*
U.S. Cl. 209—18 **3 Claims**



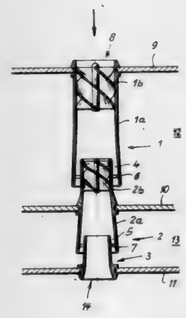
1. A centrifugal pump for selectively separating different weight components of a liquid-solids mixture comprising: a stationary outer housing having an inlet communicating with the interior of said housing; a rotor assembly having a first and a second chamber spaced apart by a common wall, said first chamber being defined by a first casing and a portion of one side of said common wall, said first casing having a wall portion integral with said common wall and extending toward said housing inlet and terminating in spaced relation from said common wall, outlet means providing communication between said first chamber and the exterior of said housing, radially extending acceleration passages in the end wall of said first casing providing communication between the inlet of said housing and the radially outer peripheral interior of said first chamber, said second chamber being defined by a second casing and the opposite side of said common wall, said second casing having a wall portion integral with and extending in an opposite direction from the wall portion of said first casing and terminating in spaced relation from said common wall, radially extending acceleration passages in said common wall providing communication between the radially inner portion of the interior of said first chamber and the radially outer portion of the interior of said second chamber; a first pickup stationarily mounted within said second chamber having a pickup inlet positioned near the periphery of said second chamber for collecting components of the liquid-solids mixture; a second pickup stationarily mounted within said second chamber having a pickup inlet positioned inwardly of the pickup inlet of said first pickup means for collecting components of the liquid-solids mixture of a weight different from the weight of the components collected by said first pickup means; outlet means from said housing; means providing communication between said first and second pickup means and said outlet means disposed to extend axially of said rotor assembly; and means for rotatingly supporting said rotor assembly to permit rotation thereof relative to said outer housing about an axis parallel to said communication means.

4,289,611

MULTI-STAGE CYCLONE SEPARATOR

Heinz Brockmann, Homburg, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz Akt., Cologne, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,274
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918765
Int. Cl.³ B01D *45/12*
U.S. Cl. 209—144 **4 Claims**



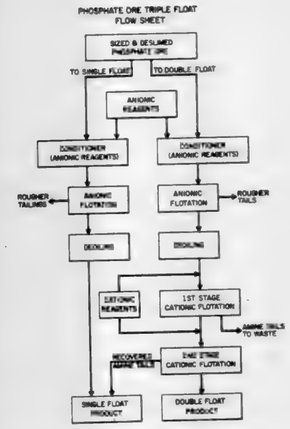
1. A vortex separator, operating as a dust filter system for air intake machines, such as gas turbines and other internal combustion engines, comprising dust filters including first and second casings arranged coaxially and having upstream and downstream ends, said upsteam end of said first casing having a predetermined diameter and said upstream end of said second casing having a diameter less than said predetermined diameter, first and second helical bladed inserts respectively mounted within and having corresponding diameters to said upstream ends of said casings, said inserts having blades oriented for effecting air rotation in the same direction, said blades of said second insert having a pitch greater than the blade pitch of said first insert for increasing the swirl of the air entering said second casing, an air outlet connector having upstream and downstream ends and extending coaxially of said downstream end of said second filter, said upstream end of said connector having a diameter less than said upstream end of said second casing, said downstream end of said first casing surrounding and having a larger diameter than said upstream end of said second casing to thereby form a first annular space therewith, said downstream end of said second casing surrounding and having a larger diameter than said upstream end of said air outlet connector to thereby form a second annular space therewith, whereby air containing dust particles of various grain sizes enters said upstream end of said first filter and is subjected to a centrifugal force by said first insert, the dust particles having larger grain sizes first impacting against the inner wall of said first casing and thereby exiting through said first annular space, the dust particles having relatively smaller grain sizes entering said upstream end of said second filter and being subjected to a further centrifugal force by said second insert, the dust particles having grain sizes smaller than said larger sizes first impacting against the inner wall of said second casing and thereby exiting through said second annular space, the dust particles having grain sizes still smaller than said smaller sizes being discharged through said outlet connector.

4,289,612

PHOSPHATE ORE TRIPLE FLOAT

Glenn H. Schrieber, Aurora, N.C., assignor to Texasgulf Inc., Stamford, Conn.

Filed Jun. 11, 1980, Ser. No. 158,380
Int. Cl.³ B03D *1/02*
U.S. Cl. 209—166 **5 Claims**



1. An improved process for the beneficiation of phosphate ore wherein the ore is floated with anionic reagent to produce a single float product, the single float product is treated with acid to remove anionic reagent, and the acid treated single float product is subjected to cationic floatation with cationic reagent to produce a double float product, wherein the improvement comprises:

(a) performing said cationic floatation in first and second stages;

(b) adding cationic floatation reagent in starvation amounts in said first stage with a low floatation retention time to produce a float containing most of the silica from the ore which is discarded; and,

(c) adding additional cationic floatation reagent to the phosphate ore remaining from said first stage to said second stage with enough floatation retention time to produce a float containing most of the phosphate from the total cationic floatation tailings which is recovered.

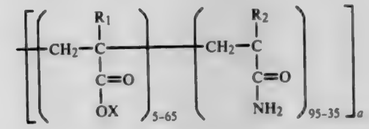
4,289,613

LOW MOLECULAR WEIGHT HYDROLYZED POLYMERS OR COPOLYMERS AS DEPRESSANTS IN MINERAL ORE FLOTATION

Richard M. Goodman, Norwalk, and Sim K. Lim, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 19, 1979, Ser. No. 95,812
Int. Cl.³ B03D *1/06*
U.S. Cl. 209—167 **13 Claims**

1. A process for depressing oxidic iron minerals in a flotation system which comprises adding to the flotation system, as a selective depressant, an effective amount of a copolymer or water soluble salt thereof of the general structure:



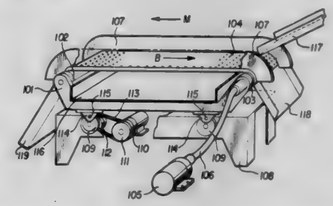
wherein R_1 and R_2 are individually hydrogen or a methyl radical, X is a hydrogen, alkali metal or ammonium ion and a has a numerical value such that the total molecular weight of the copolymer is within the range from about 200 to 85,000.

4,289,614

SPROUTING BEANS REFINEMENT APPARATUS

Tomosaburo Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,914
Claims priority, application Japan, Mar. 6, 1979, 54-25752; Mar. 6, 1979, 54-25753
Int. Cl.³ B07B *1/10*
U.S. Cl. 209—308 **5 Claims**



1. A sprouting bean refinement apparatus comprising:

a vibration frame including a perforated screen, said perforated screen comprising a perforated endless belt and further comprising a driving device for driving the endless belt in one direction and cleaning means arranged so as to face said endless belt and statically placed so as to remove deposits on the endless belt;

a vibrator operatively associated with said vibrator frame for generating vibration in a direction having a component opposite said one direction to said vibration frame; and

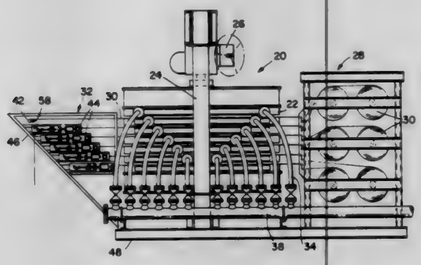
said cleaning means contacting said perforated screen such that relative sliding motion is generated between the cleaning means and the perforated screen to thereby remove deposits on the top side of the perforated screen.

4,289,615

FILTER MEDIA MOVER FOR PLATE TYPE FILTER

John R. Schneider, Belvedere, and Joseph F. Mangione, San Rafael, both of Calif., assignors to Russ Schneider & Associates, Tiburon, Calif.

Filed Jan. 18, 1980, Ser. No. 113,187
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—91 **11 Claims**



1. In combination with a liquid filtering device comprising a plurality of filter plates which, when placed together, form liquid containers, means for moving said plates together for retaining elongated sheets of flexible filter media between adjacent plates, thereby forming a pair of fluid-tight chambers on opposite sides of each sheet, there being an inlet to one chamber and an outlet to the opposite chamber on the other side of the sheet, and means for separating the plates when the sheets of filter media are contaminated, a sheet extraction and advancing means for the various sheets of filter media adjacent the filtering device comprising:

a frame;

an elongated drive roller for each sheet of filter media supported by said frame and extending generally perpendicular to the longitudinal center line of the media, each said drive roller being a crown roll with a slightly greater diameter at its midpoint than at its ends;

controllable power means for rotating each said drive roller;

a freely rotatable bar adjacent each said drive roller and a plurality of rotatable pinch wheels mounted on said bar;

means for urging each said bar towards its adjacent roller when said power means is activated so that said pinch wheels will press against the filter media which is partially wrapped around said roller, thereby causing a frictional force between said roller and said media that is sufficient to advance the media when said power means is activated, said latter means including means for retracting each said bar away from its adjacent roller when filter media is initially installed and said power means is deactivated.

4,289,616

APPARATUS FOR REMOVING SUSPENDED SOLIDS FROM AN EFFLUENT

Richard D. Hallack, 329 Anita Ave., Pasadena, Calif. 91105, and Tommie B. Carter, 806 Valencia Mesa Dr., Fullerton, Calif. 92632

Continuation-in-part of Ser. No. 777,687, Jun. 25, 1977, abandoned, and Ser. No. 924,373, Jul. 13, 1978, Pat. No. 4,203,836. This application May 19, 1980, Ser. No. 150,913
Int. Cl.³ B01D *33/32*
U.S. Cl. 210—101 **10 Claims**

1. Apparatus for separating suspended solids from a liquid containing such suspended solids, the apparatus comprising:

(a) a base;

(b) a pan supported on the base having a bottom wall, a spaced-apart pair of sidewalls extending upwardly and outwardly from the bottom wall, and a spaced-apart pair of end walls extending upwardly and outwardly between the sidewalls and from the bottom wall to form an open-top container;

(c) a perforated plate within the pan and secured to the sidewalls and end walls of the pan above the bottom wall to define a chamber between the bottom wall, an undersurface of the perforated plate, and the surrounding side and end walls;

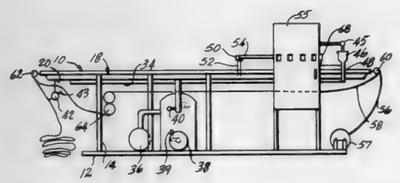
(d) at least one outlet on the bottom wall of the pan for introducing a vacuum to the chamber and for removing liquid from the pan;

(e) a continuous liquid-absorbing medium transfer support lying within the pan in contact with the perforated plate and extending across the end walls and forming a loop around the pan;

(f) roller means for providing ease of movement of the transfer support around the pan;

(g) drive means for moving the transfer support around the pan;

(h) a liquid-absorbing medium comprising an industrial paper toweling having a basis weight from about 28 to



about 34 pounds per ream, a caliper from about 0.013 to about 0.0145, an aged-wet tensile strength from about 16 to 25 ounces and an aged absorption of less than 40 seconds, positioned on the transfer support on the pan;

(i) means for introducing liquid containing suspended solids to the pan onto the liquid-absorbing medium;

(k) means for sensing the level of liquid containing suspended solids in the pan and for activating the means for introducing liquid containing suspended solids to the pan when the level is below a selected level;

(l) a liquid receiver spaced from the pan and connected to an outlet of the pan by a conduit for removing liquid from the pan to the liquid receiver;

(m) a vacuum pump connected by a vacuum line to the liquid receiver for creating a reduced pressure in the liquid receiver and in the chamber in the pan; and

(n) a liquid transfer pump connected to the liquid receiver for removing liquid from the liquid receiver.

4,289,617

WATER SOFTENING AND REVERSE OSMOSIS SYSTEM

Stephen H. Davis, Dayton, Ohio, assignor to Water Refining Company, Inc., Middletown, Ohio

Filed May 5, 1980, Ser. No. 146,956
Int. Cl.³ B01D *57/00*
U.S. Cl. 210—109 **18 Claims**

11. A water softening and reverse osmosis treatment system comprising:

a pressure tank;

a closure for the pressure tank having an access opening therethrough;

an inlet line for conveying raw water to the pressure tank;

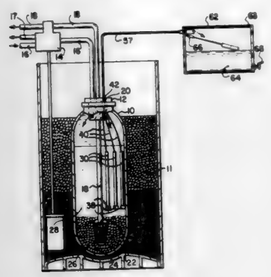
an outlet line for conveying softened water from the tank;

a treatment material held within the pressure tank;

a plurality of tubular membrane elements embedded within the treatment material, each membrane element including a perforated membrane carrier having a hollow core and a semi-permeable reverse osmosis membrane covering the external surface of the membrane carrier, each membrane element having a diameter less than the diameter of the access opening;

a plug sealing the access opening and having an upper recess and a plurality of passages communicating with the recess;

a plurality of flexible tubes, each communicating with a hollow core and extending to a passage so that water may pass from the membrane carrier to the plug;



a holding tank; and

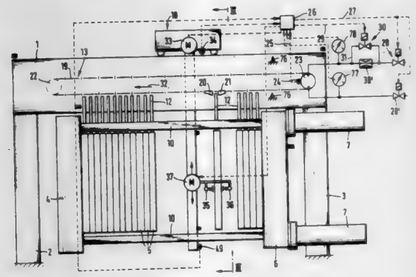
a water line attached to an end to the recess of the plug and at an opposite end to the holding tank.

4,289,618

MOTION CONTROL FOR A FILTER PRESS

Alfons Schotten, Düren; Herman J. Spölgen, Langerwehe, and Ulrich Rilling, Düren, all of Fed. Rep. of Germany, assignors to Eberhard Hoesch & Söhne GmbH & Co., Düren, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,028
Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823501
Int. Cl.³ B01D *25/12*
U.S. Cl. 210—142 **10 Claims**



1. In a plate filter press having a length dimension and including a guide carrier extending in said length dimension; a plurality of filter plated oriented perpendicularly to said length dimension and being shiftably supported on the guide carrier for displacement towards a closed side and an opposite, open side of the filter plate press; a filter plate shifting apparatus for individually displacing the filter plates of a filter plate stack on the closed side towards the open side; the filter plate shifting apparatus having a drive motor, a traveling carrier element connected to the drive motor and filter plate engaging elements mounted on the traveling carrier element for being displaced by the drive motor back and forth in a clearance between the closed side and the open side of the plate filter press; the improvement comprising

(a) a displacement sensor for emitting signals in response to the motion of said filter plate engaging elements in said length dimension; and

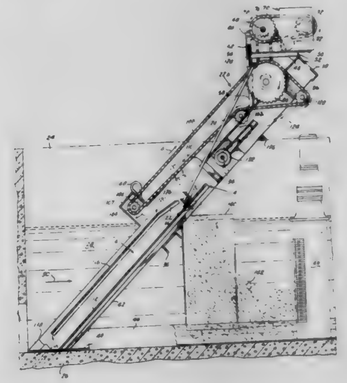
(b) a monitoring and control means operatively connected to said displacement sensor for receiving said signals to monitor the momentary position of the successive traveling paths of said filter plate engaging elements with respect to said guide carrier to determine the required displacement characteristics for each filter plate as a function of the determined position; said monitoring and control means being further operatively connected to said drive motor for controlling the motion of said filter plate engaging elements for controlling the shifting motion of the individual filter plates as a function of said displacement characteristics.

4,289,619

MATERIAL HANDLING APPARATUS

Milo J. Sampson, 1713 Douglas, Ames, Iowa 50010

Filed Aug. 11, 1980, Ser. No. 177,199
Int. Cl.³ B01D *35/16*
U.S. Cl. 210—159 **11 Claims**



1. In a screening apparatus adapted to be disposed in a refuse laden waterstream to collect debris therein and a rake disposed for reciprocal movement relative thereto to remove collected debris, the combination therewith of:

an elongated frame defining respective upper and lower end portions,

said screening apparatus mounted on said lower end portion, respective lower and upper parallel tracks extending longitudinally of said frame at said lower end portion,

said rake adapted to slidably ride on said lower track in engagement with said screening apparatus in an upwardly cleaning stroke and to slidably ride on said upper track out of engagement with said screening apparatus on a downwardly return stroke,

a power driven endless chan operably mounted on said frame at said upper end portion to move in respective directions towards and away from said screening apparatus,

an elongated rod pivotally connected at one end to said chain for movement therewith in its path of travel and secured at its other end to said rake,

fulcrum means on said frame in said upper end portion in the line of travel of said rod,

movement of said chain away from said screening apparatus acting through said rod to slide said rake on said lower track in its cleaning stroke, and

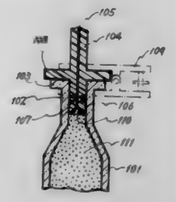
movement of said chain in reversing its direction towards said screening apparatus effecting the engagement of said rod with said fulcrum means and the resulting upwardly tilting of said rod and said rake to a position where further movement of said chain towards said screening apparatus acts to move said rake on said upper track on its return stroke.

4,289,620

HIGH PRESSURE GLASS COLUMN FOR HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Shoji Hara, 1618, Shiki, Shiki-shi, Saitama, Japan

Filed Nov. 9, 1979, Ser. No. 92,980
Claims priority, application Japan, Nov. 22, 1978, 53-143338
Int. Cl.³ C02F *1/68*; G01N *31/06*
U.S. Cl. 210—198.2 **5 Claims**



1. In a high pressure glass column for liquid chromatography, a high pressure glass column for high performance liquid chromatography which comprises:

(a) a glass column having at each end thereof a flange made of the same material as said column, said each end communicating via a conical passage with a shorter column of smaller diameter and in which a chromatographic absorbent is packed;

(b) a distributing filter made of a fluoropolymeric resin fitted in each said shorter column and tightly packed against said absorbent;

(c) a fitting plug made of the same material as the filter, said plug having an external annular flange at the center portion thereof, one end of which is extended beyond the end of the shorter column and the other end of which is packed into the shorter column and contacts one said filter so that the outer face of each said fitting plug tightly contacts the inner face of the shorter column, wherein each said plug includes a small diameter axial bore and the outlet thereof is formed in a bowl-like shape, and a plurality of hollows are circumferentially formed in the plug above the bowl so that the mouth of the bowl may be enlarged to compress against the inside of the column tube and the hollows may be shrunk by the enlargement of the bowl; and

(d) a clip fitting and holding the two flanges of the main column and the plug.

4,289,621

DEVICE FOR TREATING FLUIDS WITH MAGNETIC LINES OF FORCE

James R. O'Meara, Jr., 2023 S. Gessner, Ste. N-2, Houston, Tex. 77063

Filed May 21, 1980, Ser. No. 151,864
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 **11 Claims**

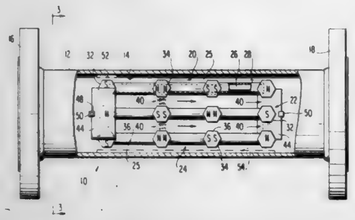
1. A device for the treatment of fluids with magnetic lines of force comprising:

an elongated hollow non-ferromagnetic outer casing having a longitudinal axis and fluid inlet and outlet means at the longitudinal ends thereof;

at least three spaced-apart and longitudinally coextensive elongated magnet assemblies, each positioned within said outer casing and having a longitudinal axis substantially parallel with that of adjacent magnet assemblies and with the longitudinal axis of said outer casing to form elongated laminar passageways for said fluid therebetween;

each of said magnet assemblies comprising at least one tier of at least two permanent magnets, each magnet being encased in a non-ferromagnetic jacket and arranged in a coaxial line with the other magnet or magnets in the same tier with like poles of said magnets adjacent each other;

said non-ferromagnetic jacket having its ends supported by ferromagnetic support members and the length of each tier of jacketed magnets being supported between its ends by at least one ferromagnetic support member adjacent the ends of the jacketed magnets received therein, to magnetize said support members with the polarity of the magnet ends supported thereby;



said magnet assemblies being positioned so that the polarities of the support members in one of said magnet assemblies are unlike the polarities of the oppositely disposed support members in an adjacent magnet assembly; and

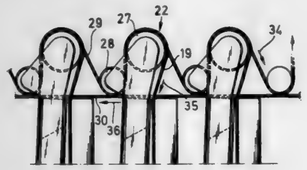
means for fixedly positioning said magnet assemblies within said outer casing.

4,289,622

PLATE FILTER PRESS WITH FILTER CLOTH TRANSPORT

Alfons Schotten, Düren, Fed. Rep. of Germany, assignor to Eberhard Hoesch & Söhne GmbH & Co., Düren, Fed. Rep. of Germany

Filed Dec. 13, 1979, Ser. No. 103,218
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853952
Int. Cl.³ B01D *25/32*
U.S. Cl. 210—225 **13 Claims**



1. In a filter press including a press stand having a length dimension; a plurality of plate-like filter elements and frame-like filter elements oriented perpendicularly to said length dimension and arranged alternatingly and supported in said stand for displacement parallel to said length dimension and relative to one another; a closing device operatively connected to the filter elements for pressing the filter elements to one another into a filter element stack; a guide roller supported on each filter element alternatingly at opposite sides thereof as viewed in said length dimension; each said guide roller having a horizontal axis of rotation oriented perpendicularly to said length dimension; a continuous filter cloth trained about each said guide roller for guiding said filter cloth in a zigzag course between all adjoining filter elements; at least some of said guide roller being driven guide rollers rotated by driving means for pulling said filter cloth through said filter elements in said zigzag course; the improvement in said driving means comprising

(a) a sprocket drivingly connected with each said driven guide roller and having a rotary axis in alignment with the rotary axis of the respective driven guide roller;

(b) a guide wheel mounted on each filter element which supports a driven guide roller; each guide wheel having a rotary axis extending parallel with the rotary axis of the respective sprocket and spaced therefrom in a direction which forms an angle other than zero with the direction of said length dimension;

(c) an endless flexible drive member meshing in succession with each said sprocket and being deflected by respective said guide wheels between every adjoining sprocket, whereby said flexible drive member has a zigzag course and is trained about each said sprocket in the same direction; and

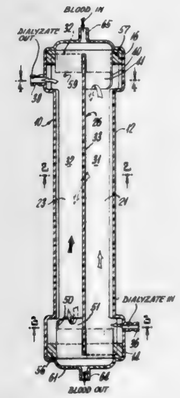
(d) motor means for driving said flexible drive member to unidirectionally rotate said guide rollers.

4,289,623

HOLLOW FIBER DIALYSIS

Kyu H. Lee, King of Prussia, Pa., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Continuation of Ser. No. 629,082, Nov. 5, 1975, abandoned. This application Oct. 19, 1977, Ser. No. 843,502
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—247 **22 Claims**



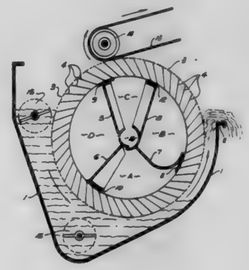
1. A hollow fiber dialyzer having an elongated tubular casing containing partitioning that divides its interior into a plurality of separate longitudinally-extending passageways, dialyzate flow directing means for receiving dialyzate from an external source and directing it to flow from one casing end to the other through one of the passageways and then back to said one casing end through another of the passageways and so to and fro lengthwise through the other passageways and finally out of the casing, at least two of the passageways each having a longitudinally-extending bundle of elongated hollow blood dialysis fibers extending lengthwise through it, and means connected to deliver blood to be dialyzed from an inlet to the fiber ends of each of such bundles at the same end of the casing and to receive the blood from the other ends of the hollow fibers for delivery to an outlet, characterized in that only some but not all of the passageways have said bundles of fibers and the remaining passageways do not contain dialysis fibers, and the dialyzate flow directing means directs dialyzate to flow from one casing end to the other in alternating fashion through the passageways having bundles of fibers and the passageways which do not contain fibers so that the dialyzate flow through each of the passageways having bundles of fibers is always in the same lengthwise direction.

4,289,624

APPARATUS FOR EXTRACTING SOLIDS FROM SLURRY

Roman Golczewski, 19 Primrose Ave., Ryde 2112, N.S.W.; Barry G. Seach, 92 Cecil Ave., Castle Hill, 2154, and Solomon E. Cohen, 46A Epping Ave., Eastwood, N.S.W., all of Australia

Filed Mar. 14, 1979, Ser. No. 20,534
Claims priority, application Australia, Mar. 20, 1978, 3757
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—404 **22 Claims**



1. An apparatus for separating solids from a slurry suspension of solids and liquid, including a container adapted to hold a quantity of the slurry suspension, said apparatus comprising:

a cylindrical sieve rotatably mounted to said container, said sieve being adapted to permit passage therethrough of the liquid while substantially retaining the solids on a surface thereof while being partially immersed in the slurry;

means within said cylindrical sieve defining a stationary first reduced pressure chamber within said cylindrical sieve for applying suction to a zone on the interior side of said sieve, said interior zone being at least partially within that part of the circumference of said sieve most deeply immersed in the slurry;

means for feeding said slurry suspension to a corresponding zone on the exterior side of said sieve, whereby the solids are urged against said corresponding zone of said sieve and the liquid is urged to flow through said sieve to the interior thereof;

means within said cylindrical sieve defining a second chamber angularly spaced from said first chamber, said second chamber defining means being at least partially formed as a trough;

conveyance means comprising a plurality of liquid collection and transport means spaced around the circumference of said sieve and extending generally inwardly from the inner surface of said sieve, said liquid collection and transport means being arranged to collect some of the liquid when said liquid collection and transport means are adjacent said interior zone and being arranged to discharge at least some of the thus collected liquid onto said trough when said liquid collection and transport means are moved toward said second chamber to a position removed from adjacent said interior zone;

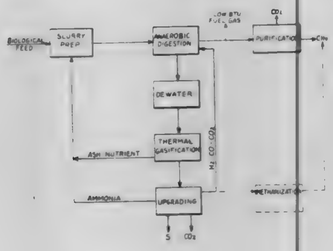
sealing means whereby reduced pressure may be substantially maintained in said first reduced chamber notwithstanding transportation of liquid therefrom by said liquid collection and transport means.

4,289,625

HYBRID BIO-THERMAL GASIFICATION

Paul B. Tarman, Elmhurst, and David P. Chynoweth, St. Charles, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Jan. 18, 1980, Ser. No. 113,242
Int. Cl.³ C02F *3/28*
U.S. Cl. 210—603 **28 Claims**



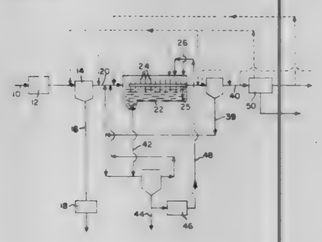
1. A hybrid bio-thermal gasification process for improved carbonaceous gasification comprising: adding biological feed to an anaerobic digester; anaerobically digesting said biological feed under thermophilic or mesophilic conditions in an active liquid culture; introducing a gasification product to said active liquid culture during said anaerobic digesting; withdrawing product methane and carbon dioxide containing gas from said digester; separately withdrawing biological residue from said digester and introducing it into a thermal gasifier; gasifying at least a substantial portion of said biological residue under elevated temperature conditions producing thermal gasifier products and thermal residue, at least a portion of said thermal gasifier products or their derivatives being passed through said digester as said gasification product.

4,289,626

WASTEWATER TREATMENT

Paul V. Knopp, Wausau, and Walter Burant, Jr., Weston, both of Wis., assignors to Sterling Drug, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 937,963, Aug. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 834,231, Sep. 19, 1977, abandoned. This application Mar. 7, 1980, Ser. No. 128,273
Int. Cl.³ C02F *1/28, 3/08*
U.S. Cl. 210—616 **6 Claims**



6. A process for treating wastewater comprising the following steps:

a. contacting wastewater in a stream in a biological contactor apparatus which has a multiplicity of surfaces therein alternately immersed in the stream and air above the stream, for a period of time of at least ½ hour while adding to the stream an adsorbent capable of adsorbing impurities from the wastewater, and

b. removing accumulated suspended solids from the contactor apparatus at a rate substantially equivalent to the rate at which solids accumulate within the contactor,

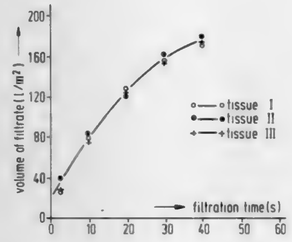
wherein the adsorbent is added at the downstream end of the biological contactor apparatus and is moved by the surfaces in the contactor apparatus in countercurrent relationship with the bulk of the liquid flow.

4,289,627

LIQUID FILTRATION PROCESS

Dieter Disselbeck, Bad Soden am Taunus; Gerhard Neumann, Frankfurt am Main; Karl-Heinz Ott, Kelkheim; Günther Strobel, and Edwin Zalewski, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,296
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901397
Int. Cl.³ B01D *39/08*
U.S. Cl. 210—702 **4 Claims**



1. A method for the separation of solid material from a liquid phase which comprises pouring a liquid containing solids into a three-dimensional filter element which consists of a fabric of synthetic fibers the individual threads of which are bound to each other by at least one technique selected from the group consisting of crossing, knitting and overcasting so in an unshiftable manner without the threads being permanently bonded together at the contact points between the warp and weft, said fabric having an air permeability of more than 50 l/dm^2.min at a pressure difference of 2 millibar and resistant to a permanent load over the entire filter area without formation of free regions; passing the liquid through said fabric and thus filtering off the solids content.

4,289,628

PROCESS FOR SEPARATING SOLIDS FROM LIQUID MATTER

Dieter Disselbeck, Bad Soden am Taunus, and Rudolf Richter, Hünstetten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 154,068
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922778
Int. Cl.³ B01D *23/04*
U.S. Cl. 210—703 **9 Claims**

1. A process for separating solids from liquid matter by gravity comprising feeding a gas into a liquid medium from which solid particles are to be separated whereby gas bubbles accummulate on the solid particles, introducing the liquid medium into a three dimensional filter element to form a column of the liquid medium in the filter element whereby the gas bubble-particles float to the upper level of the said column to form a layer of particles on the upper surface of the column and allowing the liquid matter to pass through the sides and bottom of the filter element while continuously building alluvial filter layers of the solids on the internal surface of the filter element from the bottom upwards along the filter wall relative to the rising level of the liquid medium in the filter element.

4,289,629

REMOVAL OF CONTAMINANTS FROM STRONGLY ALKALINE SOLUTION

Claude R. Andrews, Pasadena, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Jul. 10, 1980, Ser. No. 168,833
Int. Cl.³ C01B *33/26, 33/28*
U.S. Cl. 210—737 **2 Claims**



1. A method of removing chloride and carbonate ions from a strongly alkaline solution comprising:

(a) mixing sodium aluminosilicate with said solution wherein said sodium aluminosilicate is selected from the group consisting of zeolite A and hydroxysodalite wherein said sodium aluminosilicate constitutes at least 20% by weight of the solution;

(b) heating the resulting solution to a temperature of at least 90 degrees Celsius to produce a sodalite type product; and,

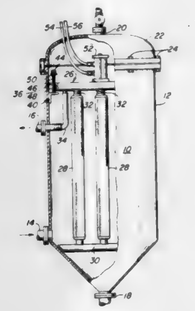
(c) filtering said sodalite type product from the solution.

4,289,630

FILTER CAKE REMOVAL METHOD AND APPARATUS

Henry Schmidt, Jr., Hinsdale; Allen E. Cederholm, Western Springs, and James F. Zievers, LaGrange, all of Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Dec. 10, 1979, Ser. No. 102,258
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—785 **15 Claims**



1. A filter, comprising in combination

a filter tank enclosing a filter chamber,

a liquid inlet opening into said tank through which a filtrate may be introduced into said chamber,

a rigid, generally planar tubular header manifold having a passageway therein,

spring means supporting said manifold in said chamber,

an effluent outlet from said tank,

conduit means connecting said passageway to said outlet, a plurality of filter elements each having a perforate filter media overlying an internal cavity therein,

said filter elements being fixedly mounted at one end to said header with said cavities being in communication with said passageway,

said filter elements being in mutually parallel relationship, the outer surfaces of said filter media extending in a direction perpendicular to the plane of said header manifold and

vibratory impactor means connected to said manifold for impacting said manifold in a direction parallel to the outer surface of said filter media.

4,289,631

COMPOSITIONS AND PROCESS FOR EXTENSION OF THE USEFUL LIFE OF MACHINE ELEMENTS

S. Roy Luxemburg, 680 Sharp La., Baton Rouge, La. 70815

Continuation-in-part of Ser. No. 772,547, Feb. 28, 1977, abandoned. This application Dec. 16, 1977, Ser. No. 861,126
Int. Cl.³ C09K *7/00*
U.S. Cl. 252—8.5 B **10 Claims**

1. A novel composition of matter useful for metal plating the metal surfaces of a machine element to increase its useful life which comprises a carrier material admixed with reactants comprised of an electron donor metal and a decomposable plating-metal bearing compound, the electron donor metal being more electropositive and higher in the electromotive series of the metals than the metal constituent of said decomposable plating-metal compound which is electronegative and consequently capable of being plated out by the more electropositive metal of said series on said metal surfaces of said machine element, one or both of which reactants is encapsulated within a film of material to form a barrier between said electron donor metal and said decomposable plating-metal bearing compound to prevent the release and contact of one reactant with the other but which, at conditions of operation of said machine element, the film of material will be caused to break-down and release the reactants from contact and reaction one with the other to deposit the plating-metal of said decomposable plating-metal bearing compound on the metal surfaces of said machine element to extend its wear capabilities and useful life.

4,289,632

LOST CIRCULATION MATERIAL FOR SEALING PERMEABLE FORMATIONS

Elmer E. Clear, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 20, 1979, Ser. No. 77,215
Int. Cl.³ C09K *7/02, 7/06*
U.S. Cl. 252—8.5 LC **10 Claims**

1. A composition of matter for sealing permeable formations comprising diatomaceous earth and a suspending agent wherein:

the suspending agent consisting of finely divided paper present in an amount in the range of about 2 to about 30 percent by weight of said mixture said diatomaceous earth being present in an amount of from about 70 to about 98 percent by weight of said mixture.

4,289,633

CHEMICAL PROCESS FOR BACKSURGING FLUID THROUGH WELL CASING PERFORATIONS

Edwin A. Richardson, Houston; Ronald F. Scheuerman, Bellaire, and David C. Berkshire, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 28,025, Apr. 6, 1979, Pat. No. 4,219,083. This application Dec. 20, 1979, Ser. No. 105,815
Int. Cl.³ E21B *43/25*
U.S. Cl. 252—8.55 B **3 Claims**

1. An additive that dissolves in an aqueous liquid to form a solution capable of treating a well within a subterranean reservoir by chemically generating a pulse of fluid pressure and heat within a near-well portion of the reservoir, comprising:

at least one water-soluble salt of ammonium hydroxide capable of being oxidized within an acidic aqueous solution to yield nitrogen gas and liquid or dissolved by-products which are substantially inert to the components of said well and reservoir;

at least one water-soluble salt of nitrous acid that is an oxidizing agent capable of so-oxidizing salt of ammonium hydroxide and is present in at least a substantially stoichiometric proportion for said nitrogen gas production from said salt of ammonium hydroxide.

at least one water-soluble alkaline buffer system which is capable of maintaining an aqueous solution containing said nitrogen-containing compound and said oxidizing agent at a pH of at least 7 at which the rate of said gas-generating reaction is relatively slow throughout a period in which a significant proportion of hydrogen ions are being released within the solution; and,

at least one water-soluble compound which is (a) capable of being dissolved in an aqueous solution containing said salts of ammonium hydroxide and nitrous acid and alkaline buffer and there reacting to yield enough hydrogen ions to subsequently reduce the pH of the solution to a pH less than about 7 at which the rate of said gas-generating reaction is relatively fast, (b) is capable of causing said pH reduction to occur after a time sufficient to permit a significant volume of the solution to be injected through the said well and into the surrounding reservoir and (c) is a member of the group consisting of lower alcohol esters of lower fatty acids, hydrolyzable acyl halides, relatively slowly hydrolyzable acid anhydrides and relatively slowly hydrolyzable phosphoric or sulfonic acid esters.

4,289,634

DEPOSIT CONTROL ADDITIVES AND FUEL AND LUBE OIL COMPOSITIONS CONTAINING THEM

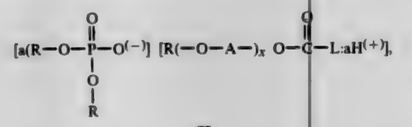
Robert A. Lewis, Berkeley, and Lewis R. Honnen, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 25, 1979, Ser. No. 60,307

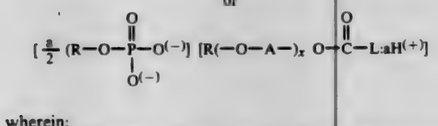
Int. Cl.³ C10M *1/46, 1/32, 3/40;* C10L *1/26*

U.S. Cl. 252—32.5 **11 Claims**

2. An additive composition effective as a minor component in a fuel or lubricating oil composition for reducing the deposition of solids and inhibiting corrosion in the intake system and crankcase of an internal combustion engine, said additive composition comprising at least one salt of the formula



or

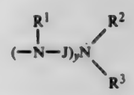


wherein:

(1) said R groups are the same or different hydrocarbyl groups having a carbon atom content in the range from 1 to 30 selected from the group consisting of phenyl, mono-, di- and trialkylphenyl, alkyl, cycloalkyl, alkenyl, cycloalkenyl, and combinations thereof;

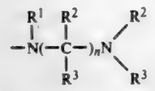
(2) A is an alkylene group having a carbon atom content in the range of from 2 to 5 and x is an integer sufficient to provide said cation in unprotonated form with a molecular weight in the range of from about 500 to 10,000;

(3) L is monovalent and selected from the group consisting of radicals of the formula



(i)

wherein J is an alkylene group having a carbon atom content in the range 2 to 6 and y is an integer in the range 1 to 11, and



wherein n is an integer in the range 2 to 6;

(4) R^1, R^2 and R^3 are the same or different groups having a carbon atom content in the range 0 to 16 selected from the group consisting of hydrogen and hydrocarbyl groups selected from the group consisting of acyl, alkoxy, ketoalkyl, hydroxyalkyl and cyanoalkyl groups; and

(5) a is an integer in the range 1 to 3.

4,289,635

PROCESS FOR PREPARING MOLYBDENUM-CONTAINING COMPOSITIONS USEFUL FOR IMPROVED FUEL ECONOMY OF INTERNAL COMBUSTION ENGINES

Calvin W. Schroeck, Eastlake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

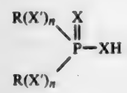
Filed Feb. 1, 1980, Ser. No. 117,892

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **82 Claims**

1. A process for preparing a composition which comprises reacting an olefinically unsaturated compound capable of reacting with active sulfur with a composition prepared by a process which comprises reacting:

(a) A phosphorus-containing acid represented by the formula:



wherein each X and X' is independently oxygen or sulfur, each n is zero or one, and each R is independently the same or a different hydrocarbon-based radical;

(b) at least one hexavalent molybdenum oxide compound, and

(c) hydrogen sulfide,

in the presence of (d) a polar solvent.

4,289,636

AQUEOUS LUBRICANT COMPOSITIONS

Robert H. Davis, Pitman, and Alfred B. Piotrowski, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,713

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.3 **11 Claims**

1. An improved water-soluble lubricant comprising an effective anti-corrosion or anti-rust amount of a water-soluble amide derived from the reaction of a C_1–C_{30} primary alkyl amine or a C_1–C_{30} secondary alkyl amine with a member selected from the group consisting of tetrahydrophthalic acid, tetrahydrofuran tetracarboxylic acid, tetrahydrophthalic acid anhydride and tetrahydrofuran tetracarboxylic acid anhydride and water to make the balance of the composition.

7. A water-soluble lubricant composition comprising about 5–40 wt. % of a water-soluble amide derived from the reaction of a C_1–C_{30} primary or secondary alkyl amine and a member selected from the group consisting of tetrahydrophthalic acid tetrahydrofuran tetracarboxylic acid tetrahydrophthalic acid anhydride and tetrahydrofuran tetracarboxylic acid anhydride, 5–50 wt. % of a water-soluble mono-, di- or tri-alkanolamine, about 0.5 to 20 wt. % of a water-soluble polyoxyalkylene glycol containing at least one homopolyalkylene unit having a unit weight of at least about 800 and water to make the balance of the composition.

4,289,637

MINERAL OIL SOLUBLE BORATE COMPOSITIONS

Joseph Dulat, Fetcham, England, assignor to United States Borax & Chemical Corp., Los Angeles, Calif.

Filed Nov. 29, 1979, Ser. No. 98,455

Claims priority, application United Kingdom, Jan. 15, 1980, 47564/78

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.5 **11 Claims**

1. A stable, mineral oil-soluble borate composition formed by reacting at a temperature in the range of about 50° to 120° C. an aqueous solution of an alkali metal borate with a fatty acid containing about 8–22 carbon atoms, fatty oil containing said fatty acid, or mixture thereof in the presence of about 1 to 10% of a surfactant selected from lanolin, ethylene glycol monostearate, and mixtures hereof, said composition containing about 5–30% of said alkali metal borate.

4. A method for the preparation of an alkali metal borate reaction product which is soluble in mineral oil which comprises reacting an aqueous solution of an alkali metal borate with a fatty acid containing about 8–22 carbon atoms, a fatty oil containing said fatty acid, or a mixture thereof, at an elevated temperature in the range of about 50°–120° C. in the presence of about 1 to 10% of a surfactant selected from lanolin, ethylene glycol monostearate, and mixtures thereof, said reaction product containing about 5 to 30% w/v of said alkali metal borate.

11. Mineral oil containing the borate composition of claim 1 dissolved therein, said mineral oil containing at least one surfactant having an intermediate to high HLB value and containing about 1 to 10% w/v of alkali metal borate.

4,289,638

METAL TREATMENT

Bruce E. Svenson, 852a Pittwater Rd., Dee Why, N.S.W., Australia (2099)

Filed Sep. 28, 1979, Ser. No. 80,794

Claims priority, application Australia,

Int. Cl.³ C09G *1/02;* C11D *7/08, 7/20, 7/46*

U.S. Cl. 252—85 **3 Claims**

1. A rust treatment preparation comprising:

from about 5% to about 35% V/V of about 95% concentrated phosphoric acid,

from about 25% to about 35% W/V of an emulsifier selected from the group consisting of anhydrous wool fat, anhydrous wool grease, hydrous wool fat, hydrous wool grease and derivatives thereof,

from about 10% to about 15% W/V of a stabilizer-absorbing agent; and

a solvent selected from the group consisting of methylated and industrial spirits.

2. A rust treatment preparation as described in claim 1 further comprising:

about 33⅓% V/V of said concentrated phosphoric acid, wherein said emulsifier comprises about 25% W/V commercial wool grease and said stabilizer-absorbing agent comprises about 10% W/V of kaolin.

4,289,639

METHOD AND COMPOSITION FOR REMOVING SULFIDE-CONTAINING SCALE FROM METAL SURFACES

Gary R. Buske, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1980, Ser. No. 193,878

Int. Cl.³ C02B *5/06;* C11D *7/10, 7/26;* C23G *1/06*

U.S. Cl. 252—87 **9 Claims**

1. An aqueous acid composition comprising an aqueous non-oxidizing acid having glyoxlic acid dissolved therein; said composition having, as one of its chemical properties, the capability of dissolving acid-soluble, sulfide-containing scale from a metal surface without the evolution of hydrogen sulfide gas.

7. In the method of chemically cleaning acid-soluble, sulfide-containing scale from a metal surface comprising contacting said scale with an aqueous acid cleaning composition comprising an aqueous non-oxidizing acid having at least one aldehyde dissolved or dispersed therein, which aldehyde is present in an amount at least sufficient to prevent or substantially prevent the evolution of hydrogen sulfide gas the improvement comprising using glyoxlic acid as said aldehyde.

4,289,640

CLEANING COMPOSITIONS

Pasquale J. Falivene, Union City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 434,853

The portion of the term of this patent subsequent to Aug. 15, 1996, has been disclaimed.

Int. Cl.³ C11D *3/065, 3/14, 7/12, 7/54*

U.S. Cl. 252—95 **11 Claims**

1. A dry powder cleaning composition comprising a particulate base selected from the group consisting of an abrasive and a detergent builder salt and mixtures thereof; a synthetic organic detergent; and an organic hydrotrope, with the proportion of hydrotrope to detergent being in the range of about 0.4 to 5, on a molar basis, at least about 8% by weight of any such abrasive particles having a diameter of at least about 0.037 mm.

4,289,641

DETERGENT PRODUCT

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 15, 1978, Ser. No. 933,931

Claims priority, application United Kingdom, Jan. 12, 1978, 1285/78

Int. Cl.³ C11D *9/44, 9/50*

U.S. Cl. 252—96 **14 Claims**

1. A deodorant detergent product comprising:

(i) from 1 to 99% by weight of a soap;

(ii) from 0.99 to 98.99% by weight of other detergent adjuncts including at least one selected from the group consisting of detergency builders (other than soap) and bleaches; and

(iii) from 0.01 to 10% by weight of a deodorant composition comprising from 45 to 100% by weight of deodorant active components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances

Class 2: essential oils, extracts, resins and synthetic oils

Class 3: aldehydes and ketones

Class 4: polycyclic compounds

Class 5: esters

Class 6: alcohols,

provided that where a component can be classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of Class 1, Class 2 and Class 4;

(b) the deodorant composition contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b)

said deodorant composition having a deodorant value of from 0.50 to 3.5 as measured by the Deodorant Value Test.

4,289,642

DETERGENT COMPOSITION HAVING A SIZING EFFECT COMPRISING NONIONIC AND/OR ZWITTERIONIC TENSIDES AND POLYSACCHARIDE AMINO ESTERS

Rudolf Weber, Düsseldorf, and Hans Andree, Leichlingen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 126,037

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911857

Int. Cl.³ C11D *3/22*

U.S. Cl. 252—99 **15 Claims**

15. A detergent composition with a sizing effect which consists essentially of:

(a) from about 1 to 30 percent by weight of nonionic and/or zwitterionic tenside;

(b) from about 0.5 to 10 percent by weight of polysaccharide amino ether containing quaternary ammonium groups;

(c) from about 0 to 60 percent by weight of builder salt; and

(d) the ramainder customary additives.

4,289,643

STABILIZATION OF ANHYDROUS SODIUM METASILICATE

Daniel Joubert, Trevoux, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 877,882, Feb. 15, 1978, abandoned. This application Aug. 30, 1979, Ser. No. 71,028

Claims priority, application France, Feb. 16, 1977, 77 04380

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—103 **12 Claims**

1. A composition of matter comprising (i) anhydrous sodium metasilicate, and (ii) a minor amount of an inorganic molecular water donor including either bound water of hydration or free water of sorption which will evolve its water content to the metasilicate (i), at a temperature less than that required for the fusion of sodium metasilicate pentahydrate (72.2° C.), and as will convert from about 1% to about 20% by weight of said anhydrous metasilicate into its said pentahydrate, said water donor (ii) being selected from the group consisting of $Na_2B_4O_7.10H_2O$, $Na_2CO_3.7H_2O$, $Na_2HPO_4.7H_2O$, $Na_2HPO_4.12H_2O$, $(NaPO_3)_3.6H_2O$, $Na_2SO_4.10H_2O$, a caustic compound and silica.

4,289,644

PRE-WASH STICK CLEANER

Roger C. Steinhauer, Park Forest, and Isabelle M. Gabriel, Chicago, both of Ill., assignors to Armour-Dial, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 941,829, Sep. 11, 1978, abandoned. This application Jun. 4, 1980, Ser. No. 156,324

Int. Cl.³ C11D *50/00, 9/26, 17/00*

U.S. Cl. 252—127 **7 Claims**

1. A pre-wash cleaner composition comprising the following ingredients by weight made into a solid, non-thixotropic stick: about 70% of a balanced system of paraffinic hydrocarbon solvents having an average molecular weight of about 143, and a boiling point about 300°±5° F., and nonionic detergents having the equivalent of about 3 ethylene oxide units; about 15% tallow soap; and about 15% sorbitol (70%).

4,289,645

HYDROQUINONE AND MU-AMINE COMPOSITIONS

John A. Muccitelli, Feasterville, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 14, 1980, Ser. No. 168,989

Int. Cl.³ C02B *1/23;* C23F *11/06, 11/12, 11/14*

U.S. Cl. 252—178 **17 Claims**

1. A composition which is useful for reducing the amount of oxygen in an oxygen containing aqueous medium, said composition consisting of hydroquinone and mu-amine, said hydroquinone and mu-amine being present in an amount sufficient to increase the oxygen scavenging efficiency of said hydroquinone.

4. A composition which is useful for reducing the amount of oxygen in an oxygen containing aqueous medium, said composition consisting of water, hydroquinone and mu-amine, said hydroquinone and mu-amine being present in an amount sufficient to increase the oxygen scavenging efficiency of said hydroquinone.

4,289,646

1,1-DIFLUORO-2-CHLOROETHYLENE AS AEROSOL PROPELLANT

Karl-Heinz Mitschke, Odenthal, and Hans Niederprüm, Monheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,900

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846811

Int. Cl.³ C09K *3/30*

U.S. Cl. 252—305 **4 Claims**

1. A container for dispersing a spray comprising a container, a valve sealing the container, a conventional filler within said container to be dispersed as a spray and a pressurized propellant gas comprising 1,1-difluoro-2-chloroethylene.

4,289,647

METHOD OF PRODUCING PROCESS GASES CONTAINING HYDROGEN AND CARBON MONOXIDE FROM ASH OIL

Kurt Tippmer, Recklinghausen, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 52,618, Jun. 27, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,312

Int. Cl.³ C01B *2/06*

U.S. Cl. 252—373 **1 Claim**

1. A method of producing process gases containing hydrogen and carbon monoxide comprising:

(a) mixing an amount by weight of ash oil with a smaller amount by weight of carbon-containing water;

(b) adding steam to the mixture of step (a);

(c) burning the mixture plus steam of step (b) with oxygen enriched gas, downwardly into a gasification reactor to gasify oil under pressure to produce partially burned gases with steam and residual carbon plus ash in fine particles;

(d) quenching the products of step (c) with quenching wash water from a direct gas cooler to form wash water with residual carbon plus ash, and ash in the form of clinker particles, and to separate the unburned gases;

(e) directing the unburned gases of step (d) to the direct gas cooler and cooling the unburned gases in the direct gas cooler with clean wash water to produce the process gases and the quenching wash water for step (d); and

(f) decanting and thickening, in a decanter/thickener, the wash water with residual carbon plus ash from step (d) to form the clean wash water of step (e) at the top, the carbon-containing water of step (a) in the middle, and ash mud at the bottom, of the decanter/thickener.

4,289,648

BLOOD GAS CONTROLS COMPOSITION, METHOD AND APPARATUS

Michael K. Hoskins, Irvine, and Gary D. Christiansen, Yorba Linda, both of Calif., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Mar. 20, 1979, Ser. No. 22,244

Int. Cl.³ C09K *3/00;* G01N *33/16, 31/00*

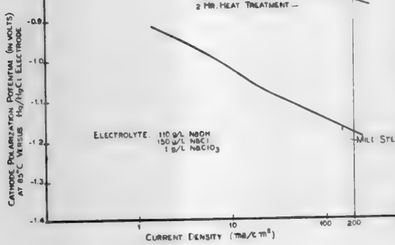
U.S. Cl. 252—408 **18 Claims**

10. A blood gas control composition which consists essentially of

(a) water

(b) dissolved CO_2 in equilibrium with a water-soluble carbonate or bicarbonate salt source in solution

(c) dissolved oxygen in equilibrium with a water soluble or water suspendible peroxide source in solution



(d) a water soluble pH buffer

(e) said composition having a pH of 7.0–7.7, a pO_2 of from 30 to 170 mm Hg, and a pCO_2 of from 10 to 80 mm Hg

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4,289,649

AQUEOUS LIPID STANDARD SOLUTION

Hans-Dieter Harders, and Roland Helger, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,457

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839433

Int. Cl.³ C09K *3/00;* G01N *33/48*

U.S. Cl. 252—408 **13 Claims**

1. A stable, aqueous, substantially alcohol-free lipid standard solution, comprising water, at least one lipid, and an effective lipid-solubilizing amount of both a non-ionic detergent and an ionic detergent; wherein the amount of ionic detergent is from 0.5 to 10% by weight and the amount of the non-ionic detergent is from 2 to 20% by weight.

4,289,650

CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 25,153, Mar. 29, 1979, Pat. No. 4,240,895. This application Oct. 1, 1979, Ser. No. 80,745

Int. Cl.³ H01M *4/88;* C25B *11/06;* C25D *5/50*

U.S. Cl. 252—425.3 **8 Claims**

1. A method of producing a low overvoltage electrode for use as a hydrogen evolution cathode in an electrolytic cell which comprises the steps of:

(a) preparing a clean surface of a non-porous conductive base metal structure of a nickel-titanium-molybdenum alloy of a weight percent molybdenum within the range of from about 5 to about 20, a weight percent titanium within the range of from about 1 to about 5 and a weight percent nickel within the range of from about 75 to about 94;

dipping said structure into molten aluminum to apply a coating of molten aluminum to said clean surface;

(c) heat treating said coated surface by maintaining said surface at a temperature within the range of from about 660° to about 750° C. for no more than six hours to provide sufficient time to diffuse a portion of said aluminum into outer portions of said structure to produce an integral nickel-molybdenum-aluminum alloy layer in said outer portions consisting predominately of $NiAl_3$ type grains but insufficient time to create a predominance of Ni_2Al_3 type grains in said outer portions; and

(d) leaching out residual aluminum and aluminide intermetallics from the alloy layer until a Raney nickel-molybdenum-titanium layer having a thickness of less than about 75 microns is formed integral with said structure.

4,289,651

SUPPORTED CATALYSTS FOR THE POLYMERIZATION OF ALPHA-OLEFINS

Kenneth C. Benton, Garfield Hts.; James R. Mooney, South Russell, and Raymond J. Weinert, Jr., Garfield Hts., all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 20, 1979, Ser. No. 106,078

Int. Cl.³ C08F *4/02*

U.S. Cl. 252—429 B **7 Claims**

1. A catalyst comprising a Ziegler-type transition metal complex and a planar organosilicon polymer support derived from at least one of chrysotile and apophyllite.

4,289,652

CATALYST COMPRISING A METAL SUBSTRATE

James B. Hunter, Newton Square; George McGuire, West Chester; A. F. D'Alessandro, Havertown, and Larry L. Lawlor, Glenmoore, all of Pa., assignors to Johnson Matthey Inc., Malvern, Pa.

Continuation of Ser. No. 876,565, Feb. 10, 1978, Pat. No. 4,196,099. This application Feb. 1, 1980, Ser. No. 117,555

The portion of the term of this patent subsequent to Apr. 11, 1997, has been disclaimed.

Int. Cl.³ B01J *27/14, 22/16, 35/00*

U.S. Cl. 252—437 **5 Claims**

1. A supported catalyst suitable for use at a temperature above 1200° F. consisting essentially of a metal or alloy substrate which itself is not heat or oxidation resistant at a temperature above 1200° F.; a heat-cured oxidation resistant coating applied to said substrate, said coating being applied as an aqueous coating composition which is curable into water-insoluble oxidation resistant form by heating and which consists essentially of a dispersion of aluminum metal powder in an aqueous chromium-containing/aluminum phosphate binder composition; a high surface area refractory oxide washcoat over said oxidation resistant coating and a catalytically active platinum group metal deposited on said washcoat.

4,289,653

COMULLED SILICA-ALUMINA BASE DENITRIFICATION CATALYST

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 968,589, Dec. 11, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,304

Int. Cl.³ B01J *21/12*

U.S. Cl. 252—453 **4 Claims**

1. An extruded silica-alumina catalyst prepared by the method which consists essentially of the following steps:

mixing a sodium silicate solution with an aqueous aluminum sulfate solution and sulfuric acid to form an acidified silica sol in an alumina salt solution having a pH in the range of about 1 to 3;

adding sufficient ammonium hydroxide to said acidified silica sol in the aluminum salt solution to form a cogelled mass of silica and alumina under substantially constant pH conditions and at a pH of at least 4;
adding additional ammonium hydroxide to the cogelled mass to obtain a pH in the range of 7.5 to 8.5;
washing the cogelled mass;
mulling the cogelled mass with a peptizing agent, a Group VI-B metal compound and a Group VIII metal compound to form an extrudable dough;
extruding said dough;
and drying and calcining the extruded dough.

4,289,654

SUPPORTED CATALYST FOR THE OXIDATION OF ACROLEIN INTO ACRYLIC ACID

Natale Bertolini, Milan, and Natale Ferlazzo, Segrate, both of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Dec. 6, 1979, Ser. No. 100,807
Claims priority, application Italy, Dec. 12, 1978, 30718 A/78
Int. Cl.³ B01J *23/20, 23/24*
U.S. Cl. 252—456 **18 Claims**

1. A catalyst active in the oxidation of acrolein into acrylic acid, which comprises a silica or alumina support and from 15 to 80% by weight, with respect to the catalyst, of a catalytically active part having the following chemical composition

$$Mo_aV_bW_cCu_dX_xO_y$$

wherein X is Cr, Mn, Fe, Co, Ni, Zn, Cd, Al or Sb and wherein for a = 12, b ranges from 4 to 8, c ranges from 1 to 4, d ranges from 2 to 5, x ranges from 0 to 1 and y ranges from about 17 to about 72; said active part having an amorphous and bidimensional structure with an interplanar distance of 3.98 A, as measured by X rays; and an IR spectrum with a somewhat broad band at 860 cm^{-1} attributable to the tetrahedral coordination of the oxygen atoms with respect to the metal atoms; and said catalyst being obtained by impregnating the support with an aqueous solution of decomposable salts of the metals of said active part, drying the thus impregnated support and activating at high temperature the support thus dried, the activation stage being carried out firstly in an oxidizing atmosphere and then in an inert atmosphere, the cycle of impregnation, drying and activation being then repeated at least one time and the activation of the last cycle being followed by a thermal treatment in an oxidizing atmosphere.

4,289,655

MAGNETIC CATALYSTS AND THEIR PREPARATION

George W. Bailey, Baton, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 27, 1980, Ser. No. 153,408
Int. Cl.³ B01J *21/04, 21/06, 23/89*
U.S. Cl. 252—466 B **15 Claims**

1. A composition of matter useful in a bed which can be fluidized by contact with a fluidizing medium while simultaneously subjected to an applied magnetic field comprising, particulate, magnetizable composite solid particles comprised of an ilmenite magnetic iron component dispersed within an inorganic oxide matrix, the iron component of the ilmenite being comprised of from about 0.05 percent to about 50 volume percent metallic iron in reduced state.

4,289,656

CATALYST FOR THE PREPARATION OF ETHYLENIMINE

William V. Hayes, Clute, and David L. Childress, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1980, Ser. No. 169,563
Int. Cl.³ B01J *23/84, 23/86*
U.S. Cl. 252—470 **2 Claims**

1. A catalyst suitable for the dehydration of alkanolamine to obtain alkylenimine which comprises the oxides of niobium or tantalum and iron and chromium wherein the atomic ratio of the metals in the catalyst is

$$M_{10}\ Fe_{0.5\text{-}2.9}\ Cr_{0.3\text{-}1.7}$$

wherein M is tantalum or niobium.

4,289,657

FLUID TREATMENT DEVICES

Richard S. Nelson, Goring-on-Thames, England, assignor to United Kingdom Atomic Energy Authority, England

Filed Oct. 17, 1979, Ser. No. 85,754
Claims priority, application United Kingdom, Oct. 27, 1978, 42175/78
Int. Cl.³ B01J *35/00;* B01D *47/00;* B01J *8/00;* B05D *5/12*
U.S. Cl. 252—477 R **9 Claims**

1. A device for use in the treatment of a fluid by catalysis which comprises one or more sheets of interconnected coils laid up to give more than one layer of coils, said layers being in touching contact with one another, the or each sheet comprising a plurality of elongate helically wound coils of wire-form wherein the space between adjacent windings of each coil is less than the diameter of the wire-form and wherein each coil carries a coating of catalytically active material, the coils being arranged with their longitudinal axes substantially parallel to one another and being interconnected by a connecting member to form a sheet of interconnected coils.

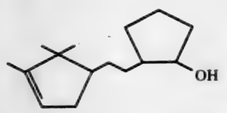
4,289,658

2-[-(2′2′3′-TRIMETHYL-3′-CYCLOPENTEN-1′-yl)-ETHYLIDEN]-AND ETHYL]-CYCLOPENTANOLS

Brian J. Willis, Bergenfield, and John M. Yurecko, Jr., Bayonne, both of N.J., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Sep. 19, 1979, Ser. No. 77,037
Int. Cl.³ C07C *35/21;* A61K *7/46*
U.S. Cl. 252—522 R **5 Claims**

1. The compound having the structure



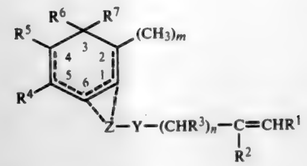
4,289,659

CYCLIC C_6 ESTERS AND THEIR USE IN PERFUMES

Karl-Heinrich Schulte-Elte, Onex; Bruno Willhalm, Chene-Bourg, and Fritz Gautschi, Commugny, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 935,263, Aug. 21, 1978, which is a division of Ser. No. 708,075, Jul. 23, 1976, Pat. No. 4,147,672, which is a continuation-in-part of Ser. No. 541,988, Jan. 17, 1975, abandoned. This application May 5, 1980, Ser. No. 146,224
Claims priority, application Switzerland, Jan. 29, 1974, 1147/74
Int. Cl.³ C11B *9/00;* C07C *69/74*
U.S. Cl. 252—522 R **5 Claims**

1. A compound of formula



having a saturated ring or an isolated double bond in position 1, 4 or 6 or two double bonds in position 1 and 4, 1 and 5, or 4 and 6 of the ring as indicated by the dotted lines, and wherein:
m stands for integers 0 or 1;
n stands for integers 0, 1 or 2;
Z is bound to the ring carbon atoms in position 1 or 6 and represents the group —CO;
Y represents an oxygen atom;
each of the symbols R^1, R^2, R^3, R^4 and R^5 designates a hydrogen atom or one of them represents a methyl radical and each of the others a hydrogen atom, and each of the symbols R^6 and R^7 represents an alkyl radical having from 1 to 3 carbon atoms or one of them represents an alkyl radical as defined above and the other a hydrogen atom.

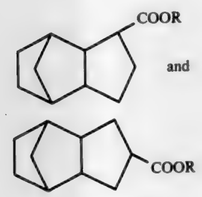
4,289,660

PERFUME COMPOSITIONS CONTAINING TRICYCLO[5.2.1.$0^{2,6}$]DECANE CARBOXYLIC ACID ESTERS

Ulf-Armin Schaper, Düsseldorf, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 65,606, Aug. 10, 1979. This application Jul. 21, 1980, Ser. No. 170,914
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835445
Int. Cl.³ A61K *7/46;* C11B *9/00*
U.S. Cl. 252—522 R **3 Claims**

1. A perfume composition comprising as a perfume from about 1 to 50 percent by weight of an isomeric mixture of tricyclo[5.2.1.$0^{2,6}$]decane carboxylic acids of the general formulas



wherein R represents a saturated or unsaturated linear or branched aliphatic hydrocarbon radical having from about one to five carbon atoms, the remainder comprising customary constituents including at least one other fragrance substance.

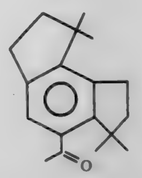
4,289,661

ACETYL HYDRINDACENES, ACETYL INDANES, MIXTURES OF SAME, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

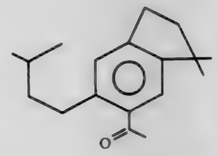
Joaquin Vinals, Red Bank, N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 156,736, Jun. 5, 1980, which is a division of Ser. No. 953,180, Oct. 20, 1978, Pat. No. 4,209,543. This application Sep. 18, 1980, Ser. No. 188,523
Int. Cl.³ A23L *1/235*
U.S. Cl. 252—522 R **10 Claims**

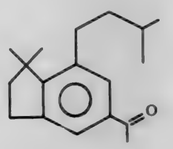
1. A process for augmenting or enhancing the aroma of a perfume composition or a cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of at least one chemical substance selected from the group consisting of:
A. 4-acetyl-3,3,8,8-tetramethyl-as-hydrindacene having the structure



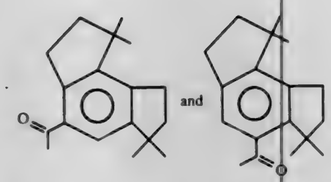
existing in the liquid phase at ambient temperature and pressure;
B. 6-acetyl-5-(3-methylbutyl)-1,1-dimethylindane having the structure:



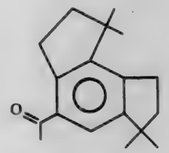
existing in the liquid phase at ambient temperature and pressure;
C. 5-acetyl-7-(3-methylbutyl)-1,1-dimethylindane having the structure:



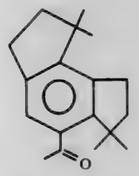
existing in the liquid phase at ambient temperature and pressure;
D. A mixture of acetyl hydrindacene having the structures:



existing in the liquid phase at ambient temperature and pressure, the weight ratio of the compound having the structure:

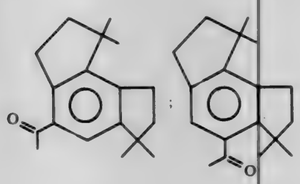


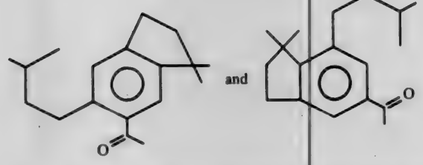
the compound having the structure:



being 40:60; and

E. A mixture of acetyl indanes and acetyl hydrindacenes having the structures:





existing in the liquid phase at ambient temperature and pressure.

4,289,662

METHOD OF MAKING CRUDE BORIC ACID FROM BORATE AND SULFURIC ACID

James R. Blasius, Phoenix, Ariz., assignor to HJH Chemicals, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 892,157, Mar. 31, 1978, Pat. No. 4,156,654. This application Mar. 12, 1979, Ser. No. 19,633

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.[3] **C09K** *3/28*

U.S. Cl. 252—607 **10 Claims**

1. A method for making an essentially dry, free-flowing particulate mixture comprising boric acid and sodium sulfate, said method comprising the steps of:

a. introducing sodium tetraborate into a mixing zone;

b. introducing 0.95–0.98 mole of sulfuric acid and exothermically reacting said sulfuric acid with said sodium tetraborate to obtain a mixture of sodium sulfate and boric acid;

c. maintaining the temperature of said mixing zone above 100° C. but below about 150° C. until a generally free-flowing, moist, particulate mixture is obtained.

4,289,663

METHOD OF PRODUCING SYNTHETIC RESIN FROM WASTE PRODUCTS

Ingvar K. G. Johansson, Kungsängen, Sweden, assignor to Svenska Traforskningsinstitutet, Stockholm, Sweden

Filed Mar. 2, 1979, Ser. No. 17,077

Claims priority, application Sweden, Mar. 2, 1978, 7802393

Int. Cl.[3] **C08L** *97/00*

U.S. Cl. 260—17.5 **6 Claims**

1. A method for producing an adhesive for wood products comprising the steps of:

(a) heating a waste product containing sugar in a strongly acidic environment at a pH of from 0.1 to 2.0 to produce a reaction mixture containing furfural derivatives, and

(b) reacting said reaction mixture at a pH in the range of from 1.0 to 4.0 and at a solids content of from about 50 to 60%, without separating furfural therefrom, with lignin to form an adhesive binder containing the condensation products of said lignin and said furfural derivatives.

4,289,664

GLASS FIBER BONDING RESINS

I. Luis Gomez, Longmeadow, and Robert Cole, Three Rivers, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 14, 1980, Ser. No. 140,280

Int. Cl.[3] **B32B** *17/04;* **C03C** *27/10;* **C08G** *8/10*

U.S. Cl. 260—19 R **13 Claims**

1. A resin binder composition comprising a novolac resin; from 0.5 to 8% by weight of a polyunsaturated vegetable oil having a polyunsaturated content of at least 40% by wt. and an iodine value of from 80 to 200; and from 0.2 to 2.0% by weight of a polyoxyethylene adduct selected from the group consisting of adducts of polyethylene glycol with alcohols, ethers, esters and acids.

4,289,665

PROCESS FOR THE PREPARATION OF AQUEOUS EMULSIONS, STABLE IN STORAGE, OF N.ALKYL-N-ALKYLOL-UREAS AND THEIR APPLICATION FOR THE SOFTENING OF LEATHER

Gustav Hudec, Schwalbach; Karl-Heinz Keil, Offenbach-Bieber; Volker Köhler, Niedernhausen, and Kurt Rosenbusch, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main-Fechenheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 970,224, Dec. 18, 1978, abandoned. This application Aug. 17, 1979, Ser. No. 67,273

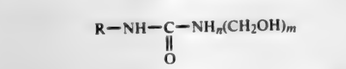
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757582

Int. Cl.[3] **D06M** *13/40;* **D06P** *5/00;* **C14C** *9/00*

U.S. Cl. 260—21 **11 Claims**

1. Conditioning and water-repellent agent for leather comprising a homogeneous mixture of

(a) 10 to 35% by weight of a substance of the formula



wherein R is linear or branched alkyl or alkenyl each having 14 to 22 carbon atoms, m is a number average from 1.0 to 1.5 and n is 2 minus m;

(b) 0 to 10% by weight of non-ionic emulsifiers;

(c) 0 to 3% by weight of anionic emulsifiers with the proviso that the sum of (b) and (c) is 0.5 to 10%;

(e) 5 to 25% by weight of fat liquors; and

(f) 25 to 89.5% by weight of water or a water-miscible organic solvent.

4,289,666

ADHESIVE CORRECTION COMPOSITION AND METHOD OF USE

Fred M. Creekmore; Dorothy J. Kennair; Benjamin F. Livingston; James F. Martone, and Joseph J. Sabad, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,676

Int. Cl.[3] **C08L** *23/06, 91/00;* **B41J** *29/16*

U.S. Cl. 260—23 H **31 Claims**

1. A low tack pressure sensitive composition comprising:

(a) about 15–35% by weight of polyethylene;

(b) about 20–65% by weight of a hydrocarbon tackifying polymer;

(c) about 7–25% by weight of a tacky semi-solid isobutylene polymer having a viscosity average molecular weight (FLORY) of at least about 40,000;

(d) about 10–20% by weight of a copolymer of an olefin selected from the group of ethylene, propylene, or mixtures thereof; and a monoethylenically unsaturated ester wherein the copolymer contains about 18 to about 40% by weight of said ester; and

(e) about 0.5 to about 5% by weight of a nonvolatile carboxylic acid, or ester thereof or mixture thereof.

4,289,667

EMULSION POLYMERIZATION PROCESS WITH LOW EMULSIFIER CONCENTRATION

Charles N. Bush, Bay Village, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 21, 1980, Ser. No. 113,840

Int. Cl.[3] **C08F** *2/18, 2/20*

U.S. Cl. 260—23 XA **19 Claims**

1. A process of producing polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with one or more polymerizable olefinic monomers having at least one terminal $CH_2{=}C<$ group comprising, forming a monomer premix containing the monomer or monomers to be polymerized, the aqueous reaction medium, from about 0.01% to about 0.5% by weight of a water-insoluble, free radical yielding catalyst, based on the weight of 100 parts of monomer or monomers being polymerized, an emulsifier, from about 0.1% to about 1.0% by weight, based on the weight of 100 parts of monomer(s), of a water-insoluble plasticizer, homogenizing said entire premix at a temperature below the reactivity of the catalyst or catalysts employed, polymerizing said homogenized premix in a reaction zone at a temperature in the range of about 30° C. to about 70° C. while maintaining the pH thereof in the range of about 2.0 to about 10.5 until the reaction is complete, and thereafter recovering the polymer or copolymer, and wherein polymer buildup in said reaction zone is substantially reduced.

3. A process of producing polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with one or more polymerizable olefinic monomers having at least one terminal $CH_2{=}C<$ group comprising, forming a monomer premix containing the monomer or monomers to be polymerized, the aqueous reaction medium, from about 0.01% to about 0.5% by weight of a water-insoluble, free radical yielding catalyst, based on the weight of 100 parts of monomer or monomers being polymerized, an emulsifier system comprised of from about 0.6% to about 1.2% by weight, based on the weight of 100 parts of monomer(s), of compounds selected from the group consisting of alkali metal or ammonium salts of long chain saturated fatty acids containing from 8 to 20 carbon atoms and alkali metal or ammonium salts of the sulfates of alcohols containing from 8 to 18 carbon atoms, from about 0.1% to about 1.0% by weight, based on the weight of 100 parts of monomer(s), of a water-insoluble plasticizer, homogenizing said entire premix at a temperature below the reactivity of the catalyst or catalysts employed, polymerizing said homogenized premix in a reaction zone at a temperature in the range of about 30° C. to about 70° C. while maintaining the pH thereof in the range of about 2.0 to about 10.5 until the reaction is complete, and thereafter recovering the polymer or copolymer, and wherein polymer buildup in said reaction zone is substantially reduced.

4,289,668

POLYMER SYSTEMS PLASTICIZED WITH HYDROXY FATTY ACIDS

George S. Li, Macedonia, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 14, 1980, Ser. No. 196,885

Int. Cl.[3] **C08L** *91/00*

U.S. Cl. 260—23 AR **21 Claims**

1. A plasticized resin system comprising an intimate mixture of

(a) an interpolymer derived from (i) at least one vinyl monomer and (ii) an α,β-unsaturated dicarboxylic acid anhydride or the lower alkyl esters thereof, and

(b) a plasticizing amount of a hydroxy substituted fatty acid containing at least about 8 carbon atoms.

4,289,669

ALKALI-SOLUBLE HOT MELT ADHESIVE COMPOSITIONS

Pallavoor R. Lakshmanan, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,596

Int. Cl.[3] **C08L** *93/00, 93/04*

U.S. Cl. 260—27 EV **6 Claims**

1. An alkali-soluble hot melt adhesive composition consisting essentially of:

(a) 10–30 weight % of an alkenyl succinic anhydride,

(b) 30–50 weight % of an ethylene polymer having an acid number of about 0.25–30.0, and

(c) 10–50 weight % of a rosin material selected from natural rosins, hydrogenated rosins and isomerized rosins;

said alkenyl succinic anhydride having been prepared by heat-

ing a high molecular weight alpha-olefin containing 30 or more carbon atoms with maleic anhydride.

4,289,670

PRESSURE SENSITIVE CORRECTION COMPOSITION AND METHOD OF USE

Fred M. Creekmore; Dorothy J. Kennair; Benjamin F. Livingston, and Joseph J. Sabad, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,475

Int. Cl.³ B41J *29/16*; C08L *23/06, 91/00*

U.S. Cl. 260—28.5 AV **31 Claims**

1. A low tack pressure sensitive composition comprising:

(a) about 5–35% by weight of a material selected from the group of paraffinic wax, polyethylene resin, or mixtures thereof, and wherein said paraffinic wax is selected from the group of paraffin wax, synthetic polyolefin wax, or mixtures thereof;

(b) about 20–65% by weight of a hydrocarbon tackifying polymer;

(c) about 7–25% by weight of a tacky, semisolid isobutylene polymer having a viscosity average molecular weight (FLORY) of at least about 40,000; and

(d) about 10–48% by weight of a copolymer of an olefin selected from the group of ethylene, propylene, or mixtures thereof; and a monoethylenically unsaturated ester wherein the copolymer contains about 18 to about 40% by weight of said ester.

4,289,671

COATING COMPOSITION FOR DRAWING AND IRONING STEEL CONTAINERS

Pablo M. Hernandez, Waukegan, Ill., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 3, 1980, Ser. No. 156,148

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—28.5 AV **3 Claims**

1. An improved, sacrificial aqueous coating composition for use in drawing and ironing steel containers comprising:

(a) from about 10 to 35% by weight molybendum disulfide;

(b) from about 4 to 7% by weight of a low molecular weight resin having a monomer content of from about 25 to 35% acrylic acid, and from about 65 to 75% of a styrene monomer selected from the group consisting of styrene, alpha-methyl styrene, and mixtures thereof;

(c) from about 10 to 25% by weight of an aqueous wax emulsion containing from about 15 to 25% non-volatiles;

(d) from about 3 to 7% by weight of a high molecular weight acrylic polymer comprising from about 25 to 60% of a styrene monomer selected from the group consisting of styrene, alpha-methyl styrene and mixtures thereof, from about 30 to 50% by weight of an ester selected from methyl methacrylate, methyl acrylate, ethyl acrylate, ethyl methacrylate, butyl acrylate and mixtures thereof, and from about 10 to 25% of an acid selected from the group consisting of acrylic acid and methacrylic acid;

(e) from about 1 to 5% by weight of a solvent selected from the group consisting of diethylene glycol monoethyl ether, diethylene glycol monobutyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monoethyl ether and mixtures thereof;

(f) from about 0.1 to 0.25% by weight of a water soluble zinc containing salt, and

(g) from about 35 to 55% by weight water.

4,289,672

SIZING GLASS FIBERS FOR THERMOPLASTIC RESIN REINFORCEMENT

Klaus Friederich, Leverkusen, Fed. Rep. of Germany; Gerhard Heinze, Shildgen, Fed. Rep. of Germany; Helmut Reiff, New Martinsville, W. Va.; Dietrich Michael, Krefeld, Fed. Rep. of Germany; Manfred Schön; Peter Markusch, both of Cologne, Fed. Rep. of Germany; Ulrich Haberland, Krofald, Fed. Rep. of Germany; Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, and Josef Merten, Korchenbroich, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 882,486, Mar. 1, 1978, abandoned, which is a continuation of Ser. No. 797,156, May 16, 1977, abandoned, which is a continuation of Ser. No. 581,324, May 27, 1975, abandoned. This application Feb. 21, 1979, Ser. No. 13,648

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1974, 2426657

Int. Cl.³ C08L *75/06*

U.S. Cl. 260—29.2 TN **16 Claims**

1. An aqueous dispersion suitable for use as a sizing composition for glass fibers comprising a polyurethane anionomer as a film-forming agent, said polyurethane anionomer being characterized by

(a) an average particle size of about 0.05μ to 0.5μ,

(b) an ionic group content of about 5 to 30 milliequivalents per 100 g, and

(c) forming a film when dried, this film having a tensile strength of at least about 50 kp/cm^2, an elongation at break of about 100–600%, a Shore-A-hardness of about 50–90, a swelling in water of less than about 30%, and being insoluble in 80% aqueous tetrahydrofuran after heating to 140° C.

4,289,673

PROCESS FOR PRODUCING DURABLE-PRESS COTTON FABRICS WITH IMPROVED BALANCES OF TEXTILE PROPERTIES

Stanley P. Rowland, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 8,130, Jan. 31, 1979. This application Feb. 6, 1980, Ser. No. 118,949

Int. Cl.³ C08L *61/22, 61/28, 61/32*

U.S. Cl. 260—29.4 R **1 Claim**

1. A chemical composition for imparting to cellulosic textiles improved balances of physical properties, including resilience, strength, abrasion resistance and hydrophilicity, the composition comprising an aqueous solution containing about 3% to 20% of N-methylol reagent selected from the group consisting of:

dimethyloldihydroxyethyleneurea,

dimethylolethyleneurea,

methylolated alkyl carbamates,

methylated methylolmelamines, and

dimethylol alkyltriazones;

about from 0.25 to 4.0% of a Brønsted acid or acid-generating catalyst selected from the group consisting of:

an ammonium, sodium, or potassium bisulfate,

a magnesium or aluminum bisulfate,

an ammonium, sodium, or potassium persulfate, and

a phosphoric, pyrophosphoric, or phosphorus acid; and a phosphate salt or mixture of salts selected from the group consisting of:

ammonium, sodium, potassium monohydrogen and dihydrogen phosphates.

4,289,674

BASE-SOLUBILIZED ACRYLIC POLYMERS AND AQUEOUS RESINOUS DISPERSIONS OF ACRYLIC POLYMERS AND EPOXY RESINS

Roger M. Christenson, Gibsonia; Rudolf Maska, Pittsburgh; Rostyslawa Dowbenko, and Thomas R. Hockswender, both of Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 964,549, Nov. 29, 1978. This application Jul. 9, 1979, Ser. No. 55,937

Int. Cl.³ C08L *33/02*

U.S. Cl. 260—29.6 NR **20 Claims**

1. An aqueous, base-solubilized resinous dispersion in which the resinous phase comprises:

(A) 15 to 90 percent by weight of an acrylic polymer which is formed by solution polymerizing in the absence of primary and secondary alcohols other than ethanol, the following monomer charge:

(1) 15 to 85 percent by weight of an alpha, beta-ethylenically unsaturated carboxylic acid,

(2) 5 to 85 percent by weight of N-ethoxymethylacrylamide or N-ethoxymethylmethacrylamide,

(3) 0 to 80 percent by weight of a copolymerizable vinyl monomer different from (1) and (2); the percentages by weight of (1), (2) and (3) being based on total weight of (1), (2) and (3);

(B) 10 to 85 percent by weight of an epoxy resin; the percentages by weight of (A) and (B) being based on total weight of (A) and (B).

4,289,675

AIR DRYING LATEX COATING COMPOSITION CURABLE UNDER AMBIENT CONDITIONS AND METHOD OF PROVIDING SAME

John J. Krajewski, Wheeling, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 3, 1979, Ser. No. 99,568

Int. Cl.³ C08L *29/04, 31/00, 33/24*

U.S. Cl. 260—29.6 CM **23 Claims**

1. An air drying latex coating composition which cures under ambient conditions comprising water having dispersed therein aqueous emulsion copolymer particles consisting essentially of copolymerized monoethylenically unsaturated monomers, the copolymer particles of said latex having ethylenic unsaturation provided by the reaction of reactive groups in the copolymer particles with a reactive ethylenically unsaturated monomer bonded thereto through a reacted C_1–C_6 N-alkylol functionality, said unsaturated monomer which is bonded to the copolymer particles being present in an amount of about 0.5% to about 30% by weight of the copolymer, and a curing catalyst or curing agent incorporated in the latex to cause said unsaturation to react in a deposited coating to cure the same.

4,289,676

BINDERS, IMPREGNATING AGENTS AND COATING AGENTS BASED ON AN AQUEOUS DISPERSION OF AN AMIDE-CONTAINING COPOLYMER

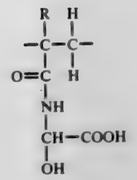
Bernhard Czauderna, Hirschberg; Andreas Einwiller, Mannheim, and Kaspar Bott, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 1, 1980, Ser. No. 145,695

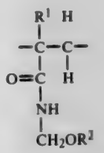
Int. Cl.³ C08L *33/24*

U.S. Cl. 260—29.6 H **8 Claims**

1. A binder, impregnating agent and coating agent based on an aqueous dispersion of an amide-containing copolymer which contains from 3 to 6% by weight of recurring units of formula I:



when R is H and/or CH_3, up to 3% by weight of units of formula II:



when R^1 is H or CH_3 and R^2 is H or alkyl of 1 to 4 carbon atoms, and not less than 85% by weight of

(a) a mixture of from 40 to 60 parts by weight of styrene and/or acrylonitrile and from 60 to 40 parts by weight of butadiene or

(b) vinyl monomers selected from the group consisting of esters of acrylic acid or methacrylic acid with alkanols of 1 to 8 carbon atoms, vinyl esters and vinyl chloride, together with up to 40% by weight, based on total monomers (b), of acrylonitrile, styrene or butadiene,

and from 0 to 5% by weight of α,β-monoolefinically unsaturated monocarboxylic acids and/or dicarboxylic acids of 3 to 5 carbon atoms and/or their amides, the said monomers being present as copolymerized units.

4,289,677

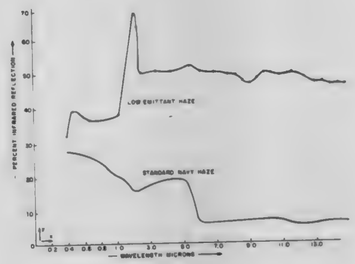
FORMULATION FOR PRODUCING LOW INFRARED COATING IN THE 2-15 MICRON RANGE

Robert F. Supcoe, 1227 Mt. Pleasant, Rt. 9, and Melvin Greenberg, 314 Dewey Dr., both of Annapolis, Md. 21401

Continuation-in-part of Ser. No. 173,940, Aug. 23, 1971, abandoned. This application Sep. 10, 1979, Ser. No. 73,815

Int. Cl.³ C09D *3/82, 5/32, 5/38*

U.S. Cl. 260—33.6 SB **4 Claims**



1. A diffuse gray coating mixture having a low infrared emittance and comprising by weight:

from about 10% to about 22% coarse non-leafing aluminum powder;

from about 2% to about 15% cobalt metal;

from about 2% to about 5% cobalt oxide;

from about 7% to about 20% titanium dioxide;

from about 65% to about 75% silicone alkyd resin and from about 1% to about 4% polarized montmorrilite clay.

4,289,678

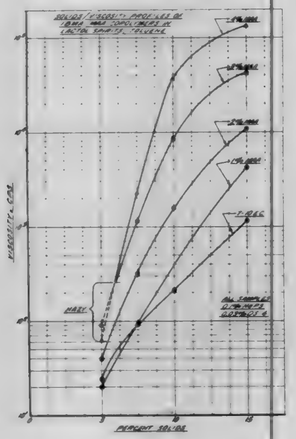
ACRYLIC THICKENER FOR PUBLICATION GRAVURE INKS, METHOD OF PREPARING SAID THICKENER, INK CONTAINING THE SAME AND METHOD OF PRINTING

G. Vincent Calder, Richboro, and Andrew Mercurio, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 831,466, Sep. 8, 1977, abandoned. This application Oct. 16, 1979, Ser. No. 85,359

Int. Cl.[3] C08K *5/01;* C08L *93/04;* C08F *220/06;* C09D *11/10*

U.S. Cl. 260—33.6 UA 31 Claims



1. A thickened organic solvent composition containing dissolved therein a thickening amount of an addition polymer of ethylenically unsaturated (A) hydrophobic monomers being in the hydrogen bonding class of from moderate to poor, and (B) hydrophilic monomers being in the strong hydrogen bonding class, in a ratio of between 90(A):10(B) and 99.9(A):0.1(B), at least about 60% of the hydrophobic monomer or monomers being those whose homopolymers have a solubility parameter of ≦8.8, any other hydrophobic monomer(s) and all hydrophilic monomers being such, in quantity and nature, as to not destroy the organic solvent solubility of the addition polymer, the T_g of the polymer being ≧30° C., and the weight average molecular weight of the polymer being from about 100,000 to 2,000,000.

4,289,679

METHOD FOR PRODUCING SOLUTIONS OF DRAG REDUCING SUBSTANCES

Mark P. Mack, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Dec. 14, 1979, Ser. No. 103,317

Int. Cl.[3] C08J *3/08;* C08K *5/01*

U.S. Cl. 260—33.6 PQ 5 Claims

1. An improved method for producing solution of ultrahigh molecular weight polymers, which polymers are useful as drag reducing substances or anti-mist agents, comprising

(1) polymerizing an alpha olefin or mixtures of alpha olefins containing from 2 to 30 carbon atoms in the presence of a Ziegler/Natta catalyst system to at least 5% of the monomer present in a polymerization grade hydrocarbon diluent;

(2) adding the polymerization mixture obtained to a relatively heavy hydrocarbon diluent having a boiling point difference from the polymerization mixture sufficient to allow separation; and

(3) removing substantially all polymerization grade hydrocarbon components, leaving the polymer dissolved in the heavy hydrocarbon diluent.

4,289,680

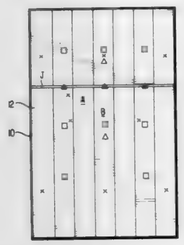
HEAT RESISTANT AND FIRE-PROOF SYNTHETIC RESIN MATERIAL CONTAINING INORGANIC SUBSTANCES AND PROCESS OF PRODUCING SAME

Junichi Kimura, Higashine, Japan, assignor to Ishikawa Giken Kogyo Kabushiki Kaisha, Yamagata, Japan

Continuation-in-part of Ser. No. 464,195, Dec. 9, 1974, abandoned. This application May 3, 1979, Ser. No. 35,516

Int. Cl.[3] B32B *3/26, 5/18;* C08K *3/34*

U.S. Cl. 260—37 R 9 Claims



1. A heat resistant and fire-proof material consisting essentially of:

(a) a thermosetting synthetic resin; and

(b) a ceramic layer forming component consisting essentially of:

(1) at least one member of the group consisting of boric acid salts and silicic acid salts, and

(2) a filler material consisting essentially of expanded pearlite, the pearlite having the following characteristics:

(i) composition: from about 5 to about 20% by weight of Al_2O_3, the balance being substantially SiO_2;

(ii) bulk density: from about 0.05 to about 0.2 gm/cm^3;

(iii) melting point: higher than about 1000° C. and

(iv) thermal conductivity: from about 0.03 to about 0.10 kcal/mh°C.

4,289,681

BORON CONTAINING PRECIPITATED SILICA

Peter Nauroth, Wesseling; Robert Kühlmann, Erftstadt, and Günter Türk, Hanau, all of Fed. Rep. of Germany, assignors to Deutsch Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,925

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829045

Int. Cl.[3] C08L *83/04*

U.S. Cl. 260—37 SB 14 Claims

1. A boron containing precipitated silica having the following physical-chemical data

Loss on heating	Weight %	14–40
pH		4–6
Conductivity in 4% aqueous dispersion	μS	<800
Bulk density	g/l	130 ± 100
Sieve residue according to Alpine >63μ	Weight %	0.1
SiO_2 content based on original material	Weight %	9–76
B_2O_3 content based on original material	Weight %	10–51
Na_2O content based on original	Weight %	<0.5
SO_3 content based on original	Weight %	<0.8

-continued

material

11. A composition comprising a hardenable elastomeric diorganopolysiloxane containing as a filler the boron containing precipitated silica of claim 1.

4,289,682

CURABLE RESIN COMPOSITIONS COMPRISING HYDROXYL-TERMINATED UNSATURATED POLYESTER OLIGOMER, A POLYISOCYANATE, AN ETHYLENICALLY UNSATURATED MONOMER AND A CATALYST

Edward N. Peters, Piscataway, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,084

Int. Cl.[3] C08L *75/08*

U.S. Cl. 260—37 N 22 Claims

1. A curable resin composition comprising:

(a) a hydroxyl-terminated unsaturated polyester oligomer,

(b) a polyisocyanate,

(c) an ethylenically unsaturated monomer, and

(d) a catalyst capable of catalyzing polyurethane-forming reactions of the polyester oligomer and the polyisocyanate.

4,289,683

ADHESION OF POLYAMIDE OR POLYESTER CORDS TO RUBBER

Terry C. Neubert, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 32,071, Apr. 23, 1979, Pat. No. 4,251,409. This application Oct. 16, 1980, Ser. No. 197,422

Int. Cl.[3] C08K *5/20;* C08L *61/06*

U.S. Cl. 260—38 4 Claims

1. A polyamide or polyester reinforcing element containing from about 3 to 15% by weight dry based on the weight of said element of a heat cured adhesive composition useful for adhering said element to a rubber compound comprising on a dry weight basis 100 parts by weight of a rubbery graft low gel vinyl pyridine copolymer consisting essentially of

(a) a core of a copolymer of butadiene-1,3 and styrene in the parts by weight ratio of butadiene-1,3 to styrene of about 40:60 to 60:40 and having a gel content of from about 0 to below 40% and

(b) a shell of a copolymer of butadiene-1,3 and a vinyl pyridine and having a gel content of from about 0 to below 70% and

(c) where in said graft copolymer the total amount of said monomers is from about 47 to 69% by weight of butadiene-1,3, from 23 to 52% by weight of styrene and from 1 to 8% by weight of the vinyl pyridine and a water-soluble thermosetting phenolic-aldehyde resin in an amount of from about 10 to 40 parts by weight.

4,289,684

SHEET MOLDING COMPOUND

Michael Kallaur, Grafton, Wis., assignor to Freeman Chemical Corporation, Port Washington, Wis.

Filed Apr. 23, 1980, Ser. No. 143,802

Int. Cl.[3] C08L *67/06, 63/02, 75/06*

U.S. Cl. 260—40 R 4 Claims

1. A polymerizable composition of matter which becomes thickened without concomitant gelation and which can be subsequently polymerized from its thickened state to a thermoset mass, said composition comprising:

(A) a resin component comprising:

(1) an unsaturated polyester resin having an acid value less than 25, an ethylenically unsaturated monomer copolymerizable therewith and a free radical initiator, these materials comprising from 10–80 weight percent of said resin component;

(2) a polyhydroxy polyacrylate or polyhydroxy polymethacrylate which is a reaction product of an ethylenically unsaturated monomarboxylic acid and a polyepoxide comprising 10–80 weight percent of said resin component;

(3) an organic diisocyanate in an amount sufficient to supply 0.3 to 0.9 NCO radicals for each hydroxyl radical present in said resin component and a catalyst for the reaction of NCO radicals and hydroxyl radicals; and

(B) a quantity of randomly oriented reinforcing glass fibers.

4,289,685

PROCESS FOR THE PREPARATION OF FLAME-RESISTANT POLYCARBONATES

Frank Druschke, Stuttgart; Dieter Margotte, Krefeld; Erhard Tresper, Krefeld; Ludwig Bottenbruch, Krefeld; Wolfgang Cohnen, Leverkusen, and Uwe Hucks, Alpen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 174,298

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933344

Int. Cl.[3] C08K *5/42*

U.S. Cl. 260—45.7 S 4 Claims

1. In the process of rendering flame-resistant the thermoplastic aromatic polycarbonates prepared by a solution process, the improvement comprising steps

(i) washing the polycarbonate/organic solvent system until neutral and free of electrolytes and

(ii) adding to the neutral and electrolyte free system an effective amount of an aqueous solution of a salt-like flameproofing agent and

(iii) dispersing said aqueous solution, in the form of particulates of less than 2 μm in diameter, in said system and

(iv) isolating the polycarbonate/salt-like flameproofing agent composition by evaporating the water and the organic solvent.

4,289,686

TETRA-ALKYL PIPERIDINE DERIVATIVES AS LIGHT STABILIZERS

Jean Rody, Riehen, and Mario Slongo, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

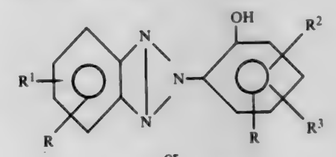
Filed Sep. 17, 1979, Ser. No. 76,106

Claims priority, application Switzerland, Sep. 27, 1978, 10088/78

Int. Cl.[3] C08K *5/34;* C07D *401/14, 401/04, 491/22*

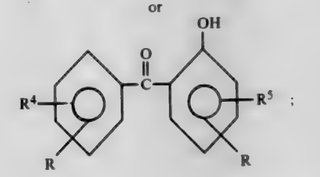
U.S. Cl. 260—45.8 NT 11 Claims

1. A compound of the formula A-B-A, B-A-B, A-Z-B-Z-A or B-Z-A-Z-B wherein A is



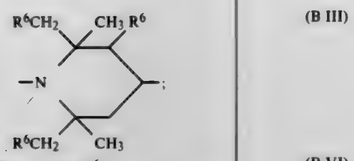
(A I)

or

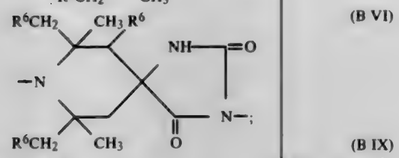


(A II)

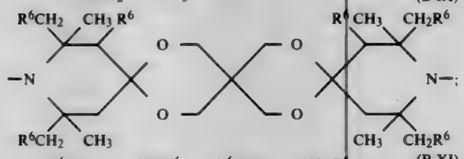
for compounds of the formulae A-B-A and A-Z-B-Z-A, B is



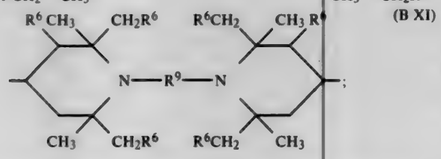
(B III)



(B VI)

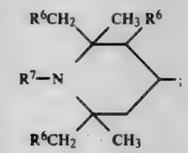


(B IX)

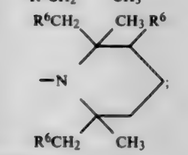


(B XI)

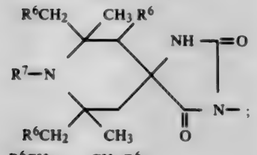
for formula (B XII) wherein R^{12} is a free valency; while for compounds of the formulae B-A-B and B-Z-A-Z-B, B is



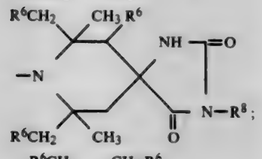
(B I)



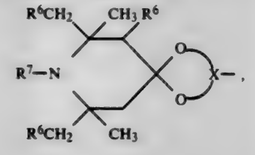
(B II)



(B IV)



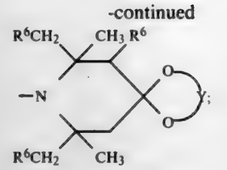
(B V)



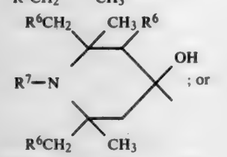
(B VII)



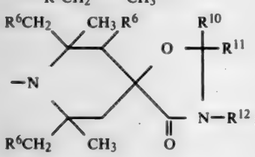
-continued



(B VIII)



(B X)



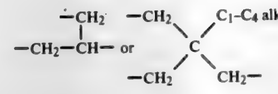
(B XII)

Z is a divalent linking member selected from the group consisting of $-(CH_2)_m-CO-O-$, $-(CH_2)_m-CO-O-R^{14}-$, $-O-(CH_2)_n-CO-O-R^{14}-$, $-CH_2-CH(OH)-CH_2-O-CO-(CH_2)_m$, $-O-CH_2-CH(OH)-CH_2-O-CO-(CH_2)_m-$, $-CH_2-CH(OH)-CH_2-$, $-CH_2-CH(OH)-CH_2-O-$, $-CH_2-CH(OH)-CH_2-N(R^{15})-(CH_2)_m-$, $-O-CH_2-CH(OH)-CH_2-N(R^{15})-(CH_2)_m-$, $-N(R^{15})-CH_2-CH(OH)-CH_2-N(R^{16})-(CH_2)_m$, $-CH_2-CH(R^{13})-O-CH_2-CH(OH)CH_2-N(R^{15})-(CH_2)_m-$, $-CH_2-CH(R^{13})-O-CH_2-CH(OH)-CH_2-O-CO-(CH_2)_m-$, $-(CH_2)_m-N(R^{15})-CO-$, $-(CH_2)_m-N(R^{15})-CO-(CH_2)_n-$, $-O-(CH_2)_3-N(R^{15})-CO-(CH_2)_m-$, $-CH_2-NH-CO-CH_2-O-$, $-CH_2-NH-CO-CH_2-O-CH(R^{13})-CH_2-$, $-CH_2-NH-CO-CH_2-N(R^{15})-(CH_2)_m-$, $-CH_2-NH-CO-CH_2CH_2-N(R^{15})-(CH_2)_m-$ and

one R being hydrogen and one R being a free valency for compounds of the formulae A-B-A and A-Z-B-Z-A, and both R groups being free valency for compounds of the formulae B-A-B and B-Z-A-Z-B; R^1 is hydrogen, chlorine, C_1–C_4 alkyl, OH or C_1–C_4 alkoxy; R^2 and R^3 independently of one another are H, Cl, C_1–C_{12} alkyl, C_5–C_8 cycloalkyl, phenyl, C_7–C_9 phenylalkyl, OH or C_1–C_{12} alkoxy; R^4 and R^5 independently of one another are H, Cl, OH, C_1–C_{12} alkoxy or C_1–C_{12} alkyl; R^6 is H or CH_3, R^7 is H, O, C_1–C_{12} alkyl, C_3–C_8 alkenyl, benzyl, acetyl or a group $-CH_2-CH(OH)-R^{13}$; R^8 is C_1–C_{12} alkyl, C_3–C_8 alkenyl or C_7–C_9 phenylalkyl; R^9 is a $-CH_2CH=CHCH_2-$;

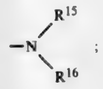


R^{10} and R^{11} are hydrogen, C_1–C_{12} alkyl, phenyl or benzyl, or R^{10} and R^{11} are together C_4–C_{19} alkylene; R^{12} is H or a free valency; R^{13} is H, CH_3, C_2H_5 or phenyl; X is a



group; Y is a C_2–C_8

Y is a C_2–C_8 alkylene group; R^{14} is $-CH_2-$ or $-CH(R^{13})-CH_2-$; R^{15} and R^{16} are H, C_1–C_{12}-alkyl, cyclohexyl or benzyl; R^{17} is —O— or $-NR^{15}-$; R^{18} is C_1–C_{12}-alkoxy, phenoxy or an amino group



m is 0, 1 or 2; and n is 1 or 2.

10. A method of stabilizing a polymer normally subject to deterioration by light against said deterioration which comprises incorporating into said polymer an effective stabilizing amount of a compound according to claim **1**.

4,289,687

FIRE RETARDANT RESIN MOLDED PRODUCT AND PREPARATION PROCESS OF THE SAME

Miyuki Hagiwara, Maebashi, and Yosuke Morita, Takasaki, both of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Jan. 22, 1980, Ser. No. 114,420

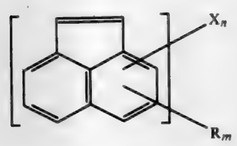
Claims priority, application Japan, Jan. 22, 1979, 54/004802; Jul. 19, 1979, 54/092019

Int. Cl.[3] **C08F** *255/02;* **C08K** *5/03*

U.S. Cl. 260—45.85 E **10 Claims**

1. A process for preparing a fire-retardant and radiation resistant molded resin product, which comprises:

blending a resin selected from the group consisting of polyethylene, polypropylene, polybutene, ethylene-vinyl acetate copolymer, ethylene-ethylacrylate copolymer, ethylene-propylene copolymer, ethylene-propylene-diene copolymer, ethylene-vinylchloride copolymer, ethylene-vinylacetate-graft vinylchloride copolymer, ethylene-propylene-graft vinylchloride copolymer, chlorinated polyethylene, chlorinated polyethylene-graft vinychloride copolymer, polyurethane, polyamide, polyester, acrylic resin, butyl rubber, chloroprene rubber, nitrile rubber, natural rubber, silicone rubber, chlorosulfonated polyethylene, styrene-butadiene rubber, styrene-butadiene-acrylonitrile copolymer, acrylonitrile-styrene copolymer, and polyester-ether elastomer with a halogenated acenaphthylene compound of the formula:



wherein X is chlorine or bromine and R is alkyl, alkoxy or an alkylester of 1 to 4 carbon atoms such that when m is 0, n is an integer of 2 to 8; when m is an integer of 1 to 4, n is an integer of 2 to 7 and $n+m \leqq 8$, and when m is more than 2, R may be the same or different; and, after molding said blend, generating free radicals in said blend.

4,289,688

PROTEIN-BOUND POLYSACCHARIDES

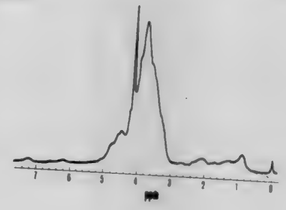
Tetsuya Hotta, Tokyo; Satoru Enomoto, Fujisawa; Chikao Yoshikumi, Kunitachi; Minoru Ohara, Tokyo, and Saburo Ueno, Ichigayadai, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 755,142, Dec. 29, 1976, abandoned. This application May 18, 1979, Ser. No. 40,105

Claims priority, application Japan, Jan. 1, 1976, 51/318

Int. Cl.[3] **A23J** *1/00;* **A61K** *31/71, 31/73, 37/02*

U.S. Cl. 260—112 R **8 Claims**



1. A process for producing protein-bound polysaccharides having an antitumor effect in intraperitoneal or oral administration comprising the steps of:

(a) extracting the mycelia and/or fruit bodies of a species of fungi belonging to the genus Coriolus from the family Polyporaceae and selected from the group consisting of Coriolus versicolor (Fr.) Quel., Coriolus conchifer (Schw.) Pat., Coriolus pargamenus (Fr.) Pat., Coriolus hirsutus (Fr.) Quel., Coriolus biformis (Klotz.) Pat., Coriolus consors (Berk.) Imaz. and Coriolus pubescens (Fr.) Quel. with an aqueous solvent to obtain an extract solution;

(b) concentrating said extract solution after removing the extraction residue therefrom;

(c) subjecting the solution obtained in steb b to salting out by mixing with ammonium sulfate to saturation and collecting the precipitate by separation from the solution and then dissolving the precipitate into water to obtain a solution or subjecting the solution obtained in step b to ultrafiltration to remove low molecular weight substances;

(d) adding ammonium sulfate in an amount corresponding to 25% of its saturation value to the solution from step c to obtain a first precipitate;

(e) separating said first precipitate from the solution;

(f) adding ammonium sulfate in an amount corresponding to 40% of its saturation value to the solution from step e to form a second precipitate;

(g) collecting the second precipitate and then dissolving in water to obtain a solution;

(h) dialyzing the solution from step g to remove salts;

(i) passing the desalted solution from step h through a diethylaminoethylcellulose column and washing the column with water;

(j) eluting said column with an aqueous saline solution to obtain an elutant;

(k) adding ammonium sulfate in an amount corresponding to 40% of its saturation value to the elutant from step j to form a third precipitate;

(l) dissolving said third precipitate in water;

(m) dialysing the solution from step l to remove salts;

(n) spray-drying the desalted solution from step m to obtain the protein-bound polysaccharide.

8. A protein-bound polysaccharide obtained by extraction of a mycelium or fruit body of a Coriolus of Polyporaceae of Basidiomycetes and having a molecular weight within the range of 5,000 to 300,000 as measured with ultra-centrifugation and which gives a positive color reactions characteristic of saccharides with α-naphthol-sulfuric acid, indolesulfuric acid, anthrone-sulfuric acid, phenol-sulfuric acid, and tryptophane-sulfuric acid, a positive ninhydrin color reaction characteristic of amino acids after hydrochloric acid hydrolysis and a posi-

tive color reaction in the Lowry-Folin test characteristic of peptide linkage, said protein-bound polysaccharide having absorption regions, as measured by proton nuclear magnetic resonance spectra, at 0.9±0.1 ppm, 1.2±0.1 ppm, 2.0±0.1 ppm, 4.5±0.1 ppm and 4.7±0.1 ppm, with broad absorption at 3.0–4.4 ppm, said protein-bound polysaccharide having a polysaccharide portion/protein portion ratio within the range of 55/45 to 95/5 provided that the proton strength of the protein portion is at 0.5–2.5 ppm and that of the polysaccharide portion is at 2.5–6.0 ppm, and said polysaccharide portion being composed of β-glucan, showing no absorption attributed to α-glucan at 4.9–6.0 ppm, said protein portion being composed of aspartic acid, threonine, serine, glutamic acid, proline, glycine, alanine, cysteine, valine, methionine, isoleucine, leucine, tyrosine, tryptophane, phenylalanine, lysine, histidine and arginine.

4,289,689

PREPARATION OF HOMOGENEOUS HUMAN FIBROBLAST INTERFERON

Heinz-Jürgen Friesen, Moers, Fed. Rep. of Germany, and Sidney Pestka, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 130,635, Mar. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 62,371, Jul. 31, 1979, abandoned. This application Jun. 19, 1980, Ser. No. 160,889

Int. Cl.[3] **C07C** *103/52;* **A61K** *45/02*

U.S. Cl. 260—112 R **11 Claims**

1. A process for producing human fibroblast interferon as a homogeneous protein which process comprises the following steps in combination:

A. passing an aqueous solution of human fibroblast interferon in an impure state through an affinity chromatography column so as to absorb said interferon onto said column and thereafter eluting said interferon from said column and obtaining said interferon in selected fractions of said eluate in a state of enhanced purity; and

B. passing the selected said interferon fractions obtained in Step A through one or more buffer equilibrated hydrocarbon bonded silica matrix column under high pressure liquid chromatography conditions wherein said hydrocarbon is selected from the group consisting of cyclohexyl, phenyl, diphenyl, octyl, octadecyl and cyanopropyl, to absorb said interferon onto said column and thereafter eluting said interferon from said column with a gradient of an acidic aqueous buffered mixture of water miscible solvents and obtaining interferon as a single distinct peak in selected fractions of said eluate in the state of a homogeneous protein.

4,289,690

PROTEIN PURIFICATION PROCESS AND PRODUCT

Sidney Pestka, North Caldwell, N.J., and Menachem Rubinstein, Rimon, Israel, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 106,644, Dec. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 77,710, Sep. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 62,374, Jul. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 963,257, Mar. 24, 1978, abandoned. This application Jul. 9, 1980, Ser. No. 167,165

Int. Cl.[3] **C07G** *7/00;* **A61K** *45/02;* **C07C** *103/52*

U.S. Cl. 260—112 R **9 Claims**

1. A process for purifying proteins having molecular weights greater than about 12,000 which process comprises passing an aqueous solution of said protein in an impure state through a buffer equilibrated octyl bonded silica matrix column under high performance liquid chromatography conditions so as to absorb said protein onto said column and thereafter eluting said protein from said column with an increasing gradient of an aqueous water miscible solvent and obtaining said protein in selected fractions of said eluate in a state of enhanced purity.

3. A process for producing interferon as a homogeneous protein which process comprises the following steps in combinations:

A. passing an aqueous solution of interferon in an impure state through a buffer equilibrated octyl bonded silica matrix column under high performance liquid chromatography conditions so as to absorb said interferon onto said column and thereafter eluting said interferon from said column with an increasing gradient of an aqueous, buffered, water miscible solvent and obtaining said interferon in selected fractions of said eluate in a state of enhanced purity;

B. passing the selected interferon fractions obtained in Step A through a buffer equilibrated glyceryl bonded silica matrix column to absorb said interferon onto said column and thereafter eluting said interferon from said column with a decreasing gradient of an aqueous buffered water miscible solvent and obtaining interferon as distinct major peaks in selected fractions of said eluate in a state of enhanced purity;

C. passing the selected fractions of interferon corresponding to one of said distinct major peaks obtained in Step B in buffered solution through a buffer equilibrated octyl bonded silica matrix column under high performance liquid chromatography conditions so as to absorb said interferon onto said column and thereafter eluting said interferon from said column with an aqueous, buffered, water miscible solvent and obtaining interferon as a single distinct peak in selected fractions of said eluate in the state of a homogeneous protein.

4,289,691

METHOD OF OBTAINING INTERMEDIATE PURITY FACTOR VIII

Gail A. Rock, 270 Sandridge Rd., Rockcliffe Park, Canada (K1L 5A2), and Douglas S. Palmer, 17 Front St., Hull, Canada (J8Y 3M4), assignors to The Canadian Red Cross Society, Toronto; Gail Ann Rock, Rockcliffe Park and Douglas Stephen Palmer, Hull, all of, Canada

Continuation-in-part of Ser. No. 123,472, Feb. 21, 1980, abandoned. This application Nov. 26, 1980, Ser. No. 210,385

Claims priority, application Canada, Jan. 18, 1980, 344000

Int. Cl.[3] **C07G** *7/00*

U.S. Cl. 260—112 B **16 Claims**

1. A method of obtaining Factor VIII which comprises

(a) adding heparin to freshly obtained blood plasma collected into a calcium chelating anticoagulant or collecting blood plasma by plasma pheresis using heparin and a calcium chelating anticoagulant;

(b) freezing the plasma;

(c) resolubilizing the plasma;

(d) isolating a cryoprecipitate from the plasma;

(e) resolubilizing the cryoprecipitate;

(f) adding a citrate saline heparin buffer to the resolubilized cryoprecipitate;

(g) incubating the buffered, resolubilized cryoprecipitate at a temperature of from about 0° to about 10° C. for a time in excess of about one hour, whereby Factor VIII present in the cryoprecipitate is insolubilized using heparin precipitable cold insoluble globulin and the resulting Factor VIII rich precipitate also includes cold insoluble globulin;

(h) separating the Factor VIII rich precipitate; and

(i) isolating Factor VIII therefrom.

4,289,692

DERIVATIVES OF A-30912D NUCLEUS

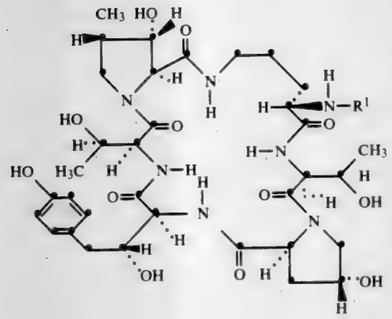
Manuel Debono, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 103,019, Dec. 13, 1979. This application Aug. 25, 1980, Ser. No. 181,035

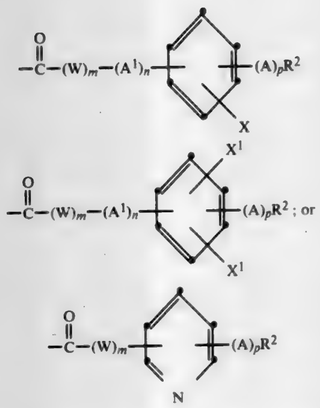
Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **40 Claims**

1. A compound of the formula:



wherein R^1 is a group of the formula:



(a)

(b)

(c)

wherein A is divalent oxygen, sulfur, sulfinyl, or sulfonyl; A^1 is divalent oxygen, sulfur, sulfinyl, sulfonyl or —NH—; X is hydrogen, chloro, bromo, iodo, nitro, C_1–C_3 alkyl, hydroxy, C_1–C_3 alkoxy, mercapto, C_1–C_3 alkylthio, carbamyl or C_1–C_3 alkylcarbamyl; X^1 is chloro, bromo or iodo; R^2 is hydrogen C_1–C_{18} alkyl or C_2–C_{18} alkenyl; W is C_1–C_{10} alkylene or C_2–C_{10} alkenylene; m, n and p are 0 or 1, but if m=0, n must=0; provided: that the sum of the carbon atoms in the R^2 and W groups must be greater than 4 but cannot exceed 21; that when X is mercapto, A and A^1 cannot be sulfinyl or sulfonyl and that when A and A^1 are sulfinyl or sulfonyl, they must be in equal oxidation states.

4,289,693

AZO DYES HAVING A QUATERNIZED HETEROCYCLIC DIAZO COMPONENT RADICAL AND AN OPTIONALLY SUBSTITUTED ARYLOXYALKYL SUBSTITUENT ON THE AMINO GROUP OF THE COUPLING COMPONENT RADICAL

Beat Henzi, Neuallschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

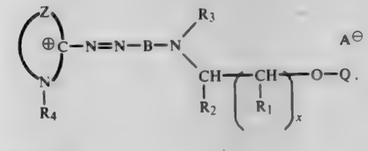
Continuation of Ser. No. 383,782, Jul. 30, 1973, abandoned. This application Dec. 1, 1976, Ser. No. 746,507

Claims priority, application Switzerland, Jul. 31, 1972, 11354/72; Dec. 7, 1972, 17824/72; Feb. 5, 1973, 1618/73

Int. Cl.[3] **C07C** *107/04;* **C09B** *44/18, 44/20, 44/10*

U.S. Cl. 260—146 R **49 Claims**

1. A compound of the formula



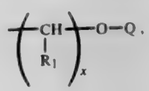
wherein each

R_1 and R_2 is independently hydrogen; alkyl of 1 to 4 carbon atoms; alkyl of 1 to 4 carbon atoms substituted by halo, alkoxy of 1 to 4 carbon atoms or phenoxy; phenyl or cycloalkyl of 5 to 6 carbon atoms,

R_3 is hydrogen, phenyl, alkyl of 1 to 12 carbon atoms or alkyl of 1 to 12 carbon atoms substituted by halo, alkoxy, cyano, phenyl, phenoxy, alkoxycarbonyl wherein the alkoxy radical has 1 to 4 carbon atoms, alkylcarbonyloxy wherein the alkyl radical has 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, benzoyloxy, —O—CO—$N(Ra)_2$ or —CO—$N(RA)_2$,

wherein each Ra is independently hydrogen or alkyl of 1 to 4 carbon atoms,

R_4 is alkyl of 1 to 8 carbon atoms; alkyl of 1 to 8 carbon atoms substituted by halo, hydroxy, cyano, phenyl, phenoxy, cycloalkyl of 5 or 6 carbon atoms, alkoxy of 1 to 4 carbon atoms or carbamoyl; alkenyl of 2 to 8 carbon atoms; alkenyl of 2 to 8 carbon atoms substituted by halo, hydroxy, cyano, phenyl, phenoxy, cycloalkyl of 5 to 6 carbon atoms, alkoxy of 1 to 4 carbon atoms or carbamoyl; alkoxy of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms substituted by halo, hydroxy, cyano, phenyl, phenoxy, cycloalkyl of 5 to 6 carbon atoms, alkoxy of 1 to 4 carbon atoms or carbamoyl; cycloalkyl of 5 or 6 carbon atoms; cycloalkyl of 5 or 6 carbon atoms substituted by alkyl of 1 to 4 carbon atoms or





is triazolium, benzothiazulium or naphthothiazolium, or a substituted derivative thereof, wherein each substituent is independently alkyl of 1 to 4 carbon atoms; alkyl of 1 to 4 carbon atoms substituted by phenyl, hydroxy, carbamoyl, cycloalkyl of 5 to 6 carbon atoms, cyano or halo; halo; nitro; cyano; trifluoromethyl; alkoxy of 1 to 4 carbon

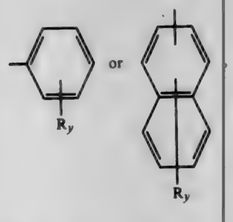
atoms; alkoxy of 1 to 4 carbon atoms substituted by phenyl, hydroxy, carbamoyl, cycloalkyl of 5 or 6 carbon atoms, cyano or halo; cycloalkyl of 5 or 6 carbon atoms; cycloalkyl of 5 or 6 carbon atoms substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halo; phenyl; phenyl substituted by cyano, nitro, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halo; phenoxy; phenoxy substituted by cyano, nitro, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halo; phenylazo; —CO—Ro; —CO—O—Ro; —CO—NH—Ro; —CO—N(Ro)$_2$; —NH—CO—Ro; —SO_2—Ro; —SO_2—NH—Ro; —SO_2—N(Ro)$_2$ or —NH—SO_2—Ro,

wherein each Ro is independently alkyl of 1 to 4 carbon atoms or phenyl,

with the proviso that the azo group is linked to a carbon atom of the ring containing the quaternized nitrogen atom,

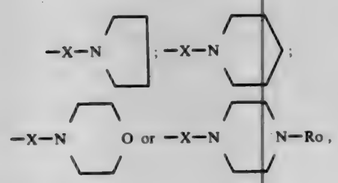
B is phenylene, substituted phenylene having 1 or 2 substituents, naphthylene or substituted naphthylene having 1 or 2 substituents, wherein each substituent of substituted phenylene and substituted naphthylene is independently alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms or halo,

each Q is independently



wherein each

R is independently hydroxy; halo; alkyl of 1 to 4 carbon atoms; alkyl of 1 to 4 carbon atoms substituted by halo, hydroxy, cyano, phenyl or phenoxy; alkoxy of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms substituted by halo, hydroxy, cyano, phenyl or phenoxy; trihalomethyl; trifluoromethyl; cycloalkyl of 5 or 6 carbon atoms; cycloalkyl of 5 or 6 carbon atoms substituted by alkyl of 1 to 4 carbon atoms; cyano; nitro; phenoxy; naphthyloxy; phenylazo; —CO—Ro; —CO—O—Ro; —CO—NH—Ro; —CO—N(Ro)$_2$; —O—CO—Ro; —O—CO—NH—Ro; —O—CO—N(Ro)$_2$; —NH—CO—Ro; —SO_2—Ro; —SO_2—NH—Ro; —SO_2—N(Ro)$_2$; —OSO$_2$—N(Ro)$_2$;



wherein each

Ro is independently alkyl of 1 to 4 carbon atoms or phenyl, and

X is —CO— or —SO_2—, and

y is 0, 1, 2, 3, 4 or 5, each x is independently 1, 2 or 3, and

$A^{\ominus}$ is an anion, wherein each halo is independently chloro, bromo or iodo.

4,289,694

PROCESS FOR THE INDUSTRIAL PREPARATION OF WATER INSOLUBLE AZO DYESTUFFS CONTAINING CYANO GROUPS FROM THE CORRESPONDING HALOGEN COMPOUNDS

Gerard L. A. Belfort, Oissel, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed May 23, 1979, Ser. No. 41,658

Claims priority, application France, May 31, 1978, 78 16184

Int. Cl.^{3} C09B *43/00*

U.S. Cl. 260—208 **21 Claims**

1. A process for the manufacture of a cyano azo dye which is insoluble in water and has the formula:

$$(CN)_n—A—N=N—B \quad (I)$$

starting from a halogen azo compound of the formula:

$$(Hal)_n—A—N=N—B \quad (II)$$

in which A denotes a benzene radical containing one or more nitrile or halogen substituents in the ortho position with respect to the azo group, Hal represents a halogen atom, B denotes the radical of a coupling component, A and B are free from water-solubilizing groups and n is 1 or 2, wherein a compound of formula (II) is reacted with an alkali metal cyanide in the absence of water and in the presence of a sulfide solvent of the formula:

$$X—R—S—R'—H \quad (III)$$

where R and R′ may be the same or different and denote an alkylene radical having from 1 to 8 carbon atoms with a straight or branched chain able to contain an —O— or —S— bridge and X represents a hydrogen atom or a hydroxyl group, in the presence of a catalyst constituted by a combination between the sulfide solvent of formula (III) and a cuprous salt.

4,289,695

PROCESS FOR PREPARING 2-CHLOROSULFINYLAZETIDINONES

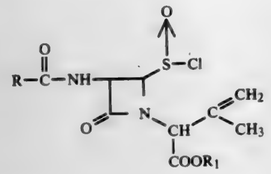
Ta-Sen Chou, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 960,347, Nov. 13, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,266

Int. Cl.^{3} C07D *205/08, 405/12, 409/12*

U.S. Cl. 260—239 A **16 Claims**

1. In the process for preparing a 2-chlorosulfinylazetidin-4-one of the formula



wherein

R is hydrogen, C_1–C_3 alkyl, halomethyl or cyanomethyl;

or R is the group R′ wherein R′ is phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, protected hydroxy, nitro, cyano and trifluoromethyl; or R is a group of the formula

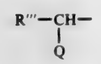
R″—O—

wherein R″ is t-butyl, 2,2,2-trichloroethyl, benzyl, 4-nitrobenzyl or 4-methoxybenzyl; or R is a group of the formula

R‴(Z)$_n$CH$_2$—

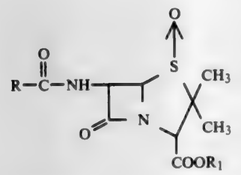
wherein R‴ is R′ as defined above, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl or 1,4-cyclohexadienyl; n is 0 or 1, and Z is O or S, subject to the limitation that when n is 1, R‴ is R′;

or R is a substituted aralkyl group of the formula



wherein R‴ has the same meanings as defined above and Q is protected hydroxy or protected amino;

and R_1 is a carboxylic acid protecting group, which comprises heating in an inert organic solvent a penicillin sulfoxide ester of the formula



wherein R and R_1 are as defined above, at a temperature between about 75° C. and about 175° C. with an N-chlorohalogenating agent, the improvement which consists of heating said penicillin sulfoxide ester with the N-chlorohalogenating agent in the presence of an organic solvent insoluble, weakly basic cross-linked poly-4-(vinylpyridine) polymer in a ratio by weight of said polymer to penicillin sulfoxide of between about 1:1 and about 1:5, wherein said polymer is cross-linked to between about 1 percent and about 10 percent with a cross-linking agent selected from among the group consisting of divinylbenzene, N,N′-methylenebisacrylamide, N,N′-decamethylenebisacrylamide, N,N-diallylacrylamide, ethylene diacrylate, ethylene dimethacrylate, 1,1,1-trimethylolpropane trimethacrylate, 1,1,1-trimethylolpropane triacrylate, 1,1,1-trimethylolethane triacrylate, 1,1,1-trimethylolethane trimethacrylate, pentaerythritol tetramethacrylate, 1,3,5-triacryloylhexahydro-s-triazine, 1,3,5-trimethacryloylhexahydro-s-triazine, diallyl phthalate, diallyl malonate, diallyl succinate, N,N-diallylpiperazine, tetraallyloxyethane, tetraallylpyromellitate, trivinylcyclohexane, and divinylsulfone.

4,289,696

POLYCYCLIC COMPOUNDS

Terence C. Smale, Epsom Downs, England, assignor to Beecham Group Limited, England

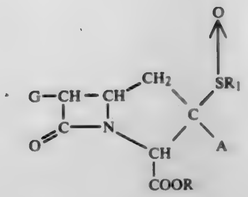
Division of Ser. No. 955,598, Oct. 30, 1978, Pat. No. 4,223,038. This application Feb. 11, 1980, Ser. No. 120,065

Claims priority, application United Kingdom, Dec. 11, 1977, 47201/77

Int. Cl.^{3} C07D *487/04*

U.S. Cl. 260—245.2 T **19 Claims**

1. A compound of the formula:



wherein

A is chloro, bromo or iodo;

R_1 is alkyl of 1 to 6 carbon atoms, unsubstituted or substituted with hydroxy, amino, alkanoylamido of 1 to 6 carbon atoms, benzyloxycarbonylamido or p-nitrobenzyloxycarbonylamido; phenyl; or phenyl substituted by one or more members selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, amino, alkanoylamido of 1 to 6 carbon atoms, benzyloxycarbonylamido or p-nitrobenzyloxycarbonylamido;

R is alkyl of 1 to 6 carbon atoms, benzyl, p-nitrobenzyl, p-methoxybenzyl, phenacyl, p-bromophenacyl, 2,2,2-trichloroethyl, phthalidyl, phthalimidomethyl, α-ethoxycarbonyloxyethyl or alkanoyloxymethyl of 1 to 6 carbon atoms, and

G is hydrogen, alkyl or alkenyl, said alkyl and alkenyl being unsubstituted or substituted with hydroxy, oxy, methoxycarbonyl, phenyl or phenyl substituted with alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, nitro or halo.

4,289,697

5-SUBSTITUTED 4-HYDROXY-2,3-ALKYLENE THIAZOLIUM SALTS

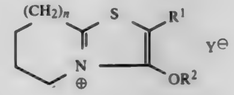
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Oct. 15, 1980, Ser. No. 197,359

Int. Cl.^{3} C07D *513/04*

U.S. Cl. 260—245.5 **4 Claims**

1. A compound of the formula:



in which

R^1 is phenyl, halophenyl, alkylphenyl of 7 to 10 carbon atoms, nitrophenyl or aminophenyl;

R^2 is hydrogen or alkanoyl of 2 to 4 carbon atoms;

Y is the anion of a pharmaceutically acceptable acid; and

n is one of the integers 1 or 2.

4,289,698

SOLVENT STABLE COPPER PHTHALOCYANINE BLUE PIGMENTS

James D. Stepp, Point Roberts, Wash., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 3, 1980, Ser. No. 109,413

Int. Cl.^{3} C07D *207/00*; C09B *47/04*

U.S. Cl. 260—314.5 **7 Claims**

1. A process for producing stable copper phthalocyanine blue pigment in the alpha form comprising grinding copper phthalocyanine blue crystals to produce a powder, contacting the powder with chlorine and mixing the chlorinated pigment with sulfuric acid.

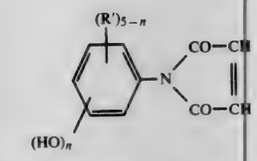
4,289,699

PROCESS FOR THE PRODUCTION OF N-(HYDROXYPHENYL) MALEIMIDES

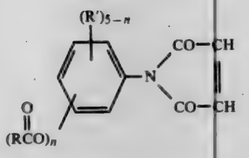
Masayuki Oba; Motoo Kawamata; Hikotada Tsuboi, and Nobuhito Koga, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 956,971, Nov. 2, 1978, Pat. No. 4,231,934.
This application Oct. 26, 1979, Ser. No. 88,825
Claims priority, application Japan, Nov. 2, 1977, 52-130905; Nov. 4, 1977, 52-131504
Int. Cl.³ C07D *207/452*
U.S. Cl. 260—326.5 FM **9 Claims**

1. A process for the production of an N-(hydroxyphenyl)-maleimide expressed by the formula:



where R′ stands for H, CH_3, C_2H_5, F, Cl, Br or I and n is 1 or 2, comprising admixing an N-(hydroxyphenyl)-maleimide ester expressed by the formula:



where R stands for an alkyl group having 1 to 7 carbon atoms or a phenyl group, and R′ and n each have the same meaning as indicated above, with at least one oxyacid selected from the group consisting of sulfuric acid, thiosulfuric acid, sulfurous acid, phosphoric acid, metaphosphoric acid and pyrophosphoric acid to dissolve said ester in said oxyacid at a temperature of 0°–150° C., the amount of said ester being within the solubility limit thereof in said oxyacid, and then admixing the resulting mixture with water to hydrolyze the ester and to precipitate said N-(hydroxyphenyl)-maleimide.

4,289,700

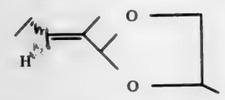
CYCLIC ACETALS OF 2-METHYL-2-PENTENAL AND FOOD FLAVOR USES THEREOF

Takao Yoshida, West Long Branch, and Manfred H. Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 24, 1977, Ser. No. 827,253
Int. Cl.³ C07D *317/10*
U.S. Cl. 260—340.9 R **3 Claims**



1. A substantially pure compound having the structure:



wherein the wavy lines represent either a "cis" or "trans" configuration around the carbon-carbon double bond of the ethyl moiety with respect to the dioxolane moiety.

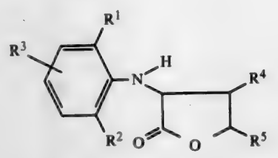
4,289,701

LACTONE SUBSTITUTED ANILINE PREPARATION

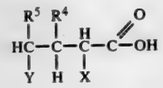
William L. Schinski, San Rafael, and Francis J. Freenor, III, Richmond, both of Calif., assignors to Chevron Research, San Francisco, Calif.

Filed Nov. 13, 1979, Ser. No. 93,765
Int. Cl.³ C07D *307/30*
U.S. Cl. 260—343.6 **10 Claims**

1. A process for making

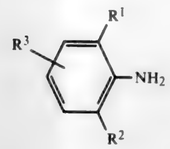


in an overall reaction which comprises contacting



with

-continued



in a reaction zone at a temperature between 20° and 250° C. to obtain a reaction mixture and contacting said reaction mixture with an inorganic base at a temperature between 20° C. and 250° C. in a second part of the overall reaction to thereby obtain the compound of formula I, wherein

R^1 is lower alkyl or hydrogen;
R^2 is lower alkyl or hydrogen;
R^3 is lower alkyl, hydrogen, C_1–C_4 alkoxy, C_1–C_4 halo alkyl, trifluoromethyl, nitro, or halo;
R^4 is lower alkyl, hydrogen, or C_1–C_4 alkoxy;
R^5 is lower alkyl or hydrogen; and
X and Y are halo.

4,289,702

PREPARATION OF ERYTHORBIC ACID AND ASCORBIS ACID 6-FATTY ACID ESTERS

Gordon D. Gruetsmacher, Gales Ferry, and Charles R. Stephens, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 75,084, Sep. 13, 1979, abandoned, which is a continuation of Ser. No. 861,506, Dec. 16, 1977, abandoned. This application Jun. 5, 1980, Ser. No. 156,746
Int. Cl.³ C07D *307/62*
U.S. Cl. 260—343.7 **6 Claims**

1. A process for the preparation of a 6-fatty acid ester of erythorbic or ascorbic acid which comprises contacting erythorbic or ascorbic acid with a saturated fatty acid of from about 12 to 18 carbon atoms in a medium consisting essentially of at least about 10 moles of anhydrous hydrogen fluoride per mole of said fatty acid and continuing said contacting until monoesterification is substantially complete.

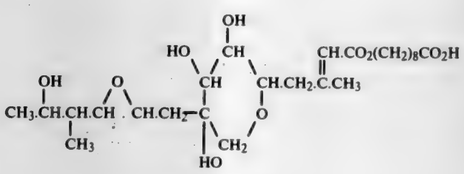
4,289,703

ANTIBIOTICS

Kevin D. Barrow, Kensington, Australia, and Graham Mellows, London, England, assignors to Beecham Group Limited, England

Continuation-in-part of Ser. No. 612,237, Sep. 11, 1975, abandoned, which is a continuation of Ser. No. 444,791, Feb. 22, 1974, abandoned, which is a division of Ser. No. 261,042, Jun. 8, 1972, abandoned. This application Nov. 12, 1976, Ser. No. 741,215
Claims priority, application United Kingdom, Jun. 12, 1971, 27653/71
Int. Cl.³ C07D *309/10*
U.S. Cl. 260—345.8 R **1 Claim**

1. The methyl ester of pseudomonic acid I having the formula:



and being in substantially pure form.

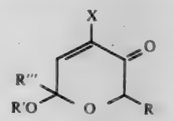
4,289,704

PREPARATION OF GAMMA-PYRONES

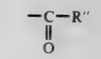
Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, and Donald E. Kuhla, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 971,897, Dec. 21, 1978, abandoned, which is a division of Ser. No. 869,493, Jan. 16, 1978, Pat. No. 4,147,705, which is a division of Ser. No. 721,885, Sep. 9, 1976, Pat. No. 4,082,717, which is a continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Jul. 2, 1980, Ser. No. 164,514
Int. Cl.³ C07D *309/22*
U.S. Cl. 260—345.8 R **2 Claims**

1. A process for preparing a compound of the formula



wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; R′ is hydrogen, alkyl of 1 to 4 carbon atoms or



wherein R″ is methyl, ethyl or phenyl; R‴ is hydrogen or alkyl of 1 to 4 carbon atoms; and X is bromine, or chlorine which comprises contacting a compound of the formula

in a reaction-inert solvent at a temperature of −50° to 50° C. with at least one equivalent of a halogen oxidant selected from the group consisting of chlorine, bromine, bromine chloride, hypochlorous acid, hypobromous acid or mixtures thereof until the reaction is substantially complete.

4,289,705

2-OXABICYCLOOCTANE DERIVATIVE, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

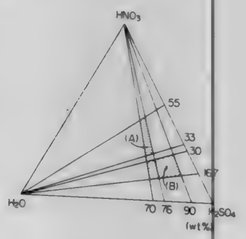
Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 77,539, Sep. 21, 1979, Pat. No. 4,269,862, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Aug. 7, 1980, Ser. No. 176,050
Int. Cl.³ C07D *309/04*
U.S. Cl. 260—345.1 **1 Claim**

1. The compound having the structure:



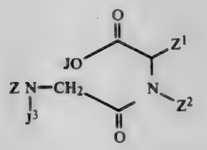
4,289,706
METHOD FOR PRODUCING 1-NITROANTHRAQUINONE
Akira Fukasawa, Toyonaka; Shinzaburo Masaki, Takarazuka, and Norio Serizawa, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Continuation of Ser. No. 853,753, Nov. 21, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,382
Claims priority, application Japan, Jan. 6, 1977, 52-695
Int. Cl.³ C07C *50/18*
U.S. Cl. 260—369 **6 Claims**



1. A method for producing 1-nitroanthraquinone by nitration of anthraquinone, which comprises reacting anthraquinone at a temperature of 30° to 80° C. with a mixed acid comprising sulfuric acid and nitric acid, the concentration of sulfuric acid being 70 to 76% by weight and the amount of nitric acid being 33 to 55% by weight based on the total weight of sulfuric acid and nitric acid, and then separating the reaction mixture into a crystal portion of 1-nitroanthraquinone and a liquid portion of the mixed acid.

4,289,707
NITROGEN HETEROCYCLES
Albert G. Caldwell, West Wickham, and Norman Whittaker, Beckenham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.
Filed Mar. 21, 1978, Ser. No. 888,524
Claims priority, application United Kingdom, Mar. 23, 1977, 12144/77
Int. Cl.³ A61K *31/23*
U.S. Cl. 260—404.5 **7 Claims**

1. A compound of formula (II)


(II)

wherein J is alkyl of 1 to 6 carbon atoms, J^3 is hydrogen or benzyloxycarbonyl, Z is hydrogen or alkyl, one of Z^1 and Z^2 is represented by the group $—CH_2—X—X^1—X^2$ wherein X is $—CH_2—CQ_2—$ in which each Q is independently selected from hydrogen and alkyl or the two Q'S together form alkylene having from four to six carbon atoms;
X^1 is a covalent bond or a straight or branched alkylene chain having 1 to 6 carbon atoms;
X^2 is selected from carboxyl or alkoxycarbonyl; the other of Z^1 and Z^2 is represented by the group $—Y—Y^1—Y^2—Y^3$, wherein Y is $—CR_2—CH_2—$ in which each R is independently selected from hydrogen and methyl;
Y^1 is methylene, methylene substituted by hydroxyl or methylene substituted by hydroxyl and alkyl;
Y^2 is a covalent bond or straight or branched alkylene having 1 to 7 carbon atoms optionally substituted on the carbon adjacent Y^1 by one or two groups each of which is alkyl;
Y^3 is hydrogen
or a salt thereof wherein the term alkyl as it appears above has one to six carbon atoms.

4,289,708
CATALYST METAL SEPARATION FROM SATURATED ALIPHATIC MONOCARBOXYLIC ACIDS
Robert H. Scott; Hubert H. Thigpen, both of Corpus Christi, and Frank Wood, Jr., Houston, all of Tex., assignors to Celanese Corporation, New York, N.Y.
Filed Aug. 9, 1979, Ser. No. 65,239
Int. Cl.³ C07C *51/235, 55/07, 53/122, 53/127*
U.S. Cl. 260—413 **6 Claims**

1. A process for separating manganese and copper from organic saturated aliphatic monocarboxylic acids having 3 to 9 carbon atoms which comprises treating said metal-containing organic acids with oxalic acid, in an amount sufficient to precipitate sebstantially all of the copper and manganese as cupric oxalate and manganous oxalate, and separating siad oxalates from said acids.

4. In a process of oxidizing saturated aliphatic aldehydes having 3 to 9 carbon atoms to their corresponding acids using soluble copper and manganese catalysts, the improvement comprising adding sufficient oxalic acid to the metal-containing organic acid product to precipitate substantially all of the copper and manganese to cupric oxalate and manganous oxalate and separating said oxalates from said acids.

5. The process of claim 4 wherein said acid is heptanoic acid.

4,289,709
PREPARATION OF METHANOL FROM SYNTHESIS GAS WITH PROMOTED PALLADIUM CATALYSTS
Steven W. Kaiser, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Dec. 19, 1979, Ser. No. 105,407
Int. Cl.³ C07C *27/06, 31/04*
U.S. Cl. 518—714 **7 Claims**

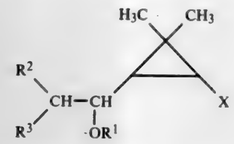
1. In a heterogeneous catalytic process for the production of methanol by the reaction of hydrogen and carbon monoxide in the presence of a palladium-containing catalyst at a temperature of from about 200° C. to about 400° C. and a pressure of from about 150 to about 20,000 psia, the improvement for enhancing the production of methanol which comprises effecting said reaction in the presence of a heterogeneous solid catalyst containing palladium in combination with a metal additive selected from the group consisting of lithium, magnesium, strontium, barium, molybdenum and mixtures thereof.

4,289,710
PROCESS FOR PRODUCING METHANOL FROM SYNTHESIS GAS WITH PALLADIUM-CALCIUM CATALYSTS
Steven W. Kaiser, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Dec. 19, 1979, Ser. No. 105,408
Int. Cl.³ C07C *27/06, 31/04*
U.S. Cl. 518—717 **6 Claims**

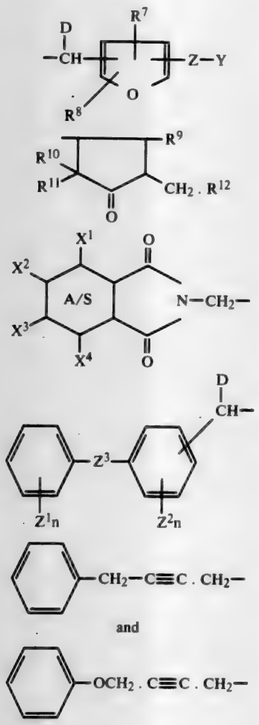
1. In a heterogeneous process for the production of methanol by the reaction of hydrogen and carbon monoxide in the presence of a palladium-containing catalyst at a temperature of from about 200° C. to about 400° C. and a pressure of from about 150 to about 20,000 psia, the improvement for enhancing the production of methanol which comprises effecting said reaction in the presence of a heterogeneous solid catalyst containing palladium in combination with calcium, the concentration of calcium in the catalyst being at least 0.03 weight percent.

4,289,711
ESTER SYNTHESIS
Grahame R. Lee, Strood, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Filed Sep. 3, 1976, Ser. No. 720,347
Claims priority, application United Kingdom, Sep. 5, 1975, 36688/75; Aug. 4, 1976, 32483/76
Int. Cl.³ C07C *143/68*
U.S. Cl. 260—456 P **4 Claims**

1. A compound of formula (V)


(V)

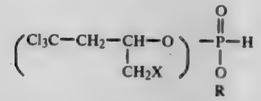
wherein R^1 is the radical derived from a strong organic acid of Formula $R^1.OH$, R^2 and R^3 are the same and are both either Chloro or Bromo and X is nitrile, carboxyl, carbonamide, carbonamide substituted by one or two lower alkyl groups each having 1 to 4 carbon atoms, carbonyl chloride, carbonyl bromide or a group —COOM wherein M is lower alkyl having 1 to 6 carbon atoms, phenylalkyl where alkyl has 1 to 3 carbon atoms, or a group B selected from:


(XIV);
(XV);
(XVI);
(XVII);
(XVIII);
(XIX);

wherein
Z represents O, S, CH_2 or CO, Y represents hydrogen or an alkyl, alkenyl, or alkynyl group or an aryl or furyl group which is unsubstituted or substituted in the ring by one or more alkyl, alkenyl, alkoxy or halogeno groups; R^7 and R^8, which may be the same or different, each represent hydrogen or an alkyl or alkenyl group;
R^9 represents hydrogen or a methyl group;
R^{10} and R^{11}, which may be the same or different, each represent hydrogen or an alkyl group;
R^{12} represents an organic radical having carbon-carbon unsaturation in a position α to the CH_2 group to which R^{12} is attached;
A/S indicates an aromatic ring or a dihydro or tetrahydro analogue thereof;
X^1, X^2, X^3 and X^4, which may be the same or different, each represent hydrogen, chlorine or a methyl group; and
Z^3 represents $—CH_2—$ or —O— or —S— or —CO—; D represents H,CN or $—C{\equiv}CH$; Z^1 and Z^2, which may be the same or different, each represent chlorine or a methyl group; and n is 0, 1 or 2.

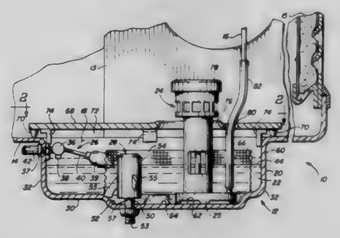
4,289,712
TETRACHLORO-BUTYL SECONDARY PHOSPHITES
Richard J. Turley, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.
Division of Ser. No. 80,744, Oct. 1, 1979, Pat. No. 4,247,489, which is a division of Ser. No. 937,033, Aug. 25, 1978, Pat. No. 4,207,272. This application Jun. 30, 1980, Ser. No. 164,737
Int. Cl.³ C07F *9/141*
U.S. Cl. 260—967 **3 Claims**

1. A tetrachloro-butyl secondary phosphite having the formula:



wherein X is a halogen, and R is selected from alkyl of 1 to about 20 carbon atoms, 2-haloalkyl of about 2 to about 8 carbon atoms, alkaryl, aryl, halogenated aryl, and arylalkyl.

4,289,713
AUTOMATIC FLUSHING AND DRAINING RESERVOIR APPARATUS FOR EVAPORATIVE COOLERS
Adam D. Goettl, 4960 E. Palomino Rd., Phoenix, Ariz. 85018
Continuation-in-part of Ser. No. 115,041, Jan. 24, 1980, Pat. No. 4,255,361, which is a continuation-in-part of Ser. No. 7,027, Jan. 29, 1979, Pat. No. 4,192,832. This application Jan. 5, 1981, Ser. No. 222,552
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—27 **12 Claims**



1. An automatic flushing and draining reservoir for an evaporative cooler comprising:
(a) an evaporative cooler including a water distribution plumbing system for carrying water to the upper portion of said cooler and a floor pan for receiving unevaporated water draining by gravity from the upper portion of said cooler, the floor pan of said cooler having an opening formed therein;
(b) a tank depending from the floor pan of said cooler below the opening formed therein, said tank opening upwardly

to receive the unevaporated water from the floor pan, said tank having a cross sectional area which is less than the cross sectional area of the floor pan of said cooler with the opening of said tank being substantially equal to the cross sectional area of the tank and substantially equal to the area of the opening formed in the floor pan of said cooler;

(c) a float controlled shutoff valve means for supplying water from an external source to said tank and maintaining it at a predetermined operating level;

(d) pump means for pumping water from said tank into the water distribution plumbing system of said cooler and allowing the pumped water in the distribution plumbing system to drain back into said tank upon interruption of the operation of said pump means so that this returning pumped water in conjunction with the unevaporated water received from the floor pan of said cooler will cause the water level in said tank to rise from the operating level to a flooded level;

(e) a siphon drain valve mounted in said tank with its water inlet adjacent the bottom thereof and having an elevated water passage zone located between the water operating level and the flooded water level of said tank so that its siphoning action will be initiated upon the water level in said tank reaching the flooded level;

(f) said tank being sized with its water surface area as small as possible as determined by its containment of said siphon drain valve, said pump means and at least the float portion of said float controlled shutoff valve; and

(g) means formed in the bottom of said tank for placing the inlet end of said pump means in direct communication with the water inlet of said siphon drain valve for allowing said pump means to positively stop the siphoning action of said siphon drain valve by drawing the water away from its water inlet when draining of said tank is complete.

4,289,714

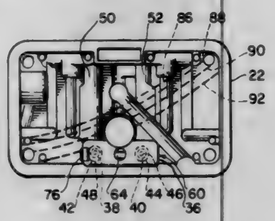
FUEL MANIFOLD FOR OVAL TRACK RACING CARS

Jimmie D. Duncan, 626 E. Chevy Chase Dr., and Ben T. Ryan, 1335 E. Harvard St., both of Glendale, Calif. 91205

Filed Nov. 26, 1979, Ser. No. 97,154

Int. Cl.³ F02M *5/02*

U.S. Cl. 261—34 R **5 Claims**



1. In a carburetor,

a liquid fuel reservoir connected to the carburetor for supplying fuel therefor,

a plurality of spaced identical jets on a horizontal plane adjacent the bottom of the reservoir and having jet ends connected to the reservoir and connected to parts of the carburetor to provide horizontal fuel flow passages directly to the carburetor from the reservoir,

the improvement comprising:

removable encapsulating means surrounding jet ends in said reservoir so that the flow of fuel through said identical jets is generally equalized regardless of the angle of the fuel level,

said encapsulating means having a first opening to said reservoir, and having a flow passage from said first opening to said jets,

said removable encapsulating means is an elongated member extending between and around said jet ends in said reservoir,

said member being formed with a pair of spaced second openings communicating with said flow passage adapted to snap fit on the jet ends so as to be secured thereon.

4,289,715

VARIABLE VENTURI TYPE CARBURETOR

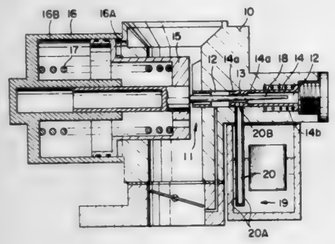
Takaaki Ito, Susono, and Norihiko Nakamura, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 6, 1979, Ser. No. 72,996

Claims priority, application Japan, Sep. 11, 1978, 53-111435

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 C **16 Claims**



1. Variable venturi type carburetor having a body including an external wall and a float chamber comprising:

a venturi unit vertically formed in the carburetor body;

a horizontal fuel suction hole assembly, one end of which opens in said venturi unit and an opposite end opening in said external wall of said carburetor body;

a plug which blocks the opposite opening in the wall outside of said fuel suction hole assembly;

a tubular member inserted into said fuel suction hole assembly;

a throttle provided inside of the inserted end of said tubular member;

a suction piston opposed to the venturi opening end of said fuel suction hole assembly, movable into or out of said venturi unit;

a tapered needle attached to said suction piston, a tip portion of said needle extending through said throttle;

a fuel suction pipe vertically fitted to the carburetor body beneath said throttle, a bottom portion of said pipe opening into the float chamber and a top portion opening into said fuel suction hole assembly; and

fuel path means formed in the throttle of said tubular member to communicate said throttle with said pipe.

4,289,716

THERMALLY INSULATING TUBES

Hermann U. Voigt, Langenhagen, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte A.G., Hanover, Fed. Rep. of Germany

Filed Feb. 14, 1979, Ser. No. 12,248

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806560

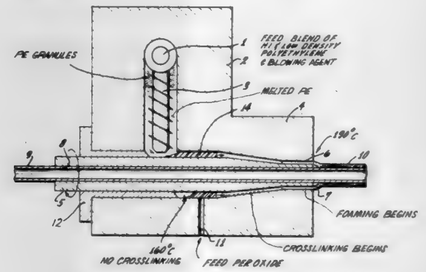
Int. Cl.³ B29D *27/00*

U.S. Cl. 264—45.9 **11 Claims**

1. Method of jacketing a tube with a foamed, thermal insulation, and including providing a thermoplastic resin powder or granulate, conveying and heating the thermoplastic resin powder or granulate in a device such as a screw extruder in order to melt the powder or granulate; feeding the heated thermoplastic melt from the device into a shear head which includes a fast rotating, hollow mandrel for further heating the plastic, the tube passing through the hollow mandrel, the melt being

shaped and discharged from the shear head onto and around the tube as the tube emerges from the mandrel, the improvement comprising:

adding a chemical blowing agent to the thermoplastic melt prior to said feeding step for rendering the melt foamable, said blowing agent reaching a decomposition temperature for subsequently obtaining foaming just prior to the discharge of the foamable, plastic melt onto and around the tube; and



adding a cross-linking agent to the foamable, plastic melt when inside said shear head and at a location in the shear head in which the thermoplastic has a temperature so that it is completely melted, but the temperature of the thermoplastic, as further heated in the shear head, has not yet reached said decomposition temperature of said chemical blowing agent at said location said cross-linking agent causing the plastic to begin cross-linking at a temperature below said decomposition temperature.

4,289,717

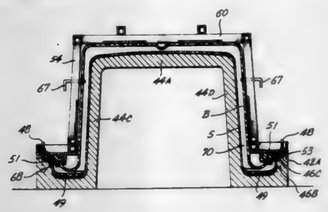
METHOD OF MAKING A CUSHIONED BATHROOM ARTICLE

Wayne E. Bortz, Seattle, Wash., assignor to The Soft Bathtub Company, Seattle, Wash.

Filed Oct. 18, 1979, Ser. No. 85,995

Int. Cl.³ B29D *27/04;* **A47K** *3/00*

U.S. Cl. 264—46.5 **8 Claims**



1. A method for making a cushioned bathroom receptacle, said method comprising the steps of:

(a) fabricating a base, said base having a wall portion, a floor portion and a peripheral flange portion, said wall portion being closed at one end by said floor portion and being open at an opposite end, and said peripheral flange portion being integral with and extending from the open end of said wall portion;

(b) fabricating a composite flexible polymeric skin by;

(1) spraying a liquid mixture of a resinous material and a volatile carrier therefor on a form having a peripheral surface, a recess and a member having a wall surface and a floor surface, said member centrally projecting from said peripheral surface, said wall surface of said member being generally complementary to said wall portion of said base, said floor portion of said member being generally complementary to said floor portion of said base, said recess surrounding said wall surface of said member and joining said wall surface and said peripheral surface, said recess being generally complementary to said peripheral flange portion of said base, and allowing said resinous material to completely cure to form a first layer of said resinous material;

(2) thereafter spraying a self-foaming flexible skin foam resin on first layer of said resinous material on said form, said resin being applied to said first layer on all of said surfaces of said form in a layer sufficiently thin to prevent substantial foaming of said resin and thereby produce a relatively dense flexible skin foam layer on said first layer of said resinous material, to thereby form said composite flexible polymeric skin, said skin having a first portion overlying said peripheral surface of said form, a second portion overlying said wall surface, a third portion overlying said recess, and a fourth portion overlying said floor surface;

(c) thereafter applying said self-foaming skin foam resin in said recess in an amount sufficient to induce foaming and produce a layer of relatively less dense skin foam in said recess adjacent said third portion of said composite flexible polymeric skin;

(d) assembling said base with a frame having a peripheral frame base, said frame base having a lower surface generally similar in configuration to said peripheral surface of said form and having a supporting framework generally similar in its interior configuration to the outer configurations of said wall portion and said floor portion of said base, by inserting said wall portion and said floor portion of said base into said supporting framework of said frame and securing said base to said frame;

(e) assembling said frame with said form so that said lower surface of said peripheral base is adjacent said first portion of said composite flexible polymeric skin, whereby said base is separated from but closely adjacent to said second, third and fourth portions of said composite flexible polymeric skin to define a cavity with said wall portion of said base being in registration with said second portion of said composite flexible polymeric skin, said flange portion of said base being in registration with said third portion of said composite flexible polymeric layer, and said floor portion of said base being in registration with said fourth portion of said composite flexible polymeric layer;

(f) injecting a flexible foam material in liquid form into said cavity and allowing said foam material to expand throughout said cavity to thereby form a flexible foam between said base and said second and fourth portions of said flexible polymeric layer and between said peripheral flange portion of said base and said layer of relatively less dense flexible skin foam in said recess;

(g) disassembling said skin from said form and disassembling said frame from said base.

4,289,718

MAT MATERIAL AND METHOD FOR MAKING IT

Balf Vollbrecht, Obernburg, and Karl Ostertag, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 921,715, Jul. 3, 1978, Pat. No. 4,212,915, which is a continuation of Ser. No. 738,986, Nov. 4, 1976, abandoned. This application Nov. 5, 1979, Ser. No. 91,650

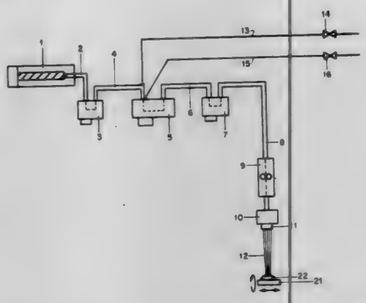
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2550070

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—50 **10 Claims**

1. In a process for the manufacture of a mat material comprising filaments having a plurality of adjacent, uniform, individual, discontinuous cavities which comprises extruding a synthetic polymer melt through a spinneret having a plurality of spinning orifices each having a diameter in excess of about 0.2 mm onto a moving surface located at a distance from the spinneret, the improvement wherein from 0.1 to 0.4 weight %, based on the weight of the melt of a silicone oil, and a gas that

is essentially inert to the melt, or an inert, gas-forming substance are mixed with the melt under conditions whereby the gas or gas-forming substance is largely dissolved in the melt, the melt is extruded in an essentially vertical direction onto a moving plane having a structured surface and located at a



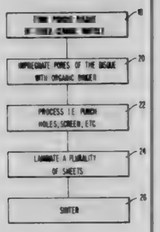
distance of 3 to 20 cm from the spinneret, where the filaments are deposited onto and between elements forming the surface structure of the receiving area and are mutually solidly fused at their points of intersection, following which the resulting mat material is withdrawn after cooling from the moving area.

4,289,719

METHOD OF MAKING A MULTI-LAYER CERAMIC SUBSTRATE

Charles M. McIntosh, Orlando, Fla., and Arnold F. Schmeckenbecher, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,482
Int. Cl.³ C04B *39/08*
U.S. Cl. 264—61 **21 Claims**



1. A method of making a multi-layer ceramic substrate for an integrated circuit device package having internal circuitry comprising:

forming a plurality of porous ceramic bisque sheets by shaping a mixture which includes (1) a powdered ceramic material; (2) a lower melting powdered glass material; and (3) an organic binder material, and subsequently heating the resultant shaped sheet at a temperature less than the sintering temperature of the ceramic material but at least as high as the softening temperature of the glass material, said heating operative to adhere the particles of ceramic material with the glass material and burn off the binder material,

impregnating the pores of said bisque sheets with an organic binder material,

forming openings through said impregnated bisque sheets,

filling said openings with conductive material,

imprinting conductive circuitry patterns on the surface of said impregnated bisque sheets of a conductive material,

assembling said plurality of apertured printed, impregnated bisque sheets into a laminated unit,

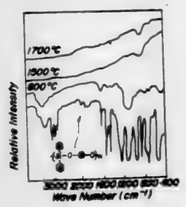
sintering said laminated unit to form a unitary laminated structure having an interconnected internal circuitry system.

4,289,720

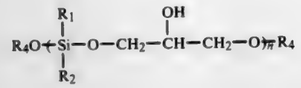
PROCESS FOR PRODUCING A THERMAL-RESISTANT CERAMIC FIRED BODY

Seishi Yajima; Toetsu Shishido; Kiyohito Okamura; Hideo Kayano, all of Oharai; Josaburo Hayashi, Naga, and Hiroshi Kobayashi, Fuji, all of Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Asahi, Japan

Continuation of Ser. No. 930,079, Aug. 1, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 117,603
Claims priority, application Japan, Aug. 3, 1977, 52-92584
Int. Cl.³ C05B *35/14*
U.S. Cl. 264—63 **5 Claims**



1. A process for producing a thermalresistant ceramic fired body, which comprises adding an organosilicon polymer having the following structural formula:



wherein R_1 and R_2 are the same or different and represent an alkyl group having a carbon number of not more than 4, or a phenyl group, R_4 represents a hydrogen atom, a trimethylsilyl group, or a triphenylsilyl group, and n is less than 10,000, as an additive to at least one ceramic powder selected from the group consisting of oxides, carbides, nitrides, borides and silicides; molding the resulting mixture in a desired form; and then firing the molded body at a temperature of 800° to 2000° C. under vacuum or in at least one atmosphere selected from the group consisting of inert gas, carbon monoxide gas, carbon dioxide gas, nitrogen gas and hydrocarbon gas.

4,289,721

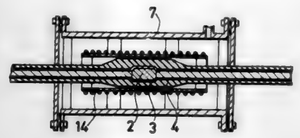
METHOD OF CONNECTING CABLES

Kojiro Ishise, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 58,396, Jul. 17, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,550
Claims priority, application Japan, Jul. 17, 1978, 53-87530; Aug. 26, 1978, 53-104017; Oct. 23, 1978, 53-130748; May 23, 1979, 54-64515
Int. Cl.³ B29C *6/04*
U.S. Cl. 264—85 **19 Claims**

1. A method of connecting two cables each having an internal conductor comprising the steps of: connecting spaced ends of said conductors with a conductive connector, forming a reinforcing insulation layer over said connector for the conductors of said cables by pouring insulation material in a metal mold at a material pouring rate corresponding to the ratio (Q/t) of an insulation material pouring speed Q (cc/min) to time t (min) required for pouring said insulation material into said metal mold, wherein said ratio is not less than five; said insulation material comprising polyethylene blended with a

crosslinking agent; providing a heat-shrinkable tube on said reinforcing insulation layer by heating said heat-shrinkable



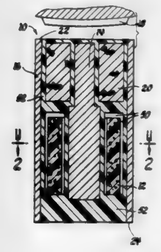
tube to form a cable connection part; and forming said cable connection part by heating while being pressurized in a fluid medium.

4,289,722

METHOD OF POTTING MAGNETIC SPEED PICKUPS

Glen E. Tranbarger, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1980, Ser. No. 173,031
Int. Cl.³ B29C *6/02*
U.S. Cl. 264—102 **3 Claims**



3. A method of potting a magnetic pickup assembly that comprises a housing containing a polymer bonded barium-ferrite magnet comprising the steps of:

heating the pickup assembly to a temperature that equals or exceeds the use temperature for the intended pickup application;

introducing a heated resinous material comprising epoxy resin and hardener into said housing;

evacuating the pickup assembly so that said resinous material impregnates the spaces surrounding said magnet;

curing said resinous material by maintaining the temperature of the pickup assembly at or higher than said use temperature for a period of time sufficient to solidify said material; and

cooling said assembly to permit said magnet to contract, whereby adequate spacing is provided within said pickup assembly to accommodate for thermal expansion and contraction of said magnet.

4,289,723

PROCESS FOR THE PREPARATION OF REGENERATED CELLULOSE FORMED BODIES FROM SOLUTIONS OF CELLULOSE DERIVATIVES IN ORGANIC SOLVENTS

Roberto Leoni, Milan; Alberto Baldini, Garlasco, and Gianfranco Angelini, Buscate, all of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.P.A., Milan, Italy

Filed Jul. 25, 1979, Ser. No. 60,544
Claims priority, application Italy, Jul. 27, 1978, 26175 A/78
Int. Cl.³ C09J *3/08*; D01F *2/28*
U.S. Cl. 264—187 **8 Claims**

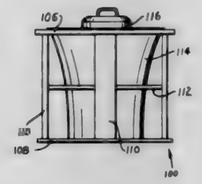
1. A process for the preparation of regenerated cellulose formed bodies from organic solutions of methylol cellulose derivatives having 0.8 or more formaldehyde units per anhydroglucosidic unit, which comprises first precipitating said cellulose derivative in a coagulating bath consisted of the organic solvent for said cellulose derivatives and a cellulose derivative non-solvent, non-regenerating organic liquid selected from the group consisting of alcohols, ethers, esters, aldehydes, ketones, chlorinated organic liquids and nitriles, and subsequently drawing the cellulose derivative body (in a subsequent hot water bath to an extent) between 10% and the maximum value which said cellulose body can withstand without breaking, and regenerating the cellulose in (said hot water bath) one or more aqueous baths consisting essentially of hot water, wherein the drawing and the regeneration occur, at least in part, concurrently.

4,289,724

SIMULATED TREE FURNITURE AND METHOD OF MOLDING SAME

Shirley Baynard, 7878 N. Main St., Apt. 1-N, Jonesboro, Ga. 30236

Filed Dec. 4, 1978, Ser. No. 966,003
Int. Cl.³ B29C *1/02, 3/00*
U.S. Cl. 264—225 **3 Claims**



1. A method of molding simulated tree furniture comprising:

constructing a flexible mold by molding a plastic molding material around actual portions of a tree whereby one surface of the mold is complementary to and corresponds to the bark surface of the tree so that the flexible mold can be used to reproduce the identical tree portions;

constructing a mold frame having a top and a bottom connected together by frame members and a removable mold sleeve such as flexible galvanized metal mounted between said top and said bottom;

placing said flexible mold against the inside surface of said removable mold sleeve so that said one surface corresponding to the bark surface of the tree faces away from the inside surface of said removable mold sleeve;

positioning a removable central core member within said removable mold sleeve leaving a space between said removable central core member and said flexible mold to receive concrete poured therein;

supporting a bracket partially in said space between said removable central core member and said flexible mold on said mold frame;

pouring concrete into the space between said removable central core and said flexible mold;

curing said concrete;

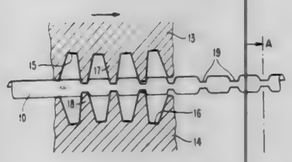
removing said removable central core member and said removable mold sleeve from said mold frame and peeling said flexible mold from said concrete to form hollow simulated tree furniture.

4,289,725

MATERIAL WEB FOR THE MANUFACTURE OF FILTER RODS FOR TOBACCO PRODUCTS AND APPARATUS AND PROCESS FOR PRODUCING SUCH WEB

Paul A. Müller, Triesenberg, Liechtenstein, and Hans Muster, Greifensee, Switzerland, assignors to Celfil Company Establishment, Vaduz, Liechtenstein

Continuation of Ser. No. 844,389, Oct. 21, 1977, abandoned.
This application Jun. 13, 1980, Ser. No. 159,281
Claims priority, application Switzerland, Aug. 11, 1977, 9888/77
Int. Cl.³ B31F *1/22*; B21F *1/36*
U.S. Cl. 264—287 **8 Claims**



1. A process for treating a web of fibrous material to improve its filtering qualities and increase its resistance to lateral crushing when gathered transversely and enclosed in a wrapper to make a filter cord subdividable into filter rods and filter plugs for cigarettes, the web being provided with closely spaced longitudinal corrugations wherein the material has been laterally stretched to loosen and expose fibers, comprising:

advancing the web along a path; and

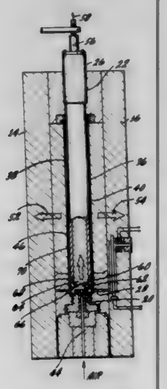
compressing and compacting the advancing web in successive spaced narrow transverse zones to substantially eliminate the corrugations and produce a denser structure in said zones, said zones being of a width not over about 0.4 mm and of a thickness of the order of about 0.2 mm and being spaced apart not over about 2.0 mm.

4,289,726

APPARATUS AND METHOD FOR INJECTION MOLDING OF ELONGATED HOLLOW PLASTIC CONTAINER WALLS

Joseph B. Potoczky, 8975 Burke Ave., South Gate, Calif. 90280

Filed Jul. 2, 1979, Ser. No. 53,962
Int. Cl.³ B29F *1/14*
U.S. Cl. 264—318 **4 Claims**



1. The method of injection molding an elongated hollow plastic article having its internal sidewalls parallel to itself through to form an article having a cylindrical interior shape of arbitrary cross-section, said method comprising:

a. providing a pair of mold halves which, when brought together, define a cavity closed at one end, said mold halves providing (i) a sprue through which molten plastic material may be injected into the cavity under pressure, and (ii) an opening at the other end of said cavity through which one end of a core extends axially, the sidewall of said mold halves being provided with reentrant means for defining a projection on said molten article extending radially into said mold halves for restraining said article from axial movement during unmolding;

b. disposing a core in said cavity with one end extending in close fit relation through said opening in the mold halves, said core having its sidewalls parallel and defining the interior of said article, and spaced from the sidewalls of said cavity;

c. disposing a core centering element between the innermost cavity-defining walls of the mold halves;

d. when said core has been disposed in said cavity, causing molten plastic to be injected under high pressure through said sprue to fill the space between the core sidewalls and the sidewalls defining said cavity, said plastic being of a type which sets into a rigid substantially non-extendable member upon cooling;

e. cooling said injected molten plastic to a temperature approximately just below the softening point of said injected plastic to thereby form said article, and while at such temperature and therefore while article is slightly yieldable, simultaneously

f. commencing the separation of said mold halves from each other while maintaining said reentrant means in contact with said projection and simultaneously applying a force directed axially out of said opening and against the restraint of said projection to withdraw said core from said thus formed article and also simultaneously providing air under pressure at the innermost end of said thus-formed article in the cavity and air-under-pressure admitted through a passage provided in said centering element to whereby said air-under-pressure is forced between the outer end and sidewalls of said core and the thus-formed article to forceably expand the article radially outward and cause a small air gap to be established between said core and said article to thereby facilitate the withdrawal of the core from the same;

g. completing the separation of the mold halves;

h. and, ejecting the thus-formed article from such mold half as it may have remained in, after the mold halves have been completely separated.

4,289,727

METHOD FOR EXTRUSION OF TUBULAR FILMS

F. John Herrington, Jr., Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,351
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—514 **7 Claims**

1. A method for producing blown crystalline high density polyethylene film comprising the steps of:

melt extruding a thin inner tubular layer of said high density polyethylene;

coextruding a thinner outer tubular layer of higher-melting thermoplastic at a temperature at least 50° F. above the high density polyethylene melting point;

inflating the tubular coextruded film utilizing an encapsulated fluid;

cooling the tubular film to solidify the outer higher melting thermoplastic layer before solidifying the inner tubular layer; and externally supporting the molten high density polyethylene layer while permitting relaxation of molecular orientation before solidification of the inner tubular film;

thereby reducing the tendency for machine direction rupturing or splitting of the high density polyethylene under stress.

4,289,728

IMPROVEMENTS IN METHODS OF STERILIZATION

John L. Peel, and William M. Waites, both of Norwich, England, assignors to National Research Development Corp., London, England

Filed Jan. 3, 1980, Ser. No. 109,317
Claims priority, application United Kingdom, Jan. 11, 1979, 1091/79
Int. Cl.³ A61L *2/10*; B65B *55/08*
U.S. Cl. 422—24 **18 Claims**

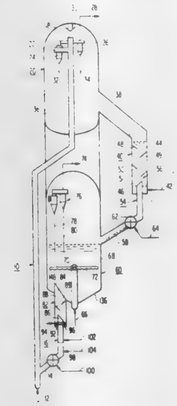
1. A method of sterilizing food packaging which comprises treating a microorganism at the surface of the packaging with an ultraviolet irradiated solution of hydrogen peroxide, the wavelength of the ultraviolet radiation being wholly or predominantly below 325 nm and the concentration of the hydrogen peroxide being at least 0.01% and no greater than 10% by weight, whereby the microorganism is rendered non-viable by synergism between the radiation and the hydrogen peroxide.

4,289,729

BIASED DEGASSER FOR FLUIDIZED BED OUTLET

George D. Myers, and Paul W. Walters, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jul. 26, 1979, Ser. No. 61,117
Int. Cl.³ F27B *15/08*; F26B *17/10*; B01J *8/28*
U.S. Cl. 422—144 **19 Claims**



1. A solids transport system wherein particulate solids are transferred to a conduit from the dense phase of a fluidized bed within a vessel larger than said conduit, said system comprising:

an upwardly extending solids outlet conduit with an open upper end for receiving a flow of solids from said dense phase bed;

a degasser means for reducing the amount of gas entrained by said solids flow into said conduit, said degasser means including a substantially vertical curvilinear wall extending upward from said upper conduit end and cut on the bias to form a solids outlet rim beveled at an angle in the range of 5° to 85° to the vertical and having a low side abutting said upper conduit end and a high side forming an extension of said upper conduit end, said curvilinear wall adjoining and extending around at least the major portion of said upper conduit end and said high side being submerged within said dense phase bed; and,

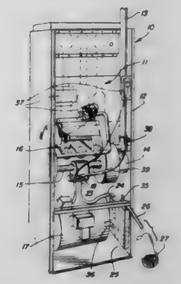
inlet means for introducing particulate solids into said vessel and means for maintaining said solids in a fluidized condition without imparting substantial swirling motion to said dense phase bed such that said flow of solids into said upper conduit end consists essentially of solids transferred through said outlet rim by the fluid head of said dense phase bed, said upper conduit end being at a depth in said dense phase bed sufficient under said fluidized conditions to cause said solids to have a tendency to lose fluidization within said conduit or across said conduit end in the absence of said degasser means, the high side of said rim being spaced below said inlet means by at least one-half the depth of said dense phase bed, and the upper end of said outlet conduit being located within about one conduit diameter of the bottom of said dense phase bed.

4,289,730

FURNACE WITH FLUE GAS CONDENSATE NEUTRALIZER

Ronald S. Tomlinson, Nashville, Tenn., assignor to Heil-Quaker Corporation, Lewisburg, Tenn.

Filed Mar. 26, 1980, Ser. No. 133,981
Int. Cl.³ B01D *53/34*; F01N *3/10*
U.S. Cl. 422—178 **10 Claims**



1. In a domestic furnace having means for burning fuel resultingly producing gaseous products of combustion and means for exhausting the gaseous products of combustion wherein acidic condensate may result from cooling of gaseous acid-forming components in the gaseous combustion products, the improvement comprising:

means for neutralizing the acidic condensate;

means for conducting acidic condensate from the exhausting means to the neutralizing means; and

discharging means for discharging the neutralized condensate from the neutralizing means.

4,289,731

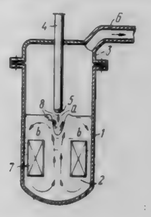
APPARATUS FOR PYROLYSIS OF HYDROCARBON STARTING PRODUCTS

Elena D. Khmelevskaya, Yaroslavskoe shosse, 142, kv. 106, Moscow; Grigory I. Dvoskin, Mytischi, Sharapovsky proezd, 18, kv. 4, Moskovskaya oblast; Vladislav A. Kablikov, Sretensky bulvar, 6/1, kv. 122, Moscow; Zinovy F. Chukhanov, ulitsa D. Ulyanova, 3, kv. 40, Moscow; Vadim M. Volny, ulitsa Butlerova, 34, korpus 1, kv. 29, Moscow; Tamara N. Mukhina, Festivalnaya ulitsa, 15, korpus 3, kv. 44, Moscow; Genrikh L. Stolyar, Kievskaya ulitsa, 18, kv. 51, Moscow; Olga E. Volnaya, ulitsa Butlerova, 34, korpus 1, kv. 29, Moscow, and Nikolai F. Kuptsov, ulitsa Shafeeva, 18, kv. 25, Ufa, all of U.S.S.R.

Filed Jun. 28, 1977, Ser. No. 811,137
Int. Cl.³ C10G *9/04, 9/34, 9/42*
U.S. Cl. 422—206 **8 Claims**

1. In an apparatus for pyrolysis of hydrocarbon starting products, casing means having an upper hollow interior gas space and accommodating in its interior below said gas space a heat carrier which is adapted to be placed in a molten condition, first jet supply means extending downwardly into said gas space and having an open bottom discharge end situated in close proximity to an upper surface of said heat carrier for introducing into said casing means a jet of hydrocarbon start-

ing products for creating with said jet a hydrodynamic crater in the upper surface of said molten heat carrier and for directing the jet of hydrocarbon starting products into the bottom of the thus-created crater to flow upwardly in said crater from the bottom toward the top thereof in the form of a thin layer along the crater surface in a manner providing an intensive transfer of heat from the heat carrier to the starting products, so that pyrolysis products leave the crater and emerge into the gas space over the heat carrier, heating means operatively connected with said casing means for placing said heat carrier in said molten condition, said heating means comprising a second jet supply means for supplying a gaseous heating agent to the upper surface of said heat carrier for creating therein a crater at said upper surface into which the jet of gaseous heat-



ing agent flows for transferring heat to the heat carrier to place the same in said molten condition, baffle means carried by said casing means in the interior thereof between the first and second jet supply means and extending to a depth which is only slightly below the upper surface of the heat carrier for dividing the space over the heat carrier into a pyrolysis zone with which a first discharge pipe means communicates and a zone for receiving gaseous heating agent, said first discharge pipe means being operatively connected to said casing means and communicating with said upper gas space for receiving said pyrolysis products and discharging them from said casing means and second discharge pipe means communicating with the gaseous heating agent receiving zone for removing gaseous heating agent therefrom.

4,289,732

APPARATUS FOR INTIMATELY ADMIXING TWO CHEMICALLY REACTIVE LIQUID COMPONENTS

John R. Bauer, Baytown; Robert W. Byars, LaPorte, and Robin L. Grieve, Houston, all of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 969,221, Dec. 13, 1978, abandoned. This application Feb. 22, 1980, Ser. No. 123,797
Int. Cl.³ B01F *5/20*
U.S. Cl. 422—224 **5 Claims**

1. An apparatus adapted to achieve intimate mixing of two liquid components which enter into reaction one with the other substantially immediately after they are brought together, which apparatus comprises in combination:

a substantially cylindrically shaped mixing chamber provided with side walls, and exit means at one end thereof and a plurality of inlet means at the other end thereof;

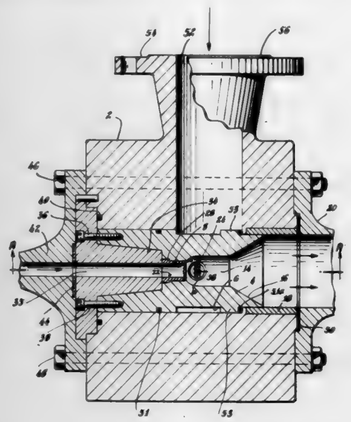
a first jet inlet means disposed substantially symmetrically in the end of the said mixing chamber remote from said exit means and having the nozzle of said jet means projecting into said mixing chamber and being directed substantially along the longitudinal axis thereof;

at least two additional jet inlet means disposed in the side walls of said mixing chamber at the end thereof remote from said exit means, the nozzles of said jets projecting through the side walls into said mixing chamber and being directed towards the longitudinal axis of said mixing chamber and in a plane substantially at right angles to said axis;

means for introducing a first liquid component under pressure through said first jet inlet means;

means for introducing a second liquid component under pressure simultaneously through each of said additional jet inlet means; and

means for conducting mixed liquid components from said exit means to a subsequent reaction zone; each of said first and said additional jet inlet means being provided with



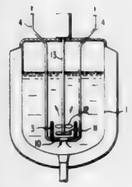
shaping means for forming said liquid components into flat spray patterns; said first jet inlet means and said additional jet inlet means being so arranged relative to each other that the paths of all of said flat sprays formed from said liquid components intersect at a common locus.

4,289,733

APPARATUS FOR MAKING SILVER HALIDE GRAINS

Hirokazu Saito; Keiichi Suzuki; Masayuki Shimizu, and Junji Miyahara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 641,714, Dec. 17, 1975. This application Mar. 9, 1979, Ser. No. 19,062
Claims priority, application Japan, Dec. 17, 1974, 49-145381
Int. Cl.³ B01F *5/04, 7/00*
U.S. Cl. 422—227 **3 Claims**



1. Apparatus for producing silver halide grains by a process which comprises introducing a water soluble silver salt solution and a water soluble halide solution for purposes of reaction to form silver halide grains into a vertically disposed mixing chamber whose interior is filled with an aqueous colloid solution, which mixing chamber is within a reaction vessel which is also filled with said aqueous colloid solution, comprising:

the mixing chamber comprising a polygonal-pillar casing, the upper and lower ends of which are open, and which is provided with

(i) first agitator means in the lower portion thereof to achieve a first agitation which quickly mixes and reacts both reactant liquids; and

(ii) second agitator means in the upper interior portion thereof to achieve a second agitation which quickly expels the silver halide grains formed upwardly into the aqueous colloid solution in the reaction vessel outside said mixing chamber; and

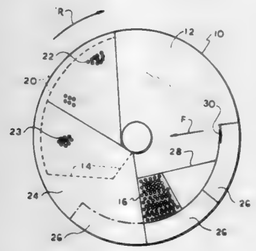
(iii) means for controlling the rate of revolution of said first agitator means and said second agitator means independently of each other.

4,289,734

APPARATUS FOR CONTACTING SOLIDS WITH A LIQUID

Andre Longuet, Bethune, France, assignor to Fives-Cail Babcock, Paris, France

Filed Oct. 6, 1980, Ser. No. 193,925
Claims priority, application France, Oct. 4, 1979, 79 24674
Int. Cl.³ B01D *11/02;* **C13D** *1/12*
U.S. Cl. 422—272 **6 Claims**



1. An apparatus for contacting solids with a liquid, which comprises

(a) a drum rotatable about a substantially horizontal axis in a direction of rotation and having a cylindrical side wall and two closed end walls, the drum walls defining an interior chamber, the solids being delivered into the interior chamber through one of the end walls and the liquid being delivered thereinto through the other end wall,

(b) a screw conveyor arranged in the interior chamber for continuously conveying the solids from the one end wall towards the other end wall upon rotation of the drum while the liquid flows countercurrently thereto, the screw conveyor having helical turns affixed to the cylindrical side wall of the drum and defining a helical passageway for the solids between the helical conveyor turns,

(c) means for raising the solids and for draining the solids during rotation of the drum, said means being spaced along the helical passageway and dividing the passageway into a series of compartments, each of the solids raising and draining means including

(1) a grating receiving the solids and raising the received solids while liquid is drained through the grating and then permitting the drained solids to fall into a succeeding one of the compartments, and

(2) an imperforate partition trailing the grating in the direction of rotation of the drum, the partition having an inner end adjacent the axis of the drum and defining a chamber receiving the liquid drained from the solids with the adjacent side wall of the drum and the helical screw turns, and

(d) a passageway interconnecting each of said chambers with the compartment upstream of the chamber in the direction of movement of the solids from the one to the other end wall, the passageways extending along the side wall of the drum, and each passageway communicating with the upstream compartment it feeds through openings in a trailing part thereof in the direction of rotation of the drum and through orifices in a leading part thereof in the direction of drum rotation, the leading part adjoining the imperforate partition of the solids raising and draining means,

(1) a perforate dike defining the orifices, the dike being arranged in the leading part and being disposed approximately in the median plane of the compartment and extending transversely to the axis of the drum.

4,289,735

PROCESS FOR THE PRODUCTION OF ALUMINUM CHLORIDE

Hans P. Mueller, Magden; Hanspeter Alder, Flurlingen, both of Switzerland, and Gerhard Zhuber-Okrog, Rheinfelden, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 1, 1980, Ser. No. 117,462
Claims priority, application Switzerland, Feb. 16, 1979, 1512/79; Feb. 16, 1979, 1513/79
Int. Cl.³ C01F *7/56, 7/60*
U.S. Cl. 423—136 **9 Claims**

1. A continuous process for producing aluminum chloride from aluminum oxide bearing substances in a fluidized bed comprising:

(a) preparing a fluidized bed of an aluminum oxide bearing substance having a range in particle size of from about 10 to 120 microns and a bulk density of from about 0.2 to 0.9 g/cm^2 and a chemically and physically inert solid dilution agent having a range of particle size of from about 60 to 200 microns and a bulk density of from about 0.4 to 1.8 g/cm^2 wherein the solid dilution agent is in an amount equal to 10 to 90 weight percent of the total weight of the fluidized bed;

(b) heating said bed at a temperature of up to 800° C.; and

(c) reducing and chlorinating said fluidized bed with a reducing and chlorinating gas or mixtures thereof at a gas flow rate of from about 2 to 30 cm/sec whereby the solid dilution agent has a larger average particle size and bulk density than said aluminum oxide bearing substance as a result of the chemical conversion of said aluminum oxide bearing substance into aluminum chloride.

6. A continuous process for producing aluminum chloride from aluminum oxide bearing substances coated with carbon in a fluidized bed comprising:

(a) preparing a fluidized bed of an aluminum oxide bearing substance coated with carbon having a range in particle size of from about 10 to 120 microns and a bulk density of from about 0.2 to 0.9 g/cm^2 and a chemically and physically inert solid dilution agent having a range of particle size of from about 60 to 200 microns and a bulk density of from about 0.4 to 1.8 g/cm^2 wherein the solid dilution agent is in an amount equal to 10 to 90 weight percent of the total weight of the fluidized bed;

(b) heating said bed at a temperature of up to 800° C.; and

(c) chlorinating said fluidized bed with a chlorinating gas or mixtures thereof at a gas flow rate of from about 2 to 30 cm/sec.

4,289,736

FILTERING OF PRECIPITATING SILICA

Jean M. Lalancette, Sherbrooke, Canada, assignor to Universite de Sherbrooke, Quebec, Canada

Filed Aug. 31, 1979, Ser. No. 71,175
Claims priority, application Canada, Oct. 18, 1978, 313713
Int. Cl.³ C01F *5/00, 5/30, 5/38, 5/40*
U.S. Cl. 423—158 **7 Claims**

1. A process for recovering a water-soluble magnesium salt from a reaction mixture containing a water-soluble magnesium salt, silica, and metal salt impurities comprising reacting the magnesium oxide of an aqueous slurry of asbestos tailings with a mineral acid, there being employed sufficient asbestos tailings that the reaction mixture contains at least 5 percent by weight of asbestos tailings in excess of the stoichiometric amount required for the reaction of the magnesium oxide contained in the asbestos tailings with the mineral acid said excess asbestos tailings being present and recovering the magnesium salt in solution by filtration to eliminate silica and metal salt impurities, the excess asbestos tailings in the reaction mixture facilitat-

ing the filtration of the precipitated silica in forming a mat on the membrane of the filter, the mat being permeable to the solution and retaining the silica and metal salt impurities.

4,289,737

CATALYTIC REACTIONS

Gary J. K. Acres, and Robert M. Hutchings, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Continuation of Ser. No. 916,817, Jun. 16, 1978, abandoned, which is a continuation of Ser. No. 463,143, Apr. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 71,131, Sep. 10, 1970, abandoned. This application Aug. 1, 1979, Ser. No. 62,903

Claims priority, application United Kingdom, Sep. 16, 1969, 45545/69

The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—245 **1 Claim**

1. In a process for the removal of methane from a gas containing the same, by oxidation to carbon dioxide and water wherein said gas is passed with oxygen through a catalyst bed in which the catalyst comprises a porous refractory support having a platinum group metal deposited thereon, said oxidation involving bringing said gas to its ignition temperature followed by combustion of said gas in the presence of said catalyst, the improvement comprising utilizing, as the catalyst, one which consists essentially of an inert rigid unitary porous refractory ceramic honeycomb having deposited upon the surfaces which come into contact with the said gas a first layer of a catalytically active high surface area refractory metal oxide, a major proportion of which is selected from oxides of at least one of the metals of Group II, III and IV of the Periodic Table having atomic numbers not exceeding 40, and a second metallic layer deposited upon said first layer consisting essentially of an alloy of 35% by weight rhodium and 65% by weight platinum whereby the ignition temperature of the gas is reduced when compared with otherwise identical catalysts wherein the second metallic layer is (a) 100% platinum, (b) 100% rhodium or (c) alloys of 5% rhodium and 95% platinum; 20% rhodium and 80% platinum; or 50% rhodium and 50% platinum, the reduced temperature being in the range of 300°–325° C.

4,289,738

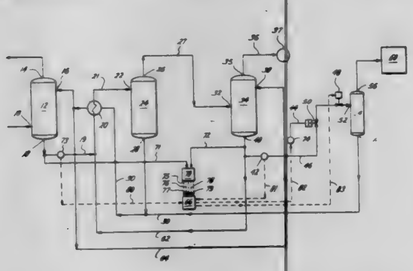
PROCESS FOR REMOVING H_2S FROM SOUR GASES WITH GENERATION OF A CLAUS FEED GAS

Roscoe L. Pearce, and Charles W. Martin, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 22, 1980, Ser. No. 171,210

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 **4 Claims**



1. A process for treating a sour gas to prepare a fuel gas with relatively low amounts of hydrogen sulfide, and simultaneously prepare (1) a side stream of relatively pure carbon dioxide and (2) a side stream of a gas suitable for the feed to a Claus process having the required H_2S/CO_2 ratio which comprises

(A) feeding a gas containing CO_2 and low amounts of H_2S to a first amine absorber containing an aqueous amine solution to produce a first off gas useful as a fuel gas containing lower amounts of H_2S, a major portion of the CO_2 and a first rich amine,

(B) feeding said rich amine loaded with H_2S and CO_2 from said first amine absorber to a first amine regenerator wherein said amine is regenerated to produce a lean amine and a second off gas containing essentially CO_2 and relatively large amounts of H_2S and said lean amine is recycled back to said first absorber,

(C) feeding said second off-gas to a second amine absorber to produce a third off-gas containing substantially pure CO_2 and a second rich amine,

(D) feeding said second rich amine loaded with H_2S from said second absorber to said first regenerator together with said first rich amine from said first absorber, and

(E) feeding a proportion of said second rich amine to a second amine regenerator wherein said amine is regenerated to produce an off gas suitable for the feed of a sulfur recovery process wherein the flow to said second amine regenerator is automatically controlled to provide a suitable off gas composition.

4,289,739

METHOD OF PRODUCING CRYSTALLINE SODIUM ALUMINUM PHOSPHATE

John S. Chiang, Mercerville; Theodore F. Munday, Kendall Park, and Joseph M. Ilardi, North Brunswick, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 26, 1979, Ser. No. 106,634

Int. Cl.³ C01B *25/26*

U.S. Cl. 423—306 **17 Claims**

1. In the method of manufacturing crystalline acidic sodium aluminum phosphate of the formula:

$$NaAl_3H_{14}(PO_4)_8.4H_2O$$

by contacting a reactive sodium compound and a reactive trivalent aluminum compound with aqueous phosphoric acid, the sodium and aluminum compounds being in stoichiometric proportions to provide one sodium atom for each three aluminum atoms and the phosphoric acid being in excess of the amount required to react with all of said sodium and aluminum compounds, and concentrating the resulting solution to effect crystallization of the sodium aluminum phosphate, the improvement of separating the crystals of sodium aluminum phosphate from the resulting viscous crystallization mixture by rapidly diluting said mixture with water in the absence of added organic solvent while maintaining vigorous agitation to produce a liquid suspension of said crystals in aqueous phosphoric acid and immediately recovering the crystals from the aqueous phosphoric acid.

4,289,740

CRYSTALLINE ZEOLITE HP

John H. Estes, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 713,457, Aug. 11, 1976, abandoned. This application Nov. 7, 1979, Ser. No. 92,162

Int. Cl.³ C01B *33/28*

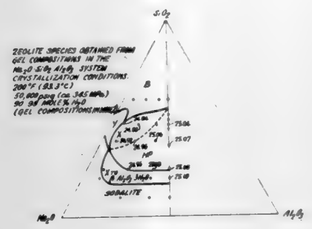
U.S. Cl. 423—328 **33 Claims**

1. The process for preparing sodium zeolite HP which comprises:

a. forming an aqueous mixture of sodium aluminosilicate having a composition sufficient to establish a ratio of silicon atoms to aluminum atoms of between about 0.25 and about 1.0;

b. maintaining said aqueous mixture at hydrothermal conditions including a pressure above 20,000 psig (ca. 138 MPa) and a temperature of 150°–350° F. (65.6°–176.7° C.) for at least three hours; and

c. recovering crystalline zeolite comprising sodium zeolite HP as the resulting solid product.



17. A synthetic crystalline sodium aluminosilicate zeolite, having a lattice constant of about 25.01 A -25.0 A.

4,289,741

PROCESS FOR THE PRODUCTION OF HYDROGEN CYANIDE

Carl Voigt, Rodenbach; Peter Kleinschmit, Hanau, and Eberhard Walter, Wiesbaden, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,358

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913925

Int. Cl.³ C01C *3/02*

U.S. Cl. 423—376 **13 Claims**

1. In a process for the production of hydrogen cyanide or hydrocyanic acid from liquified gas and ammonia according to the conditions of the hydrocyanic acid-methane-ammonia process in a reaction zone, the improvement comprising employing in place of methane a hydrocarbon consisting essentially of propane or at least one butane or a mixture of propane and at least one butane the gaseous mixture consisting essentially of the propane and/or butane, ammonia and hydrogen to provide an atomic ratio of carbon to nitrogen to hydrogen of 1:1:7.1 to 1:1.33:13 at the beginning of the reaction and separating the hydrogen cyanide from the reaction gas mixture.

4,289,742

CARBON BLACK RECOVERY

Paul H. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 31, 1979, Ser. No. 44,147

Int. Cl.³ C01B *31/02;* **C09C** *1/48*

U.S. Cl. 423—450 **5 Claims**

1. A process for filtering solids from carbon black smoke produced in a carbon black furnace by the pyrolysis of hydrocarbon oil under conditions forming a hot smoke having a temperature above 2200° F. which comprises:

(a) quenching said hot smoke removed from said furnace to a temperature of about 2000° F. or below by injecting into it recycle smoke subsequently to be described;

(b) cooling said hot smoke further by indirect heat exchange to a temperature of about 700° F. or lower;

(c) passing said hot smoke, cooled in (b), to a cyclone separation zone to remove a substantial portion of the carbon black solids present as product for further processing as desired;

(d) removing carbon black smoke substantially reduced in solids content from said cyclone separation zone and then passing same through a filtration zone on filtering cycle containing a bed of aggregate filtering medium to further remove solids therefrom;

(e) withdrawing off-gas substantially free of carbon black solids from (d);

(f) passing at least a portion of said off-gas in (e) to a filtration zone on regeneration cycle containing aggregate filtering medium and carbon black solids under conditions to substantially remove said carbon black solids; and

(g) recycling said off-gas containing carbon black solids removed in (f) to (a) as quench to reduce the temperature of said hot smoke.

4,289,743

DOUBLE VENTURI CARBON BLACK REACTOR SYSTEM

Theodore A. Ruble, deceased, late of Fort Worth, Tex. (by Eulalia B. Ruble, executrix), assignor to Sid Richardson Carbon & Gasoline Co., Fort Worth, Tex.

Division of Ser. No. 812,345, Jul. 1, 1977, Pat. No. 4,213,939. This application Sep. 12, 1979, Ser. No. 74,741

Int. Cl.³ C01B *31/02;* **C09C** *1/48*

U.S. Cl. 423—450 **12 Claims**

1. A method for the production of carbon black in a reactor of the type having a reaction tunnel of generally circular cross-section and varying diameter, said tunnel including a combustion zone, a reaction zone and a quench zone in contiguous axial alignment, which method comprises the steps of:

introducing a fluid fuel and oxidant gas into said combustion zone for combustion therein to produce hot combustion product gases;

flowing said hot combustion product gases downstream from said combustion zone into said reaction zone;

introducing hydrocarbon feedstock into said hot combustion product gases in said reaction zone for reaction therewith to produce carbon black;

flowing said admixed hydrocarbon feedstock and combustion product gases downstream through said reaction zone;

passing said admixed combustion product gases and feedstock through first and second venturi flow constrictions disposed in said reaction zone and spaced longitudinally from each other;

flowing said combustion product gases, feedstock and carbon black into said quench zone;

quenching the reactions in said quench zone with a quench fluid; and

separating the carbon black product from off gases downstream from said quench zone.

4,289,744

MATERIAL AND METHOD TO DISSOCIATE WATER

Eugene R. Anderson, Wills Point, Tex., assignor to Horizon Manufacturing Corporation, Wills Point, Tex.

Continuation-in-part of Ser. No. 85,374, Oct. 16, 1979, and a continuation-in-part of Ser. No. 68,749, Aug. 23, 1979, and a continuation-in-part of Ser. No. 902,708, May 4, 1978, Pat. No. 4,182,748, and a continuation-in-part of Ser. No. 902,705, May 4, 1978, Pat. No. 4,207,095. This application Jan. 7, 1980, Ser. No. 110,218

The portion of the term of this patent subsequent to Jan. 6, 1997, has been disclaimed.

Int. Cl.³ C01B *1/07, 13/02*

U.S. Cl. 423—579 **31 Claims**

1. A material for the generation of hydrogen and oxygen from water without spontaneous combustion of the resultant evolved hydrogen which comprises an amalgam of an alkali metal, mercury and aluminum, wherein the atomic weight ratio of alkali metal to mercury is from about 1:100 to about 100:1 and the atomic weight ratio of alkali metal to aluminum is from about 1:100 to about 100:1, intimately admixed with a catalytically active alloy of nickel and at least one element selected from the group consisting of germanium, antimony, gallium, thallium, indium, and bismuth.

16. A process for generating hydrogen and oxygen from water without spontaneous combustion of the resultant hydrogen which comprises contacting water with an amalgam of an alkali metal, mercury and aluminum, wherein the atomic

weight ratio of alkali metal to mercury is from about 1:100 to about 100:1 and the atomic weight ratio of alkali metal to aluminum is from about 1:100 to about 100:1, intimately admixed with a nickel containing alloy in a catalytically effective amount.

4,289,745

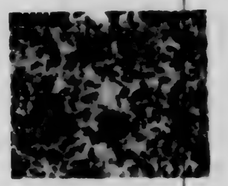
PIGMENTS STABLE AT HIGH TEMPERATURES

Arvind S. Patil, Wyoming, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 70,196, Aug. 27, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,735

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—594 **9 Claims**



1. A temperature-stable spinel in the form of acicular particles having a length of 0.01 to 0.13 micron and consisting essentially of oxygen, iron, and at least one metal, said spinel corresponding to the formula

$$XFe_2O_4$$

wherein X is said other metal, said other metal being one selected from the group consisting of Cu, Ca, Cd, Co, Ba, Sr, and Mn.

6. A method of making a pigment having good stability at high temperatures, said method consisting essentially of the steps of

forming a first aqueous solution consisting essentially of water, a soluble ferrous salt, and at least one other salt, said salt being a soluble salt of a non-ferrous metal selected from the group consisting of copper, calcium, cadmium, cobalt, barium, strontium, manganese, and lithium, said ferrous salt and said non-ferrous salt being present in said solution in proportions such that the respective quantities of iron and other metal which are present will yield, when said solution is so adjusted in pH as to cause precipitation, the formation of a substantial quantity of a precipitate oxidizable to a spinel of the formula XFe_2O_4, or YFe_5O_8 in which X is a metal selected from the group consisting of Cu, Cd, Ca, Co, Ba, Sr, and Mn, and Y is Li,

mixing with said first aqueous solution a second aqueous solution to form a reaction mixture, said second solution containing a substantial proportion of a soluble alkalizing compound selected from the group consisting of the carbonates, bicarbonates, and hydroxides of the alkali metals, the said second solution being used in such quantity and the said first and second solutions being in such a state of dilution that there results upon said mixing the formation of a precipitate in the form of particles of sub-micron size, the liquid phase of said reaction mixture being as a result of such precipitation substantially completely depleted in its content of lithium ions and metal ions having a valence greater than one;

oxidizing the said precipitate to form a spinel in aqueous solution;

then heating said aqueous solution having said spinel therein to a temperature of from about 75° to 100° C.; and

recovering said spinel.

4,289,746

PROCESS FOR PREPARATION OF MICACEOUS IRON OXIDE

Masanori Hayakawa, and Satoshi Nishimura, both of Ube, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed May 19, 1980, Ser. No. 151,538

Claims priority, application Japan, May 22, 1979, 54/62219; May 22, 1979, 54/62220; May 22, 1979, 54/62221; May 22, 1979, 54/62222

Int. Cl.³ C01G *49/06*

U.S. Cl. 423—633 **22 Claims**

1. A process of preparing hexagonal plate-like crystals of α-Fe_2O_3, comprising mixing a first material of which a principal component thereof is magnetite, an aqueous alkali solution having an alkali concentration in the range of 1 to 20 N, and an oxidizer, in a closed vessel and hydrothermally treating the resultant mixture at a temperature of from about 100° to 400° C. for a time sufficient to effect formation of hexagonal plate-like crystals of α-Fe_2O_3.

4,289,747

IMMUNOLOGICAL DETERMINATION USING LECTIN

Albert E. Chu, San Mateo, Calif., assignor to E-Y Laboratories, Inc., San Mateo, Calif.

Filed Dec. 26, 1978, Ser. No. 972,696

Int. Cl.³ G01N *33/48*; G01T *1/00*; A61K *43/00*

U.S. Cl. 424—1 **48 Claims**

1. A method for the determination of one component of an immunological conjugate in a fluid sample comprising the steps of

(a) forming an immunological conjugate reaction product including said one component from a fluid sample immunologically bound to its corresponding component, a bound label compound, and a bound lectin, said lectin being bound to said corresponding component,

(b) contacting said reaction product with insolubilized sugar selectively and reversibly reactive with said bound lectin to reversibly bind the reaction product through the lectin to the insolubilized sugar,

(c) separating the insolubilized sugar-bound lectin product from the remainder of said reaction mixture, and

(d) determining the amount of label compound in either said insolubilized sugar-bound lectin product or said remainder as a measure of the quantity of said one component in said sample.

4,289,748

ULTRASENSITIVE ENZYMATIC RADIOIMMUNOASSAY METHOD

Curtis C. Harris, Bethesda; Robert Yolken, Laurel, and Ih-Chang Hsu, Rockville, all of Md., assignors to United States of America, Washington, D.C.

Filed May 31, 1979, Ser. No. 44,260

Int. Cl.³ G01N *33/48*; G01T *1/00*; G01N *33/54*

U.S. Cl. 424—1 **20 Claims**

1. A method of quantitatively measuring the concentration of an immunosystem reactant comprising:

(a) preparing a solid substrate;

(b) selectively adhering the immunosystem reactant to said substrate;

(c) binding an enzyme-conjugated antibody to said reactant;

(d) reacting a radiolabelled indicator with said enzyme-conjugated antibody thereby producing a radiolabelled product and an unlabelled product;

(e) separating said radiolabelled product(s) from unreacted indicator; and

(f) measuring the extent of reaction by radioactive counting said radiolabelled product, said counting yielding a quantitative measurement of the concentration.

4,289,749

POLYMERIC DIFFUSION MATRIX CONTAINING PHENYLPROPANOLAMINE

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 109,242, Jan. 3, 1980, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned, and Ser. No. 47,084, Jun. 11, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,009

Claims priority, application Japan, Aug. 14, 1979, 54/103459

Int. Cl.³ A61L *15/03*; A61K *31/79*

U.S. Cl. 424—28 **10 Claims**

1. A self-supporting polymeric diffusion matrix for the sustained release of phenylpropanolamine in order to transdermally deliver said phenylpropanolamine to a patient and provide said patient with a bronchodilator and nasal decongestant effect, said matrix comprising from about 2 to about 60% of a polar plasticizer, from about 6 to about 20% by weight polyvinylalcohol, from about 2 to 10% by weight polyvinylpyrrolidone, and a pharmaceutically effective amount of phenylpropanolamine to provide a sustained release of said phenylpropanolamine over a prolonged period.

4,289,750

THERAPY OF CONDITIONS WHICH MAY BE ASSOCIATED WITH ALTERED RENAL FUNCTION AND DOSAGE FORMS THEREFOR

Klaus F. Kopp, Aschlkofener Str. 4, D-8017 Ebersberg, and Joachim W. Helbig, Traubinger Str. 23, D-8132 Tutzing, both of Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,066

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2845059

Int. Cl.³ A61K *33/00, 33/06, 33/14*

U.S. Cl. 424—33 **22 Claims**

1. A method of treating a subject suffering from abnormal distribution and retention of body fluids and retention products which is as a result of altered renal function, which comprises orally administering to a subject in need of such treatment, a therapeutically effective amount of an oral dosage form of a pharmaceutically acceptable alkaline acting substance adapted to release sodium and bicarbonate ions in the small intestine of the subject and being capable of increasing patient plasma bicarbonate level to a value in excess of that prior to treatment, the therapeutically effective amount being sufficient to substantially correct metabolic acidosis and increase urine production and clearance of retention products.

4,289,751

EFFERVESCENT ENTERIC-COATED FORMULATION OF SOLUBLE FORM OF ERYTHROMYCIN AND THERAPEUTIC USE THEREOF

John J. Windheuser, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 53,363, Jun. 29, 1979, abandoned. This application Mar. 17, 1980, Ser. No. 131,183

Int. Cl.³ A61K *9/46, 9/36, 31/71*

U.S. Cl. 424—35 **10 Claims**

1. A pharmaceutically acceptable effervescent enteric-coated tablet for orally delivering therapeutic levels of erythromycin to a warm-blooded animal, which comprises a tableted admixture of:

(a) an antibiotic effective amount of a non-toxic pharmaceutically acceptable salt of erythromycin which is readily soluble in the intestines;

(b) a non-toxic pharmaceutically acceptable inert diluent; and

(c) a non-toxic pharmaceutically acceptable effervescent couple acid and base; and

(d) a non-toxic pharmaceutically acceptable enteric coating maintained over the tableted admixture of (a), (b), and (c) above.

4,289,752

COSMETIC COMPOSITIONS CONTAINING N-ALKYLACRYLAMIDE OR N-ALKYLMETHACRYLAMIDE BASED COPOLYMERS

Claude Mahieu, Paris, and Christos Papantoniou, Epinay-sur-Seine, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Division of Ser. No. 783,632, Apr. 1, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,623

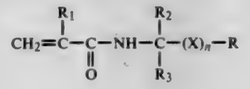
Claims priority, application Luxembourg, Apr. 6, 1976, 74707; Jul. 12, 1976, 75371

Int. Cl.³ A61K *7/11, 7/043, 31/78*

U.S. Cl. 424—47 **11 Claims**

1. A hair setting lotion comprising in a hydroalcoholic solution a copolymer which is the polymerization of:

(a) a water-insoluble monomer of the formula



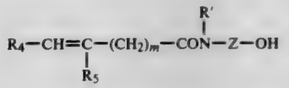
wherein:

R represents alkyl having 1–10 carbon atoms,

R_1, R_2 and R_3 each independently represent hydrogen or methyl,

n=0 or 1 and when n=1, X represents oxygen, and

(b) a water soluble monomer of the formula



wherein

R′ represents hydrogen or methyl,

Z represents alkylene having 1–6 carbon atoms or alkylene having 1–6 carbon atoms and substituted by 1–2 hydroxymethyl groups,

m is 0 or 1,

when m is 0, R_4 is hydrogen or $-COR_6$ wherein R_6 is OH or $-NH-R_7$, wherein R_7 is hydrogen or $-Z-OH$ wherein Z has the meaning given above, and R_5 is hydrogen or $-CH_3$, and

when m is 1, R_4 is hydrogen and R_5 is $-COR_6$ wherein R_6 has the meaning given above,

said copolymer having a molecular weight between 1,000 and 500,000, and being present in an amount between 0.3 and 6 percent by weight of said lotion.

4,289,753

CALCULUS-INHIBITING METHOD AND COMPOSITIONS

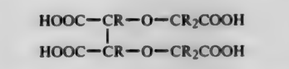
David R. Dyroff; Gary F. Graf; Keun Y. Kim, all of St. Louis, Mo., and Walton F. Suchanek, Jr., Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 4, 1977, Ser. No. 784,188

Int. Cl.³ A61K *9/68*

U.S. Cl. 424—48 **7 Claims**

1. An oral composition effective in inhibiting formation of dental calculus, said composition comprising (1) a bis(carboxyalkoxy)-butanedioic acid compound selected from the group consisting of acids having the structural formula:



wherein R is hydrogen or lower normal alkyl and each R can be the same as or different from any other R in said formula, and pharmaceutically acceptable salts of said acids and (2) a

carrier suitable for use in the oral cavity, said compound being present in said composition in amount and concentration sufficient to substantially inhibit formation of dental calculus, said composition being selected from the group consisting of oral hygiene products and chewing gums.

4,289,754

ZINC DERIVATIVES AND THEIR USE IN MOUTHWASH COMPOSITIONS

Dadi J. Dhabhar, Norwalk, Conn., and Nutan B. Shah, New Rochelle, N.Y., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Nov. 3, 1980, Ser. No. 203,520
Int. Cl.³ A61K *7/16, 7/18, 7/24*
U.S. Cl. 424—52 **8 Claims**

1. A mouthwash composition comprising about 0.01 to about 1.0% by weight of an anticaries effective fluoride compound and about 0.1 to about 15.0% by weight of an ammonium or alkali metal zinc citrate in a mouthwash carrier suitable for use in the oral cavity.

4,289,755

STABLE MOUTHWASH COMPOSITIONS CONTAINING ZINC AND FLUORIDE COMPOUNDS

Dadi J. Dhabhar, Norwalk, Conn., assignor to Richardson-Vicks Inc., Wilton, Conn.

Filed Nov. 3, 1980, Ser. No. 203,634
Int. Cl.³ A61K *7/16, 7/18, 7/24*
U.S. Cl. 424—52 **7 Claims**

1. A stable mouthwash composition containing zinc and fluoride compounds comprising a mouthwash carrier, from about 0.1 to about 15% by weight zinc citrate, from about 0.01 to about 1% by weight sodium fluoride, an amount of citric acid sufficient to solvate the zinc citrate and an amount of an alkali compound sufficient to adjust the pH of the mouthwash composition to a pH within the range of pH 6.0 to 7.2.

4,289,756

PHYSIOLOGICAL PREPARATION CONTAINING LOADED CELLS OF EXPANDED VOLUME IN SUSPENSION, FOR PREFERENTIAL ACCUMULATION IN SPLEEN AND LIVER

Ulrich Zimmermann, Jülich; Günter Pilwat, Niederzier; Karin Bock, Aachen, and Hermann J. Buers, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Dec. 14, 1977, Ser. No. 860,570
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656746
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.³ A61K *37/48, 43/00, 35/14*
U.S. Cl. 424—101 **2 Claims**

1. A process for preparing a mass of loaded cells suspended in a solution which cells by their loading are provided with material intended for chemical or physical interaction with substances present outside the cells, comprising the steps of suspending living animal blood cells selected from the group consisting of erythrocytes, lymphocytes, thrombocytes and leucocytes, and having cell membranes, in a cell-compatible solution, increasing the permeability of the cell membranes by the effect of osmotic pressure or by the effect of an electric field, or both, incorporating loading material selected from the group consisting of medicaments and radionuclides into the cells by passage of said materials from a cell-compatible solution through the membranes of increased permeability, restoring the original permeability of the membranes by healing up the membranes by regeneration effect, then separating the cells from the solution in which they were suspended and putting them for preservation in suspension in a physiological solution, said process incorporating the improvement consisting in that:

in the step of incorporating loading material into the cells from a cell-compatible solution, there is provided in the cell-compatible solution, and therefrom incorporated into the cells, a medicament or a radionuclide intended for and capable of chemical or physical interaction with substances present in the spleen or liver of an animal body and having a destructive effect on the cell membranes by interaction therewith that would lead to premature destruction of the cell membranes in the absence of agents inhibiting such effect, also an osmotically active substance compatible with the cell membranes and having the property of changing the volume of the cells without releasing their contents and thereby causing the loaded cells to differ so greatly from the original cells used in the step of incorporating loading material thereinto, that when the loaded cell suspension in a physiological solution, as prepared by the process, is injected into the bloodstream of an animal body, the loaded cells are treated as foreign bodies and are separated from the blood and broken down by the system of body organs composed of the spleen and liver and their contents are liberated in said organs, and also providing in said cell-compatible solution and therefrom incorporating into the cells and additional material selected from the group consisting of proteins and sugars which is capable of interacting with the material having a destructive effect on the cell membranes, by the formation of hydrogen bridge-bonds or covalent bonds therewith, so as to prevent reaction with the membranes without impairment of the intended effect on substances present in the liver or spleen, said additional material being provided in said cell-compatible solution used in said material incorporating step in such dosing, that after the performance said incorporation step and performance of the step of restoring the original semi-permeability of the loaded cells, the interaction of materials in the loaded cells with the cell membranes will be prevented for a predetermined period of time.

4,289,757

METHOD FOR TREATING INFLAMMATION

E. Myles Glenn, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 882,298, Feb. 28, 1978. This application Nov. 28, 1979, Ser. No. 98,157
Int. Cl.³ A61K *35/00, 31/70, 31/71, 31/43*
U.S. Cl. 424—120 **13 Claims**

1. A method of treating inflammation comprising administration to the epidermis or areas reached by rectal or vaginal suppositories to mammals suffering from an inflammatory condition not associated with a microbial component an effective dose for alleviating inflammation and its accompanying edema and erythema of an antibiotic selected from the group consisting of:

Polyamido Streptomycin
Streptomycin
Penicillin-O
Streptomycin-Dehydro
Novobiocin
Nystatin
Lincomycin
Streptolydigin
Clindamycin

and their pharmaceutically acceptable salts.

4,289,758

LIQUID BIOCIDAL COMPOSITIONS COMPRIING A MIXTURE OF SILVER IONS AND SODIUM PECTATE

James W. Van Leuven, Duarte, Calif., assignor to Aquatain Partnership, Arcadia, Calif.

Continuation of Ser. No. 75,979, Sep. 17, 1979, which is a division of Ser. No. 776,776, Mar. 11, 1977, Pat. No. 4,184,974, which is a continuation-in-part of Ser. No. 693,622, Jun. 7, 1976, abandoned, which is a continuation of Ser. No. 470,629, May 16, 1974, abandoned. This application Aug. 18, 1980, Ser. No. 178,755
The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.
Int. Cl.³ A01N *59/16;* **C11D** *3/48*
U.S. Cl. 424—132 **5 Claims**

1. A biocidal composition comprising:

sterile distilled water substantially free of alkaline earth cations, halide ions and strong acid anions containing:

sodium polypectate in the range of from about 100 to 400 parts per million;

silver ion in the range of from about 13 to 250 parts per million;

glycerine in the range of from about 4 to 8% by weight; and

sufficient water soluble base to maintain a pH in the range of from about 7.2 to 7.8.

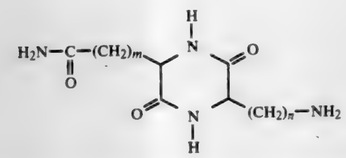
4,289,759

IMMUNOREGULATORY DIKETOPIPERAZINE COMPOUNDS

George Heavner, Flemington; Foe-Siong Tjoeng, Neshanic Station, and Gideon Goldstein, Short Hills, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 23, 1980, Ser. No. 162,228
Int. Cl.³ A61K *37/00;* **C07C** *103/52;* **A61K** *31/495;* **C07D** *241/04*
U.S. Cl. 424—177 **7 Claims**

1. A chemical compound of formula:



and optical isomers and pharmaceutically acceptable acid m is 1 and n is addition salts thereof, wherein m is 1 or 2 and n is 3 or 4.

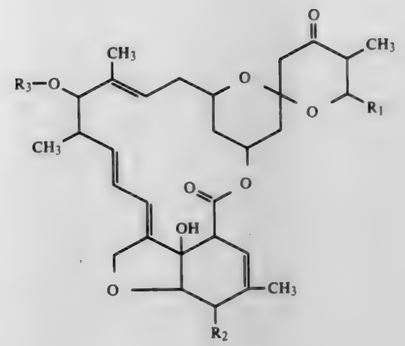
4,289,760

23-KETO DERIVATIVES OF C-076 COMPOUNDS

Helmut H. Mrozik, Matawan; John G. MacConnell, Westfield, both of N.J., and August J. Kempf, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 2, 1980, Ser. No. 146,725
Int. Cl.³ A61K *31/71, 31/335;* **C07H** *17/08;* **C07D** *313/00*
U.S. Cl. 424—181 **6 Claims**

1. A compound having the formula:



wherein

R_1 is iso-propyl or sec-butyl;

R_2 is methoxy, hydroxy, lower alkanoyloxy or substituted lower alkanoyloxy wherein the substituent is hydroxy, phenoxy or mono-, di- or tri-halo; and

R_3 is hydrogen, α-L-oleandrosyl, 4'-(α-L-oleandrosyl)-α-L-oleandrosyl, 4''-lower alkanoyl-4'-(α-L-oleandrosyl)-α-L-oleandrosyl, 4''-substituted lower alkanoyl)-4'-(α-L-oleandrosyl)-α-L-oleandrosyl wherein the substituent is hydroxy, carboxy, phenoxy or mono-, di- or tri-halo; and

the 4''- and/or 5-trisubstituted silyloxyacetyl, acetyl, trifluoroacetyl, trichloroacetyl, chloroacetyl, hydroxyacetyl, carboxyacetyl, and phenoxyacetyl protected derivatives thereof.

6. A composition useful for the treatment of parasitic infections in animals which comprises an inert carrier and an effective amount of a compound of claim 1.

4,289,761

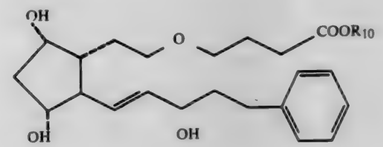
COMBINATION OF 5-OXA-17-PHENYL-PGF$_{1\alpha}$'S ESTROGENIC COMPOUNDS FOR MENSES INDUCTION

John W. Wilks, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 6, 1980, Ser. No. 175,466
Int. Cl.³ A01N *45/00*
U.S. Cl. 424—240 **8 Claims**

1. A method for inducing menses in a female primate which comprises concomitantly administering to said primate an amount effective to induce menses of

(1) a prostaglandin of the formula III



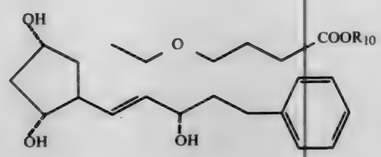
wherein R_{10} is hydrogen, or alkyl of from one to 12 carbon atoms, or a pharmacologically acceptable cation; and

(2) a compound having estrogenic activity;

said combination being administered in a total dosage of from 0.1 to 50.1 mg per kg of body weight, having between 0.1 and 50 mg of the prostaglandin and between 0.001 and 0.09 mg per kg of body weight of the estrogenic compound.

2. A pharmaceutical composition comprising

(1) a prostaglandin of the formula III



wherein R_{10} is hydrogen, alkyl of from one to 12 carbon atoms or a pharmacologically acceptable cation; and

(2) a compound having estrogenic activity, in a weight ratio of with respect to said prostaglandin of 10:9 to 50,000:1.

4,289,762

10-(1,2-PROPADIENYL) STEROIDS AS IRREVERSIBLE AROMATASE INHIBITORS

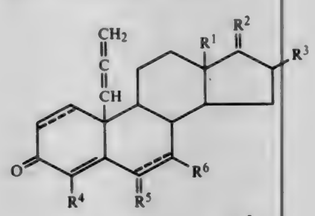
Brian W. Metcalf, Mason, and J. O'Neal Johnston, Cincinnati, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Jun. 27, 1980, Ser. No. 163,453

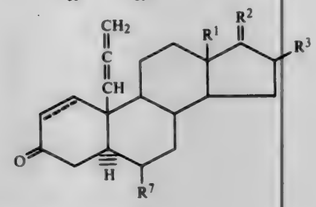
Int. Cl.[3] **A61K** *31/56, 31/58*

U.S. Cl. 424—242 **23 Claims**

1. Compounds having the formulae



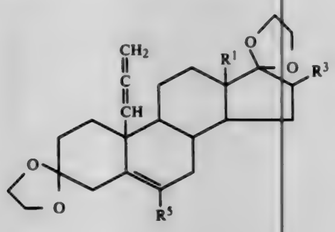
I



II

wherein ═ represents a single or a double bond; R^1 is CH_3 or C_2H_5; R^2 is (H)(OR^8) or O; R^3 is H or C_{1-3} alkyl; R^4 is H or OR^8; R^5 is H_2, O or (H)(C_{1-3} alkyl); R^6 and R^7 are each independently H or C_{1-3} alkyl; and R^8 is H or C_{1-4} alkanoyl.

20. Compound having the formulae



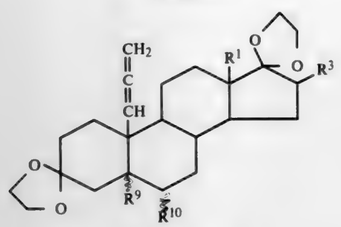
III

wherein

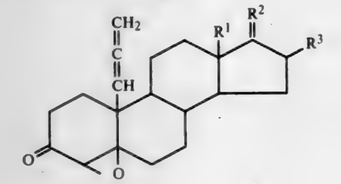
X is fluorine or chlorine and

-continued

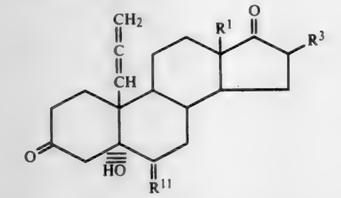
IV



V



VI



wherein R^1 is CH_3 or C_2H_5; R^2 is (H) (OR^8) or O; R^3 is H or C_{1-3} alkyl; R^5 is H, or C_{1-3} alkyl; R^8 is H or C_{1-4} alkanoyl; R^9 and R^{10} together are >O, or R^9 is OH and R^{10} is C_{1-3} alkyl; and R^{11} is (H)(OH) or O.

22. A method of treating a normal or pathological condition mediated by estrogen production and responsive to inhibition of estrogen production, which comprises administering to a subject having said condition a therapeutically effective aromatase inhibiting amount of a compound of claim **1**.

4,289,763

NOVEL CORTICOIDS, THE PREPARATION THEREOF AND THE USE THEREOF

Henry Laurent; Rudolf Wiechert; Hans Wendt, and Joachim-Friedrich Kapp, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

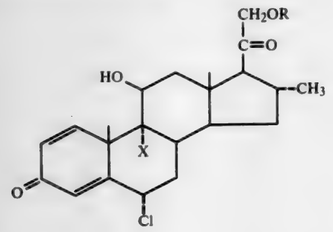
Filed May 19, 1980, Ser. No. 150,826

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920726

Int. Cl.[3] **C07J** *5/00*

U.S. Cl. 424—243 **13 Claims**

1. A corticoid of the formula



wherein

X is fluorine or chlorine and

R is hydrogen, C_{1-6} alkanoyl, benzoyl or —OCO—A—COOH

wherein

A is a carbon-to-carbon bond or a C_{1-6} hydrocarbon chain, or when

R is —OCO—A—COOH, the physiologically acceptable salts thereof with a base.

11. A method of achieving corticoidal effects in a patient in need of such treatment comprising administering to the patient a corticoidally effective amount of a compound of claim **1**.

4,289,764

STEROID COMPOSITIONS

Hyman Yarrow, Hitchin, and Martin Whitefield, London, both of England, assignors to Drythanol Ltd., London, England

Filed Dec. 4, 1979, Ser. No. 100,038

Int. Cl.[3] **C07J** *7/00;* **A61K** *31/56*

U.S. Cl. 424—243 **4 Claims**

1. In a pharmaceutical composition for topical application comprising an essentially saturated solution of hydrocortisone in an aqueous propylene glycol solution containing at least 15% but less than 50% by weight of propylene glycol, the proportion of hydrocortisone in the total composition being at least 0.08% but not greater than 0.4% by weight of aqueous propylene glycol and from 0.025 to 0.4% based on the total weight of the composition, the improvement which consists in including in the composition sufficient of a pharmacologically acceptable compatible non-toxic acid to bring the pH of the composition to within the range 2.7 to 3.3, and in substantially excluding metallic cations from the composition.

4,289,765

4-AMINOPYRIDINES AND MEDICAMENTS CONTAINING THE SAME

Wilfried Greve; Heinzgeorg von Schuh, both of Wiesbaden, and Hiristo Anagnostopulos, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

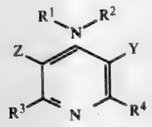
Filed Jan. 7, 1980, Ser. No. 109,913

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900504

Int. Cl.[3] **A61K** *31/44, 31/535, 31/54;* **C07D** *213/61, 213/85, 413/04, 417/04*

U.S. Cl. 424—246 **8 Claims**

1. 4-Aminopyridines of the formula



(I)

in which

R^1 is hydrogen or alkyl of up to 6 carbon atoms and

R^2 represents (a) alkyl of up to 6 carbon atoms substituted up to three times with at least one radical from the group of halogen and hydroxyl, with formyl acetalized with an alcohol of up to 3 carbon atoms, alkylthio of up to 3 carbon atoms, phenylthio or the corresponding alkyl- and phenylsulfoxy and sulfone groups, the phenyl ring optionally carrying in each case up to three substituents from the group of alkyl, alkyl halide, alkoxy, mono- or dialkylamino having each up to 4 carbon atoms in each alkyl radical, halogen, nitro, amino and hydroxy, or

(b) phenylalkyl or diphenyl-alkyl of up to 6 carbon atoms in the linear or branched alkyl moiety, the phenyl rings optionally being substituted up to three times with at least one radical from the group of alkyl, alkoxy, alkyl halide with up to 4 carbon atoms each, halogen, amino, hydroxy, nitro, the sulfamoyl group and the methylene dioxy radical, or

R^1 and R^2, together with the nitrogen atom present in the 4-position, form a five- to seven-membered heterocyclic ring optionally substituted with alkyl of up to 2 carbon atoms and including up to two hetero-atoms, the second hetero-atom being oxygen, sulfur optionally carrying up to two oxygen atoms, or nitrogen, and

R^3 and R^4 which may be identical or different, each represent alkyl of up to 9 carbon atoms, one of the two radicals optionally also being hydrogen,

Y is a nitro or a cyano group, and

Z stands for hydrogen or halogen, and the physiologically acceptable salts of these compounds.

7. A method of treating a human patient having bronchospasms which comprises oral administration to said patient of an effective dosage of from about 30 to 150 mg/day of a compound as defined in claim **1**.

4,289,766

HETEROCYCLIC CARBOTHIOAMIDES

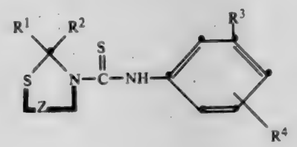
Terry W. Balko, Waldron, and Ronald E. Hackler, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 27, 1977, Ser. No. 865,094

Int. Cl.[3] **C07D** *277/04*

U.S. Cl. 424—246 **87 Claims**

T. A compound of the formula,



wherein

R^1 represents

(A) C_1–C_{18} alkyl;

(B) C_2–C_{18} alkenyl;

(C) C_4–C_{18} alkadienyl;

(D) C_3–C_{12} cycloalkyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(E) C_5–C_{12} cycloalkenyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(F) C_6–C_{12} cycloalkadienyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(G) phenyl, optionally substituted with from one to three groups selected from the group consisting of

(1) C_1–C_6 alkyl,

(2) C_1–C_6 alkoxy,

(3) C_1–C_6 alkylthio,

(4) trifluoromethyl,

(5) halo, and

(6) cyano;

(H) (cycloalkyl)alkyl, containing no more than about 18 carbon atoms, in which the cycloalkyl moiety is as defined hereinabove;

(I) phenylalkyl, containing no more than about 18 carbon atoms, in which the phenyl moiety is as defined hereinabove;

(J) diphenylalkyl, containing no more than about 18 carbon atoms, in which each phenyl moiety is as defined hereinabove;

(K) pyridyl, optionally substituted with either one or two groups selected from the group consisting of

(1) C_1–C_3 alkyl,

(2) C_1–C_3 alkoxy, or

(3) halo;

(L) piperidino attached at a position other than the nitrogen atom, optionally substituted with either one or two C_1–C_3 alkyl groups;

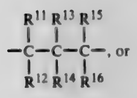
(M) morpholino attached at a position other than the nitrogen atom;
(N) pyrazinyl, optionally substituted with either one or two C_1–C_3 alkyl groups;
(O) pyridylalkyl, containing no more than about 17 carbon atoms, in which the pyridyl moiety is as defined hereinabove;
(P) piperidinoalkyl, containing no more than about 17 carbon atoms, in which the piperidino moiety is as defined hereinabove;
(Q) morpholinoalkyl, containing no more than about 16 carbon atoms;
(R) pyrazinylalkyl, containing no more than about 16 carbon atoms, in which the pyrazinyl moiety is as defined hereinabove; or
(S) tetrahydrofurylalkyl, containing no more than about 17 carbon atoms;

R^2 represents hydrogen or C_1–C_3 alkyl;
R^3 represents
(A) halo,
(B) trifluoromethyl,
(C) cyano, or
(D) 1,1,2,2-tetrafluoroethoxy;
R^4 represents
(A) hydrogen,
(B) halo, or
(C) C_1–C_3 alkyl, with the provisos that when R^4 is halo it can not be in the 2-position and when R^4 is C_1–C_3 alkyl it can not be in the 4-position;
Z represents

(A)



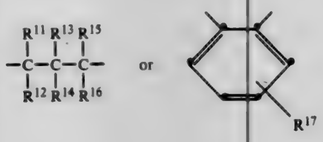
(B)



(C)



in which each of R^7–R^{16}, inclusive, independently is hydrogen or C_1–C_3 alkyl, with the proviso that the two groups attached to any given carbon atom in (A) or (B) together can not contain more than four carbon atoms; and
R^{17} represents
(1) C_1–C_3 alkyl,
(2) C_1–C_3 alkoxy,
(3) C_1–C_3 alkylthio,
(4) trifluoromethyl,
(5) halo,
(6) cyano, or
(7) hydrogen;
with the proviso that when Z represents



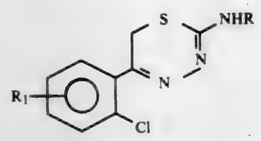
R^2 is hydrogen.

4,289,767
5-(CHLOROPHENYL)-6H-1,3,4-THIADIAZINE-2-AMINES

Winton D. Jones, Cincinnati, and Francis P. Miller, Loveland, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Sep. 4, 1979, Ser. No. 71,952
Int. Cl.³ C07D *285/16;* A61K *31/54*
U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula



wherein R is H, $C_{1\text{-}5\ or\ 7}$-straight or branched chain alkyl or allyl and R_1 is H or Cl, and
the pharmaceutically acceptable acid addition salts thereof.

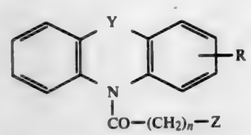
7. A method of achieving an anxiolytic effect in a patient which comprises administering to a patient in which such effect is desired an amount of a compound of claim 1 to the patient effective to induce such an effect.

4,289,768
PHENOTHIAZINE DERIVATIVES AND A PROCESS FOR THEIR PREPARATION

Joachim Gante; Hans-Eckart Radunz; Dieter Orth; Hans-Jochen Schliep, and Ernst Schorscher, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 145,652
Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917650
Int. Cl.³ A61K *31/415;* C07D *279/30*
U.S. Cl. 424—247 **11 Claims**

1. A phenothiazine derivative of the formula



wherein R is H, F, Cl, Br, I, CH_3, CF_3, CN, CH_3O or CH_3CO; Y is S, SO or SO_2; Z is imidazol-1-yl, 2-methylimidazol-1-yl, pyrazol-1-yl or benzimidazol-1-yl; and n is 1, 2 or 3;
or a physiologically acceptable acid addition salt thereof.

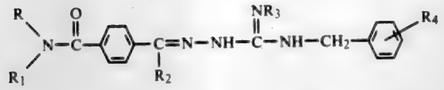
8. A pharamaceutical composition comprising an antihypertensively effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,289,769
DERIVATIVES OF P-FORMYLBENZAMIDE AMIDINOHYDRAZONE AND USE THEREOF

William B. Wright, Jr., Woodcliff Lake, and Andrew S. Tomcufcik, Old Tappan, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

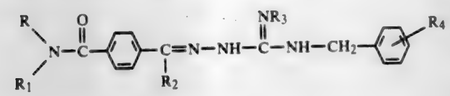
Filed Aug. 8, 1980, Ser. No. 176,233
Int. Cl.³ A61K *31/165, 31/535;* C07C *133/12;* C07D *295/18*
U.S. Cl. 424—248.56 **16 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R and R_1 may be the same or different and may be selected from hydrogen and alkyl (C_1–C_6), and where R and R_1 taken together with their associated nitrogen may be morpholine, piperidine and pyrrolidine; R_2 is hydrogen or methyl; R_3 is selected from the group comprising hydrogen, and lower alkyl (C_1–C_3); and R_4 may be hydrogen, lower alkyl (C_1–C_3), fluoro and chloro, the tautomers thereof and the pharmacologically acceptable acid-addition salts thereof.

9. The method of lowering elevated blood pressure in a mammal which comprises administering internally to said mammal an effective amount of a compound selected from the group consisting of those of the formula:



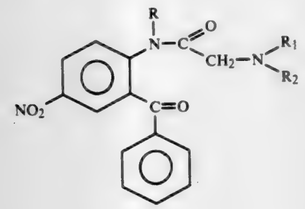
wherein R and R_1 may be the same or different and may be selected from hydrogen and alkyl (C_1–C_6), and where R and R_1 taken together with their associated nitrogen may be morpholine, piperidine and pyrrolidine; R_2 is hydrogen or methyl; R_3 is selected from the group comprising hydrogen, and lower alkyl (C_1–C_3); and R_4 may be hydrogen, lower alkyl (C_1–C_3), fluoro and chloro, the tautomers thereof and the pharmacologically acceptable acid-addition salts thereof.

4,289,770
2-BENZOYL-4-NITROANILIDES AND THEIR USE AS MEDICAMENTS

Henri Cousse, and Gilbert Mouzin, both of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Filed Jun. 13, 1980, Ser. No. 159,070
Int. Cl.³ A61K *31/535, 31/16;* C07D *295/14;* C07C *103/183*
U.S. Cl. 424—248.54 **6 Claims**

1. 2-benzoyl-4-nitro anilides having the formula I:



in which
R represents alkyl, alkenyl, cycloalkyl, or a benzyl;
R_1 represents hydrogen, alkyl or hydroxyalkyl;
R_2 represents hydroxyalkyl, alkenyl or alkynyl, unsubstituted or substituted one or more times by an alkyl radical, or cycloalkyl having three to six carbon atoms, inclusive;
R_1 and R_2 may furthermore form, with the nitrogen atom to which they are attached, a nitrogen heterocycle which may also contain a second heteroatom selected from oxygen and nitrogen;
provided, however that, when R_2 represents hydroxyalkyl R_1 may not be hydrogen as well as their salts obtained with therapeutically acceptable inorganic or organic acids.

5. A pharmaceutical composition suitable for use as a hypnotic comprising an effective hypnotic amount of a compound of claim 1 or claim 2 in combination with a pharmaceutically acceptable carrier or adjuvant.

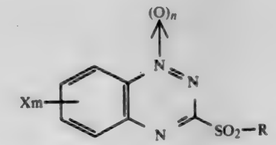
4,289,771
3-SULPHONYL-BENZO-1,2,4-TRIAZINE AND 3-SULPHONYL-BENZO-1,2,4-TRIAZINE 1-OXIDE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICINAL USE

Klaus Sasse, Berg.-Gladbach; Ingo Haller; Manfred Plempel, both of Wuppertal; Hans-Joachim Zeiler, Velbert, and Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 126,054
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2910974
Int. Cl.³ C07D *253/08;* A61K *31/53*
U.S. Cl. 424—249 **18 Claims**

1. A compound which is a 3-sulphonyl-benzo-1,2,4-triazine or 3-sulphonyl-benzo-1,2,4-triazine 1-oxide of the formula

(I)



in which
X is a hydrogen or halogen atom or an alkyl, trifluoromethyl, alkoxy or nitro group,
R is an alkyl group which is optionally substituted by phenyl optionally substituted by halogen, nitro or methyl, halogen, or alkoxy, an alkenyl or cycloalkyl group or a phenyl radical which is optionally substituted by alkyl, halogenoalkyl, halogen, alkoxy or nitro,
m is 1, 2, 3, or 4, and
n is 0 or 1.

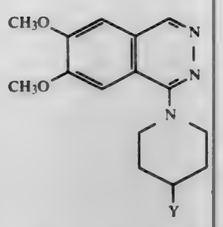
16. A method of combating microbial illnesses in warmblooded animals which comprises administering to the animals an antimicrobially effective amount of a compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,289,772
1-PIPERIDINOPHTHALAZINES AS CARDIAC STIMULANTS

Simon F. Campbell, Deal; John C. Danilewicz; Anthony G. Evans, both of Ash, Nr. Canterbury, and Allan L. Ham, Broadstairs, all of England, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 908,664, May 23, 1978. This application Dec. 13, 1979, Ser. No. 103,342
Claims priority, application United Kingdom, Jun. 3, 1977, 23582/77
Int. Cl.³ A61K *31/495*
U.S. Cl. 424—250 **20 Claims**

1. A method of treating congestive heart failure in a human subject having such condition which comprises parenterally administering to said human subject a congestive heart failure treating amount of a compound selected from the group consisting of:



and a pharmaceutically acceptable acid addition salt thereof, wherein Y is selected from the group consisting of —CH_2COR_1 wherein R_1 is alkyl having from one to four carbon atoms or alkoxy having from one to four carbon atoms; —$N(R_2)COR_3$ wherein R_2 is hydrogen or alkyl having from one to four carbon atoms, and R_3 is alkyl having from one to four carbon atoms, alkoxy having from one to four carbon atoms, phenyl or benzyloxy; —$N(R_2)SO_2R_4$ wherein R_2 is hydrogen or alkyl having from one to four carbon atoms and R_4 is alkyl having from one to four carbon atoms, phenyl, pyridyl, benzyl or dialkoxyphenyl wherein said alkoxy has from one to four carbon atoms; —$N(R_2)$—$CONR_5R_6$ wherein R_2 is hydrogen or alkyl having from one to four carbon atoms, R_5 is alkyl having from one to four carbon atoms, benzyl or pyridyl and R_6 is hydrogen or alkyl having from one to four carbon atoms; —O—$CONHR_7$ wherein R_7 is alkyl having from one to four carbon atoms, phenyl, benzyl or pyridyl; hydroxy; alkanoyloxy having from one to four carbon atoms; alkoxy having from one to four carbon atoms; substituted alkyl wherein said alkyl has from one to five carbon atoms and said substituent is hydroxy, alkoxy having from one to four carbon atoms or —$CONR_2R_6$ wherein R_2 and R_6 are each hydrogen or alkyl having from one to four carbon atoms; and substituted alkoxy wherein said alkoxy has from two to four carbon atoms and said substituent is hydroxy or alkoxy having from one to four carbon atoms, with the proviso that other than the alpha-carbon atoms is substituted.

4,289,773

ANTIVIRAL COMBINATIONS

Donald C. DeLong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 95,804, Nov. 19, 1979, which is a division of Ser. No. 49,671, Jun. 18, 1979, Pat. No. 4,210,647. This application Nov. 14, 1980, Ser. No. 206,748

Int. Cl.³ A61K *31/495, 31/13*

U.S. Cl. 424—250 **1 Claim**

1. A method of suppressing influenza virus infections in mammals which comprises orally administering to a mammal exposed to influenza virus a virus-suppressing amount of a combination containing from 0.5–5 mg./kg. of ethyl 6,7-bromo-4-dihydro-3-oxoquinoxaline carboxylate and from 0.3–3 mg./kg. of 1-(1-adamantyl)-1-aminoethane.

4,289,774

LIPID LOWERING AND ANTI-THROMBOTIC 6-ARYLPYRIDAZIN-3-ONES AND A PROCESS FOR THEIR PREPARATION

Erich Schacht, Seeheim; Hans-Adolf Kurmeier, Darmstadt; Joachim Gante, Darmstadt-Arheilgen; Reinhard Lissner, Fischbachtal- Lichtenberg; Guido Melzer, Hofheim, and Dieter Orth, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,604

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845456

Int. Cl.³ C07D *237/04;* **A61K** *31/50;* **C07D** *237/26, 401/04*

U.S. Cl. 424—250 **4 Claims**

1. 5-Methyl-6-p-biphenylyl-2,3,4,5-tetrahydropyridazin-3-one.

2. A pharmaceutical composition comprising an amount of a compound of claim 1 effective to lower the lipid level in a patient and a pharmaceutically acceptable adjuvant.

4,289,775

PENICILLINS

Bernd Wetzel; Eberhard Woitun, both of Biberach an der Riss; Wolfgang Reuter, Laupertshausen; Roland Maier, Biberach an der Riss; Uwe Lechner, Ummendorf, and Hanns Goeth, Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

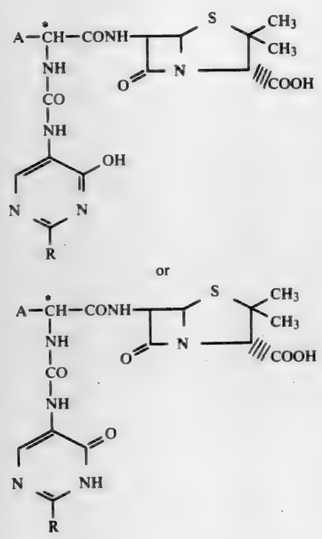
Continuation of Ser. No. 117,103, Jan. 31, 1980, abandoned. This application May 14, 1980, Ser. No. 149,839

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910190

Int. Cl.³ A61R *31/505;* **C07D** *499/68;* **C07D** *499/70*

U.S. Cl. 424—251 **6 Claims**

1. A compound of the formula



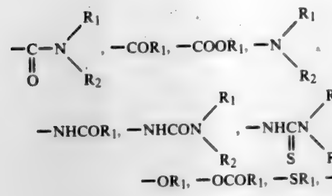
wherein

A is phenyl, p-hydroxy-phenyl, 2-thienyl, 3-thienyl or 3,4-disubstituted phenyl, where the substituents, which may be identical to or different from each other, are each chlorine, hydroxyl or methoxy;

R is —NH—Z—X;

Z is straight or branched alkylene of 1 to 6 carbon atoms or cycloalkylene of 3 to 6 carbon atoms;

X is cyano, hydroxyl, mercapto, aminocarbonyl, aminosulfonyl,



R_1 is straight or branched alkyl of 1 to 4 carbon atoms or phenyl; and

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms;

or a non-toxic, pharmacologically acceptable salt thereof formed with an onorganic or organic base.

5. An antibacterial pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antibacterial amount of a compound of claim 1.

4,289,776

XANTHINE DERIVATIVES

Werner Mohler, Hofheim; Manfred Jayme, Rüsselsheim, and Jaromir Komarek, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

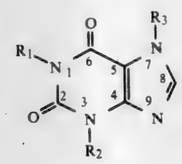
Continuation of Ser. No. 775,551, Mar. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 531,048, Dec. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 479,434, Jun. 14, 1974, abandoned. This application Apr. 23, 1979, Ser. No. 32,536

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1973, 2330742

Int. Cl.³ A61K *31/52;* **C07D** *473/06*

U.S. Cl. 424—253 **19 Claims**

1. A compound of the formula



(I)

wherein one of

R_1 and R_2 is a straight-chain or branched oxoalkyl having from 5 to 8 carbon atoms; the oxygen atom of the oxoalkyl is attached to a non-terminal carbon atom, is separated from the nearest ring nitrogen atom by at least three carbon atoms when it is in the (ω-1)-position of the oxoalkyl and is separated from the nearest ring nitrogen atom by at least four carbon atoms when it is in a position other than the (ω-1)-position of the oxoalkyl;

R_2 is alkyl having up to 12 carbon atoms and the other of R_1 and R_3 is straight-chain or branched alkyl having from 1 to 12 carbon atoms; at least one of R_1, R_2 and R_3 being alkyl having more than one carbon atom.

11. A pharmaceutical composition comprising a pharmaceutical carrier or excipient and a member according to claim 1 in an amount and concentration which are effective to improve blood circulation of an arterial-blood-flow-deficient host to which the composition is administered.

4,289,777

QUINOLONECARBOXYLIC ACID DERIVATIVES AND PHARMACEUTICAL PREPARATIONS THEREOF FOR TREATMENT OF AN ALLERGIC DISEASE OF THE RESPIRATORY TRACT

Rudolf Albrecht; Eberhard Schröder, and Irmgard Böttcher, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

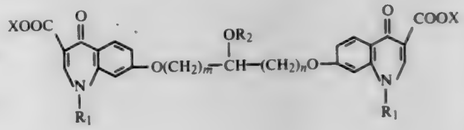
Filed Dec. 27, 1979, Ser. No. 107,676

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856908

Int. Cl.³ A61K *31/47;* **C07D** *401/12*

U.S. Cl. 424—258 **15 Claims**

1. A quinolone compound of the formula



wherein

m and n independently are each 1–4;

R_1 is hydrogen or alkyl of 1–6 carbon atoms;

R_2 is hydrogen, alkanoyl of 1–8 carbon atoms or benzoyl; and

X is hydrogen or alkyl of 1–6 carbon atoms

or; for those compounds wherein X is H, the pharmaceutically acceptable salts thereof with a base.

11. A pharmaceutical composition comprising an amount of a compound of claim 1 effective to treat an allergic disease of the respiratory tract and a pharmaceutically acceptable carrier.

15. A method of treating an allergic disease of the respiratory tract in a mammal which comprises administering an amount of a compound of claim 1 effective for such treatment.

4,289,778

2-(SUBSTITUTED IMINO)-N-(3-SUBSTITUTED PHENYL)-3-THIAZOLIDINECARBOTHIOAMIDES

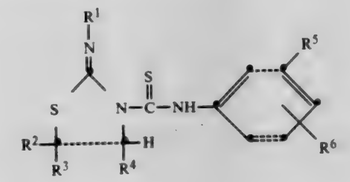
Terry W. Balko, Waldron, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 27, 1977, Ser. No. 864,998

Int. Cl.³ C07D *277/04*

U.S. Cl. 424—263 **97 Claims**

1. A compound of the formula,



wherein

R^1 represents

(A) C_1–C_{18} alkyl;

(B) C_2–C_{18} alkenyl;

(C) C_4–C_{18} alkadienyl;

(D) C_3–C_{12} cycloalkyl, optionally substituted with either one or two C_1–C_4 alkyl groups;

(E) C_5–C_{12} cycloalkenyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(F) C_6–C_{12} cycloalkadienyl, optionally substituted with either one or two C_1–C_3 alkyl groups;

(G) phenyl, optionally substituted with from one to three groups selected from the group consisting of

(1) C_1–C_6 alkyl,

(2) C_1–C_6 alkoxy,

(3) C_1–C_6 alkylthio,
(4) trifluoromethyl,
(5) halo, and
(6) cyano;
(H) (cycloalkyl)alkyl, containing no more than about 18 carbon atoms, in which the cycloalkyl moiety is as defined herein above;
(I) phenylalkyl, containing no more than about 18 carbon atoms, in which the phenyl moiety is as defined hereinabove;
(J) diphenylalkyl, containing no more than about 18 carbon atoms, in which each phenyl moiety is as defined hereinabove;
(K) pyridyl, optionally substituted with either one or two groups selected from the group consisting of
(1) C_1–C_3 alkyl,
(2) C_1–C_3 alkoxy, or
(3) halo;
(L) piperidino, optionally substituted with either one or two C_1–C_3 alkyl groups;
(M) morpholino;
(N) pyrazinyl, optionally substituted with either one or two C_1–C_3 alkyl groups;
(O) pyridylalkyl, containing no more than about 17 carbon atoms, in which the pyridyl moiety is as defined hereinabove;
(P) piperidinoalkyl, containing no more than about 17 carbon atoms, in which the piperidino moiety is as defined hereinabove;
(Q) morpholinoalkyl, containing no more than about 16 carbon atoms;
(R) pyrazinylalkyl, containing no more than about 16 carbon atoms, in which the pyrazinyl moiety is as defined hereinabove;
(S) tetrahydrofurylalkyl, containing no more than about 17 carbon atoms; and
(T) substituted amino, having the formula

in which R^8 and R^9 independently are selected from the group consisting of hydrogen, C_1–C_{18} alkyl, phenyl, and phenylalkyl, wherein the phenyl and phenylalkyl moieties are as defined hereinabove, provided that at least one of R^8 and R^9 is other than hydrogen;
R^2 and R^3 independently are selected from the group consisting of
(A) hydrogen,
(B) C_1–C_3 alkyl, and
(C) phenyl, with the proviso that when one of R^2 and R^3 is phenyl, the other of R^2 and R^3 is hydrogen;
R^4 represents
(A) hydrogen or
(B) C_1–C_3 alkyl;
R^5 represents
(A) halo,
(B) trifluoromethyl,
(C) cyano, or
(D) 1,1,2,2-tetrafluoroethoxy; and
R^6 represents
(A) hydrogen,
(B) halo, or
(C) C_1–C_3 alkyl;
with the provisos that when R^5 is bromo, R^1 can not be 3-bromophenyl; when R^5 is cyano, R^1 can not be 3-cyanophenyl; when R^5 is halo and R^6 is halo, R^6 can not be in the 2-position; and when R^5 is halo and R^6 is C_1–C_3 alkyl, R^6 can not be in the 4-position.

4,289,779

ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, England

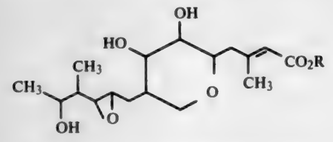
Division of Ser. No. 931,385, Aug. 7, 1978, Pat. No. 4,237,161, which is a division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Jun. 11, 1979, Ser. No. 47,159

Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77

Int. Cl.[3] **A61K** *31/44, 31/47, 31/35*

U.S. Cl. 424—263 **12 Claims**

7. The method of treating bacterial infections in humans and other animals which comprises administering to a human or other animal in need thereof an antibacterially effective amount of a compound of the formula:



wherein R is a heterocyclic ring system comprising oxygen, nitrogen or sulfur as the hetero atom and containing six ring members in the hetero ring, said system being a monocyclic or a fused benzo bicyclic system and being unsubstituted or substituted with a member selected from the group consisting of alkyl of 1 to 6 carbon atoms, carbalkoxy of 1 to 6 carbon atoms in the alkoxy group, phenyl and oxo.

4,289,780

METHODS OF TREATING SLEEP DISTURBANCE

Rene Spiegel, Binningen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

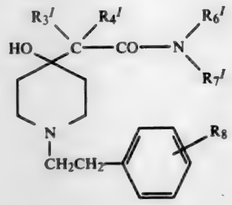
Filed Apr. 7, 1980, Ser. No. 138,090

Claims priority, application United Kingdom, Apr. 12, 1979, 12923/79

Int. Cl.[3] **A61K** *31/447*

U.S. Cl. 424—267 **7 Claims**

1. A method of treating sleep disturbance in a subject in need of such treatment, which method comprises administering to said subject an amount sufficient to treat sleep disturbance of a compound of formula Ia



Ia

wherein
R_3^1 is C_{1-4}-alkyl,
R_4^1 and R_6^1 are independently hydrogen or C_{1-4}-alkyl,
R_7^1 is C_{1-4}-alkyl, C_{4-6}-cycloalkyl or C_{4-6}-cycloalkyl-C_{1-4}-alkyl, and
R_8 is hydrogen, bromine, chlorine, fluorine or C_{1-4}-alkyl,
or a pharmaceutically acceptable acid addition salt thereof.

4,289,781

ANTI-PSYCHOTIC PHTHALIMIDINE DERIVATIVES

Karl S. Bengtsson; Seth O. Thorberg, both of Järna, and Sven O. Ogren, Nykvarn, all of Sweden, assignors to Astra Läkemedel Aktiebolag, Södertälje, Sweden

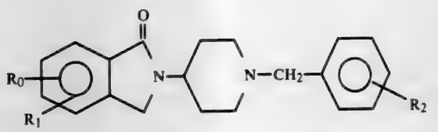
Filed Aug. 14, 1980, Ser. No. 177,888

Claims priority, application Sweden, Aug. 27, 1979, 7907121

Int. Cl.[3] **C07D** *401/04;* **A61K** *31/40*

U.S. Cl. 424—267 **13 Claims**

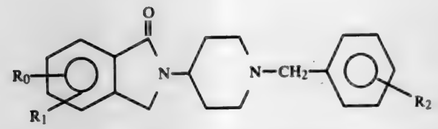
1. A compound of the formula



I

and pharmaceutically acceptable acid-addition salts thereof, in which formula R_0 and R_1 are the same or different and are each selected from hydrogen, halogen, alkyl having 1, 2 or 3 carbon atoms, alkoxy having 1, 2 or 3 carbon atoms, and trifluoromethyl, and R_2 is selected from hydrogen, halogen, alkyl having 1, 2 or 3 carbon atoms, alkoxy having 1, 2 or 3 carbon atoms, and trifluoromethyl.

10. A method for the treatment of psychoses in man, characterized by the administration to a host in need of such treatment of a therapeutically effect amount of a compound of the formula



I

or a pharmaceutically acceptable acid-addition salt thereof, in which formula R_0 and R_1 are the same or different and are each selected from hydrogen, halogen, alkyl having 1, 2 or 3 carbon atoms, alkoxy having 1, 2 or 3 carbon atoms, and trifluoromethyl, and R_2 is selected from hydrogen, halogen, alkyl having 1, 2 or 3 carbon atoms, alkoxy having 1, 2 or 3 carbon atoms, and trifluoromethyl.

4,289,782

ANTIVIRAL 1-SULFONYLBENZIMIDAZOLES

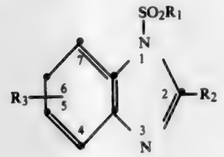
Charles J. Paget; James W. Chamberlin, both of Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 30,782, Apr. 17, 1979, which is a division of Ser. No. 883,113, Mar. 3, 1978, Pat. No. 4,174,454, which is a division of Ser. No. 750,991, Dec. 15, 1977, Pat. No. 4,118,742, which is a continuation-in-part of Ser. No. 608,415, Aug. 28, 1975, abandoned. This application Nov. 14, 1979, Ser. No. 94,149.

Int. Cl.[3] **A61K** *31/415;* **A01N** *43/52*

U.S. Cl. 424—273 B **27 Claims**

1. A method of suppressing the growth of a virus which comprises adding to a medium in which the virus is growing an antivirally effective amount of a compound of the formula

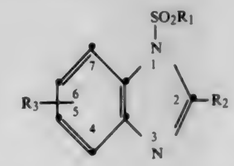


wherein
R_1 is C_1–C_5 alkyl, C_3–C_7 cycloalkyl, phenyl, furyl, thienyl, or R_4R_5N—, wherein R_4 and R_5 are independently C_1–C_3 alkyl or R_4 and R_5, when taken together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino or morpholino;
R_2 is amino, formamido, acetamido, propionamido or butyramido;
R_3 is
hydroxy, C_2–C_8 alkanoyloxy, phenylacetoxy, α-C_1–C_7 alkyl-α-hydroxybenzyl or benzoyloxy; or



wherein R_6 is hydrogen, C_1–C_7 alkyl, C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl) methyl, 1-(C_3–C_7 cycloalkyl) ethyl, benzyl, phenyl or phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl; or Z═C(R_6)—, wherein Z is hydroxyimino, C_1–C_4 alkoxyimino, C_1–C_4 acyloxyimino, benzyloxyimino, benzoyloxyimino, hydrazono, thiocarbamylhydrazono, carboxymethoxyimino, methoxycarbonylhydrazono, ethoxycarbonylhydrazono, carbamylhydrazono, C_1–C_4 alkoxycarbonylethylcarbonyloxyimino, benzyloxycarbonylaminomethylcarbonyloxyimino, p-nitrobenzyloxycarbonylethylcarbonyloxyimino, phthalimidomethylcarbonyloxyimino, or C_1–C_7 alkylidene; and
R_3 is at the 5 or 6 position.

11. A method of suppressing the growth of a virus which comprises administering intranasally to a warm-blooded animal infected with the virus an antivirally effective amount of a compound of the formula:



wherein
R_1 is C_1–C_5 alkyl, C_3–C_7 cycloalkyl, phenyl, furyl, thienyl, or R_4R_5N—, wherein R_4 and R_5 are independently C_1–C_3 alkyl or R_4 and R_5, when taken together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino or morpholino;
R_2 is amino, formamido, acetamido, propionamido or butyramido;
R_3 is
hydroxy, C_2–C_8 alkanoyloxy, phenylacetoxy, α-C_1–C_7 alkyl-α-hydroxybenzyl or benzoyloxy; or



wherein R_6 is hydrogen, C_1–C_7 alkyl, C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl)methyl, 1-(C_3–C_7 cycloalkyl)ethyl, benzyl, phenyl or phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl; or Z═C(R_6)—, wherein Z is hydroxyimino, C_1–C_4 alkoxyimino, C_1–C_4 acyloxyimino, benzyloxyimino, benzoyloxyimino, hydrazono, thiocarbamylhydrazono, carboxymethoxyimino, methoxycarbonylhydrazono, ethoxycarbonylhydrazono, carbamylhydrazono, C_1–C_4 alkoxycarbonylethylcarbonyloxyimino, benzyloxycarbonylaminomethylcarbonyloxyimino, p-nitrobenzyloxycarbonylethylcarbonyloxyimino, phthalimidomethylcarbonyloxyimino, or C_1–C_7 alkylidene; and

R_3 is at the 5 or 6 position.

4,289,783

ETOMIDATE-CONTAINING COMPOSITIONS

Jean Mesens, Geel, Belgium, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation of Ser. No. 942,236, Sep. 14, 1978, abandoned. This application Jan. 16, 1980, Ser. No. 112,671

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **12 Claims**

1. An etomidate-containing infusion liquid for intravenous administration to provide an anesthetic effect which comprises a physiologically acceptable infusion liquid to which has been added a solution of etomidate hydrochloride or hydrobromide in a medium which contains from 80% to about 99.8% by weight of ethanol to provide an anesthetically effective concentration of at least 0.05 mg/ml of atomidate in the infusion liquid.

4,289,784

PYROMELLITIC DIIMIDES AND METHOD OF INCREASING FEED EFFICIENCY IN RUMINANT ANIMALS

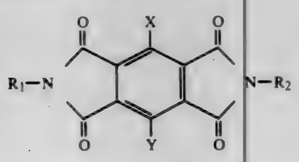
Richard J. Bochis, East Brunswick; Michael H. Fisher, and Bruce O. Linn, both of Bridgewater, all of N.J., assignors to Merck & Co., Inc., N.J.

Division of Ser. No. 954,040, Oct. 23, 1978, abandoned. This application Apr. 22, 1980, Ser. No. 142,795

Int. Cl.³ A61K *31/40*; C07D *209/56*

U.S. Cl. 424—274 **13 Claims**

1. A compound having the formula:



wherein R_1 is hydrogen and R_2 is loweralkyl, loweralkenyl, loweralkynyl, cycloalkyl, loweralkanoyl, benzoyl, substituted phenyl wherein the substituent is sulfonamido, hydroxy, carboxy, nitro, methylthio, or hydroxy loweralkyl; substituted loweralkyl wherein the substituents are one or two of hydroxy, halogen nitro, loweralkoxy, carboxy, phenyl, hydroxyloweralkoxy, loweralkanoyloxy, phenoxy, amino, mono- or di-loweralkylamino, mercapto, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkoxycarbonyl, carbamyl, hydroxyloweralkylthio, hydroxyloweralkylsulfinyl, hydroxyloweralkylsulfonyl, hydroxyloweralkylamino, di-(hydroxyloweralkyl)amino, loweralkanoylamino or hydroxyphenyl; diloweralkylamino, or mono-substituted amino wherein the substituent is loweralkanoyl, benzoyl or loweralkoxycarbonyl; and

X and Y are independently hydrogen, loweralkyl or halogen.

12. A method for increasing the feed efficiency of a ruminant animal which comprises orally administering to said ruminant animal an effective amount of a compound of claim **1**.

4,289,785

METHOD AND COMPOSITIONS INVOLVING PROSTAGLANDINS

John W. Wilks, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

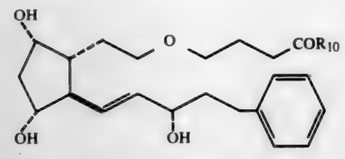
Filed Aug. 6, 1980, Ser. No. 175,467

Int. Cl.³ A61K *31/335, 31/215, 31/19, 31/165*

U.S. Cl. 424—279 **14 Claims**

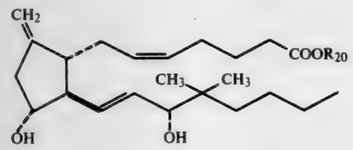
1. A method for inducing menses in a female primate which comprises concomitantly administering to said primate an amount effective to induce menses of

(1) a prostaglandin of the formula IV,



wherein R_{10} is NH_2 or $—OR_{20}$ and R_{20} is hydrogen, alkyl of from one to 12 carbon atoms, or a pharmacologically acceptable cation; and either

(2) a prostaglandin of the formula V,



wherein R_{20} is defined as above, R_{20} in formulas IV and V being the same or different, or $PGF_{2\alpha}$ 1,15-lactone.

4,289,786

FARNESYLACETIC ACID ESTER DERIVATIVES

Susumu Okabe, Kyoto; Yoshiaki Omura, Okayama; Yoichi Ninagawa, and Yoshiji Fujita, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

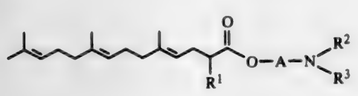
Filed Nov. 21, 1979, Ser. No. 96,570

Claims priority, application Japan, Nov. 28, 1978, 53-147622

Int. Cl.³ A61K *31/23*; C09F *5/08*

U.S. Cl. 424—312 **20 Claims**

1. A farnesylacetic acid ester derivative selected from the group consisting of compounds represented by the general formula (I)



wherein

A is a straight or branched alkylene group having 2 to 10 carbon atoms in its principal chain,

R′ is a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 5 or 6 carbon atoms, an aryl group having 6 to 10 carbon atoms, an aralkyl group having 7 to 9 carbon atoms, or an alkenyl group having 2 to 15 carbon atoms, and

R^2 and R^3 are the same or different and each is a hydrogen atom or an alkyl group having 1 to 8 carbon atoms,

provided that the total number of carbon atoms contained in said A, R^1, R^2 and R^3 groups is at least five; and pharmaceutically acceptable salts thereof.

18. A method of treating ulcers of the mammalian digestive tract in an afflicted host which comprises administering to said host a farnesylacetic acid ester derivative or a pharmaceutically acceptable salt thereof as defined in claim **1** in a pharmaceutically acceptable carrier in dosage unit form in a daily dose ranging from about 100 mg to about 2500 mg of said derivative or pharmaceutically acceptable salt thereof.

4,289,787

QUATERNARY AMMONIUM ANTIARRHYTHMIC DRUGS

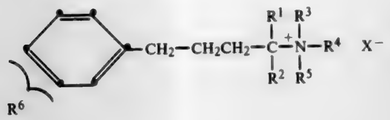
Bryan B. Molloy, North Salem, and Mitchell I. Steinberg, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 861,789, Dec. 19, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 102,043

Int. Cl.³ A61K *31/14*; C07C *85/00, 87/00, 93/00*

U.S. Cl. 424—329 **28 Claims**

1. A compound having the general formula



wherein:

R^1 is hydrogen or C_1–C_2 alkyl;

R^2 is hydrogen or C_1–C_3 alkyl;

R^3 is C_1–C_4 alkyl or phenyl C_1–C_4 alkyl;

R^4 is C_1–C_8 alkyl;

R^5 is C_6–C_{10} alkyl;

R^6 is hydrogen, hydroxy, halogen, nitro, C_1–C_3 alkoxy, or C_1–C_3 alkyl; and

X is a therapeutically acceptable anion.

19. A method of treating re-entrant arrhythmias comprising administering to a subject in need thereof an antiarrhythmically effective dose of a compound of claim **1**.

4,289,788

INSTANT YOGURT COMPOSITION

Stanley D. Cajigas, Point Pleasant, N.J., assignor to M P Food Technology, Inc., Fairfield, N.J.

Filed Jun. 25, 1979, Ser. No. 51,819

Int. Cl.³ A23C *9/12, 23/00*

U.S. Cl. 426—61 **2 Claims**

1. An instant powdered composition comprising a mixture of (a) from about 0.01 to 5 percent by weight Lactobacillus culture, (b) from about 1 to about 35 percent by weight deactivated yogurt powder, (c) from about 2 to about 25 percent by weight gelatin, (d) from about 0.1 to about 20 percent by weight locust bean gum, and (e) from about 10 to about 50 percent by weight of a mixture of acid whey and citric acid based upon the weight of the total composition.

4,289,789

INSTANT YOGURT DRINK COMPOSITION

Stanley D. Cajigas, Point Pleasant, N.J., assignor to M P Food Technology, Inc., Fairfield, N.J.

Filed Jun. 25, 1979, Ser. No. 51,820

Int. Cl.³ A23C *9/12, 23/00*

U.S. Cl. 426—61 **2 Claims**

1. An instant powdered composition which may be reconstituted to form a yogurt drink, said composition comprising a mixture of (a) from about 0.01 to about 5 percent by weight Lactobacillus culture, (b) from about 1 to about 35 percent by weight deactivated yogurt powder, (c) from about 0.1 to about 10 percent by weight of carboxy methyl cellulose, (d) from about 0.1 to about 20 percent by weight locust bean gum, and (e) from about 10 to about 50 percent by weight of a mixture of acid whey and citric acid based upon the weight of the total composition.

4,289,790

SIZZLING AND CRUNCHY CHOCOLATE CANDY

Georges Bruelle, Paris, France, assignor to General Foods France S.A., Rueil Malmaison, France

Filed Feb. 25, 1980, Ser. No. 124,029

Int. Cl.³ A23G *3/00*

U.S. Cl. 426—93 **14 Claims**

1. A confection which comprises:

(a) a crunchy core selected from the group consisting of cereal, dried fruit, nuts and mixtures thereof, and

(b) a protective matrix coating formed on said core, said matrix coating comprising alternate layers of chocolate and particles of gasified candy, the innermost and outermost layers of said coating being chocolate, said particles of gasified candy being from −4 to +40 U.S. Standard Sieve.

4,289,791

ICE CREAM CONE WITH JACKET ATTACHED AND METHOD FOR PRODUCING SAME

David Weinstein, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Continuation-in-part of Ser. No. 885,278, Mar. 10, 1978, and Ser. No. 910,886, May 30, 1978. This application May 4, 1979, Ser. No. 36,227

Int. Cl.³ B65G *59/00*; A21D *13/00*

U.S. Cl. 426—139 **15 Claims**

1. A method of adhering a sanitary jacket to a conformally shaped ice cream cone comprising the steps of:

interposing a mixture of water and an adhesion-reducing agent between said sanitary jacket and said ice cream cone;

causing said sanitary jacket and said ice cream cone to be brought together in juxtaposition with said mixture of water and adhesion-reducing agent being dispersed therebetween; and

drying the combined cone and sanitary jacket;

said adhesion-reducing agent comprising a food grade, nontoxic and hydrophilic material selected from the group consisting of an alcohol, a natural sugar syrup, a surfactant, and mixtures thereof, which is mixed with water in an amount sufficient to cause said adhesion while at the same time permitting separation of the jacket from the cone with substantially no jacket or cone tear.

4,289,792

MICROWAVE TREATMENT OF FOOD PRODUCTS

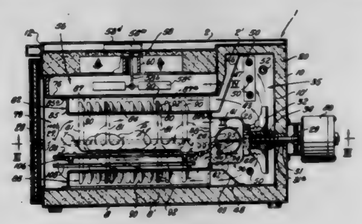
Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220

Division of Ser. No. 687,982, May 19, 1976, Pat. No. 4,154,861. This application Mar. 16, 1979, Ser. No. 21,261

The portion of the term of this patent subsequent to May 20, 1992, has been disclaimed.

Int. Cl.³ A21D *6/00*

U.S. Cl. 426—241 **6 Claims**



1. A method of controlling heat transferred to a food product comprising the steps of: delivering microwave energy to heat the food product; forming a plurality of streams of high velocity heated gas; directing each of the streams of high

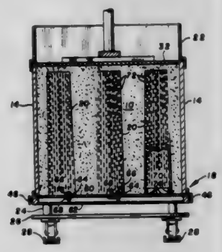
velocity heated gas perpendicular to the surface of the food product such that the streams of high velocity gas impinge against discrete areas on the surface of the food product, before gas in the streams is diffused, to wipe away the boundary layer of air and moisture from the discrete areas against which the streams impinge; and moving the food product relative to the streams of high velocity gas such that heat is transferred to the surface of the food product at areas upon which the streams of high velocity gas impinge to increase the temperature of the surface of the food product at the areas of impingement before the areas of impingement move out of impinging relation with the streams of high velocity gas.

4,289,793

METHOD OF MAKING CHEESE

Leon D. Gustafson, and Wayne C. Mielke, both of Marshfield, Wis., assignors to Land O'Lakes, Inc., Arden Hills, Minn.

Division of Ser. No. 1,598, Jan. 8, 1979. This application May 12, 1980, Ser. No. 148,990
Int. Cl.³ A23C *19/05*
U.S. Cl. 426—491 **3 Claims**



1. A method of manufacturing cheese from curd, the method comprising:
- filling the curd into a container having a removable bottom, side walls, and an essentially open top, and having a plurality of upstanding perforated tapered posts secured to and extending and tapering from the bottom to substantially a desired height of the curd after compacting, the upstanding perforated tapered posts being essentially uniformly distributed within the container and being spaced longitudinally and laterally from one another and from the sidewalls of the container along their entire height such that the curd completely surrounds the upstanding perforated tapered posts as the container is filled, each of said tapered posts having an essentially diamond-shaped cross-section in which the cross-sectional length is substantially greater than the cross-sectional width;
- inserting a pressure plate into the top of the container over the curd, applying pressure downwardly to the pressure plate and hence to the curd in the container substantially parallel to the longitudinal axes of the posts to compact the curd and to cause draining through the upstanding perforated tapered posts through openings in the bottom to whey collecting means beneath said posts;
- continuing such downward pressure until the under surface of the pressure plate is slightly spaced from the tops of the tapered posts so that draining of the whey is accomplished without the need of inserting probes from above;
- inverting the container with the compacted curd therein;
- withdrawing the bottom and the inverted upstanding perforated posts secured thereto from the curd, and
- applying pressure downwardly to the curd to cause substantial closing of the downwardly extending essentially diamond shaped openings produced as a result of withdrawing the inverted upstanding perforated posts to permit knitting together of the curd to provide a cheese block of uniform texture.

4,289,794

PROCESS OF PREPARING GASIFIED CANDY

Fredric Kleiner, New City; Pradip K. Roy, Yorktown, and Michael J. Kuchman, Hopewell Junction, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 12, 1980, Ser. No. 129,513
Int. Cl.³ A23G *9/00*
U.S. Cl. 426—660 **8 Claims**

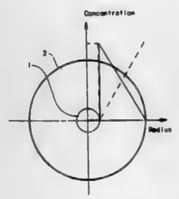
1. In a process of preparing gasified candy whereby a sugar melt is gasified at superatmospheric pressure and the gasified sugar melt is cooled below its fusion temperature under superatmospheric pressure to form a gasified candy, the improvement which comprises:
- maintaining the sugar melt during the gasification at a temperature below about 280° F. effective to produce in the gasified candy product observable gas bubbles wherein the majority of the observable gas bubbles have a diameter of above about 225μ, and wherein the gasifying gas is carbon dioxide, nitrogen or air.

4,289,795

METHOD FOR PREPARING PREPARATIONS HAVING CONTROLLED RELEASE OF AN ACTIVE COMPONENT

Conny B. Bogentoft, Mölndal, and Curt H. Appelgren, Frölunda, both of Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

Continuation of Ser. No. 742,283, Nov. 16, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,124
Claims priority, application Sweden, Nov. 17, 1975, 7512883
Int. Cl.³ A61K *27/12*
U.S. Cl. 427—3 **12 Claims**



1. A process for producing a preparation comprising a plurality of granules each having a core and a unitary layer thereon containing at least one pharmaceutically active material which, on disintegration, release said pharmaceutically active material at a controlled rate, comprising applying to said cores in a continuous coating operation a solution or suspension containing at least one active compound and at least one pharmaceutically inactive release controlling substance over a period of time sufficient to cause said unitary layer of said active ingredient and inactive release controlling substance to form on each core to give granules of size 0.3–2 mm, during said time period the concentration of active ingredient being decreased in the solution or suspension from which the layer is formed by adding additional release controlling substance to the solution or suspension, whereby there results granules each having a layer containing an active ingredient in which layer the concentration of active ingredient decreased radially outwardly from the core to the outer surface of said layer.

4,289,796

Patent Not Issued For This Number

4,289,797

METHOD OF DEPOSITING UNIFORM FILMS OF SI_xN_y OR SI_xO_y IN A PLASMA REACTOR

Aline Akselrad, Princeton, N.J., assignor to Western Electric Co., Incorporated, New York, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,902
Int. Cl.³ C23C *11/00*
U.S. Cl. 427—39 **6 Claims**

1. A method of depositing a uniform dielectric film on a silicon substrate, comprising the steps of:
- flowing a first plasma comprising an excited mixture of inert gas and a volatile Si compound over said substrate thereby to form a film having porous a-Si_xH_y over the surface of said substrate;
- discontinuing the flow of said first plasma and substituting therefor a flow of a second excited plasma comprising an activated gas selected from the group consisting of oxygen and nitrogen over said substrate; and then
- elevating the temperature of said substrate to cause the hydrogen to diffuse-out from said porous a-Si_xH_y film, each departing hydrogen atom leaving behind a dangling Si bond which combines with an excited radical of the activated gas in said second plasma thereby to form said dielectric film of formula Si_xM_y, where M represents either oxygen or nitrogen, depending on the identity of said activated gas.

4,289,798

METHOD FOR REDUCING SURFACE GLOSS

George E. Bagley; Willard E. McCreary, and Werner Rueggeberg, all of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 14, 1980, Ser. No. 140,102
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—39 **10 Claims**



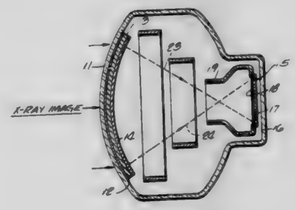
1. A method for producing a radiant energy cured resinous coating having a reduced gloss level, wherein said coating does not require the presence of flatting pigments to achieve gloss reduction, which method comprises:
- (a) coating the surface of a substrate with a liquid resinous coating composition curable by radiant energy;
- (b) treating at least a portion of the surface of the liquid resinous coating with a corona discharge sufficient to reduce the gloss level of the coating in the treated portion; and
- (c) exposing the liquid resinous coating having a reduced gloss level to a dosage of radiant energy sufficient to polymerize the coating and set the reduced gloss level.

4,289,799

METHOD FOR MAKING HIGH RESOLUTION PHOSPHORESCENT OUTPUT SCREENS

Walter P. Sarvas, Waukesha, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,558
Int. Cl.³ H01J *29/18*; G21K *4/00*
U.S. Cl. 427—65 **8 Claims**



1. A method of making phosphorescent screens comprising the steps of:
- coating a substrate with a slurry composed of substantially uniformly fine phosphor particles having a first degree of fineness suspended in a thermoplastic fluid,
- spinning said substrate to remove any excess slurry and to reduce the coating to the thickness desired, and permitting said thermoplastic fluid to set,
- heating said substrate and the coated layer formed as aforesaid until the thermoplastic softens or begins to melt,
- pressing onto said softened thermoplastic with a fine low durometer sponge more phosphor having said first degree of fineness and removing any excess phosphor particles which are not adhered,
- heating said substrate and the coating thereon to drive out the volatile constituents of the thermoplastic,
- depositing on said coating another coating of slurry composed of substantially uniformly fine phosphor particles having a second degree of fineness, which is more coarse that the first, suspended in a water and silicate mixture, and centrifuging the substrate to reduce said other coating to the desired thickness,
- drying said other coating, applying a thin coating of lacquer over said other coating and letting the lacquer dry,
- depositing a thin aluminum layer on said lacquer, and
- heating the coated substrate to drive off the volatile constituents of said lacquer.

4,289,800

METHOD FOR PROVIDING AN ELECTRICALLY CONDUCTIVE BRIDGE IN CATHODE RAY TUBES

Ricky H. Shah, Glendale Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Division of Ser. No. 86,907, Oct. 22, 1979. This application Jul. 18, 1980, Ser. No. 170,206
Int. Cl.[3] H01J 29/06
U.S. Cl. 427—68 8 Claims

1. For use in the manufacture of a color cathode ray picture tube, a method for providing an electrically conductive bridge between a high-voltage-charged shadow mask held dependent adjacent to the phosphor-layered faceplate of said tube by a plurality of metallic suspension members extending from said faceplate, and an aluminum film overlayed on a lacquer deposited on said phosphor layer, the method being of the type including the steps of:

(a) baking said tube to drive off said lacquer by oxidation;

(b) providing a bake-hardenable water-soluble solution that is electrically conductive when hardened;

(c) painting on said solution to form said bridge between said suspension members and said mask, and said aluminum film;

an improvement which comprises;

in lieu of step (b), providing a bake-hardenable solution which comprises a mixture of substantially equal parts of glass frit particles and graphite particles in the micron-sized range, said particles being in suspension in an evaporable solvent for said lacquer, said suspension including a thickening agent in an amount sufficient to produce a paintable viscosity for application by brush means;

such that upon application of said solution between said suspension members and said aluminum film, said solution penetrates said lacquer film, and when baked, said solution provides a permanent electrically conductive bridge between said mask and said aluminum film, whereby step (a)—baking said tube to remove said lacquer can be eliminated, providing a significant reduction in production costs and energy consumption.

4,289,801

METHOD FOR PRODUCING FINE GRAINED PYROLYTIC SILICON NITRIDE

Francis S. Galasso, Manchester, Conn., and Malcolm Basche, deceased, late of West Hartford, Conn. (by Joyce O. Basche, heir), assignors to United Technologies Corporation, Hartford, Conn.

Filed May 21, 1980, Ser. No. 149,820
Int. Cl.[3] C01B 21/06; B05D 5/12
U.S. Cl. 427—94 6 Claims

1. A method for producing fine grain pyrolytic silicon nitride which comprises:

providing reactant gases which comprise from 40 to 90% ammonia, balance silicon halide and an amount of methane equal to from about 50 to 500% of the reactant gases, mixing these gases and flowing them into a reaction chamber which contains a substrate, said reaction chamber and substrate being heated to from 1200° to 1900° C. and said reaction chamber being maintained at a partial pressure of less than 300 mm of Hg of reactant gases, so that fine grained pyrolytic silicon nitride free of carbon and having a grain size less than about 10 microns is deposited on the substrate.

4,289,802

POROUS CERMET ELECTRODE AND METHOD OF MAKING SAME

Adolph L. Micheli, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1979, Ser. No. 97,907
Int. Cl.[3] C03C 15/00; G01N 27/26, 27/30; B32B 3/00
U.S. Cl. 427—125 3 Claims

1. A method of making a porous cermet electrode on a solid electrolyte substrate comprising:

coating a surface of the substrate with a slurry of noble metal particles and glass particles, the glass being annealable into an immiscible and leachable borate phase;

heating the coated substrate at a first temperature to fuse the glass and bond it to the noble metal particles and to the substrate;

heating the coated substrate at a second and lower temperature for a sufficient duration to form an interconnected network of the borate phase leachable from a second glass phase within which it is dispersed; and

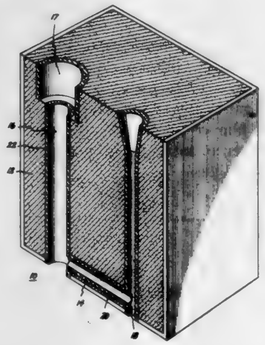
leaching the borate phase from the other glass phase, effective to produce a porous matrix throughout which said noble metal particles are exposed.

4,289,803

FOUNDRY MOLD TREATING COMPOSITIONS AND METHODS OF MAKING SAME

Wayne F. Wales, Clifton Park, and James J. Frawley, Loudonville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 68,193, Aug. 20, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 158,065
Int. Cl.[3] B28B 7/38; B29C 1/04
U.S. Cl. 427—134 22 Claims



1. A phosphosilicate composition useful for treating foundry molds and products, comprising an admixture of from about 5 to about 55 weight percent colloidal silica sol containing at least 15 percent SiO_2; from about 2 to about 60 weight percent of an alkyl silicate containing at least 28 percent SiO_2; from about 20 to about 40 weight percent of a water-miscible organic solvent, and from about 5 to about 45 weight percent phosphoric acid having a concentration of at least 50 percent.

17. A method of treating foundry molds and products formed of compacted comminuted refractory materials, comprising coating at least a predetermined surface portion of the surface to be treated with a hybrid silicate followed by application to the surface so treated of a mixture of about 50–90 percent of a high concentrate phosphoric acid and approximately 10–50 percent water miscible alcohol to form a silicyl metaphosphate on the surface so treated.

4,289,804

PROCESS FOR TREATING METAL HANDLING AND SHAPING DEVICES

Micheal D. Labate, 115 Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 59,968, Jul. 23, 1979, abandoned. This application Aug. 13, 1980, Ser. No. 177,650
Int. Cl.[3] B44D 1/092; B22D 41/00
U.S. Cl. 427—135 10 Claims

1. A process of treating metal handling and shaping devices that consists essentially of the steps of cleaning said devices to the bare metal, penetrating a liquid suspension of submicron sized particles of graphite into said bare metal of the devices, said liquid suspension including at least 5% of 25% submicron sized particles of graphite, applying enough of said liquid suspension of graphite to build up smooth adhering and lubricating coating on said metal portions and building up sufficient excess of graphite on said devices to form a slick smooth surface, the size of said submicron particles of graphite being no larger than as determined by electron microscopy.

4,289,805

METHOD FOR SEALING POROSITY LEAKS IN PNEUMATIC TIRES

Jerome Dubow, North Wales, Pa., assignor to Stop-A-Flat Corporation, Huntingdon Valley, Pa.

Filed Jul. 26, 1979, Ser. No. 60,967
Int. Cl.[3] B29H 9/02; B32B 25/02, 25/04; B05D 7/22
U.S. Cl. 427—140 2 Claims

1. A method for sealing porosity openings in a pneumatic tire having an interior chamber which comprises the steps of

introducing into the interior tire chamber an aqueous sealing solution containing a butyl latex emulsion and natural fibers;

inflating the tire;

rotating the inflated tire and forming a film of the sealing solution over the interior chamber;

flowing portions of the sealing solution into the porosity openings;

rotating the tire over a surface and creating frictional heat; and

utilizing the frictional heat to dry the portions of the sealing solution within the porosity openings and effecting sealing closure of the said openings.

4,289,806

PRESSURE-SENSITIVE RECORDING MATERIAL

Atsushi Sato, Tokyo; Isoo Shimizu, Yokohama, and Eiichi Matsuzaka, Tokyo, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Jan. 24, 1980, Ser. No. 114,994
Claims priority, application Japan, Jan. 27, 1979, 54-7689; Jan. 27, 1979, 54-7690
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.[3] B41M 5/16, 5/22
U.S. Cl. 427—150 12 Claims

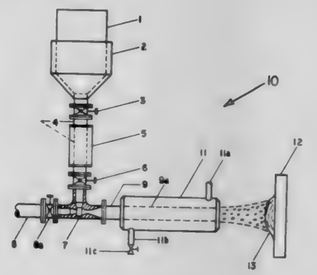
1. A method of producing pressure-sensitive recording material wherein a sheet material is coated with pressure rupturable microcapsules containing therein a solution of dyestuff in a solvent fraction, the main components of which are chosen from the group consisting of non-condensed bicyclic and tricyclic aromatic hydrocarbons, having a boiling range (converted to atm. press.) of 265° to 360° C., which comprises treating a raw material fraction in the presence of an acid catalyst and under the conditions of liquid phase, 0.1 to 5 hours in contact time, and 10% by weight or less in concentration of monocyclic aromatic olefins contained in the material fed to the reaction vessel, said raw material fraction being obtained from the product of thermal cracking of petroleum hydrocarbons at a temperature of 700° C. or above and mainly containing the distillate having boiling points in the range of 75° C. to 198° C. and the main components thereof being monocyclic aromatic hydrocarbons (excluding aromatic olefins) each having 6–10 carbon atoms and monocyclic aromatic olefins.

4,289,807

FUSION PROCESSING OF SYNTHETIC THERMOPLASTIC RESINOUS MATERIALS

Marvin M. Christensen, Baton Rouge; Richard E. Zachary, Clinton, and Andra P. Dupont, Plaquemine, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1980, Ser. No. 126,619
Int. Cl.[3] B05B 1/00; B05D 1/02; B05B 1/24; B05D 1/12
U.S. Cl. 427—195 10 Claims



1. An apparatus for the fusion processing of a particulate synthetic thermoplastic resinous material comprising, means for providing a first stream of high-velocity gas; means for entraining the particulate synthetic thermoplastic resinous material in the first stream of gas; an elongated passageway for transporting the first stream of gas and entrained resinous material, the passageway being defined by at least one wall having a plurality of formamina or small pores therethrough and throughout substantially the length thereof; means for providing and passing a second stream of heated gas through the foraminous wall into the passageway, said second stream having sufficient velocity uniformly through the wall to provide a slip stream next to the passageway surface of the wall thereby minimizing sticking of the resinous material to the passageway surface of the wall, said wall terminating at an exit opening for expelling the first and second streams of gas and entrained resinous material from the apparatus; and a workpiece against which the entrained resinous material is directed, thereby fusing the resinous material.

4,289,808

PROCESS FOR PRODUCING DRY FINISHED PAPERBOARD

Denis K. Huang, Laurel, Md., assignor to Westvaco Corporation, New York, N.Y.

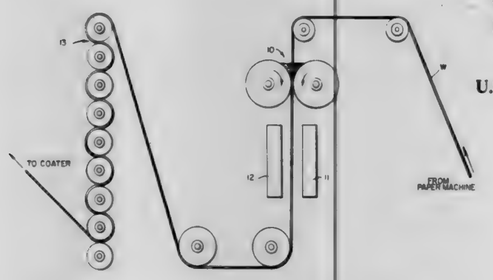
Continuation of Ser. No. 926,075, Jul. 19, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,743
Int. Cl.[3] B05D 1/00
U.S. Cl. 427—209 1 Claim

1. A process for producing a dry finished, coated paperboard web to attain a smoothness and printability equivalent to that of a wet finished product without any significant loss of caliper comprising:

(a) applying a surface sizing composition with a surface sizing applicator to at least one side of the paperboard web before calendering and coating, said surface sizing composition comprising a binder, pigment in the ratio of from about 1:1 to 1:1.5 based on the weight of the binder and from about 5–20% based on the weight of the binder of a low molecular weight polyhydroxy alcohol plasticizing agent having a boiling point greater than about 100 degrees C. selected from the group consisting of glycerine, glycerol, glycol, propylene glycol, diethylene glycol, triethylene glycol, trimethylene glycol and glycide, the

solids content of said surface sizing composition being from about 4–32%, wherein the total pickup at the size-press ranges from about 0.75 to 3.5 lb/ream/side in such a manner that the plasticizing agent remains substantially on the surface of the paperboard;

(b) machine calendering the surface sized paperboard in the



absence of a water treatment so that only the plasticizing agent containing surface layer of the paperboard becomes compacted and smoothed;

(c) coating the calendered and surface size treated paperboard surface; and,

(d) drying the thus treated paperboard to produce a dry finished web.

4,289,809

POLYDENTATE PHOSPHONIUM SALTS USEFUL IN TREATING GLASS AND CAPILLARY CHROMATOGRAPHIC COLUMNS

Sean G. Traynor, and George Marcelin, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 14,131, Feb. 22, 1979, Pat. No. 4,209,554. This application Sep. 10, 1979, Ser. No. 65,588

Int. Cl.³ C07F *9/54;* **B01D** *53/04, 15/08*

U.S. Cl. 427—230 **12 Claims**

1. Polydentate phosphonium salts comprising the reaction product of:

(a) a polydentate phosphine containing two or more trivalent phosphorus atoms selected from the group consisting of:

(1) $R_1R_2PAPR_1R_2$;

(2) $(R_1R_2PA)_3P$;

(3) $[(R_1R_2PA)_3P]\ (R_1R_2PA)_2PR_3$;

(4) $(R_1R_2PA)_2PAP(APR_1R_2)_2$; and

(5) $R_1R_2P-(AP)_n-APR_1R_2$ (with R_3 on the phosphorus)

wherein R_1, R_2 and R_3 are the same or different C_{1-20} alkyl radical, or an aromatic radical containing up to twelve carbon atoms and A represents a straight chain or branched lower alkylene radical containing from 2 to 6 carbons; n is an integer from 1 to 6; and

(b) a mono or difunctional alkyl or aralkyl halide capable of forming a quaternary salt selected from the group consisting of (1) R_4X; (2) ArR_5X; (3) XR_6X; and (4) XCH_2ArCH_2X wherein X is halogen; R_4 is an alkyl radical containing up to 20 carbon atoms; R_5 is a lower alkylene radical containing 2 to 6 carbon atoms; Ar is a mono or divalent aryl radical which may contain one or more halogen ring substituents, provided that when the polydentate phosphine is $R_1R_2PAPR_1R_2$, the halide used to form the quaternary salt must be a difunctional alkyl halide or an aralkyl halide.

4,289,810

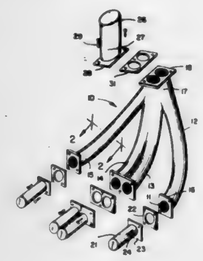
IN-SITU CAVITY COATING METHOD

King D. Eng, Fishkill, N.Y.; John T. Brandenburg, Port Neches, Tex.; Kung-You Lee, and Matthew A. McMahon, both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1979, Ser. No. 78,869

Int. Cl.³ B05D *7/22, 3/02*

U.S. Cl. 427—230 **11 Claims**



1. Method for depositing a coating layer of material onto interior surfaces of a body which defines an internal cavity having a gas pervious matrix substrate substantially occupying said cavity, the latter having at least one opening, which method includes the steps of:

initially inserting into said internal cavity a charge comprising a solid reaction component which, when mixed with a sufficient amount of a liquid component, will form a liquid coating solution having a desired molar concentration,

closing said at least one cavity to form a vented, liquid holding chamber within the cavity,

introducing into said liquid holding cavity said sufficient amount of liquid component to contact said reaction component thereby to form the coating composition having the desired molar concentration,

and maintaining said coating composition within said cavity for a sufficient period of time to deposit a coating layer on surfaces within the cavity.

4,289,811

STABLE AQUEOUS DISPERSIONS OF MIXED RESINS AND PROCESS FOR USE AS COATING COMPOSITIONS

Ralph R. Shelley, Jr., Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Feb. 21, 1980, Ser. No. 123,136

Int. Cl.³ B05D *7/22*

U.S. Cl. 427—239 **17 Claims**

16. A method for protecting the surface of an article of manufacture which comprises applying to the surface a coating of a stable aqueous dispersion of heat-curable mixed resins, and heat-treating the coating to form an adherent thermoset film on the surface of the article, wherein the said stable aqueous dispersion coating composition is prepared by a process which comprises the steps of (1) preparing a solution of an aminoplast in a substantially water-miscible organic solvent; (2) heating the solution and adding thereto a mixture of vinyl polymerization catalyst and α,β-olefinically unsaturated carboxylic acid monomer and at least one other vinyl polymerizable monomer to form a polymerization product solution wherein the unsaturated monocarboxylic acid monomer is present in the amount of about 20 to about 90 weight percent based on total monomer weight; (3) admixing and heating together the polymerization product solution and an epoxy resin; (4) at least partially neutralizing the admixture with ammonia or an organic amine; and

(5) dispersing the admixture into an aqueous medium to provide a stable aqueous dispersion of mixed resin solids having a solids content in the range of between about 15 to about 40 weight percent wherein the aminoplast component is present in the amount of about 1 to about 12 weight percent, the monomers are present in the amount of about 20 to about 40 weight percent and the epoxy resin component is present in the amount of about 48 to about 79 weight percent, said weight percents being based on the total weight of aminoplast, monomers and epoxy resin components.

4,289,812

METHOD OF WATER-SOLUBILIZING HIGH PERFORMANCE POLYETHER EPOXIDE RESINS, THE SOLUBILIZED RESINS AND THERMOSET, HYDROPHOBIC COATINGS DERIVED THEREFROM

Patrick H. Martin, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

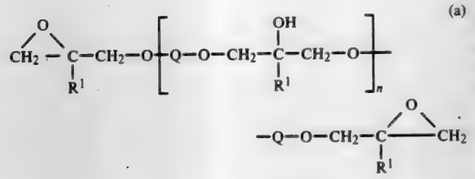
Continuation-in-part of Ser. No. 853,168, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 753,765, Dec. 23, 1976, abandoned. This application Mar. 12, 1979, Ser. No. 19,958

Int. Cl.³ B05D *3/02;* **C08L** *63/00*

U.S. Cl. 427—379 **34 Claims**

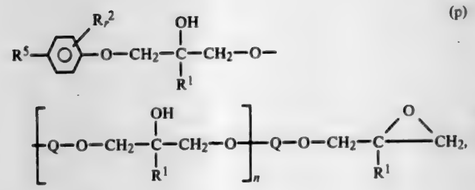
1. A process for making water-thinnable, base-neutralized, acidic resins which are convertible to hydrophobic, high performance, thermoset resins, said process comprising:

(I) reacting orthophosphoric acid with a polyether epoxide resin E^1 consisting essentially of molecules of the formula



(a)

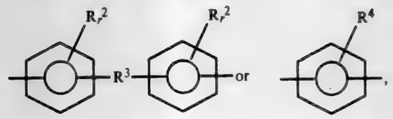
or



(p)

wherein

Q, independently, in each occurrence, is



n is an integer of from 0 to 40, r is zero, 1 or 2 and, independently in each occurrence;

R^1 is H, methyl or ethyl,

R^2 is —Br, —Cl or a C_1 to C_4 alkyl or alkenyl group,

R^3 is a C_1–C_4 alkylene or alkenylene group, $>C(CF_3)_2$, —CO—, —SO_2—, —S—, —O— or a valence bond,

R^4 is —Br, —Cl or a C_1 to C_4 alkyl or alkenyl group; and

R^5 is H or alkyl of 1 to 12 carbons,

said reaction being carried out by contacting E^1 with an orthophosphoric acid source material and from 0 to about 25 molecular proportions of water per molecular proportion of H_3PO_4 provided by said source material, until the fraction of the oxirane groups in E^1 converted is such that when the resulting product is at least partially salified with a base, an aqueous dispersion which contains essentially no co-solvents or dispersing agents can be formed from it,

the amount of orthophosphoric acid included as such in said source material, or obtainable therefrom by hydrolysis, being such as to provide from about 0.3 to about 2.8 P-OH hydroxyl groups per oxirane group, and

(II) salifying the resultant reaction product with at least sufficient of a base to render it water-thinnable.

4,289,813

PROCESS FOR COATING SOLVENT-FREE LACQUERS

Freidrich Blomeyer, deceased, late of Schildgen, Fed. Rep. of Germany (by Agnes Blomeyer, heiress); Gerhard Mennicken, Opladen, Fed. Rep. of Germany, and Walter Uerdingen, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 616,108, Sep. 23, 1975, abandoned, which is a continuation of Ser. No. 438,049, Jan. 30, 1974, abandoned. This application Jan. 25, 1980, Ser. No. 115,463

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1973, 2304893

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **9 Claims**

1. In a process for coating substrates with polyurethane forming lacquers and curing the coating, the improvement wherein a lacquer binder is used which has a solvent-free viscosity of 20 to 100 DIN seconds in DIN cup 4 measured according to DIN 53211 and comprises

(a) a polyisocyanate component consisting essentially of a polyisocyanate or polyisocyanates having only aliphatically bound isocyanate groups,

(b) a high molecular weight polyhydroxy component consisting essentially of a polyhydroxy compound or compounds which have molecular weights between 200 and 2000 and do not contain ether groups, and

(c) 10 to 30 percent by weight, based on the total quantity of binder, of a low molecular weight component comprising monohydric and/or polyhydric alcohols with molecular weights below 200,

wherein said components are present in quantities corresponding to an NCO to OH ratio of between 0.8:1 to 1.2:1.

4,289,814

STABILIZED PHENOLIC RESINS

C. Eugene Jinkins, Freeport, and Bobby Legler, Lake Jackson, both of Tex., assignors to The Dow Chemical Co.

Division of Ser. No. 5,738, Jan. 23, 1979, Pat. No. 4,235,762. This application May 12, 1980, Ser. No. 149,089

Int. Cl.³ B05D *7/26;* **C08L** *61/10*

U.S. Cl. 427—385.5 **8 Claims**

1. A method of preparing a coating from a stabilized phenolic resole resin composition of a phenolic resole resin and an amount of a finely divided, water absorbent powder having a number average particle size of less than about 5,000 Å sufficient to reduce the amount of a distinct, water rich phase formed in the phenolic resole resin; said method comprising the steps of:

(a) adding a catalytic amount of an acid to the stabilized resole resin composition;

(b) applying the catalyzed resole resin composition to a suitable substrate; and

(c) subjecting the catalyzed resole resin composition to conditions sufficient to cure the resin on the substrate.

4,289,815

COLD WATER-INSOLUBLE POLYVINYL ALCOHOL POUCH FOR THE CONTROLLED RELEASE OF ACTIVE INGREDIENTS

Ping I. Lee, Valley Cottage, N.Y., assignor to Airwick Industries, Inc., Carlstadt, N.J.

Continuation-in-part of Ser. No. 919,120, Jun. 26, 1978, abandoned. This application May 4, 1979, Ser. No. 35,369

Int. Cl.[3] **B65D** *1/20, 11/20*

U.S. Cl. 428—35 **12 Claims**

1. A sealed pouch for the controlled release of chlorinating agent into an aqueous medium having a maximum of 60° C. consisting of an envelope of cold water insoluble polyvinyl alcohol in film form, said polyvinyl alcohol being at least about 99% hydrolyzed and having a minimum degree of swelling in water of about 120%, and enclosed therein an effective amount of a chlorinating agent having at least a minimum solubility in water, the pH of said aqueous solution of chlorinating agent being in the range of from 2.5–10.0; said sealed pouch having a maximum ratio of weight of active ingredient to pouch volume of about 50 lb/ft^3.

4,289,816

PROCESS FOR IMPROVED GLASS ARTICLE COATING, AND SUCH COATED ARTICLES

Clement V. Fogelberg, Arvada, and Joseph H. Romig, Boulder, both of Colo., assignors to LAM Partnership, Denver, Colo.

Continuation-in-part of Ser. No. 911,017, May 30, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,584

Int. Cl.[3] **B05D** *3/02;* **C03C** *17/23, 17/32*

U.S. Cl. 428—35 **43 Claims**

1. A method for forming protective coatings upon glass articles comprising:

positioning a glass article heated to an elevated temperature within a coating location;

applying an aqueous solution of a coating compound selected from the group consisting of magnesium compounds, zinc compounds and mixtures thereof upon the surface of the heated glass article;

evaporating the solvent from the solution at the surface of the glass article;

pyrolytically decomposing the remaining compound at the surface of the glass article to form a continuous, adherent and substantially transparent coating of the coated compound metal oxide upon the surface of the glass article;

cooling the glass article and metal oxide coating thereon; and

applying a second, lubricious coating thereto at a lower temperature.

4,289,817

DECORATED MULTILAYERED HOLLOW PLASTIC CONTAINER

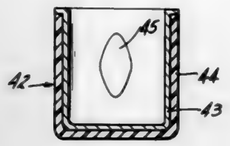
Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation of Ser. No. 5,957, Jan. 24, 1979, abandoned, which is a continuation of Ser. No. 632,308, Nov. 17, 1975, abandoned, which is a division of Ser. No. 488,728, Jul. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 477,751, Mar. 21, 1973, Pat. No. 3,939,239, which is a continuation-in-part of Ser. No. 343,498, Mar. 21, 1973, abandoned, which is a division of Ser. No. 186,984, Oct. 6, 1971, Pat. No. 3,787,157, which is a division of Ser. No. 71,734, Sep. 14, 1970, Pat. No. 3,717,544, which is a continuation-in-part of Ser. No. 100,050, Dec. 21, 1970, Pat. No. 3,719,735. This application May 16, 1980, Ser. No. 150,325

Int. Cl.[3] **B65D** *11/16;* **B32B** *3/00*

U.S. Cl. 428—35 **4 Claims**

1. An open neck, blow molded multilayered hollow plastic container exhibiting the characteristics of blow orientation having an outer, pressure molded first portion of a transparent plastic material and a drawn inner second portion of plastic material having substantially continuous side and end walls and an open ended neck, wherein the inner portion is colored so that said color is visible through the molded plastic, said outer pressure molded first portion having substantially continuous



side and end walls and an open neck conforming to the side and end walls and open ended neck of said inner portion.

4,289,818

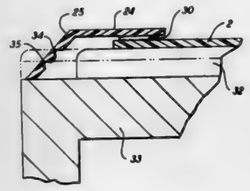
EXTRUDED WALL PANELING SYSTEM

Jorge Casamayor, Columbus, Ohio, assignor to Plaskolite Inc., Columbus, Ohio

Filed Mar. 1, 1979, Ser. No. 16,482

Int. Cl.[3] **A47K** *3/14;* **E04B** *1/343*

U.S. Cl. 428—43 **9 Claims**



1. A kit for providing protective paneling for a walled recess, having a back wall extending along the width of the recess and at least one side wall extending along the depth of the recess, the kit including

1. paneling members co-extruded from at least two different polymeric materials, said paneling members including
   (a) back paneling sufficient to extend the width of the recess;
   (b) at least one side paneling member sufficient to extend the depth of the recess;
   said back and side paneling members being approximately equal in height;
2. At least one corner joining strip extruded from a polymeric material and adapted to join the back and side panel at an inside corner of the recess, the corner joining strip:
   (i) consisting of a pair of rigid side portions each of which normally obtusely extends integrally from a substantially rigid laterally extensive central portion,
   (ii) being cross-sectionally symmetrical and having side portions perpendicular with respect to each other so that the outer surfaces of the side portions coincide with respect to perpendicular surfaces forming an inside corner, and
   (iii) having means for adhesively attaching the strip to the panels at the inside corner, said adhesive means being applied to the outer surfaces of each of the obtusely extending side portions;
3. at least one edge sealing strip extruded from polymeric material and adapted to protectively overlap the terminal edge of the at least one side panel applied to the wall,
   (i) said edge strip having two substantially rigid longitudinally extending portions in a lateral normally obtusely angled relationship,
   (ii) said strip including on one portion, on the inward facing surface of the obtuse angle, adhesive means for attachment of the strip to the outermost surface of the side panel at the extending terminal edge thereof,

(iii) said strip being further adapted to provide an adjustable overlap with respect to the terminal edge of a panel and an existing wall surface by means of one of: (A) a resilient hinge portion connecting and being co-extensive with the two rigid longitudinally extending portions; and (B) means for separation of a longitudinal end segment from the width of the other portion of the strip, said means consisting of at least one of (1) a longitudinal breaking groove and (2) a narrow longitudinally extending dividing stripe consisting of co-extruded flexible polymeric material of a softer durometer than the durometer of the polymeric material from which the rigid portions are formed, the said one of a breaking groove and dividing stripe being adapted to allow the separation of a longitudinal end segment from the portion.

4,289,819

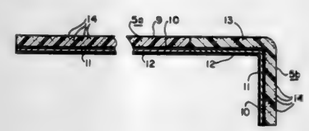
STEP TREAD PLATE

James H. Kalman, 1001 City Ave., Philadelphia, Pa. 19151

Continuation of Ser. No. 7,114, Jan. 29, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 125,842

Int. Cl.[3] **B32B** *3/00;* **B61D** *32/00*

U.S. Cl. 428—57 **8 Claims**



1. A step tread plate for vehicles consisting essentially of:

(a) a substantially planar and integral metallic first portion having a top layer of a resilient plastic containing gritty particles, said first portion having an edge with a plurality of projections spaced from one another, and

(b) a second, integral metallic portion having a substantially L-shaped cross-section adapted to fit over the front edge of the step when in place, part of said second portion being disposed substantially horizontal and co-planar with said first portion and having a top layer of a resilient plastic containing gritty particles, the gritty particles in said first and second portions being distributed throughout the thickness of said top layers, said second portion also having an upper horizontal longitudinal edge with a plurality of projections which intermesh with the projections of said first portion, said first and second portions being highly contrasting in color with said second portion being substantially more light-reflective than said first portion.

4,289,820

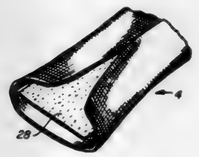
FUSED BELT LOOP STRIPS

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Continuation-in-part of Ser. No. 79,977, Sep. 28, 1979, Pat. No. 4,259,131. This application Jun. 12, 1980, Ser. No. 158,646

Int. Cl.[3] **B31F** *1/00;* **B29C** *17/04;* **B32B** *3/04;* **E03D** *1/18*

U.S. Cl. 428—125 **6 Claims**



1. A non-frayable fabric loop comprised of an elongated fabric strip of a first material whose longitudinal edges are folded over itself and a second material, whose melting point is lower than the scorching point of the first material, and which is entirely diffused between the fibers of the fabric strip, including the folded over edges, to hold them in their folded position and to fuse together the fibers of the fabric strip to prevent fraying.

4,289,821

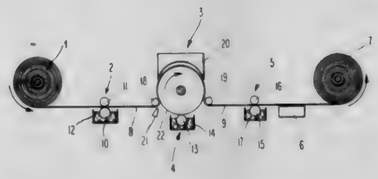
SURFACE REPLICATION ON A COATED SUBSTRATE

Lorin S. Gray, III, Portland; John A. Mattor, Bar Mills; Ben Millard, South Windham, and Franklin J. Ward, Cape Elizabeth, all of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Sep. 24, 1979, Ser. No. 78,078

Int. Cl.[3] **B05D** *3/06*

U.S. Cl. 428—172 **7 Claims**



1. A method of providing surface replication in a release coating on a substrate, comprising the steps of:

A. applying a coating of an electron beam radiation curable composition or material directly to one side of the substrate;

B. pressing the substrate and coating against a replicative surface having a desired surface effect to cause the surface of the coating opposite the substrate to conform to the replicative surface;

C. irradiating the coating with electron beam radiation through the substrate to only partially cure the coating, but at least sufficiently to enable it to be removed from the replicative surface with the replicated surface effect in the coating being maintained;

D. stripping the substrate from the replicative surface with the partially cured coating adhered to the substrate;

E. applying a further light layer of a curable coating composition compatible with the coating composition applied in step A. to the surface of the partially cured coating; and

F. curing the further coating layer while completing the cure of the first applied coating to provide improved release properties over that obtainable without the further coating layer.

6. A release sheet comprising a paper substrate and on at least one side thereof a coating of an electron beam radiation curable composition or material which has been cured by electron beam radiation passing first through the substrate, the outer surface of the coating having a desired surface effect formed by curing the coating in intimate contact with a replicative surface having the desired surface effect.

4,289,822

LIGHT-SENSITIVE FILM

Toshikazu Shimada, Hinodemachi; Yoshifumi Katayama, and Kiichi F. Komatsubara, both of Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1979, Ser. No. 48,740

Claims priority, application Japan, Jun. 26, 1978, 53/76457

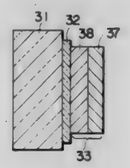
Int. Cl.[3] **B32B** *7/12, 9/04*

U.S. Cl. 428—212 **26 Claims**

1. An article comprising a light-sensitive film constructed of at least a single layer of at least one photoconductive material on a substrate, wherein at least one layer of said at least a single layer is made of an amorphous photoconductive material

whose composition is expressed by a formula $[Si_{1-x}C_x]_{1-y}[H]_y$ where $0 \leqq x \leqq 0.3$ and $0.02 \leqq y \leqq 0.3$, whereby said light-sensitive film exhibits photoconductive characteristics.

23. An article according to claim 1, wherein said light-sensitive film is constructed of at least two layers of at least one photoconductive material, with one of said at least two layers



made of said amorphous photoconductive material, and with the amorphous photoconductive material layer having a higher resistivity than the other photoconductive layers of said light-sensitive film, whereby the amorphous photoconductive material layer can act to store charge patterns formed in the light-sensitive film.

4,289,823

CALENDERABLE ACRYLIC POLYMERS AND TEXTILES TREATED THEREWITH

Charles T. Arkens, Hatfield, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 30, 1980, Ser. No. 192,165

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—245 **10 Claims**

1. A calenderable, soft, three-stage acrylic polymeric composition, said composition having a calculated T_g of from about (−)40° C. to about (+)20° C., the isolated and dried particles of which comprise about 30–60% by weight of a polymeric first stage, about 30–60% by weight of a polymeric second stage, and about 5–20% by weight of a polymeric third stage, wherein

(1) said first stage is formed by emulsion polymerization of a first monomer composition having a T_g of about (−)10°. or lower consisting essentially of:
- (a) about 70–95% by weight of at least one (C_1–C_8) alkyl acrylate,
- (b) about 0–15% by weight of at least one (C_1–C_8) alkyl methacrylate,
- (c) about 4–10% by weight of a latent cross-linking monomer selected from acrylamide or methacrylamide, and
- (d) about 0.5–4% by weight of at least one alpha, beta-ethylenically unsaturated carboxylic acid selected from acrylic acid, methacrylic acid, and itaconic acid;

(2) said second stage is formed by emulsion polymerization, in the presence of said first stage, of a second monomer composition having a T_g of about (−)10 to (+)60° C. consisting essentially of:
- (a) about 40–70% by weight of at least one (C_1–C_8) alkyl acrylate,
- (b) about 20–50% by weight of at least one (C_1–C_8) alkyl methacrylate,
- (c) about 4–10% by weight of a latent cross-linking monomer selected from acrylamide and methacrylamide, and
- (d) about 0.5–4% by weight of at least one alpha, beta-ethylenically unsaturated carboxylic acid selected from acrylic acid, methacrylic acid, an itaconic acid; and

(3) said third stage is formed by emulsion polymerization, in the presence of said second stage polymerization product, of a third monomer composition consisting essentially of:
- (a) about 50–100% by weight of methyl methacrylate, and
- (b) about 0–50% by weight of a comonomer selected from those comonomers copolymerizable with methyl methacrylate and having a calculated T_g of less than (−)25° C.

4,289,824

HIGH FLUID-HOLDING ALLOY RAYON FIBER MASS

Frederick R. Smith, Toms Brook, Va., assignor to Avtex Fibers Inc., Valley Forge, Pa.

Continuation-in-part of Ser. No. 790,129, Apr. 22, 1977, Pat. No. 4,199,367, which is a continuation-in-part of Ser. No. 629,952, Nov. 7, 1975, Pat. No. 4,136,697, and Ser. No. 696,451, Jun. 11, 1976, abandoned. This application Oct. 5, 1979, Ser. No. 82,352

Int. Cl.³ D02G *3/00;* **D04H** *1/58*

U.S. Cl. 428—288 **7 Claims**

1. An article of manufacture comprising a highly fluid absorbent mass of alloy rayon staple fibers consisting essentially of a matrix of regenerated cellulose and about 10 to about 40 percent of sodium carboxymethylcellulose b.o.c., at least about three-fourths of the carboxyl groups of said carboxymethylcellulose being in sodium salt form, said fibers having a denier of about one and one-half to six; said fibers carrying a lubricating or protective finish in an amount of less than one percent, and said fibers having a fluid holding capacity of at least about 5.5 cc. per gram of fiber as measured by the Syngyna test.

4,289,825

ELASTOMERIC POLYURETHANES COATED WITH A VINYL CHLORIDE POLYMER POWDER

Edmond G. Kolycheck, Lorain, and Richard M. Herman, Elyria, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 55,943, Jul. 9, 1979, abandoned. This application Aug. 22, 1980, Ser. No. 180,193

Int. Cl.³ B32B *27/40*

U.S. Cl. 428—407 **7 Claims**

1. A composition comprising elastomeric polyurethanes in granular form coated with less than 2 weight percent of a vinyl chloride polymer powder.

4,289,826

WATER-BORNE COATING FOR METAL SURFACES

John K. Howell, Jr., North Branch, Mich., assignor to Hooker Chemicals & Plastics Corp., Madison Heights, Mich.

Continuation of Ser. No. 818,184, Jul. 22, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,305

Int. Cl.³ C08L *61/20, 63/00;* **B05D** *3/02;* **B32B** *15/08*

U.S. Cl. 428—418 **8 Claims**

1. A process for coating a ferrous or tin surface comprising contacting the surface thereof with an aqueous composition comprising:
- (a) an epoxy resin having an average molecular weight of about 900 to 2,900 and about 2.7 to 11.6 hydroxyl equivalents per mole;
- (b) melamine-formaldehyde resin alkylated with at least one alcohol of from 1 to 4 carbon atoms in a weight ratio of epoxy resin:melamine-formaldehyde resin of from 2:1 to 20:1;
- (c) an acid catalyst which is an ammonium salt of an anion of the formula:

$$R{-}O{-}(CH_2CH_2O)_mSO_3^-$$

wherein R is an alkyl or alkylaryl group of at least 10 carbon atoms and containing a saturated alkyl portion and m is in the range of about 4 to 30 in an amount sufficient to effect cross linking of the epoxy resin and melamine-formaldehyde resin;
- (d) a block copolymer of general formula

$$HO(CH_2CH_2O)_a(\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2O)_b(CH_2CH_2O)_cH$$

having an HLB in excess of 22 and a molecular weight in the range of about 5,000 to 14,000 in an amount of about 2 to 12 wt. % of the total of the epoxy and melamine-formaldehyde resin; and
- (e) water, the balance,

wherein the total of the components (a), (b), (c) and (d) concentrations ranges from 5 to 85 wt. % of the aqueous composition and thereafter heat-curing the applied coating.

8. A ferrous or tin surface having thereon a coating obtained by the process of claim 1.

4,289,827

MOISTURE HARDENING ONE-COMPONENT LACQUERS AND A PROCESS FOR COATING LEATHER

Klaus Noll, Cologne; Wolfgang Speicher, Leverkusen; Josef Pedain, Cologne, and Rosemarie Schmid, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 22, 1980, Ser. No. 123,854

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908628

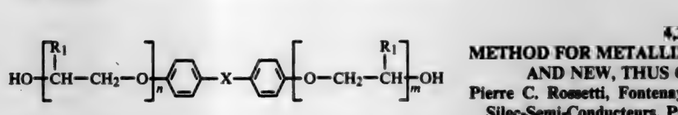
Int. Cl.³ B32B *27/40*

U.S. Cl. 428—423.4 **14 Claims**

1. Moisture-hardening one-component lacquers comprising a reaction product containing free isocyanate groups of a relatively high molecular weight polyol having an average hydroxyl functionality of from 2 to 3 and polyisocyanates, characterized in that the relatively high molecular weight polyol is a mixture comprising

(a) a hydroxyl polyester having an average molecular weight of from about 500 to 6000,

(b) a hydroxyl polyether corresponding to the following general formula:



wherein

R_1 represents hydrogen, a C_1–C_4 alkyl radical or a phenyl radical,

X represents one of the difunctional radicals —S—, —O—, —SO_2—, —CO— or



where

R_2 and R_3, which may be the same or different, represent hydrogen or a C_1–C_4 alkyl radical, and n and m each represent an integer of >0, the value of (n+m) being selected in such a way that the hydroxyl polyether has an average molecular weight of from about 300 to 1200, wherein component (b) makes up from about 3 to 30% by weight of the total quantity of the relatively high molecular weight polyol.

4,289,828

MAGNETIC RECORDING MEDIUM AND PROCESS

Hiroshi Ota, Komoro; Eiji Horigome, Saku, and Hitoshi Azegami, Tobu, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,242

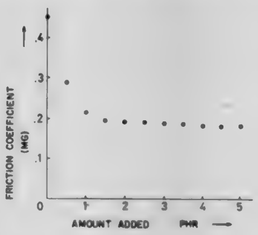
Claims priority, application Japan, Nov. 30, 1978, 53-147097

Int. Cl.³ B32B *27/40*

U.S. Cl. 428—425.9 **4 Claims**

1. In a magnetic recording medium comprising a base coated with mixture containing magnetizable particles dispersed in a curable synthetic resin binder and a polyfunctional aromatic isocyanate curing agent which functions by chemical reaction with the binder resin to produce a crosslinked product, the improvement which comprises the addition to said mixture of up to 6% by weight based on the weight of said resin binder of a sorbitan stearate dispersing agent.

3. In a process for manufacturing a magnetic recording medium which comprises preparing a liquid dispersion containing magnetic particles, a curable synthetic resin binder and



a solvent, said curable resin binder containing groups reactive with a polyfunctional aromatic isocyanate to produce a crosslinked product, adding said polyfunctional aromatic isocyanate to said dispersion, coating a base with said dispersion and curing the same, the improvement which comprises the addition of up to 6% by weight based on the weight of the resin binder of a sorbitan stearate dispersing agent.

4,289,829

METHOD FOR METALLIZING CERAMIC SUBSTRATES AND NEW, THUS OBTAINED PRODUCTS

Pierre C. Rossetti, Fontenay aux Roses, France, assignor to Silec-Semi-Conducteurs, Paris, France

Continuation of Ser. No. 845,841, Oct. 26, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 52,015

Claims priority, application France, Dec. 1, 1976, 76 36243

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—469 **6 Claims**

1. A method of metallizing an alumina substrate to obtain weldable metallized zones or areas thereon usable at a high temperature, said method consisting essentially in the sequential steps of:
- (a) depositing on said substrate an ink composed of a dispersion of a cobalt oxide in collodion,
- (b) forming a compound between said substrate and cobalt oxide, in an oxidizing atmosphere, at about 1,100° C., and thereafter
- (c) reducing the oxide superficially to obtain a cobalt metal layer on which weldable metallized zones or areas may be deposited.

6. An alumina ceramic substrate comprising weldable metallized zones or areas obtained by the method of claim 1.

4,289,830

ETHYLENE-VINYL ALCOHOL COPOLYMER GAS BARRIER LAYER WITH PHENOL ADDITIVE

Jack E. Knott, II, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

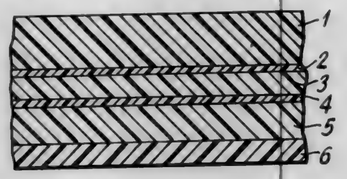
Filed Mar. 14, 1980, Ser. No. 130,229

Int. Cl.³ B32B *9/04, 27/08*

U.S. Cl. 428—475.8 **12 Claims**

3. A multi-layer packaging film structure comprising an outer structural polymer layer of nylon or a polyolefin with a modified polyolefin adhesive layer, a gas-barrier layer consisting essentially of ethylenevinyl alcohol polymer to which has

been added an orthosubstituted phenol having a melting point below about 185° C. and a boiling point above about 125° C.,



an adhesive layer of a modified polyolefin, an inner structural layer of a polyolefin, and an inside heat-sealable layer.

4,289,831

POLYOLEFIN FILMS

Anthony G. M. Last, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 30, 1979, Ser. No. 62,188

Claims priority, application United Kingdom, Aug. 18, 1978, 33910/78

Int. Cl.³ B32B *27/08*; C09U *7/02*; D02G *3/00*

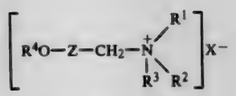
U.S. Cl. 428—515 **11 Claims**

1. A self-supporting multiple-layer film comprising:

a substrate layer of a polymer of a mono-alpha-olefin containing from 2 to 8 carbon atoms in its molecule, a modulus improver incorporated in the substrate layer,

wherein said modulus improver is a resin, of natural or synthetic origin, which is (I) amorphous, hard, brittle, and solid at ambient temperature, (II) has a softening range at elevated temperature, (III) has a drop softening point of at least 70° C., and (IV) is sufficiently compatible with the film-forming olefin polymer to yield a composition from which may be formed a drawn, self-supporting transparent film exhibiting a modulus exceeding that of a film formed from an identical olefin polymer in the absence of the improver resin,

a polymeric heat-sealable layer adhered to at least one surface of the substrate layer, and, on the surface of the heat-sealable layer remote from the substrate, an antistatic medium comprising a quaternary ammonium of general formula



wherein each of R^1, R^2, and R^3, which may be the same or different, is a hydrogen atom or a lower alkyl radical containing from 1 to 6 carbon atoms, or R^1 and R^2 are each methylene groupings within a common five- or six-membered saturated heterocyclic ring, R^4 is a hydrogen atom or an acyl radical containing up to 15 carbon atoms, Z is a methylene group or a carbonyl group when R^4 is a hydrogen atom, or Z is a methylene group when R^4 is said acyl radical, and X is a univalent anion or an equivalent of a multivalent anion.

4,289,832

CHEMICALLY-IMPREGNATED MICROPOROUS FILMS

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Biax Fiberfilm Corp., Neenah, Wis.

Division of Ser. No. 780,034, Mar. 22, 1977, Pat. No. 4,153,751, and a continuation-in-part of Ser. No. 614,018, Sep. 17, 1975, Pat. No. 4,116,892, and Ser. No. 563,623, Mar. 31, 1975, abandoned. This application Oct. 26, 1978, Ser. No. 954,982

Int. Cl.³ B32B *3/12, 3/26, 3/28*

U.S. Cl. 428—542 **3 Claims**

1. An opaque low density porous sheet comprised of a chemically-impregnated biaxially stretched film of synthetic material comprised of a blend of a thermoplastic orientable polymer and an incompatible second phase selected from the group consisting of an incompatible polymer of inorganic material or a polymer matrix having an inorganic filler.

4,289,833

LIQUID PHASE SINTERED DENSE COMPOSITE BODY FOR BRAZED JOINTS AND METHOD FOR MAKING THE SAME

Takeji Hachisuka, Toyama, Japan, assignor to Kabushiki Kaisha Fujikoshi t/a Nachi-Fujikoshi Corp., Toyama, Japan

Filed Mar. 19, 1979, Ser. No. 21,976

Claims priority, application Japan, Mar. 31, 1978, 53-36697

Int. Cl.³ B22F *3/00*

U.S. Cl. 428—544 **21 Claims**

1. A liquid phase sintered dense composite metal body comprising:

a metal base layer formed by a powder mixture of at least one cementing metal and at least one hard refractory metal carbide compound, said base layer including

a multiplicity of unmelted particles of said hard refractory metal carbide compound dispersed within said metal base layer; and

a matrix layer consisting essentially of said cementing metal and a portion of said metal carbide compound diffused into said cementing metal, said matrix layer tightly cementing the unmelted particles of said hard refractory metal carbide compound; and

a continuous metal surface layer covering an entire surface of said metal base layer, said continuous metal surface layer having a chemical composition similar to that of said cementing metal, said continuous metal surface layer including

a plurality of patterned areas formed by a first plurality of metallic elements partially embedded in the surface of said metal base layer, said first plurality of metallic elements having melted and then solidified at predetermined locations in said continuous metal surface layer; and

a thin surface layer contiguously integral with all of said plurality of patterned areas, said thin surface layer being formed by the fusing together of a second plurality of said metallic elements, said metallic elements having melted and spreadingly flowed outward from said predetermined locations to cover said metal base layer.

4,289,834

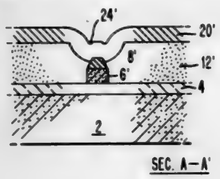
DENSE DRY ETCHED MULTI-LEVEL METALLURGY WITH NON-OVERLAPPED VIAS

George E. Alcorn, Fairfax; Raymond W. Hamaker, Catharpin, and Geoffrey B. Stephens, Catlett, all of Va., assignors to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 922,410, Jul. 6, 1978, abandoned, which is a division of Ser. No. 843,901, Oct. 20, 1977, Pat. No. 4,172,004. This application Oct. 12, 1979, Ser. No. 84,212

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—601 **1 Claim**



1. A double level metal interconnection structure having an etch-stop on the first level metal to prevent overetching thereof when forming the second level metal line in a via hole thereover, comprising:

a first metal layer formed on a substrate in the shape of a conductor line;

a reactive ion etch resistant chromium metal layer formed on the surface of, aligned over and in the shape of said first layer of metal;

an insulating layer formed over said etch resistant metal layer with a via hole having a first diameter formed therethrough over said first level metal layer;

a third metal layer reactively ion etched in a pattern on said insulating layer and in said via hole said pattern having a width less than said first diameter in said via hole, electrically contacting said etch resistant metal layer;

whereby said first metal layer is protected from over-etching beneath said via hole.

4,289,835

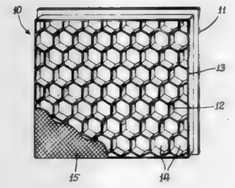
LEAD ACID BATTERY HAVING CELLULAR MATRIX POSITIVE ELECTRODE

Tien S. Lee, Palatine; Anthony F. Sammells, and Robert J. Remick, both of Naperville, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 23, 1979, Ser. No. 96,787

Int. Cl.³ H01M *10/44*

U.S. Cl. 429—50 **40 Claims**



1. A lead-acid battery comprising: a container having one or more negative electrodes, positive electrodes, cell separators therebetween and an acid electrolyte therein, each of said positive electrodes comprising: an electrically conducting current collector bus plate; a honeycomb matrix structure extending from one side of said collector bus plate forming multiple positive active material compartments and having electrically conducting surfaces in electrical communication with said collector bus plate; and acid ion porous retainer means adjacent the ends of said material compartments opposite said collector bus plate and in contact with said acid electrolyte; and positive active material within said compartments and in electrical communication with said collector bus plate and said honeycomb matrix electrically conducting surfaces, said positive active material comprising lead oxide reactive material and powdered electronic conductive additive resistive to electrolyte corrosion throughout a stable acid ion porous structure, the acid ions of the electrolyte passing through said retainer means and contacting said reactive material to produce electronic flow whose conductance to said honeycomb matrix structure and said current collector bus plate is increased by said conductive additive.

4,289,836

RECHARGEABLE ELECTRIC BATTERY SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Mar. 5, 1980, Ser. No. 127,400

Int. Cl.³ H01M *2/00*

U.S. Cl. 429—61 **15 Claims**

1. A rechargeable electric storage battery and a control system therefor comprising in combination:

a rechargeable cell for generating electricity,

a source of recharging electrical energy,

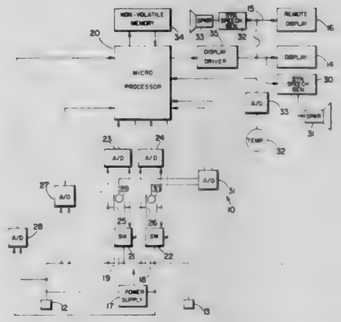
control means for controlling the flow of electrical energy to recharge said electric battery,

first means for sensing an operating condition of said cell,

second means for generating electrical signals indicative of the condition of said cell,

third means for receiving said electrical signals generated by said second means,

fourth means for processing said electrical signals received by said third means and generating digital signals,



fifth means including an electronic computer for receiving said digital electrical signals, analyzing same and generating control signals, and

means for applying said control signals for operating said control means to control the flow of electrical energy to said cell for charging said rechargeable cell.

4,289,837

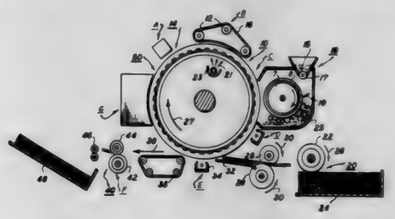
DEVELOPMENT METHOD AND APPARATUS

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,952

Int. Cl.³ G03G *15/08*

U.S. Cl. 430—39 **22 Claims**



1. In an apparatus employing polar or polarizable toner particles for the development of a nonuniform electrostatic or magnetic latent image a development means comprising a cylindrical insulating member and concentric with and within said insulating cylinder a means for establishing convergent fields around the outer surface of said cylindrical insulating member; said means and said insulating cylinder being rotatable with respect to each other.

4,289,838

DIAZO-UNSATURATED MONOMER LIGHT SENSITIVE COMPOSITIONS

William Rowe, Westfield, N.J., and Eugene Golda, Monsey, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Continuation of Ser. No. 865, Jan. 4, 1979, abandoned, which is a continuation of Ser. No. 595,466, Jul. 14, 1975, abandoned, which is a continuation of Ser. No. 315,207, Dec. 14, 1972, abandoned. This application Aug. 13, 1980, Ser. No. 177,664

Int. Cl.³ G03C *1/60, 1/54;* G03F *7/08*

U.S. Cl. 430—163 **8 Claims**

1. A light sensitive element which comprises: a substrate and an ultraviolet radiation curable composition applied to at least one surface of said substrate, which composition comprises the admixture of:

I. From about 10 to 95% by weight of an unsaturated monomer, based on total weight of the unsaturated monomer and diazonium compound, wherein the unsaturated monomer is the reaction product of:

A. one equivalent of an isocyanate containing intermediate which is the reaction product of i. about one equivalent of a polyol with ii. two equivalents of a diisocyanate and

B. one equivalent of a monomeric olefinically active hydrogen in the form of a hydroxyl group, said reaction product being a monomeric, solvent-free liquid containing zero percent free isocyanate groups, and

II. From about 1 to 95% by weight, based on the weight of the unsaturated monomer, of one or more solid resins selected from the group consisting of polyurethanes, epoxies, polyvinyl acetals, polyethylene oxides, polyamides, phenol formaldehydes, acrylics, ureaformaldehydes, and cellulosic resins, and

III. From about 10–95%, based on total weight of unsaturated monomer and diazonium compound of a light sensitive, negative acting diazonium compound,

whereby before light exposure said admixture is organic solvent soluble, water emulsifiable and is capable of forming a non-tacky solid film and after light exposure said admixture is not soluble in organic solvents and is non-water emulsifiable.

4,289,839

NEGATIVE IMAGE DIAZOGRAPHY FORMULATION WITH ACID LABILE COUPLER, DIAZONIUM COMPOUND AND CARBOXYLIC ACID ANHYDRIDE

Carmine A. DiPippo, Longmeadow, Mass., assignor to James River Graphics, Inc., South Hadley, Mass.

Continuation-in-part of Ser. No. 75,833, Sep. 14, 1979, abandoned, which is a continuation of Ser. No. 902,961, May 4, 1978, abandoned, which is a continuation of Ser. No. 734,975, Oct. 22, 1976, abandoned. This application Feb. 15, 1980, Ser. No. 121,883

Int. Cl.³ G03C *1/54, 1/58, 1/60*

U.S. Cl. 430—177 **40 Claims**

1. A negative-working, light-sensitive diazography formulation comprising (i) at least one diazonium compound D capable of forming an organic azo dyestuff D—YOH or D—Y'OH, (ii) at least one acid labile blocked-coupler adapted to be converted in the presence of acid into an active azo-coupling species YOH or Y'OH, said blocked-coupler being chemically inert with respect to said diazonium compound D and having the structural formula Y—O—B, wherein Y—O— is the residue of said active azo-coupling species YOH and further wherein the residue —O—B is an acid labile oxygen bridged blocking moiety B defining a radical selected from the group consisting of tertiary ether, acetal, ketal and MEM ether, (iii) at least one light-sensitive acid progenitor adapted to photolytically generate an acid species capable of unblocking said blocked-coupler Y—O—B to convert same into said active azo-coupling component YOH, or rearrangement derivative Y'OH thereof, and (iv) at least one carboxylic acid anhydride adapted to inactivate, when subjected to alkaline developing conditions, unreacted diazonium compound remaining in the unexposed portions of the formulation after imagewise exposure to light.

2. A negative-working, light-sensitive diazography formulation comprising (i) at least one light-sensitive salt of a diazonium compound D capable of forming an organic azo dyestuff D—YOH or D—Y'OH, said salt being adapted to photolytically generate an acid species capable of unblocking the below blocked-coupler Y—O—B (ii) to convert same into an active azo-coupling component YOH or Y'OH, (ii) at least one acid labile blocked-coupler adapted to be converted in the presence of said acid species into said active azo-coupling component YOH or rearrangement derivative Y'OH thereof, said blocked-coupler being chemically inert with respect to said salt of said diazonium compound D and having the structural formula Y—O—B, wherein Y—O— is the residue of said active azo-coupling species YOH and further wherein the residue —O—B is an acid labile oxygen bridged blocking moiety B defining a radical selected from the group consisting of tertiary ether, acetal, ketal and MEM ether, and (iii) at least one carboxylic acid anhydride adapted to inactivate, when subjected to alkaline developing conditions, unreacted diazonium compound remaining in the unexposed portions of the formulation after imagewise exposure to light.

4,289,840

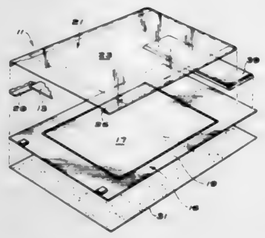
INSTANT PROCESSING SLEEVE FOR BORDERLESS PRINTS

Robert A. Sylvester, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,024

Int. Cl.³ G03C *1/48*

U.S. Cl. 430—207 **8 Claims**



1. In a processing sleeve including first and second sheets coupled together in a manner suitable for receiving therebetween a diffusion transfer film sheet, the first sheet having an image-receiving section separable from a border section surrounding the image-receiving section, the improvement comprising:

a thin coupling sheet forming an outermost face of said sleeve and adhered to the image-receiving section and the border section,

said coupling sheet being separable from said border section to release the image-receiving section from said sleeve, and thereafter being separable from said image-receiving section to provide a borderless picture comprising said image-receiving section.

4,289,841

DRY-DEVELOPING PHOTOSENSITIVE DRY FILM RESIST

Abraham B. Cohen, Springfield, and Joseph E. Gervay, Red Bank, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 15,245, Feb. 26, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,300

Int. Cl.³ G03C *11/12, 1/68*

U.S. Cl. 430—253 **10 Claims**

1. Dry-developing dry film resist for developing an image on a surface by removal of unexposed area from exposed area of said resist without the use of solvent comprising a flexible support sheet and a photopolymerizable layer having a greater adhesion to said support than to said surface, but upon exposure to actinic radiation, having a greater adhesion to said surface than to said support sheet, said layer comprising (1) a dispersion of at least one polymer having a Tg below 70° C. in the form of spherical-like domains within a continuous phase of (2) at least one further polymer, the adhesion between the domains of the dispersed polymer and the further polymer being low relative to the cohesion of the continuous phase of second polymer, to provide an appreciable reduction in the cohesive strength of said layer as compared to when the dispersed polymer is not present in said layer, (3) free-radical polymerizable monomer, (4) and photopolymerization initiator for initiating the polymerization of said monomer upon exposure of said layer to actinic radiation, said monomer being present in an amount in excess of the absorptive capacity of said layer, said layer being dry developed by lamination to said surface, imagewise exposure of said layer to actinic radiation to cause the exposed area of said layer to achieve said greater adhesion to said surface, and peeling away said support sheet, the reduced cohesive strength of said layer enabling the unexposed area of said layer to break free from said exposed area and be removed therefrom by said peeling.

4,289,842

NEGATIVE-WORKING POLYMERS USEFUL AS ELECTRON BEAM RESISTS

Zoilo C. H. Tan, Rochester; Constantine C. Petropoulos, Webster, and Frederick J. Rauner, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

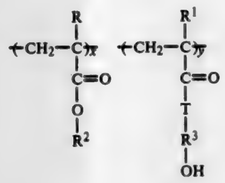
Filed Jun. 27, 1980, Ser. No. 163,470

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—270 **12 Claims**

1. A polymer having a negative-working electron sensitivity of at least 2×10^{-7} coulombs/cm^2 when exposed to a 10 keV electron beam,

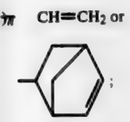
said polymer having recurring units with the sructure



wherein

R and R^1 are each independently hydrogen or methyl,

R^2 is



n is 1, 2, or 3;

R^3 is alkylene of from 1 to 3 carbon atoms;

T is —O— or —NH—; and

x and y are mole percents such that

$50 \leqq x \leqq 95$

$5 \leqq y \leqq 50$.

4,289,843

PHOTOPOLYMERIZABLE ELEMENT HAVING INITIATOR IN ADHESIVE LAYER

David L. Boutle, Colchester; Stuart C. Rennison, Hadleigh, and Stuart G. Lambert, Colchester, all of England, assignors to Bexford Limited, London, England

Continuation-in-part of Ser. No. 873,955, Jan. 31, 1978, abandoned. This application Nov. 21, 1978, Ser. No. 963,939

Claims priority, application United Kingdom, Nov. 29, 1977, 49610/77

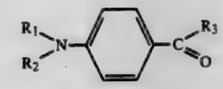
Int. Cl.³ G03C *1/76, 1/68*

U.S. Cl. 430—271 **10 Claims**

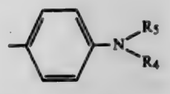


1. A photopolymerisable element which comprises a self-supporting plastics film or sheet having an adhesive layer superimposed upon at least one surface thereof and a photopolymerisable layer superimposed upon the adhesive layer, said adhesive layer having a thickness of from 0.05 to 20 μm and being free of photopolymerisable component and comprising a non-photopolymerisable plastics binder and a photopolymerisation initiator comprising an admixture of:

(i) a compound having the formula:



wherein R_1 and R_2 are the same or different and are selected from hydrogen, or a lower alkyl group having up to 6 carbon atoms and R_3 is the same as or different from R_1 or R_2 and is selected from hydrogen, a lower alkyl group having up to 6 carbon atoms, a partially or completely halogenated alkyl group having up to 6 carbon atoms or a group of the formula:



in which R_5 and R_4 are the same or different and are selected from the same substituents as R_1 and R_2, said compound being present in an amount 0.01 to 2.0% by weight based upon the weight of the plastics binder; and

(ii) another photopolymerisation initiator present in an amount 0.1 to 7% by weight based upon the weight of the plastics binder.

4,289,844

PHOTOPOLYMERIZABLE COMPOSITIONS FEATURING NOVEL CO-INITIATORS

Donald P. Specht, Rochester; Conrad G. Houle, Webster, and Samir Y. Farid, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 49,661, Jun. 18, 1979, abandoned. This application Sep. 5, 1980, Ser. No. 184,606

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—281 **17 Claims**

1. In a photopolymerizable composition comprising an addition-polymerizable compound containing ethylenic unsaturation, and a co-initiator composition comprising a carbonyl compound and a photopolymerization activator responsive in the presence of the photo-excited form of said carbonyl compound to form a free radical, said activator being selected from the group consisting of an amine other than a 3-ketocoumarin,

an acetic acid derivative, a phosphine, a phosphite, a bismuthine, an arsine, a stibine, a sulfinic acid, a sulfinic acid ester, a sulfone, a dicarbonyl, a ketone, a bi-imidazole, and a stannate;

the improvement wherein said carbonyl compound is a coumarin having an absorption maximum between about 250 and about 550 nm and a



substituent in the 3-position, wherein R^1 is alkyl or alkenyl having 1 to about 12 carbon atoms, or a carbo-cyclic or heterocyclic group having about 5 to about 20 nuclear carbon and hetero atoms, said coumarin and said activator being present in an amount sufficient to provide, when the composition is coated, dried and exposed to a medium-pressure mercury light source, a speed which is at least about one-fifth that of the same composition coated, dried and exposed identically except with a co-initiator consisting of Michler's ketone and benzophenone.

4,289,845

FABRICATION BASED ON RADIATION SENSITIVE RESISTS AND RELATED PRODUCTS

Murrae J. S. Bowden, Summit, and Larry F. Thompson, Gillette, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed May 22, 1978, Ser. No. 907,873
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 **29 Claims**

1. Process for fabrication of an article comprising an operation during which the article undergoing fabrication comprises an article surface and an overlying actinic processing layer, said processing layer comprising a phase compatible blend including polymeric material, said process including the steps of (1) selectively exposing portions of the said processing layer to patterning actinic radiation whereby a difference in ease of removal of exposed portions relative to unexposed portions of the said processing layer by a developing agent is effected; (2) developing by treating the said processing layer with said developing agent to selectively remove material, thereby producing a patterned processing layer said pattern being defined by regions of the said processing layer within which material is selectively removed; (3) treating the article undergoing fabrication with an altering agent which preferentially alters regions of the said article surface corresponding with said regions of the patterned processing layer, relative to regions of the said article surface corresponding with the remainder of the said patterned processing layer, CHARACTERIZED IN THAT the said phase compatible blend comprises a "matrix polymer" determinative of the characteristics of the said remaining regions of the patterned processing layer together with a modifier which is the part of the blend primarily responsive to actinic radiation which responds to radiation primarily via a self-propagating reaction initiated by the said radiation to effect the said relative ease of removal, in which the blend is positive acting so that self-propagating reaction initiated by the said radiation increases relative ease of removal and in which the modifier is a polymer which is less soluble in the said developing agent than is the matrix polymer so that the blend, in turn, is less soluble in the developing agent wherein actinic radiation results in depolymerization to permit selective removal of modifier in irradiated portions of the said processing layer.

4,289,846

PROCESS FOR FORMING LOW-REACTANCE INTERCONNECTIONS ON SEMICONDUCTORS

Earl L. Parks, and Simon A. Zaidel, both of Liverpool, N.Y., assignors to General Electric Company, Syracuse, N.Y.

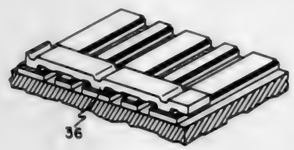
Filed Dec. 28, 1979, Ser. No. 108,064
Int. Cl.³ H01L *21/288*
U.S. Cl. 430—314 **3 Claims**

1. A method of forming a conductive bridge connecting selected ones of a plurality of thin film conductors located on a substrate comprising:

A. applying a layer of photosensitive material to the conductors and the substrate, said layer being of a thickness equal to the desired height of the bridges;

B. selectively exposing and developing the photosensitive material to effect uncovering of a contact region of each of the selected conductors with which the bridge is to come in contact;

C. depositing a layer of conductive material onto the photosensitive material and the contact regions, said layer being



of sufficient thickness to form an electroplating electrode;

D. applying a layer of photosensitive material onto the layer of conductive material, said layer being of sufficient thickness to prevent electroplating therethrough;

E. selectively exposing and developing the last applied layer of photosensitive material to effect uncovering of the conductive material spanning the contact regions;

F. utilizing the conductive material as an electrode and electroplating the uncovered surface areas thereof to the desired bridge thickness to form the bridge; and

G. removing the remaining photosensitive material and the unplated conductive material.

4,289,847

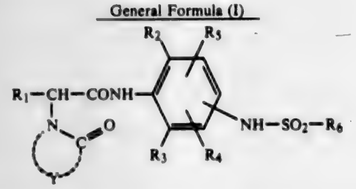
METHOD OF FORMING DYE IMAGE

Wataru Ishikawa; Mitsuto Fujiwhara; Tamotsu Kojima; Takaya Endo, and Katsunori Kato, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

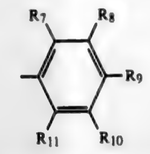
Continuation of Ser. No. 4,768, Jan. 19, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,770
Claims priority, application Japan, Jan. 20, 1978, 53-5666
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—389 **9 Claims**

1. A method of forming a dye image, comprising: processing a light-sensitive silver halide photographic material after its imagewise exposure in the presence of a compound of the following general formula (I) and an aromatic primary amine color developing agent:

General Formula (I)



wherein R_1 represents cyano, alkyl carbonyl, phenylalkyl carbonyl, phenoxy alkyl carbonyl, phenylthio alkyl carbonyl, arylcarbonyl, alkyl phenyl carbonyl, alkoxy phenyl carbonyl, R_2, R_3, R_4, and R_5 independently are hydrogen, halogen, alkyl, alkoxy, aryloxy, alkylacyloxy, arylacyloxy, acylamino, N-alkyl carbamoyl, N-phenylcarbamoyl, alkylsulfonamido, arylsulfonamido, N-alkyl sulfamoyl, N-phenylsulfamoyl, or imido, R_6 represents cycloalkyl, alkenyl, naphthyl, thienyl, benzothienyl, furyl, or pyranyl, or a group of the formula (II):



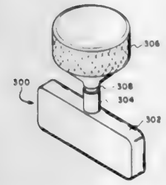
wherein R_7, R_9 and R_{11} are each hydrogen or alkyl, the sum of the carbon atoms in R_7, R_9 and R_{11} being 5 to 20, R_8 and R_{10} are hydrogen, and Y represents non-metal atoms required for forming 2,5-dioxo-imidazolidine, 2-3,5-trioxo-imidazolidine, 2,5-dioxo-triazolidine, 2,4-oxazolidinedione, 2,4-thiazolidinedione, 2(1H)-pyridone, 2(1H)-pyrazone, 5(1H)-imidazolone, 5(1H)-triazolone, 2(1H)-pyrimidone, 2-pyrazolone (5), 2-isothiazolone(5), 2(1H)-quinaoxazolone, 4(3H)-pyrimidone, 2-benzoxazolone, 4-isooxazolone(5), 3-fluorone(2), 4-imidazolone(2), 3-pyrazolone, 2-tetrazolone(5), 3-tetrazolone(5), and derivatives thereof.

4,289,848

GAUGES FOR INSERTING DENTAL IMPLANTS

Alvin L. Miller, Creek Rd., Mount Holly, N.J. 08060, and Anthony J. Viscido, 7015 Keene Mill Rd., Springfield, Va. 22150

Division of Ser. No. 792,522, May 2, 1977, Pat. No. 4,177,562. This application Dec. 11, 1979, Ser. No. 102,449
Int. Cl.³ A61C *19/04*
U.S. Cl. 433—72 **1 Claim**



1. A set of independent and unconnected gauges for use with preparing a bone structure for implanting a dental implant, each of said gauges in said set including: a first portion having a substantially rectangular configuration substantially equal to the configuration of the dental implant, the first portion on at least one of said gauges having dimensions smaller than the dimensions of said implant and the first portion on at least one other of said gauges being substantially equal to the dimensions of said implant; and a second portion attached to and extending upwardly from said first portion and including a marker on said second portion and a handle means for manually holding the gauge.

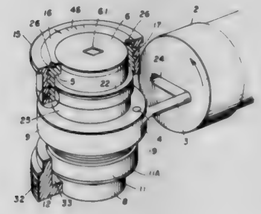
4,289,849

TOOLS FOR DRILLING, REAMING AND THE LIKE WITH SIMULTANEOUS ANGULAR AND LINEAR OSCILLATORY MOTIONS

Leopold P. Lustig, 304 Greenwood St., Newton Ctr., Mass. 02159, and Anselm Yaron, Brookline, Mass., assignors to Leopold Paul Lustig, Newton, Mass.

Filed Mar. 31, 1980, Ser. No. 135,359
Int. Cl.³ A61C *00/07*
U.S. Cl. 433—123 **7 Claims**

1. A tool operating apparatus for driving a tool with two oscillatory motions at substantially the same time, one of said motions being an angular oscillatory motion back-and-forth around an established axis, the other of said motions being a linear reciprocal motion back-and-forth parallel to said axis, said apparatus comprising, in combination, a tool holder having means to receive and hold a tool, housing means supporting said tool holder on said established axis with freedom to rotate around said axis and freedom to move linearly along said axis, and drive means rotatable around a second axis extending transverse to said established axis for driving said tool holder relative to said housing means with a motion having a first component that is linear reciprocal parallel to said axis and a



second component that is angular back-and-forth around said axis while said drive means is in continuous unidirectional rotation around said second axis, said apparatus including means to limit the amplitude of said linear reciprocal motion independent of said angular oscillatory motion, and means to adjust said limiting means, so as to change the amplitude of said linear reciprocal motion.

4,289,850

INTERFERON PRODUCTION

Jeffery H. Robinson, Epsom, England, assignor to Beecham Group Limited, England

Filed Jan. 10, 1980, Ser. No. 110,897
Claims priority, application United Kingdom, Jan. 16, 1979, 01632/79
Int. Cl.³ C12P *21/00*
U.S. Cl. 435—68 **9 Claims**

1. A method for preparing interferon, in which interferon-producing cells are contacted in vitro with an interferon-inducing medium comprising a non-toxic quantity of an interferon-inducing double-stranded polynucleotide, diethylamine ethyl dextran (DEAE-Dextran), and at least 100 m.mol l^{-1} of a water soluble sugar in a physiologically acceptable aqueous vehicle at physiological conditions of temperature and pH, and the interferon so formed is thereafter separated.

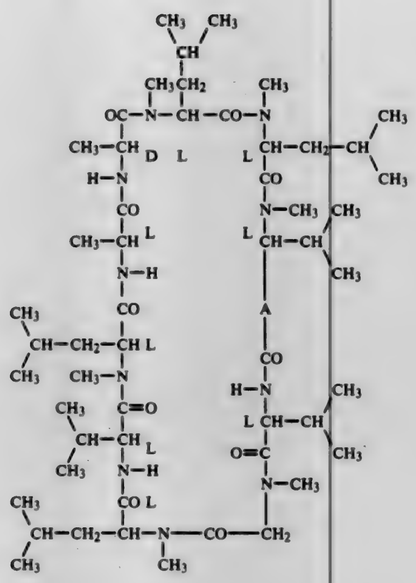
4,289,851

PROCESS FOR PRODUCING CYCLOSPORIN DERIVATIVES

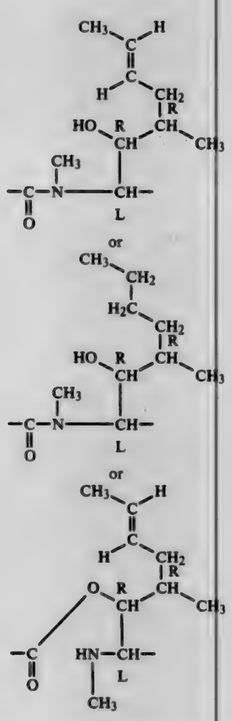
Rene P. Traber; Max Kuhn, both of Basel; Hans Hofmann, Ettingen, and Eugen Härri, Therwil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 902,794, May 4, 1978, Pat. No. 4,220,641. This application Mar. 3, 1980, Ser. No. 126,215
Claims priority, application Switzerland, May 10, 1977, 5822/77; May 10, 1977, 5823/77; Jun. 17, 1977, 7457/77
Int. Cl.³ C12P *21/04*
U.S. Cl. 435—71 **1 Claim**

1. A process for the production of a compound of formula I



wherein A is



hereinafter referred to as cyclosporin D, dihydroclosporin D or iso-cyclosporin D, respectively,
which comprises

(a) for the production of cyclosporin D, cultivating a cyclosporin D producing strain of the species *Tolypocladium inflatum Gams* in the presence of a nutrient medium and isolating cyclosporin D,

(b) for the production of dihydrocyclosporin, hydrogenating cyclosporin D, or

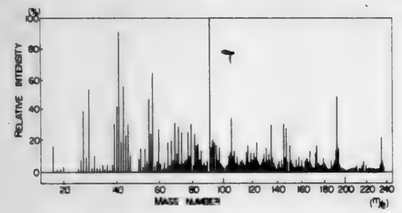
(c) for the production of isocyclosporin D rearranging cyclosporin D under acidic conditions.

4,289,852

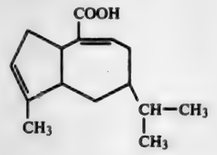
PROCESS FOR PRODUCING NOVEL BICYCLODECADIENE COMPOUNDS

Shingo Marumo, Owariasahi, and Masato Katayama, Nagoya, both of Japan, assignors to Noda Institute for Scientific Research, Noda, Japan

Division of Ser. No. 50,226, Jun. 20, 1979, Pat. No. 4,250,120, and Ser. No. 945,831, Sep. 26, 1978, Pat. No. 4,178,462. This application Nov. 29, 1979, Ser. No. 98,894
Claims priority, application Japan, Sep. 29, 1979, 52-116139
Int. Cl.³ C12P *7/24, 7/40*
U.S. Cl. 435—136 **6 Claims**

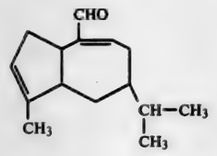


1. A process for producing 5-isopropyl-8-methylbicyclo (5.3.0) deca-2, 8-diene-2-carboxylic acid having a chemical structure represented by the formula



characterized by inoculating a microbial strain, Sclerotinia S-1 (FERM-P No. 4214, ATCC 20497) and having an ability to produce the bicyclodecadiene compound represented by the above mentioned formula into a medium containing carbon and nitrogen sources, cultivating the microbial strain there, and isolating the bicyclo-decadiene compound from the cultivated mixture.

4. A process for producing 5-isopropyl-8-methylbicyclo (5.3.0) deca-2, 8-diene-2-carboaldehyde having a chemical structure represented by the formula



characterized by inoculating a microbial strain, Sclerotinia S-1 (FERM-P No. 4214, ATCC 20497), and having an ability to produce the bicyclo-decadiene compound represented by the above-mentioned formula into a medium containing carbon and nitrogen sources, cultivating the microbial strain there, and isolating the bicyclo-decadiene compound from the cultivated mixture.

4,289,853

HIGH LOADING OF IMMOBILIZED ENZYMES ON ACTIVATED CARBON SUPPORTS

James E. Bailey, Houston, Tex., and Yong K. Cho, Rockford, Ill., assignors to Illinois Water Treatment Company, Rockford, Ill.

Division of Ser. No. 838,544, Oct. 3, 1977, Pat. No. 4,204,041. This application May 7, 1980, Ser. No. 147,353
The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.
Int. Cl.³ C12N *11/02*
U.S. Cl. 435—177 **4 Claims**

1. Method of immobilizing enzymes on activated carbon supports which comprises treating said activated carbon with a solution of an isoxazolium salt of the formula



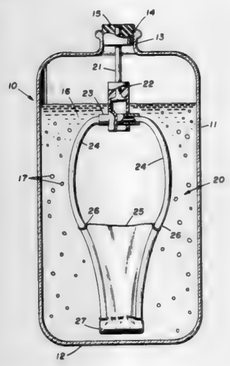
wherein R is lower alkyl and X is a bivalent lower alkylene or arylene radical, which forms a complex with reactive groups on the surface of said activated carbon, thereafter treating said activated carbon complex with a solution of an enzyme, whereby the enzyme displaces said isoxazolium salt and forms a carbon-enzyme complex, and separating said carbon-enzyme complex from the reaction media.

4,289,854

CELL CULTURE METHOD AND APPARATUS

William R. Tolbert, Manchester; Mary M. Hitt, St. Louis, and Joseph Feder, University City, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 20, 1980, Ser. No. 161,614
Int. Cl.³ C12N *5/02;* C12M *3/02*
U.S. Cl. 435—241 **8 Claims**



1. Apparatus for the suspension culturing of cells comprising
(A) a hollow flask having an opening at the top,
(B) shaft means within said flask and supported downwardly from said top opening, and
(C) a rotatable agitator means supported downwardly from said shaft means, said agitator means having supported thereon at least one flexible sheet, said flexible sheet being thus supported at upper and lower positions of the sheet to permit billowing of said sheet during rotation of the agitator means.

4,289,855

SAFETY CATALYST SYSTEMS

Donald C. Whitley, Shipley, England, assignor to Oxoid Limited, Basingstoke, England

Filed Dec. 19, 1978, Ser. No. 971,830
Claims priority, application United Kingdom, Dec. 30, 1977, 54354/77
Int. Cl.³ B01J *8/02, 35/04*
U.S. Cl. 435—287 **9 Claims**



1. In a system comprising an anaerobic jar containing an explosive mixture of oxygen and hydrogen and a catalytic device for catalyzing a reaction between the oxygen and hydrogen, the improvement wherein said catalytic device comprises: a container having holes for the inflow and outflow of gases, a metal foil net folded or rolled up inside said container, and a pelleted catalyst held loose in and throughout the holes and folds of said metal foil net, the ratio of metal foil net to catalyst being not less than 0.75:1 by weight, whereby said metal foil net constitutes a heat-sink material which, by preventing the formation of localized hotspots, reduces the risk of an explosion between the oxygen and hydrogen.

4,289,856

PROCESS FOR PREPARING NON-YELLOWING INTEGRAL-SKINNED POLYURETHANE FOAM USING A POLYOL HAVING A FUNCTIONALITY OF 4 TO 8

Masaki Yamamoto, and Ichiro Azuma, both of Kakogawa, Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Nov. 14, 1979, Ser. No. 94,265
Claims priority, application Japan, Nov. 14, 1978, 53-140577
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—51 **5 Claims**

1. A process for preparing an integral-skinned polyurethane foam of improved heat and weathering resistance wherein a foamable composition for formation of polyurethane which comprises one or more polyols, a polyisocyanate, a cross-linking agent, a catalyst, and a blowing agent is reacted and expanded in a mold, characterized in that
(a) said one or more polyols are polyether polyols having a terminal ethylene oxide adduct rate of at least 60%, an OH number of 20 to 100 and an average functionality of 4 to 8, or one or more polyester polyols having a functionality of 4 to 8;
(b) said polyisocyanate is a non-aromatic polyisocyanate having an isocyanate index of 90 to 130;
(c) said cross-linking agent is diethanolamine and ranges from 0.5 to 20 parts by weight based on 100 parts by weight of said one or more polyols;
(d) said catalyst is an organometallic salt; and
(e) said blowing agent is a halogenated hydrocarbon of a low boiling point.

4,289,857

FOAMABLE POLYMERIC COMPOSITIONS

Tsuneo Hoki; Nobuo Miura, and Hiroshi Watanabe, all of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 174,297
Int. Cl.³ C08J *9/10, 9/14*
U.S. Cl. 521—85 **4 Claims**

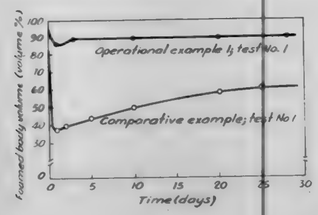
1. A foamable thermoplastic synthetic resin composition containing a polymer selected from the group consisting of styrenic and olefin polymers, a blowing agent and at least one

glycol ester compound of the formula I below in an amount of 0.1 to 10% by weight in respect to the resin:

$$[(R_1CO)_l(OR_2)_m\text{-}O]_n\text{-}M \qquad (I)$$

wherein,

R_1 is an aliphatic hydrocarbon radical with 10 to 24 carbons;



R_2 is an aliphatic polyvalent alcohol resin residue with 1 to 5 carbons;

l is a positive integer greater than 1 and less than the (alcohol valence of the R_2 group) -1;

m is a positive integer greater than 1 satisfying the following equation:

$$\frac{\text{number of carbons in } R_1 \text{ group}}{m \times \dfrac{\text{number of carbons in } R_2 \text{ group}}{\text{alcohol valence of } R_2 \text{ group}}} \geqq 0.8;$$

n is a positive integer of from 1 to 3; and

M is a residue of boric acid or phosphoric acid.

4,289,858

POLYOL-FLUOROCARBON-AMINETRIOL BLEND AND POLYISOCYANURATE FOAMS THEREFORE

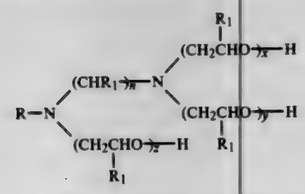
Charles E. Koehler, Baytown; Thomas R. McClellan, Seabrook, and Pat L. Murray, Houston, all of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 47,036, Jun. 11, 1979, abandoned. This application Feb. 1, 1980, Ser. No. 117,436

Int. Cl.³ C08G *18/14, 18/32, 18/42;* **C09K** *3/00*

U.S. Cl. 521—131 **17 Claims**

1. A blend comprising at least about 20 percent by weight of a fluorocarbon blowing agent and the balance being a polyol blend comprising (i) from about 20 percent to about 85 percent by weight of said polyol blend of an amine triol, or mixture of amine triols having the formula



wherein R is an aliphatic radical having from 8 to 18 carbon atoms, inclusive, each R_1 is independently selected from the group consisting of hydrogen and methyl, x, y, and z each independently have an average value between about 1 and about 5 inclusive, n is 2 or 3, and (ii) from about 15 percent to about 80 percent by weight of a primary hydroxyl polyol characterized by a molecular weight of from about 60 to about 1000 wherein said blowing agent and said polyol blend are miscible in each other.

11. In a process for the preparation of a cellular polymer in which the major recurring polymer unit is an isocyanurate moiety said process comprising the trimerization of an organic polyisocyanate in the presence of a minor amount of a polyol, a blowing agent, and a trimerization catalyst, the improvement which comprises preparing said cellular polymer by bringing together:

A. an organic polyisocyanate; and

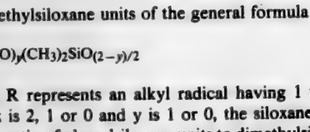
B. from about 10 to about 120 parts by weight per equivalent of said polyisocyanate of a miscible blend comprising:

(a) about 2 to about 20 percent by weight of a polyisocyanate trimerization catalyst, and

(b) about 80 to about 98 percent by weight of a mixture comprising:

1. at least about 20 percent by weight of a fluorocarbon blowing agent, and

2. the balance being a polyol blend comprising (i) from about 20 percent to about 85 percent by weight of said polyol blend of an amine triol or mixture of amine triols having the formula



wherein R is an aliphatic radical having from 8 to 18 carbon atoms, inclusive, x, y, and z each independently have an average value between about 1 and about 5 inclusive, n is 2 or 3 and (ii) from about 15 percent to about 80 percent by weight of a primary hydroxyl polyol having a molecular weight of from about 60 to about 1000; and provided the total hydroxyl equivalents present in said blend (B) are within a range of from about 0.05 to about 0.5 equivalent per equivalent of said polyisocyanate.

4,289,859

NON-BLEEDING TRANSPARENT SILICONE ADDITIVES FOR PLASTICS

Robert E. Kalinowski, Auburn, and Gary A. Vincent, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 2, 1980, Ser. No. 155,861

Int. Cl.³ C08L *27/06, 69/00;* **C08K** *5/54*

U.S. Cl. 525—104 **3 Claims**

1. A transparent thermoplastic composition comprising in admixture a transparent thermoplastic resin selected from the group consisting of polystyrene, polyvinyl chloride, polyethylene terephthalate, polybutylene terephthalate, acrylic polymers, and polycarbonate and a minor amount of a fluid siloxane copolymer composed essentially of phenylsiloxane units of the general formula

$$(RO)_xC_6H_5SiO_{(3-x)/2}$$

and dimethylsiloxane units of the general formula

$$(RO)_y(CH_3)_2SiO_{(2-y)/2}$$

wherein R represents an alkyl radical having 1 to 6 carbon atoms, x is 2, 1 or 0 and y is 1 or 0, the siloxane copolymer having a ratio of phenylsiloxane units to dimethylsiloxane units in the range of 0.6 to 2, a phenyl radical content above 22 weight percent based on the total weight of the copolymer, and a ratio of alkoxy groups to silicon atoms above 0.3.

4,289,860

GRAFTING OF SILANE ON THERMOPLASTICS OR ELASTOMERS FOR PURPOSES OF CROSS LINKING

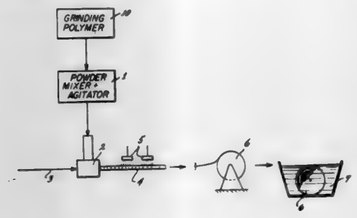
Fritz Glander, Isernhagen, and Hermann U. Voigt, Langenhagen, both of Fed. Rep. of Germany, assignors to Kabel- und Metallwerke Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Mar. 10, 1975, Ser. No. 557,108

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1974, 2411141; Aug. 17, 1974, 2439513; Aug. 17, 1974, 2439534

Int. Cl.³ C08F *255/02*

U.S. Cl. 525—263 **35 Claims**



1. In a method for cross-linking thermoplastic or elastomeric material wherein cross-linking is preceded by grafting of silane and is carried out in the presence of moistures, the combination of steps comprising:

providing the thermoplastic or elastomeric material as dry, fluid powder;

agitating the powder to obtain fluidization thereof and raising the temperature by operation of the agitating;

adding a silane compound to the material prior to completion of the agitation, the silane compound being of the variety that permits grafting on the molecules of said powder;

providing for a temperature below the crystallite melting range, between 80° C. and 100° C., so that the silane or silane compound as agitated together with the said material fluid is caused to diffuse into the fluid particles without grafting; and

providing for grafting of the silane or silane compound molecules to the molecules of the thermoplastic or elastomeric material.

4,289,861

CURABLE RUBBER COMPOSITIONS WITH AMINO ACIDS

Masao Onizawa, Ohmiya, Japan, assignor to Sanyo Trading Co., Ltd., Japan

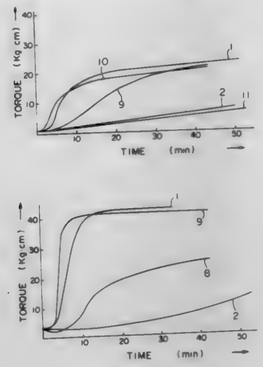
Filed Dec. 9, 1976, Ser. No. 749,081

Claims priority, application Japan, Dec. 27, 1975, 50-155874; Apr. 23, 1976, 51-45438; May 12, 1976, 51-53338

Int. Cl.³ C08C *19/22*

U.S. Cl. 525—346 **4 Claims**

1. A curable composition consisting of (A) at least one rubber selected from the group consisting of a styrene-butadiene rubber, an acrylonitrile-butadiene rubber, a polybutadiene rubber, an acrylonitrile-isoprene rubber, an alfin rubber, a butadiene-methyl methacrylate rubber, a polyisoprene rubber, an acrylonitrile-butadieneisoprene rubber, a carboxylated acrylonitrile-butadiene rubber, a propylene oxide rubber, a propylene-butadiene rubber, and natural rubber, (B) at least one curing agent selected from the group consisting of sulfur and sulfur donors, and (C) at least one compound, as a vulcanization accelerator not requiring an activator, selected from the group consisting of arginine, lysine, hydroxylysine, ornithine, proline, hydroxyproline, leucine, isoleucine, histidine, tryptophan, threonine, serine, homoserine, alanine, phenylalanine,



valine, methionine, citrulline, tyrosine, asparagine, aspartic acid, glutamine, glutamic acid, and salts of these amino acids.

4,289,862

LIQUID PHOSPHAZENE COMPOSITIONS

Edwin D. Hornbaker, and Hsueh M. Li, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 14, 1980, Ser. No. 167,748

Int. Cl.³ C08L *79/00*

U.S. Cl. 525—538 **15 Claims**

1. In combination,

(i) a normally solid or viscous linear, substituted, crosslinkable phosphazene polymer having a viscosity of greater than 500,000 cps at 23° C., said polymer containing crosslinkable unsaturation in some of the substituents attached to the phosphorus atoms of said polymer, in admixture with

(ii) from about 1 to about 30 parts per 100 parts of polymer of a curing agent selected from the group consisting of a polythiol, a polyacrylate, a polymethacrylate and mixtures thereof such that the combination has a viscosity of less than 500,000 cps at 23° C.

4,289,863

ETHYLENE POLYMERIZATION PROCESS

Robert W. Hill, Houston, Tex.; William L. Kehl, Pittsburgh, Pa., and Thomas J. Lynch, Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 86,890, Oct. 10, 1979, which is a division of Ser. No. 864,296, Dec. 27, 1977, Pat. No. 4,219,444, which is a continuation-in-part of Ser. No. 722,197, Sep. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 612,252, Sep. 10, 1975, abandoned. This application Apr. 4, 1980, Ser. No. 137,341

Int. Cl.³ C08F *4/02, 4/24*

U.S. Cl. 526—106 **6 Claims**

1. In a Particle Form Process for the polymerization of ethylene, the improvement which comprises employing as the polymerization catalyst a catalyst prepared by depositing a chromium compound upon an amorphous inorganic carrier containing aluminum and phosphorus moieties; said carrier having been prepared by neutralizing an acidic aqueous solution containing Al^{+++} cations and PO_4^{---} anions in an aqueous medium *et* a pH in the range of about 4.0–11.0 to form a solid precipitate containing aluminum and phosphorus moieties, and recovering said precipitate; said acidic solution containing aluminum and phosphorus in an atomic ratio in the range of about 5:1 to 1:1.

4,289,864

OXIDATIVE POLYMERIZATION OF MONOMERS HAVING AT LEAST TWO ACTIVATED UNSATURATIONS

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 19, 1980, Ser. No. 150,789
Int. Cl.³ C08F *4/28, 16/00, 18/18, 22/28*
U.S. Cl. 526—235 **10 Claims**

1. A process for the production of a hydrophilic air-curing polymer system which comprises passing oxygen through a monomer maintained at a temperature below 30° C., said monomer having a structure comprising at least two unsaturations, with no more than three of said unsaturations being adjacent in the molecule, at least one of said unsaturations being α, β or β, γ to a nucleophilic group capable of activating the unsaturation towards oxidative polymerization and selected from the group consisting of —O—, —S—, —CON<, —COO—, >C=C<, —SO_2N<, —SO_2— and >NCN, so as to polymerize the monomer oxidatively and raise the viscosity of the system to a desired level.

4,289,865

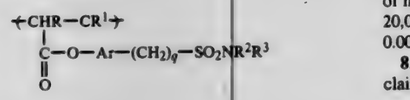
POLYMERS ACRYLOYLOXYARYLENESULFONAMIDES

John C. Wilson, and Paul D. Yacobucci, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1979, Ser. No. 22,406
Int. Cl.³ C08F *20/38*
U.S. Cl. 526—288 **6 Claims**

1. A polymer having an inherent viscosity within the range of from about 0.10 to about 2.0 comprising

(a) about 1 to 100 mole percent of one or more units having the formula:



wherein:

R and R^1 are independently hydrogen, halide or alkyl;

R^2 and R^3 are independently hydrogen, alkyl, cycloalkyl, aryl or aralkyl;

q is 0 or 1; and

Ar is arylene having from 6 to 18 carbon atoms, wherein no more than one of R^2 and R^3 is hydrogen; and

(b) 0 to 99 mole percent of one or more additional polymerized ethylenically unsaturated polymerizable monomers.

4,289,866

PROCESS FOR THE PREPARATION OF COPOLYMERS

Jürgen Ritz, Mainz; Hermann Hotze, and Hans-Dieter Mummenthey, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,378
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907997
Int. Cl.³ C08F *222/20;* C08G *83/00*
U.S. Cl. 526—320 **10 Claims**

1. In a process for the manufacture of copolymers reacting in a first step an olefinically unsaturated dicarboxylic acid with a polyhydric alcohol to yield a hemi-ester having free hydroxyl groups, reacting said hemi-ester in a second step with a monoepoxy compound to yield an olefinically unsaturated diester containing hydroxyl groups and copolymerizing said diester with at least one unsaturated monomer having no free carboxyl groups, the improvement which comprises reacting the hemi-ester having no ether groups in a second step with an equivalent amount of a monoepoxide compound, based on the hydroxyl groups of the hemi-ester, selected from the group consisting of glycidol, a glycidylether of a phenol and glycidylester of saturated carboxylic acids at a temperature between 100° and 170° C. to yield a reaction product having a molecular weight between 250 and 1500 and an OH-number between 175 and 550 and then copolymerizing the diester having 2 hydroxyalkyl radicals at a temperature between 80° and 220° C. and wherein the hardenable reaction product thus obtained is either isolated or hardened with a hardening agent.

4,289,867

ORGANOFUNCTIONAL POLYSILOXANE POLYMERS AND A METHOD FOR PREPARING THE SAME

Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 968,152, Dec. 11, 1978, abandoned. This application Jan. 30, 1980, Ser. No. 116,723
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—12 **8 Claims**

1. A process for preparing polysiloxane polymers which contain only $(M)_x(T')_y$ structural units in which M is a unit of the formula $R_3SiO_{0.5}$ and T' represents a unit of the formula $(R''S)_zR'SiO_{1.5}$ which comprises reacting a hexaorganodisiloxane with a silicon compound of the formula

$$[(R''S)_z R'Si\,OR_3](R''S)_z R'Si(OR)_3$$

in the presence of an acid catalyst having a pKa value less than 1.0, in which R is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, R' is selected from the group consisting of divalent, trivalent and tetravalent hydrocarbon radicals having from 2 to 18 carbon atoms and divalent, trivalent and tetravalent hydrocarbon radicals having at least one —C—S—C—group, R'' is selected from the group consisting of hydrogen, and R, x and y are each greater than 1 and up to 20,000, where the ratio of x to y may vary from 1:0.33 to 0.005:1 and z is 1, 2 or 3.

8. The product prepared in accordance with the process of claim 1.

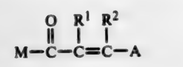
4,289,868

POLYHYDANTOINS FROM UNSATURATED CARBOXYLIC ACIDS AND POLYISO(THIO)CYANATES

Jürgen Lewalter, Odenthal; Rudolf Merten, Leverkusen; Wilfried Zecher, Leverkusen, and Willi Dünwald, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 958,940, Nov. 8, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,712
Int. Cl.³ C08G *18/34, 18/38, 18/67;* C07D *233/80*
U.S. Cl. 528—73 **3 Claims**

1. A process for the preparation of polyhydantoins and polythiohydantoins, comprising reacting organic polyisocyanates or polyisothiocyanates at temperatures of from −20° to +500° C. with compounds consisting essentially of unsaturated carboxylic acid derivatives of the formula:



wherein R^1 and R^2 are the same or different and each represents hydrogen, halogen, a C_1–C_{20} aliphatic group, a C_7–C_{20} aliphatic-aromatic group, a C_6–C_{20} aromatic group or a heterocyclic group having from 4 to 16 ring members and at least one N, O or S atom;

A represents CN, COR, substituted or unsubstituted C_1–C_{20} aliphatic group, C_7–C_{20} aliphatic-aromatic group, C_6–C_{20} aromatic group or a heterocyclic group having from 4 to 16 ring members and at least one N, O or S atom wherein the substituents are NO_2, $COOR_4$, CN, CO or OH; R and R^4 are selected from the definition of R^1 and R^2 with the exclusion of halogen;

M represents OH or



and

R^6 represents hydrogen, unsubstituted or substituted C_2–C_{20} aliphatic, C_5–C_{12} cycloaliphatic, C_6–C_{20} aliphatic aromatic, or a C_5–C_{12} aromatic or C_5–C_{12} cycloaliphatic containing a heteroatom N, O or S in the ring, wherein the substituents are at least one halogen, C_1–C_{10} alkyl or C_6–C_{12} aryl.

4,289,869

MIXTURE HARDENING UNDER THE INFLUENCE OF AIR MOISTURE AND A PROCESS FOR PRODUCTION OF POLYISOCYANATE-POLY-ADDITION PRODUCTS OR OF CROSS-LINKED POLYEPOXIDES

Hans-Georg Zengel, Kleinwallstadt; Michael Wallrabenstein, Wörth, and Walter Brodowski, Amorbach, all of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed May 22, 1980, Ser. No. 152,368
Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922176
Int. Cl.³ C08G *18/32, 59/18, 59/50*
U.S. Cl. 528—73 **14 Claims**

1. A polymeric mixture hardenable in the presence of moisture comprising

at least one organic polyisocyanate or polyepoxide; and a hardener activated by moisture in an amount sufficient to induce a chemical cross-linking reaction comprising an N,N'-substituted imidazolidine derivative or an N,N'-substituted hexahydropyrimidine derivative, which do not have a —CO—NH— group at any nitrogen atom.

14. Method for preparing polyisocyanate polyaddition products or cross-linked polyepoxides in the presence of water comprising reacting organic polyisocyanates or polyepoxides with N,N'-substituted imidazolidine derivatives or with N,N'-substituted hexahydropyrimidine derivatives having at no nitrogen atom a —CO—NH— grouping, under the hydrolyzing influence of water.

4,289,870

2,2',6,6'-TETRAMETHYLBIPHENYL-4,4'-DIOL POLYESTERS

John A. Donohue, Elmhurst, and Edward E. Paschke, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 3, 1979, Ser. No. 81,341
Int. Cl.³ C08G *63/16, 63/18, 63/20, 63/40*
U.S. Cl. 528—193 **13 Claims**

1. A polyester comprising units of a dicarboxylic acid component and dihydroxy component wherein said dicarboxylic acid component comprises non-vicinal benzene dicarboxylate moieties and said dihydroxy component comprises 2,2',6,6'-tetramethylbiphenyl-4,4'-diol moieties.

4,289,871

METHOD TO INCREASE REACTOR CAPACITY FOR POLYCONDENSATION OF POLYESTERS

Hugh H. Rowan, Chapel Hill, N.C.; Max B. Mueller, Royal Oak, Md., and Stanley D. Lazarus, Petersburg, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 27, 1980, Ser. No. 134,592
Int. Cl.³ C08G *63/18*
U.S. Cl. 528—309 **17 Claims**

1. A method to increase the reactor capacity and throughput and/or increase final viscosity of the polyester for polycondensation of molten ethylene terephthalate polyesters in a high surface area-to-volume ratio reactor operating at temperatures between about 275° C. and 300° C., pressures between about 0.1 and 760 Torr, and a residence time of between about 0.1 and 6 hours while continuously removing the vaporous products of condensation in a vapor removal system, and increasing the viscosity of the polyester having an initial intrinsic viscosity above 0.4, comprising:

a. injecting liquid inert vaporizable and condensible material having an atmospheric boiling point between about 220° C. and 250° C., and a solubility parameter between about 10 and 16 into the molten polyester at said reaction temperature so that it vaporizes to form vapor bubbles to further increase the surface area-to-volume ratio in the reactor, and

b. passing said inert material through said molten polyester and into said vapor removal system, and

c. condensing said inert material in said vapor removal system.

4,289,872

MACROMOLECULAR HIGHLY BRANCHED HOMOGENEOUS COMPOUND BASED ON LYSINE UNITS

Robert G. Denkewalter, Westfield; Jaroslav Kolc, Randolph Twp., Morris County, and William J. Lukasavage, Harrison, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 6, 1979, Ser. No. 27,622
Int. Cl.³ C08G *69/10*
U.S. Cl. 528—328 **5 Claims**

1. A macromolecular compound composed of at least four successive layers of lysine units:

the first said layer consisting of one lysine unit linked as an amide, via its carbonyl group, to an amino group of a compound (S) in which amino groups are the only groups reactive with the lysine molecule;

the second layer consisting of two lysine units each linked as an amide, via the respective carbonyl groups, to one of the two amino groups in the lysine unit of the first layer;

the third layer consisting of four lysine units each linked as an amide, via the respective carbonyl groups, to one of the four amino groups in the two lysine units of the second layer;

the fourth layer consisting of eight lysine units each linked as an amide, via the respective carbonyl groups, to one of the eight amino groups in the four lysine units of the third layer.

4,289,873

PROCESS FOR PRODUCING LACTONE POLYESTERS

Masayoshi Kubo, Oi; Michio Nakanishi, Niza, and Mamoru Kimura, Oi, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Nov. 28, 1979, Ser. No. 97,780
Claims priority, application Japan, Nov. 30, 1978, 53-148211
Int. Cl.³ C08G *63/10*
U.S. Cl. 528—357 **14 Claims**

1. In a process for producing a lactone polyester which comprises ring-opening polymerization of a lactone in the presence of a metal containing organic compound as a catalyst, the improvement wherein said catalyst is an alcoholate, chelate or organic carboxylic acid salt of vanadium or molybdenum.

4,289,874

AQUEOUS CRYSTALLIZATION OF POLYESTER

Ronald E. Bockrath, Aurora, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 923,060, Jul. 10, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,212

Int. Cl.³ C08G *61/00, 61/12;* C08J *3/00*

U.S. Cl. 528—487 **8 Claims**

1. A process of increasing crystallinity of water-insoluble crystallizable polyester pellets in an aqueous medium which comprises crystallizing polyester pellets having a diameter of 0.5 mm to 2.0 mm and 0.5 mm to 4 mm in length in an aqueous medium at about 50°–150° C. containing 0.0001 to 5% by weight of at least one surface active agent capable of preventing agglomeration of said polyester pellets selected from the group consisting of nonionic surface active agents and anionic surface active agents and dewatering said polyester pellets, wherein said polyester pellets comprise from 5–60% by weight of the aqueous bath.

4,289,875

PROCESS FOR CONTINUOUS FILTRATION AND AGING OF XANTHATED ALKALI CELLULOSE

Charles J. Geyer, Jr., Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Incorporated, Wayne, Pa.

Filed Oct. 29, 1979, Ser. No. 89,129

Int. Cl.³ 308B *9/04*

U.S. Cl. 536—60 **13 Claims**

1. An improved continuous process for forming cellulose products by the viscose process from a solution of xanthated alkali cellulose, wherein said solution of xanthated alkali cellulose is passed in a downstream direction through a series of filter means, the improvement comprising controlling the rate of flow per unit area whereby each said filter means in said series has a successively greater initial pressure differential as said xanthated alkali cellulose solution passes in said downstream direction through said series of filter means, so that the filter rate is inversely related to the degree of gel removal.

4,289,876

ANTISECRETORY AGENTS

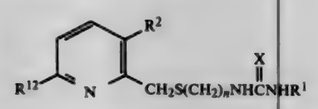
Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 963,477, Nov. 24, 1978, Pat. No. 4,250,316. This application Mar. 10, 1980, Ser. No. 129,158

Int. Cl.³ C07D *213/28*

U.S. Cl. 542—416 **6 Claims**

1. A compound of the formula



I

wherein R^1 is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms, inclusive; R^2 is hydrogen, hydroxy, cyano, (lower)alkyl, (lower)alkoxy, halogen or amino; n is 2 or 3; X is NR^3 or CHR^3; R^3 is SO_2Ar or SO_2(lower)alkyl; R^{12} is hydrogen or $(CH_2)_pNR^{13}R^{14}$, p is an integer of from 1 to 4, inclusive; R^{13} and R^{14} each are independently hydrogen or (lower)alkyl; and Ar is phenyl or phenyl containing 1 or 2 substituents independently selected from halogen and (lower)alkyl; or a nontoxic, pharmaceutically acceptable salt thereof.

6. 1-Phenylsulfonyl-2-(2-propynylamino)-2-{2-[(3-bromo-2-pyridyl)methylthio]ethylamino}ethylene, or a nontoxic pharmaceutically acceptable salt thereof.

4,289,877

2-DECARBOXY-2-TETRAZOLYL-9-DEOXY-5,9α-EPOXY-4,5-CIS-17,18-TETRADEHYDRO-PGF$_1$ COMPOUNDS

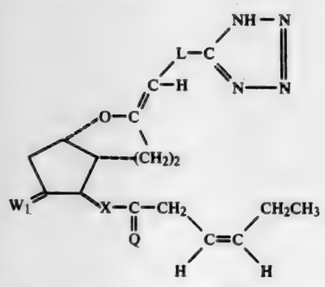
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,982, Aug. 11, 1978, Pat. No. 4,212,968, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,462

Int. Cl.³ C07D *405/02*

U.S. Cl. 542—431 **16 Claims**

1. A compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;
wherein L is
(1) —$(CH_2)_d$—$C(R_2)_2$, or
(2) —CH=CH—,
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2— or —$(CH_2)_2$—,
wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and
wherein X is
(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—; including the lower alkanoates thereof.

4,289,878

2-DECARBOXY-2-TETRAZOLYL-TRANS-2,3,4,5-TETRADEHYDRO-PGI$_1$ COMPOUNDS

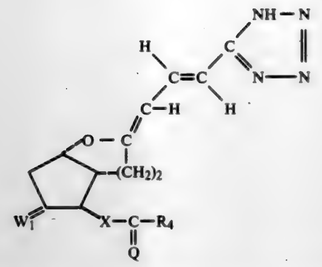
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 936,295, Aug. 23, 1978, Pat. No. 4,202,972, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,464

Int. Cl.³ C07D *405/02*

U.S. Cl. 542—431 **18 Claims**

1. A 4Z compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;
wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and
wherein R_4 is
(1) —CR_5R_6—C_gH_{2g}—CH_3
(2) —CR_5R_6—Z—(Ph)
(3) cis—CH_2—CH=CH—CH_2CH_3
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7—, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—;
including the lower alkanoates thereof.

4,289,879

SYNTHETIC METHOD AND INTERMEDIATE FOR PIROXICAM

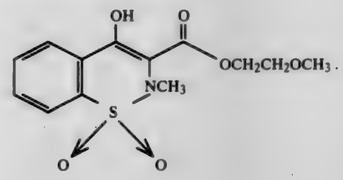
Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,716

Int. Cl.³ C07D *279/02*

U.S. Cl. 544—49 **4 Claims**

1. A compound of the formula



4,289,880

CATIONIC OXAZINE DYES

Peter Moser, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

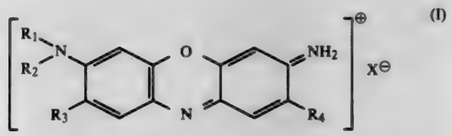
Filed Jul. 11, 1979, Ser. No. 56,664

Claims priority, application Switzerland, Jul. 21, 1978, 7907/78

Int. Cl.³ C07D *265/38*

U.S. Cl. 544—103 **3 Claims**

1. A cationic oxazine dye of the formula I



(I)

in which R_1, R_2, R_3 and R_4 independently of one another are each C_{1-4}-alkyl, with R_1 and R_2 together with the nitrogen atom also being able to form a heterocyclic ring, and $X\ominus$ is an anion.

3. A cationic oxazine dye according to claim 1, wherein R_1, R_2, R_3 and R_4 are each methyl.

4,289,881

PROCESS FOR THE PREPARATION OF 1,4-DIAZABICYCLO-(2,2,2)-OCTANE

Laszlo Imre, Leverkusen; Walter Horstmann, Bergisch Gladbach, and Hans-Gerhard Leopold, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

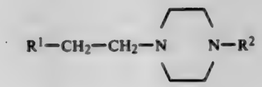
Filed Oct. 15, 1979, Ser. No. 84,928

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846813

Int. Cl.³ C07D *295/02*

U.S. Cl. 544—352 **10 Claims**

1. A process for the preparation of 1,4-diazabicyclo-(2,2,2)-octane which comprises contacting a piperazine compound of the formula



wherein

R^1 denotes the hydroxyl group or the amino group and

R^2 represents hydrogen or the radical

$$-A-R^3$$

wherein

A denotes a straight-chain or branched hydrocarbon radical and

R^3 denotes the hydroxyl group or the amino group, at a temperature in the range from 200° to 500° C. with a catalyst containing at least 97 percent by weight free silicon dioxide.

4,289,882

4a-ARYL-DECAHYDROISOQUINOLINES

Henry Rapoport, Berkeley, Calif.; Dwight D. Weller, Champaigne, Ill., and Richard D. Gless, Oakland, Calif., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 900,275, Apr. 26, 1978, Pat. No. 4,189,583. This application Sep. 5, 1978, Ser. No. 939,706

Int. Cl.³ C07D *217/24, 217/16*

U.S. Cl. 546—141 **5 Claims**

1. A compound, tert-butyl 1,6-dioxo-4a-(3'-methoxyphenyl)-2-methyl-decahydroisoquinoline-7-carboxylate (33).

2. A compound, 1,6-dioxo-4a-(3'-methoxyphenyl)-2-methyl-decahydroisoquinoline (9).

3. A compound, trans-Δ^7-6α-hydroxy-4aα-(3'-hydroxyphenyl)-2-methyloctahydroisoquinoline (6).

4. A compound, trans-Δ^7-6α-hydroxy-4a-(3'-methoxyphenyl-2-methyloctahydroisoquinoline (7).

5. A compound, $\Delta^6\Delta^{8(8a)}$-6-methoxy-4a-(3'-methoxyphenyl)-2-methylhexahydroisoquinoline (8).

4,289,883

CARBOSTYRIL COMPOUNDS

Michiaki Tominaga; Hitoshi Tone, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 778,537, Mar. 17, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,535

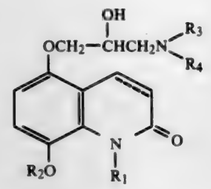
Claims priority, application Japan, Mar. 17, 1976, 51-28957; May 7, 1976, 51-52498

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ C07D *215/22;* **A61K** *31/47*

U.S. Cl. 546—158 **18 Claims**

1. A carbostyril compound represented by the formula (I):



(I)

wherein R_1 represents a hydrogen atom, a straight or branched chain alkyl group having 1 to 6 carbon atoms or a phenylalkyl group selected from the group consisting of monophenylalkyl and diphenylalkyl groups having a straight or branched chain alkyl group having 1 to 6 carbon atoms in the alkyl moiety thereof, R_2 represents a straight or branched chain alkenyl group having 2 to 6 carbon atoms, an alkoxyalkyl group having a straight or branched chain alkoxy group of 1 to 6 carbon atoms in the alkoxy moiety thereof and a straight or branched chain alkylene group of 1 to 6 carbon atoms in the alkyl moiety thereof, a mono hydroxyalkyl group having a straight or branched chain alkyl group of 1 to 6 carbon atoms, a carboxyalkyl group having a straight or branched chain alkylene group of 1 to 6 carbon atoms in the alkyl moiety thereof, an alkylcarbonyl group having a straight or branched chain alkyl group of 1 to 6 carbon atoms in the alkyl moiety thereof, a cycloalkylcarbonyl group having a cycloalkyl group of 3 to 7 carbon atoms in the cycloalkyl moiety thereof, an alkylcarbonylalkyl group having a straight or branched chain alkylene group of 1 to 6 carbon atoms and the alkyl carbonyl group as defined hereinabove for R_2, an alkoxycarbonylalkyl group having an alkoxycarbonyl moiety consisting of a straight or branched chain alkoxy group having 1 to 6 carbon atoms attached to a carbonyl group and a straight or branched chain alkyl group having 1 to 6 carbon atoms in the alkyl moiety thereof, a straight or branched chain alkynyl group having 2 to 7 carbon atoms or a carbamoylalkyl group having a straight or branched chain alkylene group of 1 to 6 carbon atoms in the alkyl moiety thereof and a carbamoyl group which may be substituted on the nitrogen atom thereof with an alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted phenylalkyl group, R_3 and R_4, which may be the same or different, each represents a hydrogen atom, a straight or branched chain alkyl group having 1 to 6 carbon atoms, a cycloalkyl group having 3 to 7 carbon atoms, an alkoxyalkyl group having a straight or branched chain alkoxy group of 1 to 6 carbon atoms in the alkoxy moiety thereof and a straight or branched chain alkylene group of 1 to 6 carbon atoms in the alkyl moiety thereof, a straight or branched chain alkenyl group having 2 to 6 carbon atoms, a phenylalkyl group selected from the group consisting of monophenylalkyl and diphenylalkyl groups having a straight or branched chain alkyl group having 1 to 6 carbon atoms in the alkyl moiety thereof, a phenoxyalkyl group having a straight or branched alkylene group of 1 to 6 carbon atoms in the alkyl moiety thereof, or a phenyl group, the 3,4-bond of the carbostyril nucleus represents a single or double bond, said phenyl, phenylalkyl or phenoxyalkyl being unsubstituted or having 1 to 3 substituents being selected from the group consisting of alkyl groups having 1 to 4 carbon atoms, alkoxy groups having 1 to 4 carbon atoms, halogen atoms, alkylenedioxy groups having 1 to 2 carbon atoms, carbamoyl and substituted or unsubstituted phenyl, and the pharmaceutically acceptable acid addition salts thereof.

4,289,884

HERBICIDAL TETRAHYDROFURAN DERIVATIVES

Michael D. Barker, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 3, 1980, Ser. No. 109,382

Claims priority, application United Kingdom, Jan. 8, 1979, 613/79

Int. Cl.³ C07D *239/72*

U.S. Cl. 546—283 **1 Claim**

1. 2,2-Dimethyl-5-ethyl-5-(2-pyridylmethoxymethyl)oxolane.

4,289,885

3-[2-(DIMETHYLAMINO)-2-PHENYLETHYL]N-[PHENYLAMINO)CARBONYL]SYDNONE IMINE, A NEW CENTRAL NERVOUS SYSTEM STIMULANT

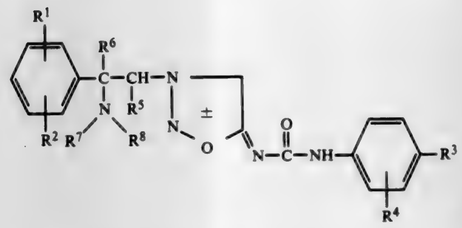
Reinhardt P. Stein, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,043

Int. Cl.³ C07D *271/04, 413/06*

U.S. Cl. 548—125 **8 Claims**

1. A compound of the formula:



in which

R^1 and R^2 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, perfluoroalkyl of 1 to 3 carbon atoms, nitro, alkanoyl of 2 to 4 carbon atoms or alkoxycarbonyl of 2 to 4 carbon atoms;

R^3 is hydrogen, halo, nitro or alkanoyl of 2 to 4 carbon atoms;

R^4 is hydrogen, halo, nitro or perfluoroalkyl of 1 to 3 carbon atoms;

R^5 and R^6 are, independently, hydrogen or methyl; and

R^7 and R^8 are, independently, alkyl of 1 to 4 carbon atoms, or when taken with the nitrogen atom to which they are attached form a piperidinyl, pyrolidinyl, morpholinyl, N-alkyl piperazinyl in which the alkyl group contains from 1 to 6 carbon atoms or N-phenylpiperazinyl group; or

a non-toxic acid addition salt thereof.

4,289,886

IMIDES DERIVED FROM 2-THIOXO-3-BENZOX(THIA)AZOLINE ACETIC, AND PROPIONIC ACIDS

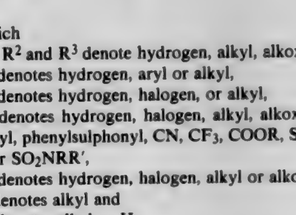
John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 5, 1979, Ser. No. 55,102

Int. Cl.³ C07D *261/58;* **A01N** *43/72;* **C07D** *277/70;* **A01N** *43/78*

U.S. Cl. 548—165 **5 Claims**

1. A compound having the formula



wherein X is sulfur or oxygen, R is lower alkyl, T is selected from the group consisting of hydrogen, halogen, nitro, lower alkyl and trifluoromethyl and n is 1 or 2.

4,289,887

BENZOFURANE BENZOXAZOLES

Bernhard Wehling, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

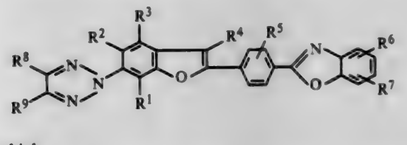
Filed Apr. 21, 1980, Ser. No. 141,831

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2918965

Int. Cl.³ C07D *263/58;* **C09K** *11/06*

U.S. Cl. 548—224 **2 Claims**

1. A benzofurane compound of the formula



in which

R^1, R^2 and R^3 denote hydrogen, alkyl, alkoxy or halogen,

R^4 denotes hydrogen, aryl or alkyl,

R^5 denotes hydrogen, halogen, or alkyl,

R^6 denotes hydrogen, halogen, alkyl, alkoxy, alkylsulphonyl, phenylsulphonyl, CN, CF_3, COOR, SO_3R, CONRR' or SO_2NRR',

R^7 denotes hydrogen, halogen, alkyl or alkoxy,

R denotes alkyl and

R' denotes alkyl or H,

R^8 denotes aryl, alkyl, aralkyl, styryl or alkoxy, and

R^9 denotes hydrogen, CN, COOR, CONRR' or R^8, or R^8 and R^9 together denote a fused-on hydroaromatic or aromatic ring, and

the abovementioned hydrocarbon radicals and alkoxy radicals and the optionally fused-on ring systems optionally being substituted by substituents customary in brightener chemistry.

4,289,888

2-DECARBOXY-2-TETRAZOLYL-4-HALO-5,9-EPOXY-9-DEOXY-PGF$_1$ COMPOUNDS

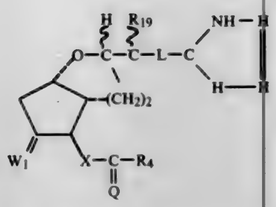
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,981, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,456

Int. Cl.³ C07D *405/02*

U.S. Cl. 548—253 **9 Claims**

1. A compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;
wherein L is
(1) $-(CH_2)_d-C(R_2)_2$,
(2) $-O-CH_2-Y$, or
(3) $-CH=CH-$,
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$ or $-(CH_2)_2-$,
wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_4 is
(1) $-CR_5R_6-C_gH_{2g}=CH_3$
(2) $-CR_5R_6-Z-(Ph)$
(3) cis$-CH_2-CH=CH-CH_2CH_3$
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;
wherein R_{19} is chloro, bromo, or iodo; and wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $-CH_2CH_2-$.

4,289,889
PREPARATION OF TETRAALKOXYSILANES
William B. Herdle, Greenburgh; Bernard Kanner, Nyack, both of N.Y., and Donald L. Bailey, Traverse City, Mich., assignors to Union Carbide Corporation, New York, N.Y.
Filed Jun. 30, 1980, Ser. No. 163,976
Int. Cl.³ C07F *7/04, 7/18*
U.S. Cl. 556—470 **5 Claims**

1. A process for the preparation of a tetraalkylorthosilicate with comprises (I) contacting at a temperature in the range of 200° C. through 350° C. for a period of time sufficient to form a silane mixture (A) an alkanol ROH wherein R is an alkyl group of from one to three carbon atoms and (B) dimethylamine with (C) copper-activated silicon, wherein the mole ration of dimethylamine (B) to alkanol (A) is in the range of from 0.2:1 to 10:1, and (II) subsequently adding to said silane mixture at least enough alkanol ROH to convert all of the silanes present to tetraalkylorthosilicates.

4,289,890
SYNTHESIS OF CHLOROMETHYLDISILANES
Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138
Continuation-in-part of Ser. No. 11,079, Feb. 12, 1979. This application Nov. 7, 1979, Ser. No. 92,205
Int. Cl.³ C07F *7/08, 7/16, 7/14, 7/12*
U.S. Cl. 556—430 **22 Claims**

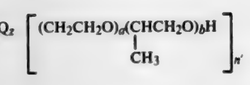
1. A process for synthesizing chloromethyldisilanes starting from the disilane fraction resulting from the direct process for the manufacture of silicones, said process comprising the steps of
(a) reacting said disilane fraction with a methylating agent to form hexamethyldisilane and
(b) reacting said hexamethyldisilane with a further portion of said disilane fraction to form a chloromethyldisilane product.

4,289,891
SILICONE DIFFUSION PUMP FLUIDS
Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.
Filed Apr. 21, 1978, Ser. No. 898,747
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—453 **12 Claims**

1. A process for forming inexpensive silicone diffusion pump fluids capable of maintaining a vacuum of 1×10^{-6} in a vacuum pump comprising (1) reacting sufficient amounts of an aliphatic alcohol having 1 to 3 carbon atoms with phenyltrichlorosilane so as to substitute on the average from 30% to 80% of the chlorine groups in said silane with alkoxy groups so as to produce an alkoxylated phenylchlorosilane at a temperature of −8 to 25° C.; (2) adding at least the stoichiometric amount of water to the mixture of said alkoxylated phenylchlorosilane, trimethylchlorosilane and a phenyl compound selected from the class consisting of diphenyldichlorosilane and diphenylsilane diol to form a mixture of diffusion pump fluids which are phenylsiloxane fluids, and (3) separating all the different fluids by fractional distillation.

4,289,892
FLUOROCHEMICAL FOAM STABILIZER AND FOAMED POLYURETHANES MADE THEREWITH
Fredrich A. Soch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 20,113, Mar. 3, 1970, abandoned. This application Apr. 30, 1979, Ser. No. 34,383
Int. Cl.³ C07C *125/077*
U.S. Cl. 560—26 **7 Claims**

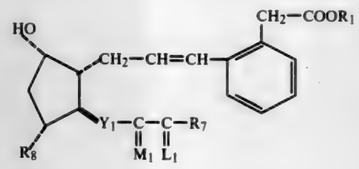
1. A fluoroaliphatic radical-substituted polyol having the formula



wherein R_f is a fluorinated, saturated, monovalent, aliphatic, stable, non-polar, inert, oleophobic, hydrophobic radical having 4 to 20 carbon atoms and 40 to 78 weight percent fluorine terminating in at least three fully fluorinated carbon atoms, Q is a linkage free of active hydrogen atoms and has a valence equal to m+n', m is an integer of at least 1, n' is an integer of at least 2, a and b are integers of at least 1, the sum of a+b being at least 5 and the weight ratio of a:b being 20:80 to 80:20, said polyol having a fluorine content of 4–25 weight percent and an average molecular weight of at least 4500, and z is an integer of 1–3.

4,289,893
2,5-INTER-O-PHENYLENE-3,4-DINOR-PGF$_2$ COMPOUNDS
Udo F. Axen, Plainwell, and John C. Sih, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 62,443, Jul. 31, 1979, which is a continuation-in-part of Ser. No. 962,845, Nov. 22, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,599
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—55 **1 Claim**

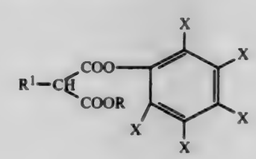
1. A prostacyclin intermediate of formula VII



wherein
R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) $-CH_2CH_2-$, or
(4) —C≡C—,
wherein M_1 is α-R_5:β-OH or αOH-β-R_5, wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive,
wherein L_1 is αR_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and αR_4:β-R_3, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_7 is
(1) $-(CH_2)_m-CH_3$, wherein m is an integer from one to 5, inclusive;
(2) phenoxy;
(3) phenoxy substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(4) phenyl;
(5) phenyl substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(6) phenylmethyl, phenylethyl, or phenylpropyl; or
(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl or one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein R_1 is
(1) hydrogen;
(2) alkyl of one to 12 carbon atoms, inclusive;
(3) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(4) aralkyl of 7 to 12 carbon atoms, inclusive;
(5) phenyl;
(6) phenyl substituted with one, 2 or 3 chloro or alkyl of one to 3 carbon atoms;
(7) phenyl substituted in the para position by
(a) —NH—CO—R_{25},
(b) —CO—R_{26},
(c) —O—CO—R_{27}, or
(d) —CH=N—NH—CO—NH_2,
wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is hydroxy, methyl, phenyl, —NH_2, or methoxy; and R_{27} is phenyl or acetaminophenyl, inclusive, or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

4,289,894
PENTACHLOROPHENYL-PHENYL MALONATE COMPOUND SUITABLE FOR USE AS ACYLATING AGENTS
Magda Huhn; Eva Somfai; Gabor Szabo; Gabor Resovszki, and Zoltan Gneth, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyiszeti Termekek Gyara R.T., Budapest, Hungary
Continuation of Ser. No. 698,063, Jun. 21, 1976. This application Mar. 6, 1979, Ser. No. 17,835
Claims priority, application Hungary, Jun. 20, 1975, OE 22511592
Int. Cl.³ C07C *69/76, 79/46, 101/447*
U.S. Cl. 560—82 **3 Claims**

1. A compound of the formula:

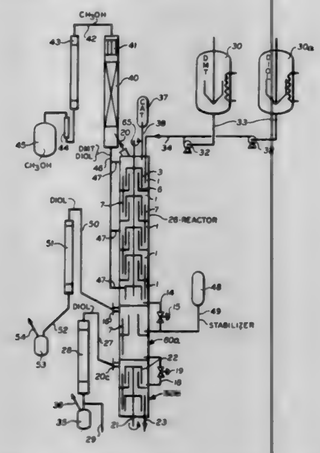


wherein
R is C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_3 to C_8 cycloalkyl, phenyl, halophenyl, naphthyl, benzyl, indanyl, phenacyl, p-nitrophenacyl, xylyl or acetoxymethyl;
R^1 is phenyl, benzyl or phenyl or benzyl substituted by halo, nitro, dialkylamino, alkoxy or trifluoromethyl, lower alkyl or allyl; and
X is halo.

4,289,895
METHOD FOR THE PREPARATION OF OLIGOMERIC ALKYLENE TEREPHTHALATES
Rudolf Burkhardt, Troisdorf; Günther Meyer, Troisdorf-Sieglar; Reinhard Schmidt, Witten, and Klaus Thewalt, Witten-Bommern, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany
Continuation of Ser. No. 871,661, Jan. 23, 1978, abandoned, which is a continuation of Ser. No. 653,183, Jan. 28, 1976, abandoned. This application Aug. 13, 1979, Ser. No. 65,823
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1975, 2504258
Int. Cl.³ C07C *69/82*
U.S. Cl. 560—92 **13 Claims**

1. Process for production of oligomeric alkylene terephthalates having an average degree of condensation of 4 to 7, a CH_3O content of less than 0.05 wt.%, and a monomeric terephthalic acid dialkanediol ester content of up to 30 wt.%, by transesterification of dimethylterephthalate and diol of 3 to 8 carbon atoms and condensation of the transesterification product, which comprises:
(a) continuously passing the dimethylterephthalate, the diol, and a catalyst for the transesterification through a series of superposed reaction chambers from the uppermost chamber serially to the lowermost chamber, for the transesterification, in liquid phase, methanol being formed in the transesterification reaction and being distilled in the reaction chambers from the liquid phase during the transesterification, and withdrawing the methanol distilled from each chamber without intermixing thereof with the liquid present in any of the other chambers,
(b) the molar proportion of dimethylterephthalate to diol introduced into the reaction chambers being 1:1.1 to 1:1.5,

(c) heating said materials in the reaction chambers so that the temperature in the reaction chambers is in the range of 130°-245° C. and increases stepwise from chamber to chamber, and maintaining the pressure at normal or above normal in said reaction chambers, and stirring the materials during the reaction thereof with stirrers,



(d) passing the transesterification product of the reaction chambers through a vacuum zone maintained at a reduced pressure of 20-300 Torr and temperature of 180°-250° C. for expelling of diol and production of said oligomer and withdrawing the oligmer from the vacuum zone, the temperature in the vacuum zone being higher than the highest temperature in the reaction chambers.

4,289,896

TRANSESTERIFICATION PROCESS

Lothar Buxbaum, Lindenfels, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,789

Claims priority, application Switzerland, Sep. 29, 1978, 10198/78

Int. Cl.³ C07C *67/02*

U.S. Cl. 560—92 **12 Claims**

1. An improved process for the transesterification of an alkyl ester of a mono- or polycarboxylic acid with an aliphatic or cycloaliphatic diol containing at least 3 carbon atoms, in the presence of an acid catalyst, in a temperature range between 180° and 280° C., wherein the improvement comprises

carrying out the transesterification in the presence of a catalytically effective amount of one or more phosphonic acid of the formula

$$RP(O)(OH)_2$$

wherein R is alkyl of 1 to 20 carbon atoms or cycloalkyl of 5 to 6 carbon atoms.

4,289,897

METHOD FOR PRODUCTION OF ACYLHYDRAZONES OF FORMYL-ACETIC ACID ESTER

Hans-Rudolf Krüger, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 196,150

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2945406

Int. Cl.³ C07C *133/04, 133/00*

U.S. Cl. 560—159 **10 Claims**

1. A process for the production of acylhydrazones of formyl-acetic acid ester of the general formula

$$H-\underset{\underset{N-NH-CO-R_2}{\|}}{C}-CH_2-COOR_1 \qquad (I)$$

wherein R_1 is an alkyl group with from 1 to 6 carbon atoms and R_2 is an alkoxy group or an amino group

comprising

contacting a propiolic acid ester of the general formula

$$H-C\equiv C-COOR_1 \qquad (II)$$

with hydrazine derivatives of the general formula

$$H_2N-NH-CO-R_2 \qquad (III)$$

in the presence of a solvent.

4,289,898

13,14-DIDEHYDRO-19-OXO-PGE$_2$COMPOUNDS

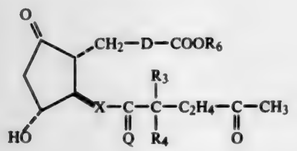
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,963

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$CH=CH—CH$_2$—CH$_2$—, or

(4) trans—(CH$_2$)$_3$—CH=CH—; wherein g is zero, one, two, or three; wherein Q is α—OH:β—R$_5$ or α—R$_5$:β—OH, wherein R$_5$ is hydrogen or methyl; wherein R$_6$ is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) -(p—Ph)—CO—CH$_3$,

(h) -(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH$_3$,

(i) -(p—Ph)—NH—CO—(p—Ph),

(j) -(p—Ph)—NH—CO—CH$_3$,

(k) -(p—Ph)—NH—CO—NH$_2$,

(l) -(p—Ph)—CH=N—NH—CO—NH$_2$,

(m) β-naphthyl,

(n) —CH$_2$—CO—R$_{28}$, wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R$_{28}$ is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro; and wherein X is —C=C—.

4,289,899

13,14-DIDEHYDRO-19-OXO-PGE$_1$ ANALOGS

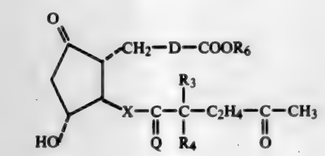
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,972

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) (CH$_2$)$_3$—(CH$_2$)$_g$—CH$_2$—, or

(2) (CH$_2$)$_3$—(CH$_2$)$_g$—CF$_2$—;

wherein g is zero, one, two, or three;

wherein Q is α-OH:β-R$_5$ or α-R$_5$:β-OH, wherein R$_5$ is hydrogen or methyl;

wherein R$_6$ is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH$_3$,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH$_3$,

(i) —(p-Ph)—NH—CO—(p-Ph),

(j) —(p-Ph)—NH—CO—CH$_3$,

(k) —(p-Ph)—NH—CO—NH$_2$,

(l) —(p-Ph)—CH=N—NH—CO—NH$_2$,

(m) β-naphthyl,

(n) —CH$_2$—CO—R$_{28}$,

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R$_{28}$ is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro; and

wherein X is —C≡C—,

with the proviso that R$_6$ is hydrogen or alkyl of one to 12 carbon atoms, and R$_3$, R$_4$, and R$_5$ are all hydrogen only when D is not —(CH$_2$)$_5$—.

4,289,900

13,14-DIDEHYDRO-11-DEOXY-19-OXO-PGE$_2$ COMPOUNDS

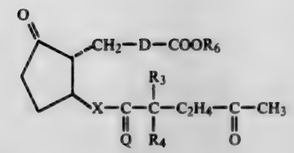
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,975

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—, or

(4) trans—(CH$_2$)$_3$—CH=CH—;

wherein g is zero, one, two, or three; wherein Q is α—OH:-β—R$_5$ or α—R$_5$:β—OH, wherein R$_5$ is hydrogen or methyl; wherein R$_6$ is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g)—(p—Ph)—CO—CH$_3$,

(h)—(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH$_3$,

(i)—(p—Ph)—NH—CO—(p—Ph),

(j)—(p—Ph)—NH—CO—CH$_3$,

(k)—(p—Ph)—NH—CO—NH$_2$,

(l)—(p—Ph)—CH=N—NH—CO—NH$_2$,

(m) β-naphthyl,

(n)—CH$_2$—CO—R$_{28}$,

wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R$_{28}$ is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro; and

wherein X is —C≡C—.

4,289,901

13,14-DIHYDRO-11-DEOXY-19-OXO-PGF$_1$ COMPOUNDS

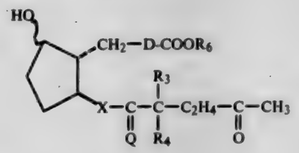
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 20, 1980, Ser. No. 132,007

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) (CH$_2$)$_3$—(CH$_2$)$_g$—CH$_2$—, or

(2) (CH$_2$)$_3$—(CH$_2$)$_g$—CF$_2$—;

wherein g is zero, one, two, or three;

wherein Q is α-OH:β-R$_5$ or α-R$_5$:β-OH, wherein R$_5$ is hydrogen or methyl;

wherein R$_6$ is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

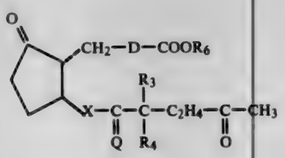
4,289,902

13,14-DIHYDRO-11-DEOXY-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,030
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein
D is
(1) $(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(2) $(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein
g is zero, one, two, or three;
wherein
Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein
R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein
(p—Ph) is para-phenyl or inter-para-phenylene,
wherein
R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein
X is —CH_2CH_2—.

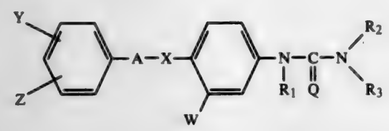
4,289,903

PARA-PHENYLALKOXY PHENYLUREA AND THIOUREA COMPOUNDS AND HERBICIDAL USE THEREOF

David M. Spatz, Trenton, and Barrington Cross, Rocky Hill, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

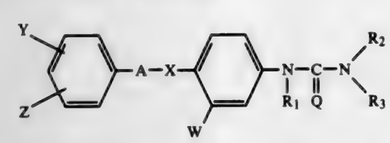
Filed Jun. 25, 1979, Ser. No. 51,584
Int. Cl.^{3} C07C *127/15, 127/17*; A01N *7/00, 17/08*
U.S. Cl. 564—20 **18 Claims**

1. A compound of the formula:



wherein X is selected from the group consisting of O,S, and SO_2; Q is O; R_1 is H or CHO; R_2 is H or C_1–C_4 alkyl; W is selected from the group consisting of H, halogen, C_1–C_4 alkyl, CF_3, OCH_3, and NO_2; R_3 is selected from the group consisting of H, C_1–C_4 alkyl, C_1–C_4 alkyl monosubstituted with either C_1–C_3 alkoxy or halogen, C_3–C_5 alkenyl, C_3–C_5 alkynyl and CHO; A represents C_2–C_3 alkyl; Y is selected from the group consisting of H, halogen, C_1–C_4 alkyl, OCH_3 and CF_3; Z represents H, halogen, C_1–C_4 alkyl, or C_1–C_4 alkoxy.

2. A compound of the formula:



wherein X is O; Q is S; R_1 is H; R_2 is H or C_1–C_4 alkyl; R_3 is C_1–C_4 alkyl; A is C_2–C_3 alkyl; Y or Z is H or halogen; and W is H or halogen.

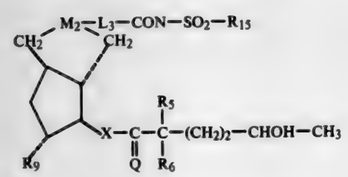
4,289,904

19-HYDROXY-6A-CARBA-PGI$_2$ SULFONYLAMIDES

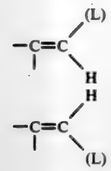
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,467
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.^{3} C07C *143/72, 149/40, 147/107*
U.S. Cl. 564—91 **1 Claim**

1. A prostacyclin-type compound of the formula



wherein L_3 is
(1) —$(CH_2)_n$—, wherein n is one to 5, inclusive,
(2) —$(CH_2)_p$—CF_2—, wherein p is 2, 3, or 4, or
(3) —CH_2—CH=CH—; wherein M_2 is



wherein Q is oxo, α—H:β—H, α—OH:β—R_4, or α—R_4:β—OH, wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro; wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive; wherein R_9 is hydrogen or hydroxyl; and wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

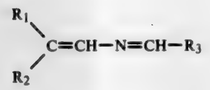
4,289,905

2-AZA-1,3-DIENES

Dieter Reinehr, Kandern, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 10, 1978, Ser. No. 923,438
Claims priority, application Switzerland, Jul. 19, 1977, 8916/77
Int. Cl.^{3} C07C *119/00*
U.S. Cl. 564—248 **7 Claims**

1. A compound of the formula I



(I)

wherein
R_1 and R_2 independently of one another represent alkyl having 1–8 C atoms, or together with the bond C atom they represent a cycloaliphatic ring having 4–8 C atoms, and
R_3 represents ethyl; or
R_1 represents alkyl having 1–8 C atoms,
R_2 represents hydrogen, or alkyl having 1–8 C atoms, and
R_3 represents tertiary alkyl having 4–8 C atoms.

4,289,906

CHEMICAL PROCESS FOR PREPARING METHYLENE BIS-ANILINES

Kju H. Shin, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 10, 1979, Ser. No. 101,544
Int. Cl.^{3} C07C *85/02*
U.S. Cl. 564—330 **7 Claims**

1. A process for making a methylenebisaniline, said process comprising reacting an aromatic amine having an unsubstituted ortho or para position with hydrogen chloride and dimethylsulfoxide.

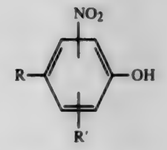
4,289,907

PROCESS FOR PREPARING N-ALKYL-NITROANILINES

John K. Chan, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,537
Int. Cl.^{3} C07C *85/02, 85/06*
U.S. Cl. 564—399 **7 Claims**

1. A process for producing N-alkyl-nitroaniline comprising:
(a) reacting a nitrophenol of the formula:



where R is a group selected from the class consisting of hydrogen, alkyl, sulfonylalkyl, haloalkyl, alkaryl, aryl, aralkyl, mercaptoalkyl and mercaptoaryl, and wherein R′ is selected from the group consisting of hydrogen, nitro and CF_3, with an alkylating compound selected from the group consisting of ethylene oxide, propylene oxide, styrene oxide, and mixtures thereof, to form an intermediate product, and
(b) reacting said intermediate product with an amine selected from the group consisting of methylamine, ethylamine, isopropylamine, propylamine, butylamine, and mixtures thereof,
to produce said N-alkyl-nitroaniline.

4,289,908

PRODUCTION OF HIGHER AMINES BY THE GAS PHASE HYDROGENATION OF NITRILES

Eckhart R. Becker, Allentown; Randall J. Daughenbaugh, Barto, and Barton Milligan, Coplay, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 19, 1979, Ser. No. 59,000
Int. Cl.^{3} C07C *85/12*
U.S. Cl. 564—490 **5 Claims**

1. In a process for the catalytic hydrogenation of a lower aliphatic mononitrile having from 2 to 6 carbon atoms in a structure by reacting said nitrile with hydrogen in a reaction zone to form the corresponding amine, the improvement which comprises:
(a) carrying out said reaction at a temperature and pressure such that the hydrogenation reaction is carried out in the gas phase; and
(b) maintaining a feed throughput in the reaction zone such that the gas hourly space velocity is from 2,000 to 12,000.

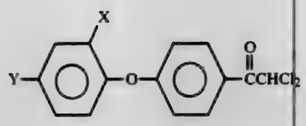
4,289,909

PROCESS FOR PREPARING 1-DICHLOROACYL-4-SUBSTITUTED PHENOXY BENZENE AND INTERMEDIATES THEREFOR

Francis J. Freenor, III, Richmond, and Barbara M. Koerber, Berkeley, both of Calif., assignors to Chevron Research, San Francisco, Calif.

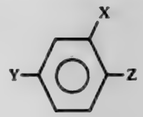
Filed Mar. 3, 1980, Ser. No. 126,252
Int. Cl.^{3} C07C *45/46, 45/63, 41/91*
U.S. Cl. 568—315 **14 Claims**

13. A process for preparing a compound having the formula



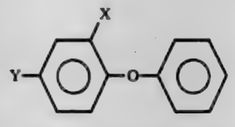
wherein one of X or Y is chloro and the other is trifluoromethyl,
which comprises the steps of
(a) contacting the corresponding compound of the formula

(B)



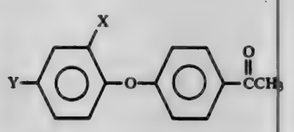
wherein X and Y are as defined hereinabove and Z is chloro with an alkali metal phenolate in the presence of a catalytically effective amount of powdered copper in dimethylsulfoxide at temperatures in the range of about from 150°–160° C. under substantially anhydrous reactive conditions thereby yielding a compound having the formula

(C)



wherein X and Y are as defined hereinabove
(b) contacting the product of step (a) of formula (C) with acetyl chloride in the presence of about from 1 to 1.15 mols of ferric chloride per mol of said acetyl chloride in methylene chloride at temperatures in the range of about from 15° to 25° C. and wherein about 1 to 1.2 mols of said acetyl chloride are used per mol of the compound of formula C, under substantially anhydrous reactive conditions and wherein said compound of formula C is added at a controlled rate to a mixture comprising said acetyl chloride, said ferric chloride, and said methylene chloride, thereby yielding the corresponding compound of the formula

(E)



wherein X and Y are as defined hereinabove, and;
(c) contacting the product of step (b) of formula E with chlorine in an inert organic solvent at temperatures in the range of about from 40°–55° C. under reactive conditions thereby yielding the corresponding compound of formula F.

4,289,910

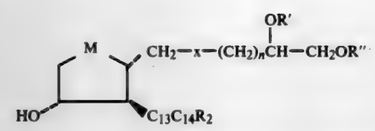
1-HYDROXYMETHYL-PROSTEN-1-OL DERIVATIVES

Allan Wissner, Ardsley, and Middleton B. Floyd, Jr., Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

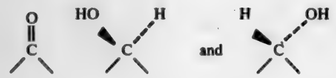
Filed Apr. 3, 1980, Ser. No. 137,029
Int. Cl.³ C07C *35/06, 49/597*
U.S. Cl. 568—367 **104 Claims**

1. Compounds of the formula:

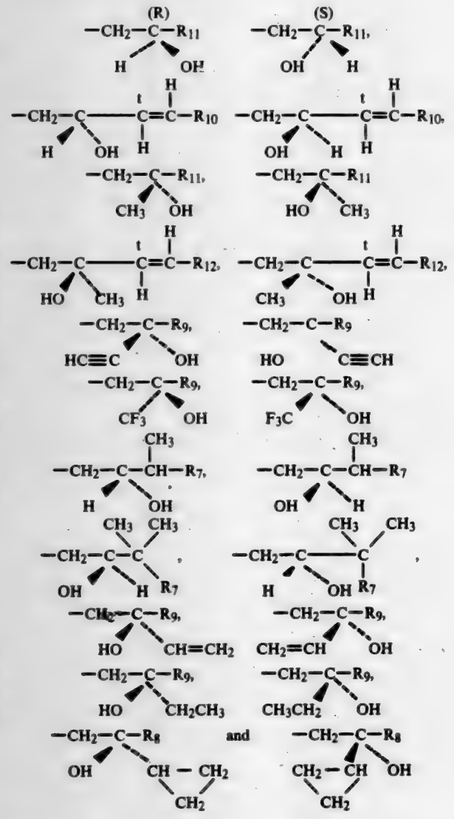
(F)



n is the integer 3-5 inclusive; wherein M is the divalent moiety selected from the group



X is $-CH_2CH_2-$; R′ and R″ are the same or different and are hydrogen, C_1 to C_4 alkyl, C_1 to C_6 alkanoyl or optionally substituted benzoyl, the substituents selected from the group C_1 to C_4 alkoxy, halo and trifluoromethyl; C_{13}–C_{14} is selected from the group —CH=CH—(trans) and $-CH_2CH_2-$; and R_2 is selected from the group



wherein R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_9 is selected from the group consisting of C_3–C_6 alkyl; R_{10} is selected from the group consisting of C_1–C_4 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; R_{12} is selected from the group consisting of C_1 to C_4 alkyl; the racemic mixtures thereof; and the mirror images thereof, and the pharmaceutically acceptable, non-toxic salts thereof.

4,289,911

PROCESS FOR PRODUCING METHYLISOBUTYLKETONE

Nobuo Isogai; Takashi Okawa, and Natsuko Wakui, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,539
Claims priority, application Japan, Jun. 13, 1979, 54-74418
Int. Cl.³ C07C *45/45, 29/136*
U.S. Cl. 568—396 **15 Claims**

1. A process for producing methylisobutylketone, which comprises contacting acetone with at least one member selected from the group consisting of water and hydrogen under superatomspheric pressure and under a carbon monoxide atmosphere using: (a) an element of Group VIII of the periodic table, said element being present as a simple substance, an oxide, a hydroxide, a salt, an organic metal complex or a carbonyl; and (b) a halogen selected from the group consisting of iodine and bromine, said halogen being present as elemental halogen, a halogenic acid or a metal salt of a halogenic acid; and (c) a phosphorus compound, said phosphorus compound being present as an alkylphosphine, an alkylphosphine oxide, an alkyl phosphonium salt, or an alkylphosphine sulfide as catalyst at a temperature effective for forming methylisobutylketone, the catalyst's components being present in amounts effective for forming methylisobutylketone.

4,289,912

STABILIZATION OF LIQUID PARAFORMALDEHYDE

Marvin E. Harris, Jr., and Hubert H. Thigpen, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed May 2, 1980, Ser. No. 146,945
Int. Cl.³ C07C *47/04*
U.S. Cl. 568—422 **5 Claims**

1. An aqueous formaldehyde composition characterized by resistance to the deposition of long-chain paraformaldehyde solids therefrom when it is concentrated to a liquid paraformaldehyde containing at least about 80 wt % formaldehyde moiety, which composition consists essentially of water, formaldehyde, and a polymerization moderator selected from the group consisting of polyacrylic acid, tartaric acid, dl-malic acid, ethylenediaminetetraacetic acid, and citric acid.

4,289,913

PROCESS FOR PREPARING 3-(4)-FORMYLTRICYCLO-[5,2,1,$0^{2,6}$]-DECENE-8

Helmut Bahrmann, Hünxe; Jürgen Weber, Oberhausen, and Boy Cornils, Dinslaken, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,121
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928313
Int. Cl.³ C07C *45/50*
U.S. Cl. 568—444 **14 Claims**

1. A process for preparing 3- or 4-formyltricyclo-[5,2,1,$0^{2,6}$]-decene-8 which comprises contacting dicyclopentadiene with carbon monoxide and hydrogen in the presence of a rhodium catalyst at 110° to 150° C. and 50 to 400 atmospheres, said catalyst being present in an amount of 1 to 30 ppm of rhodium, based upon the amount of dicyclopentadiene employed, said rhodium being present in the form of an organic phosphine - carbon monoxide containing complex, said organic phosphine being an aliphatic straight or branched chain phosphine, a cycloaliphatic phosphine, an aromatic phosphine or an arylaliphatic phosphine or a phosphine with one or more substituted cyclic substituents or an organic phosphine with two or more phosphorus atoms having from 1 to 30 carbon atoms.

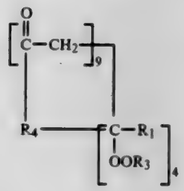
4,289,914

COMPOUNDS BY ADDITION OF HYDROPEROXIDES TO α, β-UNSATURATED KETONES

Wilbur H. McKellin, Buffalo, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 727,335, May 7, 1968, Pat. No. 4,257,985. This application Jan. 16, 1980, Ser. No. 112,487
Int. Cl.³ C07C *179/03, 179/025*
U.S. Cl. 568—567 **6 Claims**

1. Alicyclic keto-peroxy compounds of the formula:



where:
(a) the alicyclic ring may be a single ring or a fused double ring and has 4–10 carbon atoms in the ring;
(b) p is an integer equal to 1–2;
(c) q is an integer equal to 1–4;
(d) p+q is equal to 2–6;
(e) said



group

is joined to a carbon atom α to a ring tertiary carbon atom which is joined to a peroxy oxygen;
(f) R_1 is an aliphatic, cycloaliphatic or aryl radical;
(h) R_3 is an aliphatic or cycloaliphatic radical affording a t-carbon atom which is joined to a peroxy oxygen atom; and
(j) R_6 is an aliphatic biradical.
6. 3,5,5-Trimethyl-3-(t-butylperoxy) cyclohexanone.

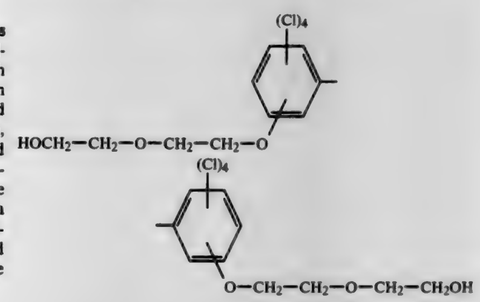
4,289,915

HALOGENATED POLYHYDROXY COMPOUNDS AND THEIR DERIVATIVES

Jacques Vuillemenot, Champ-sur-Frac, and Edouard Grimaud, Oullins, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 776,805, Nov. 18, 1968, abandoned, and a continuation-in-part of Ser. No. 346,078, Feb. 20, 1964, abandoned, and Ser. No. 668,644, Sep. 18, 1967, abandoned. This application Sep. 20, 1971, Ser. No. 182,189
Int. Cl.³ C07C *43/225*
U.S. Cl. 568—609 **1 Claim**

1. A compound consisting essentially of bis(tetrachlorophenoxy ethoxy-ethanol) and having the structure



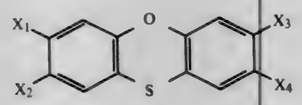
4,289,916

PROCESS FOR PRODUCING P-CHLOROALKYLBENZENE

Yoshiki Nakayama, Shimizu; Chihiro Yazawa, Yokohama, and Koji Yamanashi, Shimizu, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,817
Int. Cl.³ C07C *25/00*
U.S. Cl. 570—209 **5 Claims**

1. A process for producing a p-chloroalkylbenzene which comprises chlorinating an alkylbenzene in the presence of a phenoxthine compound having the formula



wherein X_1, X_2, X_3 and X_4 are the same or different and respectively represent hydrogen atom; an electron attractive group or an electron donative group and a Lewis acid or its precursor as a catalyst.

4,289,917

ALKOXIDES OF 2-PINANOL

Bernard J. Kane, Atlantic Beach, and Sean G. Traynor, Jacksonville, both of Fla., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 25,734, Mar. 30, 1979, abandoned. This application Aug. 17, 1979, Ser. No. 67,522
Int. Cl.³ C07C *1/253*
U.S. Cl. 585—359 **3 Claims**

1. A method of improving the reaction rate or yield of an organic chemical reaction which can be affected only under basic conditions wherein said reaction is an elimination reaction which comprises, contacting the reactants of said organic chemical reaction with a pinanoxide base, said base being an alkali metal-2,6,6-trimethyl-bicyclo(3.1.1)-heptan-2-oxide.

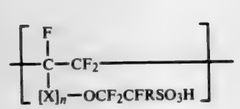
4,289,918

ARALKYLATION

Atsushi Sato, Tokyo; Isoo Shimizu, Yokohama, and Masahito Gotoh, Kawasaki, all of Japan, assignors to Nippon Petrochemical Company, Limited, Japan

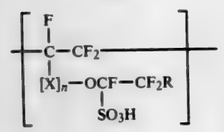
Filed Jul. 23, 1980, Ser. No. 171,465
Claims priority, application Japan, Jul. 24, 1979, 54-93173
Int. Cl.³ C07C *2/72*
U.S. Cl. 585—422 **8 Claims**

1. Method of aralkylating benzene or alkylbenzenes, which method comprises contacting an aromatic olefin having an olefinic double bond conjugated with the benzene ring, with at least one compound selected from benzene and alkylbenzenes containing alkyl group or groups with a total number of carbon atom of the alkyl group or groups ranging from 1 to 18, at a temperature of 50° to 230° C. and in the presence of a perfluoro polymer having at least one repeating unit selected from the units represented by the general formulae



(I)

and



(II)

where,

n is an integer of 0, 1, or 2,

R is a fluorine atom or a perfluoroalkyl group of C_1 to C_{10},

X is $-O(CF_2)_m-$ wherein m is an integer of 1 to 10, $-OCF_2CFY-$, or $-OCFYCF_2-$, and

Y is a fluorine atom or trifluoromethyl group.

4,289,919

CATALYTIC ISOMERIZATION OF AN INTERNAL DOUBLE BOND ALIPHATIC MONO-OLEFIN TO PRODUCE TERMINAL BOND OLEFIN

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 41,589, May 23, 1979, abandoned. This application Sep. 12, 1980, Ser. No. 186,861
Int. Cl.³ C07C *5/25*
U.S. Cl. 585—664 **7 Claims**

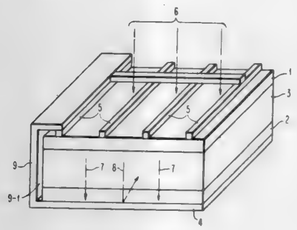
1. A process for the isomerization of an aliphatic mono-olefin hydrocarbon feed to shift an internal double bond therein to produce a corresponding terminal olefin which comprises subjecting said mono-olefin hydrocarbon under isomerization conditions which include a temperature in the approximate range of from about 500° to about 1200° F. to the action of a catalyst comprising a small amount of a manganese oxide supported on an activated alumina, said oxide being present in the approximate range of from about 0.2 to about 8 wt. %, expressed as the element based on the weight of the activated alumina.

4,289,920

MULTIPLE BANDGAP SOLAR CELL ON TRANSPARENT SUBSTRATE

Harold J. Hovel, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,816
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—246 **10 Claims**



1. A solar cell structure comprising:

an optically transparent, electrically insulating substrate,

at least one semiconductor material on a first upper surface of said substrate,

at least one semiconductor material on a second lower surface of said substrate,

the upper semiconductor material having larger energy bandgap than at least one of the lower semiconductor materials,

first and second photoactive solar cell means in said upper and lower semiconductor materials respectively, at least one of said solar cell means having a Schottky barrier, and

a reflective metal layer covering the bottom surface of the lower semiconductor materials,

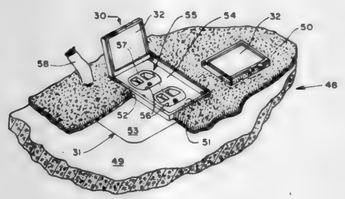
said reflective metal layer wrapping around the edge to connect the two solar cell devices in electrical series.

4,289,921

ELECTRICAL ACTIVATING ASSEMBLY AND CLOSURE MEMBER THEREFOR

Rodney W. Gartner; Charles R. Gray, both of Coraopolis, and John O. Hazen, Monaca, all of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Dec. 26, 1979, Ser. No. 107,350
Int. Cl.³ H02G *3/12*
U.S. Cl. 174—48 **23 Claims**



1. A closure member for an electrical outlet comprising: p1 a plate having perimeter edges, a plate outer face and a plate inner face;

an access opening in said plate disposed between the bilateral axis of said plate and one of said perimeter edges;

a perimeter bead surrounding said access opening and being inwardly inset from said perimeter edges, said perimeter bead extending outwardly from said plate outer face and having a bead outer surface remote from said plate outer face, a portion of said plate outer face being enclosed by said perimeter bead;

a cover socket formed by said portion and said perimeter bead; and

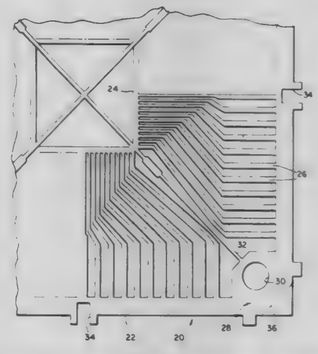
a cover fitting within said cover socket and being supported thereby substantially flush with said bead outer surface.

4,289,922

INTEGRATED CIRCUIT PACKAGE AND LEAD FRAME

Daniel J. Devlin, Torrance, Calif., assignor to Plessey Incorporated, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,870
Int. Cl.³ H05K *5/02*
U.S. Cl. 174—52 FP **2 Claims**



1. A lead frame for a semiconductor package comprising:

a plurality of leads having their inner tips surrounding a designated circuit area and extending outwardly therefrom to outer ends;

an internal tie bar connecting all said inner tips;

an external frame member connecting all of said leads at said outer ends;

said frame member being quadrilateral and including at least four registration holes on the diagonals thereof referenced to the exact center of said circuit area, whereby package assembly may be keyed to said center;

said frame member additionally including four registration slots on the outer edge thereof on the X and Y axes, said slots being adapted to reference said frame to the center of said circuit area during hot stage assembly steps.

4,289,923

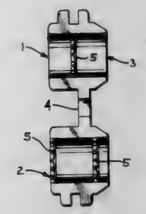
STRAIN RELIEF GROMMET IN COMBINATION WITH A CORD SET EXTENDING FROM AN ELECTRIC MOTOR

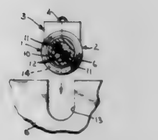
Robert W. Ebert, Sauk City, Wis., assignor to Marathon Electric Manufacturing Corp., Wausau, Wis.

Filed Sep. 24, 1979, Ser. No. 77,800
Int. Cl.³ H02G *3/18*; H01B *17/26*
U.S. Cl. 174—65 G **1 Claim**

1. A strain relief grommet in combination with a cord set and an electric motor having a frame with the cord set extending from the frame said cord set having internal lead wires encased in an inner insulation covering and an outer jacket, the grommet being of insulating material formed of two parts, a plurality of generally sharp, large size intermittently spaced clamping teeth, all of which are tapered downwardly to provide sharp ends and edges to readily penetrate the insulation covering, disposed internally of the respective parts of the grommet, a hinge joining the parts of the grommet together, and a notch in the frame receiving and holding the grommet and clamping the two parts of the grommet together in a closed position within the notch and around the cord set, the clamping teeth projecting through the outer jacket of the cord set and into

actual contact with the inner insulation covering to place a bite on the inner insulation covering and thereby secure the grom-







met to the lead wires in a fixed position to prevent removal or loosening of the cord set in service.

4,289,924

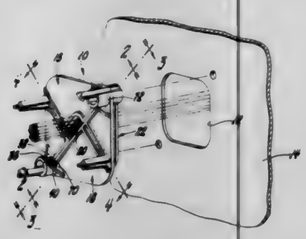
INJECTABLE GROMMET ASSEMBLY

Warren Pearce, Jr., Warren; Stephan H. Schramme, Cortland; John L. Lightner, Austintown, and Joseph A. McGee, Warren, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 24, 1980, Ser. No. 190,446

Int. Cl.³ H02G *3/22*; H01B *17/30*

U.S. Cl. 174—152 G **3 Claims**



1. An injectable grommet assembly for passing a bundle of insulated electric wires through a bulkhead comprising

a first shell including a grommet segment having an integral outward flange segment at one end and an inward flange at each end defining an internal cavity,

finger-like means in the cavity for spreading out a bundle of insulated electric wires so that sealant can penetrate between the insulated wires,

a second shell secured to the first shell, said second shell including a grommet segment which cooperates with the grommet segment of the first shell to form an annular sealant chamber for surrounding the bundle of insulated electric wires,

said last mentioned grommet segment having an integral outward flange segment at one end which complements the flange segment of the first shell to provide a mounting flange, and

said flange segments having complementary grooves communicating with the annular sealant chamber.

4,289,925

ELECTROGRAPHIC APPARATUS

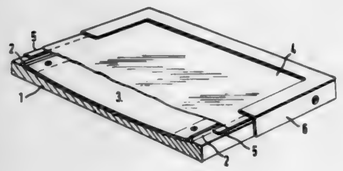
Martin R. Lambden, Bourne End, England, assignor to Quest Automation Limited, Dorset, England

Filed May 29, 1979, Ser. No. 43,595

Claims priority, application United Kingdom, May 30, 1978, 23699/78

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—18 **10 Claims**



1. In an electrographic apparatus of the type comprising a transducer pad for providing electrical signals representing the coordinates of a location at which pressure is applied locally to a writing surface of the pad by a pen or stylus, the transducer pad including a base member having a conductive surface to which a voltage is applied, the improvement comprising a flexible frame member adapted to be mounted on said base member, a flexible membrane securely mounted on said flexible frame member, said flexible membrane being spaced from said base member and having a conductive surface adapted to make electrical contact with the conductive surface of the base member when a pen or stylus is applied to said flexible membrane, and means for applying voltage to the said conductive surface of said flexible membrane, said flexible frame member comprising four sides each of which is prestressed inwardly during the securing of said flexible membrane thereto and each of which increases in cross section from its ends to its center so as to cause said four sides to produce uniform tensile force in said flexible membrane secured thereto.

4,289,926

TRANSMITTER FOR A TELEWRITER

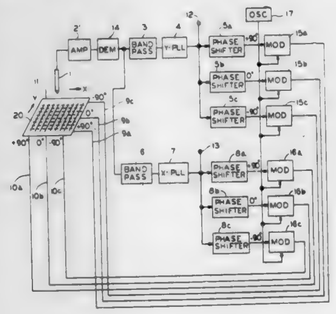
Masahisa Kobayashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,654

Claims priority, application Japan, Mar. 26, 1979, 54-34229

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—19 **7 Claims**



1. A telewriter transmitter comprising:

a supporting plate;

a wire assembly having a first array of parellel wires arranged on said plate in an X-axis direction and a second array of parallel wires arranged on said plate in a Y-axis direction perpendicular to the X-axis direction, said arrays defining X and Y coordinates on said plate;

transmission pen means having a point for electrostatically picking up X-axis and Y-axis signals responsive to signals in said first and second arrays, respectively, said X-axis and Y-axis signals having phases uniquely representative of the coordinates closest to the point of the pen;

means for translating said X-axis and Y-axis signals into signals having predetermined frequency deviations relative to the phases of said X-axis and Y-axis signals picked up by said pen means;

means responsive to said translated X-axis and Y-axis frequency signals for providing at least X-axis and Y-axis phase shift signals having phases lying in a preset relationship with said X-axis and Y-axis frequency signals; and

means for equally phase-splitting said X-axis and Y-axis phase shift signals and for distributing them to said wire assembly, carrier wave source means having a frequency which is considerably higher than said X-axis and Y-axis frequency signals; means for amplitude modulating said carrier wave with the outputs of said phase-shifting means; and means for demodulating a signal picked up by said pen.

4,289,927

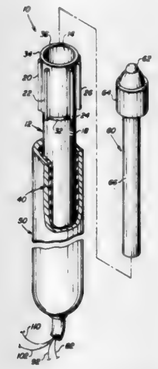
GRAPHIC COMMUNICATION APPARATUS

James L. Rodgers, Tempe, Ariz., assignor to Kurta Corporation, Tempe, Ariz.

Filed Nov. 13, 1979, Ser. No. 93,620

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—19 **20 Claims**



1. Graphic communication apparatus, comprising, in combination:

a writing surface;

pen means movable on the writing surface for graphically portraying information on the writing surface;

input signal means for providing an input signal to the pen means;

pen coil means, including a plurality of pen coils, disposed in the pen means for producing a magnetic field in response to the input signal as the pen moves on the writing surface;

sense coil means for sensing the magnetic field produced by the pen coil means and for producing output signals in response thereto, including

X direction sense coil means for sensing the magnetic field produced by the pen coil means in an X direction, and

Y direction sense coil means for sensing the magnetic field produced by the pen coil means in a Y direction; and

circuitry means connected to the sense coil means for receiving the output signal from the sense coil means and for producing an output signal representative of the location of the pen means on the writing surface.

4,289,928

TONE CONTROL ARRANGEMENT FOR USE IN SOUND REPRODUCING INSTRUMENTS

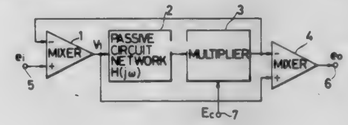
Saburo Takaoka, and Ryozi Higashi, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 21, 1977, Ser. No. 817,649

Claims priority, application Japan, Jul. 23, 1976, 51-87238

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—1 D **17 Claims**



1. A tone control arrangement for use in sound reproducing instruments, said tone control arrangement including at least one tone control circuit unit comprising:

a first mixer having a first input terminal to which is applied an audible sound signal to be frequency controlled and a second input terminal;

a passive circuit network coupled to the output terminal of the first mixer and having an amplitude transmission characteristic determined by a desired frequency response of the tone control arrangement;

a variable d.c. voltage source;

a multiplier coupled to the passive circuit network and the variable d.c. voltage source to multiply an output signal derived from the former with a variable d.c. voltage from the latter, an output signal from the multiplier being applied to the second input terminal of the first mixer; and

a second mixer having a first input terminal coupled to the output signal of the multiplier and a second input terminal coupled to the output terminal of the first mixer, said second mixer having

an output terminal coupled to the output terminal of the tone control arrangement.

4,289,929

LOUDSPEAKER AND ENCLOSURE COMBINATION

Dana B. Hathaway, Amesbery, Mass., assignor to Epicure Products, Inc., Newburyport, Mass.

Filed Sep. 11, 1979, Ser. No. 74,508

Int. Cl.³ H04R *1/20*; H05K *5/00*

U.S. Cl. 179—1 E **12 Claims**

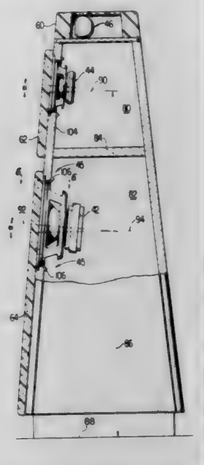
1. A loudspeaker enclosure and loudspeaker in combination, comprising:

a hollow closed structure formed as a truncated pyramid having vertical edges smoothly rounded, and having one side with an aperture formed therein, and

a loudspeaker arranged internal to said hollow closed structure and mounted on said one side of said truncated pyramid for radiating sound through said aperture in said one side,

said loudspeaker having a center, and said one side of said truncated pyramid and said loudspeaker having a dimensional relationship therebetween so that a horizontal plane passing through said center of said loudspeaker passes

through a section of said one side of said truncated pyramid, said section being smaller in length than the



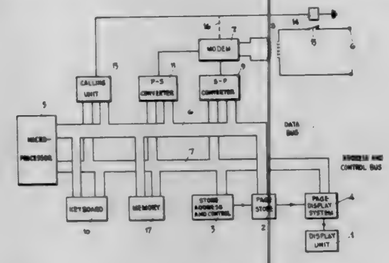
wavelengths of the sounds to be radiated by said loudspeaker.

4,289,930

ELECTRONIC APPARATUS FOR THE DISPLAY OF INFORMATION RECEIVED OVER A LINE

David C. A. Connolly, Hong Kong, Hong Kong, and Harry Shutt, Darlington, England, assignors to The General Electric Company Limited, London, England

Filed Nov. 30, 1978, Ser. No. 965,041
Int. Cl.³ H04M *11/08*
U.S. Cl. 179—2 TV **5 Claims**



1. Electronic apparatus for the display of pages of information signalled from a remote location in response to a request for the information being signalled by the apparatus to the remote location, the apparatus comprising:

(A) a pair of terminals for connection to a transmission line,

(B) a raster-type display unit responsive to video signals for controlling the display thereof,

(C) a data store for storing data representing in digitally-coded form characters to be displayed by the display unit,

(D) means to write character identifying data into the data store in response to signals which are applied to the pair of terminals and which carry the data,

(E) video signal generating means to derive said video signal from the data stored by the data store for supply to the display unit,

(F) a keyboard,

(G) an electrically-alterable memory,

(H) means to enter into the memory in response to operation of the keyboard, data identifying selected pages of information which are to be transmitted from the remote location, and

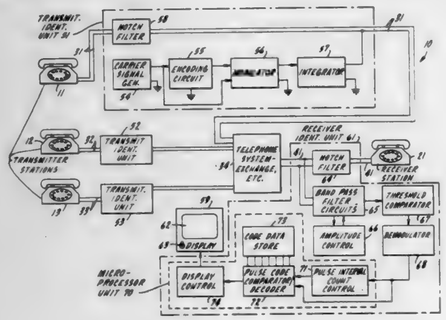
(I) means responsive to further operation of the keyboard to supply to the pair of terminals for transmission to the remote location signals characterizing at least some of the data stored by the memory and identifying a particular one of the selected pages of information.

4,289,931

SECURITY IDENTIFICATION SYSTEM USING PULSE CODE MODULATION

Donald G. Baker, Wildwood, Ill., assignor to Micro-Tek, Inc., Atlanta, Ga.

Filed Nov. 28, 1979, Ser. No. 95,004
Int. Cl.³ H04M *1/57*
U.S. Cl. 179—5.5 **10 Claims**



7. A transmitter identification unit for connection to the telephone line of an individual transmitter station in a telephone transmission system, as a part of a security identification system for the telephone transmission system, comprising:

a carrier signal generator, including a stabilized oscillator, for developing a carrier signal at a frequency F;

an encoding circuit, utilizing the carrier signal as a synchronizing signal, for developing a pulse code signal including a repeating sequence of uncoded and coded signal segments, each uncoded signal segment comprising a series of N pulse intervals of fixed duration D, each coded signal segment comprising a series of M pulse intervals of fixed duration D, with coding effected by the presence or absence of pulses in those intervals, with $F>>1/D$,

a modulator for modulating the carrier signal with the pulse code signal to generate an identification signal corresponding to the pulse code signal but with each code pulse comprising a burst of cycles of the carrier signal;

coupling means for applying the identification signal to the telephone line of a transmitter station;

and filter means for interposition in the telephone line to preclude transmission of the identification signal to the transmitter station.

4,289,932

CONFERENCING COMMUNICATIONS SYSTEM

Roger R. Reed, 31 Hutchinson St., Arlington, Mass. 02174

Filed Oct. 15, 1979, Ser. No. 84,907
Int. Cl.³ H04M *3/56*
U.S. Cl. 179—18 BC **22 Claims**

1. A system for conferencing a plurality of stations comprising:

a plurality of signal originating stations;

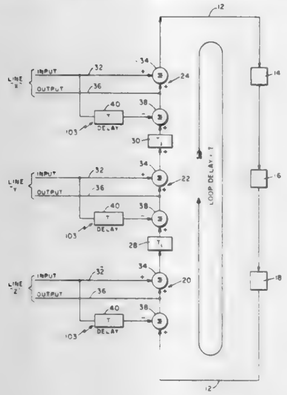
a plurality of signal receiving stations;

means for defining a predetermind time interval;

means for identifying at least one of said signal originating stations and at least one of said signal receiving stations for communication each with the other;

at least some of said signal originating stations and at least some of said signal receiving stations being identified as associated one with the other in conference communication;

means for applying to each of the identified signal receiving stations a signal consisting of the combination of signals generated by each of the identified signal originating



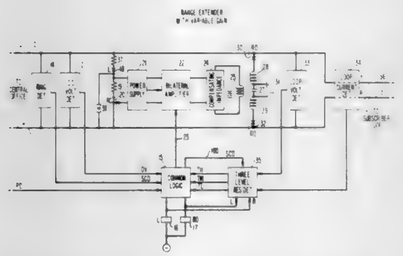
stations over a period of time defined by said time interval with signals originated by the signal originating station associated with that signal receiving station delayed said predetermined interval so as to cancel in the signals applied to each receiving station the signals originated by the associated originating station.

4,289,933

DIAL PULSE DETECTION

James L. Henry, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1979, Ser. No. 84,916
Int. Cl.³ H04B *3/40*
U.S. Cl. 179—18 FA **7 Claims**



1. A telephone loop supervisory detector comprising

a differential amplifier having two inputs and one output,

a voltage sensor for applying a first signal across a first voltage divider, a midpoint of which is connected to one of said inputs, and

a current sensor for applying a second signal across a second voltage divider, a midpoint of which is connected to the other of said inputs,

said detector

characterized by

a capacitor, and

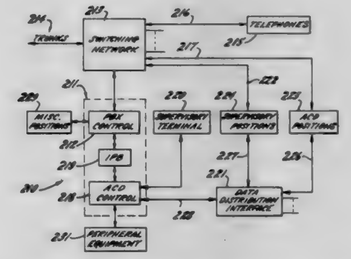
means for selectively connecting said capacitor to one of said midpoints to dynamically modify the threshold of detection of said supervisory detector.

4,289,934

INTEGRATED AUTOMATIC CALL DISTRIBUTION FACILITY AND PBX SYSTEM

Satyan G. Pitroda, Villa Park, Ill., and Madhukumar A. Mehta, Baroda, India, assignors to Wescom Switching Inc., Downers Grove, Ill.

Filed Apr. 25, 1979, Ser. No. 33,245
Int. Cl.³ H04Q *3/54, 3/64*
U.S. Cl. 179—27 D **7 Claims**



1. An automatic call distribution and telecommunications switching system comprising:

a. a switching network having a plurality of access ports including a first group of access ports coupled by a first group of lines to a group of automatic call distribution positions; and

b. a control complex having:

1. first microprocessor control means selectively establishing connections between said access ports, thereby performing the functions of a telephone switching exchange,

2. second microprocessor control means for communicating data on data lines other than said first group of lines with the automatic call distribution group of positions, each of said positions being coupled to a different access port of said first group of access ports, and

3. means for transferring data messages between said first and second microprocessor control means, the second microprocessor control means including means for directing the first microprocessor control means to establish connections selected by the second microprocessor control means with said first group of access ports.

4,289,935

METHOD FOR GENERATING ACOUSTICAL VOICE SIGNALS FOR PERSONS EXTREMELY HARD OF HEARING AND A DEVICE FOR IMPLEMENTING THIS METHOD

Manfred Zollner; Christian Hoffmann, both of Munich, and Eberhard Zwicker, Icking, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 27, 1980, Ser. No. 125,046
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2908999
Int. Cl.³ H04R *25/00*
U.S. Cl. 179—107 FD **33 Claims**

1. A method for generating acoustical voice signals which are intelligible to persons extremely hard of hearing, but having a sensory response to frequencies in a given sensory spectrum, comprising:

(a) supplying an input signal in accordance with an acoustical voice signal to be made intelligible to an individual with a given sensory spectrum,

(b) dividing the input signal into a plurality of frequency bands to provide output signals of different frequency bands,

(c) modulating alternating waveform signals of different

frequencies within the given sensory spectrum with the envelopes of the output signals of said different frequency bands, to provide modulated tone signals,

(d) combining the modulated tone signals with frequency components of the input signal, and supplying the resultant signal to the individual having said given sensory spectrum,

wherein the improvement comprises

(e) dividing the input signal in accordance with the acoustical voice signal, into at least three frequency bands to thereby provide output signals in a multiplicity of different frequency bands with respective mean frequencies (f_m),

(f) modulating a multiplicity of alternating current waveforms of different frequencies (f_G) within the given sensory spectrum with the envelopes of respective ones of said output signals in said multiplicity of different frequency bands, to provide a multiplicity of modulated tone signals,

(g) combining the multiplicity of modulated tone signals with the total spectrum of said input signal, and supplying the resultant total spectrum combined signal to the individual having said given sensory spectrum, and

(h) adjusting the ratio of the loudness of the multiplicity of modulated tone signals with respect to the loudness of said input signal, and also adjusting the loudness of the resultant total spectrum combined signal, both adjustments being made in relation to the specific sensory characteristics of the individual person having said given sensory spectrum.

30. A method for generating acoustical voice signals which are intelligible to persons extremely hard of hearing, but having a sensory response to frequencies in a given sensory spectrum, comprising:

(a) supplying an input signal in accordance with an acoustical voice signal to be made intelligible to an individual with a given sensory spectrum

(b) dividing the input signal into a plurality of frequency bands to provide output signals of different frequency bands,

(c) modulating alternating waveform signals of different frequencies within the given sensory spectrum with the envelopes of the output signals of said different frequency bands, to provide modulated tone signals,

(d) combining the modulated tone signals with frequency components of the input signal, and supplying the resultant signal to the individual having said given sensory spectrum,

wherein the improvement comprises

(e) dividing the input signal in accordance with the acoutical voice signal, into at least three frequency bands to thereby provide output signals in a multiplicity of different frequency bands with respective mean frequencies (f_m),

(f) modulating a multiplicity of alternating current waveforms of different frequencies (f_G) within the given sensory spectrum with the envelopes of respective ones of said output signals in said multiplicity of different frequency bands, to provide a multiplicity of modulated tone signals,

(g) selecting the different frequencies (f_G) of the alternating current waveforms to be proportionate with respective frequencies of the input signal above a given low frequency limit, and

(h) combining with the multiplicity of modulated tone signals only one low pass component of the input signal.

4,289,936

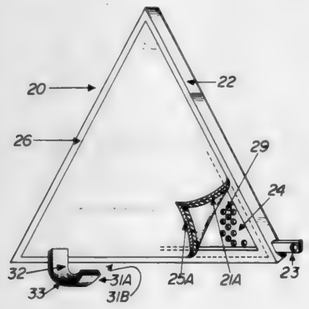
ELECTROSTATIC TRANSDUCERS

John P. Civitello, 226 Vreeland Ave., Paterson, N.J. 07504

Filed Apr. 7, 1980, Ser. No. 137,576

Int. Cl.³ H04R *19/00*

U.S. Cl. 179—111 R **1 Claim**





1. An electrostatic transducer the combination comprising:

a. two outer dielectric diaphragms carrying conductive layers which are laminated in a parallel condition to

b. a one-piece dielectric spacer/centrally fixed and perforated conductive grid serving as an essential skeletal structure wherein

c. geodesically-curved transducer arrays are configured and result in broadened sound radiation patterns in the vertical and horizontal dimensions of the listening area

d. non-resonant dampening means for joining adjacent transducers thereby decoupling adjoining speaker units without loss of structural integrity

e. a laminated dielectric/conductive tab which serves as a diaphragm signal connection electrode as well as a diaphragm interconnecting system allowing adjacently curved geodesic diaphragms to be "interwired" without bulky connectors or strands of wire

f. a transformer to which its primary winding is supplied a signal voltage and to which its secondary winding is connected across said electrostatic transducer's diaphragm conductive layers; and, there being an additional connection of a high voltage d.c. biasing potential to said electrostatic transducer's fixed conductive grid via its electrode connection point.

4,289,937

SPEAKER WITH FINE GRAIN FERROMAGNETIC MATERIAL ON CENTER POLE OR RING

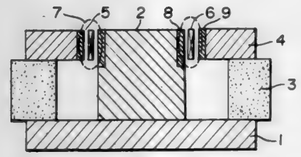
Hideo Ikeda; Hideshi Tsuchiya, and Masaru Okada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,893

Claims priority, application Japan, May 30, 1978, 53-64727; Jun. 7, 1978, 53-68684

Int. Cl.³ H01F *1/00*; H04R *9/06*

U.S. Cl. 179—119 R **6 Claims**



1. A speaker comprising a disc yoke, a ring permanent magnet and centerpole on said yoke, a ring plate on said ring permanent magnet, said centerpole and ring plate being placed so as to create an air gap, and a voice coil placed in said air gap;

wherein said voice coil produces an AC magnetic field when AC signal current passes through the voice coil;

wherein at least one of the areas of said centerpole and said ring plate which face said voice coil is formed of different material from the remaining portions of said centerpole and said ring plate, said different material being a ferromagnetic material with fine crystalline grains having an average of sixteen (16) or more grains per twenty-five square millimeters of field of view of a microscope at magnification of 100, and having a reduced magnetic domain size;

wherein the different material produces a substantially linear magnetic minor hysteresis loop for the magnetic circuit of the speaker.

4,289,938

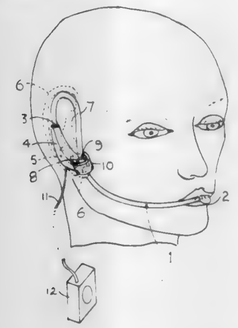
VOICE AMPLIFICATION APPARATUS

Theodore B. R. Zichy, 8 Sandwich St., London, WC1H 9PL, England

Filed Nov. 23, 1979, Ser. No. 96,675

Int. Cl.³ H04M *1/05*

U.S. Cl. 179—156 A **3 Claims**



1. Voice amplification apparatus including a microphone unit; a housing for the microphone unit which is shaped so as to be able to lie behind or substantially behind the ear of the user; an elongate self supporting sound energy guide tube attachable at one end to the housing, the sound energy guide tube being shaped to provide a loop which engages over the user's ear to provide suspension means for supporting the housing adjacent the user's ear, and which loop is adjustable for the purposes of obtaining a desired degree of fit of the loop to the user's ear, the shaping of the sound energy guide tube also being such that when the housing is supported adjacent the user's ear a sound energy input end is presented adjacent to the user's mouth.

4,289,939

LONGITUDINAL BALANCE ARRANGEMENTS FOR TWO-TO-FOUR WIRE TELECOMMUNICATION LINE CIRCUITS

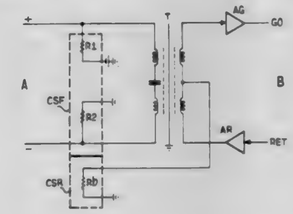
John S. Arnold, Nether Heyford, England, assignor to The Plessey Company Limited, Ilford, England

Filed Dec. 28, 1979, Ser. No. 108,179

Claims priority, application United Kingdom, Dec. 30, 1978, 50385/78

Int. Cl.³ H04M *1/76*

U.S. Cl. 179—170 D **3 Claims**



1. A two-to-four wire telecommunications line circuit including line current feed resistors connected to the subscribers line on the two-wire side of the line circuit and a balance impedance connected in the four-wire side of the line circuit and the balance impedance includes a resistive component which is thermally coupled to the line feed resistors and is formed of a resistive material having a negative temperature co-efficient.

4,289,940

KEYBOARD SWITCH COVERING PADS

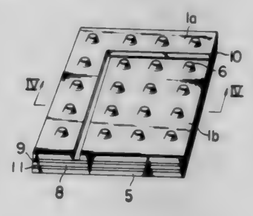
Ryoichi Sado, Saitama, and Yoshitusgu Morikawa, Tokyo, both of Japan, assignors to Shin-Etsu Polymer Company, Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,513

Claims priority, application Japan, Nov. 24, 1978, 53-161710[U]

Int. Cl.³ H01H *9/26*; B32B *3/10*

U.S. Cl. 200—5 A **2 Claims**



1. A keyboard switch covering pad mountable on a printed circuit forming a common circuit between the keyboard switch covering pad and the printed circuit which comprises (a) an electrically conductive rubber sheet having a plurality of

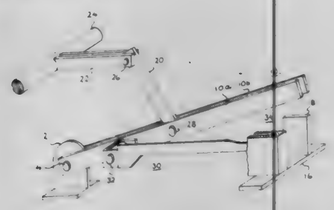
fixed contact points and a plurality of switching contact points on one side thereof, said conductive rubber sheet being divided into at least two sections each having at least one fixed contact point and at least one switching contact point said conductive rubber sheet being completely free of openings, and (b) an electrically insulating sheet having a plurality of openings, on which the conductive rubber sheet as divided into sections is bonded in such a manner that each of the fixed contact points and the switching contact points penetrate one of the openings, the divided sections of the conductive rubber sheet are electrically insulated from each other and said electrically insulating sheet being provided with a layer of an adhesive on the surface thereof opposite to the electrically conductive rubber sheet for the mounting of same to said printed circuit.

4,289,941

LOAD BREAK SWITCH ARC SUPPRESSION

John W. Cannon, Roanoke, Va., assignor to General Electric Company, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,430
Int. Cl.³ H01H *33/12, 9/38*
U.S. Cl. 200—146 R **16 Claims**



1. In a load breaker switch of the type comprising main contact members adapted to be disengaged from one another, auxiliary stationary contact means and auxiliary moveable contact means adapted to engage one another and to make contact while the main contact members disengage and to thereafter break contact by rapid movement of the auxiliary stationary member along a predetermined path to an open position, the combination comprising:

(a) means to prevent disengagement and movement of said auxiliary moveable contact means until after disengagement of said main contact members;

(b) arc supporting means secured adjacent to, and connected in a low impedance electrical circuit with said auxiliary stationary contact means;

(c) said arc supporting means being disposed adjacent to the path of movement of said auxiliary moveable member at a position of the path intermediate said auxiliary stationary member and said open position to provide for transfer of arc attachment from said auxiliary stationary member upon disengagement of said auxiliary members so as to reduce physical deterioration of said auxiliary stationary member.

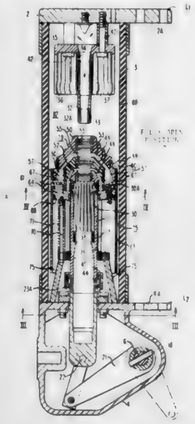
4,289,942

GAS-BLAST CIRCUIT-INTERRUPTER WITH MULTIPLE INSULATING ARC-SHIELD CONSTRUCTION

Stanislaw A. Milianowicz, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 29, 1977, Ser. No. 820,176
Int. Cl.² H01H *33/88*
U.S. Cl. 200—148 A **22 Claims**

1. A gas-type puffer circuit-interrupting structure including, in combination, means defining casing means, a relatively stationary contact-rod disposed within said casing means, means defining a fixed piston structure disposed within the casing means, a movable operating cylinder assembly carrying a movable contact and operatively slidable over said fixed piston structure to compress gas therebetween within a piston chamber for arc-extinction purposes, a multiple hollow insulating nozzle assembly also affixed to said movable operating cylinder assembly and surrounding said relatively stationary contact-rod in the closed circuit position of the circuit-interrupting structure, said movable nozzle assembly including at least a pair of axially-spaced insulating nozzles defining a gas-inlet passage therebetween, said gas-inlet passage being in communication with said piston chamber, one nozzle being situated close to the tip of the movable contact so that said stationary contact-rod blocks said gas-inlet passage in the closed-circuit position of the circuit-interrupting structure when the two aforesaid separable contacts are in closed contacting engagement, means effecting opening movement of said operating cylinder assembly during the opening operation



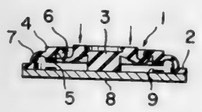
of the circuit interrupting structure so that said movable operating cylinder assembly slides over said fixed piston structure to thereby simultaneously effect contact separation and also compression of gas within said piston chamber, and the blocking action of said rod-shaped stationary contact within said one insulating nozzle delaying flow of compressed gas out of the piston chamber and through said gas inlet passage for a predetermined time after said contact separation, thereby enabling a substantial predetermined arc-length to be achieved between said stationary contact rod and said movable contact prior to unplugging said one nozzle, whereby compressed gas will then flow at this time through said one gas-inlet passage into the established arc for arc-extinction purposes.

4,289,943

PUSH-BUTTON SWITCHES

Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1980, Ser. No. 173,330
Claims priority, application Japan, Aug. 6, 1979, 54-100107
Int. Cl.³ H01H *13/52*
U.S. Cl. 200—159 B **2 Claims**



1. A push-button switch which comprises

(a) a base plate,

(b) at least one pair of contact points fixedly provided on the base plate;

(c) a curved diaphragm covering made of an elastically resilient material to cover the contact points on the base plate, a part of which is shaped in a form of a snap spring or a click spring so as that the part moves toward the contact points when a pushing force is applied to the top of the diaphragm covering but, when the movement toward the contact points exceeds a limit, spontaneously and rapidly snaps back in the reverse direction to come apart from the contact points, and

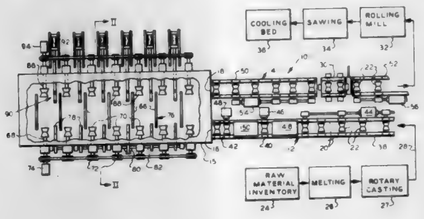
(d) at least one movable contact member provided on the inward surface of the diaphragm covering at the part of the snap spring so as to come into contact with the contact points on the base plate to close the electric circuit therebetween when the diaphragm covering is pushed toward the contact points and to come out of contact with the contact points when the diaphragm covering is snapped back.

4,289,944

APPARATUS FOR REHEATING, STORING AND CONVEYING CAST BARS

Thurston F. Reese, 4929 S. Meridian Rd., Jackson, Mich. 49204

Filed Dec. 19, 1977, Ser. No. 862,117
Int. Cl.³ H05B *6/06;* F27D *3/02;* B65G *47/30*
U.S. Cl. 219—10.41 **6 Claims**



1. The method of reheating and controlling the movement of elongated steel bars having ends wherein the bars are formed by an axial movement casting process causing the bars to cool from a previously heated condition such that the bar temperature varies throughout the bar axial length intermediate said ends and the bars are transported by conveyors from a caster to a plurality of treatment stations, comprising the steps of placing the bars upon a first conveyor at random, non-periodic intervals for axial movement thereon, axially translating the bars through a heated zone of lesser length in the axial direction of the bars than the bar's length at a rate of axial translation proportional to the temperature of that portion of a bar within the heated zone whereby the heat content of the bar exiting the heated zone is substantially uniform throughout the bar length, conveying the heated bar to storage means, storing the heated bars in the storage means, and removing the bars from the storage means at predetermined intervals by a second conveyor for processing at the treatment stations.

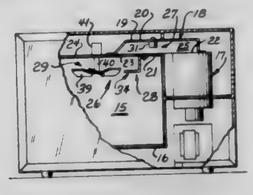
3. A furnace for metal bars and the like comprising, it combination, a thermally insulated housing having a floor, a top panel, spaced lateral walls and end walls defining a heated chamber, first and second bar conveyors located within said furnace spaced from each other and adapted to axially convey elongated bars in spaced, substantially parallel paths, bar supporting and storing means within said furnace comprising skids intermediate said conveyors receiving bars from said first conveyor, unloading means within said furnace transfering bars from said first conveyor onto said supporting and storing means, said unloading means comprising pivoted bar lifting means movable between a raised position lifting a bar from said first conveyor onto said bar supporting and storing means and a retracted position below said first conveyor, first expansible motor means operatively connected to said unloading means for movement thereof between said positions, loading means within said furnace adjacent said supporting and storing means and said second conveyor loading said bars on said second conveyor from said storage means, said loading means comprising a plurality of pivotally mounted arms movable between an inoperative retracted position, a lower position and an elevated position, said arms removing a bar from said bar supporting and storing means and raising said bar to said second conveyor upon moving from said lower position to said elevated position, and second expansible motor means operatively connected to said arms for selectively translating said arms between said retracted, lower and elevated positions.

4,289,945

ENERGY TRANSMISSION AND DISTRIBUTION SYSTEM FOR A MICROWAVE OVEN

Mark J. Kristof, Marion Township, Marion County, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 17, 1979, Ser. No. 85,893
Int. Cl.³ H05B *6/74*
U.S. Cl. 219—10.55 F **16 Claims**



1. In a microwave oven structure having wall means defining an oven cavity and an inlet opening to said cavity, and microwave energy generating means externally of said cavity, an improved energy transmission and distribution system for delivering microwave energy from said generating means through said inlet opening into said cavity, said system comprising:

a waveguide member extending in communicating relationship from said generating means to said inlet opening;

impedance matching means within said waveguide for matching the impedance of said cavity and said waveguide to said generating means;

shield means within said cavity adjacent said inlet opening for deflecting microwave energy passed through said inlet opening into said cavity; and

stirrer means within said cavity and adjacent said inlet opening and said deflector, said impedance matching means, shield means, and stirrer means being accurately sized and located for cooperatively causing effectively optimized uniform distribution of said microwave energy in said oven structure.

4,289,946

ELECTROMAGNETIC CASTING APPARATUS

John C. Yarwood, Madison; Ik Y. Yun, Orange; Derek E. Tyler, Cheshire, and Peter J. Kindlmann, Northford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 905,889, May 15, 1978, Pat. No. 4,161,206.
This application Dec. 26, 1978, Ser. No. 973,475
Int. Cl.³ H05B *6/06;* G01R *27/26;* B22D *27/02*
U.S. Cl. 164—503 **13 Claims**

1. In an apparatus for casting materials such as metals comprising:

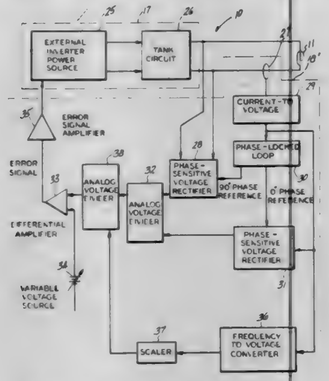
induction means for applying a magnetic field to said material and solid state inverter means for applying an alternating current to said induction means to generate said magnetic field the improvement wherein:

means are provided for sensing a reactive parameter corresponding about to the reactance or inductance of said induction means, said reactive parameter sensing means comprising:

means for sensing a voltage signal applied to said induction means;

means for sensing a current signal applied to said induction means;

circuit means for filtering said voltage and current signals to extract the fundamental frequency thereof; and



circuit means receiving said filtered voltage and current signals for generating a signal corresponding about to said reactance or inductance of said induction means.

4,289,947

FLUID JETTING SYSTEM FOR ELECTRICAL MACHINING

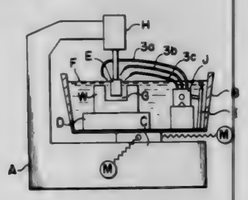
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jan. 19, 1979, Ser. No. 4,987

Claims priority, application Japan, Mar. 2, 1978, 53-25633[U]; Aug. 28, 1978, 53-117434[U]

Int. Cl.³ B23P *1/04*

U.S. Cl. 219—69 D **24 Claims**



1. In an electrical machining apparatus, in combination a workpiece, an electrode spacedly juxtaposed with said workpiece and defining a single machining gap, and a fluid-jetting system, said fluid-jetting system comprising:

a fluid source;

a distribution chamber with an inlet connected to said source for receiving an electrical machining fluid therefrom and for distributing the received fluid into a plurality of streams; and

a plurality of fluid distribution delivery nozzle tubes which are flexible, self sustaining and bendable commonly leading from said distribution chamber and having their respective ends in the form of nozzles positionable independently of said electrode and orientable as desired by manipulating the flexibility of said tubes in different zones in the region of said single machining gap respectively for conducting and directing said distributed streams of said machining fluid from said distribution chamber into said desired different zones in the region of said single machining gap.

4,289,948

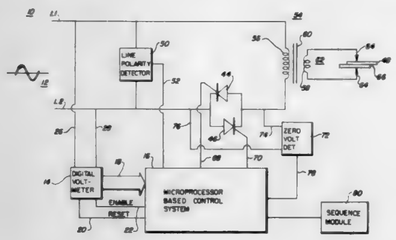
AUTOMATIC VOLTAGE COMPENSATION FOR DIGITAL WELDER CONTROL SYSTEM

Dennis J. Jurek, Grafton; Marvin A. Guettel, Milwaukee, and Michael Aslin, Cedarburg, all of Wis., assignors to Square D Company, Palatine, Ill.

Filed Jul. 17, 1979, Ser. No. 58,356

Int. Cl.³ B23K *11/24*

U.S. Cl. 219—110 **2 Claims**



1. A digital welder control system for a resistance welder of the type connecting and disconnecting a welding transformer load from an alternating electrical source to control timing periods of the welding sequence and the level of heat intensity in the weld to insure quality welds, comprising:

a means responsive to a polarity change in line voltage for generating a signal representing the beginning of each cycle of line voltage;

a digital means responsive to the signals generated at the beginning of each cycle of line voltage for sensing the line voltage and for producing a digital signal therefrom proportional to the average line voltage, said digital signal being accumulated in said sensing and producing means for a period of one cycle of the line voltage; and

a digital control means responsive to the accumulated digital signal of each cycle of line voltage, for adjusting the welding current by altering the timing of the firing points of the welding contactors in a next proceeding line voltage cycle and for maintaining the welding current constant and independent of line voltage variations.

4,289,949

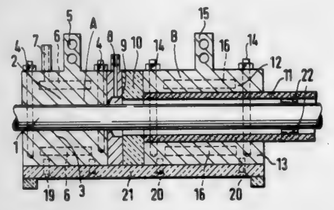
PLASMA BURNERS

Ola S. Raaness, Saupstad, and Jon A. Bakken, Trondheim, both of Norway, assignors to SINTEF (Selskapet for Industriell og Teknisk Forskning ved NTH), Trondheim, Norway

Filed Jun. 6, 1979, Ser. No. 46,023

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PR **8 Claims**



1. Plasma burner comprising a centrally arranged electrode, an outer electrode and an electrode holder for the support of said electrodes, means for applying an electrical voltage for producing an electric arc between the electrodes and means for the supply of gas to the electric arc area of said electrodes, the electrodes being made of a non-melting and subliming material to constitute a continuously consumable system in which said outer electrode has the shape of a pipe and said centrally arranged electrode has a shape selected from that of a row and a pipe and is coaxially arranged within said outer electrode so as to define therebetween an elongate passage of annular cross-section, and said electrode holder being designed to conduct gas through said passage forwards to a front, free end of the electrodes where the electric discharge occurs from the end of said inner electrode.

4,289,950

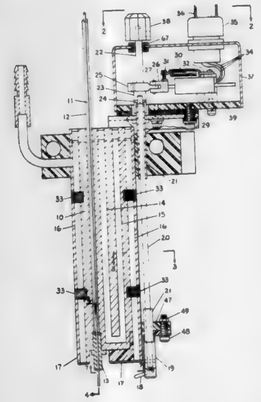
NARROW GAP WELDING APPARATUS

Elmer L. Griebeler, Cleveland Heights, Ohio, assignor to C-R-O, Inc., Menomonee Falls, Wis.

Filed May 15, 1979, Ser. No. 39,216

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—124.34 **8 Claims**



1. Apparatus for affecting a weld seam in a narrow gap formed by opposing walls of the members to be joined, comprising:

(a) a torch body having guide means for a filler wire,

(b) a generally vertical probe shaft mounted to said body,

(c) an angular probe connected to the lower end of said probed shaft and adapted for contact with the walls of the gap,

(d) biasing means connected to the upper end portion of said probe shaft to rotate the latter so that said probe normally engages a wall of the gap during welding,

(e) and selectively actuatable means connected to said probe shaft for rotating the latter and said probe against the force of said biasing means.

4,289,951

POWER FACTOR MONITORING AND CONTROL SYSTEM FOR RESISTANCE WELDING WITH LINE DISTURBANCE IMMUNITY

Dennis J. Jurek, Grafton, Wis., assignor to Square D Company, Palatine, Ill.

Filed Feb. 16, 1979, Ser. No. 12,926

Int. Cl.³ B23K *11/24*

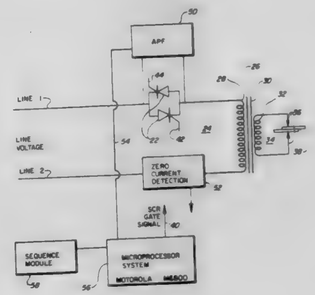
U.S. Cl. 219—110 **10 Claims**

4. A power factor monitoring and control system for controlling the quality of welds in resistance welding with line disturbance immunity, including a welding transformer having primary and secondary circuits, a line voltage applied to the primary circuit and a load circuit in the secondary circuit, the improvement comprising:

means responsive to the initiation and termination of current conduction of each half cycle in a weld for measuring the differences between the current conduction times of these half cycles in the weld due to the change in power factor of the welding transformer circuits during the weld;

means for analyzing measured differences to approximate the time derivative of the conduction function which in turn is an approximation of the second derivative of the resistance function of the weld;

means for converting the conduction time function back to a numerical representation of the resistance function in the weld;



means for deriving from the numerical representation of the resistance function, a measure of the sufficiency of energy supplied to a weld;

means for summing and averaging the numerical results over a preselected number of welds to form a control signal; and

means for applying the control signal resulting from the averaging of the preselected number of welds to adjust the amount of energy delivered to the weld for the next group of welds to be averaged.

4,289,952

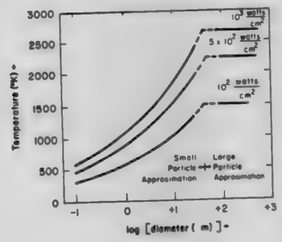
PROCESS FOR CONTROLLING POWDER SIZE WITH OPTICAL ENERGY

John S. Haggerty, Lincoln, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 12, 1979, Ser. No. 102,608

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 L **6 Claims**



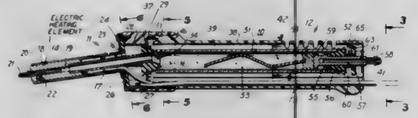
1. The process for producing a metal or ceramic powder having a narrow size distribution which comprises forming a dilute mixture of a metal or ceramic powder in a gas and passing said mixture through a collimated beam of intense light which coupled with the larger particles in said mixture to vaporize a portion of said larger particles until said larger particles have a diameter that approximates a minimum wavelength of said beam, and recovering the particles which have passed through said beam.

4,289,953

ELECTRICALLY HEATED SOLDER EXTRACTOR

William E. Scheu, Jr., 22 Sedgemere Rd., Center Morchies, N.Y. 11934

Filed Feb. 9, 1979, Ser. No. 10,639
Int. Cl.³ B23K *3/00*; H05B *1/00*
U.S. Cl. 219—230 **8 Claims**



1. A solder extractor device comprising: a working front unit including a hollow rear cowl member with front and rear openings and formed of a heat insulating material, an elongated tubular bracket secured to the front of and projecting forwardly from said cowl member with the longitudinal axis of the bracket being oblique to the longitudinal axis of the cowl member, an electrical heating member having an axial bore positioned in the forward end of said bracket, a tubular tip member telescoping the forward end of said bore and projecting forwardly thereof and separably secured to said heating member, a conveyor tube extending rearwardly from said heating member and communicating with said bore and a tubular first seal member engaging the rear end of said conveyor tube and located within said cowl; a rear unit projecting rearwardly from said cowl member and separably secured thereto and including an elongated tubular outer handle member formed of a heat insulating material and being coaxial with said cowl member, said outer handle member being detachably secured to the rear of said cowl member, a tubular receiver disposed in said handle member and having an open front end releasably engaging said first seal member and a rear open end, and a closure member engaging said receiver member rear open end and having a passageway therethrough communicating with the rear of the receiver and a conduit coupling communicating with said passageway; and an electric power line cable freely slidably extending into the rear end of the handle member and through a longitudinal passageway in the rear unit into the front unit and being fixedly connected to said heating member, said rear unit, when said handle member is detached from said cowl member, being rearwardly slidable on said power cable to permit the separation of said front and rear units.

4,289,954

ENERGY CONSERVING SYSTEM FOR USE WITH HEATING AND/OR HOT WATER SYSTEMS AND THE LIKE

R. Joseph Brognano, 421 Briarwood Rd., North Massapequa, N.Y. 11758, and Albert Buonasera, 134 N. Boylan La., Blue Point, N.Y. 11715

Continuation of Ser. No. 840,985, Oct. 11, 1977, abandoned.
This application Jul. 17, 1980, Ser. No. 169,769
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—307 **9 Claims**

1. Apparatus for providing electrical energy at low consumption and high efficiency for use in heating and/or hot water systems, comprising:

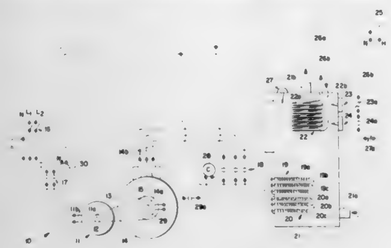
single phase motor means powered by an independent single phase a.c. source for driving its output shaft;

multiphase electrical generator means having mechanical input means;

mechanical means for coupling the output shaft of said motor means to the mechanical input means of said multiphase generator means for generating multiphase output power at the electrical outputs of said multiphase electrical generator means, wherein the electrical outputs of said multiphase electrical generator means are electrically isolated from said independent single phase a.c. source;

multiphase load means for converting electrical energy into heat for heating a fluid, said load means being electrically isolated from said single phase a.c. source and having ratings matching the output power ratings and operating frequency of said multiphase electrical generator means wherein the electrical isolation of said multiphase electrical generator means and said single phase source permits the selection of an electrical generator having an operating frequency which is different from the operating frequency of the single phase a.c. source to optimize the match between the multiphase electrical generator means and the multiphase load means regardless of the operating frequency of the single phase a.c. source;

first switch means for normally maintaining said multiphase load means electrically disconnected from the electrical outputs of said multiphase electrical generator means;



said switch means being responsive to said multiphase electrical generator means reaching a predetermined operating condition for electrically connecting said multiphase load means to said multiphase electrical generator means thereby enabling said single phase motor means and said multiphase electrical generator means to reach optimum operating conditions at a more rapid rate;

thermostat means for sensing the temperature level of the fluid being heated; and

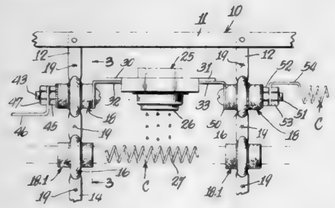
second switch means responsive to said thermostat means for electrically disconnecting said motor means from said a.c. soruce when the fluid being heated reaches a predetermined level and for electrically reconnecting said motor means to said a.c. source when the temperature level in the fluid being heated drops below said predetermined level.

4,289,955

ELECTRIC HEATING ASSEMBLIES WITH A MOUNTED THERMOSTATIC SWITCH

Wayne R. Seeley, Pulaski, Va., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 5, 1979, Ser. No. 91,389
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—532 **7 Claims**



1. An electric heating assembly, comprising a supporting frame including a pair of arms held in spaced-apart relation, a heating coil having a reach extending crosswise of said arms, a thermostatic switch mounted between said arms and having a heat sensor portion directed toward said coil reach so as to be affected by heat issuing therefrom and adapted to interrupt electrical current to said heating coil when a predetermined high temperature has been reached, the improvement comprising:

means preventing improper installation or replacement of said thermostatic switch and insuring that said heat sensor portion is always directed toward said coil reach, said means comprising,

an insulating bushing carried by one of said arms, said bushing and said arm having interfitting parts to hold said bushing against substantial rotation about its axis and in a preselected relation with respect to said one arm,

means between said thermostatic switch and said bushing, interfitting in predetermined manner to hold said thermostatic switch in position with its heat sensor portion directed toward said coil reach, and

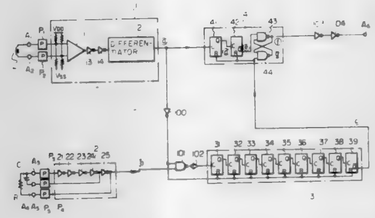
a second insulating bushing carried by the other arm, said thermostatic switch having a pair of terminals respectively supported by said bushings.

4,289,956

TIME-PERIOD COMPARING DEVICE

Fumitaka Asami, Kunitachi, Japan, assignor to Fujitsu Limited, Japan

Filed May 18, 1979, Ser. No. 40,410
Claims priority, application Japan, May 23, 1978, 53-61279
Int. Cl.³ H03K *21/30*; G06M *3/02*
U.S. Cl. 235—92 T **23 Claims**



1. A time-period comparing device, for comparing the time-period of an input signal with the time-period of a reference signal, comprising:

an input circuit, having an input terminal, for receiving the input signal;

an oscillator for providing a pulse signal;

a reference period comparing means, operatively connected to said input circuit and said oscillator, for receiving the input signal and said pulse signal and for generating the reference signal which is a rectangular signal or a definite level signal in dependence upon the frequency of the input signal;

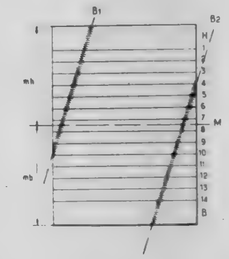
a time-period comparator, operatively connected to said input circuit and said reference period comparing means, for continuously comparing the input signal with the reference signal and for producing two different signals, each of which is at a direct current level, in dependence upon the relationship between the time-period of the input signal and the time-period of the reference signal.

4,289,957

READING STROKE CODES

Jean Neyroud, Saint Martin d'Heres, and Francois Ollivier, Meylan, both of France, assignors to La Telemecanique Electrique, France

Filed Apr. 17, 1979, Ser. No. 30,796
Claims priority, application France, Apr. 19, 1978, 78 11471
Int. Cl.³ G06K *7/10, 7/14, 9/00*
U.S. Cl. 235—462 **5 Claims**



1. In a process of reading, from a movable support having lower and upper margins and a data field, of data and security characters recorded in said field and said margins respectively and coded in accordance with a bar code, of the kind comprising the steps of:

(i) using a scanning light beam to carry out first and second sweeps onto the support in movement, said sweeps having a constant direction, the first sweep being carried out from top to bottom of the support and the second sweep being carried out from bottom to top

(ii) detecting the light reflected by said support to provide a signal comprising data characters and lower and upper security characters corresponding to said data field and said lower and upper margins respectively and

(iii) decoding these data and security characters by comparison of the relative widths of the bars and the intervals between the bars, the improvement that

(a) the process comprises the step of proceeding to the collecting of those portions of the said signal which originate in the course of pairs of successive sweeps and to the selection of those of the said signal portions which comprise at least one upper or lower security character and a number of data characters at least equal to half of the total number of data characters in the said data field, and

(b) the process further comprises the step of associating for the purpose of reconstitution and decoding of the complete data, couples of two selected successive signal portions of which one comprises an upper security character and the other a lower security character.

4,289,958

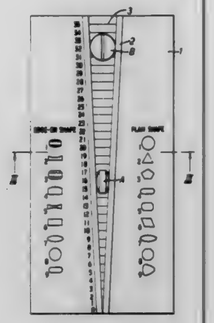
SYSTEM FOR IDENTIFYING SOLID DOSAGE UNITS

Stephen Thomas, Cardiff, Wales, assignor to Edwin Burgess Limited, Aylesbury, England

Filed Feb. 7, 1980, Ser. No. 119,597
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—489 **9 Claims**

1. An identification system for a solid dosage unit, comprising a member defining a substantially straight-sided channel which tapers from one end towards the other to define a V-shaped channel in which a dosage unit can be placed, markings being associated with the channel for indicating a dimension parameter of the unit when placed in the channel, a colour region having a plurality of coloured areas for indicating a colour parameter of the dosage unit, a shape region bearing a series of shape parameters, and an information storage and

retrieval system operative, when fed with parameters of the dosage unit obtained from said V-shaped channel, from said



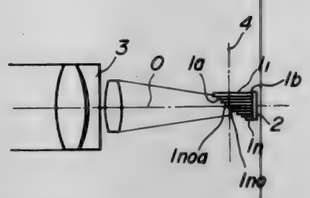
colour region and from said shape region, to provide an identification of the unit.

4,289,959

APPARATUS FOR DETECTING THE IN-FOCUSING CONDITIONS

Shuichi Takayama; Kosaku Tsuboshima; Yoshio Nakajima, all of Hachioji; Teruo Iwasawa, Mitaka, and Masafumi Yamazaki, Okaya, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 9, 1979, Ser. No. 92,686
Claims priority, application Japan, Nov. 15, 1978, 53-141288
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—201 **7 Claims**



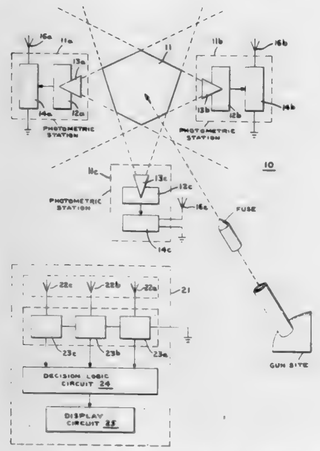
1. An apparatus for detecting in-focusing conditions of an optical system comprising: a plurality of optical fibers of different lengths which are closely arranged to each other and have light inlet ends arranged side by side along a given line and located at different levels when viewed in a direction of an optical axis of the optical system and light outlet ends located on a same plane, the inlet end of a centrally arranged optical fiber being situated on a predetermined focal plane of the optical system; a like number of charge transfer elements arranged at the respective outlet ends of the optical fibers to receive light rays emerging from respective picture elements and transmitted through the respective optical fibers and to produce illuminance signals; and means for receiving the illuminance signals from the charge transfer elements and processing the received illuminance signals in accordance with a predetermined function to produce a signal which represents a focusing condition of the optical system.

4,289,960

ARTILLERY TRAINING ROUNDS TARGET SCORING SYSTEM

Chester L. Smith, Lake Hopatcong, and William Donnally, Boonton Twp., Morris County, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 3, 1979, Ser. No. 54,755
Int. Cl.³ G01P *3/68*
U.S. Cl. 250—222 R **14 Claims**



1. Apparatus for registering and scoring the impact of an incoming munition, said munition being of a type that generates a burst of radiation upon impact, which comprises:

a plurality of radiation detectors, each having a fixed field of view in the horizontal plane, the logical union of said fields of view defining a target region in the horizontal plane;

a corresponding plurality of means for transmitting to a remote location an output signal which is generated by a corresponding radiation detector in response to the impact of said munition in the field of view of said detector;

means for receiving the output signals transmitted by said plurality of transmitting means; and

means, connected to said receiving means, for generating a first output signal if said munition impacts within said target region and a second output signal if said munition impacts without said target region.

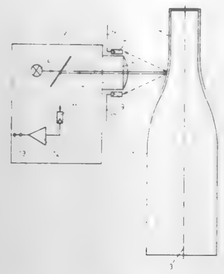
4,289,961

APPARATUS FOR SCANNING THE MARKINGS ON BOTTLE NECKS

Wilfried Kurth, Düsseldorf, Fed. Rep. of Germany, assignor to Jagenberg-Werke, Postfach, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 966,992
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754319
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—223 B **5 Claims**

1. In an apparatus for scanning the markings on foils on the necks of the bottles in a bottle labeling machine having a photoelectric scanner including a light source and a lens for illuminating the foil on the bottle neck, a beam splitter in the path of the light, a photosensitive receiver and a first amplifier having the input thereof receptive of the receiver output, the improvement wherein the photosensitive receiver comprises a pair of photoelectric elements respectively provided outside of the lens and wherein the first amplifier comprises an integrating



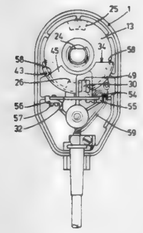
amplifier operatively connected to each output of the pair of photoelectric elements.

4,289,962

OPTOELECTRONIC SYNCHRO GENERATOR

Herbert Palloch, Schwetzingens, and Hans Erndt, Wiesloch, both of Fed. Rep. of Germany, assignors to Frankl & Kirchner GmbH & Co. KG, Schwetzingen, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,794
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837743
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **11 Claims**



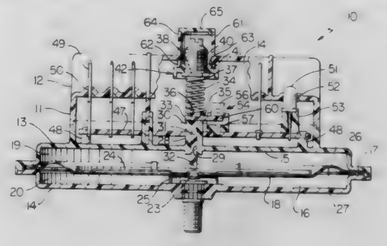
1. An optoelectronic synchro generator comprising at least one photoelectric circuit element, each including a light source and an associated receiver; a rotatable shaft; means mounted on the shaft both for normal rotation therewith and for selective adjusting rotation with respect thereto for defining at least one optically effective surface spaced from the axis of rotation of the shaft by which light coming from the light source impinges on the receiver when said surface is in a predetermined position during the rotation of said shaft; a removable cover which covers the shaft and the photoelectric circuit element; at least one shielding means disposed at least in front of the receiver, but behind the path of the means defining the optically effective surface when viewed from the receiver, for permitting light from the source to impinge on the receiver when the surface is in the predetermined position and for preventing the impingement of stray light on the receiver when the cover is removed.

4,289,963

CONTROL DEVICE AND METHOD OF MAKING THE SAME

Charles J. Everett, Clinton, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 17, 1979, Ser. No. 76,407
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 P **28 Claims**



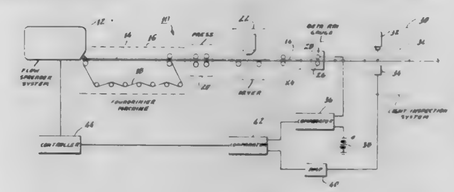
1. In a control device having a housing means provided with an actuator chamber separated from a pressure differential chamber by wall means having opening means therethrough receiving an axially movable actuator pin that transmits axial movement of a movable part in said pressure differential chamber to said actuator chamber, said actuator pin being separate from and engageable with said movable part, the improvement comprising optical switch means in said actuator chamber, said actuator pin having interrupter means for actuating said optical switch means when said movable part axially moves said actuator pin to a certain axial position relative to said housing means, said actuator pin having orientation means, said opening means having orientation means cooperating with said orientation means of said actuator pin to maintain said interrupter means of said actuator pin in proper rotational alignment with said optical switch means.

4,289,964

RADIATION INSPECTION SYSTEM FOR A MATERIAL MAKING APPARATUS AND METHOD USING A BETA RAY GAUGE

Cole H. Baker, Westport, Conn., assignor to Intec Corporation, Trumbull, Conn.

Filed Jan. 24, 1980, Ser. No. 114,901
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—308 **5 Claims**



1. A method of controlling the production of paper products using a beta ray gauge in conjunction with a light inspection system for inspecting a moving web of formed paper material comprising the steps of:

dispensing paper stock onto a wire support for forming a continuous paper web,

sampling the basis weight of the continuous paper web so formed by passing said web through a beta ray gauge which generates a first signal based on the weight of the paper web where measured by the beta ray gauge,

comparing the first signal from the beta ray gauge with a predetermined reference signal preset for the weight desired to produce a difference signal,

continuously inspecting the entire paper web with a light

inspection system by applying a light source across the paper web and detecting light emanating therefrom to provide a second signal based on the light transmitting or reflecting characteristics of said paper web,

comparing said difference and second signals and deriving a control signal therefrom, and

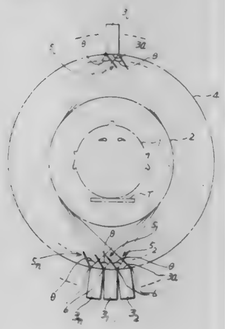
regulating the dispensing of paper stock forming said continuous paper web using said control signal for controlling the basis weight of said continuous paper web.

4,289,965

EMISSION COMPUTED TOMOGRAPH

Kenichiro Koga; Yoshiharu Hirose, both of Kyoto; Iwao Kanno, Akita; Kazuo Uemura, Akita, and Shuichi Miura, Akita, all of Japan, assignors to Shimadzu Corporation, Japan

Filed Jan. 16, 1980, Ser. No. 112,637
Claims priority, application Japan, Jan. 23, 1979, 54-8120[U]
Int. Cl.³ G01T *1/20*; G21F *5/04*
U.S. Cl. 250—363 S **6 Claims**



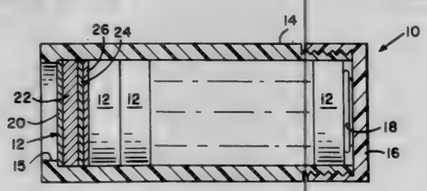
1. An emission computed tomograph comprising: means for supporting an object to be examined at a predetermined position, said object having taken therein a radionuclide that emits radiation; a plurality of radiation detectors so arranged as to surround said predetermined position; a plurality of collimator means each for use with a different kind of radionuclides and each so arranged as to surround said position; means for supporting said plurality of collimator means in axial alignment; means for causing said supporting means to be axially displaced relative to said detectors so that each of said collimator means can alternatively be brought into radial alignment with and operative relation to said detectors.

4,289,966

RADIATION ENERGY DETECTOR AND ANALYZER

Thomas G. Roberts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 10, 1980, Ser. No. 138,967
Int. Cl.³ G01T *1/18, 1/185*
U.S. Cl. 250—378 **10 Claims**



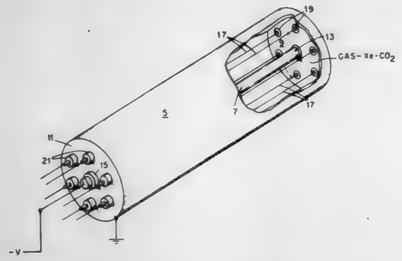
1. A radiation detector comprising: a plurality of batteries arranged coaxially in respective parallel planes forming a stack, each of said batteries being disposed to exhibit a reduction in electrical voltage in response to passage of radiation therethrough, said plurality of batteries being of sufficient stack depth to prevent all radiation impinging coaxially thereon from passing completely through the stack and thereby providing a voltage gradient decrease across the stack indicative of any radiation impinging thereon.

4,289,967

MULTIANODE CYLINDRICAL PROPORTIONAL COUNTER FOR HIGH COUNT RATES

James A. Hanson, Madison, Wis., and Manfred K. Kopp, Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 23, 1980, Ser. No. 152,954
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—385 **10 Claims**



1. A proportional counter tube for detecting ionizing radiation comprizing:

a closed cylindrical housing forming an outer cathode electrode;

a cylindrical inner cathode electrode disposed coaxially within said housing and spaced from the cylinder wall of said housing to form a detection volume between said inner and outer cathodes,

a plurality of uniformly spaced-apart anode electrodes disposed intermediate said inner and outer cathodes and parallel to the longitudinal axis of said cathodes;

an ionizable gas filling said detection volume within said housing; and

means for applying bias voltages between said outer cathodes and said plurality of anodes and said inner cathode and said plurality of anodes so that a uniform electrostatic field is provided within said detection volume thereby minimizing the electron collection time at said anodes following ionizing events within said gas filling said detection volume.

4,289,968

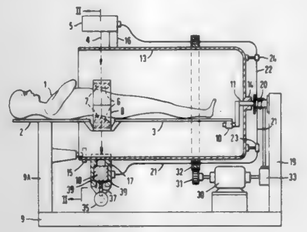
RADIOGRAPHY

Christopher A. G. LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 543,338, Jan. 23, 1975. This application Jul. 11, 1977, Ser. No. 814,631
The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.
Int. Cl.³ G01N *21/00*
U.S. Cl. 250—445 T **2 Claims**

1. Radiographic apparatus for examining at least one slice disposed cross-sectionally of a patient's body, comprising means defining a patient position including a region in which said at least one slice can be disposed, a source of a fan-shaped spread of penetrating radiation, support means supporting said source so that said radiation projects through said region along a plurality of beams which are distributed across said spread at respective angular orientations therein so that they diverge from one another with increasing distance from said source,

means for moving said source angularly around the patient position to project said beams of radiation through said region from a plurality of locations distributed angularly around said patient position, detecting means, including a plurality of detector devices, disposed to detect said beams of radiation after



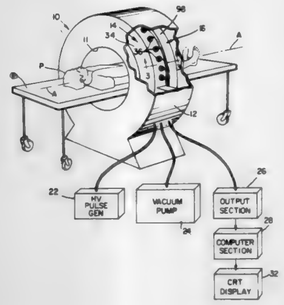
they have traversed said region, and means causing relative movement between said spread of radiation and said detector devices whereby each beam of radiation is detected by a respective detector device at one stage of said angular movement of said source and by a different respective detector device at another stage of said angular movement.

4,289,969

RADIATION IMAGING APPARATUS

Gerald Cooperstein, Rockville, Md.; Richard C. Lanza, and A. Robert Sohval, both of Cambridge, Mass., assignors to Butler Greenwich Inc., Greenwich, Conn.

Filed Jul. 10, 1978, Ser. No. 922,982
Int. Cl.³ G03B *41/16*
U.S. Cl. 250—445 T **19 Claims**



1. In a computerized tomographic scanner:

A. a fixed array of cold cathode diodes each said diode being characterized by an impedance in excess of about 100 ohms;

B. a fixed array of radiation detectors juxtaposed to the diode array;

C. means for applying greater than 100 ns duration and less than 200 kv voltage pulses sequentially to the diodes in the array so as to cause said diodes to emit successive substantially constant amplitude X-ray pulses, said radiation being detected by the detectors in the detector array, and

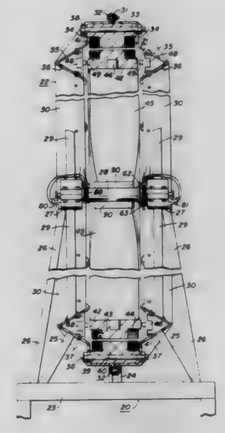
D. means responsive to the output signals from said detectors for producing a reconstruction image of a selected body slice illuminated by radiation from the diode array.

4,289,970

WIND POWERED ELECTRICAL GENERATOR

David D. Deibert, 1524 Grasshopper Rd., Huntingdon Valley, Pa. 19006

Filed Nov. 22, 1978, Ser. No. 962,957
Int. Cl.³ F03D *9/00*
U.S. Cl. 290—44 **23 Claims**



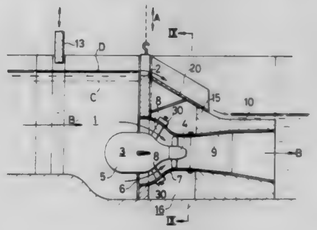
1. A wind powered alternating current electrical generator of the type having a rotatable wind wheel generator rotor consisting of a circular rim carrying one of the armature or field structures and a plurality of angularly spaced radially extending windvanes connecting the rim to a rotatable central shaft, a stator carrying the other of the armature or field structures and past which the windwheel rotor rim rotates, and a supporting structure for the windwheel rotor and the stator, characterized in that the stator extends concentrically closely peripherally completely around the rotor substantially co-planar therewith and radially outward therefrom.

4,289,971

ELECTRIC POWER GENERATION EQUIPMENT INCORPORATING BULB TURBINE-GENERATOR

Tsuneo Ueda, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 25, 1979, Ser. No. 33,083
Claims priority, application Japan, Apr. 18, 1979, 54/47700
Int. Cl.³ F01D *15/10*; F02C *6/00*; H02K *7/18*; F16D *31/02*
U.S. Cl. 290—52 **9 Claims**



1. A movable hydroelectric power generation system in a water channel comprising: a bulb turbine generator comprising an electric power generator housed in a bulb shape inner casing and a turbine runner connected to a main shaft of said electric power generator; an outer casing having annular upstream and downstream ends, disposed outside said inner casing and positioning said inner casing by stay vanes so as to position said

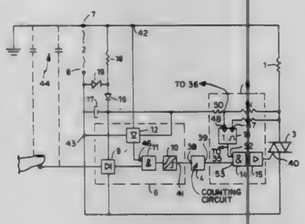
generator partially within said outer casing and partially outside said outer casing; a draft tube coupled to said annular downstream end of said outer casing; and a liftable gate positioned to dam up said water channel, said gate being vertically movable, said gate having an annular opening, and said annular upstream end of said outer casing being fixedly secured to said annular opening of said gate, whereby said generator is disposed on both the upstream and downstream sides of said gate, to thereby minimize the upstream and downstream extent of said movable generator system whereby the vertical movement of said generator system is enhanced by the minimal extent of said generator system.

4,289,972

TOUCH CONTROL SWITCH

Lars A. Wern, Upplandsgatan 65, 113 28 Stockholm, Sweden

Continuation-in-part of Ser. No. 885,806, Mar. 13, 1978, Pat. No. 4,210,822. This application Jan. 24, 1979, Ser. No. 6,251
Claims priority, application Sweden, Aug. 5, 1977, 7708952; Aug. 4, 1978, 7800026
Int. Cl.³ H03K *17/68*
U.S. Cl. 307—116 **14 Claims**



1. A touch control switch connectable between a lamp type load and an AC power supply in an AC type of lighting installation for controlling said load in response to touch, said touch control switch comprising gating means trigger pulse generating means operatively connected to said gating means for changing the state thereof, pulse counting means operatively connected to the input of said trigger pulse generating means for controlling the state of said gating means in accordance with the output of said pulse counting means, touch sensitive impedance means, and control pulse shaping means having its input operatively connected to said power supply through said touch sensitive impedance means and its output operatively connected to the input of said pulse counting means, said trigger pulse generating means having a leading edge triggering input and a trailing edge triggering input with said triggering inputs being operatively connected in parallel to said power supply, said touch sensitive impedance means varying said impedance in response to touch for initiating trigger pulse generation from said trigger pulse generating means for changing said gating means state to activate said load, said load being capable of comprising both a reactive type load and a resistive type load.

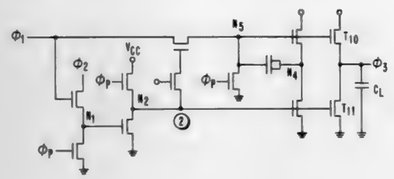
4,289,973

AND-GATE CLOCK

Sargent S. Eaton, Jr., Colorado Springs, Colo., assignor to Mostek Corporation, Carrollton, Tex.

Filed Aug. 13, 1979, Ser. No. 66,147
Int. Cl.³ H03K *19/08, 19/20*
U.S. Cl. 307—448 **9 Claims**

1. An AND-gate clock comprising:
an input stage adapted to receive a first and a second input signal for providing a plurality of interstage signals in response to the first and second input signals;
an output stage for driving a load having a large capacitance; and
an isolation stage means coupled between the input stage and the output stage for receiving the plurality of interstage signals and for enabling the output stage to provide a true



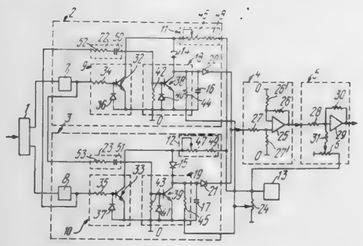
level to the load only when the first and second input signals are at a true level.

4,289,974

VOLTAGE FREQUENCY METER OF SYNCHRONOUS ELECTRICAL MACHINE

Vladimir M. Katunin, ulitsa Shefskaya, 30, kv. 8, and Vladimir G. Nakrokhin, ulitsa Baumana, 32a, kv. 9, both of Sverdlovsk, U.S.S.R.

Filed Sep. 24, 1979, Ser. No. 78,662
Claims priority, application U.S.S.R., Jan. 18, 1979, 2715253
Int. Cl.³ H03K *5/00, 5/22*
U.S. Cl. 307—527 **1 Claim**



1. A voltage frequency meter of a synchronous electrical machine, comprising:
a voltage converter having two outputs;
a first input voltage measuring channel and a second input voltage measuring channel, their inputs being connected to said outputs of said voltage converter;
a voltage follower;
outputs of said frequency measuring channels being connected to an input of the voltage follower;
a power source;
a voltage comparator having a first input connected to an output of said voltage follower, and a second input connected to said power source;
an adjusting resistor having a movable contact;
each of said input voltage frequency measuring channels containing:
a zero-crossing detector intended to convert sinusoidal voltage to square-wave voltage;
two transistor switches, the first having its input connected to an output of said zero-crossing detector;
a differentiating circuit connected to an input of said second transistor switch;
a charging resistor;
an isolating diode;
a decoupling diode;
a storage capacitor;
an output of the first transistor switch being connected to said power source via said charging resistor and via said isolating diode to the output of said second transistor switch and to said storage capacitor;

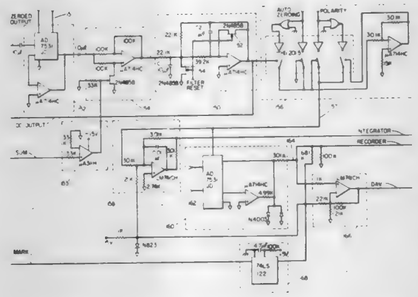
said storage capacitor being connected via said decoupling diode to the input of said voltage follower;
the input of said second transistor switch of said first frequency measuring channel being connected via said differentiating circuit of said first channel to the output of said zero-crossing detector of said second frequency measuring channel;
the input of said second transistor switch of said second frequency measuring channel being connected via said differentiating circuit of that frequency measuring channel to the output of said zero-crossing detector of said first frequency measuring channel;
said power source being connected to said adjusting resistor whereof the movable contact is connected to the output of said second transistor switch of each of said frequency measuring channels.

4,289,975

DISSIPATING ELECTRICAL CHARGE

Norman F. Rolfe, Carlisle, Mass., assignor to Waters Associates, Inc., Milford, Mass.

Filed Jul. 20, 1979, Ser. No. 59,292
Int. Cl.³ H03K *17/04, 17/12*
U.S. Cl. 307—246 **3 Claims**



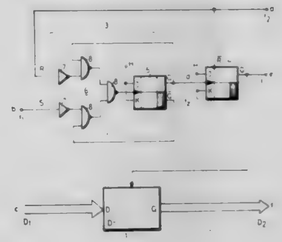
1. In circuitry of the type including analog circuit means for producing an analog output in response to an input and digital circuit means for sampling said output, said analog circuit means including a charge storage element that can become charged in response to said input, the improvement comprising charge dissipation means for dissipating the charge built up in said charge storage element during an interval prior to sampling of said output by said digital circuit means,
wherein said digital circuit means and analog circuit means are connected in a loop and said digital means includes means for providing said input to said analog circuit and for periodically changing said input in response to changes in said sampled output,
wherein said digital circuit means includes means for changing said input so that said output approaches a desired value,
wherein said digital circuit means includes comparator means for measuring whether said output is above or below said desired value and includes means for adjusting said input to said analog circuit based on the output of said comparator,
wherein said analog circuit means includes a low-pass filter which includes one or more capacitors which form said charge storage element, the response of said filter being characterized by a time constant, and
wherein said digital circuit means includes means for varying said input so that at two successive sampling times said analog output can change from a first value greater than said desired value to a second value less than said desired value, the amount by which said second value is less than said desired value being 100 or more times smaller than the amount by which said first value exceeds said desired value, whereby the time required, without dissipation of the charge stored in said capacitors, for said output to change from being above to being below said desired value, and thereby allow said comparator output to change, is of the order of 5 or more said time constants.

4,289,976

CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF DIGITAL DATA

Hans-Peter Maly, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,524
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848803
Int. Cl.³ H03K *5/13*
U.S. Cl. 307—247 R **4 Claims**



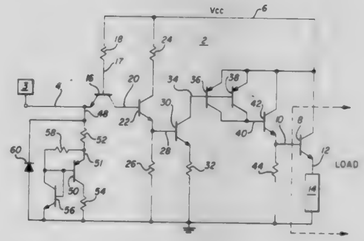
1. An interface circuit for the transmission of digital data between digital data handling systems operating with different clock frequencies, the circuit comprising an edge-controlled R-S flip-flop of which the S input is supplied with a first clock signal and the R input is supplied with a second clock signal, a J-K flip-flop of which the J input is maintained at a high logic level and the K input is maintained at a low logic level, the J-K flip-flop having a clock input connected to the output of the R-S flip-flop and a reset input supplied with the second clock signal, and at least one D flip-flop having a clock input connected to the output of the J-K flip-flop and whose D input is arranged to receive digital data at the frequency of the first clock signal, whereby at the output of the D flip-flop digital data is produced in synchronism with the second clock signal.

4,289,977

CMOS COMPATIBLE BIPOLAR DRIVE CIRCUIT WITH PROTECTIVE CLAMP

Vernon B. Powers, and Harry I. Crawford, both of St. Petersburg, Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jun. 12, 1978, Ser. No. 914,863
Int. Cl.³ H03K *3/01, 17/16, 5/02*
U.S. Cl. 307—270 **8 Claims**



1. A drive circuit for driving an electrical load in response to an input drive signal from a source thereof, comprising:
first circuit means having an input and an output for generat-

ing a signal at said first circuit means output in response to the input drive signal at said first circuit means input;

said circuit means having an input and an output for generating a logic level signal at said second circuit means output in response to said first circuit means generated signal at said second circuit means input, said second circuit means output being connected for driving the load;

a first resistor having a first terminal thereof connected to said first circuit means input;

a second resistor having a first terminal thereof connected to ground;

a first clamp transistor having the collector and emitter terminals thereof connected between the second terminals of said resistors; and

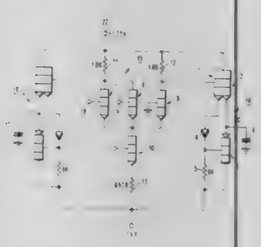
means connected to the base and collector terminals of said first clamp transistor and to ground for controlling current flow through said first clamp transistor.

4,289,978

COMPLEMENTARY TRANSISTOR INVERTING EMITTER FOLLOWER CIRCUIT

Richard R. Konian, Poughkeepsie, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,255
Int. Cl.³ H03K *19/40, 19/36*
U.S. Cl. 307—270 **7 Claims**



1. A complementary emitter follower circuit comprising:

a series connected first pair of bipolar complementary transistors,

the emitters of said first pair of transistors being connected together and to an output terminal,

a series-connected second transistor and Schottky diode,

the bases of said second transistor and the transistor of said first pair of transistors of like kind being connected together and to an input terminal,

the terminal of said Schottky diode remote from said second transistor being connected to the base of the other transistor of said first pair of transistors,

a source of first voltage,

the collector of said last-named transistor being directly connected to said source of first voltage,

a resistor,

the base of said last-named transistor being connected by said resistor to said source of first voltage, and

a source of second voltage,

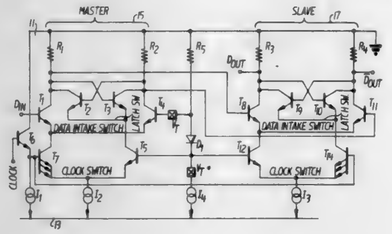
the collectors of said second transistor and of said transistor of like kind being connected to said source of second voltage.

4,289,979

TRANSISTORIZED MASTER SLAVE FLIP-FLOP HAVING THRESHOLD OFFSETS GENERATED BY CIRCUIT SIZE VARIATIONS

Harold Muller, Carlsbad, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 28, 1978, Ser. No. 937,687
Int. Cl.³ H03K *3/289*
U.S. Cl. 307—272 A **8 Claims**



1. A master slave flip-flop circuit comprising:

input signal source means;

a master flip-flop coupled to said input signal source means and having a data intake circuit for passing the input source signal to the output of said master flip-flop and a latch circuit for preventing the input source signal from being passed through the output of said master flip-flop;

a slave flip-flop coupled to said master flip-flop and to said input signal source means, said slave flip-flop having a data intake circuit for passing the signal of said input signal source means to the output of said slave flip-flop and a latch circuit for preventing the signal from said input signal source means from being passed to the output said slave flip-flop; and

means for actuating the data intake circuit and the latch circuit of said master flip-flop and the data intake circuit and the latch circuit of said slave flip-flop such that the data intake circuit of said master flip-flop and the data intake circuit of said slave flip-flop are never simultaneously actuated;

said means for actuating the data intake circuit and the latch circuit of the master flip-flop comprising: a source of clock signals; a first current source; a first multi-emitter bipolar transistor having its base coupled to said source of clock signals, its emitters coupled to said first current source and its collector coupled to said data intake circuit of said master flip-flop; a DC voltage source having a constant output intermediate the voltage range of said clock signals; and a first bipolar transistor having its base coupled to said DC voltage source, its collector coupled to said latch circuit of said master flip-flop and its emitter coupled to said first current source whereby current from said current source is steered by said first bipolar transistor to said latch circuit of said master flip-flop when the level of said clock signal is less than said voltage level of said first DC voltage source and where said current from said first current source is steered through said first multi-emitter transistor to said data intake circuit of said master flip-flop when said voltage level of said clock signal is greater than said voltage level of said constant DC voltage source;

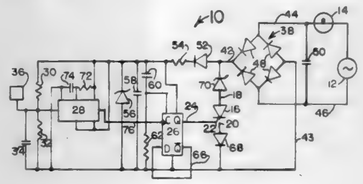
said means for actuating the data intake circuit and the latch circuit of said slave flip-flop comprising: a second current source; a second multi-emitter bipolar transistor having its base coupled to said source of clock signals, its collector coupled to said latch circuit and its emitters coupled to said second current source; and a second bipolar transistor having its base coupled to said DC voltage source, its collector coupled to said data intake circuit of said slave flip-flop and its emitter coupled to said second current source.

4,289,980

TOUCH SENSITIVE ELECTRIC SWITCH

Richard J. McLaughlin, 4203 W. 141st St., Hawthorne, Calif. 90250

Filed Jun. 22, 1979, Ser. No. 51,430
Int. Cl.³ H03K *3/26;* **G08B** *13/26*
U.S. Cl. 307—308 **7 Claims**



1. A touch sensitive electric switch for connection in circuit with an alternating current power source and a current load comprising:

semiconductor means with a trigger input lead for connecting load current responsive to signals on said trigger input lead,

electronic flip-flop means with an output connected to said trigger input lead,

electronic one shot multivibrator sensing means having an output connected to an input of said flip-flop for generating an electronic pulse to said flip-flop means in response to an actuating input thereto,

biasing means including a voltage dividing network for maintaining a steady d.c. bias to said sensing means to suppress pulse generation and including charge storage means connected to said sensing means, to at least partially filter noise,

conductive touch plate means connected to said sensing means for removing said suppressing bias in response to a manual touch to said touch plate, and

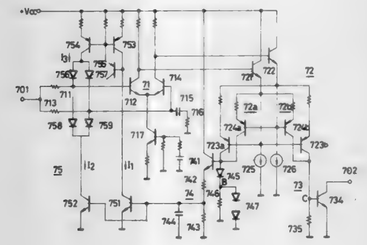
rectifying means connected to said alternating current power source to supply direct current for operating said electronic flip-flop means, said electronic sensing means and said biasing means.

4,289,981

PULSIVE COMPONENT DETECTING APPARATUS

Junji Sakamoto, Oota, and Hiroyasu Kishi, Gunma, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

Filed Mar. 23, 1979, Ser. No. 23,408
Claims priority, application Japan, Jun. 21, 1978, 53-75613; Jun. 21, 1978, 53-75614; Jul. 5, 1978, 53-83277
Int. Cl.³ H03K *5/153;* **H03L** *5/00*
U.S. Cl. 307—350 **17 Claims**



1. An apparatus for detecting a pulsive component in an input signal including a pulsive component in superposition on a continuous component, comprising:

amplifying means for amplifying said input signal,

rectifying means responsive to the output of said amplifying means for rectifying the output of said amplifying means,

detecting means responsive to the output of said rectifying means for detecting at a first detecting level the output of said rectifying means for providing a control signal associated with the level of said continuous component of said input signal,

limiting means responsive to said control signal obtained from said detecting means for limiting the amplitude of said input signal being applied to said amplifying means,

pulsive component detecting means responsive to the output of said rectifying means for detecting at a second detecting level a pulsive component in said input signal, and

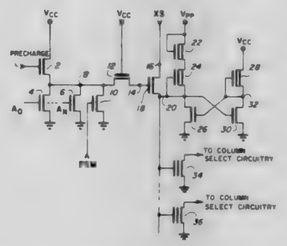
level ratio setting means operatively coupled to said detecting means and said pulsive component detecting means for controlling said first and second detecting levels of said detecting means and said pulsive component detecting means, respectively, for avoiding malfunction of said pulsive component detecting means by virtue of said continuous component in said input signal.

4,289,982

APPARATUS FOR PROGRAMMING A DYNAMIC EPROM

Stephen L. Smith, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1979, Ser. No. 53,148
Int. Cl.³ H03K *19/173, 19/096;* **G11C** *7/00, 11/40*
U.S. Cl. 307—463 **12 Claims**



1. A circuit for providing a programming signal from a first source of supply voltage to row or column conductors of an electronically programmable read-only-memory, comprising:

first means associated with each of said conductors for latching each of said conductors at a voltage below that of said first source;

second means associated with each of said conductors for establishing an enabling voltage with a single precharge pulse;

first switching means coupled to said enabling voltage and responsive thereto for unlatching a selected one of said conductors; and

third means associated with each of said conductors for coupling said first source to said selected one of said conductors.

4,289,983

ENCODER FOR MONITORING BIDIRECTIONAL MOTION

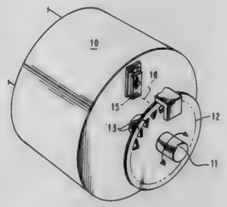
Lutz H.O. Bengnar, Wallace E. Kee, Raymond D. Mathews, and Stephen T. Olson, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,650
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **23 Claims**

1. In a rotational encoder apparatus having a plurality of indicia at fixed positions with respect to each other, means for rotating said indicia about an axis and means for sensing said indicia positioned along the path of rotation of said indicia, the improvement

wherein each of a plurality of said indicia has a first edge radial to said axis and traversing said path of rotation and a second edge non-radial to said axis, traversing said path of rotation,

and



further including means for moving said sensing means so that the position of said sensing means may be adjusted with respect to said first edges which are the leading edges when said indicia are rotated in one direction and to said second edges which are the leading edges when said indicia are rotated in the opposite direction.

4,289,984

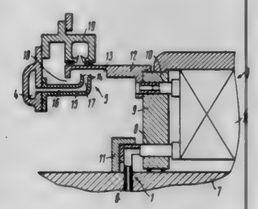
LIQUID COOLING OF AN ELECTRIC MACHINE ROTOR WINDING

Jury V. Aroshidze, Moskovsky prospekt, 199, kv. 37; Ibragim A. Kadi-Ogly, ulitsa Marshala Zhukova, 64, Korpus 1, kv. 180; Vladimir P. Chernyavsky, Pulkovskaya ulitsa, 17 kv. 185; Aron B. Shapiro, ulitsa Basseinaya, 53 kv. 71; Boris I. Fomin, Petrovskaya ulitsa, 4, korpus 2, kv. 50, all of Leningrad, and Anatoly F. Yankov, Detskoselsky prospekt, 1, kv. 63, Pushkin Leningradskoi oblasti, all of U.S.S.R.

Filed Oct. 18, 1979, Ser. No. 86,063

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—54 **4 Claims**



1. A device for collecting discharged cooling liquid from axial outlet passages of a rotor winding of an electric machine, having means for supplying a cooling liquid to the rotor winding, said supply means being connected by axial inlet passages with said winding, and means for discharging the cooling liquid into a drain cavity, said discharge means being in communication with axial outlet passages of said winding, said discharge means comprising an outer cylindrical member having an annular recess on the inner surface thereof attached to the rotor and mounted concentrically with the rotor shaft, a stationary inner cylindrical member mounted in concentric relation with the rotor shaft, said inner cylindrical member having on its outer surface an annular projection engaging the annular recess of said outer cylindrical member and having at least one inner annular cavity open at the outer diameter of the annular projection, and a drain cavity provided in said inner cylindrical member and communicating with the inner annular cavity.

4,289,985

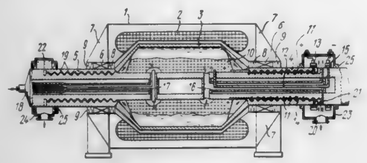
ELECTRICAL MACHINE WITH CRYOGENIC COOLING

Jury S. Popov, ulitsa Bariernaya, 16, kv. 14, Novosibirsk; Jury V. Skachkov, Nevsky prospekt, 125, kv. 13, Leningrad; Iosif F. Filippov, ulitsa Pulkovskogo, 17, kv. 39, Leningrad, and Gary M. Khutoretsky, ulitsa Altaiskaya, 20, kv. 5, Leningrad, all of U.S.S.R.

Filed Dec. 22, 1978, Ser. No. 972,397

Int. Cl.³ H02K *1/32*

U.S. Cl. 310—61 **9 Claims**



1. An electrical machine with cryogenic cooling, comprising:

a stator having a winding fixed in an internal cavity;

a hollow rotor fixed in said stator and including a superconducting winding in an internal cavity, a hollow shaft of said rotor having first and second end parts, each end part having at least one cooling duct provided with inlet end and outlet end members, said first end part having an inlet means and a passage, said second end part having a passage with an inlet end member connected to said internal cavity of said rotor and an outlet end member, and each end part having coolant collecting chambers;

a coolant for cooling said rotor introduced into said cavity of said rotor via said inlet means and said passage of said first end part;

at least two supply leads having first ends rigidly attached to said superconducting winding, a first supply lead being disposed in said cooling ducts of said second end part and a second supply lead being disposed in said passage of said second end part;

at least two current-collecting means disposed in respective coolant collecting chambers and connected to second ends of respective supply leads; and

exhausting means mounted in respective coolant collecting chambers and coupled to said outlet end members of said cooling ducts and of said passage of said second end part to withdraw said coolant from said internal cavity of said rotor.

4,289,986

COOLANT CONNECTING HEAD FOR AN ELECTRIC MACHINE WITH A SUPERCONDUCTING ROTOR WINDING

Dieter Kullmann, Langenzenn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

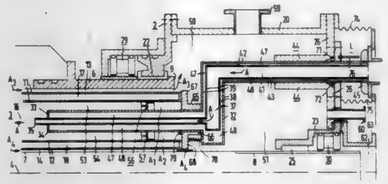
Filed Dec. 19, 1979, Ser. No. 105,219

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856128

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—61 **9 Claims**

1. In a coolant connecting head for an electric machine, which machine contains a rotor supported rotatably about an axis a superconducting winding which can be deep cooled by a coolant, and a device for feeding the coolant from a nonrotating coolant line part into a rotating coolant line part connected to the rotor, and containing at least one sealing device which seals off an interspace formed between these line parts and which, in the operating state of the machine, allows a predetermined leakage rate which depends on the pressure difference prevailing there, the improvement comprising at least one further sealing device with an adjustable seal gap formed between the sealing surfaces thereof for sealing the interspace, whereby said seal gap may be adjusted according to the operating condition of the electric machine so as to be fully effective during the cooling down phase and adjusted to be no longer fully effective after the machine has reached its nominal speed.



4,289,987

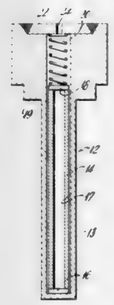
MAGNETOSTRICTIVE NON-CONTACTING PRESSURE DETECTION SYSTEM

James T. Russell, and Thomas J. Davis, both of Richland, Wash., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

Continuation of Ser. No. 558,124, Mar. 13, 1975, abandoned. This application Mar. 2, 1977, Ser. No. 773,771

Int. Cl.³ H01L *41/14*

U.S. Cl. 310—26 **9 Claims**



1. A pressure measurement system comprising a pressurized system including a sensor located within said pressurized system comprising a material which has a magnetic permeability which is dependent upon stress applied thereto, and is responsive to the internal pressure of said pressurized system, sensing means operably associated with said pressurized system in proximate relation to said sensor within said pressurized system for developing a magnetic field upon energization which field penetrates the containment wall of said pressurized system and interrogates said sensor, said sensing means providing an output electrical signal which is proportional to the stress applied to said sensor, electronic circuit means connected to said sensor means for processing said output signal of said sensing means for providing a readout of said pressure in said pressurized system, and a reference sensing means located substantially close to said sensing means during energization of said sensing means, for providing temperature compensation for said pressurized system, wherein said electronic circuit means comprises a plurality of channels for processing the output voltages from said reference sensing means and said sensing means, and phase discrimination means for providing an output proportional to said pressure in said pressurized system.

4,289,988

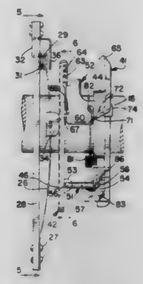
CENTRIFUGAL MECHANISM AND SWITCH

Edward J. Schaefer, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Continuation-in-part of Ser. No. 961,846, Nov. 20, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,127

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 E **15 Claims**



1. In an electric motor including a rotatable shaft and a switch connected to control energization of a winding of the motor, the improvement comprising a centrifugal mechanism for actuating the switch, said mechanism comprising a support part secured to and rotating with the shaft, a movable annular member having a central opening receiving the shaft therethrough, a weight having its center of gravity to one side of the axis of rotation of the mechanism and the shaft, said weight extending between said support part and said annular member and being pivotally connected to said part and said member, said weight and said member swinging outwardly due to centrifugal force upon rotation of said mechanism, said weight and said annular member having a standstill position that exists when said mechanism is stationary and a running position that exists when said mechanism is turning at above a predetermined speed, centrifugal force acting on said weight and causing said outward swinging movement to said running position, and counterforce means directly connected to said weight and said support part and extending therebetween and causing movement to said standstill position, said annular member being adapted to engage said switch and said swinging movement of said annular member being adapted to actuate the switch.

4,289,989

BRUSHLESS EXCITER ROTOR MOUNTING

Patrick J. Schibline, Merrill, Wis., assignor to Marathon Electric Manufacturing Corp., Wausau, Wis.

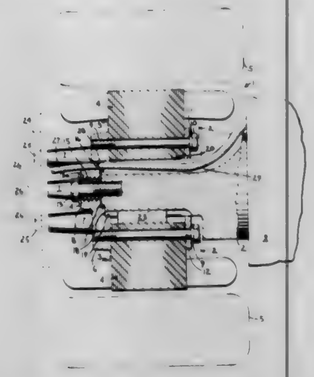
Filed Dec. 10, 1979, Ser. No. 101,480

Int. Cl.³ H02K *1/22*

U.S. Cl. 310—261 **8 Claims**

1. The mounting of a brushless exciter rotor to a generator by a sleeveless construction, comprising a shaft extending from the generator and having a stepped construction of predetermined lengths providing a larger diameter in the shaft at the inner end portion and a lesser diameter portion in the shaft extending outwardly from the inner end portion, a rotor core with an inner diameter slightly larger than the lesser diameter portion of the shaft, an outer end member assembled to the outer end of the rotor core and having an inner diameter substantially in line with the lesser diameter portion of the shaft and disposed in a predetermined length of engagement with the shaft lesser diameter portion, an end member assembled to the inner end of the rotor core with the inside of the last named end member in a predetermined length of engagement with the larger diameter inner end portion of the shaft, the stepped construction of the shaft providing a radial clearance around the shaft between the rotor core and lesser diameter portion of the shaft for a predetermined length of the rotor core, means to

pull the rotor core to seating position with respect to the shaft and secure the rotor core to the shaft, means to secure the rotor



core to the shaft to prevent rotation of the shaft within the rotor core, and means to secure the rotor core to the end members.

4,289,990

SPARK PLUG WITH A STEPPED INSULATOR AND AN INNER CONSTRICTION IN THE HOUSING

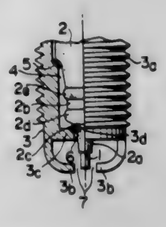
Kazuhisa Mayumi, Aichi; Katsumi Suzuki, Toyota, and Fujio Tsuboi, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and NGK Spark Plugs Co., Ltd., Nagoya, both of, Japan

Filed Mar. 14, 1979, Ser. No. 20,923

Claims priority, application Japan, Oct. 17, 1978, 53-143091[U]

Int. Cl.³ H01T *13/20, 13/32*

U.S. Cl. 313—143 **1 Claim**



1. A spark plug comprising a central axial electrode, an insulator which covers said axial electrode except for its tip, and a housing which surrounds said insulator with an open tubular gap left therebetween and which at its tip portion furnishes at least one ground electrode which opposes the tip of said axial electrode, said housing being formed with a constriction on its inner surface which approaches said insulator at a portion near its tip portion with an open annular gap being left therebetween, wherein said insulator is formed with a first portion nearer to its root, a second portion nearer to its tip which is of generally smaller radius than said first portion, and a stepped portion between said first and second portions, and wherein the constriction has an annular inside surface which opposes both said second portion and said stepped portion, said constriction inside surface and the surfaces of said insulator at said second portion and said stepped portion being shaped to define an open annular gap therebetween which has a substantially constant width throughout its length, said open annular gap angling sharply radially outwardly from its portion which follows said second portion to its portion which follows said stepped portion of the insulator, said first portion of said insulator being formed with an annular bulge which extends in continuity with said stepped portion.

4,289,991

FLUORESCENT LAMP WITH A LOW REFLECTIVITY PROTECTIVE FILM OF ALUMINUM OXIDE

Willy P. Schreurs, Danvers, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 526,755, Nov. 25, 1974, abandoned. This application Sep. 6, 1977, Ser. No. 830,702

Int. Cl.³ H01J *61/35, 61/42*

U.S. Cl. 313—489 **1 Claim**

1. In a fluorescent lamp comprising a sealed glass envelope containing a fill including low pressure mercury vapor, the improvement which comprises an antireflective film of aluminum oxide disposed on an electroconductive layer adhering to the inner surface of the glass envelope, wherein the thickness of the antireflective film is such as to increase both initial light output and lumen maintenance of the lamp.

4,289,992

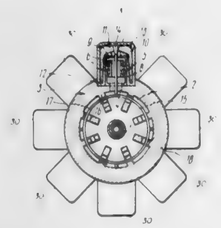
MICROWAVE DEVICE

Zinaida P. Kapitonova, ulitsa Ostrovityanova, 23, korpus 5, kv. 112, Moscow, U.S.S.R.

Filed Jun. 4, 1979, Ser. No. 45,341

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.77 **3 Claims**



1. A microwave device characterized by an operating frequency range having undesired modes on either side thereof, comprising:

a cathode emitting a stream of electrons;

an anode made up of individual cells receiving and interacting with the stream of electrons;

a coupling element provided in at least one of said cells of said anode;

a plurality of band-reject filters having a rejection band covering the operating frequency range of said microwave device, and each band-reject filter being connected in parallel with respective said at least one of said cells via respective said coupling element; and

a plurality of broad-band microwave loads, located outside said anode, comprising shorted transmission line sections and having a variable characteristic impedance;

each respective said coupling element conveying said undesired modes from respective said at least one of said cells to said each band-reject filter, said each band-reject filter discriminating between desired modes and said undesired modes of said device, said plurality of broad-band microwave loads being electrically associated with said band-reject filters and having a microwave absorbing coating for suppressing the undesired modes on either side of said operating frequency range of said microwave device.

4,289,993

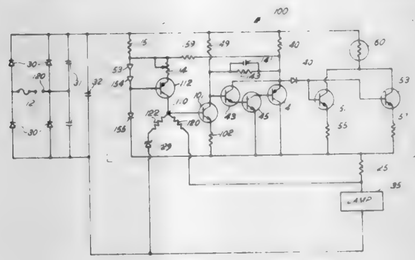
DIRECT CURRENT POWER SOURCE FOR AN ELECTRIC DISCHARGE LAMP

Clarence E. Harper, Yuciapa, Calif., and William J. Elliott, Zephyr Cove, Nev., assignors to Quietlite International, Ltd., Reno, Nev.

Continuation-in-part of Ser. No. 911,984, Jun. 2, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,406

Int. Cl.³ H05B *41/36*

U.S. Cl. 315—311 **6 Claims**



1. In a electrical lighting system of the class comprising a resistive ballast circuit serially connected with an electric discharge lamp across a source of a direct current potential, the improvement comprising, in combination,

means for decreasing the effective resistance of said ballast circuit in response to a decrease in the magnitude of current flowing through said lamp below a variable threshold level, and

means for decreasing the value of said variable threshold level in response to an increase in the magnitude of voltage across said lamp.

4,289,994

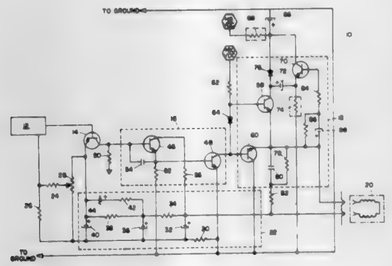
VERTICAL DRIVE CIRCUIT FOR VIDEO DISPLAY

Gregory J. Beaumont, Arlington Heights, and Lloyd E. Matthews, Berwyn, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 20, 1979, Ser. No. 77,432

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—371 **4 Claims**



1. In a video display having a cathode ray tube energized by a first DC voltage source providing a first DC voltage level, with a vertical deflection yoke for sweeping an image across the screen of said cathode ray tube in a vertical direction by applying an input sawtooth current waveform including trace and retrace periods to said vertical deflection yoke, said input sawtooth current waveform including an S-shaped correction factor to compensate for the planar configuration of the face of said cathode ray tube, a DC-coupled vertical deflection drive circuit comprising:

means for generating a substantially linear, input sawtooth-shaped signal;

single signal feedback means responsive to deflection yoke current for removing said S-shaped correction factor from said sawtooth current waveform so as to generate a substantially linear, uncorrected sawtooth current waveform;

signal level comparator means coupled to said input sawtooth-shaped signal generating means and to said signal feedback means for generating a correction signal, the magnitude of said correction signal being determined by the difference between said input sawtooth-shaped signal and said uncorrected, feedback sawtooth current waveform;

amplification means coupled to said first DC voltage source for amplifying said yoke deflection correction signal;

push-pull conducting means coupled to said amplification means for driving said deflection yoke with said yoke deflection correction signal, said push-pull conducting means connected to a second DC voltage source providing a second DC voltage level, said second DC voltage level being greater than said first DC voltage level; and

means for substantially increasing the voltage applied to said push-pull conducting means during electron beam retrace so as to shorten the retrace period.

4,289,995

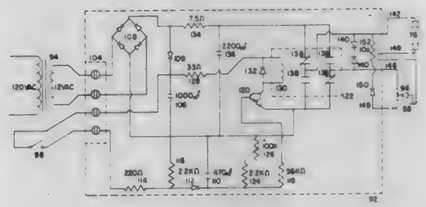
ELECTRIC DOOR OPERATOR WITH SLIP CLUTCH AND DYNAMIC BRAKING

Robert E. Sorber, and James A. Gallion, both of Charlotte, N.C., assignors to Keane Monroe Corporation, Monroe, N.C.

Filed Aug. 1, 1979, Ser. No. 62,765

Int. Cl.³ H02K *7/10*

U.S. Cl. 318—9 **19 Claims**



1. An electrically driven operator for a door comprising a door operating linkage, electrically powered drive means connected to said linkage for applying an operating force to said door therethrough and capable of being continuously stalled while applying said operating force at the operating voltage of said drive means, slip clutch means connecting said drive means and said operating linkage for transmitting said operating force therebetween and having a resistance to slipping greater than the operating force of the drive means when stalled, and means for closing and maintaining the door in closed position against a stationary stop or obstruction by the application of the operating force with the drive means being continuously stalled by the obstruction without slipping of said clutch means.

4,289,996

ACTUATORS

Robin R. Barnes, Twickenham; Ronald F. Delves, Guildford, and James F. Slasor, Ockham, Near Woking, all of England, assignors to Frazer Nash Limited, Surrey, England

Filed Aug. 29, 1978, Ser. No. 937,820

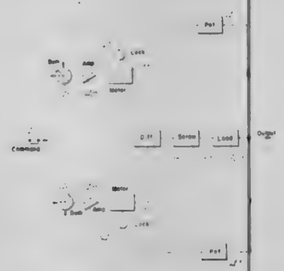
Int. Cl.³ H02P *1/54*

U.S. Cl. 318—38 **9 Claims**

1. A powered linear actuator, comprising

a screw jack having a non-rotary rectilinearly-moving screwed shaft and a rotary non-rectilinearly-moving screwed sleeve surrounding the shaft in screw engagement therewith;

an axially aligned pair of electric motors coaxially surrounding the screwed shaft and sleeve;
differential gearing coupling both said motors in driving relationship with said screwed sleeve, and including a pair of gears each individually driven by a respective one of said motors and a set of planetary pinions mounted on the screwed sleeve and meshing with both said gears, whereby said pair of motors share substantially equally in driving said screw jack;
a pair of motor locks, one for each motor, each automatically engaging to lock the respective motor against rotation in the event of motor circuit failure;



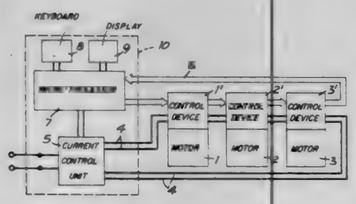
output position feedback potentiometer means operatively coupled to said screwed shaft and generating a feedback signal;
driving circuit means responsive to said feedback signal and an input command signal to derive a drive signal for applicaton to the motors; and
resistor means in series with said potentiometer means the resistance value of which is selectable at will to determine the length of stroke of the shaft of the screw jack.

4,289,997

DRIVE APPARATUS HAVING AT LEAST TWO ELECTRIC MOTORS

Bernhard Jung, Winnweiler, and Michael Teichmann, Obermoschel, both of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,130
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827340
Int. Cl.³ H02P *1/54*
U.S. Cl. 318—113 **10 Claims**



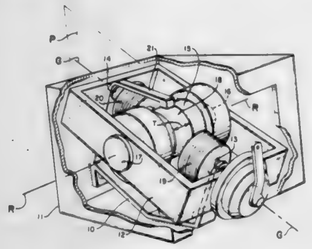
1. Drive apparatus, having a plurality of electric motors and a central control common to the plurality of motors, from which central control each motor can be turned on and off, comprising:
said plurality of motors lies in series in closed-circuit energy supply;
each of said plurality of motors has a control unit which can be turned on from the central control via a control line common to said plurality of motors by an address; and
each of said plurality of control units contains a short-circuit device connected in parallel with its connecting terminals.

4,289,998

SINGLE PHASE DC BRUSHLESS MOTOR

Gerald F. Dulin, Torrance, Calif., assignor to Astronautics Corporation of America, Torrance, Calif.

Filed May 27, 1980, Ser. No. 153,138
Int. Cl.³ H02K *23/00*
U.S. Cl. 318—254 **4 Claims**



1. A single phase DC brushless motor including, in combination:
(a) a permanent magnet rotor made of ceramic material;
(b) stator windings adjacent to the periphery of the rotor, said stator windings being bobbin-wound without laminations and stationarily positioned adjacent to diametrically opposite sides of the rotor;
(c) a sole Hall cell adjacent to the rotor and stationary relative thereto responsive to rotation of the rotor to provide a commutating signal for switching current passed to the stator windings in synchronism with the speed of the rotor whereby slip rings and brushes are eliminated, and
(d) a gimbal mounting the rotor for rotation, the gimbal being mounted for turning movement about a gimbal axis at right angles to the axis of rotation of the rotor, the gimbal axis being coaxial with the stator windings so that magnetic flux interaction between the stator windings and the rotor is invariant with turning of the gimbal, said Hall cell being positioned juxtaposed to a central portion of the rotor, the axial width of the ceramic material making up the permanent magnet being such that the degree of turning of the gimbal is not sufficient to remove the influence of the magnet on the Hall cell, whereby the motor can function as a gyroscope.

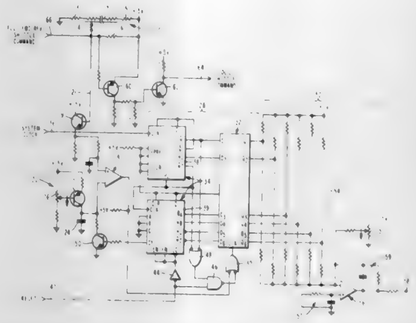
4,289,999

DIGITAL VARIABLE VOLTAGE LEVEL CONTROL CIRCUIT WITH AUTOMATIC RETURN TO NEUTRAL

Robert P. Harshberger, Jr., San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 14, 1979, Ser. No. 38,951
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—341 **8 Claims**

1. A control circuit for generating a readily varied analog output voltage signal for controlling the speed of a tape transport in a selected mode of operation, and including an operator generated control command commensurate with the desired speed from zero to maximum, comprising the combination of;
means including a touch control means for generating selected digital values which are representative of the operator generated control command;
said generating means including counter means for counting through a selected number of digital values within a preselected range of digital values in response to a fixed frequency clock; and comparator means coupled to the touch control means for selecting the selected digital value within the preselected range of values in response to the operator control command;
means coupled to the counter means for digitally holding and continuously supplying a selected digital value for an extended time period in response to the comparator means; and



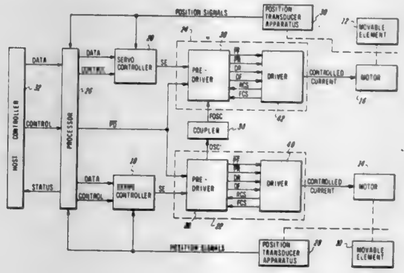
means for reconverting each continuously supplied digital value to define the desired analog output voltage signal representative of the operator generated control command.

4,290,000

POWER AMPLIFIER WITH CURRENT LIMITER CIRCUIT

Kai C. K. Sun, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1979, Ser. No. 63,638
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—566 **1 Claim**



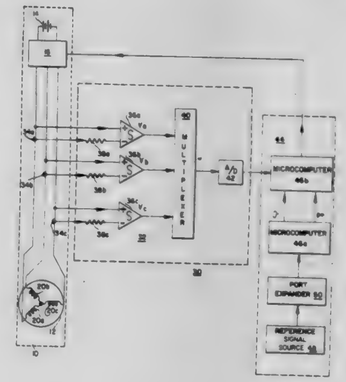
1. A power amplifier for controlling the current flow through a load, comprising:
a plurality of switching elements connected in bridge fashion with said load and a predetermined power source for coupling the load across alternate output terminals of said power source in accordance with the levels of a pluraltiy of control signals respectively applied to said plurality of switching elements;
generating means responsive to an error signal for generating said control signals;
coupling means capable when enabled of coupling each of said control signals from said generating means to the respective switching element for controlling same;
sensing means coupled to said load for generating an actual current signal indicative of the actual level of current flow through said load;
current limiter means coupled to said sensing means and including a first comparator having a first input for receiving a first reference signal indicative of an upper level limit of current flow through said load, a second input for receiving said actual current signal, and an output for developing an upper limit disable signal when said actual current signal exceeds said first reference signal; a second comparator having a first input for receiving said actual current signal, a second input for receiving a second reference signal indicative of a lower level limit of current flow through said load, and an ouput for developing a lower limit disable signal when said second reference signal exceeds said actual current signal; and a gate coupled to the outputs of said first and second comparators for developing said current disable signal when either or both of said upper and lower limit disable signals are true; and
disable means coupled to said current limiter means and responsive to said current disable signal for virtually instantaneously disabling said coupling means whereby further current flow through said load is virtually instantaneously inhibited.

4,290,001

CLOSED LOOP, MICROCOMPUTER CONTROLLED PULSE WIDTH MODULATED INVERTER-INDUCTION MACHINE DRIVE SYSTEM

Paul M. Espelage, Salem, Va., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,126
Int. Cl.³ H02P *5/34, 7/42*
U.S. Cl. 318—811 **7 Claims**



1. For use with an inverter-induction machine drive system comprised of an n-phase induction machine (where n is an integer greater than zero) and an inverter which includes n pairs of solid state switching devices, each pair of said solid state switching devices coupled in series-aiding fashion across a source of potential and adapted for coupling at the junction between switching devices to a respective one of said n induction machine phases, improved apparatus for controlling torque and speed of said induction machine by controlling amplitude and frequency of inverter output voltage in accordance with an externally-varied amplitude value and frequency value, respectively, comprising:
(a) sensor circuit means for generating, from inverter output current and output voltage, an n phase output signal which varies in accordance with the actual magnitude of machine flux; and
(b) means coupled to said sensor circuit and to said inverter for generating an n-phase reference signal, the amplitude and frequency of which varies in accordance with the magnitude of said externally varied amplitude value and said frequency value, respectively, and for supplying an n-phase control signal to said inverter to vary the conduction of each of said inverter solid state switching devices of each of said pairs of inverter solid state switching de-

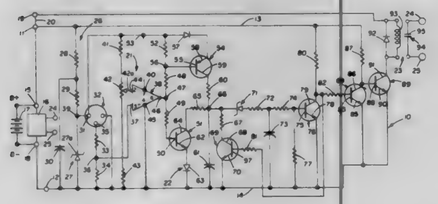
vice, said n-phase control signal varying in accordance with a prescribed relationship between the deviation in magnitude of said sensor circuit output signal from said reference signal and the deviation in magnitude of said sensor circuit output signal from a preset limit, said preset limit representing a predetermined maximum inverter current.

4,290,002

METHOD AND APPARATUS FOR CONTROLLING BATTERY RECHARGING

Peter B. Piotti, Westchester, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 4, 1979, Ser. No. 45,444
Int. Cl.³ H02J 7/04
U.S. Cl. 320—20 **22 Claims**



1. A method of controlling the charging of a rechargeable battery (17) during the charging thereof by a ferroresonant charging apparatus (16) and the like which provides cyclical periods of substantially zero current flow to the battery during the charging operation, said method comprising the steps of:

digitizing information representative of a portion of the charging voltage waveform (W) during said period of zero current flow; and

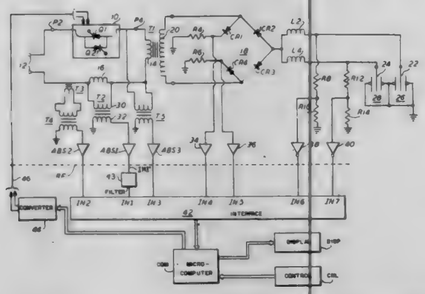
determining the duty cycle content of the digitized information as an indication of the state of charge of the battery.

4,290,003

HIGH VOLTAGE CONTROL OF AN ELECTROSTATIC PRECIPITATOR SYSTEM

Philip M. Lanese, Belle Mead, N.J., assignor to Belco Pollution Control Corporation, Parsippany, N.J.

Filed Apr. 26, 1979, Ser. No. 33,604
Int. Cl.³ B03C 3/68
U.S. Cl. 323—241 **36 Claims**



1. In an electrostatic precipitator system including a voltage controller for producing from a primary alternating power source a variable output which varies in response to a control signal, a high voltage means comprising:

a high voltage converter means driven by said voltage controller for producing therefrom a variable high voltage; and

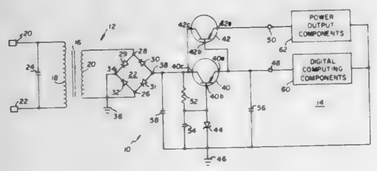
command means for producing and varying said control signal, said command means being operative to repress the drive to said converter means by a given amount in response to its loading exceeding a predetermined limit during a corresponding limit interval, said given amount being sized to interrupt the production of power by said converter means, said command means being operative after said limit interval to restore productive drive to said converter means by the next half cycle of said power source that has a polarity opposite to that existing at the beginning of said limit interval so that the system is re-stabilized quickly.

4,290,004

VOLTAGE REGULATOR CIRCUIT

Robert L. Smith, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Feb. 4, 1980, Ser. No. 118,558
Int. Cl.³ G05F 3/08
U.S. Cl. 323—311 **7 Claims**



1. In an electronic system of the type including a power supply means, first component means powered by said power supply means, which first component means by their nature transmit interference signals to said power supply means, second component means powered by said power supply means, said second component means being adversely sensitive to said interference signals, wherein the improvement includes a voltage regulator circuit comprising:

a first bipolar semiconductor device having a control terminal, a first main terminal representing a first output terminal for supplying power to said second component means and a second main terminal coupled to said power supply means;

a voltage regulating device connected in series with said control terminal of first said semiconductor device and representing a common input-output terminal between said power supply means and said first and second component means; and

a second bipolar semiconductor device having a control terminal connected to said first main terminal of said first semiconductor device, a first main terminal representing a second output terminal with respect to said common input-output terminal for supplying power to first said component means and a second main terminal coupled to said power supply means,

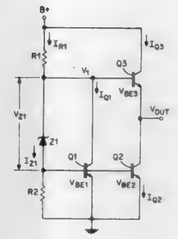
wherein voltage regulation is provided at said first output terminal by a constant voltage drop across said voltage regulating device in combination with a constant voltage drop between said control terminal and said first main terminal of said first semiconductor device, further wherein voltage regulation is provided at said second output terminal by the regulation provided at said first output terminal in combination with a constant voltage drop between said control terminal and said first main terminal of said second semiconductor device, and further wherein said interference signals of said first component means are isolated from reaching said second component means.

4,290,005

COMPENSATED REFERENCE VOLTAGE SOURCE

Rangaswamy Arumugham, Acton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 7, 1980, Ser. No. 166,526
Int. Cl.³ G05F 3/20
U.S. Cl. 323—313 **13 Claims**



1. A compensated reference voltage source comprising in combination

a first resistance means, a constant voltage means, and a second resistance means connected in series between a source of voltage and a point of fixed potential;

a first transistor having its collector electrode connected to the juncture of the first resistance means and the constant voltage means, its base electrode connected to the juncture of the constant voltage means and the second resistance means, and its emitter electrode connected to the point of fixed potential whereby changes in the voltage of the source of voltage change the current through the first transistor and consequently the base-to-emitter voltage and the collector electrode voltage of the first transistor;

a second transistor having its base electrode connected to the base electrode of the first transistor, its emitter electrode connected to the emitter electrode of the first transistor whereby the base-to-emitter voltage of the second transistor is equal to the base-to-emitter voltage of the first transistor, and having its collector electrode connected to an output terminal; and

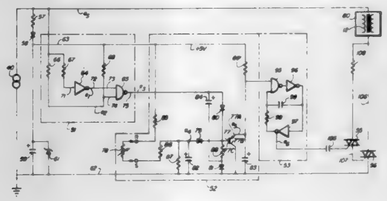
a third transistor having its collector electrode connected to the source of voltage, its emitter electrode connected to the output terminal, and its base electrode connected to the collector electrode of the first transistor whereby the voltage at the output terminal is related to the voltage at the collector electrode of the first transistor and the base-to-emitter voltage of the third transistor.

4,290,006

PROPORTIONAL A-C POWER CONTROL

Joseph T. Wallace, 4401 S. Juniper, Tempe, Ariz. 85282

Filed Oct. 1, 1979, Ser. No. 80,582
Int. Cl.³ G05F 1/455
U.S. Cl. 323—326 **8 Claims**



1. A control circuit connected to an alternating current source for providing smooth and continuous current regulation to connected loads comprising:

a crossover detector for detecting the change in polarity of the alternating current source and generating a signal in response thereto,

a timing circuit connected to said crossover detector for receiving said signal,

said timing circuit being energized by said source for establishing an adjustable direct current reference potential and comprising a pair of capacitive means,

one of said capacitive means functioning as a timing device and being charged by said source under the control of said signal,

control means for receiving said signal and effecting the charging or discharging of said timing device depending on the value of said signal,

the other of said capacitive means being charged by said adjustable reference potential and connected to said control means for preventing said timing device from discharging below a value related to said reference potential,

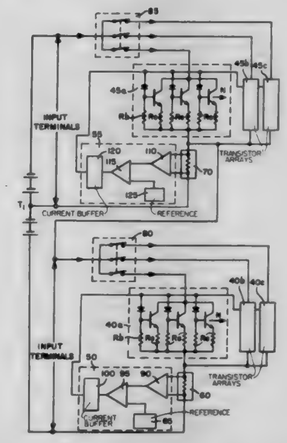
whereby when said signal is relatively high said one of said capacitive means charges and when said signal drops to substantially zero it begins to discharge to a predetermined voltage value depending on the set value of said reference potential, said timing circuit generating an output signal relatively early in each half cycle of said source when said reference potential is high and generating an output signal relatively late in each half cycle when said reference potential is low.

4,290,007

HIGH POWER AND HIGH VOLTAGE TRANSISTOR CONTROL CIRCUIT

Bernard Fisher, Dayton, and Robert C. Storar, Xenia, both of Ohio, assignors to United Systems Corporation, Dayton, Ohio

Filed Dec. 3, 1979, Ser. No. 99,378
Int. Cl.³ G05F 1/44
U.S. Cl. 323—270 **4 Claims**



1. A circuit for controlling current through a high voltage source including

a plurality of series connected transistor arrays,

means for sensing the current flow through each of said transistor arrays,

means associated with each transistor array and responsive to the current flow therethrough for applying control current to the base electrodes of the transistors within said arrays,

and means for providing a connection between the transistor arrays and a tap on the high voltage source such that the

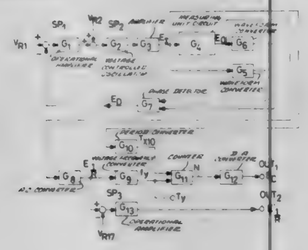
voltage applied to each array is less than the critical voltage of the transistors within the array at the maximum current flow therethrough.

4,290,008

METHOD AND APPARATUS FOR DISCRIMINATIVELY DETERMINING ELECTRICAL CONSTANTS

Yoshikazu Hoshino, Kusatsu, and Masayoshi Shuto, Suita, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 22,835
Claims priority, application Japan, Apr. 5, 1978, 53/40733
Int. Cl.³ G01R *27/26, 27/02*
U.S. Cl. 324—57 R **20 Claims**



1. A method for discriminatively determining electrical characteristics of an object, said characteristics including a resistive part, a capacitive part, and an inductive part, and said object being within a detection cell of a measuring unit circuit, comprising the steps of:

maintaining a constant phase difference between the phase of an input signal to said measuring unit circuit and the phase of an output signal of said measuring unit circuit corresponding to the phase angle in a frequency transfer function of said measuring unit circuit;

determining a value corresponding to said resistive part in accordance with an amplitude quantity corresponding to the amplitude of the output of said measuring unit circuit, said amplitude quantity being proportional to the resistance of said object;

determining a value independent of said resistive part corresponding to one of other possible characteristics of said measuring unit circuit, said other possible characteristics being said capacitive part and said inductive part, in accordance with said amplitude quantity and a frequency quantity corresponding to the frequency of any one of the input and output signals of said measuring unit circuit, the respective frequencies of the input signal to said measuring unit circuit and the output signal of said measuring unit circuit being equal.

4,290,009

STANDING WAVE RATIO DETECTING APPARATUS

Konomu Sanpei, and Tadaaki Fujii, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

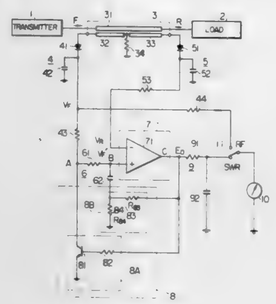
Filed May 11, 1979, Ser. No. 38,277
Claims priority, application Japan, May 12, 1978, 53/55559
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—57 R **5 Claims**

1. A standing wave ratio detecting apparatus provided with detector means for obtaining a traveling wave detection voltage V_F and a reflected wave detection voltage V_R and with a standing wave ratio indication meter, comprising:

an integration circuit connected to said detector means for integrating said traveling wave detection voltage V_F to deliver an integrated voltage V'_F;

a comparator circuit connected to said integration circuit and said detector means for comparing said integrated voltage V'_F from said integration circuit and said reflected wave detection voltage V_R from said detector means;

control means connected to said comparator circuit and said integration circuit for causing said integrated voltage V'_F from said integration circuit to be approximately equal to said reflected wave detection voltage V_R in response to the output voltage E_o of said comparator circuit, the output voltage of said comparator circuit having a duty ratio related to the ratio between the traveling wave detection voltage V_F and the reflected wave detection voltage V_R; and



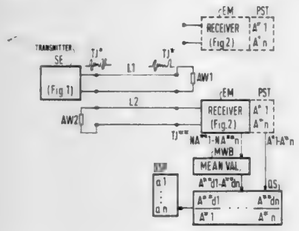
a smoothing circuit connected to said comparator circuit and said standing wave ratio indication meter for deriving from said output voltage E_o of said comparator circuit an average voltage corresponding to the ratio V_R/V_F of said reflected wave detection voltage V_R to said traveling wave detection voltage V_F to supply said average voltage to said standing wave ratio indication meter.

4,290,010

METHOD AND APPARATUS FOR MEASURING TRANSMISSION CHARACTERISTIC OF A TEST OBJECT

Gerhard Blaess, Olching, and Karl Bauernfeind, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 96,792
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852747
Int. Cl.³ G01R *27/00*
U.S. Cl. 324—57 SS **19 Claims**



13. A method of measuring the transmission characteristics of a test object by applying a test pulse to an input of said test object, and by evaluating, by Fourier analysis, the deformation of said test pulse as it is produced at the output of said object under test, said test pulse being formed of plural components having different frequencies and predetermined amplitudes and initial phase angles, and formed according to the equation:

$$V_{(t)} = \sum_{i}^{n} A_n \cos(2 \cdot \pi \cdot n \cdot f \cdot t - \phi_n)$$

wherein A_n is the amplitude and ϕ_n is the initial phase angle of a component having a frequency n·f, including the step of:

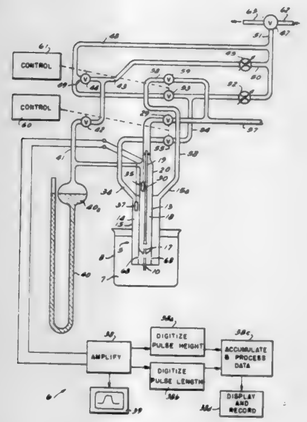
improving the signal-to-noise ratio of the measured values by reducing the relative width of the pass bands of said evaluation.

4,290,011

PARTICLE LENGTH AND VOLUME COMEASUREMENT WITH CONTROLLED ORIENTATION

Robert H. Berg, Elmhurst, and Richard F. Karuhn, Downers Grove, both of Ill., assignors to Particle Data, Inc., Elmhurst, Ill.

Filed May 18, 1978, Ser. No. 907,010
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71 CP **20 Claims**



1. A method of controlling the presentation and traverse of elongated particles in fluid suspension to and through a sensing zone of greater length than the longest particle to be analyzed, to facilitate particle shape or size determination in a particle analysis system of a type responsive to electrical signals generated by particles passing through said sensing zone during an analytical time span, comprising:

effecting in a fluid-filled circuit all of the following steps in a manner effectively free from turbulence, continuously and sequentially in isokinetic laminar flow;

(a) transporting the particles through a first elongate passage of sufficient length to cause stable longitudinal orientation of the particles in a filamentary stream in said passage;

(b) transferring said filamentary stream of longitudinally oriented particles as a core stream enveloped in a particle-free cotraveling fluid sheath from the downstream end of said first passage and smoothly, and without disturbing the stable longitudinal orientation of the elongated particles, receiving said stream through the entrance end of a coaxially aligned sensing zone passage;

(c) advancing said fluid sheathed core stream through said sensing zone passage and maintaining the particles in said stable longitudinal orientation for particle shape or size determination as the particles generate signals while traversing the length of said sensing zone;

(d) discharging said fluid sheathed core stream of now waste particles from an exit end of said sensing zone passage into a continuation of said fluid filled circuit;

(e) controlling the flow of the stream of waste particles in movement away from the said exit end and thus avoiding straying, hangup or recycling of waste particles relative to said exit end;

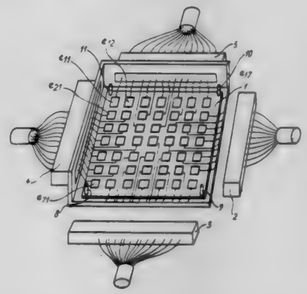
(f) and applying a constant differential pressure throughout said fluid filled circuit in effecting all of the foregoing steps during said analytical time span.

4,290,012

DEVICE FOR QUANTITATIVE DISPLAY OF THE CURRENT DENSITY WITHIN A CHARGED-PARTICLE BEAM

Marc Berte, and Pierre Legrand, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 5, 1979, Ser. No. 90,920
Claims priority, application France, Nov. 7, 1978, 78 31437
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71 EB **4 Claims**



1. A device for displaying the distribution of current density within a beam of electrically charged particles, said device comprising a support plate of electrically insulating material having a surface area at least equal to the cross-sectional area of the beam, $m \times n = q$ electrically conducting elements fixed on the support plate being so arranged as to form a lattice of elements which consist of m lines and n columns and are intended to intercept the charged particles of the beam to a partial extent, said elements being electrically connected to systems which serve to process electrical signals collected by said elements and to display the density of the beam at $m \times n$ points of its cross-section, said device having a screen plate provided with $m \times n$ holes, said screen plate being placed above said support plate, each of said $m \times n$ holes being placed directly above one of said elements, said screen plate being of electrically insulating material.

4,290,013

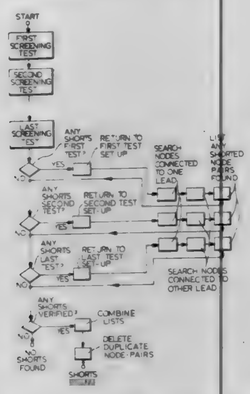
METHOD OF AND APPARATUS FOR ELECTRICAL SHORT TESTING AND THE LIKE

David W. Thiel, Acton, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed Jun. 22, 1979, Ser. No. 50,993
Int. Cl.³ G01R *15/12*
U.S. Cl. 324—73 PC **20 Claims**

1. Apparatus for detecting shorts and the like between the nodes of a system under test, the system having a plurality of such nodes, and for identifying shorted nodes, comprising short detection means provided with a pair of leads across which a short is to be detected; a pair of switch-connecting means, one associated with each of the leads and adapted, respectively, to connect a group of nodes together and to connect an associated lead to said group of said nodes; and means for operating the pair of switch-connecting means to connect one lead to a first group of nodes, the first group having up to and including half of said nodes while simultaneously connecting the other lead to a second group of nodes, the second group including the remaining nodes; said operating means including means for successively varying the population of nodes in each group to connect different populations of said nodes to the leads in accordance with a predetermined pattern to enable successive screening tests for detecting shorts

between said different populations, said predetermined pattern varying the population of the group of nodes connected to each lead such that each node is tested against every other node at least once in substantially fewer tests than are required



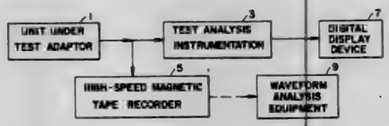
to test each node individually against every other node, and means operable in the event that a short is detected for successively reducing the number of nodes connected to each lead until each lead is connected to only one shorted node, to search for and identify a shorted node pair.

4,290,014

ANALOG/DIGITAL SYSTEM FOR EVALUATING BATTERY CHARACTERISTICS

Richard E. Tremaine, Clayton, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1978, Ser. No. 939,000
Int. Cl.³ G01R *13/02, 13/04, 23/16, 31/36*
U.S. Cl. 324—77 A **6 Claims**



1. An analog/digital system for detection, measurement and evaluation of the characteristics of the output signal and the sporadically occurring noise signal of each cell of an energized electrical power source having at least one cell comprising:

(a) means for holding said electrical power source, said holding means having the capability to duplicate the conditions under which said electrical power source is to be energized;

(b) means for energizing said electrical power source, said energizing means cooperatively connected to said holding means and selectively activated when said conditions under which said electrical power source is to be used are achieved, each of said cells of said electrical power source outputting both a DC voltage and a superimposed AC noise voltage when energized;

(c) means for separately determining said DC voltage and the maximum level of said AC noise voltage output by each of said cells over discrete selectively variable time intervals, said determining means receiving as inputs said DC voltage and superimposed AC noise voltage outputs of each of said cells and transmitting as digital outputs the test characteristics of interest of said DC voltage and said maximum level of said AC noise voltage for each of said time intervals from each of said cells selectively;

(d) means for displaying hard copy real-time digital values of said test characteristics of interest occurring in said output signal of each of said cells for each of said time intervals, said displaying means receiving as inputs said digital outputs transmitted from said determining means and providing the capability for selective recall at a later time said digital values of said test characteristics of interest;

(e) means for storing for long terms said DC and said AC noise voltage output of each of said cells, said storing means having plural inputs and outputs and receiving as inputs said DC and said AC noise voltage output of each of said cells, said storing means having capability for providing as outputs reproductions of selected portions of said DC and said AC noise voltages for any of said discrete time intervals for which said real-time digital values of said test characteristics of interest have been measured; and

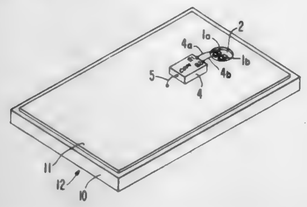
(f) means for performing waveform analysis on said selected portions of said reproductions of said output signals of said cells corresponding to said output signals of said cells occurring in real time, said waveform analysis being selectively performed only on said reproductions corresponding to certain of said discrete time intervals for which said test characteristics of interest indicate the existence of said sporadically occurring noise signals, said existence indicated by display of a high maximum level of said AC noise voltage for said discrete time interval during which said noise signal occurred, said waveform analysis of all said AC noise signals occurring in said output signals of said cells being said evaluation of said characteristics of said noise signal.

4,290,015

ELECTRICAL VALIDATOR FOR A PRINTED CIRCUIT BOARD TEST FIXTURE AND A METHOD OF VALIDATION THEREOF

Donald J. Labriola, Troy, N.Y., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Oct. 18, 1979, Ser. No. 86,220
Int. Cl.³ G01R *31/00, 31/02*
U.S. Cl. 324—158 R **9 Claims**



1. A structure for validating the performance of a test fixture for a test system for printed circuit boards, the structure comprising:

a board having (1) an electrically conductive sheet on a first region of a surface of the board and (2) a plurality of electrically conductive pads on a second region of the surface, the pads electrically isolated from each other and from the sheet, the board having no transistors formed on it; and

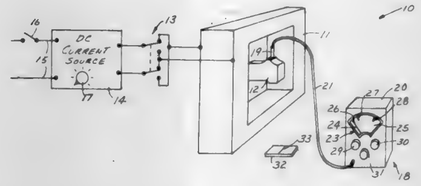
a test module having (1) a like plurality of first output leads corresponding on a one-to-one basis to the pads, each first lead attached to the corresponding pad, (2) a second output lead attached to the sheet, and (3) a like plurality of impedance elements corresponding on a one-to-one basis to the first leads, each impedance element connected between the second lead and the corresponding first lead.

4,290,016

METHOD AND APPARATUS FOR ESTABLISHING MAGNETIZATION LEVELS FOR MAGNETIC PARTICLE TESTING OR THE LIKE

Donald E. Lorenzi, Des Plaines, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Dec. 28, 1978, Ser. No. 974,009
Int. Cl.³ G01N *27/84;* **G01R** *33/12;* **G01N** *27/72;* **G01R** *35/00*
U.S. Cl. 324—216 **5 Claims**



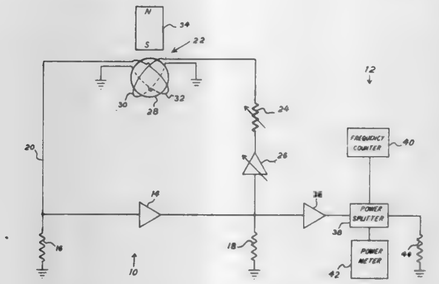
1. In a method of testing parts of various types of ferromagnetic material through detection of leakage fields at the surfaces of the parts for indication of defects therein, the steps of providing an eddy current testing instrument including probe means and including indicating means so calibrated as to produce a certain target indication under a reproducible standard condition, preparing at least a representative part of each type tested by establishing a demagnetized condition thereof and by establishing base metal characteristics at at least one surface portion thereof, placing said probe means against the said surface portion of each prepared part, adjustably applying a uni-directional magnetic field to each prepared part to establish a certain field level at which said target indication is produced, and testing all parts of the same type by applying a magnetic field at said certain field level while detecting leakage fields at surface portions thereof, said target indication and said reproducible standard indication being such that a magnetic field at said certain field level produces uniformly detectable leakage fields from shallow seams in any part of ferromagnetic material tested regardless of the type of ferromagnetic material of the part.

4,290,017

APPARATUS AND METHOD FOR NONDESTRUCTIVE EVALUATION OF SURFACE FLAWS IN CONDUCTIVE MATERIALS

Christopher M. Fortunko, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1978, Ser. No. 973,295
Int. Cl.³ G01N *27/82;* **G01R** *33/12;* **G01N** *22/02*
U.S. Cl. 324—237 **17 Claims**



1. An apparatus for detecting a surface anomaly in an electrically conductive sample, comprising:

a two port ferromagnetic crystal probe, including an input port and an output port; and

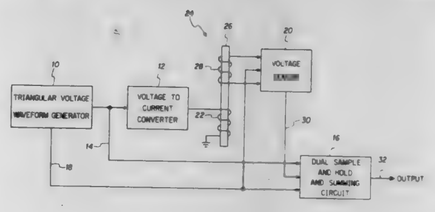
an oscillating circuit, including a feedback loop, said ferromagnetic probe being coupled to said loop in a transmission mode through said input and output ports, whereby the precession resonance of the crystal thereby controls the frequency and level of oscillation of said oscillation circuit and eddy currents induced in the surface of the sample by the probe modulate the level and frequency of oscillation in response to a surface anomaly.

4,290,018

MAGNETIC FIELD STRENGTH MEASURING APPARATUS WITH TRIANGULAR WAVEFORM DRIVE MEANS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 22, 1979, Ser. No. 68,831
Int. Cl.³ G01R *33/04*
U.S. Cl. 324—255 **4 Claims**



1. Apparatus for measuring magnetic field comprising in combination:

magnetic rod sensing means having a large length-to-diameter ratio and including drive and output windings;

triangular waveform drive means, including logic output means, connected to said drive winding for cyclically altering the magnetic field in a linear manner as a function of time between first and second magnetic field values, said logic output means providing output signals indicative of times at which the magnetic field reaches said first and second values; and

sample and hold means, connected to said output winding and to said logic output means, for outputting a signal indicative of sensed magnetic field as obtained by taking the average voltage appearing on said drive winding at times determined by signals received from said logic output means.

4,290,019

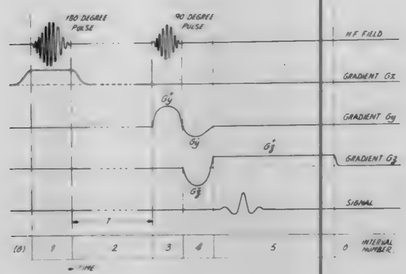
METHODS OF DERIVING IMAGE INFORMATION FROM OBJECTS

James M. S. Hutchison; John R. Mallard, and Robert J. Sutherland, all of Aberdeen, Scotland, assignors to National Research Development Corporation, London, England

Filed Feb. 9, 1979, Ser. No. 10,913
Claims priority, application United Kingdom, May 31, 1978, 25899/78
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—311 **9 Claims**

1. A method of deriving image information from an object using nuclear magnetic resonance signals comprising the steps of subjecting an object to a static magnetic field along one axis, applying a first gradient to said magnetic field which varies in a direction orthogonal to said axis together with a 90° high frequency pulse, reversing the direction of said magnetic field

gradient and applying a second gradient to said magnetic field which varies in a direction orthogonal to said first gradient and



then reversing the direction of said second gradient while reading out the free induction signal from said object.

4,290,020

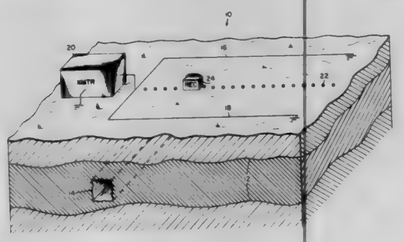
METHOD AND APPARATUS FOR DETECTING SUBTERRANEAN ANOMALIES BY GENERATING TWO PARALLEL MAGNETIC FIELDS

Peder M. Hansen; John G. Hoffman; Elwin W. Seeley, and Wesley A. Andrew, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 20, 1979, Ser. No. 31,721

Int. Cl.³ G01V *3/08*

U.S. Cl. 324—334 **2 Claims**



2. In an apparatus for detecting subterranean anomalies wherein two parallel magnetic fields are generated and the strength of the field resulting from their intersection along a centerline midway between the fields is measured, the improvement comprising:

a source of alternating current having one grounded terminal and another, nongrounded terminal; and

a pair of substantially parallel conductors placed on the earth in the vicinity of a suspected anomaly, each conductor being connected at one end to the nongrounded terminal of the current source and at the other end in its characteristic impedance;

whereby, uniform in-phase currents flow in the conductors generating a magnetic field around each conductor.

4,290,021

BATTERY TESTING METHOD AND DEVICE

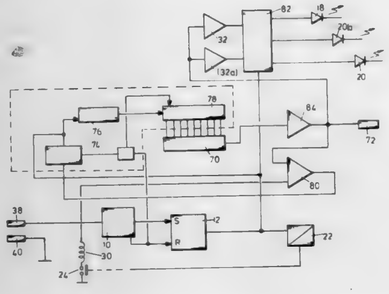
Jacob J. Theron, 57 Charlie Ave., Fontainebleau, Randburg, Transvaal; Bernardus J. Bout, Plot No. 47, Blignautsrus, Walkerville, Transvaal; Jacobus P. Van Wyk, 25 Second Ave., Florida, Transvaal, and Michael D. De Lange, 12 Godalming Ave., Mulbarton, Johannesburg, Transvaal, all of South Africa

Filed May 1, 1979, Ser. No. 35,274

Claims priority, application South Africa, May 1, 1978, 78/2491

Int. Cl.³ G01N *27/46*

U.S. Cl. 324—429 **8 Claims**



4. Apparatus for testing the condition of a battery, comprising:

a first level detector for sensing battery voltage;

a timer;

a non-resistive constant current load;

a tapped constant voltage source;

a second level detector for sensing battery voltage;

voltage comparator means; and

circuitry means for: interconnecting a battery to said first level detector; interconnecting said first level detector to said timer so that said timer will be actuated if the battery voltage sensed by said first level detector is greater than a predetermined minimum; interconnecting said timer and the battery with said constant current load so that said load will draw constant current from the battery for a predetermined period of time determined by the timer; interconnecting said second voltage detector with the battery so that said constant current load; and interconnecting said tapped constant voltage source and said second voltage detector with said comparator means to determine whether or not the sensed voltage is greater than a predetermined amount set by said tapped constant voltage means.

4,290,022

DIGITALLY PROGRAMMABLE PHASE SHIFTER

Charles M. Puckette, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,013

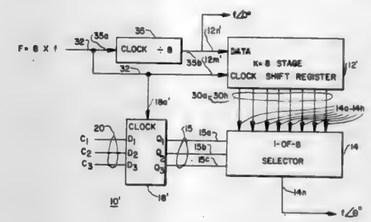
Int. Cl.³ H03K *5/15, 3/86*

U.S. Cl. 328—55 **10 Claims**

1. Apparatus for providing an output signal having a phase shifted with respect to the phase of an input signal, comprising:

first means receiving said input signal, having the desired output frequency, for simultaneously providing the input signal at a reference phase and a plurality K of signals each having the same waveshape as the input signal and at the input frequency and with each signal having a different one of K phases of $2\pi N/K$ radians, with respect to the input signal phase, where N is an integer between one and K; and

second means for synchronously selecting one of the K signals from said first means to provide the phase shifted



output signal with a selected phase and with all phase shift changes occurring at transitions of the input signal.

4,290,023

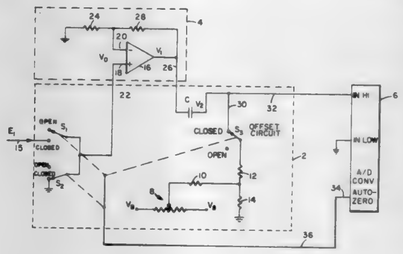
VOLTAGE OFFSET CIRCUIT FOR AUTO-ZERO LOW VOLTAGE AMPLIFIER

George Greenfield, W. Orange, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Sep. 10, 1979, Ser. No. 74,006

Int. Cl.³ H03F *1/02*

U.S. Cl. 330—9 **8 Claims**



1. A voltage offset circuit for use with an amplifier having an input and an output, said input connected to receive input signals, said offset circuit comprising:

(a) sensing and storing circuit means for correcting internal offset voltages generated by said amplifier, said circuit means including:

(i) capacitor means connected on one side thereof to said amplifier output, and

(ii) switch means operable in a first position for connecting another side of said capacitor means to ground, and for connecting said amplifier input to ground thereby forming a sensing and storing path between said amplifier input and output, and operable in a second position to disconnect said path and connect said amplifier input to receive said input signals,

(b) voltage generating means connected between said another side of said capacitor means and ground for providing an additional offset voltage in said sensing and storing path, and

(c) means for adjusting said additional offset voltage.

4,290,024

VOLTAGE-TO-CURRENT CONVERTER CIRCUIT

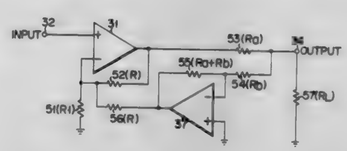
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 2, 1980, Ser. No. 136,448

Claims priority, application Japan, Apr. 13, 1979, 54-44961

Int. Cl.³ H03F *1/26*

U.S. Cl. 330—85 **7 Claims**



1. A voltage-to-current converter circuit for proportionally converting an A.C. input voltage into an A.C. output current, and having a high input impedance, comprising:

a first amplifier having a noninverting input connected to receive an A.C. input voltage signal, an inverting input and an output;

a first impedance element connected between said inverting input of said first amplifier and circuit ground;

a second impedance element connected between said output and said inverting input of said first amplifier;

an output terminal for supplying an A.C. output current to a load which is connected between said output terminal and circuit ground;

a third impedance element connected between said output of said first amplifier and said output terminal;

a second amplifier having a noninverting input connected to circuit ground, an inverting input and an output;

a fourth impedance element connected between said inverting input of said second amplifier and said output terminal;

a fifth impedance element connected between said inverting input and said output of said second amplifier; and

a sixth impedance element connected between said output of said second amplifier and said inverting input of said first amplifier;

whereby an A.C. output current proportional to and in phase with said A.C. input voltage is supplied to a load which is connected between said output terminal and circuit ground.

4,290,025

AMPLIFIER ARRANGEMENT WITH VARIABLE GAIN FACTOR

Rudy J. van de Plassche, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,547

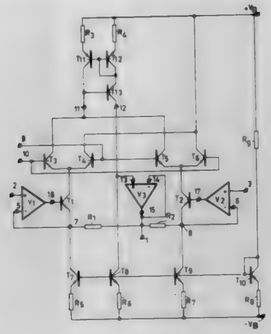
Claims priority, application Netherlands, Mar. 20, 1978, 7802973

Int. Cl.³ H03F *3/45;* H03G *3/30*

U.S. Cl. 330—254 **17 Claims**

17. A variable gain amplifier comprising, first, second, third and fourth transistors each having first and second electrodes defining a current path in the transistor and a control electrode, means interconnecting the first electrodes of the first and second transistors, means interconnecting the first electrodes of the third and fourth transistors, means interconnecting the control electrodes of the first and fourth transistors and the control electrodes of the second and third transistors to form first and second input terminals, respectively, for receiving a variable control voltage, an output terminal of the amplifier coupled to the interconnected second electrodes of the first and third transistors, means for applying quiescent currents to the interconnected first electrodes of the first and second transistors and to the interconnected first electrodes of the third and fourth transistors, and means for applying a signal current to the interconnected first electrodes of the first and second

transistors comprising first and second voltage-current converters each having a first input coupled to the output terminal



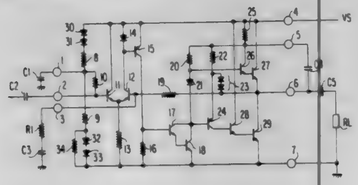
to provide a negative feedback and one converter having a separate signal voltage input terminal that is indepedent of said output terminal.

4,290,026

POWER AMPLIFIER WHOSE BIAS VOLTAGE CHANGES DEPENDING ON POWER SUPPLY VOLTAGE

Masashi Shoji, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,315
Claims priority, application Japan, Jul. 25, 1978, 53/91093
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—255 **12 Claims**



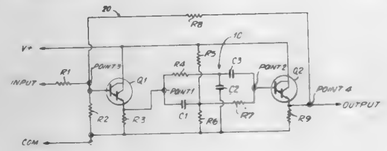
1. A power amplifier comprising a differential amplifier having a first input terminal receiving an input signal and a second input terminal, a bias circuit connected between first and second power supply terminals and having a bias terminal coupled to said first input terminal, a drive stage receiving the output from said differential amplifier, a single-ended push-pull output stage driven by said drive stage, an output terminal coupled to said single-ended push-pull output stage, a feedback circuit coupled between said output terminal and said second input terminal, said single-ended push-pull output stage having a first compound transistor coupled between said first power supply terminal and said output terminal and a second compound transistor coupled between said output terminal and said second power supply terminal, said first compound transistor being activated by a voltage applied between said first power supply terminal and said output terminal, said second compound transistor being activated by a second voltage applied between said output terminal and said second power supply terminal, said first voltage being larger than said second voltage, said bias circuit including a first series connection of a first constant voltage generating means and a first resistor inserted between said first power supply terminal and said bias terminal and a second series connection of a second constant voltage generating means and a second resistor inserted between a said bias terminal and said second power supply terminal, and a third resistor connected in parallel to said second constant voltage generating means.

4,290,027

FAIL-SAFE ACTIVE BANDPASS FILTER USING A MODIFIED TWIN-T FILTER

John W. Parker, Rochester, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 26, 1979, Ser. No. 97,573
Int. Cl.³ H03H *11/12, 7/065*
U.S. Cl. 330—293 **9 Claims**



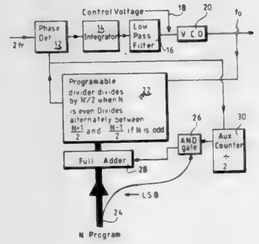
1. A fail-safe active bandpass filter circuit comprising:
a first section including a twin-T filter network, which has a plurality of resistors and capacitors, connected between a first point and a second point, the voltage gain of said network being greater than one;
a power source connected to said twin-T network;
a second section including a first resistor connected between a common or reference point and the input of said twin-T network;
a second, feedback resistor connected from the output to the input of said twin-T network such that the loop gain is less than one.

4,290,028

HIGH SPEED PHASE LOCKED LOOP FREQUENCY SYNTHESIZER

Jesse S. LeGrand, Clifton, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,723
Int. Cl.³ H03L *7/18*
U.S. Cl. 331—1 A **19 Claims**



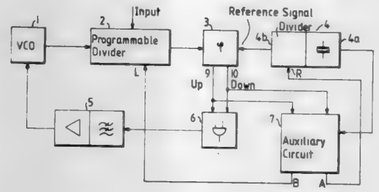
1. A phase locked loop type frequency synthesizer comprising:
a reference signal source;
a division factor program source providing a predetermined selected digital number N represented by a plurality of digital bits;
a voltage controlled oscillator (VCO) having an input and an output to provide an output signal for said synthesizer;
a phase detector having a first input coupled to said reference signal source, an output coupled to said input of said VCO and a second input;
a programmable divider having a first input coupled to said program source, a second input coupled to said output of said VCO and an output coupled to said second input of said phase detector, said divider being responsive to said predetermined number N for dividing said synthesizer output signal by a given division number M, where M is equal to N/x when said predetermined number N is even and is equal alternately to (N−1)/x and (N+1)/x when said predetermined number N is odd, where x is an integer less than said predetermined number N; and
first means coupled to said output of said divider and said program source responsive to a given one of said plurality of bits of said predetermined number N to control said divider so that the average value of said given number M can be a non-integer.

4,290,029

DIGITAL PHASE CONTROL CIRCUIT INCLUDING AN AUXILIARY CIRCUIT

Wulf-Christian Streckenbach, Hemmingen, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,161
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856211
Int. Cl.³ H03L *7/10, 7/18*
U.S. Cl. 331—1 A **5 Claims**



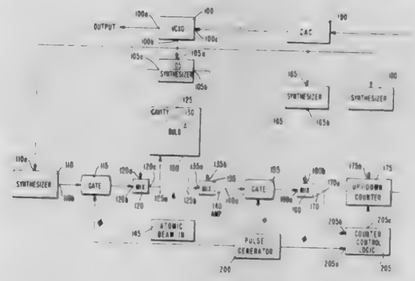
1. In a digital phase control circuit including a controllable oscillator having a control input; a programmable first divider having first and second inputs, said first input being coupled to the output of said oscillator; a reference frequency source comprising a second divider having an input; a phase discriminator having first and second inputs coupled to the outputs of said programmable first divider and said second divider respectively, said phase discriminator further having output means; and means coupling the output means of said phase discriminator to the control input of said controllable oscillator, the frequency of said oscillator being controlled in a direction determined by the direction of the phase deviation between the signals applied to the first and second inputs of said phase discriminator and compared therein; the improvement comprising:
an auxiliary circuit having input means coupled to the output means of said phase discriminator, a first output coupled to the input of said second divider comprising said reference frequency source and a second output coupled to the second input of said programmable first divider, said auxiliary circuit generating a first synchronizing signal at the input of said second divider when the phase difference between the signals at the outputs of said programmable first divider and said second divider is in one direction and generating a second synchronizing signal at the second input of said programmable first divider when the phase difference between the signals at the outputs of said programmable first divider and said second divider is in the opposite direction thereby setting either said programmable first divider or said second divider, respectively, to a predetermined initial phase position, the divider set to said predetermined initial phase position being maintained in said position until the other divider reaches its predetermined initial phase position.

4,290,030

ATOMIC FREQUENCY STANDARD USING FREE INDUCTION TECHNIQUE

Harry T. Wang, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 29, 1979, Ser. No. 43,075
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **21 Claims**



1. A maser atomic frequency standard clock comprising:
a microwave cavity;
an oscillator generating an oscillator signal;
an atom storage bulb in said cavity;
means for injecting atoms of a selected magnetic spin orientation into said storage bulb;
means for stimulating coherent emission from said atoms referenced to said oscillator signal;
pulsing means for temporarily connecting said stimulating means to said cavity during a first time period and then disconnecting said stimulating means from said cavity for a second time period;
means for sensing said coherent emission during said second time period exclusively, whereby said sensing means generates a maser output signal having a phase and frequency which is substantially unaffected by said stimulating means;
means for comparing the frequency of said maser output signal with the frequency of said oscillator signal to generate a difference signal in response thereto; and
means for changing the frequency of said oscillator signal so as to null said difference signal.

4,290,031

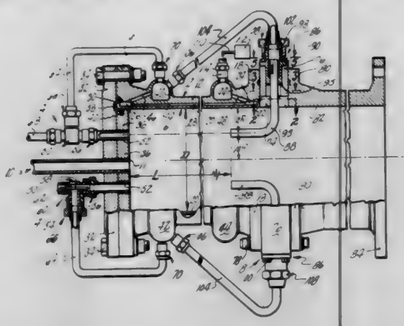
COMBUSTOR FOR GAS DYNAMIC LASER

Robert G. Carroll, West Palm Beach; John I. Caporini, Palm Beach Gardens, and William J. Egan, Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 18, 1979, Ser. No. 58,714
Int. Cl.³ H01S *3/05*
U.S. Cl. 331—94.5 G **12 Claims**

1. In a gas dynamic laser device; a combustor, said combustor having a combustion chamber with a discharge opening at one end; primary injection means for injecting a combustible mixture into said combustion chamber at the other end of the chamber; said primary injection means having a plurality of injector tubes; an igniter for igniting a combustible mixture; secondary injection means located adjacent the discharge opening for ejecting an oxidizer into said combustion chamber; said secondary injection means having a plurality of nozzle

tubes, one nozzle tube for each injector tube of said primary injection means; each nozzle tube and injector tube being



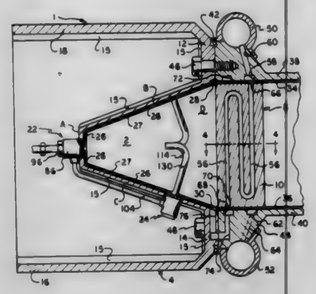
axially aligned with said nozzle tubes directing the oxidizer towards the injector tubes.

4,290,032

LINEAR COMBUSTOR FOR GAS DYNAMIC LASER

Robert J. Vogel, Palm Beach Gardens, Fla., and Roger L. Wahl, Camarillo, Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 18, 1979, Ser. No. 58,715
Int. Cl.³ H01S 3/08
U.S. Cl. 331—94.5 D **5 Claims**



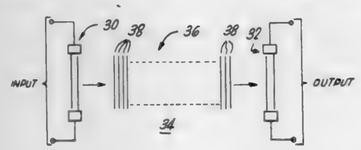
1. In a gas dynamic laser device; an elongated linear combustor; said combustor having a combustion chamber of trapezoidal cross-section with an elongated open end, said chamber being formed by a short front plate and two side plates extending rearwardly at an outwardly extending angle, each side plate having a rear end at the elongated open end of said combustion chamber; said combustor having a short flange extending outwardly from the rear end of each side plate, each short flange having a first end away from its cooperating side plate; an elongated plate extending forwardly from the first end of each short flange to a point located in front of said short plate; a plurality of ribs spaced adjacent one another along said elongated linear combustor normal to the side plates of the combustion chamber; said ribs being fixed to the short front plate, two side plates, short flanges, and elongated plates for supporting said combustion chamber.

4,290,033

SHALLOW BULK ACOUSTIC WAVE DEVICES EMPLOYING ENERGY TRAPPING

Reynold S. Kagiwada, Los Angeles; Kuo-hsiung Yen, Manhattan Beach, and Kei-fung Lau, Harbor City, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 4, 1979, Ser. No. 45,159
Int. Cl.³ H03H 9/54, 9/64, 9/30
U.S. Cl. 333—141 **20 Claims**



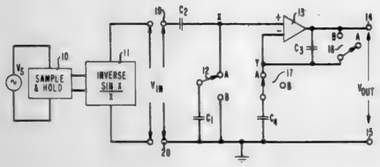
1. A shallow bulk acoustic wave device, comprising:
a piezoelectric substrate having a surface;
at least one sending transducer and at least one receiving transducer, both disposed on said substrate surface in such a manner as to provide substantial coupling of shallow bulk acoustic waves and negligible coupling of surface acoustic waves; and
means for trapping electroacoustic energy close to said substrate surface, to reduce spreading of the energy into the substrate and thereby reduce insertion loss of the device.

4,290,034

SWITCHED CAPACITOR FILTER

Donald L. Fraser, Jr., Warren Township, Somerset County, N.J., and Armando J. Vera, Methuen, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 16, 1980, Ser. No. 150,459
Int. Cl.³ H03H 19/00
U.S. Cl. 333—173 **7 Claims**



1. A sampled-data filter circuit comprising: at least one input portion (**19**), at least one output portion (X) and at least one reference level portion (**20,15**); first and second capacitors (C_1 and C_2) with one electrode of at least one capacitor (C_1) coupled to the reference portion and one electrode of the other capacitor (C_2) coupled to the output portion, and switching means (**12**) for alternatively connecting one electrode of said first capacitor to two of said portions so as to simulate the electrical characteristics of a resistor between said portions, CHARACTERIZED IN THAT the capacitances of said first and second capacitors have a value in accordance with the relationship:

$$C_1/C_2 = e^{\frac{2\pi f_p}{f_s}} - 1$$

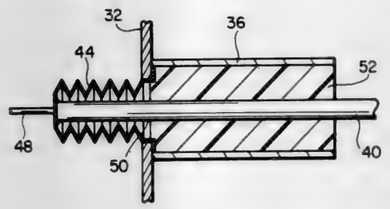
where f_p is the pole frequency of the filter and f_s is the sampling frequency.

4,290,035

MECHANICAL FILTER AND METHOD OF ACOUSTICALLY COUPLING WAVEGUIDES THEREIN

Fred G. Geil, Annapolis, and John H. Thompson, Severna Park, both of Md., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 30, 1978, Ser. No. 955,889
Int. Cl.³ H03H 9/50, 9/10
U.S. Cl. 333—186 **15 Claims**



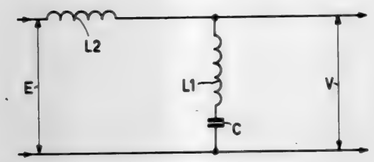
1. A mechanical filter comprising a housing having a wall,
a mechanical resonator supportably mounted within said housing,
a first waveguide,
an axially compliant member having an open end and a closed end with said open end attached to said wall,
means attaching said first waveguide to the closed end of said compliant member with said first waveguide extending axially through said wall and into said housing and attached to the interior surface of said closed end of said compliant member, and
a second waveguide attached to the exterior surface of the closed end of said compliant member and to said resonator whereby mechanical vibrations are coupled from said first waveguide to said second waveguide through the closed end of said compliant member.

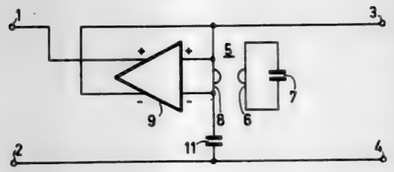
4,290,036

FILTER CIRCUIT ARRANGEMENT

Kenneth W. Moulding, Horley, and Gordon A. Wilson, Reigate, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,729
Claims priority, application United Kingdom, Apr. 30, 1979, 15009/79
Int. Cl.³ H03H 11/08
U.S. Cl. 333—215 **4 Claims**





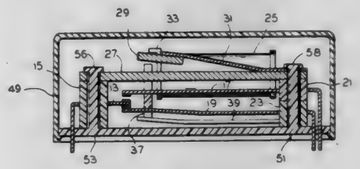
1. A filter circuit arrangement comprising an inductive element and an electronic reactance circuit, said electronic reactance circuit comprising an amplifier arrangement the input of which is connected across said inductive element and the output of which is coupled to said inductive element, characterised in that said inductive element is constituted by a first port of a gyrator circuit the second port of which is capacitively loaded, in that said amplifier arrangement, is a voltage amplifier arrangement, the output circuit of which is connected effectively in series with an input signal path through said inductive element in such manner that said output circuit is external to the circuit loop which includes the reactive element and the input circuit of the voltage amplifier, in that a capacitive element is included in series in said input signal path, in that first means are provided for presenting an input signal path, in that first means are provided for presenting an input signal voltage across the effective series arrangement of the inductive element, the capacitive element and said output circuit, in that second means are provided for deriving an output signal voltage from across a part of said series arrangement which includes said capacitive element and said inductive element, and in that said output circuit is connected in said series arrangement in such a sense that, within this series arrangement, the signal voltage produced across said output circuit by the voltage amplifier when said input signal voltage is present will be in phase with the signal voltage occurring across said inductive element.

4,290,037

FLAT ELECTROMAGNETIC RELAY

Takashi Inagawa; Naoto Kushida; Akira Sekiguchi; Matujiro Ikeda; Hidetoshi Sugawara, and Kunio Naito, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,217
Claims priority, application Japan, Feb. 28, 1978, 53/23116; Feb. 28, 1978, 53/23117; Feb. 28, 1978, 53/25872[U]; Feb. 28, 1978, 53/25873[U]; Feb. 28, 1978, 53/25874[U]
Int. Cl.³ H01H 9/0 2, 13/04, 67/02, 3/00
U.S. Cl. 335—202 **8 Claims**



1. An electromagnetic relay comprising:
a base member having a generally flat surface, and at least first and second projections standing substantially perpendicularly at predetermined positions on said surface thereof and having free ends, respectively;
first and second contact block means respectively fitting over said first and second projections to rest upon said surface, said first and second contact block means respectively holding stationary and movable contacts;
yoke means with an associated coil fitted over both said first and second projections to rest on said first and second contact blocks;
hinging leaf sping means fitted over one of said first and second projections and carrying an armature means for moving said movable contact in response to energization and deenergization of said coil; and
means associated with the free ends of said projections for holding together said contact block means, said yoke means and said leaf spring means; wherein said first and second contact block means are made of a mouldable material and hold said stationary and said movable contacts with individually associated first and second leaf springs having portions extending away from and beyond opposite surfaces of an individually associated one of said

first and said second contact block means, the first end portions of said first and said second leaf springs being substantially aligned with the respective moulded blocks to carry said contacts thereon, the second end portions of said first and said second leaf springs being bent substantially perpendicular to an end surface on each of said first and said second moulded blocks from which the second end portion of the leaf springs extends; and wherein said end surface on each of said first and second moulded blocks is inclined to form an acute angle with respect to the bent end portion of the leaf spring.

4,290,038

SCANNING-AREA ROTATION DEVICE FOR AN IMAGE PICKUP TUBE

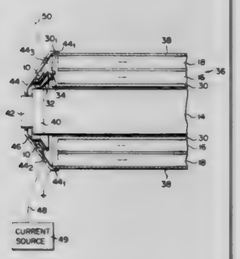
Junichi Yamanaka, Sagamihara; Noboru Nakamura, Yokohama; Hirokazu Fujiki, Asakusabashi, and Yoshimori Miyaji, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 14, 1979, Ser. No. 66,764

Claims priority, application Japan, Aug. 18, 1978, 54-113140[U]

Int. Cl.³ H01J *31/26*

U.S. Cl. 335—214 **7 Claims**



1. A scanning-area rotation device for an image pickup tube comprising:

an image pickup tube having a target including a target face

first means, positioned near the outer periphery of the target, for providing a static magnetic field to said target face in order to rotate a scanning-area thereof by electron beams on said target face; and

second means for electrostatically and not magnetically shielding said first means from the target.

4,290,039

AC SOLENOID APPARATUS OF THE ARMATURE IN TUBE TYPE

Ikuo Tochizawa, Takaoka, Japan, assignor to Kabushiki Kaisha Fujikoshi, Toyama, Japan

Filed Oct. 23, 1979, Ser. No. 87,487

Claims priority, application Japan, Oct. 26, 1978, 53-130991

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—262 **4 Claims**

1. An AC solenoid apparatus for operating a valve comprising:

a relatively thin pressure proof tube made from nonmagnetic material, said tube having a longitudinal axis;

an armature slidably positioned within said tube for movement along said longitudinal axis in contact with the inner face of said tube;

a stationary core secured to one end of said pressure proof tube, said core having an axial bore along which oil can circulate between said valve and the interior of said pressure proof tube;

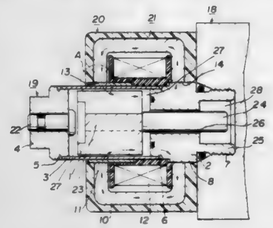
an end member sealingly attached to the other end of said pressure proof tube;

a pin positioned within the axial bore of said stationary core and engageable with said armature; and

an exciting assembly including;

a coil surrounding said pressure proof tube, said armature moving axially within said tube when said coil is energized by current flowing therethrough;

a generally rectangular yoke having a pair of longitudinal side faces with openings therein surrounding said coil,



said yoke having slots in each of said longitudinal side faces connecting said openings with the outside of said yoke; and

a slotted annular ring made from magnetic material, said ring being interposed between said pressure proof tube and at least one opening of said yoke, the slot in said ring being in alignment with a slot in said yoke, said ring having an annular length greater than the thickness of said yoke.

4,290,040

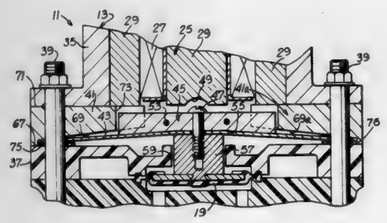
ELECTROMAGNETIC ACTUATOR HAVING PRELOADED SPRING MEANS

L. Clark Feightner, P.O. Box 10, El Dorado Hills, Calif. 95630, and E. Dale Hartley, 2700 Jalmia Dr., Los Angeles, Calif. 90046

Filed Sep. 17, 1979, Ser. No. 76,344

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—274 **10 Claims**



1. An apparatus comprising:

a leaf spring;

means for mounting the leaf spring at least at two locations with the region of the leaf spring between said two locations being resiliently movable;

said leaf spring having a predetermined configuration in its relaxed condition;

an armature having a first surface with a configuration different from said predetermined configuration;

means for mounting said armature on said region of the leaf spring with the leaf spring being held against the first surface of the armature whereby the first surface of the armature resiliently deflects said region of the leaf spring to preload the leaf spring;

electromagnetic means energizable to apply a force to the armature to move the armature along a path from a first position to a second position against the biasing force of the leaf spring to increase the load on the leaf spring, said spring moving said armature along said path from said second position toward said first position when the electromagnetic means is de-energized; and

means for progressively increasing the spring rate of the spring as the armature moves along said path from said first position toward said second position.

4,290,041

VOLTAGE DEPENDENT NONLINEAR RESISTOR

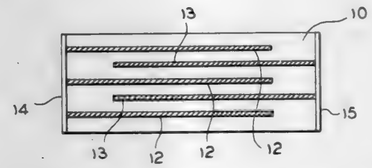
Kazuaki Utsumi; Nobuaki Shohata, and Tomeji Ohno, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,777

Claims priority, application Japan, Feb. 10, 1978, 53/14238

Int. Cl.³ H01C *7/10*

U.S. Cl. 338—21 **11 Claims**



1. A voltage-dependent nonlinear resistor comprising a sintered body having a voltage-dependent nonlinear resistance and a plurality of internal electrodes arranged in parallel with each other, each of said internal electrodes being embedded within said sintered body, except for a portion led out to an external surface.

4,290,042

CONTROLLER FOR ELECTRIC MOTOR

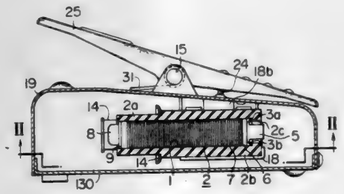
Yoshitoshi Sato, Sukagawa, Japan, assignor to Yamamoto Electric Industrial Co., Ltd., Sukagawa, Japan

Filed Jul. 26, 1979, Ser. No. 60,870

Claims priority, application Japan, Aug. 30, 1978, 53-105291

Int. Cl.³ H01C *10/12*

U.S. Cl. 338—113 **5 Claims**



1. A controller for electric motors comprising:

a casing;

a carbon pile resistor contained within a through-hole of an insulating frame carried by said casing;

a U-shaped spring conductor plate with an end secured to said insulating frame;

a rotational plate pivotally supported on said casing;

a first terminal connected to an end of said carbon pile resistor; and

a second terminal connected to said conductor plate;

wherein the other end of said conductor plate is operatively coupled to said rotational plate, and is biased in response to the rotation of said rotational plate, for pressing the other end of said carbon pile resistor; and

an arm member of an insulating material having one end pivotally supported on said rotational plate and the other end operatively coupled to said conductor plate, said arm member being adapted to move in the longitudinal direction of said carbon pile resistor in response to the rotation of said rotational plate, thereby moving the other end of said conductor plate in the same direction for pressing said carbon pile resistor.

4,290,043

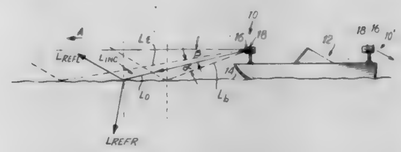
METHOD OF AND SYSTEM FOR DETECTING MARINE OBSTACLES

Irwin M. Kaplan, 7 Barnett Pl., East Northport, N.Y. 11731

Filed Oct. 16, 1979, Ser. No. 85,239

Int. Cl.³ G08G *3/02*; G01C *3/08*

U.S. Cl. 340—29 **42 Claims**



1. A marine obstacle avoidance system for alerting a helmsman of a marine vehicle to the danger of maritime collision with floating and/or submerged obstacles, comprising:

(a) transmitter means mounted on the marine vehicle at a location above the air-water interface, for generating light radiation with at least one wavelength in the range including the ultraviolet light region, the visible light region and the infrared light region of the light spectrum, and thereupon for transmitting the generated light radiation as an incident light beam along a path which extends generally forwardly away from the marine vehicle, as considered along the forward direction of advancement of the vehicle, and downwardly towards the water surface at a predetermined angle below the horizon,

(1) one portion of the transmitted incident light beam being reflected off the water surface to constitute a reflected light beam which extends along a path only forwardly away from the marine vehicle and upwardly into the air, and

(2) another portion of the transmitted incident light beam being refracted into the water to constitute a refracted light beam which extends along a path only forwardly away from the marine vehicle and downwardly into the water,

said incident, reflected and refracted light beams being redirected in direction towards the marine vehicle when obstacles are located in their respective paths, and not being redirected towards the marine vehicle when obstacles are not located in their respective paths;

(b) receiver means mounted on the same marine vehicle for detecting the presence of any redirected light radiation which was initially transmitted by the transmitter means and which was thereupon reflected off obstacles lying in the paths of the incident light beam and/or the reflected lightbeam and/or the refracted light beam, and for also detecting the non-return of the incident, reflected and refracted light beams when no obstacles are located in their respective paths; and

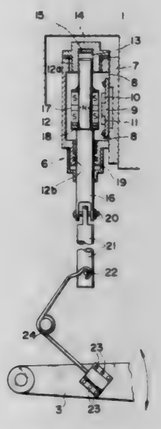
(c) alarm means responsive to detection by the receiver means for alerting the helmsman to the presence of a floating obstacle in the paths of the incident light beam and/or the reflected light beam, and also for alerting the helmsman to the presence of a submerged obstacle in the path of the refracted light beam, whereby the helmsman is forewarned to the danger of a maritime collision of the marine vehicle with obstacles located generally forwardly of the same.

4,290,044

VEHICLE LEVEL DETECTOR

Hiroshi Ishikawa, 5-6447, Iriya, Zama-shi, Kanagawa-ken, and Mamoru Ichikawa, 715, Aiko, Atsugi-shi, Kanagawa-ken, both of Japan

Filed Jun. 19, 1979, Ser. No. 49,962
Claims priority, application Japan, Jun. 23, 1978, 53-76258
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—52 H **19 Claims**



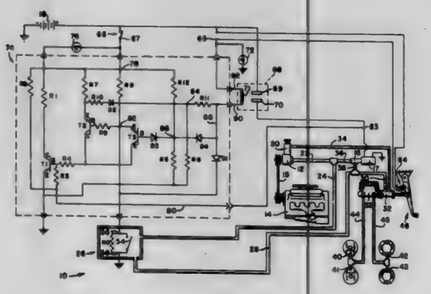
1. A vehicle level detector which detects a change in the elevation of a vehicle body as reflected in a change in the relative distance between a suspension member and a lower surface of the vehicle body, comprising at least two magneto-electric transducer elements which are fixedly mounted on the lower surface of the vehicle body and spaced apart a given distance, a movable magnet disposed in opposing relationship with the transducer elements, and an actuating member connected between the magnet and the suspension member for actuating the magnet in accordance with a change in the relative distance between the suspension member and the vehicle body, a displacement of the magnetic selectively activating or deactivating the transducer elements, thereby producing a signal indicative of the elevation of the vehicle body.

4,290,045

BRAKE SYSTEM WARNING CIRCUIT

Marvin H. Killinger, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 10, 1979, Ser. No. 83,443
Int. Cl.³ B60T *17/22*
U.S. Cl. 340—52 C **21 Claims**



1. A warning circuit for a vehicle including an engine, a brake system, and means for actuating the engine, the brake system having a primary source of brake actuation pressure, an auxiliary source of brake actuation pressure, and relay means for actuating the auxiliary source upon failure of the primary source, the warning circuit comprising:

circuit means coupled to the actuating means and to the relay means for generating a warning signal in response to an open circuit condition of the relay means when the engine is running.

4,290,046

CODED ELECTRICAL SECURITY SYSTEM FOR VEHICLES, SUCH AS AUTOMOBILES

Ovila Chabot, 78, du College St., Pont-Rouge, Prov. of Quebec, Canada (G0A 2X0)

Continuation-in-part of Ser. No. 4,690, Jan. 19, 1979. This application Oct. 5, 1979, Ser. No. 82,375
Int. Cl.³ G08B *1/08*; B60R *25/10*
U.S. Cl. 340—63 **4 Claims**



1. A coded electrical security system for a vehicle, such as an automobile, comprising:

(a) a bank of series-connected double-throw toggle switches, each having a through terminal and a phantom terminal and which must be operated in one of two positions following a predetermined code for completing an electrical circuit through the through terminals of all the switches;

(b) means for connecting one terminal of one of the toggle switches to an automobile battery;

(c) at least one safety light mounted externally of said vehicle;

(d) means for connecting one of the terminals of the last toggle switch in the series to said safety light, whereby operation of the toggle switches following the predetermined code will complete the electrical circuit and energize the safety light; and

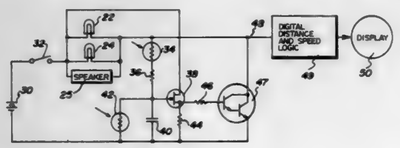
(e) wherein each safety light is of a lesser voltage than the battery and has an appropriate resistance series connected therewith, whereby if the resistance is bypassed, said safety light will burn out.

4,290,047

LIGHT DETECTION, SIGNALING AND SPEED MEASUREMENT SYSTEM

John S. Latta, Jr., 3100 W. Walnut, Apt. 109, Garland, Tex. 75040

Continuation-in-part of Ser. No. 669,677, Mar. 23, 1976, Pat. No. 4,117,457. This application Aug. 21, 1978, Ser. No. 934,704
Int. Cl.³ B62J *5/00*; H05B *37/02*
U.S. Cl. 340—134 **35 Claims**



13. A system for sensing and measuring a variation in light level of a light source having an intensity located at a distance from the system comprising:

a housing having a vertical axis;

first circuit means disposed within said housing for photosensitive detection of variations in the light intensity at any direction in a horizontal plane perpendicular to said vertical axis of the light source and for generating a signal representative of the incident light on the system;

second circuit means for measuring variations in said signal generated by first circuit means as a function of time and for generating an output signal; and

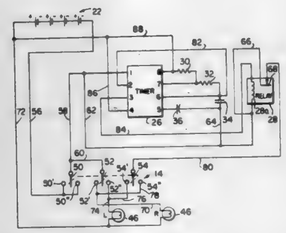
means interconnected to said second circuit means for displaying said output signal generated by said second circuit means to provide an indication of variations in the intensity of the light source as a function of time.

4,290,048

TURN SIGNALLING APPARATUS

David S. Cutlip, and Judyth Cutlip, both of 179 Candlewood Path, Dix Hills, N.Y. 11746

Filed Jun. 5, 1980, Ser. No. 156,836
Int. Cl.³ B62J *3/00*; B60Q *1/34*
U.S. Cl. 340—134 **13 Claims**



1. A vehicle turn signalling apparatus, comprising:

(a) a right-turn signalling lamp;

(b) a left-turn signalling lamp; and

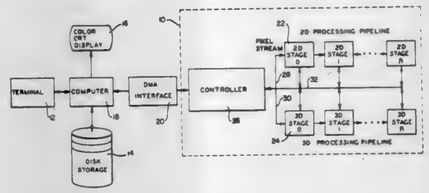
(c) means for simultaneously initiating a flashing illumination of either one of said signalling lamps and a steady illumination of the other signalling lamp.

4,290,049

DYNAMIC DATA CORRECTION GENERATOR FOR AN IMAGE ANALYZER SYSTEM

Stanley R. Sternberg; Robert M. Lougheed, and William O. Dargel, all of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Sep. 10, 1979, Ser. No. 73,816
Int. Cl.³ G06K *9/12*
U.S. Cl. 340—146.3 MA **8 Claims**



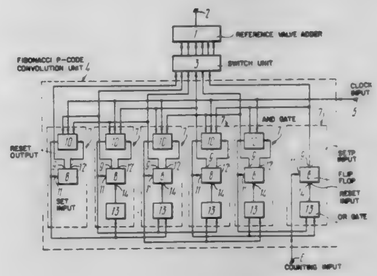
1. In an image analyzer system, the improvement comprising scanner correction circuitry for accomodating wrap-around of digital data signals derived from a scanner having an ambiguity interval less than the true range of values of points in the scene being sensed, said scanner correction circuitry including means for sensing the value of a central data point in a neighborhood of a matrix of points comprised of a central data point and its surrounding points in the matrix, means for adding to the values of all of the data points in the neighborhood a correction value associated with the sensed value of the central data point so that all of the adjusted data points in the neighborhood are uninterrupted by any wrap-around whereby said system may accurately identify the data point in the neighborhood truly having a particular value associated with the scene; and means for removing the correction value from the system output after the said value has been selected.

4,290,050

DIGITAL-ANALOG CONVERTER UTILIZING FIBONACCI SERIES

Alexei P. Stakhov, prospekt Kosmonavtov, 54, kv. 130, Vinnitsa, U.S.S.R.

Filed Sep. 20, 1978, Ser. No. 944,014
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **1 Claim**



1. A digital-analog converter, comprising

a reference value adder having an output functioning as the output of said digital-analog converter and a multidigit input and producing analog values;

a switch unit having a multidigit input and a multidigit output and selecting respective reference values in said reference value adder; and

a Fibonacci p-code convolution unit having a counting input, a clock input and a multidigit output and converting step-by-step the original p-code of a natural number to other code combinations representing that natural number, the multidigit input and the multidigit output of said switch unit being coupled to the multidigit output of said Fibonacci p-code convolution unit and to the multidigit input of said reference value adder, respectively, said Fibonacci p-code convolution unit comprising n stages for converting the bit positions of the original p-code of a natural number, each of said stages corresponding to one of the bit positions of the original p-code, said stages ranging from the lowest order, or zero, bit position, to the highest order, or (n−1)th bit position, which are, respectively, referred to as the ith bit positions, where i=0, 1, 2, . . . (n−1), p and n are each any natural number from 1 to infinity, the value of each of which is a constant or any given embodiment and wherein n is the length of the Fibonacci p-code, each of the stages of said Fibonacci p-code convolution unit corresponding to the bit positions from 1 to n−2 having a flip-flop, an AND gate and an OR gate, all of the AND gates except one having first, second, third, and fourth inputs and an output and said one AND gate having first, second and third inputs and an output and all of the OR gates except one having first and second inputs and an output and said one OR gate having an input and an output, said stage of the low order, zero, bit position having a flip-flop and an OR gate and said stage of the higher order, (n−1)th, bit position having a flip-flop and an AND gate, each of said flip-flops having a reset input, a reset output, a set input and a set output, the set and reset inputs of the flip-flop of said stage of the ith bit position being coupled to the output of the AND gate and the output of the OR gate, respectively, of said stage of the ith bit position, the reset input of the flip-flop of said stage of the low order bit position being coupled to the output of the OR gate of said stage of the low order bit position, the

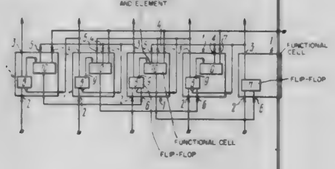
set output of the flip-flop of said stage of the low order bit position functioning as the counting input of said digital-analog converter, the set input of the flip-flop of said stage of the high order bit position being coupled to the output of the AND gate of said stage of the high order bit position, and the set outputs of a plurality of the flip-flops of all said stages functioning as the multidigit output of said Fibonacci p-code convolution unit, the first and second inputs of the OR gate of each stage corresponding to the bit positions i to n−2 being coupled to the output of the AND gate of the (i+1)th stage and the output of the AND gate of the (i+p+1)th stage, respectively, the first and second inputs of the AND gate of the ith stage corresponding to the bit positions 1 to n−1 being coupled to the reset output of the flip-flop of the same stage and to the set output of the flip-flop of the (i−1)th stage, respectively, the third input of the AND gate of the ith stage, beginning with the (p+1)th bit position being coupled to the set output of the flip-flop of the (i−p−1)th stage, and the remaining inputs of all the AND gates being joined together to constitute a clock input of said digital-analog converter.

4,290,051

DEVICE FOR REDUCING IRRATIONAL-BASE CODES TO MINIMAL FORM

Alexei P. Stakhov, prospekt Kosmonavtov 54, kv. 130; Andrei A. Kozak, prospekt Leninskogo Komsomola 53, kv. 40; Nikolai A. Solyanichenko, ulitsa Vasilia Porika 30, kv. 108; Ivan V. Kuzmin, Kommunalny pereulok 3, kv. 6, and Alexei D. Azarov, ulitsa Vasilia Porika, 30, kv. 103, all of Vinnitsa, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,175
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **4 Claims**



1. A device for reducing irrational-base codes to a minimal form, comprising:

n identical functional cells;

a Bth functional cell comprising: an information input from which code information is entered; an information output from which code information is read; first and second convolution information inputs respectively receiving information on the state of (B−1)th and (B−p−1)th functional cells and respectfully connected to said information outputs of these functional cells; a convolution signal output at which a convolution signal is formed if the condition for convolution of the code digits for said Bth functional cell is satisfied; a convolution set input receiving a signal which resets said Bth functional cell and connected to said convolution signal output of a (B+p+1)th functional cell; a convolution control input receiving a signal which enables convolution of said Bth functional cell; and an inversion signal input receiving a signal which reverses the state of said Bth functional cell and connected to said information output of said (B−1)th functional cell;

wherein n is the digit capacity of the code, B=1, 2, . . . , (n−1), and p=1;

wherein each of said functional cells, except the functional cell corresponding to the lowest order digit, comprises:

a flip-flop recording and storing information on the Bth digit of the code and having a count input connected to said inversion signal input, a set input connected to said information input, a reset input connected to said convolution set input, a direct output connected to said information output, and an inverting output; and

a convolution AND element evaluating the possibility of performing the operation of convolution of the (B−1)th and (B−p−1)th code digits to the Bth digit and generating a one signal which resets said flip-flop of said (B−p−1)th functional cell if the convolution condition is satisfied, said convolution AND element having a first input connected to said inverting output of said flip-flop, second and third inputs connected to said first and second convolution information inputs, a fourth input connected to said convolution control input, and an output connected to said convolution signal output; and

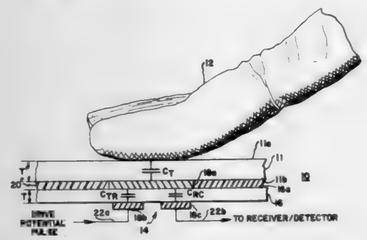
wherein said functional cell corresponding to the lowest order digit comprises a flip-flop.

4,290,052

CAPACITIVE TOUCH ENTRY APPARATUS HAVING HIGH DEGREE OF PERSONAL SAFETY

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,287
Int. Cl.³ G06F *3/02*; H01G *7/00*
U.S. Cl. 340—365 C **8 Claims**



1. A touch entry panel activatible upon contact by a user member, comprising:

a relatively thick insulative substrate having a first surface contactable by user personnel, and a second surface opposite said first surface, with both said surfaces being devoid of operational elements of said panel;

a single member having a single insulative layer with a first surface and a second surface opposite said insulative layer first surface, and having all electrodes of at least one capacitive touch sensor formed completely thereon; each capacitive touch sensor comprising a touch electrode fabricated on said insulative layer first surface and a pair of spaced-apart electrodes fabricated upon the second surface of said insulative layer and in registration with the touch electrode of that sensor;

a terminal associated with each of said spaced-apart electrodes;

lead means fabricated upon said insulative layer second surface for interconnecting each of said spaced-apart electrodes and its associated terminal;

conductive guard means disposed upon said insulative layer first surface and positioned for shielding the lead means of at least one of said at least one capacitive touch sensor from capacitive effects when said substrate first surface is contacted by said user member; and

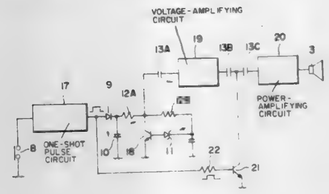
means for fastening said member first surface adjacent to said substrate second surface; said substrate being formed of a material having a dielectric constant sufficiently high enough to cause one of said at least one capacitance touch sensor to be activitated when the user member contacts a portion of the substrate first surface opposite the touch electrode of the capacitive touch sensor to be activated.

4,290,053

SOUND EFFECTS PRODUCER

Kuniichi Nemoto, 2357, Jinkaiji-machi, Chofu-shi, Tokyo, Japan

Filed Jun. 28, 1978, Ser. No. 919,796
Claims priority, application Japan, Feb. 22, 1978, 53/19300
Int. Cl.³ G08B *3/10*
U.S. Cl. 340—384 E **2 Claims**



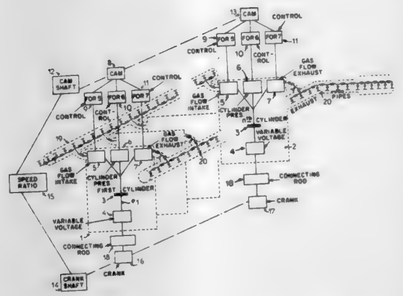
1. A sound effects producer comprising a Zener diode semiconductor element, an inverse voltage impressing means for impressing to the Zener diode semiconductor element inverse voltage sufficient to generate output having a random noise component, as an alternating current component from an output side of the semiconductor element, an amplification circuit connected to the output side of the Zener diode semiconductor element for amplifying the output, a speaker connected to the output side of the amplification circuit for converting output amplified by the amplification circuit to audible sound, and a control circuit for controlling the output wave-form of the inverse voltage impressing means, the control circuit comprising an on-off control circuit connected between the Zener diode semiconductor element and the power source of the inverse voltage impressing means, an attenuator for causing attenuation of the output signal from the Zener diode semiconductor element, and a switching circuit to ground the output signal from the Zener diode semiconductor element while the on-off control switch is in the on position.

4,290,054

ELECTRICAL APPARATUS AND METHOD FOR ELECTRICALLY SIMULATING A NOISE

Michel Magnani, Templeuve, and Michel Moulin, Nieppe, both of France, assignors to S.A. Andre Boet, France

Continuation-in-part of Ser. No. 883,844, Mar. 6, 1978. This application Dec. 12, 1979, Ser. No. 103,063
Claims priority, application France, Mar. 8, 1977, 77 07573
Int. Cl.³ G09B *9/02*; G08B *3/10*
U.S. Cl. 340—384 E **9 Claims**



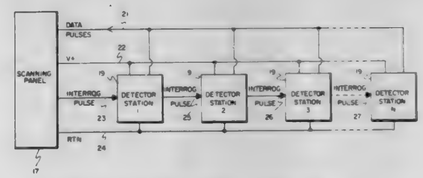
1. Electrical apparatus for simulating noise resulting from the thermodynamic expansion of a gas inside a chamber the volume of which is varied and from the flow of gas between the chamber and the exterior thereof, comprising a circuit for simulating the said expansion, said circuit comprising in series a capacitor of fixed capacitance and means for varying with respect to time the potential at at least one of the terminals of said capacitor, said variation of potential depending on the variation of the volume of said chamber with respect to time and on the nature of said expansion, and further comprising an exhaust circuit connected to said expansion simulating circuit, said exhaust circuit comprising in series a fixed impedance and a semi-conducting circuit, said semi-conducting circuit comprising means for varying its internal impedance with respect to time, said variation in internal impedance depending on the variation with respect to time of the mass flow of gas and of the type of flow.

4,290,055

SCANNING CONTROL SYSTEM

Douglas E. Furney, and Michael J. Muldrey, both of Lakewood, Colo., assignors to Technical Development LTD, Hamilton, Bermuda

Filed Dec. 5, 1979, Ser. No. 100,574
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—518 **31 Claims**



1. A condition monitoring system, comprising:

interrogation means providing an interrogation pulse output;

a plurality of detecting means adapted to monitor a predetermined variable condition, each of said detecting means including receiving means for receiving interrogation pulses with said receiving means of a first of said detecting means being connected with said interrogation means to receive said interrogation pulse output therefrom and responsive thereto providing an interrogation pulse output, each of said detecting means being connected in series with one another so that said receiving means of each of said detecting means receives an interrogation pulse output from the immediately preceeding one of said detecting means with each of said detecting means, responsive to receipt of said interrogation pulse output coupled thereto, providing a data pulse output having a predetermined characteristic if said monitored variable condition is in a preselected state, and each said data pulse output being on a common output conductor with each detecting means providing said data pulse output at timewise spaced intervals so that a train of data pulses is coupled from said detecting means; and

pulse processing means connected with said common output conductor to receive said train of data pulses and responsive thereto providing an indication of the state of said detecting means.

4,290,056

PROTECTIVE SYSTEM

Vincent Y. S. Chow, Hanover Park, Ill., assignor to Ellsworth, Chow & Murphy, Inc., Palo Alto, Calif.

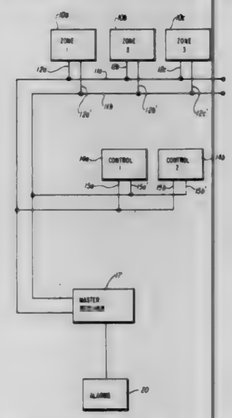
Filed Jul. 5, 1979, Ser. No. 54,859
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—538 **21 Claims**

1. A protective system having at least two remote stations and a master receiver all connected by a common AC power line, said protective system comprising:

(a) at least one monitoring means connected to each remote station for detecting an alarm or normal condition at said monitoring means;

(b) timing means;

(c) signal generating means within each remote station responsive to said monitoring means and said timing means for producing and transmitting on said AC power line alarm and normal data transmission signals representing alarm or normal conditions;
(d) each of said alarm and normal data transmission signals comprising a data pulse of greater duration than one cycle of the AC power wave form wherein said data pulse is not synced to or dependent upon said AC power wave form;
(e) said signal generating means transmitting said data pulse



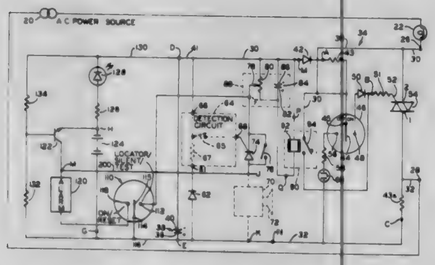
after a time delay established by said timing means unique for each remote station;
(f) transmission sensing means within said master receiver for detecting alarm or normal data transmission from each remote station;
(g) control signal generating means within said master receiver responsive to said master signal sensing means for producing control data transmission signals; and
(h) signal sensing means within each remote station responsive to data transmissions from each remote station and from said master receiver.

4,290,057

SEQUENTIAL POWER DISTRIBUTION CIRCUIT

Webster B. Knight, 2320 Abbey Dr., Apt. #6, Fort Wayne, Ind. 46815

Filed Sep. 25, 1978, Ser. No. 945,463
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—539 **17 Claims**



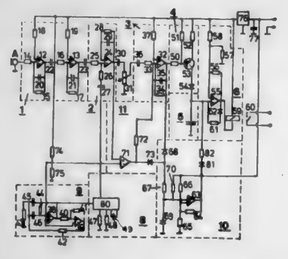
10. A power distribution system adaptable to replace an electrical switch in a circuit having an electrical power source and an illuminating load coupled in power receiving relation to said source and controllable through said switch, said load having a predetermined operating power capacity and decoupled from the power source by switch removal from said source comprising first means for providing an alarm circuit in switch replaceable relation to said load and in series with said load and power source wherein said alarm circuit receives operating power through said load; said first means having an alarm detection condition and a non-alarm detection condition; and second means coupled to said power source and illuminating load for providing an alarm when one of said power source and primary load become inoperative.

4,290,058

METHOD AND APPARATUS FOR INTRUSION DETECTION BY USING SONIC RECEIVERS

Gustav Bystricky, Oberdürnten, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland

Filed Nov. 5, 1979, Ser. No. 91,410
Claims priority, application Switzerland, Nov. 30, 1978, 12243/78
Int. Cl.³ G08B *13/22*
U.S. Cl. 340—566 **14 Claims**



1. A method for detecting an intrusion, comprising the steps of:
obtaining signals delivered by a sonic receiver mounted at the object to be protected;
mixing the obtained signals with a carrier frequency whose frequency periodically and continuously passes within a given time duration through a predetermined frequency range;
filtering the mixed signal in a narrow band frequency range;
upon occurrence of a filtered signal activating a timing circuit having a predetermined time duration;
integrating the filtered signal;
resetting the result of the integrated filtered signal whenever the filtered signals are interrupted for at least said time duration of the timing circuit;
said time duration at most being equal to the time duration of a frequency throughpass; and
triggering an alarm signal as soon as the integrated signal reaches a predetermined threshold within the reset time.

4,290,059

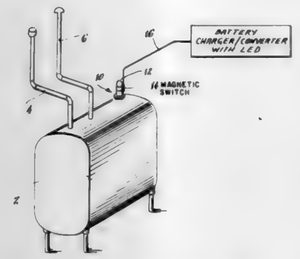
LIQUID LEVEL ALARM FOR REMOTELY INDICATING WHEN LESS THAN A PREDETERMINED QUANTITY OF FUEL OIL REMAINS IN A STORAGE TANK AND METHOD FOR INSTALLING THE SAME

Walter O. Noyes, 308 Elm St., Bennington, Vt. 05201, and John M. Helft, Center Rd., Eagle Bridge, N.Y. 12057

Filed Apr. 7, 1980, Ser. No. 138,163
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—624 **12 Claims**

1. In a rising stem fuel indicating gauge used to measure the quantity of liquid fuel remaining within a fuel storage tank, said indicating gauge being of the type including a tube, a level-indicating element on a shaft within said tube, and indicating markings on said tube for determining the quantity of fuel within said fuel storage tank corresponding to the level of said indicating element in said tube;
the improvement comprising:
a magnetic element carried on said level-indicating element;

a magnetically actuated switch mounted to said tube, said switch being selected so that it is magnetically actuated by said magnetic element carried on said level indicating element when said magnetic element descends in said tube to less than a predetermined distance away from said switch, said switch being mounted on said tube in such position that actuation of said switch by said magnetic



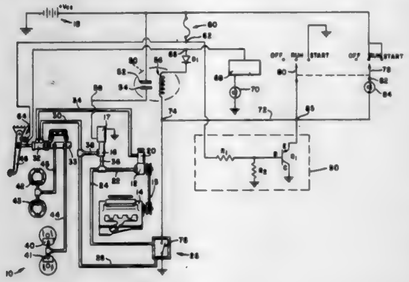
element indicates that no more than a predetermined quantity of fuel remains within said fuel storage tank; and
an alarm coupled to said switch for actuation thereof upon the actuation of said switch;
whereby actuation of said alarm provides an indication that no more than said predetermined quantity of fuel remains within said fuel storage tank.

4,290,060

BRAKE FUSE WARNING CIRCUIT

Dewey W. Eppley, Nappanee, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 10, 1979, Ser. No. 83,441
Int. Cl.³ B60T *17/22*
U.S. Cl. 340—638 **10 Claims**



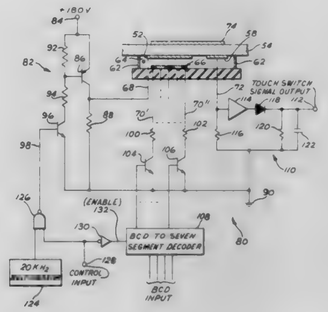
1. A warning circuit for a vehicle brake system having a battery-powered source of brake actuation pressure, having electrical control circuitry for controlling and monitoring the brake system, and having a fuse connected between the battery and the control circuitry for protecting the control circuitry from a short circuit to ground condition, the warning circuit comprising:
a warning device;
a controlled switch;
first means for coupling the controlled switch with the warning device; and
second means for coupling the controlled switch with the vehicle battery via the fuse, the controlled switch actuating the warning device in response to an open circuit condition of the fuse.

4,290,061

ELECTRICALLY INTEGRATED TOUCH INPUT AND OUTPUT DISPLAY SYSTEM

Juan de J. Serrano, Seymour, Conn., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 23, 1979, Ser. No. 69,001
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—712 **30 Claims**



1. An integrated entry/display system comprising:
a dielectric panel;
a display having at least one electrode adjacent one side of said dielectric panel;
a capacitive attenuator touch switch rear pad adjacent the one side of said dielectric panel and electrically insulated from said one display electrode;
a capacitive attenuator touch switch front pad adjacent the other side of said dielectric panel and arranged for capacitive coupling through said panel with both said one display electrode and said touch switch rear pad; and
circuitry for operating said display by applying a suitable signal to said one display electrode; and for operating said one display electrode, said touch switch rear pad and said touch switch front pad together as a capacitive attenuator touch switch by applying an effectively AC exciting voltage to one of said one display electrode and said touch switch rear pad and sensing the resultant signal capacitively coupled to the other of said one display electrode and said touch switch rear pad to detect a decrease in the coupled signal when said touch switch front pad is touched.

4,290,062

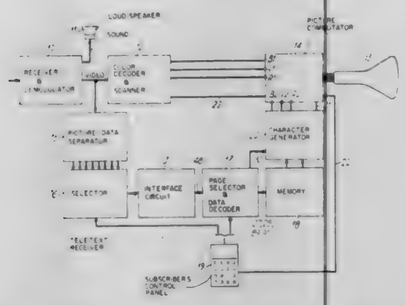
SYSTEM FOR DIGITAL TRANSMISSION AND TEXT DISPLAY

Bernard Marti, Noyal-sur-Vilaine; Alain Poignet; Jean-Yves Savary, both of Rennes, and Roger Brusq, Betton, all of France, assignors to Etablissement Public de Diffusion dit Telediffusion de France, Montrouge, France

Filed Feb. 28, 1979, Ser. No. 15,959
Claims priority, application France, Mar. 10, 1978, 78 07551
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—721 **13 Claims**

1. A system for transmission and display of text material on a television screen, wherein the transmitting television station broadcasts data for such displays in the form of data packets sent out over several channels, the packets from the different channels being adapted to be time multiplexed, a series of packets from any one channel constituting a magazine made up of several pages, the packets relative to any one page being transmitted without being multiplexed with the packets from another page one page including an order row of data which is purely operational data that is not used for display, and character shape format control means for use in said system, said character shape format means comprising: a plurality of shape

memory means for recording the character shapes transmitted by the system, said one of said pages of transmitted data containing exclusively data relating to the shapes of alphabet characters on the alphabet page which is not for display means for switching the subsequent data of that alphabet page toward



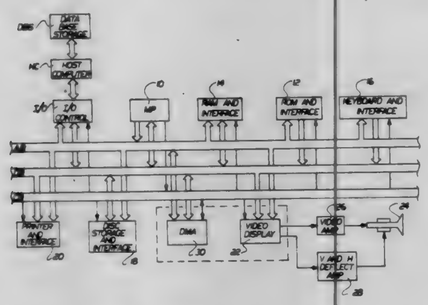
a writing circuit, means associated with one of the shape memory means in order to record there the character shape data, and character generator means responsive to said recorded character shape data for generating alphabetical character of a shape selected from said page which is not for display.

4,290,063

VIDEO DISPLAY TERMINAL HAVING MEANS FOR ALTERING DATA WORDS

Elden D. Traster, Garland, Tex., assignor to Harris Data Communications, Inc., Dallas, Tex.

Filed Aug. 3, 1979, Ser. No. 63,528
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—723 **7 Claims**



1. A video display system, comprising:

a data source for providing a data stream comprised of a plurality of multi-bit coded data words, each said data word being comprised of N bits and having at least one dedicated bit position for normally indicating whether the data word is representative of a character to be displayed or a non-character, whereby a maximum of N−1 bits can be used to provide character information;

video display means for displaying images of characters represented by character data words;

character generator means for receiving said data words for controlling said video display means in dependence upon non-character data words for displaying images of said character data words; and,

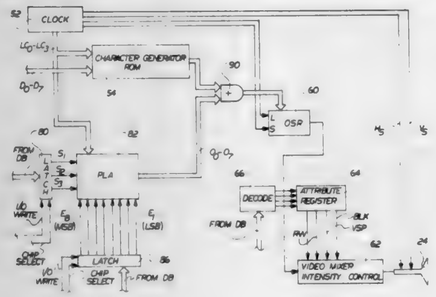
conversion means interposed between said data source and said character generator means for converting the bit patterns of at least some of said data words normally representing said non-character data words into that representing character data words to thereby increase the number of said data words available to represent characters to be displayed.

4,290,064

VIDEO DISPLAY OF IMAGES WITH IMPROVED VIDEO ENHANCEMENTS THERETO

Elden D. Traster, Garland, Tex., assignor to Harris Data Communications, Inc., Dallas, Tex.

Filed Aug. 3, 1979, Ser. No. 63,529
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—723 **5 Claims**



1. A video display system for displaying dot pattern images of data characters on a display screen with dot pattern modifications to the video characteristics thereof and comprising:

means for providing a data stream including a plurality of coded character words each representing a dot pattern image to be displayed and at least one coded modifier word each representing one or more of a plurality of N dot pattern modifiers;

means responsive to each said coded character word for providing dot pattern video signals for forming the dot pattern image represented thereby,

means responsive to each said coded modifier word for providing dot pattern modifier video signals;

means for mixing said video signals to provide a combined dot pattern video signal;

means responsive to said combined video signals for forming a video image with said video dot pattern modifications made thereto; and

said modifier word responsive means having N different selectable modes for providing one or more of N modifiers for modifying a said character with the dot pattern modification for each said modifier being determined by said coded modifier word.

4,290,065

POSITION TRANSDUCING METHOD AND MEANS

Joseph P. Gleason, Woodland Hills, Calif., assignor to Thomas P. Sullivan, Los Angeles, Calif., a part interest

Filed Apr. 10, 1980, Ser. No. 139,092
Int. Cl.³ G08C *25/02, 19/10, 19/04*
U.S. Cl. 340—870.43 **6 Claims**

1. A method of converting a physical position into an electrical signal including the steps of:

(a) connecting opposite ends of an enlogated resistance member of given length across a fixed voltage source to provide a voltage gradient from one end to the other;

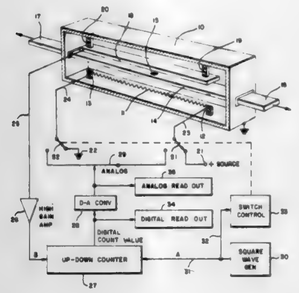
(b) moving an aperture along said member a distance constituting a function of said physical position;

(c) providing an analog voltage constituting a function of a digital count value;

(d) switching the connection of said member back and forth between said fixed voltage source and said analog voltage at a given frequency to provide a comparison of the value of the voltage at the physical position of the aperture and

the value of the analog voltage each cycle of said given frequency; and

(e) increasing the digital count value at each frequency cycle that the voltage value due to the voltage gradient is



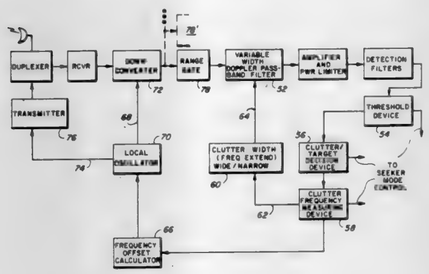
greater than the analog voltage and decreasing the digital count value each frequency cycle that said voltage value due to said voltage gradient is less than said analog voltage so that said digital count value will always reflect a value determined by the position of said aperture.

4,290,066

HIGH SPEED ADAPTIVE CLUTTER FILTER

Walker Butler, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Oct. 12, 1979, Ser. No. 84,265
Int. Cl.³ G01S *7/28*
U.S. Cl. 343—17.1 R **4 Claims**



1. In an airborne coherent pulsed Doppler radar system having a receiver comprising a local oscillator, a method of suppressing clutter in order to put nearby desired targets within a useful dynamic range of the radar system, comprising the steps of:

(a) sensing a presence of clutter in a specified range interval;

(b) measuring a center frequency of said clutter during the radar look time;

(c) moving the local oscillator output frequency by an amount equal to said center frequency of said clutter before the onset of the next look time of the radar;

(d) sensing for a target presence within said range interval; and

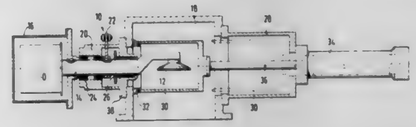
(e) repeating steps (a), (b), (c) and (d) in sequential range intervals until a target is sensed, with each range interval having a different, adaptive clutter notch.

4,290,067

RADIANT ENERGY PROFILOMETER

Edouard Legille, and Victor Kremer, both of Luxembourg, Luxembourg, assignors to Paul Wurth, S.A., Luxembourg, Luxembourg

Filed Dec. 10, 1979, Ser. No. 102,428
Claims priority, application Luxembourg, Dec. 12, 1978, 80645
Int. Cl.³ G01S *13/08*
U.S. Cl. 343—12 R **23 Claims**



1. In apparatus for measuring the contour of a surface from a location remote from the surface, the improvement comprising:

means for transmitting radiant energy to the surface of interest and receiving the transmitted energy reflected from the surface;

support means for said transmitting and receiving means; and

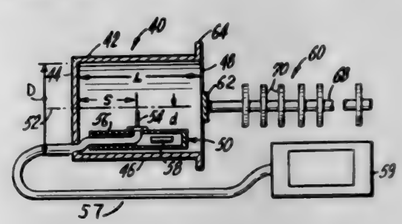
chamber defining means movable relative to said support means between a first position commensurate with measurement of the surface and a second position wherein the transmitting and receiving means is hermetically isolated from the surface within a chamber.

4,290,068

MICROWAVE TELEVISION SYSTEM

Richard D. Bogner, 4 Hunters La., Roslyn, N.Y. 11576

Filed Dec. 14, 1979, Ser. No. 103,612
Int. Cl.³ H01Q *13/28*
U.S. Cl. 343—702 **14 Claims**



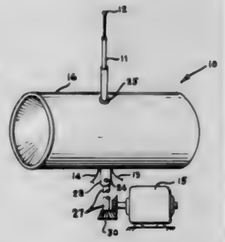
1. A microwave receiving apparatus comprising a probe excited, waveguide, electronic circuit means contained in said waveguide and means for mounting said waveguide onto a support; said waveguide comprising: a metallic container having an elongated axis and including at least a back wall, side walls, and and open mouth which defines an internal cavity; a metal structure positioned within the container and extending in a direction between the back wall and the mouth of the container, spaced from the side walls of the container and contained within at most one half of the volume of the cavity, and a probe extending from the metal structure into the remaining portion of the container for excitation of the waveguide; wherein the diameter D of the waveguide is between $\lambda/2$ and λ, the probe is spaced from the back wall a distance S of between $\lambda/8$ and $\lambda/2$, λ being the wavelength of the transmission energy and wherein the metal structure extends from the back wall toward the mouth a distance in the range between S and the length L of the waveguide.

4,290,069

DIRECTIONAL ANTENNA FOR LONG RANGE T.V. SIGNAL RECEPTION

Philip H. Duda, 20C Scott Cir., Bedford, Mass. 01730

Filed Mar. 25, 1980, Ser. No. 133,716
Int. Cl.³ H01Q *21/29*
U.S. Cl. 343—722 **9 Claims**



1. In combination with a television receiver having VHF and UHF antenna leads, a directional antenna for long range television signal reception, said directional antenna comprising

a cylindrical r.f. coil,

a monopole antenna center tapped to said r.f. coil and extending perpendicularly therefrom, one end of said r.f. coil being connected to said UHF antenna lead and the other end being connected to the base of said monopole antenna,

first and second truncated cones of conductive material, said first cone being mechanically connected by its vertex to one end of said r.f. coil and said second cone being mechanically connected by its vertex to the other end of said cone, said r.f. coil and said cones constituting a bi-conical antenna structure,

a support structure connecting said truncated cones, said VHF antenna lead being connected to said support structure and to said first and second truncated cones, and

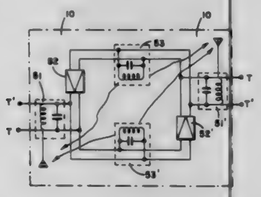
means engaged to said support structure for positioning said bi-conical antenna structure in a horizontal position.

4,290,070

MAGNETIC LOOP ANTENNA WITH DIAMAGNETIC PROPERTIES

Osamu Tanaka, 16-37, 5-chome Yoshida Higashi Osaka, Osaka; Nobuo Nakano, Kashiwara, and Toyoaki Fukui, Osaka, all of Japan, assignors to Osamu Tanaka, Osaka, Japan

Continuation-in-part of Ser. No. 37,939, May 9, 1979, abandoned. This application Sep. 25, 1979, Ser. No. 78,761
Int. Cl.³ G09F *9/00*
U.S. Cl. 343—788 **4 Claims**



1. An antenna comprising:

a first elongated magnetic antenna member having a first magnetic pole orientation, said first elongated magnetic member comprising an elongated member made from magnetic material and at least one diamagnetic portion provided in the magnetic material and separating the magnetic material into at least two portions;

a second elongated antenna member having a second magnetic pole orientation opposite to the first magnetic pole orientation and provided adjacent and parallel to the first elongated magnetic member, said second elongated magnetic member comprising an elongated member made from magnetic material and at least one diamagnetic portion provided in the magnetic material and separating the magnetic material into at least two portions; p1 a pair of third elongated magnetic members connecting the ends of said first and second elongated members to form a magnetic loop, said first, second and third elongated members being arranged and configured such that the lines of magnetic force in the third members connect with the lines of the magnetic force in the first and second members; and

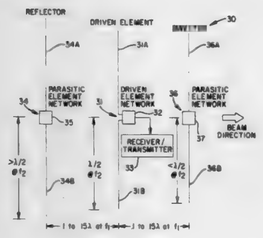
a coil wound on each of said first and second elongated magnetic members.

4,290,071

MULTI-BAND DIRECTIONAL ANTENNA

Richard C. Fenwick, Dallas, Tex., assignor to Electrospace Systems, Inc., Richardson, Tex.

Filed Dec. 23, 1977, Ser. No. 863,619
Int. Cl.³ H01Q *19/30*
U.S. Cl. 343—819 **32 Claims**



1. In a multi-band multi-element directional antenna array having a driven element means formed of two opposed sections each a half wavelength at the midband frequency and parasitic element means: driven element impedance matching network means; a parasitic element; parasitic element center network means; signal feed line means; signal coupling means interconnecting said signal feed line means and said driven element; and with said driven element matching network means and said parasitic element center network means being networks enabling respective driven and parasitic elements to respond, as an antenna array, on all bands of said multi-band directional antenna for providing a unidirectional radiation pattern.

4,290,072

OPAQUE JET INK PRINTING METHOD AND COMPOSITION

Ishwar R. Mansukhani, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 28, 1980, Ser. No. 115,916
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **41 Claims**

1. A process for opaque jet printing comprising:

providing a uniform printable substrate;

providing supply of jet ink comprising from 2% to 60% by weight of a resin or mixture thereof, from about 40% to about 90% of a solvent selected from the group consisting of aliphatic alcohols, ketones, hydrocarbons, and mixtures thereof, up to about 5% of an electrolyte, up to about 10% of a dye or other coloring material, and up to about 40% of a slow evaporating solvent selected from the group consisting of substituted and unsubstituted heterocyclic compounds having 5 or 6 membered rings and from 1 to 3 oxygen or nitrogen atoms in the ring, at least one of said dye and said electrolyte being present in said ink, said ink exhibiting a viscosity of from 0.5 to 25 cp. at 25° C. and having a resistivity of up to 10,000 ohm-cm.;

forming a jet of discrete droplets of said ink;

directing said jet toward said substrate;

modulating the density of said jet by applying an electric field thereto in accordance with information to be recorded;

printing said information on said substrate;

applying a coating of an opacifying solvent, before the solvents in the ink have evaporated, the solvents in the ink being miscible in the opacifying solvent, and the resin being immiscible in the opacifying solvent; and

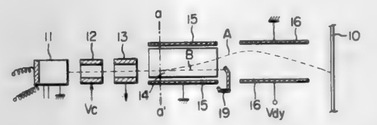
drying the thus opacified printed information.

4,290,073

INK-JET RECORDING APPARATUS

Koichiro Jinnai, Kawasaki, and Kyuhachiro Iwasaki, Fujisawa, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,000
Claims priority, application Japan, Sep. 25, 1978, 53/116493
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **3 Claims**



1. An ink-jet recording apparatus characterized by the provision of

(a) an ink head or manifold from which the ink jet is issued,

(b) a charge electrode for imparting a charge to the selected ink drop broken off from said ink jet in response to a video signal,

(c) a first deflection means for deflecting the charged ink drop in a direction which may be resolved into two mutually perpendicular component directions, one being parallel with a main scanning direction while the other being in the direction perpendicular to said main scanning direction,

(d) a second deflection means for cancelling the deflection in said direction perpendicular to said main scanning direction and

(e) a gutter for trapping the unused ink drops interposed between said first deflection means and said second deflection means in front of a recording medium upon which the charged ink drops strike and disposed at a level upward or downward from the printing level in said main scanning direction.

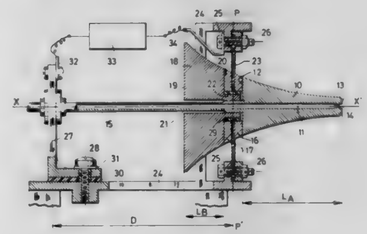
4,290,074

INK DROP GENERATOR FOR INK JET PRINTER

Gerard Royer, Saint-Denis, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Nov. 21, 1979, Ser. No. 96,527
Claims priority, application France, Dec. 29, 1978, 78 36984
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **20 Claims**

1. A drop generator for use in ink-jet printers, comprising a mechanical vibrations amplifier having two ends, one end of which is adapted to be vibrated and the other end adapted to have ink emitted therefrom, said amplifier including a passage extending between its two ends, and further including an ink supply tube connected to the said passage on the side of said one end of the amplifier, an electromechanical converter device connected at said one end of said amplifier for vibrating said one end to cause ink emitted from the other end to break up into drops at a point close to said other end, means for electrically exciting said converter device to impart a vibratory movement to said amplifier, a compensating block attached to the said converter device and arranged so as to set up in the said converter device a nodal vibration zone, said compensating block including an aperture for the passage of said ink supply tube, said tube having parts situated outside said



nodal zone, the transverse dimensions of said aperture being greater than those of the tube such that the compensating block is maintained out of contact with said those parts of the tube situated outside said nodal zone, and attachment means for holding the drop generator in position on the ink jet printer, said attachment means including a first attachment member having a part in contact with said generator, said part being situated in said nodal vibration zone.

4,290,075

OPTICAL RECORDING DEVICE HAVING SEVERAL ABLATIVE RECORDING LAYERS

Bernardus A. J. Jacobs; Adriaan W. De Poorter, and Pieter Zalm, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,213
Claims priority, application Netherlands, Apr. 2, 1979, 7902542
Int. Cl.³ G01D *15/34*; B32B *7/00, 9/04*
U.S. Cl. 430—270 **11 Claims**



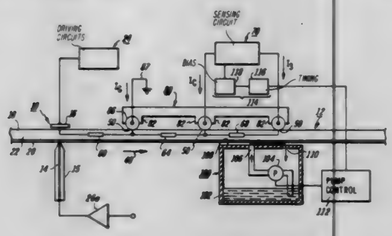
1. A device for the optical recording of information comprising a substrate plate having on at least one side an ablative recording layer which locally melts and forms holes as a result of exposure to laser light modulated in accordance with the information to be written, characterized in that on its surface remote from the substrate the ablative recording layer has a second ablative recording layer having a higher surface energy than the first recording layer, in which during operation of the device both recording layers melt and form liquid regions in the places exposed to the laser light and furthermore as a result of mixing of the recording layers in the liquid regions, a leap in the surface energy occurs at the circumferential edge thereof so that the molten recording material is drawn to the circumferential edge, wets the solid surface of the second recording layer and a hole is formed.

4,290,076

COMPENSATORY MEANS IMPROVING THE OPERATION OF ELECTROSTATIC PRINTERS

Keith E. McFarland, Woodside, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 22,029
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—154 **10 Claims**



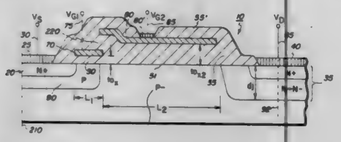
1. In an electrostatic printer of the type having a recording station and a development station, said recording station including electrode means for forming a latent electrostatic image on a recording medium moving through said recording station and thence through said development station, a portion of said recording medium being conductive, a potential above ground maintained at said electrode means during nonprinting periods, said potential being below image forming potentials, all of said potentials establishing a current in said medium conductive portion during printing and nonprinting periods, circuit means provided at said development station to compensate for the effects of said current in said recording medium, the input of said circuit means connected to sense the current in said medium at said development station and the output of said circuit means connected to engage said medium at the upstream side of said development station to nullify said current.

4,290,077

HIGH VOLTAGE MOSFET WITH INTER-DEVICE ISOLATION STRUCTURE

Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1979, Ser. No. 43,851
Int. Cl.[3] H01L *27/02*
U.S. Cl. 357—41 **46 Claims**



1. A high voltage MOSFET device on a substrate for use in a monolithic integrated array comprising:

(a) first means introduced in the substrate for operation as a drain area, second means introduced in the substrate adjacent to said first means for operation as a source area, third means introduced in the substrate between said first and second means for operation as a channel area, and fourth means introduced in the substrate between said first and third means for operation as a drift area;

(b) control gate means embedded in a first layer of relatively thin oxide disposed over said third means for on-off control of voltage as between said first and second means;

(c) field plate means embedded in a second layer of relatively thick oxide disposed over said fourth means for controlling field inversion relative to said first and second means, and for controllably increasing the breakdown voltage as between said control gate means and said first means;

(d) said first means is operative to function as the common axis for said second, third, fourth, control gate and field plate means which are relatively concentric thereto for interdevice high-voltage isolation; and

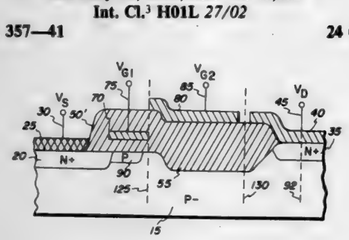
(e) high voltage lines means disposed on a dielectric oxide which in turn is operative to be placed on a relatively lightly doped implant in the substrate, the relatively lightly doped implant is interposed at predetermined spatial offsets between relatively heavily doped areas in the substrate for operative connection as between said first means and said field plate means for field isolation relative to the device.

4,290,078

HIGH VOLTAGE MOSFET WITHOUT FIELD PLATE STRUCTURE

Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1979, Ser. No. 43,852
Int. Cl.[3] H01L *27/02*
U.S. Cl. 357—41 **24 Claims**



1. A high voltage metal oxide semiconductor FET structure having an integrated monolithic circuit on a substrate with a closed geometry configuration including a drain area having a relative center axis introduced in the substrate, a source area introduced in the substrate relatively adjacent to the drain area, a channel area introduced in the substrate between the source area and the drain area, and a drift area introduced in the substrate between the channel area and the drain area comprising:

(a) first oxide means relatively disposed as a relatively thick layer over the drift area for use as a field dielectric;

(b) second oxide means disposed as a relatively thin layer over the channel area for use as a channel dielectric;

(c) gate electrode means relatively disposed over said second oxide means and spaced from the drain area for controlling the potential and for turning the current on and off as between the source and drain areas.

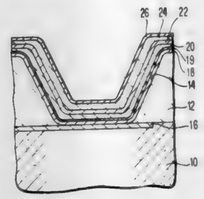
(d) two or more doped area means implanted in the substrate under said first oxide means and offset from said gate electrode means and the drain area having carrier concentrations relatively below degeneracy for stretching out field lines away from the drain area for prevention of breakdown at the junction of the drain areas with the substrate.

4,290,079

IMPROVED SOLDER INTERCONNECTION BETWEEN A SEMICONDUCTOR DEVICE AND A SUPPORTING SUBSTRATE

Charles Carpenter, Poughkeepsie; Joseph F. Fugardi, Wappingers Falls; Lawrence V. Gregor, Hopewell Junction; Peter S. Grosewald, Putnam Valley, and Morton D. Reeber, Shrub Oak, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,463
Int. Cl.[3] H01L *23/48, 29/46, 29/54*
U.S. Cl. 357—71 **3 Claims**



3. The ball limiting metallurgy pad structure for a semiconductor device solder bond interconnection that is made from electrically conductive materials consisting of:

an adherent layer formed of chromium that will bond to the passivating layer of a semiconductor device

a relatively thick layer of high thermal conductivity metal bonded to said chromium layer

a barrier layer formed of a metal that protects said high conductivity metal layer by physically preventing any interaction or alloying with overlying layers

a layer that is formed of a solder wettable metal

a surface protective layer

said layer of high thermal conductivity metal, when said pad structure is joined to a substrate with a solder connection, capable of reducing the radial thermal gradient within said interconnection,

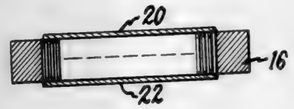
said barrier layer preventing dissolution and interaction of said layer of high thermal conductivity metal with the molten solder during the joining operation.

4,290,080

METHOD OF MAKING A STRAIN BUFFER FOR A SEMICONDUCTOR DEVICE

Robert E. Hysell, Berwyn, Pa., and Francis W. Kalkbrenner, Aurora, Ill., assignors to General Electric Company, Philadelphia, Pa.

Filed Sep. 20, 1979, Ser. No. 77,226
Int. Cl.[3] H01L *23/34*
U.S. Cl. 357—81 **24 Claims**



1. A method of making a thermally and electrically conductive strain buffer for a semiconductor device, the strain buffer including a plurality of individual copper strands, comprising the steps of:

a. providing a plurality of substantially straight strands of copper, said strands being aligned such that their lengths are substantially parallel, each of said strands being of substantially the same length, the respective ends of each of said strands defining a pair of opposing surfaces;

b. closely packing said strands together to remove substantially all interstitial voids between said strands;

c. cleaning said ends of said strands, and then,

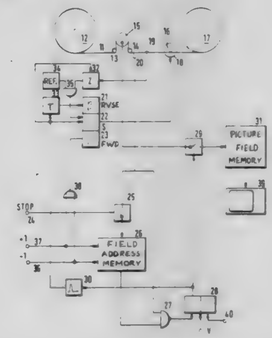
d. depositing by vacuum deposition a layer of highly electrically and thermally conductive metal having a melting point greater than 350° C. on at least one of said opposing surfaces defined by said respective ends of said strands, wherein said deposited metal layer provides sufficient structural integrity to hold said strands together so that the resulting strain buffer can be manipulated with substantially no break-up thereof and with substantially no loss of individual ones of said strands.

4,290,081

METHOD AND APPARATUS FOR STOP FRAME REPRODUCTION IN TELEVISION PICTURE FIELDS EACH RECORDED ON TAPE IN A PLURALITY OF ADJACENT TRACKS

Hubert Foerster, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 841,178, Oct. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 840,026, Oct. 6, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,335
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645747
Int. Cl.[3] H04N *5/76*
U.S. Cl. 358—4 **6 Claims**



1. A method of reproducing individual pictures selected by stepwise inspection of a sequence of television picture fields from tape-recorded television signals having picture field addresses corresponding to position on the tape, for critical examination of events recorded in said sequence of fields, comprising the steps of:

storing in an address storage memory the address of a picture field to be repetitively reproduced;

establishing normal pick-up of tape-recorded television signals while keeping track of the positions on the tape of the picture fields successively picked-up;

writing in the signals corresponding to said picture field to be repetitively reproduced into a picture storage memory during normal television signal pick-up of said tape-recorded signals in response to the detection of the tape position corresponding to said stored address;

repetitively reading out nondestructively the signals so stored in said memory;

stopping and reversing the tape movement in response to completion of the writing of said signals corresponding to said picture field into said memory and then automatically stopping the tape again after backing it up to a point from which it can obtain sufficient velocity upon renewed forward movement to pick up and store in said memory a picture field which precedes, by a first predetermined number of picture fields, the picture field last written into said memory, and, concurrently with reversing the tape

movement and stopping it again, modifying the address storage memory to store the address of a picture field preceding or succeeding, selectedly, by said first predetermined number of picture fields, the picture field stored by said corresponding signals in said picture storage memory, the extent of said backing up being determined by a second predetermined number of picture fields exceeding said first predetermined number of picture fields.

4,290,082

NOISE AND CROSS-TALK ELIMINATION IN RECORDING AND REPRODUCING VIDEO SIGNALS

Jun Hirai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 812,329, Jul. 1, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,678

Claims priority, application Japan, Jul. 6, 1976, 51/80127; Feb. 28, 1977, 52/21850

Int. Cl.³ H04N *9/493, 5/91*

U.S. Cl. 358—8 **60 Claims**

1. In apparatus for recording signals of varying level extending over a predetermined frequency band, and which comprises modulating means for frequency modulating a carrier with said signals to provide frequency modulated signals, and transducer means receiving said frequency modulated signals and scanning a record medium for recording said frequency modulated signals in successive parallel tracks thereon; signal processing means operative on said signals in advance of the frequency modulation of said carrier therewith and including first non-linear pre-emphasizing means for providing an amount of emphasis to said signals which is dependent on both the level and frequency of said signals, and second non-linear pre-emphasizing means acting on said signals following the emphasis of the latter by said first non-linear pre-emphasising means for providing a second amount of emphasis to said signals which is different from the first mentioned amount of emphasis and also dependent on both the level and frequency of said signals.

4,290,083

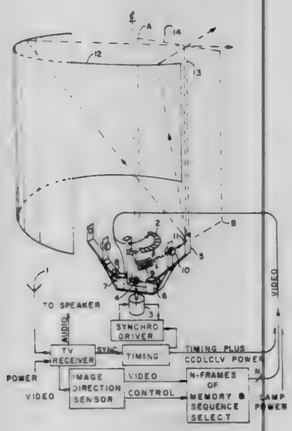
STEREOSCOPIC TELEVISION (UNAIDED) ON STANDARD BANDWIDTH-METHOD AND APPARATUS

Robert B. Collender, 709 Patterson Ave., Glendale, Calif. 91203

Filed Dec. 28, 1979, Ser. No. 107,838

Int. Cl.³ H04M *9/54*

U.S. Cl. 358—88 **2 Claims**



1. A method of stereoscopically reproducing standard television signals for observation by plural observers without the need for visual aids at the eyes of said observers, comprising the steps of:

providing relative lateral motion between television camera and scene;

acquiring a number of sequential television frames or fields on an array of images;

scanning said image array by a scan projector having one or more identical facets;

causing any image of said image array to store a whole television field or frame during the scan interval by any single facet of said scan projector;

causing any image in said image array to advance to the next sequential television field or frame during the period between adjacent facets of said scan projector;

sensing the direction of said relative lateral motion between said camera and scene to assure stereoscopic viewing;

sequentially projecting said array of images onto a semi-specular screen, said scan projector being positioned during projection at successive positions about the arc of a projection circle, said screen being of larger radius compared with said projection circle;

causing said screen to vertically scatter and horizontally reflect light from said screen to intersect on a line essentially tangent to said projection circle;

causing said intersected light to move along said line;

causing said scan projector interval between adjacent facets to be within the period of persistence of vision of observers.

4,290,084

METHOD AND MEANS FOR PRESERVING ORIGINAL CONTINUITY/DISCONTINUITY AMONG SAME COLORED PEL CLUSTERS UPON ARRAY COMPRESSION

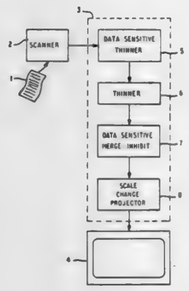
John F. Minshull, Winchester, England, and Pavel Brazdil, Edinburgh, Scotland, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,698

Claims priority, application United Kingdom, Oct. 2, 1978, 38998/78

Int. Cl.³ H04N *1/00*

U.S. Cl. 358—260 **13 Claims**



1. A method for preserving continuities and discontinuities among clusters of the same first color valued pels originating in an m×n multicolor valued pel array upon said array being compressed into a smaller p×q size, at least two contiguous first color pels constituting a cluster, the method steps prior to compression include:

detecting a bifurcation between clusters defined by at least one run of consecutive second color valued pels in at least one or more consecutive scan lines through row major order scanning of the m×n array;

upon the detection of a bifurcation, converting first color valued pels lying within a predetermined number of array positions contiguous to said detected bifurcation into second color valued pels.

4,290,085

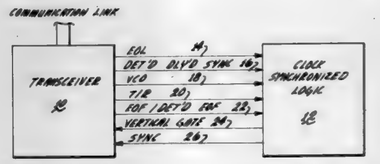
SYNCHRONIZATION SYSTEM FOR VARIABLE LINE LENGTH FACSIMILE TRANSCEIVERS

Carl R. Kolker, San Gabriel, Calif., assignor to Faxon Communications Corporation, Pasadena, Calif.

Filed May 15, 1980, Ser. No. 150,092

Int. Cl.³ H04N *1/36*

U.S. Cl. 358—264 **14 Claims**



1. In a raster scan facsimile system utilizing transceivers having means for modulating and demodulating video information on a carrier signal and hving means for creating a raw first signal whose initiation indicates the end of a raster line and whose duration, determined by a predetermined number of cycles of a controllable oscillator, indicates the magnitude of vertical displacement between successive scan lines, successive raw first signals being asynchronous, a combination for better synchronizing a first transceiver functioning in a transmitting mode as a transmitter with a remote transceiver functioning in a receiving mode as a receiver comprising, in each transceiver:

(a) precision oscillator means for creating a first clock signal whose frequency is an integral fraction of said precision oscillator frequency; and a second clock signal whose frequency is an integral fraction of said first clock signal; and

(b) control signal generating means including counting means coupled in the transmitting mode to the controllable oscillator and to said precision oscillator means for generating control signals in response to the raw first signal, the initiation of said control signals being synchronized to said first and second clock signals and the duration of said control signals being related to said first signal, said counting means generating a first operating signal after counting a first predetermined number of first clock signals and a second operating signal after counting a second predetermined number of first clock signals for precise control of the duration of said operating signals; and

(c) whereby the raw first signal is employed only to indicate the approximate start and duration of said control signals in a transceiver when functioning as a transmitter or a received signal when functioning as a receiver, and each scan of the image is controlled by said precision oscillator means for better synchronizing with remote transceivers so that uncertainties as to the time of termination or precise duration of a raw first signal do not affect the generation of control and operating signals.

4,290,086

FIRST GRATE DETECTOR FOR AN OPTICAL SCANNING SYSTEM

David R. Spencer, Melville, and Leonard Zuckerman, Dix Hills, both of N.Y., assignors to Litton Systems, Inc., Melville, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,776

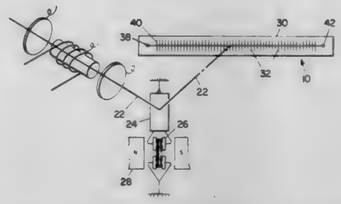
Int. Cl.³ H04N *1/10*

U.S. Cl. 358—293 **11 Claims**

1. An optical scanning system using a beam of electromagnetic energy and a grating for providing scan position information as said beam traces said grating and then retraces back across said grating for the next trace, comprising:

means for generating an output signal as said beam of electromagnetic energy traces each grate in said grating;

means for suppressing said output signal as said beam retraces back across said grating;



means for detecting said output signal above a threshold; and means for detecting a given portion of said output signal above said threshold whereby said portion represents a first grate signal.

4,290,087

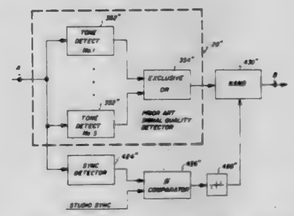
COARSE AND FINE CONTROL OF SEGMENTED VIDEO PLAYBACK APPARATUS WITH ANCILLARY RECORDING MEDIUM

James A. Bixby, San Diego, and Robert A. Lentz, Rancho Sante Fe, both of Calif., assignors to Spin Physics, Inc., San Diego, Calif.

Continuation of Ser. No. 916,653, Jun. 19, 1978, abandoned. This application May 11, 1979, Ser. No. 38,357

Int. Cl.³ H04N *5/795*

U.S. Cl. 360—33 **3 Claims**



1. For use with a machine adapted for the playback of segmented field video information recorded on magnetic tape in the form of discrete signal tracks corresponding to the video field segments, each said signal track having recorded therein sync and segment identifier signals and each video field being comprised of N segments per field, said machine having a rotary assembly of magnetic heads adapted to scan said discrete signal tracks and produce signals therefrom, apparatus comprising:

(a) an ancillary magnetic recording medium;

(b) means for slaving said ancillary medium to the motion of said rotary assembly;

(c) magnetic head means for recording N tracks on said ancillary magnetic medium;

(d) means for selectively recording the video field segment signals in respective tracks of said ancillary recording medium; and

(e) means for precluding the recording of signal information on said ancillary recording medium when said signal information has less than a predetermined quality, said means for precluding recording comprising

means for producing a signal having a reference phase,

first means responsive to said identifier signals to produce respective gate signals, and

second means responsive to said sync signals for producing signals corresponding to the phase error between said sync signals and said signal having a reference phase, and

logic means cooperative with said first and second means

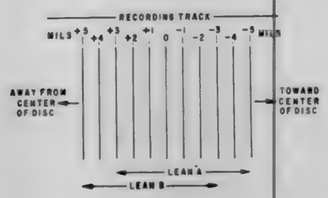
for effecting recording on said ancillary medium when one gate signal is exclusively produced coincidentally with a second means output error signal corresponding to a sync error less than a predetermined amount.

4,290,088

SYSTEM AND METHOD FOR ERASING INFORMATION FROM A FLEXIBLE INFORMATION STORAGE MEDIA

Harold J. Beecroft, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,163
Int. Cl.³ G11B *5/47, 21/02*
U.S. Cl. 360—66 **19 Claims**



1. An apparatus for erasing information from selected tracks of a flexible information storage media in an information storage system having a single magnetic head transducer, said apparatus comprising:

(a) means for moving said head transducer along said media and for maintaining said head transducer in a predetermined position relative to the center line of a selected track;

(b) means for controlling said moving means to move said head transducer to first and second predetermined positions on opposite sides of the center line of the selected track and at a predetermined distance therefrom when information on the track is to be erased; and

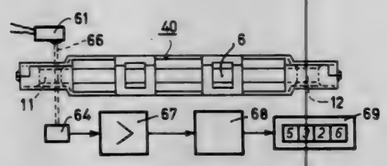
(c) means for applying an erase signal to said head transducer when said head transducer is in said first and second positions, so that a track width greater than the width of the head transducer is eraseable using a single head transducer.

4,290,089

MAGNETIC-TAPE CASSETTE WITH TAPE COUNTING ROLLER

Matheus D. Lavaleije, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 965,830
Claims priority, application Netherlands, Dec. 12, 1977, 7713709
Int. Cl.³ G11B *15/18, 15/48*
U.S. Cl. 360—72.1 **3 Claims**



1. A magnetic-tape cassette comprising a housing, first and second winding hubs accommodated in the housing, a length of magnetic tape having a first end connected to the first winding hub and a second end connected to the second winding hub and arranged so that the tape can be wound back and forth between said hubs, and a tape guide roller arranged interiorly of said housing for guiding the magnetic tape being wound between said hubs, said roller being rotatable about an axis of rotation by the motion of the magnetic tape, and

the improvement wherein said roller includes means for periodically varying the reflection or transmission of a radition beam impinging on the roller, responsive to rotation of the roller proportional to the transport of tape between said hubs, and

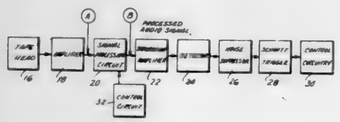
the cassette housing comprises radiation transmitting parts arranged to allow passage of a radiation beam into and from the interior of the cassette for cooperation with said roller means.

4,290,090

APPARATUS FOR AND METHOD OF NOISE-FREE DETECTION OF INTER-FEATURE PAUSES TO CONTROL SELECTIVE REPLAY IN TAPE RECORDING/REPRODUCTION SYSTEMS

Ryuji Yamamoto, Tonemachi, and Kiyotaka Ohsawa, Kanamachi, both of Japan, assignors to Soundesign Corporation, Jersey City, N.J.

Filed Mar. 25, 1980, Ser. No. 133,821
Claims priority, application Japan, Mar. 28, 1979, 54-39237[U]
Int. Cl.³ G11B *15/16, 15/52, 19/10*
U.S. Cl. 360—72.1 **10 Claims**



1. In a recording/reproduction system for selectively replaying features recorded on a recording medium, and for advancing the recording medium at any one of a selected playback speed, fast forward speed and rewind speed,

an improved apparatus for reliably detecting interfeature pauses between features to control the selective replay of the recorded features, said apparatus including recording head sensor means operative for detecting

audio signals whose voltage amplitudes are above a predetermined voltage value to indicate the presence of features,

non-audio signals whose voltage amplitudes are below the predetermined voltage value to indicate the presence of inter-feature pauses, and

noise signals located within the inter-feature pauses and having voltage amplitudes above the predetermined voltage value at all advancement speeds of the recording medium, thereby resulting in apparatus malfunction in distinguishing between an inter-feature pause and a feature itself,

the improvement comprising:

(a) first signal-processing means for attenuating the noise signals to voltage amplitudes less than said predetermined voltage value in accordance with a first predetermined frequency response characteristic;

(b) second signal-processing means for attenuating the noise signals to voltage amplitudes less than said predetermined voltage value in accordance with a second predetermined frequency response characteristic; and

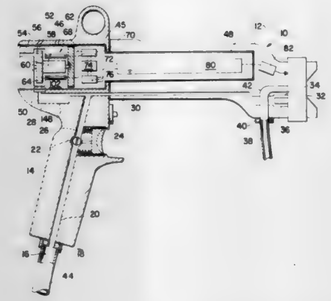
(c) control means for selecting said first signal-processing means when the recording medium advances at playback speed, and for alternately selecting said second signal-processing means when the recording medium advances at fast forward or rewind speed to thereby eliminate the aforementioned apparatus malfunction.

4,290,091

SPRAY GUN HAVING SELF-CONTAINED LOW VOLTAGE AND HIGH VOLTAGE POWER SUPPLIES

David H. Malcolm, Randolph, N.J., assignor to Speeflo Manufacturing Corporation, Houston, Tex.

Continuation of Ser. No. 754,161, Dec. 27, 1976, abandoned.
This application Jun. 11, 1979, Ser. No. 47,372
The portion of the term of this patent subsequent to Aug. 26, 1997, has been disclaimed.
Int. Cl.³ B05B *5/02*
U.S. Cl. 361—228 **30 Claims**



1. Electrostatic spray coating apparatus devoid of external electrical power connection thereto comprising

means for emitting a spray of atomized coating material,

electrode means disposed adjacent the locus of atomization of said coating material for applying an electric charge to said atomized coating material, and

a self-contained electrical potential originating power supply for providing the operating voltage for said electrode means, said self-contained electrical potential originating power supply including,

means for converting the kinetic energy of a moving air stream derived from a remote source thereof into an alternating voltage, and

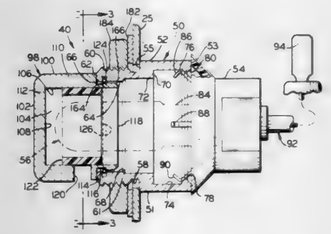
long chain voltage multiplying means for converting said alternating voltage into a high direct current voltage for application to said electrode means.

4,290,092

LAMP ASSEMBLY LIGHT SHIELD AND RETAINING MEANS

David W. Bull, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Filed Aug. 27, 1979, Ser. No. 69,704
Int. Cl.³ B60Q *3/04*
U.S. Cl. 362—61 **12 Claims**



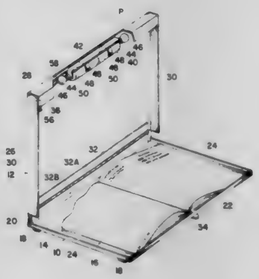
1. In a lamp assembly, the combination comprising body means adapted to be supported by associated support means and effective for operative connection to associated bulb socket means, and light shield means for detachable connection to said body means, a first open end formed in said body means, a second open formed in said body means, clearance passage means formed through said body means and operatively interconnecting said first and second open ends, said light shield means being detachably connected to said body means as to be supported and carried thereby and effectively closing said first open end, detent-like latching means effective for detachably securing said light shield means to said body means, said second open end being adapted to have operatively connected thereto said associated bulb socket means whereby bulb means carried by said socket means extends into said clearance passage means and upon energization emits light to the interior of said light shield means, said light shield means comprising a shield main body portion, said shield main body portion comprising a generally relatively forwardly disposed first closed end and a generally relatively rearwardly disposed second end, a recesslike cavity formed in said shield main body portion, said cavity having an end opening in said rearwardly disposed second end, said end opening being effective for receiving at least a portion of said associated bulb means therein, aperture means formed in said shield main body portion as to be located generally between said first closed end and said rearwardly disposed second end, said aperture means being effective for permitting the passage therethrough of light rays generated by said associated bulb means, said latching means comprising a generally annular groove carried by said body means, a resiliently deflectable retainer member generally contained by said groove, said retainer member comprising a plurality of integrally interconnected resiliently deflectable latching portions, said retainer member when normally contained by said groove having said plurality of latching portions extending through portions of said clearance passage means, and ramp-like surface means carried by said shield main body portion, said plurality of latching portions being effective to operatively engage said ramp-like surface means and resiliently restrain the detachment of said light shield main body portion from said body means.

4,290,093

PORTABLE ILLUMINATED MAGAZINE CASE

Tom Thompson, Campbell, and Kenneth A. Hirschberg, Saratoga, both of Calif., assignors to LITE-A-GUIDE, Inc., Los Gatos, Calif.

Filed Mar. 20, 1980, Ser. No. 132,254
Int. Cl.³ F21J *33/00*
U.S. Cl. 362—98 **16 Claims**



1. In a portable magazine case, or the like, with illuminating means for holding an opened magazine, or the like, for enclosing the same and to provide illumination for the pages to which the magazine is opened to facilitate reading the same, the combination comprising

a base which includes a bottom member of a size for support of a magazine, or the like, in an opened position,

a cover pivotally attached to said base and movable between open and closed positions relative thereto, said cover including a portion which projects beyond at least one edge of the base in the cover closed position, and

illuminating means attached to the cover at said projecting portion of said cover for illumination of said base, or

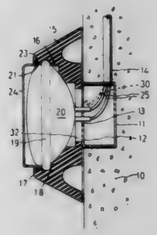
magazine positioned thereon, in the open position of the cover.

4,290,094

UNDERWATER OR WEATHERPROOF LIGHT

Henning Jensen, 13 Peter Parade, Mermaid Beach, Queensland, Australia (4218)

Filed Apr. 14, 1980, Ser. No. 139,811
Int. Cl.³ F21V *31/02*
U.S. Cl. 362—145 **9 Claims**



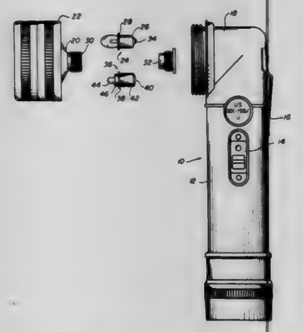
1. A light adapted for immersion in water and connectable to an electrical supply means by a conduit, said light including:
- a non-sealing lamp mounting means;
- a sealed beam electric lamp having at least a pair of filament contact posts on the rear thereof;
- means retaining the lamp in the mounting means whereby the exterior of the lamp may be exposed to direct contract with water;
- a waterproof insulated conductor wire electrically connected to each of the filament contact posts and extending through the conduit;
- a small mass of waterproof material completely enclosing and seaing each filament contact post and respective electrical connection between the filament contact post and its respective conductor wire; and
- a heat-shrinkable sleeve shrunk over said small mass of waterproof material which encloses and seals the connections between said filament contact posts and conductor wires.

4,290,095

AIMING POST LIGHT

Robert C. H. Schmidt, 2631 Stafford Blvd., Bettendorf, Iowa 52722

Filed Aug. 27, 1979, Ser. No. 69,954
Int. Cl.³ ..04M *1/22*
U.S. Cl. 362—191 **5 Claims**



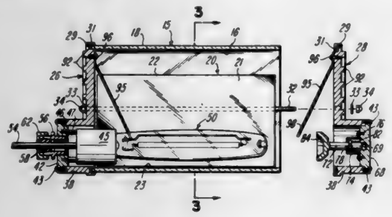
1. An aiming post light comprising a post, a flashlight having a bulb and batteries therein, and a bracket,
said flashlight having a belt clip thereon,
said flashlight projecting a beam of light at an angle of 90° to the axis of said batteries therein,
said bracket removeably connecting said flashlight belt clip with said post and positioning said flashlight thereon for emission of light in a substantially horizontal beam therefrom.

4,290,096

LIGHT FIXTURE

Roman Szpur, 2685 Culver Ave., Dayton, Ohio 45429

Filed Oct. 15, 1979, Ser. No. 84,554
Int. Cl.³ F71S *3/00*
U.S. Cl. 362—223 **11 Claims**



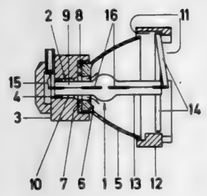
1. A light fixture adapted for use in an explosive environment containing flammable gases or particles, comprising an elongated light transmitting tube having opposite end portions, a set of end closure members mounted on said end portions of said tube, reflector means disposed within said tube and having a light reflecting surface, means located on one of said end closure members and supporting a lamp element within said tube, at least one of said end closure members including means defining a gap providing for the release of pressurized gas within said tube, and said gap defining means forming a path which abruptly changes the direction of the gas flowing through said gap for extinguishing any flame within the gas.

4,290,097

HIGH-PRESSURE DISCHARGE LAMP AND REFLECTOR COMBINATION

Werner Block, Taufkirchen; Manfred Pilsak; Klaus Düsedau, both of Munich, and Wolfgang Greiler, Unterhaching, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,664
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840031
Int. Cl.³ F21V *7/20*
U.S. Cl. 362—264 **15 Claims**



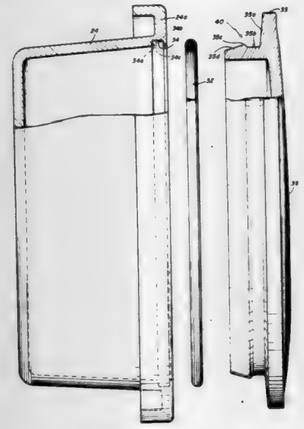
1. High-pressure discharge lamp and reflector combination assembly comprising
- an essentially bowl-shaped reflector (5) having a central opening at the reflector base end and open at the reflector light exit end;
- a high-pressure discharge lamp bulb (1, 9, 13) having a projecting bulb base end (9) positioned longitudinally with respect to the reflector axis;
- and a base (3) including an insulating, essentially cylindrical socket of temperature-resistant material formed with an inner recess slightly bigger than the bulb base end (9) to receive the bulb base end therein with clearance and to form an air circulation space between the base bulb end and said recess;
- air circulation openings (3*a*) formed in the base and communicating with said air circulation space surrounding the bulb base end (9), distributed along the circumference of the base;
- the bulb base end (9) being irremovably secured within said recess;
- and the reflector (5) being individually and separately irremovably secured to the base, surrounding the projecting bulb base end and spaced therefrom, the central opening thereof being in air flow communication with said air circulating space to provide a continuous ventilating path from said air circulating opening (3*a*) in the base, through said air circulating space past the base end of the bulb and into the reflector, and out of the open lightemitting end of the reflector for heat exchange of ambient air between the inside of the base, the lamp bulb, and the reflector.

4,290,098

RECEPTACLE APPARATUS FOR HOUSING COMPONENTS OF A LIGHTING SYSTEM

Karl B. Pierson, Warren, Pa., assignor to Betts Machine Company, Warren, Pa.

Filed Aug. 10, 1979, Ser. No. 65,428
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **12 Claims**



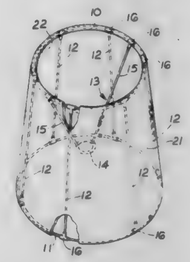
1. Receptacle apparatus for use in housing components of lighting systems of the class utilized to equip commercial vehicles such as trucks, trailers, buses and the like, said receptacle apparatus including an enclosure body, means for mounting the enclosure body on a vehicle, said enclosure body having an opening formed at one side thereof and defined by a circular end wall, inner portions of the enclosure body being removed to form an annular channel, a resilient sealing ring contained in the annular channel, a closure member occurring in spaced relation to the circular end wall and presenting an inner side, an outer side and a bottom extending between the inner and outer sides sealably secured to the enclosure body, said closure member having a cylindrical flange section and a tubular extension formed integrally therewith, said tubular extension being engageable with the sealing ring to detachably secure the cylindrical flange section in abutting relation to the circular wall, said tubular extension being further characterized by an extended annular sealing surface, the circumferential dimension of the extended annular sealing surface gradually increasing to form a retaining shoulder whose circumference is at a maximum at points substantially in a plane passing through the said inner side of the annular channel at right angles to the central longitudinal axis of the enclosure body, and the retaining shoulder being arranged to compressibly force the sealing ring against the bottom and outer side of the annular channel in displaced relationship along the said extended annular sealing surface.

4,290,099

LAMPSHADE

Nigel Vicars-Harris, Gwynedd, England, assignor to B. Blumenthal & Co., Inc., Carlstadt, N.J.

Filed Jun. 18, 1979, Ser. No. 49,647
Claims priority, application United Kingdom, Nov. 28, 1978, 46366/78
Int. Cl.³ F21V *1/06*
U.S. Cl. 362—352 **2 Claims**



1. A lampshade having a framework including an upper ring, a lower ring, a plurality of connecting rods connecting said rings and holding them in spacedapart relationship, a gimbal composed of a lampholder-annulus and struts extending therefrom to one of said rings, and a covering supported by the upper and lower rings of the framework, wherein the invention comprises tee-pieces on the ends of the rods for connecting the rods to the rings, each said tee-piece having a tubular socket part into which the respective end of the respective rod is friction fit, a resilient, stabilizing cross-piece on an end of the socket part, said cross-piece having a length that is at least equal to the length of said socket part, said cross-piece being slotted from end to end in order to establish a narrow gap that provides a snap fit on the respective ring and to conform to the arcuate ring curvature, and a respective stiffening web in each of the angles between the socket and the cross-piece, each of said webs extending from the approximate socket part midpoint to the approximate mid-point of the adjacent portion of the cross-piece.

4,290,100

FOUR TERMINAL VOLTAGE TRIPLER FOR MONOLITHIC LCD CLOCK CIRCUIT

David R. Squires, Cupertino, Calif., assignor to Intersil, Inc., Cupertino, Calif.

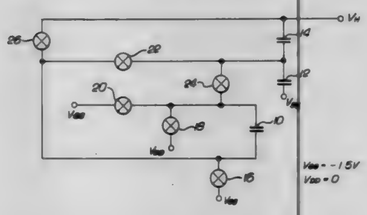
Filed Mar. 24, 1980, Ser. No. 132,819
Int. Cl.³ H02M *3/155*
U.S. Cl. 363—60 **12 Claims**

1. A circuit for tripling the voltage of a D.C. voltage supply comprising:
- a first capacitor;
- a second capacitor having a first terminal connected to a first voltage supply;
- a third capacitor connected in series with the second capacitor, the third capacitor including a first terminal connected to the second capacitor and an output terminal; and
- a plurality of switches for sequentially connecting the volt-

age supply and the capacitors in the following configurations:

(a) a first phase during which the first capacitor is connected across the voltage supply to thereby charge the first capacitor,

(b) a second phase during which the first capacitor is connected in parallel with the second capacitor,



(c) a third phase during which the first capacitor is again connected across the voltage supply, and

(d) a fourth phase during which the first capacitor is connected in parallel with the second capacitor, whereby by repeating said four phases a plurality of times, the voltage at the output terminal referenced to a second terminal of the voltage supply will approach three times the supply voltage.

4,290,101

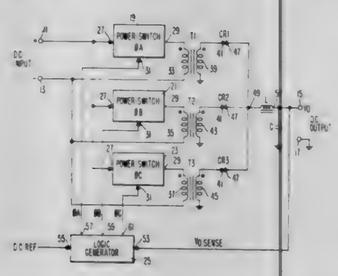
N PHASE DIGITAL INVERTER

Odo Hergenhan, Hightstown, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 865,403, Dec. 29, 1977, abandoned. This application Dec. 31, 1979, Ser. No. 109,128

Int. Cl.³ H02M 3/22

U.S. Cl. 363—65 **10 Claims**



1. A single feedback loop N-phase digital inverter for converting a first DC level into a second DC level comprising:

a first and a second input terminal for receiving therebetween said first DC level;

a first and second output terminal for outputting therebetween said second DC level;

a plurality of switching means for passing and inhibiting current flow, each switching means therein having an input lead connected to said first input terminal, an output lead, and a control terminal for receiving pulses to control the passing and inhibiting of current flow between said input lead and said output lead;

a plurality of transformers, each transformer therein having a primary winding with one end thereof connected to said output lead of an individually associated switching means in said plurality thereof and the other end connected to said second input terminal, each transformer also having a secondary winding with a first and a second end thereof, said second end being connected to said second output terminal;

a plurality of rectifiers, each rectifier having a first rectifier end connected to said first end of said secondary winding of an individually associated transformer in said plurality thereof, and a second rectifier end joined together with all other said second rectifier ends;

filtering means connected between said joined second ends of said rectifiers and said first output terminal for providing voltage filtering therebetween;

a single feedback path having a first and a second end, said first end thereof connected to said first output terminal; and

logic generator means connected to said second end of said single feedback path, said logic generator means providing pulses sequentially to said control terminal of each switching means in said plurality thereof for maintaining said second DC level at a constant value.

4,290,102

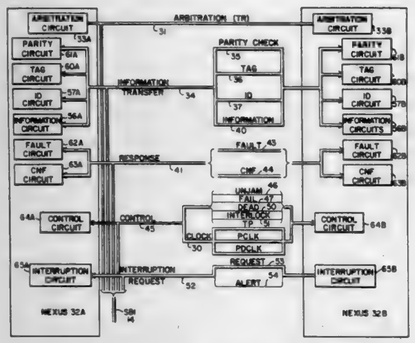
DATA PROCESSING SYSTEM WITH READ OPERATION SPLITTING

John V. Levy, Palo Alto, Calif.; David Rodgers, Acton, Mass.; Robert E. Stewart, Stow, Mass., and Richard J. Casabona, Stow, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 845,411, Oct. 25, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,566

Int. Cl.³ G06F 13/00

U.S. Cl. 364—200 **12 Claims**



1. A data processing system including a first data means, a second data means including at least one storage location, transfer means including timing, function, identification, address and confirmation signal conveying means connected to said first data means and said second data means for transferring information between said first and second means and timing means connected to said timing signal conveying means for transmitting timing signals for establishing consecutive transfer intervals:

A. said first data means including means for transmitting onto said transfer means during a first transfer interval one of a plurality of commands, each command having a function signal portion for defining a transfer function to be performed, an identification signal portion for identifying said first data means and an address signal portion for identifying a location in said second data means to or from which the transfer of data is to occur, said first data means transmitting the function, identification and address signal portions onto said function, identification and address signal conveying means in said transfer means, and further including means for receiving confirmation signals from said confirmation signal conveying means in the transfer means during a subsequent transfer interval a predetermined number of transfer intervals after the first transfer interval,

B. said second data means including:

i. control means connected to said timing signal conveying means for controlling a transfer in response to signals from said timing means,

ii. command responsive transfer means connected to said control means, said function signal conveying means and said address signal conveying means, responsive to the receipt of a command for transferring data between the location identified by the address portion received from said address signal conveying means and said transfer means,

iii. identification means connected to said control means and said identification signal conveying means for storing the identification portion from said identification signal conveying means that identifies said first data means, and iv. confirmation means connected to said confirmation signal conveying means, said timing signal conveying means and said command responsive transfer means responsive to the receipt of a command from said first data means for transferring a confirmation signal on said confirmation signal conveying means said predetermined number of transfer intervals after said command responsive transfer means has received the command.

4,290,103

SYSTEM AND METHOD FOR ACHIEVING BUFFER MEMORY COINCIDENCE IN A MULTIPROCESSOR SYSTEM

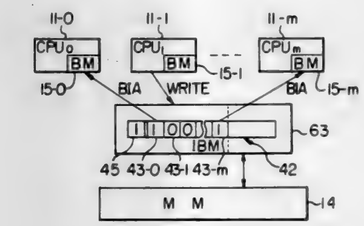
Akira Hattori, Yokohama, Japan, assignor to Fujitsu Limited, Japan

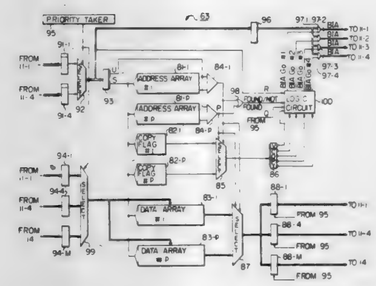
Filed Oct. 30, 1978, Ser. No. 955,760

Claims priority, application Japan, Dec. 29, 1977, 52-160451

Int. Cl.³ G06F 13/00

U.S. Cl. 364—200 **26 Claims**





1. A method for achieving buffer memory coincidence in a multiprocessor system comprising the steps of:

providing a plurality of central processing units, a plurality of buffer memories, one for each central processing unit, each buffer memory being contained in a respective one of said central processing units, a main memory commonly utilized by saic central processing units, and an intermediate buffer memory operatively connected between said main memory and said buffer memories, said intermediate buffer memory having a plurality of data block memory areas for storing respective corresponding data blocks, and a plurality of supervising information memory areas, one for each data block memory area, each supervising information memory area being coupled to a respective corresponding one of said data block memory areas, each supervising information memory area storing supervising information indicating whether or not a copy of one of said respective corresponding data blocks stored in said respective corresponding one of said data block memory areas is stored in each of said buffer memories;

detecting when one of said central processing units provides a request for accessing a data block in said intermediate buffer memory;

detecting whether or not said request is a request sent to said intermediate buffer memory for writing a data block;

if said request is a request for writing a data block, detecting whether or not the accessed data block is found in said intermediate buffer memory;

if said accessed data block is not found in said intermediate buffer memory, sending buffer invalidation address information to all of said buffer memories other than the buffer memory contained in the accessing central processing unit, said buffer invalidation address information having an address identical to the address of said accessed data block;

if said accessed data block is found in said intermediate buffer memory, sending said buffer invalidation address information only to selected ones of said buffer memories, said selected ones of said buffer memories being determined by said intermediate buffer memory in accordance with said supervising information.

4,290,104

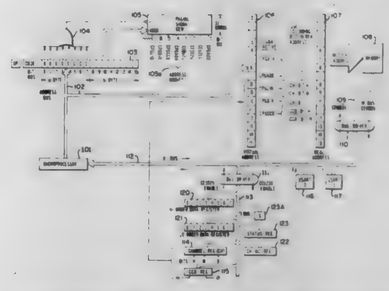
COMPUTER SYSTEM HAVING A PAGING APPARATUS FOR MAPPING VIRTUAL ADDRESSES TO REAL ADDRESSES FOR A MEMORY OF A MULTILINE COMMUNICATIONS CONTROLLER

Thomas O. Holtey, Newton; Robert C. Miller, Braintree, and Kin C. Yu, Burlington, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1979, Ser. No. 463

Int. Cl.³ G06F 9/06, 9/36

U.S. Cl. 364—200 **11 Claims**



1. A computer system having a paging apparatus for mapping virtual addresses to real addresses of a real memory, comprising:

(a) a first means for generating a first predetermined number of virtual addresses;

(b) signal means, coupled to said first means, for generating a set of control signals in response to said virtual addresses, said set of control signals having either a first or a second state, said second state having a plurality of selectable substates;

(c) storage means containing address modification data; and

(d) gating means, coupled to said first means and said storage means, for forming real addresses, said gating means responding to said set of control signals in said first state to form a real address equal to a first virtual address and responding to said set of control signals in a selected

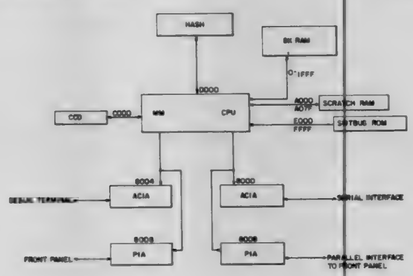
substate of said second state to form a real address from bits of said address modification data and from bits of a second virtual address, the number of bits of said address modification data and the number of bits of said second virtual address used to form said real address being determined by the selected substate of said set of control signals.

4,290,105

METHOD AND APPARATUS FOR TESTING MEMBERSHIP IN A SET THROUGH HASH CODING WITH ALLOWABLE ERRORS

Richard J. Cichelli, Allentown; Michael Q. Thompson, Bethlehem, and William R. Cheswick, New Hope, all of Pa., assignors to American Newspaper Publishers Association, Easton, Pa.

Filed Apr. 2, 1979, Ser. No. 26,114
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—200 **15 Claims**



1. A process for performing a set membership test by the technique of binary hash coding with allowable errors, comprising the steps of:

a. receiving a source listing of a number of discrete items which define a set, and generating a number of representations for each of said items; and

b. randomizing each of the number of representations through a hash step in order to yield a plurality of simple and randomly distributed hash address locations for each item of said set regardless of any variation in length for each item comprising the given set, wherein the number of address locations so generated is chosen as a function of the acceptable probability of an erroneous true when testing an item for membership; and

c. storing a binary indicator (a single binary value, i.e., 0 to 1) at each of the plurality of hash address locations generated for each item of the set within a bulk storage memory device, without the ability to reconstruct the items of the set given the storage locations; and

d. receiving a new item and examining said new item for set membership by repeating said generating and hashing steps upon said new item to thereby generate an equal number of new item hash address locations, and performing an AND operation upon all of the indicator values at said new item hash address locations to determine if there is a match with the set of previously stored indicators; and

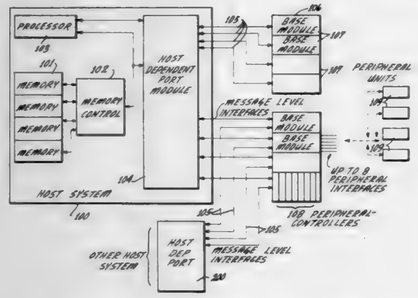
e. outputing whether there is or is not a match between all the indicators at the new item locations and the previously stored indicators defining the set.

4,290,106

MICROPROCESSOR SYSTEM WITH SOURCE ADDRESS SELECTION

Robert D. Catiller, Garden Grove, and Brian K. Forbes, Huntington Beach, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 27, 1979, Ser. No. 52,477
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **12 Claims**



1. A universal-type microprocessor system which cooperates with an application-dependent logic module to form a peripheral-controller capable of handling data transfers between main memory of a host computer and a plurality of peripheral terminal units which can be either "word-oriented" or "byte-oriented", and wherein said application-dependent logic module provides external register means having bus connections to said plurality of peripheral terminal units and to said host computer, and wherein said application-dependent logic module further includes an external memory for storage of programs related to control of said peripheral terminal units and for temporary storage of data undergoing transfer, and wherein said application-dependent logic module further includes control logic means for communicating with and controlling: said external register means, said external memory and communicating with a decoder-controller in said microprocessor system, the said microprocessor system comprising:

(a) data processing means including:

(a1) an Arithmetic logic Unit providing an output to a shift logic circuit and to a byte-swap circuit;

(a2) a shift logic circuit providing output to an I/O bus;

(a3) a byte-swap circuit providing output to said I/O bus;

(b) an I/O bus providing connecting lines from said data processing means to said external registers, to said external memory, to an accumulator register means, and to an addressing means;

(c) addressing means receiving input data from said I/O bus and storing addresses used for accessing data from internal or external memory, said addressing means including:

(c1) a program counter storing consecutive addresses of data located in an internal program memory;

(c2) a memory reference register for storing addresses of data located in said external memory, and including:

(c2-1) a memory address bus which connects to said external memory;

(c3) an address register means in said decoder-controller and providing an address bus to a plurality of accumulator registers for selection of data from/to an addressed accumulator register;

(d) internal program memory for storing program instructions and data words, said internal memory being addressed from said program counter and providing instruction words and data, via an instruction bus, to a register means.

(e) register means for temporary storage of data, said register means including:

(e1) a plurality of addressable accumulator registers which provide an output to the input of said Arithmetic Logic Unit, said accumulator registers receiving input data words from said I/O bus, said plurality of accumulator registers, including:

(e1-1) address bus means from said decoder-controller for addressing selected registers in said plurality of accumulator registers;

(e2) a memory operand register for receiving operand data from said internal program memory via an instruction bus or from said external memory via a memory data bus; said operand register providing an output to the input of said Arithmetic Logic Unit;

(e3) an instruction register for receiving instruction words and data from said internal program memory via said instruction bus or receiving data from said external memory via a memory data bus and providing instruction words and data to said decoder-controller;

(f) an instruction decoder-controller receiving instruction signals from said instruction register, and including incoming and outgoing control signal lines connected to said data processing means, to said addressing means, to said register means, to said internal and external memory means, to said external registers and said control logic means;

(g) an external memory data bus for carrying data from said external memory to said instruction register and said memory operand register.

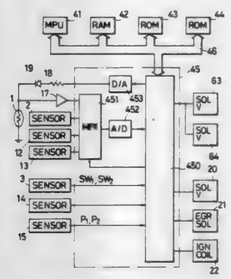
(h) program instruction words in said internal program memory wherein each instruction word includes a bit field "M" which is used to signal said decoder-controller to select either said program counter or said memory reference register as the next address source for data to be transmitted to said instruction register or said memory operand register.

4,290,107

ELECTRONIC FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Seiji Suda, Mito; Taiji Hasegawa, Minato; Yasunori Mouri, Katsuta, and Toshio Furuhashi, Tomobe, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,495
Claims priority, application Japan, Jun. 2, 1978, 53-66568
Int. Cl.³ F02B *3/00*; F02D *35/00*
U.S. Cl. 364—431 **11 Claims**



9. A processor-based control apparatus for controlling the supply of fuel to an internal combustion engine comprising:

regulation means for controlling the air-fuel ratio of a mixture of fuel and air to be supplied to said engine in response to a control signal applied thereto;

first sensor means for producing a first detection signal representative of the oxygen concentration in exhaust gas emitted by said engine;

second sensor means for generating pulses in accordance with the rotation of the engine crankshaft;

third sensor means for producing a second detection signal representative of the negative suction pressure of a suction pipe of an engine cylinder; and

a control unit, responsive to the pulses generated by said second sensor means and to the first and second detection signals produced by said first and third sensor means, for generating said control signal to be supplied to said regulation means, whereby the air-fuel ratio is controlled,

said control unit comprising

memory means for storing data representative of fluctuations in the air-fuel ratio versus quantity of suction air, and data representative of signals produced by said sensor means, and

a processor unit coupled to said memory means, said processor performs the following functions:

(a) generating, in response to pulses generated by said second sensor means and said second detection signal, first prescribed data representative of the quantity of suction air for said engine,

(b) generating data representative of the duty cycle of said control signal associated with the air-fuel ratio determined in accordance with said first prescribed data,

(c) evaluating the maximum value and the minimum value of said first detection signal capable of being produced by said first sensor means,

(d) generating a signal representative of a threshold level V_s intermediate said maximum and minimum values, in response to step (c), and

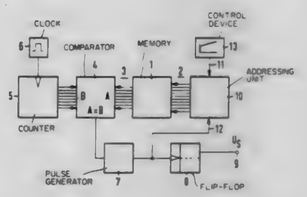
(e) comparing said threshold level V_s representative signal with said detected signal and generating data representative of a correction of said duty cycle-representative data generated in step (b) in accordance with a predetermined relationship between said threshold level V_s representative signal and said detected signal.

4,290,108

CONTROL UNIT FOR A CONVERTER

Patrick Woehrle, Erlangen; Adolf Habock, Uttenreuth, and Paul F. Müller, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,371
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829793
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—480 **10 Claims**



1. A circuit for forming a periodic control signal having a predetermined pulse pattern for modulating a converter stage comprising:

a memory for storing code words designating the position of switching pulse edges of a periodic control signal for a time interval, divided into increments, of up to one period of one of the AC input voltage and the output voltage of the converter, the memory having an address input, a memory advancing input, and a code word output comprising pulse patterns of a control signal for modulating a converter stage;

a clock generator for generating clock pulses, each clock pulse representing one increment;

a first counter coupled to the clock generator for counting the clock pulses and forming a count word;

a digital comparator having a first input coupled to the code word output of the memory and a second input coupled to the counter word output of the counter, and the compara-

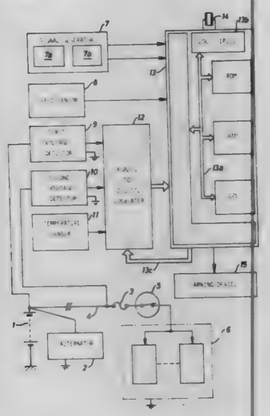
tor generating an output signal upon each agreement of the code word and the count word;
a pulse generator coupled to the signal at the output of the comparator and having an output coupled to the memory advancing input; and
a second counter coupled to the output of the pulse generator and having an output signal coupled to the address input of the memory, the second counter generating a first subaddress upon each agreement of the code word and the count word; and
a shift register having an output coupled to the memory address input, the shift register responsive to a modulation control signal for cyclically generating a second subaddress and supplying it to the memory.

4,290,109

ELECTRIC MONITORING METHOD AND APPARATUS FOR ELECTRIC SYSTEM OF AUTOMOTIVE VEHICLE

Koichi Taniguchi, Chita; Minoru Katayama, Toyohashi; Osamu Sangu, Toyota, and Shinichi Hori, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 2, 1979, Ser. No. 26,167
Claims priority, application Japan, Apr. 10, 1978, 53-42466
Int. Cl.³ G08B *21/00*
U.S. Cl. 364—481 **14 Claims**



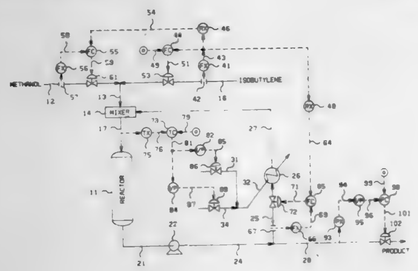
9. Monitoring apparatus for use with a secondary energy source connected to an alternator driven by the prime engine of a vehicle and to an electric load circuit through a conductor, said apparatus comprising:
first detecting means for generating a first signal related to the instantaneous terminal voltage across said energy source;
second detecting means for generating a second signal related to the instantaneous terminal voltage across said load circuit;
signal generating means for selectively generating first and second travel mode signals, respectively indicative of first and second travel modes of the vehicle;
means responsive to said first and second electric signals and said first and second travel mode signals for selectively generating one of a first reference value and a second reference value, said first and second reference values being generated from first and second relationships, respectively, with the load current corresponding with the terminal voltage across said load circuit, said first and second reference values being generated when said first and second travel mode signals, respectively, are being generated, said reference values representing a minimum performance for normal functioning of the circuit comprising said energy source, alternator, conductor, and load circuit, said calculating means also including means for comparing a value related to said first signal with said reference values; and
warning means for producing a warning signal when the said first signal is lower than said first reference value during said first travel mode and said second reference value during said second travel mode.

4,290,110

TEMPERATURE CONTROL FOR A REACTOR

Donald J. Makovec, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Nov. 8, 1979, Ser. No. 92,779
Int. Cl.³ G06G *7/58*; G05D *11/13*
U.S. Cl. 364—500 **9 Claims**



1. Apparatus comprising:
a reactor;
means for supplying a first feed stream containing a first reactant to the feed inlet of said reactor;
means for withdrawing the reaction product from said reactor;
means for passing a portion of said reaction product as a recycle stream to the feed inlet of said reactor;
means for establishing a first signal representative of the flow rate of said first feed stream;
means, responsive to said first signal, for establishing a second signal representative of the flow rate of the recycle stream required to substantially maintain a desired temperature differential across said reactor;
means for establishing a third signal representative of the actual flow rate of said recycle stream;
means for comparing said second signal and said third signal and for establishing a fourth signal responsive to the difference between said second signal and said third signal; and
means for manipulating the flow rate of said recycle stream in response to said fourth signal to thereby maintain a desired temperature differential across said reactor.

4,290,111

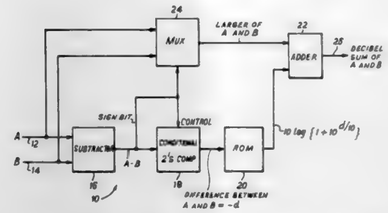
DECIBEL ADDITION CIRCUIT

Keith Dillon, Worthing, England, assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,708
Claims priority, application United Kingdom, Mar. 14, 1979, 8925/79
Int. Cl.³ G06F *7/556*; G06G *7/24*
U.S. Cl. 364—768 **10 Claims**

1. A decibel addition circuit for adding two signals in the decibel form of measurement directly, comprising:
means for determining which of said two signals is the larger,
means for determining the difference in magnitude between said two signals,
means responsive to said difference in magnitude for generating a signal having a value of 10 log $[1+10^{d/10}]$, and

means for adding said signal generated by said last-mentioned means to the larger of said two signals determined



by said first-mentioned means for providing the decibel sum of said two decibel signals.

4,290,112

METHOD AND APPARATUS FOR ELECTRO-OPTICALLY CONVOLUTING A ONE-DIMENSIONAL SIGNAL

Jacob S. Baumann, Pynacker, and Ronald J. Geluk, Nootdorp, both of Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Netherlands

Filed May 4, 1979, Ser. No. 36,097
Claims priority, application Netherlands, May 5, 1978, 7804881
Int. Cl.³ G06G *7/19, 9/00*
U.S. Cl. 364—822 **26 Claims**

19. An apparatus for convoluting a signal representing a profile formed during X-ray tomography and a filter function, which comprises:
an image intensifier tube having a deflection coil, said image intensifier tube includes an anode for producing a longitudinally moving linear image of said signal in which brightness varies along said linear image.
two mirrors having surfaces and mounted at a predetermined angle relative to one another for expanding said linear image transverse to said longitudinally moving linear image and for splitting a light beam into two light beams, said surfaces being in the shape of cylindrical segments;
at least two mask means representative of a portion of said filter function in each of said two light beams;
means for detecting light transmitted through each of said mask means to produce an output signal; and
differential amplifier means for receiving said output signal from said detector means and for producing an electric signal representative of convolution.

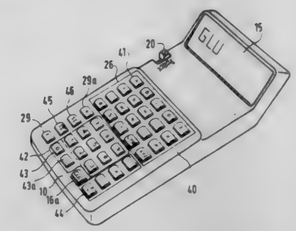
23. A method for electro-optically convoluting a signal representing a profile formed during X-ray tomography and a filter function which comprises:
(a) electro-optically reproducing said signal as a line-shaped image having one dimension and having its brightness varying there along respectively;
(b) converting said line-shaped image into a two-dimensional light beam having a first dimension corresponding to said one dimension and a second dimension corresponding to an expansion of said line-shaped image in a direction transverse to one dimension;
(c) projecting said two dimensional light beam through a beam splitter onto a first mask representative of a positive portion of said filter function and onto a second mask representative of a negative portion of said filter function;
(d) detecting light transmitted through each mask to produce output signals herefrom; and
(e) generating a difference between said output signals to produce an electric signal representative of said profile.

4,290,113

MINICOMPUTER

Rolf Haker, Frankenthal; Heinz-Georg Führer, Rauenberg; Rainer van Rijckevorsel, Mannheim; Werner Ruhl, Ludwigshafen, and Joachim Thiery, Mannheim, all of Fed. Rep. of Germany, assignors to Labors Mannheim GmbH für Labortechnik, Mannheim, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,930
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755407
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—900 **7 Claims**



1. Minicomputer for converting values, especially of a medicinal nature, between two systems of units, the minicomputer having manually actuatable numeral, letter, function and clearing keys, a computer unit having computing circuits responsive to numeral, function and clearing keys, respectively, a readout or display unit, respectively responsive to actuation of the keys and the computing circuits, and a fixed program memory wherein calculating routines and conversion factors for the calculation and conversion, respectively, between the two systems of units are stored whereby, upon actuation of a function key, one of the stored conversion factors is addressed thereby and entered from the fixed-program memory into a register of the computer unit, the improvement comprising means in the fixed-program memory for storing not only the conversion factors but also dimensions pertaining thereto in the form of letters, an interlinking logic operative upon actuation of a plurality of letter keys for selectively addressing the respective memory locations for the medical conversion factors and the dimensions pertaining thereto, and a call-up unit operative upon actuation of one of the function keys for display of the dimensions to cause the memory to issue the addressed dimension to the display unit.

4,290,114

MEDICAL DIAGNOSTIC COMPUTER

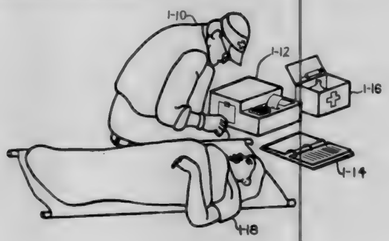
Hanon S. Sinay, 1601 Chestnut Ave., Manhattan Beach, Calif. 90266

Filed Jul. 1, 1976, Ser. No. 702,337
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—900 **5 Claims**

1. The method of operating a programmed automatic electronic computer to designate appropriate medical treatment for a patient who has been examined to determine each medical finding out of a predetermined set of medical findings which is present in the patient, the computer being adapted to have loaded therein and to read a readily interchangeable mass

memory unit, said computer also including an entry unit and an output display system, said method comprising the steps of:

(a) loading the computer with a preprepared, readily interchangeable mass memory unit having stored therein signals representing the definitions of a plurality of disease entities, each disease entity definition including signals representing a plurality of corresponding selected disease codes, each corresponding selected disease code representing one out of the predetermined set of possible medical findings with respect to any patient's condition, and also including signals representing a plurality of logic codes which, together with the selected disease codes, designate a corresponding logical combination of the selected individual disease codes which defines the disease entity, said mass memory unit also having stored therein, for each disease entity definition, corresponding signals representing at least one corresponding treatment code representing an appropriate medical treatment to be given to any patient whose medical condition satisfies the disease entity definition;



(b) for each one of the predetermined set of medical findings found in the patient being treated, operating the entry unit of the computer to enter and to store in the computer electrical signals representing the corresponding disease code, whereby the stored patient disease codes represent the medical condition of the patient being treated;

(c) operating the computer to read the contents of the mass memory unit and to respond to the logic code signals and selected disease code signals of each disease entity definition to perform a corresponding logical testing of the stored patient disease codes to test and indicate if they satisfy the corresponding logical combination of selected disease codes of the disease entity and, for each of the disease entity definitions whose logical combination of selected disease codes is satisfied by the stored patient disease codes, display indicia representative of the corresponding treatment codes;

whereby the displayed indicia are representative of the treatment codes for all of the satisfied disease entity definitions.

4,290,115

DATA PROCESSING METHOD AND MEANS FOR DETERMINING DEGREE OF MATCH BETWEEN TWO DATA ARRAYS

Paul E. Pitt, Cypress; Edward L. Glaser, Santa Monica, and Louis M. Galie, Culver City, all of Calif., assignors to System Development Corporation, Santa Monica, Calif.

Filed May 14, 1979, Ser. No. 38,518

Claims priority, application United Kingdom, May 31, 1978, 25738/78

Int. Cl.³ G06F *15/40*

U.S. Cl. 364—900 **57 Claims**

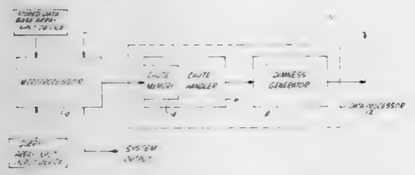
1. A method utilizing data processing means comprising a plurality of data stores and a corresponding temporary store for each such data store, the method determining a particular criterion value and an associated positional value for the degree of match between the juxtaposition of a plurality of event types of a query and a plurality of event types of a stored data base entry, the method utilizing a priorly-formed array of data values, each data value representing the number of event positions between the occurrence of an event type in the query, the occurrence of a corresponding event type in the stored data base, a group of one or more data values being provided for each of a plurality of different query event types, each different group being stored in a different data store with the data values thereof arranged in monotonic order from a first end, the method comprising the steps of:

(a) designating a data value in each of a plurality of data stores as a first data value;

(b) detecting at least one of the designated first data values having a predetermined magnitude relative to the other designated first data values;

(c) storing the at least one detected data value in the temporary store which corresponds to the data store in which such detected data value is detected;

(d) forming for each of individual data stores a first distance value which represents the algebraic difference between the detected data value and the designated data value in such data store;



(e) forming for each of individual data stores a second distance value representing the algebraic difference between the detected data value and a data value in the temporary store corresponding to such individual data store;

(f) selecting for each of individual data stores a distance value from the corresponding first and second distance values, the selected distance value having a predetermined magnitude relative to the other;

(g) forming for a detected data value a sum-of-distance value representing the sum of the absolute values of the selected distance values formed therefrom;

(h) designating a new data value in the data value store containing the at least one detected data value and repeating the steps (b)–(h) using such new data value as a designated data value,

the step of designating a new data value including the step of designating, in a predetermined order in the monotonic order of data values, the next data value from the one which was previously designated; and

(i) utilizing the detected data values and the corresponding sum-of-distance values provided during steps (b)-14 (h) for deriving such criterion value and positional value.

4,290,116

METHOD AND APPARATUS FOR OPERATING A PRINTER

Timothy C. Morse, Salem, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed May 21, 1979, Ser. No. 40,866

Int. Cl.³ G06F *3/12, 11/00*

U.S. Cl. 364—900 **23 Claims**

1. Control means for operating a printer having a printer carriage, paper feed means, carriage drive means and printing means, said control means comprising:

microprocessor means responsive to data and control codes for controlling printer operations;

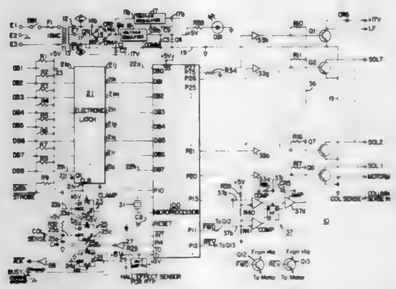
latch means for receiving incoming code words selectively representing data and commands loaded into said latch means by a strobe pulse following each code word;

means responsive to said strobe pulse for loading each of said code words into said microprocessor means;

said microprocessor means including memory means for storing character codes;

examining means for determining the type of code word present, said examining means further including means for generating a buffer full signal when loading the code words into memory means is completed;

sensor means sensing the location of the printer carriage to generate a start signal when the carriage is in the start position;



print initiating means in said microprocessor for initiating printing responsive to said buffer full signal and said start signal;

said printing initiating means including means for setting a predetermined time delay interval and means to reexamine said sensor means in the event that the buffer full signal condition and the start signal are not present at the first examination; and means responsive to the presence of said predetermined time interval for reactivating said examining means.

4,290,117

MEMORY DEVICE WITH CIRCULATING STORAGE LOOPS

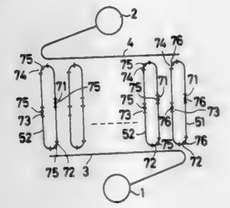
Mamoru Sugie, Hachioji; Noboru Yamaguchi, Kokubunji; Koichi Mayama, Mobara; Yuzo Kita, Fuchu; Shigeru Yoshizawa, Tokorozawa; Nobuo Saito, Mitaka, and Atsushi Asano, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,066

Claims priority, application Japan, Feb. 17, 1978, 53-16490

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—15 **8 Claims**



1. A memory device comprising:

storage means having a plurality of information storage loops, in each of which information representing whether or not the corresponding storage loop is a defective loop is written in a predetermined address of the corresponding storage loop; and

at least one marker storage loop in which a specific marker is written in a specified address corresponding to the predetermined address of said information storage loop; and

control means for reading and writing information of the same addresses of the respective storage loop of said storage means in parallel.

4,290,118

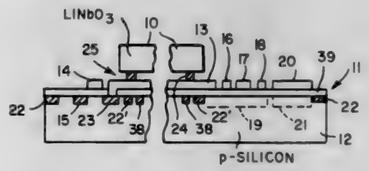
SOLID STATE DEVICES COMBINING THE USE OF SURFACE-ACOUSTIC-WAVE DEVICES AND CHARGE-COUPLED DEVICES

Ernest R. Stern, Concord; Richard W. Ralston, Bedford; Daniel L. Smythe, Jr., Carlisle, and Barry E. Burke, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 28, 1979, Ser. No. 80,100

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—183 **19 Claims**



1. A solid state device comprising

a surface acoustic wave device including

a first substrate capable of supporting a travelling acoustic wave signal on a surface thereof;

means for generating a first travelling acoustic wave input signal on said surface, said acoustic wave signal having an electromagnetic field associated therewith;

a charge-coupled device including

a second substrate having an insulating layer positioned on a surface thereof adjacent said first substrate so as to form a spatial region therebetween;

a plurality of charge storage wells, each capable of holding a charge therein;

interface means comprising

a plurality of conductive means positioned on said insulating layer each of said conductive means electrically connected at at least one end to said second substrate and associated with one of said charge storage wells of said charge-coupled device, each of said conductive means being responsive to a portion of the electromagnetic field of said acoustic wave signal to produce on said conductive means a voltage potential proportional to the corresponding portion of the electromagnetic field;

a plurality of first storage means each capable of being formed in said second substrate and associated with each of said conductive means for storing a charge therein;

said plurality of charge storage wells capable of being formed in said charge-coupled device and associated with each of said conductive means;

means for transferring charges between said first storage means and their associated charge storage wells.

4,290,119

MEMORY DEVICE PROTECTED AGAINST UNDESIRABLE SUPPLY VOLTAGE LEVEL

Kouji Masuda, Ohme; Masao Mizukami, Yokohama, and Nobuaki Kitamura, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi Ome Electronic Co., Ltd., both of Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,519

Claims priority, application Japan, Feb. 23, 1979, 54/19775

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189 **9 Claims**

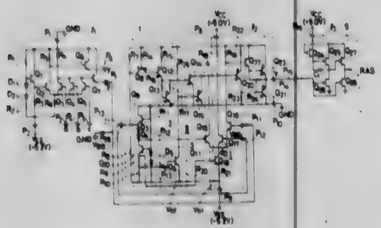
1. A memory device comprising:

memory circuit means including memory cells and means for accessing to desired memory cells; and

driver means connected to said memory circuit means for driving said access means; wherein:

said driver means comprises:

emitter coupled logic means connected to first and second supply voltage for providing switch-on and switch-off signals in response to first and second input signals, respectively, wherein said first supply voltage is larger than said second supply voltage, said switch-on and switch-off signals lie between said second supply voltage and third supply voltage which lies between said first and second voltages, and said first and second input signals lie between said second and third supply voltages;



switch means connected to said emitter coupled logic means for providing said access means with a drive signal of a low level in response to said switch-on signal and with a non-drive signal of a high level in response to said switch-off signal; and

control means connected to said first to third supply voltages for clamping the output of said emitter coupled logic means to said non-drive signal when an operating point defined by said first and second supply voltages does not belong to a predetermined region, and wherein:

said access means is means enabled in response to said drive signal.

4,290,120

CIRCUIT ARRANGEMENT FOR READING OUT AND REGENERATING ITEMS OF INFORMATION STORED IN ONE-TRANSISTOR STORAGE ELEMENTS

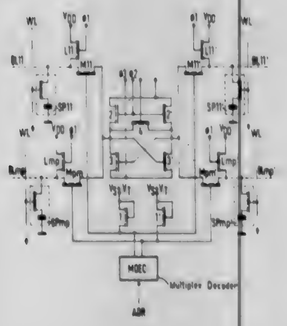
Karl U. Stein, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 69,175

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842547

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—205 **2 Claims**



1. A circuit arrangement for reading out and regenerating items of information stored in one-transistor storage elements, comprising: a plurality of word lines and bit lines; storage element means addressed by the activation of a word line during read-out for transferring an existing information charge into assigned bit lines; said assigned bit lines being connected to influence inputs of assigned read-out/regenerating amplifiers; m bit lines in each case being combined as line groups (1, 2 . . . m; m+1, m+2, . . . 2m; (p−1) m+1, (p−1) m+2 . . . pm); each of said bit line groups being assigned to a multiplexer; individual bit lines of a bit line group being connected to individual inputs of the assigned multiplexer; the assigned multiplexers each being connected by one output to the input of an assigned read-out/regenerating amplifier; a multiplex decoder means for consecutively connecting all the individual bit lines of each bit line group in a predetermined sequence via the relevant multiplexer to the input of the assigned read-out/regenerating amplifier; and, in order to improve the transfer of charge into the bit lines, threshold transistors are connected in pairs by their gates to relevant outputs of the multiplex decoder means, the threshold transistors forming means for switching individual inputs of the multiplexer; and for each output of the multiplex decoder means a load element being provided whose second terminal is in each case connected to a threshold potential.

4,290,121

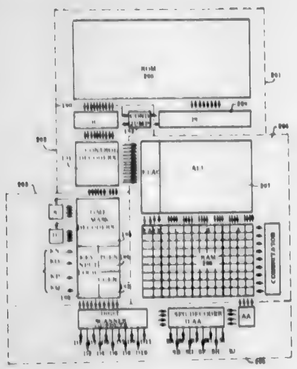
VARIABLE FUNCTION PROGRAMMED CALCULATOR

Gary W. Boone, and Michael J. Cochran, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 856,932, Dec. 2, 1977, which is a continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Jan. 12, 1979, Ser. No. 2,816

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—233 **4 Claims**



1. In data processing apparatus, data storage means in the form of an array of rows and columns of memory cells arranged in N columns with N cells in each row, where N is an integer greater than two, means for repeatedly generating N timed address signals in a given time period for addressing columns of the cells in sequence, means for generating output timing signals recurring once for each complete sequence of N address signals, means for providing coded representations of the address signals and of the output timing signals, means for detecting coincidence between the coded representation of the address signals and the coded representation of the output timing signals to produce coincidence signals, and means responsive to the coincidence signals for causing data to be read out of the data storage means into output means.

4,290,122

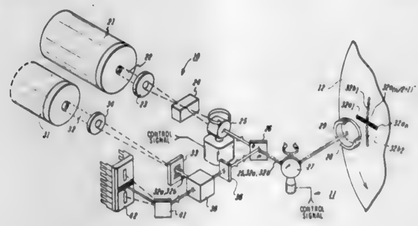
SELF-SYNCHRONIZING CLOCK SOURCE FOR OPTICAL MEMORIES

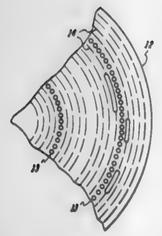
Roger D. Bates, Los Altos, and Gordon R. Knight, Cupertino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 14, 1979, Ser. No. 39,222

Int. Cl.³ G11C *13/04*; G11B *7/14*

U.S. Cl. 365—234 **7 Claims**





1. A digital optical memory for use with a recording medium having at least one band of tracks, each such band including at least one data track for storing data and a servo track containing periodic clock pulses; said memory comprising

optical means for simultaneaously focusing a first light beam on said data track and a second light beam on said servo track, whereby said first and second light beams are modulated in accordance with said data and said clock pulses, respectively;

servo control means coupled to said optical means for maintaining said second light beam on said servo track; and

detector means positioned to intercept said first and second modulated light beams, thereby simultaneously providing a first signal representing said data and a second signal representing a local source of clock frequency information.

4,290,123

TOWED ARRAY CONDITION APPRAISAL SYSTEM

George O. Pickens, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1980, Ser. No. 126,589

Int. Cl.³ H04R *29/00*

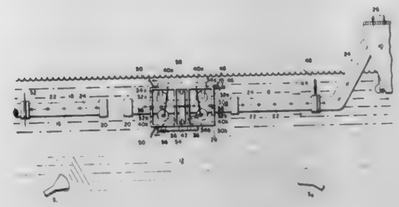
U.S. Cl. 367—13 **23 Claims**

1. Apparatus for determining selected parameters related to the operation of an acoustic array which contains a number of interconnected sensor elements, said apparatus comprising:

means for projecting test signals of selected acoustic frequencies;

cart means for successively bringing said projecting means into selected, closely spaced relationship with each of said sensor elements included in a length of said array, said cart means comprising a supporting frame to which said projecting means is fixably joined, and roller means for enabling said array to be moved along its centerline in relation to said cart means and said projecting means;

means for controlling the operation of said cart means; and



means coupled to said sensor elements for monitoring the response of a given one of said sensor elements to said test signals when said projecting means and said given sensor element are in said closely spaced relationship.

4,290,124

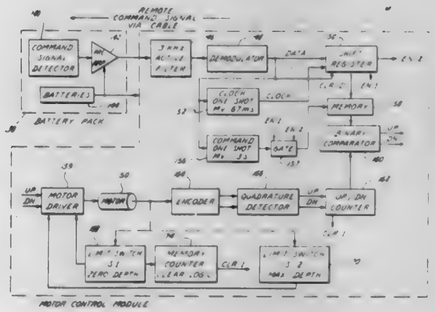
REMOTE CONTROL CABLE DEPTH CONTROL APPARATUS

Jimmy R. Cole, Houston, Tex., assignor to Syntron, Inc., Houston, Tex.

Filed Nov. 1, 1978, Ser. No. 956,730

Int. Cl.³ G01V *1/38*

U.S. Cl. 367—18 **4 Claims**



1. A remotely controlled seismic cable depth controller having depth control vanes for controlling the depth of a seismic cable in response to digital control pulses which are modulated as a multi-bit message onto a carrier signal and sent down a wire in the seismic cable from an exploration boat, comprising:

(a) motor means for controlling the position of the depth control vanes on the controller by rotating a shaft to adjust the position of said vanes;

(b) means for receiving the modulated carrier signal, representing the desired operating depth, transmitted down the cable from the boat;

(c) filter means for filtering the data pulses from the modulated carrier signal;

(d) modulator means for extracting the data pulses of the digital control signal from said filter means;

(e) shift register means for storing the pulses of the digital control signal from said demodulator means;

(f) memory means for storing the contents of said shift register means on command;

(g) clock multivibrator means responsive to the data pulses for forming clock pulses for said shift register means;

(h) command multivibrator means responsive to a first of the data pulses for forming a signal, longer in time than the

multi-bit message, which on expiration transfers the contents of said shift register means to said memory means;
(i) encoder means for sensing rotation of said shaft by said motor means;
(j) detector means for forming pulses in response to rotation of said shaft sensed by said encoder means;
(k) counter means for storing a count representing the present operating position of said shaft which thereby represents the present operating depth of the cable;
(l) digital comparator means for comparing the digital control signal from said shift register means with the count stored in said counter means;
(m) said digital comparator means further forming depth incrementing digital pulses to compensate for differences between the digital control signal and the count stored in said counter means; and
(n) motor driver circuit means for forming motor drive signals to cause said motor means to rotate said shaft and adjust the position of said vanes of the depth controller to cause the depth controller and the seismic cable to adjust operating depth in response to the digital control signal.

4,290,125

FISH DETECTOR CAPABLE OF DETECTING SPECIES OF FISH

Keisuke Honda, 62-1, Shinsanbongi, Sanbongi-cho, Toyohashi-shi, Aichi, Japan

Filed Jul. 23, 1980, Ser. No. 171,629
Claims priority, application Japan, Mar. 14, 1980, 55/31528
Int. Cl.³ G01S *15/96*
U.S. Cl. 367—87 **1 Claim**



1. A fish detector capable of detecting the species of fish CHARACTERIZED in that
two ultrasonic sounds at different frequencies are projected,
their echoes are received by transmitter-receivers, respectively,
the output signals by detected echoes from said transmitter-receivers are converted into binary-coded signals,
one of said binary-coded signals is divided by the other binary-coded signal,
the ratio thus obtained is compared with a number of n reference signals at different levels, thereby detecting whether or not said ratio is greater than the reference signal at the highest level, smaller than the reference signal at the lowest level or between the reference signals at adjacent levels and subsequently displaying in color depending upon the level thus detected.

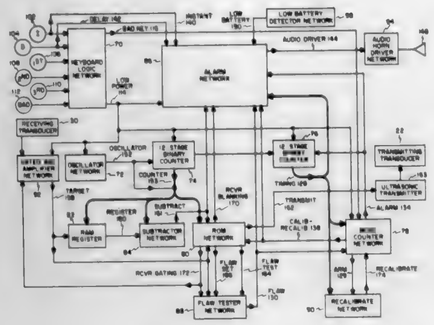
4,290,126

ULTRASONIC INTRUSION ALARM SYSTEM

Robert J. McFadyen, Syracuse, N.Y., and John F. Zeigler, III, Newtown, Conn., assignors to General Electric Company, Syracuse, N.Y.

Filed Nov. 9, 1979, Ser. No. 93,100
Int. Cl.³ G08B *13/16*
U.S. Cl. 367—93 **19 Claims**

1. An intrusion alarm system wherein transmitted pulsed signals are reflected by at least one surface including a reference surface within a protected area and the resulting received pulsed signals are employed to provide an indication of an intrusion within said protected area, comprising:
(a) transmitter means for periodically transmitting said transmitted pulsed signals,
(b) gate controlled receiver means, responsive to said received pulsed signals, for generating output signals that correspond to said received pulsed signals,
(c) first means for calculating the travel time of pulsed signals between said transmitter means and receiver means and for generating first control signals as a function of said travel time of received pulsed signals,



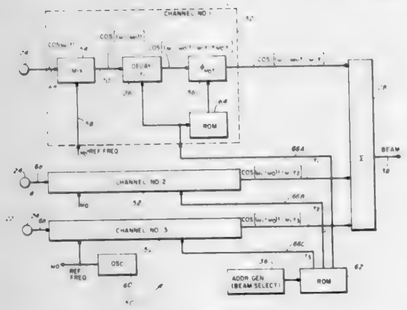
(d) second means, responsive to said first control signals, for periodically gating on said receiver means during brief periods that coincide with the calculated arrival of pulsed signals that are reflected by said reference surface, whereby said output signals are generated only upon the gated on operation of said receiver means, and
(e) third means, responsive to the output signal state of said receiver means during said brief periods, for generating an alarm signal that is indicative of an intrusion in the absence of said output signals and for preventing the generation of said alarm signal in the presence of said output signals.

4,290,127

BEAMFORMER WITH REDUCED SAMPLING RATE

Roger G. Pridham, Providence, R.I., and Ronald A. Mucci, Westwood, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 3, 1979, Ser. No. 99,386
Int. Cl.³ G01S *3/82*
U.S. Cl. 367—123 **6 Claims**



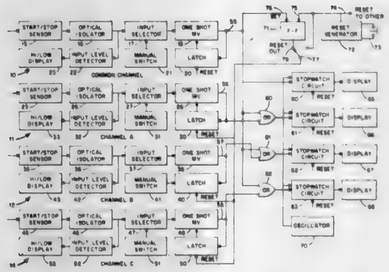
1. A beamformer comprising:
mixing means, said mixing means having terminals for receiving signals from the transducers of an array of transducers, said mixing means having terminals for receiving inphase and quadrature reference signals from a source of said inphase and quadrature reference signals, said mixing means mixing said transducer signals with said reference signals to translate said transducer signals to a lower frequency;
phase shifter means coupled to output terminals of said mixer means for applying phase shifts to individual ones of said transducer signals;
delay means coupled to individual ones of said phase shifters for imparting delays to individual ones of said transducer signals in accordance with the times of arrival of a wavefront of radiation upon said transducers of said array, said phase shifts of said phase shifting means being proportional to said delays of said delaying means; and
means coupled to said delaying means for summing said transducer signals to form a beam.

4,290,128

TIME SEQUENCE MONITOR

Paul S. Estabrook, R.F.D. #1, East Kingston, N.H. 03827

Filed Apr. 4, 1980, Ser. No. 137,450
Int. Cl.³ G04F *8/00*
U.S. Cl. 368—1 **8 Claims**



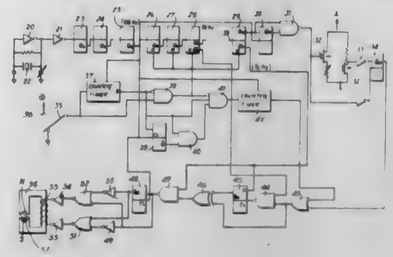
1. A time sequence monitor for displaying the time elapses for a sequence of functional occurrences comprising:
(a) a plurality of stopwatch circuits each having a start/stop connection and a display output connection.
(b) a plurality of display means each connected to a respective one of said stopwatch circuits to display time intervals counted thereby;
(c) a plurality of signal channels each of which comprises:
(1) a signal sensor for detecting one of said occurrences;
(2) pulse means connected to said sensor for providing an electrical pulse responsive to said sensor;
(3) latch means connected to said pulse means for latching said pulse means responsive to a pulse output of said pulse means and inhibiting further pulses; and,
(4) reset means connected to said latch means for resetting said latch to reenable said pulse means;
(d) a common connection of the pulse means of one of said signal channels to the start/stop input connection of each of said stopwatch circuits; and
(e) an individual connection from the pulse means of each of the remainder of said signal channels to one of the start/-stop inputs of a respective one of said stopwatch circuits whereby all of said stopwatch circuits can be started or stopped by one common signal channel and said stopwatch circuit can be individually started or stopped by a respective signal channel.

4,290,129

ELECTRONIC WATCH WITH SUPPLEMENTAL FUNCTION DISPLAY

Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 27, 1979, Ser. No. 61,341
Claims priority, application Japan, Jul. 27, 1978, 53-91803; Sep. 21, 1978, 53-116953
Int. Cl.³ G04B *9/00*
U.S. Cl. 368—66 **23 Claims**



1. In an electronic watch including a time-standard frequency-signal-generating means; a divider network dividing down said standard frequency signal and outputting a timekeeping signal of lower frequency; display means for indicating timekeeping functions; driving means, said driving means receiving said timekeeping output of said divider network and outputting signals to actuate said display means; an electrical power source for energizing the elements of said watch including said signal-generating means, said divider network, said display and driving means; the improvement therein comprising:
control means, said control means when enabled being adapted to pass a supplemental signal to said driving means said supplemental signal being outputted from said divider network;
detecting circuit means responsive to the voltage level of said power source, said detecting circuit means enabling said control means to pass said supplemental signal and causing said display means to output abnormal indications of said timekeeping functions when said source voltage drops below a prescribed level;
selectively actuatable preview circuit means, said preview circuit means being adapted to enable said control means and cause said abnormal indications of said timekeeping functions to occur in response to the actuation thereof when said source voltage exceeds said prescribed level.

4,290,130

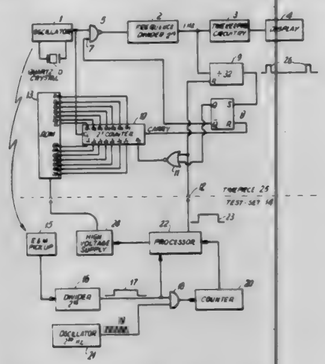
DIGITAL FREQUENCY TRIMMED ELECTRONIC TIMEPIECE

John Lowdenslager, Norwalk, and Norman C. Zatsky, Southbury, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Dec. 21, 1979, Ser. No. 106,174
Int. Cl.³ G04B *17/12*; G04C *11/02*
U.S. Cl. 368—200 **4 Claims**

1. In combination:
an electronic wristwatch having a quartz crystal controlled oscillator having a nominal frequency above a desired rate, a count-down circuit coupled to the oscillator to receive an input signal therefrom and provide a lower frequency output signal, time indicating means coupled to the count-down circuit to be activated thereby;
an inhibit circuit means comprising a NAND circuit connected between the oscillator and the count-down circuit, said NAND circuit blocking oscillator pulses to the count-down circuit upon an inhibit signal from a flip-flop circuit, said flip-flop circuit generates the inhibit signal in response to a periodic output signal from a divider circuit respond-

ing to signals from the count-down circuit, a nonvolatile memory circuit programmed to provide output signals indicative of a first predetermined count, a presettable counter coupled to said output signals of the memory circuit and being preset to a count equal to said first predetermined count in response to a preset enable signal from



the flip-flop circuit and thereafter rendered receptive to oscillator signals for increasing the count of said counter to a second predetermined count, said flip flop circuit being responsive to the second predetermined count from said counter to remove said inhibit signal to the NAND circuit whereby oscillator pulses are gated to the count-down circuit.

4,290,131

ELECTRONIC TIMEPIECE

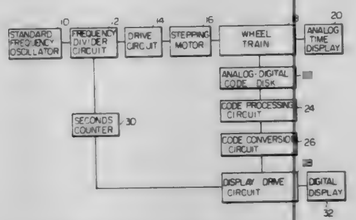
Kazunari Kume, and Hideshi Ohno, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 26,971

Claims priority, application Japan, Apr. 6, 1978, 53-040682; May 19, 1978, 53-059657

Int. Cl.³ G04B *25/00*

U.S. Cl. 368—71 **16 Claims**



1. An analog-to-digital time data conversion system for an electronic timepiece having a source of a standard time signal, frequency divider circuit means for dividing the frequency of said standard time signal to provide a time unit signal, driver circuit means responsive to said time unit signal for producing a drive signal, electro-mechanical transducing means driven by said drive signal, a wheel train driven by said electro-mechanical transducing means for reducing the speed of movement and transmitting the mechanical displacement of said electro-mechanical transducing means, and analog time indicating means driven by said wheel train for indicating time information, comprising:

at least one coded disk coupled to said wheel train for being rotated thereby, said coded disk including a plurality of areas mutually differentiated to represent the bits of a multiple-bit digital code, adjacent groups of said areas representing code combinations of said multiple-bit digital code, and each of said code combinations representing a point in time indicated by said analog time indicating means;

means for successively detecting said code combinations as said coded disk rotates, said detection means providing a plurality of digital code signals and a transition signal;

code processing circuit means responsive to said transition signal for correcting the timing of logic level transitions of said digital code signals, to produce corrected digital code signals; and

code convertion means responsive to said corrected digital code signals for producing digital time data signals indicative of said time information.

4,290,132

FOCUS SERVO DEVICE FOR USE IN AN OPTICAL INFORMATION READ-OUT DEVICE

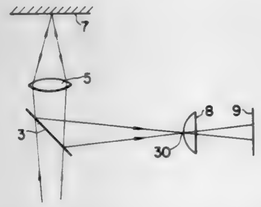
Fumitaka Kotaka, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 8, 1978, Ser. No. 904,117

Claims priority, application Japan, May 11, 1977, 52-54095; May 18, 1977, 52-57429

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—45 **3 Claims**



1. A focus servo apparatus for use in optical type information read-out system, said system of the type using a recording medium having a surface bearing at least one information recording track, said apparatus comprising:

a light source;

a first lens means for focusing the light from said light source onto said surface;

a cylindrical second lens means for passing light reflected by said surface and passed through said first lens means, said cylindrical second lens means having a primary principal point and being arranged such that said primary principal point is positioned substantially at the focal point of the reflected light passed through said first lens means; and

means responsive to an output of said light receiving means for regulating the position of said first lens means so that the light from said light source is maintained in focus on the surface of said recording medium.

4,290,133

SYSTEM TIMING MEANS FOR DATA PROCESSING SYSTEM

Robert E. Stewart, Stow; Barry J. Flahive, Westford, and David Potter, Pepperell, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 845,415, Oct. 25, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,604

Int. Cl.³ H04J *3/08*

U.S. Cl. 370—85 **14 Claims**

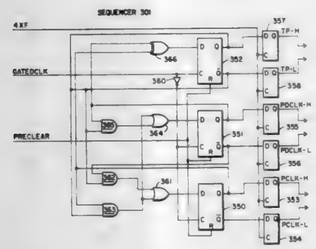
1. In a data processing system including a processor unit for processing data in response to instructions, at least one other unit for transferring data to and from said processor unit and bus means connected to the units for transferring signals among the units, the improvement of system timing means for controlling the transfer of signals among the units, said system timing means comprising:

A. clock generator means connected to said bus means for generating timing signals, said clock generator means including:

i. oscillator means for generating timing reference signals as first timing signals, and

ii. sequencer means connected to said oscillator means for transmitting a phase signal and a clocking signal in synchronism with the timing reference signals from said oscillator means, and

B. timing conductor means in the bus connected to said sequencer means in said clock generator means for coupling the phase and clocking signals to the processor and other units, and



C. timing means in each of the processor and other units for establishing internal timing for each said unit in response to the phase and clocking signals, each said timing means comprising:

i. decoding means connected to said receiving means for transmitting a sequence of unit timing signals, said decoding means including means for generating each unit timing signal in response to the phase signal and for an interval determined by the clocking signal, whereby the phase signal governs the position of the respective unit timing signals in the sequence, and the clocking signal controls the duration of each of the respective unit timing signals, the unit timing signals in a given unit controlling the functions that the unit performs.

4,290,134

MULTIPLEX INFORMATION HANDLING SYSTEM

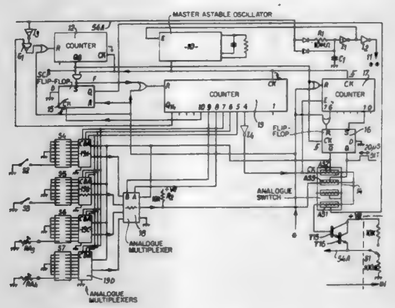
Michael J. Hampshire, Liversedge, England, assignor to Ward & Goldstone Limited, Salford, England

Filed Mar. 5, 1979, Ser. No. 17,096

Claims priority, application United Kingdom, Mar. 10, 1978, 9493/78

Int. Cl.³ H04J *6/00, 3/08*

U.S. Cl. 370—92 **26 Claims**



1. A multiplex information handling system for handling data bits, comprising:

control equipment having a state;

a plurality of transmitters, each having at least one input connected to said control equipment, each of said plurality of transmitters including generating means for generating address codes for each of said data bits, said address codes being determined by the state of, and corresponding to, said control equipment;

a plurality of receivers, each having at least one output which is connected to a corresponding load, and a respective receiver code identifying said at least one output;

signal bus means for connecting said plurality of transmitters to said plurality of receivers so as to convey said address codes and said data bits from said plurality of transmitters to said plurality of receivers as transmitted address codes and transmitted data bits, respectively; and

a power bus through which power is fed in operation to said plurality of transmitters and said plurality of receivers;

each of said plurality of receivers including comparing means for comparing each conveyed address code with said receiver code, and routing means responsive to coincidence between said each conveyed address code and said respective receiver code for routing the conveyed data bits to said identified at least one output;

each of said plurality of transmitters repeating its transmission after lapse of a predetermined time interval;

whereby any one of said corresponding loads is controlled by said control equipment at any one of said transmitter inputs, given the address code corresponding to said control equipment coinciding with said respective receiver code identifying said at least one output connected to said corresponding load.

4,290,135

CIRCUIT ARRANGEMENT FOR RECEIVING DIGITAL INTELLIGENCE SIGNALS IN A DIGITAL SWITCHING CENTER FOR PCM-TIME-DIVISION MULTIPLEX COMMUNICATION NETWORKS

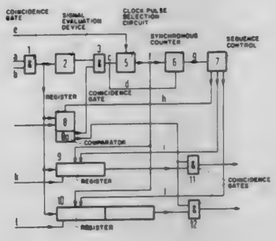
Josef Zemanek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,093

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840952

Int. Cl.³ H04J *3/12, 3/06*

U.S. Cl. 370—110 **6 Claims**



1. A circuit arrangement for the reception of digital intelligence signals in a digital switching center of a time-division communication network, which signals are transmitted on extension circuits from digital subscriber stations and are in the form of intelligence signal blocks comprising at least one intelligence signal word, and if necessary a signalling word, and a synchronizing word comprising a signal evaluation device (2) which responds to digital signals distinguishable from the quiescent condition and is insensitive to such digital signals subsequent thereto for at least for the duration of an intelligence signal block (Sy, Si, NW) and a maximum time of until the beginning of a new intelligence signal block; a clock pulse selection circuit (5) connected to said signal evaluation device and derives a plurality of bit clock pulse sequences (f) of identical frequency but phase displaced from an exchange clock

pulse (e) from the switching center and, during a synchronizing phase only passes said bit clock pulse sequence (f) which is in phase with the signal from the evaluation device (2); a synchronous counter (6) receiving the output of said clock pulse selection circuit and having a counting capacity corresponding to the length of the intelligence signal blocks which are forwarded by means of said bit clock pulse sequence (f) and said counter placed in its initial counter reading stage with a signal from the signal evaluation circuit; at least three registers (8, 9, 10) for the signal parts (Sy, Si, NW) of an intelligence signal block each connected to said incoming intelligence signal blocks and a sequence control (7) connected to said counter and deriving accept-release signals for said three registers (8, 9, 10) from the counter readings of the synchronous counter (6), a comparator (8a) which monitors the contents of one of said three registers which accepts the synchronizing word (Sy) for the occurrence of a synchronizing word and when coincidence occurs, a synchronous working phase results in which said bit clock pulse sequence (f) selected by means of the clock pulse selection circuit is retained and a zero setting of the synchronous counter is suppressed, and in the outputs of said three registers for the signalling word (9) and the intelligence signal word (10) are released, and in the case of non-coincidence, the synchronizing phase results.

4,290,136

CIRCUIT ARRANGEMENT FOR MONITORING THE STATE OF SIGNAL SYSTEMS, PARTICULARLY TRAFFIC LIGHT SIGNAL SYSTEMS

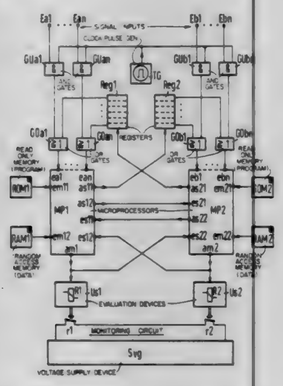
Heinrich Brunner, Rottach-Egern; Peter Drebinger; Peter Hoehne, both of Munich; Johann Hoisl, Ottobrunn; Guenter Kochanowski, Wolfratshausen, and Walter Wimmer, Pullach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 57,123

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1978, 2833761

Int. Cl.³ G06F *11/00*; B60Q *9/00*

U.S. Cl. 371—25 **15 Claims**



1. A circuit arrangement for monitoring the state of a signal system, comprising:

a memory means storing a plurality of test signals corresponding to inadmissible signal states;

an evaluation means including an input and an output and operable in response to a predetermined clock pulse sequence at said input to provide an output signal indicating an inadmissible actual signal state; and

signal comparison means including first inputs for receiving sequential actual state signals, second inputs connected to said memory means for receiving the test signals and an output connected to said evaluation means, and operable to sequentially compare each actual signal with all test signals and emit said predetermined clock pulse sequence in response to equality of an actual state signal and a test signal.

4,290,137

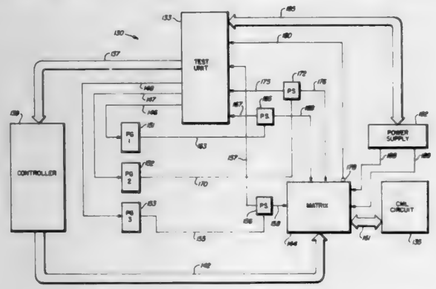
APPARATUS AND METHOD OF TESTING CML CIRCUITS

Dennis C. Hilker, Cave Creek, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 26, 1979, Ser. No. 106,573

Int. Cl.³ G01R *15/12*

U.S. Cl. 371—24 **11 Claims**



1. Test apparatus for CML integrated circuit comprising:

a. a first pulse generator capable of producing a first shaped pulse when actuated;

b. a second pulse generator capable of producing a second shaped pulse when actuated;

c. a first power splitter connected to receive said first shaped pulse and providing said first shaped pulse at two outputs thereof;

d. a second power splitter connected to receive said second shaped pulse and providing said second shaped pulse at two outputs thereof;

e. a plurality of electrically actuated relays, each relay movable between a first and second position from one electrical contact to another electrical contact in response to a switching signal, said plurality of relays being connected to said circuit, one output of said first power splitter, and one output of said second power splitter; said relays arranged in a matrix to connect said first and second shaped pulse to any pin of said circuit and provide an output waveform from any pin of said circuit at a waveform output thereof;

f. a controller connected to said relays for providing said switching signal to each relay as required; and

g. a test unit connected to other outputs of said first and second power splitters opposite to said one output thereof, and to said waveform output for measuring differences including time delays between said first and second shaped pulse and said waveform, said test unit providing control signals to said controller and actuating said first and second pulse generators.

4,290,138

WIRE FIRE MAPPING FOR PRINTERS

Gary T. Bare, and Lee T. Zimmerman, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,383

Int. Cl.³ G06F *11/32*

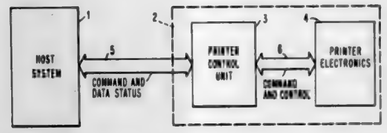
U.S. Cl. 371—29 **3 Claims**

1. Diagnostic apparatus for a printer unit having at least one print head, said print head having a plurality of print wires and actuators arranged in a nonconventional print wire pattern, such as a slanted serrated pattern, said diagnostics comprising:

selection means to select a plurality of diagnostic test operations for said printer unit, including a wire fire mapping test operation;

storage means for storing print wire images for test purposes; and

wire fire mapping means operable responsive to said selection means when the wire fire mapping test operation is selected for entering test data representative of a predetermined test pattern in said storage means and for supplying actuating signals to said print wire actuators in accordance



with said predetermined test pattern to display on a record medium the actual firing and misfiring condition of said print wire actuators and associated print wires, said wire fire mapping means incorporating

head/wire designation means for entering data in said storage means that will actuate said print wire actuators and associated print wires to provide identifying indicia on said record medium indicative of the print heads and print wires in order that wire firings and misfirings may be readily diagnosed.

4,290,139

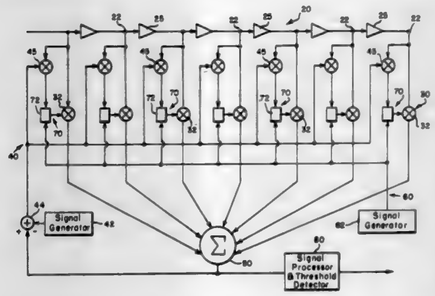
SYNCHRONIZATION OF A DATA COMMUNICATION RECEIVER WITH A RECEIVED SIGNAL

Dale M. Walsh, West Redding, Conn., assignor to General Data-Comm Industries, Inc., Danbury, Conn.

Filed Dec. 22, 1978, Ser. No. 972,445

Int. Cl.³ H04B *3/04*

U.S. Cl. 375—14 **10 Claims**



5. A method of achieving synchronization between a receiver and a data communication signal received by said receiver, said method comprising the steps of:

applying said received signal to a tapped delay line which has a plurality of spaced apart taps;

sequentially shifting said received signal through said tapped delay line;

multiplying the signals at each of a plurality of taps with signals approximately proportional to the complex conjugate of a plurality of signals in a portion of the received signal being shifted through the delay line;

summing the products produced by the foregoing multiplication step; and

producing an output signal representing the detection of said plurality of signals in the received signal when the signal produced in the foregoing summing step meets a prespecified criterion.

4,290,140

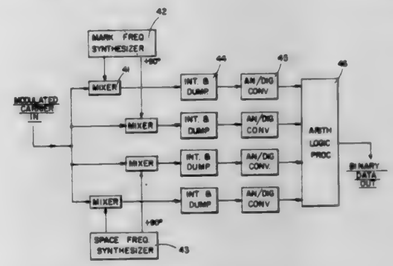
COMBINED COHERENT FREQUENCY AND PHASE SHIFT KEYING MODULATION SYSTEM

Robert Malm, Pacific Palisades, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 880,631, Feb. 23, 1978, abandoned. This application Jun. 21, 1979, Ser. No. 50,795

Int. Cl.³ H04L *27/18, 27/10*

U.S. Cl. 375—46 **6 Claims**



1. A system for use in the modulation of binary digital data on an electromagnetic carrier and the demodulation of said data from said carrier, comprising:

modulator means for effecting both coherent frequency and phase shift keying of said carrier in accordance with said data,

first demodulator means for quasi-CPSK demodulating the phase shifted carrier components representing the data from said carrier,

second demodulator means for NCFSK demodulating the frequency shifted carrier components representing the data from said carrier,

error predictor means for determining when said first or second demodulator means has an unacceptable error rate, and

means responsive to said error predictor means for selecting the output of the other one of said demodulating means as the demodulated output of said system whenever the current demodulating means has an unacceptable error rate.

4,290,141

ELECTRONIC VOTING SYSTEM

Roy E. Anderson, Scotia; Richard L. Frey, Schenectady, and James R. Lewis, Albany, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 2, 1979, Ser. No. 53,767

Int. Cl.³ H04B *17/00*; H04J *3/14*; G09B *7/06*

U.S. Cl. 455—2 **19 Claims**

17. A method for voting to determine the collective response of an audience to a given stimulus with a plurality of suggested responses comprising:

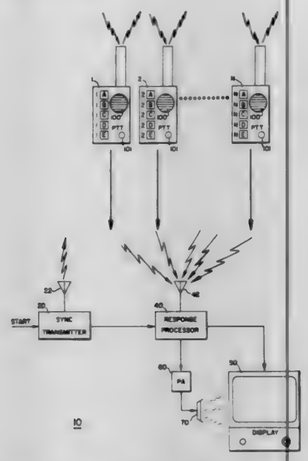
presenting a stimulus with a plurality of suggested responses to said audience;

transmitting, from each member of said audience, an individually selected one of a plurality of different digitally coded signals modulated on an electromagnetic carrier wave of predetermined frequency, each of said digitally coded signals corresponding to a different one of said suggested responses, each digitally coded signal being transmitted during a different one of a plurality of sequential time intervals of predetermined duration, respectively;

receiving said digitally coded signals;

correlating the received digitally coded signals with the suggested responses represented thereby so as to generate a logic signal at one of a plurality of logic ports each time one of said digitally coded signals is received that corresponds to the suggested response represented by that respective logic port;

counting the number of logic signals generated at each of said logic ports, and



displaying data representative of the number of logic signals generated which correspond to each of the suggested responses, such that the total number of each of said suggested responses by the audience may be ascertained.

4,290,142

INTERACTIVE CABLE TELEVISION SYSTEM

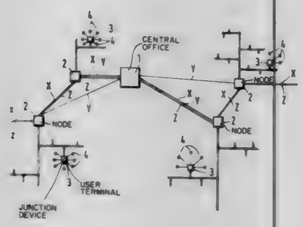
Rolf Schnee; Franz Kraus; Friedrich Kiel; Helmut Kliem; Wolfgang Krick, all of Berlin, and Herbert Landgraf, Darmstadt, all of Fed. Rep. of Germany, assignors to Heinrich-Hertz-Institut für Nachrichtentechnik Berlin GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,282

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807986

Int. Cl.³ H04B *3/04*

U.S. Cl. 455—3 **6 Claims**



1. In an interactive cable television system for serving a plurality of user locations in a service area divided into a plurality of service regions, including a central office and a service network having a portion composed of parallel cables arranged in a tree pattern possessing a plurality of nodes connected to said central office and remote from the user locations and, in the vicinity of the users, a further portion composed of transmission cables connected to groups of user locations, which transmission cables being connected to each group in a star pattern, the system presenting a plurality of transmission paths and means permitting multiple utilization of the paths, the improvement wherein: in each said service region said service parallel cables of said first mentioned portion of said network are connected in a tree structure extending from one of said node toward said user locations and are constituted by two parallel autonomous sets of cables thus representing network planes B, C and D; said service network further comprises, in each said service region, a plurality of junction devices each connected to said parallel cables of network plane D at the outer end of a respective branch of said tree structure and to said transmission cables which represent a network plane E of a respective group of user locations; and said service network further comprises a first connecting cable which is common to all of said nodes and connected in a tree structure between said central office and all of said nodes, said first cable being connected at said nodes to one of said sets of cables, and second connecting cables connected in a star structure to said central office independently of one another and of said first connecting cable, each said second connecting cable being connected at a respective node to the other set of said parallel cables associated with a respective service region, thus representing a network plane A.

4,290,143

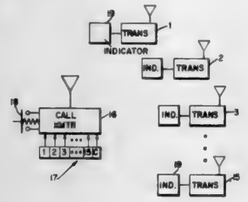
TRANSMISSION METHOD AND APPARATUS WHEREIN BINARY DATA BITS ARE CONVERTED INTO BARKER WORDS AND VICE VERSA

F. A. Wissel, and D. A. Kiliman, both of Cincinnati, Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Apr. 19, 1979, Ser. No. 31,457

Int. Cl.³ H04L *3/00*; H04B *3/60, 12/02*

U.S. Cl. 455—38 **26 Claims**



10. In an apparatus for transmitting multibit serial binary data signals, a source of binary data bits, means responsive to each of said binary data bits having first and second values for respectively deriving first and second multi-bit binary Barker words having first and second combinations including the same number of bits, the bits in like positions of the first and second combinations having complementary binary values.

4,290,144

RADIO COMMUNICATIONS SYSTEMS

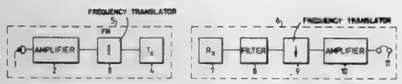
J. Stuart Webb, Reading, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 22, 1980, Ser. No. 114,170

Claims priority, application United Kingdom, Jan. 22, 1979, 02296/79

Int. Cl.³ H04B *1/00*

U.S. Cl. 455—63 **3 Claims**



1. A radio communications system for aircraft, for use in improving speech communication between aircraft travelling at high speed and low level where rapid phase and amplitude fluctuations degrade intelligible speech transmission, comprising a transmitter carried in a first aircraft, said transmitter including

a microphone and an upshift frequency translator connected to receive an input signal from said microphone and arranged to transfer the frequency band of said input signal to a higher band, and an amplitude modulator connected to receive frequency translated signals from the upshift translator and arranged to modulate said frequency signals,

and a receiver carried in a second aircraft arranged to receive said modulated signals from the transmitter, said receiver including

a demodulator for demodulating the received signals,

a high pass filter for removing noise from the demodulated signal, and a downshift frequency translator connected to receive output from the filter and arranged to transfer the frequency band of the output to a lower band.

4,290,145

CIRCUIT ARRANGEMENT FOR COMPENSATING TEMPERATURE-DEPENDENT FREQUENCY VARIATIONS OF A CRYSTAL-CONTROLLED OSCILLATOR

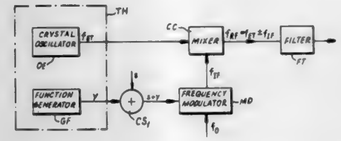
Manlio Saba, and Roberto Szocs, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jun. 11, 1980, Ser. No. 158,509

Claims priority, application Italy, Jun. 12, 1979, 23479 A/79

Int. Cl.³ H04B *1/04*

U.S. Cl. 455—113 **7 Claims**



1. In a message-transmitting system using frequency modulation, in combination:

a crystal-controlled oscillator generating a carrier of a frequency subject to temperature-dependent fluctuations;

a frequency modulator having a first input for receiving a subcarrier and a second input for receiving a message signal to be modulated upon said subcarrier;

a function generator in the vicinity of said oscillator emitting a corrective signal of a magnitude varying as a function of temperature related to the temperature dependence of said fluctuations;

summing means connected to said function generator and to a source of said message signal for supplying the latter together with said corrective signal to said second input whereby said subcarrier is frequency-modulated by the sum of said message and corrective signals;

mixer means with input connections to said oscillator and to said modulator for heterodyning said carrier with the frequency-modulated subcarrier to produce a pair of sidebands respectively representing the sum and the difference of said carrier and subcarrier, the temperature-dependent fluctuations of said carrier being substantially compensated by the corrective modulation of said subcarrier in one of said sidebands; and

filter means downstream of said mixer means for suppressing the other of said sidebands.

4,290,146

MEASURING DEVICE FOR TRANSMITTING MEASURING SIGNALS VIA AN OPTICAL LINK

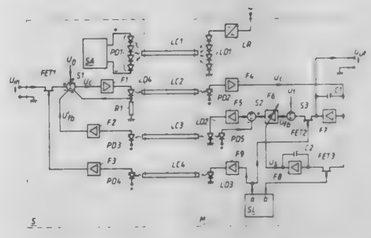
Morgan Adolfsson, and Torgny Brogardh, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Sep. 17, 1979, Ser. No. 75,873

Claims priority, application Sweden, Sep. 22, 1978, 7809961

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—612 **11 Claims**



1. In a measuring device of a type having a transmitter side and a receiver side, the transmitter side receiving at least one input measurement signal and transmitting the at least one input measurement signal over an optical link to the receiver side, the improvement comprising:

comparing means on said transmitter side for receiving the at least one measurement signal and a feedback signal from said receiver side and generating a corresponding comparison signal having an amplitude that is a function of the magnitude of the measurement signal and the received feedback signal;

first optical transmission link means for transmitting said comparison signal from the transmitter side to the receiver side;

regulator means with integrating characteristic on said receiver side for receiving the transmitted comparison signal and for generating a feedback signal having a magnitude corresponding to the magnitude of the measurement signal; and

second optical transmission link means for transmitting the feedback signal from the receiver side to the transmitter side in the form of a light signal, the light intensity of which is a direct measure of said feedback signal.

260,695

BABY CARRYING GARMENT

Helen K. Brookfield, 36 Moorhouse St., Camberwell East, Victoria, Australia (3124)

Filed Feb. 27, 1979, Ser. No. 15,879
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190



260,696

COMBINED BLADE AND CARRYING CASE FOR HERBS

Henry L. Madden, 5056 Saratoga, San Diego, Calif. 92107

Filed Dec. 21, 1978, Ser. No. 967,141
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—30

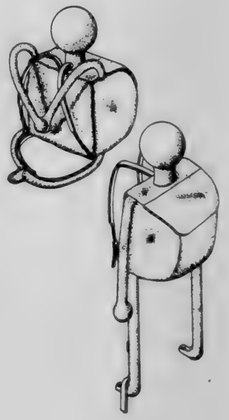


260,697

BACK PACK

Susan A. Fitzgerald, and Russell B. Watson, Jr., both of 1000 Sansome St., Third Flr., San Francisco, Calif. 94111

Filed Nov. 19, 1979, Ser. No. 95,601
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—32



260,698

BACK PACK

Susan A. Fitzgerald, and Russell B. Watson, Jr., both of 1000 Sansome St., Third Floor, San Francisco, Calif. 94111

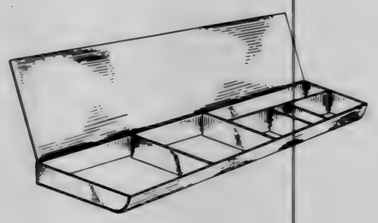
Filed Nov. 30, 1979, Ser. No. 98,877
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—32



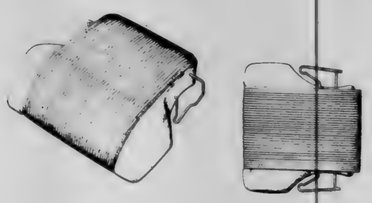
260,699
KEY HOLDER
Abel Yu, 974 W. Kensington Rd., Los Angeles, Calif. 90026
Filed Jun. 25, 1979, Ser. No. 52,000
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—65



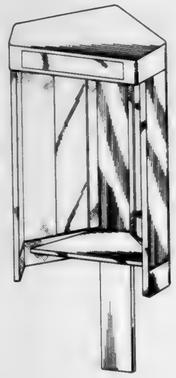
260,700
COMPARTMENT FOR A GUITAR CASE
Joseph Patrick, 107 S. Ave., Clairton, Pa. 15025, and Tim DeMurry, 1837 Greentree Rd., Pittsburgh, Pa. 15220
Filed Jul. 7, 1978, Ser. No. 923,047
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—74



260,701
AUXILLARY AUTOMOBILE SEAT FOR A CHILD
Kjell O. Jonasson, Gothenburg, Sweden, assignor to Aktiebolaget Volvo, Gothenburg, Sweden
Filed Oct. 30, 1978, Ser. No. 956,228
Claims priority, application Sweden, May 2, 1978, 78-1196
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9



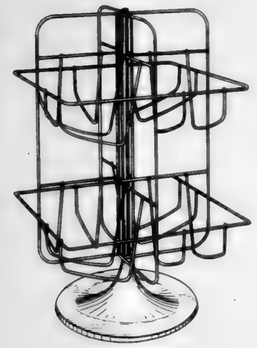
260,702
OUTDOOR TELEPHONE BOOTH
Leslie A. Hannula, Waukegan, and Fred L. Browning, Hanover Park, both of Ill., assignors to Acoustics Development Corporation, Northbrook, Ill.
Filed Jun. 18, 1979, Ser. No. 49,109
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D6—20



260,703
DENTAL CHAIR
Harold B. Pearson, West Des Moines, Iowa, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Jan. 19, 1979, Ser. No. 4,700
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—22



260,704
ROTATABLE DISPLAY STAND
Howard Nathan, New York; Sydney Edson, East Meadow, and Fred Howard, New York, all of N.Y., assignors to Consolidated Foods Corporation, Winston-Salem, N.C.
Filed Jan. 28, 1980, Ser. No. 115,912
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24



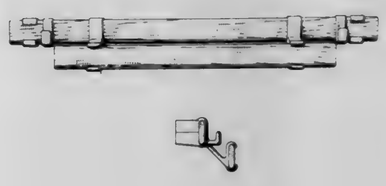
260,705
FOLDABLE COMBINATION CHAIR AND TABLE
Jose A. Zamora, 5046 W. 46th Ave., Denver, Colo. 80212
Filed Aug. 9, 1979, Ser. No. 65,125
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—64



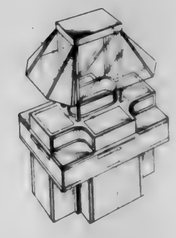
260,706
UPHOLSTERED CHAIR
Otto Zapf, Königstein, Fed. Rep. of Germany, assignor to Drabert Sohne Minden (Westf.), Minden, Fed. Rep. of Germany
Filed Jul. 2, 1979, Ser. No. 53,866
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



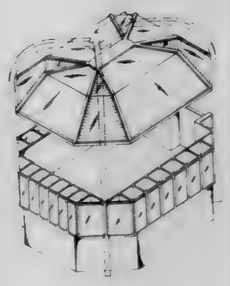
260,707
DOUBLE-BARRED TOWEL HOLDER
Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation Societe Anonyme, Isere, France
Filed Nov. 21, 1979, Ser. No. 96,446
Term of patent 3½ years
Int. Cl. D23—*02*
U.S. Cl. D6—99



260,708
SALAD BAR
James C. Schindler, Naperville, Ill.; Richard Hoeft, III, Santa Barbara, Calif., and Joan Grez, La Grange, Ill., assignors to McDonald's Corporation, Oak Brook, Ill.
Filed Apr. 20, 1979, Ser. No. 31,954
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144



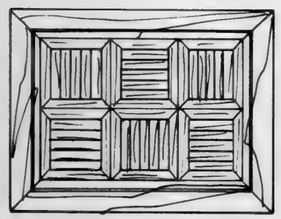
260,709
KIOSK
R. Michel Perlmutter, Aurora, Colo., assignor to Grove Foods, Inc., Aurora, Colo.
Filed Oct. 25, 1979, Ser. No. 84,895
Term of patent 14 years
Int. Cl. D6—*04*; D25—*03*
U.S. Cl. D6—146



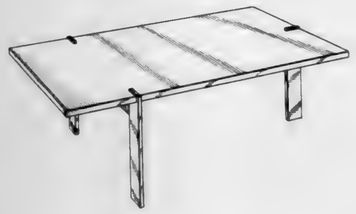
260,710
GUN CABINET
Arlie D. Miller, 4622 Anetta, Midland, Tex. 79703
Filed May 1, 1979, Ser. No. 34,983
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—149



260,711
END TABLE
Jobie G. Redmond, High Point, N.C., assignor to Jack Daniel Distillery, Lems Motlow Prop., Inc., Lynchburg, Tenn.
Filed Nov. 8, 1978, Ser. No. 958,850
The portion of the term of this patent subsequent to Jan. 20, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



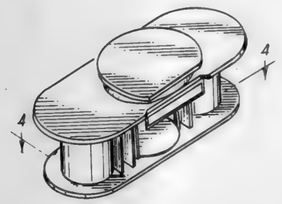
260,712
THREE-LEGGED TABLE
James Potucek, 330 E. 54th St., New York, N.Y. 10022
Filed Jul. 25, 1979, Ser. No. 60,832
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



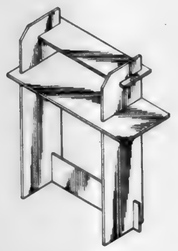
260,713
FOUR-LEGGED TABLE
James Potucek, 330 E. 54th St., New York, N.Y. 10022
Filed Jul. 25, 1979, Ser. No. 60,833
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



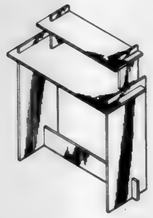
260,714
TABLE
Robert A. Philpot, 1048 Prep St., Augusta, Ga. 30901
Filed Jul. 19, 1978, Ser. No. 925,985
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—179



260,715
SUPPORT STAND FOR A COMPUTER
Steve J. Cohen, 175 Maribeau Sq. NW., Atlanta, Ga. 30327, and Cory W. Hillebrand, 1562 Beechcliff Dr., Atlanta, Ga. 30329
Filed Jun. 4, 1979, Ser. No. 45,250
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



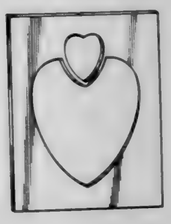
260,716
SUPPORT STAND FOR A COMPUTER
Steve J. Cohen, 175 Maribeau Sq. NW., Atlanta, Ga. 30327, and Cory W. Hillebrand, 1562 Beechcliff Dr., Atlanta, Ga. 30329
Filed Oct. 10, 1979, Ser. No. 83,391
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



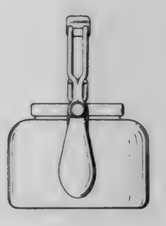
260,717
SHELF SUPPORT
Walter Gusdorf, Creve Coeur, Mo., assignor to Gusdorf Corporation, St. Louis, Mo.
Filed Apr. 12, 1979, Ser. No. 29,455
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



260,718
IMAGE FRAME
Joel C. Huck, P.O. Box 22544, Houston, Tex. 77027
Filed Oct. 26, 1978, Ser. No. 954,910
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



260,719
KETTLE
Toshio Otake, Yoshida, Japan, assignor to Yoshikawa Metal Ware Kabushiki Kaisha, Japan
Filed Feb. 8, 1980, Ser. No. 119,801
Claims priority, application Japan, Aug. 23, 1979, 54-035504
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—60



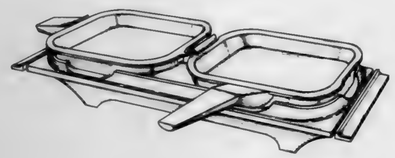


260,720
WINE CHILLER
William A. Edwards, 17200 Ceredo Pl., Granada Hills, Calif. 91344
Filed Jul. 26, 1979, Ser. No. 61,074
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—70





260,721
COMBINED, INTERLOCKING SKILLETS AND HEATING TRAY
Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 21, 1977, Ser. No. 862,724
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—87



260,722
SCOOP OR THE LIKE
Robert F. Bateman, Greenville, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 21, 1980, Ser. No. 142,289
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—104

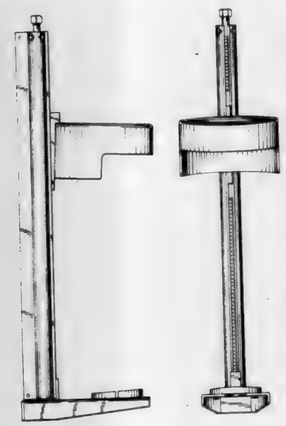
260,723
BARBECUE DEVICE
Henry H. Schifter, and Kenneth B. Briegleb, both of El Mirage, Calif., assignors to El Mirage Cooker Company, Adelanto, Calif.
Filed Nov. 6, 1978, Ser. No. 958,111
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108



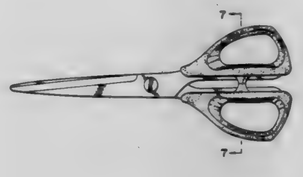
260,724
GARDEN IMPLEMENT
Eli J. Bennett, Belle Meade Ranch, Hagerman, Id. 83332
Filed May 19, 1980, Ser. No. 151,123
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—12



260,725
STRUT SPRING COMPRESSOR
David S. Kemmer, Warren, Mich., assignor to Kent-Moore Corporation, Warren, Mich.
Filed Jan. 22, 1979, Ser. No. 5,345
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51

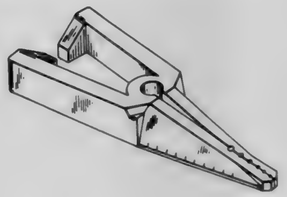


260,726
SCISSORS
Katsunori Ishii, Seki, Japan, assignor to Kai, Cutlery Center Co., Ltd., Seki, Japan
Filed Jan. 24, 1979, Ser. No. 6,123
Claims priority, application Japan, Aug. 12, 1978, 53-34436
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57

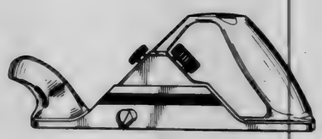




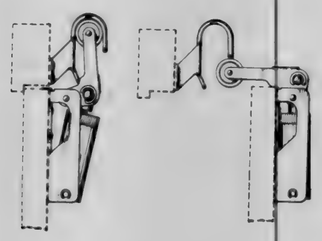
260,727
NAIL HOLDER
Robert F. West, West Simbury, and Francis W. MacGregor, New Britain, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Jan. 22, 1979, Ser. No. 5,376
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—72



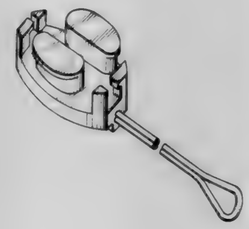
260,728
PLANE
Carl A. Breger, Malmö, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Sep. 29, 1977, Ser. No. 838,117
Claims priority, application Sweden, Mar. 29, 1977, 77/700
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—101



260,729
COMBINED DOOR CHECK AND HOOK
Kazuo Iseki, Tokyo, Japan, assignor to Ohta Company Limited, Tokyo, Japan
Filed Jun. 27, 1978, Ser. No. 919,515
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



260,730
CABLE CLAMP
Yoshinari Fujita, Kodairashi, Japan, assignor to Okura Electric Industry Co., Ltd., Tokyo, Japan
Filed Nov. 1, 1978, Ser. No. 956,678
Term of patent 7 years
Int. Cl. D8—*396, 08*
U.S. Cl. D8—356



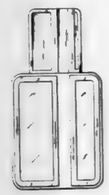
260,731
COMBINED TOY FIGURE AND CONTAINER THEREFOR
George B. Sarac, 7600 Klingston St. NW., Massillon, Ohio 44646
Filed May 7, 1979, Ser. No. 36,421
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—307



260,732
BOTTLE
Richard W. C. Walker, London, Canada, assignor to Labatt Brewing Company Limited, London, Canada
Filed Jul. 27, 1979, Ser. No. 61,403
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349



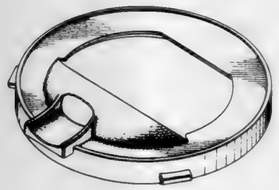
260,733
COMBINED BOTTLE AND CAP
Richard E. Meyer, Chicago, Ill., and Pierre Dinand, Levallios, France, assignors to Jovan, Inc., Chicago, Ill.
Filed May 29, 1979, Ser. No. 42,933
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—367



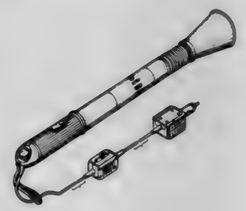
260,734
BOTTLE
Arnold I. Frumin, and Frank B. Hedges, both of 64 Grant Ave., Carteret, N.J. 07008
Filed Jun. 16, 1978, Ser. No. 916,306
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—373



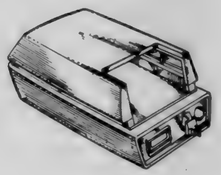
260,735
COMBINED POURING SPOUT, BRUSH WIPER AND PAINT CAN RIM PROTECTOR
Victor E. Heath, 17476 Via Lindo, Tustin, Calif. 92680
Filed Feb. 9, 1979, Ser. No. 10,744
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—447



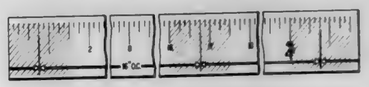
260,736
PORTABLE RADAR-TYPE SPEED METER
Viktor A. Petrovsky, ulitsa Pugacheva, 19a, kv. 49; Lev G. Gassanov, ulitsa Uritskogo, 25, kv. 65, both of Kiev; Sergei M. Belyaev, ulitsa Magnitogorskaya, 3, kv. 97; Lev A. Kochetov, ulitsa Khersonskaya, 3, kv. 30, both of Moscow; Vitaly L. Kryzhanovsky, ulitsa Transheinaya, 11, kv. 1, Kiev; Andrei A. Palamarchuk, ulitsa Saratovskaya, 49, kv. 18, Kiev; Viktor D. Ushakov, ulitsa D. Bednogo, 25, kv. 52, Kiev; Rafail J. Timraleev, ulitsa Levanevskogo, 4, kv. 43-2, Kiev; Vitaly M. Parfenjuk, ulitsa Geroev Sevastopolya, 33, kv. 55, Kiev; Alexandr S. Pilipenko, ulitsa Kablukova, 3, kv. 29, Kiev; Petr A. Goncharov, ulitsa Artema, 10, kv. 1, Kiev, and Anatoly I. Ponomarenko, poselok Bucha, ulitsa Kochubeya, 8, Kievskaya oblast, all of U.S.S.R.
Filed Mar. 23, 1979, Ser. No. 23,285
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



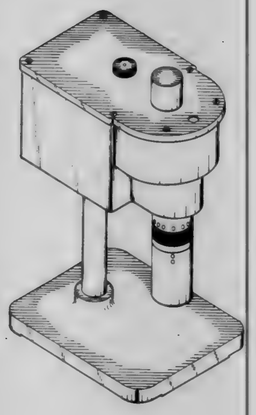
260,737
HOUSING FOR AN ELECTRONIC THERMOMETER
Joseph J. Manno, La Jolla, Calif., assignor to IVAC Corporation, San Diego, Calif.
Filed Aug. 13, 1979, Ser. No. 66,233
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



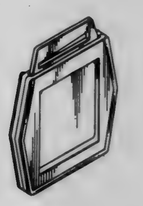
260,738
CARPENTERS' LAY-OFF TAPE
Floyd A. Smith, P.O. Box 192, Clayton, Ind.
Continuation-in-part of Ser. No. 819,206, Jul. 26, 1977. This application Dec. 27, 1977, Ser. No. 865,047
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



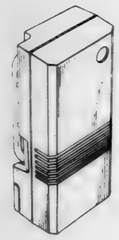
260,739
VISCOMETER
Peyton N. Randolph, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Nov. 19, 1979, Ser. No. 95,364
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83



260,740
HAND HELD DIRECTIONAL ANEMOMETER OR SIMILAR APPARATUS
Wayne K. Pfaff, 1316 Savannah, Irving, Tex. 75062
Filed Jul. 30, 1979, Ser. No. 61,675
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



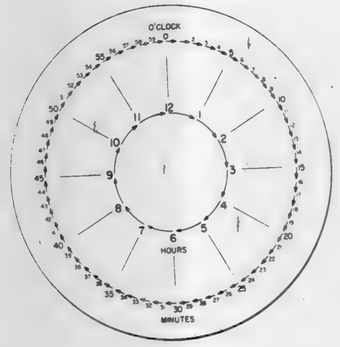
260,741
PORTABLE DOOR ALARM
Yanta H. T. Lam, Kowloon, Hong Kong, assignor to Meyer Aluminium Limited, Kowloon, Hong Kong
Filed Jun. 25, 1979, Ser. No. 52,017
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



260,742
ROAD HAZARD MARKER
Jerrold Mihalloff, 22 Greengate Rd., Don Mills, Ontario, Canada (M3B 1E8)
Filed Jul. 28, 1978, Ser. No. 929,206
Claims priority, application Canada, Feb. 3, 1978, 0302787
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—109



260,743
CLOCK FACE
John L. Haller, 7249 Carrizo Dr., La Jolla, Calif. 92037
Filed Feb. 7, 1979, Ser. No. 10,161
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—126



260,744
EARRING PENDANT
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 12, 1979, Ser. No. 74,891
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—43





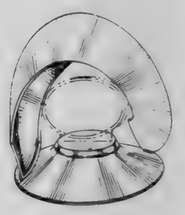
260,745
JEWELED GOLF CLUB PIN
Leif Klatzkow, Vasaplatsen 2, S-411 34 Goteborg, Sweden, and Gosta O. Bergholtz, Gothenburg, Sweden, assignors to Leif Klatzkow, Goteborg, Sweden
Filed Jun. 8, 1979, Ser. No. 46,614
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—48



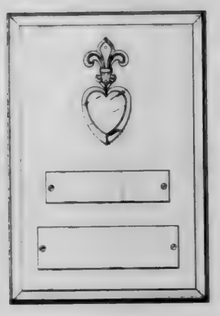
260,746
ORNAMENTAL RAZOR BLADE PENDANT
William E. Tella, 731 Central Ave., Johnston, R.I. 02919
Filed Aug. 27, 1979, Ser. No. 70,305
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81



260,747
STAND FOR A TROPHY OR SIMILAR ARTICLE
Frank Malina, 2832 S. Harding Ave., Chicago, Ill. 60623
Filed Mar. 18, 1980, Ser. No. 131,419
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131



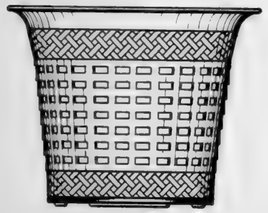
260,748
ARTIFACT PLAQUE
Sylvester Buschmann, Vienna, Mo. 65582
Filed Nov. 29, 1979, Ser. No. 98,646
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133



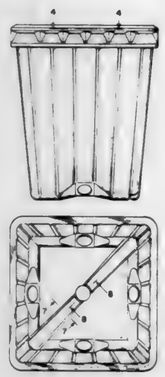
260,749
GROUND INSERTED FLOWER VASE
Richard W. Murphy, 17846 San Clemente St., Fountain Valley, Calif. 92708
Filed Apr. 6, 1979, Ser. No. 27,745
Term of patent 14 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—146



260,750
FLOWER POT HOLDER
Richard W. Murphy, 17846 San Clemente St., Fountain Valley, Calif. 92708
Filed Jun. 7, 1979, Ser. No. 46,226
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D11—153



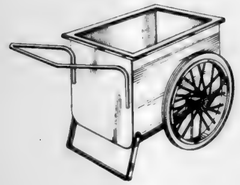
260,751
PLANT CONTAINER
Norman Lee, East Aurora, N.Y., and Thomas E. Douglas, Reidsville, N.C., assignors to Zarn, Inc., Reidsville, N.C.
Filed Sep. 10, 1979, Ser. No. 73,671
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—155



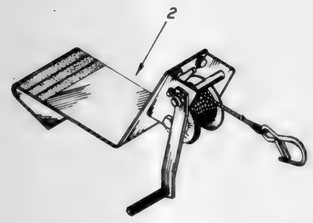
260,752
HANGING ORNAMENT OR THE LIKE
Gary A. Huntsman, and Patricia E. Huntsman, both of 2341 Woodland Ave., San Jose, Calif. 95128
Filed Apr. 17, 1978, Ser. No. 896,781
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157



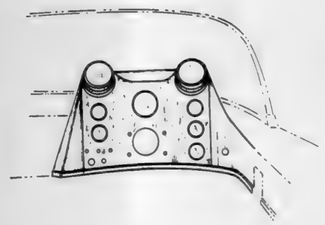
260,753
CART FOR FIREWOOD OR THE LIKE
Morris Partain, 1403 Circle Dr., Cooper, Tex. 75432
Filed Feb. 21, 1979, Ser. No. 13,061
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—32



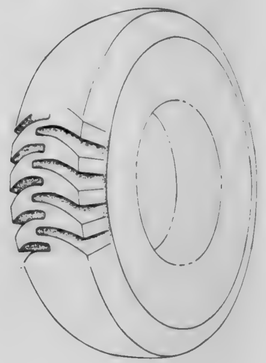
260,754
COMBINED WINCH AND SUPPORT FOR SECURING A LADDER
Ray A. Gunnels, P.O. Box 12406, Fresno, Calif. 93777
Filed Aug. 17, 1978, Ser. No. 934,640
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—54



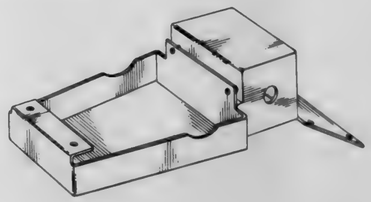
260,755
SKI BOAT CONSOLE
Robert L. Shirley, Maryville, Tenn., assignor to Master Craft Boat Company, Maryville, Tenn.
Filed Aug. 15, 1977, Ser. No. 824,967
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—317



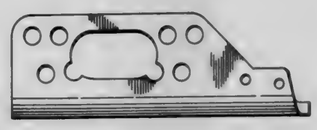
260,756
DESIGN FOR A TIRE TREAD AND BUTTRESS
Ethel L. Duncan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 5, 1979, Ser. No. 9,006
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



260,757
MOTORCYCLE CARRYING TRAY
Gerard R. Garra, and Jon S. Parisena, both of 627 Moran St., Reno, Nev. 89502
Filed Nov. 13, 1979, Ser. No. 93,387
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



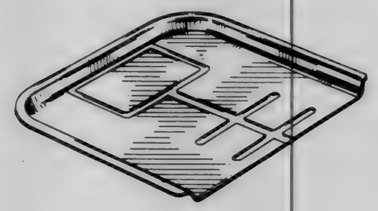
260,758
UNIVERSAL AIR CHAMBER MOUNTING BRACKET
Dennis A. Borugian, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Aug. 21, 1978, Ser. No. 935,235
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D12—180



260,759
MUD FLAP
Knut Arenhold, Westend 7, 2000 Hamburg 52, Fed. Rep. of Germany
Filed Jul. 16, 1979, Ser. No. 57,682
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 66 MR 238/79
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185



260,760
SUPPORT PAN FOR A VEHICLE BATTERY
Clarence R. Sybert, Jr., 3651 Alafaya Trail, Oviedo, Fla. 32765
Filed Apr. 9, 1979, Ser. No. 28,518
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D13—10



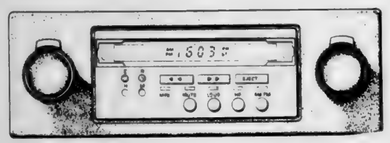
260,761
HEAT SINK OR SIMILAR APPARATUS
David H. Kennington, Highland Park, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.
Filed Oct. 22, 1979, Ser. No. 86,632
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—23



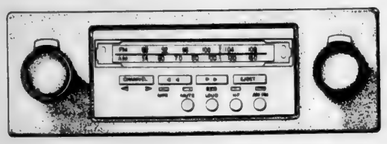
260,762
ELECTRONIC INSTRUMENT HOUSING
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Filed Feb. 15, 1979, Ser. No. 12,437
Term of patent 14 years
Int. Cl. D13—*03*; D14—*02*
U.S. Cl. D13—41



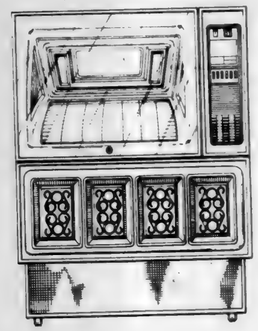
260,763
CONTROL UNIT FOR A COMBINED AUTOMOBILE CASSETTE PLAYER, RADIO AND DIGITAL CLOCK
John F. Castagna, Brooklyn, and Ronald A. Emmerling, New City, both of N.Y., assignors to Sparkomatic Corporation, Milford, Pa.
Filed Oct. 15, 1979, Ser. No. 85,032
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—10



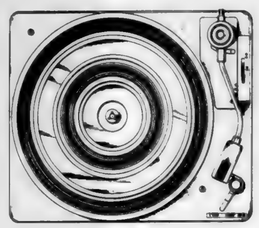
260,764
CONTROL UNIT FOR A COMBINED AUTOMOBILE CASSETTE PLAYER AND RADIO
John F. Castagna, Brooklyn, and Ronald A. Emmerling, New City, both of N.Y., assignors to Sparkomatic Corporation, Milford, Pa.
Filed Oct. 15, 1979, Ser. No. 85,033
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—10



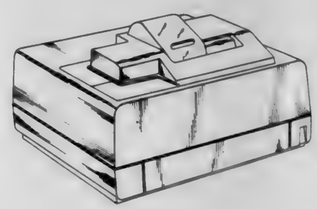
260,765
PHONOGRAPH
Melvin H. Boldt, Glenview, Ill., assignor to Rowe International, Inc., Grand Rapids, Mich.
Filed Aug. 21, 1978, Ser. No. 935,324
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—15



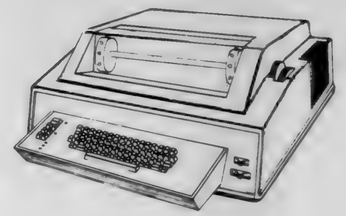
260,766
RECORD TURNTABLE
Raymond Vachus, Yzeure, France, assignor to Thomson-Brandt, Paris, France
Filed Jun. 4, 1979, Ser. No. 44,889
Claims priority, application France, Feb. 5, 1979, 77,277
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—25



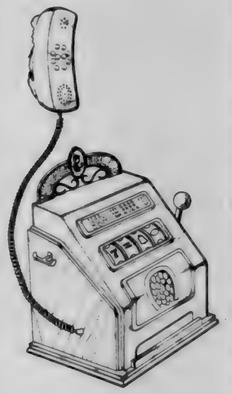
260,767
STORE TERMINAL
Roger C. Williams, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Dec. 19, 1978, Ser. No. 971,145
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



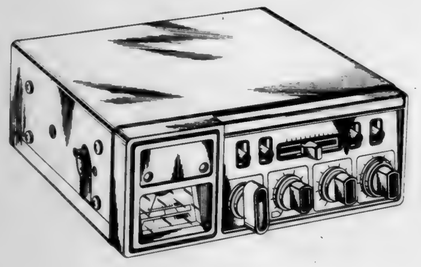
260,768
ORNAMENTAL DESIGN FOR A CABINET FOR AN INPUT-OUTPUT TERMINAL FOR A DATA HANDLING SYSTEM
Bruce B. Campbell, Chesapeake, and Charles E. Milliser, Waynesboro, both of Va., assignors to General Electric Company, Waynesboro, Va.
Filed Dec. 28, 1978, Ser. No. 974,277
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



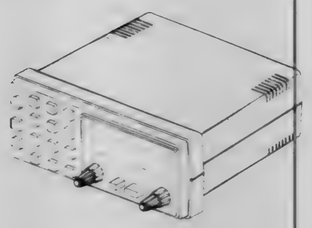
260,769
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed May 7, 1979, Ser. No. 36,595
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



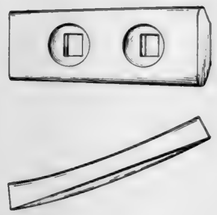
260,771
CITIZENS' BAND TRANSCEIVER OR SIMILAR ARTICLE
Andrew Kainass, Syracuse, N.Y., assignor to General Electric Company, New York, N.Y.
Filed Dec. 13, 1979, Ser. No. 103,386
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



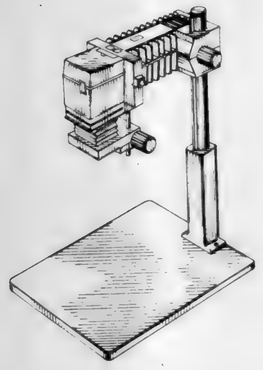
260,770
COMBINED VEHICULAR RADIO RECEIVER AND TELEPHONE DIALING PAD
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 24, 1979, Ser. No. 78,174
Claims priority, application Japan, Apr. 13, 1979, 54-014623
Term of patent years
Int. Cl. D14—*03*
U.S. Cl. D14—68



260,772
ADAPTOR FOR AN AGRICULTURAL TINE
William M. Johnson, Melton South, and Allan Lindsay, Hoppers Crossing, both of Australia, assignors to Ralph McKay Limited, Victoria, Australia
Filed Apr. 19, 1979, Ser. No. 31,488
Claims priority, application Australia, Oct. 19, 1978, 76.255
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—29



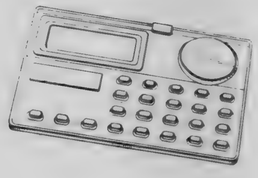
260,773
PHOTOGRAPHIC ENLARGING APPARATUS
Wilhelm Pramstraller, Brixen, Italy, assignor to Durst A.G. Fabrik Fototechnischer Apparate, Bozen, Italy
Filed Jan. 29, 1979, Ser. No. 7,242
Claims priority, application Italy, Aug. 29, 1978, 6716/78[U]
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—25



260,775
GUITAR
John P. Gaudio, 75 Ambrose St., Rochester, N.Y. 14608
Filed May 11, 1979, Ser. No. 38,237
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—18



260,776
DESK TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Tokyo, and Junichi Motoyoshi, Ichikawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 4, 1979, Ser. No. 27,081
Claims priority, application Japan, Oct. 4, 1978, 53-42376
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



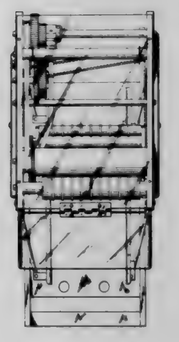
260,774
PAIR OF COMBINED RIGID TEMPLES AND FLEXIBLE INTEGRATED EAR CLIPS FOR HEARING AID SPECTACLES
Dwight C. Brown, 1516 N. Nicholas St., Arlington, Va. 22205
Filed Mar. 16, 1977, Ser. No. 778,801
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—127



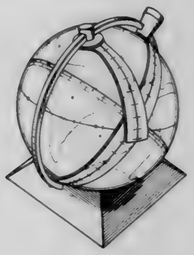
260,777
COMBINED ELECTRONIC CALCULATOR AND CLOCK
Eiichi Yoshioka, Tokyo, and Tsutomu Okuyama, Kawaguchi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 8, 1979, Ser. No. 64,848
Claims priority, application Japan, Feb. 28, 1979, 54-7665
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



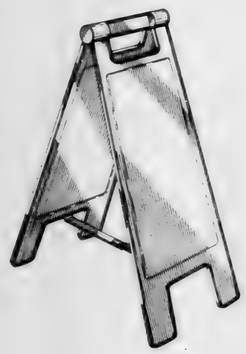
260,778
FAN FOLDING APPARATUS
Richard L. Edwards, Windsor Locks, and Martin Kesten, West Hartford, both of Conn., assignors to Preston Engravers, Inc., Windsor, Conn.
Filed Apr. 18, 1979, Ser. No. 31,126
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22



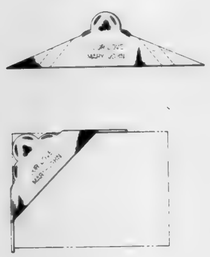
260,779
COMBINATION CELESTIAL AND TERRESTRIAL GLOBE
Daniel L. Wenger, P.O. Box 221, Soquel, Calif. 95073
Filed Jan. 11, 1979, Ser. No. 2,656
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—61



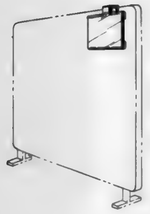
260,780
SELF-STANDING FLOOR SIGN
Dale T. Maza, Stephenson; Glen E. Tomblin, Winchester, and Harold Ruckman, Stephenson, all of Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Oct. 18, 1979, Ser. No. 85,858
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10



260,781
CEMETERY STONE MARKER
Marguerite E. Lusher, 182 Hemet Dr., Citrus Heights, Calif. 95610
Filed May 18, 1978, Ser. No. 907,253
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—22



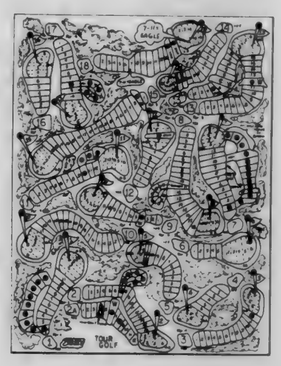
260,782
WALL OR PARTITION HUNG GRAPHICS HOLDER
Donald A. DeMars, Canoga Park, Calif., assignor to LeRoy M. Lefkowitz, Van Nuys, Calif., a part interest
Filed Nov. 30, 1978, Ser. No. 965,441
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—42



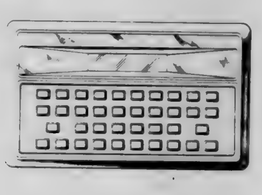
260,783
HAND-HELD ELECTRONIC GAME CASING
Kenji Shimasaki, Hong Kong, Hong Kong, assignor to Cassia Electronic Products Limited, Aberdeen, Hong Kong
Filed Jan. 12, 1979, Ser. No. 2,889
Claims priority, application United Kingdom, Nov. 29, 1978, 987462/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



260,784
GAMEBOARD
William W. Lavigno, II, 3742 Majorca Ct. Apt. 101, Clarkston, Ga. 30021, and Hardy Johnson, 9517 Whitethorn Dr., Matthews, N.C. 28105
Filed Aug. 21, 1979, Ser. No. 68,489
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27



260,785
ELECTRONIC WORD GAME CASING OR SIMILAR ARTICLE
Edward Mayer, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 5, 1979, Ser. No. 1,511
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

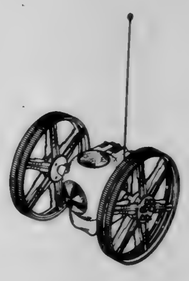


260,786
ILLUMINATION DEVICE FOR ATTACHMENT TO TOY FLYING SAUCER
Stanley C. Chaklos, 420 Kelso Dr., Erie, Pa. 16505
Filed Apr. 25, 1979, Ser. No. 33,247
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—82



260,787
SIMULATIVE KITE
Yasuo Tanaka, 420 Oaza Murata, Washima-gun, Santo-gun, Niigata-ken, Japan
Filed Jan. 31, 1979, Ser. No. 8,332
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—83

260,788
TOY SPACECRAFT
Shigeru Saitoh, No. 6-4, 2-Chome, Kuramae, Taito-ku, Tokyo, Japan
Filed Mar. 7, 1979, Ser. No. 18,354
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



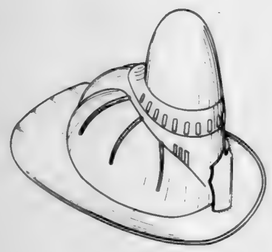
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TOY SPACESHIP
Andrew G. Probert, El Segundo, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed Mar. 19, 1979, Ser. No. 21,475
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



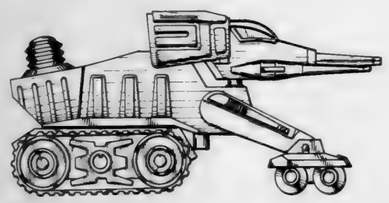
260,790
JOINT ELEMENT AND STRUT ASSEMBLY
Richard J. Gabriel, Portland, Oreg., assignor to Matrix Toys, Inc., Portland, Oreg.
Filed Mar. 12, 1979, Ser. No. 19,741
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108



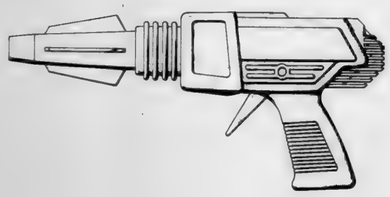
260,791
TOY HELMET
Kataro Suda, Tokyo, Japan, assignor to Yonezawa Toys Co. Ltd. and Suda Kinzoku Seisakusho Co. Ltd., both of Tokyo, Japan
Filed May 18, 1977, Ser. No. 798,038
Claims priority, application Japan, Mar. 17, 1977, 52-9763
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



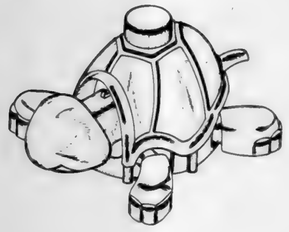
260,792
TOY VEHICLE
Lawrence T. Jones, Playa Del Rey; Anson Sims, Granada Hills, and Robert S. Lee, West Lake Village, all of Calif., assignors to California R & D Center, Culver City, Calif.
Filed Feb. 9, 1979, Ser. No. 10,828
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—131



260,793
TOY PISTOL
Jerry M. McAlpin, P.O. Box 7, Bullard, Tex. 75757, and Danny R. Waites, Rte. 1, Box 344 D2, Jacksonville, Tex. 75766
Filed Apr. 10, 1979, Ser. No. 28,830
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—147



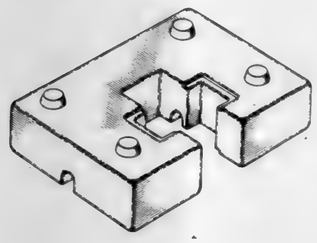
260,794
TOY TURTLE FIGURE
Toshinori Tabata, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 10, 1979, Ser. No. 74,164
Claims priority, application Japan, Mar. 16, 1979, 54-10368
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



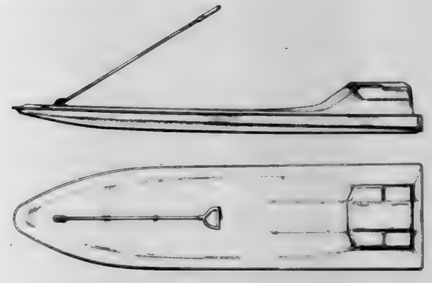
260,795
TOY MONKEY FIGURINE
Hiroshi Ohkawa, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 27, 1979, Ser. No. 80,121
Claims priority, application Japan, Mar. 30, 1979, 54-12723
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



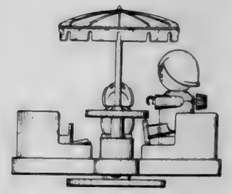
260,796
APERTURED CASTING
Tim M. Uyeda, South San Gabriel, Calif., assignor to Marcy Gymnasium Equipment Co., Alhambra, Calif.
Filed Aug. 13, 1979, Ser. No. 65,909
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—196



260,797
POWER OPERATED SURFBOARD
Gerald R. Calengor, Duluth, and Allan J. Fehn, Fridley, both of Minn., assignors to Surf-Jet Corporation, St. Paul, Minn.
Filed Feb. 21, 1979, Ser. No. 13,263
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



260,798
COMBINED TOY MERRY-GO-ROUND AND FIGURES THEREFOR
Naoharu Yamashina, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai Overseas, Tokyo, Japan
Filed Feb. 5, 1979, Ser. No. 9,058
Claims priority, application Japan, Aug. 10, 1978, 53-33920
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—249



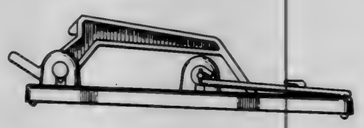
260,799
GUN GRIP
John E. Bianchi, 100 Calle Cortez, Temecula, Calif. 92390
Filed Feb. 8, 1980, Ser. No. 119,757
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1



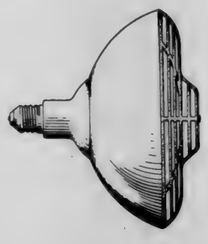
260,800
CROSS DRAW HOLSTER
John E. Bianchi, 1601 Wilt Rd., and Richard D. E. Nichols, 813 Cozy Ct., both of Fallbrook, Calif. 92390
Filed Dec. 14, 1979, Ser. No. 102,995
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13



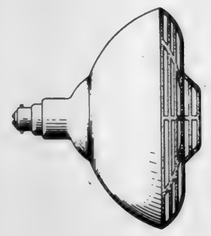
260,801
ANIMAL TRAP
John F. Adams, 65 Lanark Rd., Apt. 9, Brighton, Mass. 02135
Filed Dec. 3, 1979, Ser. No. 99,318
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



260,802
ULTRASONIC PEST REPELLING DEVICE
Lester B. Hall, Kenmore, N.Y., assignor to Gary Lester Hall, Kenmore, N.Y.
Filed Dec. 31, 1979, Ser. No. 108,714
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



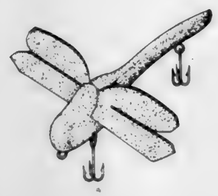
260,803
ULTRASONIC PEST REPELLING DEVICE
Lester B. Hall, Kenmore, N.Y., assignor to Gary Lester Hall, Kenmore, N.Y.
Continuation-in-part of Ser. No. 108,714, Dec. 31, 1979. This application Apr. 17, 1980, Ser. No. 137,055
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



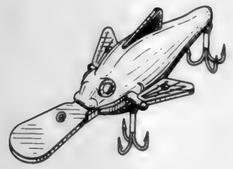
260,804
FISHING REEL
Masakazu Sakamoto, and Tetsuyuki Doi, both of Fukuyama, Japan, assignors to Ryobi Ltd., Fuchu, Japan
Filed Oct. 24, 1979, Ser. No. 88,213
Claims priority, application Japan, Apr. 25, 1979, 54-17206
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



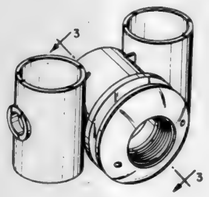
260,805
ARTIFICIAL FISH LURE
Eugene A. Gregg, 13851 Monoclair La., Woodbridge, Va. 22193
Filed Oct. 11, 1979, Ser. No. 83,984
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



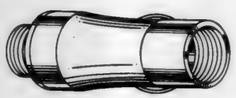
260,806
FISHING LURE
Robert L. Finlay, Emporia, Kans., assignor to Thomas J. Notestine, Grandview and James R. Cope, Kansas City, both of, Mo.
Filed Oct. 22, 1979, Ser. No. 86,762
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



260,807
HYDRO-THERAPY NOZZLE FOR HYDRO-THERAPY SPAS
Gerald W. Moreland, 11651 Pickett La., Garden Grove, Calif. 92640
Filed Nov. 5, 1979, Ser. No. 91,064
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



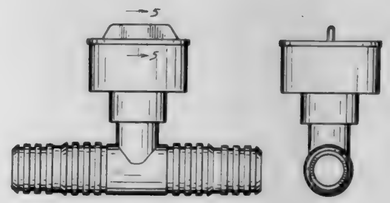
260,808
LIQUID DISPENSER FOR SHOWERS OR THE LIKE
James J. Headen, 1602 216th Ave., SE., Issaquah, Wash. 98027; Warren D. Abbott, Jr., 9964 Tanglevine, Dallas, Tex. 75238, and Clifton G. Hampton, Euless, Tex., assignors to James J. Headen, Issaquah, Wash. and Warren D. Abbott, Jr., Dallas, Tex.
Filed Mar. 29, 1979, Ser. No. 24,882
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



260,809
SHOWER OUTLET FITTING
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,838
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



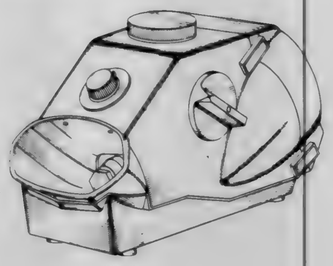
260,810
AUTOMOTIVE HOSE FITTING
Marvin G. Cleveland, 1077 Jessie St., St. Paul, Minn. 55101
Filed Jan. 22, 1979, Ser. No. 5,132
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—44



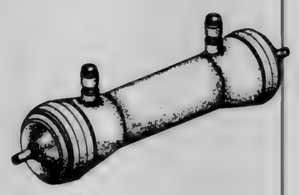
260,811
DENTAL IMPRESSION TRAY
Joseph P. Kitchenman, Cornwells Heights, Pa., assignor to Modern Materials, Inc., Columbus, Ohio
Filed Nov. 8, 1978, Ser. No. 958,753
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—10



260,812
AMALGAMATOR
Meyer Piet, Arcadia, and Dean G. Giles, Valinda, both of Calif., assignors to Futurecraft Corporation, City of Industry, Calif.
Filed Jan. 22, 1979, Ser. No. 5,370
Term of patent 14 years
Int. Cl. D24—*02;* D15—*09*
U.S. Cl. D24—10



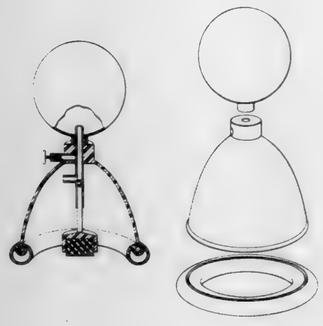
260,813
HOLLOW FIBER ARTIFICIAL KIDNEY
Zane H. Geel, Concord, Calif., assignor to Cordis Dow Corp., Miami, Fla.
Filed May 14, 1979, Ser. No. 39,043
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21



260,814
SYRINGE HAVING A CALIBRATED PLUNGER
Donald J. Goldhardt, Grove City, Ohio, and Darcy M. Willis, Gurnee, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 30, 1978, Ser. No. 955,994
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—24



260,815
SUCTION ELECTRODE
Peter J. Staver, Lincoln Park, Mich., assignor to Bernard B. Staver and Margaret Staver, both of Baraboo, Wis., part interest to each
Filed Oct. 16, 1978, Ser. No. 951,845
Term of patent 14 years
Int. Cl. D24—*01, 99*
U.S. Cl. D24—29



260,816
INTRAVENOUS EQUIPMENT SUPPORT OR SIMILAR ARTICLE
Nicholas Zissimopoulos, Schaumburg, and Lenart Anderson, Mt. Prospect, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jan. 8, 1979, Ser. No. 1,640
Term of patent 7 years
Int. Cl. D24—*99*
U.S. Cl. D24—31



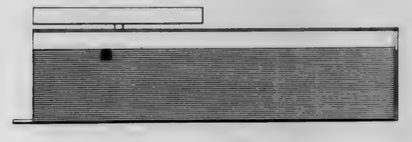
260,817
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William C. Christine, 341 St. John St., Catasauque, Pa. 18032
Filed Jul. 26, 1979, Ser. No. 60,855
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58



260,818
PROPHYLACTIC DEVICE
Tadao Okamoto, 12-8, 1-chome, Kohinata, Bunkyo-ku, Tokyo, Japan
Filed May 17, 1979, Ser. No. 39,817
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D24—99



260,819
COMBINED SERVICE STATION BUILDING AND CANOPY
Charles M. Baffo, Wilton, Conn., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Mar. 30, 1979, Ser. No. 25,316
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—33



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PATENTS WERE ISSUED ON THE 15TH DAY OF SEPTEMBER, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Andersson, Olof I.; and Kullander, Jan O., 4,289,363, Cl. 312-257.00R.

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Rich, Guy A., 4,289,530, Cl. 75-101.0BE.

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Goodman, Richard M.; and Lim, Sim K., 4,289,613, Cl. 209-167.000.
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Carter, Hudson R.; Kidwell, John H.; and Prueter, William P., 4,289,514, Cl. 55-398.000.
Goddard, Donald L., 4,289,291, Cl. 248-293.000.
Zadiraka, Allan J., 4,289,114, Cl. 126-421.000.

Babock & Wilcox Company, The: *See—*
Jabsen, Felix S.; Schluderberg, Donald C.; and Paulson, Arnold E., 4,289,196, Cl. 165-83.000.

Badger, Dale R., to Badger, Dale R.; and Norman, Spencer. Universal adapter for screw anchor installation. 4,289,010, Cl. 72-114.000.

Bagby, Thomas L.; and Coombs, Gale C., to Caterpillar Tractor Co. Electrostatically isolated carrier for painting apparatus. 4,289,090, Cl. 118-630.000.

Bagley, George E.; McCreary, Willard E.; and Rueggeberg, Werner, to Armstrong World Industries, Inc. Method for reducing surface gloss. 4,289,798, Cl. 427-39.000.

Bahls, Jerold O., to Minnesota Mining and Manufacturing Company. Mop having skip slit absorptive element. 4,288,884, Cl. 15-244.00R.

Bahrmann, Helmut; Weber, Jurgen; and Cornils, Boy, to Bayer Aktiengesellschaft. Process for preparing 3-(4)-formyltricyclo-[5,2,1,$0^{2,6}$]-decene-8. 4,289,913, Cl. 568-444.000.

Bailey, Alan C.; and Miller, Stephen B., to Corning Glass Works. Method of forming an optical waveguide preform. 4,289,517, Cl. 65-3.00A.

Bailey, Alan C.; and Miller, Stephen B., to Corning Glass Works. Support member for an optical waveguide preform. 4,289,522, Cl. 65-144.000.

Bailey, Alfred J., to Massey-Ferguson Services N.V. Tramlining device for seed drill. 4,289,256, Cl. 222-52.000.

Bailey, Donald L.: *See—*
Herdle, William B.; Kanner, Bernard; and Bailey, Donald L., 4,289,889, Cl. 556-470.000.

Bailey, George W., to Exxon Research & Engineering Co. Magnetic catalysts and their preparation. 4,289,655, Cl. 252-466.00B.

Bailey, James E.; and Cho, Yong K., to Illinois Water Treatment Company. High loading of immobilized enzymes on activated carbon supports. 4,289,853, Cl. 435-177.000.

Bajeux, Etienne, to FMC Corporation. Pipe swivel joint for a plurality of separate fluids. 4,289,336, Cl. 285-136.000.

Baker, Cole H., to Intec Corporation. Radiation inspection system for a material making apparatus and method using a beta ray gauge. 4,289,964, Cl. 250-308.000.

Baker, Donald G., to Micro-Tek, Inc. Security identification system using pulse code modulation. 4,289,931, Cl. 179-5.500.

Baker International Corporation: *See—*
Fisher, Hiram H., Jr., 4,289,200, Cl. 166-120.000.

Baker, Thomas R.: *See—*
Collura, Peter C.; and Baker, Thomas R., 4,289,491, Cl. 493-124.000.

Bakken, Jon A.: *See—*
Raaness, Ola S.; and Bakken, Jon A., 4,289,949, Cl. 219-121.0PR.

Baldini, Alberto: *See—*
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, 4,289,723, Cl. 264-187.000.

Balko, Terry W.; and Hackler, Ronald E., to Eli Lilly and Company. Heterocyclic carbothioamides. 4,289,766, Cl. 424-246.000.

Balko, Terry W., to Eli Lilly and Company. 2-(Substituted imino)-N-(3-substituted phenyl)-3-thiazolidinecarbothioamides. 4,289,778, Cl. 424-263.000.

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Scholes, Addison B., 4,289,504, Cl. 55-11.000.

Banholzer, Detlef, to Volkswagenwerk AG. Heat-expandable multi-passage pipe having parts for intended breakage. 4,289,169, Cl. 138-117.000.

Bankstahl, Herbert A.: *See—*
Weronke, Robert B.; and Bankstahl, Herbert A., 4,289,488, Cl. 440-57.000.

Bare, Gary T.; and Zimmerman, Lee T., to International Business Machines Corporation. Wire fire mapping for printers. 4,290,138, Cl. 371-29.000.

Barker, Lynn M., to Terra Tek, Inc. Gauge for measuring the mouth opening displacement of fracture toughness test specimens. 4,289,036, Cl. 73-799.000.

Barker, Michael D., to Shell Oil Company. Herbicidal tetrahydrofuran derivatives. 4,289,884, Cl. 546-283.000.

Barnes, Robin R.; Delves, Ronald F.; and Slasor, James F., to Frazer Nash Limited. Actuators. 4,289,996, Cl. 318-38.000.

Barrow, Kevin D.; and Mellows, Graham, to Beecham Group Limited. Antibiotics. 4,289,703, Cl. 260-345.80R.

Barth, Inc.: *See—*
Barth, James T., 4,289,271, Cl. 236-1.00G.

Barth, James T., to Barth, Inc. Damper construction for a gas fired combustion apparatus. 4,289,271, Cl. 236-1.00G.

Bartholic, David B., to Engelhard Minerals & Chemicals Corporation. Catalytic cracking of metal contaminated mineral oil fractions. 4,289,605, Cl. 208-113.000.

Bartl, Max: *See—*
Strehler, Richard; and Bartl, Max, 4,289,223, Cl. 192-48.910.

Basaglia, Rubens: *See—*
Bollina, Ezio; and Basaglia, Rubens, 4,289,276, Cl. 239-305.000.

Basche, Joyce O., heir: *See—*
Galasso, Francis S.; and Basche, Malcolm, deceased, 4,289,801, Cl. 427-94.000.

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Galasso, Francis S.; and Basche, Malcolm, deceased, 4,289,801, Cl. 427-94.000.

BASF Aktiengesellschaft: *See—*
Czauderna, Bernhard; Einwiller, Andreas; and Bott, Kaspar, 4,289,676, Cl. 260-29.60H.
Koehler, Waldemar; Blumenberg, Bernd; Vogel, Ludwig; and Hetzel, Eckhard, 4,289,589, Cl. 203-49.000.

BASF Wyandotte Corporation: *See—*
Patil, Arvind S., 4,289,745, Cl. 423-594.000.
Stepp, James D., 4,289,698, Cl. 260-314.500.

Basham, Edward R.; and Mosely, L. Max, to Gearhart Industries, Inc. Well casing free-point indicator. 4,289,024, Cl. 73-151.000.

Bates, Roger D.; and Knight, Gordon R., to Xerox Corporation. Self-synchronizing clock source for optical memories. 4,290,122, Cl. 365-234.000.

Battigelli, Jean A.; and Bouquet, Francois, to Saint-Gobain Industries. Glass fiberization by centrifugal feed of glass into attenuating blast. 4,289,518, Cl. 65-15.000.

Bauer, John R.; Byars, Robert W.; and Grieve, Robin L., to Upjohn Company, The. Apparatus for intimately admixing two chemically reactive liquid components. 4,289,732, Cl. 422-224.000.

Bauer Kaba AG Sicherheits-Schliessyteme: *See—*
Gretler, Heinrich, 4,289,002, Cl. 70-358.000.

Bauernfeind, Karl: *See—*
Blaess, Gerhard; and Bauernfeind, Karl, 4,290,010, Cl. 324-57.0SS.

Baughman, D. Joseph; and Lytwyn, Ann, to Ortho Diagnostics, Inc. One-stage prothrombin assay and compositions useful therein. 4,289,498, Cl. 23-230.00B.

Baumann, Jacob S.; and Geluk, Ronald J., to N.V. Optische Industrie "De Oude Delft". Method and apparatus for electro-optically convoluting a one-dimensional signal. 4,290,112, Cl. 364-822.000.

Baxter Travenol Laboratories, Inc.: *See—*
Roe, Frank L., 4,289,337, Cl. 285-158.000.

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Bahrmann, Helmut; Weber, Jurgen; and Cornils, Boy, 4,289,913, Cl. 568-444.000.
Blomeyer, Freidrich, deceased; Mennicken, Gerhard; and Uerdingen, Walter, 4,289,813, Cl. 427-385.500.
Druschke, Frank; Margotte, Dieter; Tresper, Erhard; Bottenbruch, Ludwig; Cohnen, Wolfgang; and Hucks, Uwe, 4,289,685, Cl. 260-45.70S.
Friederich, Klaus; Heinze, Gerhard; Reiff, Helmut; Michael, Dietrich; Schon, Manfred; Markusch, Peter; Haberland, Ulrich; Dieterich, Dieter; and Merten, Josef, 4,289,672, Cl. 260-29.2TN.
Herold, Heiko; Herold, Richard; Klee, Rudolf J.; and Muschelknautz, Edgar, 4,288,893, Cl. 28-266.000.
Imre, Laszlo; Horstmann, Walter; and Leopold, Hans-Gerhard, 4,289,881, Cl. 544-352.000.
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,289,868, Cl. 528-73.000.
Mitschke, Karl-Heinz; and Niederprum, Hans, 4,289,646, Cl. 252-305.000.
Noll, Klaus; Speicher, Wolfgang; Pedain, Josef; and Schmid, Rosemarie, 4,289,827, Cl. 428-423.400.
Sasse, Klaus; Haller, Ingo; Plempel, Manfred; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,289,771, Cl. 424-249.000.
Webling, Bernhard, 4,289,887, Cl. 548-224.000.

Baynard, Shirley. Simulated tree furniture and method of molding same. 4,289,724, Cl. 264-225.000.

Baz, Amr M. S.: *See—*
Seireg, Ali A.; and Baz, Amr M. S., 4,289,126, Cl. 128-204.240.

Beaumont, Gregory J.; and Matthews, Lloyd E., to Zenith Radio Corporation. Vertical drive circuit for video display. 4,289,994, Cl. 315-371.000.

Becker, Eckhart R.; Daughenbaugh, Randall J.; and Milligan, Barton, to Air Products and Chemicals, Inc. Production of higher amines by the gas phase hydrogenation of nitriles. 4,289,908, Cl. 564-490.000.

Beckmann, Franz: *See—*
Weber, Heinrich; Dungs, Horst; Wollenhaupt, Karl-Heinz; Brasseur, Yves; Birscheidt, Henri; and Beckmann, Franz, 4,289,500, Cl. 44-15.00R.

Becton, Dickinson and Company: *See—*
Lynn, Robert W., 4,289,248, Cl. 215-330.000.

Beecham Group Limited: *See—*
Barrow, Kevin D.; and Mellows, Graham, 4,289,703, Cl. 260-345.80R.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,289,779, Cl. 424-263.000.
Robinson, Jeffery H., 4,289,850, Cl. 435-68.000.
Smale, Terence C., 4,289,696, Cl. 260-245.20T.

Beecroft, Harold J., to Texas Instruments Incorporated. System and method for erasing information from a flexible information storage media. 4,290,088, Cl. 360-66.000.

Behnke, Jurgen: *See—*
Warncke, Ernst; Schlobohm, Joachim; and Behnke, Jurgen, 4,289,238, Cl. 206-527.000.

Belco Pollution Control Corporation: *See—*
Lanese, Philip M., 4,290,003, Cl. 323-241.000.

Belfort, Gerard L. A., to Produits Chimiques Ugine Kuhlmann. Process for the industrial preparation of water insoluble azo dyestuffs containing cyano groups from the corresponding halogen compounds. 4,289,694, Cl. 260-208.000.

Belkind, Benjamin A., to Velsicol Chemical Coporation. Herbicidal 3-(tetrahydrobenzothiazol-2-yl)tetrahydro-1,3,5-oxadiazin-4-ones. 4,289,524, Cl. 71-90.000.

Bell & Howell Company: *See—*
Aten, Dwight W., 4,288,966, Cl. 53-469.000.
Jastrab, Alexander G., 4,289,396, Cl. 355-45.000.
Samek, Norbert E., 4,289,384, Cl. 350-392.000.

Bell, Printes G., to Bell-Terry Automotive Electric, Inc. Commutator puller. 4,288,915, Cl. 29-762.000.

Bell Telephone Laboratories: *See—*
Eichenbaum, Bernard R.; and Topolski, Francis J., 4,289,558, Cl. 156-179.000.

Bell Telephone Laboratories, Inc.: *See—*
Bowden, Murrae J. S.; and Thompson, Larry F., 4,289,845, Cl. 430-296.000.
Fraser, Donald L., Jr.; and Vera, Armando J., 4,290,034, Cl. 333-173.000.
Henry, James L., 4,289,933, Cl. 179-18.0FA.

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Bellot, Dominique; and Cohenca, Alain, to Regie National des Usines Renault. Climate control device for the passenger compartment of motor vehicle. 4,289,195, Cl. 165-12.000.

Bemm, Wulf W.; and Weber, Gunter, to Neiman S.A. Motor vehicle door lock. 4,289,342, Cl. 292-49.000.

Bendix Corporation, The: *See—*
Eppley, Dewey W., 4,290,060, Cl. 340-638.000.
Killinger, Marvin H., 4,290,045, Cl. 340-52.00C.
Lee, Chen Y., 4,289,035, Cl. 73-708.000.
Schildkraut, Alan L., 4,289,368, Cl. 339-89.00M.

Bengtsson, Karl S.; Thorberg, Seth O.; and Ogren, Sven O., to Astra Lakemedel Aktiebolag. Anti-psychotic phthalimidine derivatives. 4,289,781, Cl. 424-267.000.

Benjamin, Martin E.: *See—*
Cather, Douglas A., Jr.; and Benjamin, Martin E., 4,289,318, Cl. 277-12.000.

Benton, Kenneth C.; Mooney, James R.; and Weinert, Raymond J., Jr., to Standard Oil Company, The. Supported catalysts for the polymerization of alpha-olefins. 4,289,651, Cl. 252-429.00B.

Beretta, Pier C., to Fabbrica d'Armi Pietro Beretta S.p.A. Adjustable legs support for automatic weapons. 4,288,939, Cl. 42-94.000.

Berg, Robert H.; and Karuhn, Richard F., to Particle Data, Inc. Particle length and volume comeasurement with controlled orientation. 4,290,011, Cl. 324-71.0CP.

Bergman, Clark: *See—*
Strom, Richard A.; Bergman, Clark; and Michalek, Paul F., 4,289,364, Cl. 339-17.0CF.

Bergwerksverband GmbH: *See—*
Kolling, Georg; Pietzka, Gerhard; Romey, Ingo; and Tillmanns, Harald, 4,289,604, Cl. 208-106.000.

Berisch, Volker: *See—*
Lupertz, Hans-Henning; and Berisch, Volker, 4,289,359, Cl. 303-6.00C.

Berkshire, David C.: *See—*
Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., 4,289,633, Cl. 252-8.55B.

Berlino, Gary M. Word forming checkers game method. 4,289,314, Cl. 273-260.000.

Bernstein, Robert L., to Electro-Catheter Corporation. Tripolar catheter apparatus. 4,289,134, Cl. 128-419.0PG.

Berry, Robert L.: *See—*
Radigan, Steven J.; and Berry, Robert L., 4,289,574, Cl. 156-643.000.

Berstein, Garrj, to Wilhelm Hegenscheidt GmbH. Boring tool with floating blades. 4,289,431, Cl. 408-154.000.

Berte, Marc; and Legrand, Pierre, to Thomson-CSF. Device for quantitative display of the current density within a charged-particle beam. 4,290,012, Cl. 324-71.0EB.

Bertolini, Natale; and Ferlazzo, Natale, to Euteco Impianti S.p.A. Supported catalyst for the oxidation of acrolein into acrylic acid. 4,289,654, Cl. 252-456.000.

Bethlehem Steel Corporation: *See—*
Chuss, David M.; and Scheirer, James W., 4,289,584, Cl. 201-39.000.

Betts Machine Company: *See—*
Pierson, Karl B., 4,290,098, Cl. 362-267.000.

Betz Laboratories, Inc.: *See—*
Muccitelli, John A., 4,289,645, Cl. 252-178.000.

Bexford Limited: *See—*
Boutle, David L.; Rennison, Stuart C.; and Lambert, Stuart G., 4,289,843, Cl. 430-271.000.

Beyer, George J.: *See—*
King, Peter F.; and Beyer, George J., 4,289,547, Cl. 148-6.15R.

Bhat, Waman V.; and Wright, Charles P., to Boeing Company, The. Noise suppressing turbofan nozzles and method. 4,288,984, Cl. 60-262.000.

Biax Fiberfilm Corp.: *See—*
Schwarz, Eckhard C. A., 4,289,832, Cl. 428-542.000.

Bicskei, Bela J. Precision blocking of lens blanks. 4,288,946, Cl. 51-284.00E.

Binkley Company, The: *See—*
Meehan, M. Dennis, 4,288,957, Cl. 52-460.000.

Bird-Johnson Company: *See—*
Esthimer, William F., 4,289,222, Cl. 192-0.033.

Birr, Hans J.; and Uibel, Paul-Ulrich, to Vorwerk & Co. Interholding GmbH. Arrangement for mounting and dismounting pivoted levers in tool housings. 4,289,416, Cl. 403-146.000.

Birscheidt, Henri: *See—*
Weber, Heinrich; Dungs, Horst; Wollenhaupt, Karl-Heinz; Brasseur, Yves; Birscheidt, Henri; and Beckmann, Franz, 4,289,500, Cl. 44-15.00R.

Bixby, James A.; and Lentz, Robert A., to Spin Physics, Inc. Coarse and fine control of segmented video playback apparatus with ancillary recording medium. 4,290,087, Cl. 360-33.000.

Blaess, Gerhard; and Bauernfeind, Karl, to Siemens Aktiengesellschaft. Method and apparatus for measuring transmission characteristic of a test object. 4,290,010, Cl. 324-57.0SS.

Blase, Manfred: *See—*
Wagener, Dietrich; Flockenhaus, Claus; and Blase, Manfred, 4,289,585, Cl. 202-227.000.

Blasius, James R., to HJH Chemicals, Inc. Method of making crude boric acid from borate and sulfuric acid. 4,289,662, Cl. 252-607.000.

Blessing, Hubert, to Levi Strauss & Co. Fused belt loop strips. 4,289,820, Cl. 428-125.000.

Block, Werner; Pilsak, Manfred; Dusedau, Klaus; and Greiler, Wolfgang, to Robert Bosch GmbH. High-pressure discharge lamp and reflector combination. 4,290,097, Cl. 362-264.000.

Blomeyer, Agnes, heiress: *See—*
Blomeyer, Freidrich, deceased; Mennicken, Gerhard; and Uerdingen, Walter, 4,289,813, Cl. 427-385.500.

Blomeyer, Freidrich, deceased (by Blomeyer, Agnes, heiress); Mennicken, Gerhard; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Process for coating solvent-free lacquers 4,289,813, Cl. 427-385.500.

Blomquist, Alfred P.: *See—*
Mikel, Steve A.; and Blomquist, Alfred P., 4,289,048, Cl. 74-733.000.

Blumenberg, Bernd: *See—*
Koehler, Waldemar; Blumenberg, Bernd; Vogel, Ludwig; and Hetzel, Eckhard, 4,289,589, Cl. 203-49.000.

Bochis, Richard J.; Fisher, Michael H.; and Linn, Bruce O., to Merck & Co., Inc. Pyromellitic diimides and method of increasing feed efficiency in ruminant animals. 4,289,784, Cl. 424-274.000.

Bock, Karin: *See—*
Zimmermann, Ulrich; Pilwat, Gunter; Bock, Karin; and Buers, Hermann J., 4,289,756, Cl. 424-101.000.

Bockrath, Ronald E., to Standard Oil Company (Indiana). Aqueous crystallization of polyester. 4,289,874, Cl. 528-487.000.

Boden, Ogden W. Cord lock having depressable plunger. 4,288,891, Cl. 24-115.00G.

Boeing Company, The: *See—*
Bhat, Waman V.; and Wright, Charles P., 4,288,984, Cl. 60-262.000.
Gransberry, N. Keith; and Haggerty, Allen C., 4,289,288, Cl. 248-56.000.

Bogentoft, Conny B.; and Appelgren, Curt H., to Aktiebolaget Hassle. Method for preparing preparations having controlled release of an active component. 4,289,795, Cl. 427-3.000.

Bogner, Richard D. Microwave television system 4,290,068, Cl. 343-702.000.

Boiko, Georgy A.: *See—*
Dubinsky, Rudolf S.; Medovar, Boris I.; and Boiko, Georgy A., 4,289,192, Cl. 164-470.000.

Boirin, Jean-Claude A. E.; and Guenon, Jean-Pierre, to Sperry Corporation. Automatic bale wagon. 4,289,435, Cl. 414-39.000.

Boise Cascade Corporation: *See—*
Ellerbrock, Donald H., 4,289,265, Cl. 229-5.500.

Bolldorf, Kurt; and Bruckner, Ernst, to Pfaff Industriemaschinen GmbH. Needle bar coupling in an embroidering machine. 4,289,086, Cl. 112-221.000.

Bollina, Ezio; and Basaglia, Rubens, to B & B Bologna di Basaglia Rubens e Bollina Ezio S N C. Improved apparatus for cleaning vehicles. 4,289,276, Cl. 239-305.000.

Bolton, Nelson P., to Advanced Glass Systems Corporation. Method and apparatus for bending glass sheets. 4,289,520, Cl. 65-104.000.

Bolza-Schunemann, Hans B., to Koenig & Bauer Aktiengesellschaft. Brake for sheet stacks on a folding table. 4,289,494, Cl. 493-405.000.

Bonanno, Anthony J.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,289,578, Cl. 159-47.0WL.

Boone, Gary W.; and Cochran, Michael J., to Texas Instruments Incorporated. Variable function programmed calculator. 4,290,121, Cl. 365-233.000.

Booth, Barclay, to Paper, Inc. Method and apparatus for splicing folded paper. 4,289,556, Cl. 156-157.000.

Borg-Warner Corporation: *See—*
Seaman, Robert L., 4,289,213, Cl. 180-233.000.

Bornell, Donald G. Removeable taps. 4,288,930, Cl. 36-132.000.

Bortz, Wayne E., to Soft Bathtub Company, The. Method of making a cushioned bathroom article. 4,289,717, Cl. 264-46.500.

Bosch Siemens Hausgerate GmbH: *See—*
Feil, Rolf, 4,289,566, Cl. 156-515.000.

Both, Marinus: *See—*
Trunner, Josef; and Both, Marinus, 4,289,039, Cl. 74-2.000.

Bott, Kaspar: *See—*
Czauderna, Bernhard; Einwiller, Andreas; and Bott, Kaspar, 4,289,676, Cl. 260-29.60H.

Bottcher, Irmgard: *See—*
Albrecht, Rudolf; Schroder, Eberhard; and Bottcher, Irmgard, 4,289,777, Cl. 424-258.000.

Bottenbruch, Ludwig: *See—*
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Bouquet, Francois: *See—*
Battigelli, Jean A.; and Bouquet, Francois, 4,289,518, Cl. 65-15.000.

Bourgeois, Norman J. Collapsible protective cover mechanism. 4,289,346, Cl. 296-105.000.

Bout, Bernardus J.: *See—*
Theron, Jacob J.; Bout, Bernardus J.; Van Wyk, Jacobus P.; and De Lange, Michael D., 4,290,021, Cl. 324-429.000.

Boutle, David L.; Rennison, Stuart C.; and Lambert, Stuart G., to Bexford Limited. Photopolymerizable element having initiator in adhesive layer. 4,289,843, Cl. 430-271.000.

Bowden, Murrae J. S.; and Thompson, Larry F., to Bell Telephone Laboratories, Inc. Fabrication based on radiation sensitive resists and related products. 4,289,845, Cl. 430-296.000.

Brand, Werner; Zavadil, Jaroslav; and Heuer, Wolfgang, to Waggonfabrik Uerdingen AG. Arrangement for arresting and releasing an intermediate buffer coupling. 4,289,247, Cl. 213-20.000.

Brand, Wilhelm, to Hermann Berstorff Maschinenbau GmbH. Apparatus for plasticizing and extruding plastic material. 4,289,409, Cl. 366-83.000.

Brandeau, Edward P., to Akzona Incorporated. Method of forming connector-cable with crimped electrical terminations. 4,288,917, Cl. 29-860.000.

Brandenburg, John T.: *See—*
Eng, King D.; Brandenburg, John T.; Lee, Kung-You; and McMahon, Matthew A., 4,289,810, Cl. 427-230.000.

Brandstetter, Aharon. Eyeglasses of the variable-lens type, and positioning member particularly useful therewith. 4,289,386, Cl. 351-128.000.

Brandt, Bertil, to Trelleborg AB. Mill lining. 4,289,279, Cl. 241-102.000.

Brannegan, Daniel P.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,289,704, Cl. 260-345.80R.

Brasseur, Yves: *See—*
Weber, Heinrich; Dungs, Horst; Wollenhaupt, Karl-Heinz; Brasseur, Yves; Birscheidt, Henri; and Beckmann, Franz, 4,289,500, Cl. 44-15.00R.

Brazdil, Pavel: *See—*
Minshull, John F.; and Brazdil, Pavel, 4,290,084, Cl. 358-260.000.

Brearley, Malcolm: *See—*
Dufft, Jurgen; and Brearley, Malcolm, 4,289,358, Cl. 303-22.00R.

Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer Inc. Preparation of gamma-pyrones. 4,289,704, Cl. 260-345.80R.

Brent, Albert: *See—*
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,289,502, Cl. 48-62.00R.

Bridgestone Tire Company Limited: *See—*
Abe, Masaru; Sakai, Yoshihiro; Enoki, Yasutaka; and Sawada, Noriyasu, 4,289,183, Cl. 152-209.00B.
Motomura, Kenichi; Tansei, Hikaru; and Abe, Masaru, 4,289,184, Cl. 152-354.00R.
Sato, Takeshi; and Kojima, Hiroshi, 4,289,182, Cl. 152-209.00R.

Brimmer, Alan: *See—*
Trotsky, Alex; and Brimmer, Alan, 4,289,568, Cl. 156-518.000.

Briody, Robert G.; and Cummings, Frances M., to PPG Industries, Inc. Method for increasing the ultra-violet light transmittance of ethylene glycol. 4,289,593, Cl. 204-158.00R.

Brisabois, Roger, to Regie Nationale des Usines Renault. Housings of gearboxes for power units. 4,289,045, Cl. 74-701.000.

Brissey, David C.: *See—*
Carlson, Denny L.; Brissey, David C.; and Vriezelaar, Lee W., 4,288,951, Cl. 52-94.000.

Bristol-Myers Company: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,289,876, Cl. 542-416.000.

Brockmann, Heinz, to Klockner-Humboldt-Deutz Akt. Multi-stage cyclone separator. 4,289,611, Cl. 209-144.000.

Brodowski, Walter: *See—*
Zengel, Hans-Georg; Wallrabenstein, Michael; and Brodowski, Walter, 4,289,869, Cl. 528-73.000.

Brogardh, Torgny: *See—*
Adolfsson, Morgan; and Brogardh, Torgny, 4,290,146, Cl. 455-612.000.

Brognano, R. Joseph; and Buonasera, Albert. Energy conserving system for use with heating and/or hot water systems and the like. 4,289,954, Cl. 219-307.000.

Brown Boveri Turbomachinery, Inc.: *See—*
Ernst, Hermann, 4,288,980, Cl. 60-39.230.

Brown, Edgar D., Jr., to General Electric Company. Silicone diffusion pump fluids. 4,289,891, Cl. 556-453.000.

Brown, William R., to FMC Corporation. Vibrator with eccentric weights. 4,289,042, Cl. 74-61.000.

Brownhill, Richard D.; and Wilkinson, Darcy B., Jr., to Mead Corporation, The. Activated sorbtion paper and products produced thereby. 4,289,513, Cl. 55-387.000.

Bruckner, Ernst: *See—*
Bolldorf, Kurt; and Bruckner, Ernst, 4,289,086, Cl. 112-221.000.

Bruelle, Georges, to General Foods France S.A. Sizzling and crunchy chocolate candy. 4,289,790, Cl. 426-93.000.

Brunner, Heinrich; Drebinger, Peter; Hoehne, Peter; Hoisl, Johann; Kochanowski, Guenter; and Wimmer, Walter, to Siemens Aktiengesellschaft. Circuit arrangement for monitoring the state of signal systems, particularly traffic light signal systems. 4,290,136, Cl. 371-25.000.

Bruns, Klaus: *See—*
Schaper, Ulf-Armin; and Bruns, Klaus, 4,289,660, Cl. 252-522.00R.

Brunswick Corporation: *See—*
Weronke, Robert B.; and Bankstahl, Herbert A., 4,289,488, Cl. 440-57.000.

Brusq, Roger: *See—*
Marti, Bernard; Poignet, Alain; Savary, Jean-Yves; and Brusq, Roger, 4,290,062, Cl. 340-721.000.

Bucher, John H.; Butler, John F.; and Held, John F., to Jones & Laughlin Steel Corporation. High strength cold finished bars. 4,289,548, Cl. 148-12.00B.

Buers, Hermann J.: *See—*
Zimmermann, Ulrich; Pilwat, Gunter; Bock, Karin; and Buers, Hermann J., 4,289,756, Cl. 424-101.000.

Bugaut, Andree; Grollier, Jean-Francois; and Vandenboosche, Jean-Jacques, to L'Oreal. Oxidative dye compositions containing a 2,5-dihydroxyphenylalkanoic acid or salts thereof as antioxidant. 4,289,495, Cl. 8-406.000.

Bull, David W., to Nartron Corporation. Lamp assembly light shield and retaining means. 4,290,092, Cl. 362-61.000.

Bunker Ramo Corporation: *See—*
Nijman, John P., 4,288,918, Cl. 29-868.000.

Buonasera, Albert: *See—*
Brognano, R. Joseph; and Buonasera, Albert, 4,289,954, Cl. 219-307.000.

Burant, Walter, Jr.: *See—*
Knopp, Paul V.; and Burant, Walter, Jr., 4,289,626, Cl. 210-616.000.

Burgener, David B., to Chemetron Corporation. Golfball center freezer. 4,288,994, Cl. 62-381.000.

Burke, Barry E.: *See—*
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,290,118, Cl. 365-183.000.

Burkhardt, Rudolf; Meyer, Gunther; Schmidt, Reinhard; and Thewalt, Klaus, to Dynamit Nobel Aktiengesellschaft. Method for the preparation of oligomeric alkylene terephthalates. 4,289,895, Cl. 560-92.000.

Burroughs Corporation: *See—*
Catiller, Robert D.; and Forbes, Brian K., 4,290,106, Cl. 364-200.000.
Hergenhan, Odo, 4,290,101, Cl. 363-65.000.
Muller, Harold, 4,289,979, Cl. 307-272.00A.

Burroughs Wellcome Co.: *See—*
Caldwell, Albert G.; and Whittaker, Norman, 4,289,707, Cl. 260-404.500.
Lee, Grahame R., 4,289,711, Cl. 260-456.00P.

Bush, Charles N., to B. F. Goodrich Company, The. Emulsion polymerization process with low emulsifier concentration. 4,289,667, Cl. 260-23.0XA.

Buske, Gary R., to Dow Chemical Company, The. Method and composition for removing sulfide-containing scale from metal surfaces. 4,289,639, Cl. 252-87.000.

Butcher, Harry L. Solar panel unit and system for heating circulating air. 4,289,117, Cl. 126-436.000.

Butler Greenwich Inc.: *See—*
Cooperstein, Gerald; Lanza, Richard C.; and Sohval, A. Robert, 4,289,969, Cl. 250-445.00T.

Butler, John F.: *See—*
Bucher, John H.; Butler, John F.; and Held, John F., 4,289,548, Cl. 148-12.00B.

Butler, Walker, to Motorola Inc. High speed adaptive clutter filter. 4,290,066, Cl. 343-17.10R.

Buxbaum, Lothar, to Ciba-Geigy Corporation. Transesterification process. 4,289,896, Cl. 560-92.000.

BWM Corporation: *See—*
Medcalf, Eugene C., 4,289,501, Cl. 44-56.000.

Byars, Robert W.: *See—*
Bauer, John R.; Byars, Robert W.; and Grieve, Robin L., 4,289,732, Cl. 422-224.000.

Bystricky, Gustav, to Cerberus AG. Method and apparatus for intrusion detection by using sonic receivers. 4,290,058, Cl. 340-566.000.

C. R. Bard, Inc.: *See—*
Nehring, John R., 4,289,158, Cl. 137-205.000.

C-R-O, Inc.: *See—*
Griebeler, Elmer L., 4,289,950, Cl. 219-124.340.

Cabaret, Pierre M.; Daboust, Maurice B.; and Engerran, Pierre R., to Union Siderurgique du Nord et de l'est de la France (USINOR). Process and device for controlling the flatness of a cold-rolled metal sheet. 4,289,005, Cl. 72-12.000.

Cadars, Patrick; and Hellouin di Cenival, Bruno, to Societe Anonyme Francaise du Ferodo. Expansion tank and water box device for heat exchanger, such as a radiator of a motor vehicle. 4,289,507, Cl. 55-195.000.

Cajigas, Stanley D., to M P Food Technology, Inc. Instant yogurt composition. 4,289,788, Cl. 426-61.000.

Cajigas, Stanley D., to M P Food Technology, Inc. Instant yogurt drink composition. 4,289,789, Cl. 426-61.000.

Calder, G. Vincent; and Mercurio, Andrew, to Rohm and Haas Company. Acrylic thickener for publication gravure inks, method of preparing said thickener, ink containing the same and method of printing. 4,289,678, Cl. 260-33.6UA.

Caldwell, Albert G.; and Whittaker, Norman, to Burroughs Wellcome Co. Nitrogen heterocycles. 4,289,707, Cl. 260-404.500.

California Pellet Mill Company: *See—*
Schnur, Andrew C.; and Wilhelm, Donald M., 4,288,998, Cl. 64-9.00R.

Campbell, Brian D., to Glacier Metal Company, Limited, The. Bearings. 4,288,895, Cl. 29-149.50C.

Campbell, Simon F.; Danilewicz, John C.; Evans, Anthony G.; and Ham, Allan L., to Pfizer Inc. 1-Piperidinophthalazines as cardiac stimulants. 4,289,772, Cl. 424-250.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Perrault, Guy; Lavertu, Roger; and Drolet, Jean-Francois, 4,289,551, Cl. 149-19.400.

Canadian Red Cross Society, The: *See—*
Rock, Gail A.; and Palmer, Douglas S., 4,289,691, Cl. 260-112.00B.

Canavesio, Franco; and Ceruti, Rodolfo, to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and apparatus for audiometrically determining the acoustic impedance of a human ear. 4,289,143, Cl. 128-746.000.

Cannon, John W., to General Electric Company. Load break switch arc suppression. 4,289,941, Cl. 200-146.00R.

Canon Kabushiki Kaisha: *See—*
Matsui, Yoshiya; Minami, Setsuo; and Mochizuki, Noritaka, 4,289,377, Cl. 350-169.000.

Caporini, John I.: *See—*
Carroll, Robert G.; Caporini, John I.; and Egan, William J., 4,290,031, Cl. 331-94.50G.

Capuano, Terry D., to Lamson & Sessions Co., The. Fastener. 4,289,181, Cl. 411-187.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
Strehler, Richard; and Bartl, Max, 4,289,223, Cl. 192-48.910.

Carl Still GmbH & Co. KG, Firma: *See—*
Tippmer, Kurt, 4,289,647, Cl. 252-373.000.
Weber, Heinrich; Dungs, Horst; Wollenhaupt, Karl-Heinz; Brasseur, Yves; Birscheidt, Henri; and Beckmann, Franz, 4,289,500, Cl. 44-15.00R.

Carlson, Denny L.; Brissey, David C.; and Vriezelaar, Lee W., to Scientific Applications Incorporated. Auxiliary insulated roof system. 4,288,951, Cl. 52-94.000.

Carpenter, Charles; Fugardi, Joseph F.; Gregor, Lawrence V.; Grosewald, Peter S.; and Reeber, Morton D., to International Business Machines Corporation. Improved solder interconnection between a semiconductor device and a supporting substrate. 4,290,079, Cl. 357-71.000.

Carpenter, David A.; Kossoff, George; and Radovanovich, George D. Signal processing system. 4,289,140, Cl. 128-660.000.

Carroll, Robert G.; Caporini, John I.; and Egan, William J., to United Technologies Corporation. Combustor for gas dynamic laser. 4,290,031, Cl. 331-94.50G.

Carter, Hudson R.; Kidwell, John H.; and Prueter, William P., to Babcock & Wilcox Company, The. Stacked re-entrant arm vapor-liquid separator. 4,289,514, Cl. 55-398.000.

Carter, Tommie B.: *See—*
Hallack, Richard D.; and Carter, Tommie B., 4,289,616, Cl. 210-101.000.

Casabona, Richard J.: *See—*
Levy, John V.; Rodgers, David; Stewart, Robert E.; and Casabona, Richard J., 4,290,102, Cl. 364-200.000.

Casamayor, Jorge, to Plaskolite Inc. Extruded wall paneling system. 4,289,818, Cl. 428-43.000.

Cashion, Jerry L., to Span-Deck, Inc. Combination bed concrete casting apparatus. 4,289,293, Cl. 249-74.000.

Casparian, Robert E.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,289,578, Cl. 159-47.0WL.

Cassella Aktiengesellschaft: *See—*
Hudec, Gustav; Keil, Karl-Heinz; Kohler, Volker; and Rosenbusch, Kurt, 4,289,665, Cl. 260-21.000.

Cassidy, James L. Method and apparatus for obtaining mechanical energy from low temperature heat sources. 4,288,989, Cl. 60-685.000.

Catalano, Joseph. Folding gate. 4,289,189, Cl. 160-160.000.

Catan, Robert, to Dynaforce Corporation. Plastic strip closures and methods of protecting the same. 4,289,190, Cl. 160-332.000.

Caterpillar Tractor Co.: *See—*
Bagby, Thomas L.; and Coombs, Gale C., 4,289,090, Cl. 118-630.000.
Hopkins, Michael F., 4,289,047, Cl. 74-713.000.
Warner, Hubert H., 4,289,091, Cl. 118-642.000.
Wernert, Gregory M., 4,289,207, Cl. 169-30.000.

Cather, Douglas A., Jr.; and Benjamin, Martin E., to Garlock Inc. Hydraulic motor balancing ring seal. 4,289,318, Cl. 277-12.000.

Cather, Douglas A., Jr., to Garlock Inc. Pressure shaft seal and method. 4,289,321, Cl. 277-152.000.

Catiller, Robert D.; and Forbes, Brian K., to Burroughs Corporation. Microprocessor system with source address selection. 4,290,106, Cl. 364-200.000.

CBS Inc.: *See—*
Marshall, Trevor J., Jr.; and Dworkin, Darryl R., 4,289,307, Cl. 272-52.500.

Cederholm, Allen E.: *See—*
Schmidt, Henry, Jr.; Cederholm, Allen E.; and Zievers, James F., 4,289,630, Cl. 210-785.000.

Celanese Corporation: *See—*
Harris, Marvin E., Jr.; and Thigpen, Hubert H., 4,289,912, Cl. 568-422.000.
Penley, Percy A., 4,289,080, Cl. 111-3.000.
Scott, Robert H.; Thigpen, Hubert H.; and Wood, Frank, Jr., 4,289,708, Cl. 260-413.000.
Shelley, Ralph R., Jr., 4,289,811, Cl. 427-239.000.

Celfil Company Establishment: *See—*
Muller, Paul A.; and Muster, Hans, 4,289,725, Cl. 264-287.000.

Central Glass Company, Limited: *See—*
Hayakawa, Masanori; and Nishimura, Satoshi, 4,289,746, Cl. 423-633.000.

Centronics Data Computer Corp.: *See—*
Morse, Timothy C., 4,290,116, Cl. 364-900.000.

Cerberus AG: *See—*
Bystricky, Gustav, 4,290,058, Cl. 340-566.000.
Trunner, Josef; and Both, Marinus, 4,289,039, Cl. 74-2.000.

Ceruti, Rodolfo: *See—*
Canavesio, Franco; and Ceruti, Rodolfo, 4,289,143, Cl. 128-746.000.

Chabot, Ovila. Coded electrical security system for vehicles, such as automobiles. 4,290,046, Cl. 340-63.000.

Chabre, Andre; de Saint-Ours, Gerard; and Vrillon, Bernard. Protective device for an inertia wheel rotating. 4,289,043, Cl. 74-609.000.

Chaiko, Walter M., to Ingersoll-Rand Company. Friction rock stabilizer and method of forming same, and a method of stabilizing an earth structure. 4,289,426, Cl. 405-259.000.

Chalmers, Alexander A.; and Gailey, J. Lynn, to Alcan Aluminum Corporation. Horizontal siding panel system with vertical stringers. 4,288,958, Cl. 52-478.000.

Chamberlin, James W.: *See—*
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,289,782, Cl. 424-273.0CB.

Chambers, J. Bruce; and Dotter, Richard J., Sr., to Eaton Corporation. Hydraulic control system. 4,289,221, Cl. 192-3.570.

Chan, John K., to Union Carbide Corporation. Process for preparing N-alkyl-nitroanilines. 4,289,907, Cl. 564-399.000.

Chandler Evans Inc.: *See—*
Noell, Godwin L.; and Haynes, Paul L., Jr., 4,289,460, Cl. 418-78.000.

Chemetron Corporation: *See—*
Burgener, David B., 4,288,994, Cl. 62-381.000.

Chenil Cont GS S.R.L.: *See—*
Tani, Fedora, 4,288,973, Cl. 57-24.000.

Chernyavsky, Vladimir P.: *See—*
Aroshidze, Jury V.; Kadi-Ogly, Ibragim A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; Fomin, Boris I.; and Yankov, Anatoly F., 4,289,984, Cl. 310-54.000.

Cheswick, William R.: *See—*
Cichelli, Richard J.; Thompson, Michael Q.; and Cheswick, William R., 4,290,105, Cl. 364-200.000.

Chevron Research: *See—*
Freenor, Francis J., III; and Koerber, Barbara M., 4,289,909, Cl. 568-315.000.
Schinski, William L.; and Freenor, Francis J., III, 4,289,701, Cl. 260-343.600.

Chevron Research Company: *See—*
Jaffe, Joseph, 4,289,653, Cl. 252-453.000.
Lewis, Robert A.; and Honnen, Lewis R., 4,289,634, Cl. 252-32.500.

Chiang, John S.; Munday, Theodore F.; and Ilardi, Joseph M., to FMC Corporation. Method of producing crystalline sodium aluminum phosphate. 4,289,739, Cl. 423-306.000.

Child, Edward T.: *See—*
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,289,502, Cl. 48-62.00R.

Child, Richard D.; and Tulinus, Jan R., to United States of America, Air Force. Fixed skewed wing airborne vehicle. 4,289,287, Cl. 244-45.00R.

Childrens Hospital Medical Center: *See—*
Clark, Leland C., Jr.; and Moore, Robert E., 4,289,499, Cl. 23-230.00B.

Childress, David L.: *See—*
Hayes, William V.; and Childress, David L., 4,289,656, Cl. 252-470.000.

Chinoin Gyogyszer es Vegylszeti Termekek Gyara R.T.: *See—*
Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth, Zoltan, 4,289,894, Cl. 560-82.000.

Chisolm, Sherril H. Case labeler. 4,289,562, Cl. 156-364.000.

Chloride Group Limited: *See—*
Evans, Christopher P., 4,289,176, Cl. 141-35.000.

Cho, Yong K.: *See—*
Bailey, James E.; and Cho, Yong K., 4,289,853, Cl. 435-177.000.

Chou, Ta-Sen, to Eli Lilly and Company. Process for preparing 2-chlorosulfinylazetidinones. 4,289,695, Cl. 260-239.00A.

Chow, Vincent Y. S., to Ellsworth, Chow & Murphy, Inc. Protective system. 4,290,056, Cl. 340-538.000.

Christena, Ray C., to Vulcan Materials Company. Stabilization of chlorinated phenols. 4,289,587, Cl. 203-6.000.

Christensen, Marvin M.; Zachary, Richard E.; and Dupont, Andra P., to Dow Chemical Company, The. Fusion processing of synthetic thermoplastic resinous materials. 4,289,807, Cl. 427-195.000.

Christenson, Roger M.; Maska, Rudolf; Dowbenko, Rostyslawa; and Hockswender, Thomas R., to PPG Industries, Inc. Base-solubilized acrylic polymers and aqueous resinous dispersions of acrylic polymers and epoxy resins. 4,289,674, Cl. 260-29.6NR.

Christiansen, Gary D.: *See—*
Hoskins, Michael K.; and Christiansen, Gary D., 4,289,648, Cl. 252-408.000.

Chrysler Corporation: *See—*
Mikel, Steve A.; and Blomquist, Alfred P., 4,289,048, Cl. 74-733.000.

Chu, Albert E., to E-Y Laboratories, Inc. Immunological determination using lectin. 4,289,747, Cl. 424-1.000.

Chukhanov, Zinovy F.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,289,731, Cl. 422-206.000.

Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A. Method of making billets. 4,288,907, Cl. 29-527.600.

Chuss, David M.; and Scheirer, James W., to Bethlehem Steel Corporation. Coke quenching practice for one-spot cars. 4,289,584, Cl. 201-39.000.

Chynoweth, David P.: *See—*
Tarman, Paul B.; and Chynoweth, David P., 4,289,625, Cl. 210-603.000.

Ciba-Geigy Corporation: *See—*
Buxbaum, Lothar, 4,289,896, Cl. 560-92.000.
Moser, Peter, 4,289,880, Cl. 544-103.000.
Reinehr, Dieter, 4,289,905, Cl. 564-248.000.
Rody, Jean; and Slongo, Mario, 4,289,686, Cl. 260-45.8NT.

Cichelli, Richard J.; Thompson, Michael Q.; and Cheswick, William R., to American Newspaper Publishers Association. Method and apparatus for testing membership in a set through hash coding with allowable errors. 4,290,105, Cl. 364-200.000.

Cincinnati Electronics Corporation: *See—*
Wissel, F. A.; and Kiliman, D. A., 4,290,143, Cl. 455-38.000.

Citizen Watch Company Limited: *See—*
Kume, Kazunari; and Ohno, Hideshi, 4,290,131, Cl. 368-71.000.

Ciucani, Mario. Automatic machine for zig-zag stitching of tubular elements. 4,289,083, Cl. 112-157.000.

Civitello, John P. Electrostatic transducers. 4,289,936, Cl. 179-111.00R.

Clark, Earl S., to Federal Products Corporation. Measurement system for machine parts. 4,289,382, Cl. 350-331.00R.

Clark, Leland C., Jr.; and Moore, Robert E., to Childrens Hospital Medical Center; and Suntech, Inc. Selecting perfluorocarbon compounds for synthetic blood. 4,289,499, Cl. 23-230.00B.

Clarke, William A.: *See—*
Stanwood, Jay W.; Clarke, William A.; and MacLeane, Johannes, 4,289,557, Cl. 156-171.000.

Clay, Burton R., to RCA Corporation. Technique for recording a hologram suitable for use in optical retrieval system. 4,289,372, Cl. 350-3.830.

Clayton, John P.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,289,779, Cl. 424-263.000.

Claytor, Thomas N., to United States of America, Energy. Method and means of passive detection of leaks in buried pipes. 4,289,019, Cl. 73-40.50A.

Clear, Elmer E., to Phillips Petroleum Company. Lost circulation material for sealing permeable formations. 4,289,632, Cl. 252-8.5LC.

Clifford, Christine H.: *See—*
Dell, Dorothy G.; and Clifford, Christine H., 4,289,137, Cl. 128-482.000.

Coal Industry (Patents) Limited: *See—*
Howard, Terence R., 4,289,356, Cl. 299-33.000.

Cochran, Michael J.: *See—*
Boone, Gary W.; and Cochran, Michael J., 4,290,121, Cl. 365-233.000.

Cocks, Philip J.; and Newton, Derek A., to Dunlop Limited. Pipe jointing. 4,288,906, Cl. 29-526.00R.

Coggins, Robert W.; and Miles, Bert B., to Combustion Engineering, Inc. Steam generator. 4,289,093, Cl. 122-197.000.

Cohen, Abraham B.; and Gervay, Joseph E., to Du Pont de Nemours, E. I., and Company. Dry-developing photosensitive dry film resist. 4,289,841, Cl. 430-253.000.

Cohen, Solomon E.: *See—*
Golczewski, Roman; Seach, Barry G.; and Cohen, Solomon E., 4,289,624, Cl. 210-404.000.

Cohenca, Alain: *See—*
Bellot, Dominique; and Cohenca, Alain, 4,289,195, Cl. 165-12.000.

Cohnen, Wolfgang: *See—*
Druschke, Frank; Margotte, Dieter; Tresper, Erhard; Bottenbruch, Ludwig; Cohnen, Wolfgang; and Hucks, Uwe, 4,289,685, Cl. 260-45.70S.

Coker, Thomas G.: *See—*
Dempsey, Russell M.; Coker, Thomas G.; La Conti, Anthony B.; and Fragala, Anthony R., 4,289,590, Cl. 204-98.000.

Cole, Jimmy R., to Syntron, Inc. Remote control cable depth control apparatus. 4,290,124, Cl. 367-18.000.

Cole, Robert: *See—*
Gomez, I. Luis; and Cole, Robert, 4,289,664, Cl. 260-19.00R.

Coleman, David F.: *See—*
Long, Lennart E.; Steele, Roger K.; Coleman, David F.; and Gustafson, Ralph A., 4,288,926, Cl. 33-174.00P.

Colgate-Palmolive Company: *See—*
Falivene, Pasquale J., 4,289,640, Cl. 252-95.000.

Collender, Robert B. Stereoscopic television (unaided) on standard bandwidth-method and apparatus. 4,290,083, Cl. 358-88.000.

Collura, Peter C.; and Baker, Thomas R., to Kliklok Corporation. Apparatus for adhesively bonding a carton. 4,289,491, Cl. 493-124.000.

Combustion Engineering, Inc.: *See—*
Coggins, Robert W.; and Miles, Bert B., 4,289,093, Cl. 122-197.000.
Liljedahl, Gregory N.; and Moffat, Bruce K., 4,288,979, Cl. 60-39.120.
McGee, John K., 4,289,157, Cl. 137-72.000.
McGee, John K., 4,289,199, Cl. 166-65.00R.

Comet, Inc.: *See—*
Yano, Robert A., 4,289,481, Cl. 432-96.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Royer, Gerard, 4,290,074, Cl. 346-75.000.

Comyns-Carr, Cecil A.; and Platts, Michael J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Devices for extracting energy from waves. 4,289,455, Cl. 417-332.000.

Connolly, David C. A.; and Shutt, Harry, to General Electric Company Limited, The. Electronic apparatus for the display of information received over a line. 4,289,930, Cl. 179-2.0TV.

Conoco, Inc.: *See—*
Mack, Mark P., 4,289,679, Cl. 260-33.6PQ.

Conor Corporation: *See—*
Herndon, Marion E., Jr., 4,289,510, Cl. 55-294.000.

Container Corporation of America: *See—*
Helms, Charles R., 4,289,252, Cl. 220-308.000.

Container Graphics Corporation: *See—*
Simpson, Jack R., 4,289,492, Cl. 493-371.000.

Continental Group, Inc., The: *See—*
Jordan, Thomas F., 4,289,250, Cl. 220-269.000.
Maliszewski, Leonard A., 4,289,251, Cl. 220-269.000.

Control Data Corporation: *See—*
Strom, Richard A.; Bergman, Clark; and Michalek, Paul F., 4,289,364, Cl. 339-17.0CF.

Cook, Edward H., Jr.: *See—*
Lazarz, Christine A.; Cook, Edward H., Jr.; and Scripa, Lesleigh V., 4,289,600, Cl. 204-296.000.

Cook, Francis E., to Dearborn Rubber Company. Belt type expansion joints. 4,289,338, Cl. 285-229.000.

Coombs, Gale C.: *See—*
Bagby, Thomas L.; and Coombs, Gale C., 4,289,090, Cl. 118-630.000.

Cooperstein, Gerald; Lanza, Richard C.; and Sohval, A. Robert, to Butler Greenwich Inc. Radiation imaging apparatus. 4,289,969, Cl. 250-445.00T.

Cordier, Walter: *See—*
Pieper, Paul; and Cordier, Walter, 4,289,054, Cl. 83-113.000.

Corfield, John C., to Unimax Switch Limited. Key-operated device for access control system. 4,289,001, Cl. 70-346.000.

Cormier Cardiac Systems, Inc.: *See—*
Cormier, Denny C., 4,289,141, Cl. 128-713.000.

Cormier, Denny C., to Cormier Cardiac Systems, Inc. Method and apparatus for extracting systolic valvular events from heart sounds. 4,289,141, Cl. 128-713.000.

Cornelius, Rorger W.; Hill, James D.; and Quinn, Paul A., Jr., to International Business Machines Corporation. Multilingual ink jet printer. 4,289,411, Cl. 400-126.000.

Cornils, Boy: *See—*
Bahrmann, Helmut; Weber, Jurgen; and Cornils, Boy, 4,289,913, Cl. 568-444.000.

Corning Glass Works: *See—*
Bailey, Alan C.; and Miller, Stephen B., 4,289,517, Cl. 65-3.00A.
Bailey, Alan C.; and Miller, Stephen B., 4,289,522, Cl. 65-144.000.
Orso, Francis L., 4,289,538, Cl. 106-286.500.

Corrigan, Francis R., to General Electric Company. Polycrystalline cubic boron nitride abrasive and process for preparing same in the absence of catalyst. 4,289,503, Cl. 51-307.000.

Cosco Industries, Inc.: *See—*
MacGregor, Francis W., 4,289,070, Cl. 101-327.000.

Courtaulds Limited: *See—*
Dunbar, John H.; and Gray, Kenneth L., 4,289,471, Cl. 425-373.000.

Cousse, Henri; and Mouzin, Gilbert, to Pierre Fabre S.A. 2-Benzoyl-4-nitroanilides and their use as medicaments. 4,289,770, Cl. 424-248.540.

Crawford, Harry I.: *See—*
Powers, Vernon B.; and Crawford, Harry I., 4,289,977, Cl. 307-270.000.

Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; Martone, James F.; and Sabad, Joseph J., to International Business Machines Corporation. Adhesive correction composition and method of use. 4,289,666, Cl. 260-23.00H.

Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; and Sabad, Joseph J., to International Business Machines Corporation. Pressure sensitive correction composition and method of use. 4,289,670, Cl. 260-28.5AV.

Crenshaw, Ronnie R.: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,289,876, Cl. 542-416.000.

Cripe, Herman S. Container. 4,289,249, Cl. 220-22.000.

Crittenden, David E.; Angarola, Barry R.; Nix, Robert J.; and Meier, William A., to Signode Corporation. Tension sensing mechanism for power-operated push-type strapping and sealing tool. 4,289,175, Cl. 140-93.400.

Cross, Barrington: *See—*
Spatz, David M.; and Cross, Barrington, 4,289,903, Cl. 564-20.000.

Cross, Carroll N. Display book apparatus. 4,288,935, Cl. 40-120.000.

Csaky, Thomas J.; Gauntt, Sibbley P.; and Heard, Ralph L., Jr., to Du Pont de Nemours, E. I., and Company. Process for making integrated racket strings from monofilaments. 4,288,977, Cl. 57-297.000.

CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Canavesio, Franco; and Ceruti, Rodolfo, 4,289,143, Cl. 128-746.000.

Csurgay, Gregory; and Reeder, Willes W., to Fail Safe Industries, Inc. Control system for vehicle brake valve. 4,289,219, Cl. 192-2.000.

Cummings, Frances M.: *See—*
Briody, Robert G.; and Cummings, Frances M., 4,289,593, Cl. 204-158.00R.

Currer, John T.: *See—*
Kielma, Ervin J.; Schabowski, Albin J.; and Currer, John T., 4,288,909, Cl. 29-568.000.

Curtil, Remi, to Societe d'Etudes de Machines Thermiques S.E.M.T. Method and apparatus for improving the gas flow in an internal combustion engine exhaust manifold. 4,288,988, Cl. 60-605.000.

Cutlip, David S.; and Cutlip, Judyth. Turn signalling apparatus. 4,290,048, Cl. 340-134.000.

Cutlip, Judyth: *See—*
Cutlip, David S.; and Cutlip, Judyth, 4,290,048, Cl. 340-134.000.

Cutrara, Anthony. Firewood package. 4,289,237, Cl. 206-443.000.

Czauderna, Bernhard; Einwiller, Andreas; and Bott, Kaspar, to BASF Aktiengesellschaft. Binders, impregnating agents and coating agents based on an aqueous dispersion of an amide-containing copolymer. 4,289,676, Cl. 260-29.60H.

Daboust, Maurice B.: *See—*
Cabaret, Pierre M.; Daboust, Maurice B.; and Engerran, Pierre R., 4,289,005, Cl. 72-12.000.

Dahlberg, J. Robert, to PPG Industries, Inc. Method of thermally inducing bending moment forces to sever a glass sheet along a score. 4,289,261, Cl. 225-2.000.

Dai-Ichi Seiko Co., Ltd.: *See—*
Kohno, Kaname, 4,289,282, Cl. 242-71.800.

Daicel Chemical Industries, Ltd.: *See—*
Kubo, Masayoshi; Nakanishi, Michio; and Kimura, Mamoru, 4,289,873, Cl. 528-357.000.

Daicel Ltd.: *See—*
Usami, Akira; Uebayashi, Toshiaki; Sato, Koji; and Goda, Tomoko, 4,289,130, Cl. 128-287.000.

D'Alessandro, A. F.: *See—*
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,289,652, Cl. 252-437.000.

D'Amico, John J., to Monsanto Company. Imides derived from 2-thioxo-3-benzox(thia)azoline acetic, and propionic acids. 4,289,886, Cl. 548-165.000.

Dan, Takehiro: *See—*
Gunji, Koki; and Dan, Takehiro, 4,289,533, Cl. 75-138.000.

D'Andrade, Bruce M., to Arco Industries Ltd. Toy air pistol with hollow breech slide. 4,289,109, Cl. 124-67.000.

Danilewicz, John C.: *See—*
Campbell, Simon F.; Danilewicz, John C.; Evans, Anthony G.; and Ham, Allan L., 4,289,772, Cl. 424-250.000.

Dargel, William O.: *See—*
Sternberg, Stanley R.; Lougheed, Robert M.; and Dargel, William O., 4,290,049, Cl. 340-146.3MA.

Daughenbaugh, Randall J.: *See—*
Becker, Eckhart R.; Daughenbaugh, Randall J.; and Milligan, Barton, 4,289,908, Cl. 564-490.000.

Davidson, Craig R.; and Sedlak, John M., to General Electric Company. Oxygen evolution with improved Mn stabilized catalyst. 4,289,591, Cl. 204-129.000.

Davis, Edd C.: *See—*
Davis, Marvin L.; Davis, Edd C.; and Green, Albert R., 4,289,420, Cl. 404-35.000.

Davis, Howard F., Jr.; and Persson, John A., to Lectromelt Corporation. Method of producing cement. 4,289,537, Cl. 106-100.000.
Davis, Marvin L.; Davis, Edd C.; and Green, Albert R. Wooden mat. 4,289,420, Cl. 404-35.000.
Davis, Robert H.; and Piotrowski, Alfred B., to Mobil Oil Corporation. Aqueous lubricant compositions. 4,289,636, Cl. 252-49.300.
Davis, Stephen H., to Water Refining Company, Inc. Water softening and reverse osmosis system. 4,289,617, Cl. 210-109.000.
Davis, Thomas J.: *See—*
Russell, James T.; and Davis, Thomas J., 4,289,987, Cl. 310-26.000.
Dayco Corporation: *See—*
Haren, Doyle V.; and Edwards, William M., 4,289,555, Cl. 156-149.000.
Kleykamp, Donald L.; and Holden, Homer N., 4,289,077, Cl. 105-199.00C.
DCA Industries Limited: *See—*
Duncan, Michael E.; Whittington, Philip J.; and Kimber, Michael P., 4,289,111, Cl. 126-391.000.
Dearborn Rubber Company: *See—*
Cook, Francis E., 4,289,338, Cl. 285-229.000.
Dearnaley, Geoffrey, to United Kingdom Atomic Energy Authority. Inhibition of fretting corrosion of metals. 4,289,544, Cl. 148-4.000.
Debono, Manuel, to Eli Lilly and Company. Derivatives of A-30912D nucleus. 4,289,692, Cl. 260-112.50R.
Declerco, Marc A.; and Margant, Gerard, to Societe Nationale Industrielle Aerospatiale. Device for limiting the flapping movements of a rotary-wing aircraft main rotor. 4,289,448, Cl. 416-140.000.
Deere & Company: *See—*
Dobberpuhl, Dale R., 4,289,224, Cl. 192-50.000.
Latham, David D.; Von Fumetti, Cyril W.; and Miller, Wayne R., 4,289,096, Cl. 123-198.00E.
Deffeyes, Robert J.; and Armstrong, Harris W., to Graham Magnetics, Inc. Metal powder paint composition. 4,289,534, Cl. 106-1.140.
de Fraine, Paul: *See—*
Worthington, Paul A.; de Fraine, Paul; Rathmell, William G.; and Gatehouse, Diana M., 4,289,526, Cl. 71-92.000.
DeGeorge, Charles W., to Exxon Research & Engineering Co. Cryogenic fractionator gas as stripping gas of fines slurry in a coking and gasification process. 4,289,603, Cl. 208-8.0LE.
Degussa Aktiengesellschaft: *See—*
Voigt, Carl; Kleinschmit, Peter; and Walter, Eberhard, 4,289,741, Cl. 423-376.000.
Deibert, David D. Wind powered electrical generator. 4,289,970, Cl. 290-44.000.
De Klerk, Pieter B.; and Velthuysen, Andries G., to Fowler Holdings Limited. Compactor. 4,289,422, Cl. 404-124.000.
Delamontagne, Robert P. Management teaching game apparatus and method. 4,289,313, Cl. 273-256.000.
De Lange, Michael D.: *See—*
Theron, Jacob J.; Bout, Bernardus J.; Van Wyk, Jacobus P.; and De Lange, Michael D., 4,290,021, Cl. 324-429.000.
Dell, Dorothy G.; and Clifford, Christine H. Sports brassiere. 4,289,137, Cl. 128-482.000.
DeLong, Donald C., to Eli Lilly and Company. Antiviral combinations. 4,289,773, Cl. 424-250.000.
Delves, Ronald F.: *See—*
Barnes, Robin R.; Delves, Ronald F.; and Slasor, James F., 4,289,996, Cl. 318-38.000.
Dempsey, Russell M.; Coker, Thomas G.; La Conti, Anthony B.; and Fragala, Anthony R., to General Electric Company. Production of halogens by electrolysis of alkali metal halides in an electrolysis cell having catalytic electrodes bonded to the surface of a solid polymer electrolyte membrane. 4,289,590, Cl. 204-98.000.
Denkewalter, Robert G.; Kolc, Jaroslav; and Lukasavage, William J., to Allied Corporation. Macromolecular highly branched homogeneous compound based on lysine units. 4,289,872, Cl. 528-328.000.
De Poorter, Adriaan W.: *See—*
Jacobs, Bernardus A. J.; De Poorter, Adriaan W.; and Zalm, Pieter, 4,290,075, Cl. 430-270.000.
Dereser, Ernst, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced cements and process for manufacture of same. 4,289,536, Cl. 106-99.000.
de Saint-Ours, Gerard: *See—*
Chabre, Andre; de Saint-Ours, Gerard; and Vrillon, Bernard, 4,289,043, Cl. 74-609.000.
Desbrandes, Robert: *See—*
Norel, Guy; and Desbrandes, Robert, 4,289,025, Cl. 73-152.000.
DeSoto, Inc.: *See—*
Krajewski, John J., 4,289,675, Cl. 260-29.6CM.
Deussner, Herbert, to Klockner-Humboldt-Deutz AG. Apparatus for the mutli-step calcination of cement-clinker. 4,289,483, Cl. 432-106.000.
Deutsch Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Nauroth, Peter; Kuhlmann, Robert; and Turk, Gunter, 4,289,681, Cl. 260-37.0SB.
Devlin, Daniel J., to Plessey Incorporated. Integrated circuit package and lead frame. 4,289,922, Cl. 174-52.0FP.
Dexter Corporation, The: *See—*
Elston, Colin; Hoffman, Herbert A.; and Murphy, H. Joseph, 4,289,580, Cl. 162-109.000.
Dhabhar, Dadi J.; and Shah, Nutan B., to Richardson-Vicks Inc. Zinc derivatives and their use in mouthwash compositions. 4,289,754, Cl. 424-52.000.
Dhabhar, Dadi J., to Richardson-Vicks Inc. Stable mouthwash compositions containing zinc and fluoride compounds. 4,289,755, Cl. 424-52.000.
Diachkov, Vasily M.: *See—*
Tikhonov, Valentin N.; Zhestkov, Vitaly I.; Shlykov, Gennady N.; Diachkov, Vasily M.; Mukhin, Viktor M.; and Zhigalov, Gennady V., 4,288,889, Cl. 19-236.000.
Didier Engineering GmbH: *See—*
Wagener, Dietrich; Flockenhaus, Claus; and Blase, Manfred, 4,289,585, Cl. 202-227.000.
Diesel Kiki Co., Ltd.: *See—*
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Friederich, Klaus; Heinze, Gerhard; Reiff, Helmut; Michael, Dietrich; Schon, Manfred; Markusch, Peter; Haberland, Ulrich; Dieterich, Dieter; and Merten, Josef, 4,289,672, Cl. 260-29.2TN.
Digital Equipment Corporation: *See—*
Levy, John V.; Rodgers, David; Stewart, Robert E.; and Casabona, Richard J., 4,290,102, Cl. 364-200.000.
Stewart, Robert E.; Flahive, Barry J.; and Potter, David, 4,290,133, Cl. 370-85.000.
Dillon, Keith, to Singer Company, The. Decibel addition circuit. 4,290,111, Cl. 364-768.000.
DiPippo, Carmine A., to James River Graphics, Inc. Negative image diazography formulation with acid labile coupler, diazonium compound and carboxylic acid anhydride. 4,289,839, Cl. 430-177.000.
Disselbeck, Dieter; Neumann, Gerhard; Ott, Karl-Heinz; Strobel, Gunther; and Zalewski, Edwin, to Hoechst Aktiengesellschaft. Liquid filtration process. 4,289,627, Cl. 210-702.000.
Disselbeck, Dieter; and Richter, Rudolf, to Hoechst Aktiengesellschaft. Process for separating solids from liquid matter. 4,289,628, Cl. 210-703.000.
Dobberpuhl, Dale R., to Deere & Company. Independent wheel drive. 4,289,224, Cl. 192-50.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Mahncke, Jurgen; Weigele, Hans; and Hotz, Dieter, 4,288,881, Cl. 14-2.400.
Dolinsky, Josef. Combined tooth brush and gum massaging. 4,288,883, Cl. 15-110.000.
Dollenmayer, William L., to International Business Machines Corporation. Automatic typefont loader. 4,289,412, Cl. 400-171.000.
Donnally, William: *See—*
Smith, Chester L.; and Donnally, William, 4,289,960, Cl. 250-222.00R.
Donohue, John A.; and Paschke, Edward E., to Standard Oil Company (Indiana). 2,2',6,6'-Tetramethylbiphenyl-4,4'-diol polyesters. 4,289,870, Cl. 528-193.000.
Donovan, Terrence P. Security door. 4,288,944, Cl. 49-395.000.
Dorpmund, Heinz; and Oberpichler, Gerd, to Volkswagenwerk Aktiengesellschaft. Motor vehicle transmission. 4,289,044, Cl. 74-688.000.
Dorsey, Robert J., to Wehr Corporation. Press for refractory material and having removable core moving apparatus. 4,289,472, Cl. 425-415.000.
Dossett, Richard A.: *See—*
Grimm, Bernard J.; and Dossett, Richard A., 4,288,995, Cl. 62-382.000.
Dotter, Richard J., Sr.: *See—*
Chambers, J. Bruce; and Dotter, Richard J., Sr., 4,289,221, Cl. 192-3.570.
Double-E, Inc.: *See—*
McLean, Douglas K., 4,289,294, Cl. 251-62.000.
Douglass, Paul W.; and Trotta, Robert A., to Gillette Company, The. Shaving system with pivotally mounted razor cartridge. 4,288,920, Cl. 30-47.000.
Dow Chemical Company, The: *See—*
Buske, Gary R., 4,289,639, Cl. 252-87.000.
Christensen, Marvin M.; Zachary, Richard E.; and Dupont, Andra P., 4,289,807, Cl. 427-195.000.
Hayes, William V.; and Childress, David L., 4,289,656, Cl. 252-470.000.
Jinkins, C. Eugene; and Legler, Bobby, 4,289,814, Cl. 427-385.500.
Martin, Patrick H., 4,289,812, Cl. 427-379.000.
Pearce, Roscoe L.; and Martin, Charles W., 4,289,738, Cl. 423-228.000.
West, Walter H.; and Prueter, E. D., 4,288,896, Cl. 29-157.10R.
Dow Corning Corporation: *See—*
Kalinowski, Robert E.; and Vincent, Gary A., 4,289,859, Cl. 525-104.000.
Sawyer, David H.; Henige, Joseph A.; and Rauchholz, Alvin W., 4,289,572, Cl. 156-617.0SP.
Dowbenko, Rostyslawa: *See—*
Christenson, Roger M.; Maska, Rudolf; Dowbenko, Rostyslawa; and Hockswender, Thomas R., 4,289,674, Cl. 260-29.6NR.
Dragerwerk Aktiengesellschaft: *See—*
Warncke, Ernst; Schlobohm, Joachim; and Behnke, Jurgen, 4,289,238, Cl. 206-527.000.
Drebinger, Peter: *See—*
Brunner, Heinrich; Drebinger, Peter; Hoehne, Peter; Hoisl, Johann; Kochanowski, Guenter; and Wimmer, Walter, 4,290,136, Cl. 371-25.000.
Driver, Julian H.: *See—*
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,289,545, Cl. 148-6.300.
Drobot, Walter: *See—*
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Drolet, Jean-Francois: *See—*
Perrault, Guy; Lavertu, Roger; and Drolet, Jean-Francois, 4,289,551, Cl. 149-19.400.

Druschke, Frank; Margotte, Dieter; Tresper, Erhard; Bottenbruch, Ludwig; Cohnen, Wolfgang; and Hucks, Uwe, to Bayer Aktiengesellschaft. Process for the preparation of flame-resistant polycarbonates. 4,289,685, Cl. 260-45.70S.
Drythanol Ltd.: *See—*
Yarrow, Hyman; and Whitefield, Martin, 4,289,764, Cl. 424-243.000.
Dubinsky, Rudolf S.; Medovar, Boris I.; and Boiko, Georgy A. Method and apparatus for producing a solid-section ingot by electroslag remelting. 4,289,192, Cl. 164-470.000.
Dubow, Jerome, to Stop-A-Flat Corporation. Method for sealing porosity leaks in pneumatic tires. 4,289,805, Cl. 427-140.000.
Duda, Philip H. Directional antenna for long range T.V. signal reception. 4,290,069, Cl. 343-722.000.
Duda, Werner, to Roe International, Inc. Tape measure. 4,288,923, Cl. 33-138.000.
Dufft, Jurgen; and Brearley, Malcolm, to Girling Limited. Vehicle braking systems. 4,289,358, Cl. 303-22.00R.
Dukes, Connie H. Lock for slidable door. 4,289,343, Cl. 292-117.000.
Dulat, Joseph, to United States Borax & Chemical Corp. Mineral oil soluble borate compositions. 4,289,637, Cl. 252-49.500.
Dulin, Gerald F., to Astronautics Corporation of America. Single phase DC brushless motor. 4,289,998, Cl. 318-254.000.
Dunbar, John H.; and Gray, Kenneth L., to Courtaulds Limited. Apparatus for forming a sheet of dry wood pulp. 4,289,471, Cl. 425-373.000.
Duncah, Jimmie D.; and Ryan, Ben T. Fuel manifold for oval track racing cars. 4,289,714, Cl. 261-34.00R.
Duncan, Michael E.; Whittington, Philip J.; and Kimber, Michael P., to DCA Industries Limited. Frying apparatus. 4,289,111, Cl. 126-391.000.
Dungs, Horst: *See—*
Weber, Heinrich; Dungs, Horst; Wollenhaupt, Karl-Heinz; Brasseur, Yves; Birscheidt, Henri; and Beckmann, Franz, 4,289,500, Cl. 44-15.00R.
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Andersson, Karl G. B., 4,289,253, Cl. 221-1.000.
Dunlop Limited: *See—*
Cocks, Philip J.; and Newton, Derek A., 4,288,906, Cl. 29-526.00R.
Wilde, Ralph, 4,289,186, Cl. 152-379.300.
Dunn, Harold K. Orthopedic appliance. 4,289,123, Cl. 128-84.00R.
Dunwald, Willi: *See—*
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Dupont, Andra P.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Cohen, Abraham B.; and Gervay, Joseph E., 4,289,841, Cl. 430-253.000.
Csaky, Thomas J.; Gauntt, Sibbley P.; and Heard, Ralph L., Jr., 4,288,977, Cl. 57-297.000.
Jones, C. Bradford; and Kinard, Richard D., 4,289,480, Cl. 432-8.000.
Duracell International Inc.: *See—*
Parsen, Frank E.; and Graham, Teresita O., 4,288,913, Cl. 29-623.500.
Dusedau, Klaus: *See—*
Block, Werner; Pilsak, Manfred; Dusedau, Klaus; and Greiler, Wolfgang, 4,290,097, Cl. 362-264.000.
Dvoskin, Grigory I.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,289,731, Cl. 422-206.000.
Dworkin, Darryl R.: *See—*
Marshall, Trevor J., Jr.; and Dworkin, Darryl R., 4,289,307, Cl. 272-52.500.
Dybel, Frank R.; and Dybel, William P. Load monitoring system with means for generating timing signals. 4,289,022, Cl. 73-862.640.
Dybel, William P.: *See—*
Dybel, Frank R.; and Dybel, William P., 4,289,022, Cl. 73-862.640.
Dyck, Richard G. Apparatus for generating energy from the rise and fall of tides. 4,288,985, Cl. 60-398.000.
Dynaforce Corporation: *See—*
Catan, Robert, 4,289,190, Cl. 160-332.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Burkhardt, Rudolf; Meyer, Gunther; Schmidt, Reinhard; and Thewalt, Klaus, 4,289,895, Cl. 560-92.000.
Dyneer Corporation: *See—*
Kraft, Derald H., 4,289,007, Cl. 72-58.000.
Dyroff, David R.; Graf, Gary F.; Kim, Keun Y.; and Suchanek, Walton F., Jr., to Monsanto Company. Calculus-inhibiting method and compositions. 4,289,753, Cl. 424-48.000.
E.A. Storz GmbH & Co., KG: *See—*
Weisser, Dieter; and Hafner, Franz, 4,289,300, Cl. 254-126.000.
E. J. Price (Developments) Limited: *See—*
Price, Ernest J., 4,289,458, Cl. 417-464.000.
E-Systems, Inc.: *See—*
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E-Y Laboratories, Inc.: *See—*
Chu, Albert E., 4,289,747, Cl. 424-1.000.
Easland Industries, Inc.: *See—*
Easland, James C., 4,288,941, Cl. 46-47.000.
Easland, James C., to Easland Industries, Inc. Trick rope having appearance of working lasso. 4,288,941, Cl. 46-47.000.
East/West Industries, Inc.: *See—*
Spinosa, Dominic J.; and Knoll, Frank, 4,289,286, Cl. 244-1.00R.
Eastman Kodak Company: *See—*
Specht, Donald P.; Houle, Conrad G.; and Farid, Samir Y., 4,289,844, Cl. 430-281.000.
Sylvester, Robert A., 4,289,840, Cl. 430-207.000.
Tan, Zoilo C. H.; Petrqpoulos, Constantine C.; and Rauner, Frederick J., 4,289,842, Cl. 430-270.000.
Wilson, John C.; and Yacobucci, Paul D., 4,289,865, Cl. 526-288.000.
Eaton Corporation: *See—*
Chambers, J. Bruce; and Dotter, Richard J., Sr., 4,289,221, Cl. 192-3.570.
Hammond, Howard A.; and Whitcomb, Paul H., 4,289,177, Cl. 144-2.00Z.
Paskert, Joseph H., 4,289,058, Cl. 411-451.000.
Eaton, Sargent S., Jr., to Mostek Corporation. AND-gate clock. 4,289,973, Cl. 307-448.000.
Eberhard Hoesch & Sohne GmbH & Co.: *See—*
Schotten, Alfons; Spolgen, Herman J.; and Rilling, Ulrich, 4,289,618, Cl. 210-142.000.
Schotten, Alfons, 4,289,622, Cl. 210-225.000.
Ebert, Robert W., to Marathon Electric Manufacturing Corp. Strain relief grommet in combination with a cord set extending from an electric motor. 4,289,923, Cl. 174-65.00G.
Economy, James; Lyerla, James R.; and Pederson, Lester A., to International Business Machines Corporation. Process for forming microcircuits. 4,289,573, Cl. 156-643.000.
Edgell, Thomas A.; Foote, Alfred R.; and Steele, Charles P., to Edgell, Thomas A.; Tillinghast, Roberta K.; and Fair, James W., a part interest. Earth fracturing apparatus. 4,289,072, Cl. 102-318.000.
Edwards, William M.: *See—*
Haren, Doyle V.; and Edwards, William M., 4,289,555, Cl. 156-149.000.
Edwin Burgess Limited: *See—*
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Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.
Egan, William J.: *See—*
Carroll, Robert G.; Caporini, John I.; and Egan, William J., 4,290,031, Cl. 331-94.50G.
Egly, Robert A. Magnetic cassette storage case. 4,289,235, Cl. 206-387.000.
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Fussl, Erwin, to Maerz Ofenbau AG. Fuel lance structure for a uniflow regenerative shaft furnace. 4,289,482, Cl. 432-96.000.

G. Siempelkamp GmbH & Co.: *See—*
Pesch, Jurgen, 4,289,467, Cl. 425-141.000.

Gabriel, Isabelle M.: *See—*
Steinhauer, Roger C.; and Gabriel, Isabelle M., 4,289,644, Cl. 252-127.000.

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Gailey, J. Lynn: *See—*
Chalmers, Alexander A.; and Gailey, J. Lynn, 4,288,958, Cl. 52-478.000.

Galasso, Francis S.; and Basche, Malcolm, deceased (by Basche, Joyce O., heir), to United Technologies Corporation. Method for producing fine grained pyrolytic silicon nitride. 4,289,801, Cl. 427-94.000.

Galbraith, Lyle D.: *See—*
Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, 4,289,089, Cl. 118-306.000.

Galie, Louis M.: *See—*
Pitt, Paul E.; Glaser, Edward L.; and Galie, Louis M., 4,290,115, Cl. 364-900.000.

Gallaher, David E.: *See—*
Rabeneck, Kenneth H.; Kantlehner, Jerry R.; and Gallaher, David E., 4,289,569, Cl. 156-580.200.

Gallion, James A.: *See—*
Sorber, Robert E.; and Gallion, James A., 4,289,995, Cl. 318-9.000.

Gante, Joachim; Radunz, Hans-Eckart; Orth, Dieter; Schliep, Hans-Jochen; and Schorscher, Ernst, to Merck Patent Gesellschaft mit Beschrankter Haftung. Phenothiazine derivatives and a process for their preparation. 4,289,768, Cl. 424-247.000.

Gante, Joachim: *See—*
Schacht, Erich; Kurmeier, Hans-Adolf; Gante, Joachim; Lissner, Reinhard; Melzer, Guido; and Orth, Dieter, 4,289,774, Cl. 424-250.000.

Ganz Brothers, Inc.: *See—*
Ganz, Robert H.; and Myers, John H., 4,289,236, Cl. 206-432.000.

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Garlock Inc: *See—*
Cather, Douglas A., Jr., 4,289,321, Cl. 277-152.000.

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Cather, Douglas A., Jr.; and Benjamin, Martin E., 4,289,318, Cl. 277-12.000.

Gartner, Rodney W.; Gray, Charles R.; and Hazen, John O., to H. H. Robertson Company. Electrical activating assembly and closure member therefor. 4,289,921, Cl. 174-48.000.

Garvin, Hugh L.; and Pinnow, Douglas A., to Hughes Aircraft Company. High selectivity thin film polarizer. 4,289,381, Cl. 350-320.000.

Gary, Norman E.; and Lorenzen, Kenneth, to University of California, The Regents of the. Bee vacuum device and method of handling bees. 4,288,880, Cl. 6-12.00R.

Gasser, Rene, to Maschinenfabrik Ad. Schulthess & Co. Aktiengesellschaft. Ironing mangle. 4,288,934, Cl. 38-44.000.

Gatehouse, Diana M.: *See—*
Worthington, Paul A.; de Fraine, Paul; Rathmell, William G.; and Gatehouse, Diana M., 4,289,526, Cl. 71-92.000.

Gates, Kenneth L.: *See—*
Johnson, Larry K.; and Gates, Kenneth L., 4,288,887, Cl. 16-105.000.

Gauntt, Sibbley P.: *See—*
Csaky, Thomas J.; Gauntt, Sibbley P.; and Heard, Ralph L., Jr., 4,288,977, Cl. 57-297.000.

Gautschi, Fritz: *See—*
Schulte-Elte, Karl-Heinrich; Willhalm, Bruno; and Gautschi, Fritz, 4,289,659, Cl. 252-522.00R.

Gay, Charles H., Jr.: *See—*
Sterman, Albert P.; Gay, Charles H., Jr.; Tegarden, Frederick W.; and Lenahan, Dean T., 4,289,447, Cl. 415-200.000.

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Basham, Edward R.; and Mosely, L. Max, 4,289,024, Cl. 73-151.000.

Geil, Fred G.; and Thompson, John H., to Electric Power Research Institute, Inc. Mechanical filter and method of acoustically coupling waveguides therein. 4,290,035, Cl. 333-186.000.

Geluk, Ronald J.: *See—*
Baumann, Jacob S.; and Geluk, Ronald J., 4,290,112, Cl. 364-822.000.

General Binding Corporation: *See—*
Wiermanski, Jerome J., 4,289,330, Cl. 281-21.00R.

General DataComm Industries, Inc.: *See—*
Walsh, Dale M., 4,290,139, Cl. 375-14.000.

General Electric Company: *See—*
Anderson, Roy E.; Frey, Richard L.; and Lewis, James R., 4,290,141, Cl. 455-2.000.
Brown, Edgar D., Jr., 4,289,891, Cl. 556-453.000.
Cannon, John W., 4,289,941, Cl. 200-146.00R.
Corrigan, Francis R., 4,289,503, Cl. 51-307.000.
Davidson, Craig R.; and Sedlak, John M., 4,289,591, Cl. 204-129.000.
Dempsey, Russell M.; Coker, Thomas G.; La Conti, Anthony B.; and Fragala, Anthony R., 4,289,590, Cl. 204-98.000.
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,290,052, Cl. 340-365.00C.
Espelage, Paul M., 4,290,001, Cl. 318-811.000.
Grimm, Bernard J.; and Dossett, Richard A., 4,288,995, Cl. 62-382.000.
Hysell, Robert E.; and Kalkbrenner, Francis W., 4,290,080, Cl. 357-81.000.
McFadyen, Robert J.; and Zeigler, John F., III, 4,290,126, Cl. 367-93.000.
Parks, Earl L.; and Zaidel, Simon A., 4,289,846, Cl. 430-314.000.
Puckette, Charles M., 4,290,022, Cl. 328-55.000.
Sarvas, Walter P., 4,289,799, Cl. 427-65.000.
Serrano, Juan de J., 4,290,061, Cl. 340-712.000.
Sterman, Albert P.; Gay, Charles H., Jr.; Tegarden, Frederick W.; and Lenahan, Dean T., 4,289,447, Cl. 415-200.000.
Wales, Wayne F.; and Frawley, James J., 4,289,803, Cl. 427-134.000.
Zirin, Louis I., 4,289,360, Cl. 308-178.000.

General Electric Company Limited, The: *See—*
Connolly, David C. A.; and Shutt, Harry, 4,289,930, Cl. 179-2.0TV.

General Foods Corporation: *See—*
Kleiner, Fredric; Roy, Pradip K.; and Kuchman, Michael J., 4,289,794, Cl. 426-660.000.

General Foods France S.A.: *See—*
Bruelle, Georges, 4,289,790, Cl. 426-93.000.

General Mills, Inc.: *See—*
Johnston, Michael L.; Gordon, Loren J.; and Weinauer, Dietrich E., 4,289,470, Cl. 425-336.000.

General Motors Corporation: *See—*
Micheli, Adolph L., 4,289,802, Cl. 427-125.000.
Pearce, Warren, Jr.; Schramme, Stephan H.; Lightner, John L.; and McGee, Joseph A., 4,289,924, Cl. 174-152.00G.
Tranbarger, Glen E., 4,289,722, Cl. 264-102.000.

General Signal Corporation: *See—*
Parker, John W., 4,290,027, Cl. 330-293.000.

General Tire & Rubber Company, The: *See—*
Neubert, Terry C., 4,289,683, Cl. 260-38.000.

GenRad, Inc.: *See—*
Thiel, David W., 4,290,013, Cl. 324-73.0PC.

George, Robert D.; and Gray, Robert C., to Mechaneer, Inc. Apparatus for winding armatures. 4,289,281, Cl. 242-7.05B.

Gernlein, Hermann: *See—*
Reim, Werner; Gernlein, Hermann; and Zimmermann, Helmuth, 4,289,228, Cl. 198-339.000.

Gervay, Joseph E.: *See—*
Cohen, Abraham B.; and Gervay, Joseph E., 4,289,841, Cl. 430-253.000.

Geyer, Charles J., Jr.; and White, Ben E., to Fiber Associates, Incorporated. Process for continuous filtration and aging of xanthated alkali cellulose. 4,289,875, Cl. 536-60.000.

GFA-Gesellschaft fur Flachenabdichtung mit beschrankter Haftung: *See—*
Hammer, Heiner I., 4,289,552, Cl. 156-73.400.

Giacomelli, Enzo: *See—*
Traversari, Alessandro; and Giacomelli, Enzo, 4,289,322, Cl. 277-188.00A.

Gillette Company, The: *See—*
Douglass, Paul W.; and Trotta, Robert A., 4,288,920, Cl. 30-47.000.
Langlois, James L., 4,289,408, Cl. 366-76.000.

Gilman, Byron L., to Medtronic, Inc. A-V Sidearm lead. 4,289,144, Cl. 128-785.000.

Girling Limited: *See—*
Dufft, Jurgen; and Brearley, Malcolm, 4,289,358, Cl. 303-22.00R.

Glacier Metal Company, Limited, The: *See—*
Campbell, Brian D., 4,288,895, Cl. 29-149.50C.

Gladrow, Elroy M.; and Winter, William E., to Exxon Research & Engineering Co. Hydrocarbon cracking with mixture of zeolites Y and ZSM-5. 4,289,606, Cl. 208-120.000.

Glander, Fritz; and Voigt, Hermann U., to Kabel- und Metallwerke Gutehoffnungshutte AG. Grafting of silane on thermoplastics or elastomers for purposes of cross linking. 4,289,860, Cl. 525-263.000.

Glaser, Edward L.: *See—*
Pitt, Paul E.; Glaser, Edward L.; and Galie, Louis M., 4,290,115, Cl. 364-900.000.

Gleason, Joseph P., to Sullivan, Thomas P., a part interest. Position transducing method and means. 4,290,065, Cl. 340-870.430.

Gleaves, Donald; and Green, Walter. Aircraft fuel tester. 4,289,027, Cl. 73-299.000.

Glenn, E. Myles, to Upjohn Company, The. Method for treating inflammation. 4,289,757, Cl. 424-120.000.

Gless, Richard D.: *See—*
Rapoport, Henry; Weller, Dwight D.; and Gless, Richard D., 4,289,882, Cl. 546-141.000.

Gloucester Engineering Co., Inc.: *See—*
Keim, Karl H., 4,289,469, Cl. 425-302.100.

Gneth, Zoltan: *See—*
Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth, Zoltan, 4,289,894, Cl. 560-82.000.

Goda, Tomoko: *See—*
Usami, Akira; Uebayashi, Toshiaki; Sato, Koji; and Goda, Tomoko, 4,289,130, Cl. 128-287.000.

Goddard, Donald L., to Babcock & Wilcox Company, The. Retractable storage lug. 4,289,291, Cl. 248-293.000.

Goeth, Hanns: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,289,775, Cl. 424-251.000.

Goettl, Adam D. Automatic flushing and draining reservoir apparatus for evaporative coolers. 4,289,713, Cl. 261-27.000.

Goeuriot, Patrice M. V.: *See—*
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,289,545, Cl. 148-6.300.

Golczewski, Roman; Seach, Barry G.; and Cohen, Solomon E. Apparatus for extracting solids from slurry. 4,289,624, Cl. 210-404.000.

Gold King Mfg. Co.: *See—*
Rose, Bobby H., 4,289,355, Cl. 299-9.000.

Golda, Eugene: *See—*
Rowe, William; and Golda, Eugene, 4,289,838, Cl. 430-163.000.

Goldblatt Tool Company: *See—*
Robinson, David M., 4,289,215, Cl. 182-92.000.

Goldstein, Gideon: *See—*
Heavner, George; Tjoeng, Foe-Siong; and Goldstein, Gideon, 4,289,759, Cl. 424-177.000.

Gomez, I. Luis; and Cole, Robert, to Monsanto Company. Glass fiber bonding resins. 4,289,664, Cl. 260-19.00R.

Goodman, Richard M.; and Lim, Sim K., to American Cyanamid Company. Low molecular weight hydrolyzed polymers or copolymers as depressants in mineral ore flotation. 4,289,613, Cl. 209-167.000.

Gordon, Loren J.: *See—*
Johnston, Michael L.; Gordon, Loren J.; and Weinauer, Dietrich E., 4,289,470, Cl. 425-336.000.

Gordon, Roy G. Synthesis of chloromethyldisilanes. 4,289,890, Cl. 556-430.000.

Gotoh, Masahito: *See—*
Sato, Atsushi; Shimizu, Isoo; and Gotoh, Masahito, 4,289,918, Cl. 585-422.000.

Gould Inc.: *See—*
Piotti, Peter B., 4,290,002, Cl. 320-20.000.

Graf, Gary F.: *See—*
Dyroff, David R.; Graf, Gary F.; Kim, Keun Y.; and Suchanek, Walton F., Jr., 4,289,753, Cl. 424-48.000.

Graham, Kenneth W.: *See—*
Norton, Edward J.; and Graham, Kenneth W., 4,288,929, Cl. 36-69.000.

Graham Magnetics, Inc.: *See—*
Deffeyes, Robert J.; and Armstrong, Harris W., 4,289,534, Cl. 106-1.140.

Graham, Teresita O.: *See—*
Parsen, Frank E.; and Graham, Teresita O., 4,288,913, Cl. 29-623.500.

Granda, Edward J.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.

Gransberry, N. Keith; and Haggerty, Allen C., to Boeing Company, The. Wire routing apparatus. 4,289,288, Cl. 248-56.000.

Gray, Charles R.: *See—*
Gartner, Rodney W.; Gray, Charles R.; and Hazen, John O., 4,289,921, Cl. 174-48.000.

Gray, Kenneth L.: *See—*
Dunbar, John H.; and Gray, Kenneth L., 4,289,471, Cl. 425-373.000.

Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., to Scott Paper Company. Surface replication on a coated substrate. 4,289,821, Cl. 428-172.000.

Gray, Robert C.: *See—*
George, Robert D.; and Gray, Robert C., 4,289,281, Cl. 242-7.05B.

Gray, Thomas J., to Olin Corporation. Cathode for chlor-alkali cells. 4,289,650, Cl. 252-425.300.

Green, Albert R.: *See—*
Davis, Marvin L.; Davis, Edd C.; and Green, Albert R., 4,289,420, Cl. 404-35.000.

Green, Walter: *See—*
Gleaves, Donald; and Green, Walter, 4,289,027, Cl. 73-299.000.

Greenberg, Melvin: *See—*
Supcoe, Robert F.; and Greenberg, Melvin, 4,289,677, Cl. 260-33.6SB.

Greene, William C. Van top conversion and boat combination. 4,289,348, Cl. 296-157.000.

Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., to Hanover Research Corporation. Process and apparatus for recovering clean water and solids from aqueous solids. 4,289,578, Cl. 159-47.0WL.

Greenfield, George, to Sangamo Weston, Inc. Voltage offset circuit for auto-zero low voltage amplifier. 4,290,023, Cl. 330-9.000.

Greenstadt, Joseph C.: *See—*
Frankhouser, Douglas L.; Schnitz, Louis; and Greenstadt, Joseph C., 4,289,244, Cl. 211-117.000.

Greer Hydraulics, Incorporated: *See—*
Jacobellis, Alfonse A., 4,288,894, Cl. 29-157.00R.

Gregor, Lawrence V.: *See—*
Carpenter, Charles; Fugardi, Joseph F.; Gregor, Lawrence V.; Grosewald, Peter S.; and Reeber, Morton D., 4,290,079, Cl. 357-71.000.

Gregorius, Klaus: *See—*
Janner, Karl; Gregorius, Klaus; and Muller, Reinhold, 4,289,592, Cl. 204-157.10R.

Greiler, Wolfgang: *See—*
Block, Werner; Pilsak, Manfred; Dusedau, Klaus; and Greiler, Wolfgang, 4,290,097, Cl. 362-264.000.

Grenda, David W., to Electrochem International, Inc. Process for electrodialytically regenerating an electroless plating bath by removing at least a portion of the reacted products. 4,289,597, Cl. 204-180.00R.

Gretler, Heinrich, to Bauer Kaba AG Sicherheits-Schliessyteme. Key for a cylinder lock and method for making same. 4,289,002, Cl. 70-358.000.

Greve, Wilfried; von Schuh, Heinzgeorg; and Anagnostopulos, Hiristo, to Hoechst Aktiengesellschaft. 4-Aminopyridines and medicaments containing the same. 4,289,765, Cl. 424-246.000.

Grib, William P.: *See—*
Latowski, Anthony A.; and Grib, William P., 4,289,485, Cl. 432-245.000.

Griebeler, Elmer L., to C-R-O, Inc. Narrow gap welding apparatus. 4,289,950, Cl. 219-124.340.

Grieve, Robin L.: *See—*
Bauer, John R.; Byars, Robert W.; and Grieve, Robin L., 4,289,732, Cl. 422-224.000.

Grimaud, Edouard: *See—*
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Grimm, Bernard J.; and Dossett, Richard A., to General Electric Company. Household refrigerator movable storage assembly. 4,288,995, Cl. 62-382.000.

Grollier, Jean-Francois: *See—*
Bugaut, Andree; Grollier, Jean-Francois; and Vandenboosche, Jean-Jacques, 4,289,495, Cl. 8-406.000.

Grosewald, Peter S.: *See—*
Carpenter, Charles; Fugardi, Joseph F.; Gregor, Lawrence V.; Grosewald, Peter S.; and Reeber, Morton D., 4,290,079, Cl. 357-71.000.

Gruetsmacher, Gordon D.; and Stephens, Charles R., to Pfizer Inc. Preparation of erythorbic acid and ascorbis acid 6-fatty acid esters. 4,289,702, Cl. 260-343.700.

Grullmeier, Artur, to Rapp, Eugen; and Haug, Paul. Pneumo-hydraulic booster with rapid-traverse feature. 4,288,987, Cl. 60-560.000.

Grummett, Lorne H.: *See—*
Melissa, Raymond F.; Grummett, Lorne H.; and Fischer, Joseph J., 4,289,069, Cl. 101-93.010.

GTE Laboratories Incorporated: *See—*
Arumugham, Rangaswamy, 4,290,005, Cl. 323-313.000.

GTE Products Corporation: *See—*
Fishinger, Lawrence W., 4,289,415, Cl. 403-104.000.
Schreurs, Willy P., 4,289,991, Cl. 313-489.000.

Gubaidulin, Vyacheslav F.: *See—*
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

Guenon, Jean-Pierre: *See—*
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Guettel, Marvin A.: *See—*
Jurek, Dennis J.; Guettel, Marvin A.; and Aslin, Michael, 4,289,948, Cl. 219-110.000.

Guidry, Joseph L. Body puller. 4,289,017, Cl. 72-462.000.

Gulf Oil Corporation: *See—*
Hedrich, Loren W., 4,289,527, Cl. 71-96.000.
Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., 4,289,863, Cl. 526-106.000.
Lakshmanan, Pallavoor R., 4,289,669, Cl. 260-27.0EV.

Gulf & Western Manufacturing Company: *See—*
Muzzell, Stephen E., 4,289,304, Cl. 267-112.000.

Gundlach, Robert W., to Xerox Corporation. Development method and apparatus. 4,289,837, Cl. 430-39.000.

Gunji, Koki; and Dan, Takehiro, to National Research Institute for Metals. Deoxidizing alloy for molten steel. 4,289,533, Cl. 75-138.000.

Gustafson, Leon D.; and Mielke, Wayne C., to Land O'Lakes, Inc. Method of making cheese. 4,289,793, Cl. 426-491.000.

Gustafson, Ralph A.: *See—*
Long, Lennart E.; Steele, Roger K.; Coleman, David F.; and Gustafson, Ralph A., 4,288,926, Cl. 33-174.00P.

Gyro Mining Transport Limited: *See—*
Hudson, Richard C.; and Howarth, Andrew W., 4,289,274, Cl. 238-249.000.

H. H. Robertson Company: *See—*
Gartner, Rodney W.; Gray, Charles R.; and Hazen, John O., 4,289,921, Cl. 174-48.000.
H. K. Porter, Inc.: *See—*
Porter, Thomas M., 4,289,015, Cl. 72-384.000.
Haberland, Ulrich: *See—*
Friederich, Klaus; Heinze, Gerhard; Reiff, Helmut; Michael, Dietrich; Schon, Manfred; Markusch, Peter; Haberland, Ulrich; Dieterich, Dieter; and Merten, Josef, 4,289,672, Cl. 260-29.2TN.
Habock, Adolf: *See—*
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Hachisuka, Takeji, to Kabushiki Kaisha Fujikoshi t/a Nachi-Fujikoshi Corp. Liquid phase sintered dense composite body for brazed joints and method for making the same. 4,289,833, Cl. 428-544.000.
Hacias, Kenneth J., to Hooker Chemicals & Plastics Corp. Aqueous acidic lubricant composition and method for coating metals. 4,289,546, Cl. 148-6.15R.
Hackler, Ronald E.: *See—*
Balko, Terry W.; and Hackler, Ronald E., 4,289,766, Cl. 424-246.000.
Hafner, Franz: *See—*
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Haggerty, Allen C.: *See—*
Gransberry, N. Keith; and Haggerty, Allen C., 4,289,288, Cl. 248-56.000.
Haggerty, John S., to Massachusetts Institute of Technology. Process for controlling powder size with optical energy. 4,289,952, Cl. 219-121.00L.
Hagiwara, Miyuki; and Morita, Yosuke, to Japan Atomic Energy Research Institute. Fire retardant resin molded product and preparation process of the same. 4,289,687, Cl. 260-45.85B.
Haines, Harold R., to United States of America, Army. Clog-proof check valve. 4,289,166, Cl. 137-846.000.
Haker, Rolf; Fuhrer, Heinz-Georg; van Rijckevorsel, Rainer; Ruhl, Werner; and Thiery, Joachim, to Labora Mannheim GmbH fur Labortechnik. Minicomputer. 4,290,113, Cl. 364-900.000.
Hall, John B.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.
Hall, John N., to Hercules Incorporated. Reticulated web making apparatus. 4,289,464, Cl. 425-66.000.
Hallack, Richard D.; and Carter, Tommie B. Apparatus for removing suspended solids from an effluent. 4,289,616, Cl. 210-101.000.
Hallengren, Charles R., to Illinois Tool Works Inc. Apparatus for producing threaded self-tapping stainless steel screws. 4,289,006, Cl. 72-38.000.
Haller, Ingo: *See—*
Sasse, Klaus; Haller, Ingo; Plempel, Manfred; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,289,771, Cl. 424-249.000.
Halliburton Company: *See—*
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Hallman, Robert W.; Kimoto, Koichi; and Okai, Sakuo, to Napp Systems (USA), Inc. Shallow relief non-bottoming photopolymer printing plate. 4,289,071, Cl. 101-395.000.
Haluko, Michael, Jr., to Kinematics, Inc. Linear motion device. 4,289,040, Cl. 74-50.000.
Halvorsen, Kenneth, to Medical Testing Systems, Inc. Electrode assembly for temporary pacing and heart measurements. 4,289,138, Cl. 128-642.000.
Ham, Allan L.: *See—*
Campbell, Simon F.; Danilewicz, John C.; Evans, Anthony G.; and Ham, Allan L., 4,289,772, Cl. 424-250.000.
Hamaker, Raymond W.: *See—*
Alcorn, George E.; Hamaker, Raymond W.; and Stephens, Geoffrey B., 4,289,834, Cl. 428-601.000.
Hamm, Wilfried. Hand-rail element for staircase. 4,289,303, Cl. 256-69.000.
Hammer, Heiner I., to GFA-Gesellschaft fur Flachenabdichtung mit beschrankter Haftung. Method for the continuous welding of thermoplastic sheets. 4,289,552, Cl. 156-73.400.
Hammond, Howard A.; and Whitcomb, Paul H., to Eaton Corporation. Tree processing apparatus. 4,289,177, Cl. 144-2.00Z.
Hampshire, Michael J., to Ward & Goldstone Limited. Multiplex information handling system. 4,290,134, Cl. 370-92.000.
Hanaford, Donald E.; and Oldham, Dale R., to Thomson, Arthur E. Stranding apparatus. 4,289,564, Cl. 156-425.000.
Hanak, Gyula, to PB Gelatines. Press for rendering fatty bones. 4,289,067, Cl. 100-117.000.
Hanover Research Corporation: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,289,578, Cl. 159-47.0WL.
Hansen, Arne H., to Meyertech Incorporated. Fitting with tangential locking rod for coupling pipes. 4,289,339, Cl. 285-305.000.
Hansen, Glen D., to Veda, Inc. Silo unloader lowering control. 4,289,437, Cl. 414-315.000.
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Hanson, James A.; and Kopp, Manfred K., to United States of America, Energy. Multianode cylindrical proportional counter for high count rates. 4,289,967, Cl. 250-385.000.
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Ports, Kenneth A., 4,288,911, Cl. 29-574.000.
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James, Robert C., 4,288,965, Cl. 53-451.000.
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Kindig, James K.; and Turner, Ronald L., 4,289,529, Cl. 75-1.00R.
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Tomlinson, Ronald S., 4,289,730, Cl. 422-178.000.
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Held, John F.: *See—*
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Noyes, Walter O.; and Helft, John M., 4,290,059, Cl. 340-624.000.
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Sawyer, David H.; Henige, Joseph A.; and Rauchholz, Alvin W., 4,289,572, Cl. 156-617.0SP.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Schaper, Ulf-Armin; and Bruns, Klaus, 4,289,660, Cl. 252-522.00R.
Weber, Rudolf; and Andree, Hans, 4,289,642, Cl. 252-99.000.
Henry, James L., to Bell Telephone Laboratories, Incorporated. Dial pulse detection. 4,289,933, Cl. 179-18.0FA.
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Alderton, Gordon H. S., 4,289,059, Cl. 411-531.000.
Henzi, Beat, to Sandoz Ltd. Azo dyes having a quaternized heterocyclic diazo component radical and an optionally substituted aryloxyalkyl substituent on the amino group of the coupling component radical. 4,289,693, Cl. 260-146.00R.
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Hercules Incorporated: *See—*
Hall, John N., 4,289,464, Cl. 425-66.000.
Herdle, William B.; Kanner, Bernard; and Bailey, Donald L., to Union Carbide Corporation. Preparation of tetraalkoxysilanes. 4,289,889, Cl. 556-470.000.
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Brand, Wilhelm, 4,289,409, Cl. 366-83.000.
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Herndon, Marion E., Jr., to Conor Corporation. Internal loading cylindrical filter with unsupported tubular filter fabric. 4,289,510, Cl. 55-294.000.
Herold, Heiko; Herold, Richard; Klee, Rudolf J.; and Muschelknautz, Edgar, to Bayer Aktiengesellschaft. Method of cooling stuffer crimped yarn. 4,288,893, Cl. 28-266.000.
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Herrington, F. John, Jr., to Mobil Oil Corporation. Method for extrusion of tubular films. 4,289,727, Cl. 264-514.000.
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Koehler, Waldemar; Blumenberg, Bernd; Vogel, Ludwig; and Hetzel, Eckhard, 4,289,589, Cl. 203-49.000.
Heuer, Wolfgang: *See—*
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Higashiyama, Hirokichi: *See—*
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Higgins, Edwin G., Jr.: *See—*
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Hilker, Dennis C., to Honeywell Information Systems Inc. Apparatus and method of testing CML circuits. 4,290,137, Cl. 371-24.000.
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Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., to Gulf Oil Corporation. Ethylene polymerization process. 4,289,863, Cl. 526-106.000.
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Herb, Armin; Popp, Franz; and Ruoff, Hanspeter, 4,289,257, Cl. 222-146.0HE.
Schiefer, Erwin, 4,289,062, Cl. 411-34.000.
Hintermann, Rudolf; Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, to Voest-Alpine Aktiengesellschaft. Hollow cutting head. 4,289,357, Cl. 299-81.000.
Hiorns, Frederick J., to Associated Portland Cement Manufacturers Limited, The. Particulate matter air assisted screw discharge apparatus. 4,289,428, Cl. 406-39.000.
Hirai, Jun, to Sony Corporation. Noise and cross-talk elimination in recording and reproducing video signals. 4,290,082, Cl. 358-8.000.
Hiraide, Seiji: *See—*
Matsumoto, Masashige; Kobuna, Hideaki; Hiraide, Seiji; and Kawai, Kouichi, 4,289,575, Cl. 156-656.000.
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Hirschberg, Kenneth A.: *See—*
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Hitachi, Ltd.: *See—*
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Masuda, Kouji; Mizukami, Masao; and Kitamura, Nobuaki, 4,290,119, Cl. 365-189.000.
Mizutani, Tatsumi; Ueki, Kazuyoshi; Iida, Shinya; and Komatsu, Hideo, 4,289,188, Cl. 156-626.000.
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Namba, Takamasa; Yanagawa, Hidekata; Fujimoto, Nobuo; Mori, Takehiko; and Yamada, Takayoshi, 4,289,263, Cl. 226-196.000.
Sanpei, Konomu; and Fujii, Tadaaki, 4,290,009, Cl. 324-57.00R.
Shimada, Toshikazu; Katayama, Yoshifumi; and Komatsubara, Kiichi F., 4,289,822, Cl. 428-212.000.
Suda, Seiji; Hasegawa, Taiji; Mouri, Yasunori; and Furuhashi, Toshio, 4,290,107, Cl. 364-431.000.
Sugie, Mamoru; Yamaguchi, Noboru; Mayama, Koichi; Kita, Yuzo; Yoshizawa, Shigeru; Saito, Nobuo; and Asano, Atsushi, 4,290,117, Cl. 365-15.000.
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Hitt, Mary M.: *See—*
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Disselbeck, Dieter; Neumann, Gerhard; Ott, Karl-Heinz; Strobel, Gunther; and Zalewski, Edwin, 4,289,627, Cl. 210-702.000.
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Greve, Wilfried; von Schuh, Heinzgeorg; and Anagnostopulos, Hiristo, 4,289,765, Cl. 424-246.000.
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Hoffmann, Christian: *See—*
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Pestka, Sidney; and Rubinstein, Menachem, 4,289,690, Cl. 260-112.00R.

Hoffmann, Ralph L., to Perfection Manufacturing Company, The. Work control assembly in an exerciser. 4,289,309, Cl. 272-73.000.

Hofmann, Hans: *See—*
Traber, Rene P.; Kuhn, Max; Hofmann, Hans; and Harri, Eugen, 4,289,851, Cl. 435-71.000.

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Hoki, Tsuneo; Miura, Nobuo; and Watanabe, Hiroshi, to Asahi-Dow Limited. Foamable polymeric compositions. 4,289,857, Cl. 521-85.000.

Hold, Peter; and Tadmor, Zehev, to USM Corporation. Rotary seal construction and processor. 4,289,319, Cl. 277-59.000.

Holden, Homer N.: *See—*
Kleykamp, Donald L.; and Holden, Homer N., 4,289,077, Cl. 105-199.00C.

Holter, Heinz. Dust aspirating arrangement. 4,289,509, Cl. 55-257.0PV.

Holtey, Thomas O.; Miller, Robert C.; and Yu, Kin C., to Honeywell Information Systems Inc. Computer system having a paging apparatus for mapping virtual addresses to real addresses for a memory of a multiline communications controller. 4,290,104, Cl. 364-200.000.

Holzknecht, Walter. Method for preparing a plurality of labels. 4,289,561, Cl. 156-265.000.

Holzwarth, Robert W., to Model A and Model T Car Reproduction Corporation, The. Vehicle folding top. 4,289,347, Cl. 296-107.000.

Honda, Akira: *See—*
Ando, Ryo; Sato, Kazuyoshi; and Honda, Akira, 4,289,462, Cl. 425-8.000.

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Honda, Juichi; Matumoto, Michiaki; and Mimori, Sadao, to Hitachi, Ltd. Process of combusting a premixed combustion fuel. 4,289,474, Cl. 431-10.000.

Honda, Keisuke. Fish detector capable of detecting species of fish. 4,290,125, Cl. 367-87.000.

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Emmett, John E., 4,289,061, Cl. 411-34.000.
Hacias, Kenneth J., 4,289,546, Cl. 148-6.15R.
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King, Peter F.; and Beyer, George J., 4,289,547, Cl. 148-6.15R.
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Hookway, Warren A., Jr.: *See—*
Marginean, Barry L.; and Hookway, Warren A., Jr., 4,289,535, Cl. 106-19.000.

Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Detergent product. 4,289,641, Cl. 252-96.000.

Hopkins, Michael F., to Caterpillar Tractor Co. Differential gear positioning means. 4,289,047, Cl. 74-713.000.

Hore, Donald L., to Rotork Limited. Fail-safe attachment for an actuator. 4,289,038, Cl. 74-2.000.

Hori, Shinichi: *See—*
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Horigome, Eiji: *See—*
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Horizon Manufacturing Corporation: *See—*
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Hornbaker, Edwin D.; and Li, Hsueh M., to Ethyl Corporation. Liquid phosphazene compositions. 4,289,862, Cl. 525-538.000.

Horstmann, Walter: *See—*
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Hoshino, Yoshikazu; and Shuto, Masayoshi, to Shionogi & Co., Ltd. Method and apparatus for discriminatively determining electrical constants. 4,290,008, Cl. 324-57.00R.

Hoskins, Michael K.; and Christiansen, Gary D., to Ortho Diagnostics, Inc. Blood gas controls composition, method and apparatus. 4,289,648, Cl. 252-408.000.

Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Protein-bound polysaccharides. 4,289,688, Cl. 260-112.00R.

Hotz, Dieter: *See—*
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Hotze, Hermann: *See—*
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Houle, Conrad G.: *See—*
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Hovel, Harold J., to International Business Machines Corporation. Multiple bandgap solar cell on transparent substrate. 4,289,920, Cl. 136-246.000.

Hovey, Richard J., to American Optical Corporation. Gradient photochromic lens and method selectively reducing photochromic activity. 4,289,497, Cl. 8-506.000.

Howard, Terence R., to Coal Industry (Patents) Limited. Shield assemblies for installation in under-ground roadways and rock excavating machines including such shield assemblies. 4,289,356, Cl. 299-33.000.

Howarth, Andrew W.: *See—*
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Howell, John K., Jr., to Hooker Chemicals & Plastics Corp. Waterborne coating for metal surfaces. 4,289,826, Cl. 428-418.000.

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Huang, Denis K., to Westvaco Corporation. Process for producing dry finished paperboard. 4,289,808, Cl. 427-209.000.

Huang, Yen T. Modular inflatable dome structure. 4,288,947, Cl. 52-2.000.

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Hudec, Gustav; Keil, Karl-Heinz; Kohler, Volker; and Rosenbusch, Kurt, to Cassella Aktiengesellschaft. Process for the preparation of aqueous emulsions, stable in storage, of N.alkyl-N-alkylol-ureas and their application for the softening of leather. 4,289,665, Cl. 260-21.000.

Hudson, Richard C.; and Howarth, Andrew W., to Gyro Mining Transport Limited. Rail track. 4,289,274, Cl. 238-249.000.

Hudson, Robert H.: *See—*
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Wang, Harry T., 4,290,030, Cl. 331-3.000.

Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth, Zoltan, to Chinoin Gyogyszer es Vegylszeti Termekek Gyara R.T. Pentachlorophenyl-phenyl malonate compound suitable for use as acylating agents. 4,289,894, Cl. 560-82.000.

Hung, John H., to International Paper Company. Polymeric sheets. 4,289,125, Cl. 128-156.000.

Hunke, Siegfried H., to Textron, Inc. Crown control for rolling mill. 4,289,013, Cl. 72-243.000.

Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., to Johnson Matthey Inc. Catalyst comprising a metal substrate. 4,289,652, Cl. 252-437.000.

Hutchings, Robert M.: *See—*
Acres, Gary J. K.; and Hutchings, Robert M., 4,289,737, Cl. 423-245.000.

Hutchison, James M. S.; Mallard, John R.; and Sutherland, Robert J., to National Research Development Corporation. Methods of deriving image information from objects. 4,290,019, Cl. 324-311.000.

Hydril Company: *See—*
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Hysell, Robert E.; and Kalkbrenner, Francis W., to General Electric Company. Method of making a strain buffer for a semiconductor device. 4,290,080, Cl. 357-81.000.

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Mougin, Georges L., 4,289,423, Cl. 405-61.000.

Ichikawa, Mamoru: *See—*
Ishikawa, Hiroshi; and Ichikawa, Mamoru, 4,290,044, Cl. 340-52.00H.
Seko, Kiyoshi; and Ichikawa, Mamoru, 4,288,967, Cl. 53-550.000.
Seko, Kiyoshi; and Ichikawa, Mamoru, 4,288,968, Cl. 53-550.000.

Iezuka, Isamu: *See—*
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,289,099, Cl. 123-307.000.

Ihara Chemical Industry Co., Ltd.: *See—*
Nakayama, Yoshiki; Yazawa, Chihiro; and Yamanashi, Koji, 4,289,916, Cl. 570-209.000.

Iida, Shinya: *See—*
Mizutani, Tatsumi; Ueki, Kazuyoshi; Iida, Shinya; and Komatsu, Hideo, 4,289,188, Cl. 156-626.000.

Ikeda, Hideo; Tsuchiya, Hideshi; and Okada, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Speaker with fine grain ferromagnetic material on center pole or ring. 4,289,937, Cl. 179-119.00R.

Ikeda, Matujiro: *See—*
Inagawa, Takashi; Kushida, Naoto; Sekiguchi, Akira; Ikeda, Matujiro; Sugawara, Hidetoshi; and Naito, Kunio, 4,290,037, Cl. 335-202.000.

Ilardi, Joseph M.: *See—*
Chiang, John S.; Munday, Theodore F.; and Ilardi, Joseph M., 4,289,739, Cl. 423-306.000.

Illinois Tool Works Inc.: *See—*
Hallengren, Charles R., 4,289,006, Cl. 72-38.000.

Illinois Water Treatment Company: *See—*
Bailey, James E.; and Cho, Yong K., 4,289,853, Cl. 435-177.000.

Imasu, Kenichiro: *See—*
Murase, Fujio; Matsumoto, Hidenosuke; Fujieda, Hiroshi; Takano, Teruhisa; and Imasu, Kenichiro, 4,289,272, Cl. 236-91.00D.

Immel, Erich A. Self-propelled battery powered cart for pushing disabled vehicles. 4,289,212, Cl. 180-19.00R.

Imperial Chemical Industries Limited: *See—*
Koronka, Paul, 4,289,081, Cl. 111-88.000.
Last, Anthony G. M., 4,289,831, Cl. 428-515.000.
Simons, Phillip R., 4,289,560, Cl. 156-244.180.

Worthington, Paul A.; de Fraine, Paul; Rathmell, William G.; and Gatehouse, Diana M., 4,289,526, Cl. 71-92.000.

Imre, Laszlo; Horstmann, Walter; and Leopold, Hans-Gerhard, to Bayer Aktiengesellschaft. Process for the preparation of 1,4-diazabicyclo-(2,2,2)-octane. 4,289,881, Cl. 544-352.000.

Inaba, Hajimu; and Inagaki, Shigemi, to Fijutsu Fanuc Limited. Industrial robot. 4,289,441, Cl. 414-589.000.

Inagaki, Shigemi: *See—*
Inaba, Hajimu; and Inagaki, Shigemi, 4,289,441, Cl. 414-589.000.

Inagawa, Takashi; Kushida, Naoto; Sekiguchi, Akira; Ikeda, Matujiro; Sugawara, Hidetoshi; and Naito, Kunio, to Nippon Electric Co., Ltd. Flat electromagnetic relay. 4,290,037, Cl. 335-202.000.

Industrial Filter & Pump Mfg. Co.: *See—*
Schmidt, Henry, Jr.; Cederholm, Allen E.; and Zievers, James F., 4,289,630, Cl. 210-785.000.

Industrie Pirelli S.p.A.: *See—*
Franchini, Carlo; and Maiocchi, Luigi, 4,289,185, Cl. 152-361.0DM.

Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*
Reim, Werner; Gernlein, Hermann; and Zimmermann, Helmuth, 4,289,228, Cl. 198-339.000.

Industronics, Inc.: *See—*
Lyman, Lawrence C., 4,289,484, Cl. 432-241.000.

Ingersoll-Rand Company: *See—*
Chaiko, Walter M., 4,289,426, Cl. 405-259.000.

Innocenti Santeustacchio S.p.A.: *See—*
Nessi, Aurindo, 4,289,012, Cl. 72-209.000.

Innovate, Inc.: *See—*
Sargeant, Roger E., 4,289,486, Cl. 433-118.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,289,947, Cl. 219-69.00D.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Fluid jetting system for electrical machining. 4,289,947, Cl. 219-69.00D.

Inoue, Toshizo. Bevel gear cutting device. 4,289,433, Cl. 409-29.000.

Institut Francais du Petrole: *See—*
Norel, Guy; and Desbrandes, Robert, 4,289,025, Cl. 73-152.000.

Institute of Gas Technology: *See—*
Lee, Tien S.; Sammells, Anthony F.; and Remick, Robert J., 4,289,835, Cl. 429-50.000.
Tarman, Paul B.; and Chynoweth, David P., 4,289,625, Cl. 210-603.000.

Intec Corporation: *See—*
Baker, Cole H., 4,289,964, Cl. 250-308.000.

INTERATOM, Internationale Atomreaktorbau GmbH: *See—*
Parr, Armin; Kleffner, Harald; and Leder, Harald, 4,289,582, Cl. 176-38.000.

International Business Machines Corporation: *See—*
Alcorn, George E.; Hamaker, Raymond W.; and Stephens, Geoffrey B., 4,289,834, Cl. 428-601.000.
Alpaugh, Warren A.; Macur, George J.; and Sharkness, James E., 4,289,594, Cl. 204-158.00R.
Bare, Gary T.; and Zimmerman, Lee T., 4,290,138, Cl. 371-29.000.
Carpenter, Charles; Fugardi, Joseph F.; Gregor, Lawrence V.; Grosewald, Peter S.; and Reeber, Morton D., 4,290,079, Cl. 357-71.000.
Cornelius, Rorger W.; Hill, James D.; and Quinn, Paul A., Jr., 4,289,411, Cl. 400-126.000.
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; Martone, James F.; and Sabad, Joseph J., 4,289,666, Cl. 260-23.00H.
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; and Sabad, Joseph J., 4,289,670, Cl. 260-28.5AV.
Dollenmayer, William L., 4,289,412, Cl. 400-171.000.
Economy, James; Lyerla, James R.; and Pederson, Lester A., 4,289,573, Cl. 156-643.000.
Hovel, Harold J., 4,289,920, Cl. 136-246.000.
Konian, Richard R.; and Walsh, James L., 4,289,978, Cl. 307-270.000.
Li, Pei-Ching, 4,289,539, Cl. 106-286.800.
McIntosh, Charles M.; and Schmeckenbecher, Arnold F., 4,289,719, Cl. 264-61.000.
Minshull, John F.; and Brazdil, Pavel, 4,290,084, Cl. 358-260.000.
Olson, Stephen T., 4,289,983, Cl. 310-49.00R.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,146, Cl. 131-276.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,705, Cl. 260-345.100.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.
Vinals, Joaquin; and Kiwala, Jacob, 4,289,661, Cl. 252-522.00R.
Yoshida, Takao; and Vock, Manfred H., 4,289,700, Cl. 260-340.90R.

International Paper Company: *See—*
Hung, John H., 4,289,125, Cl. 128-156.000.

International Playtex, Inc.: *See—*
Sterling, Larry D.; and Melvin, Wilbert, Jr., 4,288,999, Cl. 68-13.00R.

International Telephone and Telegraph Corporation: *See—*
LeGrand, Jesse S., 4,290,028, Cl. 331-1.00A.

Intersil, Inc.: *See—*
Squires, David R., 4,290,100, Cl. 363-60.000.

Isco, Inc.: *See—*
Allington, Robert W., 4,289,403, Cl. 356-349.000.

Ishida, Toshihiko; and Satou, Takateru, to TDK Electronics Co. Ltd. Magnetic tape cassette. 4,289,285, Cl. 242-199.000.

Ishihara, Masamitsu. Underwater pump. 4,289,456, Cl. 417-364.000.

Ishihara, Tadao: *See—*
Kubota, Shigeo; Ishihara, Tadao; and Kikuchi, Masahiro, 4,289,400, Cl. 356-376.000.

Ishikawa Giken Kogyo Kabushiki Kaisha: *See—*
Kimura, Junichi, 4,289,680, Cl. 260-37.00R.

Ishikawa, Hiroshi; and Ichikawa, Mamoru. Vehicle level detector. 4,290,044, Cl. 340-52.00H.

Ishikawa, Wataru; Fujiwhara, Mitsuto; Kojima, Tamotsu; Endo, Takaya; and Kato, Katsunori, to Konishiroku Photo Industry Co., Ltd. Method of forming dye image. 4,289,847, Cl. 430-389.000.

Ishise, Kojiro, to Sumitomo Electric Industries, Ltd. Method of connecting cables. 4,289,721, Cl. 264-85.000.

Isogai, Nobuo; Okawa, Takashi; and Wakui, Natsuko, to Mitsubishi Gas Chemical Company, Inc. Process for producing methylisobutylketone. 4,289,911, Cl. 568-396.000.

Itaya, Reijiro, to Kabushiki Kaisha Itaya Seisaku Sho. Coil spring manufacturing machine. 4,289,004, Cl. 72-7.000.

Ito, Kazuhiko: *See—*
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,289,099, Cl. 123-307.000.

Ito, Takaaki; and Nakamura, Norihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable venturi type carburetor. 4,289,715, Cl. 261-44.00C.

Itoh, Manabu: *See—*
Takada, Shigetaka; Nomura, Masaaki; and Itoh, Manabu, 4,289,104, Cl. 123-471.000.

Itoh, Tsutomu, to Onoda Cement Co., Ltd. Powder electro-charging device and electrostatic powder painting device. 4,289,278, Cl. 239-706.000.

ITT Industries, Inc.: *See—*
Lupertz, Hans-Henning; and Berisch, Volker, 4,289,359, Cl. 303-6.00C.

Itzkan, Irving; Kent, Herbert P.; Mack, Michael E.; and Morton, Richard G., to Avco Everett Research Laboratory, Inc. Laser ceilometer signal processing means. 4,289,397, Cl. 356-5.000.

Ivanov, Boris G.: *See—*
Mitrofanov, Evgeny S.; Ivanov, Boris G.; Ivanov, Nikolai A.; Kaljunov, Gennady A.; and Khinich, Isaak Y., 4,289,280, Cl. 241-207.000.

Ivanov, Nikolai A.: *See—*
Mitrofanov, Evgeny S.; Ivanov, Boris G.; Ivanov, Nikolai A.; Kaljunov, Gennady A.; and Khinich, Isaak Y., 4,289,280, Cl. 241-207.000.

Iwasaki, Kyuhachiro: *See—*
Jinnai, Koichiro; and Iwasaki, Kyuhachiro, 4,290,073, Cl. 346-75.000.

Iwasaki, Masami: *See—*
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,289,227, Cl. 198-334.000.

Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Uchida, Kozo, 4,289,399, Cl. 356-226.000.

Iwasawa, Teruo: *See—*
Takayama, Shuichi; Tsuboshima, Kosaku; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,289,959, Cl. 250-201.000.

Iwata, Hiroto, to Jidosha Kiki Co., Ltd. Rotary hydraulic device. 4,289,454, Cl. 417-300.000.

J. M. Huber Corporation: *See—*
Andrews, Claude R., 4,289,629, Cl. 210-737.000.

Jabsen, Felix S.; Schluderberg, Donald C.; and Paulson, Arnold E., to Babock & Wilcox Company, The. Modular heat exchangers for consolidated nuclear steam generator. 4,289,196, Cl. 165-83.000.

Jacob, Charles W., to United States Steel Corporation. Apparatus for singly discharging cylindrical workpieces from an inclined rollway. 4,289,443, Cl. 414-748.000.

Jacobellis, Alfonse A., to Greer Hydraulics, Incorporated. Method of manufacturing pressure vessels by heat forming. 4,288,894, Cl. 29-157.00R.

Jacobs, Bernardus A. J.; De Poorter, Adriaan W.; and Zalm, Pieter, to U.S. Philips Corporation. Optical recording device having several ablative recording layers. 4,290,075, Cl. 430-270.000.

Jaffe, Joseph, to Chevron Research Company. Comulled silica-alumina base denitrification catalyst. 4,289,653, Cl. 252-453.000.

Jagenberg-Werke: *See—*
Kurth, Wilfried, 4,289,961, Cl. 250-223.00B.

Jalie, Mohammed. Ophthalmic spectacle lenses having a hyperbolic surface. 4,289,387, Cl. 351-159.000.

James River Graphics, Inc.: *See—*
DiPippo, Carmine A., 4,289,839, Cl. 430-177.000.

James, Robert C., to Hayssen Manufacturing Company. Form-fill-seal packaging method and apparatus. 4,288,965, Cl. 53-451.000.

Jang, Choong-Gook: *See—*
Pasarela, Nunzio R.; and Jang, Choong-Gook, 4,289,525, Cl. 71-92.000.

Janner, Karl; Gregorius, Klaus; and Muller, Reinhold, to Kraftwerk Union Aktiengesellschaft. Method of separating isotope compounds by selective excitation and reaction in a solid matrix. 4,289,592, Cl. 204-157.10R.

Janome Sewing Machine Co., Ltd.: *See—*
Takenoya, Hideaki; and Tonomura, Yoshinobu, 4,289,084, Cl. 112-158.00E.
Takenoya, Hideaki; Watanabe, Kazuo; Nakagawa, Tamotsu; and Tonomura, Yoshinobu, 4,289,087, Cl. 112-254.000.

Janssen Pharmaceutica, N.V.: *See—*
Mesens, Jean, 4,289,783, Cl. 424-273.00R.

Japan Air Lines Co., Ltd.: *See—*
Nakamura, Shinji; and Yamakawa, Katsuyoshi, 4,289,074, Cl. 104-284.000.
Namba, Takamasa; Yanagawa, Hidekata; Fujimoto, Nobuo; Mori, Takehiko; and Yamada, Takayoshi, 4,289,263, Cl. 226-196.000.

Japan Atomic Energy Research Institute: *See—*
Hagiwara, Miyuki; and Morita, Yosuke, 4,289,687, Cl. 260-45.85E.

Japan Packaging Machinery Manu. Assn.: *See—*
Seko, Kiyoshi; and Ichikawa, Mamoru, 4,288,967, Cl. 53-550.000.
Seko, Kiyoshi; and Ichikawa, Mamoru, 4,288,968, Cl. 53-550.000.

Jastrab, Alexander G., to Bell & Howell Company. Microfiche reader printer with interchangeable carriages. 4,289,396, Cl. 355-45.000.

Jayme, Manfred: *See—*
Mohler, Werner; Jayme, Manfred; and Komarek, Jaromir, 4,289,776, Cl. 424-253.000.

Jenoptik Jena GmbH, Jena: *See—*
Mohr, Joachim, 4,289,401, Cl. 356-305.000.

Jensen, Henning. Underwater or weatherproof light. 4,290,094, Cl. 362-145.000.

Jensen, Knud B.: *See—*
Andersen, Axel; Knudsen, Poul U.; and Jensen, Knud B., 4,289,375, Cl. 350-96.230.

Jewett, David N., to Energy Materials Corporation. Method and apparatus for producing crystalline ribbons. 4,289,571, Cl. 156-617.00H.

Jidosha Kiki Co., Ltd.: *See—*
Iwata, Hiroto, 4,289,454, Cl. 417-300.000.

Jinkins, C. Eugene; and Legler, Bobby, to Dow Chemical Co., The. Stabilized phenolic resins. 4,289,814, Cl. 427-385.500.

Jinnai, Koichiro; and Iwasaki, Kyuhachiro, to Ricoh Co., Ltd. Ink-jet recording apparatus. 4,290,073, Cl. 346-75.000.

Johansson, Ingvar K. G., to Svenska Traforskningsinstitutet. Method of producing synthetic resin from waste products. 4,289,663, Cl. 260-17.500.

John Fluke Mfg. Co., Inc.: *See—*
Everett, Stephen M., 4,289,367, Cl. 339-64.00R.

Johnson, Allen S., Jr. Thermally insulated rotary kiln and method of making same. 4,289,479, Cl. 432-3.000.

Johnson, Allen S., Jr. Bag-type filter apparatus with venturi-supported air diffuser. 4,289,511, Cl. 55-302.000.

Johnson, George A.: *See—*
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,289,641, Cl. 252-96.000.

Johnson, Larry K.; and Gates, Kenneth L., to Lawrence Brothers, Inc. Frame corner connector. 4,288,887, Cl. 16-105.000.

Johnson, Matthey & Co., Limited: *See—*
Acres, Gary J. K.; and Hutchings, Robert M., 4,289,737, Cl. 423-245.000.

Johnson Matthey Inc.: *See—*
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,289,652, Cl. 252-437.000.

Johnson, Paul H., to Phillips Petroleum Company. Carbon black recovery. 4,289,742, Cl. 423-450.000.

Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-9-deoxy-5,9α-epoxy-4,5-cis-17,18-tetradehydro-PGF$_1$ compounds. 4,289,877, Cl. 542-431.000.

Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-trans-2,3,4,5-tetradehydro-PGI$_1$ compounds. 4,289,878, Cl. 542-431.000.

Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-4-halo-5,9-epoxy-9-deoxy-PGF$_1$ compounds. 4,289,888, Cl. 548-253.000.

Johnston, J. O'Neal: *See—*
Metcalf, Brian W.; and Johnston, J. O'Neal, 4,289,762, Cl. 424-242.000.

Johnston, Michael L.; Gordon, Loren J.; and Weinauer, Dietrich E., to General Mills, Inc. Lasagna noodle ripplet. 4,289,470, Cl. 425-336.000.

Jones, C. Bradford; and Kinard, Richard D., to Du Pont de Nemours, E. I., and Company. Process for heating thin surface layers. 4,289,480, Cl. 432-8.000.

Jones & Laughlin Steel Corporation: *See—*
Bucher, John H.; Butler, John F.; and Held, John F., 4,289,548, Cl. 148-12.00B.

Jones, Winton D.; and Miller, Francis P., to Richardson-Merrell Inc. 5-(Chlorophenyl)-6H-1,3,4-thiadiazine-2-amines. 4,289,767, Cl. 424-246.000.

Jordan, Thomas F., to Continental Group, Inc., The. Easy opening container with tab having separate opening element. 4,289,250, Cl. 220-269.000.

Joubert, Daniel, to Rhone-Poulenc Industries. Stabilization of anhydrous sodium metasilicate. 4,289,643, Cl. 252-103.000.

Jung, Bernhard; and Teichmann, Michael, to Keiper Automobiltechnik GmbH & Co. KG. Drive apparatus having at least two electric motors. 4,289,997, Cl. 318-113.000.

Junker, Erwin. Shaping roll. 4,289,110, Cl. 125-11.0CD.

Jurek, Dennis J.; Guettel, Marvin A.; and Aslin, Michael, to Square D Company. Automatic voltage compensation for digital welder control system. 4,289,948, Cl. 219-110.000.

Jurek, Dennis J., to Square D Company. Power factor monitoring and control system for resistance welding with line disturbance immunity. 4,289,951, Cl. 219-110.000.

Kabel- und Metallwerke Gutehoffnungshutte AG: *See—*
Glander, Fritz; and Voigt, Hermann U., 4,289,860, Cl. 525-263.000.

Kabel- und Metallwerke Gutehoffnungshutte A.G.: *See—*
Voigt, Hermann U., 4,289,716, Cl. 264-45.900.

Kablikov, Vladislav A.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,289,731, Cl. 422-206.000.

Kabushiki Kaisha Daisei Kikai: *See—*
Suzuki, Tomosaburo, 4,289,614, Cl. 209-308.000.

Kabushiki Kaisha Fujikoshi: *See—*
Tochizawa, Ikuo, 4,290,039, Cl. 335-262.000.

Kabushiki Kaisha Fujikoshi t/a Nachi-Fujikoshi Corp.: *See—*
Hachisuka, Takeji, 4,289,833, Cl. 428-544.000.

Kabushiki Kaisha Itaya Seisaku Sho: *See—*
Itaya, Reijiro, 4,289,004, Cl. 72-7.000.

Kabushiki Kaisha Kogai Boshi Sogo Kenkyusho: *See—*
Fushihara, Tomotsuru, 4,289,599, Cl. 204-275.000.

Kabushiki Kaisha Mitutoyo Seisakusho: *See—*
Mizuno, Ichiro; and Nakahara, Masao, 4,288,924, Cl. 33-147.00F.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kasai, Kazutomo, 4,289,549, Cl. 148-101.000.
Ushikoshi, Kenichi, 4,290,129, Cl. 368-66.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Yoshida, Yoshiaki; Suzuki, Osamu; Onoue, Keiji; and Seiki, Kazuo, 4,288,975, Cl. 57-263.000.

Kadi-Ogly, Ibragim A.: *See—*
Aroshidze, Jury V.; Kadi-Ogly, Ibragim A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; Fomin, Boris I.; and Yankov, Anatoly F., 4,289,984, Cl. 310-54.000.

Kadija, Igor V., to Olin Corporation. Diaphragm structure for electrolytic cells for the electrolysis of aqueous salt solutions. 4,289,601, Cl. 204-296.000.

Kagiwada, Reynold S.; Yen, Kuo-hsiung; and Lau, Kei-fung, to TRW Inc. Shallow bulk acoustic wave devices employing energy trapping. 4,290,033, Cl. 333-141.000.

Kahn, Harvey R., to Alan I. Gerald Corporation. Firearm with interchangeable barrels and ammunition cylinders. 4,288,938, Cl. 42-59.000.

Kaiser, Steven W., to Union Carbide Corporation. Preparation of methanol from synthesis gas with promoted palladium catalysts. 4,289,709, Cl. 518-714.000.

Kaiser, Steven W., to Union Carbide Corporation. Process for producing methanol from synthesis gas with palladium-calcium catalysts. 4,289,710, Cl. 518-717.000.

Kalina, Alexander I. Method and apparatus for conveying material in pipeline capsules. 4,289,429, Cl. 406-105.000.

Kalinowski, Robert E.; and Vincent, Gary A., to Dow Corning Corporation. Non-bleeding transparent silicone additives for plastics. 4,289,859, Cl. 525-104.000.

Kaljunov, Gennady A.: *See—*
Mitrofanov, Evgeny S.; Ivanov, Boris G.; Ivanov, Nikolai A.; Kaljunov, Gennady A.; and Khinich, Isaak Y., 4,289,280, Cl. 241-207.000.

Kalkbrenner, Francis W.: *See—*
Hysell, Robert E.; and Kalkbrenner, Francis W., 4,290,080, Cl. 357-81.000.

Kallaur, Michael, to Freeman Chemical Corporation. Sheet molding compound. 4,289,684, Cl. 260-40.00R.

Kalman, James H. Step tread plate. 4,289,819, Cl. 428-57.000.

Kameda, Tamotsu, to Yasui Sangyo Co., Ltd. Hydraulic lifting jack having a safety lifting saddle. 4,289,298, Cl. 254-8.00B.

Kameda, Tamotsu, to Yasui Sangyo Co., Ltd. Hydraulic lifting jack including a safety device for an elevator therein. 4,289,299, Cl. 254-8.00B.

Kaminski, Elton G., to Stolle Corporation, The. Article feeding apparatus. 4,289,231, Cl. 198-834.000.

Kanazaka, Yoshihiro, to Yoshida Kogyo K. K. Hook for a hook-and-eye fastener. 4,288,890, Cl. 24-227.000.

Kane, Bernard J.; and Traynor, Sean G., to SCM Corporation. Alkoxides of 2-pinanol. 4,289,917, Cl. 585-359.000.

Kaneto, Kimikazu: *See—*
Uzaki, Nagato; Kawamura, Yasutaro; Kaneto, Kimikazu; and Hasizume, Masaharu, 4,289,194, Cl. 164-170.000.

Kangol Magnet Limited: *See—*
Ashworth, Roger A., 4,289,352, Cl. 297-473.000.

Kanner, Bernard: *See—*
Herdle, William B.; Kanner, Bernard; and Bailey, Donald L., 4,289,889, Cl. 556-470.000.

Kanno, Iwao: *See—*
Koga, Kenichiro; Hirose, Yoshiharu; Kanno, Iwao; Uemura, Kazuo; and Miura, Shuichi, 4,289,965, Cl. 250-363.00S.

Kantlehner, Jerry R.: *See—*
Rabeneck, Kenneth H.; Kantlehner, Jerry R.; and Gallaher, David E., 4,289,569, Cl. 156-580.200.

Kapitonova, Zinaida P. Microwave device. 4,289,992, Cl. 315-39.770.

Kaplan, Irwin M. Method of and system for detecting marine obstacles. 4,290,043, Cl. 340-29.000.

Kapp, Joachim-Friedrich: *See—*
Laurent, Henry; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim-Friedrich, 4,289,763, Cl. 424-243.000.

Karl Thomae GmbH: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,289,775, Cl. 424-251.000.

Karuhn, Richard F.: *See—*
Berg, Robert H.; and Karuhn, Richard F., 4,290,011, Cl. 324-71.0CP.

Kasai, Kazutomo, to Kabushiki Kaisha Suwa Seikosha. Resin bonded permanent magnet composition. 4,289,549, Cl. 148-101.000.

Kasper, Robin: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.

Katakura, Kazuo: *See—*
Tamamushi, Masahiro; and Katakura, Kazuo, 4,289,345, Cl. 296-37.160.

Katayama Chemical Works Co., Ltd.: *See—*
Katayama, Sakae; and Umekawa, Osamu, 4,289,581, Cl. 162-161.000.

Katayama, Masato: *See—*
Marumo, Shingo; and Katayama, Masato, 4,289,852, Cl. 435-136.000.

Katayama, Minoru: *See—*
Taniguchi, Koichi; Katayama, Minoru; Sangu, Osamu; and Hori, Shinichi, 4,290,109, Cl. 364-481.000.

Katayama, Sakae; and Umekawa, Osamu, to Katayama Chemical Works Co., Ltd. Microbicidal slimicide compositions for industrial use. 4,289,581, Cl. 162-161.000.

Katayama, Yoshifumi: *See—*
Shimada, Toshikazu; Katayama, Yoshifumi; and Komatsubara, Kiichi F., 4,289,822, Cl. 428-212.000.

Kato, Hajime, to Fuji Photo Film Co., Ltd. Recording sheet. 4,289,332, Cl. 282-27.500.

Kato, Katsunori: *See—*
Ishikawa, Wataru; Fujiwhara, Mitsuto; Kojima, Tamotsu; Endo, Takaya; and Kato, Katsunori, 4,289,847, Cl. 430-389.000.

Katsumata, Masaaki; Onoda, Michio; Takagi, Yasuo; and Yoneda, Kenji, to Nissan Motor Company, Limited. Engine spark timing controlling device. 4,289,102, Cl. 123-425.000.

Katunin, Vladimir M.; and Nakrokhin, Vladimir G. Voltage frequency meter of synchronous electrical machine. 4,289,974, Cl. 307-527.000.

Kavanaugh, Harvey H. Method of forming structural walls and roofs. 4,288,962, Cl. 52-743.000.

Kawai, Kouichi: *See—*
Matsumoto, Masashige; Kobuna, Hideaki; Hiraide, Seiji; and Kawai, Kouichi, 4,289,575, Cl. 156-656.000.

Kawamata, Motoo: *See—*
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,289,699, Cl. 260-326.5FM.

Kawamura, Yasutaro: *See—*
Uzaki, Nagato; Kawamura, Yasutaro; Kaneto, Kimikazu; and Hasizume, Masaharu, 4,289,194, Cl. 164-170.000.

Kawasaki, Haruhiko; Koiwai, Hideshi; and Matsumura, Shizuo, to Kayaba Kogyo Kabushiki Kaisha. Pressure control valve. 4,289,160, Cl. 137-491.000.

Kawazoe, Michio. Camera supporting device for low angle or close-up photography. 4,289,393, Cl. 354-293.000.

Kayaba Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Haruhiko; Koiwai, Hideshi; and Matsumura, Shizuo, 4,289,160, Cl. 137-491.000.

Kayano, Hideo: *See—*
Yajima, Seishi; Shishido, Toetsu; Okamura, Kiyohito; Kayano, Hideo; Hayashi, Josaburo; and Kobayashi, Hiroshi, 4,289,720, Cl. 264-63.000.

Keane Monroe Corporation: *See—*
Sorber, Robert E.; and Gallion, James A., 4,289,995, Cl. 318-9.000.

Kearney & Trecker Corporation: *See—*
Kielma, Ervin J.; Schabowski, Albin J.; and Currer, John T., 4,288,909, Cl. 29-568.000.

Kearns, Kenneth L. Physiological occurrence, such as apnea, monitor and X-ray triggering device. 4,289,142, Cl. 128-716.000.

Kehl, William L.: *See—*
Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., 4,289,863, Cl. 526-106.000.

Keil, Karl-Heinz: *See—*
Hudec, Gustav; Keil, Karl-Heinz; Kohler, Volker; and Rosenbusch, Kurt, 4,289,665, Cl. 260-21.000.

Keim, Karl H., to Gloucester Engineering Co., Inc. Apparatus for forming and trimming articles from a web. 4,289,469, Cl. 425-302.100.

Keiper Automobiltechnik GmbH & Co. KG: *See—*
Jung, Bernhard; and Teichmann, Michael, 4,289,997, Cl. 318-113.000.

Keith, Alec D.; and Snipes, Wallace, to Key Pharmaceuticals, Inc. Polymeric diffusion matrix containing phenylpropanolamine. 4,289,749, Cl. 424-28.000.

Keller, Norman L., to Pullman Incorporated. Conveyor table slab stop arrangement. 4,289,229, Cl. 198-633.000.

Kempf, August J.: *See—*
Mrozik, Helmut H.; MacConnell, John G.; and Kempf, August J., 4,289,760, Cl. 424-181.000.

Kennair, Dorothy J.: *See—*
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; Martone, James F.; and Sabad, Joseph J., 4,289,666, Cl. 260-23.00H.
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; and Sabad, Joseph J., 4,289,670, Cl. 260-28.5AV.

Kent, Herbert P.: *See—*
Itzkan, Irving; Kent, Herbert P.; Mack, Michael E.; and Morton, Richard G., 4,289,397, Cl. 356-5.000.

Kenyon, David L. Display security device. 4,289,242, Cl. 211-4.000.

Kernforschungsanlage Julich GmbH: *See—*
Zimmermann, Ulrich; Pilwat, Gunter; Bock, Karin; and Buers, Hermann J., 4,289,756, Cl. 424-101.000.

Kessler, Milton. Method of fabricating vacuum sizing apparatus. 4,288,905, Cl. 29-526.0R.

Key Pharmaceuticals, Inc.: *See—*
Keith, Alec D.; and Snipes, Wallace, 4,289,749, Cl. 424-28.000.

Khinich, Isaak Y.: *See—*
Mitrofanov, Evgeny S.; Ivanov, Boris G.; Ivanov, Nikolai A.; Kaljunov, Gennady A.; and Khinich, Isaak Y., 4,289,280, Cl. 241-207.000.

Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F. Apparatus for pyrolysis of hydrocarbon starting products. 4,289,731, Cl. 422-206.000.

Khoe, Giok D.: *See—*
Franken, Adrianus J. J.; Khoe, Giok D.; Kuyt, Gerard; Van Leest, Johannes H. F. M.; Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Smulders, Hendricus F. G., 4,289,374, Cl. 350-96.200.

Khutoretsky, Gary M.: *See—*
Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,289,985, Cl. 310-61.000.

Kidwell, John H.: *See—*
Carter, Hudson R.; Kidwell, John H.; and Prueter, William P., 4,289,514, Cl. 55-398.000.

Kiehn, Robert M., to Standard Oil Company (Indiana). Laser-based deflection measuring method and apparatus. 4,289,404, Cl. 356-351.000.

Kiel, Friedrich: *See—*
Schnee, Rolf; Kraus, Franz; Kiel, Friedrich; Kliem, Helmut; Krick, Wolfgang; and Landgraf, Herbert, 4,290,142, Cl. 455-3.000.

Kielma, Ervin J.; Schabowski, Albin J.; and Currer, John T., to Kearney & Trecker Corporation. Automatic tool changer for machine tool. 4,288,909, Cl. 29-568.000.

Kikuchi, Masahiro: *See—*
Kubota, Shigeo; Ishihara, Tadao; and Kikuchi, Masahiro, 4,289,400, Cl. 356-376.000.

Kiliman, D. A.: *See—*
Wissel, F. A.; and Kiliman, D. A., 4,290,143, Cl. 455-38.000.

Killinger, Marvin H., to Bendix Corporation, The. Brake system warning circuit. 4,290,045, Cl. 340-52.00C.

Killmeyer, Charles W., deceased (by Killmeyer, Elizabeth A., executrix); Lane, James E.; Taylor, Leslie L., Jr.; and Pearson, Joe T., to PPG Industries, Inc. Apparatus for formation of pultruded fiber glass reinforced twisted article. 4,289,465, Cl. 425-111.000.

Killmeyer, Elizabeth A., executrix: *See—*
Killmeyer, Charles W., deceased; Lane, James E.; Taylor, Leslie L., Jr.; and Pearson, Joe T., 4,289,465, Cl. 425-111.000.

Kim, Keun Y.: *See—*
Dyroff, David R.; Graf, Gary F.; Kim, Keun Y.; and Suchanek, Walton F., Jr., 4,289,753, Cl. 424-48.000.

Kimball, David D. Protective cover and method for treating hair. 4,289,150, Cl. 132-7.000.

Kimber, Michael P.: *See—*
Duncan, Michael E.; Whittington, Philip J.; and Kimber, Michael P., 4,289,111, Cl. 126-391.000.

Kimoto, Koichi: *See—*
Hallman, Robert W.; Kimoto, Koichi; and Okai, Sakuo, 4,289,071, Cl. 101-395.000.

Kimura, Junichi, to Ishikawa Giken Kogyo Kabushiki Kaisha. Heat resistant and fire-proof synthetic resin material containing inorganic substances and process of producing same. 4,289,680, Cl. 260-37.00R.

Kimura, Mamoru: *See—*
Kubo, Masayoshi; Nakanishi, Michio; and Kimura, Mamoru, 4,289,873, Cl. 528-357.000.

Kinard, Richard D.: *See—*
Jones, C. Bradford; and Kinard, Richard D., 4,289,480, Cl. 432-8.000.

Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for beneficiating sulfide ores. 4,289,528, Cl. 75-1.00R.

Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for beneficiating sulfide ores. 4,289,529, Cl. 75-1.00R.

Kindlmann, Peter J.: *See—*
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,289,946, Cl. 164-503.000.

Kinematics, Inc.: *See—*
Haluko, Michael, Jr., 4,289,040, Cl. 74-50.000.

King, Peter F.; and Beyer, George J., to Hooker Chemicals & Plastics Corp. Aqueous acidic lubricant coating composition and method. 4,289,547, Cl. 148-6.15R.

Kinugawa, Masumi; Omori, Norio; and Sueishi, Motoharu, to Nippondenso Co., Ltd. Apparatus for controlling rotation speed of engine. 4,289,100, Cl. 123-339.000.

Kinzel, Richard: *See—*
Norberg, Helmut; and Kinzel, Richard, 4,289,098, Cl. 123-299.000.

Kirkland, Kerry G., to Armco Inc. Remote multiple string well completion. 4,289,206, Cl. 166-348.000.

Kishi, Hiroyasu: *See—*
Sakamoto, Junji; and Kishi, Hiroyasu, 4,289,981, Cl. 307-350.000.

Kita, Yuzo: *See—*
Sugie, Mamoru; Yamaguchi, Noboru; Mayama, Koichi; Kita, Yuzo; Yoshizawa, Shigeru; Saito, Nobuo; and Asano, Atsushi, 4,290,117, Cl. 365-15.000.

Kitamura, Nobuaki: *See*—
Masuda, Kouji; Mizukami, Masao; and Kitamura, Nobuaki, 4,290,119, Cl. 365-189.000.

Kitzen, Maurice R.: *See*—
Wall, Fraser M.; Kitzen, Maurice R.; and Kreipe, T. Frederick, 4,289,475, Cl. 431-11.000.

Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Voct, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,146, Cl. 131-276.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Voct, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,705, Cl. 260-345.100.
Vinals, Joaquin; and Kiwala, Jacob, 4,289,661, Cl. 252-522.00R.

Klee, Rudolf J.: *See*—
Herold, Heiko; Herold, Richard; Klee, Rudolf J.; and Muschelknautz, Edgar, 4,288,893, Cl. 28-266.000.

Kleffner, Harald: *See*—
Parr, Armin; Kleffner, Harald; and Leder, Harald, 4,289,582, Cl. 176-38.000.

Kleiner, Fredric; Roy, Pradip K.; and Kuchman, Michael J., to General Foods Corporation. Process of preparing gasified candy. 4,289,794, Cl. 426-660.000.

Kleinschmit, Peter: *See*—
Voigt, Carl; Kleinschmit, Peter; and Walter, Eberhard, 4,289,741, Cl. 423-376.000.

Klepfer, Harlan A. Disposable protective garment. 4,288,877, Cl. 2-48.000.

Kleykamp, Donald L.; and Holden, Homer N., to Dayco Corporation. Railway center bearing wear liner. 4,289,077, Cl. 105-199.00C.

Kliem, Helmut: *See*—
Schnee, Rolf; Kraus, Franz; Kiel, Friedrich; Kliem, Helmut; Krick, Wolfgang; and Landgraf, Herbert, 4,290,142, Cl. 455-3.000.

Kliklok Corporation: *See*—
Collura, Peter C.; and Baker, Thomas R., 4,289,491, Cl. 493-124.000.

Kling, Alberto. Rotor for operation in a flow medium. 4,289,450, Cl. 416-192.000.

Klockner-Humboldt-Deutz AG: *See*—
Deussner, Herbert, 4,289,483, Cl. 432-106.000.

Klockner-Humboldt-Deutz Akt.: *See*—
Brockmann, Heinz, 4,289,611, Cl. 209-144.000.

Knape & Vogt Manufacturing Co.: *See*—
Miller, Calvin K., 4,289,290, Cl. 248-251.000.

Knight, Gordon R.: *See*—
Bates, Roger D.; and Knight, Gordon R., 4,290,122, Cl. 365-234.000.

Knight, Webster B. Sequential power distribution circuit. 4,290,057, Cl. 340-539.000.

Knoll, Frank: *See*—
Spinosa, Dominic J.; and Knoll, Frank, 4,289,286, Cl. 244-1.00R.

Knopp, Paul V.; and Burant, Walter, Jr., to Sterling Drug, Inc. Wastewater treatment. 4,289,626, Cl. 210-616.000.

Knorreck, Peter, to Robert Bosch GmbH. Centrifugal rpm governor for internal combustion engines. 4,289,101, Cl. 123-364.000.

Knott, Jack E., II, to American Can Company. Ethylene-vinyl alcohol copolymer gas barrier layer with phenol additive. 4,289,830, Cl. 428-475.800.

Knudsen, Poul U.: *See*—
Andersen, Axel; Knudsen, Poul U.; and Jensen, Knud B., 4,289,375, Cl. 350-96.230.

Koba, Yoshinori, to Meinan Machinery Works, Inc. Veneer reinforcing unit and a veneer reinforcing device using the same. 4,289,179, Cl. 144-211.000.

Kobayashi, Hiroshi: *See*—
Yajima, Seishi; Shishido, Toetsu; Okamura, Kiyohito; Kayano, Hideo; Hayashi, Josaburo; and Kobayashi, Hiroshi, 4,289,720, Cl. 264-63.000.

Kobayashi, Masahisa, to Nippon Electric Co., Ltd. Transmitter for a telewriter. 4,289,926, Cl. 178-19.000.

Kobe, Inc.: *See*—
Erickson, John W., 4,289,610, Cl. 209-18.000.

Kobori, Toshio; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Exposure control device for a camera. 4,289,389, Cl. 354-31.000.

Kobori, Toshio; Yamazaki, Yasuo; and Uchida, Isamu, to Minolta Camera Kabushiki Kaisha. Pentagonal roof reflecting mirror assembly. 4,289,392, Cl. 354-225.000.

Kobuna, Hideaki: *See*—
Matsumoto, Masashige; Kobuna, Hideaki; Hiraide, Seiji; and Kawai, Kouichi, 4,289,575, Cl. 156-656.000.

Kochanowski, Guenter: *See*—
Brunner, Heinrich; Drebinger, Peter; Hoehne, Peter; Hoisl, Johann; Kochanowski, Guenter; and Wimmer, Walter, 4,290,136, Cl. 371-25.000.

Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., to Upjohn Company, The. Polyol-fluorocarbon-aminetriol blend and polyisocyanurate foams therefore. 4,289,858, Cl. 521-131.000.

Koehler, Waldemar; Blumenberg, Bernd; Vogel, Ludwig; and Hetzel, Eckhard, to BASF Aktiengesellschaft. Separating toluene diisocyanate and/or higher boiling solvents from distillation residues of the toluene diisocyanate manufacture using a fluidized bed. 4,289,589, Cl. 203-49.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Bolza-Schunemann, Hans B., 4,289,494, Cl. 493-405.000.

Koerber, Barbara M.: *See*—
Freenor, Francis J., III; and Koerber, Barbara M., 4,289,909, Cl. 568-315.000.

Koga, Kenichiro; Hirose, Yoshiharu; Kanno, Iwao; Uemura, Kazuo; and Miura, Shuichi, to Shimadzu Corporation. Emission computed tomograph. 4,289,965, Cl. 250-363.00S.

Koga, Nobuhito: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,289,699, Cl. 260-326.5FM.

Kohler, Volker: *See*—
Hudec, Gustav; Keil, Karl-Heinz; Kohler, Volker; and Rosenbusch, Kurt, 4,289,665, Cl. 260-21.000.

Kohno, Kaname, to Dai-Ichi Seiko Co., Ltd. Tape reel. 4,289,282, Cl. 242-71.800.

Koiwai, Hideshi: *See*—
Kawasaki, Haruhiko; Koiwai, Hideshi; and Matsumura, Shizuo, 4,289,160, Cl. 137-491.000.

Kojima, Hiroshi: *See*—
Sato, Takeshi; and Kojima, Hiroshi, 4,289,182, Cl. 152-209.00R.

Kojima, Tamotsu: *See*—
Ishikawa, Wataru; Fujiwhara, Mitsuto; Kojima, Tamotsu; Endo, Takaya; and Kato, Katsunori, 4,289,847, Cl. 430-389.000.

Kokotailo, George T., to Mobil Oil Corporation. Catalytic conversion with crystalline zeolite product constituting ZSM-5/ZSM-11 intermediates. 4,289,607, Cl. 208-120.000.

Kolc, Jaroslav: *See*—
Denkewalter, Robert G.; Kolc, Jaroslav; and Lukasavage, William J., 4,289,872, Cl. 528-328.000.

Kolker, Carl R., to Faxon Communications Corporation. Synchronization system for variable line length facsimile transceivers. 4,290,085, Cl. 358-264.000.

Kolling, Georg; Pietzka, Gerhard; Romey, Ingo; and Tillmanns, Harald, to Bergwerksverband GmbH; and Sigri Elektrographit GmbH. Method of producing an isotropic coke. 4,289,604, Cl. 208-106.000.

Kolycheck, Edmond G.; and Herman, Richard M., to B. F. Goodrich Company, The. Elastomeric polyurethanes coated with a vinyl chloride polymer powder. 4,289,825, Cl. 428-407.000.

Komarek, Jaromir: *See*—
Mohler, Werner; Jayme, Manfred; and Komarek, Jaromir, 4,289,776, Cl. 424-253.000.

Komatsu, Hideo: *See*—
Mizutani, Tatsumi; Ueki, Kazuyoshi; Iida, Shinya; and Komatsu, Hideo, 4,289,188, Cl. 156-626.000.

Komatsubara, Kiichi F.: *See*—
Shimada, Toshikazu; Katayama, Yoshifumi; and Komatsubara, Kiichi F., 4,289,822, Cl. 428-212.000.

Konian, Richard R.; and Walsh, James L., to International Business Machines Corp. Complementary transistor inverting emitter follower circuit. 4,289,978, Cl. 307-270.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Ishikawa, Wataru; Fujiwhara, Mitsuto; Kojima, Tamotsu; Endo, Takaya; and Kato, Katsunori, 4,289,847, Cl. 430-389.000.

Kontz, Robert F., to Owens-Illinois, Inc. Apparatus for synchronizing speed and angular position of power driven machines. 4,289,046, Cl. 74-711.000.

Kopp, Klaus F.; and Helbig, Joachim W. Therapy of conditions which may be associated with altered renal function and dosage forms therefor. 4,289,750, Cl. 424-33.000.

Kopp, Manfred K.: *See*—
Hanson, James A.; and Kopp, Manfred K., 4,289,967, Cl. 250-385.000.

Koppers Company, Inc.: *See*—
Latowski, Anthony A.; and Grib, William P., 4,289,485, Cl. 432-245.000.

Koronka, Paul, to Imperial Chemical Industries Limited. Coulter device for direct seed drills. 4,289,081, Cl. 111-88.000.

Kossoff, George: *See*—
Carpenter, David A.; Kossoff, George; and Radovanovich, George D., 4,289,140, Cl. 128-660.000.

Kostner, Richard C.: *See*—
Wiechowski, Joseph W.; Miller, Delmar S.; and Kostner, Richard C., 4,289,563, Cl. 156-423.000.

Kotaka, Fumitaka, to Pioneer Electronic Corporation. Focus servo device for use in an optical information read-out device. 4,290,132, Cl. 369-45.000.

Kozak, Andrei A.: *See*—
Stakhov, Alexei P.; Kozak, Andrei A.; Solyanichenko, Nikolai A.; Kuzmin, Ivan V.; and Azarov, Alexei D., 4,290,051, Cl. 340-347.0DD.

Kraft, Derald H., to Dyneer Corporation. Apparatus for hydraulically forming sheet metal pulleys. 4,289,007, Cl. 72-58.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Friesen, Eckart; Thogersen, Hans P.; and Kuhnel, Roland, 4,288,997, Cl. 62-434.000.
Janner, Karl; Gregorius, Klaus; and Muller, Reinhold, 4,289,592, Cl. 204-157.10R.
Puthawala, Anwer, 4,289,407, Cl. 366-75.000.

Krajewski, John J., to DeSoto, Inc. Air drying latex coating composition curable under ambient conditions and method of providing same. 4,289,675, Cl. 260-29.6CM.

Kramer, Charles J., to Xerox Corporation. Optical scanner using plane linear diffraction gratings on a rotating spinner. 4,289,371, Cl. 350-3.710.

Kramer, Daniel E. Segmented door for enclosure. 4,289,362, Cl. 312-138.00R.

Kraus, Franz: *See*—
Schnee, Rolf; Kraus, Franz; Kiel, Friedrich; Kliem, Helmut; Krick, Wolfgang; and Landgraf, Herbert, 4,290,142, Cl. 455-3.000.

Krause, Bernd, to Xomox Corporation. Bidirectional axially pliant pressure assisted seat for a valve. 4,289,296, Cl. 251-306.000.

Krautkramer-Branson, Inc.: *See*—
Prause, Reinhard; and Schlengermann, Udo, 4,289,033, Cl. 73-622.000.

Krebser, John P., to French Oil Mill Machinery Company, The. Spacers for cage presses. 4,289,065, Cl. 100-129.000.

Kreipe, T. Frederick: *See*—
Wall, Fraser M.; Kitzen, Maurice R.; and Kreipe, T. Frederick, 4,289,475, Cl. 431-11.000.

Kremer, Victor: *See*—
Legille, Edouard; and Kremer, Victor, 4,290,067, Cl. 343-12.00R.

Krick, Wolfgang: *See*—
Schnee, Rolf; Kraus, Franz; Kiel, Friedrich; Kliem, Helmut; Krick, Wolfgang; and Landgraf, Herbert, 4,290,142, Cl. 455-3.000.

Kristof, Mark J., to Whirlpool Corporation. Energy transmission and distribution system for a microwave oven. 4,289,945, Cl. 219-10.55F.

Krohn, David A., to EOTec Corporation. Low loss optical fibers. 4,289,516, Cl. 65-3.00A.

Kruger, Hans-Rudolf, to Schering Aktiengesellschaft. Method for production of acylhydrazones of formyl-acetic acid ester. 4,289,897, Cl. 560-159.000.

Kubilos, Charles A., to Abex Corporation. Pressure compensated pump. 4,289,452, Cl. 417-222.000.

Kubo, Masayoshi; Nakanishi, Michio; and Kimura, Mamoru, to Daicel Chemical Industries, Ltd. Process for producing lactone polyesters. 4,289,873, Cl. 528-357.000.

Kubota, Shigeo; Ishihara, Tadao; and Kikuchi, Masahiro, to Sony Corporation. Apparatus for measuring a gradient of a surface. 4,289,400, Cl. 356-376.000.

Kuc, Henry, to Peerless Pump Division, Indian Head, Inc. Pump shaft closure. 4,289,317, Cl. 277-1.000.

Kuchman, Michael J.: *See*—
Kleiner, Fredric; Roy, Pradip K.; and Kuchman, Michael J., 4,289,794, Cl. 426-660.000.

Kuenzly, John D.: *See*—
United States of America, National Aeronautics and Space Administration; and Kuenzly, John D., 4,288,982, Cl. 60-200.00R.

Kuhla, Donald E.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,289,704, Cl. 260-345.80R.

Kuhlmann, Robert: *See*—
Nauroth, Peter; Kuhlmann, Robert; and Turk, Gunter, 4,289,681, Cl. 260-37.0SB.

Kuhn, Max: *See*—
Traber, Rene P.; Kuhn, Max; Hofmann, Hans; and Harri, Eugen, 4,289,851, Cl. 435-71.000.

Kuhn S. A.: *See*—
Rostoucher, Guy, 4,288,972, Cl. 56-370.000.

Kuhnel, Roland: *See*—
Friesen, Eckart; Thogersen, Hans P.; and Kuhnel, Roland, 4,288,997, Cl. 62-434.000.

Kullander, Jan O.: *See*—
Andersson, Olof I.; and Kullander, Jan O., 4,289,363, Cl. 312-257.00R.

Kullmann, Dieter, to Siemens Aktiengesellschaft. Coolant connecting head for an electric machine with a superconducting rotor winding. 4,289,986, Cl. 310-61.000.

Kume, Kazunari; and Ohno, Hideshi, to Citizen Watch Company Limited. Electronic timepiece. 4,290,131, Cl. 368-71.000.

Kunjumon, Varughese. Variably supported container. 4,289,292, Cl. 248-333.000.

Kuper, Walter. Snow removal bar for the snow removal plate of a snow plow. 4,288,932, Cl. 37-42.0VL.

Kupriyanovich, Leonid I. Method for controlling functional state of central nervous system and device for effecting same. 4,289,121, Cl. 128-1.00C.

Kuptsov, Nikolai F.: *See*—
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,289,731, Cl. 422-206.000.

Kuraray Co., Ltd.: *See*—
Okabe, Susumu; Omura, Yoshiaki; Ninagawa, Yoichi; and Fujita, Yoshiji, 4,289,786, Cl. 424-312.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,289,688, Cl. 260-112.00R.

Kurmeier, Hans-Adolf: *See*—
Schacht, Erich; Kurmeier, Hans-Adolf; Gante, Joachim; Lissner, Reinhard; Melzer, Guido; and Orth, Dieter, 4,289,774, Cl. 424-250.000.

Kurta Corporation: *See*—
Rodgers, James L., 4,289,927, Cl. 178-19.000.

Kurth, Wilfried, to Jagenberg-Werke. Apparatus for scanning the markings on bottle necks. 4,289,961, Cl. 250-223.00B.

Kushida, Naoto: *See*—
Inagawa, Takashi; Kushida, Naoto; Sekiguchi, Akira; Ikeda, Matujiro; Sugawara, Hidetoshi; and Naito, Kunio, 4,290,037, Cl. 335-202.000.

Kuyt, Gerard: *See*—
Franken, Adrianus J. J.; Khoe, Giok D.; Kuyt, Gerard; Van Leest, Johannes H. F. M.; Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Smulders, Hendricus F. G., 4,289,374, Cl. 350-96.200.

Kuzmin, Ivan V.: *See*—
Stakhov, Alexei P.; Kozak, Andrei A.; Solyanichenko, Nikolai A.; Kuzmin, Ivan V.; and Azarov, Alexei D., 4,290,051, Cl. 340-347.0DD.

Kyriakou, George S. Cigarette protector. 4,289,149, Cl. 131-175.000.

La Crosse Cooler Company: *See*—
Spring, Carl E., 4,289,254, Cl. 221-295.000.

La Telemecanique Electrique: *See*—
Neyroud, Jean; and Ollivier, Francois, 4,289,957, Cl. 235-462.000.

Labate, Micheal D. Process for treating metal handling and shaping devices. 4,289,804, Cl. 427-135.000.

Labelon Corporation: *See*—
Marginean, Barry L.; and Hookway, Warren A., Jr., 4,289,535, Cl. 106-19.000.

Labora Mannheim GmbH fur Labortechnik: *See*—
Haker, Rolf; Fuhrer, Heinz-Georg; van Rijckevorsel, Rainer; Ruhl, Werner; and Thiery, Joachim, 4,290,113, Cl. 364-900.000.

Labriola, Donald J., to Fairchild Camera & Instrument Corp. Electrical validator for a printed circuit board test fixture and a method of validation thereof. 4,290,015, Cl. 324-158.00R.

La Conti, Anthony B.: *See*—
Dempsey, Russell M.; Coker, Thomas G.; La Conti, Anthony B.; and Fragala, Anthony R., 4,289,590, Cl. 204-98.000.

Laeng, Rudolf. Apparatus for the cleaning of phonograph records. 4,289,316, Cl. 369-72.000.

Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Alkali-soluble hot melt adhesive compositions. 4,289,669, Cl. 260-27.0EV.

Lalancette, Jean M., to Universite de Sherbrooke. Filtering of precipitating silica. 4,289,736, Cl. 423-158.000.

LAM Partnership: *See*—
Fogelberg, Clement V.; and Romig, Joseph H., 4,289,816, Cl. 428-35.000.

Lambden, Martin R., to Quest Automation Limited. Electrographic apparatus. 4,289,925, Cl. 178-18.000.

Lambert, Stuart G.: *See*—
Boutle, David L.; Rennison, Stuart C.; and Lambert, Stuart G., 4,289,843, Cl. 430-271.000.

Lamson & Sessions Co., The: *See*—
Capuano, Terry D., 4,289,181, Cl. 411-187.000.
Rebish, Edward J., 4,289,049, Cl. 81-56.000.

Land O'Lakes, Inc.: *See*—
Gustafson, Leon D.; and Mielke, Wayne C., 4,289,793, Cl. 426-491.000.

Landgraf, Herbert: *See*—
Schnee, Rolf; Kraus, Franz; Kiel, Friedrich; Kliem, Helmut; Krick, Wolfgang; and Landgraf, Herbert, 4,290,142, Cl. 455-3.000.

Lane, James E.: *See*—
Killmeyer, Charles W., deceased; Lane, James E.; Taylor, Leslie L., Jr.; and Pearson, Joe T., 4,289,465, Cl. 425-111.000.

Lanese, Philip M., to Belco Pollution Control Corporation. High voltage control of an electrostatic precipitator system. 4,290,003, Cl. 323-241.000.

Langlois, James L., to Gillette Company, The. Marbleization of plastic materials. 4,289,408, Cl. 366-76.000.

Lanza, Richard C.: *See*—
Cooperstein, Gerald; Lanza, Richard C.; and Sohval, A. Robert, 4,289,969, Cl. 250-445.00T.

Larson, Nils L.: *See*—
Hiatt, Carl C.; and Larson, Nils L., 4,288,955, Cl. 52-309.100.

Last, Anthony G. M., to Imperial Chemical Industries Limited. Polyolefin films. 4,289,831, Cl. 428-515.000.

Latham, David D.; Von Fumetti, Cyril W.; and Miller, Wayne R., to Deere & Company. Accoustic noise suppression apparatus noise suppression means. 4,289,096, Cl. 123-198.00E.

Latimer, John. Modular garage structure. 4,288,949, Cl. 52-67.000.

Latowski, Anthony A.; and Grib, William P., to Koppers Company, Inc. Sinter machine-pelletizing machine wear and baffle plate for pallet side plate. 4,289,485, Cl. 432-245.000.

Latta, John S., Jr. Light detection, signaling and speed measurement system. 4,290,047, Cl. 340-134.000.

Lau, Kei-fung: *See*—
Kagiwada, Reynold S.; Yen, Kuo-hsiung; and Lau, Kei-fung, 4,290,033, Cl. 333-141.000.

Laurent, Henry; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim-Friedrich, to Schering Aktiengesellschaft. Novel corticoids, the preparation thereof and the use thereof. 4,289,763, Cl. 424-243.000.

Lavaleije, Matheus D., to U.S. Philips Corporation. Magnetic-tape cassette with tape counting roller. 4,290,089, Cl. 360-72.100.

Lavertu, Roger: *See*—
Perrault, Guy; Lavertu, Roger; and Drolet, Jean-Francois, 4,289,551, Cl. 149-19.400.

Lavon, Erik V., to Atlas Copco Aktiebolag. Method and device for breaking a hard compact material. 4,289,275, Cl. 239-101.000.

Lawlor, Larry L.: *See*—
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,289,652, Cl. 252-437.000.

Lawrence Brothers, Inc.: *See*—
Johnson, Larry K.; and Gates, Kenneth L., 4,288,887, Cl. 16-105.000.

Lazarus, Stanley D.: *See*—
Rowan, Hugh H.; Muelier, Max B.; and Lazarus, Stanley D., 4,289,871, Cl. 528-309.000.

Lazarz, Christine A.; Cook, Edward H., Jr.; and Scripa, Lesleigh V., to Hooker Chemicals & Plastics Corp. Microporous membrane materials. 4,289,600, Cl. 204-296.000.

Leaf Proteins, Inc.: *See—*
Wildman, Samuel G.; and Sheen, Shuh J., 4,289,147, Cl. 131-290.000.

Lebrun, Jean-Paul R.: *See—*
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,289,545, Cl. 148-6.300.

Lechavelier, Hubert A.; and Drobot, Walter, to Engelhard Minerals & Chemicals Corporation. Process for recovering precious metals. 4,289,531, Cl. 75-101.0BE.

Lechner, Uwe: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,289,775, Cl. 424-251.000.

Lecourt, Guy B. E.; and Portalier, Claude L. L., to Societe Nationale Industrielle et Aerospatiale. Method for making pipe of fabric impregnated with resin. 4,289,168, Cl. 138-109.000.

Lectromelt Corporation: *See—*
Davis, Howard F., Jr.; and Persson, John A., 4,289,537, Cl. 106-100.000.

Leder, Harald: *See—*
Parr, Armin; Kleffner, Harald; and Leder, Harald, 4,289,582, Cl. 176-38.000.

Lee, Chen Y., to Bendix Corporation, The. Compensated capacitive transducer demodulator circuit. 4,289,035, Cl. 73-708.000.

Lee, Grahame R., to Burroughs Wellcome Co. Ester synthesis. 4,289,711, Cl. 260-456.00P.

Lee, Kung-You: *See—*
Eng, King D.; Brandenburg, John T.; Lee, Kung-You; and McMahon, Matthew A., 4,289,810, Cl. 427-230.000.

Lee, Kyu H., to Extracorporeal Medical Specialties, Inc. Hollow fiber dialysis. 4,289,623, Cl. 210-247.000.

Lee, Ping I., to Airwick Industries, Inc. Cold water-insoluble polyvinyl alcohol pouch for the controlled release of active ingredients. 4,289,815, Cl. 428-35.000.

Lee, Tien S.; Sammells, Anthony F.; and Remick, Robert J., to Institute of Gas Technology. Lead acid battery having cellular matrix positive electrode. 4,289,835, Cl. 429-50.000.

Legille, Edouard; and Kremer, Victor, to Paul Wurth, S.A. Radiant energy profilometer. 4,290,067, Cl. 343-12.00R.

Legler, Bobby: *See—*
Jinkins, C. Eugene; and Legler, Bobby, 4,289,814, Cl. 427-385.500.

LeGrand, Jesse S., to International Telephone and Telegraph Corporation. High speed phase locked loop frequency synthesizer. 4,290,028, Cl. 331-1.00A.

Legrand, Pierre: *See—*
Berte, Marc; and Legrand, Pierre, 4,290,012, Cl. 324-71.0EB.

LeMay, Christopher A. G., to EMI Limited. Radiography. 4,289,968, Cl. 250-445.00T.

Lemelson, Jerome H. Rechargeable electric battery system. 4,289,836, Cl. 429-61.000.

Le Moullac, Roger, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Segmented mold for tire casing. 4,289,463, Cl. 425-47.000.

Lenahan, Dean T.: *See—*
Sterman, Albert P.; Gay, Charles H., Jr.; Tegarden, Frederick W.; and Lenahan, Dean T., 4,289,447, Cl. 415-200.000.

Lentz, Robert A.: *See—*
Bixby, James A.; and Lentz, Robert A., 4,290,087, Cl. 360-33.000.

Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.P.A. Process for the preparation of regenerated cellulose formed bodies from solutions of cellulose derivatives in organic solvents. 4,289,723, Cl. 264-187.000.

Leopold, Hans-Gerhard: *See—*
Imre, Laszlo; Horstmann, Walter; and Leopold, Hans-Gerhard, 4,289,881, Cl. 544-352.000.

Lermann, Peter; Wagner, Karl; Schultes, Herbert; and Fauth, Gunter, to AGFA-Gevaert Aktiengesellschaft. Bellows type folding camera. 4,289,390, Cl. 354-187.000.

Lever Brothers Company: *See—*
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,289,641, Cl. 252-96.000.

Levi Strauss & Co.: *See—*
Blessing, Hubert, 4,289,820, Cl. 428-125.000.

Levinger, Paul: *See—*
Mardirossian, John H., 4,288,892, Cl. 24-206.00B.

Levresse, Bernard, to Societe Chimique des Charbonnages-CdF Chimie. High pressure separation device. 4,289,512, Cl. 55-315.000.

Levy, Amnon: *See—*
Agassi, Abraham; and Levy, Amnon, 4,288,950, Cl. 52-79.120.

Levy, John V.; Rodgers, David; Stewart, Robert E.; and Casabona, Richard J., to Digital Equipment Corporation. Data processing system with read operation splitting. 4,290,102, Cl. 364-200.000.

Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, to Bayer Aktiengesellschaft. Polyhydantoins from unsaturated carboxylic acids and polyiso(thio)cyanates. 4,289,868, Cl. 528-73.000.

Lewis, Donald F., deceased (by Lewis, Sheri, administrator). Device to indicate solar exposure. 4,288,922, Cl. 33-1.0DD.

Lewis, James R.: *See—*
Anderson, Roy E.; Frey, Richard L.; and Lewis, James R., 4,290,141, Cl. 455-2.000.

Lewis, Robert A.; and Honnen, Lewis R., to Chevron Research Company. Deposit control additives and fuel and lube oil compositions containing them. 4,289,634, Cl. 252-32.500.

Lewis, Sheri, administrator: *See—*
Lewis, Donald F., deceased, 4,288,922, Cl. 33-1.0DD.

Lewis, Steven M., to National Semiconductor Corporation. External tank level control system. 4,289,451, Cl. 417-40.000.

Li, George S., to Standard Oil Company, The. Polymer systems plasticized with hydroxy fatty acids. 4,289,668, Cl. 260-23.0AR.

Li, Hsueh M.: *See—*
Hornbaker, Edwin D.; and Li, Hsueh M., 4,289,862, Cl. 525-538.000.

Li, Pei-Ching, to International Business Machines Corporation. Phosphorus-nitrogen-oxygen composition and method for making such composition and applications of the same. 4,289,539, Cl. 106-286.800.

Liberman, Anatoly L.: *See—*
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Streckenbach, Wulf-Christian, 4,290,029, Cl. 331-1.00A.

Lightner, John L.: *See—*
Pearce, Warren, Jr.; Schramme, Stephan H.; Lightner, John L.; and McGee, Joseph A., 4,289,924, Cl. 174-152.00G.

Lightron Corporation, The: *See—*
Frankhouser, Douglas L.; Schnitz, Louis; and Greenstadt, Joseph C., 4,289,244, Cl. 211-117.000.

Liljedahl, Gregory N.; and Moffat, Bruce K., to Combustion Engineering, Inc. Combined cycle power plant incorporating coal gasification. 4,288,979, Cl. 60-39.120.

Lim, Sim K.: *See—*
Goodman, Richard M.; and Lim, Sim K., 4,289,613, Cl. 209-167.000.

Lindberg, Ernst R., to Svedala-Arbra AB. Method and apparatus for the reversal or replacement of hammers in hammer mills. 4,288,904, Cl. 29-426.300.

Linn, Bruce O.: *See—*
Bochits, Richard J.; Fisher, Michael H.; and Linn, Bruce O., 4,289,784, Cl. 424-274.000.

Lips, Hendrik R.: *See—*
Romer, Rudolf; Lips, Hendrik R.; Furch, Benjamin; and Orth, Hans, 4,289,073, Cl. 102-476.000.

Lissner, Reinhard: *See—*
Schacht, Erich; Kurmeier, Hans-Adolf; Gante, Joachim; Lissner, Reinhard; Melzer, Guido; and Orth, Dieter, 4,289,774, Cl. 424-250.000.

List, Hans: *See—*
Noraberg, John, 4,289,105, Cl. 123-500.000.

Lister, Gordon H., to Sandoz Ltd. Finishing process. 4,289,496, Cl. 8-477.000.

Listopad, Vladimir I.: *See—*
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

LITE-A-GUIDE, Inc.: *See—*
Thompson, Tom; and Hirschberg, Kenneth A., 4,290,093, Cl. 362-98.000.

Litrap, Jay J. Gold pan and classifier. 4,289,241, Cl. 209-44.000.

Litton Systems, Inc.: *See—*
Spencer, David R.; and Zuckerman, Leonard, 4,290,086, Cl. 358-293.000.

Livingston, Benjamin F.: *See—*
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; Martone, James F.; and Sabad, Joseph J., 4,289,666, Cl. 260-23.00H.
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; and Sabad, Joseph J., 4,289,670, Cl. 260-28.5AV.

Loesche, Franz W.: *See—*
Monk, Robert J.; and Loesche, Franz W., 4,289,444, Cl. 415-3.000.

Lombardino, Joseph G., to Pfizer Inc. Synthetic method and intermediate for piroxicam. 4,289,879, Cl. 544-49.000.

Long, Lennart E.; Steele, Roger K.; Coleman, David F.; and Gustafson, Ralph A., to United States of America, Transportation. Longitudinal rail profilometer. 4,288,926, Cl. 33-174.00P.

Longuet, Andre, to Fives-Cail Babcock. Apparatus for contacting solids with a liquid. 4,289,734, Cl. 422-272.000.

L'Oreal: *See—*
Bugaut, Andree; Grollier, Jean-Francois; and Vandenboosche, Jean-Jacques, 4,289,495, Cl. 8-406.000.

Lorenzen, Kenneth: *See—*
Gary, Norman E.; and Lorenzen, Kenneth, 4,288,880, Cl. 6-12.00R.

Lorenzi, Donald E., to Magnaflux Corporation. Method and apparatus for establishing magnetization levels for magnetic particle testing or the like. 4,290,016, Cl. 324-216.000.

Lougheed, Robert M.: *See—*
Sternberg, Stanley R.; Lougheed, Robert M.; and Dargel, William O., 4,290,049, Cl. 340-146.3MA.

Lowdenslager, John; and Zatsky, Norman C., to Timex Corporation. Digital frequency trimmed electronic timepiece. 4,290,130, Cl. 368-200.000.

Lubrizol Corporation, The: *See—*
Schroeck, Calvin W., 4,289,635, Cl. 252-32.70E.

Lucas Industries Limited: *See—*
Heibel, Helmut, 4,289,217, Cl. 188-73.380.

Lugscheider, Walter: *See—*
Wallner, Felix; and Lugscheider, Walter, 4,289,541, Cl. 134-7.000.

Luk, Kong; Clayton, John P.; and Rogers, Norman H., to Beecham Group Limited. Antibacterial compounds. 4,289,779, Cl. 424-263.000.

Lukasavage, William J.: *See—*
Denkewalter, Robert G.; Kolc, Jaroslav; and Lukasavage, William J., 4,289,872, Cl. 528-328.000.

Luke, Donald A.: *See—*
Worthington, Ralph E.; Luke, Donald A.; and Reese, Stanton L., 4,289,609, Cl. 209-11.000.

Lumen, Karl L. G., to Sandvik Aktiebolag. Rock drill bit. 4,289,211, Cl. 175-410.000.

Lupertz, Hans-Henning; and Berisch, Volker, to ITT Industries, Inc. Brake force regulator for a motorcycle hydraulic brake system. 4,289,359, Cl. 303-6.00C.

Lustig, Leopold P.; and Yaron, Anselm, to Lustig, Leopold Paul. Tools for drilling, reaming and the like with simultaneous angular and linear oscillatory motions. 4,289,849, Cl. 433-123.000.

Lustig, Leopold Paul: *See—*
Lustig, Leopold P.; and Yaron, Anselm, 4,289,849, Cl. 433-123.000.

Luxemburg, S. Roy. Compositions and process for extension of the useful life of machine elements. 4,289,631, Cl. 252-8.50B.

Lyerla, James R.: *See—*
Economy, James; Lyerla, James R.; and Pederson, Lester A., 4,289,573, Cl. 156-643.000.

Lyman, Lawrence C., to Industronics, Inc. Car bottom furnace. 4,289,484, Cl. 432-241.000.

Lynch, Thomas J.: *See—*
Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., 4,289,863, Cl. 526-106.000.

Lynn, Robert W., to Becton, Dickinson and Company. Container closure assembly having intermediate positioning means. 4,289,248, Cl. 215-330.000.

Lytwyn, Ann: *See—*
Baughman, D. Joseph; and Lytwyn, Ann, 4,289,498, Cl. 23-230.00B.

M P Food Technology, Inc.: *See—*
Cajigas, Stanley D., 4,289,788, Cl. 426-61.000.
Cajigas, Stanley D., 4,289,789, Cl. 426-61.000.

Mabuchi, Katsuya; and Yamamoto, Shigeyuki, to Toyo Boseki Kabushiki Kaisha. Apparatus for concentrating polyvinyl alcohol solution. 4,289,577, Cl. 159-5.000.

MacConnell, John G.: *See—*
Mrozik, Helmut H.; MacConnell, John G.; and Kempf, August J., 4,289,760, Cl. 424-181.000.

MacGregor, Francis W., to Cosco Industries, Inc. Rubber stamp. 4,289,070, Cl. 101-327.000.

Mack, Mark P., to Conoco, Inc. Method for producing solutions of drag reducing substances. 4,289,679, Cl. 260-33.6PQ.

Mack, Michael E.: *See—*
Itzkan, Irving; Kent, Herbert P.; Mack, Michael E.; and Morton, Richard G., 4,289,397, Cl. 356-5.000.

MacLeane, Johannes: *See—*
Stanwood, Jay W.; Clarke, William A.; and MacLeane, Johannes, 4,289,557, Cl. 156-171.000.

Macur, George J.: *See—*
Alpaugh, Warren A.; Macur, George J.; and Sharkness, James E., 4,289,594, Cl. 204-158.00R.

Maddox, William J., to RCA Corporation. Light transmission measurement method. 4,289,406, Cl. 356-429.000.

Maeder, Edward G.; and Tovey, John M., to National Can Corporation. Double action domer assembly. 4,289,014, Cl. 72-348.000.

Maerz Ofenbau AG: *See—*
Fussl, Erwin, 4,289,482, Cl. 432-96.000.

Magnaflux Corporation: *See—*
Lorenzi, Donald E., 4,290,016, Cl. 324-216.000.

Magnani, Michel; and Moulin, Michel, to S.A. Andre Boet. Electrical apparatus and method for electrically simulating a noise. 4,290,054, Cl. 340-384.00E.

Mahieu, Claude; and Papantoniou, Christos, to Societe Anonyme dite: L'Oreal. Cosmetic compositions containing N-alkylacrylamide or N-alkylmethacrylamide based copolymers. 4,289,752, Cl. 424-47.000.

Mahncke, Jurgen; Weigele, Hans; and Hotz, Dieter, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Bridge laying apparatus. 4,288,881, Cl. 14-2.400.

Maier, Roland: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,289,775, Cl. 424-251.000.

Maiocchi, Luigi: *See—*
Franchini, Carlo; and Maiocchi, Luigi, 4,289,185, Cl. 152-361.0DM.

Makovec, Donald J., to Phillips Petroleum Co. Temperature control for a reactor. 4,290,110, Cl. 364-500.000.

Malcolm, David H., to Speeflo Manufacturing Corporation. Spray gun having self-contained low voltage and high voltage power supplies. 4,290,091, Cl. 361-228.000.

Maliszewski, Leonard A., to Continental Group, Inc., The. Non-detach easy opening container unit. 4,289,251, Cl. 220-269.000.

Mallard, John R.: *See—*
Hutchison, James M. S.; Mallard, John R.; and Sutherland, Robert J., 4,290,019, Cl. 324-311.000.

Malm, Robert, to Northrop Corporation. Combined coherent frequency and phase shift keying modulation system. 4,290,140, Cl. 375-46.000.

Maly, Hans-Peter, to Robert Bosch GmbH. Circuit arrangement for the transmission of digital data. 4,289,976, Cl. 307-247.00R.

Mandell, Kenneth H. Clamp. 4,289,417, Cl. 403-218.000.

Mangione, Joseph F.: *See—*
Schneider, John R.; and Mangione, Joseph F., 4,289,615, Cl. 210-91.000.

Mansukhani, Ishwar R., to American Can Company. Opaque jet ink printing method and composition. 4,290,072, Cl. 346-1.100.

Marathon Electric Manufacturing Corp.: *See—*
Ebert, Robert W., 4,289,923, Cl. 174-65.00G.
Schibline, Patrick J., 4,289,989, Cl. 310-261.000.

Marcelin, George: *See—*
Traynor, Sean G.; and Marcelin, George, 4,289,809, Cl. 427-230.000.

Mardirossian, John H., to Levinger, Paul. Buckle. 4,288,892, Cl. 24-206.00B.

Margant, Gerard: *See—*
Declerco, Marc A.; and Margant, Gerard, 4,289,448, Cl. 416-140.000.

Marginean, Barry L.; and Hookway, Warren A., Jr., to Labelon Corporation. Heat sensitive coating. 4,289,535, Cl. 106-19.000.

Margotte, Dieter: *See—*
Druschke, Frank; Margotte, Dieter; Tresper, Erhard; Bottenbruch, Ludwig; Cohnen, Wolfgang; and Hucks, Uwe, 4,289,685, Cl. 260-45.70S.

Marks, Dale H. Bisexual electrical connector. 4,289,366, Cl. 339-49.00B.

Markusch, Peter: *See—*
Friederich, Klaus; Heinze, Gerhard; Reiff, Helmut; Michael, Dietrich; Schon, Manfred; Markusch, Peter; Haberland, Ulrich; Dieterich, Dieter; and Merten, Josef, 4,289,672, Cl. 260-29.2TN.

Maroszek, Raymond V., to American Can Company. Article carrier. 4,289,266, Cl. 229-28.0BC.

Marshall, Trevor J., Jr.; and Dworkin, Darryl R., to CBS Inc. Riding toy with sound effects. 4,289,307, Cl. 272-52.500.

Marti, Bernard; Poignet, Alain; Savary, Jean-Yves; and Brusq, Roger, to Etablissement Public de Diffusion dit Telediffusion de France. System for digital transmission and text display. 4,290,062, Cl. 340-721.000.

Martin, Charles W.: *See—*
Pearce, Roscoe L.; and Martin, Charles W., 4,289,738, Cl. 423-228.000.

Martin, Eugene R., to SWS Silicones Corporation. Organofunctional polysiloxane polymers and a method for preparing the same. 4,289,867, Cl. 528-12.000.

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Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; Martone, James F.; and Sabad, Joseph J., 4,289,666, Cl. 260-23.00H.

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Weinstein, David, 4,289,791, Cl. 426-139.000.

Masaki, Shinzaburo: *See—*
Fukasawa, Akira; Masaki, Shinzaburo; and Serizawa, Norio, 4,289,706, Cl. 260-369.000.

Maschinenfabrik Ad. Schulthess & Co. Aktiengesellschaft: *See—*
Gasser, Rene, 4,288,934, Cl. 38-44.000.

Maska, Rudolf: *See—*
Christenson, Roger M.; Maska, Rudolf; Dowbenko, Rostyslawa; and Hockswender, Thomas R., 4,289,674, Cl. 260-29.6NR.

Mason, Randy D. F.; and Vuletich, William. Ankle-foot orthosis. 4,289,122, Cl. 128-80.00E.

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Haggerty, John S., 4,289,952, Cl. 219-121.00L.
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,290,118, Cl. 365-183.000.

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Bailey, Alfred J., 4,289,256, Cl. 222-52.000.

Massion, Robert J., to Signode Corporation. Positive sealing assembly for hand operated strapping tool. 4,289,174, Cl. 140-93.400.

Masuda, Kouji; Mizukami, Masao; and Kitamura, Nobuaki, to Hitachi, Ltd.; and Hitachi Ome Electronic Co., Ltd. Memory device protected against undesirable supply voltage level. 4,290,119, Cl. 365-189.000.

Matson, Raphael F.; and Fisher, Bernard M., to Freeport Minerals Company. Process for the recovery of gold from carbonaceous ores. 4,289,532, Cl. 75-105.000.

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Matsumoto, Hidenosuke: *See—*
Murase, Fujio; Matsumoto, Hidenosuke; Fujieda, Hiroshi; Takano, Teruhisa; and Imasu, Kenichiro, 4,289,272, Cl. 236-91.00D.

Matsumoto, Masashige; Kobuna, Hideaki; Hiraide, Seiji; and Kawai, Kouichi, to Nippon Electric Co., Ltd. Method of making printed wiringboards. 4,289,575, Cl. 156-656.000.

Matsumura, Shizuo: *See—*
Kawasaki, Haruhiko; Koiwai, Hideshi; and Matsumura, Shizuo, 4,289,160, Cl. 137-491.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Murase, Fujio; Matsumoto, Hidenosuke; Fujieda, Hiroshi; Takano, Teruhisa; and Imasu, Kenichiro, 4,289,272, Cl. 236-91.00D.

Matsuzaka, Eiichi: *See—*
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, 4,289,806, Cl. 427-150.000.

Matthews, Lloyd E.: *See—*
Beaumont, Gregory J.; and Matthews, Lloyd E., 4,289,994, Cl. 315-371.000.

Mattor, John A.: *See—*
Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., 4,289,821, Cl. 428-172.000.

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Honda, Juichi; Matumoto, Michiaki; and Mimori, Sadao, 4,289,474, Cl. 431-10.000.

Mayama, Koichi: *See—*
Sugie, Mamoru; Yamaguchi, Noboru; Mayama, Koichi; Kita, Yuzo; Yoshizawa, Shigeru; Saito, Nobuo; and Asano, Atsushi, 4,290,117, Cl. 365-15.000.

Mayea, Larry, to Arkay Packaging Corporation. Eight-sided prefabricated container having an automatic bottom. 4,289,267, Cl. 229-39.00R.

Maytag Company, The: *See—*
Quayle, Lawrence L., 4,289,154, Cl. 134-56.00D.

Mayumi, Kazuhisa; Suzuki, Katsumi; and Tsuboi, Fujio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and NGK Spark Plugs Co., Ltd. Spark plug with a stepped insulator and an inner constriction in the housing. 4,289,990, Cl. 313-143.000.

McArthur, Dennis P., to Union Oil Company of California. Process for catalytically cracking metals-containing hydrocarbon feedstocks. 4,289,608, Cl. 208-121.000.

McChesney, John L.; and Tacklind, Thomas A., to Xerox Corporation. Liquid development fountain. 4,289,092, Cl. 118-660.000.

McClellan, Thomas R.: *See—*
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., 4,289,858, Cl. 521-131.000.

McClure, John R., to Sperry Corporation. Round baler. 4,288,971, Cl. 56-341.000.

McCreary, Willard E.: *See—*
Bagley, George E.; McCreary, Willard E.; and Rueggeberg, Werner, 4,289,798, Cl. 427-39.000.

McFadyen, Robert J.; and Zeigler, John F., III, to General Electric Company. Ultrasonic intrusion alarm system. 4,290,126, Cl. 367-93.000.

McFarland, Keith E., to Xerox Corporation. Compensatory means improving the operation of electrostatic printers. 4,290,076, Cl. 346-154.000.

McGee, John K., to Combustion Engineering, Inc. Valve with heat-responsive bearing assembly providing back seat arrangement. 4,289,157, Cl. 137-72.000.

McGee, John K., to Combustion Engineering, Inc. Wellhead sidewall electrical penetrator. 4,289,199, Cl. 166-65.00R.

McGee, Joseph A.: *See—*
Pearce, Warren, Jr.; Schramme, Stephan H.; Lightner, John L.; and McGee, Joseph A., 4,289,924, Cl. 174-152.00G.

McGee, Terence. Troughed belt conveyors. 4,289,230, Cl. 198-811.000.

McGuire, George: *See—*
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,289,652, Cl. 252-437.000.

McIntosh, Charles M.; and Schmeckenbecher, Arnold F., to International Business Machines Corporation. Method of making a multilayer ceramic substrate. 4,289,719, Cl. 264-61.000.

McKee, Edward A. Disc brake piston depressing tool. 4,288,899, Cl. 29-256.000.

McKellin, Wilbur H., to Pennwalt Corporation. Compounds by addition of hydroperoxides to α, β-unsaturated ketones. 4,289,914, Cl. 568-567.000.

McLaughlin, Richard J. Touch sensitive electric switch. 4,289,980, Cl. 307-308.000.

McLean, Douglas K., to Double-E, Inc. Wellhead flow control devices. 4,289,294, Cl. 251-62.000.

McMahon, Matthew A.: *See—*
Eng, King D.; Brandenburg, John T.; Lee, Kung-You; and McMahon, Matthew A., 4,289,810, Cl. 427-230.000.

McMurtry, David R., to Rolls-Royce Limited; and Renishaw Electrical Limited. Probe for use in measuring apparatus. 4,288,925, Cl. 33-174.00L.

McNamara, Thomas J. Heat exchanger. 4,289,197, Cl. 165-115.000.

Mead Corporation, The: *See—*
Brownhill, Richard D.; and Wilkinson, Darcy B., Jr., 4,289,513, Cl. 55-387.000.

Meadowbrook Resort, Inc.: *See—*
Williams, Robert H., 4,289,116, Cl. 126-431.000.

Mechaneer, Inc.: *See—*
George, Robert D.; and Gray, Robert C., 4,289,281, Cl. 242-7.05B.

Medcalf, Eugene C., to BWM Corporation. Hydrocarbon fuel additive. 4,289,501, Cl. 44-56.000.

Medical Testing Systems, Inc.: *See—*
Halvorsen, Kenneth, 4,289,138, Cl. 128-642.000.

Medovar, Boris I.: *See—*
Dubinsky, Rudolf S.; Medovar, Boris I.; and Boiko, Georgy A., 4,289,192, Cl. 164-470.000.

Medtronic, Inc.: *See—*
Gilman, Byron L., 4,289,144, Cl. 128-785.000.

Meehan, M. Dennis, to Binkley Company, The. Floor system. 4,288,957, Cl. 52-460.000.

Mehta, Madhukumar A.: *See—*
Pitroda, Satyan G.; and Mehta, Madhukumar A., 4,289,934, Cl. 179-27.00D.

Meier, William A.: *See—*
Crittenden, David E.; Angarola, Barry R.; Nix, Robert J.; and Meier, William A., 4,289,175, Cl. 140-93.400.

Meinan Machinery Works, Inc.: *See—*
Koba, Yoshinori, 4,289,179, Cl. 144-211.000.

Melissa, Raymond F.; Grummett, Lorne H.; and Fischer, Joseph J., to Trilog, Inc. Method for producing a multiple color hard copy image. 4,289,069, Cl. 101-93.010.

Mellows, Graham: *See—*
Barrow, Kevin D.; and Mellows, Graham, 4,289,703, Cl. 260-345.80R.

Melvin, Wilbert, Jr.: *See—*
Sterling, Larry D.; and Melvin, Wilbert, Jr., 4,288,999, Cl. 68-13.00R.

Melzer, Guido: *See—*
Schacht, Erich; Kurmeier, Hans-Adolf; Gante, Joachim; Lissner, Reinhard; Melzer, Guido; and Orth, Dieter, 4,289,774, Cl. 424-250.000.

Mennicken, Gerhard: *See—*
Blomeyer, Freidrich, deceased; Mennicken, Gerhard; and Uerdingen, Walter, 4,289,813, Cl. 427-385.500.

Merck & Co., Inc.: *See—*
Bochis, Richard J.; Fisher, Michael H.; and Linn, Bruce O., 4,289,784, Cl. 424-274.000.
Mrozik, Helmut H.; MacConnell, John G.; and Kempf, August J., 4,289,760, Cl. 424-181.000.
Windheuser, John J., 4,289,751, Cl. 424-35.000.

Merck Patent Gesellschaft mit Beschrankter Haftung: *See—*
Gante, Joachim; Radunz, Hans-Eckart; Orth, Dieter; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,289,768, Cl. 424-247.000.
Harders, Hans-Dieter; and Helger, Roland, 4,289,649, Cl. 252-408.000.
Schacht, Erich; Kurmeier, Hans-Adolf; Gante, Joachim; Lissner, Reinhard; Melzer, Guido; and Orth, Dieter, 4,289,774, Cl. 424-250.000.

Mercurio, Andrew: *See—*
Calder, G. Vincent; and Mercurio, Andrew, 4,289,678, Cl. 260-33.6UA.

Merrell Dow Pharmaceuticals Inc.: *See—*
Metcalf, Brian W.; and Johnston, J. O'Neal, 4,289,762, Cl. 424-242.000.

Merritt, Jackie A. Combination belly dump/end dump vehicle. 4,289,353, Cl. 298-17.500.

Merten, Josef: *See—*
Friederich, Klaus; Heinze, Gerhard; Reiff, Helmut; Michael, Dietrich; Schon, Manfred; Markusch, Peter; Haberland, Ulrich; Dieterich, Dieter; and Merten, Josef, 4,289,672, Cl. 260-29.2TN.

Merten, Rudolf: *See—*
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,289,868, Cl. 528-73.000.

Mesens, Jean, to Janssen Pharmaceutica, N.V. Etomidate-containing compositions. 4,289,783, Cl. 424-273.00R.

Metallgesellschaft Aktiengesellschaft: *See—*
Schymura, Konrad, 4,289,521, Cl. 65-144.000.

Metcalf, Brian W.; and Johnston, J. O'Neal, to Merrell Dow Pharmaceuticals Inc. 10-(1,2-Propadienyl) steroids as irreversible aromatase inhibitors. 4,289,762, Cl. 424-242.000.

Metzger, Karl G.: *See—*
Sasse, Klaus; Haller, Ingo; Plempel, Manfred; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,289,771, Cl. 424-249.000.

Meyer, Donald R., Sr., to Soloptics, Inc. Solar collector. 4,289,119, Cl. 126-440.000.

Meyer, Gunther: *See—*
Burkhardt, Rudolf; Meyer, Gunther; Schmidt, Reinhard; and Thewalt, Klaus, 4,289,895, Cl. 560-92.000.

Meyers, George L., to American Can Company. Carton having novel end panel construction. 4,289,239, Cl. 206-625.000.

Meyertech Incorporated: *See—*
Hansen, Arne H., 4,289,339, Cl. 285-305.000.

Michael, Dietrich: *See—*
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Michalek, Paul F.: *See—*
Strom, Richard A.; Bergman, Clark; and Michalek, Paul F., 4,289,364, Cl. 339-17.0CF.

Michel, Claude, to Rhone-Poulenc Systemes. Process and apparatus for converging developing vapors in diazocopy machines. 4,289,394, Cl. 354-299.000.

Michelet, Guy, to Quantel S.A. Optical system having a variable focal length. 4,289,379, Cl. 350-419.000.

Micheli, Adolph L., to General Motors Corporation. Porous cermet electrode and method of making same. 4,289,802, Cl. 427-125.000.

Micro-Tek, Inc.: *See—*
Baker, Donald G., 4,289,931, Cl. 179-5.500.

Mielke, Wayne C.: *See—*
Gustafson, Leon D.; and Mielke, Wayne C., 4,289,793, Cl. 426-491.000.

Mikel, Steve A.; and Blomquist, Alfred P., to Chrysler Corporation. Lock-up system for torque converter. 4,289,048, Cl. 74-733.000.

Miles, Bert B.: *See—*
Coggins, Robert W.; and Miles, Bert B., 4,289,093, Cl. 122-197.000.

Milianowicz, Stanislaw A., to Westinghouse Electric Corp. Gas-blast circuit-interrupter with multiple insulating arc-shield construction. 4,289,942, Cl. 200-148.00A.

Millard, Ben: *See—*
Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., 4,289,821, Cl. 428-172.000.

Miller, Alvin L.; and Viscido, Anthony J. Gauges for inserting dental implants. 4,289,848, Cl. 433-72.000.

Miller, Calvin K., to Knape & Vogt Manufacturing Co. Universal drawer slide mounting bracket. 4,289,290, Cl. 248-251.000.

Miller, Delmar S.: *See—*
Wiechowski, Joseph W.; Miller, Delmar S.; and Kostner, Richard C., 4,289,563, Cl. 156-423.000.

Miller, Francis P.: *See—*
Jones, Winton D.; and Miller, Francis P., 4,289,767, Cl. 424-246.000.

Miller, John F. Self aligning carrier head and truck assembly. 4,289,076, Cl. 105-163.00R.

Miller, Larry L.: *See—*
Wills, Walter L.; Vaughn, Herchel A.; and Miller, Larry L., 4,288,912, Cl. 29-577.00C.

Miller, Robert C.: *See—*
Holtey, Thomas O.; Miller, Robert C.; and Yu, Kin C., 4,290,104, Cl. 364-200.000.

Miller, Stephen B.: *See—*
Bailey, Alan C.; and Miller, Stephen B., 4,289,517, Cl. 65-3.00A.
Bailey, Alan C.; and Miller, Stephen B., 4,289,522, Cl. 65-144.000.

Miller, Terence, to Scapa-Porritt Limited. Papermakers fabrics. 4,289,173, Cl. 139-383.00A.

Miller, Wayne R.: *See—*
Latham, David D.; Von Fumetti, Cyril W.; and Miller, Wayne R., 4,289,096, Cl. 123-198.00E.

Milligan, Barton: *See—*
Becker, Eckhart R.; Daughenbaugh, Randall J.; and Milligan, Barton, 4,289,908, Cl. 564-490.000.

Mimori, Sadao: *See—*
Honda, Juichi; Matumoto, Michiaki; and Mimori, Sadao, 4,289,474, Cl. 431-10.000.

Minami, Setsuo: *See—*
Matsui, Yoshiya; Minami, Setsuo; and Mochizuki, Noritaka, 4,289,377, Cl. 350-169.000.

Minemura, Kouichi: *See—*
Sugimoto, Shigetoki; and Minemura, Kouichi, 4,289,373, Cl. 350-96.160.

Minnesota Mining and Manufacturing Company: *See—*
Bahls, Jerold O., 4,288,884, Cl. 15-244.00R.
Scibelli, John V., 4,289,088, Cl. 116-218.000.
Soch, Fredrich A., 4,289,892, Cl. 560-26.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kobori, Toshio; and Sahara, Masayoshi, 4,289,389, Cl. 354-31.000.
Kobori, Toshio; Yamazaki, Yasuo; and Uchida, Isamu, 4,289,392, Cl. 354-225.000.

Minshull, John F.; and Brazdil, Pavel, to International Business Machines Corp. Method and means for preserving original continuity/-discontinuity among same colored pel clusters upon array compression. 4,290,084, Cl. 358-260.000.

Mitchell, Peter J. D. Rakes. 4,289,344, Cl. 294-2.000.

Mitrofanov, Evgeny S.; Ivanov, Boris G.; Ivanov, Nikolai A.; Kaljunov, Gennady A.; and Khinich, Isaak Y. Crusher bowl clamping device. 4,289,280, Cl. 241-207.000.

Mitschke, Karl-Heinz; and Niederprum, Hans, to Bayer Aktiengesellschaft. 1,1-Difluoro-2-chloroethylene as aerosol propellant. 4,289,646, Cl. 252-305.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ikeda, Hideo; Tsuchiya, Hideshi; and Okada, Masaru, 4,289,937, Cl. 179-119.00R.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Isogai, Nobuo; Okawa, Takashi; and Wakui, Natsuko, 4,289,911, Cl. 568-396.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,289,699, Cl. 260-326.5FM.

Miura, Nobuo: *See—*
Hoki, Tsuneo; Miura, Nobuo; and Watanabe, Hiroshi, 4,289,857, Cl. 521-85.000.

Miura, Shuichi: *See—*
Koga, Kenichiro; Hirose, Yoshiharu; Kanno, Iwao; Uemura, Kazuo; and Miura, Shuichi, 4,289,965, Cl. 250-363.00S.

Miyahara, Junji: *See—*
Saito, Hirokazu; Suzuki, Keiichi; Shimizu, Masayuki; and Miyahara, Junji, 4,289,733, Cl. 422-227.000.

Miyaji, Yoshimori: *See—*
Yamanaka, Junichi; Nakamura, Noboru; Fujiki, Hirokazu; and Miyaji, Yoshimori, 4,290,038, Cl. 335-214.000.

Mizukami, Masao: *See—*
Masuda, Kouji; Mizukami, Masao; and Kitamura, Nobuaki, 4,290,119, Cl. 365-189.000.

Mizuno, Ichiro; and Nakahara, Masao, to Kabushiki Kaisha Mitutoyo Seisakusho. Inside dimension measuring gauge. 4,288,924, Cl. 33-147.00F.

Mizutani, Tatsumi; Ueki, Kazuyoshi; Iida, Shinya; and Komatsu, Hideo, to Hitachi, Ltd. Method and apparatus for monitoring etching. 4,289,188, Cl. 156-626.000.

Mobil Oil Corporation: *See—*
Davis, Robert H.; and Piotrowski, Alfred B., 4,289,636, Cl. 252-49.300.
Herrington, F. John, Jr., 4,289,727, Cl. 264-514.000.
Kokotailo, George T., 4,289,607, Cl. 208-120.000.

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Matsui, Yoshiya; Minami, Setsuo; and Mochizuki, Noritaka, 4,289,377, Cl. 350-169.000.

Model A and Model T Car Reproduction Corporation, The: *See—*
Holzwarth, Robert W., 4,289,347, Cl. 296-107.000.

Moffat, Bruce K.: *See—*
Liljedahl, Gregory N.; and Moffat, Bruce K., 4,288,979, Cl. 60-39.120.

Mohler, Werner; Jayme, Manfred; and Komarek, Jaromir, to Hoechst Aktiengesellschaft. Xanthine derivatives. 4,289,776, Cl. 424-253.000.

Mohr, Joachim, to Jenoptik Jena GmbH, Jena. Optical system for spectral devices. 4,289,401, Cl. 356-305.000.

Molins Machine Company, Inc.: *See—*
Woolston, A. Brent; and Evans, Donald J., 4,289,052, Cl. 83-26.000.

Molloy, Bryan B.; and Steinberg, Mitchell I., to Eli Lilly and Company. Quaternary ammonium antiarrhythmic drugs. 4,289,787, Cl. 424-329.000.

Monk, Robert J.; and Loesche, Franz W. Fluid energy convertor. 4,289,444, Cl. 415-3.000.

Monsanto Company: *See—*
D'Amico, John J., 4,289,886, Cl. 548-165.000.
Dyroff, David R.; Graf, Gary F.; Kim, Keun Y.; and Suchanek, Walton F., Jr., 4,289,753, Cl. 424-48.000.
Gomez, I. Luis; and Cole, Robert, 4,289,664, Cl. 260-19.00R.
Tolbert, William R.; Hitt, Mary M.; and Feder, Joseph, 4,289,854, Cl. 435-241.000.
Van Eenam, Donald N., 4,289,864, Cl. 526-235.000.

Monterey Shelf, Inc.: *See—*
Overman, Sherman A., 4,289,289, Cl. 248-235.000.

Monteyne, Guido, to SIDMAR Maritieme Staalnijverheid NV., Siderurgie Maritime S.A. Method of dewatering granulated-slag slurry. 4,289,519, Cl. 65-19.000.

Montgomery, J. L. Fence arrangement. 4,289,302, Cl. 256-19.000.

Mookherjee, Braja D.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.

Mooney, James R.: *See—*
Benton, Kenneth C.; Mooney, James R.; and Weinert, Raymond J., Jr., 4,289,651, Cl. 252-429.00B.

Moore, Lewis F.; and Price, George M., to Frymaster Corporation, The. Cooking system. 4,289,477, Cl. 431-171.000.

Moore, Robert E.: *See—*
Clark, Leland C., Jr.; and Moore, Robert E., 4,289,499, Cl. 23-230.00B.

Moose, Terrell F.: *See—*
Neeley, William E.; and Moose, Terrell F., 4,289,459, Cl. 417-475.000.

Mori, Takehiko: *See—*
Namba, Takamasa; Yanagawa, Hidekata; Fujimoto, Nobuo; Mori, Takehiko; and Yamada, Takayoshi, 4,289,263, Cl. 226-196.000.

Morikawa, Yoshitusgu: *See—*
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Morimoto, Yoshinori, to Ryobi Ltd. Leg and saddle of fishing reel. 4,289,283, Cl. 242-84.20R.

Morita, Yosuke: *See—*
Hagiwara, Miyuki; and Morita, Yosuke, 4,289,687, Cl. 260-45.85E.

Morse, Timothy C., to Centronics Data Computer Corp. Method and apparatus for operating a printer. 4,290,116, Cl. 364-900.000.

Morton, Richard G.: *See—*
Itzkan, Irving; Kent, Herbert P.; Mack, Michael E.; and Morton, Richard G., 4,289,397, Cl. 356-5.000.

Moschetto, Rudolph. Self-adjusting variable speed idler pulley. 4,289,489, Cl. 474-52.000.

Mosely, L. Max: *See—*
Basham, Edward R.; and Mosely, L. Max, 4,289,024, Cl. 73-151.000.

Moser, Peter, to Ciba-Geigy Corporation. Cationic oxazine dyes. 4,289,880, Cl. 544-103.000.

Mostek Corporation: *See—*
Eaton, Sargent S., Jr., 4,289,973, Cl. 307-448.000.

Motomura, Kenichi; Tansei, Hikaru; and Abe, Masaru, to Bridgestone Tire Company Limited. Pneumatic radial tire for heavy load vehicles including improved bead portion reinforcing construction. 4,289,184, Cl. 152-354.00R.

Motorola Inc.: *See—*
Butler, Walker, 4,290,066, Cl. 343-17.10R.
Smith, Stephen L., 4,289,982, Cl. 307-463.000.

Mott, James D., to Hydril Company. Well safety system method and apparatus. 4,289,205, Cl. 166-315.000.

Mougin, Georges L., to I.T.I. Limited. Protective skirt for an iceberg. 4,289,423, Cl. 405-61.000.

Moulding, Kenneth W.; and Wilson, Gordon A., to U.S. Philips Corporation. Filter circuit arrangement. 4,290,036, Cl. 333-215.000.

Moulin, Michel: *See—*
Magnani, Michel; and Moulin, Michel, 4,290,054, Cl. 340-384.00E.
Mouri, Yasunori: *See—*
Suda, Seiji; Hasegawa, Taiji; Mouri, Yasunori; and Furuhashi, Toshio, 4,290,107, Cl. 364-431.000.
Mouzin, Gilbert: *See—*
Cousse, Henri; and Mouzin, Gilbert, 4,289,770, Cl. 424-248.540.
Mrozik, Helmut H.; MacConnell, John G.; and Kempf, August J., to Merck & Co., Inc. 23-Keto derivatives of C-076 compounds. 4,289,760, Cl. 424-181.000.
Mucci, Ronald A.: *See—*
Pridham, Roger G.; and Mucci, Ronald A., 4,290,127, Cl. 367-123.000.
Muccitelli, John A., to Betz Laboratories, Inc. Hydroquinone and mu-amine compositions. 4,289,645, Cl. 252-178.000.
Mueller, David C., to American Can Company. Flip-lock reclosable carton. 4,289,240, Cl. 206-624.000.
Mueller, Hans P.; Alder, Hanspeter; and Zhuber-Okrog, Gerhard, to Swiss Aluminium Ltd. Process for the production of aluminum chloride. 4,289,735, Cl. 423-136.000.
Mueller, Max B.: *See—*
Rowan, Hugh H.; Mueller, Max B.; and Lazarus, Stanley D., 4,289,871, Cl. 528-309.000.
Mueller, Rene E., to Ergo Instruments, Inc. Surgical power tool. 4,289,131, Cl. 128-303.00R.
Muenger, James R.; Child, Edward T.; and Brent, Albert, to Texaco Development Corporation. Apparatus for the production of cleaned and cooled synthesis gas. 4,289,502, Cl. 48-62.00R.
Mukhin, Viktor M.: *See—*
Tikhonov, Valentin N.; Zhestkov, Vitaly I.; Shlykov, Gennady N.; Diachkov, Vasily M.; Mukhin, Viktor M.; and Zhigalov, Gennady V., 4,288,889, Cl. 19-236.000.
Mukhina, Tamara N.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,289,731, Cl. 422-206.000.
Muldrey, Michael J.: *See—*
Furney, Douglas E.; and Muldrey, Michael J., 4,290,055, Cl. 340-518.000.
Muller, Hans-Ueli: *See—*
Festag, Werner; and Muller, Hans-Ueli, 4,289,009, Cl. 72-60.000.
Muller, Harold, to Burroughs Corporation. Transistorized master slave flip-flop having threshold offsets generated by circuit size variations. 4,289,979, Cl. 307-272.00A.
Muller, Paul A.; and Muster, Hans, to Celfil Company Establishment. Material web for the manufacture of filter rods for tobacco products and apparatus and process for producing such web. 4,289,725, Cl. 264-287.000.
Muller, Paul F.: *See—*
Woehrle, Patrick; Habock, Adolf; and Muller, Paul F., 4,290,108, Cl. 364-480.000.
Muller, Reinhold: *See—*
Janner, Karl; Gregorius, Klaus; and Muller, Reinhold, 4,289,592, Cl. 204-157.10R.
Mummenthey, Hans-Dieter: *See—*
Ritz, Jurgen; Hotze, Hermann; and Mummenthey, Hans-Dieter, 4,289,866, Cl. 526-320.000.
Munday, Theodore F.: *See—*
Chiang, John S.; Munday, Theodore F.; and Ilardi, Joseph M., 4,289,739, Cl. 423-306.000.
Munekata, Kenichi; Fujita, Michio; and Hattori, Yasuhiro, to Toyoda Koki Kabushiki Kaisha. Rest apparatus. 4,288,945, Cl. 51-238.00S.
Murakawa, Takeyoshi; Sakamoto, Tetsuo; and Oka, Yutaka, to Nippon Electric Glass Company, Limited. Work tables in apparatus for blowing hollow glass articles. 4,289,523, Cl. 65-172.000.
Murase, Fujio; Matsumoto, Hidenosuke; Fujieda, Hiroshi; Takano, Teruhisa; and Imasu, Kenichiro, to Matsushita Electric Industrial Co., Ltd. Temperature control apparatus. 4,289,272, Cl. 236-91.00D.
Murdock, John B. Roofing or siding article. 4,288,959, Cl. 52-518.000.
Murer, Mario V., to Ateliers de Constructions Mecaniques Armand Colinet. Machine for mechanically opening and emptying bags which may contain a toxic product. 4,289,438, Cl. 414-412.000.
Murphy, H. Joseph: *See—*
Elston, Colin; Hoffman, Herbert A.; and Murphy, H. Joseph, 4,289,580, Cl. 162-109.000.
Murphy, Shirley D. Process and apparatus for heat laminating film to a substrate. 4,289,559, Cl. 156-238.000.
Murray, Pat L.: *See—*
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., 4,289,858, Cl. 521-131.000.
Muschelknautz, Edgar: *See—*
Herold, Heiko; Herold, Richard; Klee, Rudolf J.; and Muschelknautz, Edgar, 4,288,893, Cl. 28-266.000.
Muster, Hans: *See—*
Muller, Paul A.; and Muster, Hans, 4,289,725, Cl. 264-287.000.
Muzzell, Stephen E., to Gulf & Western Manufacturing Company. Seat construction. 4,289,304, Cl. 267-112.000.
Myers, George D.; and Walters, Paul W., to Ashland Oil, Inc. Biased degasser for fluidized bed outlet. 4,289,729, Cl. 422-144.000.
Myers, John H.: *See—*
Ganz, Robert H.; and Myers, John H., 4,289,236, Cl. 206-432.000.
Myers, John W., to Phillips Petroleum Company. Catalytic isomerization of an internal double bond aliphatic mono-olefin to produce terminal bond olefin. 4,289,919, Cl. 585-664.000.
Myllymaki, Richard A., to United Technologies Corporation. Injection molding thermoplastic patterns having ceramic cores. 4,289,191, Cl. 164-45.000.
Nagano, Masashi, to Shimano Industrial Company Limited. Improved rear hub chair protector. 4,289,490, Cl. 474-144.000.
Nagl, Gary J.: *See—*
Hardison, Leslie C.; Eng, Joseph P.; and Nagl, Gary J., 4,289,505, Cl. 55-59.000.
Naito, Kunio: *See—*
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Nakagawa, Kazuyuki: *See—*
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, 4,289,883, Cl. 546-158.000.
Nakagawa, Tamotsu: *See—*
Takenoya, Hideaki; Watanabe, Kazuo; Nakagawa, Tamotsu; and Tonomura, Yoshinobu, 4,289,087, Cl. 112-254.000.
Nakahara, Masao: *See—*
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Nakajima, Yoshio: *See—*
Takayama, Shuichi; Tsuboshima, Kosaku; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,289,959, Cl. 250-201.000.
Nakamura, Ichiro, to Hitachi, Ltd. Hydraulic driving device. 4,289,063, Cl. 91-306.000.
Nakamura, Noboru: *See—*
Yamanaka, Junichi; Nakamura, Noboru; Fujiki, Hirokazu; and Miyaji, Yoshimori, 4,290,038, Cl. 335-214.000.
Nakamura, Norihiko: *See—*
Ito, Takaaki; and Nakamura, Norihiko, 4,289,715, Cl. 261-44.00C.
Nakamura, Shinji; and Yamakawa, Katsuyoshi, to Japan Air Lines Co., Ltd. Construction of truck for attractive type magnetically levitated vehicle. 4,289,074, Cl. 104-284.000.
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,289,099, Cl. 123-307.000.
Nakanishi, Michio: *See—*
Kubo, Masayoshi; Nakanishi, Michio; and Kimura, Mamoru, 4,289,873, Cl. 528-357.000.
Nakanishi, Mikimaro, to Tomoe Technical Research Company. Butterfly valve. 4,289,297, Cl. 251-306.000.
Nakano, Nobuo: *See—*
Tanaka, Osamu; Nakano, Nobuo; and Fukui, Toyoaki, 4,290,070, Cl. 343-788.000.
Nakayama, Yoshiki; Yazawa, Chihiro; and Yamanashi, Koji, to Ihara Chemical Industry Co., Ltd. Process for producing p-chloroalkylbenzene. 4,289,916, Cl. 570-209.000.
Nakrokhin, Vladimir G.: *See—*
Katunin, Vladimir M.; and Nakrokhin, Vladimir G., 4,289,974, Cl. 307-527.000.
Namba, Takamasa; Yanagawa, Hidekata; Fujimoto, Nobuo; Mori, Takehiko; and Yamada, Takayoshi, to Hitachi, Ltd.; and Japan Air Lines Company Limited. Apparatus for feeding a strip of continuous forms. 4,289,263, Cl. 226-196.000.
Napp Systems (USA), Inc.: *See—*
Hallman, Robert W.; Kimoto, Koichi; and Okai, Sakuo, 4,289,071, Cl. 101-395.000.
Nartron Corporation: *See—*
Bull, David W., 4,290,092, Cl. 362-61.000.
National Can Corporation: *See—*
Maeder, Edward G.; and Tovey, John M., 4,289,014, Cl. 72-348.000.
National Research Development Corporation: *See—*
Hutchison, James M. S.; Mallard, John R.; and Sutherland, Robert J., 4,290,019, Cl. 324-311.000.
Peel, John L.; and Waites, William M., 4,289,728, Cl. 422-24.000.
National Research Institute for Metals: *See—*
Gunji, Koki; and Dan, Takehiro, 4,289,533, Cl. 75-138.000.
National Semiconductor Corporation: *See—*
Lewis, Steven M., 4,289,451, Cl. 417-40.000.
Nauroth, Peter; Kuhlmann, Robert; and Turk, Gunter, to Deutsch Gold- und Silber-Scheideanstalt Vormals Roessler. Boron containing precipitated silica. 4,289,681, Cl. 260-37.0SB.
Neeley, William E.; and Moose, Terrell F. Proportioning pump. 4,289,459, Cl. 417-475.000.
Nehring, John R., to C. R. Bard, Inc. Suction control apparatus. 4,289,158, Cl. 137-205.000.
Neiman S.A.: *See—*
Bemm, Wulf W.; and Weber, Gunter, 4,289,342, Cl. 292-49.000.
Nelson, Byron G. Breathing apparatus stabilizer. 4,289,127, Cl. 128-207.140.
Nelson, Paul M., to Wilson Industries, Inc. Tongs having torque indicator thereon. 4,289,021, Cl. 73-862.250.
Nelson, Richard S., to United Kingdom Atomic Energy Authority. Fluid treatment devices. 4,289,657, Cl. 252-477.00R.
Nemeth, Edwin A., to Nemeth, Edwin A. Folding tricycle wheel for folding golf cart. 4,289,324, Cl. 280-38.000.
Nemoto, Kuniichi. Sound effects producer. 4,290,053, Cl. 340-384.00E.
Nessi, Aurindo, to Innocenti Santeustacchio S.p.A. Device for inserting and pushing a bar into a press-piercing mill. 4,289,012, Cl. 72-209.000.
Neubert, Terry C., to General Tire & Rubber Company, The. Adhesion of polyamide or polyester cords to rubber. 4,289,683, Cl. 260-38.000.

Neumann, Gerhard: *See—*
Disselbeck, Dieter; Neumann, Gerhard; Ott, Karl-Heinz; Strobel, Gunther; and Zalewski, Edwin, 4,289,627, Cl. 210-702.000.
Neumann, Jurgen, to Hoechst Aktiengesellschaft. Level indicating device. 4,289,026, Cl. 73-290.00R.
New Balance Athletic Shoe, Inc.: *See—*
Norton, Edward J.; and Graham, Kenneth W., 4,288,929, Cl. 36-69.000.
Newton, Derek A.: *See—*
Cocks, Philip J.; and Newton, Derek A., 4,288,906, Cl. 29-526.00R.
Neyroud, Jean; and Ollivier, Francois, to La Telemecanique Electrique. Reading stroke codes. 4,289,957, Cl. 235-462.000.
NGK Spark Plugs Co., Ltd.: *See—*
Mayumi, Kazuhisa; Suzuki, Katsumi; and Tsuboi, Fujio, 4,289,990, Cl. 313-143.000.
NHK Spring Co., Ltd.: *See—*
Urano, Takayuki, 4,289,218, Cl. 188-134.000.
Niagara Machine & Tool Works: *See—*
Proga, Norbert J., 4,289,066, Cl. 100-53.000.
Nicholl, Thomas H. Aerodynamic device. 4,288,942, Cl. 46-74.00D.
Nicia, Antonius J. A.: *See—*
Franken, Adrianus J. J.; Khoe, Giok D.; Kuyt, Gerard; Van Leest, Johannes H. F. M.; Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Smulders, Hendricus F. G., 4,289,374, Cl. 350-96.200.
Nickerson, Harvey R.: *See—*
Press, Irving D.; and Nickerson, Harvey R., 4,289,340, Cl. 285-382.400.
Niederprum, Hans: *See—*
Mitschke, Karl-Heinz; and Niederprum, Hans, 4,289,646, Cl. 252-305.000.
Nielsen, Anker J., Jr., to Omco, Inc. Pick-resistant tubular lock and key for operating the same. 4,289,000, Cl. 70-34.000.
Nijman, John P., to Bunker Ramo Corporation. Method and apparatus for making a crimped, insulation-pierce electrical connection. 4,288,918, Cl. 29-868.000.
Ninagawa, Yoichi: *See—*
Okabe, Susumu; Omura, Yoshiaki; Ninagawa, Yoichi; and Fujita, Yoshiji, 4,289,786, Cl. 424-312.000.
Nippon Electric Co., Ltd.: *See—*
Inagawa, Takashi; Kushida, Naoto; Sekiguchi, Akira; Ikeda, Matujiro; Sugawara, Hidetoshi; and Naito, Kunio, 4,290,037, Cl. 335-202.000.
Kobayashi, Masahisa, 4,289,926, Cl. 178-19.000.
Matsumoto, Masashige; Kobuna, Hideaki; Hiraide, Seiji; and Kawai, Kouichi, 4,289,575, Cl. 156-656.000.
Shoji, Masashi, 4,290,026, Cl. 330-255.000.
Sugimoto, Shigetoki; and Minemura, Kouichi, 4,289,373, Cl. 350-96.160.
Utsumi, Kazuaki; Shohata, Nobuaki; and Ohno, Tomeji, 4,290,041, Cl. 338-21.000.
Nippon Electric Glass Company, Limited: *See—*
Murakawa, Takeyoshi; Sakamoto, Tetsuo; and Oka, Yutaka, 4,289,523, Cl. 65-172.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Yokoyama, Kenji, 4,290,024, Cl. 330-85.000.
Nippon Hoso Kyokai: *See—*
Taketoshi, Kazuhisa, 4,289,369, Cl. 339-118.00R.
Nippon Kogaku K.K.: *See—*
Wakabayashi, Hiroshi; and Ohtsubo, Yoshiaki, 4,289,388, Cl. 354-25.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Ando, Ryo; Sato, Kazuyoshi; and Honda, Akira, 4,289,462, Cl. 425-8.000.
Nippon Light Metal Company Limited: *See—*
Akabame, Noboru; and Yoshino, Hitoshi, 4,289,301, Cl. 256-13.100.
Nippon Petrochemical Company, Limited: *See—*
Sato, Atsushi; Shimizu, Isoo; and Gotoh, Masahito, 4,289,918, Cl. 585-422.000.
Nippon Petrochemicals Company, Limited: *See—*
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, 4,289,806, Cl. 427-150.000.
Nippon Steel Corporation: *See—*
Yoshiwara, Seishiro; and Higashiyama, Hirokichi, 4,289,011, Cl. 72-208.000.
Nippondenso Co., Ltd.: *See—*
Kinugawa, Masumi; Omori, Norio; and Sueishi, Motoharu, 4,289,100, Cl. 123-339.000.
Taniguchi, Koichi; Katayama, Minoru; Sangu, Osamu; and Hori, Shinichi, 4,290,109, Cl. 364-481.000.
Nishimura, Satoshi: *See—*
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Nissan Motor Company, Limited: *See—*
Katsumata, Masaaki; Onoda, Michio; Takagi, Yasuo; and Yoneda, Kenji, 4,289,102, Cl. 123-425.000.
Shioyama, Giichi, 4,289,108, Cl. 123-571.000.
Tamamushi, Masahiro; and Katakura, Kazuo, 4,289,345, Cl. 296-37.160.
Yabuta, Keiichiro, 4,289,329, Cl. 280-804.000.
Nitta, Tomio, to Tokai Seiki Co., Ltd. Cigaret gas lighter. 4,289,478, Cl. 431-344.000.
Nix, Robert J.: *See—*
Crittenden, David E.; Angarola, Barry R.; Nix, Robert J.; and Meier, William A., 4,289,175, Cl. 140-93.400.
Noda Institute for Scientific Research: *See—*
Marumo, Shingo; and Katayama, Masato, 4,289,852, Cl. 435-136.000.
Noell, Godwin L.; and Haynes, Paul L., Jr., to Chandler Evans Inc. Bearing lubrication system for gear pump having clearance between bearing and housing wall for preventing entry of contaminants larger than lubrication passage. 4,289,460, Cl. 418-78.000.
Nolf, Jean-Marie E., to N.V. Raychem S.A. Heat-shrinkable article. 4,289,553, Cl. 156-86.000.
Noll, Klaus; Speicher, Wolfgang; Pedain, Josef; and Schmid, Rosemarie, to Bayer Aktiengesellschaft. Moisture hardening one-component lacquers and a process for coating leather. 4,289,827, Cl. 428-423.400.
Nomura, Masaaki: *See—*
Takada, Shigetaka; Nomura, Masaaki; and Itoh, Manabu, 4,289,104, Cl. 123-471.000.
Nomura, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid reservoir for brake master cylinder. 4,289,162, Cl. 137-572.000.
Noraberg, John, to List, Hans. Fuel injection pump for a compression-ignition engine. 4,289,105, Cl. 123-500.000.
Norberg, Helmut; and Kinzel, Richard, to Robert Bosch GmbH. Device for controlling preliminary injection. 4,289,098, Cl. 123-299.000.
Nordenstrom, Bjorn; and Olsson, Jerker, to Tekniska Rontgencentralen AB. Apparatus for destroying a selected part of biological tissue. 4,289,135, Cl. 128-419.00R.
Norel, Guy; and Desbrandes, Robert, to Institut Francais du Petrole. Sonde with rotatable pad for carrying out logging measurements in a borehole. 4,289,025, Cl. 73-152.000.
Norman, Spencer: *See—*
Badger, Dale R., 4,289,010, Cl. 72-114.000.
North American Utility Construction Corp.: *See—*
Stark, Virgil, 4,289,118, Cl. 126-440.000.
Northrop Corporation: *See—*
Malm, Robert, 4,290,140, Cl. 375-46.000.
Norton, Edward J.; and Graham, Kenneth W., to New Balance Athletic Shoe, Inc. Motion control device for athletic shoe. 4,288,929, Cl. 36-69.000.
Noyes, Walter O.; and Helft, John M. Liquid level alarm for remotely indicating when less than a predetermined quantity of fuel oil remains in a storage tank and method for installing the same. 4,290,059, Cl. 340-624.000.
Nuovo Pignone S.p.A.: *See—*
Traversari, Alessandro; and Giacomelli, Enzo, 4,289,322, Cl. 277-188.00A.
N.V. Optische Industrie "De Oude Delft": *See—*
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N.V. Raychem S.A.: *See—*
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Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, to Mitsui Toatsu Chemicals, Incorporated. Process for the production of N-(hydroxyphenyl) maleimides. 4,289,699, Cl. 260-326.5FM.
O'Barr, Vernon L. Golf simulating game. 4,289,315, Cl. 273-298.000.
Oberpichler, Gerd: *See—*
Dorpmund, Heinz; and Oberpichler, Gerd, 4,289,044, Cl. 74-688.000.
O'Brien, John W. Automatic ladler. 4,289,259, Cl. 222-590.000.
O'Donnell, Royce L. Simulated log siding. 4,288,954, Cl. 52-233.000.
Ogren, Sven O.: *See—*
Bengtsson, Karl S.; Thorberg, Seth O.; and Ogren, Sven O., 4,289,781, Cl. 424-267.000.
O'Hanlon, Edward J. Heating and cooling of a heavily insulated building through the use only of solar energy. 4,289,115, Cl. 126-430.000.
Ohara, Minoru: *See—*
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,289,688, Cl. 260-112.00R.
Ohno, Hideshi: *See—*
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Ohno, Tomeji: *See—*
Utsumi, Kazuaki; Shohata, Nobuaki; and Ohno, Tomeji, 4,290,041, Cl. 338-21.000.
Ohsawa, Kiyotaka: *See—*
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Ohtsubo, Yoshiaki: *See—*
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Oka, Yutaka: *See—*
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Okabe, Susumu; Omura, Yoshiaki; Ninagawa, Yoichi; and Fujita, Yoshiji, to Kuraray Co., Ltd. Farnesylacetic acid ester derivatives. 4,289,786, Cl. 424-312.000.
Okada, Masaru: *See—*
Ikeda, Hideo; Tsuchiya, Hideshi; and Okada, Masaru, 4,289,937, Cl. 179-119.00R.
Okada, Motohiro, to Honda Giken Kogyo Kabushiki Kaisha. Air bag device for cars. 4,289,327, Cl. 280-737.000.
Okai, Sakuo: *See—*
Hallman, Robert W.; Kimoto, Koichi; and Okai, Sakuo, 4,289,071, Cl. 101-395.000.
Okamura, Kiyohito: *See—*
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Okawa, Takashi: *See—*
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Okumura, Takeshi: *See—*
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Okutsu, Hiroyasu, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Wall-hanging type magnetic displaying device. 4,288,934, Cl. 40-426.000.

Olbermann, Joseph M., to Wilkerson Corporation. Modular clamping system for pressure fluid components. 4,289,335, Cl. 285-91.000.

Oldham, Dale R.: *See—*
Hanaford, Donald E.; and Oldham, Dale R., 4,289,564, Cl. 156-425.000.

Olin Corporation: *See—*
Gray, Thomas J., 4,289,650, Cl. 252-425.300.
Kadija, Igor V., 4,289,601, Cl. 204-296.000.
Turley, Richard J., 4,289,712, Cl. 260-967.000.
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,289,946, Cl. 164-503.000.

Ollivier, Francois: *See—*
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Olson, Stephen T., to International Business Machines Corporation. Encoder for monitoring bidirectional motion. 4,289,983, Cl. 310-49.00R.

Olsson, Jerker: *See—*
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Olympus Optical Company Limited: *See—*
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Omco, Inc.: *See—*
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O'Meara, James R., Jr. Device for treating fluids with magnetic lines of force. 4,289,621, Cl. 210-222.000.

Omori, Norio: *See—*
Kinugawa, Masumi; Omori, Norio; and Soeishi, Motoharu, 4,289,100, Cl. 123-339.000.

Omura, Yoshiaki: *See—*
Okabe, Susumu; Omura, Yoshiaki; Ninagawa, Yoichi; and Fujita, Yoshiji, 4,289,786, Cl. 424-312.000.

Onizawa, Masao, to Sanyo Trading Co., Ltd. Curable rubber compositions with amino acids. 4,289,861, Cl. 525-346.000.

Onoda Cement Co., Ltd.: *See—*
Itoh, Tsutomu, 4,289,278, Cl. 239-706.000.

Onoda, Michio: *See—*
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Onoue, Keiji: *See—*
Yoshida, Yoshiaki; Suzuki, Osamu; Onoue, Keiji; and Seiki, Kazuo, 4,288,975, Cl. 57-263.000.

Onuma, Kiyoshi; and Arai, Hajime, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic coupling with a lock-up clutch. 4,289,220, Cl. 192-3.300.

Ootsu, Fumio. Underwater accumulator for pressurized gas. 4,289,425, Cl. 405-210.000.

O'Rourke, Thomas E., Jr., to United Technologies Corporation. Turbofan engine having core supercharging stage. 4,288,983, Cl. 60-226.00R.

Orso, Francis L., to Corning Glass Works. Sealing glass-ceramic articles. 4,289,538, Cl. 106-286.500.

Orth, Dieter: *See—*
Gante, Joachim; Radunz, Hans-Eckart; Orth, Dieter; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,289,768, Cl. 424-247.000.
Schacht, Erich; Kurmeier, Hans-Adolf; Gante, Joachim; Lissner, Reinhard; Melzer, Guido; and Orth, Dieter, 4,289,774, Cl. 424-250.000.

Orth, Hans: *See—*
Romer, Rudolf; Lips, Hendrik R.; Furch, Benjamin; and Orth, Hans, 4,289,073, Cl. 102-476.000.

Ortho Diagnostics, Inc.: *See—*
Baughman, D. Joseph; and Lytwyn, Ann, 4,289,498, Cl. 23-230.00B.
Hoskins, Michael K.; and Christiansen, Gary D., 4,289,648, Cl. 252-408.000.

Ortho Pharmaceutical Corporation: *See—*
Heavner, George; Tjoeng, Foe-Siong; and Goldstein, Gideon, 4,289,759, Cl. 424-177.000.

Ostertag, Karl: *See—*
Vollbrecht, Balf; and Ostertag, Karl, 4,289,718, Cl. 264-50.000.

Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, to TDK Electronics Co., Ltd. Magnetic recording medium and process. 4,289,828, Cl. 428-425.900.

Otis Engineering Corporation: *See—*
Fredd, John V., 4,289,165, Cl. 137-625.320.
Fredd, John V., 4,289,201, Cl. 166-183.000.
Henderson, William D., 4,289,202, Cl. 166-212.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, 4,289,883, Cl. 546-158.000.

Ott, Karl-Heinz: *See—*
Disselbeck, Dieter; Neumann, Gerhard; Ott, Karl-Heinz; Strobel, Gunther; and Zalewski, Edwin, 4,289,627, Cl. 210-702.000.

Overman, Sherman A., to Monterey Shelf, Inc. Shelf support member incorporating integral live hinge. 4,289,289, Cl. 248-235.000.

Overton, John S., to FMC Corporation. Puller tool. 4,288,900, Cl. 29-263.000.

Owens-Corning Fiberglas Corporation: *See—*
Dereser, Ernst, 4,289,536, Cl. 106-99.000.
Rolston, John A., 4,289,427, Cl. 405-260.000.

Owens-Illinois, Inc.: *See—*
Kontz, Robert F., 4,289,046, Cl. 74-711.000.

Oxoid Limited: *See—*
Whitley, Donald C., 4,289,855, Cl. 435-287.000.

Oy Tampella AB: *See—*
Salmi, Pekka, 4,289,209, Cl. 173-107.000.

Paap, Hans J., to Texaco Inc. Microwave-gamma ray water in crude monitor. 4,289,020, Cl. 73-61.10R.

Paccione, Anthony. Hair styling device. 4,289,153, Cl. 132-85.000.

Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., to Eli Lilly and Company. Antiviral 1-sulfonylbenzimidazoles. 4,289,782, Cl. 424-273.00B.

Paige Company Containers, Inc., The: *See—*
Paige, Richard E., 4,289,268, Cl. 229-41.00B.

Paige, Richard E., to Paige Company Containers, Inc., The. Foldable carton. 4,289,268, Cl. 229-41.00B.

Palloch, Herbert; and Erndt, Hans, to Frankl & Kirchner GmbH & Co. KG. Optoelectronic synchro generator. 4,289,962, Cl. 250-231.0SE.

Palmer, Douglas S.: *See—*
Rock, Gail A.; and Palmer, Douglas S., 4,289,691, Cl. 260-112.00B.

Palmer, Douglas Stephen: *See—*
Rock, Gail A.; and Palmer, Douglas S., 4,289,691, Cl. 260-112.00B.

Papantoniou, Christos: *See—*
Mahieu, Claude; and Papantoniou, Christos, 4,289,752, Cl. 424-47.000.

Pape, Karl, to Volkswagenwerk AG. Component subjected to thermal stresses and having parts for intended breakage. 4,289,170, Cl. 138-117.000.

Paper, Inc.: *See—*
Booth, Barclay, 4,289,556, Cl. 156-157.000.

Parietti, Pietro. Pressure regulator for combustible gases, in particular for internal-combustion motors. 4,289,106, Cl. 123-527.000.

Parise, Carl, to Parise & Sons, Inc. Hot water vacuum extraction machine with reverse fan cooled vacuum motor. 4,288,885, Cl. 15-321.000.

Parise & Sons, Inc.: *See—*
Parise, Carl, 4,288,885, Cl. 15-321.000.

Parker, John W., to General Signal Corporation. Fail-safe active band-pass filter using a modified twin-T filter. 4,290,027, Cl. 330-293.000.

Parks, Earl L.; and Zaidel, Simon A., to General Electric Company. Process for forming low-reactance interconnections on semiconductors. 4,289,846, Cl. 430-314.000.

Parr, Armin; Kleffner, Harald; and Leder, Harald, to INTERATOM, Internationale Atomreaktorbau GmbH. Nuclear reactor collecting tank with thermal insulation. 4,289,582, Cl. 176-38.000.

Parsen, Frank E.; and Graham, Teresita O., to Duracell International Inc. Method of forming in situ gelled anode. 4,288,913, Cl. 29-623.500.

Particle Data, Inc.: *See—*
Berg, Robert H.; and Karuhn, Richard F., 4,290,011, Cl. 324-71.0CP.

Pasarela, Nunzio R.; and Jang, Choong-Gook, to American Cyanamid Co. Solid compositions of a pyrazolium salt, urea and a liquid surfactant. 4,289,525, Cl. 71-92.000.

Paschke, Edward E.: *See—*
Donohue, John A.; and Paschke, Edward E., 4,289,870, Cl. 528-193.000.

Paskert, Joseph H., to Eaton Corporation. Sheet metal nail. 4,289,058, Cl. 411-451.000.

Pate, Johnny L. Maternity pillow. 4,288,879, Cl. 5-431.000.

Patil, Arvind S., to BASF Wyandotte Corporation. Pigments stable at high temperatures. 4,289,745, Cl. 423-594.000.

Paul Wurth, S.A.: *See—*
Legille, Edouard; and Kremer, Victor, 4,290,067, Cl. 343-12.00R.

Paulson, Arnold E.: *See—*
Jabsen, Felix S.; Schluderberg, Donald C.; and Paulson, Arnold E., 4,289,196, Cl. 165-83.000.

PB Gelatines: *See—*
Hanak, Gyula, 4,289,067, Cl. 100-117.000.

Pearce, Roscoe L.; and Martin, Charles W., to Dow Chemical Company, The. Process for removing H_2S from sour gases with generation of a Claus feed gas. 4,289,738, Cl. 423-228.000.

Pearce, Warren, Jr.; Schramme, Stephan H.; Lightner, John L.; and McGee, Joseph A., to General Motors Corporation. Injectable grommet assembly. 4,289,924, Cl. 174-152.00G.

Pearson, Joe T.: *See—*
Killmeyer, Charles W., deceased; Lane, James E.; Taylor, Leslie L., Jr.; and Pearson, Joe T., 4,289,465, Cl. 425-111.000.

Pedain, Josef: *See—*
Noll, Klaus; Speicher, Wolfgang; Pedain, Josef; and Schmid, Rosemarie, 4,289,827, Cl. 428-423.400.

Pederson, Lester A.: *See—*
Economy, James; Lyerla, James R.; and Pederson, Lester A., 4,289,573, Cl. 156-643.000.

Peel, John L.; and Waites, William M., to National Research Development Corp. Improvements in methods of sterilization. 4,289,728, Cl. 422-24.000.

Peerless Pump Division, Indian Head, Inc.: *See—*
Kuc, Henry, 4,289,317, Cl. 277-1.000.

Penley, Percy A., to Celanese Corporation. High-speed transplanter. 4,289,080, Cl. 111-3.000.

Penner, Gary W. Work piece holder for woodworking machine. 4,289,305, Cl. 269-43.000.

Pennwalt Corporation: *See—*
McKellin, Wilbur H., 4,289,914, Cl. 568-567.000.

Perfection Manufacturing Company, The: *See—*
Hoffmann, Ralph L., 4,289,309, Cl. 272-73.000.

Perrault, Guy; Lavertu, Roger; and Drolet, Jean-Francois, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. High-energy explosive or propellant composition. 4,289,551, Cl. 149-19.400.

Persson, John A.: *See—*
Davis, Howard F., Jr.; and Persson, John A., 4,289,537, Cl. 106-100.000.

Pesch, Jurgen, to G. Siempelkamp GmbH & Co. Apparatus for the pressing of mats of pressable material, especially for the production of particleboard. 4,289,467, Cl. 425-141.000.

Pestka, Sidney; and Rubinstein, Menachem, to Hoffmann-La Roche Inc. Protein purification process and product. 4,289,690, Cl. 260-112.00R.

Pestka, Sidney: *See—*
Friesen, Heinz-Jurgen; and Pestka, Sidney, 4,289,689, Cl. 260-112.00R.

Peter, Donald: *See—*
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,289,641, Cl. 252-96.000.

Peters, Douglas J., to Ford Motor Company. Engine carburetor throttle blade positioning control. 4,289,107, Cl. 123-571.000.

Peters, Edward N., to Union Carbide Corporation. Curable resin compositions comprising hydroxyl-terminated unsaturated polyester oligomer, a polyisocyanate, an ethylenically unsaturated monomer and a catalyst. 4,289,682, Cl. 260-37.00N.

Petersen, Jorgen S., to Rockwool International A/S. Method for the insulation of roofs. 4,288,964, Cl. 52-747.000.

Petropoulos, Constantine C.: *See—*
Tan, Zoilo C. H.; Petropoulos, Constantine C.; and Rauner, Frederick J., 4,289,842, Cl. 430-270.000.

Pfaff Industriemaschinen GmbH: *See—*
Bolldorf, Kurt; and Bruckner, Ernst, 4,289,086, Cl. 112-221.000.

Pfizer Inc.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,289,704, Cl. 260-345.80R.
Campbell, Simon F.; Danilewicz, John C.; Evans, Anthony G.; and Ham, Allan L., 4,289,772, Cl. 424-250.000.
Gruetsmacher, Gordon D.; and Stephens, Charles R., 4,289,702, Cl. 260-343.700.
Lombardino, Joseph G., 4,289,879, Cl. 544-49.000.

Phillips Petroleum Company: *See—*
Clear, Elmer E., 4,289,632, Cl. 252-8.5LC.
Hofferber, James A., 4,289,588, Cl. 203-2.000.
Johnson, Paul H., 4,289,742, Cl. 423-450.000.
Makovec, Donald J., 4,290,110, Cl. 364-500.000.
Myers, John W., 4,289,919, Cl. 585-664.000.
Swanson, Billy L., 4,289,203, Cl. 166-274.000.
Young, Richard K., 4,289,198, Cl. 165-159.000.

Pickens, George O., to United States of America, Navy. Towed array condition appraisal system. 4,290,123, Cl. 367-13.000.

Pieper, Paul; and Cordier, Walter, to Rolf Peddinghaus. Circular saw with means for opening up the cut slit. 4,289,054, Cl. 83-113.000.

Pierre Fabre S.A.: *See—*
Cousse, Henri; and Mouzin, Gilbert, 4,289,770, Cl. 424-248.540.

Pierson, Karl B., to Betts Machine Company. Receptacle apparatus for housing components of a lighting system. 4,290,098, Cl. 362-267.000.

Pierson, Leslie E. Vent valve for a mobile tank. 4,289,163, Cl. 137-587.000.

Pietzka, Gerhard: *See—*
Kolling, Georg; Pietzka, Gerhard; Romey, Ingo; and Tillmanns, Harald, 4,289,604, Cl. 208-106.000.

Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Okutsu, Hiroyasu, 4,288,936, Cl. 40-426.000.

Pilsak, Manfred: *See—*
Block, Werner; Pilsak, Manfred; Dusedau, Klaus; and Greiler, Wolfgang, 4,290,097, Cl. 362-264.000.

Pilwat, Gunter: *See—*
Zimmermann, Ulrich; Pilwat, Gunter; Bock, Karin; and Buers, Hermann J., 4,289,756, Cl. 424-101.000.

Pinnow, Douglas A.: *See—*
Garvin, Hugh L.; and Pinnow, Douglas A., 4,289,381, Cl. 350-320.000.

Pioneer Electronic Corporation: *See—*
Kotaka, Fumitaka, 4,290,132, Cl. 369-45.000.
Takaoka, Saburo; and Higashi, Ryozi, 4,289,928, Cl. 179-1.00D.

Piotrowski, Alfred B.: *See—*
Davis, Robert H.; and Piotrowski, Alfred B., 4,289,636, Cl. 252-49.300.

Piotti, Peter B., to Gould Inc. Method and apparatus for controlling battery recharging. 4,290,002, Cl. 320-20.000.

Piper, Bert W., to Piper, Bert William. Portable key seat cutter for shafts. 4,289,434, Cl. 409-177.000.

Piper, Bert William: *See—*
Piper, Bert W., 4,289,434, Cl. 409-177.000.

Pitney Bowes, Inc.: *See—*
Stelben, John J., 4,289,395, Cl. 355-3.0BE.

Pitroda, Satyan G.; and Mehta, Madhukumar A., to Wescom Switching Inc. Integrated automatic call distribution facility and PBX system. 4,289,934, Cl. 179-27.00D.

Pitt, Paul E.; Glaser, Edward L.; and Galie, Louis M., to System Development Corporation. Data processing method and means for determining degree of match between two data arrays. 4,290,115, Cl. 364-900.000.

Plaskolite Inc.: *See—*
Casamayor, Jorge, 4,289,818, Cl. 428-43.000.

Platts, Michael J.: *See—*
Comyns-Carr, Cecil A.; and Platts, Michael J., 4,289,455, Cl. 417-332.000.

Plempel, Manfred: *See—*
Sasse, Klaus; Haller, Ingo; Plempel, Manfred; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,289,771, Cl. 424-249.000.

Plessey Company Limited, The: *See—*
Arnold, John S., 4,289,939, Cl. 179-170.00D.

Plessey Incorporated: *See—*
Devlin, Daniel J., 4,289,922, Cl. 174-52.0FP.

Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Le Moullac, Roger, 4,289,463, Cl. 425-47.000.

Pogorzhelsky, Viktor I.: *See—*
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

Poignet, Alain: *See—*
Marti, Bernard; Poignet, Alain; Savary, Jean-Yves; and Brusq, Roger, 4,290,062, Cl. 340-721.000.

Polyakov, Vasily V.: *See—*
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

Polychrome Corporation: *See—*
Rowe, William; and Golda, Eugene, 4,289,838, Cl. 430-163.000.

Pope, Jessie M. Twin curling iron. 4,289,151, Cl. 132-37.00R.

Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M. Electrical machine with cryogenic cooling. 4,289,985, Cl. 310-61.000.

Popp, Franz: *See—*
Herb, Armin; Popp, Franz; and Ruoff, Hanspeter, 4,289,257, Cl. 222-146.0HE.

Portalier, Claude L. L.: *See—*
Lecourt, Guy B. E.; and Portalier, Claude L. L., 4,289,168, Cl. 138-109.000.

Porter, Carl W. Combination sea valve and deballast pump. 4,289,457, Cl. 417-424.000.

Porter, Thomas M., to H. K. Porter, Inc. Chain link tool. 4,289,015, Cl. 72-384.000.

Ports, Kenneth A., to Harris Corporation. Method for qualifying biased integrated circuits on a wafer level. 4,288,911, Cl. 29-574.000.

Potoczky, Joseph B. Apparatus and method for injection molding of elongated hollow plastic container walls. 4,289,726, Cl. 264-318.000.

Potter, David: *See—*
Stewart, Robert E.; Flahive, Barry J.; and Potter, David, 4,290,133, Cl. 370-85.000.

Potters, Cornelis J. T.: *See—*
Franken, Adrianus J. J.; Khoe, Giok D.; Kuyt, Gerard; Van Leest, Johannes H. F. M.; Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Smulders, Hendricus F. G., 4,289,374, Cl. 350-96.200.

Powell, John C.: *See—*
Stoker, James E.; and Powell, John C., 4,289,082, Cl. 112-79.00R.

Powers, Vernon B.; and Crawford, Harry I., to E-Systems, Inc. CMOS Compatible bipolar drive circuit with protective clamp. 4,289,977, Cl. 307-270.000.

PPG Industries, Inc.: *See—*
Briody, Robert G.; and Cummings, Frances M., 4,289,593, Cl. 204-158.00R.
Christenson, Roger M.; Maska, Rudolf; Dowbenko, Rostyslawa; and Hockswender, Thomas R., 4,289,674, Cl. 260-29.6NR.
Dahlberg, J. Robert, 4,289,261, Cl. 225-2.000.
Killmeyer, Charles W., deceased; Lane, James E.; Taylor, Leslie L., Jr.; and Pearson, Joe T., 4,289,465, Cl. 425-111.000.

Prause, Reinhard; and Schlengermann, Udo, to Krautkramer-Branson, Inc. Ultrasonic test apparatus for tubes and rods. 4,289,033, Cl. 73-622.000.

Premier Industrial Corporation: *See—*
Allenbaugh, George G., 4,289,277, Cl. 239-452.000.

Press, Irving D.; and Nickerson, Harvey R., to Resistoflex Corporation. Mechanically attached end fitting with insert for metal tubing. 4,289,340, Cl. 285-382.400.

Price, Ernest J., to E. J. Price (Developments) Limited. Foot pumps. 4,289,458, Cl. 417-464.000.

Price, George M.: *See—*
Moore, Lewis F.; and Price, George M., 4,289,477, Cl. 431-171.000.

Pridham, Roger G.; and Mucci, Ronald A., to Raytheon Company. Beamformer with reduced sampling rate. 4,290,127, Cl. 367-123.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Belfort, Gerard L. A., 4,289,694, Cl. 260-208.000.
Vuillemenot, Jacques; and Grimaud, Edouard, 4,289,915, Cl. 568-609.000.

Proga, Norbert J., to Niagara Machine & Tool Works. Hydraulic position control for mechanical power press slides. 4,289,066, Cl. 100-53.000.

Prueter, E. D.: *See—*
West, Walter H.; and Prueter, E. D., 4,288,896, Cl. 29-157.10R.

Prueter, William P.: *See—*
Carter, Hudson R.; Kidwell, John H.; and Prueter, William P., 4,289,514, Cl. 55-398.000.

Ptaszek, George W.; and Hudson, Robert H. Simulated firing and sighting system. 4,288,943, Cl. 46-227.000.

Puckette, Charles M., to General Electric Company. Digitally programmable phase shifter. 4,290,022, Cl. 328-55.000.

Pudvan, Donna I.: *See—*
Allen, Anna M.; and Pudvan, Donna I., 4,289,308, Cl. 272-70.000.

Pullman Incorporated: *See—*
Keller, Norman L., 4,289,229, Cl. 198-633.000.

Puthawala, Anwer, to Kraftwerk Union Aktiengesellschaft. Method for binding liquid-containing radioactive wastes and kneading machine therefor. 4,289,407, Cl. 366-75.000.

Quantel S.A.: *See—*
Michelet, Guy, 4,289,379, Cl. 350-419.000.

Quayle, Lawrence L., to Maytag Company, The. Self-cleaning float mechanism. 4,289,154, Cl. 134-56.00D.

Quest Automation Limited: *See—*
Lambden, Martin R., 4,289,925, Cl. 178-18.000.

Quietlite International, Ltd.: *See—*
Harper, Clarence E.; and Elliott, William J., 4,289,993, Cl. 315-311.000.

Quinn, Paul A., Jr.: *See—*
Cornelius, Rorger W.; Hill, James D.; and Quinn, Paul A., Jr., 4,289,411, Cl. 400-126.000.

Raaness, Ola S.; and Bakken, Jon A., to SINTEF (Selskapet for Industriell og Teknisk Forskning ved NTH). Plasma burners. 4,289,949, Cl. 219-121.0PR.

Rabeneck, Kenneth H.; Kantlehner, Jerry R.; and Gallaher, David E. Manufacture of sealed-end tubular thermoplastic net bagging. 4,289,569, Cl. 156-580.200.

Rader, Dennis, to Schlumberger Technology Corp. Percussion method and apparatus for the investigation of a casing cement in a borehole. 4,289,023, Cl. 73-151.000.

Radigan, Steven J.; and Berry, Robert L., to Fairchild Camera & Instrument Corp. Process for patterning metal connections on a semiconductor structure by using an aluminum oxide etch resistant layer. 4,289,574, Cl. 156-643.000.

Radovanovich, George D.: *See—*
Carpenter, David A.; Kossoff, George; and Radovanovich, George D., 4,289,140, Cl. 128-660.000.

Radunz, Hans-Eckart: *See—*
Gante, Joachim; Radunz, Hans-Eckart; Orth, Dieter; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,289,768, Cl. 424-247.000.

Rahdener Maschinenfabrik August Kolbus GmbH & Co. KG: *See—*
Hedrich, Winfried, 4,289,493, Cl. 493-389.000.

Rait, Joseph M. Safety razor with means to slidably mount cartridge. 4,288,919, Cl. 30-47.000.

Ralston, Richard W.: *See—*
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,290,118, Cl. 365-183.000.

Ramunas, Valdas S., to Acme-Cleveland Corporation. Object centering and moving mechanism. 4,289,051, Cl. 82-45.000.

Ransom, Charles R. Safety charge measuring device for cartridge loading machines. 4,289,258, Cl. 222-308.000.

Rapoport, Henry; Weller, Dwight D.; and Gless, Richard D., to United States of America, Health & Human Services. 4A-Aryl-decahydroisoquinolines. 4,289,882, Cl. 546-141.000.

Rapp, Eugen: *See—*
Grullmeier, Artur, 4,288,987, Cl. 60-560.000.

Rassbach, Felix, to Hoechst Aktiengesellschaft. Tubular packaging sheath and process for its manufacture. 4,289,171, Cl. 138-145.000.

Rathmell, William G.: *See—*
Worthington, Paul A.; de Fraine, Paul; Rathmell, William G.; and Gatehouse, Diana M., 4,289,526, Cl. 71-92.000.

Rauchholz, Alvin W.: *See—*
Sawyer, David H.; Henige, Joseph A.; and Rauchholz, Alvin W., 4,289,572, Cl. 156-617.0SP.

Rauner, Frederick J.: *See—*
Tan, Zoilo C. H.; Petropoulos, Constantine C.; and Rauner, Frederick J., 4,289,842, Cl. 430-270.000.

Rawlins, James J., to United States of America, Air Force. Uniform load piston ring. 4,289,264, Cl. 277-27.000.

Raytheon Company: *See—*
Feist, Wolfgang M., 4,289,550, Cl. 148-175.000.
Pridham, Roger G.; and Mucci, Ronald A., 4,290,127, Cl. 367-123.000.

RCA Corporation: *See—*
Clay, Burton R., 4,289,372, Cl. 350-3.830.
Maddox, William J., 4,289,406, Cl. 356-429.000.

Rebish, Edward J., to Lamson & Sessions Co., The. Bolt holding machine wrench. 4,289,049, Cl. 81-56.000.

Recker, Florian B. Torque transmitting coupling. 4,289,414, Cl. 403-12.000.

Reeber, Morton D.: *See—*
Carpenter, Charles; Fugardi, Joseph F.; Gregor, Lawrence V.; Grosewald, Peter S.; and Reeber, Morton D., 4,290,079, Cl. 357-71.000.

Reed, Roger R. Conferencing communications system. 4,289,932, Cl. 179-18.0BC.

Reeder, Willes W.: *See—*
Csurgay, Gregory; and Reeder, Willes W., 4,289,219, Cl. 192-2.000.

Reese, Stanton L.: *See—*
Worthington, Ralph E.; Luke, Donald A.; and Reese, Stanton L., 4,289,609, Cl. 209-11.000.

Reese, Thurston F. Apparatus for reheating, storing and conveying cast bars. 4,289,944, Cl. 219-10.410.

Regie National des Usines Renault: *See—*
Bellot, Dominique; and Cohenca, Alain, 4,289,195, Cl. 165-12.000.

Regie Nationale des Usines Renault: *See—*
Brisabois, Roger, 4,289,045, Cl. 74-701.000.

Reicherts, James E.; and Veschuroff, William C., to United States Gypsum Company. Method for making a mobile home ceiling construction. 4,289,554, Cl. 156-92.000.

Reiff, Helmut: *See—*
Friederich, Klaus; Heinze, Gerhard; Reiff, Helmut; Michael, Dietrich; Schon, Manfred; Markusch, Peter; Haberland, Ulrich; Dieterich, Dieter; and Merten, Josef, 4,289,672, Cl. 260-29.2TN.

Reim, Werner; Gernlein, Hermann; and Zimmermann, Helmuth, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Conveying device for a packing machine or the like. 4,289,228, Cl. 198-339.000.

Reinehr, Dieter, to Ciba-Geigy Corporation. 2-Aza-1,3-dienes. 4,289,905, Cl. 564-248.000.

Remick, Robert J.: *See—*
Lee, Tien S.; Sammells, Anthony F.; and Remick, Robert J., 4,289,835, Cl. 429-50.000.

Remy, Ernst; and Unsold, Eberhard. Apparatus for adjusting the focal point of an operating laser beam focused by an objective. 4,289,378, Cl. 350-174.000.

Renishaw Electrical Limited: *See—*
McMurtry, David R., 4,288,925, Cl. 33-174.00L.

Rennison, Stuart C.: *See—*
Boutle, David L.; Rennison, Stuart C.; and Lambert, Stuart G., 4,289,843, Cl. 430-271.000.

Repp, John R.; and Smith, Donald H., to Ford Motor Company. Seat belt system. 4,289,328, Cl. 280-803.000.

Resistoflex Corporation: *See—*
Press, Irving D.; and Nickerson, Harvey R., 4,289,340, Cl. 285-382.400.

Resovszki, Gabor: *See—*
Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth, Zoltan, 4,289,894, Cl. 560-82.000.

Reuter, Wolfgang: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,289,775, Cl. 424-251.000.

Rheinmetall GmbH: *See—*
Romer, Rudolf; Lips, Hendrik R.; Furch, Benjamin; and Orth, Hans, 4,289,073, Cl. 102-476.000.

Rho-Chem Corporation: *See—*
Roehl, Ernest O., 4,289,542, Cl. 134-11.000.

Rhodes, Glenn D. Method and conveyor for snow removal. 4,288,931, Cl. 37-10.000.

Rhodes, Melvin H., to Rockwell International Corporation. Magnetic field strength measuring apparatus with triangular waveform drive means. 4,290,018, Cl. 324-255.000.

Rhone-Poulenc Industries: *See—*
Joubert, Daniel, 4,289,643, Cl. 252-103.000.

Rhone-Poulenc Systemes: *See—*
Michel, Claude, 4,289,394, Cl. 354-299.000.

Rhynes, Oden H. Adjustable fish scorer. 4,288,921, Cl. 30-304.000.

Rich, Guy A., to Albee Laboratories, Inc. Symmetrical quaternary ammonium compounds and their use in heavy metals recovery. 4,289,530, Cl. 75-101.0BE.

Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., to Shell Oil Company. Chemical process for backsurging fluid through well casing perforations. 4,289,633, Cl. 252-8.55B.

Richardson-Merrell Inc.: *See—*
Jones, Winton D.; and Miller, Francis P., 4,289,767, Cl. 424-246.000.

Richardson-Vicks Inc.: *See—*
Dhabhar, Dadi J.; and Shah, Nutan B., 4,289,754, Cl. 424-52.000.
Dhabhar, Dadi J., 4,289,755, Cl. 424-52.000.

Richter, Rudolf: *See—*
Disselbeck, Dieter; and Richter, Rudolf, 4,289,628, Cl. 210-703.000.

Ricoh Co., Ltd.: *See—*
Jinnai, Koichiro; and Iwasaki, Kyuhachiro, 4,290,073, Cl. 346-75.000.

Riedel, Ronald J., to Ryco Mfg. Co. Enclosure for meters. 4,289,361, Cl. 312-100.000.

Rieman, Robert D. Surgical instrument and method of using the same. 4,289,132, Cl. 128-303.140.

Rienzo, Donald D., Sr. Percutaneous pain alleviator methods. 4,289,136, Cl. 128-421.000.

Riley, Harry J., to S. W. Hart & Co. Pty. Ltd. Socket connection for an enamelled vessel. 4,289,334, Cl. 285-55.000.

Riley, Jack G.: *See—*
Warsinske, Arthur E., 4,289,270, Cl. 233-27.000.

Rilling, Ulrich: *See—*
Schotten, Alfons; Spolgen, Herman J.; and Rilling, Ulrich, 4,289,618, Cl. 210-142.000.

Ritz, Jurgen; Hotze, Hermann; and Mummenthey, Hans-Dieter, to Hoechst Aktiengesellschaft. Process for the preparation of copolymers. 4,289,866, Cl. 526-320.000.

Rivin, Evgeny I. Pneumatic wheels for vehicles. 4,289,187, Cl. 152-418.000.

Robert Bosch GmbH: *See—*
Block, Werner; Pilsak, Manfred; Dusedau, Klaus; and Greiler, Wolfgang, 4,290,097, Cl. 362-264.000.
Foerster, Hubert, 4,290,081, Cl. 358-4.000.
Frister, Manfred, 4,289,449, Cl. 416-185.000.
Knorreck, Peter, 4,289,101, Cl. 123-364.000.
Maly, Hans-Peter, 4,289,976, Cl. 307-247.00R.
Norberg, Helmut; and Kinzel, Richard, 4,289,098, Cl. 123-299.600.

Robert, Ramon C. Device for filtering and for humidifying the admission air of an internal combustion engine. 4,289,508, Cl. 55-234.000.

Roberts, Marvin. Wheel improvement for roller skates. 4,289,323, Cl. 280-11.210.

Roberts, Thomas G., to United States of America, Army. Radiation energy detector and analyzer. 4,289,966, Cl. 250-378.000.

Robertshaw Controls Company: *See—*
Everett, Charles J., 4,289,963, Cl. 250-231.00P.

Robichaud, Roger E. Optical time domain reflectometer. 4,289,398, Cl. 356-73.100.

Robinson, David M., to Goldblatt Tool Company. Detachable step. 4,289,215, Cl. 182-92.000.

Robinson, Jeffery H., to Beecham Group Limited. Interferon production. 4,289,850, Cl. 435-68.000.

Rock, Gail A.; and Palmer, Douglas S., to Canadian Red Cross Society, The; Rock, Gail Ann; and Palmer, Douglas Stephen. Method of obtaining intermediate purity factor VIII. 4,289,691, Cl. 260-112.00B.

Rock, Gail Ann: *See—*
Rock, Gail A.; and Palmer, Douglas S., 4,289,691, Cl. 260-112.00B.

Rocket Research Corporation: *See—*
Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, 4,289,089, Cl. 118-306.000.

Rockwell International Corporation: *See—*
Alers, George A.; Thompson, Robert B.; and Vasile, Carmine F., 4,289,030, Cl. 73-588.000.
Fortunko, Christopher M., 4,290,017, Cl. 324-237.000.
Rhodes, Melvin H., 4,290,018, Cl. 324-255.000.

Rockwool International A/S: *See—*
Petersen, Jorgen S., 4,288,964, Cl. 52-747.000.

Rodeck, Hans J., to Rollei-Werke Franke & Heidecke GmbH & Co. Shutter speed display for viewfinder of a photographic camera. 4,289,391, Cl. 354-219.000.

Rodgers, David: *See—*
Levy, John V.; Rodgers, David; Stewart, Robert E.; and Casabona, Richard J., 4,290,102, Cl. 364-200.000.

Rodgers, James L., to Kurta Corporation. Graphic communication apparatus. 4,289,927, Cl. 178-19.000.

Rody, Jean; and Slongo, Mario, to Ciba-Geigy Corporation. Tetra-alkyl piperidine derivatives as light stabilizers. 4,289,686, Cl. 260-45.8NT.

Roe, Frank L., to Baxter Travenol Laboratories, Inc. Tubing connection for containers generally utilizing dissimilar materials. 4,289,337, Cl. 285-158.000.

Roe International, Inc.: *See—*
Duda, Werner, 4,288,923, Cl. 33-138.000.

Roehl, Ernest O., to Rho-Chem Corporation. Method of vapor degreasing. 4,289,542, Cl. 134-11.000.

Rogers, Bernard T. Liquid pressure control system. 4,289,178, Cl. 144-188.000.

Rogers, Norman H.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,289,779, Cl. 424-263.000.

Rogge, Russell C.: *See—*
Helmbreck, Andrew J., 4,288,878, Cl. 2-427.000.

Rohm and Haas Company: *See—*
Arkens, Charles T., 4,289,823, Cl. 428-245.000.
Calder, G. Vincent; and Mercurio, Andrew, 4,289,678, Cl. 260-33.6UA.

Rolf Peddinghaus: *See—*
Pieper, Paul; and Cordier, Walter, 4,289,054, Cl. 83-113.000.

Rolfe, Norman F., to Waters Associates, Inc. Dissipating electrical charge. 4,289,975, Cl. 307-246.000.

Rollei-Werke Franke & Heidecke GmbH & Co.: *See—*
Rodeck, Hans J., 4,289,391, Cl. 354-219.000.

Rolls-Royce Limited: *See—*
McMurtry, David R., 4,288,925, Cl. 33-174.00L.

Rolston, John A., to Owens-Corning Fiberglas Corporation. Process for installing roof bolts. 4,289,427, Cl. 405-260.000.

Romer, Rudolf; Lips, Hendrik R.; Furch, Benjamin; and Orth, Hans, to Rheinmetall GmbH. Warhead with a plurality of slave missiles. 4,289,073, Cl. 102-476.000.

Romey, Ingo: *See—*
Kolling, Georg; Pietzka, Gerhard; Romey, Ingo; and Tillmanns, Harald, 4,289,604, Cl. 208-106.000.

Romig, Joseph H.: *See—*
Fogelberg, Clement V.; and Romig, Joseph H., 4,289,816, Cl. 428-35.000.

Roncaglione, Walter. Portable sublimation refrigerator-freezer. 4,288,996, Cl. 62-384.000.

Roncarolo, Giuseppe, to Fiat Trattori S.p.A. Device for controlling agricultural implements mounted on an agricultural vehicle. 4,289,208, Cl. 172-7.000.

Ronen, Ram S., to Xerox Corporation. High voltage MOSFET with inter-device isolation structure. 4,290,077, Cl. 357-41.000.

Ronen, Ram S., to Xerox Corporation. High voltage MOSFET without field plate structure. 4,290,078, Cl. 357-41.000.

Rose, Bobby H., to Gold King Mfg. Co. Attachment flange for flexible conduit. 4,289,355, Cl. 299-9.000.

Roseen, Rutger A., to Studsvik Energiteknik AB. Heat storing solar collector device. 4,289,112, Cl. 126-415.000.

Rosenblatt, Stephen L. Automated cooker. 4,289,064, Cl. 99-334.000.

Rosenbusch, Kurt: *See—*
Hudec, Gustav; Keil, Karl-Heinz; Kohler, Volker; and Rosenbusch, Kurt, 4,289,665, Cl. 260-21.000.

Rossetti, Pierre C., to Silec-Semi-Conducteurs. Method for metallizing ceramic substrates and new, thus obtained products. 4,289,829, Cl. 428-469.000.

Rostoucher, Guy, to Kuhn S. A. Haymaking machines for tedding and windrowing. 4,288,972, Cl. 56-370.000.

Rothfuss, Robert G., to Senco Products, Inc. Cut-through backup washer for the scalpel of an intraluminal surgical stapling instrument. 4,289,133, Cl. 128-334.00C.

Rotork Limited: *See—*
Hore, Donald L., 4,289,038, Cl. 74-2.000.

Rovin, Herman. Bobbin loading apparatus for sewing machines. 4,289,085, Cl. 112-181.000.

Rowan, Hugh H.; Mueller, Max B.; and Lazarus, Stanley D., to Allied Chemical Corporation. Method to increase reactor capacity for polycondensation of polyesters. 4,289,871, Cl. 528-309.000.

Rowe, William; and Golda, Eugene, to Polychrome Corporation. Diazo-unsaturated monomer light sensitive compositions. 4,289,838, Cl. 430-163.000.

Rowland, Stanley P., to United States of America, Agriculture. Process for producing durable-press cotton fabrics with improved balances of textile properties. 4,289,673, Cl. 260-29.40R.

Roy, Pradip K.: *See—*
Kleiner, Fredric; Roy, Pradip K.; and Kuchman, Michael J., 4,289,794, Cl. 426-660.000.

Royer, Gerard, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Ink drop generator for ink jet printer. 4,290,074, Cl. 346-75.000.

Rubinstein, Menachem: *See—*
Pestka, Sidney; and Rubinstein, Menachem, 4,289,690, Cl. 260-112.00R.

Ruble, Eulalia B., executrix: *See—*
Ruble, Theodore A., deceased, 4,289,743, Cl. 423-450.000.

Ruble, Theodore A., deceased (by Ruble, Eulalia B., executrix), to Sid Richardson Carbon & Gasoline Co. Double venturi carbon black reactor system. 4,289,743, Cl. 423-450.000.

Rue, Marvin E.: *See—*
Shefbuch, Robert J.; and Rue, Marvin E., 4,289,424, Cl. 405-179.000.

Rueggeberg, Werner: *See—*
Bagley, George E.; McCreary, Willard E.; and Rueggeberg, Werner, 4,289,798, Cl. 427-39.000.

Ruf, Max: *See—*
Ehemann, Horst; and Ruf, Max, 4,289,159, Cl. 137-454.400.

Ruhl, Werner: *See—*
Haker, Rolf; Fuhrer, Heinz-Georg; van Rijckevorsel, Rainer; Ruhl, Werner; and Thiery, Joachim, 4,290,113, Cl. 364-900.000.

Ruoff, Hanspeter: *See—*
Herb, Armin; Popp, Franz; and Ruoff, Hanspeter, 4,289,257, Cl. 222-146.0HE.

Rusch, Heinz, to Willy Rusch GmbH & Co. KG. Laryngeal tube. 4,289,128, Cl. 128-207.150.

Russ Schneider & Associates: *See—*
Schneider, John R.; and Mangione, Joseph F., 4,289,615, Cl. 210-91.000.

Russell, James T.; and Davis, Thomas J., to Exxon Nuclear Company, Inc. Magnetostrictive non-contacting pressure detection system. 4,289,987, Cl. 310-26.000.

Rutgers, Hendrik J., to U.S. Philips Corporation. Detachable plug and track receptacle for electrical connections. 4,289,365, Cl. 339-21.00R.

Rutschke, Roger M. Cigarette package closure. 4,289,234, Cl. 206-259.000.

Ryan, Ben T.: *See—*
Duncan, Jimmie D.; and Ryan, Ben T., 4,289,714, Cl. 261-34.00R.

Ryco Graphic Manufacturing, Inc.: *See—*
Switall, Thomas G., 4,289,167, Cl. 137-869.000.

Ryco Mfg. Co.: *See—*
Riedel, Ronald J., 4,289,361, Cl. 312-100.000.

Ryobi Ltd.: *See—*
Morimoto, Yoshinori, 4,289,283, Cl. 242-84.20R.

S. C. Johnson & Son, Inc.: *See—*
Hernandez, Pablo M., 4,289,671, Cl. 260-28.5AV.

S. W. Hart & Co. Pty. Ltd.: *See—*
Riley, Harry J., 4,289,334, Cl. 285-55.000.

Saba, Manlio; and Szocs, Roberto, to Societa Italiana Telecomunicazioni Siemens S.p.A. Circuit arrangement for compensating temperature-dependent frequency variations of a crystal-controlled oscillator. 4,290,145, Cl. 455-113.000.

Sabad, Joseph J.: *See—*
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; Martone, James F.; and Sabad, Joseph J., 4,289,666, Cl. 260-23.00H.
Creekmore, Fred M.; Kennair, Dorothy J.; Livingston, Benjamin F.; and Sabad, Joseph J., 4,289,670, Cl. 260-28.5AV.

Sabatka, Winston E., to Finishing Equipment, Inc. Solvent recovery method. 4,289,586, Cl. 203-1.000.

Sable, Chester A., to Anthony Pools, Div. of Anthony Indus. Apparatus for cleaning a swimming pool. 4,289,155, Cl. 134-167.00R.

Sado, Ryoichi; and Morikawa, Yoshitusgu, to Shin-Etsu Polymer Company, Ltd. Keyboard switch covering pads. 4,289,940, Cl. 200-5.00A.

Sado, Ryoichi, to Shin-Etsu Polymer Co., Ltd. Push-button switches. 4,289,943, Cl. 200-159.00B.
Sahara, Masayoshi: *See—*
Kobori, Toshio; and Sahara, Masayoshi, 4,289,389, Cl. 354-31.000.
Saint-Gobain Industries: *See—*
Battigelli, Jean A.; and Bouquet, Francois, 4,289,518, Cl. 65-15.000.
Saito, Hirokazu; Suzuki, Keiichi; Shimizu, Masayuki; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Apparatus for making silver halide grains. 4,289,733, Cl. 422-227.000.
Saito, Koji: *See—*
Enjoji, Susumu; and Saito, Koji, 4,289,139, Cl. 128-660.000.
Saito, Nobuo: *See—*
Sugie, Mamoru; Yamaguchi, Noboru; Mayama, Koichi; Kita, Yuzo; Yoshizawa, Shigeru; Saito, Nobuo; and Asano, Atsushi, 4,290,117, Cl. 365-15.000.
Sakai, Yoshihiro: *See—*
Abe, Masaru; Sakai, Yoshihiro; Enoki, Yasutaka; and Sawada, Noriyasu, 4,289,183, Cl. 152-209.00B.
Sakamoto, Hitoshi; and Takano, Kazuhiro, to Sony Corporation. Tape control apparatus. 4,289,284, Cl. 242-186.000.
Sakamoto, Junji; and Kishi, Hiroyasu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Pulsive component detecting apparatus. 4,289,981, Cl. 307-350.000.
Sakamoto, Tetsuo: *See—*
Murakawa, Takeyoshi; Sakamoto, Tetsuo; and Oka, Yutaka, 4,289,523, Cl. 65-172.000.
Salmi, Pekka, to Oy Tampella AB. Impact device with fluid tool rotation motor. 4,289,209, Cl. 173-107.000.
Samek, Norbert E., to Bell & Howell Company. Electrode structures and interconnecting system. 4,289,384, Cl. 350-392.000.
Sammells, Anthony F.: *See—*
Lee, Tien S.; Sammells, Anthony F.; and Remick, Robert J., 4,289,835, Cl. 429-50.000.
Sampey, Larry A., Sr.: *See—*
Sampey, William P.; and Sampey, Larry A., Sr., 4,289,421, Cl. 404-106.000.
Sampey, William P.; and Sampey, Larry A., Sr. Concrete road paving assembly. 4,289,421, Cl. 404-106.000.
Sampson, Milo J. Material handling apparatus. 4,289,619, Cl. 210-159.000.
Sampson, Robert W.; and Franke, Francis H., to UOP Inc. High temperature injection and vaporization system for gas chromatography. 4,289,029, Cl. 73-863.110.
Sandoz Ltd.: *See—*
Henzi, Beat, 4,289,693, Cl. 260-146.00R.
Lister, Gordon H., 4,289,496, Cl. 8-477.000.
Spiegel, Rene, 4,289,780, Cl. 424-267.000.
Traber, Rene P.; Kuhn, Max; Hofmann, Hans; and Harri, Eugen, 4,289,851, Cl. 435-71.000.
Sandvik Aktiebolag: *See—*
Lumen, Karl L. G., 4,289,211, Cl. 175-410.000.
Sangamo Weston, Inc.: *See—*
Greenfield, George, 4,290,023, Cl. 330-9.000.
Sangu, Osamu: *See—*
Taniguchi, Koichi; Katayama, Minoru; Sangu, Osamu; and Hori, Shinichi, 4,290,109, Cl. 364-481.000.
Sanpei, Konomu; and Fujii, Tadaaki, to Hitachi, Ltd. Standing wave ratio detecting apparatus. 4,290,009, Cl. 324-57.00R.
Sansregret, Joseph L., to Exxon Research and Engineering Co. Electrochemical oxidation of amorphous silicon. 4,289,602, Cl. 204-32.00S.
Sanyo Electric Co., Ltd.: *See—*
Sakamoto, Junji; and Kishi, Hiroyasu, 4,289,981, Cl. 307-350.000.
Sanyo Trading Co., Ltd.: *See—*
Onizawa, Masao, 4,289,861, Cl. 525-346.000.
Sargeant, Roger E., to Innovate, Inc. Pneumatic dental scaler. 4,289,486, Cl. 433-118.000.
Sarvas, Walter P., to General Electric Company. Method for making high resolution phosphorescent output screens. 4,289,799, Cl. 427-65.000.
Sasaki, Teruo: *See—*
Tominaga, Ichiro; and Sasaki, Teruo, 4,289,031, Cl. 73-597.000.
Tominaga, Ichiro; and Sasaki, Teruo, 4,289,032, Cl. 73-599.000.
Sasse, Klaus; Haller, Ingo; Plempel, Manfred; Zeiler, Hans-Joachim; and Metzger, Karl G., to Bayer Aktiengesellschaft. 3-Sulphonyl-benzo-1,2,4-triazine and 3-sulphonyl-benzo-1,2,4-triazine 1-oxide compounds, their production and their medicinal use. 4,289,771, Cl. 424-249.000.
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, to Nippon Petrochemicals Company, Limited. Pressure-sensitive recording material. 4,289,806, Cl. 427-150.000.
Sato, Atsushi; Shimizu, Isoo; and Gotoh, Masahito, to Nippon Petrochemical Company, Limited. Aralkylation. 4,289,918, Cl. 585-422.000.
Sato, Kazuyoshi: *See—*
Ando, Ryo; Sato, Kazuyoshi; and Honda, Akira, 4,289,462, Cl. 425-8.000.
Sato, Koji: *See—*
Usami, Akira; Uebayashi, Toshiaki; Sato, Koji; and Goda, Tomoko, 4,289,130, Cl. 128-287.000.
Sato, Takeshi; and Kojima, Hiroshi, to Bridgestone Tire Company Limited. Pneumatic tires for large size and high speed motorcycles. 4,289,182, Cl. 152-209.00R.
Sato, Yoshitoshi, to Yamamoto Electric Industrial Co., Ltd. Controller for electric motor. 4,290,042, Cl. 338-113.000.
Satoh, Paul S., to Upjohn Company, The. Horizontal electrophoresis or isoelectric focusing apparatus and method of using same. 4,289,596, Cl. 204-180.00R.
Satou, Takateru: *See—*
Ishida, Toshihiko; and Satou, Takateru, 4,289,285, Cl. 242-199.000.
Savary, Jean-Yves: *See—*
Marti, Bernard; Poignet, Alain; Savary, Jean-Yves; and Brusq, Roger, 4,290,062, Cl. 340-721.000.
Sawada, Noriyasu: *See—*
Abe, Masaru; Sakai, Yoshihiro; Enoki, Yasutaka; and Sawada, Noriyasu, 4,289,183, Cl. 152-209.00B.
Sawamura, Mitsuyoshi, to Amada Company, Limited. Deviation detecting apparatus for a bandsaw blade for horizontal bandsaw machines. 4,289,053, Cl. 83-62.100.
Sawyer, David H.; Henige, Joseph A.; and Rauchholz, Alvin W., to Dow Corning Corporation. Method of closing silicon tubular bodies. 4,289,572, Cl. 156-617.0SP.
Scafaro, Vincent J. Expansion tool. 4,289,050, Cl. 81-311.000.
Scapa-Porritt Limited: *See—*
Miller, Terence, 4,289,173, Cl. 139-383.00A.
Schabowski, Albin J.: *See—*
Kielma, Ervin J.; Schabowski, Albin J.; and Currer, John T., 4,288,909, Cl. 29-568.000.
Schacht, Erich; Kurmeier, Hans-Adolf; Gante, Joachim; Lissner, Reinhard; Melzer, Guido; and Orth, Dieter, to Merck Patent Gesellschaft mit beschrankter Haftung. Lipid lowering and anti-thrombotic 6-arylpyridazin-3-ones and a process for their preparation. 4,289,774, Cl. 424-250.000.
Schaefer, Edward J., to Franklin Electric Co., Inc. Centrifugal mechanism and switch. 4,289,988, Cl. 310-68.00E.
Schaper, Ulf-Armin; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Perfume compositions containing tricyclo[5.2.1.$0^{2,6}$]decane carboxylic acid esters. 4,289,660, Cl. 252-522.00R.
Scheirer, James W.: *See—*
Chuss, David M.; and Scheirer, James W., 4,289,584, Cl. 201-39.000.
Schering, Aktiengesellschaft: *See—*
Albrecht, Rudolf; Schroder, Eberhard; and Bottcher, Irmgard, 4,289,777, Cl. 424-258.000.
Kruger, Hans-Rudolf, 4,289,897, Cl. 560-159.000.
Laurent, Henry; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim-Friedrich, 4,289,763, Cl. 424-243.000.
Scherr, Ronald R. Preheater for aircraft engines. 4,289,095, Cl. 123-142.50R.
Schetina, Otto: *See—*
Hintermann, Rudolf; Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, 4,289,357, Cl. 299-81.000.
Scheu, William E., Jr. Electrically heated solder extractor. 4,289,953, Cl. 219-230.000.
Scheuerman, Ronald F.: *See—*
Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., 4,289,633, Cl. 252-8.55B.
Schibline, Patrick J., to Marathon Electric Manufacturing Corp. Brushless exciter rotor mounting. 4,289,989, Cl. 310-261.000.
Schiefer, Erwin, to Hilti Aktiengesellschaft. Expansion dowel. 4,289,062, Cl. 411-34.000.
Schildkraut, Alan L., to Bendix Corporation, The. Full mate indicator for detachable connectors. 4,289,368, Cl. 339-89.00M.
Schinski, William L.; and Freenor, Francis J., III, to Chevron Research. Lactone substituted aniline preparation. 4,289,701, Cl. 260-343.600.
Schlengermann, Udo: *See—*
Prause, Reinhard; and Schlengermann, Udo, 4,289,033, Cl. 73-622.000.
Schliep, Hans-Jochen: *See—*
Gante, Joachim; Radunz, Hans-Eckart; Orth, Dieter; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,289,768, Cl. 424-247.000.
Schlobohm, Joachim: *See—*
Warncke, Ernst; Schlobohm, Joachim; and Behnke, Jurgen, 4,289,238, Cl. 206-527.000.
Schluderberg, Donald C.: *See—*
Jabsen, Felix S.; Schluderberg, Donald C.; and Paulson, Arnold E., 4,289,196, Cl. 165-83.000.
Schlumberger Technology Corp.: *See—*
Rader, Dennis, 4,289,023, Cl. 73-151.000.
Schmeckenbecher, Arnold F.: *See—*
McIntosh, Charles M.; and Schmeckenbecher, Arnold F., 4,289,719, Cl. 264-61.000.
Schmid, Rosemarie: *See—*
Noll, Klaus; Speicher, Wolfgang; Pedain, Josef; and Schmid, Rosemarie, 4,289,827, Cl. 428-423.400.
Schmidt, Fritz. Plate and method for laying railway level crossings. 4,289,273, Cl. 238-8.000.
Schmidt, Henry, Jr.; Cederholm, Allen E.; and Zievers, James F., to Industrial Filter & Pump Mfg. Co. Filter cake removal method and apparatus. 4,289,630, Cl. 210-785.000.
Schmidt, Reinhard: *See—*
Burkhardt, Rudolf; Meyer, Gunther; Schmidt, Reinhard; and Thewalt, Klaus, 4,289,895, Cl. 560-92.000.
Schmidt, Robert C. H. Aiming post light. 4,290,095, Cl. 362-191.000.
Schmitt, Frederick L.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,146, Cl. 131-276.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,705, Cl. 260-345.100.
Schmitz, John S.: *See—*
Steele, Thomas L., 4,289,008, Cl. 72-83.000.
Schnee, Rolf; Kraus, Franz; Kiel, Friedrich; Kliem, Helmut; Krick, Wolfgang; and Landgraf, Herbert, to Heinrich-Hertz-Institut fur Nachrichtentechnik Berlin GmbH. Interactive cable television system. 4,290,142, Cl. 455-3.000.
Schneider, John R.; and Mangione, Joseph F., to Russ Schneider & Associates. Filter media mover for plate type filter. 4,289,615, Cl. 210-91.000.
Schnitz, Louis: *See—*
Frankhouser, Douglas L.; Schnitz, Louis; and Greenstadt, Joseph C., 4,289,244, Cl. 211-117.000.
Schnur, Andrew C.; and Wilhelm, Donald M., to California Pellet Mill Company. Polylobe drive element. 4,288,998, Cl. 64-9.00R.
Schoeffler, William H. Impact drill bit actuator. 4,289,210, Cl. 175-319.000.
Scholes, Addison B., to Ball Corporation. Modular gas cleaner and method. 4,289,504, Cl. 55-11.000.
Scholta, Owen R., to Thorne Industries, Inc. Air compressor and dispenser. 4,289,225, Cl. 194-9.00T.
Schon, Manfred: *See—*
Friederich, Klaus; Heinze, Gerhard; Reiff, Helmut; Michael, Dietrich; Schon, Manfred; Markusch, Peter; Haberland, Ulrich; Dieterich, Dieter; and Merten, Josef, 4,289,672, Cl. 260-29.2TN.
Schorscher, Ernst: *See—*
Gante, Joachim; Radunz, Hans-Eckart; Orth, Dieter; Schliep, Hans-Jochen; and Schorscher, Ernst, 4,289,768, Cl. 424-247.000.
Schotten, Alfons; Spolgen, Herman J.; and Rilling, Ulrich, to Eberhard Hoesch & Sohne GmbH & Co. Motion control for a filter press. 4,289,618, Cl. 210-142.000.
Schotten, Alfons, to Eberhard Hoesch & Sohne GmbH & Co. Plate filter press with filter cloth transport. 4,289,622, Cl. 210-225.000.
Schramme, Stephan H.: *See—*
Pearce, Warren, Jr.; Schramme, Stephan H.; Lightner, John L.; and McGee, Joseph A., 4,289,924, Cl. 174-152.00G.
Schreck, Ronald: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.
Schreurs, Willy P., to GTE Products Corporation. Fluorescent lamp with a low reflectivity protective film of aluminum oxide. 4,289,991, Cl. 313-489.000.
Schrieber, Glenn H., to Texasgulf Inc. Phosphate ore triple float. 4,289,612, Cl. 209-166.000.
Schroder, Eberhard: *See—*
Albrecht, Rudolf; Schroder, Eberhard; and Bottcher, Irmgard, 4,289,777, Cl. 424-258.000.
Schroeck, Calvin W., to Lubrizol Corporation, The. Process for preparing molybdenum-containing compositions useful for improved fuel economy of internal combustion engines. 4,289,635, Cl. 252-32.70E.
Schubert & Salzer: *See—*
Teubner, Ehrhardt, 4,289,402, Cl. 356-313.000.
Schulte-Elte, Karl-Heinrich; Willhalm, Bruno; and Gautschi, Fritz, to Firmenich SA. Cyclic C_6 esters and their use in perfumes. 4,289,659, Cl. 252-522.00R.
Schultes, Herbert: *See—*
Lermann, Peter; Wagner, Karl; Schultes, Herbert; and Fauth, Gunter, 4,289,390, Cl. 354-187.000.
Schulz, Daniel R. Controller for an air conditioning or heating system. 4,288,990, Cl. 62-158.000.
Schwarz, Eckhard C. A., to Biax Fiberfilm Corp. Chemically-impregnated microporous films. 4,289,832, Cl. 428-542.000.
Schwarzschild, Jack, to Timex Corporation. Lighted dot matrix display. 4,289,383, Cl. 350-334.000.
Schymura, Konrad, to Metallgesellschaft Aktiengesellschaft. Apparatus for producing a foamed-glass or foamed-ceramic strip. 4,289,521, Cl. 65-144.000.
Scibelli, John V., to Minnesota Mining and Manufacturing Co. Sterility indicating device. 4,289,088, Cl. 116-218.000.
Scientific Applications Incorporated: *See—*
Carlson, Denny L.; Brissey, David C.; and Vriezelaar, Lee W., 4,288,951, Cl. 52-94.000.
Sciortino, August M. Universal funnel and mounting bracket for coin receptacles of coin operated machines. 4,289,269, Cl. 232-16.000.
SCM Corporation: *See—*
Kane, Bernard J.; and Traynor, Sean G., 4,289,917, Cl. 585-359.000.
Traynor, Sean G.; and Marcelin, George, 4,289,809, Cl. 427-230.000.
Scott, George B. Free standing merchandiser. 4,289,246, Cl. 211-205.000.
Scott Paper Company: *See—*
Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., 4,289,821, Cl. 428-172.000.
Scott, Robert H.; Thigpen, Hubert H.; and Wood, Frank, Jr., to Celanese Corporation. Catalyst metal separation from saturated aliphatic monocarboxylic acids. 4,289,708, Cl. 260-413.000.
Scripa, Lesleigh V.: *See—*
Lazarz, Christine A.; Cook, Edward H., Jr.; and Scripa, Lesleigh V., 4,289,600, Cl. 204-296.000.
Seach, Barry G.: *See—*
Golczewski, Roman; Seach, Barry G.; and Cohen, Solomon E., 4,289,624, Cl. 210-404.000.
Seaman, Robert L., to Borg-Warner Corporation. Angular output transfer case. 4,289,213, Cl. 180-233.000.
Sedlak, John M.: *See—*
Davidson, Craig R.; and Sedlak, John M., 4,289,591, Cl. 204-129.000.
Seegmiller, Wan: *See—*
Young, Bruce O.; and Seegmiller, Wan, 4,289,419, Cl. 404-6.000.
Seeley, Elwin W.: *See—*
Hansen, Peder M.; Hoffman, John G.; Seeley, Elwin W.; and Andrew, Wesley A., 4,290,020, Cl. 324-334.000.
Seeley, Wayne R., to Emerson Electric Co. Electric heating assemblies with a mounted thermostatic switch. 4,289,955, Cl. 219-532.000.
Seibel, Paula; and Stettler, Wayne J., to Seibel, Paula. Diaphragm case or the like. 4,289,232, Cl. 206-37.000.
Seiki, Kazuo: *See—*
Yoshida, Yoshiaki; Suzuki, Osamu; Onoue, Keiji; and Seiki, Kazuo, 4,288,975, Cl. 57-263.000.
Seireg, Ali A.; and Baz, Amr M. S., to Wisconsin Alumni Research Foundation. Pressure regulator for breathing apparatus. 4,289,126, Cl. 128-204.240.
Sekiguchi, Akira: *See—*
Inagawa, Takashi; Kushida, Naoto; Sekiguchi, Akira; Ikeda, Matujiro; Sugawara, Hidetoshi; and Naito, Kunio, 4,290,037, Cl. 335-202.000.
Seko, Kiyoshi; and Ichikawa, Mamoru, to Fuji Machinery Co. Ltd.; and Japan Packaging Machinery Manu. Assn., part interest to each. Center sealing device for a plastic film in a packaging apparatus. 4,288,967, Cl. 53-550.000.
Seko, Kiyoshi; and Ichikawa, Mamoru, to Fuji Machinery Co., Ltd.; and Japan Packaging Machinery Manu. Assn., part interest to each. End sealing device for a plastic film in a packaging apparatus. 4,288,968, Cl. 53-550.000.
Selas Corporation of America: *See—*
Wall, Fraser M.; Kitzen, Maurice R.; and Kreipe, T. Frederick, 4,289,475, Cl. 431-11.000.
Senco Products, Inc.: *See—*
Rothfuss, Robert G., 4,289,133, Cl. 128-334.00C.
Seplin, Stanley. Cartridge and ribbon for use with a single spool stenotype machine. 4,289,413, Cl. 400-196.000.
Serizawa, Norio: *See—*
Fukasawa, Akira; Masaki, Shinzaburo; and Serizawa, Norio, 4,289,706, Cl. 260-369.000.
Serrano, Juan de J., to General Electric Company. Electrically integrated touch input and output display system. 4,290,061, Cl. 340-712.000.
Sethi, Amar J.: *See—*
Yong, Raymond N.; and Sethi, Amar J., 4,289,540, Cl. 127-33.000.
Shah, Nutan B.: *See—*
Dhabhar, Dadi J.; and Shah, Nutan B., 4,289,754, Cl. 424-52.000.
Shah, Ricky H., to Zenith Radio Corporation. Method for providing an electrically conductive bridge in cathode ray tubes. 4,289,800, Cl. 427-68.000.
Shapiro, Aron B.: *See—*
Aroshidze, Jury V.; Kadi-Ogly, Ibragim A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; Fomin, Boris I.; and Yankov, Anatoly F., 4,289,984, Cl. 310-54.000.
Sharkness, James E.: *See—*
Alpaugh, Warren A.; Macur, George J.; and Sharkness, James E., 4,289,594, Cl. 204-158.00R.
Shashaty, Alex, to Fairfield Machine Company. Method and apparatus for simultaneously boring and turning upset pipe end. 4,289,430, Cl. 408-1.00R.
Sheen, Shuh J.: *See—*
Wildman, Samuel G.; and Sheen, Shuh J., 4,289,147, Cl. 131-290.000.
Shefbuch, Robert J.; and Rue, Marvin E., to Rue, Marvin E. Apparatus for laying conduit, cable and the like in or beneath fill material. 4,289,424, Cl. 405-179.000.
Shell Oil Company: *See—*
Barker, Michael D., 4,289,884, Cl. 546-283.000.
Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., 4,289,633, Cl. 252-8.55B.
Shelley, Ralph R., Jr., to Celanese Corporation. Stable aqueous dispersions of mixed resins and process for use as coating compositions. 4,289,811, Cl. 427-239.000.
Shibuya, Tsunenori, to Diesel Kiki Co., Ltd. Swash-plate type compressor. 4,289,453, Cl. 417-269.000.
Shier, Stephen F. Percussion kit. 4,289,056, Cl. 84-412.000.
Shimada, Toshikazu; Katayama, Yoshifumi; and Komatsubara, Kiichi F., to Hitachi, Ltd. Light-sensitive film. 4,289,822, Cl. 428-212.000.
Shimadzu Corporation: *See—*
Koga, Kenichiro; Hirose, Yoshiharu; Kanno, Iwao; Uemura, Kazuo; and Miura, Shuichi, 4,289,965, Cl. 250-363.00S.
Shimano Industrial Company Limited: *See—*
Nagano, Masashi, 4,289,490, Cl. 474-144.000.
Shimizu, Hidetoshi: *See—*
Shirai, Kenji; Shimizu, Hidetoshi; and Tanoue, Junichi, 4,289,216, Cl. 188-72.200.
Shimizu, Isoo: *See—*
Sato, Atsushi; Shimizu, Isoo; and Matsuzaka, Eiichi, 4,289,806, Cl. 427-150.000.
Sato, Atsushi; Shimizu, Isoo; and Gotoh, Masahito, 4,289,918, Cl. 585-422.000.
Shimizu, Masayuki: *See—*
Saito, Hirokazu; Suzuki, Keiichi; Shimizu, Masayuki; and Miyahara, Junji, 4,289,733, Cl. 422-227.000.

Shin-Etsu Polymer Company, Ltd.: *See*—
Sado, Ryoichi; and Morikawa, Yoshitusgu, 4,289,940, Cl. 200-5.00A.
Sado, Ryoichi, 4,289,943, Cl. 200-159.00B.

Shin, Kju H., to Ethyl Corporation. Chemical process for preparing methylene bis-anilines. 4,289,906, Cl. 564-330.000.

Shinoda, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Altitude compensating device of an internal combustion engine. 4,289,103, Cl. 123-440.000.

Shionogi & Co., Ltd.: *See*—
Hoshino, Yoshikazu; and Shuto, Masayoshi, 4,290,008, Cl. 324-57.00R.

Shioyama, Giichi, to Nissan Motor Company, Limited. Exhaust gas recirculation rate control device. 4,289,108, Cl. 123-571.000.

Shirai, Kenji; Shimizu, Hidetoshi; and Tanoue, Junichi, to Toyota Jidosha Kogyo Kabushiki. Disc brake. 4,289,216, Cl. 188-72.200.

Shishido, Toetsu: *See*—
Yajima, Seishi; Shishido, Toetsu; Okamura, Kiyohito; Kayano, Hideo; Hayashi, Josaburo; and Kobayashi, Hiroshi, 4,289,720, Cl. 264-63.000.

Shlykov, Gennady N.: *See*—
Tikhonov, Valentin N.; Zhestkov, Vitaly I.; Shlykov, Gennady N.; Diachkov, Vasily M.; Mukhin, Viktor M.; and Zhigalov, Gennady V., 4,288,889, Cl. 19-236.000.

Shohata, Nobuaki: *See*—
Utsumi, Kazuaki; Shohata, Nobuaki; and Ohno, Tomeji, 4,290,041, Cl. 338-21.000.

Shoji, Masashi, to Nippon Electric Co., Ltd. Power amplifier whose bias voltage changes depending on power supply voltage. 4,290,026, Cl. 330-255.000.

Shulgin, Grigory M.: *See*—
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

Shum, Valentin B.: *See*—
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

Shuto, Masayoshi: *See*—
Hoshino, Yoshikazu; and Shuto, Masayoshi, 4,290,008, Cl. 324-57.00R.

Shutt, Harry: *See*—
Connolly, David C. A.; and Shutt, Harry, 4,289,930, Cl. 179-2.0TV.

Sid Richardson Carbon & Gasoline Co.: *See*—
Ruble, Theodore A., deceased, 4,289,743, Cl. 423-450.000.

SIDMAR Maritieme Staalnijverheid NV., Siderurgie Maritime S.A.: *See*—
Monteyne, Guido, 4,289,519, Cl. 65-19.000.

Siegler, Frederick. Air broom. 4,288,886, Cl. 15-330.000.

Siegwart, Emil. Fluid flow regulator. 4,289,161, Cl. 137-499.000.

Siemens Aktiengesellschaft: *See*—
Blaess, Gerhard; and Bauernfeind, Karl, 4,290,010, Cl. 324-57.0SS.
Brunner, Heinrich; Drebinger, Peter; Hoehne, Peter; Hoisl, Johann; Kochanowski, Guenter; and Wimmer, Walter, 4,290,136, Cl. 371-25.000.
Kullmann, Dieter, 4,289,986, Cl. 310-61.000.
Stein, Karl U., 4,290,120, Cl. 365-205.000.
Vogelsberg, Dieter, 4,288,976, Cl. 57-293.000.
Woehrle, Patrick; Habock, Adolf; and Muller, Paul F., 4,290,108, Cl. 364-480.000.
Zemanek, Josef, 4,290,135, Cl. 370-110.000.
Zollner, Manfred; Hoffmann, Christian; and Zwicker, Eberhard, 4,289,935, Cl. 179-107.0FD.

Signode Corporation: *See*—
Crittenden, David E.; Angarola, Barry R.; Nix, Robert J.; and Meier, William A., 4,289,175, Cl. 140-93.400.
Massion, Robert J., 4,289,174, Cl. 140-93.400.

Sigri Elektrographit GmbH: *See*—
Kolling, Georg; Pietzka, Gerhard; Romey, Ingo; and Tillmanns, Harald, 4,289,604, Cl. 208-106.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-19-oxo-PGE_2compounds. 4,289,898, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-19-oxo-PGE_1 analogs. 4,289,899, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-11-deoxy-19-oxo-PGE_2 compounds. 4,289,900, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-11-deoxy-19-oxo-PGF_1 compounds. 4,289,901, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-11-deoxy-19-oxo-PGE_1 compounds. 4,289,902, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-6a-carba-PGI_2 sulfonylamides. 4,289,904, Cl. 564-91.000.

Sih, John C.: *See*—
Axen, Udo F.; and Sih, John C., 4,289,893, Cl. 560-55.000.

Silec-Semi-Conducteurs: *See*—
Rossetti, Pierre C., 4,289,829, Cl. 428-469.000.

Simmonds Precision Products, Inc.: *See*—
Wallman, Irwin, 4,289,028, Cl. 73-304.00C.

Simons, Phillip R., to Imperial Chemical Industries Limited. Method of making laminates of thermoplastic polymers by a single-channel coextrusion process and melt injector block for use therein. 4,289,560, Cl. 156-244.180.

Simpson, Jack R., to Container Graphics Corporation. Creasing rule. 4,289,492, Cl. 493-371.000.

Sims, James O. Rotary pump assembly. 4,289,445, Cl. 415-113.000.

Sinay, Hanon S. Medical diagnostic computer. 4,290,114, Cl. 364-900.000.

Singer Company, The: *See*—
Dillon, Keith, 4,290,111, Cl. 364-768.000.

SINTEF (Selskapet for Industriell og Teknisk Forskning ved NTH): *See*—
Raaness, Ola S.; and Bakken, Jon A., 4,289,949, Cl. 219-121.0PR.

Sintokogio Ltd.: *See*—
Uzaki, Nagato; Kawamura, Yasutaro; Kaneto, Kimikazu; and Hasizume, Masaharu, 4,289,194, Cl. 164-170.000.

Skachkov, Jury V.: *See*—
Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,289,985, Cl. 310-61.000.

Slasor, James F.: *See*—
Barnes, Robin R.; Delves, Ronald F.; and Slasor, James F., 4,289,996, Cl. 318-38.000.

Slednev, Vladimir P.: *See*—
Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

Slongo, Mario: *See*—
Rody, Jean; and Slongo, Mario, 4,289,686, Cl. 260-45.8NT.

Smale, Terence C., to Beecham Group Limited. Polycyclic compounds. 4,289,696, Cl. 260-245.20T.

Smith, Chester L.; and Donnally, William, to United States of America, Army. Artillery training rounds target scoring system. 4,289,960, Cl. 250-222.00R.

Smith, Donald H.: *See*—
Repp, John R.; and Smith, Donald H., 4,289,328, Cl. 280-803.000.

Smith, Donald P. Microwave treatment of food products. 4,289,792, Cl. 426-241.000.

Smith, Frederick R., to Avtex Fibers Inc. High fluid-holding alloy rayon fiber mass. 4,289,824, Cl. 428-288.000.

Smith, Harry A. Golf club. 4,289,311, Cl. 273-167.00F.

Smith, Richard J.: *See*—
Thomas, Robert J.; and Smith, Richard J., 4,289,350, Cl. 297-172.000.

Smith, Robert L., to Emhart Industries, Inc. Voltage regulator circuit. 4,290,004, Cl. 323-311.000.

Smith, Roy E., to Urban Transportation Development Corporation Ltd. Steering articulated car. 4,289,075, Cl. 105-4.00R.

Smith, Stephen L., to Motorola, Inc. Apparatus for programming a dynamic EPROM. 4,289,982, Cl. 307-463.000.

Smulders, Hendricus F. G.: *See*—
Franken, Adrianus J. J.; Khoe, Giok D.; Kuyt, Gerard; Van Leest, Johannes H. F. M.; Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Smulders, Hendricus F. G., 4,289,374, Cl. 350-96.200.

Smythe, Daniel L., Jr.: *See*—
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,290,118, Cl. 365-183.000.

Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.P.A.: *See*—
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, 4,289,723, Cl. 264-187.000.

Snipes, Wallace: *See*—
Keith, Alec D.; and Snipes, Wallace, 4,289,749, Cl. 424-28.000.

Snow, Kenneth T., Jr.; and Snow, Robert N. Rigid steel brace for offset trusses. 4,288,961, Cl. 52-738.000.

Snow, Robert N.: *See*—
Snow, Kenneth T., Jr.; and Snow, Robert N., 4,288,961, Cl. 52-738.000.

Soch, Fredrich A., to Minnesota Mining and Manufacturing Company. Fluorochemical foam stabilizer and foamed polyurethanes made therewith. 4,289,892, Cl. 560-26.000.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See*—
Saba, Manlio; and Szocs, Roberto, 4,290,145, Cl. 455-113.000.

S.A. Andre Boet: *See*—
Magnani, Michel; and Moulin, Michel, 4,290,054, Cl. 340-384.00E.

Societe Anonyme dite: L'Oreal: *See*—
Mahieu, Claude; and Papantoniou, Christos, 4,289,752, Cl. 424-47.000.

Societe Anonyme Francaise du Ferodo: *See*—
Cadars, Patrick; and Hellouin di Cenival, Bruno, 4,289,507, Cl. 55-195.000.

Societe Chimique des Charbonnages-CdF Chimie: *See*—
Levresse, Bernard, 4,289,512, Cl. 55-315.000.

Societe d'Etudes de Machines Thermiques S.E.M.T.: *See*—
Curtil, Remi, 4,288,988, Cl. 60-605.000.

Societe Nationale Industrielle Aerospatiale: *See*—
Declerco, Marc A.; and Margant, Gerard, 4,289,448, Cl. 416-140.000.

Societe Nationale Industrielle et Aerospatiale: *See*—
Lecourt, Guy B. E.; and Portalier, Claude L. L., 4,289,168, Cl. 138-109.000.

Soft Bathtub Company, The: *See*—
Bortz, Wayne E., 4,289,717, Cl. 264-46.500.

Sohval, A. Robert: *See*—
Cooperstein, Gerald; Lanza, Richard C.; and Sohval, A. Robert, 4,289,969, Cl. 250-445.00T.

Soloptics, Inc.: *See*—
Meyer, Donald R., Sr., 4,289,119, Cl. 126-440.000.

Solyanichenko, Nikolai A.: *See*—
Stakhov, Alexei P.; Kozak, Andrei A.; Solyanichenko, Nikolai A.; Kuzmin, Ivan V.; and Azarov, Alexei D., 4,290,051, Cl. 340-347.0DD.

Somfai, Eva: *See*—
Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth, Zoltan, 4,289,894, Cl. 560-82.000.

Sony Corporation: *See*—
Hirai, Jun, 4,290,082, Cl. 358-8.000.
Kubota, Shigeo; Ishihara, Tadao; and Kikuchi, Masahiro, 4,289,400, Cl. 356-376.000.
Sakamoto, Hitoshi; and Takano, Kazuhiro, 4,289,284, Cl. 242-186.000.

Sorber, Robert E.; and Gallion, James A., to Keane Monroe Corporation. Electric door operator with slip clutch and dynamic braking. 4,289,995, Cl. 318-9.000.

Soundesign Corporation: *See*—
Yamamoto, Ryuji; and Ohsawa, Kiyotaka, 4,290,090, Cl. 360-72.100.

South African Inventions Development Corporation: *See*—
Vinopal, George W., 4,289,037, Cl. 73-808.000.

Span-Deck, Inc.: *See*—
Cashion, Jerry L., 4,289,293, Cl. 249-74.000.

Spatz, David M.; and Cross, Barrington, to American Cyanamid Company. Para-phenylalkoxy phenylurea and thiourea compounds and herbicidal use thereof. 4,289,903, Cl. 564-20.000.

Specht, Donald P.; Houle, Conrad G.; and Farid, Samir Y., to Eastman Kodak Company. Photopolymerizable compositions featuring novel co-initiators. 4,289,844, Cl. 430-281.000.

Speed Queen Company: *See*—
Altnau, Ronald L., 4,289,320, Cl. 277-67.000.

Speeflo Manufacturing Corporation: *See*—
Malcolm, David H., 4,290,091, Cl. 361-228.000.

Speicher, Wolfgang: *See*—
Noll, Klaus; Speicher, Wolfgang; Pedain, Josef; and Schmid, Rosemarie, 4,289,827, Cl. 428-423.400.

Spence, William G. Multi-purpose vehicle. 4,289,214, Cl. 180-234.000.

Spencer, David R.; and Zuckerman, Leonard, to Litton Systems, Inc. First grate detector for an optical scanning system. 4,290,086, Cl. 358-293.000.

Spencer Wright Industries, Inc.: *See*—
Stoker, James E.; and Powell, John C., 4,289,082, Cl. 112-79.00R.

Sperry Corporation: *See*—
Boirin, Jean-Claude A. E.; and Guenon, Jean-Pierre, 4,289,435, Cl. 414-39.000.
McClure, John R., 4,288,971, Cl. 56-341.000.
Underhill, Kenneth R., 4,288,969, Cl. 56-10.200.
Zipser, Randall E.; and Stringfellow, H. Berton, 4,289,436, Cl. 414-76.000.

Spiegel, Rene, to Sandoz Ltd. Methods of treating sleep disturbance. 4,289,780, Cl. 424-267.000.

Spin Physics, Inc.: *See*—
Bixby, James A.; and Lentz, Robert A., 4,290,087, Cl. 360-33.000.

Spinosa, Dominic J.; and Knoll, Frank, to East/West Industries, Inc. Replaceable harness bracket assembly. 4,289,286, Cl. 244-1.00R.

Spolgen, Herman J.: *See*—
Schotten, Alfons; Spolgen, Herman J.; and Rilling, Ulrich, 4,289,618, Cl. 210-142.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of 2,4,6-trimethylcyclohexanemethanol and derivatives for augmenting or enhancing the aroma or taste of smoking tobacco and smoking tobacco articles. 4,289,146, Cl. 131-276.000.

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Spring, Carl E., to La Crosse Cooler Company. Article dispenser with cam actuated gate. 4,289,254, Cl. 221-295.000.

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Jurek, Dennis J.; Guettel, Marvin A.; and Aslin, Michael, 4,289,948, Cl. 219-110.000.
Jurek, Dennis J., 4,289,951, Cl. 219-110.000.

Squires, David R., to Intersil, Inc. Four terminal voltage tripler for monolithic LCD clock circuit. 4,290,100, Cl. 363-60.000.

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Stamp, Thomas B. Accumulator plate assembly methods. 4,289,193, Cl. 164-109.000.

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Benton, Kenneth C.; Mooney, James R.; and Weinert, Raymond J., Jr., 4,289,651, Cl. 252-429.00B.
Li, George S., 4,289,668, Cl. 260-23.0AR.

Standard Oil Company (Indiana): *See*—
Bockrath, Ronald E., 4,289,874, Cl. 528-487.000.
Donohue, John A.; and Paschke, Edward E., 4,289,870, Cl. 528-193.000.
Kiehn, Robert M., 4,289,404, Cl. 356-351.000.

Stanwood, Jay W.; Clarke, William A.; and MacLeane, Johannes, to Ford Aerospace & Communications Corp. Method for mass producing composite shafts. 4,289,557, Cl. 156-171.000.

Stark, Virgil, to North American Utility Construction Corp. Solar energy system with pivoting lens and collector and conduit system therefor. 4,289,118, Cl. 126-440.000.

Steele, Charles P.: *See*—
Edgell, Thomas A.; Foote, Alfred R.; and Steele, Charles P., 4,289,072, Cl. 102-318.000.

Steele, Roger K.: *See*—
Long, Lennart E.; Steele, Roger K.; Coleman, David F.; and Gustafson, Ralph A., 4,288,926, Cl. 33-174.00P.

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Stein, Reinhardt P., to American Home Products Corporation. 3-[2-(Dimethylamino)-2-phenylethyl]N-[phenylamino)carbonyl]sydnone imine, a new central nervous system stimulant. 4,289,885, Cl. 548-125.000.

Steinberg, Mitchell I.: *See*—
Molloy, Bryan B.; and Steinberg, Mitchell I., 4,289,787, Cl. 424-329.000.

Steinhauer, Roger C.; and Gabriel, Isabelle M., to Armour-Dial, Inc. Pre-wash stick cleaner. 4,289,644, Cl. 252-127.000.

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Gruetsmacher, Gordon D.; and Stephens, Charles R., 4,289,702, Cl. 260-343.700.

Stephens, Geoffrey B.: *See*—
Alcorn, George E.; Hamaker, Raymond W.; and Stephens, Geoffrey B., 4,289,834, Cl. 428-601.000.

Stepp, James D., to BASF Wyandotte Corporation. Solvent stable copper phthalocyanine blue pigments. 4,289,698, Cl. 260-314.500.

Sterling Drug, Inc.: *See*—
Knopp, Paul V.; and Burant, Walter, Jr., 4,289,626, Cl. 210-616.000.

Sterling, Larry D.; and Melvin, Wilbert, Jr., to International Playtex, Inc. Apparatus to lessen the entanglement of tubular fabrics. 4,288,999, Cl. 68-13.00R.

Sterling Merchandise Co.: *See*—
Harris, Ronald J., 4,288,948, Cl. 52-28.000.

Sterman, Albert P.; Gay, Charles H., Jr.; Tegarden, Frederick W.; and Lenahan, Dean T., to General Electric Company. Metal-ceramic turbine shroud and method of making the same. 4,289,447, Cl. 415-200.000.

Stern, Donald J., to Allsop Automatic, Inc. Method for heating ski boots. 4,288,928, Cl. 36-2.600.

Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., to Massachusetts Institute of Technology. Solid state devices combining the use of surface-acoustic-wave devices and charge-coupled devices. 4,290,118, Cl. 365-183.000.

Sternberg, Stanley R.; Lougheed, Robert M.; and Dargel, William O., to Environmental Research Institute of Michigan. Dynamic data correction generator for an image analyzer system. 4,290,049, Cl. 340-146.3MA.

Stettler, Wayne J.: *See*—
Seibel, Paula; and Stettler, Wayne J., 4,289,232, Cl. 206-37.000.

Stevens, James L. Boom lift load relief. 4,289,442, Cl. 414-629.000.

Stewart, Hudson: *See*—
Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, 4,289,089, Cl. 118-306.000.

Stewart, Orvel L., to Sun Tech Energy Corporation. Solar heat treating of well fluids. 4,289,204, Cl. 166-303.000.

Stewart, Robert E.; Flahive, Barry J.; and Potter, David, to Digital Equipment Corporation. System timing means for data processing system. 4,290,133, Cl. 370-85.000.

Stewart, Robert E.: *See*—
Levy, John V.; Rodgers, David; Stewart, Robert E.; and Casabona, Richard J., 4,290,102, Cl. 364-200.000.

Stockton, Raymond F. Terrestrial magnetism responsive method and device including a soft iron bar on a free end of a magnet. 4,288,927, Cl. 33-355.00R.

Stoker, James E.; and Powell, John C., to Spencer Wright Industries, Inc. Knife block for tufting machines. 4,289,082, Cl. 112-79.00R.

Stolle Corporation, The: *See*—
Kaminski, Elton G., 4,289,231, Cl. 198-834.000.

Stolyar, Genrikh L.: *See*—
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,289,731, Cl. 422-206.000.

Stone, Arthur F. Scrubbing apparatus. 4,289,506, Cl. 55-92.000.

Stop-A-Flat Corporation: *See*—
Dubow, Jerome, 4,289,805, Cl. 427-140.000.

Storar, Robert C.: *See*—
Fisher, Bernard; and Storar, Robert C., 4,290,007, Cl. 323-270.000.

Storck, Glenn E., to Thomas & Betts Corporation. Flat conductor cable electrical conductor junction means. 4,289,370, Cl. 339-125.00R.

Strampe, Clarence W. Oil filter cap. 4,289,255, Cl. 222-81.000.

Streckenbach, Wulf-Christian, to Licentia Patent-Verwaltungs-G.m.b.H. Digital phase control circuit including an auxiliary circuit. 4,290,029, Cl. 331-1.00A.

Strehler, Richard; and Bartl, Max, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Shiftable friction clutch for gear drives. 4,289,223, Cl. 192-48.910.

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Zipser, Randall E.; and Stringfellow, H. Berton, 4,289,436, Cl. 414-76.000.

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Disselbeck, Dieter; Neumann, Gerhard; Ott, Karl-Heinz; Strobel, Gunther; and Zalewski, Edwin, 4,289,627, Cl. 210-702.000.

Strom, Richard A.; Bergman, Clark; and Michalek, Paul F., to Control Data Corporation. Plasma display panel flexible circuit connection. 4,289,364, Cl. 339-17.0CF.

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Roseen, Rutger A., 4,289,112, Cl. 126-415.000.

Suchanek, Walton F., Jr.: *See—*
Dyroff, David R.; Graf, Gary F.; Kim, Keun Y.; and Suchanek, Walton F., Jr., 4,289,753, Cl. 424-48.000.

Suda, Seiji; Hasegawa, Taiji; Mouri, Yasunori; and Furuhashi, Toshio, to Hitachi, Ltd. Electronic fuel control system for an internal combustion engine. 4,290,107, Cl. 364-431.000.

Sueishi, Motoharu: *See—*
Kinugawa, Masumi; Omori, Norio; and Sueishi, Motoharu, 4,289,100, Cl. 123-339.000.

Sugawara, Hidetoshi: *See—*
Inagawa, Takashi; Kushida, Naoto; Sekiguchi, Akira; Ikeda, Matujiro; Sugawara, Hidetoshi; and Naito, Kumo, 4,290,037, Cl. 335-202.000.

Sugie, Mamoru; Yamaguchi, Noboru; Mayama, Koichi; Kita, Yuzo; Yoshizawa, Shigeru; Saito, Nobuo; and Asano, Atsushi, to Hitachi, Ltd. Memory device with circulating storage loops. 4,290,117, Cl. 365-15.000.

Sugimoto, Shigetoki; and Minemura, Kouichi, to Nippon Electric Co., Ltd. Bidirectional optical fiber transmission system. 4,289,373, Cl. 350-96.160.

Sullivan, Thomas P.: *See—*
Gleason, Joseph P., 4,290,065, Cl. 340-870.430.

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Fukasawa, Akira; Masaki, Shinzaburo; and Serizawa, Norio, 4,289,706, Cl. 260-369.000.

Sumitomo Electric Industries, Ltd.: *See—*
Ishise, Kojiro, 4,289,721, Cl. 264-85.000.

Sumitomo Rubber Industries, Inc.: *See—*
Tominaga, Ichiro; and Sasaki, Teruo, 4,289,032, Cl. 73-599.000.

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Sumpter, Floyd H. Apparatus for supporting macrame during formation of a particular article. 4,289,341, Cl. 289-16.500.

Sun, Kai C. K., to Xerox Corporation. Power amplifier with current limiter circuit. 4,290,000, Cl. 318-566.000.

Sun Tech Energy Corporation: *See—*
Stewart, Orvel L., 4,289,204, Cl. 166-303.000.

Suncor Inc.: *See—*
Yong, Raymond N.; and Sethi, Amar J., 4,289,540, Cl. 127-33.000.

Suntech, Inc.: *See—*
Clark, Leland C., Jr.; and Moore, Robert E., 4,289,499, Cl. 23-230.00B.

Supcoe, Robert F.; and Greenberg, Melvin. Formulation for producing low infrared coating in the 2-15 micron range. 4,289,677, Cl. 260-33.6SB.

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Hutchison, James M. S.; Mallard, John R.; and Sutherland, Robert J., 4,290,019, Cl. 324-311.000.

Suzuki, Katsumi: *See—*
Mayumi, Kazuhisa; Suzuki, Katsumi; and Tsuboi, Fujio, 4,289,990, Cl. 313-143.000.

Suzuki, Keiichi: *See—*
Saito, Hirokazu; Suzuki, Keiichi; Shimizu, Masayuki; and Miyahara, Junji, 4,289,733, Cl. 422-227.000.

Suzuki, Osamu: *See—*
Yoshida, Yoshiaki; Suzuki, Osamu; Onoue, Keiji; and Seiki, Kazuo, 4,288,975, Cl. 57-263.000.

Suzuki, Tomosaburo, to Kabushiki Kaisha Daisei Kikai. Sprouting beans refinement apparatus. 4,289,614, Cl. 209-308.000.

Svedala-Arbra AB: *See—*
Lindberg, Ernst R., 4,288,904, Cl. 29-426.300.

Svenska Traforskningsinstitutet: *See—*
Johansson, Ingvar K. G., 4,289,663, Cl. 260-17.500.

Svenson, Bruce E. Metal treatment. 4,289,638, Cl. 252-85.000.

Swanson, Billy L., to Phillips Petroleum Company. Oil displacement method using shear-thickening compositions. 4,289,203, Cl. 166-274.000.

Swiss Aluminium Ltd.: *See—*
Festag, Werner; and Muller, Hans-Ueli, 4,289,009, Cl. 72-60.000.
Mueller, Hans P.; Alder, Hanspeter; and Zhuber-Okrog, Gerhard, 4,289,735, Cl. 423-136.000.

Swistun, Gwido K. Sawdust furnace. 4,289,079, Cl. 110-255.000.

Switall, Thomas G., to Ryco Graphic Manufacturing, Inc. Non-drip fluid delivery system. 4,289,167, Cl. 137-869.000.

SWS Silicones Corporation: *See—*
Martin, Eugene R., 4,289,867, Cl. 528-12.000.

Sylvester, Robert A., to Eastman Kodak Company. Instant processing sleeve for borderless prints. 4,289,840, Cl. 430-207.000.

Symeonidis, Ioannis. Sunroof. 4,289,349, Cl. 296-213.000.

Syntron, Inc.: *See—*
Cole, Jimmy R., 4,290,124, Cl. 367-18.000.

System Development Corporation: *See—*
Pitt, Paul E.; Glaser, Edward L.; and Galie, Louis M., 4,290,115, Cl. 364-900.000.

Szabo, Gabor: *See—*
Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth, Zoltan, 4,289,894, Cl. 560-82.000.

Szocs, Roberto: *See—*
Saba, Manlio; and Szocs, Roberto, 4,290,145, Cl. 455-113.000.

Szpur, Roman. Light fixture. 4,290,096, Cl. 362-223.000.

Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, to Rocket Research Corporation. Tire sealant applicator. 4,289,089, Cl. 118-306.000.

Tacklind, Thomas A.: *See—*
McChesney, John L.; and Tacklind, Thomas A., 4,289,092, Cl. 118-660.000.

Tadmor, Zehev: *See—*
Hold, Peter; and Tadmor, Zehev, 4,289,319, Cl. 277-59.000.

Takada, Shigetaka; Nomura, Masaaki; and Itoh, Manabu, to Aisan Industry Co., Ltd. Air-fuel mixture supplying device for internal combustion engines. 4,289,104, Cl. 123-471.000.

Takagi, Yasuo: *See—*
Katsumata, Masaaki; Onoda, Michio; Takagi, Yasuo; and Yoneda, Kenji, 4,289,102, Cl. 123-425.000.

Takano, Kazuhiro: *See—*
Sakamoto, Hitoshi; and Takano, Kazuhiro, 4,289,284, Cl. 242-186.000.

Takano, Teruhisa: *See—*
Murase, Fujio; Matsumoto, Hidenosuke; Fujieda, Hiroshi; Takano, Teruhisa; and Imasu, Kenichiro, 4,289,272, Cl. 236-91.00D.

Takaoka, Saburo; and Higashi, Ryozi, to Pioneer Electronic Corporation. Tone control arrangement for use in sound reproducing instruments. 4,289,928, Cl. 179-1.00D.

Takasue, Takashi: *See—*
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,289,227, Cl. 198-334.000.

Takayama, Shuichi; Tsuboshima, Kosaku; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, to Olympus Optical Company Limited. Apparatus for detecting the in-focusing conditions. 4,289,959, Cl. 250-201.000.

Takenoya, Hideaki; and Tonomura, Yoshinobu, to Janome Sewing Machine Co., Ltd. Sewing machine with stitch type identifying device. 4,289,084, Cl. 112-158.00E.

Takenoya, Hideaki; Watanabe, Kazuo; Nakagawa, Tamotsu; and Tonomura, Yoshinobu, to Janome Sewing Machine Co., Ltd. Sewing machine with thread-tension control system. 4,289,087, Cl. 112-254.000.

Taketoshi, Kazuhisa, to Nippon Hoso Kyokai. Exchangeable Ga-Cu electrode for an evaporation system. 4,289,369, Cl. 339-118.00R.

Takeuchi, Haruo, to Olympus Optical Co., Ltd. Endoscope sheath cleaning device. 4,288,882, Cl. 15-88.000.

Tamamushi, Masahiro; and Katakura, Kazuo, to Nissan Motor Company, Limited. Luggage compartment cover apparatus for an automotive vehicle. 4,289,345, Cl. 296-37.160.

Tan, Zoilo C. H.; Petropoulos, Constantine C.; and Rauner, Frederick J., to Eastman Kodak Company. Negative-working polymers useful as electron beam resists. 4,289,842, Cl. 430-270.000.

Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Two-stroke cycle gasoline engine. 4,289,094, Cl. 123-69.00R.

Tanaka, Osamu; Nakano, Nobuo; and Fukui, Toyoaki, to Tanaka, Osamu. Magnetic loop antenna with diamagnetic properties. 4,290,070, Cl. 343-788.000.

Tani, Fedora, to Chenil Cont GS S.R.L. Machine for producing chenille yarn. 4,288,973, Cl. 57-24.000.

Taniguchi, Koichi; Katayama, Minoru; Sangu, Osamu; and Hori, Shinichi, to Nippondenso Co., Ltd. Electric monitoring method and apparatus for electric system of automotive vehicle. 4,290,109, Cl. 364-481.000.

Tanikawa, Sakuichi: *See—*
Matsuda, Tamio; and Tanikawa, Sakuichi, 4,288,903, Cl. 29-416.000.

Tanoue, Junichi: *See—*
Shirai, Kenji; Shimizu, Hidetoshi; and Tanoue, Junichi, 4,289,216, Cl. 188-72.200.

Tansei, Hikaru: *See—*
Motomura, Kenichi; Tansei, Hikaru; and Abe, Masaru, 4,289,184, Cl. 152-354.00R.

Tarman, Paul B.; and Chynoweth, David P., to Institute of Gas Technology. Hybrid bio-thermal gasification. 4,289,625, Cl. 210-603.000.

Taylor, Leslie L., Jr.: *See—*
Killmeyer, Charles W., deceased; Lane, James E.; Taylor, Leslie L., Jr.; and Pearson, Joe T., 4,289,465, Cl. 425-111.000.

TDK Electronics Co. Ltd.: *See—*
Ishida, Toshihiko; and Satou, Takateru, 4,289,285, Cl. 242-199.000.
Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, 4,289,828, Cl. 428-425.900.

Technical Development LTD: *See—*
Furney, Douglas E.; and Muldrey, Michael J., 4,290,055, Cl. 340-518.000.

Technics, Inc.: *See—*
Engle, Frank W., 4,289,598, Cl. 204-192.00E.

Tegarden, Frederick W.: *See—*
Sterman, Albert P.; Gay, Charles H., Jr.; Tegarden, Frederick W.; and Lenahan, Dean T., 4,289,447, Cl. 415-200.000.

Teichmann, Michael: *See—*
Jung, Bernhard; and Teichmann, Michael, 4,289,997, Cl. 318-113.000.

Tekniska Rontgencentralen AB: *See—*
Nordenstrom, Bjorn; and Olsson, Jerker, 4,289,135, Cl. 128-419.00R.

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Heeren, Richard H., 4,288,910, Cl. 29-571.000.

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Terra Tek, Inc.: *See—*
Barker, Lynn M., 4,289,036, Cl. 73-799.000.

Teubner, Ehrhardt, to Schubert & Salzer. Spark chamber for a vacuum emission spectrometer. 4,289,402, Cl. 356-313.000.

Texaco Development Corporation: *See—*
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,289,502, Cl. 48-62.00R.

Texaco Inc.: *See—*
Eng, King D.; Brandenburg, John T.; Lee, Kung-You; and McMahon, Matthew A., 4,289,810, Cl. 427-230.000.
Estes, John H., 4,289,740, Cl. 423-328.000.
Paap, Hans J., 4,289,020, Cl. 73-61.10R.

Texas Instruments Incorporated: *See—*
Beecroft, Harold J., 4,290,088, Cl. 360-66.000.
Boone, Gary W.; and Cochran, Michael J., 4,290,121, Cl. 365-233.000.

Texasgulf Inc.: *See—*
Schrieber, Glenn H., 4,289,612, Cl. 209-166.000.

Textron, Inc.: *See—*
Hunke, Siegfried H., 4,289,013, Cl. 72-243.000.

Theobald, Roger W.: *See—*
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Theron, Jacob J.; Bout, Bernardus J.; Van Wyk, Jacobus P.; and De Lange, Michael D. Battery testing method and device. 4,290,021, Cl. 324-429.000.

Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., to Association pour la Recherche et le Developpement des Methodes et Processus Industriels (ARMINES). Process for the boronizing of pieces made of metal or cermet. 4,289,545, Cl. 148-6.300.

Thewalt, Klaus: *See—*
Burkhardt, Rudolf; Meyer, Gunther; Schmidt, Reinhard; and Thewalt, Klaus, 4,289,895, Cl. 560-92.000.

Thiel, David W., to GenRad, Inc. Method of and apparatus for electrical short testing and the like. 4,290,013, Cl. 324-73.0PC.

Thiery, Joachim: *See—*
Haker, Rolf; Fuhrer, Heinz-Georg; van Rijckevorsel, Rainer; Ruhl, Werner; and Thiery, Joachim, 4,290,113, Cl. 364-900.000.

Thigpen, Hubert H.: *See—*
Harris, Marvin E., Jr.; and Thigpen, Hubert H., 4,289,912, Cl. 568-422.000.
Scott, Robert H.; Thigpen, Hubert H.; and Wood, Frank, Jr., 4,289,708, Cl. 260-413.000.

Think, Inc.: *See—*
Gaetano, Ralph R., 4,289,333, Cl. 283-35.000.

Thogersen, Hans P.: *See—*
Friesen, Eckart; Thogersen, Hans P.; and Kuhnel, Roland, 4,288,997, Cl. 62-434.000.

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Thomas, Robert J.; and Smith, Richard J. Combined folding table and seat. 4,289,350, Cl. 297-172.000.

Thomas, Ross T. Exercise wheel. 4,289,306, Cl. 272-33.00R.

Thomas, Stephen, to Edwin Burgess Limited. System for identifying solid dosage units. 4,289,958, Cl. 235-489.000.

Thompson, John H.: *See—*
Geil, Fred G.; and Thompson, John H., 4,290,035, Cl. 333-186.000.

Thompson, Larry F.: *See—*
Bowden, Murrae J. S.; and Thompson, Larry F., 4,289,845, Cl. 430-296.000.

Thompson, Michael Q.: *See—*
Cichelli, Richard J.; Thompson, Michael Q.; and Cheswick, William R., 4,290,105, Cl. 364-200.000.

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Alers, George A.; Thompson, Robert B.; and Vasile, Carmine F., 4,289,030, Cl. 73-588.000.

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Thomson, Arthur E.: *See—*
Hanaford, Donald E.; and Oldham, Dale R., 4,289,564, Cl. 156-425.000.

Thomson-CSF: *See—*
Berte, Marc; and Legrand, Pierre, 4,290,012, Cl. 324-71.0EB.

Thorberg, Seth O.: *See—*
Bengtsson, Karl S.; Thorberg, Seth O.; and Ogren, Sven O., 4,289,781, Cl. 424-267.000.

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Scholta, Owen R., 4,289,225, Cl. 194-9.00T.

Tikhonov, Valentin N.; Zhestkov, Vitaly I.; Shlykov, Gennady N.; Diachkov, Vasily M.; Mukhin, Viktor M.; and Zhigalov, Gennady V. Apparatus for drafting fibers. 4,288,889, Cl. 19-236.000.

Tillinghast, Roberta K.: *See—*
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Tillmanns, Harald: *See—*
Kolling, Georg; Pietzka, Gerhard; Romey, Ingo; and Tillmanns, Harald, 4,289,604, Cl. 208-106.000.

Timex Corporation: *See—*
Lowdenslager, John; and Zatsky, Norman C., 4,290,130, Cl. 368-200.000.
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Tippmer, Kurt, to Carl Still GmbH & Co. KG, Firma. Method of producing process gases containing hydrogen and carbon monoxide from ash oil. 4,289,647, Cl. 252-373.000.

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Heavner, George; Tjoeng, Foe-Siong; and Goldstein, Gideon, 4,289,759, Cl. 424-177.000.

Tobias, Philip E. Color monitoring system for use in creating colored displays. 4,289,405, Cl. 356-407.000.

Tochizawa, Ikuo, to Kabushiki Kaisha Fujikoshi. AC Solenoid apparatus of the armature in tube type. 4,290,039, Cl. 335-262.000.

Tokai Seiki Co., Ltd.: *See—*
Nitta, Tomio, 4,289,478, Cl. 431-344.000.

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Sakamoto, Junji; and Kishi, Hiroyasu, 4,289,981, Cl. 307-350.000.

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Enjoji, Susumu; and Saito, Koji, 4,289,139, Cl. 128-660.000.
Yamanaka, Junichi; Nakamura, Noboru; Fujiki, Hirokazu; and Miyaji, Yoshimori, 4,290,038, Cl. 335-214.000.

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Chumanov, Julian M.; Liberman, Anatoly L.; Listopad, Vladimir I.; Polyakov, Vasily V.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Evteev, Dmitry P.; Efimenko, Sergei P.; Fulmakht, Veniamin V.; Slednev, Vladimir P.; Pogorzhelsky, Viktor I.; Shum, Valentin B.; and Tolpa, Anatoly A., 4,288,907, Cl. 29-527.600.

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Wright, William B., Jr.; and Tomcufcik, Andrew S., 4,289,769, Cl. 424-248.560.

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Nakanishi, Mikimaro, 4,289,297, Cl. 251-306.000.

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Takenoya, Hideaki; and Tonomura, Yoshinobu, 4,289,084, Cl. 112-158.00E.
Takenoya, Hideaki; Watanabe, Kazuo; Nakagawa, Tamotsu; and Tonomura, Yoshinobu, 4,289,087, Cl. 112-254.000.

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Eichenbaum, Bernard R.; and Topolski, Francis J., 4,289,558, Cl. 156-179.000.

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Maeder, Edward G.; and Tovey, John M., 4,289,014, Cl. 72-348.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Mabuchi, Katsuya; and Yamamoto, Shigeyuki, 4,289,577, Cl. 159-5.000.

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Yamamoto, Masaki; and Azuma, Ichiro, 4,289,856, Cl. 521-51.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Munekata, Kenichi; Fujita, Michio; and Hattori, Yasuhiro, 4,288,945, Cl. 51-238.00S.

Toyota Jidosha Kogyo Kabushiki: *See—*
Shirai, Kenji; Shimizu, Hidetoshi; and Tanoue, Junichi, 4,289,216, Cl. 188-72.200.

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Ito, Takaaki; and Nakamura, Norihiko, 4,289,715, Cl. 261-44.00C.
Mayumi, Kazuhisa; Suzuki, Katsumi; and Tsuboi, Fujio, 4,289,990, Cl. 313-143.000.
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,289,099, Cl. 123-307.000.
Nomura, Yoshihisa, 4,289,162, Cl. 137-572.000.
Onuma, Kiyoshi; and Arai, Hajime, 4,289,220, Cl. 192-3.300.
Shinoda, Kazuo, 4,289,103, Cl. 123-440.000.
Tanahashi, Toshio, 4,289,094, Cl. 123-69.00R.

Traber, Rene P.; Kuhn, Max; Hofmann, Hans; and Harri, Eugen, to Sandoz Ltd. Process for producing cyclosporin derivatives. 4,289,851, Cl. 435-71.000.

Tranbarger, Glen E., to General Motors Corporation. Method of potting magnetic speed pickups. 4,289,722, Cl. 264-102.000.

Traster, Elden D., to Harris Data Communications, Inc. Video display terminal having means for altering data words. 4,290,063, Cl. 340-723.000.

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Traynor, Sean G.; and Marcelin, George, to SCM Corporation. Polydentate phosphonium salts useful in treating glass and capillary chromatographic columns. 4,289,809, Cl. 427-230.000.

Traynor, Sean G.: *See—*
Kane, Bernard J.; and Traynor, Sean G., 4,289,917, Cl. 585-359.000.

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Brandt, Bertil, 4,289,279, Cl. 241-102.000.

Tremaine, Richard E., to United States of America, Navy. Analog/digital system for evaluating battery characteristics. 4,290,014, Cl. 324-77.00A.

Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Use of acyl trimethyl cyclohexene derivatives in augmenting or enhancing the organoleptic properties of smoking tobacco or smoking tobacco article. 4,289,145, Cl. 131-276.000.

Tresper, Erhard: *See—*
Druschke, Frank; Margotte, Dieter; Tresper, Erhard; Bottenbruch, Ludwig; Cohnen, Wolfgang; and Hucks, Uwe, 4,289,685, Cl. 260-45.70S.

Trilog, Inc.: *See—*
Melissa, Raymond F.; Grummett, Lorne H.; and Fischer, Joseph J., 4,289,069, Cl. 101-93.010.

Trotsky, Alex; and Brimmer, Alan, to Arnold Engineering Company. Apparatus for automated application of heat sensitive tape. 4,289,568, Cl. 156-518.000.

Trotta, Robert A.: *See—*
Douglass, Paul W.; and Trotta, Robert A., 4,288,920, Cl. 30-47.000.

Trunner, Josef; and Both, Marinus, to Cerberus AG. Release mechanism for a valve of a fire extinguishing installation. 4,289,039, Cl. 74-2.000.

TRW Inc.: *See—*
Kagiwada, Reynold S.; Yen, Kuo-hsiung; and Lau, Kei-fung, 4,290,033, Cl. 333-141.000.

Tsuboi, Fujio: *See—*
Mayumi, Kazuhisa; Suzuki, Katsumi; and Tsuboi, Fujio, 4,289,990, Cl. 313-143.000.

Tsuboi, Hikotada: *See—*
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,289,699, Cl. 260-326.5FM.

Tsuboshima, Kosaku: *See—*
Takayama, Shuichi; Tsuboshima, Kosaku; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,289,959, Cl. 250-201.000.

Tsuchiya, Hideshi: *See—*
Ikeda, Hideo; Tsuchiya, Hideshi; and Okada, Masaru, 4,289,937, Cl. 179-119.00R.

Tucker, Thomas R., to United States of America, Navy. Laser beam linear adjustable integrating mirror. 4,289,380, Cl. 350-292.000.

Tulinus, Jan R.: *See—*
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Turk, Gunter: *See—*
Nauroth, Peter; Kuhlmann, Robert; and Turk, Gunter, 4,289,681, Cl. 260-37.0SB.

Turley, Richard J., to Olin Corporation. Tetrachloro-butyl secondary phosphites. 4,289,712, Cl. 260-967.000.

Turner, Roger S. Injection site apparatus. 4,289,129, Cl. 128-214.00G.

Turner, Ronald L.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,289,528, Cl. 75-1.00R.
Kindig, James K.; and Turner, Ronald L., 4,289,529, Cl. 75-1.00R.

Twisselmann, Lorenz, to VDO Adolf Schindling AG. Device for converting pneumatic or hydraulic pressure into an electric current and vice versa. 4,289,034, Cl. 73-701.000.

Tyler, Derek E.: *See—*
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,289,946, Cl. 164-503.000.

Uchida, Isamu: *See—*
Kobori, Toshio; Yamazaki, Yasuo; and Uchida, Isamu, 4,289,392, Cl. 354-225.000.

Uchida, Kozo, to Iwasaki Tsushinki Kabushiki Kaisha. Light signal observation device. 4,289,399, Cl. 356-226.000.

Uebayashi, Toshiaki: *See—*
Usami, Akira; Uebayashi, Toshiaki; Sato, Koji; and Goda, Tomoko, 4,289,130, Cl. 128-287.000.

Ueda, Tsuneo, to Fuji Electric Co., Ltd. Electric power generation equipment incorporating bulb turbine-generator. 4,289,971, Cl. 290-52.000.

Ueki, Kazuyoshi: *See—*
Mizutani, Tatsumi; Ueki, Kazuyoshi; Iida, Shinya; and Komatsu, Hideo, 4,289,188, Cl. 156-626.000.

Uemura, Kazuo: *See—*
Koga, Kenichiro; Hirose, Yoshiharu; Kanno, Iwao; Uemura, Kazuo; and Miura, Shuichi, 4,289,965, Cl. 250-368.00S.

Ueno, Saburo: *See—*
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,289,688, Cl. 260-112.00R.

Uerdingen, Walter: *See—*
Blomeyer, Freidrich, deceased; Mennicken, Gerhard; and Uerdingen, Walter, 4,289,813, Cl. 427-385.500.

Uibel, Paul-Ulrich: *See—*
Birr, Hans J.; and Uibel, Paul-Ulrich, 4,289,416, Cl. 403-146.000.

Ulics, George. Crutch attachment. 4,289,156, Cl. 135-66.000.

Umekawa, Osamu: *See—*
Katayama, Sakae; and Umekawa, Osamu, 4,289,581, Cl. 162-161.000.

Underhill, Kenneth R., to Sperry Corporation. Stone trap seal. 4,288,969, Cl. 56-10.200.

Unimax Switch Limited: *See—*
Corfield, John C., 4,289,001, Cl. 70-346.000.

Union Carbide Corporation: *See—*
Chan, John K., 4,289,907, Cl. 564-399.000.
Herdle, William B.; Kanner, Bernard; and Bailey, Donald L., 4,289,889, Cl. 556-470.000.
Kaiser, Steven W., 4,289,709, Cl. 518-714.000.
Kaiser, Steven W., 4,289,710, Cl. 518-717.000.
Peters, Edward N., 4,289,682, Cl. 260-37.00N.

Union Oil Company of California: *See—*
McArthur, Dennis P., 4,289,608, Cl. 208-121.000.

Union Siderurgique du Nord et de l'est de la France (USINOR): *See—*
Cabaret, Pierre M.; Daboust, Maurice B.; and Engerran, Pierre R., 4,289,005, Cl. 72-12.000.

United Kingdom Atomic Energy Authority: *See—*
Dearnaley, Geoffrey, 4,289,544, Cl. 148-4.000.
Nelson, Richard S., 4,289,657, Cl. 252-477.00R.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Webb, J. Stuart, 4,290,144, Cl. 455-63.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the: *See—*
Comyns-Carr, Cecil A.; and Platts, Michael J., 4,289,455, Cl. 417-332.000.

United States Borax & Chemical Corp.: *See—*
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United States Gypsum Company: *See—*
Reicherts, James E.; and Veschuroff, William C., 4,289,554, Cl. 156-92.000.

United States of America
Agriculture: *See—*
Rowland, Stanley P., 4,289,673, Cl. 260-29.40R.
Air Force: *See—*
Child, Richard D.; and Tulinus, Jan R., 4,289,287, Cl. 244-45.00R.
Rawlins, James J., 4,289,264, Cl. 277-27.000.
America: *See—*
Harris, Curtis C.; Yolken, Robert; and Hsu, Ih-Chang, 4,289,748, Cl. 424-1.000.
Army: *See—*
Haines, Harold R., 4,289,166, Cl. 137-846.000.
Roberts, Thomas G., 4,289,966, Cl. 250-378.000.
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Claytor, Thomas N., 4,289,019, Cl. 73-40.50A.
Hanson, James A.; and Kopp, Manfred K., 4,289,967, Cl. 250-385.000.
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Rapoport, Henry; Weller, Dwight D.; and Gless, Richard D., 4,289,882, Cl. 546-141.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Kuenzly, John D. Low thrust monopropellant engine. 4,288,982, Cl. 60-200.00R.
Navy: *See—*
Hansen, Peder M.; Hoffman, John G.; Seeley, Elwin W.; and Andrew, Wesley A., 4,290,020, Cl. 324-334.000.
Pickens, George O., 4,290,123, Cl. 367-13.000.
Tremaine, Richard E., 4,290,014, Cl. 324-77.00A.
Tucker, Thomas R., 4,289,380, Cl. 350-292.000.
Transportation: *See—*
Long, Lennart E.; Steele, Roger K.; Coleman, David F.; and Gustafson, Ralph A., 4,288,926, Cl. 33-174.00P.

U.S. Philips Corporation: *See—*
Franken, Adrianus J. J.; Khoe, Giok D.; Kuyt, Gerard; Van Leest, Johannes H. F. M.; Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Smulders, Hendricus F. G., 4,289,374, Cl. 350-96.200.
Jacobs, Bernardus A. J.; De Poorter, Adriaan W.; and Zalm, Pieter, 4,290,075, Cl. 430-270.000.
Lavaleije, Matheus D., 4,290,089, Cl. 360-72.100.
Moulding, Kenneth W.; and Wilson, Gordon A., 4,290,036, Cl. 333-215.000.
Rutgers, Hendrik J., 4,289,365, Cl. 339-21.00R.
van de Plassche, Rudy J., 4,290,025, Cl. 330-254.000.
van Mensvoort, Adrianus J.; and Asselman, George A. A., 4,288,993, Cl. 62-333.000.

United States Steel Corporation: *See—*
Jacob, Charles W., 4,289,443, Cl. 414-748.000.

United Systems Corporation: *See—*
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United Technologies Corporation: *See—*
Carroll, Robert G.; Caporini, John I.; and Egan, William J., 4,290,031, Cl. 331-94.50G.
Galasso, Francis S.; and Basche, Malcolm, deceased, 4,289,801, Cl. 427-94.000.

Myllymaki, Richard A., 4,289,191, Cl. 164-45.000.
O'Rourke, Thomas E., Jr., 4,288,983, Cl. 60-226.00R.
Terkelsen, Bruce E., 4,289,570, Cl. 164-122.100.
Vogel, Robert J.; and Wahl, Roger L., 4,290,032, Cl. 331-94.50D.
Wallace, Matthew J., 4,289,446, Cl. 415-174.000.

Universite de Sherbrooke: *See—*
Lalancette, Jean M., 4,289,736, Cl. 423-158.000.

University of California, The Regents of the: *See—*
Gary, Norman E.; and Lorenzen, Kenneth, 4,288,880, Cl. 6-12.00R.

Unsold, Eberhard: *See—*
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UOP Inc.: *See—*
Sampson, Robert W.; and Franke, Francis H., 4,289,029, Cl. 73-863.110.
Withers, James G., Jr., 4,288,897, Cl. 29-157.400.

Upjohn Company, The: *See—*
Axen, Udo F.; and Sih, John C., 4,289,893, Cl. 560-55.000.
Bauer, John R.; Byars, Robert W.; and Grieve, Robin L., 4,289,732, Cl. 422-224.000.
Glenn, E. Myles, 4,289,757, Cl. 424-120.000.
Johnson, Roy A., 4,289,877, Cl. 542-431.000.
Johnson, Roy A., 4,289,878, Cl. 542-431.000.
Johnson, Roy A., 4,289,888, Cl. 548-253.000.
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., 4,289,858, Cl. 521-131.000.
Satoh, Paul S., 4,289,596, Cl. 204-180.00R.
Sih, John C., 4,289,898, Cl. 562-503.000.
Sih, John C., 4,289,899, Cl. 562-503.000.
Sih, John C., 4,289,900, Cl. 562-503.000.
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Sih, John C., 4,289,904, Cl. 564-91.000.
Wilks, John W., 4,289,761, Cl. 424-240.000.
Wilks, John W., 4,289,785, Cl. 424-279.000.

Uranium Recovery Corporation: *See—*
Worthington, Ralph E.; Luke, Donald A.; and Reese, Stanton L., 4,289,609, Cl. 209-11.000.

Urano, Takayuki, to NHK Spring Co., Ltd. Mechanical motion-snubbing device. 4,289,218, Cl. 188-134.000.

Urban Transportation Development Corporation Ltd.: *See—*
Smith, Roy E., 4,289,075, Cl. 105-4.00R.

Usami, Akira; Uebayashi, Toshiaki; Sato, Koji; and Goda, Tomoko, to Daicel Ltd.; and Fuji Sanitary Industries Co., Ltd. Absorbent material for sanitary products. 4,289,130, Cl. 128-287.000.

Ushikoshi, Kenichi, to Kabushiki Kaisha Suwa Seikosha. Electronic watch with supplemental function display. 4,290,129, Cl. 368-66.000.

USM Corporation: *See—*
Hold, Peter; and Tadmor, Zehev, 4,289,319, Cl. 277-59.000.
Vancelette, Stanley R., 4,288,914, Cl. 29-741.000.

Utsumi, Kazuaki; Shohata, Nobuaki; and Ohno, Tomeji, to Nippon Electric Co., Ltd. Voltage dependent nonlinear resistor. 4,290,041, Cl. 338-21.000.

Uzaki, Nagato; Kawamura, Yasutaro; Kaneto, Kimikazu; and Hasizume, Masaharu, to Sintokogio Ltd. Molding machine. 4,289,194, Cl. 164-170.000.

Valdespino, Joseph M. Reciprocator for use with rotary drills. 4,289,041, Cl. 74-56.000.

Vallor, Ben J., to Hobart Corporation. Method for pre-conditioning a warewasher. 4,289,543, Cl. 134-25.200.

Valyi, Emery I. Decorated multilayered hollow plastic container. 4,289,817, Cl. 428-35.000.

Vancelette, Stanley R., to USM Corporation. Adjustable mechanism for cutting and clinching electrical component leads. 4,288,914, Cl. 29-741.000.

Vandenboosche, Jean-Jacques: *See—*
Bugaut, Andree; Grollier, Jean-Francois; and Vandenboosche, Jean-Jacques, 4,289,495, Cl. 8-406.000.

van de Plassche, Rudy J., to U.S. Philips Corporation. Amplifier arrangement with variable gain factor. 4,290,025, Cl. 330-254.000.

van der Meulen, Gysbert J. R. Triangular column arrangement and method. 4,288,963, Cl. 52-745.000.

Van Eenam, Donald N., to Monsanto Company. Oxidative polymerization of monomers having at least two activated unsaturations. 4,289,864, Cl. 526-235.000.

Van Leest, Johannes H. F. M.: *See—*
Franken, Adrianus J. J.; Khoe, Giok D.; Kuyt, Gerard; Van Leest, Johannes H. F. M.; Nicia, Antonius J. A.; Potters, Cornelis J. T.; and Smulders, Hendricus F. G., 4,289,374, Cl. 350-96.200.

Van Leuven, James W., to Aquatain Partnership. Liquid biocidal compositions compriing a mixture of silver ions and sodium pectate. 4,289,758, Cl. 424-132.000.

van Mensvoort, Adrianus J.; and Asselman, George A. A., to U.S. Philips Corporation. Refrigerator. 4,288,993, Cl. 62-333.000.

van Oorschot, Gosewinus F.; and Emanuelsson, Kaj B. I., to Atlas Copco Aktiebolag. Liquid injected compressor with temperature control of liquid. 4,289,461, Cl. 418-84.000.

van Rijckevorsel, Rainer: *See—*
Haker, Rolf; Fuhrer, Heinz-Georg; van Rijckevorsel, Rainer; Ruhl, Werner; and Thiery, Joachim, 4,290,113, Cl. 364-900.000.

Van Wyk, Jacobus P.: *See—*
Theron, Jacob J.; Bout, Bernardus J.; Van Wyk, Jacobus P.; and De Lange, Michael D., 4,290,021, Cl. 324-429.000.

Vapor Energy, Inc.: *See—*
Wyatt, William G., 4,288,978, Cl. 60-39.050.

Varo Semiconductor, Inc.: *See—*
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Vasile, Carmine F.: *See—*
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Vaughn, Herchel A.: *See—*
Wills, Walter L.; Vaughn, Herchel A.; and Miller, Larry L., 4,288,912, Cl. 29-577.00C.

VDO Adolf Schindling AG: *See—*
Twisselmann, Lorenz, 4,289,034, Cl. 73-701.000.

Veda, Inc.: *See—*
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Velsicol Chemical Coporation: *See—*
Belkind, Benjamin A., 4,289,524, Cl. 71-90.000.

Velthuysen, Andries G.: *See—*
De Klerk, Pieter B.; and Velthuysen, Andries G., 4,289,422, Cl. 404-124.000.

Vera, Armando J.: *See—*
Fraser, Donald L., Jr.; and Vera, Armando J., 4,290,034, Cl. 333-173.000.

Vereinigte Oesterreichische Eisen-und Sthl-Werke Alpine Montan Akteingesellschaft: *See—*
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Verma, Surendra, to Hughes Aircraft Company. Method of making mass terminable shielded flat flexible cable. 4,288,916, Cl. 29-828.000.

Veschuroff, William C.: *See—*
Reicherts, James E.; and Veschuroff, William C., 4,289,554, Cl. 156-92.000.

Vicars-Harris, Nigel, to B. Blumenthal & Co., Inc. Lampshade. 4,290,099, Cl. 362-352.000.

Vinals, Joaquin; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Acetyl hydrindacenes, acetyl indanes, mixtures of same, processes for preparing same and organoleptic uses thereof. 4,289,661, Cl. 252-522.00R.

Vinals, Joaquin F.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,146, Cl. 131-276.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,705, Cl. 260-345.100.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.

Vincent, Gary A.: *See—*
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Vinopal, George W., to South African Inventions Development Corporation. Method of stress grading timber, and machine for stress grading timber. 4,289,037, Cl. 73-808.000.

Virsen, Gary R. Display structure. 4,288,937, Cl. 40-605.000.

Viscido, Anthony J.: *See—*
Miller, Alvin L.; and Viscido, Anthony J., 4,289,848, Cl. 433-72.000.

Visos, Charles D.; and Fernstrom, Carl F., to Emerson Electric Co. Direct ignition gas burner control system. 4,289,476, Cl. 431-66.000.

Vock, Manfred H.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,146, Cl. 131-276.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,289,705, Cl. 260-345.100.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,289,145, Cl. 131-276.000.
Yoshida, Takao; and Vock, Manfred H., 4,289,700, Cl. 260-340.90R.

Voest-Alpine Aktiengesellschaft: *See—*
Hintermann, Rudolf; Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, 4,289,357, Cl. 299-81.000.

Vogel, Ludwig: *See—*
Koehler, Waldemar; Blumenberg, Bernd; Vogel, Ludwig; and Hetzel, Eckhard, 4,289,589, Cl. 203-49.000.

Vogel, Robert J.; and Wahl, Roger L., to United Technologies Corporation. Linear combustor for gas dynamic laser. 4,290,032, Cl. 331-94.50D.

Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Apparatus for the SZ-twisting of power cable conductors with sector-shaped conductor cross section. 4,288,976, Cl. 57-293.000.

Voigt, Carl; Kleinschmit, Peter; and Walter, Eberhard, to Degussa Aktiengesellschaft. Process for the production of hydrogen cyanide. 4,289,741, Cl. 423-376.000.

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Whiteford, Carl. Thermal and optical multi-mode window. 4,288,953, Cl. 52-171.000.
Whitley, Donald C., to Oxoid Limited. Safety catalyst systems. 4,289,855, Cl. 435-287.000.
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Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,289,099, Cl. 123-307.000.

Yazawa, Chihiro: *See*—
Nakayama, Yoshiki; Yazawa, Chihiro; and Yamanashi, Koji, 4,289,916, Cl. 570-209.000.

Yearout, James D. Production of nitrogen by air separation. 4,289,515, Cl. 62-13.000.

Yen, Kuo-hsiung: *See*—
Kagiwada, Reynold S.; Yen, Kuo-hsiung; and Lau, Kei-fung, 4,290,033, Cl. 333-141.000.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Voltage-to-current converter circuit. 4,290,024, Cl. 330-85.000.

Yolken, Robert: *See*—
Harris, Curtis C.; Yolken, Robert; and Hsu, Ih-Chang, 4,289,748, Cl. 424-1.000.

Yoneda, Kenji: *See*—
Katsumata, Masaaki; Onoda, Michio; Takagi, Yasuo; and Yoneda, Kenji, 4,289,102, Cl. 123-425.000.

Yong, Raymond N.; and Sethi, Amar J., to Suncor Inc. Hydrolyzed starch-containing compositions. 4,289,540, Cl. 127-38.000.

Yoshida Kogyo K. K.: *See*—
Kanazaka, Yoshihiro, 4,288,890, Cl. 24-227.000.

Yoshida, Takao; and Vock, Manfred H., to International Flavors & Fragrances Inc. Cyclic acetals of 2-methyl-2-pentenal and food flavor uses thereof. 4,289,700, Cl. 260-340.90R.

Yoshida, Yoshiaki; Suzuki, Osamu; Onoue, Keiji; and Seiki, Kazuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for starting a spinning machine. 4,288,975, Cl. 57-263.000.

Yoshikumi, Chikao: *See*—
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,289,688, Cl. 260-112.00R.

Yoshino, Hitoshi: *See*—
Akabame, Noboru; and Yoshino, Hitoshi, 4,289,301, Cl. 256-13.100.

Yoshiwara, Seishiro; and Higashiyama, Hirokichi, to Nippon Steel Corporation. Continuous pipe rolling process. 4,289,011, Cl. 72-208.000.

Yoshizawa, Shigeru: *See*—
Sugie, Mamoru; Yamaguchi, Noboru; Mayama, Koichi; Kita, Yuzo; Yoshizawa, Shigeru; Saito, Nobuo; and Asano, Atsushi, 4,290,117, Cl. 365-15.000.

Young, Bruce O.; and Seegmiller, Wan, to Energy Absorption Systems, Inc. Inertial barrier system. 4,289,419, Cl. 404-6.000.

Young, Richard K., to Phillips Petroleum Company. Heat exchanger. 4,289,198, Cl. 165-159.000.

Yu, Kin C.: *See*—
Holtey, Thomas O.; Miller, Robert C.; and Yu, Kin C., 4,290,104, Cl. 364-200.000.

Yun, Ik Y.: *See*—
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,289,946, Cl. 164-503.000.

Yurecko, John M., Jr.: *See*—
Willis, Brian J.; and Yurecko, John M., Jr., 4,289,658, Cl. 252-522.00R.

Zachary, Richard E.: *See*—
Christensen, Marvin M.; Zachary, Richard E.; and Dupont, Andra P., 4,289,807, Cl. 427-195.000.

Zadiraka, Allan J., to Babcock & Wilcox Company, The. Control system for a solar steam generator. 4,289,114, Cl. 126-421.000.

Zaidel, Simon A.: *See*—
Parks, Earl L.; and Zaidel, Simon A., 4,289,846, Cl. 430-314.000.

Zakiewicz, Bohdan M., to Higgins, Edwin G., Jr. Borehole mining of solid mineral resources. 4,289,354, Cl. 299-4.000.

Zalewski, Edwin: *See*—
Disselbeck, Dieter; Neumann, Gerhard; Ott, Karl-Heinz; Strobel, Gunther; and Zalewski, Edwin, 4,289,627, Cl. 210-702.000.

Zalm, Pieter: *See*—
Jacobs, Bernardus A. J.; De Poorter, Adriaan W.; and Zalm, Pieter, 4,290,075, Cl. 430-270.000.

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Lowdenslager, John; and Zatsky, Norman C., 4,290,130, Cl. 368-200.000.

Zavadil, Jaroslav: *See*—
Brand, Werner; Zavadil, Jaroslav; and Heuer, Wolfgang, 4,289,247, Cl. 213-20.000.

Zecher, Wilfried: *See*—
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,289,868, Cl. 528-73.000.

Zeigler, John F., III: *See*—
McFadyen, Robert J.; and Zeigler, John F., III, 4,290,126, Cl. 367-93.000.

Zeiler, Hans-Joachim: *See*—
Sasse, Klaus; Haller, Ingo; Plempel, Manfred; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,289,771, Cl. 424-249.000.

Zemanek, Josef, to Siemens Aktiengesellschaft. Circuit arrangement for receiving digital intelligence signals in a digital switching center for PCM-time-division multiplex communication networks. 4,290,135, Cl. 370-110.000.

Zengel, Hans-Georg; Wallrabenstein, Michael; and Brodowski, Walter, to Akzo NV. Mixture hardening under the influence of air moisture and a process for production of polyisocyanate-poly-addition products or of cross-linked polyepoxides. 4,289,869, Cl. 528-73.000.

Zenith Radio Corporation: *See*—
Beaumont, Gregory J.; and Matthews, Lloyd E., 4,289,994, Cl. 315-371.000.
Shah, Ricky H., 4,289,800, Cl. 427-68.000.

Zhestkov, Vitaly I.: *See*—
Tikhonov, Valentin N.; Zhestkov, Vitaly I.; Shlykov, Gennady N.; Diachkov, Vasily M.; Mukhin, Viktor M.; and Zhigalov, Gennady V., 4,288,889, Cl. 19-236.000.

Zhigalov, Gennady V.: *See*—
Tikhonov, Valentin N.; Zhestkov, Vitaly I.; Shlykov, Gennady N.; Diachkov, Vasily M.; Mukhin, Viktor M.; and Zhigalov, Gennady V., 4,288,889, Cl. 19-236.000.

Zhuber-Okrog, Gerhard: *See*—
Mueller, Hans P.; Alder, Hanspeter; and Zhuber-Okrog, Gerhard, 4,289,735, Cl. 423-136.000.

Ziehy, Theodore B. R. Voice amplification apparatus. 4,289,938, Cl. 179-156.00A.

Zickel, Robert E. Surgical appliance for the fixation of fractured bones. 4,289,124, Cl. 128-92.00D.

Ziehn, Klaus-Dieter. Process for improving the filling capacity of tobacco. 4,289,148, Cl. 131-291.000.

Zievers, James F.: *See*—
Schmidt, Henry, Jr.; Cederholm, Allen E.; and Zievers, James F., 4,289,630, Cl. 210-785.000.

Zimmerman, Lee T.: *See*—
Bare, Gary T.; and Zimmerman, Lee T., 4,290,138, Cl. 371-29.000.

Zimmermann, Helmuth: *See*—
Reim, Werner; Gernlein, Hermann; and Zimmermann, Helmuth, 4,289,228, Cl. 198-339.000.

Zimmermann, Ulrich; Pilwat, Gunter; Bock, Karin; and Buers, Hermann J., to Kernforschungsanlage Julich GmbH. Physiological preparation containing loaded cells of expanded volume in suspension, for preferential accumulation in spleen and liver. 4,289,756, Cl. 424-101.000.

Zipser, Randall E.; and Stringfellow, H. Berton, to Sperry Corporation. Delivery tray release mechanism for a bale wagon. 4,289,436, Cl. 414-76.000.

Zirin, Louis I., to General Electric Company. Bearing damper system. 4,289,360, Cl. 308-178.000.

Zitz, Alfred: *See*—
Hintermann, Rudolf; Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, 4,289,357, Cl. 299-81.000.

Zollner, Manfred; Hoffmann, Christian; and Zwicker, Eberhard, to Siemens Aktiengesellschaft. Method for generating acoustical voice signals for persons extremely hard of hearing and a device for implementing this method. 4,289,935, Cl. 179-107.0FD.

Zoor, Reinhold, to Heinrich Wunder KG. Roof carrier for motor vehicles. 4,289,260, Cl. 224-315.000.

Zuckerman, Leonard: *See*—
Spencer, David R.; and Zuckerman, Leonard, 4,290,086, Cl. 358-293.000.

Zwicker, Eberhard: *See*—
Zollner, Manfred; Hoffmann, Christian; and Zwicker, Eberhard, 4,289,935, Cl. 179-107.0FD.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF SEPTEMBER, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Azmoon, Majid: *See—*
Shelley, David J.; Warp, Rick A.; and Azmoon, Majid, Re. 30,743, Cl. 346-76.0PH.

Bunker Ramo Corporation: *See—*
Cole, Robert H.; Feuer, Robert; Nissim, Samuel; and Podraza, George V., Re. 30,744, Cl. 365-227.000.

Cole, Robert H.; Feuer, Robert; Nissim, Samuel; and Podraza, George V., to Bunker Ramo Corporation. Digital memory apparatus. Re. 30,744, Cl. 365-227.000.

Feuer, Robert: *See—*
Cole, Robert H.; Feuer, Robert; Nissim, Samuel; and Podraza, George V., Re. 30,744, Cl. 365-227.000.

Hewlett-Packard Company: *See—*
Shelley, David J.; Warp, Rick A.; and Azmoon, Majid, Re. 30,743, Cl. 346-76.0PH.

Nakagaki, Norio; and Sawada, Shigeru, to Shinshu Seiki Kabushiki Kaisha. Miniaturized printer control assembly. Re. 30,741, Cl. 101-99.000.

Nissim, Samuel: *See—*
Cole, Robert H.; Feuer, Robert; Nissim, Samuel; and Podraza, George V., Re. 30,744, Cl. 365-227.000.

Podraza, George V.: *See—*
Cole, Robert H.; Feuer, Robert; Nissim, Samuel; and Podraza, George V., Re. 30,744, Cl. 365-227.000.

Sawada, Shigeru: *See—*
Nakagaki, Norio; and Sawada, Shigeru, Re. 30,741, Cl. 101-99.000.

Shelley, David J.; Warp, Rick A.; and Azmoon, Majid, to Hewlett-Packard Company. Thermal printer-plotter system for multi-directional printing and plotting. Re. 30,743, Cl. 346-76.0PH.

Shinshu Seiki Kabushiki Kaisha: *See—*
Nakagaki, Norio; and Sawada, Shigeru, Re. 30,741, Cl. 101-99.000.

Warp, Rick A.: *See—*
Shelley, David J.; Warp, Rick A.; and Azmoon, Majid, Re. 30,743, Cl. 346-76.0PH.

Weier, Roman J., to Wyard Industries, Inc. Container depalletizing apparatus. Re. 30,742, Cl. 414-119.000.

Wyard Industries, Inc.: *See—*
Weier, Roman J., Re. 30,742, Cl. 414-119.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Goldhardt, Donald J.; and Willis, Darcy M., 260,814, Cl. D24-24.000.

Abbott, Warren D., Jr.: *See—*
Headen, James J.; Abbott, Warren D., Jr.; and Hampton, Clifton G., 260,808, Cl. D23-35.000.

Acoustics Development Corporation: *See—*
Hannula, Leslie A.; and Browning, Fred L., 260,702, Cl. D6-20.000.

Adams, John F. Animal trap. 260,801, 9-15-81, Cl. D22-18.000.

Aktiebolaget Volvo: *See—*
Jonasson, Kjell O., 260,701, Cl. D6-9.000.

Allibert Exploitation Societe Anonyme: *See—*
Deconinck, Didier, 260,707, Cl. D6-99.000.

Anderson, Lenart: *See—*
Zissimopoulos, Nicholas; and Anderson, Lenart, 260,816, Cl. D24-31.000.

Arenhold, Knut. Mud flap. 260,759, 9-15-81, Cl. D12-185.000.

Baffo, Charles M., to Mobil Oil Corporation. Combined service station building and canopy. 260,819, 9-15-81, Cl. D25-33.000.

Barr, Josef J. Earring pendant. 260,744, 9-15-81, Cl. D11-43.000.

Bateman, Robert F., to Dart Industries Inc. Scoop or the like. 260,722, 9-15-81, Cl. D7-104.000.

Baxter Travenol Laboratories, Inc.: *See—*
Zissimopoulos, Nicholas; and Anderson, Lenart, 260,816, Cl. D24-31.000.

Belyaev, Sergei M.: *See—*
Petrovsky, Viktor A.; Gassanov, Lev G.; Belyaev, Sergei M.; Kochetov, Lev A.; Kryzhanovsky, Vitaly L.; Palamarchuk, Andrei A.; Ushakov, Viktor D.; Timraleev, Rafail J.; Parfenjuk, Vitaly M.; Pilipenko, Alexandr S.; Goncharov, Petr A.; and Ponomarenko, Anatoly I., 260,736, Cl. D10-46.000.

Bennett, Eli J. Garden implement. 260,724, 9-15-81, Cl. D8-12.000.

Bergholtz, Gosta O.: *See—*
Klatzkow, Leif; and Bergholtz, Gosta O., 260,745, Cl. D11-48.000.

Bianchi, John E. Gun grip. 260,799, 9-15-81, Cl. D22-1.000.

Bianchi, John E.; and Nichols, Richard D. E. Cross draw holster. 260,800, 9-15-81, Cl. D22-13.000.

Boldt, Melvin H., to Rowe International, Inc. Phonograph. 260,765, 9-15-81, Cl. D14-15.000.

Borugian, Dennis A., to Eaton Corporation. Universal air chamber mounting bracket. 260,758, 9-15-81, Cl. D12-180.000.

Breger, Carl A., to Sandvik Aktiebolag. Plane. 260,728, 9-15-81, Cl. D8-101.000.

Briegleb, Kenneth B.: *See—*
Schifter, Henry H.; and Briegleb, Kenneth B., 260,723, Cl. D7-108.000.

Brookfield, Helen K. Baby carrying garment. 260,695, 9-15-81, Cl. D2-190.000.

Brown, Dwight C. Pair of combined rigid temples and flexible integrated ear clips for hearing aid spectacles. 260,774, 9-15-81, Cl. D16-127.000.

Browning, Fred L.: *See—*
Hannula, Leslie A.; and Browning, Fred L., 260,702, Cl. D6-20.000.

Buschmann, Sylvester. Artifact plaque. 260,748, 9-15-81, Cl. D11-133.000.

Calengor, Gerald R.; and Fehn, Allan J., to Surf-Jet Corporation. Power operated surfboard. 260,797, 9-15-81, Cl. D21-228.000.

California R & D Center: *See—*
Jones, Lawrence T.; Sims, Anson; and Lee, Robert S., 260,792, Cl. D21-131.000.

Campbell, Bruce B.; and Milliser, Charles E., to General Electric Company. Ornamental design for a cabinet for an input-output terminal for a data handling system. 260,768, 9-15-81, Cl. D14-100.000.

Canon Kabushiki Kaisha: *See—*
Yoshioka, Eiichi; and Motoyoshi, Junichi, 260,776, Cl. D18-7.000.
Yoshioka, Eiichi; and Okuyama, Tsutomu, 260,777, Cl. D18-7.000.

Cassia Electronic Products Limited: *See—*
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Castagna, John F.; and Emmerling, Ronald A., to Sparkomatic Corporation. Control unit for a combined automobile cassette player, radio and digital clock. 260,763, 9-15-81, Cl. D14-10.000.

Castagna, John F.; and Emmerling, Ronald A., to Sparkomatic Corporation. Control unit for a combined automobile cassette player and radio. 260,764, 9-15-81, Cl. D14-10.000.

Chaklos, Stanley C. Illumination device for attachment to toy flying saucer. 260,786, 9-15-81, Cl. D21-82.000.

Christine, William C. Dispensing bag for fluidic uses. 260,817, 9-15-81, Cl. D24-58.000.

Cleveland, Marvin G. Automotive hose fitting. 260,810, 9-15-81, Cl. D23-44.000.

Cohen, Steve J.; and Hillebrand, Cory W. Support stand for a computer. 260,715, 9-15-81, Cl. D6-186.000.

Cohen, Steve J.; and Hillebrand, Cory W. Support stand for a computer. 260,716, 9-15-81, Cl. D6-186.000.

Consolidated Foods Corporation: *See—*
Nathan, Howard; Edson, Sydney; and Howard, Fred, 260,704, Cl. D6-24.000.

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Cordis Dow Corp.: *See—*
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Deconinck, Didier, to Allibert Exploitation Societe Anonyme. Double-barred towel holder. 260,707, 9-15-81, Cl. D6-99.000.

DeMars, Donald A., to Lefkowitz, LeRoy M., a part interest. Wall or partition hung graphics holder. 260,782, 9-15-81, Cl. D20-42.000.

DeMurry, Tim: *See—*
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Dinand, Pierre: *See—*
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Doi, Tetsuyuki: *See—*
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Drabert Sohne Minden (Westf.): *See—*
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Durst A.G. Fabrik Fototechnischer Apparate: *See—*
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Eaton Corporation: *See—*
Borugian, Dennis A., 260,758, Cl. D12-180.000.

Edson, Sydney: *See—*
Nathan, Howard; Edson, Sydney; and Howard, Fred, 260,704, Cl. D6-24.000.

Edwards, Richard L.; and Kesten, Martin, to Preston Engravers, Inc. Fan folding apparatus. 260,778, 9-15-81, Cl. D18-22.000.

Edwards, William A. Wine chiller. 260,720, 9-15-81, Cl. D7-70.000.

El Mirage Cooker Company: *See—*
Schifter, Henry H.; and Briegleb, Kenneth B., 260,723, Cl. D7-108.000.

Emmerling, Ronald A.: *See—*
Castagna, John F.; and Emmerling, Ronald A., 260,763, Cl. D14-10.000.
Castagna, John F.; and Emmerling, Ronald A., 260,764, Cl. D14-10.000.

Fehn, Allan J.: *See—*
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Finlay, Robert L., to Notestine, Thomas J.; and Cope, James R. Fishing lure. 260,806, 9-15-81, Cl. D22-28.000.

Fitzgerald, Susan A.; and Watson, Russell B., Jr. Back pack. 260,697, 9-15-81, Cl. D3-32.000.

Fitzgerald, Susan A.; and Watson, Russell B., Jr. Back pack. 260,698, 9-15-81, Cl. D3-32.000.

Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Shower outlet fitting. 260,809, 9-15-81, Cl. D23-35.000.

Frumin, Arnold I.; and Hedges, Frank B. Bottle. 260,734, 9-15-81, Cl. D9-373.000.

Fujita, Yoshinari, to Okura Electric Industry Co., Ltd. Cable clamp. 260,730, 9-15-81, Cl. D8-356.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Combined vehicular radio receiver and telephone dialing pad. 260,770, 9-15-81, Cl. D14-68.000.

Futurecraft Corporation: *See—*
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Gabriel, Richard J., to Matrix Toys, Inc. Joint element and strut assembly. 260,790, 9-15-81, Cl. D21-108.000.

Garra, Gerard R.; and Parisena, Jon S. Motorcycle carrying tray. 260,757, 9-15-81, Cl. D12-158.000.

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Gaudio, John P. Guitar. 260,775, 9-15-81, Cl. D17-18.000.

Geel, Zane H., to Cordis Dow Corp. Hollow fiber artificial kidney. 260,813, 9-15-81, Cl. D24-21.000.

General Electric Company: *See—*
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Goldhardt, Donald J.; and Willis, Darcy M., to Abbott Laboratories. Syringe having a calibrated plunger. 260,814, 9-15-81, Cl. D24-24.000.

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Goodyear Tire & Rubber Company, The: *See—*
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Gregg, Eugene A. Artificial fish lure. 260,805, 9-15-81, Cl. D22-27.000.

Grez, Joan: *See—*
Schindler, James C.; Hoeft, Richard, III; and Grez, Joan, 260,708, Cl. D6-144.000.

Grove Foods, Inc.: *See—*
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Gunnels, Ray A. Combined winch and support for securing a ladder. 260,754, 9-15-81, Cl. D12-54.000.

Gusdorf Corporation: *See—*
Gusdorf, Walter, 260,717, Cl. D6-191.000.

Gusdorf, Walter, to Gusdorf Corporation. Shelf support. 260,717, 9-15-81, Cl. D6-191.000.

Hall, Gary Lester: *See—*
Hall, Lester B., 260,802, Cl. D22-18.000.
Hall, Lester B., 260,803, Cl. D22-18.000.

Hall, Lester B., to Hall, Gary Lester. Ultrasonic pest repelling device. 260,802, 9-15-81, Cl. D22-18.000.

Hall, Lester B., to Hall, Gary Lester. Ultrasonic pest repelling device. 260,803, 9-15-81, Cl. D22-18.000.

Haller, John L. Clock face. 260,743, 9-15-81, Cl. D10-126.000.

Halliburton Company: *See—*
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Hampton, Clifton G.: *See—*
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Hannula, Leslie A.; and Browning, Fred L., to Acoustics Development Corporation. Outdoor telephone booth. 260,702, 9-15-81, Cl. D6-20.000.

Headen, James J.; Abbott, Warren D., Jr.; and Hampton, Clifton G., to Headen, James J.; and Abbott, Warren D., Jr. Liquid dispenser for showers or the like. 260,808, 9-15-81, Cl. D23-35.000.

Heath, Victor E. Combined pouring spout, brush wiper and paint can rim protector. 260,735, 9-15-81, Cl. D9-447.000.

Hedges, Frank B.: *See—*
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Cohen, Steve J.; and Hillebrand, Cory W., 260,716, Cl. D6-186.000.

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Huntsman, Gary A.; and Huntsman, Patricia E. Hanging ornament or the like. 260,752, 9-15-81, Cl. D11-157.000.

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Ishii, Katsunori, to Kai, Cutlery Center Co., Ltd. Scissors. 260,726, 9-15-81, Cl. D8-57.000.

IVAC Corporation: *See—*
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Jack Daniel Distillery, Lems Motlow Prop., Inc.: *See—*
Redmond, Jobie G., 260,711, Cl. D6-177.000.

Johnson, Hardy: *See—*
Lavigno, William W., II; and Johnson, Hardy, 260,784, Cl. D21-27.000.

Johnson, William M.; and Lindsay, Allan, to Ralph McKay Limited. Adaptor for an agricultural tine. 260,772, 9-15-81, Cl. D15-29.000.

Jonasson, Kjell O., to Aktiebolaget Volvo. Auxillary automobile seat for a child. 260,701, 9-15-81, Cl. D6-9.000.

Jones, Lawrence T.; Sims, Anson; and Lee, Robert S., to California R & D Center. Toy vehicle. 260,792, 9-15-81, Cl. D21-131.000.

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Kainass, Andrew, to General Electric Company. Citizens' band transceiver or similar article. 260,771, 9-15-81, Cl. D14-68.000.

Kemmer, David S., to Kent-Moore Corporation. Strut spring compressor. 260,725, 9-15-81, Cl. D8-51.000.

Kennington, David H., to Thermalloy Incorporated. Heat sink or similar apparatus. 260,761, 9-15-81, Cl. D13-23.000.

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Lam, Yanta H. T., to Meyer Aluminium Limited. Portable door alarm. 260,741, 9-15-81, Cl. D10-106.000.

Lavigno, William W., II; and Johnson, Hardy. Gameboard. 260,784, 9-15-81, Cl. D21-27.000.

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Malina, Frank. Stand for a trophy or similar article. 260,747, 9-15-81, Cl. D11-131.000.
Manno, Joseph J., to IVAC Corporation. Housing for an electronic thermometer. 260,737, 9-15-81, Cl. D10-57.000.
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209 4,289,012
243 4,289,013
348 4,289,014
384 4,289,015
457 4,289,016
462 4,289,017

CLASS 73

19 4,289,018
40.5 A 4,289,019
61.1 R 4,289,020
151 4,289,023
4,289,024
152 4,289,025
290 R 4,289,026
299 4,289,027
304 C 4,289,028
588 4,289,030
597 4,289,031
599 4,289,032
622 4,289,033
701 4,289,034
708 4,289,035
799 4,289,036
808 4,289,037
862.25 4,289,021
862.64 4,289,022
863.11 4,289,029

CLASS 74

2 4,289,038
4,289,039
50 4,289,040
56 4,289,041
61 4,289,042
609 4,289,043
688 4,289,044
701 4,289,045
711 4,289,046
713 4,289,047
733 4,289,048

CLASS 75

1 R 4,289,528
4,289,529
101 BE 4,289,530
4,289,531
105 4,289,532
138 4,289,533

CLASS 81

56 4,289,049
311 4,289,050

CLASS 82

45 4,289,051

CLASS 83

26 4,289,052
62.1 4,289,053
113 4,289,054
659 4,289,055

CLASS 84

412 4,289,056
485 SR 4,289,057

CLASS 91

306 4,289,063

CLASS 99

334 4,289,064

CLASS 100

53 4,289,066
117 4,289,067
129 4,289,065
215 4,289,068

CLASS 101

93.01 4,289,069
99 Re.30,741
327 4,289,070
395 4,289,071

CLASS 102

318 4,289,072
476 4,289,073

CLASS 104

284 4,289,074

CLASS 105

4 R 4,289,075
163 R 4,289,076
199 C 4,289,077
241.2 4,289,078

CLASS 106

1.14 4,289,534
19 4,289,535
99 4,289,536
100 4,289,537
286.5 4,289,538
286.8 4,289,539

CLASS 110

255 4,289,079

CLASS 111

3 4,289,080
88 4,289,081

CLASS 112

79 R 4,289,082
157 4,289,083
158 E 4,289,084
181 4,289,085
221 4,289,086
254 4,289,087

CLASS 116

218 4,289,088

CLASS 118

306 4,289,089
630 4,289,090
642 4,289,091
660 4,289,092

CLASS 122

197 4,289,093

CLASS 123

69 R 4,289,094
142.5 R 4,289,095
198 E 4,289,096
292 4,289,097
299 4,289,098
307 4,289,099
339 4,289,100
364 4,289,101
425 4,289,102
440 4,289,103
471 4,289,104
500 4,289,105
527 4,289,106
571 4,289,107
4,289,108

CLASS 124

67 4,289,109

CLASS 125

11 CD 4,289,110

CLASS 126

391 4,289,111
415 4,289,112
418 4,289,113
421 4,289,114
430 4,289,115
431 4,289,116
436 4,289,117
440 4,289,118
4,289,119
450 4,289,120

CLASS 127

33 4,289,540

CLASS 128

1 C 4,289,121
80 E 4,289,122
84 R 4,289,123
92 D 4,289,124
156 4,289,125
204.24 4,289,126
207.14 4,289,127
207.15 4,289,128
214 G 4,289,129
287 4,289,130
303 R 4,289,131
303.14 4,289,132
334 C 4,289,133
419 PG 4,289,134
419 R 4,289,135
421 4,289,136
482 4,289,137
642 4,289,138
660 4,289,139
4,289,140
713 4,289,141
716 4,289,142
746 4,289,143
785 4,289,144

CLASS 131

175 4,289,149
276 4,289,145
4,289,146
290 4,289,147
291 4,289,148

CLASS 132

7 4,289,150
37 R 4,289,151
74.5 4,289,152
85 4,289,153

CLASS 134

7 4,289,541
11 4,289,542
25.2 4,289,543
56 D 4,289,154
167 R 4,289,155

CLASS 135

66 4,289,156

CLASS 136

246 4,289,920

CLASS 137

72 4,289,157
205 4,289,158
454.4 4,289,159
491 4,289,160
499 4,289,161
572 4,289,162
587 4,289,163
614.03 4,289,164
625.32 4,289,165
846 4,289,166
869 4,289,167

CLASS 138

109 4,289,168
117 4,289,169
4,289,170
145 4,289,171
149 4,289,172

CLASS 139

383 A 4,289,173

CLASS 140

93.4 4,289,174
4,289,175

CLASS 141

35 4,289,176

CLASS 144

2 Z 4,289,177
188 4,289,178
211 4,289,179
312 4,289,180

CLASS 148

4 4,289,544
6.15 R 4,289,546
4,289,547
6.3 4,289,545
12 B 4,289,548
101 4,289,549
175 4,289,550

CLASS 149

19.4 4,289,551

CLASS 152

209 B 4,289,183
209 R 4,289,182
354 R 4,289,184
361 DM 4,289,185
379.3 4,289,186
418 4,289,187

CLASS 156

73.4 4,289,552
86 4,289,553
92 4,289,554
149 4,289,555
157 4,289,556
171 4,289,557
179 4,289,558
238 4,289,559
244.18 4,289,560
265 4,289,561
364 4,289,562
423 4,289,563
425 4,289,564
514 4,289,565
515 4,289,566
517 4,289,567
518 4,289,568
580.2 4,289,569
617 H 4,289,571
617 SP 4,289,572
626 4,289,188
643 4,289,573
4,289,574
656 4,289,575
667 4,289,576

CLASS 159

5 4,289,577
47 WL 4,289,578

CLASS 160

160 4,289,189
332 4,289,190

CLASS 162

58 4,289,579
109 4,289,580
161 4,289,581

CLASS 164

45 4,289,191
109 4,289,193
122.1 4,289,570

170 4,289,194
470 4,289,192
503 4,289,946

CLASS 165

12 4,289,195
83 4,289,196
115 4,289,197
159 4,289,198

CLASS 166

65 R 4,289,199
120 4,289,200
183 4,289,201
212 4,289,202
274 4,289,203
303 4,289,204
315 4,289,205
348 4,289,206

CLASS 169

30 4,289,207

CLASS 172

7 4,289,208

CLASS 173

107 4,289,209

CLASS 174

48 4,289,921
52 FP 4,289,922
65 G 4,289,923
152 G 4,289,924

CLASS 175

319 4,289,210
410 4,289,211

CLASS 176

38 4,289,582

CLASS 178

18 4,289,925
19 4,289,926
4,289,927

CLASS 179

1 D 4,289,928
1 E 4,289,929
2 TV 4,289,930
5.5 4,289,931
18 BC 4,289,932
18 FA 4,289,933
27 D 4,289,934
107 FD 4,289,935
111 R 4,289,936
119 R 4,289,937
156 A 4,289,938
170 D 4,289,939

CLASS 180

19 R 4,289,212
233 4,289,213
234 4,289,214

CLASS 182

92 4,289,215

CLASS 188

72.2 4,289,216
73.38 4,289,217
134 4,289,218

CLASS 192

0.033 4,289,222
2 4,289,219
3.3 4,289,220
3.57 4,289,221
48.91 4,289,223
50 4,289,224

CLASS 194

9 T 4,289,225
84 4,289,226

CLASS 196

115 4,289,583

CLASS 198

334 4,289,227
339 4,289,228
633 4,289,229
811 4,289,230
834 4,289,231

CLASS 200

5 A 4,289,940
146 R 4,289,941
148 A 4,289,942
159 B 4,289,943

CLASS 201

39 4,289,584

CLASS 202

227 4,289,585

CLASS 203

1 4,289,586
2 4,289,588
6 4,289,587
49 4,289,589

CLASS 204

32 S 4,289,602
4,289,590
129 4,289,591
157.1 R 4,289,592
158 R 4,289,593
4,289,594
159.11 4,289,595
180 R 4,289,596
4,289,597
192 E 4,289,598
275 4,289,599
296 4,289,600
4,289,601

CLASS 206

37 4,289,232
221 4,289,233
259 4,289,234
387 4,289,235
432 4,289,236
443 4,289,237
527 4,289,238
624 4,289,240
625 4,289,239

CLASS 208

8 LE 4,289,603
106 4,289,604
113 4,289,605
120 4,289,606
4,289,607
121 4,289,608

CLASS 209

11 4,289,609
18 4,289,610
44 4,289,241
144 4,289,611
166 4,289,612
167 4,289,613
308 4,289,614

CLASS 210

91 4,289,615
101 4,289,616
109 4,289,617
142 4,289,618
159 4,289,619
198.2 4,289,620
222 4,289,621
225 4,289,622
247 4,289,623
4,289,624
603 4,289,625
616 4,289,626
702 4,289,627
703 4,289,628
737 4,289,629
785 4,289,630

CLASS 211

4 4,289,242
35 4,289,243
117 4,289,244
133 4,289,245
205 4,289,246

CLASS 213

20 4,289,247

CLASS 215

330 4,289,248

CLASS 219

10.41 4,289,944
10.55 F 4,289,945
69 D 4,289,947
110 4,289,948
4,289,951
121 L 4,289,952
121 PR 4,289,949
124.34 4,289,950
230 4,289,953
307 4,289,954
532 4,289,955

CLASS 220

22 4,289,249
269 4,289,250
4,289,251
308 4,289,252

CLASS 221

1 4,289,253
295 4,289,254

CLASS 222

52 4,289,256
81 4,289,255
146 HE 4,289,257
308 4,289,258
590 4,289,259

315

106

196

5.5
BC
R
B

27

T

462
489

G
D

249

106
305
452
706

102
207

7.05 B
8.2 R
166
194

CLASS 224

4,289,260

CLASS 225

4,289,261
4,289,262

CLASS 226

4,289,263

CLASS 229

4,289,265
4,289,266
4,289,267
4,289,268

CLASS 232

4,289,269

CLASS 233

4,289,270

CLASS 235

4,289,956
4,289,957
4,289,958

CLASS 236

4,289,271
4,289,272

CLASS 238

4,289,273
4,289,274

CLASS 239

4,289,275
4,289,276
4,289,277
4,289,278

CLASS 241

4,289,279
4,289,280

CLASS 242

4,289,281
4,289,282
4,289,283
4,289,284
4,289,285

CLASS 244

4,289,286
4,289,287

CLASS 248

4,289,288
4,289,289
4,289,290
4,289,291
4,289,292

CLASS 249

4,289,293

CLASS 250

4,289,959
4,289,960
4,289,961
4,289,963
4,289,962
4,289,964
4,289,965
4,289,966
4,289,967
4,289,968
4,289,969

CLASS 251

4,289,294
4,289,295
4,289,296
4,289,297

CLASS 252

8.5 B 4,289,631
8.5 LC 4,289,632
8.55 B 4,289,633
32.5 4,289,634
32.7 E 4,289,635
49.3 4,289,636
49.5 4,289,637
85 4,289,638
87 4,289,639
95 4,289,640
96 4,289,641
99 4,289,642
103 4,289,643
127 4,289,644
178 4,289,645
305 4,289,646
373 4,289,647
401 4,289,648
425.3 4,289,650
429 B 4,289,651
437 4,289,652
453 4,289,653
456 4,289,654
466 B 4,289,655
470 4,289,656
477 R 4,289,657
522 R 4,289,658
4,289,659
4,289,660
4,289,661
607 4,289,662

CLASS 254

8 B 4,289,298
4,289,299
126 4,289,300

CLASS 256

13.1 4,289,301
19 4,289,302
4,289,303

CLASS 260

17.5 4,289,663
19 R 4,289,664
21 4,289,665
23 AR 4,289,668
23 H 4,289,666
23 XA 4,289,667
27 EV 4,289,669
28.5 AV 4,289,670
4,289,671
29.2 TN 4,289,672
29.4 R 4,289,673
29.6 CM 4,289,675
29.6 H 4,289,676
29.6 NR 4,289,674
33.6 PQ 4,289,679
33.6 SB 4,289,677
33.6 UA 4,289,678
37 N 4,289,682
37 R 4,289,680
37 SB 4,289,681
38 4,289,683
40 R 4,289,684
45.7 S 4,289,685
45.8 NT 4,289,686
45.85 E 4,289,687
112 B 4,289,691
112 R 4,289,688
4,289,689
4,289,690
112.5 R 4,289,692
146 R 4,289,693
208 4,289,694
239 A 4,289,695
245.2 T 4,289,696
245.5 4,289,697
314.5 4,289,698
326.5 FM 4,289,699
340.9 R 4,289,700
343.6 4,289,701
343.7 4,289,702
345.1 4,289,705
345.8 R 4,289,703
4,289,704
369 4,289,706
404.5 4,289,707
413 4,289,708
456 P 4,289,711
967 4,289,712

CLASS 261

27 4,289,713
34 R 4,289,714
44 C 4,289,715

CLASS 264

45.9 4,289,716
46.5 4,289,717
50 4,289,718
61 4,289,719
63 4,289,720
85 4,289,721
102 4,289,722
187 4,289,723
225 4,289,724
287 4,289,725
318 4,289,726
514 4,289,727

CLASS 267

112 4,289,304

CLASS 269

43 4,289,305

CLASS 272

33 R 4,289,306
52.5 4,289,307
70 4,289,308
73 4,289,309
85 4,289,310

CLASS 273

63 A 4,289,312
167 F 4,289,311
256 4,289,313
260 4,289,314
298 4,289,315

CLASS 277

1 4,289,317
12 4,289,318
27 4,289,264
59 4,289,319
67 4,289,320
152 4,289,321
188 A 4,289,322

CLASS 280

11.21 4,289,323
38 4,289,324
87.04 A 4,289,325
646 4,289,326
737 4,289,327
803 4,289,328
804 4,289,329

CLASS 281

21 R 4,289,330
47 4,289,331

CLASS 282

27.5 4,289,332

CLASS 283

35 4,289,333

CLASS 285

55 4,289,334
91 4,289,335
136 4,289,336
158 4,289,337
229 4,289,338
305 4,289,339
382.4 4,289,340

CLASS 289

16.5 4,289,341

CLASS 290

44 4,289,970
52 4,289,971

CLASS 292

49 4,289,342
117 4,289,343

CLASS 294

2 4,289,344

CLASS 296

37.16 4,289,345
105 4,289,346
107 4,289,347
157 4,289,348
213 4,289,349

CLASS 297

172 4,289,350
307 4,289,351
473 4,289,352

CLASS 298

17.5 4,289,353

CLASS 299

4 4,289,354
9 4,289,355
33 4,289,356
81 4,289,357

CLASS 303

6 C 4,289,359
22 R 4,289,358

CLASS 307

116 4,289,972
246 4,289,975
247 R 4,289,976
270 4,289,977
4,289,978
272 A 4,289,979
308 4,289,980
350 4,289,981
448 4,289,973
463 4,289,982
527 4,289,974

CLASS 308

178 4,289,360

CLASS 310

26 4,289,987
49 R 4,289,983
54 4,289,984
61 4,289,985
4,289,986
68 E 4,289,988
261 4,289,989

CLASS 312

100 4,289,361
138 R 4,289,362
257 R 4,289,363

CLASS 313

143 4,289,990
489 4,289,991

CLASS 315

39.77 4,289,992
311 4,289,993
371 4,289,994

CLASS 318

9 4,289,995
38 4,289,996
113 4,289,997
254 4,289,998
341 4,289,999
566 4,290,000
811 4,290,001

CLASS 320

20 4,290,002

CLASS 323

241 4,290,003
270 4,290,007
311 4,290,004
313 4,290,005
326 4,290,006

CLASS 324

57 R 4,290,008
4,290,009
57 SS 4,290,010
71 CP 4,290,011
71 EB 4,290,012
73 PC 4,290,013
77 A 4,290,014
158 R 4,290,015
216 4,290,016
237 4,290,017
255 4,290,018
311 4,290,019
334 4,290,020
429 4,290,021

CLASS 328

55 4,290,022

CLASS 330

4,290,023
85 4,290,024
254 4,290,025
255 4,290,026
293 4,290,027

CLASS 331

1 A 4,290,028
4,290,029
3 4,290,030
94.5 D 4,290,032
94.5 G 4,290,031

CLASS 333

141 4,290,033
173 4,290,034
186 4,290,035
215 4,290,036

CLASS 335

202 4,290,037
214 4,290,038
262 4,290,039
274 4,290,040

CLASS 338

21 4,290,041
113 4,290,042

CLASS 339

17 CF 4,289,364
21 R 4,289,365
49 B 4,289,366
64 R 4,289,367
89 M 4,289,368
118 R 4,289,369
125 R 4,289,370

CLASS 340

29 4,290,043
52 C 4,290,045
52 H 4,290,044
63 4,290,046
134 4,290,047
4,290,048
146.3 MA 4,290,049
347 DA 4,290,050
347 DD 4,290,051
365 C 4,290,052
384 E 4,290,053
4,290,054
518 4,290,055
538 4,290,056
539 4,290,057
566 4,290,058
624 4,290,059
638 4,290,060
712 4,290,061
721 4,290,062
723 4,290,063
4,290,064

870.43 4,290,065

CLASS 343

12 R 4,290,067
17.1 R 4,290,066
702 4,290,068
722 4,290,069
788 4,290,070
819 4,290,071

CLASS 346

1.1 4,290,072
75 4,290,073
4,290,074
76 PH Re.30,743
154 4,290,076

CLASS 350

3.71 4,289,371
3.83 4,289,372
96.16 4,289,373
96.20 4,289,374
96.23 4,289,375
99 4,289,376
169 4,289,377
174 4,289,378
292 4,289,380
320 4,289,381
331 R 4,289,382
334 4,289,383
392 4,289,384
419 4,289,379
468 4,289,385

CLASS 351

128 4,289,386
159 4,289,387

CLASS 354

25 4,289,388
31 4,289,389
187 4,289,390
219 4,289,391
225 4,289,392
293 4,289,393
299 4,289,394

CLASS 355

3 BE 4,289,395
45 4,289,396

CLASS 356

5 4,289,397
73.1 4,289,398
226 4,289,399
305 4,289,401
313 4,289,402
349 4,289,403
351 4,289,404
376 4,289,400
407 4,289,405
429 4,289,406

CLASS 357

41 4,290,077
4,290,078
71 4,290,079
81 4,290,080

CLASS 358

4 4,290,081
8 4,290,082
88 4,290,083
260 4,290,084
264 4,290,085
293 4,290,086

CLASS 360

33 4,290,087
66 4,290,088
72.1 4,290,089
4,290,090

CLASS 361

228 4,290,091

CLASS 362

61 4,290,092
98 4,290,093
145 4,290,094
191 4,290,095
223 4,290,096
264 4,290,097
267 4,290,098
352 4,290,099

CLASS 363

60 4,290,100
65 4,290,101

CLASS 364

200 4,290,102
4,290,103
4,290,104
4,290,105
4,290,106
431 4,290,107
480 4,290,108
481 4,290,109
500 4,290,110
768 4,290,111
822 4,290,112
900 4,290,113
4,290,114
4,290,115
4,290,116

CLASS 365

15 4,290,117
183 4,290,118
189 4,290,119
205 4,290,120
227 Re.30,744
233 4,290,121
234 4,290,122

CLASS 366

75 4,289,407
76 4,289,408
83 4,289,409
88 4,289,410

CLASS 367

13 4,290,123
18 4,290,124
87 4,290,125
93 4,290,126
123 4,290,127

CLASS 368

1 4,290,128
66 4,290,129
71 4,290,131
200 4,290,130

CLASS 369

45 4,290,132
72 4,289,316

CLASS 370

85 4,290,133
92 4,290,134
110 4,290,135

CLASS 371

24 4,290,137
25 4,290,136
29 4,290,138

CLASS 375

14 4,290,139
46 4,290,140

CLASS 400

126 4,289,411
171 4,289,412
196 4,289,413

CLASS 403

12 4,289,414
104 4,289,415
146 4,289,416
218 4,289,417
369 4,289,418

CLASS 404

6 4,289,419
35 4,289,420
106 4,289,421
124 4,289,422

CLASS 405

61 4,289,423
179 4,289,424
210 4,289,425
259 4,289,426
260 4,289,427

CLASS 406

39 4,289,428
105 4,289,429

CLASS 408

1 R 4,289,430
154 4,289,431
201 4,289,432

CLASS 409

29 4,289,433
177 4,289,434

CLASS 411

34 4,289,060
4,289,061
4,289,062
187 4,289,181
451 4,289,058
531 4,289,059

CLASS 414

39 4,289,435
76 4,289,436
119 Re.30,742
315 4,289,437
412 4,289,438
523 4,289,439
4,289,440
589 4,289,441
629 4,289,442
748 4,289,443

CLASS 415

3 4,289,444
113 4,289,445
174 4,289,446
200 4,289,447

CLASS 416

140 4,289,448
185 4,289,449
192 4,289,450

CLASS 417

40 4,289,451
222 4,289,452
269 4,289,453
300 4,289,454
332 4,289,455
364 4,289,456
424 4,289,457
464 4,289,458
475 4,289,459

CLASS 418

78 4,289,460
84 4,289,461

CLASS 422

24 4,289,728
144 4,289,729
178 4,289,730
206 4,289,731
224 4,289,732
227 4,289,733
272 4,289,734

CLASS 423

136 4,289,735
158 4,289,736
228 4,289,738
245 4,289,737
306 4,289,739
328 4,289,740
376 4,289,741
450 4,289,742
4,289,743
579 4,289,744
594 4,289,745
633 4,289,746

CLASS 424

1 4,289,747
4,289,748
28 4,289,749
33 4,289,750
35 4,289,751
47 4,289,752
48 4,289,753
52 4,289,754
4,289,755
101 4,289,756
120 4,289,757
132 4,289,758
177 4,289,759
181 4,289,760
240 4,289,761
242 4,289,762
243 4,289,763
4,289,764
246 4,289,765
4,289,766
4,289,767
247 4,289,768
248.54 4,289,770
248.56 4,289,769
249 4,289,771
250 4,289,772
4,289,773
4,289,774
251 4,289,775
253 4,289,776
258 4,289,777
263 4,289,778
4,289,779
267 4,289,780
4,289,781
273 B 4,289,782
273 R 4,289,783
274 4,289,784
279 4,289,785
312 4,289,786
329 4,289,787

CLASS 425

8 4,289,462
47 4,289,463
66 4,289,464
111 4,289,465
112 4,289,466
141 4,289,467
146 4,289,468
302.1 4,289,469
336 4,289,470
373 4,289,471
415 4,289,472
567 4,289,473

CLASS 426

61 4,289,788
4,289,789
93 4,289,790
139 4,289,791
241 4,289,792
491 4,289,793
660 4,289,794

CLASS 427

3 4,289,795
39 4,289,797
4,289,798
65 4,289,799
68 4,289,800
94 4,289,801
125 4,289,802
134 4,289,803
135 4,289,804
140 4,289,805
150 4,289,806
195 4,289,807
209 4,289,808
230 4,289,809
4,289,810
4,289,811
379 4,289,812
385.5 4,289,813
4,289,814

CLASS 428

35 4,289,815
4,289,816
4,289,817
4,289,818
43 4,289,819
57 4,289,820
125 4,289,821
172 4,289,822
212 4,289,822
245 4,289,823
288 4,289,824
407 4,289,825
418 4,289,826
423.4 4,289,827
425.9 4,289,828
469 4,289,829
475.8 4,289,830
515 4,289,831
542 4,289,832
544 4,289,833
601 4,289,834

CLASS 429

50 4,289,835
61 4,289,836

CLASS 430

39 4,289,837
163 4,289,838
177 4,289,839
207 4,289,840
253 4,289,841
270 4,289,842
4,290,075
271 4,289,843
281 4,289,844
296 4,289,845
314 4,289,846
389 4,289,847

CLASS 431

10 4,289,474
11 4,289,475
66 4,289,476
171 4,289,477
344 4,289,478

CLASS 432

3 4,289,479
8 4,289,480
96 4,289,481
4,289,482
106 4,289,483
241 4,289,484
245 4,289,485

CLASS 433

72 4,289,848
118 4,289,486
123 4,289,849

CLASS 435

68 4,289,850
71 4,289,851
136 4,289,852
177 4,289,853
241 4,289,854
287 4,289,855

CLASS 440

31 4,289,487
57 4,289,488

CLASS 455

2 4,290,141
3 4,290,142
38 4,290,143
63 4,290,144
113 4,290,145
612 4,290,146

CLASS 474

52 4,289,489
144 4,289,490

CLASS 493

124 4,289,491
371 4,289,492
389 4,289,493
405 4,289,494

CLASS 518

714 4,289,709
717 4,289,710

CLASS 521

51 4,289,856
85 4,289,857
131 4,289,858

CLASS 525

104 4,289,859
263 4,289,860
346 4,289,861
538 4,289,862

CLASS 526

106 4,289,863
235 4,289,864
288 4,289,865
320 4,289,866

CLASS 528

12 4,289,867
73 4,289,868
4,289,869
193 4,289,870
309 4,289,871
328 4,289,872
357 4,289,873
487 4,289,874

CLASS 536

60 4,289,875

CLASS 542

416 4,289,876
431 4,289,877
4,289,878

CLASS 544

49 4,289,879
103 4,289,880
352 4,289,881

CLASS 546

141 4,289,882
158 4,289,883
283 4,289,884

CLASS 548

125 4,289,885
165 4,289,886
224 4,289,887
253 4,289,888

CLASS 556

430 4,289,890
453 4,289,891
470 4,289,889

CLASS 560

26 4,289,892
55 4,289,893
82 4,289,894
92 4,289,895
4,289,896
159 4,289,897

CLASS 562

503 4,289,898
4,289,899
4,289,900
4,289,901
4,289,902

CLASS 564

20 4,289,903
91 4,289,904
248 4,289,905
330 4,289,906
399 4,289,907
490 4,289,908

CLASS 568

315 4,289,909
367 4,289,910
396 4,289,911
422 4,289,912
444 4,289,913
567 4,289,914
609 4,289,915

CLASS 570

209 4,289,916

CLASS 585

359 4,289,917
422 4,289,918
664 4,289,919

CLASSIFICATION OF DESIGNS

D2—	190	260,695			260,716		57	260,737		185	260,759	D19—	61	260,779		13	260,800
D3—	30	260,696		191	260,717		71	260,738		317	260,755	D20—	10	260,780		18	260,801
	32	260,697		234	260,718		83	260,739	D13—	10	260,760		22	260,781			260,802
		260,698	D7—	60	260,719		96	260,740		23	260,761		42	260,782			260,803
	65	260,699		70	260,720		106	260,741		41	260,762	D21—	13	260,783		25	260,804
	74	260,700		87	260,721		109	260,742	D14—	10	260,763			260,785		27	260,805
D6—	9	260,701		104	260,722		126	260,743			260,764		27	260,784		28	260,806
	20	260,702		108	260,723	D11—	43	260,744		15	260,765		82	260,786	D23—	34	260,807
	22	260,703	D8—	12	260,724		48	260,745		25	260,766		83	260,787		35	260,808
	24	260,704		51	260,725		81	260,746		53	260,769		87	260,788			260,809
	64	260,705		57	260,726		131	260,747		68	260,770			260,789		44	260,810
	75	260,706		72	260,727		133	260,748			260,771		108	260,790	D24—	10	260,811
	90	260,707		101	260,728		146	260,749		100	260,767		109	260,791			260,812
	144	260,708		331	260,729		153	260,750			260,768		131	260,792		21	260,813
	146	260,709		356	260,730		155	260,751	D15—	29	260,772		147	260,793		24	260,814
	149	260,710	D9—	307	260,731		157	260,752	D16—	25	260,773		150	260,794		29	260,815
	177	260,711		349	260,732	D12—	32	260,753		127	260,774			260,795		31	260,816
		260,712		367	260,733		54	260,754	D17—	18	260,775		196	260,796		58	260,817
		260,713		373	260,734		146	260,756	D18—	7	260,776		228	260,797		99	260,818
	179	260,714		447	260,735		158	260,757			260,777		249	260,798			
	186	260,715	D10—	46	260,736		180	260,758		22	260,778	D22—	1	260,799	D25—	33	260,819

CLASSIFICATION OF PLANTS

P—	63	4,766															

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(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,288,897		4,289,306		4,290,065		4,290,061		4,289,189		4,289,096
	4,289,445		4,289,315		4,290,076		4,290,130		4,289,197		4,289,154
	4,289,966		4,289,317		4,290,077		4,290,139		4,289,207		4,289,414
04 :	4,288,878		4,289,323		4,290,078	10 :	4,288,999		4,289,246		4,289,619
	4,288,954		4,289,324		4,290,083		4,289,464		4,289,250		4,290,018
	4,288,955		4,289,341		4,290,085		4,289,480		4,289,251		4,290,095
	4,289,010		4,289,361		4,290,087	12 :	4,288,879		4,289,269	20 :	4,289,587
	4,289,050		4,289,367		4,290,093		4,288,911		4,289,330		4,289,751
	4,289,142		4,289,381		4,290,100		4,288,935		4,289,337	21 :	4,288,995
	4,289,245		4,289,384		4,290,102		4,288,962		4,289,338		4,289,133
	4,289,355		4,289,417		4,290,106		4,288,990		4,289,351		4,289,302
	4,289,564		4,289,419		4,290,114		4,288,996		4,289,468		4,289,411
	4,289,662		4,289,436		4,290,115		4,289,041		4,289,472		4,289,412
	4,289,713		4,289,451		4,290,122		4,289,132		4,289,473		4,289,569
	4,289,927		4,289,452		4,290,123		4,289,137		4,289,505		4,289,666
	4,289,982		4,289,459		4,290,140		4,289,141		4,289,524		4,289,670
	4,290,006		4,289,491	08 :	4,288,901		4,289,215		4,289,530		4,289,729
	4,290,066		4,289,515		4,289,335		4,289,219		4,289,554		4,289,811
	4,290,137		4,289,542		4,289,528		4,289,243		4,289,595	22 :	4,289,003
05 :	4,288,940		4,289,557		4,289,529		4,289,264		4,289,625		4,289,127
	4,289,259		4,289,563		4,289,816		4,289,413		4,289,630		4,289,210
06 :	Re.30,744		4,289,568		4,289,973		4,289,446		4,289,644		4,289,421
	4,288,880		4,289,573		4,290,055		4,289,583		4,289,671		4,289,477
	4,288,886		4,289,574	09 :	4,288,917		4,289,609		4,289,675		4,289,532
	4,288,891		4,289,598		4,288,953		4,289,719		4,289,800		4,289,606
	4,288,894		4,289,608		4,288,979		4,289,749		4,289,835		4,289,631
	4,288,916		4,289,610		4,288,983		4,289,809		4,289,870		4,289,655
	4,288,922		4,289,615		4,289,013		4,289,917		4,289,874		4,289,673
	4,288,927		4,289,616		4,289,070		4,289,977		4,289,931		4,289,807
	4,288,930		4,289,634		4,289,119		4,290,031		4,289,934		4,289,862
	4,288,974		4,289,648		4,289,191		4,290,032		4,289,994	23 :	4,289,079
	4,288,982		4,289,653		4,289,307		4,290,138		4,290,011		4,289,469
	4,288,998		4,289,701		4,289,319	13 :	4,289,082		4,290,016		4,289,821
	4,289,017		4,289,714		4,289,383		4,289,343		4,290,056	24 :	4,289,016
	4,289,055		4,289,726		4,289,395		4,289,558	18 :	4,288,944		4,289,057
	4,289,069		4,289,747		4,289,460		4,289,724		4,289,131		4,289,097
	4,289,071		4,289,758		4,289,484	17 :	4,288,887		4,289,213		4,289,556
	4,289,092		4,289,812		4,289,486		4,288,910		4,289,504		4,289,629
	4,289,122		4,289,882		4,289,516		4,288,915		4,289,692		4,289,677
	4,289,138		4,289,909		4,289,570		4,288,949		4,289,695		4,289,748
	4,289,147		4,289,922		4,289,580		4,288,961		4,289,722		4,289,791
	4,289,152		4,289,979		4,289,613		4,288,994		4,289,766		4,289,808
	4,289,155		4,289,980		4,289,650		4,289,006		4,289,773		4,289,969
	4,289,212		4,289,993		4,289,702		4,289,019		4,289,778		4,290,035
	4,289,233		4,289,998		4,289,704		4,289,022		4,289,782	25 :	4,288,920
	4,289,234		4,289,999		4,289,712		4,289,029		4,289,787		4,288,926
	4,289,235		4,290,000		4,289,754		4,289,047		4,289,988		4,288,946
	4,289,244		4,290,014		4,289,755		4,289,090		4,290,004		4,288,989
	4,289,248		4,290,017		4,289,801		4,289,091		4,290,045		4,289,000
	4,289,258		4,290,020		4,289,879		4,289,167		4,290,057		4,289,015
	4,289,287		4,290,030		4,289,946		4,289,174		4,290,060		4,289,113
	4,289,289		4,290,033		4,289,963		4,289,175	19 :	4,288,951		4,289,222
	4,289,305		4,290,040		4,289,964		4,289,177		4,289,008		4,289,331

4,289,360 4,289,144 4,290,003 4,289,871 4,289,405 4,289,732
4,289,372 4,289,225 4,290,023 4,289,995 4,289,406 4,289,738
4,289,397 4,289,364 4,290,028 39 : 4,288,888 4,289,443 4,289,743
4,289,408 4,289,437 4,290,034 4,288,898 4,289,465 4,289,744
4,289,497 4,289,470 4,290,091 4,288,905 4,289,475 4,289,792
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4,289,550 4,289,892 35 : 4,289,030 4,288,991 4,289,520 4,289,820
4,289,571 28 : 4,289,420 4,289,398 4,289,007 4,289,537 4,289,853
4,289,590 29 : 4,288,899 36 : 4,288,877 4,289,046 4,289,548 4,289,858
4,289,664 4,288,921 4,288,913 4,289,049 4,289,584 4,289,863
4,289,839 4,288,942 4,288,919 4,289,051 4,289,597 4,289,912
4,289,849 4,288,957 4,288,923 4,289,058 4,289,623 4,289,983
4,289,890 4,289,095 4,288,938 4,289,065 4,289,645 4,290,047
4,289,929 4,289,265 4,289,027 4,289,066 4,289,652 4,290,063
4,289,932 4,289,309 4,289,052 4,289,077 4,289,674 4,290,064
4,289,952 4,289,440 4,289,115 4,289,114 4,289,678 4,290,071
4,289,975 4,289,476 4,289,118 4,289,120 4,289,697 4,290,088
4,289,991 4,289,562 4,289,124 4,289,181 4,289,798 4,290,121
4,290,005 4,289,753 4,289,125 4,289,231 4,289,804 4,290,124
4,290,013 4,289,854 4,289,136 4,289,242 4,289,805 49 : 4,289,036
4,290,069 4,289,864 4,289,149 4,289,277 4,289,819 4,289,064
4,290,104 4,289,886 4,289,153 4,289,281 4,289,823 4,289,117
4,290,118 31 : 4,289,403 4,289,190 4,289,296 4,289,875 4,289,123
4,290,133 32 : 4,288,885 4,289,267 4,289,308 4,289,885 4,289,150
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4,288,931 4,289,591 4,289,368 4,289,427 4,289,942 4,290,059
4,288,970 4,290,116 4,289,371 4,289,430 4,289,970 51 : 4,288,977
4,288,992 4,290,128 4,289,487 4,289,447 4,290,002 4,289,068
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4,289,048 4,289,040 4,289,502 4,289,492 4,290,098 4,289,196
4,289,060 4,289,080 4,289,517 4,289,499 4,290,105 4,289,291
4,289,061 4,289,109 4,289,522 4,289,503 44 : 4,288,892 4,289,380
4,289,076 4,289,134 4,289,535 4,289,514 4,288,943 4,289,442
4,289,107 4,289,145 4,289,538 4,289,543 4,289,382 4,289,457
4,289,151 4,289,146 4,289,539 4,289,617 4,290,127 4,289,824
4,289,156 4,289,158 4,289,594 4,289,635 45 : 4,289,085 4,289,834
4,289,166 4,289,236 4,289,600 4,289,651 46 : 4,288,933 4,289,941
4,289,249 4,289,313 4,289,727 4,289,667 4,288,941 4,289,955
4,289,290 4,289,340 4,289,740 4,289,668 4,289,255 4,290,001
4,289,295 4,289,349 4,289,794 4,289,683 47 : 4,289,293 53 : 4,288,928
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4,289,314 4,289,415 4,289,810 4,289,767 4,289,730 4,288,981
4,289,328 4,289,426 4,289,815 4,289,818 48 : 4,288,912 4,288,984
4,289,347 4,289,498 4,289,817 4,289,825 4,288,947 4,289,089
4,289,350 4,289,501 4,289,837 4,289,924 4,288,978 4,289,241
4,289,434 4,289,506 4,289,840 4,289,945 4,288,985 4,289,270
4,289,546 4,289,525 4,289,842 4,289,950 4,289,020 4,289,312
4,289,547 4,289,531 4,289,844 4,290,007 4,289,021 4,289,325
4,289,565 4,289,578 4,289,846 4,290,096 4,289,023 4,289,348
4,289,572 4,289,602 4,289,865 4,290,143 4,289,024 4,289,698
4,289,596 4,289,603 4,289,876 40 : 4,289,093 4,289,072 4,289,717
4,289,639 4,289,605 4,289,889 4,289,198 4,289,157 4,289,987
4,289,745 4,289,607 4,289,891 4,289,203 4,289,163 54 : 4,289,709
4,289,757 4,289,636 4,289,910 4,289,204 4,289,165 4,289,710
4,289,761 4,289,640 4,289,914 4,289,226 4,289,199 4,289,907
4,289,785 4,289,658 4,289,920 4,289,576 4,289,200 55 : 4,288,909
4,289,802 4,289,661 4,289,953 4,289,588 4,289,201 4,288,965
4,289,826 4,289,682 4,289,954 4,289,632 4,289,202 4,289,126
4,289,859 4,289,690 4,289,978 4,289,679 4,289,205 4,289,224
4,289,867 4,289,700 4,290,015 4,289,742 4,289,206 4,289,239
4,289,877 4,289,705 4,290,022 4,289,919 4,289,292 4,289,240
4,289,878 4,289,739 4,290,027 4,290,110 4,289,294 4,289,254
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4,289,893 4,289,760 4,290,048 42 : 4,288,900 4,289,346 4,289,271
4,289,898 4,289,769 4,290,052 4,288,908 4,289,353 4,289,320
4,289,899 4,289,784 4,290,068 4,288,959 4,289,354 4,289,396
4,289,900 4,289,788 4,290,079 4,288,969 4,289,366 4,289,488
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4,289,904 4,289,836 4,290,141 4,289,129 4,289,432 4,289,793
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4,289,944 4,289,841 4,289,318 4,289,229 4,289,527 4,289,830
4,290,049 4,289,845 4,289,321 4,289,232 4,289,534 4,289,832
4,290,092 27 : Re.30,742 4,289,848 4,289,479 4,289,252 4,289,593 4,289,923
4,288,884 4,289,872 4,289,510 4,289,261 4,289,621 4,289,948
4,288,937 4,289,903 4,289,511 4,289,288 4,289,633 4,289,951
4,288,980 4,289,933 4,289,555 4,289,333 4,289,656 4,289,967
4,289,014 4,289,936 4,289,559 4,289,339 4,289,669 4,289,989
4,289,088 4,289,960 4,289,612 4,289,362 4,289,708 4,290,072

DESIGN PATENTS

6 : 260,769 260,782 12 : 260,744 20 : 260,806 260,771 260,746
06 : 260,696 260,785 260,760 25 : 260,801 260,775 47 : 260,755
260,697 260,789 13 : 260,714 26 : 260,725 260,802 48 : 260,710
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260,723 260,800 16 : 260,724 260,810 39 : 260,731 260,753
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260,737 260,812 260,708 260,748 260,814 260,793
260,743 260,813 260,721 32 : 260,757 41 : 260,790 51 : 260,768
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260,779 260,778 18 : 260,738 260,763 260,817 55 : 260,809
260,781 260,819 19 : 260,703 260,764 44 : 260,722

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25 : 4,766

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OFFICIAL GAZETTE

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UNITED STATES PATENT AND TRADEMARK OFFICE

September 22 1981

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

September 22, 1981 Volume 1010 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,963,531, Re. S.N. 260,906, Filed May 6, 1981, Cl. 148/31.5, COLD ROLLED, DUCTILE, HIGH STRENGTH STEEL STRIP AND SHEET AND METHOD THEREFOR, James A. Elias, et al., Owner of Record: *Armco, Inc., Middletown, Ohio,* Attorney or Agent: Joseph V. Hoffman, et al., Ex. Gp.: 111

4,042,135, Re. S.N. 256,185, Filed Apr. 21, 1981, Cl. 414/718, LOAD HANDLING VEHICLE, Stuart Pugh, et al., Owner of Record: *The Liner Concrete Machinery Co., Ltd., Tyne and Wear, England,* Attorney or Agent: Neil B. Siegel, Ex. Gp.: 314

4,067,754, Re. S.N. 260,904, Filed May 6, 1981, Cl. 148/12F, COLD ROLLED, DUCTILE, HIGH STRENGTH STEEL STRIP AND SHEET AND METHOD THEREFOR, James A. Elias, et al., Owner of Record: *Armco, Inc., Middletown, Ohio,* Attorney or Agent: Joseph V. Hoffman, et al., Ex. Gp.: 111

4,148,546, Re. S.N. 251,929, Filed Apr. 7, 1981, Cl. 339/192, ELECTRICAL POWER DISTRIBUTION ASSEMBLY, Lester E. Wilson, Jr., et al., Owner of Record: *Inventor,* Attorney or Agent: Richard J. Birch, Ex. Gp.: 322

4,245,141, Re. S.N. 261,456, Filed May 7, 1981, Cl. 200/314, ELECTRICAL SWITCHES, David Aspden, Owner of Record: *Lucas Industries Ltd., Birmingham, England,* Attorney or Agent: John Clark Holman, et al., Ex. Gp.: 243

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,518,946, Reexam. No. 90/000,059, Requested: Aug. 21, 1981, Cl. 104/174, PUSHER CONVEYOR FOR WHEELED CARRIERS, Shelden M. Kavieff, Owner of Record: *Jervis B. Webb Co.,* Attorney or Agent: Farley, Forster & Farley, Ex. Gp.: 316, Requester: Armstrong, Nikaido, Marmelstein & Kubovcik, Washington, D.C.

3,634,973, Reexam. No. 90/000,060, Requested: Aug. 25, 1981, Cl. 51/2R, APPARATUS FOR ABRADING BY EXTRUSION AND ABRADING MEDIUM, Ralph W. McCarty, Owner of Record: *Extrude Hone Corp.,* Attorney or Agent: Baldwin, Egan, et al., Ex. Gp.: 323, Requester: Dynetics Corp., c/o Thompson, Birch, Gauthier & Samuels, Boston, Mass.

Vacancy Announcement
Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of $50,113 per annum, which is the current statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

Qualifications: Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;
2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and

reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Crystal Plaza 2, Room 9C05
2011 Jefferson Davis Hwy.
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

MARGARET M. LAURENCE
July 27, 1981 *Assistant Commissioner for Trademarks.*

Reorganization of Trademark Examining Operation

The Trademark Examining Operation will be undergoing a reorganization from mid-September through October. The reorganization includes decentralizing the clerical staff, adding a sixth examining division, and reassigning trademark examining attorneys and goods and services classes among the divisions. Office space is being remodelled to accommodate these changes. Due to required construction on the second and third floors of Crystal Plaza Bldg. 2, some inconvenience is anticipated.

The Public Search Room will remain open during normal public hours of 8:00 a.m. to 5:30 p.m. However, access to application files may be interrupted at times.

After reorganization, it will be important for all correspondence and inquiries pertaining to a trademark application to identify the examining division and the trademark examining attorney handling the application. If the applicant has not yet been notified of the division number and the name of the examining attorney, correspondence should be addressed to the division which handles the class of goods or services covered by the application.

New telephone numbers will be assigned to several areas of the Trademark Examining Operation. When installed, these numbers will be published in the *Official Gazette.*

Your cooperation during this reorganization will be appreciated. Any questions relating to the reorganization should be directed to the office of the Director of the Trademark Examining Operation, 703-557-3268.

MARGARET M. LAURENCE,
Sept. 1, 1981. *Assistant Commissioner for Trademarks.*

Energy-Related Inventions

This is a reminder that under Public Law 93-577, the National Bureau of Standards (NBS) evaluates "all promising energy-related inventions, particularly those submitted by individual inventors and small companies" for the purpose of obtaining grants from the Department of Energy. For further information write to: Office of Energy-Related Inventions/NBS, Washington, D.C. 20234, (phone (301) 921-3694).

PATENT NOTICES

Certificates of Correction for the Week of Sept. 22, 1981

Re. 30,430	4,262,999	4,271,166	4,276,189
4,104,295	4,263,029	4,271,430	4,276,242
4,122,029	4,263,087	4,271,465	4,276,277
4,178,843	4,263,121	4,271,489	4,276,334
4,198,175	4,263,209	4,271,519	4,276,475
4,198,487	4,263,391	4,271,875	4,276,484
4,201,779	4,263,459	4,271,945	4,276,760
4,231,642	4,263,565	4,272,092	4,276,875
4,231,999	4,263,567	4,272,148	4,277,035
4,233,736	4,264,534	4,272,155	4,277,123
4,237,928	4,264,591	4,272,292	4,277,148
4,239,519	4,264,940	4,272,339	4,277,340
4,242,124	4,265,952	4,272,454	4,277,505
4,242,607	4,266,082	4,272,509	4,277,570
4,242,956	4,267,142	4,272,519	4,277,605
4,247,386	4,267,504	4,272,682	4,277,642
4,248,160	4,267,659	4,272,788	4,277,959
4,251,082	4,268,476	4,272,859	4,278,073
4,251,115	4,268,596	4,272,895	4,278,089
4,251,434	4,268,841	4,272,899	4,278,094
4,251,700	4,268,850	4,272,985	4,278,106
4,251,828	4,268,900	4,273,064	4,278,166
4,252,681	4,268,943	4,273,079	4,278,241
4,253,743	4,269,269	4,273,118	4,278,264
4,253,985	4,269,691	4,273,530	4,278,446
4,254,225	4,269,757	4,273,983	4,278,689
4,254,451	4,269,859	4,274,251	4,278,762
4,255,336	4,269,898	4,274,326	4,278,893
4,256,753	4,269,947	4,274,355	4,278,966
4,256,833	4,270,024	4,274,433	4,279,238
4,256,891	4,270,089	4,274,443	4,279,271
4,257,456	4,270,115	4,274,651	4,279,291
4,257,872	4,270,116	4,274,849	4,279,311
4,258,919	4,270,309	4,274,855	4,279,535
4,259,424	4,270,499	4,275,156	4,279,611
4,259,947	4,270,658	4,275,202	4,279,851
4,260,229	4,270,936	4,275,850	4,280,274
4,260,259	4,271,013	4,275,863	4,280,319
4,260,483	4,271,048	4,275,974	4,280,379
4,261,977	4,271,078	4,276,004	4,281,172
4,262,717	4,271,158	4,276,019	4,281,406

Disclaimers

3,916,997.—*Larry J. Douglas* and *Charles B. Wenger,* Denver, Colo. OIL RECOVERY WITH HIGH CONDUCTIVITY MICELLAR SYSTEMS. Patent dated Nov. 11, 1975. Disclaimer filed July 6, 1981, by the assignee, *Marathon Oil Co.*

Hereby enters this disclaimer to claims 5 and 9 of said patent.

4,088,025.—*Bill D. Foster,* Ankeny; *John T. Comiskey,* Johnston; and *LeRoy H. Degner,* Des Moines, Iowa. MATERIAL SAMPLING APPARATUS. Patent dated May 9, 1978. Disclaimer filed June 22, 1981, by the assignee, *Elevator Contractors, Inc.*

Hereby enters this disclaimer to claims 10–14 of said patent.

4,250,714.—*Allan P. Covy,* Palos Verdes Estates, Calif. METHOD FOR COOLING METAL TURNINGS. Patent dated Feb. 17, 1981. Disclaimer filed July 31, 1981, by the inventor.

The term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

4,263,157.—*Eginhard Steiner,* Fullinsdorf and *Andreas Schmidt,* Reinach, Switzerland. CHLORINATED DERIVATIVES OF BUTYRIC ACID AS USEFUL LUBRICANT ADDITIVES AND LUBRICANTS CONTAINING SAME. Patent dated Apr. 21, 1981. Disclaimer filed July 9, 1981, by the assignee, *Ciba-Geigy Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 8 of said patent.

Disclaimer and Dedication

4,180,606.—*Charles M. Hance,* Woodruff and *Charles D. Martin,* Greer, S.C. FABRICS HAVING FLOCKED CORDUROY RIBS. Patent dated Dec. 25, 1979. Disclaimer and Dedication filed July 2, 1981, by the assignee, *M. Lowenstein Corp.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

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Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG

Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6–189,399. Frequency Selectable Q-Switched Laser. Filed Sept. 22, 1980.

Patent application 6–193,225. Cover Hold Down Mechanism. Filed Oct. 2, 1980.

Patent application 6–194,736. Heterodyne Indicial Refractometer. Filed Oct. 7, 1980.

Patent application 6–196,409. A Dual Channel Correlator for an FM CW Ranging Radar. Filed Oct. 14, 1980.

Patent application 6–200,297. Trailer Frame Beam. Filed Oct. 4, 1980.

Patent application 6–200,832. System and Method for Testing the Reaction of Rare Earth Ions. Filed Oct. 28, 1980.

Patent application 6–202,261. Thin Film Plane-Polarized Intensity Pickoff. Filed Oct. 30, 1980.

Patent application 6–210,068. Heat Exchanger Base for a Portable Laser System. Filed Nov. 24, 1980.

Patent application 6–216,416. Intergrating Angular Accelerometer. Filed Dec. 15, 1980.

Patent application 6–217,349. Electrostatic Safe Electric Match. Filed Dec. 17, 1980.

Patent application 6–217,881. Fluidic-Controlled Oxygen Intermittent Demand Flow Device. Filed Dec. 18, 1980.

Patent application 6–219,455. Doppler Discrimination of Aircraft Targets. Filed Dec. 22, 1980.

Patent application 6–220,485. Impedance Tapered Dematron. Filed Dec. 29, 1980.

Patent application 6–221,953. Anode Mounting for Window Type Geiger-Mueller Tube. Filed Dec. 31, 1980.

Patent application 6–241,785. Band Interacting Tunnel Heterojunction. Filed Mar. 9, 1981.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent application 6–219,397. Vacuum Blast Adapter for Bombs. Filed Dec. 22, 1980.

Patent application 6–222,845. Corrosion Monitoring System. Filed Jan. 6, 1981.

Patent 4,255,478. Composite Structures. Filed Mar. 14, 1979. Patented Mar. 10, 1981. Not available NTIS.

Patent 4,258,578. Floated, Internally Gimballed Platform Assembly. Filed June 6, 1978. Patented Mar. 31, 1981. Not available NTIS.

Patent 4,259,362. Process for Improving Baking Properties of Unbleached Flour. Filed Jan. 19, 1979. Patented Mar. 31, 1981. Not available NTIS.

Patent 4,259,834. Synchronized Flail for Treatment of Forestry Residues. Filed July 26, 1979. Patented Apr. 7, 1981. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent 4,247,646. Laboratory Apparatus for Cloning Mammalian Cells. Filed Sept. 12, 1978. Patented Jan. 27, 1981. Not available NTIS.

Patent 4,255,386. Method and Apparatus for Destroying Organic Matter to Facilitate Trace Inorganic Element Analysis. Filed Nov. 30, 1978. Patented Mar. 10, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Counsel for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6–171,567. Contrahelically Laid Torque Balanced Benthic Cable. Filed July 23, 1980.

Patent application 6–231,718. Constrained Store Ejector. Filed Feb. 5, 1981.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Milwaukee Public Library	(414) 278-3043

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 25, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-11-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-03-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-07-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-31-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	11-01-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,139,622 to 3,142,840, inclusive

Plant Patents ..... Numbers 2,416 to 2,430, inclusive

REISSUES

SEPTEMBER 22, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,745

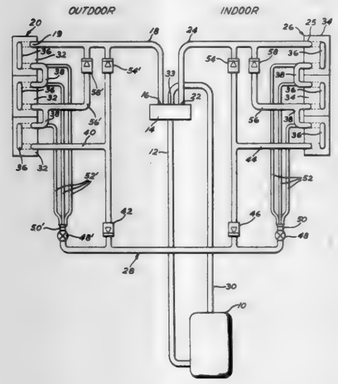
REVERSE CYCLE HEAT PUMP CIRCUIT

Leo B. Chambless, Norman, Okla., assignor to General Electric Company, Louisville, Ky.

Original No. 4,057,977, dated Nov. 15, 1977, Ser. No. 729,907, Oct. 6, 1976. Application for reissue Oct. 25, 1979, Ser. No. 85,436

Int. Cl.³ F25B *13/00*

U.S. Cl. 62—324.1 **10 Claims**



6. A reversible refrigeration system adapted for heating and cooling, comprising:

a motor compressor unit;

an indoor heat exchanger and an outdoor heat exchanger each including a plurality of circuits, each circuit defining a single continuous passageway, a heat exchanger inlet line and a heat exchanger outlet line;

a valve for reversing the flow of refrigerant through said system to operate said system in a heating or cooling mode with each of said heat exchangers arranged interchangeably as a condenser or as an evaporator;

a conduit interconnecting said heat exchangers;

means connecting in series said single continuous passageways of each of the circuits in one of said heat exchangers arranged as a condenser to provide refrigerant flow successively through each of said single continuous passageway of each of said circuits between its heat exchanger inlet line and its outlet line when that heat exchanger operates as a condenser; and

means connecting in parallel said single continuous passageway of each of the circuits in said one of said heat exchangers when said one of said heat exchanger is arranged as an evaporator to provide refrigerant flow simultaneously through the continuous passageway of each of said circuits said conduit and said reversing valve when that heat exchanger operates as an evaporator.

Re. 30,746

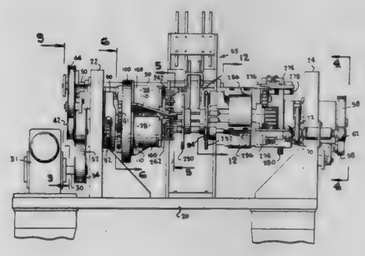
CAN CUTTING APPARATUS AND METHOD

Alphonse Stroobants, Lynchburg, and Daniel S. Cvacho, Forest, both of Va., assignors to Belgium Tool & Die Company, Lynchburg, Va.

Original No. 41,810,508, dated Jan. 1, 1980, Ser. No. 884,981, Mar. 9, 1978. Application for reissue May 14, 1980, Ser. No. 150,618

Int. Cl.³ B23B *3/06, 3/04, 7/00*

U.S. Cl. 82—56 **18 Claims**



13. A can end trimmer comprising:

frame means;

a turret plate mounted for rotation about a horizontal axis on said frame means;

power means for rotating said rotary turret plate;

a plurality of cutter unit cartridges removably supported on one side of said turret plate;

each of said cutter unit cartridges including:

a housing having a head flange engaged with one side of said turret plate;

an axially fixed rotary knife shaft;

an axially fixed rotary knife mounted on said axially fixed rotary knife shaft;

a transversely shiftable rotary knife shaft having an axis parallel to said axially fixed rotary knife shaft;

a transversely shiftable rotary knife mounted on one end of said transversely shiftable rotary knife shaft;

shaft shifting means for moving said transversely shiftable rotary knife shaft to effect movement of said transversely shiftable knife into and out of cutting permitting engagement with said axially fixed rotary knife;

a rotary power input member; and

power transmission means connecting said rotary power input members to said knife shafts for effecting rotation of said knives in unison;

a vacuum chuck mounted on [said] *a* vacuum chuck supporting housing *opposite each of said cutter unit cartridges* for rotation about an axis parallel to the axis of rotation of said turret plate; and

means for reciprocating *each of* said vacuum [chuck] *chucks* toward its associated cutter unit cartridge to effect positioning of a can *held by said vacuum chuck* to be trimmed over said axially fixed cutter knife so that the axially fixed cutter knife is inside the can to be trimmed and for subsequently reciprocating the can away from the associated cutter unit following trimming of the can to effect the removal of the trimmed can from the cutter blade area.

Re. 30,747

ADHESIVE APPLICATOR CRAYONS

Janos A. Muszik, Dusseldorf, and Wolfgang Dierichs, Dusseldorf-Holthausen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Original No. 3,576,776, dated Apr. 27, 1971, Ser. No. 785,262, Dec. 19, 1968. Application for reissue Nov. 8, 1979, Ser. No. 92,376

Claims priority, application Austria, Feb. 1, 1968, 998/68

Int. Cl.[3] C09J *3/00, 3/14*

U.S. Cl. 260—22 R 11 Claims



1. An adhesive applicator crayon comprising a shape-giving base consisting of a gel of a gel-forming salt of an aliphatic carboxylic acid having from 8 to 36 carbon atoms with a cation selected from the group consisting of alkali metals, ammonia and lower alkylamines, in an aqueous liquid selected from the group consisting of water and mixtures of water with water-miscible organic solvents, with a content of from 5% to 40%, based on the total [amount of constituents in said crayon] *of the gel-forming substance, of the liquid components and of the adhesive substance*, of a film-forming adhesive component selected from the group consisting of water-soluble and water-dispersable adhesives.

Re. 30,748

PHOSPHATIDYL QUATERNARY AMMONIUM COMPOUNDS

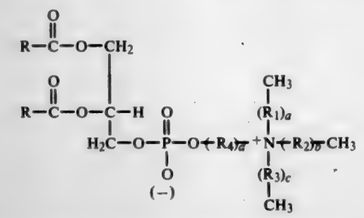
Barry D. Sears, 5 Cleveland Rd., Marblehead, Mass. 01945

Original No. 4,086,257, dated Apr. 25, 1978, Ser. No. 731,132, Oct. 12, 1976. Application for reissue Nov. 13, 1979, Ser. No. 93,631

Int. Cl.[3] A23J *7/00;* C07F *9/02*

U.S. Cl. 260—403 8 Claims

1. A synthetic phosphatidyl quaternary ammonium compound represented by the formula:



wherein R is a C_{14} to C_{20} hydrocarbon radical; a, b and c represent whole integers of from 0 to [3] *2 and a, b and c in total are equal to at least one*; d represents *a* whole [integers] *integer* of [from 1 to 5, except that in combination a, b and c cannot be zero and d cannot be two] *2;* and R_1, R_2, R_3 and R_4 are methylene radicals.

PLANT PATENTS

GRANTED SEPTEMBER 22, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,767

ROSE PLANT—73-3521

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Mar. 18, 1980, Ser. No. 131,393

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous tall bush, long stiff stems with few thorns, dark green, medium sized leaves, its uniform red flower color and light fragrance.

4,768

STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed May 27, 1980, Ser. No. 153,393

Int. Cl. A01H *5/03*

U.S. Cl. Plt.—48 1 Claim

1. The new and distinct strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

PATENTS

GRANTED SEP. 22, 1981

ERRATA

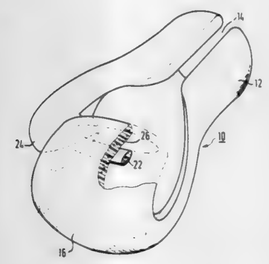
For CLASS	See PATENT NO.
411–002	4,290,337
411–021	4,290,338
411–185	4,290,469
501–013	4,290,813
501–107	4,290,814
560–076	4,291,127

PATENTS

GRANTED SEPTEMBER 22, 1981

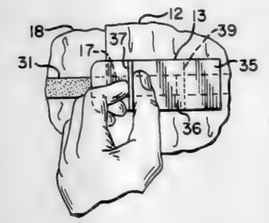
GENERAL AND MECHANICAL

4,290,147
HANDPROTECTOR FOR ATHLETES
Georg F. Brückner; Bernd Geike, both of Berlin; Fritz Berger, Ottobeuren, and Bernd-Jürgen Schoen, Grafenau, all of Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Menningen, Fed. Rep. of Germany
Filed Nov. 5, 1979, Ser. No. 90,982
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847867
Int. Cl.³ A41D *13/08*
U.S. Cl. 2—18 **7 Claims**



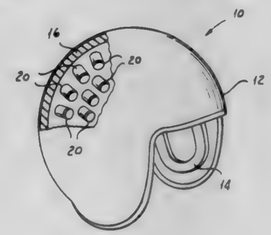
1. Handprotector for athletes, comprising a seamless one-piece protective cushion of soft and elastic polyurethane integral foam having a tubular forearm region surrounding the forearm and the wrist, said tubular forearm region having a narrow slit formed therein over the entire length thereof along the inside of the arm, a balloon-shaped hand region adjacent said forearm region, said hand region being bent back approximately 180° from the back of the hand in the vicinity of the fingertips to form the shape of a closed fist, a finger grip strap being integrably molded to said hand region and disposed exclusively on the inside thereof, and a protective thumb cover disposed adjacent said hand region and extending over the thumb at the side of said forearm region, said thumb cover being closed at the outer side and at least part of the inner side of the handprotector.

4,290,148
SURGICAL GOWN
Fred A. Roberts, 428 Beverly, Lake Forest, Ill. 60045
Filed Mar. 14, 1980, Ser. No. 130,230
Int. Cl.³ A41B *13/10*
U.S. Cl. 2—51 **11 Claims**



1. A surgical gown comprising a body having sleeves attached thereto, said body having a central panel and first and second side panels, said body having inner tie strings for securing said gown about the waist of a wearer, fastening means for releasably securing said first side panel over said second side panel and tab means secured to an outer surface of said first side panel, said tab means having a grip portion extending out of the plane of said outer surface of said first side panel for easy contact and manual retention, said tab means being releasably secured to said outer surface for easy removal whereby a person may aid the wearer to don said surgical gown without contaminating the outer surface of said gown by tying said interior ties, grasping said grip portion of said tab means, pulling said first side portion over said second side portion to engage said fastening means by pulling said grip portion and removing said tab means from said gown.

4,290,149
METHOD OF MAKING AN INDIVIDUALLY FITTED HELMET
Jackson A. Aileo, Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.
Continuation of Ser. No. 905,154, May 12, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,476
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—414 **9 Claims**

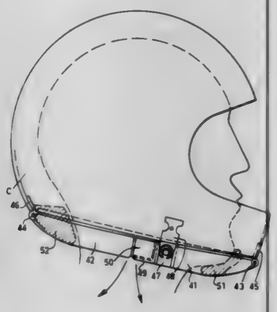


1. A method of making a custom-fitted helmet including the steps of assembling a perforated liner within a perforated fixture having the general configuration of a helmet outer shell with the liner perforations registering with the fixture perforations, assembling a plurality of elongated spacer plugs in said registering perforations with the major portions of the lengths of said spacer plugs outside said fixture, placing the assembly of said liner and said fixture and said plugs over the head of the intended wearer, pushing plugs located adjacent to the ends of the fore-and-aft median line and adjacent to the ends of the lateral median line and adjacent to the intersection of said median lines into engagement with the wearer's head properly to position said liner with reference to and to stabilize said assembly on the wearer's head, pushing the remaining spacer plugs into engagement with the wearer's head, removing said assembly from the wearer's head, removing the portions of said spacer plugs extending out from said fixture, removing said liner from the fixture, and securing said liner to a helmet shell.

4,290,150
PROTECTIVE HELMETS AND FASTENING DEVICES THEREFOR
Pierre Guerre-Berthelot, Lesigny, France, assignor to G P A International, Chevry Cossigny, France
Filed Oct. 30, 1978, Ser. No. 955,946
Claims priority, application France, Nov. 8, 1977, 77 33639; Jul. 13, 1978, 78 21002
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—421 **50 Claims**

1. Improved fastening device for securing a single piece helmet on the head, comprising essentially a rigid skirt extending completely around the base of the shell of the helmet and the lower part of a wearer's head in the region of the neck with the interposition of padding adapted to the lower part of the

head, said skirt being composed of two half-skirts hinged on the helmet at opposite points of said base, and two locking



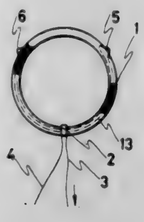
means and fixing means enabling said half-skirts to cooperate with the base of the shell of the helmet.

4,290,151

ADJUSTABLE ANNULAR PROSTHESIS FOR CARDIAC SURGERY

Miguel P. Massana, c/o Pfizer Inc., 235 E. 42nd St., New York, N.Y. 10017

Filed Jul. 22, 1980, Ser. No. 171,059
Claims priority, application Spain, Jul. 31, 1979, 244.903[U]
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **1 Claim**



1. An adjustable annular prosthesis for cardiac surgery comprising

a tubular body of textile material biocompatible with the human body, said tubular body being woven in such a manner that it is longitudinally and diametrically expandable, and the ends of said tubular body being sewn together at a seam to form a ring, and

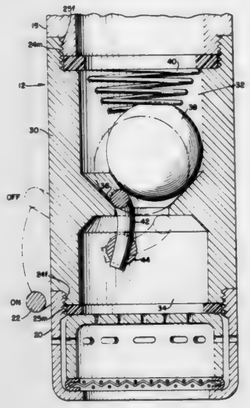
a filiform string provided in the interior of said tubular body and extending to the exterior thereof at two exit points on opposite sides of said seam so as to leave two loose ends, said string being undulated twice at approximately 130° from its respective exit points, extending to the exterior of the tubular body and then penetrating again into the interior thereof, thereby providing retention points of the string which differentiate zones of contraction during use of the prosthesis when the latter is sutured to an atrioventricular valve.

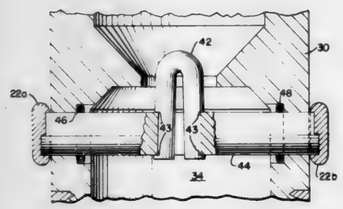
4,290,152

ON-OFF SNAP ACTION WATER AND ENERGY SAVING VALVE ATTACHMENT FOR SINK SPOUT

Joseph J. Kesselman, Sr., 16 Pont Street, New York, N.Y. 11021

Continuation-in-part of Ser. No. 948,788, Oct. 5, 1978, Pat. No. 4,181,987. This application Oct. 2, 1979, Ser. No. 81,065
Int. Cl.³ E03C *1/00, 1/086*
U.S. Cl. 4—191 **4 Claims**





1. An attachment for use between a sink spout and the non-splash aerator for said spout, said attachment comprising:

a casing having a generally longitudinal axis;

means, including a passageway along said longitudinal axis, for operatively connecting said sink spout to said non-splash aerator;

a partial partition across said passageway dividing said passageway into a first chamber and a second chamber;

the side of said partition closer to said spout defining a valve seat;

valve means in said first chamber adapted to seat against said valve seat;

spring means for normally biasing said valve means against said valve seat, whereby, when said valve means is seated, the said passageway is interrupted and water cannot flow from said spout to said aerator;

snap action means for lifting said valve means from said valve seat, whereby, when said valve means is lifted, water can flow through said passageway from said spout to said aerator;

said snap action means comprises a horizontally positioned shaft through said casing positioned below said valve seat;

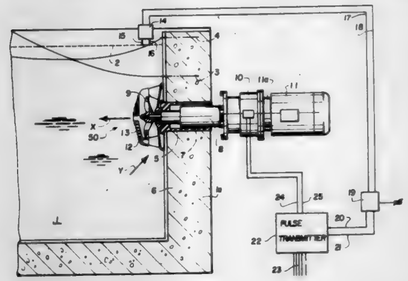
said shaft having a cam surface located substantially centrally and having an operating surface in abutment with a bottom portion of the valve means whereby said valve means may be upset from said valve seat when in one mode and said shaft having a cam surface that permits the valve means to reside in said valve seat in another operative mode.

4,290,153

METHOD AND APPARATUS FOR GENERATING A CONTROLLED CURRENT FLOW AND WAVES IN A WATER POOL

Erhard Kockerols, Bad Soden, and Albert Sagemüller, Gütersloh, both of Fed. Rep. of Germany, assignors to Thyssen Industrie AG

Filed Apr. 17, 1979, Ser. No. 30,940
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816756
Int. Cl.³ A47K *3/10*; E04H *3/18*; E02B *3/00*
U.S. Cl. 4—491 **7 Claims**



1. An apparatus for generating a control current flow in a pool, comprising, a continuously operable electric motor having a rotatable drive shaft, an electrically operated clutch connected to said drive shaft, a rotatable propeller drive shaft disposed adjacent said clutch and being engageable with said clutch upon actuation of said clutch, a propeller affixed to said drive shaft for rotation therewith, mounting means rotatably supporting said drive shaft so that said propeller is disposed in said pool below the water level thereof, sensor means for sensing variations in the water level of the pool connected to said clutch for electrically actuating said clutch to selectively engage said clutch with said propeller drive shaft to drive said propeller to produce a current flow in said pool and to subsequently disengage said clutch from said drive shaft, said sensor means including a sensor having electrodes disposed substantially at the level of the surface of the liquid in the pool, a pulse delay connected to said sensor and a pulse transmitter connected between said pulse delay and said clutch for actuating said clutch after a delay.

4,290,154

BATHTUB STRUCTURE

William H. Benjamin, Bellflower, Calif., assignor to Benjamin Manufacturing Company, Inc., Paramount, Calif.

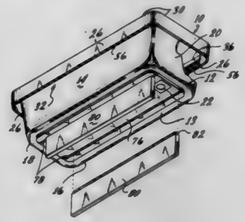
Filed Nov. 13, 1979, Ser. No. 93,889
Int. Cl.³ A47K *3/02, 3/16*
U.S. Cl. 4—538 **12 Claims**

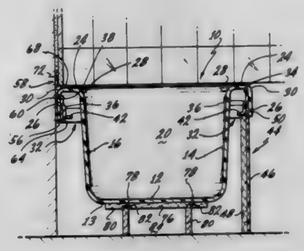
1. In a bathtub having a bottom integrally formed with four sides and a drain opening located in the bottom an improvement which comprises:

a smooth, continuous horizontally extending essentially planar surface integrally formed with and extending outwardly from each of the four sides;

a skirt member extending downwardly for a portion of the vertical height of the sides from the outer perimeter of said planar surface around said sides of said tub;

the uppermost portion of said walls, said planar surface and said skirt together forming a downwardly opening channel extending around the periphery of the uppermost portion of said walls;





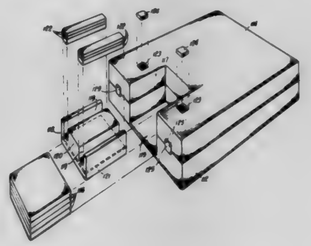
a panel retaining means located in its entirety in said channel and capable of retaining a panel in a fixed alignment with said tub.

4,290,155

ARTICULATED BED

Paul B. Hanson, 2761 Eastwood Dr., Decatur, Ga. 30032

Continuation of Ser. No. 710,597, Aug. 2, 1976, Pat. No. 4,122,567, which is a continuation-in-part of Ser. No. 702,022, Jul. 2, 1976, Pat. No. 4,086,673, which is a division of Ser. No. 533,980, Dec. 18, 1974, Pat. No. 3,991,428, which is a continuation of Ser. No. 406,567, Oct. 15, 1973, abandoned. This application Oct. 26, 1978, Ser. No. 955,019
The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.
Int. Cl.³ A47C *27/00*
U.S. Cl. 5—465 **3 Claims**



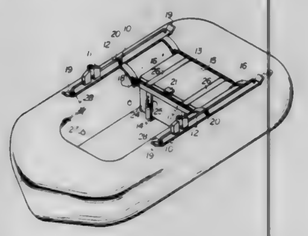
1. An improved articulated bed, comprising:

(a) a main mattress support having generally flat top and bottom surfaces and a first rectangular cavity disposed in one of its ends, said main mattress support having portions thereof on opposite sides of said first cavity;

(b) a main mattress on said top surface and having a second rectangular cavity disposed along one of its ends in registry with said first cavity, said main mattress having portions thereof on opposite sides of said second cavity;

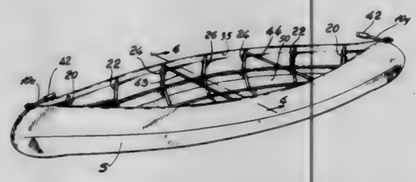
(c) a rectangular removable support means generally corresponding in dimensions and shape to said first cavity and removeably received within said first cavity; and
(d) a rectangular removable mattress means within said second cavity and being supported on said removable support means, said support means and said mattress means being selectively removable from the respective cavities to facilitate use of said main mattress and said cavities for sexual intercourse.

4,290,156
OAR LOCK SEAT
Darwin B. Rawson, Rte. 1, Box 11, Butte, Mont. 59701
Filed Aug. 9, 1979, Ser. No. 65,043
Int. Cl.[3] B63B *17/00, 29/00*
U.S. Cl. 9—1.1 **8 Claims**



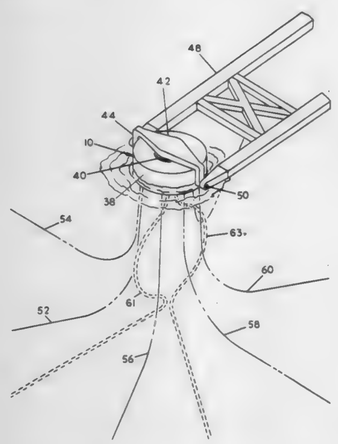
1. An oar lock seat device for use in inflatable rafts and the like comprising:
a left and right oar lock assembly means disposed on the top portions of the gunwales of the raft,
transverse structural bars disposed in longitudinally spaced relationship within the upper portion of said raft and having opposite ends detachably connected to a respective one of said left and right oar lock assembly means,
seat carriage bracket means extending from said transverse structural bars downwardly from and between said transverse structural bars within the interior of said raft to define with said transverse structural bars a recess for slidably accommodating a cooler seat box upon which an oarsman sits.

4,290,157
COLLAPSIBLE BOAT
Ragnar Jensen, Jr., Sundlia 6A, N-1315 Nesöya, Norway
Continuation-in-part of Ser. No. 912,866, Jun. 5, 1978, abandoned. This application Feb. 8, 1979, Ser. No. 10,360
Claims priority, application Canada, Sep. 24, 1976, 262026
Int. Cl.[3] B63B *7/00*
U.S. Cl. 9—2 C **8 Claims**



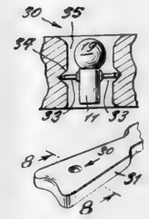
1. A collapsible boat comprising a skeleton and water-impervious skin held in tension against the skelton, the skelton comprising:
(a) a longitudinal main beam terminating in upwardly curved bow and stern sections,
(b) a pair of gunwale members and a plurality of stringers extending from the stern to the bow section, and
(c) a plurality of formers extending laterally of the beam and spaced apart longitudinally,
(d) each of the gunwales, stringers and main beam being assembled from a plurality of lightweight metallic tubular sections,
(e) each section having one end retainably inserted into the other end of the next section making up the gunwale, stringer and beam,
(f) the ends of each gunwale and stringer on one side of the longitudinal beam being connected to the end of the corresponding gunwale and stringer on the other side of the beam by individual connectors each having at least a stub cylindrical portion,
(g) each former including a lightweight metallic tubular member in the form of a U,
(h) the stern and bow sections of the main beam each being provided with open C-shaped brackets for receiving respective stub cylindrical portions of connectors of respective pairs of stringers and gunwales,
(i) a plurality of open, downwardly directed U-shaped brackets positioned on the formers, the stringers and gunwales being bowed outwardly when assembled and being held on the outer surface of the formers in a laterally spaced-apart relation by the open U-shaped brackets fixed at corresponding locations on each former,
(j) wherein the skin under tension over the skeleton holds the stringers and main beam against the formers and within the open U-shaped brackets.

4,290,158
MOORING BUOY
Francis A. Kuntz, Jr., San Pedro, Calif., assignor to Amtel, Inc., Providence, R.I.
Continuation of Ser. No. 784,132, Apr. 4, 1977, abandoned. This application Jan. 28, 1980, Ser. No. 116,098
Int. Cl.[3] B63B *21/52*
U.S. Cl. 9—8 P **3 Claims**



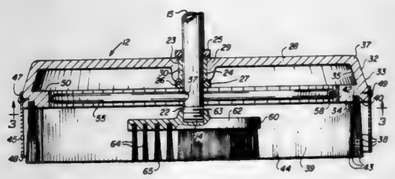
2. In a mooring system for a ship wherein a yoke is used to couple the ship to a buoy of the mooring system, the improvement comprising:
a U-shaped member;
means mounted on the top of said buoy, for supporting said U-shaped member for rotation about a vertical axis extending through the center of said buoy, and with the arms of said U-shaped member extending downwardly on either side of said buoy to be freely rotatable therearound; and
means for pivotably coupling said yoke to the arms of said U-shaped member.

4,290,159
SPORTSMAN'S RETRIEVER
Charles I. McLennan, Goochland; Marshall G. Stokes, Richmond, both of Va., and George J. Konucik, P.O. Box 9482, Richmond, Va. 23228, assignors to George Joseph Konucik, Richmond, Va.
Filed Dec. 26, 1979, Ser. No. 107,335
Int. Cl.[3] B63C *7/26*
U.S. Cl. 9—9 **1 Claim**



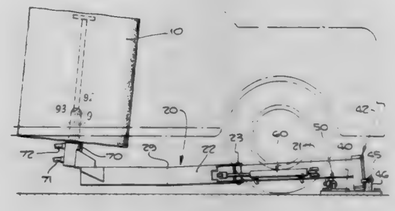
1. A sportsman's retriever, comprising, in combination, a can, a line wound on a spool retained inside said can, one end of said line being attached to said spool, and an opposite end of said line being attached to a float temporarily attached to said can by a water-soluble adhesive; said retriever including a means to allow the retriever to be mounted, and to swivel within an opening through a piece of equipment, such as a fishing pole handle or a gun stock, so that the float end of the retriever pivots to be above the spool end at all times, thus permitting the float to move freely toward the surface of the water.

4,290,160
ROTARY BRUSH
Larry K. Daniels, deceased, late of Flagstaff, Ariz., and Patricia K. Daniels, administratrix, Flagstaff, Ariz.
Filed Jan. 21, 1980, Ser. No. 113,634
Int. Cl.[3] A46B *13/06*
U.S. Cl. 15—29 **10 Claims**



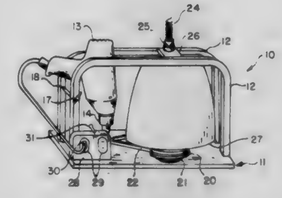
1. A rotary brush for use with a source of pressurized fluid and for utilizing said fluid for wetting and scrubbing a surface, said rotary brush comprising:
a. an elongate handle member including
i. an inlet end,
ii. a discharge end, and
iii. a fluid passage communicating between said ends;
b. connection means carried at the inlet end of said handle means for connection to said source of pressurized fluid;
c. a rotor assembly including
i. a generally circular spatter shield extending radially from said handle member,
ii. a generally cylindrical movable brush element terminating with a scrubbing face generally parallel to said shield,
iii. a skirt coaxially encircling said movable brush element and having a terminal edge proximate said scrubbing face, and
iv. a circumferential row of spaced apart inwardly directed impeller blades;
d. nozzle means communicating with said fluid passage for impinging said pressurized upon said impeller blades to urge rotation of said rotor assembly;
e. mounting means for rotatably securing said rotor assembly proximate the discharge end of said handle member.

4,290,161
AUTOMATED CARWASH BRUSH ASSEMBLY
Ronald G. Fishering, and Peter M. Fishering, both of 1344 Primrose Ave., Rialto, Calif. 92376
Filed Jun. 20, 1979, Ser. No. 50,185
Int. Cl.[3] B60S *3/06*
U.S. Cl. 15—53 AB **15 Claims**



1. An improved brush assembly for a carwash having a rotating brush mounted at the end of an arm member, the arm member moving the brush to various locations along a car passing through the carwash, the improvement comprising:
a base;
an arm member comprising a single arm assembly comprising an inside and an outside arm pivotally mounted with respect to each other at an intermediate pivot; and
support means extending upward from the base at an angle to the vertical and attached to the end of the inside arm assembly opposite the intermediate pivot for pivotally mounting the arm assembly above the base so that the arm assembly pivots in a near horizontal plane above and adjacent the base, the brush extending upward from the arm member.

4,290,162
LIGHT-WEIGHT FLOOR-STANDING DRAIN CLEANER
Michael Agostino, 2558 Yates Ave., Bronx, N.Y. 10469
Continuation-in-part of Ser. No. 56,298, Jul. 10, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 139,985
Int. Cl.[3] B08B *9/02*
U.S. Cl. 15—104.3 SN **7 Claims**



1. A light-weight portable floor-standing drain cleaner comprising a frame, said frame including a pair of adjacent spaced apart members, a first pulley rotatably mounted on said frame, a second pulley rotatably mounted on said frame, a drive belt, said drive belt connected between said first and second pulley, said first pulley including a free pulley shaft, said members including means to removably fix a hand drill with its chuck engaged with said first pulley shaft, a hollow rounded drum, said drum including an inner portion and an outer portion, said inner and outer portions closely spaced, said inner portion having a rounded top, said outer portion including an opening at its top, said outer portion including an integral hollow spin-

dle extending from said opening, said spindle rotatably mounted between said members, said drum rotatably mounted on said second pulley, and a cleaning cable, said cable slidable through said spindle and adapted to coil within said drum.

4,290,163

ARRANGEMENT FOR REMOVAL OF RESIDUES AND SEDIMENTS FROM THE INTERIOR SURFACES OF BARRELS OF WEAPONS

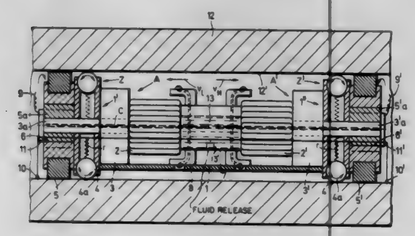
Rigobert Opitz, Habichtswald, and Juergen Flach, Duesseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,040

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839153

Int. Cl.³ F41F *17/14*; A46B *13/02*

U.S. Cl. 15—104.09 **3 Claims**



1. An automatic axially reciprocally movable cleaning arrangement for removing residues and sediments from cylindrical bores and in particular gun barrels, wherein said arrangement includes a carrier with at least one drive motor having electrical energy supply means connected thereto and electrical switching means connected to the electrical energy supply means for reversing the rotation of said at least one drive motor, and a container for holding cleaning fluid mounted on the carrier, and rotary brush means operatively connected to said motor, the improvement comprising in combination,

a. the rotary brush means being rotated about the longitudinal axis of the gun barrel;

b. drive gear means operatively connected on the one hand to said at least one drive motor and, on the other hand, to said rotary brush means;

c. centering means operatively mounted on said carriers and including a plurality of drive rollers which are continuously biased against the inner surface of the gun barrel; and

d. said drive rollers of said centering means being rotated by said drive motor to axially advance said cleaning arrangement in said gun barrel.

4,290,164

ADAPTOR FOR CONNECTING A WIPER BLADE TO A WIPER ARM

Johan H. van den Berg, Hasselt, Belgium, assignor to Archambel, S.A., Brussels, Belgium

Filed Oct. 10, 1979, Ser. No. 83,511

Claims priority, application France, Nov. 15, 1978, 78 32252

Int. Cl.³ B60S *1/40*

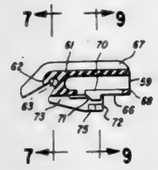
U.S. Cl. 15—250.32 **17 Claims**

1. An adaptor between a wiper blade (**43**) and two hook-shaped wiper arm ends (**41,42**), comprising an elongate body (**61,161,261,361**) which fits exactly into the inside of each of the two hooks (**45,50**) of said wiper arm ends (**41,42**) and is capable of being mounted on a rivet (**44**) of said wiper blade (**43**), characterized in that said adaptor also comprises:

(a) first blocking means (**63,163,263,363**) located at the front end portion (**62,162,262,362**) of the adaptor (**60,160,260,360**) and permitting the snap-fitting of said device onto said rivet (**44**),

(b) second blocking means (**70,170,270,372**) attached to the rear end portion (**59,159,259,359**) of the adaptor (**60,160,260,360**) and which cooperate with a first type of hook-shaped arm end (**41**) in order to prevent any displacement of said first-type arm end (**41**) with respect to said adaptor,

(c) third blocking means (**72,172,272,372**) carried by the



lower portion of the adaptor (**60,160,260, 360**) and which cooperate with a second type of hook-shaped arm end (**42**) in order to prevent any displacement of said second type arm end (**42**) with respect to said adaptor, wherein the elongate body (**61,161,261**) of the adaptor is hollow over most of its length, and comprises two lateral side walls (**67,167,267**) which project from said body (**61,161,261**) and wherein said second (**70,170,270**) and third (**72,172,272**) blocking means are attached to said lateral side walls (**67,167,267**).

4,290,165

COLLECTING APPARATUS

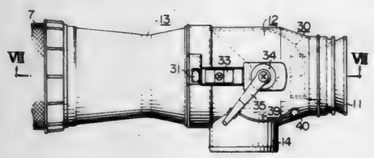
Kenzo Hiramatsu, Hoya, and Fumihiko Aiyama, Musashino, both of Japan, assignors to Kioritz Corporation, Japan

Filed Feb. 12, 1980, Ser. No. 120,600

Claims priority, application Japan, Aug. 13, 1979, 54-110473[U]

Int. Cl.³ A47L *5/18*

U.S. Cl. 15—330 **4 Claims**



1. A hand-carried apparatus selectively operable as an air sweeper for blowing to gather or scatter seeds, dust, snow, or the like or as a suction device for collecting fruit, dirt, or other objects, said apparatus comprising in combination:

a. a sleeve having an upstream end and a downstream end;

b. a nozzle extending into said sleeve at the upstream end thereof, said nozzle being connected to means for supplying air under pressure thereto, which air in turn may be directed as a jet flow into said sleeve;

c. a passage, including a restricted portion, extending from the downstream end of said sleeve;

d. a tubular member intersecting said sleeve at one side thereof and communicating with the space inside said sleeve;

e. valve means disposed within said sleeve adjacent said nozzle and being selectively switchable to a position for permitting said jet flow to pass through said passage and restricted portion to effect vacuum condition in said sleeve and to another position for deflecting said jet flow to pass directly into and through said tubular member to effect a blowing condition at the end of said tubular member spaced from said sleeve.

4,290,166

SELF-ALIGNING TWIN-WHEELED CASTER

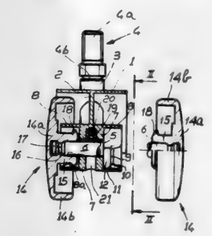
Francescantonio Melara, Via Ferrarese, 8, Bologna, Italy

Filed Jun. 19, 1979, Ser. No. 50,035

Claims priority, application Italy, Jun. 26, 1978, 3480 A/78

Int. Cl.³ A47B *91/00*

U.S. Cl. 16—47 **2 Claims**



1. A self-aligning twin-wheeled caster of a type comprising a vertical wall, a seat formed through said wall perpendicularly thereto elongated in a vertical direction and defining tubular front projections on both sides of said wall, a shaft carried in said seat and having its opposite ends extending outwardly from said seat on both sides thereof, a pair of wheels rotatably secured to said opposite ends and having tubular hub portions provided with outer collars facing said projections, a sleeve formed in said wall and contained in the same plane as said wall and perpendicular and offset with respect to said seat, a rotatably carried pin in said sleeve adapted for insertion into a vertical housing of the article whereto the caster is mounted, front bushings defined on both sides of said wall and arranged coaxial with said seat such as to receive said hub portions provided with collars, wherein according to the improvement the castor further comprises a hole formed in said wall and intersecting said seat, elastic means arranged in said hole and acting on said shaft to bring said hub portions in sliding contact with lower portions of said bushings, teeth contoured over an arc of a circle internally and at the lower half of said bushings, and close to the free ends of said bushings, said teeth defining respective shoulders adapted for snap engagement behind said collars for axially retaining said wheels.

4,290,167

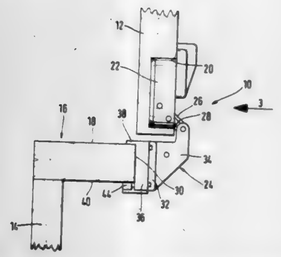
HINGE FOR FURNITURE PIECES WITH A FRAME EXTENDING INTO THE DOOR OPENING

Horst Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Mepla Inc., High Point, N.C.

Filed Jan. 17, 1980, Ser. No. 112,814

Int. Cl.³ E05D *7/04*

U.S. Cl. 16—129 **11 Claims**



1. An articulated hinge for pivotally connecting a door leaf to a carcass of a furniture piece having a carcass wall and a frame protruding at right angles from said carcass wall and having a front face, and a rear face substantially parallel to said front face, said frame having an end face defining an unobstructed door opening of the furniture piece, said end face extending substantially at right angles to said front and rear faces, and having a relatively narrow width between said front and rear faces, and its major longitudinal extension perpendicular to said width, said front face in the closed position of the door leaf being covered at least in part by the door leaf; said hinge having a carcass-related mounting part adapted to be adjustably mounted to the frame, and a door-related mounting part adapted to be mounted at the door leaf and pivotally connected via a link mechanism with said carcass-related mounting part so as to be pivotable about an axis extending parallel to said longitudinal extension when mounted to said frame, said carcass-related mounting part comprising a flange plate for holding said link mechanism and adapted to be detachably connected to the end face, said flange plate having at least one through bore for at least one connecting screw to be screwed into the end face; an adjustment plate on that side of the flange plate which faces the frame end face when mounted thereto, said adjustment plate being displaceable by a predetermined amount relative to the flange plate in the direction of said longitudinal extension, said adjustment plate, in the area below said at least one bore being provided with an oblong hole extending in the direction of displacement of the adjustment plate relative to the flange plate, surfaces of the flange plate and the adjustment plate facing each other being provided with at least one pair of complementary ramp surfaces each extending in the direction of said longitudinal extension and inclined with respect to said pivot axis of said link mechanism, said surfaces upon displacement of the adjustment plate relative to the flange plate sliding on each other, to thereby effect a change in the distance of the flange plate from the frame end face when mounted thereto and thereby a corresponding change of the amount of overlap of the frame by the door leaf.

4,290,168

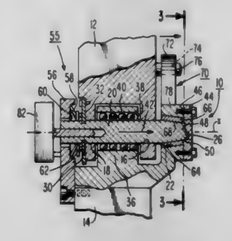
HINGE CONSTRUCTION WITH POSITIVE LOCKING MEANS

Derek S. Binge, Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 15, 1979, Ser. No. 84,587

Int. Cl.³ E05D *1/06, 7/10*

U.S. Cl. 16—175 **15 Claims**



1. A hinge joint construction comprising:

a first hinge member,

a second hinge member secured to the first member, said second member being rotatable about a pivot axis relative to the first member and axially moveable relative to the first member in a first direction parallel to the axis,

friction locking means including detent means and friction means each having engaged and disengaged states, said locking means being coupled to said members for locking said members in a fixed relative angular position only when said first member is in a first relative position along said axis with respect to said second member to thereby place said detent and friction means in the engaged state; said locking means including said friction means and said detent means both being disengaged only when said first

member is in a second relative axial position along said axis with respect to said second member, and

axial positioning means for axially placing said first member in said first axial position from said first position only when said hinge members are in said fixed angular position.

4,290,169

APPARATUS FOR FORMING A FIBER STRAND INTO CYCLOIDAL LOOPS

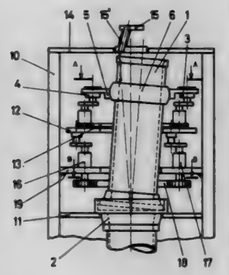
Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano SA, Vernier-Geneva, Switzerland

Filed Nov. 27, 1979, Ser. No. 97,892

Claims priority, application Switzerland, Dec. 19, 1978, 12871/78

Int. Cl.³ B65H *54/80*

U.S. Cl. 19—159 R **6 Claims**



1. Apparatus for continuously taking up a ropelike strand of fibers from a card or drawing frame and loading it into a receiving container in cycloidal loops, comprising a tube inclined from the vertical with its upper end below a sliver guide and is lower end supported such that the tube can move about its lower end, first eccentric drive means coupled to said tube for imparting thereto a gyratory movement such as would cause the tube to move in a generally conical path about its lower end, and second eccentric drive means coupled to said first eccentric drive means to impart to said first eccentric drive means a gyratory movement such that the gyratory movement of said second eccentric drive means is superimposed on the gyratory movement of said first eccentric drive means, and means for driving said first and second eccentric drive means at respectively different speeds.

4,290,170

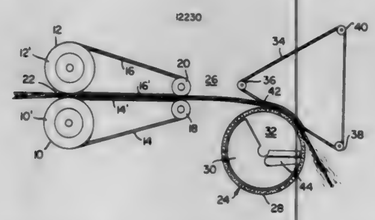
DEVICE FOR ALIGNING THE ATTENUATING FIBER MATS

David S. Brookstein, Marietta, and Alton R. Colcord, Atlanta, both of Ga., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,639

Int. Cl.³ D01H *5/26, 5/74*

U.S. Cl. 19—236 **5 Claims**



1. In a device for aligning and attenuating fiber mats wherein the mats are fed through a series of roller nips, each one of which is driven at a faster speed than a preceding one in the series of roller nips, the improvement whereby relatively soft or brittle fiber mats can be aligned and attenuated without seriously affecting the fiber length distribution, said improvement comprising in combination:

at least one preceding roller nip;

a vacuum roller comprising an inner stationary cylindrical member and an outer rotating air-permeable tubular member, said stationary cylindrical member forming a vacuum chamber in an outer surface portion thereof adjacent to said rotating tubular member;

a continuously moving air-impermeable flexible element which is located in contiguous relationship to said rotating tubular member forming therewith a roller nip adapted to receive the fiber mat upon passing from the preceding roller nip and also extending into contact with the portion of said tubular member opposite said vacuum chamber whereby upon application of a vacuum to said chamber said flexible element exerts a compressive force against said fiber mat which is sufficient to hold the mat in relative fixed position against said tubular member but without breaking or damaging the fiber mat; and

means for rotating said tubular member at a rate of speed which will impart to the fiber mat a faster linear rate of speed than that at which the mat passes through the preceding roller nip.

4,290,171

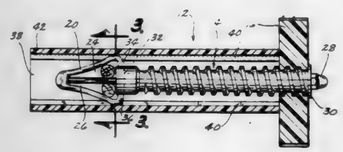
CLAMPING DEVICE

Fred F. Wilcox, 1506 Beaver Ave., Des Moines, Iowa 50310

Filed Mar. 14, 1979, Ser. No. 20,254

Int. Cl.³ B65D *63/00*

U.S. Cl. 24—18 **11 Claims**



1. A clamping device comprising,

a length of line having opposite ends,

an elongated hollow member having inner and outer ends and oppositely disposed sidewalls,

said hollow member having transversely aligned openings in its opposite sidewalls adjacent its inner end through both of which the ends of said line moveably extend in opposite directions,

an adjustment member in said hollow member and adapted to move longitudinally thereof, said adjustment member having inner and outer ends, and

line-engaging means on the inner end of said adjustment member including an opening means through which said line ends extend, said line-engaging means adapted to cooperate with the inside of said hollow member to lock said line to said line-engaging means as said adjustment member is moved outwardly in said hollow member by the edges of said openings and the side-walls of said hollow member doubling the line back upon its self on opposite sides of side line-engaging means thereby tightening said line about an article being clamped between said line and the inner end of said hollow member.

4,290,172

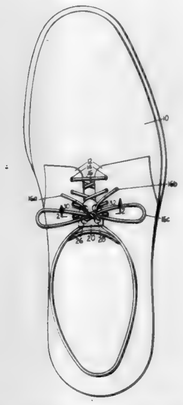
KNOT RETAINER FOR SHOELACES

Gary B. Burton, 2617 SW. Water St., Portland, Oreg. 97201

Filed Feb. 15, 1980, Ser. No. 121,743

Int. Cl.³ F16G *11/00*; A43C *9/00*

U.S. Cl. 24—117 **3 Claims**



1. A knot retainer for shoelaces comprising

(a) a disc-like body member having upper and lower surfaces and also having outer defining edges,

(b) said body member being arranged to lie flat on the lacing area of a shoe,

(c) first aperture means extending through said body member within the outer defining edges thereof arranged to receive upwardly therethrough both the free ends of a shoelace to be tied,

(d) said body member being arranged to support a bow knot in the shoelaces on the upper surface thereof in the area of said first aperture means,

(e) and a pair of second apertures extending through said body member within the outer defining edges thereof on opposite sides of said first aperture means and arranged to receive downwardly therethrough the respective free ends of the shoelace after a knot has been tied on the upper surface of said body member.

4,290,173

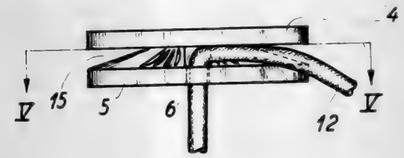
METHOD AND MEANS FOR RELEASABLE SECURING OF STRINGS

Henrik Herlau, 27 Vaeldegaardsvej, 2820Gentofte, Denmark

Filed Sep. 13, 1978, Ser. No. 941,905

Int. Cl.³ F16G *11/04*

U.S. Cl. 24—118 **1 Claim**



1. A fastening device for strings, comprising upper and lower disks disposed in mutual juxtaposition and having adjacent flat and frustoconical surfaces respectively, the smaller diameter planar end surface of said lower disk being coaxially secured to the flat surface of said upper disk, so that the region between said disks defines a circumferential string retaining wedge, a string receiving groove extending across a diameter of said lower disk, and at least one string-receiving hole normal to the smaller diameter planar end surface of said lower disk and extending through the larger diameter end surface thereof and communicating with said string-receiving groove.

4,290,174

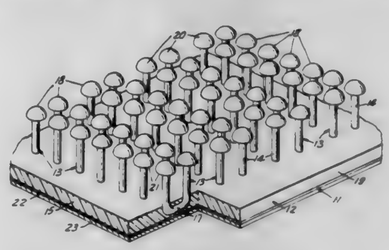
SEPARABLE FASTENER AND ARTICLE FOR MAKING SAME

Melvin O. Kalleberg, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 714,132, Aug. 13, 1976, abandoned. This application Jan. 13, 1978, Ser. No. 869,132

Int. Cl.³ A44B *18/00*

U.S. Cl. 24—204 **12 Claims**



1. A fastener comprising two articles adapted for releasable engagement, each of said articles comprising:

a backing comprising a uniform non-fibrous non-oriented polymeric surface bonding layer having an exposed major surface;

a multiplicity of flexible resilient generally U-shaped generally identical monofilaments of longitudinally oriented polymeric material, each including:

a central bight portion embedded in, bonded in, and held only by said bonding layer:

two stem portions extending from the opposite ends of said bight portion and projecting generally normal to said exposed major surface of the surface bonding layer, and having unsupported ends opposite said bight portion; and

an enlarged generally circular head at each unsupported end, each of the heads being generally concentric with its supporting stem portion and having a cam surface opposite its supporting stem portion adapted for engagement with the cam surface on the heads of the other article to produce side deflection of the heads upon movement of said heads toward each other with the backings of said articles generally parallel;

the bight portions of said U-shaped monofilaments being disposed generally parallel with a plurality of groups of the bight portions each being disposed generally side by side to form a plurality of generally parallel rows of stem portions with said heads along and between the rows being spaced at distances which, as an average, are generally no greater than the diameter of the heads so that simultaneous movement of all the heads of the articles past each other can occur only upon resilient separation of many of said heads, with said stems being spaced apart a distance which, as an average, is at least as large as the diameter of said heads to afford positioning of the heads of each article between the stems of the other, and with the length of each stem portion from the major surface to the head on its unsupported end being at least equal to the diameter of the head to afford deflection of the stems to allow simultaneous movement of all the heads of said articles past each other at any relative angular orientation between the rows of stems of said articles.

4,290,175

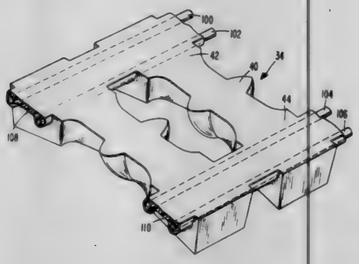
SLIDE FASTENER WITH MOLDED ELEMENTS AND METHOD OF MANUFACTURE

George B. Moertel, Connesutville, Pa., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 817,718, Jul. 21, 1977, which is a continuation-in-part of Ser. No. 724,223, Sep. 17, 1976, abandoned. This application Mar. 22, 1979, Ser. No. 22,900

Int. Cl.³ A44B *19/30*

U.S. Cl. 24—205.13 D **3 Claims**



1. A woven stringer for a slide fastener comprising

a woven tape having a plurality of warp threads and a weft thread interwoven with the warp threads,

a coupling element train having a pair of connecting threads and a plurality of spaced polymer coupling elements molded on the connecting threads,

each of said coupling elements having a head portion and a pair of leg portions extending in generally the same direction from opposite sides of the head portion,

said connecting threads each having spaced embedded segments which are embedded in the leg portions on respective sides of the coupling elements and having spaced connecting segments which extend between adjacent leg portions on respective sides of the coupling elements to join the coupling elements together,

a plurality of reinforcing means including a plurality of projections molded integral with the coupling elements and extending partially across the spaces between adjacent coupling elements on respective sides of the coupling elements to reinforce all of the connecting segments,

said plurality of projections including two projections extending from each coupling element in opposite directions from respective leg portions of each coupling element,

said plurality of projections extending from the respective leg portions between the connecting threads and the heels of the leg portions and being slightly spaced from the connecting threads,

said weft thread having a plurality of loops on one longitudinal edge of the tape,

both connecting segments and reinforcing means in each space between adjacent coupling elements being encircled together by at least one loop of the plurality of loops to secure the train to the one edge of the tape and to hold the pair of leg portions of each coupling element together, and

a protrusion on each projection between the connecting thread and each projection for a portion of the length of each projection.

4,290,176

SLIDE FASTENER AND METHOD OF MAKING SAME

Helmut Wulz, Birmensdorf, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

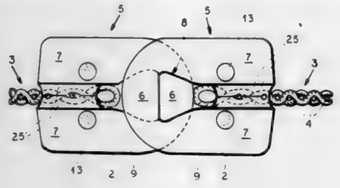
Filed Feb. 29, 1980, Ser. No. 125,783

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907954

Int. Cl.³ A44B *19/40*

U.S. Cl. 24—205.16 R **10 Claims**

1. A slide fastener stringer comprising a pair of slide fastener halves each provided with a fabric support tape having a longitudinal edge and consisting of synthetic resin strands forming mesh openings, and a row of U-shaped coupling members straddling said edge and interdigitable with the coupling members of the other slide fastener half, said coupling mem-



bers each having a pair of shanks welded together through mesh openings of the respective tapes located between the shanks, said mesh openings between the shanks of each coupling member being larger than the mesh openings elsewhere of sai tapes.

4,290,177

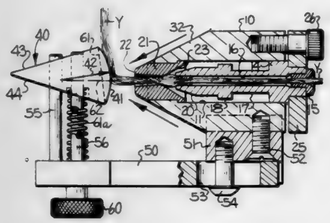
AIR JET WITH A BAFFLE INCLUDING AN ARCUATE YARN ENGAGING SURFACE

Samuel T. Price, Kennett Square, and Kay P. Hoffsommer, Ridley Park, both of Pa., assignors to Enterprise Machine and Development Corp., New Castle, Del.

Filed Oct. 24, 1979, Ser. No. 87,729

Int. Cl.³ D02G *1/16*

U.S. Cl. 28—254 **5 Claims**



1. In an air jet for treating multifilament yarn and including an elongate housing having a central bore therethrough, an entrance end for passage of yarn into said air jet, an exit end including an exit orifice for passage of yarn from said air jet, and means for directing pressurized air into the central bore of said housing to contact the yarn and pass outwardly through the exit orifice with the treated yarn; the combination therewith of air guiding means associated with said exit end of said housing for controlling and directing the path of travel of ambient air surrounding said exit end of said housing, said air guiding means comprising a frusto-conical outer surface on said exit end of said housing and extending from its smaller end positioned closely surrounding said exit orifice toward its base positioned between said exit orifice and said entrance end of said housing so that the pressurized air leaving said exit orifice causes the ambient air surrounding said exit end of said housing to be drawn downwardly along said frusto-conical outer surface and join the pressurized air and yarn leaving said exit orifice of said air jet, and including a baffle spaced from said exit orifice, said baffle comprising an arcuate leading surface positioned to be engaged by the yarn and pressurized air after leaving said exit orifice, and a substantially wedge-shaped portion extending away from said arcuate leading surface.

4,290,178

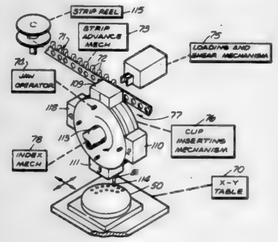
ASSEMBLY APPARATUS FOR ELECTRICAL CONNECTORS

Egon F. Friese, Tustin, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 10, 1978, Ser. No. 904,602

Int. Cl.³ B23P *19/04, 23/04*

U.S. Cl. 29—33 M **8 Claims**



1. An automated assembler for inserting an electrical contact retention clip into a hole in an insulator, said assembler comprising: a carrier member; a first pair of jaws movably mounted on said member; a jaw operator mounted and actuable to open said first jaws and deactuable to close said first jaws; a reciprocable mechanism actuable to load a clip in between said first jaws when they are open, said first jaws, when closed, forming a cavity to fit snugly around a clip; a plunger slidable in the said cavity of said first jaws; first means for actuating said jaw operator to open said first jaws; second means for actuating said mechanism to load a clip between said first jaws; third means to reciprocate said plunger to eject a clip from the first jaws and insert it into the insulator; fourth means to operate said third means, said second means and said first means in synchronism to cause said first jaws to open before the clip is loaded, to cause said first jaws to close on the clip after the clip has been loaded, and to reciprocate said plunger to eject the clip from the first jaws after the clip has been loaded and the first jaws closed.

4,290,179

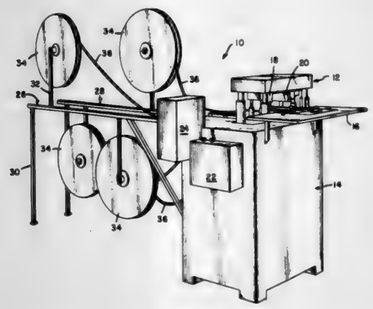
CABLE HARNESS ASSEMBLY MACHINE

Johannes C. W. Bakermans, and Richard A. Neiman, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 22, 1979, Ser. No. 86,927

Int. Cl.³ B25B *11/02*; H01R *43/04*

U.S. Cl. 29—33 M **14 Claims**



1. A machine for the manufacture of electrical cable harnesses by gang crimping terminals to one or both ends of multi-conductor flat flexible cable in a single operation, said machine comprising:

a press assembly defining a work station;

at least one multi-terminal applicator mounted in said work station so as to be actuated by said press;

means to feed a continuous supply of terminals in strip form to each said at least one multi-terminal applicator; and

a cable hold down assembly for each said at least one multi-terminal applicator, said cable hold down assembly being mounted for reciprocal movement into and out of said applicator and comprising a vacuum hold down member, an edge guide adjustably mounted on said member, and an end abutment pivotally mounted on said member.

4,290,180

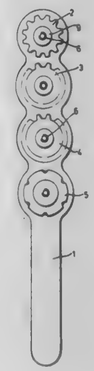
FIXTURE FOR SPECIAL GEARS, PARTICULARLY OF BICYCLES

Tullio Campagnolo, Corso Padova 168, Vicenza, Italy

Filed Mar. 10, 1980, Ser. No. 128,478

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—240 **3 Claims**



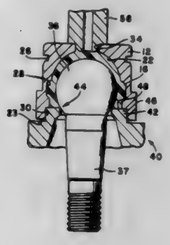
1. An apparatus for mounting and removing special gears, particularly for mounting sprocket wheels on and removing them from the free-wheel units of bicycles, comprising a first tool in the form of an appropriately shaped elongated metal plate, having a smooth handgrip and a functional part provided with a plurality of recesses which are shaped to receive and mate with elements of a free-wheel unit so as to prevent their rotation, each of said recesses being provided at the centre with a screw-threaded hole, said first tool comprising at least two locking pin members apt to be screwed into said screw-threaded holes and to lock in said recesses of the plate the elements of the free-wheel unit having to be handled; and a second tool of the type comprising a handle, provided at one end with a half-moon shaped body having a length of bicycle transmission chain pivotally connected to one end thereof, characterized in that, the recesses in said first tool are apt to mate not only with the outer profile of the free-wheel unit elements having to be applied to the tool, but also with the wall of the inner hole of said elements, and in that, said second tool comprises, in order to engage the sprocket wheels of said free-wheel unit, on one hand a transmission chain length and, on the other hand, a pair of chain links mounted so as to form an articulated parallelogram.

4,290,181

BALL JOINT FORMING METHOD AND APPARATUS THEREFOR

Robert W. Jackson, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 22, 1979, Ser. No. 87,597
Int. Cl.³ B23P *25/00*
U.S. Cl. 29—458 **1 Claim**



1. A method of constructing a ball joint comprising the steps of:

forming an open-ended ball-receiving cavity in a housing;

inserting a ball with a stud projecting therefrom through said open end of said cavity and into said cavity to a position in which the ball cooperates with the wall of the cavity to define a chamber therebetween and in which the stud projects away from the housing;

engaging said ball and said housing with a fixture to control the dimension of said chamber, said fixture including a shoulder extending from said ball to said housing;

injecting a pressurized plastic bearing material into said chamber to engage said plastic bearing material with said fixture shoulder and completely fill said chamber;

allowing said plastic bearing material to congeal in said chamber with the ball in contact with the bearing material;

rotating said ball on said fixture as said bearing material congeals while maintaining said bearing material under pressure;

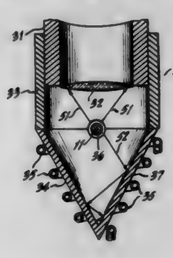
attaching a retaining ring to said housing adjacent said open end of said cavity to retain said ball and said bearing material within said cavity.

4,290,182

METHODS AND APPARATUS FOR MEASURING THE TEMPERATURE OF A CONTINUOUSLY MOVING STRAND OF MATERIAL

Hopeton S. Lawrence, Lawrenceville, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,603
Int. Cl.³ B22D *11/126*; G01J *5/00*
U.S. Cl. 29—527.4 **10 Claims**



6. A method of measuring the temperature of an article, comprising the steps of:

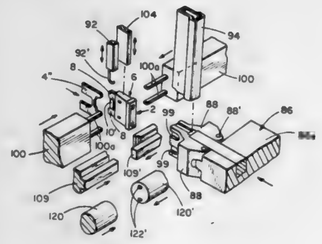
positioning an article within a radiation absorbing cone; and measuring the thermal radiation emitted from the article with a thermal radiation measuring device positioned proximate the base of the cone to determine the temperature of the article.

4,290,183

APPARATUS FOR MAKING PLUG-IN FUSE ASSEMBLIES

Robert J. Tait, Arlington Heights, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Division of Ser. No. 766,239, Feb. 7, 1977, Pat. No. 4,099,322. This application Jul. 7, 1978, Ser. No. 922,880
Int. Cl.³ H01H *69/02*
U.S. Cl. 29—564.8 **6 Claims**



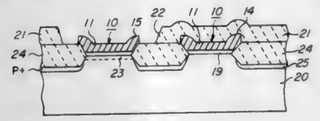
1. In combination with apparatus for making a plug-in fuse element including a plate-like body of fuse metal having a pair of spaced confronting generally parallel terminal blade portions to be received by pressure clip terminals or the like, current-carrying extensions at the inner ends of said pair of terminal blade portions and a fuse link portion interconnecting the current-carrying extensions at the inner ends of said pair of terminal blade portions and a fuse link portion interconnecting the current-carrying extensions, said apparatus comprising means for receiving a strip of fuse metal having longitudinally spaced blank portions from which individual plug-in fuse elements are to be formed, such means including means for sequentially advancing the strip of fuse metal, and means for blanking said strip in each of said sequentially advanced blank portions to form a plug-in fuse element therein comprising said pair of terminal blade portions and current-carrying extensions interconnected by said fuse link portion, the improvement comprising apparatus for forming from said blanked portions of the strip separated individual insulated plug-in fuse elements where the insulation is provided by insulating means applied over the current-carrying extensions of each plug-in fuse element formed in the end blank portion of said strip, the latter apparatus comprising clamping means for engaging and clamping the opposite faces of only the terminal blade portions of each such plug-in fuse element so that said current-carrying extensions and fuse link portion are completely exposed and free to receive said insulating means thereover, said clamping means including backing means and a punch initially movable transversely of the strip over a given path which brings the punch against the terminal blade portions of each plug-in fuse element formed at the end of the strip to sever the same from the strip and then to clamp the severed plug-in fuse element against said backing means to enable the insulation means to be applied over the same, insulation applying means for receiving and holding said insulating means and means for moving said insulating unit applying means for applying said insulating means over the current-carrying extensions of each such plug-in fuse element while said clamping means remains in clamping relation with the terminal blade portions thereof.

4,290,184

METHOD OF MAKING POST-METAL PROGRAMMABLE MOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 20, 1978, Ser. No. 890,555
Int. Cl.³ G11C *11/40*; H01L *7/44, 27/10*; B01J *17/00*
U.S. Cl. 29—571 **16 Claims**



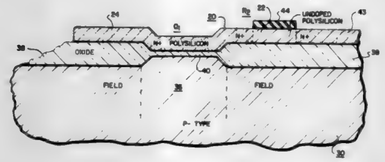
1. A method of making a read-only memory comprising the steps of: forming a plurality of insulated gate field effect transistors in a face of a semiconductor body, each of the transistors having a source, a drain and a gate, the transistors being in a regular pattern to provide an array of rows and columns of memory cells, the sources of all transistors in each column being integral with and connected in common to elongated column lines in said face, and drains of all transistors in each column being integral with and connected in common to elongated column lines in said face, the column lines including heavily-doped semiconductor material in said face, the gates of all transistors in each row being connected to a row line; the column lines running generally perpendicular to the row lines, one overlying the other; and thereafter programming the array of memory cells by masked ion implant penetrating through the gates and into the semiconductor body for selected ones of the field effect transistors but not through metal conductors on said face.

4,290,185

METHOD OF MAKING AN EXTREMELY LOW CURRENT LOAD DEVICE FOR INTEGRATED CIRCUIT

Vernon G. McKenny, and Tsiu C. Chan, both of Carrollton, Tex., assignors to Mostek Corporation, Carrollton, Tex.

Division of Ser. No. 957,587, Nov. 3, 1978, Pat. No. 4,251,876, which is a continuation of Ser. No. 743,810, Nov. 22, 1976, abandoned. This application May 29, 1979, Ser. No. 43,420
Int. Cl.³ H01L *21/00*
U.S. Cl. 29—571 **5 Claims**



1. A method for producing an integrated circuit of the type including an insulated gate field effect transistor and a load impedance device for conducting current from a power supply node through the channel of the transistor comprising:

providing a semiconductor substrate chip of a first conductivity type;

growing a layer of thermal oxide on the surface of the substrate;

depositing a layer of nitride on the oxide layer;

forming a mask over the combined nitride and oxide layers and photoresisting to define an active area and a field area;

removing the layer of nitride from the field area;

implanting ion impurities of the first conductivity type in the field area;

removing the photoresist from the active area;

growing a layer of thermal oxide over the field area;

removing the nitride and oxide layers over the active area;

growing a layer of gate oxide over the active area;

depositing a layer of undoped semiconductor material over the gate oxide;

masking and photoresisting the undoped semiconductor layer to define a gate strip having a gate interconnect portion;

depositing a diffusion-impervious layer over the undoped gate interconnect portion;

masking and photoresisting the diffusion-impervious layer to define the situs of a potential extremely low current load impedance device;

removing the oxide layer from the active area to define the situs of drain and source regions;

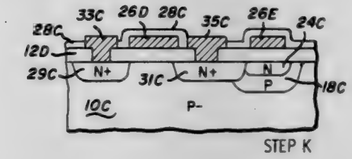
diffusing impurities of the opposite conductivity type into the unmasked portions of the undoped semiconductor layer and into the active area, whereby a diffused gate and diffused source and drain regions are formed by the diffusion of impurities into gate strip and into the active area of the substrate on either side of the gate strip, a nondiffused channel region being defined in the active area beneath the gate oxide and gate strip, and an intrinsic-extrinsic junction being formed in the gate interconnect at the interface of the undoped semiconductor material beneath the mask with the adjacent impurity diffusion.

4,290,186

METHOD OF MAKING INTEGRATED SEMICONDUCTOR STRUCTURE HAVING AN MOS AND A CAPACITOR DEVICE

Thomas Klein; Andrew G. Varadi, and Charles E. Boettcher, all of Saratoga, Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.

Continuation of Ser. No. 788,872, Apr. 19, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,637
Int. Cl.³ B01J *17/00*; H01L *21/265*
U.S. Cl. 29—576 B **11 Claims**



1. A method for making an integrated semiconductor structure having an MOS semiconductor device and a semiconductor capacitor device comprising the steps of:

forming a semiconductor region of one conductivity type within a higher resistivity semiconductor substrate region of the same type conductivity,

forming a shallow semiconductor region of opposite conductivity type within said semiconductor region of one conductivity type located within said higher resistivity semiconductor substrate region of the same one type conductivity, forming an insulating layer on a surface of said semiconductor region of one conductivity type, said higher resistivity semiconductor substrate region of the same one type conductivity, and said shallow semiconductor region of opposite conductivity type, ,

forming spaced polysilicon layer portions on the surface of said insulating layer over said shallow semiconductor region of opposite conductivity type and over a portion of said higher resistivity semiconductor substrate region of said one conductivity type spaced from said shallow semiconductor region of opposite conductivity type to be used as a self-aligned polysilicon gate electrode for the MOS semiconductor device,

forming openings in said insulating layer on opposite sides of

said polysilicon gate electrode layer portion for subsequently forming source and drain regions,

forming source and drain regions for the MOS semiconductor device on opposite sides of said polysilicon gate electrode layer portion using said polysilicon gate electrode layer portion as a self-aligned mask which is doped during the step of forming said source and drain regions along with said polysilicon layer portion located over said shallow semiconductor region of opposite conductivity type to render both said polysilicon layer portions electrically conductive,

said electrically conductive polysilicon layer portion located over said shallow semiconductor region of opposite conductivity type being one plate of the semiconductor capacitor device, the portion of said insulating layer located over said region of opposite conductivity type being the dielectric of said semiconductor capacitor device, and said region of opposite conductivity type being the other plate of said semiconductor capacitor device.

4,290,187

METHOD OF MAKING CHARGE-COUPLED ARRANGEMENT IN THE TWO-PHASE TECHNIQUE

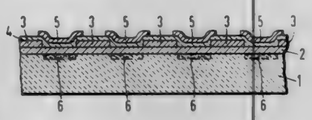
Karl-Ulrich Stein, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 863,526, Dec. 22, 1977, abandoned, which is a division of Ser. No. 696,745, Jun. 16, 1976, abandoned, which is a continuation of Ser. No. 513,350, Oct. 9, 1974. This application Jul. 25, 1979, Ser. No. 60,376

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1973, 2351393; Oct. 9, 1974, 513350

Int. Cl.³ H01L *13/00, 27/10*

U.S. Cl. 29—576 B **1 Claim**



1. A method of producing a charge-coupled arrangement in two-phase technique, comprising two series of cooperable spaced electrodes with the spaced electrodes of one series overlying spaces between the electrodes of the other series, said method comprising the steps of applying a layer of insulating material to a substrate of semiconductor material, applying to said insulating layer a plurality of electrodes comprising one of said series and disposed in spaced sequential relation on such layer, utilizing said electrodes as masking members and introducing doping atoms by means of ion implantation into said semiconductor material between said electrodes, whereby said semiconductor material is provided with more highly doped zones of a same conductivity type as the substrate spanning the space gaps between such series of electrodes, applying, at least to said electrodes, a second layer of insulating material, and applying to the structure so formed further electrodes, comprising the other of said series, with the latter electrodes extending into said space gaps between the electrodes of said first series, in complete insulated relation with respect thereto, and overlying said more highly doped zones in insulated relation with respect to said zones.

4,290,188

PROCESS FOR PRODUCING BIPOLAR SEMICONDUCTOR DEVICE UTILIZING PREDEPOSITION OF DOPANT AND A POLYCRYSTALLINE SILICON-GOLD FILM FOLLOWED BY SIMULTANEOUS DIFFUSION

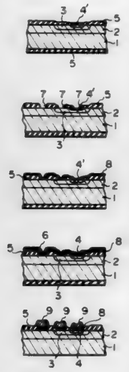
Yoshito Ichinose, Kawasaki; Takeshi Fukuda, Tokyo, and Naoaki Kobayashi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 30, 1980, Ser. No. 116,974

Claims priority, application Japan, Jan. 31, 1979, 54/10032

Int. Cl.³ H01L *21/283, 21/324*

U.S. Cl. 29—591 **10 Claims**



1. A process for manufacturing a bipolar semiconductor device comprising the steps of:

forming an epitaxial layer on a silicon wafer, said epitaxial layer comprising a collector layer of said device;

forming a base layer of said device by diffusion of impurities having one conductivity type in a portion of said epitaxial layer within said collector layer;

depositing an inpurity of the opposite conductivity type on a part of said base layer;

selectively depositing polycrystalline silicon on the entire surface of said wafer to provide windows for emitter, base and collector electrodes of said device,

applying a gold-containing film on the entire surface of the polycrystalline silicon layer;

simultaneously driving (1) said deposited impurity having the opposite conductivity type into said part of said base layer so as to form an emitter layer within said base layer and (2) the atoms of said gold through said windows into the collector layer; and

electrically connecting said emitter, base and collector layers within said device.

4,290,189

METHOD OF FABRICATING A LOW COST DIAGONAL TYPE MHD GENERATOR CHANNEL FRAME ELEMENT

Anthony P. Coppa, Merion, Pa., assignor to General Electric Co., Fairfield, Conn.

Filed Dec. 26, 1979, Ser. No. 106,810

Int. Cl.³ H02K *15/00*

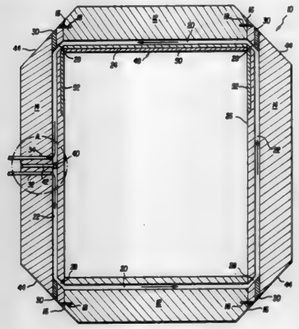
U.S. Cl. 29—596 **9 Claims**

1. A method of fabricating a diagonal type MHD generator channel frame element, comprising the steps of:

forming a first set of members each of which has a first predetermined exterior cross-sectional profile, and a passageway, formed as a result of said forming process, totally enclosed within said first member and having a predetermined cross-sectional profile similar to said exterior cross-sectional profile of said first member;

forming a second set of members each of which has a second predetermined exterior cross-sectional profile different from said first predetermined exterior cross-sectional profile, and a passageway, formed as a result of said forming process, totally enclosed within said second member and having a predetermined cross-sectional profile similar to said exterior cross-sectional profile of said second member;

connecting said first and second members together in an annular array so as to define said frame element, with members of each set disposed in opposite pairs;



fluidically connecting together said passageways defined within said first and second members such that a single fluid passageway extends throughout said annular frame element; and

connecting a fluid circulatory means to said single fluid passageway so as to circulate coolant fluid within said single passageway and throughout said annular frame element.

4,290,190

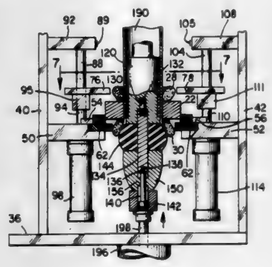
METHOD AND APPARATUS FOR SPREADING STATOR WINDINGS

Richard B. Arnold, Fort Wayne, Ind., assignor to Advanced Machine and Tool Corporation, Fort Wayne, Ind.

Filed Feb. 25, 1980, Ser. No. 124,323

Int. Cl.³ H02K *15/06*

U.S. Cl. 29—596 **13 Claims**



1. Stator winding spreading apparatus comprising:

first means for releasably clamping a stator having a cylindrical opening at a work station;

said stator having windings at least partially covering one end of said opening;

a resilient cylindrical plug;

a tubular cylindrical sleeve having a smooth surfaced outer wall and having an outside diameter that provides a sliding bit with said opening and an inside diameter that provides a sliding fit with said plug;

second means for moving said sleeve axially of said plug to a first axial position to cover said plug and withdrawing said sleeve to a second axial position to uncover said plug;

third means for inserting said plug covered by said sleeve axially into the other end of said stator opening to an axial position whereat said plug is radially opposite said windings;

fourth means to axially compress said plug whereby when said third means has inserted said sleeve and plug into said opening and said second means has withdrawn said sleeve, said fourth means compresses said plug to cause it to radially expand and force said windings radially outwardly to uncover said opening.

4,290,191

METHOD FOR MAKING A COMMUTATOR FOR AN ELECTRIC MOTOR

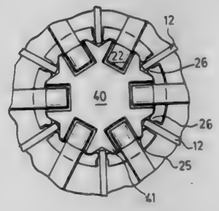
Otto Klein, Wemding, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Division of Ser. No. 883,870, Mar. 6, 1978, Pat. No. 4,180,900. This application Aug. 20, 1979, Ser. No. 68,107

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1977, 2709433

Int. Cl.³ H01R *43/06*

U.S. Cl. 29—597 **7 Claims**



1. The method of manufacturing a commutator for an electric motor comprising the steps of:

individually inserting the segments of said commutator into a cavity in a mould intermediary plate in a circular arrangement substantially that desired in a finished commutator, with predetermined circumferential spaces between the adjacent axially extending edges of said segments;

inserting a radially inwardly directed removable separating web within each of said circumferential spaces from outside the periphery of said cavity and between said adjacent axially extending edges of said segments;

inserting a tool along the axial centerline of said arrangement of segments to inelastically deform at least one of the adjacent edges of each adjacent pair of said segments against the corresponding separating web in a manner reducing said circumferential spaces between said adjacent segment edges and said supporting webs at least at their radially inward edges;

and admitting a plastic moulding material into the cavity within said arrangement of segments to form a monolithic commutator assembly, said segment deformation tending to preclude entry of said plastic moulding material into said predetermined circumferential spaces especially near the outer surface of said finished commutator.

4,290,192

METHOD OF MAKING A SODIUM SULFUR BATTERY

Perry E. Elkins, Santa Ana, Calif., assignor to Ford Motor Company, Dearborn, Mich.

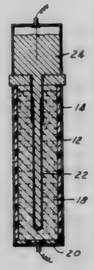
Filed Dec. 20, 1979, Ser. No. 105,848

Int. Cl.³ H01M *10/38, 10/39*

U.S. Cl. 29—623.5 **3 Claims**

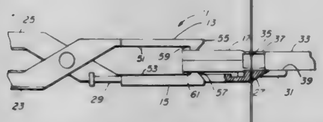
1. A method of making a sodium sulfur battery which comprises:

selecting a steel pipe having a predetermined inside diameter;
selecting a porous graphite pipe having an outside diameter greater than said predetermined inside diameter of said steel pipe;
machining said outside diameter of said graphite pipe to a diameter in the range of 0.005 inches to 0.010 inches greater than said predetermined inside diameter of said steel pipe;
heating said steel pipe so as to expand the same so that the inside diameter is greater than said predetermined inside diameter when in a heated condition;
slipping said heated steel pipe over said machined graphite pipe;



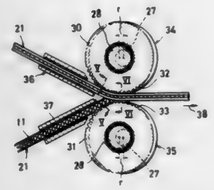
cooling said heated steel pipe to room temperature so that the inside diameter thereof comes into intimate contact with said machined outside diameter of said graphite pipe;
machining the inside diameter of said graphite pipe to reduce the thickness of said graphite pipe to a selected thickness;
coating the inside diameter of said relatively porous graphite pipe with a sealant material to close off the porosity of said graphite pipe from the internal diameter thereof thereby forming a portion of the sodium sulfur battery container; and
providing the container with cathodic reactant material, sodium electrolyte material and a sodium anode compartment so as to form said sodium sulfur battery.

4,290,193
CONNECTOR EXTRACTOR TOOL
John J. Anderton, Oil City, and Lynette E. Graham, Titusville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Dec. 19, 1979, Ser. No. 105,188
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—764 **3 Claims**



1. An extractor tool for removing a connector of the type having a latch for releasably fastening the connector to a support member, said tool comprising first and second connector gripping members mounted for movement toward and away from one another in a given direction, means for normally biasing said connector gripping members in the open position, hand actuated means operably associated with said connector gripping members for moving said members to a clamping position against the force of said biasing means, a latch engaging member mounted on at least one of said gripping members for movement in a direction substantially normal to the given direction, said latch engaging member having a wedge shaped end for engaging and releasing said connector from said support member when said gripping members are in a clamping position and said latch engaging member is moved toward said latch.

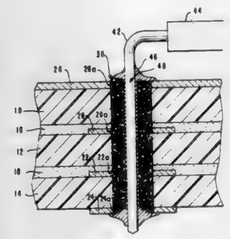
4,290,194
APPARATUS FOR INTERENGAGING OPPOSED ROWS OF SLIDE FASTENER COUPLING ELEMENTS
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Nov. 1, 1979, Ser. No. 90,136
Claims priority, application Japan, Nov. 6, 1978, 53-136551
Int. Cl.³ B23P *11/00, 19/04*; B29D *5/00*
U.S. Cl. 29—766 **4 Claims**



1. An apparatus for interengaging a pair of rows of slide fastener coupling elements carried on a pair of stringer tapes, respectively, said apparatus comprising;
(a) a pair of non-rotatably supported parallel spaced first and second shafts, each of said first and second shafts having first and second portions eccentric to each other;
(b) a pair of guide wheels each rotatably mounted on said second portion of one of said first and second shafts and having a plurality of peripheral teeth meshable with one of unengaged rows of coupling elements for guiding the same and for regulating distances between adjacent coupling elements of the last-named one of unengaged rows; and
(c) a pair of presser rollers each rotatably mounted on said first portion of one of said first and second shafts for squeezing the unengaged rows of coupling elements to interengage the same immediately after the latter are released from said peripheral teeth of said guide wheels, whereby the pair of rows of coupling elements can be interengaged without obstruction or impairment by said peripheral teeth of said guide wheels but while such regulated distances between adjacent coupling elements of each row remain.

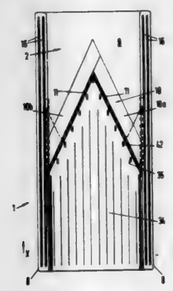
4,290,195
METHODS AND ARTICLES FOR MAKING ELECTRICAL CIRCUIT CONNECTIONS EMPLOYING COMPOSITION MATERIAL
Ralph E. Rippere, 4145 W. Banff La., Phoenix, Ariz. 85023
Filed Sep. 1, 1978, Ser. No. 938,878
Int. Cl.³ H05K *3/32*
U.S. Cl. 29—837 **33 Claims**

1. A method for making an electrical circuit connection to at least one conductor which conductor has an exposed surface defining in part an at least partially enclosed space, said method comprising the steps of:
(a) loading discrete composition particles into said space, said composition particles each comprising first and second electrically conductive components, said second component having a lower melting point than said first component and said second component having less than a 10 to 100 ratio by weight to said first component in said particles to avoid becoming a lubricant upon melting of said second component;
(b) asserting pressure to said composition particles to contact said exposed surface of said conductor with said composition particles and to achieve a coherent unit which resists the sagging of either of said first and second components under the force of gravity upon the melting of only said second component;
(c) heating said particles to melt only said second component



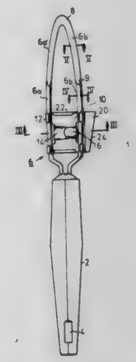
sufficiently to allow at least a portion of said second component to flow onto said exposed surface of said conductor and yet avoid sag of said first component; and
(d) cooling said particles to form a rigid electrical and mechanical connection between said conductor and said compact.

4,290,196
APPARATUS FOR CUTTING FOODSTUFFS
Alfred Börner, Industriegebiet, 5561 Niederkail, Fed. Rep. of Germany
Filed May 9, 1979, Ser. No. 37,956
Claims priority, application United Kingdom, May 30, 1978, 24588/78
Int. Cl.³ B26B *3/00*
U.S. Cl. 36—122 **7 Claims**



1. Apparatus for cutting foodstuffs upon linear movement thereof comprising:
(a) a substantially flat body comprising;
(i) a support plate,
(ii) a fixed cutting blade secured to the support plate, lying generally in the plane thereof, and extending across said plate,
(b) first substantially flat plate means comprising:
(i) plural upstanding cutting blades projecting from the plane thereof, and
(ii) guide means at the edges thereof,
(c) means for supporting said first plate means in spaced, substantially parallel relationship to said support plate with said upstanding cutting blades in the said space and in planes transverse to the plane of said fixed cuting blade,
(d) second substantially flat plate means comprising:
(i) side edges engaging said guide means of said first plate means,
(ii) plural upstanding cutting blades projecting from the plane thereof in the said space, and in planes transverse to the plane of said fixed cutting blade and intermediate the planes of said cutting blades of said first plate means,
(e) whereby to cut foodstuffs into strips.

4,290,197
HAND-UTENSIL PARTICULARLY USEFUL FOR REMOVING THE PEEL OF CITRUS FRUIT
Shlomo Zaroor, 105 Krinitzi St., Ramat Gan, Israel
Filed Mar. 25, 1980, Ser. No. 133,822
Int. Cl.³ A47J *17/04*
U.S. Cl. 30—123.7 **4 Claims**

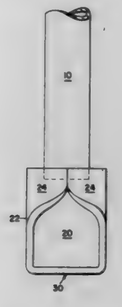


1. A hand utensil particularly useful for removing the peel of oranges or other citrus fruit characterized in that it includes:
a handle;
a blade-like member having an inner end fixed to said handle and extending substantially axially thereof, and an outer curved tip;
and a curved cutting element secured to said blade-like member adjacent to the handle at an axis substantially perpendicular to that of the handle, such that the curved cutting elements may first be used for removing a central circumferential strip of the citrus peel, after which the blade-like member may be inserted between the fruit and its remaining peel on both sides of the removed strip for removing said remaining peel;
said blade-like member being constituted of a pair of parallel, spaced rod-shaped arms converging together at said outer curved tip;
said curved cutting element being formed in a transversely extending strip fixed between said parallel spaced arms by being pressed outwardly from a section of said strip;
and said transversely extending strip further including an extension laterally of said curved cutting element and having a straight edge for facilitating removing any remaining fragments of the fruit peel.

4,290,198
ICE BREAKER
Robert A. Richards, North Adams, Mass., assignor to Janice M. B. Richards, North Adams, Mass., a part interest
Filed Apr. 7, 1980, Ser. No. 138,180
Int. Cl.³ E01H *5/12*
U.S. Cl. 30—164.5 **1 Claim**

1. A tool for chopping and breaking ice comprising, a plate having a straight sided intermediate portion of substantially square configuration having a straight chamferred lower edge for providing the chopping and breaking function, a pair of arcuate supporting portions projecting rearwardly from each side edge of the intermediate portion, the supporting portions having a curvilinear configuration so as to extend not only rearwardly but also inwardly with the end edges of the two supporting portions being brought into osculation with each

other, each supporting portion additionally being provided with a taper which extends downwardly from its outboard free terminus to its line of joinder with the respective side edge of the intermediate portion with the lower edges of the arcuate



portions serving to pressurize the ice and to force it forwardly in the direction of the straight sided intermediate portion, and a handle disposed between the intermediate portion and the arcuate portions and welded thereto.

4,290,199

CUTTING APPARATUS FOR A RUSTY NUT

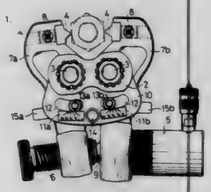
Shuji Hashimoto, No. 197-1, Uchihashi, Kasuya-Cho, Kasuya-District, Fukuoka-Pref., Japan

Filed Nov. 2, 1979, Ser. No. 90,775

Claims priority, application Japan, Sep. 26, 1979, 54-132050[U]

Int. Cl.³ B26B *17/00*

U.S. Cl. 30—180 **6 Claims**



1. An apparatus for cutting a rusty nut comprising

(A) a pair of arms coupled in opposing position by a pair of axes,

(B) a pair of cutting blades, each blade affixed to a top inside portion of one of the pair of arms,

(C) a pressure mechanism positioned at an end of at least one of the pair of arms,

(D) a plate situated on the pair of axes,

(E) at least one pair of springs situated between the pair of arms and connected through a coupling member on the plate, said springs actuated separately from one another to equalize balance of movement of said pair of arms, and

(F) a member on the surface of the plate for indicating the balance between the pair of arms.

4,290,200

APPARATUS FOR CUTTING VEGETATION

Marco H. Lombard, Austin, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 29, 1979, Ser. No. 53,592

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **26 Claims**

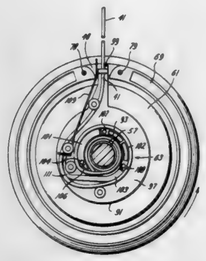
1. An apparatus for cutting vegetation, comprising:

(a) a head rotatable about an axis of rotation and said head having at least one peripheral aperture;

(b) said head carrying a supply of cutting line;

(c) said cutting line being flexible and non-metallic with a free end extending outwardly from said head through said aperture into a cutting plane;

(d) cam means for controlling extension to a predetermined maximum length of said cutting line through said aperture into the cutting plane during the cutting of vegetation;



(e) said cam means including unitary gripping members adapted for progressively gripping said cutting line proportionately to its length extending into the cutting plane; and

(f) said gripping members modulated by vibration of said cutting line into a pulsing gripping of said cutting line whereby dynamic friction conditions predominate between the said gripping members and said cutting line.

4,290,201

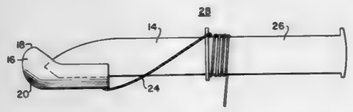
FIELD DRESSING DEVICE

Joseph Goodwin, R.D. #4, Box 430-C, Jackson, N.J. 08527

Filed Sep. 12, 1979, Ser. No. 74,732

Int. Cl.³ A22B *5/16*

U.S. Cl. 30—294 **6 Claims**



1. A field dressing device for use with a knife incising the hide of an animal, comprising:

a generally elongated member having a rearwardly extending body portion and a forwardly extending nose portion adjacent thereto, with said body portion having a slot to receive at least the leading edge of the non-cutting surface of the blade of a knife to be held in place thereby and the tip thereof, and with said nose portion having a generally rounded contour extending forwardly of the tip of said knife blade, including a top surface extending upwardly beyond said knife blade tip and a bottom surface extending downwardly beneath said tip; and

wherein the top surface of said nose portion extends upwardly with respect to said knife blade tip by an amount sufficient to deflect away from the incision the hide of an animal as said knife blade is pushed forward along the length of cut desired.

4,290,202

CHAIN SAW GUARD

Glenn L. Nadenoff, 1074 Lynsue La., Pontiac, Mich. 48054

Filed Mar. 24, 1980, Ser. No. 132,899

Int. Cl.³ B27B *17/00*

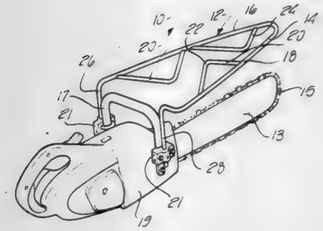
U.S. Cl. 30—382 **10 Claims**

1. A detachable and adjustable chain saw guard for attachment to a chain saw having an extended saw bar around which the saw chain is driven by a motor, said motor being supported in a motor housing having a handle, said guard comprising:

first and second elongated rods;

a first means for connecting said rods together at one end such that the rods define a space therebetween;

a second means for releasably connecting the free ends of said rods to a chain saw such that the rods extend above and along the saw bar and saw chain; and



a plurality of inwardly tapering projections, each projection being secured to at least one of said rods and extending from and between said rods substantially within the plane of said rods and wherein said projections are interspersed from side to side to thereby form an interdigital substantially planar frame structure above the saw bar and saw chain.

4,290,203

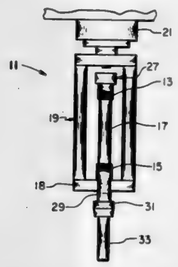
INSERTION COMPLIANCE DEVICE

Jack Rebman, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Apr. 7, 1980, Ser. No. 138,065

Int. Cl.³ G01B *5/25*

U.S. Cl. 33—169 C **10 Claims**



1. An alignment apparatus for correcting axial and angular misalignment between first and second mating parts each having an insertion axis to permit assembly of said parts, comprising:

holding means operable to hold said first mating part for assembly with said second mating part; and

insertion means connected to said holding means, said insertion means including an intermediate member having a longitudinal axis colinear with said inseriton axis of said first mating part, a first compliance means attached to one end of said intermediate member, and a second compliance means attached to the other end of said intermediate member, said first and second compliance means and said intermediate member cooperating to permit translational and rotational motion of said first mating part in every plane passing through said insertion axis thereof for continuous axial and angular alignment of said mating parts to avoid binding, jamming and damage to said mating parts during assembly.

4,290,204

PLUG GAUGE FOR CHECKING INTERNAL GEOMETRIC DIMENSIONS

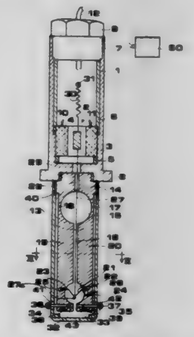
Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs, S.p.A., S. Marino di Bentivoglio, Italy

Filed Nov. 15, 1979, Ser. No. 94,727

Claims priority, application Italy, Dec. 1, 1978, 3612 A/78

Int. Cl.³ G01B *5/12, 7/12, 3/26*

U.S. Cl. 33—178 E **9 Claims**



1. Plug gauge for checking internal geometrical dimensions of bores of mechanical parts, comprising a supporting section, two members associated with said section and movable with respect to the same, two feelers adapted to contact the part to be checked, each feeler being coupled to a relevant movable member in such a way as to be movable substantially in a radial direction with respect to a longitudinal axis of the gauge, a position transducer, with a movable element, the transducer being adapted to provide a signal responsive to the position of the movable element, and connection means for connecting said movable element and said members, the connection means including a resilient lamina and supporting means for supporting the movable element, the supporting means being connected to the resilient lamina and arranged substantially in an axial direction of the gauge, wherein the supporting section and the movable members substantially comprise a single part including a base, corresponding to the supporting section, and a portion, adjacent to the base, with a longitudinal cut splitting this portion in two half-portions corresponding to said members; this single part having near the end of the longitudinal cut adjacent to the base two thin flexible sections acting as fulcrums to allow the displacement of the movable members with respect to the base, said resilient lamina being arranged between the half-portions, near the other end of the longitudinal cut.

4,290,205

RIM SURFACE MEASURING GUAGE FOR WHEEL BALANCES

Donald C. Holm, San Jose, Calif., assignor to Autotron Equipment Corporation, Mountain View, Calif.

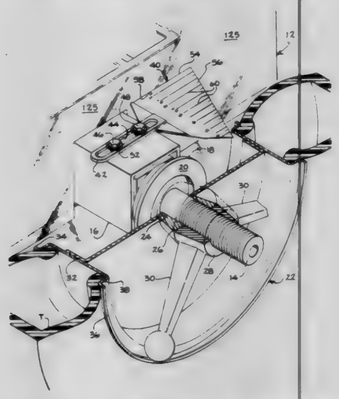
Filed Mar. 10, 1980, Ser. No. 128,945

Int. Cl.³ G01B *3/30, 3/02*

U.S. Cl. 33—180 R **6 Claims**

1. A gauge for ascertaining the location of the plane of the inner edge of a vehicle wheel rim on a wheel balancer of the type having a stationary base, a driven shaft journalled for rotation on a substantially horizontal axis on said base, a portion of said shaft extending outward of said base, and means on said shaft portion for securing a wheel rim thereon to be rotatively driven thereby, said gauge comprising a generally planar blade formed of flexible resilient material, said blade having an

edge and a plurality of visible indicia adjacent said edge for indicating distance in a linear direction, means for supporting said blade so that said linear direction is substantially parallel to said shaft, said blade supporting means affording movement of said blade in a direction transversely of said shaft so that said



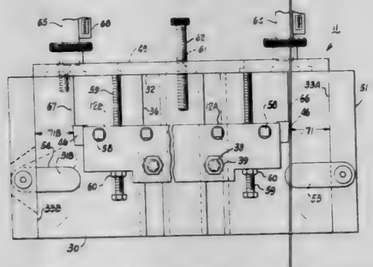
edge can be moved substantially radially toward and away from the inner peripheral surface of said rim and positioned adjacent the inner edge of said wheel rim to afford a visual indication of the position of the plane of said inner wheel rim edge.

4,290,206

TOOL PRESETTING FIXTURE

Milton L. Benjamin, Moreland Hills; Wilbur N. Miles, Chagrin Falls, and Edward A. Majkrzak, Newburgh Heights, all of Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed Oct. 9, 1979, Ser. No. 82,771
Int. Cl.³ B23B *49/00*; G01B *5/02*
U.S. Cl. 33—185 R **15 Claims**



1. A tool presetting fixture for cross-slide type tool holders usable on a multiple spindle automatic machine tool, the tool holders each having a tool holding pocket on an end thereof adapted to mount a tool having a tool tip, said fixture comprising in combination:

a base,

means to secure to said base any said tool holder for cross-slide type tools,

movable element means mounted on said base and having a first gage surface for movement parallel to said base adapted for gaging the spindle centerline height of a tool tip in the tool holding pocket on the tool holder,

a wall carried on said base and having a second gage surface perpendicular to said base,

said second gage surface adapted for gaging the distance of the tool tip from said second gage surface, and

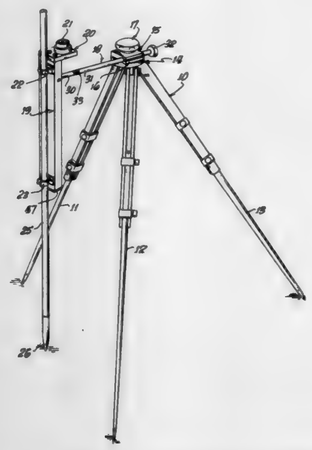
a wall carried on said base and having a third gage surface perpendicular to said base and perpendicular to said second gage surface adapted for gaging the distance from the tip of the tool to said third gage surface to gage for the workpiece cutting radius of the tool tip on a workpiece in the respective machine spindle.

4,290,207

SURVEYING INSTRUMENT

James S. Browning, 19004 Groverdale, Covina, Calif. 91722; Peter F. Pfeiler, 2241 Ardsheal Dr., La Habra Hts., Calif. 90631, and Vernon Lowery, 1731 E. Vermont, Anaheim, Calif. 92805

Filed Mar. 6, 1980, Ser. No. 127,826
Int. Cl.³ G01C *15/08*
U.S. Cl. 33—295 **12 Claims**



1. A device for holding a surveying instrument plumb and level, said device comprising:

means for attachment to tripod means;

clamp means affixed to said means for attachment, said clamp means having a lower plate having a groove formed therein, an upper plate having a groove formed therein, tightening means abutting said upper and lower plates for urging said upper and lower plates together and for holding them together in a tightened relationship, said clamp means permitting rotation of the upper and lower plates with respect to the tripod means when said clamp means are in a loosened condition;

a slide bar held between said grooves; and

a clip bar hingedly held by said slide bar, said clip bar having level indicating means affixed thereto and having clip means for holding a surveying instrument, whereby the orientation of a surveying instrument held by said clip bar can be adjusted in a north/south direction by the longitudinal movement of the slide bar in said clamp means and in an east/west direction by the rotation of the upper and lower plates with respect to the tripod means.

4,290,208

PROCESS FOR THE DEHUMIDIFICATION OF MOIST AIR OR SATURATED WATER VAPOR

Lars G. Hellman, Norrtullsgatan 10, 113 27 Stockholm, Sweden

Filed Mar. 25, 1980, Ser. No. 133,877
Claims priority, application Sweden, Apr. 4, 1979, 7902979
Int. Cl.³ F27D *3/00*
U.S. Cl. 34—9 **4 Claims**

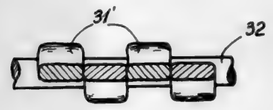
1. A counter-current absorption process for the dehumidification of moist air or saturated water vapour, e.g. obtained in the drying of solid material comprising the steps of: introducing a concentrated absorption liquid into an absorption device at a temperature at least equal to the temperature which at atmospheric pressure corresponds to the boiling point of the absorption liquid at the concentration corresponding to the water vapour pressure reduction required in order to attain the desired low relative humidity of the exit gas or the desired degree of superheating of the exit water vapour, the only component of the absorption liquid having a substantial vapour pressure is water; introducing moist air or saturated water vapour into said absorption device counter-current to said liquid where the absorption is carried out adiabatically, and with weight proportions between the absorption liquid and the gas or vapour such that most of the condensation heat of the water vapour condensed during the absorption is transferred to the gas or vapour becoming progressively drier, to thereby raise the temperature thereof; regenerating the diluted absorption liquid obtained after the absorption is concentrated and recycling the concentrated liquid for reuse while the demoisturized and heated gas or vapour is recycled for again taking up moisture or for being again converted to saturated water vapour.

4,290,209

DRYER FABRIC

John G. Buchanan, and Donald G. MacBean, both of Ottawa, Canada, assignors to Jwi Ltd., Montreal, Canada

Continuation of Ser. No. 906,434, May 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 846,355, Oct. 28, 1977, abandoned. This application Apr. 15, 1980, Ser. No. 140,475
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—123 **15 Claims**



1. A dryer fabric for use in a papermaking machine comprising a plurality of interwoven warp and weft monofilament plastic polymeric strands woven with approximately 100% warp fill with edges of adjacent warp strands generally lying in common planes disposed generally normal to the plane of the fabric, at least said warp strands which extend in the machine direction, have a flattened cross-section with the long axis of said cross-section extending parallel to the plane of the fabric; the lowered profile of said flattened strands defining restricted diagonal apertures in the mesh of the fabric to thereby reduce the permeability of said fabric uniformly throughout.

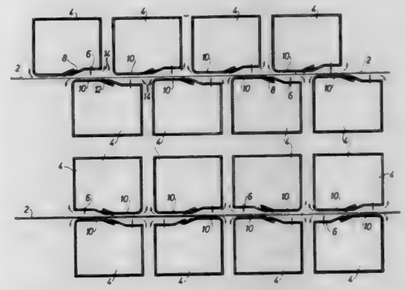
4,290,210

DEVICE FOR DRYING WEB MATERIAL

Eric G. B. Johansson, Växjö, Sweden, assignor to AB Svenska Flaktfabriken, Nacka, Sweden

Filed Nov. 28, 1979, Ser. No. 97,917
Claims priority, application Sweden, Dec. 6, 1978, 7812565
Int. Cl.³ F26B *13/20*
U.S. Cl. 34—156 **13 Claims**

1. A device for drying a web (2) having guidance means for guiding the web in a plane, gas distribution boxes (4) arranged on both sides of the plane of guidance for the web, said boxes (4) including first opening means (6) arranged to direct the gas essentially perpendicularly towards said plane and second opening means (8) arranged to direct the gas essentially along said plane, characterized in that in each of the distribution boxes said first opening means (6) are disposed in a first line extending transverse to said path of guidance and said second opening means (8) are disposed in a second line essentially parallel thereto, said box having an adjoining surface portion (10) extending alongside said second line at a side remote from said first line, guide means (22) associated with said second opening means for directing the gas issuing therefrom away from the first line towards and along said adjoining surface portion (10) of the box, said surface portion being on a higher level than said first opening means (6), said first opening means



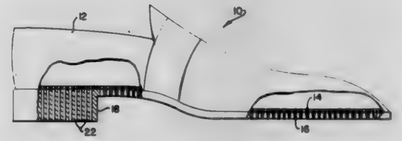
(6) of each box on one side of said guidance plane being located directly opposite said surface portions (10) on a higher level in a confronting box on the other side of said guidance plane.

4,290,211

VENTILATING OUTSOLE

George Csengeri, 5624 Calle de Arboles, Torrance, Calif. 90505

Filed Oct. 15, 1979, Ser. No. 84,991
Int. Cl.³ A43B *7/06*
U.S. Cl. 36—3 B **1 Claim**



1. In an article of footwear having an outsole, an insole and some form of upper for maintaining the outsole on the foot, the improvement comprising;

a multiplicity of perforations uniformly distributed throughout a major portion of the ground engaging portion of the outsole through the material of the outsole, to open at the inner surface of the outsole, said perforations having a spacing relative to one another on the order of 5 to 7 millimeters center-to-center and each of said perforations at the inner surface of the outsole having a span on the order of about 1.60 to about 2.00 millimeters,

said insole being formed with a plurality of spaced perforations of the same span as said perforations in said outsole, said insole further having a spaced plurality of stubs protruding downwardly from the lower surface of said insole engaging some only of said perforations in said outsole for indexing said insole to said outsole.

4,290,212

WOODEN SHOE INCLUDING HINGE

Karl J. Matsson, Karlskrona, Sweden, assignor to Stiftelsen Blekinge Produkter, Karlskrona, Sweden

Filed Mar. 3, 1980, Ser. No. 126,713
Claims priority, application Sweden, Mar. 6, 1979, 7901989
Int. Cl.³ A43B *13/08, 1/06*
U.S. Cl. 36—33 **3 Claims**

1. A shoe having an articulated connection in a bottom portion to which is attached an upper foot-receiving portion, said bottom portion comprising

a heel portion;

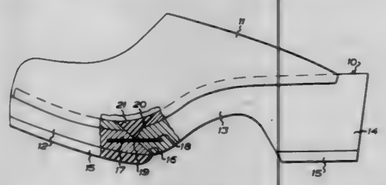
a sole portion;

a shank portion having a front part and a rear part, said rear

part connected to said heel portion and said front part connected to said sole portion;

said front part connection formed as two abutting planar surfaces, one of said planar surfaces formed on said sole portion and extending upwardly at a constant acute angle throughout said sole portion, the other planar surface formed on said front part of said shank portion and extending upwardly at an angle corresponding to said acute angle and terminating at an intermediate location along said one planar surface;

said front part of said shank portion having a beveled surface formed at right angles to said one planar surface to provide a groove extending upwardly from said terminating location;



a yieldable material fixedly mounted in said groove;

a first slot formed in said sole portion, said slot originating in said one planar surface immediately adjacent and below said terminating location and extending longitudinally into said sole portion;

a second slot aligned with said first slot, said second slot originating in said other planar surface and extending longitudinally into said shank portion; and

a hinge member mounted in said first and second slots to extend therebetween and provide the articulated connection.

4,290,213

SKI-BOOT ENABLING ITS DELIBERATE RELEASE FROM THE SKI BY MEANS OF THE SKI-STICK

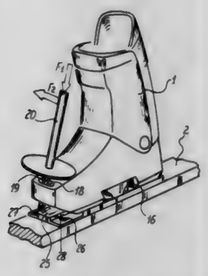
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Dec. 19, 1978, Ser. No. 970,963

Claims priority, application France, Dec. 23, 1977, 77 39072

Int. Cl.³ A43B 5/04; A63C 9/00

U.S. Cl. 36—117 **17 Claims**



1. A ski-boot adapted to be releasably engaged on a ski, said ski-boot comprising one bearing surface adapted to cooperate with a lower portion of a ski-pole whereby deliberate movement of said ski-pole relative to said ski while said lower portion of said ski-pole bears against said bearing surface causes said ski-boot to be released from said ski, said ski boot further comprising retention means for retaining the lower portion of said ski-pole in cooperation with said bearing surface during said deliberate motion of said ski-pole, wherein said bearing surface and said retention means comprise a single hole.

4,290,214

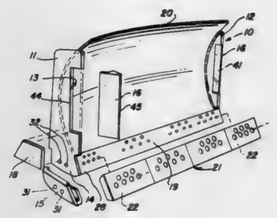
EARTHWORKING IMPLEMENT SIDE PLATE WEAR MEMBER

Visvaldis A. Stepe, Willow Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 4, 1980, Ser. No. 150,869

Int. Cl.³ E02F 9/28

U.S. Cl. 37—141 T **18 Claims**



1. In an earthworking implement (**10**) having a sidewall member (**11,12**) defining a bottom edge portion (**14**), wear member structure comprising:

a U-section member (**15**) defining a bottom bight portion (**25**), and spaced legs (**23,24**) extending upwardly from said bottom bight portion to define a channel (**48**) receiving said sidewall member bottom edge portion (**14**), and front edge portions;

securing means (**33,35**) removably securing said U-section member to said sidewall member to define a replaceable wear member thereon; and

a transverse member extending across one of said front edge portions of the U-section member and the bottom edge portion of the sidewall member into abutment with the other of said front edge portions of the U-section member.

4,290,215

BADGE WITH PIN

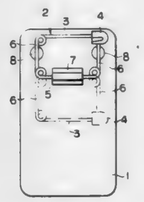
Yaeko Kise, 35-10 Asakusabashi 1-chome, Taito-ku, Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,705

Claims priority, application Japan, Oct. 12, 1979, 54-140969[U]

Int. Cl.³ A44C 3/00

U.S. Cl. 40—1.5 **4 Claims**



1. A badge comprising a pin pivotally movable attached to the back surface of the badge, said pin being a resilient wire member bent substantially in a rectangle, with the opposite ends thereof positioned at one corner thereof, said wire member having a hook portion at one end thereof and a sharp point at the other end, which is adapted to engage said hook portion, said resilient wire member having the distance between a prong thereof with the sharp point and a prong opposite thereto larger than the thickness of a thumb or forefinger, said wire member is coiled at the other end of the prong with a sharp point, which is remote from said hook, two opposing sides of the rectangular wire member which interconnect the prong with a sharp point and the prong opposite thereto which forms a support stem constitute support prongs; and said badge has on the back surface thereof a means for separably fixing said support prongs to the back surface of the badge.

4,290,216

COMBINATION HORIZONTALLY AND VERTICALLY MOUNTED DISPLAY

Jean L. Gale, 44 Deer Path La., Weston, Mass. 02193

Filed Jun. 30, 1980, Ser. No. 163,989

Int. Cl.³ G09F 1/12

U.S. Cl. 40—152.1 **12 Claims**



1. A display member having a central horizontal axis and a 90° displaced vertical axis capable of being supported on a horizontal surface in a first mode and on a hook member attached to a vertical surface in a second mode comprising:

display means having a front viewing surface and a back surface;

support means capable of being readily displaced 90° with respect to said display means for supporting said display means on a horizontal surface when said support means is aligned with the central horizontal axis or the central vertical axis or on a hook member attached to a vertical surface when said support means is aligned with the central horizontal axis or the central vertical axis, said support means having first and second substantially flat, rigid, unbending portions, said first portion having a shorter length than said second portion, said first and second portions being joined at an angle, said first portion including a first fastening means and said second portion including a second fastening means; and

connecting means located on said back surface of said display means for readily releasably connecting and attaching said first fastening means to said display means, to provide a display member capable of being supported on a horizontal surface and for readily releasably connecting and attaching said second fastening means to said display means to provide a display capable of being supported on the hook member attached to a vertical surface.

4,290,217

LIST FINDER

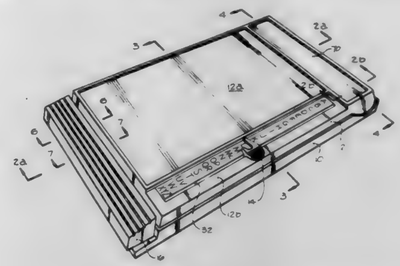
Henry Finkel, Westmount, Canada, assignor to Swedish Industrial Corporation of Canada Ltd., Montreal, Canada

Filed Oct. 2, 1979, Ser. No. 81,247

Int. Cl.³ B42F 17/20

U.S. Cl. 40—389 **14 Claims**

1. A list finder comprising a base and a cover pivotably connected together by a hinge pin with the cover normally lying above said base and defining therewith a space for index sheets, said cover incorporating means for lifting selected index sheets when the cover is opened, wherein said base and cover both comprise integrally moulded parts having hinge pin seats including a normally downwardly facing seat on said moulded base part and a normally upwardly facing seat on said moulded cover part, said base part having a clear space below said downwardly facing seat and said cover part having a clear space above said upwardly facing seat whereby said base part is capable of being formed by moulding by a unitary mould member which both forms a bottom surface of said base part and also forms said downwardly facing seat, said cover part having a configuration which is mouldable by a unitary mould member which both forms a top surface of said cover part and also forms said upwardly facing seat, said base and cover parts also including moulded surfaces for holding said seats in contact with the hinge pin during relative pivotal movement of the parts.



4,290,218

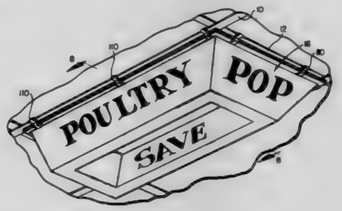
CEILING MODULE

Fred Drueck, Jr., 4941 W. Henderson, Chicago, Ill. 60641

Filed Jun. 19, 1980, Ser. No. 160,958

Int. Cl.³ G09F 13/00

U.S. Cl. 40—553 **4 Claims**



1. An advertising display module for use with suspended ceilings having spaced-apart grid members defining panel receiving areas, ceiling panels removably supported by said grid members in said panel receiving areas and lighting fixtures disposed in cooperative working relationship with pre-determined ones of said ceiling panels, said advertising display module being co-extensive in area with the respective ones of said panel receiving areas and supported by said grid members defining the respective ones of said panel receiving areas, whereby one or more of said advertising display modules can be removably disposed in conjunction with or in substitution for any one of said ceiling panels to provide readily visible advertising, said advertising display module comprising a hollow enclosure formed by a plurality of walls, at least some of which depend downward with respect to said suspending ceiling and provide surfaces for receiving thereon indicia, and indicia on at least one of said surfaces, and securement means comprising a clip removably secured to said grid member and having a shoulder forming a support surface upon which said peripheral rim seats to support said module from said grid members.

4,290,219

TARGET SIGHT RECORDING APPARATUS

Hans Boller, Alte Landstrasse 79, Thalwil, and Max Oschwald, In der Fadmatt 26, Urdorf, both of Switzerland

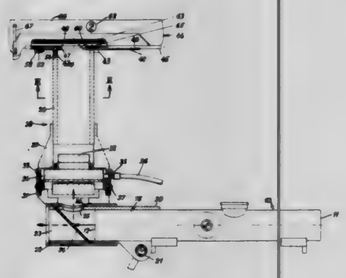
Filed Jun. 3, 1976, Ser. No. 692,452

Claims priority, application Switzerland, Jun. 4, 1975, 7170/75

The portion of the term of this patent subsequent to Jul. 22, 1996, has been disclaimed.

Int. Cl.[3] F41C 27/00

U.S. Cl. 42—1 R 13 Claims



1. In a firearm having a trigger and a telescopic sight through which light from a target zone can pass along the optical axis of the sight through an eyepiece to reach the eye of an observer, target sight recording apparatus comprising

an optical beam splitter element rigid with the telescopic sight for diverting a fraction of the light passing through the telescopic sight along a path extending at an angle to the optical axis,

a photographic camera rigid with the telescopic sight and inclined at an angle to receive the deflected light,

the camera having an objective lens system, a camera shutter, and a cassette for housing photographic exposure material all aligned along the optical axis of the camera and a shutter releasing device coupled to actuate the camera shutter, and

means coupling the shutter release device with the trigger of the firearm so that upon operating the trigger the camera shoots the picture which at that instant the observer can view through the telescopic sight.

4,290,220

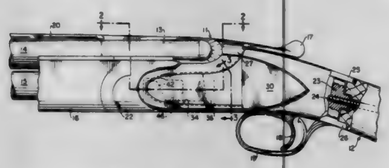
LIGHTWEIGHT STOCK AND FRAME CONSTRUCTION FOR A FIREARM

William B. Ruger, Croydon, N.H., assignor to Sturm, Ruger & Co., Inc., Southport, Conn.

Filed Jul. 9, 1979, Ser. No. 55,643

Int. Cl.[3] F42C 23/00

U.S. Cl. 42—75 D 5 Claims



1. A lightweight stock and frame construction for a firearm having a frame the forward end of which is formed with a longitudinally extending open-top recess defined by right hand and left hand side walls, a bottom wall and rear end wall of the frame; a stock the forward end of which is secured to the rearward end of the frame; and at least one barrel pivotally mounted on the forward end of the frame for rotation from its closed "firing" position to its open "loading and unloading" position and return, the barrel being snugly received in the longitudinally extending open-top recess formed in the forward end of the frame when at its closed position;

the right hand side wall of the frame being formed with a longitudinallly extending right hand cut-out opening and the left hand side wall of the frame being formed with a longitudinally extending left hand cut-out opening, each of said openings extending forwardly from the rear end wall of the frame to a point a short distance rearward of the forward end of the frame, the periphery of the opening formed in the right hand side wall and the periphery of the opening formed in the left hand side wall of the frame each having an inwardly undercut bevelled surface;

the right hand side of the stock being provided with a right hand side wall extension and the left hand side of the stock being provided with a left hand side wall extension, said right hand and left hand side wall extensions of the stock each extending forwardly into the right hand and left hand side wall openings, respectively, of the frame and being snugly received in said openings, the periphery of the right hand side wall extension and the periphery of the left hand side wall extension of the stock each being formed with an inwardly rising bevelled surface that firmly contacts the inwardly undercut bevelled surface of the right hand and left hand side wall opening in which each side wall extension is received;

the right hand side wall and the left hand side wall of the frame each being provided with an inner support member disposed on the inner surface of each side wall at the forward end of the longitudinally extending cut-out opening formed therein, the inner support member at the forward end of the right hand side wall opening of the frame contacting the forward end of the inner surface of the right hand side wall extension of the stock received in said opening, and the inner support member at the forward end of the left hand side wall opening of the frame contacting the forward end of the inner surface of the left hand side wall extension of the stock received in said opening.

4,290,221

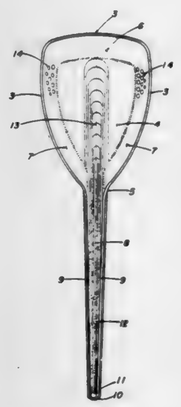
MINNOW DIPPERS

Harold C. Dotson, Sr., P.O. Box 1306, Socorro, N. Mex. 87801

Filed Nov. 13, 1979, Ser. No. 93,540

Int. Cl.[3] A01K 97/00

U.S. Cl. 43—4 6 Claims



1. A minnow dipper of transparent material so as to avoid unduly arousing a minnow as it is being scooped-up into the minnow dipper while in a pool of water, e.g. in a minnow bucket, said dipper

a dipper portion which is integrally formed with an elongated handle portion extending longitudinally rearwardly therefrom to a free end;

said dipper portion including a bottom wall, two opposite upstanding sidewalls and an upstanding front wall;

said handle portion being constituted by wall means of hollow, steeply generally conical shape, so as to be convergent away from said dipper portion, and having means defining a longitudinally extending, upwardly opening slot through said wall means, extending from said dipper portion to adjacent said free end, thereby providing an upwardly open sluiceway from said dipper portion to adjacent said free end of said handle portion;

said dipper portion being generally triangular as seen in top plan, with said two opposite sidewalls converging from laterally opposite margins of said front wall to said handle portion;

said bottom wall of said dipper portion being generally upwardly concave and including an upwardly opening, longitudinally elongated shallow trough which begins, gradually, midway between said sidewalls near said front wall and increases in depth until smoothly merging with said sluiceway there said dipper portion adjoins said handle portion;

at least one of said upstanding walls of said dipper portion having opening means provided therethrough which extend down to adjacent said bottom wall, but insufficiently downwards to substantially drain said dipper portion when said dipper portion is being held to contain a minnow, but sufficiently to cause the minnow to lower into said shallow trough; said bottom wall and shallow trough thereof being imperforate;

means providing an upstanding stop for said slot, at the free end of said handle portion; and

drain opening means through said handle portion near said stop, so that when the minnow dipper is used to scoop-up a minnow from a pool of water, so long as the dipper is maintained with said trough lowermost where said dipper portion adjoins said handle portion, excess water will drain out of said opening means and lower the minnow, still in water, into said shallow groove, and so that as the minnow dipper is then tilted slightly to place the free end of the handle portion at least nearly as low as said trough where said dipper portion adjoins said handle portion, the minnow will reorient itself downstream and sluice with water contained in said dipper portion below said opening means down and sluiceway towards said upstanding stop, whereupon the water in the sluiceway will drain out of said drain opening means leaving the minnow aground in said sluiceway, oriented with its head away from said dipper portion;

said handle portion being of sufficient depth that when minnows of sizes commonly used as bait become aground in said sluiceway and exposed through said slot, but closely flanked on both sides by said wall means throughout a substantial part of the height of the minnow.

4,290,222

FISHING APPARATUS

William D. McLeod, Westland, Mich., assignor to Fishing Innovations, Inc., Westland, Mich.

Filed May 19, 1980, Ser. No. 150,721

Int. Cl.[3] A01K 97/12

U.S. Cl. 43—15 5 Claims

1. Apparatus for jerking a fishline, comprising:

a base;

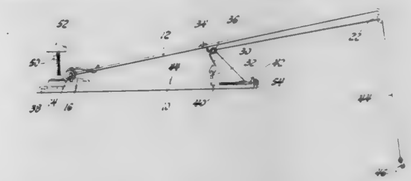
an elongated arm having a first end, a section transverse to the longitudinal axis of the arm, and a line receiving eye at the opposite end of the arm;

means pivotally connecting the arm to the base for pivotal motion between a first position in which the transverse section is adjacent the base, and a second position;

a trigger member pivotally connected to the base, said trigger member having a hook engageable with the transverse section of the arm to prevent motion of the arm toward said second position, the hook being movable by a motion of the hook towards the eye of the arm for releasing the arm, the trigger member having an elbow for receiving a fishline;

a fishline having one end connected to the base and being disposed in the eye of the arm and through the elbow of the trigger member such that a pull on the line moves the trigger to release the arm for motion toward said second position; and

a bias member urging the arm from said first position toward said second position whereby the line is jerked as the arm is moved from said first position toward said second position.



4,290,223

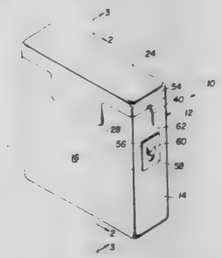
FISHERMAN'S LEADER/LINE DISPENSER AND DECOILER

John R. Ostenberg, and Kenneth M. Ligas, both of Boulder, Colo., assignors to Creative Anglers

Filed Jul. 27, 1979, Ser. No. 61,330

Int. Cl.[3] A01K 91/00

U.S. Cl. 43—54.5 R 6 Claims



1. A fisherman's leader/line dispenser and decoiler comprising:

container means having side walls, a bottom and a top;

a spool of fisherman's leader/line mounted within said container means;

first longitudinally extending, generally rectangular, resilient pad means mounted within said contained means;

second longitudinally extending, generally rectangular, resilient pad means mounted within said container means in an opposing posture with respect to said first resilient pad means, said first and second resilient pad means being mounted so as to be self-biasing in mutual opposing engagement;

said top comprises a cap and one of said first and second resilient pad means is mounted upon an inside surface of said cap and the other of said first and second resilient pad means is mounted above said spool of fisherman's leader/line, said first and second resilient pad means extend substantially across an upper zone of said container; and

aperture means extending through said container means wherein a fisherman's leader/line may be threaded from said spool between said mutually opposed longitudinally extending resilient pads and through said aperture means away from said container means wherein drawing a length

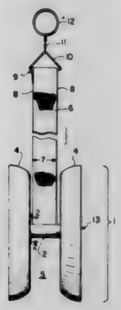
of leader/line between said first and second longitudinally extending resilient pad means along the long dimensions thereof and out said container serves to erase coil memory of the leader/line as the leader/line is dispensed.

4,290,224

TAPE-SUPPORTED YO-YO

Patrick MacCarthy, Golden, Colo., assignor to Ramon E. Bisque and Franklin J. Stermole, both of Golden, Colo., a part interest to each

Filed Apr. 9, 1980, Ser. No. 138,729
Int. Cl.³ A63H *27/12*
U.S. Cl. 46—61 **4 Claims**



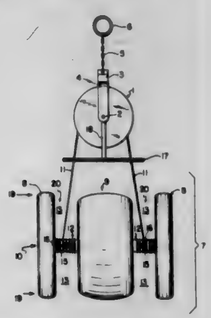
1. A toy capable of combined rotational motion about a horizontal axis and translational motion in a vertical direction, comprising:
an axle;
a first disc connected at a center point to said axle;
a second disc connected at a center point to said axle; and
a torsion resistant tape connected at one end to said axle at a position between said first disc and said second disc said tape being connected to said axle in such a manner that said tape winds around and unwinds from said axle during said rotational motion about said horizontal axis and translational motion in said vertical direction.

4,290,225

LOOPED-STRING PULLEY-SUPPORTED YO-YO

Patrick MacCarthy, 37 Mines Park, Golden, Colo. 80401

Filed Feb. 11, 1980, Ser. No. 120,289
Int. Cl.³ A63H *27/12*
U.S. Cl. 46—61 **5 Claims**



1. A toy capable of combined rotational motion about a horizontal axis and translational motion in a vertical direction, comprising:
an axle;
a first disc connected at a center point of said disc to said axle;
a second disc connected at a center point of said disc to said axle;
a third disc connected at a center point of said disc to said axle at a position on said axle between said first and second discs;
a string connected at one end to said axle at a point near said first disc, and connected at its other end to said axle at a point near said second disc; and
a rotatably mounted support means over which said string is looped in a manner such that said string may slidably move over said rotatably mounted support means.

4,290,226

FLEXIBLE FLYING DISC TOY

Allen R. Stauffer, 860 Normandy Dr., Suffolk, Va. 23434

Filed Nov. 15, 1979, Ser. No. 94,495
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—74 D **6 Claims**



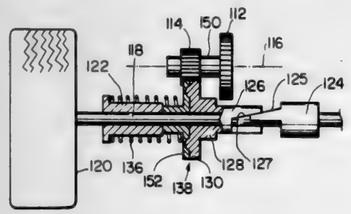
1. A flying disc or saucer toy having aerodynamic properties so that, when tossed and simultaneously rotated, said toy will fly in a stable manner, said toy comprising: a flat, circular body portion of flexible sheet material; a flexible ring attached to the periphery of said circular body portion, said ring being made of plastics material having sufficient elastic memory to be shape retaining and stretch said body portion into a disc shaped configuration yet pliable so that said toy may be folded and/or crumpled for storage; and an integral upstanding, circumferential rim on said ring, said body portion being attached to said rim whereby said disc toy assumes an unfolded shape with a flat, upper surface and a recessed undersurface to thus exhibit stable, aerodynamic properties when tossed or thrown.

4,290,227

TORQUE TRANSMISSION SYSTEM FOR MOTOR DRIVEN TOY

Juky Shimamura, Chigasaki, Japan, assignor to Asahi Communications Inc., Soka, Japan

Filed Aug. 28, 1980, Ser. No. 182,190
Claims priority, application Japan, Mar. 4, 1980, 55-26156
Int. Cl.³ A63H *17/00*
U.S. Cl. 46—206 **7 Claims**



1. In a motor driven toy, a transmission system comprising:
motor means;
a rotary output shaft;
driven means fixed on said rotary output shaft;
a first rotary driving member drivingly connected to said motor means having a first diameter and being disposed to be rotated at a predetermined position thereof;

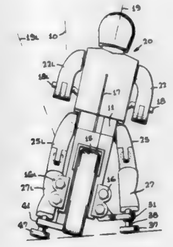
a second rotary driving member having a second diameter smaller than said first diameter;
connecting means for connecting said first and second rotary driving members at the same rotational rate;
a first output member axially slidable on said output shaft and drivingly engageable exclusively with said first driving member;
a second output member axially slidable on said output shaft together with said first output member and being rotated with said first output member and drivingly engageable exclusively with said second driving member;
a first cam member axially slidable on said output shaft and rotated with said first output member including at least one further slanted cam surface;
a second cam member fixed on said output shaft, including at least one first slanted cam surface in contact with said first cam surface of said first cam member;
a synchronizing rotary member axially slidable on said output shaft for synchronizing said second output member with said second rotary driving member during changeover from high-speed low-torque operation to the low-speed high-torque operation, said synchronizing rotary member being biased toward said first and second output members; and
two-way clutch means operatively disposed between said synchronizing rotary member and said second output member.

4,290,228

TOY VEHICLES WITH AUTOMATIC BANKING

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.

Filed Feb. 13, 1980, Ser. No. 121,023
Int. Cl.³ A63H *17/36*; B62D *9/02*
U.S. Cl. 46—262 **62 Claims**



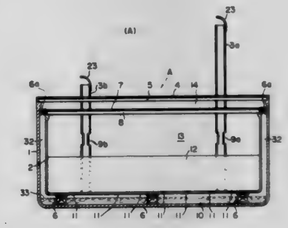
1. A toy vehicle for operation on a supporting surface, the vehicle comprising:
a frame;
a wheel mounted to the frame;
a steering mechanism, supported on the frame, for causing the vehicle to negotiate turns;
an additional wheel mounted to the steering mechanism so that the wheels are generally one in front of the other;
a pair of side supports mounted to the frame, one on each side, each support being moveable from a first position adjacent to the frame to a second position spaced outwardly from the frame, said supports for engaging such supporting surface to prevent the vehicle from falling over sideways;
means on the frame for moving said supports inwardly and outwardly in coordination with the steering mechanism such that during a turn the support on the inside of the turn is moved toward its second position spaced outwardly from the frame and the support on the outside of the turn is maintained in its first position adjacent to the frame; and
banking means responsive to the steering mechanism and operatively associated with each support for tilting the vehicle during the turn toward the inside of the turn.

4,290,229

INSTALLATION FOR CULTIVATION OF CROPS ON WATER

Masahiro Miura, 11-2, Miyanishi-cho, 5 chome, Fuchyu-City, Tokyo, Japan

Filed Feb. 14, 1980, Ser. No. 121,557
Claims priority, application Japan, Oct. 4, 1979, 54-128723
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—66 **9 Claims**



1. An installation for the cultivation of crops on water comprising:
a box-like floatable outer housing;
an inner cultivation housing supported within said outer housing and forming a double-walled bottom and double-wall sidewalls therewith, the bottom of said cultivation housing having a plurality of holes extending therethrough;
a transparent plate glass roof on said outer housing in air-tight relationship therewith;
a drip plate formed of plate glass having a plurality of holes extending therethrough positioned over said cultivation housing, said bottom and the region between said double-walled sidewalls being in communication with the interior of said cultivation housing through the holes in said drip plate;
a plurality of ventilation tubes mounted in said cultivation housing and extending through said drip plate and roof for communication with the air above said roof, a first set of said ventilation tubes extending beyond said roof to a higher elevation than a second set of said ventilation tubes, a lower portion of each of said ventilation tubes being in communication with the interior of said cultivation housing;
the interior of said cultivation housing being adapted to contain a quantity of soil and said bottom being adapted to contain a quantity of water, whereby water from said bottom is periodically and automatically evaporated and condensed for passage through the holes in said drip plate to prevent undue drying of the soil and to supply sufficient water to the soil to enable cultivation thereof.

4,290,230

GATE FOR SUPERMARKETS AND SIMILAR ESTABLISHMENTS

Amaury H. t'Kint de Roodenbeke, Brussels, Belgium, assignor to Technical Services, Societe Anonyme, Brussels, Belgium

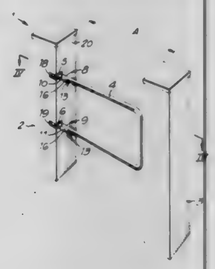
Filed Jan. 15, 1980, Ser. No. 112,271
Claims priority, application European Pat. Off., Jan. 22, 1979, 79200038.2
Int. Cl.³ E01F *13/00*
U.S. Cl. 49—49 **2 Claims**

1. A gate of the type generally used in supermarkets and similar establishments comprising:
a generally vertical rotatable axle;
vertically spaced supporting levers secured to and extending

laterally of said axle, said levers having generally flat upper surfaces;

a pair of cylindrical rods secured to each upper surface in spaced parallel relation;

a U-shaped barrier having free ends and headed bolts pivot-



ally connecting said free ends to said supporting levers to overlie said flat upper surfaces between said cylindrical rods; and

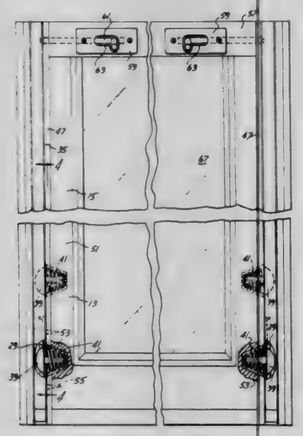
spring means reacting against the heads of said bolts urging said free ends against said upper surfaces whereby said barrier may be rotated in either direction.

4,290,231

WINDOW ASSEMBLY

Joseph N. Blair, Detroit, Mich., assignor to Mamie I. Blair Adams, Detroit, Mich.

Filed Aug. 3, 1979, Ser. No. 63,603
Int. Cl.³ E05D *15/22*
U.S. Cl. 49—173 **1 Claim**



1. A window assembly for a building wall comprising a hollow frame including opposed sides, a sill and a header;

a trackway mounted upon and secured to each frame side including opposed inner and outer channel tracks of dovetail shape in cross section;

elongated opposed pairs of channel slides of dovetail shape in cross section movably mounted in opposed tracks respectively;

a window support bracket overlying each slide and adjacent its lower end pivotally mounted thereon;

a lower sash interposed between a pair of opposed support brackets and secured thereto;

an upper sash interposed between an additional pair of opposed support brackets and secured thereto;

the lower and upper sashes and connected channel slides adapted for vertical adjustments along the inner and outer tracks respectively;

the lower and upper sashes and connected support brackets adapted for selective inward pivotal movement approximately 90° to facilitate cleaning;

retractable latching means on said sashes engageable with the channel slides for securing the sashes within said tracks;

the outer surface of each channel slide having an elongated V-shaped groove;

the outer surface of each window support bracket having a corresponding V-shaped base normally nested and retained within the channel slide grooves respectively when said sashes are in an upright position, and are angularly displaced from said grooves when the sashes are pivoted inwardly;

the pivotal mounting of each window support bracket including a bolt within a channel slide projecting inwardly thereof and through a window bracket;

and a coiled compression spring anchored upon said bolt and bearing against the window bracket, normally biasing the bracket base into the slide groove;

the slide camming said bracket inwardly on rotation thereof, against the action of said spring for biasing the window sash and bracket in any selected angular position of adjustment, said window brackets on return rotation adapted to snap into said slide grooves respectively;

the securing of a sash between a pair of support brackets including opposed spaced inwardly directed channels on said brackets, the sides of each window sash being nested and retained within said channels respectively;

and fasteners securing said brackets to said window sashes respectively;

said latching means including a manually retractable bolt nested within an upper portion of each window sash and longitudinally projected into a corresponding recess in an adjacent channel slide;

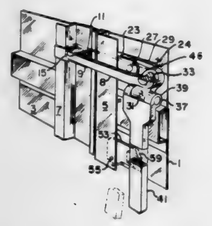
and a latch plate on said sash having a bayonet slot for guidably retaining said bolt in a locking position, and permitting rotation and retraction thereof to disconnect the bolt from the channel slide.

4,290,232

FREIGHT CAR DOOR LOCKING MECHANISM

Jackson A. Shook, LaGrangePark, Ill., assignor to Evans Products Company, Portland, Oreg.

Filed Dec. 3, 1979, Ser. No. 99,832
Int. Cl.³ E05F *11/00*; E05D *13/04*
U.S. Cl. 49—277 **16 Claims**



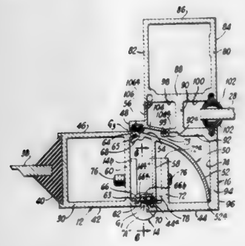
1. In combination with a pair of members, at least one of which is a sliding door, said members having opposed vertical edges and being relatively movable from a closed position wherein their vertical edges abuttingly engage each other and open position wherein their vertical edges are spaced from each other, a locking device comprising a hasp, means pivotally mounting said hasp on one of said members, resilient means biasing said pivotal mounting means away from the edge of said one member, an arm pivoted on a transverse axis to said other member and extending away from the edge of said other member, the free end of said hasp being removably pivoted to the free end of said arm, and means for holding said arm in slight disalignment with said hasp when said door is fully closed, said resilient means then maintaining said hasp in tension and the abutting edges of said members in tightly engaged relation, said arm being swingable about its pivotal mounting on said other structure to an over-center position with respect to said hasp, whereby said hasp is placed under compression to move the edges of said members away from each other and permit detachment of said hasp from its pivotal connection to said arm to accommodate further separation of said members.

4,290,233

SAFETY DOOR ENTRANCE

S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Aug. 28, 1979, Ser. No. 70,432
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—383 **24 Claims**



1. In combination, a door having opposite faces and a hinge stile element along one edge thereof, a door jamb element adjacent said hinge stile element, and hinge means interconnecting said elements for supporting said door for pivotal movement about a hinge axis parallel of said elements to swing between a closed and an open position wherein a corner edge of said door on one face thereof moves between corresponding positions closely adjacent said jamb element and spaced apart from said jamb forming a gap between said corner and jamb element,

a finger protector secured on one of said elements to extend between facing portions thereof including a curved wall surface for continuously bridging said gap while said door swings between said open and closed positions,

the other of said elements including a pocket for receiving said finger protector when said door is closed, and

a pair of spaced apart weatherstrip means between said elements, one of said weatherstrip means mounted to provide a seal between said curved wall surface of said finger protector and said other element and the other of said weatherstrip means mounted to provide a seal between said elements adjacent a door face opposite from the door face adjacent said curved wall surface of said finger protector.

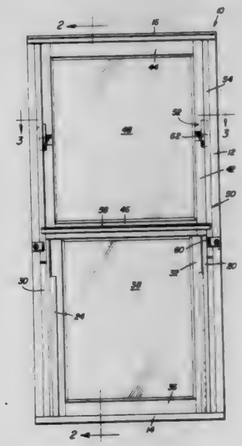
4,290,234

DEMOUNTABLE WINDOW CONSTRUCTION

Carmine De Maria, 39 E. Madison Ave., Collingswood, N.J. 08108

Filed Sep. 18, 1979, Ser. No. 76,618
Int. Cl.³ E05D *15/16*
U.S. Cl. 49—415 **3 Claims**

1. A window construction including a frame having opposite side parallel vertical side frame members interconnected at their upper and lower ends by top and bottom transverse horizontal members extending and secured between the upper and lower ends of said side frame members, said frame defining an opening therethrough, bound by said members, and including front and rear portions, said rear portion of said frame including inwardly projecting and forwardly facing opposite side vertical retaining members supported from and extending at least substantially fully along said side frame members, a lower rear sash assembly disposed in said frame immediately forwardly of and guidingly engaged with the forwardly facing surfaces of said retaining members for guided vertical shifting of said lower sash assembly in said frame, at least the upper portions of said side frame members including vertically extending inwardly opening grooves formed therein and spaced forwardly of said forwardly facing surfaces, the upper opposite side portions of said lower sash assembly including oppositely outwardly projecting members slidably and rotatably received in said grooves, the lower portions of said side frame members including first inwardly projecting and vertically extending retaining flanges whose upper ends are spaced below the upper limit of travel of said lower sash assembly in said frame and behind which said lower sash assembly is snugly slidably received when said lower sash assembly is lowered in said frame, said side frame members defining forwardly facing vertical guide surfaces spaced slightly outwardly of the remote side surfaces of said lower sash assembly in a plane spaced slightly forward of the forward face of said lower sash assembly and extending substantially fully along said side frame members, a front upper sash assembly disposed in said frame immediately



forwardly of and guidingly engaged with said guide surfaces for guided vertical shifting of said upper sash assembly in said frame forward of said rear sash assembly and in passing relation therewith, said opposite side frame members including second lower inwardly projecting and vertically extending retaining flanges whose upper ends are spaced above the upper ends of said first flanges and below the upper limit of travel of said lower sash assembly in said frame and behind which said upper sash assembly is snugly slidably received when said upper sash assembly is lowered in said frame, a retainer assembly including vertical opposite side bars defining third inwardly projecting vertical flanges, the upper ends of said bars being pivotally supported from the upper ends of said side frame members with said bars closely overlying the forwardly facing opposite side portions of said upper sash for guidingly mounting the latter within said frame against removal therefrom, said retainer assembly being swingably supported from said frame for outward and upward swinging of the lower ends of said bars toward open positions, latch means carried by said frame for releasably latching said retainer assembly in a closed position with the lower ends of said third flanges being coextensive with the upper ends of said second flanges when said retainer is in said closed position, and yieldable friction means mounted on said upper sash assembly for engagement with said

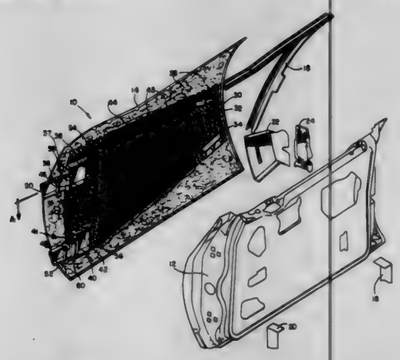
bars, when said retainer assembly is in the closed position, to bias said upper sash assembly rearwardly against said guide surfaces and to frictionally hold the sash assemblies in vertically adjusted positions thereof.

4,290,235

INTRUSION RESISTING STRAP FOR AUTOMOBILE DOORS

Herbert A. Jahnle, Havertown, Pa., and Richard B. Freeman, Wilmington, Del., assignors to The Budd Company, Troy, Mich.

Filed Oct. 24, 1979, Ser. No. 87,869
Int. Cl.³ B60J *5/04*
U.S. Cl. 49—502 **8 Claims**



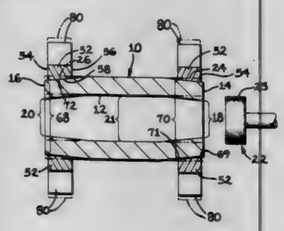
1. An automobile door having a hinge and a latch mechanism and including inner and outer panels for attachment between two vertical posts in an automobile body comprising:
(a) a hinge and latch mechanism connected to said door;
(b) a plastic outer panel comprising resin material and chopped glass fibers; and
(c) a band comprising continuous glass fibers integral with said outer panel in alignment with said hinge and latch mechanism and disposed to extend unidirectionally horizontally between said hinge and latch mechanism and said two vertical posts when said door is attached.

4,290,236

METHOD AND APPARATUS FOR MANUFACTURING A CONTOURED INTERNAL DIAMETER BUSHING

Thomas D. Brewer, Tremont; Robert J. Purcell, and James R. Sturges, both of Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00322, § 371 Date May 14, 1979, § 102(e) Date May 14, 1979, PCT Pub. No. WO80/02525, PCT Pub. Date Nov. 27, 1980.
This PCT application filed May 14, 1979, Ser. No. 89,117
Int. Cl.³ B24B *1/00, 5/40*
U.S. Cl. 51—5 A **7 Claims**



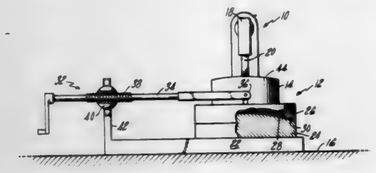
1. A method of forming tapers internally on ends (14,16) of tubes (10) having cylindrical bores (12), comprising:
compressing a first end (14) of a tube (10) having a cylindrical bore (12) radially inwardly sufficient to force said first end (14) to deform to a reduced internal diameter (18) which is of lesser size than the first end (14) internal diameter (21) in the absence of said compressing;
boring said tube (10) axially inwardly from said first end (14) with a boring tool (22) while said tube is compressed which bores a hole of a diameter (21) greater than said reduced internal diameter (18); and
releasing said first end (14) compressing to allow an external dimension (24) of said first end (14) to return towards its uncompressed size with concomitant generally uniform outward flaring of an interior portion (28) of said bore (12) at said first end (14).

4,290,237

FIXTURE FOR USE IN FORMING CYLINDRICAL SURFACES OF ACCURATE DIMENSION

Saulius M. Jameikis, Riviera Beach; Robert K. Stalcup, North Palm Beach Gardens; Joe F. Arnold, North Palm Beach, and Robert K. Hon, West Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 30, 1979, Ser. No. 99,062
Int. Cl.³ B24B *5/04*
U.S. Cl. 51—34 A **4 Claims**



4. Apparatus for forming a cylindrical surface on a workpiece, comprising:
a grinding machine having a base plate and a traversing head including a grinding wheel mounted thereon;
a fixture for manipulating the workpiece through a circular arc which is perpendicular to the direction of travel of the traversing head, including
a movable template having a spherical surface and to which the workpiece is securable,
a fixed template having a spherical surface of inverse geometry to the spherical surface of the movable template in opposing relationship thereto, and over which the spherical surface of the movable template is slidable,
means restricting relative movement between said fixed and movable templates to a circular arc which is perpendicular to the direction of travel of the traversing head; and
means for traversing the grinding wheel in said head across the workpiece and means for incrementally moving said workpiece on the movable template across the path of the traversing head to form a cylindrical surface on the workpiece
wherein one of said spherical surfaces has a lattice of intersecting channels formed therein.

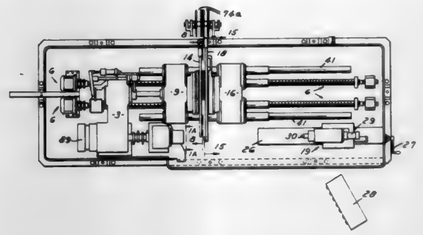
4,290,238

UNIVERSAL CRANKSHAFT FINISHING MACHINE

Edward E. Judge, Jr., Lansing, Mich., assignor to Industrial Metal Products Corporation, Lansing, Mich.

Filed Dec. 18, 1979, Ser. No. 104,784
Int. Cl.³ B24B *5/42*
U.S. Cl. 51—58 **17 Claims**

1. A crankshaft bearing finishing machine comprising crankshaft rotating means, finishing arm means engageable with individual eccentric crankshaft pin bearings during rotation, means for retracting and moving said finishing arm means to a plurality of successive longitudinally spaced bearing positions, means for effecting finishing engagement with respective bearings at said spaced bearing positions, and eccentric drive means



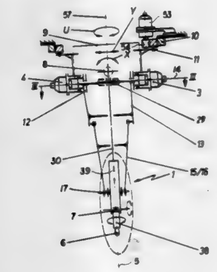
for said arm means separate from and synchronized with said crankshaft.

4,290,239

TOOL POSITIONER

Ernst Zimmer, Friedberg, Fed. Rep. of Germany, assignor to Industriewerke Karlsruhe Augsburg AG Zweigniederlassung Keller & Knappich, Augsburg, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 119,628
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905784; Dec. 21, 1979, 2951832
Int. Cl.³ B24B *41/00*
U.S. Cl. 51—126 **13 Claims**



1. A positioner comprising:
a main support defining a pair of main pivot axes and carrying a guide;
respective main cranks having inner ends pivoted at said main pivot axes on said support and outer ends;
respective links having respective one ends pivoted on said outer ends of said cranks and having other ends;
a holder pivoted on said other ends of said links and having an elongated stem longitudinally displaceable in said guide; and
respective means for pivoting said main cranks on said main support about the respective main pivot axes.

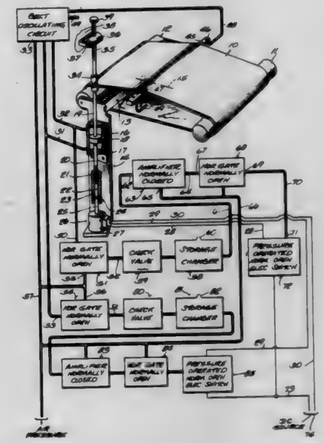
4,290,240

AUTOMATIC EQUALIZER FOR ABRASIVE BELT

Charles E. Robinson, 208 Gardner Ave., Burlington, Wis. 53105

Filed Jan. 28, 1980, Ser. No. 116,068
Int. Cl.³ B24B *21/00*
U.S. Cl. 51—135 BT **10 Claims**

1. In an abrading machine including an endless belt supported for translating longitudinally on spaced apart rolls, oscillator means coupled to at least one of said rolls for oscillating said roll through opposite angles to cause said belt to move back and forth laterally on said rolls, means responsive to said belt reaching a predetermined limit of lateral movement in one direction by providing alternate signals for controlling said oscillator to move said belt in an opposite direction to another predetermined lateral limit, the travel times of said belt in opposite directions being subject to variations due to indeterminate characteristics of the belt, and the improvement comprising:



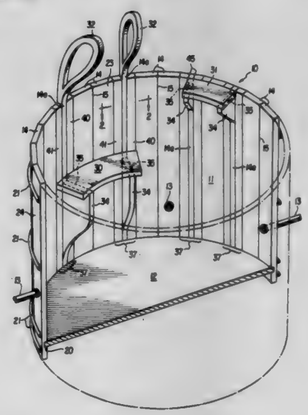
means for determining the time that it takes for said belt to move from one lateral limit to the other latera limit under the influence of said oscillator means, and
means for adjusting said oscillator means to change the angles through which it oscillates said roll to thereby equalize said times.

4,290,241

STAVE ASSEMBLIES, STAVES, AND TUBS CONSTRUCTED THEREWITH

Robert S. Tucker, P.O. Box 25362, Richmond, Va. 23260

Filed Feb. 16, 1979, Ser. No. 12,762
Int. Cl.³ E04G *11/06*; A47B *5/00*
U.S. Cl. 52—36 **12 Claims**



1. A hot tub comprising:
(a) a plurality of staves forming a wall for said tub,
(b) a bottom,
(c) a pair of support staves, each support stave having longitudinally extending side faces and an inwardly, laterally extending projection,
(d) each projection having a support surface positioned

intermediate the bottom of said tub and the top of said stave for supporting a seat,

(e) each of said support staves formed of a single fabricated board,

(f) said pair of support staves spacedly positioned in the wall of said tube for forming a portion thereof, and

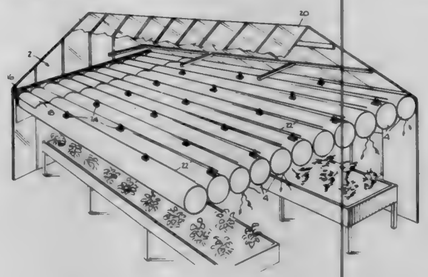
(g) a seating board having ends thereof supported by the support surfaces of said stave projections for forming said seat.

4,290,242

GREENHOUSE TUBULAR INSULATION BARRIER

William T. Gregory, Jr., 2177 Eighth Ave., Sea Girt, N.J. 08750

Filed Mar. 23, 1979, Ser. No. 23,296
Int. Cl.³ E04B *1/34*
U.S. Cl. 52—2 **7 Claims**



1. An apparatus for retaining heat within a greenhouse and providing necessary light to the plants in the greenhouse comprising:

a glass roof;

a plurality of inflatable essentially transparent tubes below the glass roof arranged in parallel across the width of the greenhouse which tubes extend longitudinally from one end of the greenhouse to the opposite end of the greenhouse;

a header extending the entire width of the greenhouse at eave level which header is in communication with the tubes;

tube ties to constrict the ends of the tubes at the end opposite the header;

a sheet of clear plastic draped over the tubes at the constricted end; and

a blower motor adapted to deliver or evacuate air from the header.

4,290,243

BUILDING MEMBRANE HOLD-DOWN SYSTEM

Gerald D. Mellin, Bradenton, Fla., assignor to Seaman Corporation, Sarasota, Fla.

Filed Mar. 27, 1980, Ser. No. 134,486
Int. Cl.³ E04B *1/347, 1/00*
U.S. Cl. 52—63 **6 Claims**

1. A hold-down system for a tensioned membrane covering a rigid framework and having catenary cables secured to its lower edges between bays, comprising retainer means wedgably holding the end portions of two contiguous cables in overlapping loops, and flexible linear means detachably con-



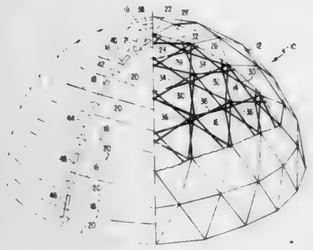
nected at one end to said retainer means and adapted at its other end for detachable connection to a foundation anchor.

4,290,244

COLLAPSIBLE SELF-SUPPORTING STRUCTURES AND PANELS AND HUB THEREFOR

Theodore R. Zeigler, 9923 Indian Queen Point Rd., Oxon Hill, Md. 20022

Continuation of Ser. No. 919,131, Jun. 26, 1978, abandoned, and a continuation-in-part of Ser. No. 763,701, Jan. 28, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,246
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—80 **5 Claims**



1. An assembly of pivotally connected rod elements capable of being manipulated from a bundled, collapsed condition to an expanded, self-locking erected condition forming a self-supporting structure, said assembly comprising, in combination:

a plurality of pairs of crossed rod elements pivotally joined in scissored fashion substantially midway between their ends, one rod element of each pair being pivotally joined at its opposite ends to two other rod elements of adjacent pairs of rod elements and the other rod element of said each pair being pivotally joined at its opposite ends to the remaining two rod elements of said adjacent pairs of rod elements, whereby the pivotally connected ends of said pairs of rod elements lie at the corners of first and second similar polygons situated in spaced, parallel planes such that as the pairs of rod elements are scissored, the assembly is moved between a collapsed condition in which the first and second polygons are of contracted size and their planes are maximally spaced and an erected condition in which the first and second polygons are of expanded size and their planes are spaced relatively close; and

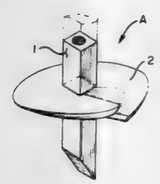
further rod means pivotally joined together and to corners of said polygons for self-locking said assembly in said erected condition, said further rod means comprising a first set of rod elements pivotally joined together at the plan view geometric center of said first polygon and extending therefrom to pivotally connect to corners of said first polygon, said rod elements of said first set being of lengths such that they lie essentially in a common plane containing said corners of said first polygon when said first polygon has expanded to a maximum size, said further rod means also including a second set of rod elements pivotally joined to corners of said second polygon and to intermediate portions of corresponding rod elements of said first set so that said rod elements of the second set cannot be essentially in a common plane containing the corners of said second polygon even when the assembly is in erected condition; said rod elements of said second set being of lengths between their corner-connected ends and their pivotal connections to the corresponding rod elements of said first set such that as said polygons are expanded, the rod elements of said first and secoond sets thereof interact to place all of the rod elements of said assembly under cumulative self-locking stress in said erected condition of the assembly.

4,290,245

EARTH ANCHOR

James I. Pardue, Jr., Birmingham; William M. Hornsby, Hueytown, and Henry J. Noble, III, Birmingham, all of Ala., assignors to Dixie Electrical Manufacturing Company, Memphis, Tenn.

Filed Oct. 30, 1979, Ser. No. 89,446
Int. Cl.³ F02D *5/74*
U.S. Cl. 52—157 **9 Claims**



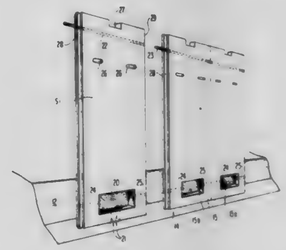
1. An earth anchor for use for embedment within the ground and for resisting pulling or compressing forces tending to urge the anchor from its implanted position, comprising, a shank portion, a continuous helical blade extending approximately a full circumference and affixed to said shank portion and designed for cutting into the ground upon anchor application, said blade having a singular linear cutting edge at the lowest extent of its flight, said linear cutting edge extending at a lagging angle from the perpendicular to the shank portion and further extending tangentially from its frontal portion thereof for effectively displacing any debris encountered by the cutting edge outwardly of the blade's circumference, said linear cutting edge lagging the perpendicular from the shank portion by an angle at least thirty degrees, and said linear cutting edge of the helical blade being bevelled downwardly for facilitating its cutting into the ground upon anchor application.

4,290,246

MULTI-PURPOSE PRECAST CONCRETE PANELS, AND METHODS OF CONSTRUCTING CONCRETE STRUCTURES EMPLOYING THE SAME

Arthur F. Hilsey, 6409 SE. Evergreen Hwy., Vancouver, Wash. 98661

Filed Nov. 22, 1978, Ser. No. 962,852
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—169.1 **46 Claims**



1. A prefabricated concrete slab adapted for placement substantially vertically in an elongated foundation ground trench at a building location adjacent to prefabricated substantially vertically positioned like-constructed such slabs in the trench to form a building structure at said building location, said prefabricated concrete slab having means providing for a positive fixed horizontal and vertical anchoring of said slab into said foundation ground trench, after said prefabricated concrete slab is aligned in abutting relationship with other such slabs in said foundation ground trench, by a pour of flowable anchoring material filling said ground trench, said means comprising an opening of elongated rectangular shape adjacent one end of said slab, said rectangular opening being positioned in said slab for disposition entirely below grade when said one end of said slab is placed in the trench, so that said rectangular opening is adapted to pass and be filled by the flowable anchoring material which is to be poured into the trench after said one end of said slab has been placed in the trench, the direction of elongation of said elongated rectangular opening in said slab being transverse to the outer vertical edges of said slab and extending substantially horizontally when said slab is placed in the trench, and said slab further defining a pair of horizontally extending aligned bores which are located respectively between the opposed outer vertical edges of said slab and the substantially vertically disposed shorter opposed edges of said rectangular opening in said slab for use in aligning said slab with adjacent ones of such slabs prior to the pouring of the anchoring material into the trench, the diameter of each of said bores being significantly smaller than the width of the shorter opposed edges of said opening, the length of said rectangular opening being greater than the combined length of said bores to permit the insertion of an elongated alignment member into said opening in said slab for horizontal passage from said opening through one of said bores in said slab and through an aligned such bore in an adjacent one of such slabs and into the rectangular opening of the adjacent one of said slabs, and the height of said rectangular opening being sufficiently great to permit the ready manipulation of the elongated alignment member by hand tools inserted into said rectangular opening during the aligning of said slab with adjacent ones of such slabs in the trench.

4,290,247

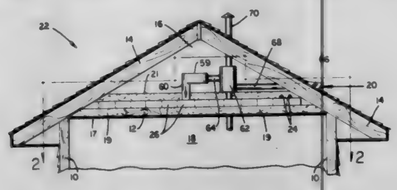
FLUID FLOW INSULATION SYSTEM

Robert J. Alderman, 812 59th St., NW., Bradenton, Fla. 33505

Filed Jul. 26, 1979, Ser. No. 60,841
Int. Cl.³ F24F *7/10*
U.S. Cl. 52—173 R **19 Claims**

1. An air insulation system for an attic and the like wherein

the attic defines an approximately horizontal support surface, said insulation system comprising an air duct system positioned on the support surface of the attic, said air duct system defining a plurality of air passages extending substantially parallel to one another and positioned closely adjacent one another, said plurality of passages being of a length and number to extend



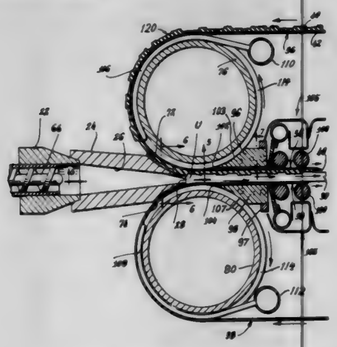
over substantially the entire support surface of the attic, and means for inducing air to move along the lengths of each of said passages from one end to the other end of each passage in closely adjacent parallel streams so that at least some of the heat transferred from one side of the air duct system to the air passages tends to be moved with the streams of air along the lengths of the passages.

4,290,248

CONTINUOUS PROCESS FOR FORMING PRODUCTS FROM THERMOPLASTIC POLYMERIC MATERIAL HAVING THREE-DIMENSIONAL PATTERNS AND SURFACE TEXTURES

William J. Kemerer, 122 Derwent Dr., Pittsburgh, Pa. 15237, and Clyde W. Vassar, Cholchester, Vt., assignors to William James Kemerer, Long Beach, Calif.

Continuation-in-part of Ser. No. 538,645, Jan. 6, 1975, abandoned. This application Dec. 10, 1975, Ser. No. 639,328
Int. Cl.³ E04C *1/00*
U.S. Cl. 52—309.16 **24 Claims**



1. A continuous impression molding process for making three-dimensional patterns on thermoplastic polymeric material comprising the steps of:

continuously providing a heated ribbon of substantially uniform thickness of said material in a plastic state at a temperature above its glass transiton temperature,

initially pressing opposed endless flexible belt molds, at least one of which has a three-dimensional rubber pattern form with abrupt changes in profile extending longitudinally of the belt and in surface contour extending transversely of the belt, against opposite sides of said heated ribbon while its temperature is above its glass transition temperature, so as to displace at least a portion of said ribbon in a continuous progressive localized pinching nip action with sufficient initial pressure for impressing a three-dimensional pattern on the heated material of said ribbon,

moving said opposed flexible belt molds and carrying said impressed material along between said opposed molds while exerting sufficient pressure against opposite sides of the material to retain said three-dimensional pattern therein,

cooling said moving opposed molds for cooling said impressed material down to a temperature in its memory retention state to cause said cooled material to retain said three-dimensional pattern, and

removing the cooled impressed material from between the opposed molds.

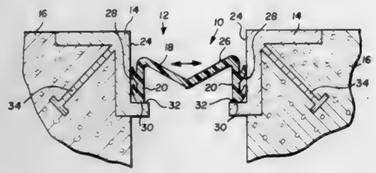
15. A continuous thermoplastic product made by the process of claim 1 having a three-dimensional pattern including abrupt changes in profile extending longitudinally of the product and in contour extending transversely of the product.

4,290,249

ELASTOMERIC SPRING EXPANSION JOINT-SEAL STRIP

Ronald H. Mass, Naperville, Ill., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,180
Int. Cl.³ E01C *11/04*; E04B *1/68*
U.S. Cl. 52—396 **3 Claims**



1. An expansion joint seal strip of a substantially M-shaped cross section for bridging a gap between spaced surfaces of a pair of structural slab members, said seal strip comprising:

an elongated central resilient web member of a substantially V-shaped cross section spanning the gap;

a longitudinally extending flange portion extending transversely to and along each longitudinal edge of said web member, and having one edge of each flange portion integral with an edge of said web member, and the opposite edge of each flange portion free, each flange portion having an outer side surface, and an inner side surface defining an acute angle with said web member; and

spring means embedded within said web member for expanding said web member and urging said outer side surfaces of said flange portions into sealing engagement with the spaced surfaces on the slab members when said seal strip is compressed and inserted in the gap between the slab members.

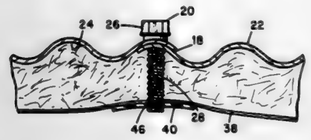
4,290,250

METHOD AND APPARATUS FOR INSULATING BUILDINGS

Stephen R. Kusenda, Knoxville, Tenn., assignor to Insulation Materials, Inc., Knoxville, Tenn.

Filed Nov. 28, 1979, Ser. No. 98,181
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 **9 Claims**

1. In an insulated building including a wall having an interior surface, a flexible layer of insulative material covering said interior surface and a plurality of aligned shaft members projecting inwardly from said interior surface through said insulative layer, the improvement comprising means for securing said flexible layer to said wall, said securing means comprising an elongated fastener member comprising a flexible material



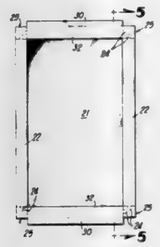
defining elongated slot means adapted to frictionally engage a plurality of said shaft members.

4,290,251

STORM SASHES AND METHOD AND APPARATUS FOR MANUFACTURING

Lawrence L. Graham, 300 Great Oak Dr., Athens, Ga. 30605

Division of Ser. No. 884,893, Mar. 9, 1978, Pat. No. 4,191,080. This application Jul. 23, 1979, Ser. No. 59,904
Int. Cl.³ E06B *3/26*
U.S. Cl. 52—656 **4 Claims**



1. A storm sash or frame member comprising a rectangular pane formed of translucent material, pairs of opposite side channel cross section frame sections embracing opposite side longitudinal edge portions of said pane, said opposite side frame sections having lengths whereby square corner portions of the pane project beyond the ends of adjacent frame sections and remain exposed, integral locking tabs carried by the opposite ends of portions of said frame sections and lying generally in the same planes adjacent to opposite sides of portions of the square corner portions of the rectangular pane, and separately formed corner connectors for the ends of the frame sections having side walls engaging over the square corner portions of said pane and having side wall locking apertures adapted to receive and interlock with said locking tabs, said portion of said corner connectors having right angular edges abutting the end faces of adjacent parts of said portions of said frame sections when assembled with the frame sections to produce a continuous rigid channel frame entirely around the margin of said pane.

4,290,252

BASEMENT WATERPROOFING SYSTEM

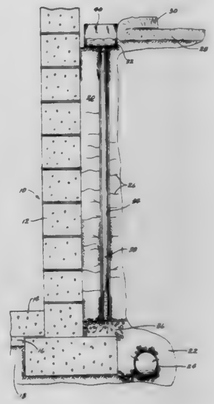
Turgut Demirel, and Richard L. Handy, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Nov. 5, 1979, Ser. No. 91,362
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—742 **8 Claims**

1. A method of waterproofing subterranean walls, comprising:

making a plurality of spaced apart vertical holes in the soil adjacent said wall but yet spaced away from said wall;

introducing a highly ionic inorganic salt solution into the bottom portion of said holes without contacting the sidewalls of said holes; and thereafter,



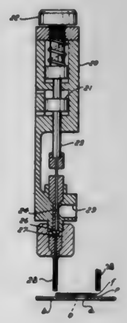
filling said bore holes and associated soil cracks with asphalt emulsion to impregnate the soil and seal the same.

4,290,253

METHOD OF PRODUCING SEALED PACKAGING CONTAINERS

Klaus Domke, and Walter Saur, both of Ditzingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stutgart, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,898
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856021
Int. Cl.³ B65B *51/02, 1/28, 3/18*
U.S. Cl. 53—410 **7 Claims**



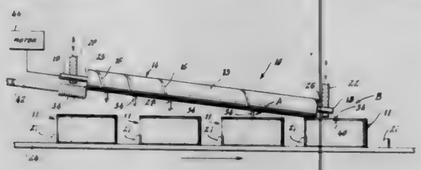
1. A method of producing a valve-equipped packaging container to be filled with a commodity, comprising the steps of forming a bag from a flexible sheet material; sealing a bottom of the bag; forming a hole on one of the surfaces of the bag; applying to said one surface in the area of said hole two members in superimposed relation to form a valve, one of said members contacting said one surface and being preliminarily provided with an opening and having a lower surface coated with an adhesive material so as to form two substantially parallel layers surrounding said opening which becomes in registry with said hole upon applying said two members, said two layers forming a valve channel between said one member and said one surface; pressing said members to said one surface to firmly connect the valve to the bag; filling the bag with the commodity and sealingly closing the bag; and applying a noncuring sealing fluid to free ends of said channel to produce a

fluid film in said channel, said film being adapted to be ruptured by expanding gases which may develop in the closed bag, so as to enable said gases to escape from said bag and to thereafter inherently reseal.

4,290,254
BEVERAGE CARRIER HANDLE FEEDER AND INSERTER

William T. Brunone, Plymouth, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 1, 1980, Ser. No. 117,470
Int. Cl.³ B65B *61/14*
U.S. Cl. 53—413 **7 Claims**



6. A method of feeding handles to and inserting said handles into packages comprising the steps of:

(a) sequentially separating individual handles from a plurality of handles,

(b) linearly feeding each of said handles at a preselected rate of speed and at a preselected angular relationship with respect to a plurality of said packages being, linearly and horizontally conveyed at a preselected speed therebeneath,

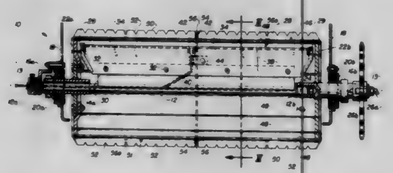
(c) aligning each said handles being fed with a different one of said packages, respectively, being conveyed by synchronizing said preselected rate of speed of feeding said handles with said preselected speed of conveying said packages, and

(d) inserting each of said handles in said different one of said packages, respectively, at a preselected position, wherein said steps of periodically separating individual handles, feeding said handles at a preselected speed and inserting each of said handles into a different one of said packages, respectively, is accomplished by rotating a pair of spaced apart cylindrically-shaped members positioned at said preselected angular relationship with respect to said packages, each member having a spiral groove therein for engaging said handles therebetween.

4,290,255
FEED ROLL APPARATUS

Wayne B. Martenas, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Oct. 1, 1980, Ser. No. 192,784
Int. Cl.³ A01D *41/12*
U.S. Cl. 56—10.2 **5 Claims**



1. A feed roll apparatus comprising:

a shaft;

a feed roll rotatably mounted on said shaft; said feed roll having spaced apart end plates interconnected by a tubular peripheral wall;

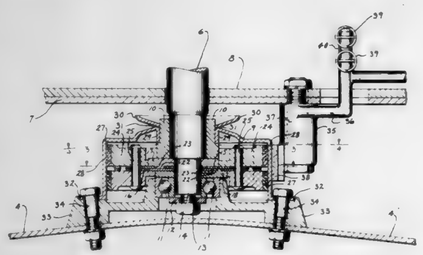
a plurality of elongated corrugations formed on an outer surface of said wall, said corrugations extending substantially coaxially with said shaft and protruding substantially radially outwardly from said feed roll, said corrugations having a circumferential groove formed therein substantially midway between said end plates, said groove being directed radially inward transverse to said shaft axis; and

means for strengthening said tubular wall, said means being a support ring secured in said groove and extending radially outwardly from said wall surface and terminating adjacent said corrugations.

4,290,256
SINGLE CABLE CONTROL SYSTEM FOR LAWN MOWER

Lester H. Seifert, R.R. #2, Park Ave., Kiel, Wis. 53042

Filed Dec. 10, 1979, Ser. No. 101,617
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—11.3 **13 Claims**

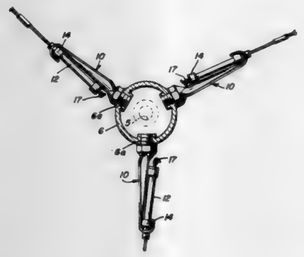


1. A rotary lawn mower, comprising a housing, a handle connected to the housing, drive means mounted on the housing and having a drive shaft and having a throttle member on the engine for controlling the speed of the engine, said throttle member being movable between an idle position and a full throttle position, a rotary cutting blade disposed within the housing, clutch means disposed within the housing and interconnecting the drive shaft and the blade and including a clutch member connected to the blade, brake means disposed within the housing and movable between a braking position in which the brake means is engaged with said clutch member to stop free rotation of said clutch member and said blade and a released position in which the brake means is out of contact with said clutch member, throttle operating means mounted on the handle and movable between an idle position and a full throttle position, cable means interconnecting the throttle operating means and the throttle member, biasing means for biasing the brake means to the braking position, brake actuating means connected to the cable means for moving the brake means to the released position on movement of the throttle operating means from the idle position toward the full throttle position to thereby enable said clutch means to provide a driving connection between the drive shaft and the blade, and an extendible member connected to said cable means between said brake actuating means and said throttle member, movement of the throttle operating means from the idle position toward the full throttle position causing said extendible member to extend without a corresponding movement of said throttle member to thereby insure that the brake means is released before the engine speed is increased.

4,290,257
ROTARY ASSEMBLY FOR CUTTING GRASS AND OTHER VEGETATION

Alfred A. Frantello, 26 Rainbow Dr., Satellite Beach, Fla. 32937

Continuation-in-part of Ser. No. 105,080, Dec. 19, 1979, which is a continuation-in-part of Ser. No. 932,991, Dec. 15, 1978, abandoned. This application Aug. 20, 1980, Ser. No. 179,873
Int. Cl.³ A01D *50/00, 53/00*
U.S. Cl. 56—12.7 **7 Claims**



1. A balanced rotary cutting assembly for attachment to the lower end of the drive-shaft of a housed rotary power mower for cutting grass and other vegetation, said balanced rotary cutting assembly comprising

(a) a centrally-bored hub member;

(b) a plurality of equi-distantly spaced radially-extending arms carried by said centrally-bored hub member;

(c) each of said equi-distantly spaced radially-extending arms being provided adjacent its outer end with an axially offset boss having a longitudinal bore extending therethrough;

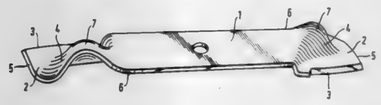
(d) a readily replaceable section of flexible cutting line extending through the longitudinal bore of the axially offset boss adjacent the outer end of each of said radially-extending arms and projecting therefrom into proximity with the inner surface of the aforementioned housing of the rotary power mower; and

(e) each of said readily replaceable flexible cutting lines possessing an axially enlarged inner end of sufficient diameter to prevent its axial movement into the adjacent end of the longitudinally bored boss on the radially-extending arm by which it is carried.

4,290,258
LAWNMOWER BLADES

Hans Göbler, Kirchstrasse 8, 5231 Woldert, Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,310
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921249
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **4 Claims**

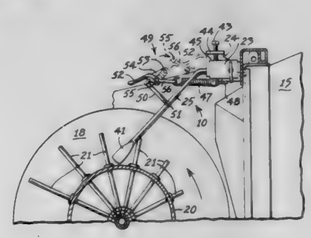


1. In a lawnmower blade arranged to cut in a substantially horizontal position, of the kind which comprises a strip of metal having a substantially flat central region and end portions provided with cutting edges on opposite sides of said blade, said cutting edges being at a level lower than said central region in the position of operation and extending substantially parallel to the surface of said central region and being joined by transitional zones to the surface of said central region, said transitional zones extending, at the ends of said blade, from said cutting edges to the trailing edges of said blade respectively and being progressively shorter with increasing distance from said ends, the improvement comprising: providing a hump positioned near and spaced from each end of said blade, each of said humps merging with its associated adjacent transitional zone and being directed towards said trailing edges of said blade respectively, the humps enhancing the grass ejecting force of the blade without substantially increasing the air rupture and its attendant noise when the blade is in use.

4,290,259
KNIFE ASSEMBLY FOR STRIPPING AUGER DRUM OF COMBINE HEADER

Charles V. Parvin, Rte. 1, Mulkeytown, Ill. 62865, and James Harris, Rte. 1, Box 121A, Rutherford, Tenn. 38369

Filed Mar. 4, 1980, Ser. No. 127,113
Int. Cl.³ A01D *89/00*
U.S. Cl. 56—364 **7 Claims**



1. In a combine header having an auger rotatable about a transverse axis and including a central drum portion having axially spaced feed fingers projecting radially therefrom and a feed opening behind the central drum portion for communication with the throat of a combine, a cutting apparatus comprising:

(a) a mounting frame,

(b) means supporting said mounting frame in operative position above and in fixed relation to said feed opening,

(c) a knife frame,

(d) journal means supporting said knife frame on said mounting frame in operative position for pivotal movement about a transverse axis,

(e) a plurality of transversely spaced, elongated knife bars, each knife bar having a fixed end portion fixed to said knife frame, and an opposite free cutting end portion,

(f) each of at least some of said knife bars lying between the radial planes of rotation of a pair of adjacent feed fingers,

(g) each of said cutting end portions being co-linear with said knife bar,

(h) a first stop element on said knife frame,

(i) a second stop element on said mounting frame engageable with said first stop element to limit the pivotal movement of the cutting end portions of said knife bars toward the central drum portion of said auger drum to an operative position slightly spaced from the surface of said central drum portion for cutting vegetation carried around said central drum portion by said feed fingers,

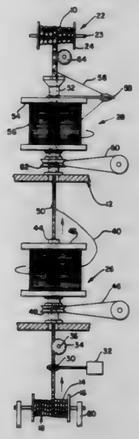
(j) adjustment means operably associated with one of said stop elements to vary the position of said one stop element relative to its corresponding frame so that when said stop elements are engaged, said operative position of said cutting end portions relative to the surface of said central drum portion is varied.

4,290,260

HIGH DENIER NON-PLIED FRIEZE YARN AND METHOD OF MAKING THE SAME

Allan Wasserman, Lincoln, R.I., assignor to Felice Lowenstein, New York, N.Y. and Ronnee M. Wasserman, Providence, R.I., part interest to each

Filed Dec. 26, 1979, Ser. No. 107,405
Int. Cl.³ D02G 3/12
U.S. Cl. 57—210 **6 Claims**



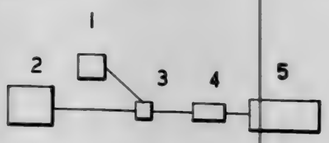
4. A relatively heavy non-plied decorative metallic, composite frieze yarn suitable for use in embroidery, sewing and the like comprising a composite core yarn including a non-metallic core yarn about which a first metallic yarn is spirally wound in a first rotational direction and over which a first non-metallic cover yarn is spirally wound in a second opposite rotational direction, said composite core yarn having a second metallic yarn spirally wrapped thereover in one rotational direction and a second non-metallic cover yarn spirally wrapped thereover in a second direction opposite to that of said one rotational direction.

4,290,261

NON-SPECULAR ELECTRICAL CONDUCTOR AND STEEL STRAND, AND METHODS OF MAKING

Thomas Eistrat, 1020 S. Almansor St., Alhambra, Calif. 91801

Continuation-in-part of Ser. No. 12,168, Feb. 14, 1979, Pat. No. 4,198,807, which is a continuation-in-part of Ser. No. 869,850, Jan. 16, 1978, Pat. No. 4,149,367. This application Apr. 17, 1980, Ser. No. 141,028
The portion of the term of this patent subsequent to Apr. 17, 1996, has been disclaimed.
Int. Cl.³ D07B 7/14
U.S. Cl. 57—223 **10 Claims**



1. A multi-layered stranded linear body having interior and exterior wires, such as an electrical conductor or wire rope, wherein the improvement comprises;

(a) the exterior wires having an electrodeposited pigment on the surfaces thereof which gives a non specularly dulled appearance and the exterior wires being stranded over one or more interior wires;

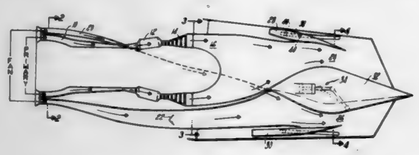
(b) all said interior wires being free of any contaminants such as the products of abrasive blasting.

4,290,262

TWO-DIMENSIONAL PLUG NOZZLE

Thomas A. Wynosky, Madison, Conn.; Charles A. Campbell, Palm Beach Gardens, Fla., and Robert J. Mischke, Middletown, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1978, Ser. No. 968,599
Int. Cl.³ F02K 3/06
U.S. Cl. 60—262 **4 Claims**



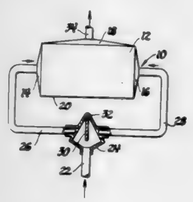
1. For a fan jet engine having a primary core section for developing a fluid working medium in an annular cross-sectional flow stream and a fan section for developing a fluid working medium in an annular cross-sectional flow stream and each stream at a given location being in concentric relationship, means for forming said stream in a rectangular cross-sectional relationship including a first ducting means for transitioning the primary core fluid working medium in a two-dimensional nozzle configuration, a second ducting means for transitioning the fan fluid working medium in a separate two-dimensional nozzle configuration, means for changing the geometry of each of said two-dimensional nozzle configurations independently of each other and a central plug centrally disposed at the downstream end of said fan jet engine and having wall portions, said wall portions defining a wall of each of said two-dimensional nozzles.

4,290,263

DIESEL ENGINE EXHAUST TRAP PARTICULATE DISTRIBUTION AND INCINERATION BALANCING SYSTEM

Gamdur S. Mann; Dilip V. Tendulkar, both of Flint, and William J. Parker, Burton, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 12, 1979, Ser. No. 102,966
Int. Cl.³ F01N 3/02
U.S. Cl. 60—311 **3 Claims**



1. A diesel engine exhaust system with particulate collection and incineration balancing means comprising

a particulate trap having a plurality of generally parallel inlet passages open at both ends and a plurality of generally parallel outlet passages open at least at one end, said inlet passages extending adjacent said outlet passages and being separated therefrom by porous walls through which exhaust gases may pass from the inlet to the outlet passages and capable of retaining substantial amounts of combustible particulates filtered from the exhaust gases upon such passage,

inlet duct means including multiple inlet ducts connected to supply to said inlet passages exhaust gases which may be heated for the incineration of collected particulates, with the opposite ends of each inlet passage being supplied by separate ducts,

exhaust duct means including at least one outlet duct connected with the open ends of said outlet passages to receive filtered exhaust gas therefrom, and

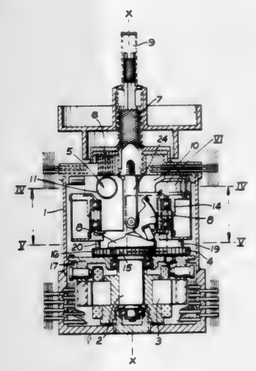
valve means in at least one of said inlet and exhaust duct means and arranged to differentially vary the flow through the walls separating the various inlet and output passages of the particulate trap, the distribution of particulates to or the burning of particulates on the trap walls being thereby concentrated sequentially at various points whereby a more even distribution of particulates to or a more complete removal of particulates from the trap at all locations may be accomplished.

4,290,264

STIRLING CYCLE APPARATUS

Derrick J. Haines, Letchworth, England, assignor to British Aerospace Public Limited Company, London, England

Filed Jan. 19, 1979, Ser. No. 4,923
Claims priority, application United Kingdom, Jan. 21, 1978, 2487/78
Int. Cl.³ F02G 1/06
U.S. Cl. 60—518 **15 Claims**



1. Stirling cycle apparatus, including:

working means for cyclically compressing or expanding a working fluid, displacing means for cyclically displacing the working fluid, rotatable shaft means, and drive means operatively associating the working means and the displacing means with the shaft means;

the working means including a plurality of piston/cylinder units symmetrically disposed with the axis of reciprocation of the pistons tangential to an imaginary circle lying in a plane normal to the rotational axis of the shaft means and centred upon said rotational axis.

4,290,265

MASTER CYLINDER DEVICE

Toshifumi Maehara, Chichibu, and Kazuo Kawase, Kuki, both of Japan, assignors to Akebono Brake Industry Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 933,904, Aug. 15, 1978, abandoned. This application Nov. 14, 1979, Ser. No. 94,050
Claims priority, application Japan, Aug. 31, 1977, 52-115692[U]
Int. Cl.³ B60T 11/06
U.S. Cl. 60—561 **8 Claims**

1. A master cylinder device for a vehicle in which a valve mechanism for reducing and controlling rear brake pressure with respect to front brake pressure is accommodated within a piston of the master cylinder comprising:

a driving piston and a floating piston which are slidably moved within a cylinder body;

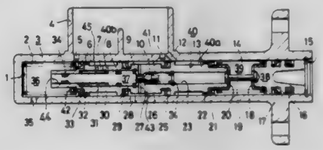
a first liquid chamber formed between said driving piston and said floating piston;

a second liquid chamber formed between said floating piston and an end wall of said cylinder body;

a third liquid chamber connectable to a rear brake;

a stepped cylinder formed within said floating piston and having a large diameter portion and a small diameter portion;

a stepped piston having large and small diameter portions sealingly slidable respectively in said large and small



diameter portions of said stepped cylinder, which has said small diameter portion facing one of said first and second liquid chambers and said large diameter portion facing said third liquid chamber;

a valve mechanism disposed in a passage having a valve seat which provides a communication between the other of said first and second liquid chambers and said third liquid chamber, said valve mechanism including a valve member cooperating with said valve seat, said valve mechanism being closed in response to movement of said stepped piston towards said one of said first and second liquid chambers, said stepped piston being separate from and relatively movable with respect to said valve member; and

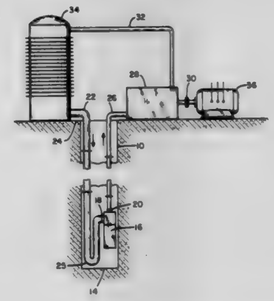
a spring for biasing said stepped piston towards said third liquid chamber to open said valve mechanism.

4,290,266

ELECTRICAL POWER GENERATING SYSTEM

Terrance M. Twite, Shellhorn, and Wilmer S. Huston, both of Brownsville, Minn. 55919

Filed Sep. 4, 1979, Ser. No. 72,125
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.2 **4 Claims**



1. A geothermal power generating system comprising:

(a) a bore hole extending into the earth to a subterranean location where the temperature is a predetermined desired value;

(b) an evaporator unit disposed proximate the bottom of said bore hole and having a liquid refrigerant inlet port and a gaseous refrigerant outlet port;

(c) an elongated U-shaped loop of tubular conduit having

one end thereof coupled to said liquid refrigerant inlet port and the bottom of said loop being at a predetermined level below the effective level of said evaporator unit;

(d) a gas driven turbine unit disposed on the earth's/earth-/surface proximate said bore hole and having a high pressure inlet and a lower pressure outlet;

(e) a condenser unit disposed on the earth's surface proximate said bore hole;

(f) a first conduit means coupling said condenser unit to the other end of said U-shaped loop of tubular conduit;

(g) a second conduit means coupling said gaseous refrigerant outlet port of said evaporator unit to said high pressure inlet of said turbine; and

(h) a third conduit means coupling said lower pressure outlet of said turbine unit to said condenser unit, said evaporator unit, said U-shaped loop, said first, second and third conduit means and said condenser unit all being in a hermetically sealed relationship.

4,290,267

METHOD FOR RECOUPING COMBUSTION HEAT

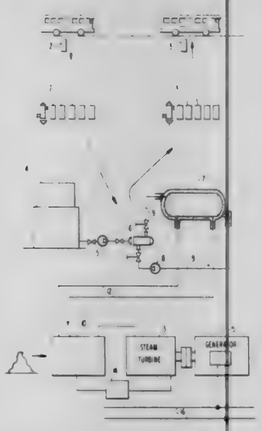
Helmut Buchner, Wendlingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 8, 1978, Ser. No. 876,103

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705145

Int. Cl.³ F01K *17/00*

U.S. Cl. 60—648 **25 Claims**



1. An installation for the regenerative heat-exchange with a exchange of heat-absorbing body means in a heat-emitting flow and a heat-emitting body means in a heat-absorbing flow, characterized in that the body means are constructed as metal hydride storage means, the heat-emitting flow is exhaust gases of combustion of an internal combustion engine in a motor vehicle, the heat-absorbing flow is a stationary heating means, and in that the storage means are interchangeable so as to be removed, replaced and stored.

4,290,268

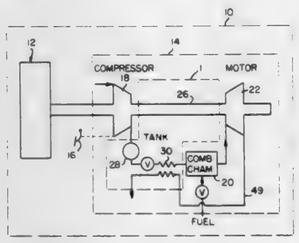
VEHICLE BRAKING AND KINETIC ENERGY RECOVERY SYSTEM

Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences, Inc., Geneva, N.Y.

Continuation-in-part of Ser. No. 926,237, Jul. 20, 1978, Ser. No. 890,465, Mar. 27, 1978, abandoned, Ser. No. 908,155, May 22, 1978, Pat. No. 4,228,659, Ser. No. 920,445, Jun. 29, 1978, abandoned, and Ser. No. 879,969, Feb. 21, 1978, abandoned. This application Sep. 15, 1978, Ser. No. 942,820

Int. Cl.³ F01K *15/00*

U.S. Cl. 60—668 **23 Claims**



1. A method for braking a vehicle comprising the steps of:

(a) powering said vehicle with an engine including a compressor, a combustion chamber, and a motor for converting hot combustion products into rotation of a shaft, and at least one of said compressor and motor being a rotary sliding vane device, said motor and compressor being operatively connected to a wheel of said vehicle for rotation therewith;

(b) braking said vehicle by loading said compressor and therefore said wheel, and

(c) recovering kinetic energy of said vehicle during braking thereof in a closed circuit gas circulating system for a gas capable of undergoing a change of phase, compressing said gas in said closed circuit during braking to change its phase, and storing said gas in its changed phase state for later use.

4,290,269

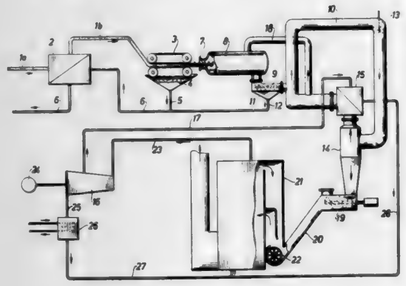
PROCESS FOR THE EFFICIENT CONVERSION OF WATER-CONTAINING ORGANIC MATERIALS AS FUELS INTO ENERGY

Bengt O. A. Hedström, Gothenburg, and Claes G. S. Svensson, Kungälv, both of Sweden, assignors to MoDo-Chemetics AB, Ornskoldsvik, Sweden

Filed Oct. 9, 1979, Ser. No. 83,194

Int. Cl.³ F01K *21/00*

U.S. Cl. 60—670 **13 Claims**



1. A process for the efficient conversion of water-containing organic material as a fuel into heat and electric energy, including drying the material to convert it into a fuel and then combusting the fuel to recover electric energy at low cost; which comprises heating the material in a steam vessel in which the material is enveloped in steam at superatmospheric pressure that is heated by heat exchange with steam derived from combustion of the fuel at a higher pressure and higher temperature than the steam in the vessel; recycling water driven from the material as steam and forming excess steam in the vessel at least in part to the material in the vessel and condensing it directly thereon; mechanically separating water from the material, and then drying the material to convert the material into a fuel; combusting the dry fuel in particulate form, thereby generating steam at high pressure; utilizing the high pressure steam to operate a turbine; which in turn operates a generator; converting the energy content of the steam into electric energy; and recycling at least part of the steam from the turbine for heat exchange with the steam in the steam vessel.

4,290,270

MARINE PROPULSION UNIT

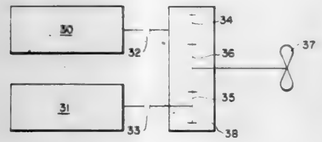
Wilhelm Meeh, Friedrichshafen, Fed. Rep. of Germany, assignor to Motoren-und-Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,284

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830730

Int. Cl.³ B63H *23/00*

U.S. Cl. 60—716 **4 Claims**



1. A marine propulsion unit which includes at least two diesel engines, a propeller means and means for selectively coupling the diesel engines to the propeller so as to enable the propulsion unit to be operated with less than all of the engines during a medium speed range and to be operated with all engines during higher speed ranges, characterized in that one of the propeller means and coupling means is constructed so that the propeller means absorbs a maximum constant output of those diesel engines operated in the medium speed range with a full amount of fuel being injected to those medium speed operated diesel engines and so that in the higher speed ranges with all engines operating, higher speeds of the propeller means are attained by an increase of the speeds of the diesel engines with exceeding a maximum constant output and with a reduction in the amount of fuel being injected.

4,290,271

NITROGEN LIQUID TO GAS CONVERTER

Donald W. Granger, Sunset, La., assignor to Waukesha-Pearce Industries, Inc., Houston, Tex.

Filed Mar. 6, 1980, Ser. No. 127,620

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—53 **10 Claims**

1. A nitrogen liquid to gas converter comprising,

a liquid nitrogen inlet,

a nitrogen pump actuated by a first hydraulic motor connected to the inlet for pumping liquid nitrogen,

a nitrogen-air heat exchanger connected to the nitrogen pump for adding heat to the nitrogen and converting the liquid nitrogen to gaseous nitrogen,

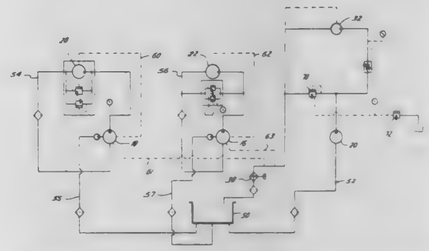
an air fan for passing air over the heat exchanger and actuated by a second hydraulic motor,

hydraulic pump means for actuating the first and second motors,

diesel engine for driving said hydraulic pump means,

an engine exhaust-air heat exchanger positioned in the air upstream from the nitrogen heat exchanger for heating the air,

an engine water-air heat exchanger positioned in the air



upstream from the nitrogen heat exchanger for heating the air,

a hydraulic oil-air heat exchanger connected to the hydraulic pump means and first and second hydraulic motors and positioned in the air upstream from the nitrogen heat exchanger for heating the air,

means connected to the hydraulic pump means for increasing the heat of the hydraulic fluid for heating the nitrogen.

4,290,272

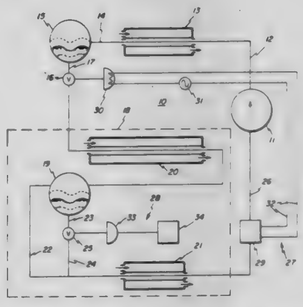
MEANS AND METHOD FOR INDEPENDENTLY CONTROLLING VAPOR COMPRESSION CYCLE DEVICE EVAPORATOR SUPERHEAT AND THERMAL TRANSFER CAPACITY

Himanshu B. Vakil, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 18, 1979, Ser. No. 58,462

Int. Cl.³ F25B *00/00*

U.S. Cl. 62—114 **11 Claims**



1. A method for controlling the capacity and evaporator superheat of a vapor compression cycle device comprising the steps of:

compressing vapor of a miscible multicomponent working fluid mixture comprising at least two refrigerants having different boiling points, circulating the mixture vapor through a condensing heat exchanger, circulating mixture from the condensing heat exchanger to a high pressure accumulator, circulating a controlled amount of the mixture from the high pressure accumulator to a first evaporator stage in response to a sensed household thermal demand, circulating mixture from the first evaporator stage to a low pressure accumulator, controlling the circulation of the mixture from the low pressure accumulator to a

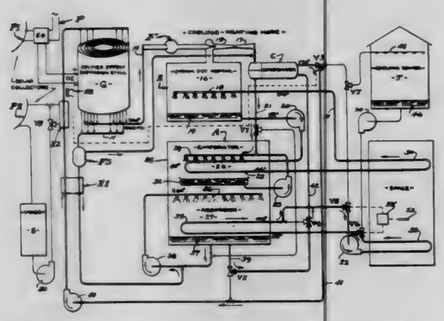
second evaporator stage in response to the degree of mixture vapor superheat sensed at a point intermediate the second evaporator stage inlet and a compressor, and circulating the mixture exiting from the second evaporator stage to the compressor.

4,290,273

PELTIER EFFECT ABSORPTION CHILLER-HEAT PUMP SYSTEM

Milton Meckler, 16348 Tupper St., Sepulveda, Calif. 91348

Filed Feb. 13, 1980, Ser. No. 121,249
Int. Cl.³ F25B *15/00, 21/02*
U.S. Cl. 62—148 **20 Claims**



1. A space conditioning system for buildings and the like, and including;

a generator means with feed means and for producing high temperature high pressure motive water separate from an absorbent solution thereof,

a means converting said motive water into high temperature high pressure steam,

a steam-jet refrigeration means having a booster ejector operated with said steam and drawing a secondary water vapor from a chamber, there being spray means discharging chilled water into said chamber for both evaporation and precipitation to a sump therein,

the booster ejector discharging steam through a first channel of a condenser means for liquification and discharge of water through a first diverting valve, and a second channel of the condenser means absorbing heat into a heating water discharged through a control valve,

an evaporator-absorber means having an evaporator section with spray means for receiving water through said first diverting valve, and having an absorber section with heat transfer coils and with circulating means discharging strong solution from the generator means and through spray means for heat absorption and precipitation of weak solution to a sump therein and returned to said generator means by the feed means therefor,

first circulating means for selectively drawing chilled water from the sump of the steam-jet refrigeration means and through coils exposed to the spray means in the evaporator section and thereafter through space cooling coils and recirculated therefrom through the spray means in the chamber of the steam-jet refrigeration means,

recirculating means for selectively drawing water from a collecting tray in the evaporator section and discharging the same from the spray means therein,

a second diverting valve from the heat transfer coils in the absorber section and discharging between the second channel of the condenser and sump of said absorber section,

a recirculating valve from the sump of the absorber section for alternate opening to the generator feed means and to the second channel of the condenser through said second diverting valve,

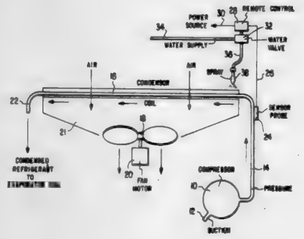
and a pair of controlling valves at the inlet and outlet of a second circulating means through space heating coils and said heat transfer coils in the absorber section.

4,290,274

LIQUID SPRAY DEVICE WITH ADAPTIVE DUTY CYCLE

Donald D. Essex, 1620 Georgia Ave., North Augusta, S.C. 29841

Filed Jul. 16, 1979, Ser. No. 57,975
Int. Cl.³ G05D *23/32*
U.S. Cl. 62—157 **7 Claims**



1. Apparatus for cooling the refrigerant-containing vessels of a refrigeration or air conditioning unit, which comprises:

valve means including an inlet port for receiving a cooling fluid from a source and an outlet port for delivering said cooling fluid when said valve means is open;

nozzle means for receiving said cooling fluid from said outlet port of said valve means and for directing said cooling fluid onto said refrigerant-containing vessels;

control means for opening and closing said valve means for variable time periods that are proportional to the temperature sensed at a control point in said unit, said control means including timing means having a predetermined period that consists of an on cycle and an off cycle, the time periods of said on and off cycles within said predetermined period being variable in proportion to said temperature, wherein said timing means includes first timer means for producing an output signal during said on cycle, said control means responsive to said output signal for opening said valve means; and

means for sensing said temperature of said unit at said control point comprising a thermistor means whose resistance decreases as said temperature increases, wherein said first timing means includes means responsive to a decrease in resistance of said thermistor means for decreasing the time period of said output signal, whereby said valve means is opened for a longer period of time during said predetermined period in response to an increase in said temperature.

4,290,275

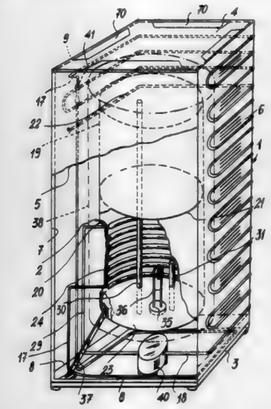
HEAT PUMP WATER HEATER

Paulus J. Disco, Induno Olona; Ernesto Quargentan, Mainate, and Pietro Santalucia, Laveno Mombello, all of Italy, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,478
Claims priority, application Italy, Sep. 13, 1978, 27609 A/78
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **5 Claims**

1. A water storage heater comprising a heat pump including a compressor, a condenser and an evaporator connected in a closed circuit; a vertically disposed inner hot-water container having a cold water inlet and a hot water outlet, said condenser being arranged in heat relationship with a wall of said inner

container; and an outer shell spaced from and surrounding said inner container to provide an interspace, at least a part of said



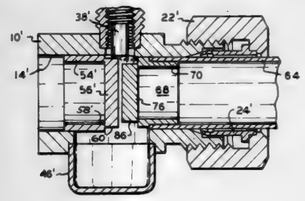
outer shell being constituted by said evaporator, said outer shell being provided with apertures.

4,290,276

VALVE WITH FRANGIBLE CLOSURE

Steven M. Knowles, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Nov. 1, 1979, Ser. No. 90,396
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—299 **17 Claims**



16. In combination, a flexible conduit precharged with a pressurized refrigerant, said conduit having cylindrical inner and outer surfaces and ends, a tubular body comprising a tubular sleeve having an axial passage, an outer end, a cylindrical portion sealingly received within said conduit inner cylindrical surface and a shouldered portion having a radial shoulder engaging a conduit end, said shouldered portion having a cylindrical outer surface comprising the maximum dimension of said sleeve and of a diameter substantially equal to the diameter of said conduit outer surface, a valve element defined upon said sleeve outer end sealing said sleeve passage and axially extending from said sleeve outer end and radially exteriorally accessible, and a frangible web supporting said valve element upon said body.

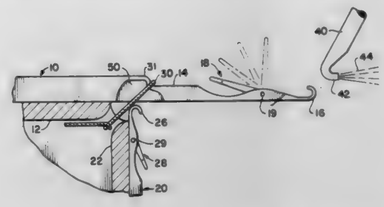
4,290,277

AIR-CONTROLLED NEEDLE LATCH CLOSING FOR KNITTING MACHINE

Robert Valliere, Laconia, N.H., assignor to Scott & Williams, Incorporated, Laconia, N.H.

Filed Jun. 21, 1979, Ser. No. 50,801
Int. Cl.³ D04B *9/24, 15/08*
U.S. Cl. 66—24 **4 Claims**

1. A method of closing the open latch of a latch needle, comprising the steps of moving the latch needle to a clear position, and thereafter directing a blast of air away from the open latch of the needle to create a low pressure area generally adjacent the latch wherein an inrush of air to fill the low pressure area impinges the open latch and flips it to a closed position, the blast of air not impinging the needle.

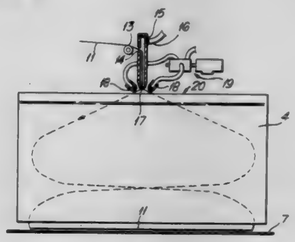


4,290,278

MACHINE FOR PRODUCING STITCH BONDED FABRIC

Kenneth Porter, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 21, 1979, Ser. No. 96,475
Claims priority, application United Kingdom, Sep. 25, 1979, 7933141
Int. Cl.³ D04B *23/06, 23/08, 23/10, 23/12*
U.S. Cl. 66—84 A **8 Claims**



1. A machine for producing stitch bonded fabrics comprising means for supplying a layer of warp threads, means for continuously supplying a weft thread, means for supplying a plurality of stitching threads and means for stitching the warp layer and weft thread together with said stitching threads, the improvement being that the means for supplying and laying the weft threads consists of a pair of closely spaced plates, means for forwarding an individual thread towards the plates and means for imparting an oscillatory motion to the forwarded thread before it passes between the plates.

4,290,279

PADLOCK WITH INTERCHANGEABLE CYLINDER

Aaron M. Fish, Hampstead, and Jean-Paul Dausseing, Montreal, both of Canada, assignors to Unican Security Systems, Ltd., Montreal, Canada

Filed Jul. 14, 1980, Ser. No. 168,117
Int. Cl.³ E05B *67/22*
U.S. Cl. 70—38 A **10 Claims**

1. A padlock comprising:

a body having a pair of parallel bores therein adapted to receive the legs of a shackle;

a shackle having a pair of parallel legs slidably received in said bores;

locking means positioned within said body to secure said shackle in said body when said legs are depressed into said bores;

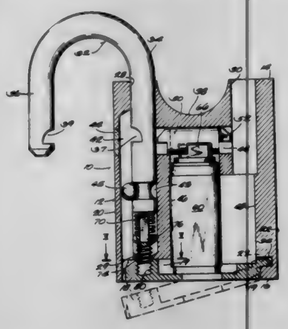
interchangeable means for releasing said locking means, comprising

key-operated means operable by turning movement of a key to effect the release of said shackle from said lock-

ing means to allow one of said legs to withdraw from said body, said body having an opening to receive said interchangeable means to permit positioning said interchangeable means within said body;

detachable cover means adapted to close said opening;

fastener means operable from within said body and engageable in fastening relation with said cover means;



tool means carried by the other of said shackle legs within said body,

said tool means being movable by movement of said shackle to engage and move said fastener means, whereby to selectively engage or disengage said fastener means relative to said cover means for selective connection or disconnection of said cover means relative to said padlock body.

4,290,280

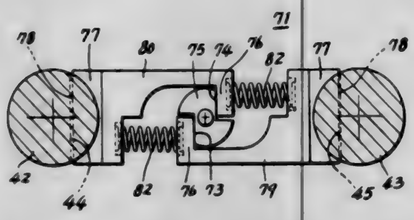
PADLOCK

Sun Y. Yun, 561-12 Yeonnam-dong, Seodaimoon-ku, Seoul, Rep. of Korea

Filed Mar. 23, 1979, Ser. No. 23,280

Int. Cl.³ E05B *67/22*

U.S. Cl. 70—38 A **2 Claims**



1. Padlock comprising a body case as a frame block having a cylinder assembly space and shackle holes, said cylinder assembly space having securing members extending thereinto;

a semi-circular shackle having a center portion and two ends slidable through said shackle holes;

a locking member unit housed in said space and having a cam and locking bars operatively associated with said cam, each said bar having a locking edge for co-acting with one of said shackle ends, and a rear portion, springs, said locking bars being biased into engagement with said shackle ends by the action of said springs against said rear portions, said cam having L-shaped stopping points into which said rear portions are biased;

a cylinder assembly unit operatively associated with said cam for lockingly operating said locking member unit;

a closing member; and

screw means for securing said cylinder assembly to one securing member in said cylinder assembly space and for securing said closing member to another securing member in said frame block.

4,290,281

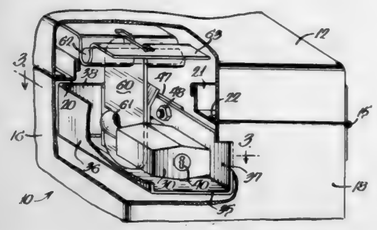
LOCK SYSTEM

Howard L. Knaack, and Kenneth F. Weger, Jr., both of Cary, Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.

Filed May 27, 1980, Ser. No. 153,841

Int. Cl.³ E05B *67/38*

U.S. Cl. 70—54 **18 Claims**



1. A lock system for a tool box having a body and a movable cover and utilizing a padlock having a body and shackle comprising,

means within the tool box mounting the padlock inside the tool box with the shackle captured against substantial movement to be inaccessible from outside the tool box, and the padlock body supported for movement and having a key insertion end thereof exposed for access from outside the tool box, and a lock bracket on the movable cover positionable in mechanically interlocked association with the shackle when the cover is closed for capture by the padlock upon locking thereof.

4,290,282

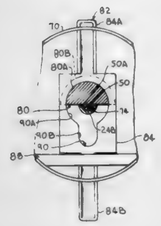
SINGLE CYLINDER DEADBOLT LOCK MECHANISM

Carl H. Wildenradt, 209 Moncada Way, San Francisco, Calif. 94127

Filed Aug. 21, 1979, Ser. No. 68,463

Int. Cl.³ E05B *13/00, 17/04, 55/06*; F16D *11/06*

U.S. Cl. 70—129 **2 Claims**



1. A lock mechanism comprising,

a lock cylinder at one side thereof,

a thumbturn at the opposite side thereof,

a latch bolt operated by rotation of said cylinder,

releasably engagable means for interconnecting said thumbturn and latch bolt,

means selectively operable from said opposite side of the lock mechanism movable between thumbturn enabling and disabling positions for conditioning said releasably engagable means for non-coupling relationship between said thumbturn and latch bolt in the thumbturn disabling position thereof,

said releasably engagable means including,

a tubular shaft on said thumbturn formed with a slot in one side thereof,

spindle bar means coupled to said latch bolt and having an end portion with a flat thereon coaxially aligned with said thumbturn shaft and extending past said slot therein, and

detent means maintained by said selectively operable means in said shaft slot in non-relatively movable engagement with both said thumbturn shaft and flat on said spindle bar means for nonrotatably connecting said thumbturn shaft and spindle bar means in the thumbturn enabling position of said selectively operable means.

4,290,283

HUB CAP LOCK DEVICE

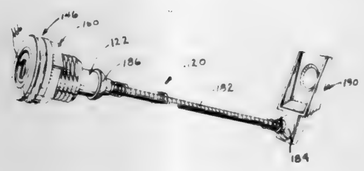
Clovis Labrecque, 2135 Comtois, Sillery, Province of Quebec, Canada

Continuation-in-part of Ser. No. 843,967, Oct. 20, 1977, abandoned. This application Nov. 15, 1978, Ser. No. 960,773

Claims priority, application Canada, Oct. 5, 1977, 288172

Int. Cl.³ B65D *55/14*

U.S. Cl. 70—167 **14 Claims**



1. A hub cap lock device adapted to be installed upon a stud projecting from the hub disc of a vehicle wheel; the hub cap having an aperture therein, comprising: a hollow tubular housing having an internal cavity in registry with said aperture of said hub cap, a connecting rod having one end engagedly mounted in said one end of said housing and the other end engagedly mounted to a bracket means attached to said stud, cap means mounted at the opposite end of said housing, said cap means including a flange portion having a dimension slightly larger than the aperture in the hub cap and a bore slightly greater than said housing so that said housing may extend therein; and lock means engagedly received in said bore and in said cavity of said housing for locking said cap means to said housing to thereby prevent removal of the hub cap outwardly of said wheel.

4,290,284

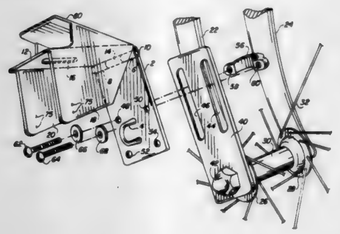
LOCKING DEVICE FOR SPOKED WHEEL VEHICLES

Edward E. Nicksic, 1318 W. Oregon, Phoenix, Ariz. 85013

Filed Apr. 21, 1980, Ser. No. 142,262

Int. Cl.³ B62H *5/16*; B62K *25/02*; E05B *71/00*; F16B *41/00*

U.S. Cl. 70—233 **11 Claims**



1. A locking device for locking a spoked wheel of a spoked wheel vehicle, the spoked wheel being rotatably mounted upon a threaded axle, the threaded axle being attached to a frame member of the vehicle, said locking device comprising in combination:

a. a hasp including a first member having a staple projecting from one side thereof, said staple being formed to permit the passage of a shackle of a padlock therethrough, said hasp also including a second member hinged to said first member and having a slot located opposite said staple, said staple extending through said slot when said second member is folded over said first member;

b. a first threaded nut attached to said first member for threadedly engaging the threaded axle upon which the spoked wheel is rotatably mounted and preventing detachment of the threaded axle from the frame member of the vehicle; and

c. attaching means coupled to said first member for releasably attaching said first member to the frame member of the vehicle to prevent rotation of said threaded nut, access to said attaching means for effecting release of said first member from the frame member of the vehicle being prevented when said second member is folded over said first member.

4,290,285

CYLINDRICAL LOCK WITH A MAGNETIC BODY

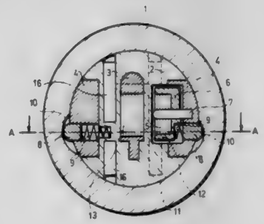
Romvari Bela, Pomaz, and Kakonyi Gyula, Budapest, both of Hungary, assignors to Elzett Müvek, Budapest, Hungary

Filed Dec. 8, 1978, Ser. No. 967,592

Claims priority, application Hungary, Dec. 17, 1977, 2538

Int. Cl.³ E05B *47/00*

U.S. Cl. 70—276 **9 Claims**



1. A cylinder lock comprising: a lock body having a cylindrical throughbore and two longitudinally extending grooves in the internal surface of the throughbore; and a lock cylinder mounted in the throughbore for rotation therein between a locking position and an unlocking position and comprising a longitudinally extending key passage and magnetically actuatable means coactive with the grooves to prevent rotation from the locking to the unlocking position and responsive to the insertion of a suitable magnetic key in the key passage to enable rotation thereby from the locking to the unlocking position including a plurality of magnetic bodies, means mounting the magnetic bodies on both sides of the key passage for rotation about an axis perpendicular to the longitudinal axis of the cylinder to a unique angular position when the suitable key is inserted wherein, the mounting means have recesses therein which are longitudinally aligned in two lines when the magnetic bodies are in their unique position, two blocking laths slidably mounted on either side of the key passage alignable with and receivable in the grooves when the lock cylinder is in the locking position to enable movement into a blocking position therein and alignable with and receivable in the recesses when the magnetic bodies are in their unique positions to enable movement into an unblocking position therein and means urging the blocking laths outwardly from the lock cylinder into the blocking position.

4,290,286

COMBINATION LOCK

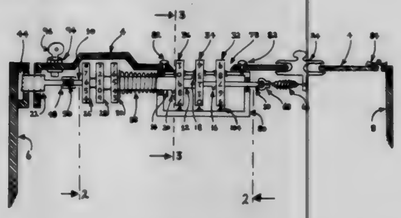
Andrew E. Rae, 103 Cumberland Ave., Willow Park, Guilford, Surrey, England

Filed Nov. 8, 1979, Ser. No. 92,290

Claims priority, application United Kingdom, Nov. 14, 1978, 44324/78

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—285 **12 Claims**



1. A combination lock comprising at least two coaxially arranged elongate members, first and second rotatable combination dial members for each elongate member, an abutment member on each elongate member, a bolt which is adapted to slide backwards and forwards in the direction of alignment of the elongate members, and a bolt-operating member, each first combination dial member being fixed to its elongate member and each second combination dial member being rotatable with respect to its elongate member, and each second combination dial member having a central aperture for receiving the elongate member and a slot for receiving the abutment member, the combination lock being such that when the code set on all the second rotatable combination dial members agrees with the code set on all the first rotatable combination dial members each abutment member can move into the slot on its second combination dial member to allow each elongate member to move through its second member for allowing withdrawal of the bolt, and the combination lock including locking means which is spring biased into engagement with the first rotatable combination dial members and which prevents unintended rotational movement of the first rotatable dial members and therefore unintended loss of the code set on the first combination dial members whilst permitting backwards and forwards movement of the first combination dial members when the elongate members are moved backwards and forwards through the second combination dial members.

4,290,287

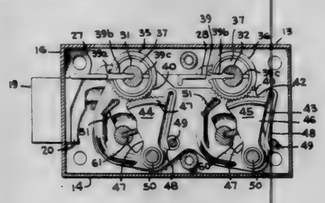
DOUBLE CHANGEABLE KEY LOCK FOR SAFE DEPOSIT BOXES AND THE LIKE

James P. Peppard, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Aug. 28, 1979, Ser. No. 71,352

Int. Cl.³ E05B *25/00*

U.S. Cl. 70—355 **12 Claims**



1. A changeable multiple key lock for safe deposit boxes and the like, comprising a lock case, a locking bolt including an integral bolt plate slidably movable in said case between projected locking and retracted unlocking positions and having a pair of longitudinally spaced fence members projecting therefrom, first and second stacks of peripherally gated tumbler wheels rotatably supported about respective parallel center axes in the path of longitudinal unlocking movement of said fence members to bar retraction of said fence members from the projected locking position, the tumbler wheels having gating recesses for accommodating said fence members to accommodate retraction of said bolt to unlocking position, first and second sets of key operable sector levers pivotally mounted on respective pivot posts and having gear teeth couplings respectively with the two stacks of tumbler wheels and having key follower surfaces to be engaged by portions of a guard key and renter key inserted into the lock and rotated to unlocking position to drive the associated tumbler wheels to unlocking position, and said pivot posts for said first and second sets of sector levers having means mounting them eccentrically in the lock case and having change key receiving openings therein for rotation of said posts pivot to positions withdrawing the first and second sets of sector levers to decoupled positions relative to their associated tumbler wheels by a change key to free the sector levers to assume new positions corresponding to a new renter's key or a new guard key introduced and positioned to set the sector levers and their associated tumbler wheels while they are decoupled from each other.

4,290,288

DEVICE FOR NARROWING THE BREADTH OF A SHEET SPRING MATERIAL IN AN APPARATUS FOR MANUFACTURING A TAPER LEAF SPRING

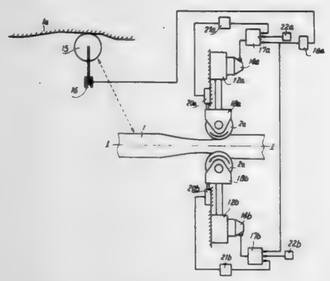
Mitsushige Kawakubo; Yoshihiro Sakai, and Akira Ohno, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed May 30, 1979, Ser. No. 43,837

Claims priority, application Japan, May 30, 1978, 53-64618

Int. Cl.³ B21B *37/14, 1/20*

U.S. Cl. 72—7 **4 Claims**



1. A device for narrowing the breadth of a sheet spring material in an apparatus for manufacturing a taper leaf spring which comprises the following: for performing rolling for breadth narrowing to both sides of a sheet spring material prior to taper rolling of both ends of said spring sheet material, a pair of work rolls for said breadth narrowing, means to regulate the interval between said pair of work rolls, a template to determine the interval between said pair of work rolls, means to detect the shape of said template as an electric signal and transmit same as mechanical energy to the means for regulating the interval between the work rolls, means to detect variations in the regulation of the interval between said work rolls as electric signals, compare them with electric signals based on variations indicated in the shape of the templete, determine errors and give correcting signals to the means for regulating the interval between the work rolls, and means to give tension to a sheet spring material and simultaneously control bending of the sheet spring material during processing work.

4,290,289

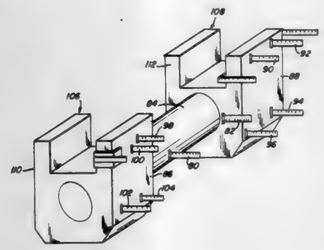
SPACIAL ALIGNMENT METHOD FOR ROLLING MILL ROLLS AND CHOCKS

Alfred J. Capriotti, Falls Township, Bucks County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 15, 1980, Ser. No. 121,858

Int. Cl.³ B21B *31/16;* B21C *51/00*

U.S. Cl. 72—31 **23 Claims**



1. In a rolling mill of the type having a housing for selectively providing both lateral and vertical support for a plurality of substantially vertically aligned rolls and associated support chocks contained therein, a method of aligning each of the rolls such that their axes of rotation are substantially parallel, said method comprising:

determining the spacial orientation of each of the lateral chock face planes with respect to the axis of rotation of their associated rolls; and

selectively placing correcting spacing elements between the lateral chock face planes and their lateral support within the rolling mill to laterally adjust the chock face plane and correspondingly, the axis of rotation of the associated roll so that each axis of rotation of each roll is substantially parallel to the axis of rotation of each of the other rolls.

4,290,290

PROCESS FOR EXTRUDING A COMPOSITE SECTION, A DIE FOR THIS PURPOSE, AND THE RESULTANT COMPOSITE SECTION

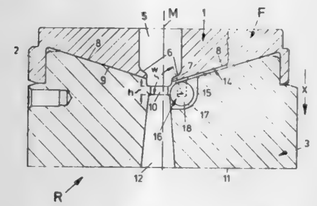
Alfred Wagner, Steisslingen, and Adolf Ames, Hilzingen-Duchtlingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 887,317, Mar. 16, 1978. This application Nov. 9, 1979, Ser. No. 92,934

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712366

Int. Cl.³ B21C *23/22;* B29F *3/00*

U.S. Cl. 72—256 **7 Claims**



1. A process for extruding a composite metal section through a shape-giving opening in a die, said composite comprising a beam-like section, in particular a beam-like section made of a light-weight metal, and a facing of at least a part of at least one of the surfaces of the beam-like section in the form of a strip of a different metal, which comprises producing the beam-like section by extruding a billet through a die while at the same time passing the facing strip through the shape-giving opening in the die such that the facing strip is metallically bonded to the beam-like section, wherein the facing strip is fed on a moving surface positioned adjacent to the shape-giving opening of the die and plastically deformed while in contact with said moving surface such that the facing strip does not contact the non-moving surface of the die.

4,290,291

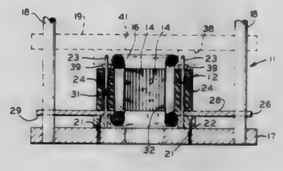
APPARATUS FOR MAKING DYNAMOELECTRIC MACHINE STATORS

Richard D. Burns, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 835,294, Sep. 21, 1977, Pat. No. 4,188,712. This application Nov. 5, 1979, Ser. No. 91,082

Int. Cl.³ H02K *15/02*

U.S. Cl. 72—316 **3 Claims**



1. Apparatus for use in the manufacture of a bolt-down stator comprising a stack of laminations having a number of conductor accommodating slots, a plurality of mounting bolt holes, and a central bore concentric with the bolt hold locations wherein the dimensional variations between the mounting bolt holes and the central bore are less than eleven thousandths of an inch; the apparatus comprising: a frame; a pair of relatively movable members supported by said frame that simulate ultimate mounting means and mounting areas; press means, supported by said frame, for moving the relatively movable members together and for applying forces to the stack of laminations that simulate ultimate stator mounting forces for a preselected period of time; alignment pins carried by one of said movable members for entering the bolt holes wherein the pins are accurately dimensioned to closely fit the bolt holes and wherein the pins have a diameter that is not more than about three thousandths of an inch smaller than the diameter of the bolt holes; and means, supported by said frame, for shaping the bore of the stack of laminations within the preselected period of time while the stator mounting forces are being simulated by said means for moving and for applying forces, and while said alignment pins are disposed within bolt holes of the laminations.

4,290,292

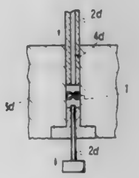
MANUFACTURE OF ROTATABLE IGNITION FILES OR FLINT WHEELS

Yushin Yoneda, 1788, Mebuki, Noda City, Chiba Prefecture, Japan (278)

Filed Aug. 30, 1979, Ser. No. 71,553

Int. Cl.³ B21D *31/02*

U.S. Cl. 72—330 **5 Claims**



1. A method of manufacturing rotatable ignition files or flint

wheels, for example for lighters, comprising the steps of: cutting elongate wire stock of gauge appropriate to the desired diameter of the wheel into blanks of suitable size; applying a series of press operations to the blanks, as cut, by means of respective punches and dies to champfer or round off the peripheral edges of the blanks, to provide axial mounting holes, and to harden the respective surfaces of the blanks; and treating the circumferential surfaces of the respective blanks being formed to provide friction surfaces.

4,290,293

METHOD FOR DEEP DRAWING

Ronald J. Selines, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,440
Int. Cl.³ B21D *22/20*
U.S. Cl. 72—342 **10 Claims**

1. A method for deep drawing sheet wherein (i) the sheet is formable by deep drawing and (ii) the sheet is in the form of a blank having a flange portion and a center portion comprising the following steps;

(a) cooling the blank to a temperature no higher than about minus 50° C.;

(b) heating the flange portion to a temperature higher than the center portion and sufficient to establish a temperature differential between the flange portion and the center portion of about 40° C. to about 150° C.; and

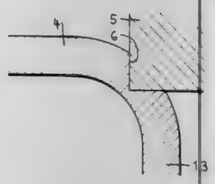
(c) drawing the blank into a concave drawing die using a mating convex punch, the center portion being initially at a temperature no higher than about 0° C. and the drawing being effected at a speed sufficient to maintain the temperature differential established in step (b).

4,290,294

METHOD FOR PRODUCING AEROSOL CAN TOPS

Werner Diemi, Bern, Switzerland, assignor to Styner & Bienz AG, Niederwangen, Switzerland

Filed Mar. 7, 1979, Ser. No. 18,369
Claims priority, application Switzerland, Mar. 8, 1978, 2506/78
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—348 **3 Claims**



1. A method for producing an aerosol can top, wherein a plate is deep-drawn to form a funnel-shaped member having a cylindrical portion closed at one end by a contiguous central portion, then the central portion is removed, and then the rim of the opening is curled, the improvement wherein the removal of the central portion comprises the steps of:

providing a tool having a compression edge;

axially pressing said tool edge into the plate for forming therein at the boundry between the cylindrical portion and the central portion a groove solely by compression of the material of the plate by said compression edge, thereby producing compressive stresses in the plate along said impressed groove; and

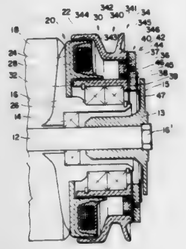
tearing off the central portion along said impressed groove leaving said cylindrical portion with a compressively prestressed open end which thereafter may be outwardly curled without splitting.

4,290,295

METHOD OF MAKING V-GROOVED PULLEY ASSEMBLY

Hisanobu Kanamaru; Hideo Tatsumi; Akira Tohkairin, and Kosaku Sayo, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,563
Claims priority, application Japan, Aug. 23, 1978, 53-103314
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—356 **7 Claims**



1. A method of making a V-grooved pulley assembly, the method comprising the steps of:

forming a thick wall portion including one side wall portion of the assembly and a tubular thin wall portion which extends from said thick wall portion and includes the other side wall portion of the assembly from a tubular member by means of cold-working, and

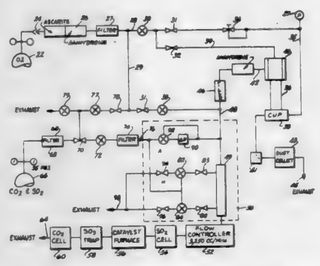
expanding said tubular thin wall portion so as to form a V-groove of the pulley assembly.

4,290,296

METHOD AND APPARATUS FOR GAS DOSING FOR LINEARIZATION

Roger L. Bredeweg, and George J. Sitek, both of Stevensville, Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Nov. 16, 1979, Ser. No. 95,508
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—1 G **22 Claims**



1. For use in an analyzer employed in the analysis of gaseous specimens in which different concentrations of specimen gas are introduced into the flow of gases by dosing to linearize the signals from the detection system of the analyzer, a system for dosing such concentrations of specimen gas comprising:

a source of specimen gas;

a manifold having a conduit coupled in the gas flow path of the analyzer;

means coupled to said manifold for metering specimen gas from said source to said conduit;

means for detecting the quantity of gas metered into the analyzer; and

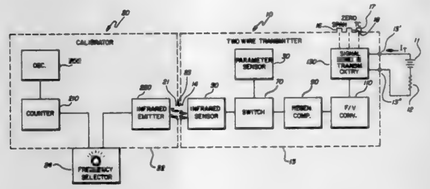
circuit means coupled to said detecting means for determining a scaling factor for a known concentration of specimen gas metered into the analyzer which scaling factor corrects for non-linearities in the detection system of the analyzer.

4,290,297

OPTICALLY COUPLED CALIBRATOR FOR TRANSMITTERS

Loren A. Anderson, Farwell, Minn., assignor to Rousemount Inc., Minneapolis, Minn.

Continuation of Ser. No. 38,446, May 14, 1979, abandoned. This application May 8, 1980, Ser. No. 147,734
Int. Cl.³ G01P *21/00*
U.S. Cl. 73—1 R **22 Claims**



1. Apparatus for calibrating a two wire DC transmitter of the type having a sensor which provides a time varying sensor signal representative of a parameter to be sensed, current control means for controlling, as a function of time varying signals received, total DC current in two wires which couple the transmitter to an external DC power supply and an external series connected load, the apparatus comprising:

a calibrator having:

an oscillator means for generating a known time varying oscillator signal;

light emitting means coupled to the oscillator means for providing a time varying light signal in response to the time varying oscillator signal; and

opening means providing for passage of light from the calibrator; and

the two wire transmitter having:

light sensor means for receiving the time varying light signal from the calibrator and for providing a time varying calibration signal as a function of the time varying light signal;

selection means for selectively providing the time varying calibration signal or the time varying sensor signal to the current control means; and

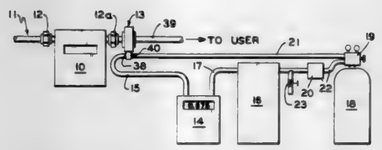
adjustment means for adjusting the total DC current from the transmitter when the time varying calibration signal is selected to provide a known relationship to the known time varying oscillator signal, thereby calibrating the transmitter.

4,290,298

SYSTEM FOR IN SITU METER TESTING

Asbjorn M. Severson, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 22, 1980, Ser. No. 123,584
Int. Cl.³ G01F *25/00*
U.S. Cl. 73—3 **7 Claims**



1. A system for in situ testing of fluid meters comprising:

a self-contained, dual-position valve disposed in the supply line in series with and downstream of the meter to be tested, said valve having a first position wherein the inlet and outlet openings of the valve are in communication with the upstream and downstream openings of the supply line such that the fluid is enabled to pass straight through the valve along the supply line, and a second position wherein the inlet and outlet openings of the valve are in communication with auxiliary ports not connected with each other; and

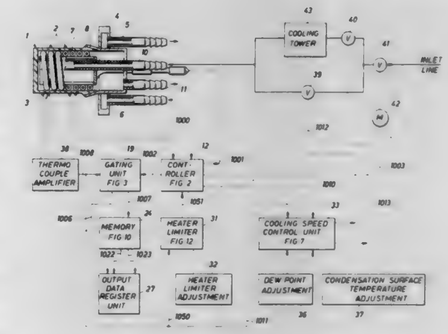
means for connecting said auxiliary ports in series with a test or calibration unit.

4,290,299

APPARATUS FOR CONTINUOUS TEMPERATURE MEASUREMENT OF THE DEW POINT OF FLUE GASES

Mikhail A. Pozin, 2960 Lake St., Apt. 143, Lake Charles, La. 70601, and Mikhail B. Serkh, Posledny Per 15, Apt. 30, Moscow 10392, U.S.S.R.

Filed May 10, 1978, Ser. No. 904,603
Int. Cl.² G01N *25/02*
U.S. Cl. 73—17 A **19 Claims**



1. Apparatus for continuous temperature measurement of the dew point of flue gases which apparatus is adapted to be installed in a stream of flue gases and comprises:

(a) a condensation surface means which is adapted to be installed in a flue gas stream which surface means forms a condensate on the exposed surface thereof dependent at least in part on its temperature and the gases flowing in the stream of flue gases;

(b) sensor means operative at said condensation surface means for determining the presence or absence of condensate formed on said surface means;

(c) heating means for said condensation surface means for supplying heat thereto for raising the temperature thereof;

(d) cooling means for cooling said condensation surface means;

(e) temperature sensing means for sensing the temperature of said condensation surface means;

(f) control means connected to said sensor means wherein said sensor means provides a signal at least partly dependent on an increase or decrease in the condensate thereon for forming a control signal indicative of the increase and decrease in surface condensate;

(g) comparator means for comparing the signal from said control means against a reference signal wherein the output thereof is a signal applied to said heating means and said cooling means for controlling the operation thereof to vary the temperature of said condensation surface means which variation in temperature alters the rate at which condensate is formed on said condensation surface means to achieve a controlled rate of change in condensate, and wherein the absence of change in condensate is indicative of the dew point in the flue gases flowing past said condensation surface means;

(h) output means connected to said surface temperature sensing means for forming an output signal proportionate to the surface temperature detected by said surface temperature sensing means;

(i) memory means connected to said output means for receiving and storing the output signal thereof proportionate to the surface temperature measured by said surface temperature sensing means; and

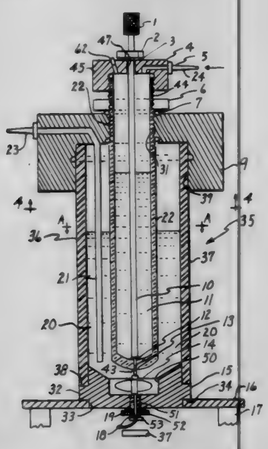
(j) memory control means connected to said memory means and additionally connected to said comparator means which control means is operated by the comparison determined by said comparator means, and wherein said comparator means determines the occurrence of a balance in the formation of additional condensate on said condensation surface means and the loss of condensate which balance causes formation of a signal by said comparator means supplied to said memory control means for operation of said memory means to store and hold the signal proportionate to surface temperature as representative of the dew point temperature of the flue gases flowing past said condensation surface means.

4,290,300

SUCROSE DENSITY GRADIENT SYSTEM

Joseph Carver, 31 West Blvd., East Rockaway, N.Y. 11518

Filed Oct. 18, 1978, Ser. No. 952,283
Int. Cl.³ G01N *9/18*
U.S. Cl. 73—32 R **9 Claims**



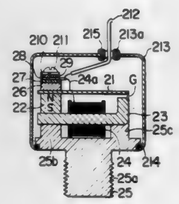
1. In a device for preparing an exponential or linear sucrose or similar type gradient liquid column within a test tube or centrifuge tube, having two chambers concentric one within the other, each of which may be pressurized or vented to atmosphere, an outer chamber provided with a mixing bar, an inner chamber provided with a valve stem, both chambers permitting a variable volume charge, to form a light concentration sucrose in one chamber and a heavy concentration sucrose in the other chamber, to provide a linear gradient as a liquid column within the test tube, with the linear or exponential gradient formed, the introduction of a biological material sample containing one or more components of varying molecular weight or size to be layered atop the formed gradients to be used for quick and convenient determination of the density or specific gravity or the molecular size and weight of the various biological components, due to the distribution of the biological components over the sucrose or linear exponential gradient as they find a position in the liquid column and deposit upon the layered sucrose or float in stratified suspension through the gradient.

4,290,301

KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 19, 1979, Ser. No. 95,673
Claims priority, application Japan, Apr. 18, 1979, 54/47560
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **5 Claims**



1. A knock detecting apparatus for internal combustion engines comprising:

magnetic path means including reed means of magnetic material disposed to vibrate in response to vibration of a combustion engine and at least one air gap formed in close proximity to said reed means, wherein said magnetic path means comprises two magnetic paths each including a reed member of the same length to exhibit the same resonance characteristic;

magnetic flux detecting means disposed to detect a change in reluctance of said magnetic path means caused by a change in the length of said air gap due to the vibration of said reed means, said reed means having a characteristic so as to be resonant at the frequency of knock, wherein said magnetic flux detecting means comprises two magnetic flux detectors each thereof being disposed to detect a change in the reluctance in respective magnetic paths; and

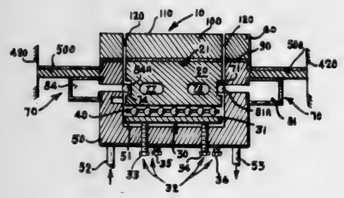
a knock detecting circuit including two integrators for integrating the output signals of said magnetic flux detectors respectively and an adder for adding the output signals of said integrators.

4,290,302

BIAXIAL SHEAR FORCE GAUGE

Clarence J. Harris, Lansdowne, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 13, 1980, Ser. No. 129,858
Int. Cl.³ G01N *17/00*
U.S. Cl. 73—86 **10 Claims**



1. A biaxial shear force gauge for use with a test specimen made of a preselected ablative material and having a top surface and a preimeter surface, wherein said test specimen is in a high temperature gaseous flow which is capable of ablating said test specimen, and which also is capable of inducing, and of exerting on said top surface of said test specimen, a resultant shear force that comprises constituent axial and lateral forces, comprising:

a. a low inertial mounting block member having a top surface upon which said test specimen of preselected ablative material is mounted, wherein said mounting block member is free to move in axial directions and in lateral directions;

b. a bottom support assembly disposed below, and in alignment with, said mounting block member, wherein said bottom support assembly includes a bottom support member and a means for leveling said bottom support member;

c. a linear thrust ball bearing member interposed between, and in abutting contact with, said mounting block member and said bottom support member of said bottom support assembly.

d. a water-cooled container/housing having an opening in which said mounting block member, said linear thrust ball bearing member, and said support assembly are disposed and housed;

e. a housing guard member made of said same preselected ablative material as said test specimen, and shaped and sized to surround, and disposed so as to surround, said perimeter surface of said test specimen of said preselected ablative material, wherein this housing guard member is simultaneously mounted on said water-cooled container/-housing;

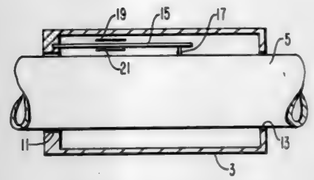
f. and, means for detecting and measuring any axial and lateral constituent forces of said resultant shearing force that are exerted on said top surface of said test specimen of said preselected ablative material by said high temperature gaseous flow.

4,290,303

APPARATUS FOR MEASURING SURFACE SCRATCHES ON A TUBE

Douglas G. Harman; Ralph E. Lambert, both of Tampa, and George W. Gruber, Largo, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 3, 1979, Ser. No. 54,515
Int. Cl.³ G01B *5/28*
U.S. Cl. 73—105 **3 Claims**



1. Apparatus for measuring a surface defect, on a tube said apparatus comprising;

a support tubularly shaped to conform to said tubular surface and being split axially to fit over said tube;

a cantilevered member having one end thereof rigidly connected to said support and a distal end biased toward said surface;

a needle fastened on said distal end of said cantilevered member;

a first strain gage affixed to one side of said cantilevered member,

a second strain gage affixed to a side opposite the one side of said cantilevered member, and

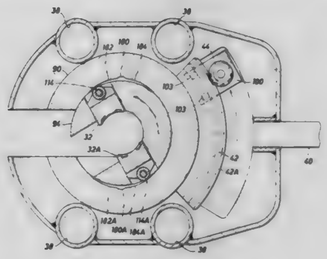
said strain gages being electrically connected together to produce an improved signal, whereby as said apparatus is traversed over said surface said needle follows said surface and defects thereon to cause said cantilevered member and said strain gages to flex and produce the improved signal, which can be calibrated to indicate the depth of the defect relative to the surface.

4,290,304

BACK-UP POWER TONGS AND METHOD

Emery L. Eckel, Odessa, Tex., assignor to Eckel Manufacturing Company, Inc., Odessa, Tex.

Filed Apr. 30, 1979, Ser. No. 34,774
Int. Cl.³ B25B *17/00*
U.S. Cl. 73—862.25 **13 Claims**



7. A back-up power tong for preventing a pipe from rotating, comprising

a cam ring affixed to a frame of said tong and having an opening therein so that said pipe may be laterally positioned within said cam ring and having first and second camming surfaces on said cam ring,

a cage plate assembly rotatable within said cam ring and having an opening therein so that said pipe may be laterally positioned in said cage plate assembly,

first and second pipe gripping heads mounted within said cage plate assembly,

means for effecting rotary motion between said cage plate assembly and said cam ring.

means affixed to said first and second pipe gripping heads for cooperating with said camming surfaces such that, upon rotary motion between said cage plate assembly and said cam ring, said first and second pipe gripping heads are caused by said camming surfaces to move inwardly thereby gripping said pipe, and

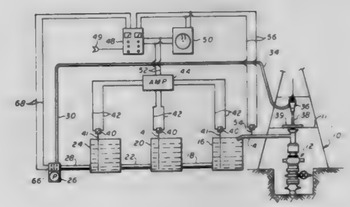
support means for releasably retaining said cage plate assembly within said cam ring, including (a) at least two hold-up brackets each rotatably mounted relative to said frame, and (b) a fluid-powered cylinder for causing rotational movement of said hold-up brackets.

4,290,305

DRILLING FLUID CIRCULATING AND MONITORING SYSTEM AND METHOD

Joseph T. Gibson, and Gerald L. Duhon, both of New Iberia, La., assignors to A. C. Company, New Iberia, La.

Filed May 29, 1979, Ser. No. 42,777
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—155 **16 Claims**



9. A method of monitoring changes in the fluid circulation of a drilling fluid circulation system, comprising:

counting the number of strokes of a drilling fluid circulation

pump for determining the volume of the drilling fluid being pumped into a well;

supporting a capacitance probe within a drilling return line to measure the liquid level of drilling fluid in said drilling fluid return line leading to storage tank means to provide an electrical signal representing the volume of drilling fluid flowing out of the well;

measuring the level of drilling fluid in storage tank means with electrical fluid level measuring means and providing an electrical signal representing the volume of drilling fluid stored in said tank means; and

recording the electrical signals from the electrical fluid level measuring means mounted with the fluid return line and tank for comparing the quantity of drilling fluid returning to and contained within said tank means with the quantity of drilling fluid flowing into the well.

4,290,306

METHOD AND APPARATUS FOR PROBING INTO A REFINING FURNACE OR THE LIKE FOR TEMPERATURE MEASUREMENT FOR SAMPLING, OR FOR BOTH

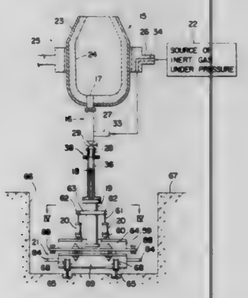
Keikichi Murakami, and Hideo Kaneko, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 29, 1980, Ser. No. 126,105

Claims priority, application Japan, Mar. 5, 1979, 54/25785; Mar. 20, 1979, 54/32520

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—354 **23 Claims**



1. A method of probing into a vessel containing a high-temperature fluid material, as for measuring the temperature of the fluid material, for sampling the fluid material, or for both purposes, which method comprises:

(a) forming a probe entrance opening in the vessel in the adjacency of its bottom;

(b) constantly introducing a gas under pressure into the vessel through the probe entrance opening in order to prevent the influx of the fluid material into the probe entrance opening; and

(c) inserting a probe into the vessel through the probe entrance opening.

4,290,307

GRAVITY MEASURING APPARATUS

Lewis A. Manson, 4602 Waring, Houston, Tex. 77027

Filed Oct. 10, 1979, Ser. No. 83,351

Int. Cl.³ G01V *7/08*

U.S. Cl. 73—382 R **15 Claims**

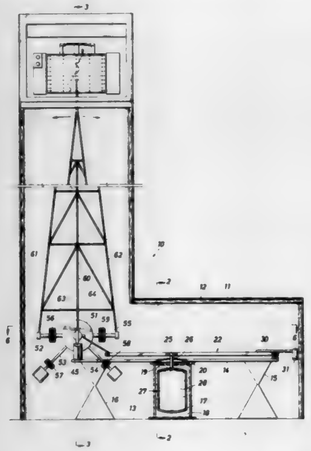
1. An apparatus for measuring time variant gravity comprising:

(a) a fixed pivot;

(b) an elongate lever arm supported by said pivot for motion thereabout, said lever arm having a specified extent laterally of the pivot when supported in a generally horizontal position relative to said pivot;

(c) a tank; and

(d) a buoyant chamber connected to said lever arm and positioned within said tank and adapted to float in a liquid



therein to move said lever arm as said chamber floats, wherein said lever arm is deflected by said chamber as it floats in said tank, and wherein an imbalance exists between said chamber and the liquid in said tank to raise or lower said chamber with time variant gravity.

4,290,308

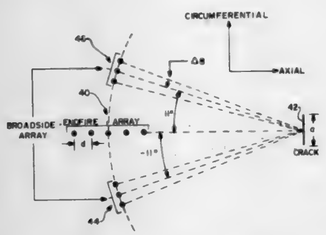
METHOD OF MONITORING DEFECTS IN TUBULAR PRODUCTS

Gary J. Dau, Palo Alto, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 17, 1979, Ser. No. 76,483

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—602 **3 Claims**



1. The method of monitoring a defect such as a crack in a product such as steel pipe comprising the steps of

(a) positioning a plurality of transducers on said product in predetermined positions relative to said defect, including a broadside array of transducers and an endfire array of transducers,

(b) applying ultrasonic waves to said product in close proximity to said defect,

(c) receiving waves reflected from said defect and generating electrical signals in response thereto, and

(d) analyzing said electrical signals to determine changes therein which are indicative of changes in said defect by providing an adaptive learning network model for said product and defect and analyzing said electric signals in accordance with said model, said model being based on

power ratios computed over several electrical signal frequency bands in a fixed frequency bandwidth.

4,290,309

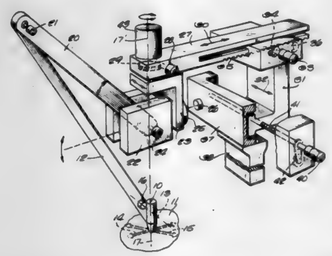
DIAGNOSTIC ULTRASOUND APPARATUS HAVING AUTOMATIC ISOCENTRIC ROTATOR

Thomas F. Charlebois, Oconomowoc, Wis., and Edward J. Roswog, Boston, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,221

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—621 **3 Claims**



1. Apparatus for making ultrasound examinations of a body including carriage means mounted for moving longitudinally in the Y direction, an arm mounted on said carriage means for moving transversely in the x direction, a head mounted on said transversely movable arm for turning about a vertical axis, an articulated arm composed of pivotally connected arm sections one of which is pivotally mounted to said head and another of which has an ultrasound transducer pivotally mounted on it, said articulated arm being constrained to move in a single plane to scan said transducer along a single plane through a body and said articulated arm being swingable with said head about said vertical axis to enable selection of the scanning plane of said arm and transducer, and the improvement for automatically establishing said vertical axis about which said articulated arm swings at the same X and Y coordinates at which said transducer is located when it is over a selected isocenter on the body so said articulated arm can be swung to a selected plane without translating said transducer from said isocenter, comprising:

first motor means operable to translate said transversely movable arm in reverse directions and controller means for said motor means,

second motor means operable to translate said longitudinally movable carriage means in reverse directions to thereby shift said transversely movable arm longitudinally and controller means for said second motor means,

means for providing signals representative of the X coordinate and Y coordinate position of said transducer,

processor means having input means for said signals and being operative to use said signals to activate said controller means to cause said respective motor means to move said transversely movable arm and carriage means until said vertical axis about which said articulated arm swings has the same X and Y coordinates as said transducer, and

a circuit including a switch operable to cause said motor controllers to be activated.

4,290,310

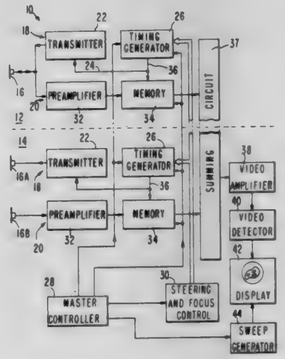
ULTRASONIC IMAGING SYSTEM USING DIGITAL CONTROL

Weston A. Anderson, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 9, 1979, Ser. No. 55,721

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—626 **17 Claims**



1. A real-time ultrasonic imaging system comprising:

an array of transducers adapted for propagating ultrasonic energy into a body to be ultrasonically examined and for receiving reradiated sonic energy from points within said body;

a plurality of signal channels respectively including transmitter branches and receiver branches, said transmitter branches activating said transducers to propagate said sonic energy, and said receiver branches receiving electrical signals from said transducers corresponding to said reradiated energy;

a plurality of identical digital memory means each respectively associated with one of said receiver branches, for receiving and storing data indicative of the signal level of said reradiated energy received by said receiver branch;

display means for receiving the data from the memory means in each of said channels, and for combining and processing said data to effect a display of the bodily portion being examined;

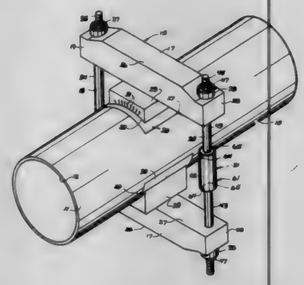
timing generator means in each signal channel connected to the transmitter branch and to the memory means associated with said channel, for activating said transducers at predetermined times of phase said transducers to enable steering and focusing of said array, and for activating said memory means and gating out the said data from said memory means at times which are delayed with respect to activation of the transducers by predetermined intervals, thereby controlling the bodily points from which said reradiated sonic energy is received in accordance with said delays, to thereby enable steering and focusing of said transducer array; and

control logic means connected to said timing generator means for enabling said signals to said memory means and said transmitter branches in each of said channels whereby said display of said bodily portion being examined is effected in real time.

4,290,311
DILATOMETER

Given A. Brewer, Marion, Mass., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 8, 1980, Ser. No. 119,709
Int. Cl.³ G01L 7/02
U.S. Cl. 73—730 15 Claims

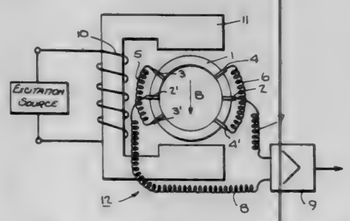


1. An apparatus for measuring diametral dilation of cylindrical pipe, comprising:
first and second rigid beams each having front and back ends spaced apart a distance greater than the exterior pipe diameter, said beams being adapted to engage the pipe intermediate their respective ends at opposite sides of the pipe with the corresponding front and back ends of the beams overlying one another and located outwardly from the pipe;
first nonextensible tensile means for tying the back ends of said beams to one another;
strain sensing means having first and second opposed ends;
second nonextensible tensile means fixed to and extending outward from the first and second opposed ends of said strain sensing means for tying the front ends of said beams to one another in opposition to said first tensile means;
said first and second tensile means being prestressed to preload the strain sensing means.

4,290,312
SIGNAL GENERATOR FOR ELECTROMAGNETIC FLOWMETER

Tamotsu Kobayashi, Yokohama, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Jan. 22, 1980, Ser. No. 114,413
Claims priority, application Japan, Jan. 26, 1979, 54-7025
Int. Cl.³ G01F 1/58
U.S. Cl. 73—861.12 3 Claims

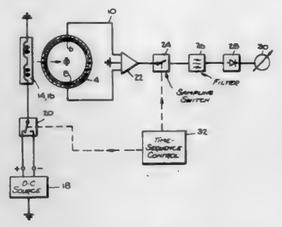


1. In an electromagnetic flowmeter in which a fluid to be metered is conducted through a flow tube to intercept a magnetic field whereby an emf if induced in a pair of detecting electrodes at diametrically-disposed positions on the tube to yield a signal as a function of flow rate which is applied to a signal converter, a signal generator comprising:
A. a set of auxiliary floating electrodes associated with each of the detecting electrodes disposed on the inner wall of the flow tube at arbitrary positions thereon at which equal potentials are present when the fluid being metered assumes a symmetrical flow rate distribution with respect to the flow tube, said auxiliary electrodes being disconnected from the detecting electrodes and from said converter; and
B. means electrically interconnecting the auxiliary electrodes of each set whereby these electrodes are rendered equipotential when the flow rate distribution is asymmetrical.

4,290,313
ELECTROMAGNETIC FLOWMETER SYSTEM

Eggert Appel, Dransfeld; Peter Nissen, Rosdorf; Gottfried Geisler, Goettingen, and Wilfried Kiene, Hann-Muenden, all of Fed. Rep. of Germany, assignors to Fischer & Porter Company, Warminster, Pa.

Filed Jan. 15, 1980, Ser. No. 112,344
Int. Cl.³ G01F 1/60
U.S. Cl. 73—861.17 9 Claims



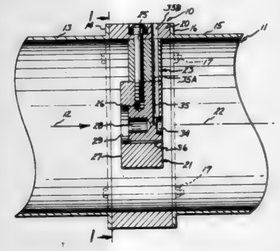
1. An electromagnetic flowmeter system including a flowmeter having electromagnets associated with a flow tube through which the fluid to be measured is conducted, the fluid intercepting a magnetic field established by the electromagnets to induce a voltage as a function of flow rate in a pair of metering electrodes mounted at opposed positions on the tube, said electromagnets being excited by a pulsatory current in accordance with a predetermined drive frequency to produce periodic magnetic flux fields resulting in a periodic metering electrode voltage, and an analyzer responsive to said metering electrode voltage to generate an output signal that is proportional to the flow rate of the fluid and is free from disturbances, said analyzer comprising:
A a sampling switch operating in synchronism with said drive frequency during sampling periods which extract from said metering electrode voltage the magnetic flux steady-state intervals thereof to produce an output train of rectangular pulses which are rich in harmonics; and
B means coupled to the output of said sampling switch to select an odd harmonic from said pulses to produce a harmonic signal which is demodulated to yield said output signal free from disturbances.

4,290,314
TARGET FLOWMETER

Robert L. Geronime, Rosemount, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Apr. 9, 1979, Ser. No. 28,575
Int. Cl.³ G01F 1/40
U.S. Cl. 73—861.52 10 Claims

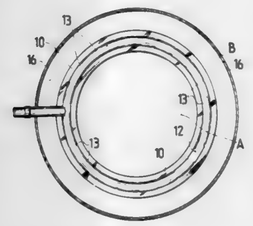
1. A flowmeter for determining flow of a fluid stream in a conduit having a flow axis comprising a one piece flow obstruction body having an upstream facing surface and a downstream facing surface, said upstream facing surface having a perimeter shape generally corresponding to the cross sectional shape of a conduit in which the body is to be mounted, said body being substantially imperforate and having a length measured along the flow axis less than its smallest transverse dimension measured generally perpendicular to the flow axis, a first bore in the body open to the upstream facing surface, a second bore in the body open to the downstream facing surface, means to mount said body in position to receive impingement of the fluid stream on the upstream facing surface, and means to sense the differential in pressures between the first and second bores to determine the relative rate of movement of the fluid stream.



4,290,315
APPARATUS FOR DETERMINING THE DIFFERENTIAL PRESSURE AND THE VOLUMETRIC FLUID FLOW IN A CONDUIT

Pauli Gröberg, Espoo, Finland, assignor to Fincoil-teollisuus Oy, Vantaa, Finland

Filed Jan. 23, 1980, Ser. No. 114,577
Claims priority, application Finland, Jan. 25, 1979, 790235; Jun. 25, 1979, 792004
Int. Cl.³ G01F 1/42
U.S. Cl. 73—861.61 11 Claims

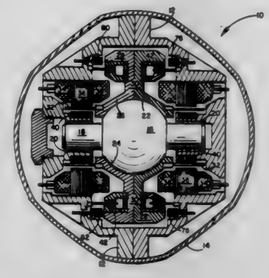


1. Apparatus for determining the differential pressure and the volumetric fluid flow in a conduit, comprising:
(a) an annular plate means arranged substantially coaxially within the conduit so as to define, on one hand, an orifice in the central portion of the plate means and, on the other hand, an annular passage between outer periphery of the plate means and the inner wall of the conduit;
(b) at least two pipe loops arranged substantially coaxially with and on opposite sides of the plate means and including a series of ports for sensing the pressure at a plurality of points upstream and downstream, respectively, of the plate means, and
(c) pressure responsive means operatively connected to each series of ports for determining the differential pressure on opposite sides of plate means.

4,290,316
FREE-ROTOR GAS-BEARING GYROSCOPE HAVING ELECTROMAGNETIC ROTOR RESTRAINT AND ACCELERATION OUTPUT SIGNAL

Raymond Noar, Bellflower; Stanley L. Zedekar, Huntington Beach; Michael D. Albertson, Tustin; Carl W. Pointer, Placentia; Chester E. Gall, Long Beach, and Alfred B. Fuller, Anaheim, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 13, 1979, Ser. No. 48,301
Int. Cl.³ G01C 19/30
U.S. Cl. 74—5.46 20 Claims

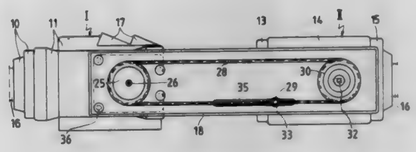


1. A gyroscope, comprising:
a frame;
a support ball fixed to said frame;
a rotor disposed over said support ball mounted for rotation about a spin axis of said rotor;
drive means for spinning said rotor about the spin axis; and
electromagnetic forcer means for inhibiting axial deflection of said rotor from a centered position over said support ball.

4,290,317
PRECISION DRIVE FOR ROTARY SWITCHING CONTROLS OF RECIPROCATING UNIT

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 63,600
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834415
Int. Cl.³ F16H 27/02, 29/02
U.S. Cl. 74—89.2 4 Claims



1. A drive for rotary switching controls of an injection molding machine capable of producing a precise, backlach-free translation of lineal relative movements between two units of said machine into corresponding angular displacements of the moving member of a rotary switching signal giver, such as, for example, the wiper of a rotary potentiometer, thereby controlling switching actions, such as the starting and/or stopping of relative movements between the two machine units, the switching controls drive comprising in combination:
a length of timing belt forming a closed loop;
two belt rollers which are supported and journalled on a first one of the two machine units, on rotational axes which are perpendicular to the direction of relative movement of the machine units and rigidly spaced in such a way that the rollers carry the timing belt in a taut oblong loop and at

least one belt run is oriented parallel to the movement direction;

means for longitudinally resetting the rigid spacing between the two belt rollers;

means for rotationally connecting one of the two belt rollers to said rotary switching signal giver;

a follower clamp arranged on the parallel-oriented belt run of the timing belt, the follower clamp serving as a belt buckle by holding both extremities of the timing belt length in a longitudinally preloaded locking connection; and

means for fixedly attaching the follower clamp to the second one of the machine units.

4,290,318

OPERATING MECHANISM OF A TRANSFER UNIT

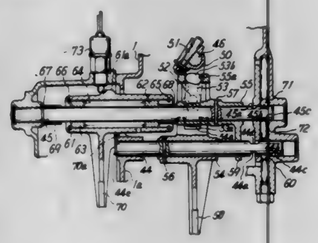
Takashi Ookubo, and Yukiyoshi Sasabe, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 27, 1979, Ser. No. 107,597

Claims priority, application Japan, Dec. 29, 1978, 53-164229

Int. Cl.³ G05G *5/10, 9/12;* **B60K** *17/34*

U.S. Cl. 74—477 **3 Claims**



1. An operating mechanism of a transfer unit including a first and a second shift rods which are parallel with each other and axially slidably supported in a transfer case, a drive condition changeover first shift fork on the first shift rod which is shiftable between two wheels drive position and four wheels drive position, a high-neutral-low speed changeover second shift fork on the second shift rod which is shiftable between high speed, neutral and low speed positions, said shift rods having recesses corresponding to said shift positions and engageable with check balls to retain respective positions, one other recess formed on each surface of the shift rods and opposing with each other when the first shift rod is shifted to the four wheels drive position and the second shift rod is shifted to the high speed position, an interlock pin disposed between said opposing surfaces of the shift rods and extending between one surface of one shift rod and one of the recesses of the other shift rod, said shift rods being selectively shiftable to attain any one of the high speed two wheels drive, high speed four wheels drive, neutral and low speed four wheels drive conditions, characterized by said first shift fork relatively movably supported on said first shift rod, a waiting mechanism resiliently retaining said first shift fork on a predetermined position of the first shift rod, and means to prevent the second shift fork from moving when said first shift fork is in the two wheels drive position.

4,290,319

DEVICE FOR THE BALANCING OF INERTIA FORCES OF RECIPROCATING PISTON-CRANKSHAFT ENGINES

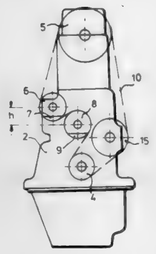
Stanislav Papez, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,760

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829042

Int. Cl.³ F16F *15/26*

U.S. Cl. 74—604 **6 Claims**



1. Apparatus for partial balancing of the free Nth order inertia forces and inertia moments of a reciprocating piston engine having a crankshaft, where N is an integer, comprising a pair of eccentrically weighted balancing masses, mounted on an axial end of said engine for rotation in a plane perpendicular to the crankshaft axis, and transmission means for connecting said balancing masses to said crankshaft and causing said masses to rotate in opposite directions at a rotational speed N times the speed of said crankshaft.

4,290,320

CONTINUOUSLY VARIABLE TRANSMISSION MECHANISMS

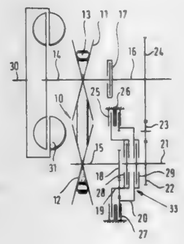
Randle L. Abbott, Tamworth, England, assignor to P.I.V. Antrieb Werner Reimers Kommanditgesellschaft, Bad Homburg, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 5,978

Claims priority, application United Kingdom, Jan. 21, 1978, 02523/78

Int. Cl.³ F16H *37/00, 3/44*

U.S. Cl. 74—689 **6 Claims**



1. A continuously variable transmission mechanism comprising

a variator having input and output sheaves of variable diameters and a flexible band connecting the sheaves together,

an input shaft co-axial with the input sheave,

an output shaft co-axail with the input shaft,

clutch means for selectively connecting said input shaft to said output shaft to provide a direct drive therebetween,

an epicyclic gearset to be driven from the output sheave and comprising elements constituted by a sun gear, a planet carrier having planet gears and an annulus,

an output shaft from the epicyclic gearset,

a reduction drive from the output of the epicyclic gearset to said first mentioned output shaft,

control members for said epicyclic gearset selected from brakes and clutches for controlling the gearset to drive the output shaft thereof from the output sheave selectively in any one of a reduction forward drive, a direct drive with the gearset locked up and a reverse drive.

4,290,321

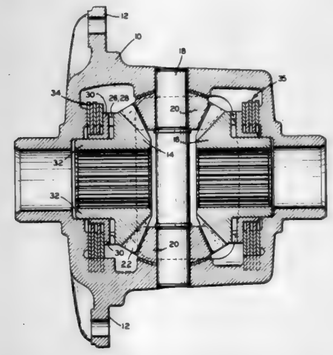
VARIABLE LOCK DIFFERENTIAL

Denney R. Wilson, Rte. 4, Ossian, Ind. 46777

Filed Jun. 25, 1979, Ser. No. 51,626

Int. Cl.³ F16H *1/44*

U.S. Cl. 74—711 **6 Claims**



1. In a differential including limited slip locking means and a pair of side gears one of said side gears including a back face having a cam surface, said differential further including an annular drive flange rotatable in coaxial relationship with said side gear, said flange having a cam surface thereon mateable with the cam surface of said side gear, said flange being positioned intermediate said locking means and said side gear such that as said gear is rotated relative to said flange, said side gear cams said flange against said locking means, an improvement comprising a variable pressure angle comprising a curvilinear profile in one of said cam surfaces whereby a varied bias ratio is achieved as drive torque is varied on said side gear.

4,290,322

ELECTRONIC TRANSMISSION CONTROL

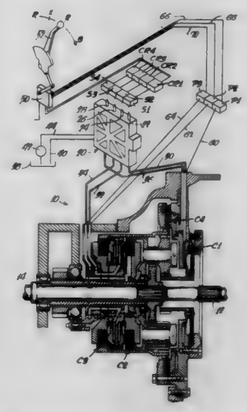
Thomas W. Huitema, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed May 25, 1979, Ser. No. 42,514

Int. Cl.³ F16H *3/74, 57/10*

U.S. Cl. 74—752 A **16 Claims**

1. In a multi-speed power transmission having an output shaft, an input shaft, a plurality of engageable fluid pressure-actuatable friction devices for connecting said output shaft to said input shaft and providing a plurality of rotational speeds for the output shaft in a given direction, and a control system for said transmission, said control system including a speed selector circuit, a plurality of fluid valve means responsive to each selector circuit, each adapted to actuate one of said friction devices, and pressure transducer means associated with each said friction devices for providing an individual indication of fluid pressure operating on each of said friction devices, said speed selector circuit comprising: an electric power source, a plurality of fluid valve actuating means each operably associated with one of said fluid valve means, speed selector switch means for energizing from said power source a predetermined number of said fluid valve actuating means, fluid pressure responsive holding means individually responsive to each of said pressure transducer means for maintaining a previously energized fluid valve actuating means in an energized state until such time when a subsequently energized fluid valve



actuating means has caused fluid pressure operating on the associated friction device to reach a predetermined value, whereby the power transmission shifts from one speed to another without delay due to the actuation and de-actuation of said friction device.

4,290,323

APPARATUS FOR CONTROLLING THE CLOSING LIMIT OF A CARBURETOR THROTTLE VALVE

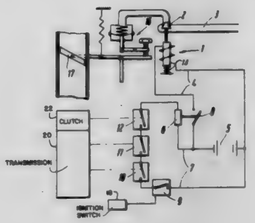
Reinhard Gospodar, Eichelkamp 36, 3180 Wolfsburg, Fed. Rep. of Germany

Continuation of Ser. No. 788,029, Apr. 15, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,819

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1976, 2617560

Int. Cl.³ B60K *21/00, 23/00*

U.S. Cl. 74—860 **7 Claims**



1. In a motor vehicle having an engine, an ignition switch, a manually-actuated clutch and a manually actuated transmission, said engine including an intake manifold and a carburetor with a throttle valve for controlling the supply of fuel-air mixture to said intake manifold by said carburetor, a device for continuously varying the closing limit of said carburetor throttle valve as a function of vacuum, which device makes said continually-varying-closing limit operation dependent upon discreet conditions of said ignition-switch, said clutch and said transmission, comprising:

vacuum-actuated means for continuously varying the closing limit of said throttle valve in dependence upon the vacuum applied thereto;

means for connecting said vacuum actuated means to said

intake manifold thereby to provide variable vacuum pressure to said vacuum actuated means;

a valve in said connecting means for blocking said variable vacuum from said vacuum-actuated means so that said throttle valve is allowed to close to an idling speed position; and

a means for actuating and closing said valve, said actuating means including switches activated in response to said discreet conditions and at least one time delay circuit for delaying operation of said actuating means until a selected time after activation of one of said switches, thereby maintaining said valve in an open condition during transient operation of said switches.

4,290,324

APPARATUS FOR CONTROLLING AN AUTOMATIC TRANSMISSION

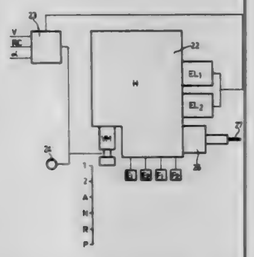
Paul Aubert, Clamart; Christian Quinton, Rueil-Malmaison, and Gerard Pannier, Bois d'Arcy, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 28, 1979, Ser. No. 79,918

Claims priority, application France, Oct. 4, 1978, 78 28436; Oct. 4, 1978, 78 28437

Int. Cl.³ B60K *41/10*

U.S. Cl. 74—866 **29 Claims**



1. A device controlling a multi-stage automatic transmission for an engine-driven vehicle, with three forward drive ratios and change under torque, damped by a hydrokinetic torque converter, and one reverse drive, of the type consisting of an epicyclic gear train actuated by two clutches and two brakes hydraulically controlled, which system comprises a hydraulic distribution unit monitored by two electric valves in order to selectively feed the two clutches and the two brakes on the basis of data concerning the running of the vehicle fitted with the transmission, comprising:

control means for controlling the two electric valves in response to three different states of the two electric valves for providing selective feeds corresponding respectively to each of the three forward drive ratios and for providing an additional control of said electric valves in response to a fourth transient state for the transmission between the third and second forward drive ratios.

4,290,325

APPARATUS FOR CONTROL OF OIL PRESSURE OPERATED TYPE TRANSMISSION FOR VEHICLE

Sadanori Nishimura, Omiya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

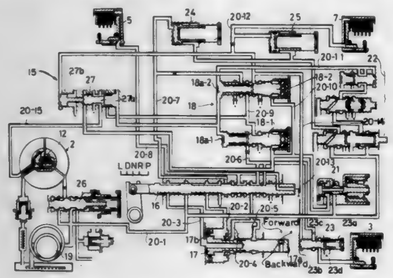
Filed May 16, 1979, Ser. No. 39,731

Claims priority, application Japan, May 29, 1978, 53-63357

Int. Cl.³ B60K *41/06, 41/10*

U.S. Cl. 74—869 **3 Claims**

1. An apparatus for control of an oil pressure operated transmission for a vehicle comprising a transmission with at least two-speeds forward driving trains having respective oil pressure clutches interposed therein; a reverse driving train using one of said two oil pressure clutches used also in the forward driving trains; a selector arranged to be given changeover movements between a forward running side and a reverse running side for operating selectively either one of the forward driving trains or the reverse driving train; a manual valve interposed in an operation circuit of the transmission so that when the manual valve is in its automatic shift range on its forward running side, the selector is given a changeover movement to its forward running side and at the same time the respective oil pressure clutches in said forward driving trains are receiving pressure oil from an oil pressure source through a shift valve; the selector is given a changeover movement to



its reverse running side and said oil pressure clutch for common use is receiving pressure oil when the manual valve is in its reverse running range; said manual valve being interposed in an oil passage connecting said shift valve and said oil pressure clutch for common use being constructed such that when the same is in the automatic shift range, said oil passage is connected, but when the same is in the reverse running range, said oil passage is disconnected and at the same time a downstream passage of said oil passage connected to said oil pressure clutch for common use is in communication with the oil pressure source without oil passing through the shift valve.

4,290,326

METHOD OF MAKING A FORGED MOWING FINGER

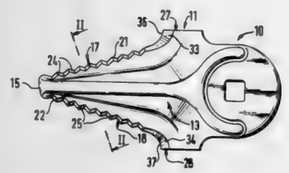
Adolf Ibach, and Heinz Könen, both of Remscheid, Fed. Rep. of Germany, assignors to Carl Sülberg, Remscheid, Fed. Rep. of Germany

Division of Ser. No. 873,244, Jan. 30, 1978, abandoned. This application Jan. 17, 1979, Ser. No. 4,312

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751523

Int. Cl.³ B21K *19/00*

U.S. Cl. 76—101 R **3 Claims**



1. A method of making a mowing finger of an elongated, step-like configuration having a finger body defining a surface, a back portion formed with lateral faces that converge to a point of the finger and include with the surface angles smaller than 90° to form cutting edges with the surface, and a plurality of serrations in the cutting edges, said method comprising a single forging operation in which said body together with said back portion, lateral faces and said serrations are simultaneously finished.

4,290,327

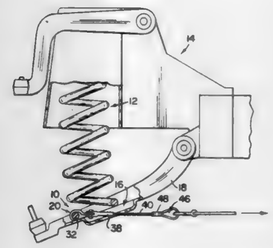
HAND TOOL

Alton L. Riker, Rte. 1, Box 658, Riverview, Fla. 33569

Filed Nov. 19, 1979, Ser. No. 95,615

Int. Cl.³ B25B *27/00*

U.S. Cl. 81—3 R **2 Claims**



1. A hand tool for vertical alignment of a coil compression spring in automotive vehicles comprising: a coil retaining member specifically configured to engage at least one of the convoluted elements of a coil compression spring and a handle member pivotally coupled to said coil retaining member to laterally adjust the coil compression spring relative to the automotive vehicle, said coil retainer member comprises a substantially flat base having an enlarged substantially convex arcuate configuration formed at one end thereof having a substantially concave coil engaging lip extending downwardly therefrom, wherein the radius of curvature of said coil engaging lip and said enlarged substantially convex arcuate configuration are greater than the diameter of the convoluted element and the coil compression spring respectively, said coil retaining member further includes a reduced coupling element formed at the opposite end of said flat base, said reduced coupling element is offset vertically relative to said substantially flat base and in substantially the same plane as the center line of said substantially concave coil engaging lip.

4,290,328

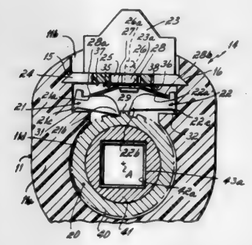
RATCHET HANDLE

Clyde C. Clark, Davenport, Iowa, assignor to Vermont American Corp., Louisville, Ky.

Filed Feb. 15, 1980, Ser. No. 121,829

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—62 **14 Claims**



1. A ratchet tool handle of the type having a rotable ratchet gear means, pawl means for selectively and operatively engaging with and disengaging from said ratchet gear means, and control means for moving said pawl means into and out of engagement with said ratchet gear means, the improvement wherein:

said ratchet gear means includes a gear ring having teeth on an exterior side thereof,

a passageway through said gear ring,

said passageway having a first cylindrical portion of predetermined diameter, and a second portion having at least one flat side, said diameter being greater than the length of said side, and

an inner sleeve disposed within the first cylindrical portion of said passageway in fixed relation with said gear ring and having a tool holding aperture therein.

4,290,329

TORQUE RELEASE WRENCH OF THE PRESET TYPE

Talmage O. Green, Schaumburg, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed Oct. 9, 1979, Ser. No. 82,854

Int. Cl.³ B25B *23/142*

U.S. Cl. 81—477 **10 Claims**



1. A preset torque wrench or the like comprising a tubular elongated handle member, a pair of superposed flex beams disposed along and within said elongated handle member, a work engaging head member anchored to the ends of said flex beams to serve as a closure for said elongated tubular handle member, means for detachably connecting said flex beams together to share the torque load and to displace said work engaging member commensurate with the flex of said beams, said detachable means being displaced a fixed distance with said flex beams until actuated by engagement with said tubular handle member to limit any further displacement thereof to effect the release of said flex beams from each other, calibrated rotary scale means journalled in said elongated tubular handle member, and a micrometer-like threaded spindle journalled in said handle member proximate to said calibrated rotary scale means, said calibrated rotary scale means being geared to said micrometer-like threaded spindle that is operatively connected to one of said flex beams to control the flexing moment arm thereof, thereby presetting the load at which said detachable beam connecting means is actuated to release said beams from connected engagement to signal and momentarily arrest any further torque load turning of said work engaging member.

4,290,330

BANDSAW BLADE GUIDING APPARATUS

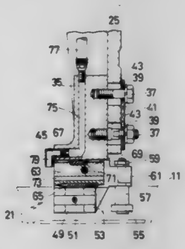
Isomi Washio, Odawara, and Kenji Onishi, Isehara, both of Japan, assignors to Amada Company, Ltd., Isehara, Japan

Filed Feb. 5, 1980, Ser. No. 118,731

Claims priority, application Japan, Feb. 6, 1979, 54-13432[U]

Int. Cl.³ B27B *13/10*

U.S. Cl. 83—820 **2 Claims**



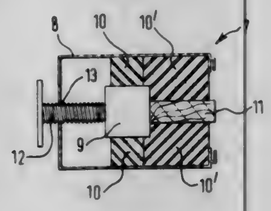
1. A bandsaw blade guiding apparatus comprising:

a support arm forming a cavity through which the blade moves;

a guide block mounted within said cavity for pivotal movement about an axis extending transversally with respect to the direction of blade movement;

an anti-friction member fixed to the bottom surface of said guide block, said anti-friction member having a flat surface contacting the back edge of the blade during a cutting operation;
a resilient member interposed between the top surface of said guide block and the base of said cavity; and
a through passageway in said guide block between said anti-friction member and said resilient member.

4,290,331
PICK-UP FOR A MUSICAL INSTRUMENT
Jerzy Izdebski, 77, Brondesbury Rd., London, N.W.6.,, England
Filed Jul. 27, 1979, Ser. No. 61,188
Int. Cl.[3] G10H *3/00*
U.S. Cl. 84—1.14 **10 Claims**



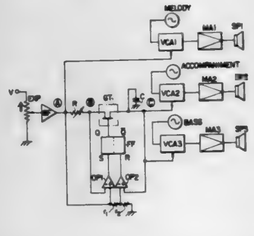
1. A pick-up adapted to be readily added-on to a musical instrument comprising a piezo-electric crystal having first and second faces, a housing surrounding said piezo-electric crystal and including top and bottom surfaces, pressure varying means extending through said top surface of said housing, said piezo-electric crystal being mounted in said housing by a resilient member, wooden coupling means for vibrationally coupling said first face of said piezo-electric crystal to a part of a musical instrument when said housing bottom surface is mounted on the musical instrument, said pressure varying means adjusting the pressure with which said piezo-electric crystal is coupled to the part, when said housing is mounted on the musical instrument, by applying an adjustable force to said second face of said piezo-electric crystal.

4,290,332
SOUND SHIELDING AND PICK-UP DEVICE
Thomas I. Schoeffling, Jr., 26 Derby Ct., Marlton, N.J. 08053
Filed Sep. 17, 1979, Ser. No. 75,900
Int. Cl.[3] G10H *3/00*; E04B *1/343*
U.S. Cl. 84—1.14 **11 Claims**



1. A sound shielding and pick-up device for use by placement on the side of a musician playing a musical instrument comprising:
(a) an upper front face sheet,
(b) an upper back face sheet,
(c) an upper holding means to hold the upper sheets in a parallel relationship sandwiching a sound deadening space between the sheets,
(d) a lower front face sheet,
(e) a lower back face sheet,
(f) a lower holding means to hold the lower sheets in a parallel relationship sandwiching a sound deadening space between the sheets,
(g) a hinge means between the lower edge of the upper sheet sandwich and the upper edge of the lower sheet sandwich to allow adjustment to form a concave angle between the sandwiches facing the musician,
(h) a frame means to hold the sheet sandwiches in any chosen position and at the chosen angle,
(i) at least one pickup transducer on at least one of the front faces, and
(j) electronic sound pick-up means conductively connecting each said at least one pickup transducer to sound processing equipment.

4,290,333
EXPRESSION MEANS OF ELECTRONIC MUSICAL INSTRUMENT
Masao Sakashita, Shobu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan
Filed Feb. 11, 1980, Ser. No. 120,034
Claims priority, application Japan, Feb. 24, 1979, 54-20921; Feb. 24, 1979, 54-20922
Int. Cl.[3] G10H *1/02, 1/36*
U.S. Cl. 84—1.24 **4 Claims**

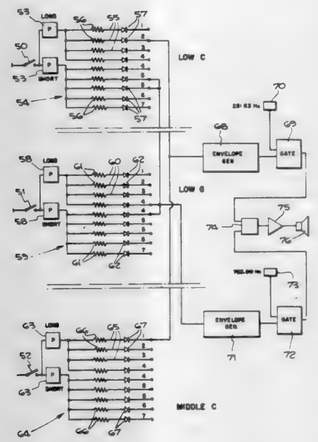


1. A circuit for an electronic musical instrument comprising:
a plurality of voltage controlled amplifiers each receiving one of a plurality of music sources for amplifying them to provide musical sound;
means for developing a first control voltage which varies in response to an operation of pedal means, said first control voltage being fed to at least a first one of said voltage controlled amplifiers;
means for developing a second control voltage which varies in response to a relatively slow operation of said pedal means and is substantially unresponsive to a relatively rapid operation of said pedal means, said second control voltage being fed to at least a second one of said voltage controlled amplifiers;
whereby said second one of said voltage controlled amplifiers is substantially incapable of accentuating its associated music source in response to a relatively quick operation of said pedal means, said first and second control voltages being substantially equal in response to a relatively slow operation of said pedal means.

4,290,334
ELECTRONIC WAVE SHARING SYNTHETIC SOUND SYSTEM
Justin Kramer, 1028 W. Eighth Pl., Los Angeles, Calif. 90017
Filed Jul. 22, 1980, Ser. No. 171,106
Int. Cl.[3] G10H *1/057, 5/02*
U.S. Cl. 84—1.26 **16 Claims**

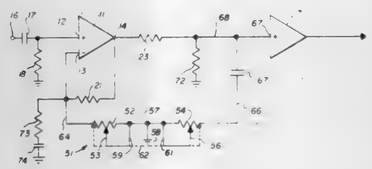
1. In a system for synthetically producing realistic musical bell sounds by electronic means including a keyboard switch member for each bell sound to be produced wherein each bell sound has a plurality of partials, pulse generators corresponding to the respective switch members, a plurality of electronic gates for the respective switch members feeding a speaker, and

an envelope generator for each partial of each said sound electrically interconnected between the pulse generator and the respective gate, the combination of a wave generator for each partial having an electric connection to the corresponding gate, and a resistor diode pair for each partial making up a plurality of groups of resistor-diode combinations for each said sound, each resistor-diode combination comprising a resistor



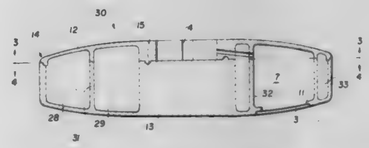
and diode in series and electrically connected between the respective pulse generator and the respective envelope generator, there being electric connections between each envelope generator and those of said individual resistor-diode combinations which serve partials of corresponding frequency, and an electric connection between each wave generator of frequency corresponding to the gate and envelope served by resistor-diode combinations for partials of corresponding frequency.

4,290,335
HIGH FREQUENCY ROLL-OFF CIRCUIT
Jack C. Sondermeyer, P.O. Box 2898, Meridian, Miss.
Filed Feb. 25, 1980, Ser. No. 124,470
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.27 **5 Claims**



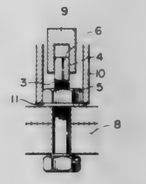
1. A high frequency roll-off circuit for a gain stage in an amplifier system, comprising, in combination, an amplifier having a feedback port, an input port and an output port, means for feeding an input signal to said input port, a feedback network connected between said output port and said feedback port, volume control means having two terminals, one of said terminals being connected to said feedback port, high frequency roll-off control means having two terminals, one of which is connected through a capacitor to said output port, the other terminals of said high frequency roll-off control means and said volume control means being connected to ground, said volume control means and said high frequency roll-off means being mechanically ganged for mutual adjustment to reduce the high frequency boost at the maximum setting of said volume control means.

4,290,336
MOLDED GUITAR STRUCTURE AND METHOD OF MAKING SAME
Hartley D. Peavey, Peavey Electronics Corp., P.O. Box 2898, Meridian, Miss. 39301
Filed Mar. 28, 1979, Ser. No. 24,529
Int. Cl.[3] G10D *1/08, 3/00*
U.S. Cl. 84—291 **13 Claims**



1. A guitar provided with a body, a neck connected to said body, and a fingerboard disposed upon said neck, means for fastening said neck to said body, said guitar body being formed partially solid from moldable material, in which said guitar body includes a plurality of hollow areas separated by upstanding ribs, and wherein said guitar body is formed from a top and bottom section defining a clam shell type of structure, guide means are provided between said top and bottom sections to facilitate alignment of the respective portions and at least some of said hollow areas contain foam of selected densities to control the resonance of the guitar body.

4,290,337
FASTENER SET
Takeo Kuwata, Fukumachi; Shoji Shimada, Kitakyushu, and Mikio Usa, Nakama, all of Japan, assignors to Nittetsu Bolten Kabushiki Kaisha, Yukuashi, Japan
Continuation of Ser. No. 756,344, Jan. 3, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,601
Int. Cl.[3] F16B *31/02*
U.S. Cl. 411—2 **4 Claims**



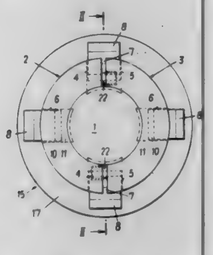
1. A fastener set comprising a bolt body having a thread and a nut threadably mounted on the bolt body, said bolt body having between the thread and adjacent end a notched portion which can be broken by a predetermined torsional force, and said nut, including its screw surfaces, being coated by a solid composition containing a partial ester obtained by only partial esterification of a polyol having not more than twelve carbon atoms and a fatty acid, wherein the reaction force resulting from a fastening torque applied to the nut which is fitted onto the threaded portion of the bolt body is transmitted to the bolt body so as to break off from the bolt body a surplus portion extending above the notched portion, so that a desired fastening axial force can be obtained by fitting the nut onto the threaded portion of the bolt body with a low rotating torque while keeping the torque coefficient at a constant.

4,290,338

STRADDLE CARTRIDGE FOR A STRADDLE CARTRIDGE ANCHOR

Rudolf Gruber, Grossdombra, Austria, assignor to GD-Anker Gebirgs-Dubel-Anker GmbH & Co. KG, Millstatt am See, Austria

Filed Jul. 17, 1979, Ser. No. 58,274
Claims priority, application Austria, Jul. 7, 1978, 4948/78
Int. Cl.³ F16B *13/10*
U.S. Cl. 411—21 **5 Claims**



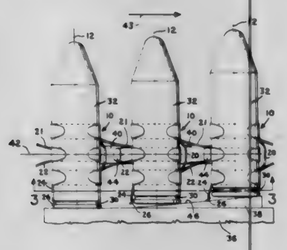
1. A rock bolt expansion anchor for anchoring a tapered head of a rock bolt in a bore, said anchor comprising a generally cylindrical expandable cartridge adapted to fit into said bore and formed with an internal taper complementary to that of said head whereby said cartridge is spread outwardly against the wall of said bore by a force applied to said bolt, and a plurality of straddle members mounted on said cartridge, each of said straddle members comprising a row of outwardly projecting fingers unitarily connected together, said straddle members being of a material having a greater flexibility than that of said cartridge.

4,290,339

CAM ACTUATED AMMUNITION PRESTRIPPING MECHANISM

Fred J. Skahill, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 30, 1979, Ser. No. 62,085
Int. Cl.³ F41D *10/06*
U.S. Cl. 89—33 CA **3 Claims**



1. Apparatus for prestripping rounds of ammunition from an ammunition belt comprising a plurality of cooperating links used in conjunction with a gas operated automatic weapon, wherein energy created by the expanding gases is used to cause an operating group to recoil from the battery position, during which recoil stroke the automatic feed mechanism of the weapon advances the ammunition belt to place the next round in position for displacement into the firing chamber by the operating group and the operating group compresses a drive spring, which expands during the counter recoil stroke and moves said operating group forward to engage the base of said round to remove the round from said link and into the firing chamber, and wherein each of said links includes a detent means for engaging an annular channel in said round for positioning and retaining said round, comprising:

advancing means driven by the operation of said automatic weapon for advancing said ammunition belt along a transverse axis, and

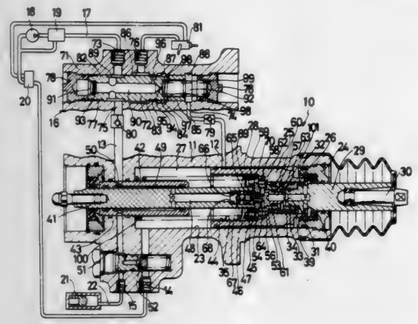
cam means disposed on said weapon, said cam means having a fixed surface extending in the direction of said transverse axis and positioned such as to directly contact the base of said round and cause partial displacement of said round longitudinally within said links sufficient only to disengage said detent means from said channel during said recoil stroke, so that during the counter recoil stroke the operating group engages the base of said round and removes the round from said link and into said chamber.

4,290,340

HYDRAULIC BOOSTER

Yoshiharu Adachi, Gamagohri, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 6, 1979, Ser. No. 91,799
Claims priority, application Japan, Nov. 10, 1978, 54-139159; Nov. 10, 1978, 54-139160
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—31 **6 Claims**



1. A hydraulic booster comprising:

a housing provided with a cylindrical bore and an inlet hydraulically connected to a pump, a drain port hydraulically connected to a reservoir and said cylindrical bore;

a power piston being sealingly and slidably disposed within said bore and dividing said cylindrical bore into a working chamber to which fluid is normally supplied and a drain chamber which is in normal communication with said drain port;

an input member sealing and slidably passed through a first end wall of said bore, said input member having an inner end sealingly and slidably interposed within said power piston and a valve seat formed on the inner end face thereof, said input member being provided with a passage communicating with said working chamber and said valve seat;

an output member sealingly and slidably passed through a second end wall of said bore and connected to said power piston at an inner end portion thereof, said output member being provided therein with a passage communicating with said inlet;

a poppet valve member spaced from said input member sealing slidably disposed within said power piston and cooperable with said valve seat for controlling hydraulic communication between said working chamber and said drain chamber, said poppet valve member being provided with a passage there through and an axial projection on a back face portion thereof, said passage in said poppet valve normally being in hydraulic communication with said working chamber via said passage in said input member, each of said passages being in substantial alignment with one another wherein said poppet valve member has a diameter approximately equal to that of said valve seat; and

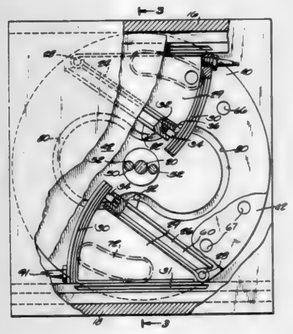
a check valve provided within said power piston for controlling hydraulic communication between said passages in said output member and said poppet valve member and opened by said axial projection of said poppet valve member when said poppet valve is slid by said input member due to engagement thereof with said valve seat upon advancement of said input member.

4,290,341

ROTARY ENGINE

Karl J. Scheibengraber, 6025 W. Spencer Pl., Milwaukee, Wis. 53218

Filed Jul. 2, 1979, Ser. No. 53,873
Int. Cl.³ F01C *9/00*
U.S. Cl. 91—339 **5 Claims**



1. An engine or pump having a frame to support a piston, output shaft, and intake and exhaust manifolds, an output shaft supported for rotation in said frame, a piston plate hingedly connected to said frame for swinging movement during the piston strokes, a working chamber associated with said piston plate, said working chamber comprising an arcuate wall having a radius concentric with the arc of movement of said piston plate, opposed parallel discs connected to said output shaft and located adjacent opposite edges of said piston plate and in planes at right angles with the pivotal axis of said piston, drive means on said piston cooperating with means on said discs to cause movement of said discs and said output shaft in response to movement of said piston plate, intake and exhaust manifolds, and ports in said discs which register with said manifolds during the intake and exhaust strokes to effect intake and discharge of working fluid.

4,290,342

HYDRAULIC BOOSTER VALVE

Larry E. Isakson, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 14, 1979, Ser. No. 103,700
Int. Cl.³ F15B *13/10*
U.S. Cl. 91—391 R **6 Claims**

1. A hydraulic booster which comprises:

a housing having an inlet and an outlet;

a hub piston reciprocable in a hub bore in the housing and having a hub piston passage which communicates with the inlet and outlet;

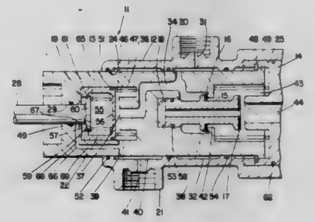
a booster piston reciprocable in a booster bore in the housing and having a booster piston chamber which is between the hub piston and the booster piston and has

a booster piston chamber outlet;

a control valve element coacting between the hub piston and the booster piston and having (i) an inlet valve to open and close an inlet between the hub piston passage and the booster piston chamber and (ii) an outlet valve to open and close the booster piston chamber outlet;

a gain valve piston reciprocable within the hub piston, the gain valve piston being located to restrict a gap in the hub piston passage to the outlet, there being a gain valve chamber in the gain valve piston and an opening in the gain valve chamber;

a push rod having one end slidably passing through a push rod opening in the hub piston and into the gain valve chamber through the opening therein;



a poppet valve disposed in the gain valve chamber on said end of the push rod to open and close the opening in the gain valve chamber;

means to bias the poppet valve in closed relation with the opening in the gain valve chamber; and

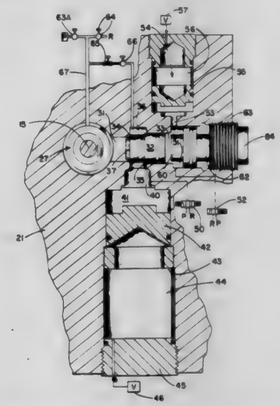
a bypass chamber in the hub piston communicating with the opening in the gain valve chamber and the hub piston passage between the outlet of the housing and the gap in the hub piston passage.

4,290,343

HIGH VOLUME POPPET VALVE WITH ORIFICE OPENING SPEED CONTROL

Martin M. Gram, Minneapolis, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Oct. 30, 1978, Ser. No. 955,964
Int. Cl.³ F15B *13/042*; F16K *31/122*
U.S. Cl. 91—461 **8 Claims**



1. In combination with a first source of fluid under pressure and a hydraulic motor, the improvement comprising a control valve having a valve body having an inlet port coupled to the first source of fluid under pressure and an outlet port coupled to the hydraulic motor, a bore in said valve body, a poppet valve member mounted in said bore, means forming a valve seat surrounding said bore, said poppet valve member having a first portion engaging said seat to seal off flow from said inlet

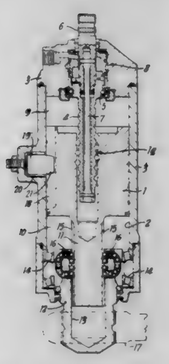
port to said outlet port when the poppet valve member is in a closed position, and said poppet valve member having a second portion of minimal cross sectional area open to the inlet port when the poppet valve is in closed position, means forming a control chamber on an opposite end of said poppet valve member from said valve seat, an accumulator providing a second fluid pressure separate from said first source of fluid under pressure to said control chamber to hold said poppet valve member against said seat, valve means having a valve opening operable to release the fluid pressure in said control chamber to permit said poppet valve member to move away from the seat, pressure at the inlet port thereafter acting to move the poppet valve member away from said seat across substantially the entire cross sectional area of the poppet valve member, said poppet valve member being moved to an open position to permit said inlet port to communicate with the outlet port across said valve seat, means other than the valve means to release forming an orifice substantially larger than the opening of the valve means to release leading from the control chamber to said accumulator to control the flow of fluid from said control chamber, and to regulate the speed of the poppet valve member as it is opened after it has moved away from said seat.

4,290,344

GEAR ASSEMBLY

Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Mar. 1, 1979, Ser. No. 16,425
Int. Cl.³ F15B *11/08*; B62D *1/20*; F01B *3/00*
U.S. Cl. 91—467 **17 Claims**



1. A gear assembly comprising

a displaceable member which is movable along a longitudinally extending axis relative to a housing and is restrained from axial rotation relative to the housing, said displaceable member being coupled to the housing by a first coupling means to impart controlled axial rotation of the displaceable member relative to the housing,

an axially rotatable input part which is secured against axial displacement relative to the housing and is coupled to said displaceable member so that rotation of the input part effects axial displacement of the displaceable member,

a take-off part, laterally spaced and in side-by-side relationship with respect to the input part, the take-off part having an output part capable of controlled axial rotation relative to the housing,

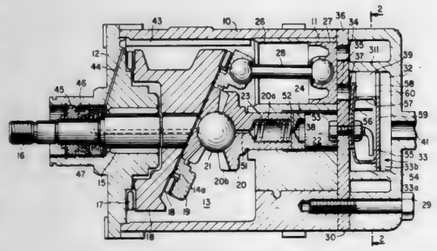
said displaceable member being coupled to the take-off part by a second coupling means, said second coupling means being adapted to cause axial rotation of the take-off part in response to controlled axial rotation of the displaceable member.

4,290,345

REFRIGERANT COMPRESSORS

Masaharu Hiraga, and Seishi Kimura, both of Isesaki, Japan, assignors to Sankyo Electric Company Limited, Isesaki, Japan

Filed Mar. 14, 1979, Ser. No. 20,436
Claims priority, application Japan, Mar. 17, 1978, 53-29873; Mar. 17, 1978, 53-29874
Int. Cl.³ F01B *31/00*; F04B *1/18, 39/04*
U.S. Cl. 92—79 **10 Claims**



1. In a refrigerant compressor unit comprising a compressor housing, a cylinder block mounted therein and having a plurality of cylinders, a plurality of piston means respectively slidably received within said plurality of cylinders, means for driving said piston means within said cylinders to compress refrigerant gas therein, said compressor housing having a first chamber adjacent said cylinder block for containing said driving means, a cylinder head having a suction chamber and a discharge chamber which operatively communicate with said cylinders, and a gas passageway communicating between said first chamber and said suction chamber to return blow-by gas in said first chamber to said suction chamber, the improvement which comprises: partitioning means for separating said discharge chamber of said cylinder head into first, second and third chamber portions, said first chamber portion communicating with said cylinders, said second chamber portion communicating with an outlet port to be connected to an external gas-circulating system and communicating with said first portion through a first opening formed in said partitioning means therebetween, means disposed to cover said first opening of said partitioning means for separating oil from the compressed gas flowing therethrough, said third chamber portion having a second upper opening in said partitioning means and disposed below said oil separating means to cover said second opening therewith for directly receiving and accumulating oil separated by said oil separating means, and an oil passageway communicating between said third chamber portion and said first chamber for returning the separated oil to said first chamber.

4,290,346

INTRAVENOUS PUMP CHAMBER

Albert F. Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 30, 1979, Ser. No. 34,826
Int. Cl.³ F01B *19/00*; F04B *43/00*; A61M *5/00*
U.S. Cl. 92—90 **14 Claims**

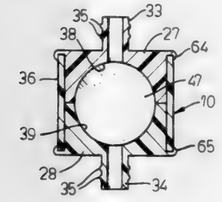
1. An intravenous pump chamber for an intravenous pump of the peristaltic type having three contact members with outer contact members programmed to constitute valve members and the central member a pumping member comprising:

a pump chamber defined by a rigid housing member presenting a central cavity portion;

tubular portions extending from said pump chamber in a fluid communication with said cavity;

a length of intravenous tubing secured to each tubular portion, said tubing presenting a contact surface and being capable of total collapse by one of said two outer contact members;

a diaphragm member positioned over said cavity and contacting said pump chamber adjacent said cavity portion; and



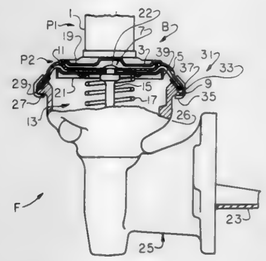
combined mechanical and sealing means operatively associated with said diaphragm member and said housing to retain said diaphragm in a taut manner over said cavity portion, said mechanical means providing an initial and subsequent stretching of said diaphragm member independently of said sealing means.

4,290,347

CRASHWORTHY FUEL PUMP

Walter E. Basch, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,268
Int. Cl.³ F01B *19/02*; F04B *43/14*
U.S. Cl. 92—102 **5 Claims**



1. A crashworthy fuel pump for use in an automotive fuel system comprising:

a body having a first portion in which is formed a fuel intake cavity and a fuel discharge cavity and a second portion in which is formed a fuel pumping chamber, one end of each cavity being in fluid communication with the pumping chamber and the second portion of the body having an open end around the periphery of which is formed a lip;

a flexible diaphragm closing the pumping chamber, the diaphragm being insertable into the open end of the second portion of the body and the lip being bendable over the outer margin of the diaphragm to clamp the diaphragm within the body;

means for flexing the diaphragm to pump fuel into and out of the pumping chamber through the respective intake and discharge cavities;

a housing in which the flexing means is housed, the housing having one end formed for abutment with the open end portion of the body; and

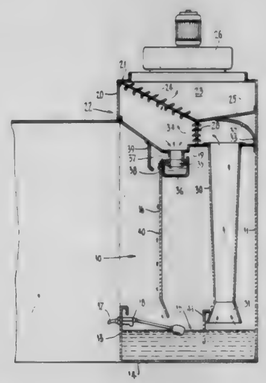
means for clamping the body and the housing together to form a unified assembly, the clamping means comprising a ring fitted around the body and the housing to join the two together, the clamping means being sufficiently strong to hold the assembly together when the assembly is subjected to normal forces, but the clamping means breaking apart when the assembly is subjected to abnormal forces such as occur during a crash whereby the housing and the body can move apart from each other, the movement apart helping maintain the leak integrity of the diaphragm and the body, the clamping ring having at least one point of structural weakness, thus for the ring to break when subjected to abnormal forces.

4,290,348

SPRAY BOOTH

Gordon L. Morgan, and John C. Wood, both of 17 Park Rd., Cheltenham, Victoria, Australia (3192)

Filed Mar. 28, 1979, Ser. No. 24,717
Claims priority, application Australia, Mar. 29, 1978, PD3794
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—115 SB **10 Claims**



1. A water spray booth, comprising

(a) housing means including

(1) front, rear, side, top and bottom walls defining a chamber; and

(2) a generally horizontal intermediate plate (**19**) extending in spaced relation between said top and bottom walls for dividing said chamber into upper (**22**) and lower portions;

(3) said front wall containing an inlet opening communicating with said chamber lower portion, said top wall containing an outlet opening communicating with said chamber upper portion;

(b) water reservoir means arranged in the bottom of said chamber lower portion;

(c) means (**17, 18**) for supplying water to, and for maintaining water at a given level within, said water reservoir means;

(d) at least one vertical duct (**30**) arranged adjacent said rear wall for conveying water from said reservoir means to said chamber upper portion via a first opening contained in said intermediate plate, the lower portion of said duct terminating at its lower extremity adjacent said given water level, said duct having a circular transverse section, the diameter of the upper portion of said duct progressively increasing in the upward direction;

(e) a unitary deflector plate (**32**) arranged in said chamber upper portion adjacent said intermediate plate first opening, said deflector plate extending continuously transversely between said side walls and including a rear edge adjacent the junction between said intermediate plate and said rear wall, said deflector plate extending forwardly in spaced relation above said first opening:

(f) said intermediate plate containing at least one second opening (**35**) forwardly of said first opening;

(g) a horizontal water trough (**36**) arranged in said lower chamber below and in communication with said second

opening, said water trough extending transversely between said side walls;

(h) a generally vertical water wall (16) connected at its upper end with said water trough, said water wall extending downwardly and terminating adjacent said reservoir means for delivering a wall of water from said water trough to said reservoir means; and

(i) means (26) applying suction to said housing outlet opening to cause water to be drawn from said reservoir means to said water trough upwardly via said vertical duct and said first opening, forwardly via said deflector plate and chamber upper portion, and downwardly via said second intermediate plate opening, whereby excess water supplied to the trough is returned to the reservoir via said vertical wall.

4,290,349

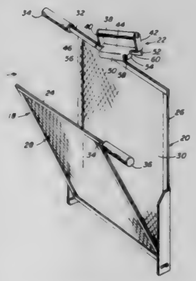
TOASTER ACCESSORY

Castenzio Fiorenza, 430 Main St., Yarmouth Port, Mass. 02675

Filed Apr. 7, 1980, Ser. No. 138,172

Int. Cl.³ A47J *37/08*

U.S. Cl. 99—388 **8 Claims**



1. An accessory for toasting sandwiches and the like in a toaster, comprising

(a) first and second panels of generally rectangular outline and each of a generally stiff foraminous construction,

(b) yieldable and extensible hinge means connecting said panels at their lower edges to permit said panels to open and close with respect to one another and hold a sandwich or the like there-between within a range of different thicknesses,

(c) latching means movably mounted to one of said panels at the upper edge thereof and formed with a plurality of spaced locking portions adapted to lockably engage the other of said panels at selectively different positions corresponding to the thickness of the sandwich in said holder,

(d) said hinge means including a member mounted to each side of one of said panels and having a portion thereof extending perpendicularly from the plane of said one panel, each of said members being formed with a slot extending perpendicularly to the plane of said one panel, the slot in one member being in opposing registration with the slot in the other member, a pivot pin mounted to each lower corner of the other of said panels and extending from opposite sides thereof and into said slots and spring means connected between said one panel and said pins and urging said panels together.

4,290,350

MACHINES FOR PITTING AND STUFFING OLIVES

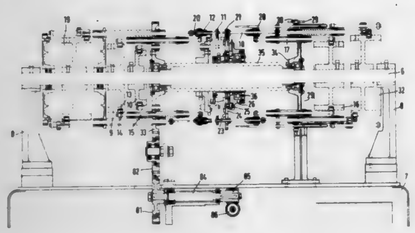
Clemente del ser Gonzalez, Talleres, 36, Villaverde Alto, Madrid 21, Spain

Filed Dec. 28, 1979, Ser. No. 108,218

Claims priority, application Spain, Nov. 8, 1978, 474.942

Int. Cl.³ A23N *4/08*

U.S. Cl. 99—494 **9 Claims**



1. An improved machine for pitting and stuffing olives comprising a fixed shaft, a drum rotatably mounted on said fixed shaft, a feed hopper for olives, means for transporting the olives from said feed hopper into tangential engagement with said drum, cam means secured to said shaft, means in operative connection with said cam means for gripping the olives on the drum, for cutting the olives, and for pitting the cut olives as said drum completes one revolution on said shaft, wherein the improvement comprises that said means for cutting the olives comprises a member for receiving the portion of the olive removed in the cutting operation, means for supplying a paste, such as an anchovy paste, into a pitted olive and for cooperation with said member receiving the cut portion of the olive for replacing the cut portion in the olive after stuffing the olive with the paste, said means for supplying paste comprises a support disc positioned on said fixed shaft adjacent the plane of movement of the olives around said drum, a cover coaxial with said support disc and joined thereto, a plate cam coaxial with and connected to said cover, a plurality of radially extending strips radially slidably supported on said plate cam, a nozzle secured to the radially outer end of each said strip so that each said nozzle can be moved radially between a first position position and a second position relative to the olives held on said drum as said plate cam rotates about said fixed shaft, means for containing a supply of the paste for stuffing the olives, transfer means for receiving the paste from said supply means and for supplying the paste into said nozzles whereby in the first position said nozzles receive pits displaced from the olives and in the second position supply the paste into the pitted olives.

4,290,351

METHOD AND APPARATUS FOR RAPIDLY SEPARATING THE ROLLS OF A CALENDER

Josef Pav, Krefeld; Franz Kayser, Geldern, and Axel Kemna, Kempen, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,632

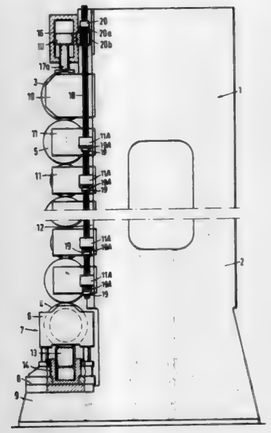
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2845055

Int. Cl.³ B30B *3/04, 15/16*

U.S. Cl. 100—47 **45 Claims**

1. A method of rapidly separating the rolls of a calender wherein a row of normally closely adjacent superimposed rolls includes upper and lower outermost rolls and one of the outermost rolls is movable sideways toward and away from the other rolls to respectively reduce and increase the width of clearances between neighboring rolls and wherein the one outermost roll must move through a predetermined distance in order to allow for adequate separation of all rolls which form the row, comprising the steps of (a) moving the one outermost roll through said predetermined distance and in a direction away from the other rolls at a series of first speeds which series includes a succession of progressively higher speeds so that the one outermost roll is accelerated during at least a portion of its movement through said predetermined distance; and (b) continuing the movement of the one outermost roll in said direction at a series of gradually decreasing second speeds and through a second distance which is at least 50 percent of said predetermined distance.

45. In a calender, the combination of a row of superimposed rolls including an upper and a lower outermost roll, one of said outermost rolls being movable toward and away from the other rolls and said rolls being adequately separable from each



other upon movement of said one outermost roll through a predetermined distance in a direction away from the other rolls; displacing means actuatable to effect the movement of said one outermost roll away from the other rolls; and control means operative to actuate said displacing means so as to effect the movement of said one outermost roll in said direction, through said predetermined distance and at a series of first speeds which series includes a succession of progressively higher speeds so that said one outermost roll is accelerated at least during a portion of its movement through said predetermined distance, and immediately thereafter through a second distance which is at least 50 percent of said predetermined distance and at a series of gradually decreasing second speeds.

4,290,352

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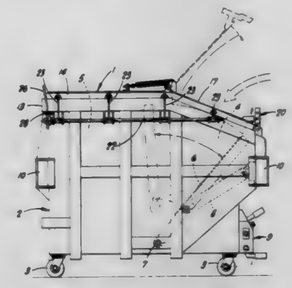
Lewis W. Schmidt, Rio Vista; Darryl G. Bettencourt, Lodi; Charles F. Dietz, Rio Vista, and George E. Marshall, Jr., Elk Grove, all of Calif., assignors to Blackwelders, Rio Vista, Calif.

Filed May 12, 1980, Ser. No. 149,032

Int. Cl.³ B30B *1/32, 15/04*

U.S. Cl. 100—100 **2 Claims**

1. A lid unit, for a portable, invert-to-dump refuse bin, having a front, rear, and sides and defining therein a refuse-packing chamber in the rear portion and a refuse-receiving chamber in the front portion, and power means in the bin operative to thrust refuse from the receiving chamber into the packing chamber; the lid unit comprising a swing frame normally resting in substantially mating relation in closed position on the bin, a rear lid section on the swing frame overlying the refuse packing chamber, a front lid section on the swing frame overlying the refuse-receiving chamber, said lid sections normally enclosing the bin, the rear lid section being fixed on the swing frame, means transversely hinging the front lid section at the rear for swinging from a closed to an open position, means between the swing frame and the front lid section releasably latching the latter in closed position, means longitudinally hinging the swing frame at one side to the bin for swinging of



the entire lid unit from a closed position to an open position, and means between the swing frame at the other side and the bin releasably latching the entire lid unit in said closed position.

4,290,353

ROLL FOR CALENDERS OR THE LIKE

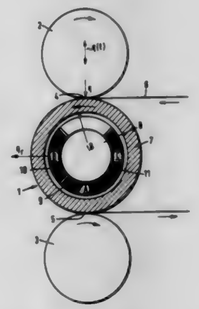
Josef Pav, Krefeld, and Josef Pav, Munich, both of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 97,961

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851747

Int. Cl.³ B30B *3/04*

U.S. Cl. 100—162 B **35 Claims**



1. In a calendar or the like, a roll comprising a non-rotatable elongated carrier; a rotary cylindrical shell spacedly surrounding said carrier and consisting at least in part of magnetizable material; and means for causing said shell to float about said carrier, including at least three groups of electromagnet means mounted on said carrier within the confines of said shell and having pole faces extending along an arc of at least 200 degrees, as considered in the circumferential direction of said carrier, and means for regulating the extent of energization of each of said electromagnet means independently of other electromagnet means.

4,290,354

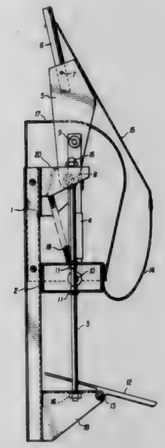
BEVERAGE CAN CRUSHER

Benjamin A. Stevens, 141 Apple Dr., Greencastle, Pa. 17225

Filed Apr. 18, 1980, Ser. No. 141,621

Int. Cl.³ B30B *15/32*

U.S. Cl. 100—218 **9 Claims**



1. A can crusher assembly comprising:

a base including a first and second shelf portion extending from said base;

at least one guide rod interconnecting said upper and lower shelf portions;

a presser member slidably mounted on said at least one guide rod for movement between a first open position for receiving an object to be crushed and a second compression position;

a pin member connected to said presser member;

a handle member;

a pivot member pivotably connecting said handle member to said first shelf portion; and

a link member pivotably interconnecting said handle member and said pin member, said link member being interconnected to said handle member in said open position above said pivot member wherein said pivot member, said at least one guide rod, said handle member and said pin member are disposed in substantially the same plane in said open position for maximizing the crushing force applied to said object to be crushed positioned between said presser member and said at least one of said first and second shelf portions.

4,290,355

TICKET PRINTING AND ADVANCING DEVICE

Henry Gross, and Samuel Gross, both of "Braewood", 45 Winnington Rd., London, England

Filed May 10, 1979, Ser. No. 37,808

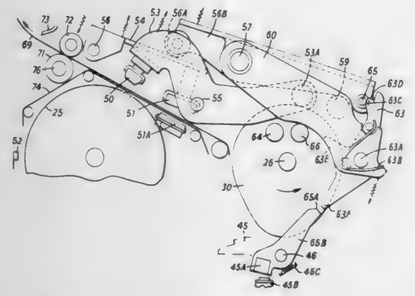
Claims priority, application United Kingdom, May 18, 1978, 20491/78

Int. Cl.³ B41J *19/76*

U.S. Cl. 101—69 **5 Claims**

1. A ticket printing and advancing device having ticket drive means, a cam, means whereby the cam can be driven through single revolutions and when required through at least three revolutions continuously, a cam follower means actuated by said cam for driving said ticket drive means, characterized by an electronically controlled stop for limiting the movement of the follower, so that the follower advances the tickets through a minor distance, stop retracting means for retracting said stop and stop restoring means to restore the stop to its follower limiting positions, said cam having a first part which includes a follower retraction part and a follower drive part means for driving the tickets through a major distance followed by a second part which includes a further follower retraction part and a further follower drive part means for driving the tickets through an intermediate distance;

said stop retracting means retracting the stop in the first of said revolutions while the cam drives the tickets through the major distance in two stages corresponding to said first and second parts of the cam;



said stop restoring means restoring the stop in the next of said revolutions, so that the tickets are driven through the minor distance;

said stop retracting means retracting the stop in the third of said revolutions between the operation of the first and second parts of the cam so that the cam drives the tickets through said intermediate distance.

4,290,356

ACTUATOR MECHANISM FOR A PRINT HAMMER OR THE LIKE

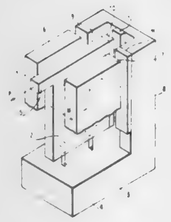
Walter H. Hehl, Steinenbronn, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,156

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1978, 2837550

Int. Cl.³ B41J *9/30*

U.S. Cl. 101—93.34 **6 Claims**



1. An actuator mechanism comprising

a movable actuator element,

an actuator magnet carried by said actuator element,

said actuator magnet comprising a permanent magnet having a magnetization vector perpendicular to the direction of motion of said actuator element, and a magnet system interactive with said actuator magnet for providing a contactless magnetic holding and accelerating force for said actuator element,

said magnet system comprising

field magnet means forming an interactive field with said actuator magnet having a first magnetic field region having an unstable high potential position for producing a magnetic accelerating force on said actuator magnet and a second magnetic field region adjacent said first magnetic field region for producing a stable magnetic field holding position of relatively high potential in the vicinity of said first field region,

said field magnet means forming said first magnetic field region comprising first stationary permanent field magnets having magnetization vectors perpendicular with said direction of motion and antiparallel with said magnetization vector of said actuator magnet, and

said field magnet means forming said second magnetic field region comprising a second stationary permanent field magnet having a magnetization vector parallel with said magnetization vector of said actuator magnet,

and operating means associated with said actuator element for application of a release force capable of displacing said actuator element from said stable magnetic field holding position to said unstable accelerating force position of said first magnetic field region.

4,290,357

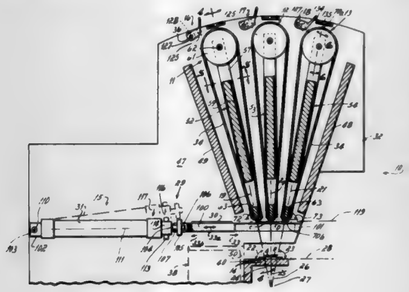
INDEPENDENTLY OPERABLE MULTIHEAD ENDLESS BAND PRINTER

Bobby J. Clay, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio

Filed Oct. 9, 1979, Ser. No. 82,981

Int. Cl.³ B41J *1/20*

U.S. Cl. 101—111 **15 Claims**



1. A marking machine comprising

a platen defining an imprint plane,

an inking pad defining a re-inking plane, said imprint plane and said re-inking plane being spaced one from the other,

at least two marking heads, each of said marking heads comprising a series of print bands adjustable to establish a desired line of information comprised of plural letters and/or numbers,

a motor for reciprocating each of said heads relative to said platen and said inking pad between a marking position, a re-inking position, and a storage position, one of said marking heads being movable in a reciprocation plane that defines a first angle relative to said imprint plane, and another of said marking heads being movable in a reciprocation plane that defines a second angle relative to said imprint plane, said first and second angles being different one from the other,

a guide for directing each of said marking heads in its reciprocation path, said guides being structured to prevent all of said marking heads' print bands from all simultaneously contacting said platen, but said guides also being structured to permit all of said marking heads' print bands to all simultaneously contact said inking pad, and

a control system connected with said motor, said control system being structured to cause one of said marking heads to move separately and independently relative to another of said heads as said heads are extended toward and retracted from said marking position, said guides and said control system cooperating to allow said marking heads to mark said information lines on a substrate positioned on said platen so that said information lines are closer together than would be possible if said marking heads were reciprocated in parallel paths.

4,290,358

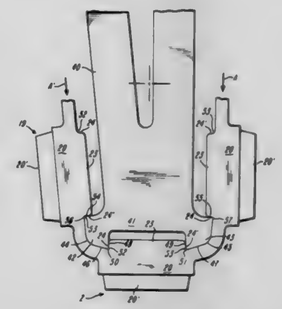
PRINT HEAD

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 11, 1980, Ser. No. 111,442

Int. Cl.³ B41J *1/20;* **B41K** *1/10*

U.S. Cl. 101—111 **5 Claims**



1. In a print head comprising a stationary support, the support including a pair of spaced support members having respective lands and tapered entries joined to the lands, the support members having abutment shoulders joining the lands and defining a pocket for receiving a lug, a series of rotatably mounted wheels, a series of printing bands trained about the wheels and the support, means selectively engageable with any printing band for advancing the respective printing band in either direction, each printing band having a plurality of printing blocks, the printing blocks of each band having a plurality of different printing elements, hinges joining the printing blocks, a lug at the underside of each printing block, each lug having a pair of spaced end faces, the end faces being joined at their roots to the undersides of the respective printing blocks, and each lug being selectably received and detented in the pocket with its respective end faces in abutment with the abutment shoulders, the improvement in the detenting comprising that the abutment shoulders join the lands at a pair of abrupt edges, the support having an additional pair of abutment shoulders terminating at an additional pair of abrupt edges so that advance of the printing band in one direction is stopped by one abutment shoulder and one additional abutment shoulder contacting the roots of end faces of adjacent lugs or advance of the printing band in the opposite direction is stopped by the other abutment shoulder and the other additional abutment shoulder contacting the roots of end faces of adjacent lugs.

4,290,359

DAMPENING ASSEMBLY

Vinod Kapoor, Bayside, N.Y., assignor to Butler Greenwich Inc., Greenwich, Conn.

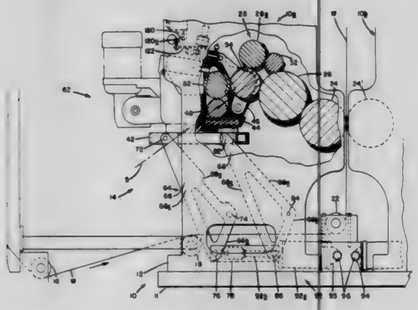
Filed Jan. 22, 1979, Ser. No. 5,218

Int. Cl.³ B41F *7/40;* **B41L** *25/16*

U.S. Cl. 101—148 **5 Claims**

1. A dampening assembly for a printing press of the type including a supporting machine frame, a plate cylinder rotatively mounted at an elevated location on the machine frame and a set of inking rollers for applying ink to the plate cylinder, said assembly comprising

(A) an assembly frame,
(B) a water tray supported horizontally on the assembly frame,
(C) a water fountain roller rotatively supported on the assembly frame so that a surface portion of said roller extends into the tray,
(D) at least one additional roller rotatively mounted to the assembly frame for conducting water from the fountain roller to the plate cylinder,
(E) motive means for rotating the rollers, and
(F) means for swingably supporting the assembly frame from the machine frame so that the assembly frame and the parts supported thereby can be swung between an elevated position wherein said at least one additional roller supported on the assembly frame contacts the plate cylinder to a lower position adjacent the floor wherein the assembly frame and the parts supported thereby are dis-



placed laterally relative to the plate cylinder so as to provide a clear access path to the plate cylinder in order to change plates quickly during a printing run, said supporting means maintaining said assembly frame and the tray supported thereby in a horizontal position as the assembly is moved between its said two positions, said supporting means including
(1) a plurality of similar generally triangular frame members, each member having
(i) a long leg pivotally connected at its opposite ends to the assembly frame and the machine frame respectively, the long legs of all of said frame members being parallel to one another, all of said members having the same distance between their said pivotal connections, and
(ii) a relatively short leg, and
(2) means for applying a force to each short frame member leg so as to cause said frame members to pivot about their pivotal connections to said machine frame.

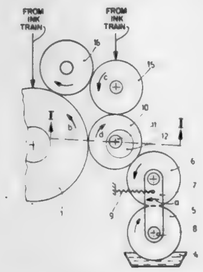
4,290,360

SELECTIVE INK AND WETTING LIQUID, OR WETTING LIQUID ONLY, APPLICATION SYSTEM FOR OFFSET PRINTING PRESSES

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft Offenbach, Augsburg, Fed. Rep. of Germany

Filed Feb. 6, 1980, Ser. No. 119,149
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902228
Int. Cl.³ B41F *7/26, 7/36, 7/40*
U.S. Cl. 101—148 **11 Claims**

1. In a rotary offset printing machine, apparatus to selectively in operation apply, together concurrently, or separately, printing ink and offset wetting liquid to the plate cylinder (1) thereof having
an ink train including an ink distribution roller (15, 27) having ink supplied thereto;
an ink application roller (16, 26) in ink transmitting contact with the ink distribution roller (15, 27) and the plate cylinder (1);
and an offset wetting liquid fountain system (4, 5, 6; 29, 30, 31) including a wetting liquid transfer roller (6, 31);
comprising a further application roller (10, 32) in continuous engagement with the plate cylinder which, selectively, can apply to the plate cylinder ink and wetting liquid combined, or only offset wetting liquid,
and means (12, 28) movably positioning the further application roller (10, 32), selectively, between a first operating positioning in which the further application roller is in engagement with the wetting liquid transfer roller (6, 31)



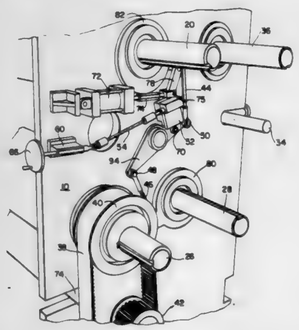
and additionally in engagement with the ink distribution roller (15, 27) and a second operating position, in which the further application roller (10, 32) is in engagement with the wetting transfer roller and out of engagement with the ink distribution roller, the further application roller (10, 32) maintaining continuous contact, in either position, with the plate cylinder (1, 25) and with the offset wetting liquid transfer roller (6, 31) and the ink application roller maintaining continuous ink transmitting contact with the ink distribution roller (15, 27) and the plate cylinder (1).

4,290,361

ON THE FLY ADJUSTING MECHANISM FOR ROTARY PRINTING PRESSES

William H. Fowler, Allentown, and Frederick L. Warner, Easton, both of Pa., assignors to American Newspaper Publishers Association, Easton, Pa.

Filed Jan. 11, 1980, Ser. No. 111,410
Int. Cl.³ B41F *5/06, 5/12*
U.S. Cl. 101—182 **3 Claims**



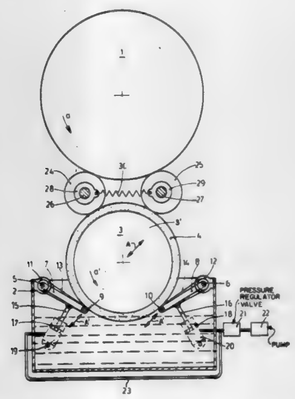
1. In a rotary printing press system of the type embodying a press frame supporting a first series and a second series of inking cylinder, plate cylinder and impression cylinder components, respectively mounted upon parallel shafts, on the fly adjusting mechanism interposed between the frame and the impression cylinder shafts and comprising:
A. A plurality of eccentric bushing plates supported in the press frame so as to engage and support the ends of the impression cylinder shafts, said eccentric bushing plates enclosing corresponding eccentric seats for each of said shafts;
B. A bell crank pivotally supported upon the frame at each end of said shafts and including a first follower strut extending from one end of said bell crank to one of said impression cylinder eccentric plates and a second follower strut extending from the other end of said bell crank to the other eccentric plate, such that pivoting of said bell crank offsets said impression cylinder shafts in said first series and said second series;
C. An articulated link pivoted in said frame at one end and engaging said bell crank at its other end, said articulated link further including:
(i) a longitudinal adjustment mechanism in the form of a threaded shaft engaged by a worm drive gear mechanism, so as to vary the length of a portion of said link and thereby vary the degree of pivoting of said bell crank and said bell crank; and
D. A rotatable extension rod supported upon said frame, said rod including a clevis assembly operatively extending to said worm gear mechanism in said adjustable link such that rotations of said rod drives said worm to vary the length of said threaded shaft;
E. Piston actuating means mounted upon the press frame and engaging another portion of said articulated link, so as to pivot said bell crank, together with said eccentric bushing plates, thereby offsetting said impression cylinder shafts with respect to the respective plate cylinders.

4,290,362

INKING SYSTEM FOR A PRINTING MACHINE, PARTICULARLY OF THE OFFSET OR GRAVURE TYPE

Ingo Köbler, Gessertshausen; Hans Mamberer, Königsbrunn, and Helge Zwosta, Augsburg, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,358
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856088
Int. Cl.³ B41F *31/06, 31/26;* **B41L** *27/08*
U.S. Cl. 101—350 **14 Claims**



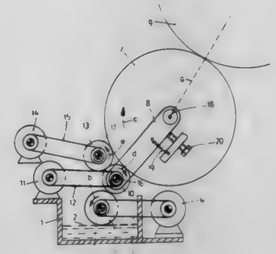
1. Inking system for a printing machine having an ink trough (2, 31, 43, 58);
an ink pick-up roller (3, 32, 44, 59) positioned above the ink trough and dipping into ink within the ink trough;
and a stripping means (9, 10, 36, 37, 52, 53, 63, 64) stripping ink off the surface of the ink roller,
wherein
and outer surface covering (4, 33, 45, 60) is provided on the ink pick-up roller consisting of foamed plastic which has discrete, unconnected pores which are open to the outer surface, said surface covering dipping from above into ink within the inktrough;
and wherein the stripping means comprises
at least one stripping roller (9, 10, 36, 37, 52, 53, 63, 64); support levers (7, 8, 34, 35, 61, 62) movably secured to the ink trough (2, 31, 43, 58) and movably supporting the at least one stripping roller in a position over the upper level of the ink;
drive means (11, 12; 65, 66) driving the at least one stripping roller at a circumferential speed which is low with respect to the circumferential speed of the foamed plastic surface covering of the ink pick-up roller;
and controllable bias force means (15–18; 38–41; 50, 51; 69–74) applying a biassing force to press the at least one stripping roller in engagement with the ink pick-up roller with controllable bias engagement force,
the position of the stripping roller over the ink trough in combination with the controllable bias force means squeezing ink from the pores of the foamed plastic covering and permitting said ink to drip into the ink trough to leave a controllable amount of ink in said pores.

4,290,363

INKING SYSTEM FOR A PRINTING MACHINE

Ingo Köbler, Gessertshausen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,270
Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920152
Int. Cl.³ B41F *31/06, 31/12, 31/34;* **B41L** *27/08*
U.S. Cl. 101—351 **11 Claims**



1. In a printing machine having a plate cylinder (9), an inking system having
an ink transfer cylinder (7) transferring ink to the plate cylinder and rotating with approximately the same surface speed as the plate cylinder (9);
an ink application roller (3) positioned to have ink applied thereto from an ink supply (1, 2);
two ink measuring rollers (10, 13) in surface contact with the transfer cylinder (7);
and comprising, in accordance with the invention,
adjustable bearing means (16, 17) journaling and supporting the respective measuring or metering rollers (10, 13) at a controllable distance with respect to the circumference of the ink transfer cylinder (7) to permit adjustment of the engagement gap or nip between the respective metering roller and the the surface of the ink transfer cylinder,
said ink measuring or metering rollers being positioned adjacent each other in surface ink transfer contact;
a bearing adjustment means (8, 19, 20) journaling one (10) of said rollers to controllably adjust the engagement nip between said two adjacent rollers;
said ink application roller (3) being further positioned in ink

transferring surface engagement with one (10) of said measuring rollers;
means (6) controllably adjusting the engagement nip between the ink application roller (3) and the associated ink measuring or metering roller (10);
an individual drive system (11, 12; 14, 15) associated and in driving connection with the respective ink measuring or metering rollers.
the drive system (11, 12) which drives the measuring or metering roller (10) in engagement with the ink application roller (3) driving said engaged measuring or metering roller (10) in a direction counter the direction of rotation of the ink transfer cylinder (7) and at a controllable adjustable surface speed;
the drive system (14, 15) which drives the contacting measuring roller (13) driving said contacting measuring roller (13) in the same direction of rotation as the ink transfer cylinder (7) and a surface speed higher than that of the ink transfer cylinder; and
the measuring roller (13) being driven at said higher speed being positioned—with respect to the direction of rotation of the ink transfer cylinder (7)—behind the roller being driven in the opposite direction of rotation.

4,290,364

GUIDED BOMB FOR USE IN LOW LEVEL FLYING

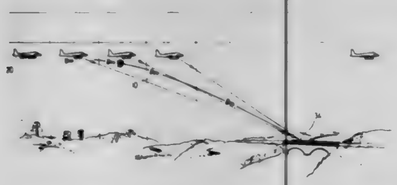
Dieter Weidenhagen, Neubiberg, and Werner Schnaebele, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm G.m.b.H., Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,213

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1978, 2803036

Int. Cl.³ F42B *25/24*

U.S. Cl. 102—384 **2 Claims**



1. A guided bomb for use in low level flying for pinpoint target combat, comprising, a bomb body, a braking device mounted on said body for producing a slow-down of said body effective against the trajectory thereof, and a picture-taking sensor on said bomb body connected to said bomb body and controlling the flight thereof for final phase guidance, and a mechanical connection for connecting said bomb to an aircraft and connected to said picture-taking sensor.

4,290,365

SHOTSHELLS

Andre T. Dreyer, P.O. Box 165, Clocolan, South Africa (9735)

Filed Jan. 29, 1979, Ser. No. 7,250

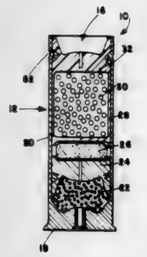
Claims priority, application South Africa, Feb. 3, 1978, 78/0670

Int. Cl.³ F42B *7/00*

U.S. Cl. 102—449 **11 Claims**

1. A shot-shell comprising a cartridge case having a base containing an opening for receiving a primer and a metal sidewall extending away from the base and defining an open end of the case at the opposite end to the base, said sidewall having a thickness of not less than about 0.5 mm over at least substantially the whole of its length; a charge comprising propellant and gunshot contained in the cartridge case; and an upper plug closing off the open end of the case; and a lower plug interposed between the propellant and the gunshot, the lower plug being of substantially identical construction to the plug closing the cartridge case; said plugs each being at least a friction fit within the cartridge case and each being cup-shaped to reduce its weight and material content, said plugs each having a length of at least about one-half its diameter and frictionally engaging said sidewall at locations along its length to prevent it from twisting in the case about an axis perpendicular to the sidewall of the case, said upper plug retaining at least the gunshot in said cartridge case.

11. A shotshell comprising:
a cartridge case having a base containing an opening for receiving a primer and a metal sidewall extending away from the base and defining an open end of the case at the opposite end to the base, the sidewall having a thickness of not less than about 0.5 mm over at least substantially the whole of its length and having an essentially groove-free inner wall;
a primer in the opening in said base;
a propellant in said case adjacent to the primer to be ignited by the primer;



a cup-shaped overpowder plug pressed down into the case to trap the propellant adjacent to the primer;
a shot cage received in the case on the opposite side of the overpowder plug to the propellant and defining a shot receiving space facing away from the overpowder plug;
shot received in the cage to be propelled from the cage by the propellant; and
an overshot plug of substantially identical construction to said overpowder plug pressed into and closing off the open end of the case, said overshot plug trapping at least the shot in the case;
said overpowder plug and overshot plug each having a diameter whereby they are each at least a press friction fit in the case against said groove-free inner wall and each having a length of at least about one-half of its diameter to prevent it twisting in the case.

4,290,366

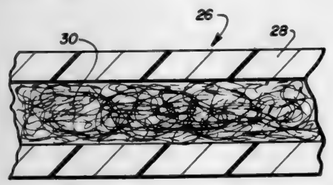
ENERGY TRANSMISSION DEVICE

Florian B. Janoski, Allentown, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Filed Jul. 16, 1979, Ser. No. 57,898

Int. Cl.³ C06C *5/00*

U.S. Cl. 102—202.3 **30 Claims**



1. An energy transmission device for transmitting an explosive signal from an initiator to a receptor comprising:
(a) an elongated tube; and
(b) a self-oxidizing material loosely contained within said tube an extending substantially along the length of said tube for propagating an explosive signal through said tube.

4,290,367

OVERHEAD CONVEYOR

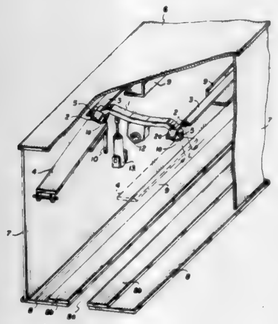
Joachim Brause, Krefeld; Thomas Gerhard, Viersen; Manfred Keller, Duisburg, and Henry Olszok, Krefeld, all of Fed. Rep. of Germany, assignors to Waggonfabrik Uerdingen A.G., Krefeld, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,077

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819068

Int. Cl.³ B61B *3/00*

U.S. Cl. 104—105 **7 Claims**



1. In an overhead conveyor including a track installation having at least one track switch point, a trolley carriage suspended on said installation and supporting a rocking lever, guiding rails and locking rails secured to said installation in the range of said switch point and at least two guiding rollers supported respectively on the ends of said rocking lever on said carriage to engage selected guiding rails in the range of said switch point, a combination comprising safety means for enhancing the switching operation in the range of said switch point, said safety means including an upwardly inclined tongue provided on said track installation before the range of said switch point below the path of movement of a guiding roller at one end of said lever; a slide shoe attached to said one end of the rocking lever to engage the sloping surface of said tongue to tilt said rocking lever about a predetermined angle; said locking rail being arranged for locking the second guiding roller at the other end of said rocking lever in its angularly displaced position; at least one safety nose attached to said other end of said lever above said second guiding roller, said nose being inclined downwardly in the direction of travel of said carriage and exceeding in length the radius of said second guiding roller to enter the effective range of said locking rail before said slide shoe disengages said tongue.

4,290,368

MANUAL AND MOTOR ACTUATED RAILWAY CAR DOOR

Giulio Mazzini, Florence, Italy, assignor to WABCO Westinghouse, Turin, Italy

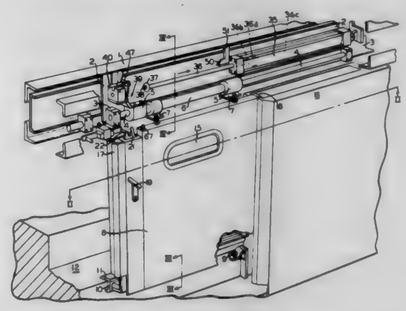
Filed Mar. 16, 1978, Ser. No. 887,167

Claims priority, application Italy, Mar. 21, 1977, 67617 A/77

Int. Cl.³ B60J *5/06*; B61D *19/00*; E05B *65/20*

U.S. Cl. 105—341 **6 Claims**

1. A sliding door for railroad cars comprising:
(a) a horizontal support member fixed on the car and on which the door is reciprocably slidably operable between open and closed positions;
(b) a pneumatically operable cylinder device including a piston reciprocably operable therein and separating front and rear pressure chambers in the cylinder device;
(c) a piston rod connected to said piston and having a free end extending exteriorly of the cylinder device, said cylinder device being arranged on said support member longitudinally parallel to the direction of travel of the door;
(d) a catch device carried by the door and including a first catch element so positioned as to be engageable by a second catch element carried by the free end of the rod, said catch elements cooperating with each other for effecting power operation of the door by the cylinder device during closing and emergency opening of the door;
(e) an electropneumatic control circuit operable, when energized, for effecting pressurization of the rear pressure chamber of the cylinder device and consequently extension of the piston rod from a retracted position in the cylinder devices to an extended position thereoutof in which said first and second catch elements abuttingly engage, upon a predetermined distance of travel of the rod out of the cylinder device, to effect consequent operation



of the door from its said open position toward its said closed position;
(f) first release means operably associated with said catch device and operable for disengaging said first and second catch elements when the door has reached a certain predetermined distance from its closed position;
(g) a lock mechanism carried by the door adjacent the upper leading edge thereof and automatically operable, upon attainment of the closing position of the door, for locking said door in its said closed position until manually released; and
(h) a normally closed electrical switch carried on the door operably connected to said lock mechanism and operable in the closed position of the door to an open position in which the electropneumatic control circuit is deenergized, said control circuit being effective, when deenergized, for venting said rear pressure chamber to atmosphere and pressurizing the front chamber for causing operation of the cylinder device and consequent retraction of the piston rod.

4,290,369

STACKING PALLET

Robert L. Propst, Bellvue, Wash., and William B. Raftery, Grandville, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

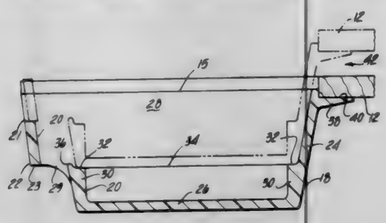
Filed Oct. 3, 1979, Ser. No. 81,536

Int. Cl.³ B65D *19/26, 19/40*

U.S. Cl. 108—53.3 **3 Claims**

1. A pallet comprising a generally horizontal body having an outer edge and capable of carrying a load, means forming a plurality of body openings at predetermined locations in said body outer edge, and a plurality of substantially identical feet positioned in said body openings and secured to said body, each of said feet being provided with an open upper end,

downwardly tapered side portions, and a generally horizontal bottom portion, means forming an internal support flange spaced above said bottom portion so that one of said feet is operable to telescope downwardly into another of said feet to a supported position wherein said bottom portion rests on the internal support flange therein, whereby an upper pallet can



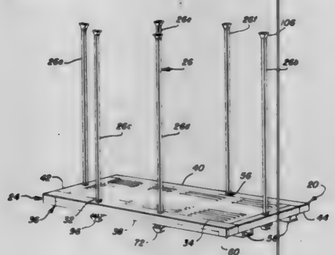
have its feet telescoped into and supported in the feet of a lower pallet with the pallet bodies being spaced apart vertically, and an opening formed by one side portion of each of said feet having a lower portion offset from and discontinuous with an upper portion, said opening forming a handle above said opening adjacent said body outer edge and facilitating location of the pallet with respect to parts and equipment.

4,290,370

STACKABLE PALLET ASSEMBLY

Ronald M. Gallagher; Michael E. Nadler; Charles E. Highsmith, all of Springfield, and Richard L. Minchey, Nashville, all of Tenn., assignors to Unarco Industries, Inc., Chicago, Ill.

Filed Nov. 21, 1977, Ser. No. 853,418
Int. Cl.³ B65D *19/28*
U.S. Cl. 108—53.5 **18 Claims**



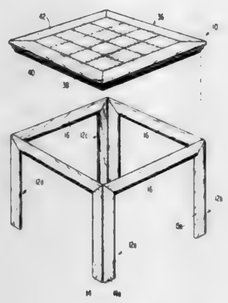
1. A stackable pallet assembly, comprising:
a plurality of posts;
a pallet having an upper load-supporting surface;
post-supporting means carried by said pallet for rigidly supporting each of said posts;
post removal means operatively associated with said post-supporting means for facilitating removal of said posts from said post-supporting means; and
at least one bracket assembly connected to one of said posts, said bracket assembly including a bracket support connected to said post, an intermediate supporting arm for extending outwardly of said bracket support, connecting means attached to one end of said intermediate support arm for removably connecting said intermediate support arm to said bracket support, a transverse bar attached to the other end of said intermediate support arm, a first load-carrying arm extending inwardly from said transverse bar on one side of said intermediate support arm and a second load-carrying arm extending inwardly from said transverse bar on the other side of said intermediate support arm.

4,290,371

TABLE AND METHOD OF ASSEMBLY

Morton Snitzer, and Gary L. Fehrenbacher, both of Evansville, Ind., assignors to Indiana Wood Specialty, Inc., Evansville, Ind.

Filed Sep. 5, 1979, Ser. No. 72,615
Int. Cl.³ A47B *3/06*; F16B *7/00*
U.S. Cl. 108—159 **9 Claims**



1. A table capable of being readily assembled or disassembled comprising, a plurality of spaced pairs of legs, means releasably joining each pair of legs along mutually engaging longitudinal surfaces, said means including elongated channels extending longitudinally and substantially throughout each leg of each pair of legs and opening in a direction transversely of the legs into said mutually engageable surfaces at opposed throat portions to define a passageway extending substantially throughout each pair of legs, said channels and the passages formed thereby extending and opening into the bottom surfaces of the legs respectively, each channel having a base dimension greater in width than the throat thereof, a plurality of elongated locking strips respectively located in the channels of each pair of legs and extending substantially throughout the length of the channels to connect the pair of legs together, said locking strips having a base portion spanning the channels and a plurality of resilient deformable tabs overlying the base portion and respectively received in the channels to prevent transverse separation of the legs of each pair, said channels each including a first side extending at an angle to the base thereof and engaging one of the tabs of the associated locking strips, and a second side opposite the first side engaging a portion of the base portion of the associated locking strip, the tabs being attached to the opposite sides of the base portion of the locking strip and extending inwardly at an angle towards the plane of the associated base portion of the strip and terminating in free edges spaced from each other, and wherein the table further includes generally horizontal strut members respectively connecting each adjacent pair of legs to hold the pairs of legs in a predetermined spaced relationship defining a space of predetermined configuration, and a table top supported over and by said legs and struts and having means preventing relative movement between said pairs of legs.

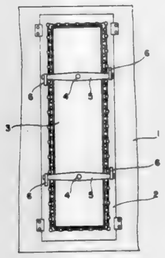
4,290,372

FURNACE DOOR HAVING SEALING STRUCTURE FOR SEALING BETWEEN FURNACE DOOR AND FURNACE FRAME

Shitomi Sato, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Aug. 17, 1979, Ser. No. 67,644
Claims priority, application Japan, Aug. 21, 1978, 53/101983; Aug. 21, 1978, 53/114917[U]; Sep. 18, 1978, 53/114965; Jan. 30, 1979, 54/11725[U]
Int. Cl.³ F23M *7/00*
U.S. Cl. 110—173 R **23 Claims**

1. A furnace door having a sealing structure for sealing space between the furnace door and a furnace frame, said sealing structure comprising,
pressing means attached to said furnace door movably toward and away from said furnace frame,
sealing means disposed between said pressing means and said furnace door and adapted to move with movement of said pressing means and to abut against said furnace frame,
characterized in that said sealing means (**11**) on at least two opposite sides (**3a**, **3a**) of said furnace door (**3**) respectively



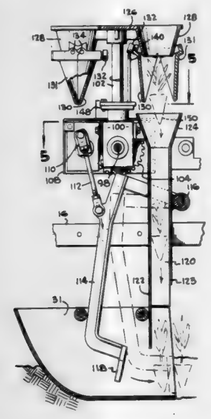
comprise a spring leaf (**12**) and a knife edge (**13**, **13*b***) attached to a free side of said spring leaf (**12**),
and a slip plate (**8**) provided between said furnace door (**3**) and said spring leaf (**12**) and between said pressing means (**22*a***, **22*b***) and said furnace frame, said slip plate (**8**) being adapted to slide with a movement of said pressing means (**22*a***, **22*b***) toward said furnace frame (**2**) to thereby cause said knife edge (**13**, **13*b***) by way of said spring leaf (**12**) to abut against said furnace frame (**2**).

4,290,373

SEEDLING TRANPLANTER

W. Stewart Boots, Belle Glade, and Jay C. Altman, Clewiston, both of Fla., assignors to Mechanical Transplanter Company, Holland, Mich.

Filed Dec. 21, 1979, Ser. No. 105,869
Int. Cl.³ A01C *11/00*
U.S. Cl. 111—3 **10 Claims**



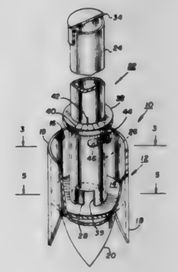
1. A seedling transplanter comprising a main longitudinally extending frame, hitch means at a front end of said main longtidunally extending frame for attachment to a tow vehicle, a pair of oppositely canted wheels rotatably fixed to a rear end portion of said frame, hollow plow means depending downwardly from said frame and having a rearwardly open internal chamber for forming a furrow in the soil as said frame is moved by the two vehicle, rotatable turret means including a plurality of selectively openable cups spaced equidistantly about said turret and each of which is adapted to receive a manually inserted seedling in a generally upright position, a fixed discharge tube fixedly positioned with respect to said frame and extending from a position beneath said turret into said internal chamber in said plow means, drive means for said rotatable turret to sequentially align each of said cups with said fixed discharge tube, said cups each including facing cup-halves defining the bottom of each of said cups, and cam means to sequentially simultaneously open both of said cup-halves of each of said cups is aligned with said discharge tube to drop a seedling disposed therein into said discharge tube for movement through said tube into said chamber of said plow and oscillating kicker means having a lower end positioned for movement in said chamber for engaging each seedling in the chamber for moving each seedling rearwardly from said chamber into the furrow, said oppositely canted wheels being disposed to close the furrow over the root clump of the seedlings.

4,290,374

HAND-HELD AND OPERATED SEEDER APPARATUS

Billy G. Maples, 65 Dale Rd., Middletown, N.J. 07748

Filed Jul. 12, 1979, Ser. No. 56,988
Int. Cl.³ A01C *5/02*, *7/02*, *15/02*
U.S. Cl. 111—92 **6 Claims**



1. A hand held and operated seeder apparatus particularly adapted for local application of seed and the like to selected lawn areas, said seeder apparatus including:
(a) an elongated rigid tubular handle, having a predetermined diameter and providing a seed storage means, said rigid tubular handle having an upper end and a lower end, the upper end of the rigid handle adapted for grasping in and by a hand of a user for manipulation thereof, at said lower end of the rigid handle and carried thereby is a seed applicator;
(b) said seed applicator having a circular cup member with an open top, imperforate sidewalls secured to a substantially flat base portion, said substantially flat base portion larger than said predetermined diameter of said rigid handle and with said imperforate sidewalls secured to said substantially flat base portion so as to extend upwardly and downwardly from said substantially flat base portion, said imperforate sidewalls of said circular cup member in said secured condition being substantially coaxially aligned with the axis of said rigid tubular handle, said downwardly extending sidewall of said circular cup member having a plurality of tooth-like projections adapted to enter and cultivate the ground when and while the seeder apparatus is manipulated toward and into the ground, and
(c) a seed escapement means formed in said lower end of the rigid handle and adapted to deliver to the inside of said circular cup member and be retained by said imperforate sidewalls thereof seeds in and from said rigid tubular handle, said seed escapement means including a castellated end formation in and at said lower end of the rigid tubular handle, with a rotatable sleeve carried by said

lower end of the rigid tubular handle so that as said rotatable sleeve is selectively positioned the seed from said rigid tubular handle escapes into said circular cup member in a metered amount corresponding to the desired quantity of seed to be distributed and when the seeder apparatus is moved up and down seed in said rigid tubular handle flows through said seed escapement means and into said circular cup member from which the seed is jostled to and over said open top of the imperforate sidewall of the circular cup member so as to fall onto and into localized areas of the ground.

4,290,375

APPARATUS FOR WRITING AND USING EMBROIDERY INFORMATION ON MAGNETIC TAPE

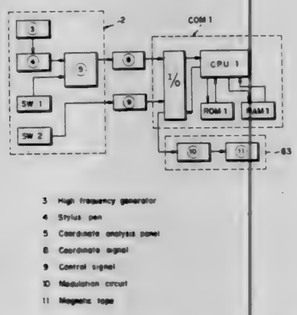
Yoshinobu Tonomura, Hachioji; Toshio Fujimura, Musashino; Masanori Hara, and Hideaki Takenoya, both of Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,321

Claims priority, application Japan, Sep. 22, 1978, 53-115896; Sep. 22, 1978, 53-115897

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **4 Claims**



1. An apparatus for providing embroidery information and control signals to a recorder in order to record such information and signals on a magnetic medium in a manner that the medium can be used to operate an automatic embroidery machine which includes a fixed sewing machine, a movable embroidery frame, and a temporary memory of a predetermined capacity, comprising:

an embroidery analysis panel;

a stylus pen having a coordinate switch and a control switch, the coordinate switch causing coordinates of a point on the embroidery analysis panel to be registered when the stylus pen is located at the point and the coordinate switch is operated by a user and the control switch generating a control signal when the control switch is operated by a user to indicate a last point on a continuous part of an embroidery pattern, the control signal being in a form which will cause the automatic embroidery machine to stop embroidering after said last point has been sewn prior to embroidering another continuous part of an embroidery pattern; and

a microcomputer cooperating with the embroidery analysis panel, the stylus pen, the coordinate switch and the control switch and connectable to the recorder, the microcomputer classifying points so registered into at least one continuous part of an embroidery pattern and converting all points so registered into embroidery information suitable for use in an automatic embroidering machine.

4,290,376

AUXILIARY TRANSPORT DEVICE FOR SEWING MACHINES

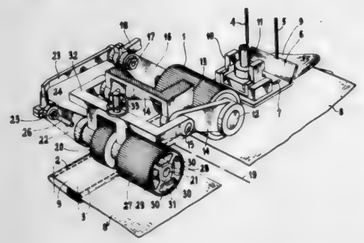
Gianfranco Brusasca, Cornaredo, and Gianfranco Garzulano, Galliate, both of Italy, assignors to Rockwell-Rimoldi, S.p.A., Milan, Italy

Filed Nov. 5, 1979, Ser. No. 91,632

Claims priority, application Italy, Dec. 13, 1978, 30772 A/78

Int. Cl.³ D05B *21/00, 27/14, 27/06*

U.S. Cl. 112—121.26 **5 Claims**



1. An improved auxiliary transport device for sewing machines of the type having a pair of spaced needles with a cooperating presser foot forming a sewing zone for attaching bands to partially sewn workpieces, said transport device comprising:

(a) a support bracket (13) mounted on the sewing machine rearwardly of and in alignment with the needles and presser foot;

(b) an auxiliary transport means defining a first roller (1) extending perpendicular to the direction of sewing and pivotably attached to said support bracket (13) including;

(i) drive means for effecting incremental rotation thereof for assisting in the advance of the workpiece from the sewing zone;

(c) a stretching means for engaging the bands attached to the workpiece defining a second roller (20) spaced from and operatively connected to said first roller (1) for effecting simultaneous incremental rotation therewith;

(d) a compensating transport means defining a third roller (27) mounted co-axial and for incremental rotation with said second roller (20) for engaging and advancing that portion of the workpiece extending from the attached band, including;

(i) yielding means for effecting limited vertical movement thereof when engaging portions of the workpiece varying in thickness.

4,290,377

SEWING MACHINE

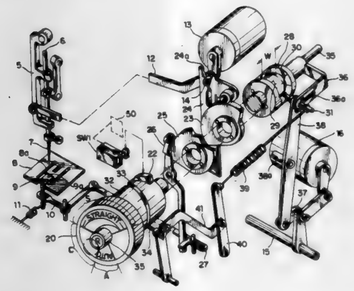
Susumu Hanyu, and Kenji Kato, both of Hachioji, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1979, Ser. No. 92,946

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **4 Claims**

1. In a sewing machine having a rotary drive shaft, a needle bar with a needle mounted for vertical and lateral reciprocation to penetrate a fabric to be sewn, a feeding device including a feed adjuster to control the fabric feeding amount and the direction of fabric feeding, an electronic control device electrically operated to generate a stitch control signal per rotation of the rotary shaft of the sewing machine for controlling the needle position and the fabric feeding position, and electric means activated by the stitch control signal for actually controlling the needle position and the fabric feeding position to automatically produce various stitch patterns, the combination comprising means manually operated to a first range to render the electronic control device operative and to a second range to render the electronic control device inoperative; and switch means adapted to be closed for rendering the electronic control device operative or opened for rendering the electronic control device inoperative, said manually operated means including first cam means to open said switch means, second cam means operatively connected to the feed adjuster and



being operative for adjusting the latter for feeding the fabric in a forward direction, the third cam means operatively connected to the needle bar and being operative for displacing the needle to a predetermined position and maintaining the needle in said predetermined position.

4,290,378

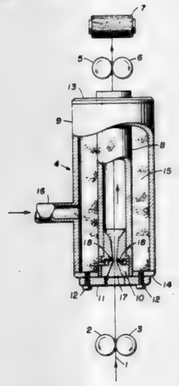
TWISTED SINGLES CARPET YARN

Arnold E. Wilkie, Pensacola Beach, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 31, 1979, Ser. No. 71,460

Int. Cl.³ D02J *1/08*

U.S. Cl. 112—410 **23 Claims**



1. A bulky, heatset singles carpet yarn, said yarn having a bundle twist of 0.5 to 6.0 turns per inch (19.7 to 236.2 turns per meter) and sufficient tangle to provide a lateral coherency of 1 to 15 cm, wherein said tangle is imparted to the yarn after said bundle twist.

13. A process for heatsetting a bulked, twisted singles yarn having a bundle twist between 0.5 and 6.0 turns per inch (19.7 to 236.2 turns per meter), comprising: passing said singles yarn at an overfeed of from 10 to 50% through an open-ended tubular chamber filled with a heat fluid, wherein at least one jet of heated fluid is directed laterally against the yarn at a velocity sufficient to cause filaments or fibers at the outside of the bundle to entangle with those at the inside of the bundle along the entire length of the yarn, said process being characterized in that the temperature of the heated fluid and the residence time of the yarn in the chamber are correlated to set the twist in the yarn and the overfeed and velocity of said heated fluid are correlated to provide a yarn having a lateral coherency of 1 to 15 cm while imparting a slight tension to the yarn sufficient to facilitate handling of the yarn.

4,290,379

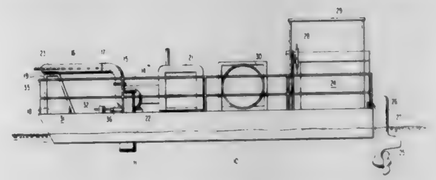
SUPPRESSION OF SURFACE FOAM ON DETERGENT-CONTAMINATED LAGOONS

Festus A. Carter, Rte. 1, Highway 341 North, Odum, Ga. 31555

Filed Jul. 30, 1979, Ser. No. 61,916

Int. Cl.³ C02C *1/08*; A62C *27/00*

U.S. Cl. 114—26 **4 Claims**



1. A machine for suppressing foam on the surface of a detergent-contaminated body of water, comprised of

a powered barge;

a horizontally disposed, C-shaped pipe having an internal diameter of about 8 to 12 inches mounted on the barge above the gunnels at a height of about 5 to 7 feet above the waterline, the length, configuration, and placement of the pipe being such that the pipe generally encircles the bow and extends part way along each side of the barge, said pipe having no outlet except for a series of horizontally directed sections of straight pipe about 8 to 10 inches long, having an internal diameter of about ¾ to 1¼ inches, projecting therefrom along substantially the entire length of the pipe; and

pump means carried by the barge for removing subsurface water from the body of water on which the barge is floating and delivering that sub-surface water to the pipe under sufficient pressure that the water is forced out of all of the sections of straight pipe simultaneously and is propelled a distance of about 30 to 45 feet, at its furthest search, from the topside of the barge.

4,290,380

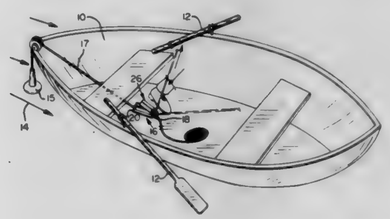
FOOT CONTROLLABLE BOAT ANCHOR ROPE LOCKING DEVICE

Laurance R. Bolen, 3205 S. Davidson, Albany, Oreg. 97321

Filed Nov. 23, 1979, Ser. No. 97,053

Int. Cl.³ B63B *21/22*

U.S. Cl. 114—210 **16 Claims**



1. A foot controllable boat anchor rope locking apparatus comprising:

a housing which defines a passageway through which the anchor rope may be threaded with the outboard end of the rope being connected to the anchor, said housing being adapted for mounting to the boat below the level of seats in the boat to thereby make the housing readily accessible to the foot of a person seated in the boat;

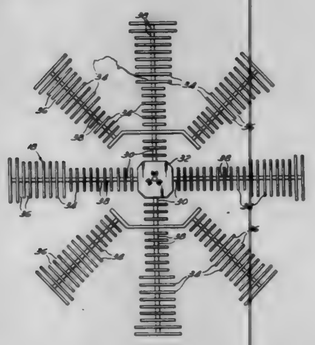
lever means pivoted to said housing for pivoting about a lever means pivot axis, said lever means having a snubbing end portion positioned within said passageway, and an actuating end portion said lever means being positioned such that pivoting said lever means in a first direction about said lever means pivot axis causes said snubbing end portion to close said passageway sufficiently to prevent the rope from playing outboard through the housing, and such that pivoting said lever means in a second direction about said lever means pivot axis causes said snubbing end portion to open said passageway sufficiently to permit outboard playing of the rope through the housing;

foot pedal means pivoted at one end portion to said housing and having its opposite or free end portion generally overhanging the passageway defined by said housing and also said lever means, said foot pedal means having an actuating undersurface positioned for engaging said actuating end portion upon application of foot pressure to said pedal means by a person seated in the boat and for pivoting said lever means in said second direction in response to the foot pressure.

4,290,381
FLOATING MARINA

Dexter D. Penman, 9091 Orangewood Ave., Garden Grove, Calif. 92641

Filed Dec. 19, 1978, Ser. No. 970,928
Int. Cl.³ E02D *29/00*
U.S. Cl. 114—263 **21 Claims**



1. A floating marina for use on a body of water comprising:

plural independent float members adapted to float on the surface of said water;

means for flexibly interconnecting said float members to permit limited movement between adjacent float members to facilitate the absorption of minor wave forces, said float members forming at least one boat docking slip;

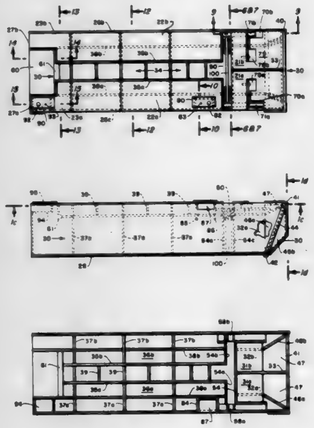
a support structure submerged within said body of water, said support structure possessing structural integrity sufficient to maintain the position and orientation of said structure relative to said body of water; and

means connected between said float members and said support structure for suspending said support structure beneath said float members at a predetermined depth, above the bottom of said body of water, said suspending means further serving to define the positions of said float members.

4,290,382
CONNECTOR RECEIVER FOR PONTOON CAUSEWAYS

Hugo Conti, 3639 Ocean Dr., and Joseph A. Drelicharz, 1300 Elder, both of Oxnard, Calif. 93030

Filed Oct. 16, 1978, Ser. No. 952,021
Int. Cl.³ B63B *35/38*
U.S. Cl. 114—266 **10 Claims**



1. Apparatus in buoyant float sections, for engaging a plurality thereof, comprising:

a. a connector means having a nose section with a longitudinally inclined front surface and at least two vertical locking grooves;

b. a pontoon section having a portion defining a channel with at least one aperture such that the nose section of said connector means can be introduced through said aperture into said channel;

c. at least one engaging member slideably disposed within a vertical slot in communication with said channel; said engaging member having portions thereof slideable within the locking grooves in said connector means;

d. locking means for holding said engaging member within said vertical slot such that in a first position said locking means is operable to allow said engaging member to extend to some intermediate point within said channel; said locking means permitting said engaging member to freely move vertically within said vertical slot above said intermediate point, said locking means in an open position operable to allow said engaging member to extend below said intermediate point within said channel;

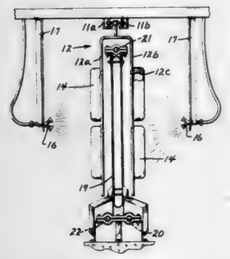
e. said connector means being extended into said channel such that the longitudinally inclined front surface of the connector means nose contacts said engaging member, causing the engaging member to slide upward within said vertical slot until said engaging member and the connector means nose locking grooves are aligned, at which time with said locking means in open position said engaging member is operable to slide by gravity into said locking grooves thereby engaging said connector within the channel of said receiver assembly;

f. said locking means also being operable to be placed in a closed position to hold said engaging member down in said vertical slot for preventing accidental disengagement of said engaging member with said connector means locking grooves.

4,290,383
SPRAYING ARRANGEMENT

Thomas E. Pfender, Vanderburgh County, Ind., assignor to Creative Craftsmen, Inc., Evansville, Ind.

Filed Jul. 31, 1979, Ser. No. 62,337
Int. Cl.³ B05C *5/00, 15/00*
U.S. Cl. 118—630 **6 Claims**

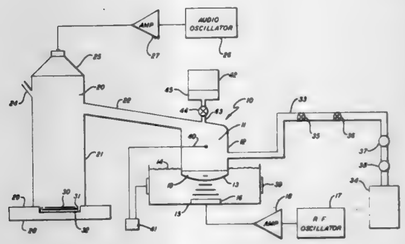


1. In combination with a conveyor installation including structure supporting a single line of hangers adapted to receive articles for spray processing, a spraying arrangement comprising sprayer equipment disposed on opposite sides of said single line of hangers and facing in the direction of articles carried therebetween, said articles carried on said hangers being in oppositely facing directions and separated by an upstanding overspray collecting shield which permits the simultaneous spraying of articles on both sides of said overspray collecting shield and multiple spray processing capacity for said single hanger line.

4,290,384
COATING APPARATUS

Christopher P. Ausschnitt, Southport, and David A. Huchital, Fairfield, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 85,844, Oct. 18, 1929. This application Mar. 28, 1980, Ser. No. 135,042
Int. Cl.³ C23C *13/04, 13/12*
U.S. Cl. 118—722 **29 Claims**



1. An apparatus for creating an aerosol from a liquid photoresist, comprising in combination;

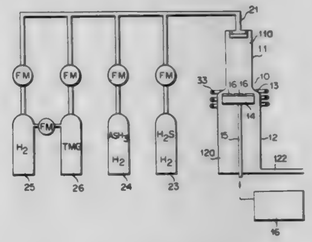
a reservoir of liquid photoresist,

first means providing an acoustic power density of at least 10 $mw.cm^{-2}$ at the surface of the photoresist to cause atomization of the photoresist.

4,290,385
VERTICAL TYPE VAPOR-PHASE GROWTH APPARATUS

Takatosi Nakanisi, Hachioji; Atsushi Tanaka, and Takashi Udagawa, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 5, 1979, Ser. No. 54,949
Claims priority, application Japan, Jun. 14, 1979, 54-75049
Int. Cl.³ C23C *11/00*
U.S. Cl. 118—730 **5 Claims**



1. A vertical type vapor-phase growth apparatus comprising a vapor-phase growth reactor constituted of an upper section defining an upper chamber having a lateral cross-section of below 200 cm^2, a lower section defining a lower chamber having a lateral cross-sectional area greater than, but smaller than four-times the cross-sectional area of, the upper chamber, and a jointing section connection together the upper and lower sections; a support disposed within the lower chamber and on which a sample is placed, said upper chamber, jointing section and lower chamber lacking gas flow restrictions therebetween; and means for conducting a gas for vapor-phase growth into the upper chamber of the reactor, wherein said support is provided within the lower chamber and near the upper chamber such that an area of a gap as defined between the outer peripheral surface of the support and the inner surface of the reactor and taken in the minimal cross-sectional direction of the gap is made equal to, or smaller than, the lateral cross-section of the upper chamber, wherein said means for conducting a gas into the upper chamber of the reactor comprises gas supply means, a gas introducing duct for supplying the gas from said gas supply means into the upper chamber of the reactor, and gas diffusion means for diffusing the gas from said gas introducing duct, wherein the upper and lower chambers of the reactor are provided concentric with the support, and wherein said support is in pyramid form and has a rounded tip and inclined side surfaces on which a sample is placed.

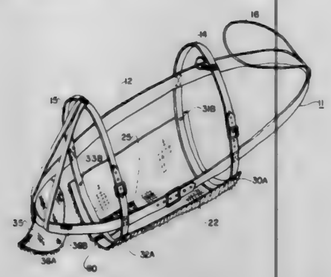
4,290,386
DOG SANITARY DEVICE

Richard Eiriksson, 4352 Verdugo Rd., Los Angeles, Calif. 90067

Filed Sep. 17, 1979, Ser. No. 75,949
Int. Cl.³ A01K *23/00*
U.S. Cl. 119—95 **3 Claims**

1. In a dog sanitary device of the type including a harness securable about the dog's torso, and a removable receptacle for collection and disposal of bodily waste products, the improvement comprising a harness carried frame and bag collector assembly, said assembly frame comprising a wire member generally U-shaped in horizontal section to extend forward beyond the dog's urinary opening and crescent shaped in vertical section extending upwardly to the dog's anal opening thereby openly encompassing the dog excretory orifices in close proximity to the dog's body, said removable receptacle

comprising precut sheet material foldable over the frame in dog body engaging and receptacle defining relation for both the urinary and anal orifices and fasteners securing the sheet material in place for use.



4,290,387

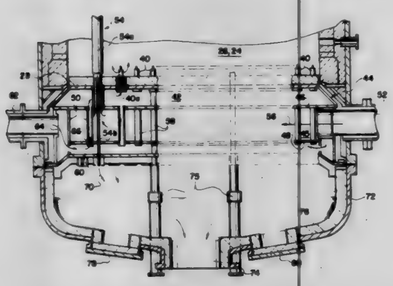
FLUIDIZED BED COMBUSTOR AND TUBE CONSTRUCTION THEREFOR

Angelo De Feo, Passaic, and William Hosek, Morris, both of N.J., assignors to Curtiss-Wright Corporation, Del.

Filed Oct. 4, 1979, Ser. No. 81,935

Int. Cl.³ F28D *13/00*

U.S. Cl. 122—4 D **18 Claims**



1. A fluidized bed combustor, comprising a housing having interior walls defining a chamber therein, plate means extending across the lower end of said housing chamber defining a fluidizable bed area and a reaction area thereabove, means for directing a fluidizing fluid and fuel into said fluidizable bed and reaction area for burning therein, flue means for the offtake of combustion gases connected into the top of said chamber, a plurality of substantially vertically arranged heat exchanger tube assemblies in said fluidizable bed area each including an outer tube having an upper tube closed end and an inner tube arranged within said outer tube and spaced radially inwardly therefrom and spaced below said upper outer tube closed end, supporting means associated with said plate means supporting the lower ends of said inner and outer tubes so that the lower end of said inner tube extends out of said chamber and defines a fluid discharge end and said outer tube is located above said fluid discharge end of said inner tube and defines an inlet flow passage in the space between said outer and inner tubes, a holding member interconnecting said plurality of heat exchanger tube assemblies adjacent said upper outer tube closed end, said holding member being spaced from and independent of said housing interior walls, and means for circulating a heat exchange fluid into the space between said outer and inner tubes through said inlet flow for flow upwardly in the space between said tubes in the fluidizable bed area to the top of said inner tube and then downwardly therethrough to discharge the fluid from said inner tube, said holding member comprising a collar member connected to each of said tube assemblies and a ring member connected to said collar members.

4,290,388

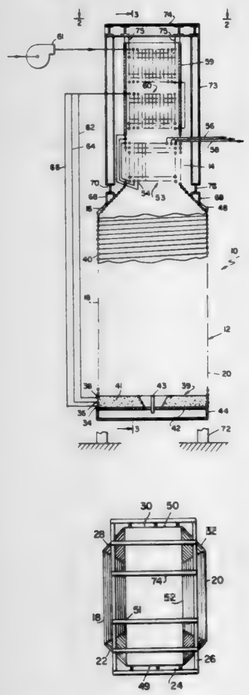
VAPOR GENERATOR

Anthony Ruhe, Fonthill, and Peter J. Adams, Niagara Falls, both of Canada, assignors to Foster Wheeler Limited, St. Catharines, Canada

Filed Aug. 3, 1979, Ser. No. 63,225

Int. Cl.³ F22B *29/02, 37/24*

U.S. Cl. 122—235 A **10 Claims**



1. A vapor generator for generating vapor from contaminated feed fluid comprising an economizer section; an evaporator section; means for introducing a vaporizable fluid to said economizer section; means for passing said fluid from said economizer section to said evaporator section; said evaporator section including first and second portions, said first portion comprising a plurality of fluid flow tubes defining a furnace enclosure including upright walls and a floor and having an octagonal cross section, said second portion comprising a plurality of fluid flow tubes arranged into a serpentine bundle and adapted to be heated by convection; burner means disposed in said furnace floor for introducing hot gases to said furnace enclosure; means for passing said vaporizable fluid from said first portion of said evaporator section to said second portion of said evaporator section; and means for removing vaporized fluid from said second portion of said evaporator section whereby said feed fluid can be uniformly heated as it flows through said furnace section and can be finally vaporized in a relatively low heat flux zone.

4,290,389

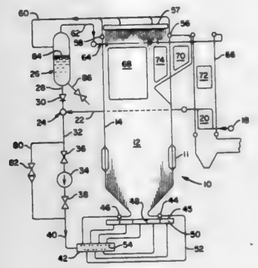
ONCE THROUGH SLIDING PRESSURE STEAM GENERATOR

David Palchik, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 21, 1979, Ser. No. 77,819

Int. Cl.³ F22D *7/00*

U.S. Cl. 122—406 S **28 Claims**



1. A supercritical pressure once-through type steam generator for sliding pressure operation into the subcritical pressure range at reduced loads, comprising: control means for operating said steam generator at supercritical pressure at high loads and at subcritical pressure at low loads; a furnace; vertical tubes lining the walls of said furnace around the periphery thereof, said tubes in parallel flow arrangement and continuous throughout the height of said furnace; internal flow agitating means located within said tubes throughout substantially the entire heated length thereof; a steam-water separating means; means for conveying fluid leaving said tubes to said separating means; a superheater; means for conveying steam from said separating means to said superheater; means for selectively directing substantially the entire flow of fluid leaving said tubes through said superheater; feedwater supply means; means for conveying feedwater to said tubes; means for passing a flow through said tubes exceeding the flow through said superheater during very low load operation of said steam generator; and fixed means for apportioning flow to various of said vertical tubes in proportion to the predicted full load heat absorption of the various tubes.

4,290,390

STEAM GENERATOR

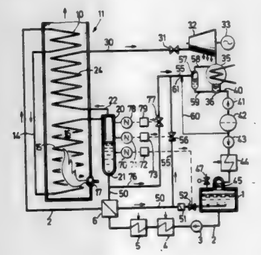
Heinz Juzi, Andelfingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 17, 1979, Ser. No. 104,428

Claims priority, application Switzerland, Dec. 22, 1978, 13096/78

Int. Cl.³ F22B *37/62*

U.S. Cl. 122—406 S **12 Claims**



1. In a steam generator, the combination comprising a feed water tank;

a heat exchanger having a secondary side to receive a flow of water from said feed water tank and a primary side;

an evaporator downstream of said secondary side of said heat exchanger for receiving and evaporating a flow of water therein;

a water separator downstream of said evaporator for separating water from a flow of vapor from said evaporator;

a water outlet pipe connecting said water separator to said feed water tank via said primary side of said heat exchanger to deliver separated water thereto;

a first control valve in said pipe to control the flow of water to said feed tank in response to a predetermined level of water in said separator;

a bypass pipe branching from said outlet pipe upstream of said control valve; and

a second control valve in said bypass pipe to control the flow of water therethrough in response to a second level of water in said separator higher than said predetermined level.

4,290,391

DIFFUSION TREATED ARTICLES

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 25,456, Mar. 30, 1979, Ser. No. 963,313, Nov. 24, 1978, abandoned, and Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,453. This application Nov. 29, 1979, Ser. No. 98,654

Int. Cl.³ C23C *9/02;* B32B *1/08*

U.S. Cl. 122—511 **4 Claims**



1. A steam boiler having a Croloy boiler tube through which pressurized steam is circulated, said tube being connected to a steam turbine to cause the pressurized steam to operate the turbine, the internal surface of the tube having a chromized case the outer portion of which is rich in chromium carbide and the remainder of which has a columnar chromized structure.

4,290,392

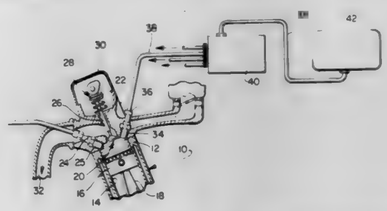
FUEL SYSTEM FOR IC ENGINE

James R. Dissmore, 63 Margaret Rd., East Taunton, Mass. 02780

Filed Oct. 29, 1979, Ser. No. 89,627

Int. Cl.³ F02D *19/12*

U.S. Cl. 123—1 A **9 Claims**



1. An improved manner of operating an internal combustion engine including a combustion chamber, means for directing a hydrocarbon and combustion gas fuel mixture to said chamber and means for igniting said fuel mixture so as to cause a controlled explosion which initiates a power cycle of said engine comprising, directing a charge of a pre-determined amount of an aqueous solution of hydrogen peroxide into said combustion

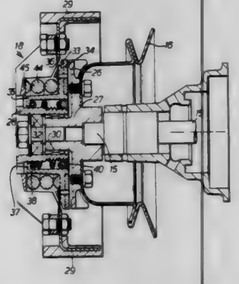
chamber after the initial ignition of said fuel mixture therein and during said power cycle thereof wherein more complete combustion of said hydrocarbon is achieved with an attendant increase in the power and/or fuel efficiency.

4,290,393

FAN UNIT

William B. Hart, 1 Almondhayes, Ipswich, Suffolk, and Rami Domloge, 12 Wilmslow Dr., Ipswich IP2 OXX, Suffolk, both of England

Filed Oct. 27, 1978, Ser. No. 955,200
Int. Cl.³ F01P *7/02*
U.S. Cl. 123—41.12 **11 Claims**



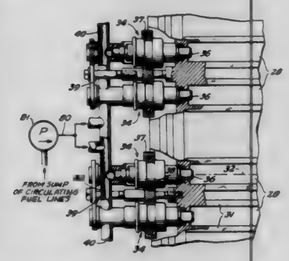
1. A thermally controlled fan unit comprising a rotatable fan; a driving member; engageable driven and driving clutch plates operatively connected to the fan and to the driving member respectively; and a temperature responsive clutch actuating mechanism acting on one of the clutch plates, said mechanism including an element of shape memory effect material, having a variable elastic modulus which varies significantly with temperature over a transition temperature range, and second biasing means acting in opposition to the element; said shape memory effect material having sufficient energy to maintain engagement of said clutch plates; and adjustment means for adjusting said second biasing means acting in opposition to said element of shape memory effect material to adjust the temperature at which the clutch plates are engaged.

4,290,394

TWO-CYCLE ENGINE WITH FUEL INJECTION

Roy W. Frank, and Richard E. Staerzl, both of Fond du Lac, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Mar. 7, 1980, Ser. No. 128,363
Int. Cl.³ F02B *33/04*; F02M *51/00*
U.S. Cl. 123—73 A **11 Claims**



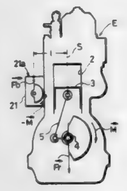
1. In a two-cycle internal-combustion engine comprising at least one cylinder having an associated crankcase with a gas-flow inlet including a check valve, said cylinder having an exhaust outlet independent of the associated crankcase region, means operating in timed relation with a piston in said cylinder for admitting to the associated combustion region gas compressed in the crankcase region, a crankshaft connected to the piston, an electrically operable fuel-injection device associated with said cylinder for injecting fuel into the crankcase region of the cylinder, and control-signal generator means having a synchronizing connection to the crankshaft and having an operating output connection to said fuel-injection device, said control-signal generator means being operative to cause fuel-injection by said device during the period of piston rise to top-cylinder position, and means for selectively varying the interval of crankshaft rotation during which said output connection is operative to cause such fuel-injection.

4,290,395

BALANCING DEVICE FOR AN ENGINE

Kenji Sakano; Masahiro Yamashita; Kenji Yamashita, and Masahiro Aketa, all of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Sep. 14, 1979, Ser. No. 75,411
Claims priority, application Japan, Oct. 12, 1978, 53/126008
Int. Cl.³ F02B *75/06*
U.S. Cl. 123—192 B **8 Claims**



1. A balancing device for attachment to a reciprocating, internal combustion engine for countering the vibrating force $\vec{F}_r$ generated during operation of the engine, said vibrating force $\vec{F}_r$ being directed along a vibration line S, said engine including an engine block having an enlarged crankcase portion in which is housed a crankshaft and a portion of smaller dimensions containing the engine cylinder(s), there being a recessed region adjacent the cylinder-containing portion of said engine block because of the smaller dimensions thereof compared to the crankcase portion of said engine block, and said balancing device comprising:

housing means mounted on said engine; and

balancing means mounted within said housing means, constructed and arranged to generate a selected balancing force $\vec{F}_b$ and a selected balancing moment $-\vec{M}$;

said balancing force $\vec{F}_b$ being chosen to cancel the nth harmonic component of said engine vibrating force $\vec{F}_r$, and said housing means being positioned on said engine within said recessed region adjacent the cylinder-containing portion of said engine block so that said balancing force $\vec{F}_b$ is spaced a distance l from said vibration line S passing through the origin of said vibrating force $\vec{F}_r$;

said distance l between said balancing force F_b and said vibrating force $\vec{F}_r$ resulting in the generation of a rotating moment $\vec{M}$; and

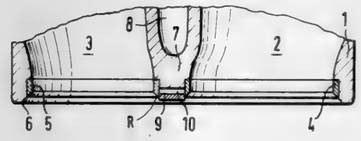
said balancing moment $-\vec{M}$ being chosen to cancel said rotating moment $\vec{M}$.

4,290,396

HEAT CONDUCTING SHIELD FOR CYLINDER HEADS OF INTERNAL COMBUSTION ENGINES

Alfred Urlaub, Nuremberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nuremberg Aktiengesellchaft, Nuremberg, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,899
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2816923
Int. Cl.³ F02F *1/26*
U.S. Cl. 123—193 CH **10 Claims**



1. In combination, a cylinder head including a side which faces an interior of an engine cylinder for internal combustion engines having a combustion chamber with the interior relative to which at least two gas change ports with centers are provided with valve seat rings at combustion chamber end of the ports, a valve bridge portion between the valve seat rings having outer faces; a heat conducting shield including cylinder head wall members readily subjected to efficient cooling for shielding only the valve bridge portion provided between at least the two gas change ports, said heat conducting shield including the wall members being located on that side of the cylinder head which faces the interior of the cylinder, and said heat conducting shield being provided with a cutout portion for forming an enclosed insulating hollow space between said heat conducting shield including the wall members and said side cylinder head which faces the interior of the cylinder, said head conducting shield being in full contact with the cylinder head in the area of said cylinder head wall members which can be readily cooled wherein said cutout portion includes a recess which in turn includes a longitudinal groove extending with its longitudinal axis in a direction normal to and beyond that of a line intersecting centers of said at least two valve ports.

4,290,397

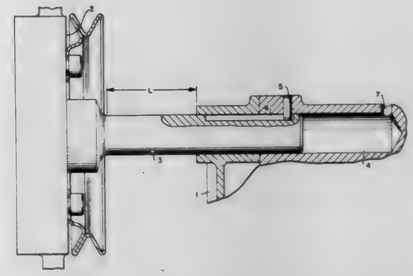
MOUNTING OR ATTACHING ARRANGEMENT FOR DRIVEN OR NON-DRIVEN ASSEMBLIES ASSOCIATED WITH AN INTERNAL COMBUSTION ENGINE

Joachim H. Sorsche, Stuttgart; Erich Ableitner, Remseck; Ernst Gobien, Weinstadt, and Manfred Minning, Esslingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 79,212
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841774
Int. Cl.³ F02F *7/00*; F01P *7/10*; F02B *77/14*
U.S. Cl. 123—195 A **4 Claims**

1. An arrangement for mounting driven or non-driven assemblies on an internal combustion engine disposed in an engine compartment of a motor vehicle, the assemblies projecting forwardly of the engine when the engine is mounted at a front of the motor vehicle and projecting rearwardly when the engine is mounted at a rear of the vehicle, characterized in that the mounting arrangement includes means for mounting the assemblies on the internal combustion engine so that the assemblies can be displaced in a direction toward the internal combustion engine substantially without any resistance upon an application of a predetermined impact force on the assemblies whereby the "hard length" of the internal combustion engine is reduced so that the energy absorbing capabilities of the body of the motor vehicle may be more fully utilized in the event of an impact.

2. An arrangement according to claim 1, characterized in that one of the assemblies is a cooling fan, and in that the mounting means includes a shaft having the fan rotatably mounted thereon, and means provided in a housing of the internal combustion engine for accommodating the shaft when the fan is displaced by an impact force acting thereon.

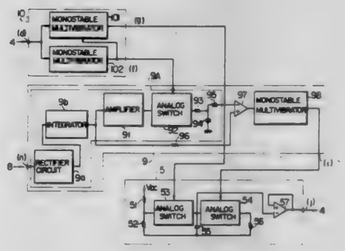


4,290,398

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tadashi Hattori, Okazaki; Kenji Goto, Susono; Daisaku Sawada, Susono; Takashi Shigematu, Susono; Hiroaki Yamaguchi, Anjo; Minoru Nishida, Okazaki, and Teruyoshi Ito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya; Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, all of, Japan

Filed Apr. 17, 1979, Ser. No. 30,933
Claims priority, application Japan, Apr. 24, 1978, 53-49094
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **11 Claims**



1. An apparatus for controlling a timing of ignition sparks supplied to an internal combustion engine having an output shaft comprising:

position detecting means for producing a reference position signal synchronized with the arrival of said output shaft at a predetermined reference position;

computing means for computing an ignition position relative to said reference position signal in response to operating conditions of said internal combustion engine, said computing means producing an ignition signal synchronized with the arrival of said output shaft at said ignition position;

knock detecting means for producing knock signals having magnitudes proportional to respective intensities of knocks of said internal combustion engine;

averaging means for averaging the magnitudes of said knock signals,

interval control means responsive to said ignition signal for limiting the operation of said averaging means to a predetermined constant interval of time measured with respect to the occurrence of said ignition signal, said constant interval of time being independent of the angle of output shaft rotation made by the engine therein;

comparing means for comparing the magnitudes of said knock signals with an average magnitude produced from said averaging means, said comparing means producing first and second outputs when the former is larger and smaller than the latter, respectively; and

means for applying said first and second outputs to said computing means which responsively retards or advances, respectively said ignition position.

4,290,399

FLOATLESS VARIABLE VENTURI TYPE CARBURETOR

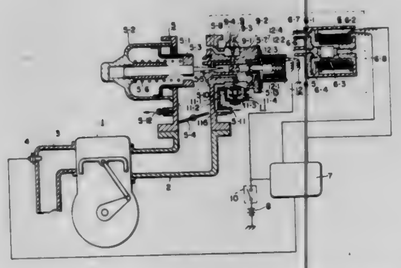
Shigetaka Takada, Ohbu, and Toshiharu Morino, Kuwana, both of Japan, assignors to Aisan Industry Co., Ltd., Aichi, Japan

Filed Jan. 4, 1980, Ser. No. 109,937

Claims priority, application Japan, Jun. 12, 1979, 54-73915

Int. Cl.³ F02M *7/00, 9/06*; F02B *3/00*

U.S. Cl. 123—439 **3 Claims**



1. A variable venturi type carburetor in which fuel discharged to the venturi section of the carburetor is metered by a fuel metering jet which is constructed such that the opening area of the venturi section is changed substantially in proportion to the flow rate of the air flowing through the venturi section by a movement of a variable venturi, characterized by comprising: a fuel valve disposed in the fuel passage and communicated at its outlet side with said fuel metering jet, said fuel valve being adapted to be opened and closed in response to the turning on and off of the engine key switch; and a fuel pressure regulator adapted to regulate the pressure of the fuel introduced to said fuel metering jet through said fuel valve, said fuel pressure regulator having two regulating chambers defined by a diaphragm, one of said regulating chambers being communicated with the inlet side of the fuel valve while the other regulating chamber being in communication with a venturi vacuum pickup port such that said fuel pressure regulator effects a control to maintain a constant pressure differential between the fuel pressure at the inlet side of said fuel metering jet and said venturi vacuum, said fuel pressure regulator being so constructed that its valve mechanism constitutes a part of the fuel return passage to a fuel tank.

4,290,400

CLOSED LOOP FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Allen J. Pomerantz, Bancroft, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 17, 1980, Ser. No. 131,085

Int. Cl.³ F02B *33/00*; F02M *7/00*

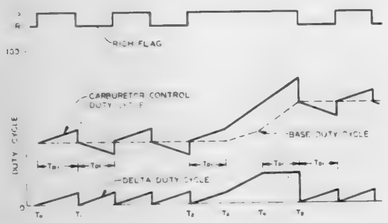
U.S. Cl. 123—440 **4 Claims**

1. A fuel control system for an internal combustion engine having combustion space into which an air-fuel mixture is supplied to undergo combustion and having means defining an exhaust gas passage from the combustion space into which spent combustion gases are discharged and are directed to the atmosphere comprising, in combination:

supply means effective to supply a mixture of air and fuel to the combustion space;

a sensor responsive to the air/fuel ratio of the exhaust gases at a predetermined point in the exhaust gas passage and, hence, after a transport time delay period dependent upon engine operating conditions, to the mixture supplied to the combustion space, the sensor providing a sensor signal shifting abrupty between two values in accord with the sense of deviation of the air/fuel ratio form a predetermined ratio;

control means responsive to the sensor signal effective to [1] generate a first signal having a preset value of zero at each change in the sense of deviation of the air/fuel ratio from the predetermined ratio and varying therefrom at a predetermined rate, [2] generate a second signal having its value



maintained constant for the period of the engine transport delay following each change in the sense of deviation of the air/fuel ratio from the predetermined ratio and thereafter varying at said predetermined rate and in a sense determined by the sense of deviation of the air/fuel ratio from the predetermined ratio, and (3) provide a control signal having a value in accord with the sum of the values of the first and second signals and varying in said sense determined by the sense of deviation of the air/fuel ratio from the predetermined ratio; and

means responsive to the control signal effective to adjust the air/fuel ratio of the mixture provided by the supply means in a sense tending to restore the predetermined air/fuel ratio and by an amount in accord with the value of the control signal, whereby the control signal is effective to return the air/fuel ratio of the mixture supplied by the supply means to a value substantially equal to the value for producing the predetermined ratio at each change in the sense of the deviation of the air/fuel ratio from the predetermined ratio.

4,290,401

VAPORIZATION MEANS FOR LIQUID FUEL

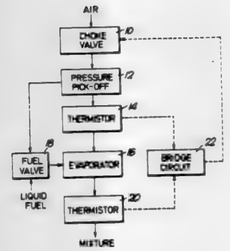
John R. C. Pedersen, 27, Greenway, Woodmancote, Cheltenham, England

Filed Mar. 23, 1978, Ser. No. 889,293

Int. Cl.³ F02M *17/18*

U.S. Cl. 123—524 **7 Claims**

1. Vaporization means for liquid fuel, comprising a reservoir for liquid fuel, an air passage for a stream of air, a wick for delivery of fuel in a substantially completely vaporized form and/or with a substantially constant liquid/vapor ratio to a location intermediate the ends of the passage, means for limiting supply of fuel from the reservoir to the wick so that the strength of the resultant mixture of vaporized fuel and air is independent of the air flow, temperature sensitive means, including a thermistor disposed in the air passage upstream of the evaporator, a thermistor disposed in the air passage downstream of the evaporator, said thermistors being connected in a bridge circuit for monitoring the temperature difference between the incoming air stream and the mixture of vaporized fuel and air, and control means for adjusting the quantity of fuel supplied from the reservoir to the wick in dependence on the output from the bridge circuit to maintain the mixture strength at a predetermined value.



4,290,402

GAS-OPERATED INTERNAL COMBUSTION ENGINE

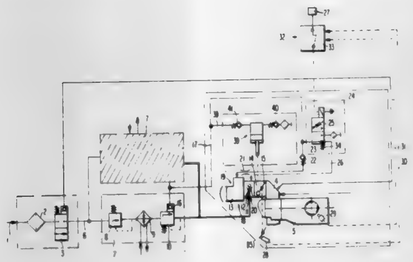
Horst Bergmann, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 138,094

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913864

Int. Cl.³ F02M *13/08*

U.S. Cl. 123—527 **10 Claims**



1. A gas-operated internal combustion engine comprising an air/gas mixer means, a volume control valve means for controlling a flow of a gas stream to the air/gas mixer means, means for biasing the volume control valve means into a closed position, the volume control valve means including a diaphragm means adapted to be exposed on an operating side thereof to a vacuum ambient in the gas downstream of the volume control valve means so as to urge the diaphragm means to an opening position of the control valve means, the diaphragm means on rear side thereof being adapted to be exposed to a control pressure, the engine further including a throttle valve means disposed downstream of the air/gas mixer means and an air supply means having an air filter means disposed upstream of the air/gas mixer means, characterized in that a pressure compensating means is disposed between the rear side of the diaphragm means of the volume control valve means in a portion of the air supply means, one pressure compensating means terminates at or upstream of the air/gas mixer means, a choke means is arranged in the pressure compensating means at one of the air filter means or a housing of the air/gas mixer means, a check valve means is disposed in the pressure compensating means at a position between the choke means and the volume control means, the check valve means opens in a direction toward the choke means, a branch conduit means branches off from the pressure compensating means at a position between the check valve means and the volume control valve means, and in that a reversing valve is arranged in the branch conduit means, the reversing valve means is operable to be selectively switched to a first position enabling the branch conduit means to be opened into the atmosphere through a further choke means and a second position enabling the branch conduit means to be subjected, without impediment, to vacuum ambient in the air/gas mixer means.

4,290,403

METHOD AND APPARATUS FOR PROVIDING OPTIMUM FUEL-TO-AIR RATIO FOR INTERNAL COMBUSTION ENGINE

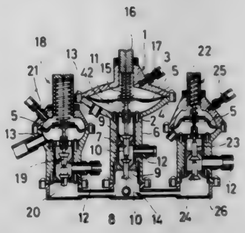
Emmanuel J. Ziniades, 314 Kirstenbosch Flats, 60 Dundalk Ave, Parkview, Johannesburg, Transvaal Province, South Africa

Filed Nov. 23, 1979, Ser. No. 96,670

Claims priority, application South Africa, Nov. 28, 1978, 78/6677

Int. Cl.³ F02M *25/06, 23/00*

U.S. Cl. 123—568 **6 Claims**



2. Apparatus for controlling and providing an optimum fuel-to-air ratio for the fuel mixture for an internal combustion engine having an exhaust conduit and a fuel mixture feed system which includes an inlet manifold and a known type of carburetor comprising:

at least two dual valves each having two inlets, one connectable to the atmosphere and the other to the exhaust conduit, two valve seats, two valve members cooperating with said seats for variably controlling flow respectively of air and exhaust gas through the valve, and outlet means connectable to the inlet manifold for supplying air and exhaust gas thereto;

pressure responsive means for each of said valves for simultaneously operating said two valve members thereof; and

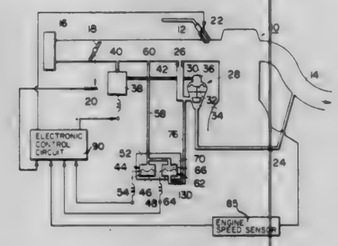
means for connecting each of said pressure-responsive means to the fuel mixture feed system at a position of variable pressure therein for operating the corresponding valve to variably control the flow of air and exhaust gas therethrough proportionately to the pressure at said position.

4,290,404

FUEL SUPPLY CONTROL SYSTEM

Yoshitaka Hata, Fujisawa, and Kenji Okamura, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 13, 1979, Ser. No. 93,672
Claims priority, application Japan, Nov. 30, 1978, 53-147235
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **6 Claims**



1. A fuel supply control system for use in an internal combustion engine including an intake passage provided therein with a throttle valve, an exhaust passage, and an exhaust gas recirculation passage connecting said exhaust passage to a first port of said intake passage provided downstream of said throttle valve and containing an exhaust gas recirculation valve, comprising:
(a) a suction vacuum sensor for detecting the engine suction vacuum appearing in said intake passage downstream of said throttle valve,
(b) an orifice provided in said exhaust gas recirculation passage between said first port and said exhaust gas recirculation valve,
(c) a pressure difference sensor for detecting the pressure difference between the opposite sides of said orifice,
(d) a speed sensor for detecting the speed of rotation of said engine, and
(e) means for determining an amount of fuel supplied to said engine in accordance with the intake air flow derived from the engine suction vacuum detected by said suction vacuum sensor and the engine speed detected by said speed sensor and corrected in accordance with the exhaust gas recirculation flow derived by the pressure difference detected by said pressure difference sensor.

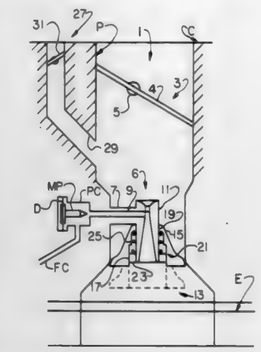
4,290,405

CARBURETOR WITH SONIC FUEL ATOMIZER

Larry J. Tipton, Florissant, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 53,935
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—590 **8 Claims**

1. In a carburetor for an internal combustion engine, the carburetor having a conduit through which air is drwn into the engine and a source of fuel, the improvement comprising:
means for delivering fuel from the source to the conduit for mixing with air to form an air-fuel mixture combusted in the engine, the fuel delivering means including a chamber to which pressurized fuel is delivered, the chamber having an outlet to the conduit, and a tapered fuel metering pin seating in the outlet, the position of the pin in the outlet being a function of the pressure created in the chamber by fuel delivered thereto and controlling the quantity of fuel delivered to the conduit;
a throttle valve positioned at the inlet to the conduit and movable between a closed and an open position to control the quantity of air drawn into the engine;
means defining an outlet for the fuel to be delivered to the conduit, fuel discharged through the outlet being atomized by the air flowing past the outlet; and
means for causing the air flowing past the fuel outlet to flow therepast at substantially sonic velocities thereby to improve fuel atomization and enhance mixing of the air and fuel.

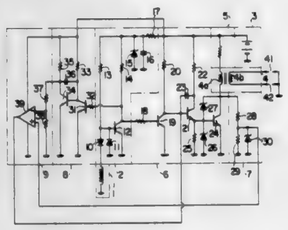


4,290,406

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Michio Iyoda, Aichi, and Shigeya Abe, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 26, 1979, Ser. No. 6,914
Claims priority, application Japan, Mar. 14, 1978, 53/29588
Int. Cl.³ F02P *3/04, 11/00*
U.S. Cl. 123—645 **7 Claims**



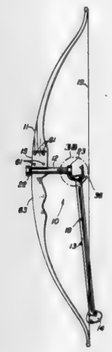
1. An ignition system for an internal combustion engine comprising:
pulse generating means for generating a train of pulses having a first and second output levels;
an ignition coil having primary and secondary windings, said primary winding being adapted to be connected in series with an electric power source of said internal combustion engine and said secondary winding being adapted to be connected to at least one spark plug provided on said internal combustion engine;
a transistor connected in series with said primary winding of said ignition coil for energizing and deenergizing said primary winding in response to said first and second output levels of pulses from said pulse generating means applied thereto; and
transistor control means for (a) controlling the currents of said transistor in response to the transition of said pulses from said second to first output levels so that an energization current flowing from said electric power source through said primary winding is gradually increased in accordance with a first time constant after the transition of said output pulses from said second to first output levels and (b) controlling the currents of said transistor in response to the transition of said pulses from said first to second output levels so that a deenergization current flows in said primary winding that changes in accordance with a second time constant shorter than said first time constant.

4,290,407

ARCHERY GUIDING DEVICE FOR ARCHERY BOW

William M. Damron, 1145 W. Harvest, Mesa, Ariz. 85201

Filed Jan. 9, 1979, Ser. No. 2,224
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—41 A **6 Claims**



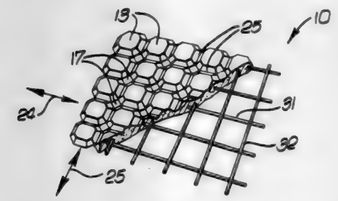
1. A guiding and launching device for arrows comprising:
a hollow launching tube assembly,
attachment means for fastening said assembly at one end thereof to the spine point of a bow,
means attached to a bow for pivotally moving at least a part of said assembly relative to the longitudinal axis of a bow for moving at least a part of said assembly into arrow launching position and to a position adjacent the longitudinal axis of a bow for carrying and storage purposes, and
a butt member fastened to the other end of said assembly for engaging the jawbone of a user when said assembly is in arrow launching position.

4,290,408

REFRACTORY LATTICE AND FABRICATION

George C. Juett, Pasadena, and Donald H. Rez, 301 36th St., Newport Beach, Calif. 92663, assignors to Donald H. Rez and Betty Rez, both of Newport Beach, Calif.

Filed Jan. 22, 1979, Ser. No. 5,306
Int. Cl.³ A47J *37/00*; F23H *13/00*; C04B *33/34*; A01J *43/20*
U.S. Cl. 126—25 R **6 Claims**



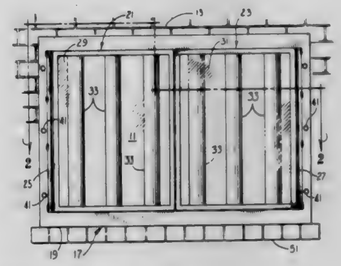
1. In combination with an upper grille to support an edible, and a flame source spaced below the grille, the grille supported by a shell, the improvement comprising
(a) a series of integrally interconnected refractory briquettes forming a generally horizontally extending lattice spaced below the grille and above said flame source.
(b) metallic members projecting lengthwise through multiple of said briquettes and confined within the lattice to reinforce same, said members protected against direct flame contact by extents of said refractory briquettes therebeneath,
(c) whereby the briquettes will be heated by flames rising from said source to radiate heat upwardly to the cooking zone, and the metallic members will not be directly exposed to said flames,
(d) said briquettes being arranged in rows and columns, and there being vertical openings formed through the lattice, between diagonally related briquettes, said openings also spaced apart in rows and columns.

4,290,409

FIREPLACE GLASS DOOR WITH HEAT CIRCULATOR

Carlos Mayo, Springdale, Ark., assignor to C. Mayo, Inc., Springdale, Ark.

Filed Oct. 12, 1979, Ser. No. 84,080
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **8 Claims**



1. A fireplace screen comprising
a frame with a central opening adapted to be attached to a fireplace,
at least one door having a top and a bottom and supported by and extending outwardly from said frame and movable to cover and uncover said opening,
said door having a thickness of at least one inch from its inner side to its outer side and a transparent glass pane mounted therein spaced from the inner side of said door,
at least two elongated tubular air ducts open at both ends, spaced apart from each other, extending vertically in said door, located toward the inner side of said door from said glass pane, and each having a wall which absorbs radiant heat from the fireplace causing heating of air in said duct, said door having openings communicating with said open duct ends.

4,290,410

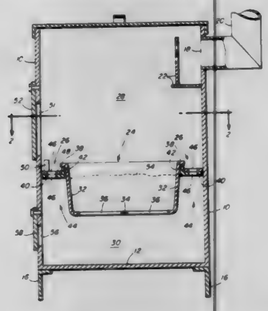
COAL STOVE

Lawrence E. Trainer, Box 205, Bryantville, Mass. 02327

Filed Feb. 26, 1979, Ser. No. 15,446
Int. Cl.³ F23M *5/00*
U.S. Cl. 126—146 **13 Claims**

1. A coal stove comprising:
a heat conductive stove body having a stove sidewall, a bottom wall and a cover;
a fire pot adapted to receive a load of coal, the fire pot having an apertured bottom wall defining a grate and a sidewall extending upwardly from the bottom wall;
means for supporting the fire pot within the lower region of the stove;
said fire pot and said supporting means being constructed and arranged so that the sidewall of the fire pot is spaced from the sidewall of the stove body thereby defining an annular space between the sidewall of the fire pot and the stove sidewall;
an annular member extending between the stove sidewall and the upper end of the sidewall of the fire pot, the region of the stove above the annular member defining an upper

chamber and the region of the stove below the annular member defining a lower chamber;
aperture means formed in the annular member for communication between the annular space and the upper chamber;
means for controlling the flow of air through the aperture means to enable air to flow from the annular space, upwardly into the upper chamber and at a variable, controllable flow rate;
an air inlet formed in the lower region of the stove sidewall in communication with the lower chamber; and
a flue outlet formed in the upper region of the stove sidewall in communication with the upper chamber.

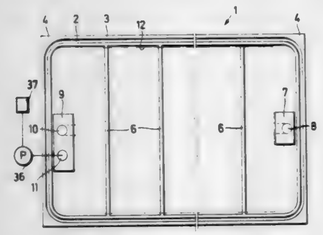


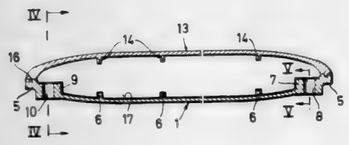
4,290,411
SOLAR ENERGY COLLECTOR SUN-TRACKING APPARATUS AND METHOD
George F. Russell, 8513-42nd Ave. West, Tacoma, Wash. 98466
Filed Jun. 5, 1978, Ser. No. 912,456
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **6 Claims**



1. In a sensing mechanism including a photoelectric cell for sun-tracking apparatus having an insolation receiver to be directed toward the sun and an elongated shield tube housing the photoelectric cell for exposing the cell to the rays of the sun while shielding the cell from stray light, the improvement comprising canting the end of the shield tube to enable the rays of the sun to expose the cell when the angle between the direction of the sun's rays and the longitudinal axis of the shield tube is toward the lower side of the cant from the tube's longitudinal axis.

4,290,412
SOLAR COLLECTOR AND PROCESS FOR ITS OPERATION
Ralf Krauss, Palma de Mallorca, Spain, assignor to Walter Steinrücke, Cologne, Fed. Rep. of Germany
Filed Jan. 31, 1979, Ser. No. 8,126
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1978, 2804746; Apr. 2, 1978, 2804863; Oct. 6, 1978, 2825509
Int. Cl.³ F24J *3/02*; F28F *13/00*
U.S. Cl. 126—419 **31 Claims**





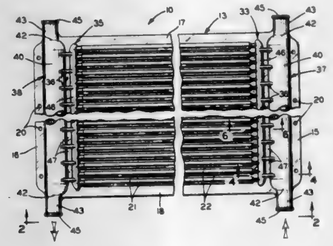
1. A solar collector assembly comprising:
(a) a hollow housing at least partially transparent to solar rays,
(b) absorber means disposed in the housing to receive said solar rays,
(c) vacuum pump means connected to maintain a normally vacuum insulating effect around the absorber means inside of the housing,
(d) means for sensing the heat radiation of prevailing ambient atmospheric conditions, and
(e) switching means responsive to said sensing means to turn off the vacuum pump means and ventilate to completely neutralize said insulating effect.

4,290,413
SOLAR ENERGY COLLECTOR
Ronald D. Goodman, Sylvania; Wallace F. Krueger, Toledo, and Anthony R. Shaw, Waterville, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Continuation-in-part of Ser. No. 909,204, May 25, 1978, Pat. No. 4,206,748. This application Sep. 19, 1979, Ser. No. 76,817
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 **13 Claims**

1. A solar energy collector comprising: a body formed of plastic material in a one-piece unitary construction having a primary inlet and outlet manifold at the opposite ends thereof, respectively, and a multiplicity of elongated, laterally spaced parallel passages extending in a direction generally normal to said primary inlet and outlet manifolds to provide cross fluid flow paths therebetween, and secondary inlet and outlet manifolds parallel to said primary manifolds, respectively, said secondary manifolds interposed between said primary manifolds and said passages, said secondary and primary manifolds being interconnected by a plurality of cross passages for fluid flow, each of said cross passages tapering in cross-sectional area from the primary to the secondary manifold.

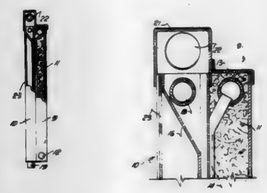
13. A solar energy collector comprising: a body formed of plastic material in a one-piece unitary construction having a primary inlet and outlet manifold at the opposite ends thereof,

respectively, and a multiplicity of elongated, laterally spaced parallel passages extending in a direction generally normal to said primary inlet and outlet manifolds to provide cross fluid flow paths therebetween, and secondary inlet and outlet manifolds parallel to said primary manifolds, respectively, said secondary manifolds interposed between said primary manifolds and said passages and establishing communication therebetween, said body being formed of a pair of sheet members



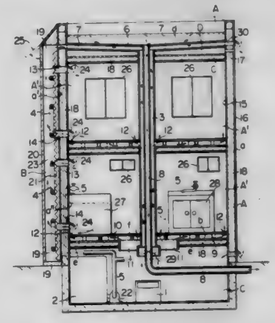
fused together along laterally spaced lines substantially lengthwise of said body to form elongated webs between said passages, each of said passages being formed by oppositely displaced portions of said sheet members between said webs and defined by an upper wall formation above said web and a lower wall formation below said web, and an inlet restriction adjacent at least one end of each passage formed by maintaining the lower wall in the same plane as said web thereby reducing the cross sectional area of said passage.

4,290,414
SOLAR HEATING COLLECTORS
John Sharp, P.O. Box 198, St. Leonards, New South, Wales, 2065, Australia
Filed Aug. 7, 1979, Ser. No. 64,637
Int. Cl.³ F24J *3/02*; F28F *9/02*
U.S. Cl. 126—429 **3 Claims**



1. A solar energy collector comprising:
a first and a second tray-like member resting one upon the other and secured together, each tray-like member including a floor and top, and sidewalls interconnecting said floor and top, said first tray-like member containing on opposite ends thereof respective fluid inlet and outlet headers, a plurality of thermally conductive tubes extending between said fluid inlet and outlet headers in thermal contact with the top wall of said first tray-like member, and an insulating material filling the interior space of said first tray-like member, the top of said first tray-like member forming the floor of said second tray-like member and being formed of heat absorbing material, said first tray-like member top having undulations therein respectively accomodating said plurality of tubes, said second tray-like member containing an additional heat absorbing wall between the top and floor thereof, said additional wall contacting with the crests of the undulations in the top of said first tray-like member to define a plurality of ducts between neighboring undulations, the cross-section of the ducts being greater than the cross-section of the tubes, said second tray-like member including an inlet header and outlet header connected to opposite ends of said ducts and the top of said second tray-like member being formed of a material transparent to light.

4,290,415
BUILDING FOR COLD DISTRICTS
Tadao Tatsumi, No. 7, Higashi 6-jo 6-chome, Asahikawa-shi, Hokkaido, Japan
Filed Nov. 30, 1979, Ser. No. 98,745
Claims priority, application Japan, Mar. 17, 1979, 54-34455[U]; May 14, 1979, 54-59480; Aug. 14, 1979, 54-103811
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **10 Claims**

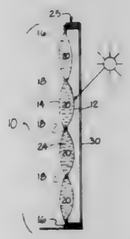


1. A building for cold districts, said building having a semi-basement and a roof comprising:
a room heater unit provided within said semi-basement, heat insulation materials provided on outer side walls and bottom of said building and also a bottom portion of a narrow space under said roof of said building for heat insulating the interior of said building from external atmosphere;
passage means each provided under a floor of each room of said building and communicating with said semi-basement such that warm air produced from said room heater unit is supplied through each of said passage means and to each room through the floor thereof, and
a vertical solar heat absorption system having a heat collection path of a predetermined cross sectional area, and provided on a sunny side outer wall of said building, and at least two of the rooms of said building each having at least two vertically spaced ports communicating each said room with said solar heat absorption system; a warm air duct having a cross sectional area less than that of said heat collection path, and provided along the underside of said roof of said building and communicating with an upper end portion of said solar heat absorption system and a circulation path vertically extending from said warm air duct through the interior of said building into said semi-basement,
whereby air in said rooms may be supplied to said solar heat absorption system via said ports, and whereby said air supplied via said ports is heated and expanded in said solar heat absorption system and may be returned to said rooms via said ports.

4,290,416
PHASE CHANGE ENERGY STORAGE PANEL FOR ENVIRONMENTALLY DRIVEN HEATING AND COOLING SYSTEM

Timothy Maloney, Winchester, Va., assignor to One Design, Inc., Winchester, Va.

Filed Sep. 13, 1978, Ser. No. 942,132
Int. Cl.³ F24J 3/02
U.S. Cl. 126—430 22 Claims



1. A phase change energy storage panel, comprising:
at least one quantum of phase change energy storage medium capable of gaining and losing heat of fusion in a temperature within a temperature range to which the panel is to be subjected during use; said quantum being of sufficiently thin transverse cross section as to avoid permanent stratification of said quantum throughout substantially the full thickness thereof during such use;
a cell having wall means including an outer face and an inner face and enveloping each such quantum, said cell wall means including portions constructed and arranged to be engaged for supporting the panel for the panel to be impinged upon by sunlight;
said cell wall means portions extending perimetrically of said at least one quantum;
said cell wall means being constituted by two confronting sheets of liquid-tight material; said sheets being perimetrically seamed together in a liquid-tight manner to provide at least one enclosed space;
said sheets also being intermedially seamed together in a liquid-tight manner according to a pattern which is bordered by their aforesaid perimetrical seaming;
said seaming also including portions constructed and arranged to be engaged for supporting the panel for the panel to be impinged upon by sunlight;
said cell wall means portions are free of direct communication with each said quantum, so that fasteners may be secured therethrough for supporting the panel without permitting leakage of molten phase change energy storage medium from said panel;
framing means for supporting the panel; and
fasteners securing the panel at said portions to said framing means;
the framing means are constituted by housing structure framing including studs; and
said cell extending widthwise from one said stud to an adjacent next one of said studs.

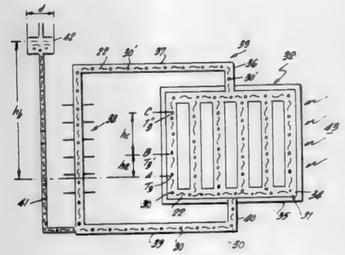
6. A phase change energy storage panel, comprising:
at least one quantum of phase change energy storage medium capable of gaining and losing heat of fusion in a temperature within a temperature range to which the panel is to be subjected during use; said quantum being of sufficiently thin transverse cross section as to avoid permanent stratification of said quantum throughout substantially the full thickness thereof during such use;
a cell having wall means including an outer face and an inner face and enveloping each said quantum, said cell wall means including portions constructed and arranged to be engaged for supporting the panel for the panel to be impinged upon by sunlight;
said cell wall means portions extending perimetrically of said at least one quantum;
said cell wall means being constituted by two confronting sheets of liquid-tight material; said sheets being perimetrically seamed together in a liquid-tight manner to provide at least one enclosed space;
said sheets also being intermedially seamed together in a liquid-tight manner according to a pattern which is bordered by their aforesaid perimetrical seaming;
said quantum and cell wall means being shaped and associated comparably, respectively, to the gypsum filing and covering sheet material of conventional gypsum board dry wall paneling, including tape joint trough means extending along two opposed edges thereof on one face thereof, so that said phase change energy storage panel may be hung, taped and spackled much like conventional dry wall paneling.

7. A phase change energy storage panel, comprising:
at least one quantum of phase change energy storage medium capable of gaining and losing heat of fusion in a temperature within a temperature range to which the panel is to be subjected during use; said quantum being of sufficiently thin transverse cross section as to avoid permanent stratification of said quantum throughout substantially the full thickness thereof during such use;
a cell having wall means including an outer face and an inner face and enveloping such said quantum, said cell wall means including portions constructed and arranged to be engaged for supporting the panel for the panel to be impinged upon by sunlight;
said cell wall means portions extending perimetrically of said at least one quantum;
said cell wall means being constituted by two confronting sheets of liquid-tight material; said sheets being perimetrically seamed together in a liquid-tight manner to provide at least one enclosed space;
said sheets also being intermedially seamed together in a liquid-tight manner according to a pattern which extends to and is bordered by their aforesaid perimetrical seaming, whereby said enclosed at least one space is divided into a plurality of individual cells in a two-dimensional array;
there being a said quantum in each such cell;
framing means for supporting the panel; and
fasteners securing the panel at said portions to said framing means;
a panel of glazing ranked relatively outside said cell wall means, in a confronting manner, with a space therebetween; and
wall means perimetrically substantially enclosing the last-mentioned space, to provide an air chamber between the at least one cell-enveloped quantum of phase change energy storage medium and the panel of glazing; and
pivot means mounting the framing means for movement of each cell through about 180 degrees between a first position wherein said outer face is presented outwardly and a second position wherein said outer face is presented inwardly.

4,290,417
SOLAR HEAT SYSTEM USING GRAVITATIONAL CIRCULATION OF HEATED TRANSFER MEDIUM

Melville F. Peters, Livingston, N.J., and Walter T. Peters, Harbor Rd., East Dennis, Mass. 02641, assignors to Walter Todd Peters; Margot E. Peters, both of East Dennis, Mass. and Albert F. Kronman, Locust Valley, N.Y.

Filed Jul. 18, 1979, Ser. No. 58,741
Int. Cl.³ F24J 3/02
U.S. Cl. 126—434 9 Claims

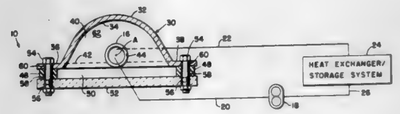


1. A solar heating system comprising solar collecting means enclosing a heat absorbing medium, fluid storage means communicating with said collecting means; at least one radiator receiving heat from said medium; a heat exchanger connected between said collecting means and said storage means cooperating with the fluid storage to preheat the heat absorbing medium; thermostatically operated valves between said exchanger, said collecting means and said storage means; said medium containing an emulsifier and at least two additives having different boiling points vaporizable at a temperature below the boiling point of said medium to cause flow of said medium through said entire system by gravitational circulation said additives having a combined vapor pressure at their peak operating temperatures which is lower than the safe operating pressure of the system.

4,290,418
SOLAR COLLECTORS

Miroslav Uroshevich, Cincinnati, Ohio, assignor to Alpha Solarco Inc., Cincinnati, Ohio

Filed Jun. 25, 1979, Ser. No. 52,087
Int. Cl.³ F24J 3/02
U.S. Cl. 126—439 3 Claims



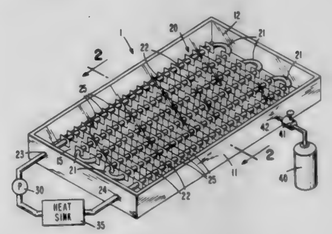


1. A solar energy collector comprising:
an elongated reflector element for receiving the beam component of solar radiation and focusing it generally along a focal (line) axis;
an elongated trough like element having a substantially uniform cross-section between its ends and including a concave reflective surface facing said reflector element, said trough like element having flanges integral with the marginal edges thereof, said flanges being in substantially the same plane, said trough like element further including end walls and flanges interconnecting the flanges along said marginal edges and being in the same plane to form a continuous perimeter flange;
an elongated receiver comprising a tubular element extending through said trough and generally coextensive with said focal line, said tubular element providing a passage for heat transfer fluid through said collector;
a flat plate covering said trough, said plate being transparent to solar radiation (: and);
a continuous perimeter seal between the side and end flanges of said trough and said plate, (whereby the) said space therebetween (may be made) being subatmospheric; and,
a plurality of discrete fasteners in contact with said plate and said flanges and spaced from one another substantially uniformly around the perimeter flange, said fasteners extending through said transparent sheet and said perimeter flange for placing said continuous perimeter seal in compression.

4,290,419
MULTI SYSTEMS SOLAR COLLECTOR

Richard W. Rabedeaux, 104 N. Second Ave. East, Newton, Iowa 50208

Filed Jun. 28, 1979, Ser. No. 52,850
Int. Cl.³ F24J 3/02; E06B 7/12
U.S. Cl. 126—450 5 Claims



1. A multi system solar collector assembly comprising:
an insulated framework having a thermally insulated cover forming a chamber within the framework;
a finned heat pipe collector tube having a plurality of serpentine coils disposed within the framework;
a heat transfer fluid disposed in the collector tube; and
a pressurized atmosphere within the chamber, comprising a dry gas, wherein said pressurized atmosphere has a value greater than atmospheric pressure, which is maintained by a pressure regulator operatively connected to said chamber; and whereby the solar collector assembly will transfer conduction, convection and radiant energy to said heat transfer fluid.

4,290,420
STRESS INCONTINENCE DIAGNOSTIC AND TREATMENT DEVICE

Alberto Manetta, 2729 Eighth Ave., Altoona, Pa. 16602

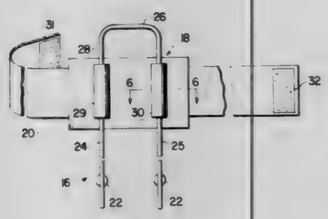
Filed Jun. 9, 1980, Ser. No. 157,795
Int. Cl.³ A61M 31/00
U.S. Cl. 128—1 R 5 Claims

1. A device for use in diagnosis or treatment of stress urinary incontinence in a patient comprising
a pressure member including a generally U-shaped body of deformable metal having
first and second elongated legs in substantially parallel relationship having a support therebetween,
the end portions of said legs being bent to form an angle of less than 90° with said legs, said end portions being insertable into the vagina of the patient with the distal ends thereof pressing upwardly against the anterior wall of the vagina to modify the urethrovesical angle with

the support portion adapted to abut against the abdomen, and

a coating of physiologically inert polymeric material covering said legs; and

a support for holding said body against the lower abdomen of the patient, including



a plate having means attached to the leg portions adjacent the support portion for holding said legs in substantially parallel relationship; and

belt means attached to said plate for surrounding the trunk of the patient and for holding said plate against the patient.

4,290,421

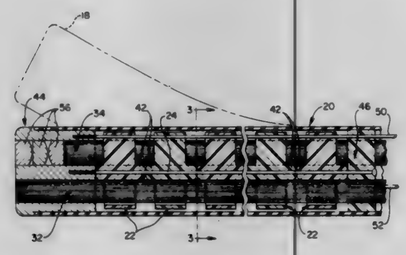
FIBERSCOPE

Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Continuation of Ser. No. 1,670, Jan. 8, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 161,725

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **5 Claims**



1. In a fiberscope probe for use in an endoscope having an articulable distal section, the improvement comprising:

a series of webbed vertebrae in said distal section of said probe each having three approximately equally circumferentially spaced openings through which endoscope illuminating and image-conducting fiber bundles and biopsy channelling may be extended and a centrally disposed doubled-ended hinge portion, said hinge portions being adjoined successionally;

means for retaining said hinge portions in said adjoined relationship while permitting universal hinging thereof one relative to another; and

operating wire means extending peripherally through said series of vertebrae for use in effecting said hinging thereof, said operating wire means comprising three wires approximatey equally circumferentially spaced from one another about said periphery of said vertebrae, said wires being anchored in said fiberscope probe adjacent one end of said series of vertebrae.

4,290,422

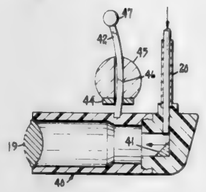
SURGICAL HEADLIGHT SYSTEM

Charles V. Burton, 18409 Minnetonka Blvd., Deephaven, Minn. 55391

Filed Jul. 5, 1979, Ser. No. 54,825

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—23 **2 Claims**



1. A surgical headlight system comprising:

(a) a headband for supporting the light on the head of the wearer, said headband being adaptable for positioning on the head of the wearer above the level of the eyes;

(b) support means carried by said headband for frictionally engaging a ball joint member;

(c) a ball joint member frictionally engaged with said support means;

(d) elongated light projecting means having an axis of elongation spaced from said ball joint member, said projecting means carried by and below said ball joint member and disposed for easy movement in all directions in a continuum of positions wherein light is emitted from said projecting means along the axis of elongation and generally away from said headband, wherein the light projecting means is connected to a fiber optic light cable which transmits light from a light source to said light projecting means, said fiber optic light cable entering said light projecting means at an angle of about 90° relative to the central axis of the light projecting means; and

(e) adjusting means, connecting said ball joint member to said light projecting means, for varying the distance between said ball joint member and said light projecting means so that said axis of elongation can be positioned proximate the axes of vision of the wearer's eyes;

(f) wherein said adjusting means comprises a shaft carried by said light projecting means and extending in frictional engagement through an aperture in said ball joint member whereby moving said shaft through said aperture will cause the light projecting means to be raised or lowered.

4,290,423

PARAPLEGIC STAND HAVING A LIFT MECHANISM

Henry Kleinwolterink, Sheldon, Iowa, assignor to Main-Tainer Corporation, Sheldon, Iowa

Filed Apr. 25, 1980, Ser. No. 143,839

Int. Cl.³ A61F *3/00*

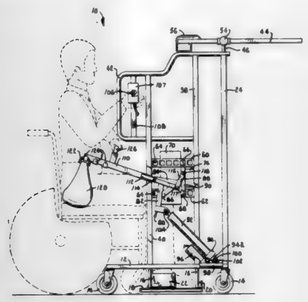
U.S. Cl. 128—80 G **9 Claims**

1. A device for assisting a patient to stand in a generally upright position, said device comprising:

a substantially upright frame having a platform for receiving the feet of the patient;

a pair of lift arms mounted to said frame for movement between a raised position and a lowered position;

sling means carried on said lift arms and adapted to be drawn behind the back of the patient when the patient is in a sitting position and said lift arms are in the lowered position, said sling means being raised with said lift arms to raise the patient to an upright standing position on said platform in response to movement of the lift arms to the raised position; and



power means for effecting movement of said lift arms between the lowered and raised positions.

4,290,424

PLASTER CUTTING WIRE, PLASTER CAST OR DRESSING COMPRISING SUCH WIRE AND METHOD OF MANUFACTURING SUCH A PLASTER CAST OR DRESSING

Karl I. Wahl, Ekerö, and Lars G. Lindström, Sundbyberg, both of Sweden, assignors to Landstingens Inkopscentral, Ekonomisk Forening, Solna, Sweden

Filed Nov. 21, 1979, Ser. No. 96,296

Claims priority, application Sweden, Nov. 29, 1978, 7812318

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—91 A **10 Claims**



1. A cast cutting device comprising an anchoring plate including a plurality of apertures extending therethrough, a cutting wire extending through said apertures to support said plate, a first segment of said wire extending through a first of said apertures and a second segment of said wire extending through a second of said apertures, said plate being positioned upon said wire substantially intermediate the two ends thereof, and a latching means attached to said first and second segments of said wire for maintaining said plate in position relative to said wire.

4,290,425

INFANT SUPPORT BOARD

Joel N. Helfer, New Haven, and Elisa M. Ferrara, Hartford, both of Conn., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 99,168

Int. Cl.³ A61F *13/00*

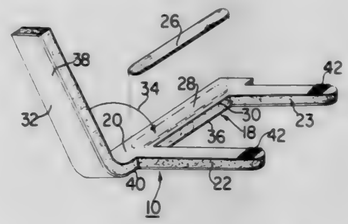
U.S. Cl. 128—133 **7 Claims**

1. A support board for use in securing an extremity of an infant against motion while infusing fluids intravenously in said extremity, comprising:

a rigid support member; and

means for affixing the support member to the extremity comprising a pad of flexible material shaped to form a plurality of flexible straps for holding the support board to the extremity;

the pad of flexible material being folded over and overlapping the support member;



the flexible material being affixed to itself where it overlaps the support member to retain the support member therebetween.

4,290,426

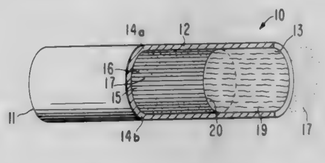
DISPENSER FOR DISPENSING BENEFICIAL AGENT

Joseph G. Luschen, Los Gatos, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 902,678, May 4, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,515

Int. Cl.³ A61M *7/00*

U.S. Cl. 128—260 **25 Claims**



1. A dispenser for the controlled dispensing of a beneficial agent to a fluid environment of use, the dispenser comprising:

(a) a container having a wall impermeable to fluid and impermeable to agent, said wall surrounding an internal reservoir having an uniform measurement along a given dimension;

(b) a passageway in the container connecting the reservoir with the exterior of the dispenser, said passageway having an area that permits entry of fluid into the reservoir, and release of beneficial agent from the reservoir;

(c) means in the reservoir for dispensing the beneficial agent from the dispenser, said means (1) occupying a volume having a constant cross-sectional area parallel to the passageway and housing the beneficial agent therein, (2) absorbs fluid that enters the reservoir and undergoes fluid induced relaxation from an unrelaxed to a relaxed state, with (3) the beneficial agent exhibiting an increased coefficient of diffusion in the relaxed means; and,

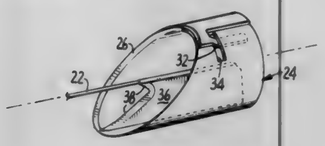
(d) wherein, when the dispenser is in operation in the fluid environment of use, beneficial agent is dispensed by diffusion through the relaxed means and the passageway at a controlled rate from the dispenser in an amount that corresponds to the amount of agent within the means that goes from an unrelaxed to a relaxed state, which relaxation occurs at a rate governed by the progressive fluid absorption and accompanying induced relaxation of the means over time.

4,290,427

ENDARTERECTOMY APPARATUS

Albert K. Chin, San Francisco, Calif., assignor to Thomas J. Fogarty, Palo Alto, Calif.

Filed Nov. 26, 1979, Ser. No. 97,206
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—304 **4 Claims**



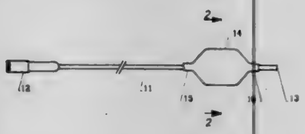
1. In an endarterectomy instrument comprising an annular knife having a cutting adge at one end thereof, said knife being split longitudinally and having overlapped end portions to thereby enable said knife to be yieldingly compressible radially for insertion within an artery and to thereafter enable said knife to apply a substantially constant outwardly directed pressure against said artery as an arteriosclerotic occlusion is being excised, and having a wire carrier attached thereto whereby said knife may be moved along an occluded artery to excise said occlusion therefrom, said cutting edge being located at the end of the knife from which said wire carrier extends the provision of attachment means carried by said knife and positioned bodily within the axial confines and centrally of said knife for connecting said wire carrier thereto along substantially the longitudinal axis of said knife, said attachment means including a cutting edge to enable said means to cut through an occlusion being excised by said knife.

4,290,428

CATHETER WITH BULB

Alain J. M. Durand, 12, Rue Jean-Jaures, F-95600 Eaubonne, and Jean C. Farcot, 18, Parc du Bearn, F-92210 Saint-Cloud, both of France

Filed Aug. 16, 1979, Ser. No. 67,161
Claims priority, application France, Sep. 1, 1978, 78 25254
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—349 B **2 Claims**



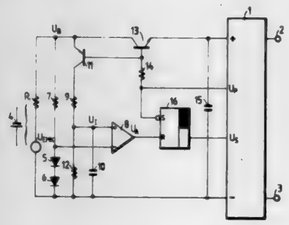
1. A catheter for blood retroperfusion, which comprises a tube of which the inner fluid passage opens directly into a bulb secured non-detachably to said tube, said bulb further comprising an orifice communicating with the cavity into which the catheter is introduced in actual use, wherein the total surface area of the communication ports between said tube fluid passage and the inner space of said bulb is at least equal to the total surface area of the orifice permitting the communication between the inner space of said bulb and the cavity into which the catheter is introduced.

4,290,429

BATTERY MONITORING CIRCUIT IN A CARDIAC PACEMAKER

Reinhard Blaser, Büdingen, Fed. Rep. of Germany, assignor to Biotronick Mess-und Therapiegeräte GmbH & Co. Ingenieurbüro Berlin, Berlin, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 136,094
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1979, 2913399
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **7 Claims**



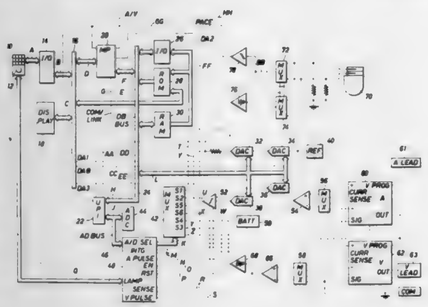
1. In a monitoring circuit for monitoring the state of the battery of a cardiac pacemaker, which pacemaker includes an energy storage element normally connected to be charged by the battery and to constitute an energy source for the pacemaker components, the circuit including a voltage detector connected to emit a signal when a parameter representative of the battery state passes a threshold value, the improvement comprising: first switching means for disconnecting the battery from the energy storage element during periodically recurring time periods of given duration; means defining a fixed load having an impedance which is large compared to the internal resistance of the battery and connected to apply to said voltage detector a voltage representative of the current flowing through said fixed load; means for connecting said load across the battery during each said time period for causing said load to be supplied with a current having a value at least indirectly defining the parameter representative of the battery state; and storage means connected to provide an indication of the emission of such signal by said voltage detector.

4,290,430

PACER ANALYZER

Daniel Bihn, Aptos, Calif., and Pat L. Gordon, West Columbia, Tex., assignors to Intermedics, Inc., Freeport, Tex.

Filed Jun. 5, 1980, Ser. No. 156,646
Int. Cl.³ A61N *1/00*
U.S. Cl. 128—419 PT **14 Claims**



1. A pacer system analyzer for determining compatibility between a selected implantable pacer and a patient within which the pacer is to be implanted, comprising:

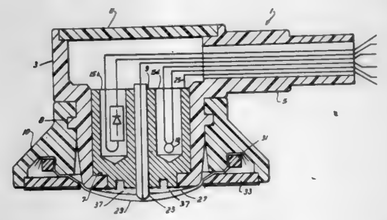
means for storing a digital representation of an actual cardiac waveform from said patient;
means connectable to said pacer for converting said digital representation to an analog output signal for presentation to said pacer; and
means connectable to said pacer for detecting a responses of said pacer to said analog output signal.

4,290,431

TRANSCUTANEOUS OXYGEN AND LOCAL PERFUSION MEASUREMENT

Normand C. Herbert, Goffstown, N.H.; Richard S. Burwen, Lexington, Mass., and Richard A. Mentelos, Hamden, Conn., assignors to Novametrix Medical Systems, Inc., Wallingford, Conn.

Filed Jun. 21, 1979, Ser. No. 50,691
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—635 **8 Claims**



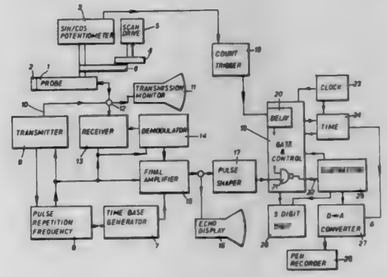
1. In a transcutaneous gas measurement probe including first and second electrodes, means for maintaining an electrolytic solution in contact with said first and second electrodes, means permeable to the gas to be measured in contact with said electrolytic solution and adapted to contact the surface at which said gas is transcutaneous, and means for maintaining said probe at substantially constant temperature, the improvement wherein said temperature maintaining means comprises
a semi-conductor device mounted in thermal transmitting relationship to said probe,
heater circuit means connected to said semi-conductor device for applying a controlled amount of current thereto for maintaining the temperature of said probe at a substantially constant predetermined temperature,
a first voltage producing means connected in parallel with said semi-conductor device for producing a first voltage having a magnitude proportional to the voltage across said semi-conductor device,
a second voltage producing means operatively connected to said semi-conductor device so as to conduct a current passing through said semi-conductor device for producing a second voltage having a magnitude proportional to said current,
a multiplier circuit having a first input operatively connected to said first voltage producing means and a second input operatively connected to said second voltage producing means and an output at which there is produced a product voltage having a magnitude proportional to the product of the magnitudes of the first and second voltages.

4,290,432

DECOMPRESSION BUBBLE DETECTORS

Stephen Daniels, Oxford, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 10, 1979, Ser. No. 83,439
Claims priority, application United Kingdom, Oct. 11, 1978, 40103/78
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **12 Claims**



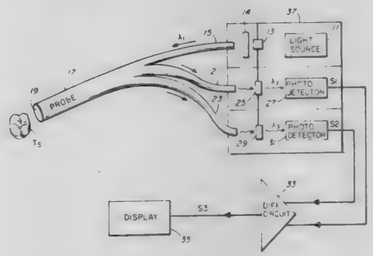
1. A decompression bubble detector for detecting decompression bubbles in human tissue comprising a pulsed ultrasonic transmitter, means to scan the transmitter across an area of tissue, a detector to record echoes reflected from said scanned area of tissue, a counter to count the number of echoes recorded by said detector in consecutive preselected time intervals, means for subtracting from said recorded number of echoes a number substantially equal to the average number of echoes recorded at normal atmospheric pressure, and a display means for displaying the resultant difference numbers of echoes recorded in successive preselected time intervals.

4,290,433

METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF CARIES IN TEETH USING VISIBLE LUMINESCENCE

Robert R. Alfano, 3777 Independence Ave., Bronx, N.Y. 10463

Filed Aug. 20, 1979, Ser. No. 67,771
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—665 **28 Claims**



13. Apparatus for use in detecting the presence of caries in the teeth of a person comprising:
(a) means for illuminating a region to be examined with a beam of monochromatic light, the wavelength of the beam of monochromatic light being one which will produce emission from the region at a wavelength where the intensity is about the same for caries and non caries and at a wavelength where the intensity increases in the presence of caries,
(b) means for measuring the intensity of the light emitted

from said region on illumination by said illuminating means at a wavelength where the relative intensity dependence of the spectra is about the same for caries and non-caries and at a wavelength where the intensity increases in the presence of caries and producing an electrical signal whose output corresponds to the intensity at each wavelength,

(c) means producing an electrical signal corresponding to the difference in said two electrical signals, and

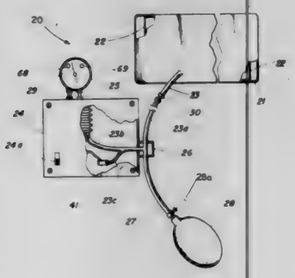
(d) means for displaying said difference electrical signal.

4,290,434

BLOOD PRESSURE MEASURING DEVICE

Warren R. Jewett, Tucson, Ariz., assignor to Vita Vet Research Group Inc., Marion, Ind.

Filed May 15, 1978, Ser. No. 905,795
Int. Cl.³ A61B 5/02
U.S. Cl. 128—680 **14 Claims**



1. A blood pressure measuring device for identifying the pressure of a subject's blood at systolic and diastolic conditions, said blood pressure measuring device comprising:

display means for indicating blood pressure measurements, sad display means including pressure sensor means and piezoelectric sensor means;

a compression cuff;

a quick disconnect bleed valve having a first end arranged with tube connection means and an opposite second end arranged with tube connection means;

a first section of tubing in fluid communication between said first end of said bleed valve and said compression cuff; and

a second section of tubing in fluid communication between said second end of said bleed valve and both said pressure sensor means and said piezoelectric sensor means.

4,290,435

INTERNALLY COOLED ELECTRODE FOR HYPERTHERMAL TREATMENT AND METHOD OF USE

David Waggott, Woodside, Calif., assignor to Thermatime A.G., Zug, Switzerland

Filed Sep. 7, 1979, Ser. No. 74,400
Int. Cl.³ A61N 1/04
U.S. Cl. 128—800 **8 Claims**

1. An improved electrode assembly for use in hyperthermal treatment of tumors in humans and animals wherein the tumor and surrounding tissue is heated with radio frequency energy by applying a pair of uninsulated conductive electrodes on opposite sides of a portion of the body containing the tumor such that an electrically conductive connection is made between the electrodes and the body portion to which they are applied, a radio frequency electric alternating current being passed between the electrodes at a magnitude selected to cause heating of the tumor beyond a predetermined temperature level while minimizing heating of tissue surrounding the tumor, said improved electrode assembly comprising an uninsulated conductive plate adapted for electrically conductive engagement with a surface portion of the body including the tumor for passing an electric current through both the tumor and surrounding tissue, means for interconnecting said conductive plate with circuit means for producing said radio frequency energy, means forming passages in heat exchange communication with said conductive plate, means for circulating a fluid coolant through said passages in order to limit temperature rise within surface portions of the body beneath said conductive plate, means forming a chamber including



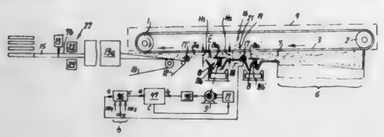
outlet jets arranged adjacent the periphery of the conductive plate and directed outwardly of the periphery so as to be toward the surrounding surface portions of the body, and means connected with the chamber for supplying cooling fluid under pressure thereinto, whereby heating in surface portions of the body immediately surrounding the conductive plate is minimized during the hyperthermal treatment.

4,290,436

METHOD AND APPARATUS FOR PRODUCING AN ELONGATED FILLER FROM FIBERS, ESPECIALLY TOBACCO FIBERS

Joachim Reuland, Neu Börnsen, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,283
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833085
Int. Cl.³ A24C 5/14, 5/39
U.S. Cl. 131—108 **38 Claims**



1. A method of producing an elongated filler from fibers, especially tobacco fibers, comprising the steps of continuously converting the fibers into an elongated stream which contains a surplus of fibers and advancing the stream lengthwise; equalizing the advancing stream, including removing the surplus of fibers therefrom; densifying and wrapping the equalized stream to convert the stream into the filler; generating a signal in dependence on the height of the stream prior to said equalizing step; and controlling said equalizing step in dependence on said signal.

4,290,437

CHANGE-A-BOWL PIPE

Robert L. Smith, Rte. 1, Box 412, Burgaw, N.C. 28425

Filed Oct. 22, 1979, Ser. No. 87,046
Int. Cl.³ A24F 1/22
U.S. Cl. 131—196 **6 Claims**

1. A smoking pipe comprising:

(a) an outer bowl and an inner bowl;

(b) said inner bowl mounted within said outer bowl;

(c) said inner bowl having a bottom and an opening in said bottom;

(d) a stem including a mouthpiece and a bowl base support having a passageway therethrough;

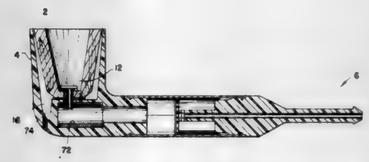
(e) said passageway having an upper wall and having an opening in said upper wall;

(f) a hollow connector positioned in said openings and securing said inner bowl to said bowl base support and providing a passageway from said inner bowl to said stem passageway;

(g) said hollow connector positioning said inner bowl with regard to said outer bowl;

(h) said inner and outer bowls each having an upper rim and inner and outer surfaces;

(i) said inner and outer bowls at their upper rims including



spacing means for maintaining said bowls in spaced relationship with one another;

(j) said outer bowl having its inner surface substantially vertical throughout its height;

(k) said inner bowl having a truncated cone shape and having its inner and outer surfaces tapering inwardly and downwardly toward said inner bowl bottom;

(l) said outer bowl having its depth exceeding the depth of said inner bowl;

(m) said inner and outer bowls having between them a concentric air space which substantially and continuously increases from said rims downwardly to at least the bottom of said inner bowl; and,

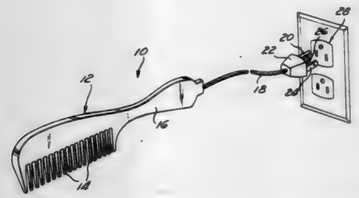
(n) said outer bowl including a base, and openings in said base to said air space for bringing cool air from outside said outer bowl into said air space.

4,290,438

STATIC ELECTRICITY GROUNDING COMB

Garey W. Price, 4817 Corwin La., Riverside, Calif. 92503

Filed Mar. 18, 1980, Ser. No. 131,475
Int. Cl.³ A45D 24/00
U.S. Cl. 132—11 R **2 Claims**



1. An electrically grounding comb for hair comprising:

a comb body, said comb body being electrically conductive, said comb body including a handle section; and

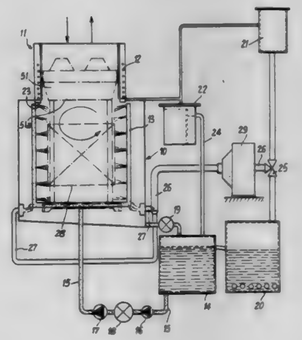
an electrical conductor having an inner end and an outer end, said inner end being embedded within said handle section and adapted to conduct static electricity from said comb body, said outer end comprising a plug, said plug having a grounding connector and a pair of securing connectors, said electrical conductor being electrically connected with said electrical grounding connector, said securing connectors being non-electrically conductive, whereby said securing connectors are to connect with mating openings within a conventional wall socket and simultaneously said grounding connector connects with a mating electrical grounding opening and static electricity is conducted from hair being combed through the comb and through said electrical conductor and is discharged through said electrical grounding connector.

4,290,439

DEVICE FOR CLEANING MECHANICAL PARTS

Jean Charpentier, Massy, France, assignor to Sietam S.A., Viry-Chatillon, France

Division of Ser. No. 970,962, Dec. 19, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 87,037
Claims priority, application France, Dec. 22, 1977, 77 38861
Int. Cl.³ B08B 3/02
U.S. Cl. 134—107 **11 Claims**



1. A cleaning unit for cleaning mechanical parts, assemblies and sub-assemblies thereof with a volatile solvent, said unit comprising:

(a) a vertically moveable holder for said parts;

(b) a lower unit portion including means for washing said parts;

(c) an upper unit portion including means for drying said parts by cooling;

(d) a unit portion including means for rinsing said parts by supplying superheated vapor into a base of said unit portion including means for rinsing; and

(e) a cover on top of said vertically moveable holder such that when said holder is temporarily immobilized in either said lower unit portion or said unit portion including means for rinsing, said cover partly closes a passage extending between said portion in which said holder is temporarily immobilized and the portion directly thereabove in a non-sealing relationship.

4,290,440

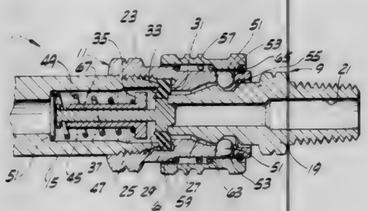
QUICK DISCONNECT COUPLING WITH A HEAT-SENSITIVE CUTOFF FEATURE

Malcolm B. Sturgis, St. Louis, Mo., assignor to M. B. Sturgis, Inc., St. Louis, Mo.

Filed Sep. 11, 1980, Ser. No. 186,175
Int. Cl.³ F16K 13/04
U.S. Cl. 137—75 **14 Claims**

1. A quick-disconnect coupling with a heat-sensitive cutoff feature for use in connecting a fuel source, such as a tank of pressurized gas, with a gas appliance, such as an outdoor gas grill, comprising interengageable plug and socket components, the latter component having a passage therethrough with inlet and outlet ends, the outlet end forming a chamber for receiving said plug component, a valve seat in the passage, a valve member in the passage comprising a valve stem and sealing means on the valve stem engageable with said valve seat, said valve member being movable in the passage between a closed position in which said sealing means is in sealing engagement with said valve seat to block flow therepast, and an open position in

which said sealing means is spaced away from the valve seat to permit flow through the passage, spring means engageable with said sealing means for biasing said valve member toward its closed position, said plug component being adapted, on insertion into said socket chamber, to engage said valve stem for moving the valve member against the bias of said spring means from its closed to its open position for flow of gas past the valve seat, and means for detachably connecting the plug



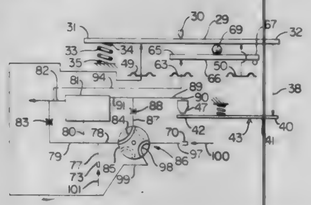
and socket components with the plug component received in said socket chamber and holding the valve member in its open position, said sealing means being secured in fixed position with respect to said valve stem by means having a relatively low melting point whereby when said plug and socket components are connected and said melting point is exceeded, said spring means is adapted to move said sealing means with respect to said valve stem into sealing engagement with said valve seat to cut off flow of gas therepast.

4,290,441

CONTROL DEVICE AND METHOD OF MAKING THE SAME

Douglas R. Scott, and Larry V. Price, both of Knoxville, Tenn., assignors to RobertShaw Controls Company, Richmond, Va.

Filed May 17, 1979, Ser. No. 39,792
Int. Cl.³ G05D *16/00*; F15B *5/00*
U.S. Cl. 137—84 **8 Claims**



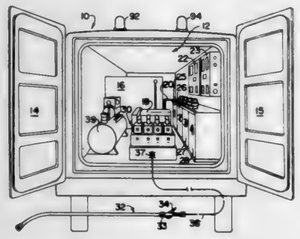
1. In a control device having a housing means provided with a main lever pivotally mounted thereto by a pivot means and being operatively associated with a flapper to move the same relative to a leakport means in relation to pivotal movement of said main lever caused by the movement of one or more main diaphragms operatively associated with said main lever, said device having a feedback diaphragm operatively associated with a feedback lever that is pivotally mounted to said housing means and operatively associated with said main lever to cause pivoting thereof upon pivoting movement of said feedback lever by said feedback diaphragm, said housing means having a plurality of inlet means respectively leading by fluid flow paths in said housing means to said diaphragms, the improvement comprising a diverter valve means carried by said housing means for selectively diverting the fluid path from one of said inlets that normally leads to one of said diaphragms to said leakport means whereby said control device can act as a control to the branch signal from another control unit that is to be interconnected to another of said inlets.

4,290,442

MOBILE CLEANING UNIT

Detmer B. Shaffer, Garrettsville, Ohio, assignor to Sparkle Wash, Inc., Chagrin Falls, Ohio

Division of Ser. No. 882,167, Mar. 1, 1978, Pat. No. 4,213,796. This application Mar. 24, 1980, Ser. No. 133,000
Int. Cl.³ B08B *3/02*
U.S. Cl. 137—112 **2 Claims**



1. In a system for selectively mixing fluid from one of a plurality of sources with fluid from a different source, a plurality of electrically-operated valves, a fluid conduit from each of said plurality of sources to a different one of said valves, a conduit common to and interconnecting said valves and connected to a conduit that carries a flow of fluid from said different source, means forming a part of each of said valves for individually adjusting the effective size of the fluid conduits from said plurality of sources to the common conduit, means for selectively applying electrical signals to said valves, including a first switch that sequentially directs electrical energy to a different one of said valves each time the switch receives an electrical signal, to select the source from said plurality from which fluid is to be supplied and mixed with fluid from said different source, and a flow-actuated switch sensitive to flow of fluid from said different source for applying an electrical signal to said first switch each time flow of fluid is initiated for said different source.

4,290,443

FLEXIBLE TUBE LIQUID TRANSFER DEVICE

Gualtiero Crozzoli, Via di Vermicino, 184, Rome, Italy

Filed Jan. 25, 1979, Ser. No. 6,514
Claims priority, application Italy, Jan. 25, 1978, 47773 A/78
Int. Cl.³ F04F *10/00*
U.S. Cl. 137—147 **5 Claims**

1. A device for the transfer of liquids without a pump by simple hand movement comprising:

first, second and third flexible tubes having first, second and third diameters respectively, said first diameter being greater than said second diameter and said second diameter being greater than said third diameter,

said first, second and third tubes being substantially coaxial with one another,

a coupling bush connecting a first end of said first tube and a first end of said third tube to position said third tube substantially coaxially within said first tube, said first and third tube defining an annular chamber therebetween,

said second tube being positioned between said first tube and said third tube for axial movement between a telescoped position and an extended position,

a sealing member at the second end of said first tube to provide a sealing engagement between said second end of said first tube and said second tube in all axial positions of said second tube,

said second tube when in the telescoped position having a first end adjacent said coupling bush and a second end extending past said sealing member, and

a removable air tight closure at the second end of said second tube,

the end of said device adjacent said coupling bush being open solely to the interior of said third tube,

the end of said device adjacent to said sealing member being closed by the joint action of said sealing member and said closure,

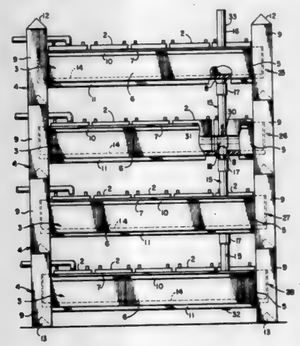
whereby manual extension of said second tube after placing the first end of the device in a liquid medium will draw liquid into the third tube and permit siphoning of the fluid to occur upon flexing the device and upon manual removal of the closure after full extension of the second tube.

4,290,444

FLOW CONTROL DEVICE FOR USE WITH A BATTERY FORMATION TUB

William G. Bevan, Birdsboro, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Jun. 19, 1980, Ser. No. 160,936
Int. Cl.³ F17D *1/00*
U.S. Cl. 137—255 **17 Claims**



1. A flow control device adapted for use in conjunction with a storage battery formation tub to control fluid flow between the interior and drain of the formation tub, the flow control device comprising:

(a) a longitudinally extending, hollow cylindrical member having a first end adapted to engage the drain of the formation tub, and having at least one aperture extending through the cylindrical member, to the interior of the cylindrical member; and

(b) a first sleeve movable along portions of the cylindrical member and having drainage means associated therewith, the first sleeve being movable between a first and second mode so that

(i) the first sleeve covers at least selected portions of the aperture to regulate fluid communication through the cylindrical member in the first, fluid regulating mode, and

(ii) the first sleeve extends beyond the first end of the cylindrical member to permit fluid to exit through the drainage means in the second, fluid drainage mode.

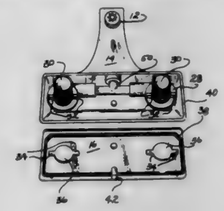
4,290,445

VALVE PLATE

Larry G. Turner, Waterford, Mich., assignor to Bristol Corporation, Elkhart, Ind.

Filed Aug. 31, 1979, Ser. No. 71,566
Int. Cl.³ F16K *11/20*
U.S. Cl. 137—359 **1 Claim**

1. In combination a valve plate, a basin having a first and second opening, a spout, first and second valve means for regulating the flow of liquid through said spout, each valve means including a threaded protrusion defining a liquid conduit into the valve means, each valve means protrusion carrying a mounting flange and extending through a said basin opening, nut means turned on each valve means protrusion for drawing the valve means into securement with said basin, said valve plate carried upon said basin about said basin openings, the improvement wherein each mounting flange carries a



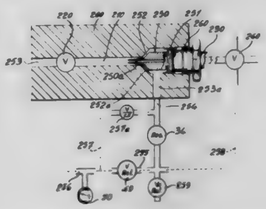
depending rib, said valve plate having first and second openings each with a slot in its periphery, each valve means protrusion fitting through a said valve plate opening with said slot therein receiving a flange rib to prevent rotation of the valve means relative to said valve plate.

4,290,446

PUMP/EXCHANGER DEVICE

Alfred J. Seiler, 1700 Dumas-Vemont, Ville de Laval, Quebec, Canada

Filed Jun. 22, 1979, Ser. No. 51,127
Claims priority, application Canada, Apr. 20, 1979, 326042
Int. Cl.³ F04F *5/24*
U.S. Cl. 137—557 **6 Claims**



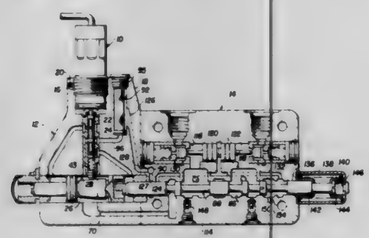
1. A combined pump/exchanger device comprising means defining an elongated passage having first and second ends, a port extending from said passage adjacent to but spaced from said first end, means within said passage at said first end for introducing a jet of compressed air into said passage axially of said passage at a point adjacent to but downstream of said port, said jet being of a cross section less than the cross section of said port, a valve in said passage intermediate said point and said second end, said second end being open, and an operating line connected to said port for coupling said device to an operating area, and said valve comprising means for selectively closing said passage and directing air under pressure to said operating line or opening said passage to said second end and creating a vacuum within said port and said operating line and causing an ingress of air, a regulator between said port and said operating line for controlling the pressure of the air discharged from said port into said operating line, a pressure-vacuum gauge coupled to said port for measuring either the pressure or vacuum condition in said port and a safety relief valve coupled to said port to ensure the air pressure in said port does not exceed a selected air pressure.

4,290,447

ELECTROHYDRAULIC PROPORTIONAL VALVE

Dale Knutson, Pewaukee, Wis., assignor to Dynex/Rivett Inc., Pewaukee, Wis.

Filed Oct. 5, 1979, Ser. No. 82,270
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—596.2 **8 Claims**



1. An electrohydraulic proportional valve comprising:
(a) a pilot actuator assembly comprising a pilot spool slidably received in a pilot sleeve and a feedback spool having a camming surface against which said pilot sleeve rides, said camming surface comprising a first portion in which the position of said pilot sleeve is a function of the axial position of said camming surface and a second portion immediately adjacent said first portion in which the position of said pilot sleeve is constant regardless of the axial position of said camming surface;
(b) an electromagnetic force motor assembly having an output member which is operatively connected to said pilot actuator assembly such that motion of said output member results in corresponding motion of said pilot spool; and
(c) a main spool and body assembly comprising:
(i) a main spool which is operatively connected to said pilot actuator assembly such that motion of said feedback spool results in corresponding motion of said main spool, said main spool having a reduced diameter area;
(ii) first and second load holding check valves slidably disposed in a bore;
(iii) first means of fluid communication for communicating pilot supply pressure to said reduced diameter area when said pilot sleeve is in contact with said second portion of said camming surface; and
(iv) second means of fluid communication for communicating pilot supply pressure from said reduced diameter area to said bore between said first and second load holding check valves when said pilot sleeve is in contact with said second portion of said camming surface.

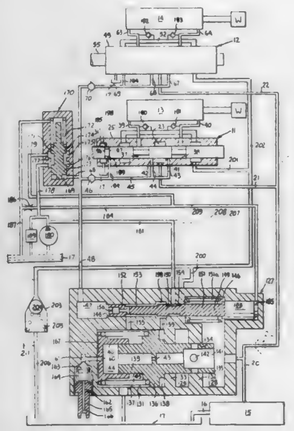
4,290,448

LOAD RESPONSIVE CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation of Ser. No. 960,767, Nov. 15, 1978, Pat. No. 4,209,039, which is a continuation-in-part of Ser. No. 947,626, Oct. 2, 1978, abandoned. This application May 24, 1979, Ser. No. 42,211
The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—596.13 **10 Claims**

1. A valve assembly comprising at least one housing having an inlet chamber connected to a pump, a load chamber, exhaust means communicable with reservoir means, a source of pressure fluid other than said pump, first valve means for selectively interconnecting said load chamber with said inlet chamber and said exhaust means, load sensing port means selectively communicable with said load chamber by said first valve means, bypass valve means between said inlet chamber and said exhaust means, pilot valve means having means responsive to pressure differential between pressure in said inlet chamber and pressure in said load sensing port means and means supplied by said source of pressure fluid operable to control said bypass valve means to vary bypass flow between said inlet



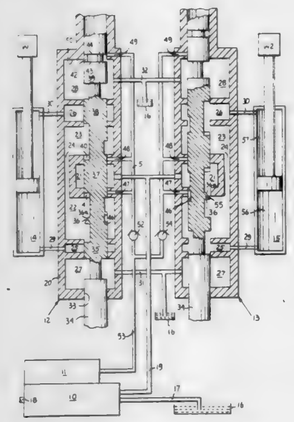
chamber and said exhaust means to maintain a constant pressure differential between said inlet chamber and said load sensing port means.

4,290,449

LOAD RESPONSIVE CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 960,072, Nov. 13, 1978, Pat. No. 4,200,118. This application Nov. 23, 1979, Ser. No. 96,803
The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—596.13 **6 Claims**



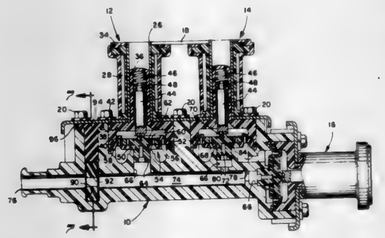
1. A load responsive valve assembly comprising at least one valve housing having an inlet chamber, first and second load chambers, at least one exhaust chamber, and load sensing port means operable through signal conducting passage means to transmit a control load pressure signal to output flow control means of a pump, direction control means for selectively interconnecting and isolating said chambers and said load sensing port means in a number of control positions including a neutral position and a regeneration position, in said regeneration position said direction control means having means for interconnecting said first and second load chambers, means for interconnecting said first and second load chambers with said load sensing port means, means for interconnecting said first and second load chambers with said inlet chamber through variable metering orifice means and means operable to vary flow area of said variable metering orifice means.

4,290,450

FLUID MIXING VALVE

Wesley S. Swanson, Elk Grove Village, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 28, 1979, Ser. No. 24,751
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—606 **4 Claims**



1. A fluid mixing valve connectable to a plurality of pressurized fluid sources, said mixing valve comprising:
(a) housing means, said housing means including an integrally formed, one piece member defining,
(i) a primary fluid passageway,
(ii) a first fluid inlet in fluid communication with said primary passageway,
(iii) a second fluid inlet in fluid communication with said primary passageway,
(iv) a first flow restricting orifice in the path of fluid flow through said first inlet,
(v) a second flow restricting orifice in the path of fluid flow through said second inlet,
(vi) a linking passageway in fluid communication with said second fluid inlet and said primary passageway, said linking passageway in fluid communication with said second inlet at a location upstream from said second flow restricting orifice, said linking passageway having a portion axially aligned with said primary passageway,
(vii) a third flow restricting orifice in the path of fluid flow through said linking passageway; and
(b) valve means operably connected to said housing means at a location fluidly in common with each of said first inlet, said second inlet at a location downstream from said point of communication of said linking passageway and said linking passageway, for individually valving fluid flowing therepast to said primary passageway, each of said valve means being selectively actuable for varying the composition of flow to said primary fluid passageway, thereby varying the properties of flow through said outlet orifice.

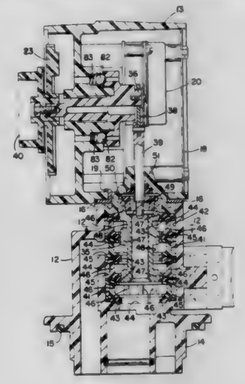
4,290,451

WATER CONDITIONING SYSTEM CONTROLS

Andrew Fleckenstein, Brookfield, and Michael Mortl, Glendale, both of Wis., assignors to L. W. Fleckenstein, Inc., Brookfield, Wis.

Filed Oct. 30, 1979, Ser. No. 89,450
Int. Cl.³ F16K *11/07, 11/10*
U.S. Cl. 137—624.15 **3 Claims**

1. In a water conditioning system having a timer control and an associated softener valve operatively associated with a treatment tank and a brine tank with piping connections for water supply and brine injection and soft water distribution, the improvement comprising a rigidly mounted motor driving a piston and a timer control, a skipper wheel in the timer control, an operating connection between the driving motor and the skipper wheel for initiating operation of the conditioning system, said softener having a unitary brine valve module incorporating an injector and a brine valve, a plurality of



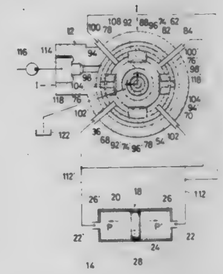
spacer rings provided in the softener valve and said piston operating in said rings, said spacer rings each made of a plastic material in two parts comprising vertically spaced upper and lower elements separated by a plurality of pins integral with one such element and heat bonded to the other element, and seal rings between the adjacent spacer rings.

4,290,452

ROTARY-MOTION VALVE AND POWER-ASSISTED STEERING SYSTEM INCORPORATING THE VALVE

Koichi Takahashi, Yokohama, and Megumu Higuchi, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

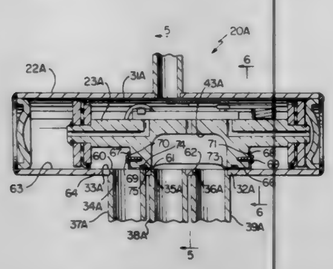
Filed Jul. 25, 1979, Ser. No. 60,792
Claims priority, application Japan, Aug. 7, 1978, 53-95905
Int. Cl.³ F15B *9/10*; F16K *11/06*
U.S. Cl. 137—625.23 **33 Claims**



1. A rotary-motion directional fluid-flow control valve comprising, in combination, a generally cylindrical valve element rotatable about an axis therethrough and having formed in its outer peripheral wall at least two concavities arranged in predetermined angular relationship to each other about said axis, a generally cylindrical valve body rotatable about an axis substantially in line with the axis of rotation of the valve element and circumferentially slidable on the outer peripheral surface of the valve element, the valve body having a circumferential groove formed in the inner peripheral wall thereof and circumferentially extending over said concavities and at least two radial holes arranged in predetermined angular relationship to each other about the axis of rotation of the valve

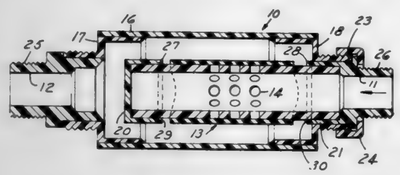
body, and at least two plug members closely fitting in said radial holes, respectively, and projecting into said circumferential groove for dividing the circumferential groove into arcuate groove portions separate from each other across the plug members, the plug members including a first plug member which is solid in its entirety and a second plug member formed with a bore open at one end to the outer peripheral wall of the valve element and at least partially communicable with one of said concavities depending upon the relative angular positions of the valve element and the valve body about the respective axes of rotation of the valve element and valve body, the valve element and the valve body having predetermined angular positions in which said concavities are substantially in registry with said plug members, respectively, in radial directions of the valve element and the valve body.

4,290,453
REVERSING VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME
Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 960,969, Nov. 15, 1978, Pat. No. 4,212,324, which is a division of Ser. No. 825,957, Aug. 19, 1977, Pat. No. 4,144,905. This application May 31, 1979, Ser. No. 44,179
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.³ F16K *11/07, 31/363*
U.S. Cl. 137—625.43 **2 Claims**



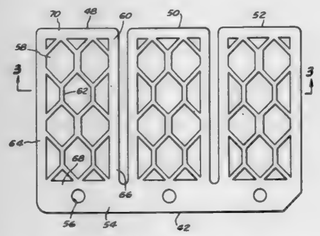
1. In a reversing valve construction having a housing means provided with a chamber carrying a movable piston-like valve member therein that controls port means of a valve seat means of said housing means through the relative position of a cavity of said valve member relative to said port means, said port means comprising first, second and third ports disposed in spaced apart and straight line relation and said cavity bridging said first and second ports while exposing said chamber to said third port when said valve member is in one position thereof and bridging said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, the improvement comprising a relatively thin and flexible sealing member secured to said valve member and disposed between said valve member and said valve seat means and surrounding said cavity to seal said cavity to said valve seat means while permitting sliding movement therebetween, said flexible sealing member including a relatively thin tape of polytetrafluoroethylene material on the side thereof that faces said valve seat means and a thin metallic shim-like member having said tape of polytetrafluoroethylene material secured to one side thereof.

4,290,454
BACK FLOW VALVE
Earl B. Shetler, 9508 Tuscola Rd., Clio, Mich. 48420
Filed Jun. 30, 1980, Ser. No. 164,813
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—853 **13 Claims**



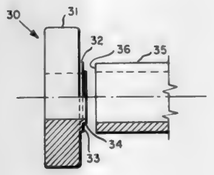
1. A back flow valve comprising
a housing having an inlet and an outlet,
a tube mounted in said housing and having an open end communicating with the inlet to said housing,
said tube having the other end thereof closed,
said tube having a plurality of circumferentially and longitudinally spaced openings at the center thereof such that fluid can only flow from the inlet to said housing through said openings to the outlet of said housing,
an elastic sleeve telescoped over said tube and normally closing said openings,
the inside diameter of said sleeve being less than the outer diameter of said tube,
said tube having longitudinally spaced abutments adjacent the ends of said sleeve,
the length of said sleeve being less than the longitudinal distance between said abutments,
the ends of said sleeve having portions thereof extending axially beyond other portions thereof such that as fluid pressure is built up, the sleeve stretches and liquid flows out of said openings in said tube and along the exterior of said tube and the liquid engages said abutments and in cooperation with said longitudinally extending portions causes said sleeve to rotate facilitating the opening and closing of said sleeve even after prolonged periods of time and preventing foreign matter from remaining between said sleeve and said tube.

4,290,455
REED VALVE
Shoichi Honda, Tokyo, and Nobuyoshi Watanabe, Omiya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1979, Ser. No. 49,734
Claims priority, application Japan, Jun. 28, 1978, 53-78278
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—855 **17 Claims**



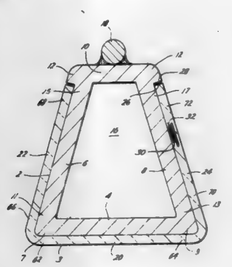
1. A reed valve comprising a reed element having a first surface, said first surface including cavities therein, said cavities being discontinuous, one from another, and structurally independent, and a planar peripheral boundary and frame members extending between said discontinuous cavities, said boundary and said frame members having surface continuity there among, said cavities extending into said element to define membranes between said frame members.

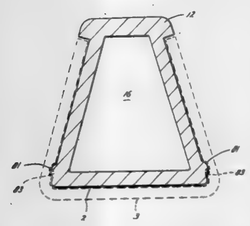
4,290,456
THERMOPLASTIC PIPE STUB END
Harold Ahrbeck, Kingston, Canada, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jul. 13, 1977, Ser. No. 815,085
Claims priority, application Canada, Aug. 16, 1976, 259142
Int. Cl.³ F16L *47/02*
U.S. Cl. 138—109 **7 Claims**



1. An improved thermoplastic pipe stub end having a flange portion integrally joined to a neck portion, the neck portion having inner and outer surfaces and terminating at a welding face, the improvement comprising the neck portion extending from the flange a length in millimeters of not greater than $1.5\sqrt{O.D.}$, where O.D. is the outer diameter in centimeters of the neck portion at the welding face.

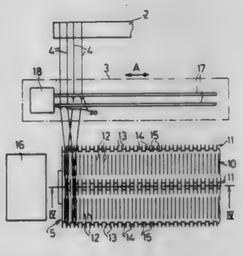
4,290,457
TRUNCATED TRIANGULAR INSULATOR
Frank Campbell, Jr., 2274 Broadlawn, Houston, Tex. 77058
Filed Nov. 2, 1979, Ser. No. 90,814
Int. Cl.³ F16L *9/10, 9/22*; F27B *9/14*; F27D *3/02*
U.S. Cl. 138—149 **20 Claims**





1. An insulator for use in combination with a truncated triangular structural member including a base member having first and second ends, converging first and second side members having upper and lower ends, the lower ends of the first and second side members secured to the first and second ends of the base member respectively, the upper ends of the side members spaced apart and secured to an apex member and a pair of shoulders extending outwardly from each upper end of said side member in proximity to where the side members are secured to the apex member, each shoulder including a lower lip, the insulator comprising:
(a) a substantially straight base unit having first and second ends;
(b) first and second converging side walls having upper and lower ends, said first and second lower ends secured to the first and second ends respectively of the base unit and said upper ends in spaced apart relationship to one another; and
(c) a support means formed by the abutment of the first and second converging side walls against the first and second side members respectively of the structural member for securing the insulator around the periphery of the base member and a substantial portion of the first and second side members respectively of the structural member.

4,290,458
MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING APPARATUS
Alois Steiner, Rieden, Switzerland, assignor to Rüti Machinery Works Ltd., Zurich, Switzerland
Filed Nov. 23, 1979, Ser. No. 96,776
Claims priority, application Switzerland, Dec. 7, 1978, 12511/78
Int. Cl.³ D03C *13/00*
U.S. Cl. 139—28 **19 Claims**



1. A multiple longitudinal traversing shed weaving loom comprising:
a rotatable weaving rotor over which pass warp threads moving in a predetermined direction of travel;
beat-up elements provided for the weaving rotor for bearing weft threads inserted through the warp threads;
shed-retaining elements for holding the warp threads over a predetermined path in selective upper and lower shed positions;
said beat-up elements being spaced from one another to form between each two neighboring beat-up elements an intermediate space;
a respective one of said shed-retaining elements for determining the upper shed position or lower shed position being operatively associated with each intermediate space between neighboring beat-up elements;
control means arranged forwardly of the weaving rotor with respect to the direction of travel of the warp threads;
said control means serving for the lateral deflection and random correlation of each warp thread to a shed-retaining element which determines the upper shed position or lower shed position;
a respective guide element for the warp threads arranged at the weaving rotor between each two beat-up elements which follow one another in the direction of rotation of said weaving rotor; and

the guide elements being oriented such that the line of alignment thereof is located within the intermediate space between beat-up elements neighboring one another in the direction of weft insertion.

4,290,459

BLOWING NOZZLE FOR TRANSPORTING A FLEXIBLE THREAD

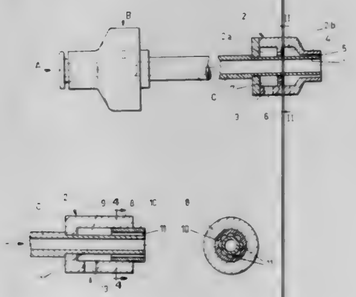
Petrus G. J. Manders, Eindhoven, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Aug. 17, 1979, Ser. No. 67,628

Claims priority, application Netherlands, Aug. 3, 1979, 7808180

Int. Cl.³ D03D *47/28*

U.S. Cl. 139—435 **4 Claims**



1. A blowing nozzle for transporting a flexible thread, comprising a supply channel for the thread, the exit end of said channel being surrounded by an annular orifice, a connection for supplying a flowing pressurized fluid to the upstream side of said orifice, and an elongated mixing tube which is arranged to receive the thread as well as fluid discharged from said orifice and which substantially forms an extension of said channel, wherein the improvement comprises a sleeve which surrounds only the outflow end portion of the mixing tube, the upstream end of the sleeve having a sealing engagement around the mixing tube, and the downstream end of the sleeve lying in substantially the same plane as the downstream end of the mixing tube, a sleeve-shaped filling piece which fills the space between the downstream end portion of the sleeve and the mixing tube and which contains axial exhaust channels and a connection for supplying a flowing pressurized fluid to the interior of the sleeve upstream of the filling piece.

4,290,460

ACTIVE AUXILIARY NOZZLE FOR A SHUTTLE-LESS LOOM WITH PNEUMATIC WEFT INSERTION

Albert H. Deborde, Bourgoin-Jailleu, France, assignor to Saurer-Diederichs, Bourgoin-Jailleu, France

Filed Feb. 23, 1979, Ser. No. 14,688

Claims priority, application France, Aug. 1, 1978, 78 23205

Int. Cl.³ D03D *47/30*

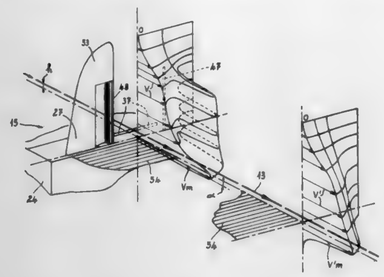
U.S. Cl. 139—435 **16 Claims**

1. An active auxiliary nozzle for a shuttle-less loom with pneumatic weft insertion, comprising:

a chamber connected to a compressed air supply source;

means defining a horizontal air outlet slot connected to said source; and

means defining at least one vertical air outlet slot to produce, downstream of the auxiliary nozzle, in a direction of weft displacement, a substantially horizontal lower flat jet and at least one lateral flat jet substantially parallel to a comb of the loom, the means defining said horizontal air outlet



slot being oriented to direct said lower flat jet slightly downwardly away from the weft.

4,290,461

YARN FEED CONTROLLING DEVICE

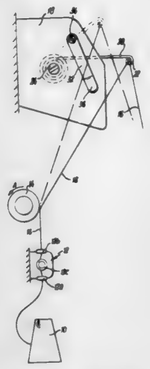
John D. Griffith, Boldon, England, assignor to Bonas Machine Company Limited, Sunderland, England

Filed Jan. 10, 1980, Ser. No. 111,083

Claims priority, application United Kingdom, Jan. 18, 1979, 01855/79

Int. Cl.³ D03D *47/34*

U.S. Cl. 139—450 **9 Claims**



1. A yarn feed apparatus for supplying yarn intermittently under a consistent tension, the apparatus including a yarn guide eye resiliently movably mounted on a base, a clamp means located upstream of the guide eye and being operated by the guide eye for intermittently trapping the yarn to prevent its movement through the apparatus, continuously rotatable yarn feed means upstream of the clamp means for positively feeding yarn to the guide eye only when yarn between the feed means and clamp means is under tension, the yarn guide eye being arranged to render the clamp means inoperative while yarn is being pulled from the apparatus and arranged to render the clamp means operative to grip the yarn to prevent further supply of yarn from the apparatus when yarn downstream of the guide eye is relaxed by a predetermined amount.

4,290,462

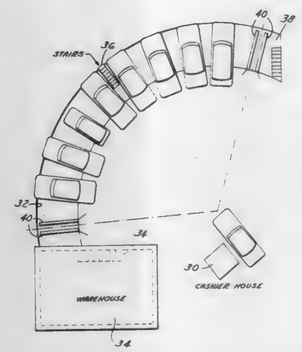
LUBRICATING APPARATUS AND SYSTEM

Lawrence A. Schott, 15940 Warwick Rd., Detroit, Mich. 48223, and Roger A. Schott, 15060 Seminole, Redford, Mich. 48239

Filed Jul. 16, 1979, Ser. No. 58,117

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—98 **7 Claims**



1. A system of servicing vehicles for oil change and lubrication and the like which comprises:

(a) one or more service stalls for an operator,

(b) a cashier's booth placed at vehicle level in lineal relation to the one or more stalls,

(c) a vehicle support track over the service stall to support a vehicle temporarily while being serviced, and

(d) said vehicle support tracks comprising:

(1) a pair of parallel tracks in spaced relation,

(2) means to support said tracks adjacent a service stall for movement transversely in relation to each other, and

(3) means responsive to contact with the front wheels of a vehicle to cause said track to move to register with the track width of a particular vehicle.

4,290,463

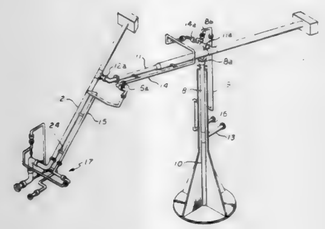
LOADING ARM

Bernard J. DeGeorge, Kingsland; Dean E. Hermanson, Richardson, and Carlos Tomas, Dallas, all of Tex., assignors to Youngstown Sheet and Tube Company, Pittsburgh, Pa.

Filed Mar. 11, 1980, Ser. No. 129,240

Int. Cl.³ B65B *3/18*; B65G *67/00*

U.S. Cl. 141—387 **10 Claims**



1. A loading arm comprising,

a support,

main and auxiliary riser pipes on said support,

inboard and outboard main and auxiliary arms carried by said support and connected to said riser pipes,

means maintaining said outboard arms in fixed relationship with each other,

a first pair of elbows spaced from each other and connected to said outboard arms,

a first pair of swivel joints spaced from each other and connected to said first pair of elbows and rotatable about a first axis,

a second pair of elbows spaced from each other and connected to said first pair of swivel joints,

a second pair of swivel joints spaced from each other and connected to said second pair of elbows and rotatable about a second axis perpendicular to said first axis,

a third pair of elbows spaced from each other and connected to said second pair of swivel joints,

a third pair of swivel joints spaced from each other and connected to said third pair of elbows and each rotatable about an axis perpendicular to both said first and second axes, and

a connecting means carried by each of said third pair of swivel joints.

4,290,464

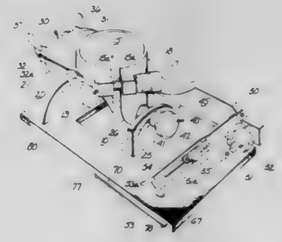
HOLDER FOR PORTABLE ELECTRIC CUTTING INSTRUMENT

Mario Marsan, 560 Beechtree Dr., Cincinnati, Ohio 45224

Filed Mar. 20, 1980, Ser. No. 132,322

Int. Cl.³ B27C *5/10*

U.S. Cl. 144—136 C **10 Claims**



1. A holder for a portable electric router comprising a base plate having planar bottom surface, an orifice in said base plate adapted for passage of a cutting tool on said router therethrough, means positioned above said base plate for clamping said router in operative position, first and second angular adjustment means secured to a top surface of said base plate on each side of said clamping means, said clamping means being secured between said adjustment means and movable therewith in angular planes of adjustment, at least one of said adjustment means having an arcuate bearing surface of sufficient length to provide tilting of said clamping means, said router and its cutting tool at least 45° in two directions from a plane vertical to said base plate, means on each said adjustment means for rigidly securing said router and cutting tool at a desired angle of adjustment from said vertical plane in two directions, an elongted straight edge guide parallel to said angular planes of adjustmet and having a bottom surface coplanar with said planar bottom surface of said base plate, and means for moving said edge guide laterally relative to said angular planes of adjustment to a desired position of displacement parallel thereto.

4,290,465

HAND INSTRUMENT

Robert W. Fee; Richard E. TenEyck, both of Wichita, and Lloyd T. Smith, Newton, all of Kans., assignors to S/V Tool Company, Inc., Newton, Kans.

Filed Oct. 17, 1979, Ser. No. 85,815

Int. Cl.³ B25G *1/00*

U.S. Cl. 145—61 R **4 Claims**

1. In a hand instrument:

an elongated handle having a pair of opposed ends,

there being an elongated cavity in said handle disposed

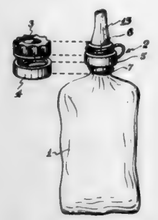
longitudinally thereof and extending inwardly from one of said ends;
an elongated connector conforming in shape to the cavity,
said connector being encased within and completely filling said cavity,
said handle tightly engaging the entire outer surface of the connector therearound to rigidly attach the connector to the handle,
said connector having an elongated, tubular stem,
said stem being provided with an innermost end having a solid, essentially spherical boss integral with the stem for holding the connector against inward movement relative to the handle toward the opposite end of the latter,
said boss having a plurality of outwardly facing, circular, flat surfaces, spaced equally therearound for holding the handle and the connector against relative rotation; and



an elongated, solid shank within the connector and extending outwardly therefrom beyond said one end of the handle,
said connector tightly engaging the entire outer surface of that portion of the shank disposed in the connector to rigidly attach the shank to the connector,
said shank having an innermost end extending into the boss for holding the shank against inward movement relative to the connector toward said opposite end of the handle,
said shank having a pair of elongated, diametrically opposed, radial ribs within the connector adjacent the boss and extending longitudinally of the shank for holding the shank and the connector against relative rotation,
the handle, the connector and the shank being coaxial.

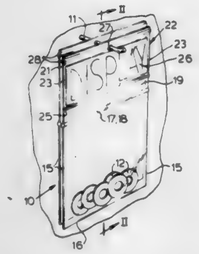
4,290,466
CONVERTIBLE CONTAINER-HOLDER THAT BECOMES THE NECK OF A FOLDING RECEPTACLE
Oscar Villa, and Jorge A. Falcon, both of Rivadavia str. 4227, Buenos Aires, Argentina
Filed Nov. 15, 1979, Ser. No. 94,481
Int. Cl.³ B65D *33/00*
U.S. Cl. 150—1 **6 Claims**

1. A convertible assembly that is adapted to hold a folded flexible container and to effectively serve as the neck of said container when the latter is extracted and unfolded, comprising a rigid tubular member having opposite end portions formed with cap mounting means, closure caps removably mounted on said end portions, and an internal ring mounted within said tube, said tube being capable of enclosing a folded container having a reduced size neck at one end and which when unfolded can contain an appreciably larger volume of fluid material than said tube, and being so constructed and arranged that upon removal of said caps and extraction of the folded container the neck of the container may be inserted through one tube end and positively held in place on the tube



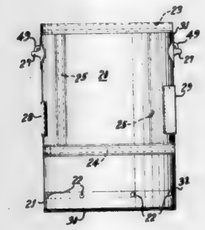
by said internal ring, whereby material may be introduced into and dispensed from said container through the other tube end.

4,290,467
RECLOSABLE FILM PLASTIC BAGS AND METHOD OF MAKING SAME
John Schmidt, Copenhagen, Denmark, assignor to Minigrip, Inc., Orangeburg, N.Y.
Filed Oct. 24, 1979, Ser. No. 88,090
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 2910851
Int. Cl.³ B65D *27/20*
U.S. Cl. 150—3 **31 Claims**



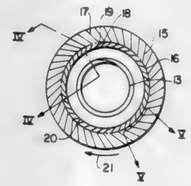
1. A reclosable film plastic merchandise contents display bag having front and rear walls joined at least at closed sides and providing an openable top for the bag, comprising:
complementary separable fastener profiles on said walls across said openable top and adapted to be separated from a closed condition into an opened condition;
a fastener-opening front pull flange extending up from the fastener profile on said front wall;
a fastener-opening wall rear pull flange, substantially longer than said front pull flange, extending up from the fastener profile on said rear wall;
a panel on the front of said rear pull flange and providing therewith a plural thickness header for the bag;
said panel having its sides secured to said rear pull flange and a lower edge of said panel being separable relative to said front pull flange;
matching hang-up holes through said panel and said rear pull flange adjacent to the upper ends thereof;
and a header reinforcing rib structure above said holes securing the upper ends of said panel and said rear pull flange together and stiffening the header against sagging under the weight of package contents when the bag is hung on a hanger extending through said hang-up holes.

4,290,468
PORTABLE COLLAPSIBLE CONTAINER
Percy Rosenbloom, Jr., and Percy Rosenbloom, III, both of Jacksonville, Fla., assignors to Technical Materials, Inc., Jacksonville, Fla.
Filed Nov. 15, 1979, Ser. No. 94,441
Int. Cl.³ B65D *33/02*
U.S. Cl. 150—49 **20 Claims**



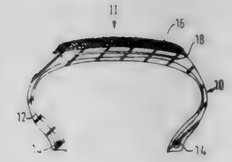
1. A collapsible and flexible container comprising a generally thin walled cylindrical body having an upper end and a lower end, said body being made of collapsible and flexible sheet material, a removably attachable bottom cover, and fastening means for removably attaching said cover to said lower end of said body, said cover having an outside surface of wear resistant, low friction material, said body enclosing in its wall adjacent said upper end a first circumferential stiff hoop and spaced intermediate of said upper and lower ends a second circumferential stiff hoop substantially parallel to said first hoop, said body also enclosing in its wall a plurality of spaced stiffening members substantially perpendicular to and separated from said hoops and positioned intermediate of said first and second hoops.

4,290,469
SELF-LOCKING NUT-TYPE OR BOLT-TYPE FASTENING DEVICE
Isoji Nakae, Wakayama, Japan, assignor to Kishu Neji Co., Ltd., Osaka, Japan
Filed Sep. 4, 1979, Ser. No. 72,047
Int. Cl.³ F16B *39/282*
U.S. Cl. 411—185 **6 Claims**



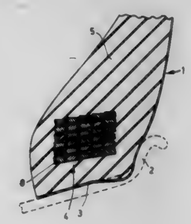
1. A fastening device comprising:
a body having a rotational axis, an engaging surface and threads concentric with said axis;
said engaging surface having formed therein and extending therefrom a plurality of ratchet-like projections having a sawtooth-type circumferential cross-section;
each said projection including a first radially outer edge and a second radially inner edge which together define a leading point which forms a most prominent portion of said projection;
all of said points being located on an imaginary circular line and facing in the direction of loosening of the fastening device;
each said first edge extending outwardly from said circular line in a direction inclined to the radial by a first angle;
each said second edge extending inwardly from said circular line in a direction inclined to the radial by a second angle different from said first angle; and
said circular line being positioned nearer the inner periphery of said engaging surface than the outer periphery thereof, whereby the cutting area of said first edges is larger than that of said second edges, and the length of each said first edge is greater than the length of each said second edge.

4,290,470
POROUS TIRE TREAD AND METHOD OF BONDING DISCRETE PARTICLES TO FORM SAME
Arthur R. Williams, Birmingham, and Gareth T. Williams, Lichfield, both of England, assignors to Dunlop Limited, London, England
Filed Mar. 6, 1980, Ser. No. 127,655
Claims priority, application United Kingdom, Mar. 16, 1979, 09376/79
Int. Cl.³ B60C *11/00*; B29G *7/02*
U.S. Cl. 152—209 R **27 Claims**



1. An unpatterned grooveless tire tread for a motor vehicle tire, wherein the tread comprises an assembly of numerous discrete particles of elastomeric material bonded together to form a cohesive nonsolid mass with adjacent particles bonded together only at separated portions thereof, and intermediate said bonded portions, the particles being spaced-apart to provide passages which are randomly distributed and randomly oriented, said passages extending substantially throughout the tread, including from a highway-contacting surface of the tread, said passages constituting voids in the tread, the total void content of the tread being in the range from 10% to 60% of the overall volume of the tread, such that in use of a tire incorporating said tread, said passages provide for drainage of water away from the portion of tread surface contacting a wet highway.

4,290,471
BUILT-UP CORE FOR THE BEAD OF A PNEUMATIC TIRE FOR WHEEL RIMS WITH INCLINED SHOULDERS
Herbert Pfeiffer, Hemer, Fed. Rep. of Germany, assignor to Otto Kuhlmann GmbH & Co. KG, Hemer, Fed. Rep. of Germany
Filed Dec. 20, 1979, Ser. No. 105,657
Claims priority, application Japan, Jan. 10, 1979, 54-760
Int. Cl.³ B60C *15/04*
U.S. Cl. 152—362 R **2 Claims**



1. A ring-like built-up core of the shape in cross-section of a

parallelogram for the bead of a pneumatic tire for wheel rims with inclined shoulders, the radially-inward surface of the core being inclined in relation to the direction of the axis of the pneumatic tire so as to be parallel to the bead seat which core comprises lays of wire disposed side-by-side wound over one another upon a support conically shaped to conform to the inclination of the shoulder of the wheel rim and which lays are formed by individual wires trapezoidal in cross-sections so as to have narrower and broader ends, the narrower ends of all the wires of the built-up core being directed in the same direction towards the outside surface of the pneumatic tire bead such that the narrower ends of the wires of one lay of wire are supported on the broader ends of the wires of the next lay of wire so as to provide clearance spaces between the consecutive narrower and broader ends of the individual wires of each individual wire lay and clearance spaces between the opposite surfaces of the wires of each lay of wire and the corresponding wires of the next lay of wire.

4,290,472

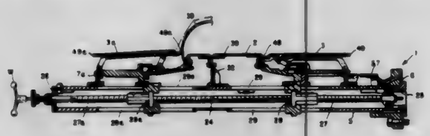
TIRE BUILDING APPARATUS

Emerson C. Bryant, Edwardsburg, Mich., assignor to National-Standard Company, Niles, Mich.

Continuation-in-part of Ser. No. 944,578, Sep. 21, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,876

Int. Cl.³ B29H *17/16*

U.S. Cl. 156—416 **16 Claims**



1. A tire building apparatus for building a complete tire in a single operation, including in combination:

an elongated shaft,

an intermediate drum mounted on said shaft in surrounding relation thereto, said intermediate drum including a central supporting member and an elastic sleeve having an intermediate portion and two oppositely disposed end portions, with said elastic sleeve operable between a collapsed position, wherein said intermediate portion and said end portions are axially aligned with each other in position to form a substantially smooth walled cylindrical member, and an expanded position, wherein said end portions are disposed closer together than in said collapsed position and said intermediate portion is disposed radially outwardly of said collapsed position thereof,

two end drums disposed around said shaft on respective opposite sides of said intermediate drum, said end drums having outer peripheral surfaces extending axially, in the unactuated condition for use, in conjunction, with said central supporting member for complete support of the tire carcass components thereon and bead lock clamp means movable radially outwardly to clamp the tire carcass material to the tire beads, wherein in one position said outer peripheral surfaces are disposed in substantially axially aligned relation to the collapsed position of the outer peripheral surface of said intermediate drum sleeve to support the tire carcass material therearound,

carrier means mounted on said shaft and movable axially relative thereto and operatively connected to said end portions of said intermediate drum sleeve and said end drums, said carrier means being movable relative to said shaft for simultaneously moving said end portions of said intermediate drum sleeve inwardly toward each other along said shaft into said expanded position thereof and said end drums inwardly toward each other along said shaft into position to dispose said bead lock clamp means in position to support the beads in the position of the beads of a finished tire,

means for feeding air under pressure into said sleeve, simultaneously with said moving of said end portions inwardly toward each other, to thereby move said intermediate portion of said sleeve radially outwardly into said expanded position thereof and thereby correspondingly move the carcass material disposed thereon outwardly into said expanded position, and

carcass ply turn-up means mounted on said end drums axially outwardly of said bead lock clamping means.

4,290,473

APPARATUS FOR CONTROLLING LIGHT TRANSMISSION THROUGH A WINDOW

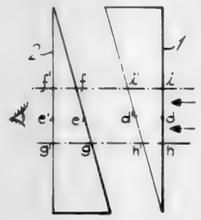
James G. Pierson, Longueuil, and David A. Wilmshurst, St. Catherines, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Jan. 24, 1979, Ser. No. 6,112

Claims priority, application Canada, Jan. 25, 1978, 295640

Int. Cl.³ A47G *5/02*; G02B *5/22*

U.S. Cl. 160—120 **9 Claims**



1. A device for controlling transmission of light through a window comprising:

(a) two lineal strips of roller-mounted film material having light transmission characteristics which vary linearly longitudinally from a maximum at one end to a minimum at the other end thereof, said strips being (i) disposed in overlying spaced parallel planar relationship over an area corresponding at least to the area of the window, (ii) extended beyond said area, and (iii) disposed so that said maximum transmission characteristic end of a first said strip is in juxtaposition with said minimum transmission characteristic end of a second said strip; and

(b) means for linearly moving one film strip relative to the other in said overlying relationship and in said area, whereby the amount of light transmission over said area is dependent upon the relative light transmission characteristics of said two film strips and is substantially uniform over said area.

4,290,474

METHOD AND APPARATUS FOR ELECTROSLAG CASTING OF METALS

Boris I. Medovar, ulitsa Anri Barbjusa, 22/26, kv. 109; Georgy A. Boiko, ulitsa Vladimiro-Lybedenskaya, 16, kv. 106; Rudolf S. Dubinsky, ulitsa Politekhnicheskaya, 5, kv. 209, and Sergei P. Egorov, ulitsa Nevskaya, 34, kv. 1, all of Kiev, U.S.S.R.

Filed Jun. 12, 1979, Ser. No. 47,944

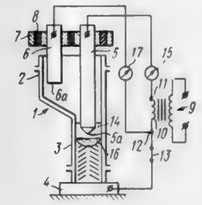
Int. Cl.³ B22D *27/02*

U.S. Cl. 164—470 **9 Claims**

1. A method for producing castings having one end portion of a larger cross-section by electroslag casting of metals in a mould of a desired shape, mounted on a bottom plate, which method comprises the steps of: forming a portion of the casting, having a smaller cross-section, by melting at least one first consumable electrode connected to one terminal of an electric power source in series with said bottom plate connected to the other terminal of said electric power source, and forming a

portion of the casting, having a larger cross-section, by simultaneously melting at least one first consumable electrode and at least one second consumable electrode, said first and second electrodes being connected in series with said electric power source.

4. An apparatus for producing castings having one end portion of a larger cross-section, by electroslag casting of metals, comprising: a cooled mould, a bottom plate of said mould, an electric power source having two terminals, a



switch connecting said bottom plate to one of the terminals of said electric power source, at least one first consumable electrode with a melting end located at a first level relative to said bottom plate, said first consumable electrode being connected to the other terminal of said electric power source, at least one second consumable electrode with a melting end positioned at a second level relative to said bottom plate, said second consumable electrode being connected to the same terminal of said electric power source as said bottom plate, said second level being higher than said first level.

4,290,475

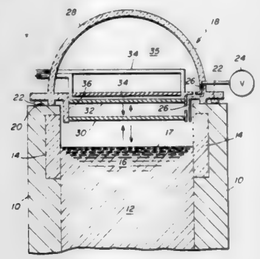
INGOT CASTING

Charles A. Berg, Buckfield, Me., assignor to Pyreflex Corporation, Buckfield, Me.

Continuation-in-part of Ser. No. 10,712, Feb. 9, 1979, Pat. No. 4,256,919. This application Dec. 20, 1979, Ser. No. 105,510

Int. Cl.³ B22D *7/10*

U.S. Cl. 164—513 **26 Claims**



1. A mold structure for casting metal ingots characterized by an upper surface shrinkage pipe of reduced size relative to ingots cast in an open-top mold, said mold structure comprising:

a mold body having a top opening; and

a mold cap for placement over said opening, said cap comprising:

a diaphragm of material having a melting point higher than the metal to be cast, said diaphragm having a bottom surface and a top surface, said bottom surface being disposed, when said mold cap is positioned on said mold body, to intercept radiation emitted from and to re-emit radiation toward the top surface of a liquid metal mass placed in said mold body; and

means for returning radiation emitted from the top surface of said diaphragm back thereto.

4,290,476

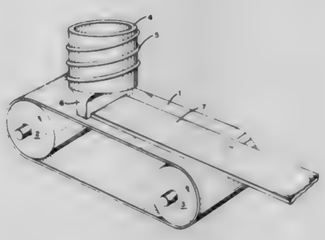
NOZZLE GEOMETRY FOR PLANAR FLOW CASTING OF METAL RIBBON

Robert W. Smith, Long Valley; Naim S. Hemmat, Mendham; John R. Bedell, Madison; Sheldon Kavesh, Whippany, and Seymour Draizen, Old Bridge, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 14, 1980, Ser. No. 112,006

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—423 **9 Claims**



1. An apparatus for planar flow casting of metal ribbon comprising a movable chill surface, a reservoir for holding molten metal and a nozzle in communication at its top with the reservoir and having at its bottom two lips adjacent to the chill surface, a first lip and a second lip numbered in the direction of movement of the chill surface, wherein

(a) the lips are separated by and define a slot for depositing molten metal on the chill surface;

(b) the leading and trailing edges of the slot are substantially parallel, to each other and are generally perpendicular to the direction of movement of the chill surface;

(c) the bottom of the lips comprises at least two now-coplanar surfaces, including a substantially planar first surface substantially parallel to the chill surface, said first surface including the leading edge of the first lip and the side edges at the bottom of the lips but not including the trailing edge of the slot;

(d) the first surface is separated from the chill surface by at least about 0.20 mm; and

(e) all points on the bottom of the lips are at least as far from the chill surface as is the first surface, but are no further from the chill surface than about 1 mm.

4,290,477

NOZZLE FOR STRIP CASTING

Ernst Huber, Schaffhausen; Wolfhart Rieger, Buch, and Martin Bolliger, Sierre, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 29, 1979, Ser. No. 7,446

Claims priority, application Switzerland, Jan. 30, 1978, 991/78

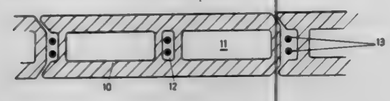
Int. Cl.³ B22D *11/06, 11/10*

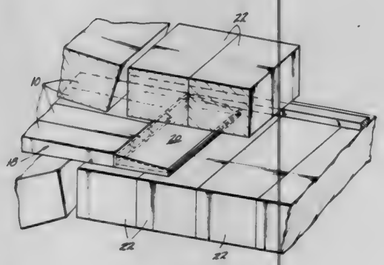
U.S. Cl. 164—430 **21 Claims**

1. An apparatus for the continuous casting of molten metal comprising in combination a caterpillar track type mold and a nozzle for feeding said molten metal to said mold, the improvement comprising:

a nozzle comprising a plurality of individually separable hollow elongated tubular sections, each of said sections having a peripheral wall defining at least one feed channel, said plurality of sections being mounted in side by side relationship such that a portion of said peripheral wall surface of one of said plurality of sections abuts a portion of said peripheral wall surface of another of said plurality

of sections wherein the abutting portions of said peripheral wall surfaces of said plurality of hollow sections form





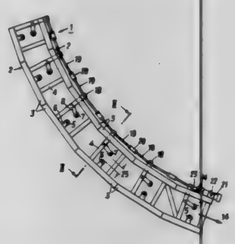
a channel substantially parallel to said at least one feed channel.

4,290,478

GUIDING STAND TO BE USED IN A CONTINUOUS CASTING PLANT

Franz Kagerhuber, Traun, and Günter Hollels, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 7, 1979, Ser. No. 46,344
Claims priority, application Austria, Jun. 16, 1978, 4330/78
Int. Cl.³ B22D *11/12*
U.S. Cl. 164—448 **5 Claims**



1. In a guiding stand to be used in a continuous casting plant for casting a strand, for example a casting plant for casting a billet or bloom, and of the type including a supporting framework, rollers arranged at said supporting framework so as to support the strand at opposing sides thereof, guide rods pivotably arranged at said supporting framework to carry at their ends the rollers of at least one of said opposing sides of the strand and adjustment means for pivoting said guide rods so as to allow for an adjustment of the rollers to various strand thicknesses, the improvement comprising:

coupling rods connecting the guide rods of neighbouring rollers in the manner of a four-bar linkage such that the guide rods of neighbouring rollers are pivotally connected both to the framework and to the coupling rods;

angle levers as said guide rods, each lever comprising a first lever arm and a second lever arm which together enclose a certain angle, a roller being hinged to an end of said first lever arm and a coupling rod being hinged to an end of said second lever arm, said angle levers being pivotably mounted at said supporting framework near their angle apex; and

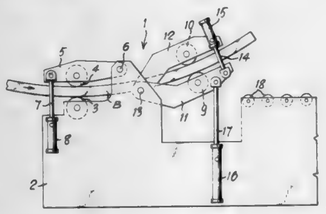
an arcuate guiding stand having a center of curvature and a beginning where the strand enters it as said guiding stand, said second lever arms to which said coupling rods are hinged, in their mid-position, being directed in a radial manner in a direction toward the center of said arcuate guiding stand and being connected by said coupling rods in the manner of four-bar linkage trapezoids, said first lever arms of neighbouring rollers having stepwise decreasing lengths, the longest first lever arm being the first lever arm that carries the roller arranged at the beginning of said arcuate guiding stand, the first lever arms carrying the rollers following upon the roller arranged at the beginning of said arcuate guiding stand each being shortened by a certain measure relative to the preceding first lever arm.

4,290,479

DRAWING AND STRAIGHTENING MACHINE FOR USE IN CONTINUOUS CASTING PLANTS

Piero Colombo, 21, Via G. Ferraris, Udine, Italy

Filed Dec. 27, 1979, Ser. No. 107,505
Claims priority, application Italy, Dec. 28, 1978, 12916 A/78
Int. Cl.³ B22D *11/08, 11/128*
U.S. Cl. 164—448 **3 Claims**



1. A drawing and straightening machine for use in continuous casting plants presenting a curved guide path for bending the casting leaving the casting mold, from a substantially vertical direction to a rectilinear direction different from the vertical comprising:

(a) a first pair of pinch rolls arranged at a point of separation between the lower end of a curved guide path section and a rectilinear guide section, at least one of the rolls of said first pair being positively driven into rotation;

(b) a second pair of pinch rolls, arranged subsequently to said first pair of pinch rolls, in the direction of movement of the continuous casting, and in the zone of the rectilinear guide section, said second pair of pinch rolls being mounted on a pair of roll carrier frames, said pair of roll carrier frames being pivotally secured to a machine frame having a pivot axis located between said first and second pairs of pinch rolls, and means for pivotally moving said pair of roll carrier frames and said second pair of pinch rolls in a substantially vertical direction to a lower straightening position for alignment with said rectilinear guide section, and to an upper starting position wherein said second pair of pinch rolls lies substantially on an upwardly directed portion of the curved path of the continuous casting; and

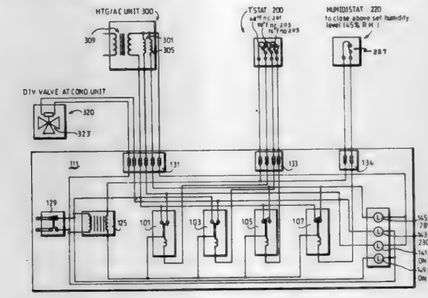
(c) means interconnecting each of said roll carrier frames for adjusting the pinch pressure between the second pair of rolls in a manner independent of the vertical positioning of said second pair.

4,290,480

ENVIRONMENTAL CONTROL SYSTEM

Alfred Sulkowski, 4 Oak Dr., Marlboro, Conn. 06447

Filed Mar. 8, 1979, Ser. No. 18,847
Int. Cl.³ F24F *3/14*
U.S. Cl. 165—21 **38 Claims**



1. A system providing for temperature and humidity control of an environment comprising:

switching means for regulating a temperature control means including air cooling and air heating means, having a plurality of replaceable standard relays and associated contacts therefor with few moving parts;

a temperature sensor coupled with the switching means, and capable of activating the switching means and consequently the temperature control means at certain temperature settings including for heating, turning the heating means on below a certain temperature of the environment and off above a certain temperature, and for cooling, turning the cooling means on above a certain temperature and off below a certain temperature;

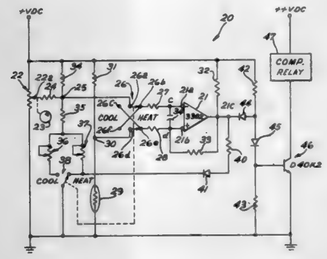
a humidity sensor responsive to moisture in air coupled with the switching means and capable of activating the switching means and consequently the temperature control means at a certain level of humidity for dehumidification by turning the cooling means on above a certain humidity level and off below a certain humidity level independently of the operation of the temperature sensor.

4,290,481

ELECTRONIC THERMOSTATIC CONTROL FOR A HEAT/COOL ROOM AIR CONDITIONING SYSTEM

Walter J. Pohl, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 12, 1980, Ser. No. 148,090
Int. Cl.³ F25B *29/00, 13/00*
U.S. Cl. 165—26 **5 Claims**



1. In a heat/cool room air conditioning system having a temperature sensor positioned above or below the comfort zone of the room space, an electronic temperature differential thermostatic control circuit operable during the heating and cooling modes of operation comprising:

a comparator circuit having a pair of input terminals and an output terminal and being switchable between two output states dependent on the relative polarity of two potentials applied to the input terminals;

means for applying to a first of the input terminals a reference potential representative of a setpoint temperature for the room comfort zone;

means including said temperature sensor for applying to the second of said input terminals a variable potential representative of sensed air temperature outside the comfort zone;

feedback means coupling the comparator output to one of the input terminals for establishing a temperature differential between two sensed temperatures at which switching of the comparator occurs from one state to another and back, respectively;

and means including a heat/cool mode switch for altering the effect that the feedback means has on the temperature differential between a first predetermined effect operative during the cool mode to a second predetermined effect operative during the heat mode;

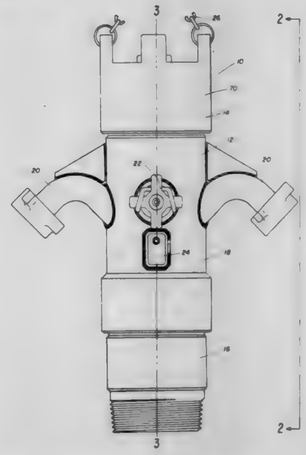
whereby the control circuit compensates for the opposite influence that air temperature stratification has in the heat and cool operating modes on the disparity between the sensed air temperature and the actual comfort zone temperature.

4,290,482

PLUG CONTAINER

David P. Brisco, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 29, 1980, Ser. No. 145,185
Int. Cl.³ E21B *33/03, 33/14, 33/16*
U.S. Cl. 166—70 **3 Claims**



1. A plug container for use in well cementing operations having one end thereof secured to the pipe being cemented in said well, said plug container comprising:

plug body means having a central bore therethrough, having a plurality of apertures therein, and having a plurality of fluid inlet ports therein, each fluid inlet port entering said plug body means at an acute angle with respect to the axis of the central bore of said plug body means;

fluid inlet conduit means, each fluid inlet conduit means being secured to said plug body means communicating with a fluid inlet port of the plurality of fluid inlet ports, each fluid inlet conduit means comprising:

arcuate shaped fluid inlet conduit means having one end secured to said plug body means communicating with a fluid inlet port of the plurality of fluid inlet ports, hav-

ing connection means on the other end thereof and having removable protector means thereon for releasably engaging the connection means to protect the connection means from damage when not in use;

plug body nipple means having one end secured to the other end of said plug body means and having the other end thereof secured to one end of said pipe being cemented in said well;

plug release plunger assembly means secured to said plug body means having a portion thereof extensible into the bore of said plug body means through an aperture therein of the plurality of apertures therein;

plug release indicator assembly means secured to said plug body means comprising housing means, pin means rotatably mounted in the housing means, and lever means extending through an aperture in said plug body means and being secured to the pin means; and

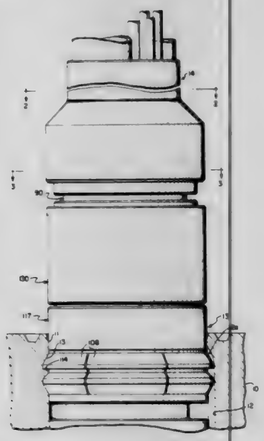
reinforcing means secured to said plug body means and said fluid inlet conduit means.

4,290,483

LATCH MEANS FOR WELL TOOLS AND COMPONENTS

John E. Lawson, Rutland Court, England, assignor to Armco Inc., Middletown, Ohio

Filed Feb. 11, 1980, Ser. No. 120,052
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—237 **8 Claims**



1. In a well tool or component adapted to be landed on a support in the upright bore of a well apparatus and releasably secured in its landed position by coaction with an inwardly opening groove in the wall of the upright bore,

a body having

a transverse annular downwardly directed shoulder to engage the support, and

a transverse annular outwardly opening segment-retaining groove located above the shoulder,

the segment-retaining groove having upper and lower side walls which are flat and uninterrupted;

a plurality of arcuate latch segments disposed in an annular series in the latch-retaining groove and each having

a flat upper surface,

a flat lower surface,

a first cylindrical outer surface portion extending downwardly from the upper surface,

a frusto-conical camming surface which tapers upwardly and inwardly and terminates at the bottom of the first cylindrical outer surface portion,

a second cylindrical outer surface portion extending downwardly from the bottom of the camming surface,

a latching shoulder located at the bottom of the second cylindrical outer surface portion and extending outwardly therefrom, and

an outer surface portion extending downwardly from the latching shoulder;

the axial dimensions of the segment-retaining groove and the latch segments, and the flat nature of the upper and lower walls of the segment-retaining groove and the upper and lower surfaces of the segments, being such that each segment can be inserted into the groove at any circumferential location in the groove and when so inserted will be in free sliding contact with the body;

spring means carried by the segments and disposed to act in compression between the segments and the bottom wall of the segment-retaining groove to urge the segments outwardly;

the radial dimensions of each segment and the location of the segment-retaining groove on the body being such that, when the body has been landed with the shoulder of the body operatively engaging the support in the upright bore, the spring means will cause the segments to slide outwardly in the segment-retaining groove until the latching shoulder of each segment is engaged with a coacting shoulder presented by the inwardly opening groove in the upright bore,

the first cylindrical outer surface portion of the segment then being spaced inwardly from the wall of the upright bore; and

combination segment retracting and retaining means carried by the body above the latch-retaining groove and comprising an annular member having

a lower end dimensioned to engage the camming surfaces of the latch segments, and

a cylindrical inner surface dimensioned to embrace the first cylindrical outer surface portions of the segments;

the segment retracting and retaining means being movable between an upper position, in which the annular member embraces the first cylindrical outer surface portions of the segments and the segments are held in the segment-retaining groove by that engagement, and a lower position, in which the annular member embraces the second cylindrical outer surface portions of the segments,

movement of the annular member downwardly from its first position to its second position causing the segments to be retracted into the segment-retaining groove and out of engagement with the inwardly opening groove of the upright bore as a result of coaction of the lower end of the annular member with the camming surfaces of the segments.

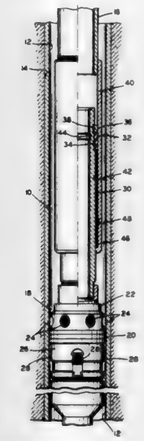
4,290,484

SEAL RECEPTACLE ASSEMBLY

Clifford H. Beall, Broken Arrow, Okla.; Amareswar Amancharla, League City, and Michael A. Luke, Houston, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Jul. 18, 1980, Ser. No. 170,209
Int. Cl.³ E21B *23/00, 33/10*
U.S. Cl. 166—242 **18 Claims**

18. A latch assembly for affixation between first and second members of a tubular conduit in a subterranean well, said assembly comprising: an inner body sleeve having one end connected to one of the members and defining an outwardly facing first sealing surface; an outer housing circumjacent said inner body sleeve and having one end connected to the other of the members, said outer housing defining an inwardly facing second sealing surface; an annular seal means having an inner surface sealingly engaging said first sealing surface and an outer surface sealingly engaging said second sealing surface; securing means for releasably securing said seal means to said inner body sleeve; and releasing means operable by extreme upward movement of said outer housing for releasing said securing means and permitting said seal means to be shifted



onto and carried by said second sealing surface and to move upwardly with said outer housing, for retrieval from the well.

4,290,485

REDUCTION OF WATER PRODUCTION FROM HYDROCARBON CONTAINING SUBSURFACE FORMATIONS

Dustin L. Free, Tulsa, and Howard M. Phillips, Oklahoma City, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 8, 1972, Ser. No. 251,345
Int. Cl.³ E21B *33/138, 43/27*
U.S. Cl. 166—281 **16 Claims**

1. In the method of treating a subsurface oil and water-producing interval of a formation located adjacent to a well bore to decrease the volume ratio of water to oil produced therefrom wherein an aqueous solution of a partially hydrolyzed polyacrylamide, said solution being substantially free of a crosslinking agent for said polyacrylamide, is injected into the producing formation and then producing fluids from said formation, the improvement which comprises: acidizing the interval to be treated prior to the injection of polymer solution to increase the injectivity of the interval; crosslinking the polymer after it is introduced into the formation and prior to producing fluids from the treated formation by contacting said polymer with an aqueous solution containing a water soluble salt of a di or trivalent metal cation or an organic crosslinking agent so that said polymer is crosslinked to a degree sufficient to achieve a greater reduction in the volume ratio of water to oil produced than is obtained with injection of only said substantially uncrosslinked polyacrylamide.

4,290,486

METHODS AND APPARATUS FOR SEVERING CONDUITS

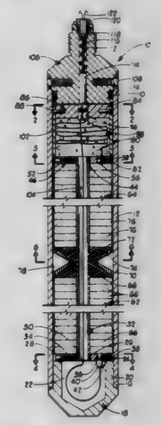
John A. Regalbuto, Fort Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed Jun. 25, 1979, Ser. No. 52,031
Int. Cl.³ E21B *43/116*
U.S. Cl. 166—297 **33 Claims**

1. Apparatus for severing a conduit along a plane extending transversely through the conduit comprising:

two aligned, confined cylindrical explosive charges positioned relative to each other for alignment along the longitudinal axis of the conduit and each including a distal end and a convexly shaped proximal end, said proximal ends facing each other and defining an explosive-free space separating the remaining portion of one of the charges from the remaining portion of the other charges;

a liner formed of high density ductile material positioned adjacent each of said proximal ends of said charges, said liners having shapes conforming with the shapes of said



proximal ends of said charges and having radially increasing thicknesses; and

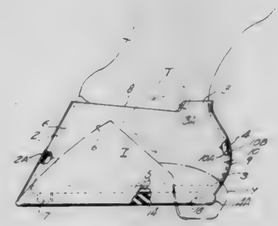
means at the distal ends of said charges for simultaneously initiating detonation of the charges at the distal ends thereof.

4,290,487

HORSE BOOT

William O. Unger, 355 Rustic Pl., Eugene, Oreg. 97401

Filed Feb. 19, 1980, Ser. No. 122,298
Int. Cl.³ A01L *3/00*
U.S. Cl. 168—18 **3 Claims**



1. A boot for a horse's hoof comprising,

a sole having a rear edge,

a resilient wall extending upwardly from the sole perimeter and including a frontal portion, side portions and a rear portion, said rear wall portion of rearwardly protuberant configuration, said rear wall portion including an elevated rim portion providing a rear wall portion of greater height than the remaining portions of the boot wall, said elevated rim portion terminating laterally in end surfaces located substantially above the juncture of the rear and side portions of the boot wall and adapted to receive the application of finger exerted pressure during manual repositioning of the rear wall portion to a reversed position downwardly below said rear edge of the sole to permit passage of a hoof in a direction generally parallel to said sole into place on the sole whereupon the rear wall portion may be restored to its raised normal position, said reversed position permitting the frontal and side portions of the boot

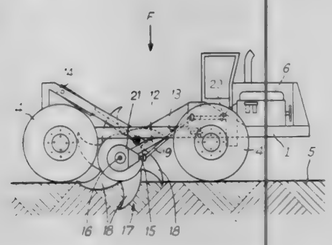
wall to avoid radical inward displacement and remain unobstructive of hoof entry.

4,290,488

DRIVING MACHINE INCLUDING SPEED SYNCHRONIZED EARTH WORKING TRACTION WHEEL

Gilles Pelsy, Ferme de l'Epina, 55400 Maucourt/Orne, France (55400)

Filed Nov. 14, 1979, Ser. No. 94,334
Claims priority, application France, Dec. 5, 1978, 78 34251
Int. Cl.³ A01B *33/02, 33/10*
U.S. Cl. 172—123 **10 Claims**



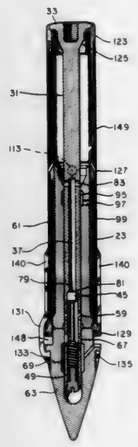
1. A public works machine comprising:
a frame;
moving members, such as wheels or caterpillar tracks, on which said frame rests for forward movement on the ground,
drive means coupled to said moving members for driving said moving members,
a traction wheel provided with a plurality of teeth for penetration into the ground mounted for rotation about a substantially horizontal rotational axis extending transversely to the frame and the direction of travel of the machine, said traction wheel being coupled to power transmission means for drivingly rotating said traction wheel in the same direction as, and in constant speed synchronization with, said moving means to provide a reactive force between a leading face of each tooth of the traction wheel and the earth tending to cause forward movement of the machine, said traction wheel being positionable with respect to the frame by means of a support in a position in which the distance between the rotation axis of said traction wheel and the ground is less than the distance separating the rotation axis from the outer end of each tooth of the traction wheel, said power transmission means including synchronizing means for maintaining the ratio of the speed of rotation of the traction wheel to the speed of the moving members at a constant value so that the outer end of each tooth of said traction wheel has a linear speed which is substantially equal to the linear speed of forward movement provided by said moving members, wherein each tooth had a leading face and a trailing face with respect to its rotational movement and the profile of the leading face of each tooth is an involute profile resulting in a minimum amount of vertical force being exerted by said profile on the ground during the rotation of the wheel and penetration of the earth by each respective tooth so as to minimize the power required for penetrating the earth by each tooth.

4,290,489

VIBRATIONLESS PNEUMATIC TOOLS

Charles Leavell, 10 Desabla Rd., San Mateo, Calif. 94402

Continuation of Ser. No. 534,070, Dec. 18, 1974, abandoned.
This application Feb. 29, 1980, Ser. No. 125,794
Int. Cl.³ B25D *9/06*
U.S. Cl. 173—17 **35 Claims**



1. A high efficiency pneumatic system comprising:
a pneumatic motor;
a drive element in said pneumatic motor having an oscillatory motion, said oscillatory motion being produced by intermittent substantially adiabatic expansion of a gas having pressure and temperature values greater than the ambient pressure and temperature values in order to actuate said drive element against an opposing force;
force transmitting means to convey said opposing force to said drive element without conveying said oscillatory motion of the source of said opposing force;
a compressor in which said gas is compressed substantially adiabatically to retain the heat energy produced during compression;
a conduit to convey said gas from said compressor to said pneumatic motor with a minimal loss of heat energy; and
valving means to selectively admit discrete portions of said gas in said conduit to actuate said drive element against said opposing force, said valving means determining that each of said portions of gas admitted by said valving means to actuate said drive element is an amount of gas that will expand to substantially ambient pressure while actuating said drive element to its maximum displacement against said opposing force.

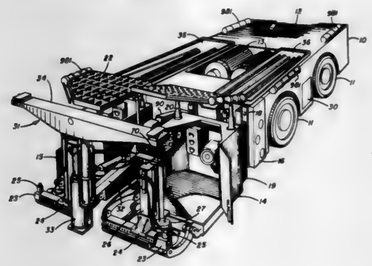
4,290,490

ROOF BOLTING DEVICE

Henry P. Barthe, Pittsburgh, and William R. Cobb, Murrysville, both of Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.

Filed Apr. 16, 1979, Ser. No. 30,219
Int. Cl.³ E21C *11/02, 27/22;* E21D *20/00*
U.S. Cl. 173—23 **6 Claims**

1. A roof drilling and bolting device comprising
a mobile chassis comprising a frame extending to and supporting a front edge, said frame not extending forwardly of said front edge,
two operator cabs having floors and canopies,
telescoping means secured to the front edge comprising at least one large tubular member and at least two extensible members telescoped with said large tubular member for slidably supporting the operator cabs on the front edge of the chassis, said extensible members each collapsible within the nominal width of the chassis, said extensible members extendible outwardly of the normal width of the chassis to support said cabs laterally outwardly of the nominal width of the chassis, said extensible members being independently actuatable to independently position said cabs, and
drilling assemblies associated with each cab including a drill pod and means for rectilinearly positioning the drill pods up-and-down and side-to-side in front of the cabs.
6. A roof drilling and bolting device comprising
a mobile chassis comprising a frame extending to and supporting a front edge, said frame not extending forward of said front edge,
two operator cabs having floors and canopies,
telescoping means secured to the front edge comprising at least one large tubular member and extensible members



telescoped within the large tubular member for slidably supporting the operator cabs on the front edge of the chassis, said extensible members each collapsible within the nominal width of the chassis, said extensible members extendible outwardly of the nominal width of the chassis to support said cabs laterally outward of the normal width of the chassis, said extensible members being independently actuatable to independently position said cabs, said means for slidably supporting the cabs comprising means for raising and lowering said cabs,
means for raising at least the front edge of the said canopies,
drilling assemblies associated with each cab including a drill pod,
means for rectilinearly positioning said drill pod up-and-down and side-to-side along the front edge of the cab, and
a temporary roof support positioned by a boom extending forwardly of the front edge of the chassis.

4,290,491

ROCK DRILL POSITIONING MECHANISM

James R. Mayer, Englewood, Colo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 31, 1978, Ser. No. 938,613
Int. Cl.³ E21C *5/00, 9/00*
U.S. Cl. 173—43 **17 Claims**



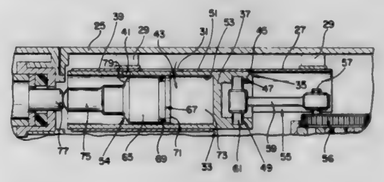
1. A rock drill positioning mechanism for positioning a drill feed bar or the like in combination with an elongated movable boom, said positioning mechanism being characterized by:
a connecting member pivotally mounted on the distal end of said boom;
a mounting arm pivotally connected to said connecting member;
actuator means interconnected between said connecting member and said arm for pivoting said arm with respect to said connecting member; and,
a rotary actuator mounted on said arm and adapted to support said feed bar for rotating said feed bar about an axis of rotation which may be substantially coincident with the longitudinal axis of said boom depending on the pivotal position of said arm and said connecting member;
said rotary actuator including a housing connected to said arm and having a cylindrical bore, a piston reciprocably disposed in said bore, at least two sets of cooperable helical splines including internal and external splines formed on said piston, a shaft mounted on said housing for rotation in response to movement of said piston in said bore, said shaft including splines cooperable with said internal splines on said piston, further splines in said housing cooperably engaged with said external splines on said piston, and means interconnecting said shaft and said feed bar so that in response to actuation of said piston to rotate said shaft said feed bar may be rotatably positioned about said axis of rotation.

4,290,492

IDLING AND AIR REPLENISHING SYSTEM FOR A RECIPROCATING HAMMER MECHANISM

Daniel H. Sides, New Freedom, Pa., and Hanspeter E. Beisch, Belair, Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 31, 1979, Ser. No. 8,228
Int. Cl.³ B25D *11/12;* B25B *45/04*
U.S. Cl. 173—118 **5 Claims**



1. A hammer tool having a housing which carries a detachable bit toengage a work piece,
(a) drive means mounted in the housing to power the tool,
(b) a barrel fixedly connected to the housing, and in communication with the atmosphere,
(c) the barrel has an open forward end and an open rearward end,
(d) an air passageway formed intermediate the ends of the barrel,
(e) a piston member slidingly disposed in the barrel, the piston member has a closed end adjacent the rearward end of the barrel, and the piston member has an open end adjacent the forward end of the barrel,
(f) the piston member connected to be reciprocated by the drive means,
(g) a ram slidingly disposed in the open end of the piston freely to move substantially forward of the open end of the piston member in an idling mode defined by the absence of the bit, and the ram to reciprocate responsive the driven piston member to deliver impact blows to the bit in a hammering mode defined by the presence of the bit,
(h) the ram having a sealing surface disposed opposite the closed end of the piston member,
(i) a chamber means of variable volume formed in the open end of the piston member between the closed end of the piston member and the sealing surface of the ram,
(j) a front port and a rear port formed in the open end of the piston member in predetermined spaced relationship to each other,
(k) the rear port to communicate the chamber means with the barrel air passageway upon the piston member reaching the limit of its forward travel to permit replenishing air in the chamber means, and thereafter said communication

between the chamber means and the barrel air passageway being selectively closed by the independent motions of the ram or the piston member during the hammering mode, the rear port continuously communicating with the chamber means during the idle mode, and

(l) the front port during the hammering mode is closed by the ram, the barrel, or by both the ram and the barrel, the front port to intermittently communicate the barrel air passageway with the chamber means during the idling mode upon the rear port being closed by the barrel and the sealing surface of the ram being disposed forwardly of the front port.

4,290,493

CONFIGURED IMPACT MEMBER FOR DRIVEN FLYWHEEL IMPACT DEVICE

James E. Smith, Boulder, Colo., and Gordon P. Baker, Amelia, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Sep. 6, 1979, Ser. No. 73,030
Int. Cl.³ B25C *1/06*
U.S. Cl. 173—124 **7 Claims**



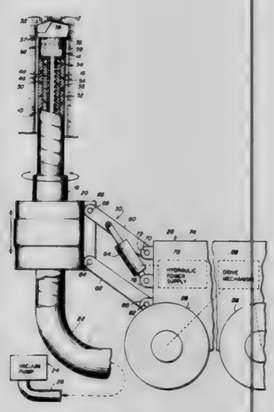
1. An impact device having an impact member driven by means of a driven flywheel, wherein the improvement comprises an impact member whose thickness varies over its entire working length, thus varying the normal force of the flywheel against the impact member as a function of the position of the impact member in its working stroke.

4,290,494

FLEXIBLE SHAFT AND ROOF DRILLING SYSTEM

John H. Blanz, Carlisle, Mass., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 2, 1978, Ser. No. 946,401
Int. Cl.³ B23Q *5/00*; E21C *5/00*
U.S. Cl. 173—149 **11 Claims**



1. A flexible drill shaft for transmitting torque and thrust, one end of said shaft defining a working end, said shaft comprising:

(a) a first flat band wound in a helical configuration defining an outer casing, edges of adjacent convolutions of said first flat band in nesting relationship with one another; and

(b) a second flat band wound in a helical configuration defining an inner casing that is disposed within said outer casing, edges of adjacent convolutions of said second flat band in nesting relationship with one another;

(c) said outer casing and inner casing coaxially disposed about a longitudinal axis of said shaft and extending the length of said shaft, said outer casing wound in a first direction and said inner casing wound in a second direction, said first direction opposite said second direction, said first band and said second band configured to transform said flexible shaft into a substantially rigid shaft when torque and thrust are applied to said flexible shaft, an inner face of said first flat band and an outer face of said second band bearing against each other in full surface contact when torque and thrust are applied to said flexible shaft, nesting edges of adjacent convolutions of each of said first and second bands having mating profiles for fitted engagement and full surface contact when torque and thrust are applied to said flexible shaft;

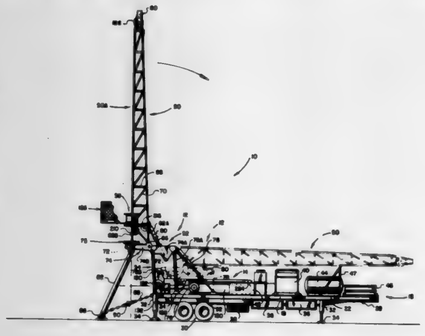
(d) said shaft configured to be engaged intermediate its ends by a torque and thrust applying device, the portion of said shaft between said working end and said engaged section being transformed into a straight rigid shaft when torque and thrust are applied by said device.

4,290,495

PORTABLE WORKOVER RIG WITH EXTENDABLE MAST SUBSTRUCTURE, PLATFORM MOUNTED DRAWWORKS AND ADJUSTABLE WELLHEAD ANCHOR

Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra-Rig, Inc., Fort Worth, Tex.

Filed Jun. 18, 1979, Ser. No. 49,954
Int. Cl.³ E21B *15/00, 19/14*
U.S. Cl. 175—85 **57 Claims**



1. A transportable mast assembly for a workover rig comprising:

a portable rig support platform;

a mast supported substructure including a cantilever support base projecting beyond the support platform in a workover position;

an elongated mast pivotally mounted on the mast support substructure for movement from a reclining transport position overlying the rig support platform to an erect workover position overlying and engaging the support base;

the mast including pipe engaging means movable along the mast for engaging and hoisting a pipe string;

a mast carriage assembly mounted on the support platform and connected to the mast support substructure for moving the mast support substructure between the transport position and the workover position wherein the support base projects above and beyond the support platform;

first power means operatively coupled intermediate the support platform and the carriage assembly for selectively moving the mast support substructure from the transport position to the workover position to place the support base over a wellhead; and,

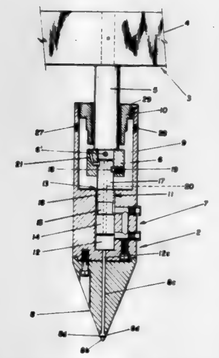
second power means operatively coupled intermediate the mast support substructure and the mast for selectively erecting the mast from the transport position to the erect workover position whereby the pipe engaging means may be operated to engage and hoist a pipe string from the wellhead.

4,290,496

COMBINATION IMPACT AND PRESSURE LIQUID ROCK DRILL

Aubrey C. Briggs, 3 Scheffield Dr., (Rosslyn Farms), Carnegie, Pa. 15106

Filed Oct. 19, 1979, Ser. No. 86,279
Int. Cl.³ E21B *1/06*
U.S. Cl. 175—321 **10 Claims**



1. A rock drill comprising in combination means for cutting rock comprising a reciprocating impact driver having an axially extending shaft-like impact transmitting extension at its lower end and the cutter unit connected together through a lost motion connection with the said extension to allow limited relative axial movement between the driver and cutter unit, the cutter unit having a cutting bit extending axially from its free end, a liquid holding reservoir in the cutter unit, a pressure cylinder in the cutter unit, and combined valve and piston means operated by said relative movement between the driver and cutter unit for forcing water from the pressure cylinder through the cutter bit during the impact stroke of the driver arranged to transfer liquid from said reservoir to the high pressure cylinder on the succeeding reverse stroke of the driver.

4,290,497

AUTOMATIC WEAR COMPENSATING SEAL DEVICE

Eduardo Barnetche, Ave. Universidad Num. 482, Mexico City 13, Mexico

Filed Jul. 24, 1979, Ser. No. 60,055
Int. Cl.³ E21B *10/08*; F16J *15/34, 15/54*
U.S. Cl. 175—371 **34 Claims**

1. An axial seal device for forming a seal between first and second members, said seal device comprising:

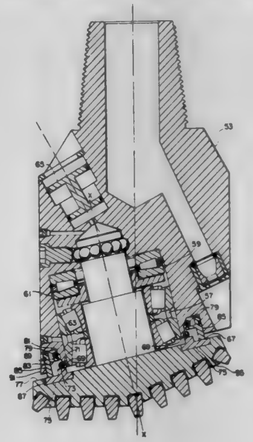
(a) an elastic sealing means positioned between said first and second members such that the elastic force of said sealing means holds said sealing means against at least one of said first and second members; and

(b) an inclined surface on said first member, said surface being inclined at an acute angle with respect to the plane of said sealing means, wherein the inner peripheral surface of said sealing means contacts said first member on the inclined surface thereof to form a seal therebetween and wherein the reaction force to the elastic force of said sealing means on said inclined surface holds said sealing means in contact with said second member to form a seal therebetween and wherein the inclined surface of said first member is rougher than the portion of the surface of said second member which contacts said sealing means.

20. In a rotary drill for drilling a well in the surface of the earth, said drill comprising:

(a) a drill bit including an upper portion for connection to a drill string, duct means including a fluid outlet into the well for carrying fluid to extract detritus and clean the bottom of the well and receiving means;

(b) a solid cutting head comprising a conical head portion and a unitary stem portion with no internal passages therein, said conical head portion including holes therein and cutting elements inserted in said holes, said stem portion being received in said receiving means of said drill bit, wherein said stem and said receiving means include



holding means for rotatably holding said cutting head in said drill bit;

(c) bearing means between said drill bit and said conical head, said bearing means being fixed relative to said drill bit and to said conical head for preventing movement between bearing surfaces of the bearing means which contact the drill bit and conical head on the drill bit and conical head, but allowing said conical head to rotate relative to said drill bit;

(d) a lubrication system, independent of said duct means, interconnected between said drill bit and said cutting head said lubricating system including a stabilizer means for equalizing the pressure in the lubricating system with the pressure in the bore hole surrounding the bit; and

(e) a seal device between said upper portion and said solid cutting head;

the improvement wherein said seal device is an automatic wear compensating seal device comprising:

(1) a first surface and an inclined second surface on said upper portion said inclined second surface being inclined at an obtuse angle with respect to the plane of said first surface;

(2) a third surface on said cutting head;

wherein said cutting head is positioned adjacent to said

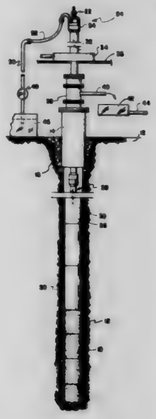
upper portion along an axis perpendicular to said first surface; and

(3) a first elastic sealing means contacting said inclined second surface such that the elastic force of said first sealing means has a first component perpendicular to said axis for maintaining said first sealing means in contact with said inclined second surface and a second component parallel to said axis which causes a reaction force for maintaining said first sealing means in contact with said third surface.

4,290,498
ABLATIBLE DRILL

William C. Triplett, 3154 Reid Dr., Corpus Christi, Tex. 78404, and Walter H. Brauer, 3725 Wakeforest, Houston, Tex. 77098

Filed Apr. 11, 1979, Ser. No. 29,031
Int. Cl.³ E21B *10/60*
U.S. Cl. 175—379 **9 Claims**



1. A drill string comprising

a string of drill pipe having a plurality of drill collars on the lower end thereof; and

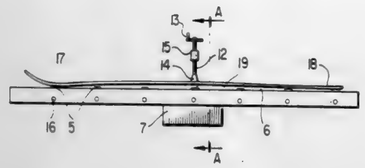
a bit, having a multiplicity of cutting elements, connected with the lowermost drill collar and comprising a plurality of interconnected joints defining a vertical axis, each joint including a matrix having therein a multiplicity of inclusions substantially harder than the matrix, the inclusions being distributed throughout the matrix from adjacent the axis to adjacent the periphery of each joint, the inclusions comprising the cutting elements.

4,290,499
APPARATUS FOR TESTING AND FITTING CROSS-COUNTRY SKIS

Mauri Luomaranta, Sault Ste. Marie, Canada, assignor to Scandinavian Ski Shop Limited, Sault Ste. Marie, Canada

Filed Apr. 28, 1980, Ser. No. 144,307
Claims priority, application Canada, Mar. 12, 1980, 347499
Int. Cl.³ G01G *23/36, 3/14*
U.S. Cl. 177—48 **10 Claims**

1. A flat bed adapted to support a cross-country ski, sensor means distributed at pre-determined points along the length and width of said flat bed, each of said sensor means being adapted to emit a signal in response to force exerted on it by the running surface of a cross-country ski supported on said flat bed, display means adapted to indicate the origin of the signals emitted from each of said sensor means, adjustable loading means adapted to exert pre-determined forces to points

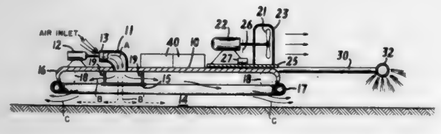


along the top surface of said ski and load measuring means adapted to indicate the amount of the applied load.

4,290,500
GROUND EFFECT FLYING PLATFORM

Harry C. Hopkins, 15 Layfayette St., White Plains, N.Y. 10606; Bernhard H. Goethert, 1703 Sycamore Cir., Manchester, Tenn. 37355, and Joseph K. Power, Box 67, Rte. 1, Alpine, Ala. 35014

Filed Nov. 5, 1979, Ser. No. 91,178
Int. Cl.³ A01C *23/00*; A01M *7/00*; B60V *1/16*
U.S. Cl. 180—117 **16 Claims**



1. A ground-effect vehicle capable of hovering above the ground comprising:

a base frame;

a skirt extending downwardly from the periphery of the base frame;

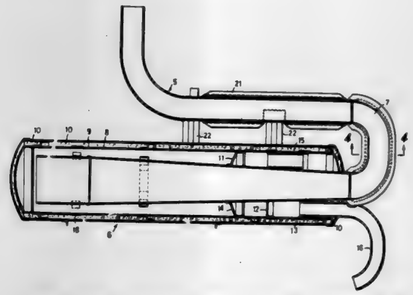
air source means located on the base frame for injecting an air flow with a particular velocity downwardly through an aperture in the base frame to create an air cushion of high pressure air in a pressure space bounded by the base frame, the skirt and the ground, said air pressure being sufficient to lift the vehicle and to allow the air to escape under said skirt; and

deflector means for diverting the downward air flow into an air flow parallel to the ground and reducing the velocity of said air flow as it passes under the skirt, said deflector means including first, second and third plates, said first plate being located in a plane substantially parallel to the ground when the vehicle is in level flight and being at the horizontal position of the aperture in the base frame, but vertically spaced therefrom, so as to form a horizontal discharge gap, said first plate having a circumference sufficent to give the discharge gap an area large enough to significantly reduce the velocity of the air flow, said second and third deflector plates being positioned along the circumference of the skirt generally parallel to and perpendicular to the skirt, respectively, the second and third deflector plates being joined at one end, the second and third deflector plates also being perforated and positioned to intercept the parallel air flow, the second and third reflector plates forming an intermediate pressure area within said pressure space so as to reduce the velocity of the air flow as it escapes under the skirt.

4,290,501
EXHAUST SILENCER, ESPECIALLY FOR SMALL VEHICLES

Ko Tanaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jan. 19, 1979, Ser. No. 4,929
Int. Cl.³ F01N *7/08*
U.S. Cl. 181—228 **5 Claims**

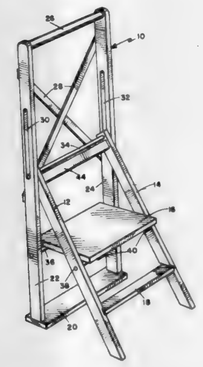


1. An exhaust silencer comprising: an elongated silencer chamber having an axis, an axial peripheral inner wall with perforations therethrough, an axial outer peripheral wall extending around said inner wall and leaving a peripheral spacing therebetween, said perforations opening into said spacing, sound absorbing material placed in said spacing, and a gas outlet port; a U-shaped exhaust pipe having a first arm outside of said silencer chamber and parallel to said axis, a second arm entering at one end of said silencer chamber and extending axially into said chamber for the major portion of the length of said chamber, and spaced from said inner peripheral wall, a bight portion joining said arms outside of said silencer chamber, said bight portion comprising a pair of spaced-apart walls, and sound absorbing material in the region between said walls of said bight portion, said outlet port being substantially axially spaced from the outlet end of said second arm.

4,290,502
FOLDING STEP STOOL

John B. Anderson, 8248 Royal Gorge Dr., San Diego, Calif. 92119

Filed Sep. 10, 1979, Ser. No. 74,150
Int. Cl.³ A47C *13/00*
U.S. Cl. 182—33 **10 Claims**



1. A folding step stool comprising:

a frame having a floor engaging terminus and having at least two substantially vertical uprights,

plurality of legs been carried on said frame by mounting means for movement of said legs between extended and retracted positions,

said legs comprising means in said extended position for extending into engagement with a horizontal floor and for coacting with said frame lower terminus to support said uprights substantially vertically, said legs, in said retracted position being adapted to lie closely against said frame,

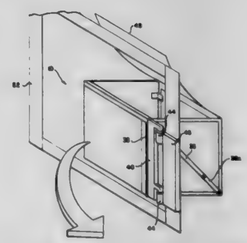
at least one platform-step pivotally mounted adjacent a first edge on said legs and pivotal mounted adjacent the opposite edge on said upright, said platform step lying entirely within the vertical projection of a planar area defined by said floor engaging terminus and the bottom surface of said legs in said extended position,

at least one additional step carried by said legs and lying within the vertical projection of said area but extending beyond the vertical projection of a area defined by said step platform when said legs are in said extended position.

4,290,503
PORTABLE SECURITY FIRE ESCAPE

Wayne A. Briles, 301 South St., Andrews Pl., #307, Los Angeles, Calif. 90020

Filed Jan. 16, 1980, Ser. No. 112,554
Int. Cl.³ A62B *3/00*
U.S. Cl. 182—47 **13 Claims**



1. In a fire escape housing for erection within and outwardly swingable from an opening in a building, comprising:

(a) A collapsible housing for accomodation, when erected, of humans therewithin;

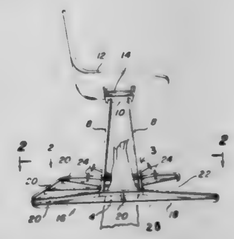
(b) articulated means one section of which is mounted to the housing;

(c) receiving means mounted to the exterior wall of the building adjacent the opening therein and connectible to an unmounted section of the articulated means.

4,290,504
TREE-MOUNTED DEER STAND

Cary Cuba, 1 N. Bryant Blvd., San Angelo, Tex. 76903

Filed Jun. 13, 1980, Ser. No. 159,166
Int. Cl.³ A47C *7/62*
U.S. Cl. 182—187 **5 Claims**



1. A tree-mounted deer stand for mounting over an upwardly disposed tree stump member, said stand comprising a frame having a downwardly-open socket, said frame including

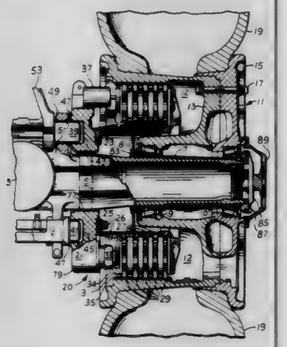
a lower portion adapted to substantially surround said member, legs extending upwardly from said lower portion, seat means mounted on upper ends of said legs, and a foot rest extending outwardly from the lower portion of the frame.

4,290,505

PIN CENTERED BRAKE

Louis T. Kramer, Long Beach, Calif., assignor to McDonnell Douglas Corp., Long Beach, Calif.

Filed Oct. 29, 1979, Ser. No. 89,548
Int. Cl.³ B60T 1/06
U.S. Cl. 188—18 A **10 Claims**



1. An improved multiple disc aircraft wheel brake circumferentially disposed in a complete annulus about an aircraft axle and having a brake housing attached to aircraft landing gear structure, a plurality of brake discs rotationally fixed to said housing while axially moveable, a plurality of wheel discs located alternately and adjacently to said brake discs and radially fixed to an aircraft wheel while axially moveable, means to axially engage the brake discs with the wheel discs, wherein the improvement comprises:

attachment of said brake housing to said aircraft landing gear structure by only two pins attached to said landing gear structure

and extending parallel to the axis of said axle, said two pins being located on a centerline coincident with the diameter of said axle and being symmetrical about a line drawn through the center of said aircraft axle and perpendicular to said centerline, said two pins slideably engaging mating apertures in said brake housing so that said two pins provide radial restraint while providing axial freedom for said brake housing, said brake housing unrestrained by said axle, and said wheel and said brake housing being retained on said axle in an axially stacked fashion by only a single fastener secured to said axle.

4,290,506

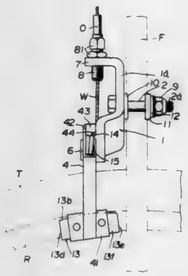
CENTER-PULL TYPE CALLIPER BRAKE FOR A BICYCLE

Masashi Nagano, and Itsuo Someya, both of Sakai, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed Oct. 2, 1979, Ser. No. 81,176
Claims priority, application Japan, Oct. 14, 1978, 53-141137[U]; Mar. 5, 1979, 54-28292[U]
Int. Cl.³ B62L 1/16
U.S. Cl. 188—24.19 **6 Claims**

1. A center-pull calliper bicycle brake comprising:

a horizontal fixing arm having an extension extending from a horizontally intermediate portion thereof in the direction of a control wire; a supporting member for supporting an outer sheath of said control wire connected with said extension, said supporting member having an elongated slot extending in the direction of said extension; a fixing bolt extending through said slot for fixing said fixing arm to a bicycle frame and permitting vertical adjustment of said fixing arm relative to said frame; a pair of brake arms pivoted to respective horizontal ends of said fixing arm; a pair of brake shoe holders integral with and extending from the ends of said brake arms; a pair of brake shoes respectively supported in said holders, each of said brake shoes having a braking surface for engaging with a bicycle



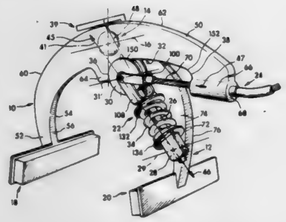
rim, and upper and lower surfaces and a pair of side surfaces in continuation of said braking surface, said upper surface being curved upwardly at a lengthwise intermediate portion thereof along said rim and having a curvature smaller than that of an outer peripheral edge of said rim; and, actuating means connectable to said control wire for causing pivotal movement of said brake arms upon pulling movement of said control wire to thereby actuate said brake.

4,290,507

ACTUATING SYSTEM AND APPARATUS FOR BRAKES AND CLUTCHES AND THE LIKE

Lawrence G. Brown, 1629 Kuhilani St., Honolulu, Hi. 96821

Continuation-in-part of Ser. No. 878,028, Feb. 15, 1978, abandoned. This application Jun. 12, 1979, Ser. No. 47,762
Int. Cl.³ B62L 3/00
U.S. Cl. 188—24.15 **11 Claims**



1. A brake system for applying braking force to retard the movement of a bicycle wheel or the like comprising:

a pair of lever arm means for holding brake pad means for movement between an open non-braking position and a closed braking position relative to the bicycle wheel and for applying braking force thereto in the closed braking position;

pivotal connecting means for providing a central pivotal axis and connecting said lever arm means and enabling pivotal movement thereof between the open non-braking position and the closed braking position and in the closed braking position between a minimum braking force application position and a maximum braking force application position;

force reaction cam surface means on one of said lever arm means for applying actuating force and for causing pivotal movement of said lever arm means between the various positions;

movable actuating means operably connected to said lever arm means and being movable relative thereto for applying brake actuating force to said surface means and for causing pivotal movement of said lever arm means between the minimum braking force application position and the maximum braking force application position and various selectively controlled force application positions therebetween in response to externally applied force;

spring means operably associated with said movable actuating means for applying spring generated force of substantially constant magnitude to said lever arm means independently of the externally applied force at each of the various selectively controlled force application positions along said surface means and being effective in each position to cause selectively controlled application of braking force to the bicycle wheel through said lever arm means proportional to the applied spring force and the position of said movable actuating means while enabling return of said lever arm means toward the minimum braking force application position in response to reduction of the externally applied force and return of said lever arm means to the non-braking position upon removal of the externally applied force; and

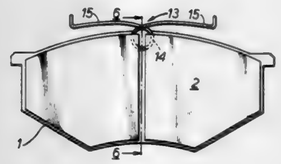
control means connected to said movable actuating means for applying the externally applied force thereto and for causing movement of said movable actuating means relative to said lever arm means resulting in pivotal movement of said lever arm means between the various positions and for changing the location of the place of application of the spring force to the lever arm means relative to the central pivotal axis of said lever arm means.

4,290,508

DISC BRAKE PAD ASSEMBLIES

Heinz W. Baum, Saarbrucken Dudweiler, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

Filed Aug. 31, 1979, Ser. No. 71,497
Claims priority, application United Kingdom, Sep. 14, 1978, 36802/78; Nov. 27, 1978, 46110/78
Int. Cl.³ F16D 65/00
U.S. Cl. 188—73.38 **9 Claims**



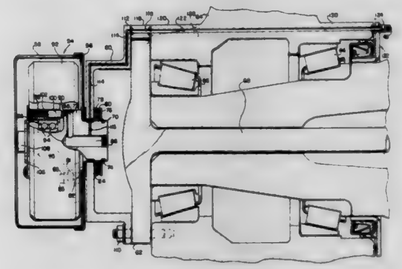
1. A friction pad assembly comprising a backing plate having front and rear faces and friction material secured to said front face, an anti-rattle spring having a bent portion intermediate its ends, and a recess extending across the width of said backing plate from the front to the rear faces thereof, said recess having an opening which extends outwardly through the edge of said backing plate between the front and rear faces thereof said opening being smaller than the largest dimension of said recess, said bent intermediate portion of said spring being seated in said recess and forming a positive connection therewith by the inherent resilience of the bent portion, said recess and said bent portion forming the sole connection between said spring and said backing plate, said recess being accessible to secure the spring to the backing plate after the friction material is secured to the backing plate, said spring being removable from said recess without deformation of said backing plate.

4,290,509

ANTI-LOCK SYSTEM

David O. Hulse, Lionville, Pa., assignor to The Budd Company, Troy, Mich.

Filed Sep. 6, 1979, Ser. No. 73,010
Int. Cl.³ B60T 8/093
U.S. Cl. 188—181 A **8 Claims**



1. In combination with a source of service pressure for actuating a brake for decelerating a vehicle wheel and means for selectively applying service pressure to the brake,

(a) sensing means attached for rotation about the axis of rotation of said wheel outboard of said wheel;

(b) a source of control pressure located inboard of said wheel and offset with respect to the axis of rotation thereof to control the application of said service pressure to said brake;

(c) means including a passageway therein connecting said sensing means to said source of control pressure through a path removed from the axis of rotation of said wheel; said passage means including a passageway extending through the hub of said wheel, a fixed circular member secured to said vehicle, sealing means between said wheel and circular member, a sealed chamber formed between said rotatable wheel and fixed portion of said vehicle by said sealing means, said wheel and said circular member, and said source of control pressure being connected to said sealed chamber through said circular member;

(d) said sensing means being responsive during normal rotation of said wheel to maintain said control pressure to permit service pressure to be applied to said brake, and

(e) said sensing means being responsive when said wheel is decelerated beyond said predetermined rate to relieve said control pressure to prevent service pressure from being applied to said brake.

4,290,510

WEAR RESISTANT COATED ARTICLE

Richard J. Warren, Howell, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

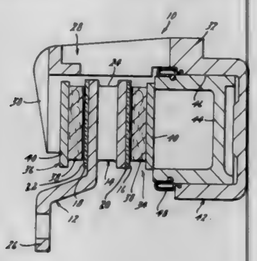
Filed Dec. 14, 1978, Ser. No. 969,640
Int. Cl.³ F16D 65/10; B22F 7/02
U.S. Cl. 188—218 XL **5 Claims**

1. A brake motor adapted to be used with a caliper braking means comprising:

a body portion adapted to be attached to a wheel of a vehicle and rotate therewith;

a head portion attached to said body, said head having friction surfaces thereon, said friction surfaces positioned so as to allow engagement of said surfaces by brake pads located on and actuated by said caliper, said friction surfaces being coated with a wear resistant material including about 30 to 70 percent by volume of a ceramic particulate material selected from the group consisting of metal carbides and metal nitrides and about 30 to 70 percent by

volume of a binder metal compatible with the ceramic particles and the rotor wherein said metal is an alloy of a



base metal selected from the group consisting of iron, nickel and copper.

4,290,511

LOAD-CARRYING STRUT CONSTRUCTION

Johannes J. de Baan, and Adolf Adrian, both of Ennepetal, Fed. Rep. of Germany, assignors to Firma August Bilstein, Ennepetal-Altenoverde, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,636

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849100

Int. Cl.³ F16F *9/36, 9/54*

U.S. Cl. 188—322.17 **6 Claims**



1. A shock absorbing strut for a vehicle comprising an outer tube for carrying a vehicle wheel axle journal; a shock absorber cylinder slidably axially movable in said outer tube; said cylinder being connected at an end projecting from the outer tube with the vehicle chassis frame and having an exteriorly extending piston rod fastened to the outer tube bottom; a lubricant annular chamber of constant volume closed off by upper and lower fixedly positioned guide rings and sealing rings disposed adjacent said guide rings; said guide and sealing rings being disposed between the shock absorber cylinder and the outer tube; each of said sealing rings being arranged above its respective guide ring in the normal position of strut use with axially limited play and comprising a lubricant sealing felt ring; and a dirt-deflecting ring composed of water-resistant plastic disposed above the upper lubricant-sealing ring for limiting the axial play of said upper lubricant-sealing ring.

4,290,512

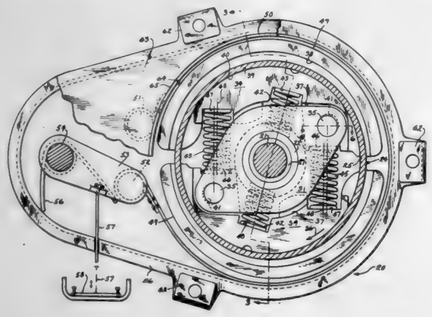
CLUTCH AND BRAKE MECHANISM

Hugh A. Zindler, Rte. 3, Box 264, Pleasant Valley La., Watertown, Wis. 53094

Division of Ser. No. 809,207, Jun. 23, 1977, Pat. No. 4,226,312. This application Sep. 6, 1979, Ser. No. 73,064

Int. Cl.³ B60K *41/20, 41/24*

U.S. Cl. 192—1 **5 Claims**



1. In a power driven implement, rotatable drive and driven members, a power source for the drive member, a drum carried on the drive member, clutch shoes carried on said driven member and being movable relative thereto into and out of clutching engagement with the drum, means biasing the shoes into engagement with the drum to drivingly clutch the drive and driven members together, a brake band for effecting movement of said shoes out of engagement with the drum against the force of said biasing means and to stop rotation of the driven member without interrupting the rotation of the drive member, spaced portions of said brake band being connected to a fixed anchor pin and a movable anchor pin respectively, a pivotally mounted lever carrying said movable anchor pin and being normally movable between angularly spaced brake-on and brake-off positions for the brake band, spring means biasing said lever to the brake-on position for the brake band, means engageable by the lever to interrupt the power source, said power source interrupting means being angularly spaced from the brake-on position of the lever in a direction opposite from the brake-off position of the lever, said spring means biasing the lever through the brake-on position of the lever and into the power source interrupting means in the event of brake band failure.

4,290,513

OPERATION OIL SUPPLY APPARATUS IN OIL PRESSURE OPERATED TYPE TRANSMISSION FOR VEHICLE

Sadanori Nishimura, Omiya, and Yoji Yamada, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

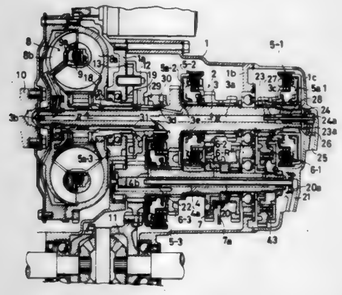
Filed Sep. 28, 1979, Ser. No. 80,781

Claims priority, application Japan, Oct. 2, 1978, 53/120405

Int. Cl.³ F16D *39/00, 25/10*

U.S. Cl. 192—3.22 **4 Claims**

1. An operation oil supply apparatus in an oil pressure operated type transmission for a vehicle of such a constructional type that, in a transmission casing, there are contained a transmission mechanism having at least two stage driving trains of a low speed and a high speed including oil pressure clutches of a low speed and a high speed respectively on a pair of rotary shafts extending between one side wall portion and an opposite side wall portion of the transmission casing, and a valve block attached to the one side wall portion and having a manual valve and a shift valve for controlling oil supply to the respective oil pressure clutches and the manual valve has a 1st forward running range in which oil supply is directed selectively through said shift valve to the respective oil pressure clutches and a 2nd forward range in which oil supply to the high speed oil pressure clutch is cutoff and oil supply is given to the low speed oil pressure clutch, characterized in that the high speed oil pressure clutch is supplied with oil under pressure by an oil



supply pipe which extends into an axially extending central opening in the rotary shaft supporting the high speed oil pressure clutch from one end of the shaft, and the low speed oil pressure clutch is supplied with oil under pressure through an oil supply opening in an extension of the valve block which surrounds the rotary shaft supporting the low speed oil pressure clutch.

4,290,514

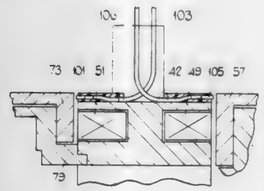
CLUTCH PROTECTION DEVICE

Edmund A. McConnell, Coventry; Norman Yearsley, Kenilworth, and Alec G. Blockley, Coventry, all of England, assignors to Wickman Machine Tool Sales Limited, Coventry, England

Continuation of Ser. No. 852,399, Nov. 17, 1977, abandoned. This application Jul. 31, 1979, Ser. No. 62,376

Int. Cl.³ F16D *66/00*

U.S. Cl. 192—30 W **1 Claim**



1. A machine tool having a work spindle, an electromagnetic clutch operatively connected to said work spindle, said clutch having releasably frictionally engageable parts, means for adjusting the relative positions of said parts, electromagnetic means for actuating said frictionally engageable parts and including an electromagnet component and an armature component, which components are relatively movable and, in use, are spaced apart by a gap, the width of which is governed by said means for adjusting the relative positions of said frictionally engageable parts, and a clutch protection device comprising an element mounted on one of the components of the electromagnetic means and situated adjacent to the other of the components across said gap, the narrowing of said gap beyond a predetermined value permitting contact between said element and other component, to complete an electrical circuit to produce a signal.

4,290,515

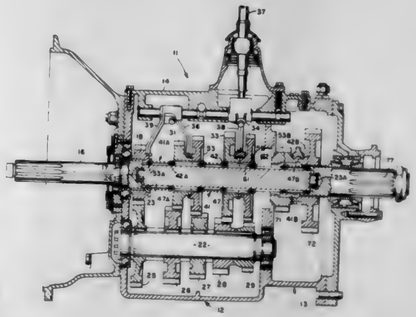
TRANSMISSION WITH RESILIENT SHIFTING MECHANISM

Edward J. Bogema, Vicksburg, and Elmer A. Richards, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 15, 1978, Ser. No. 934,102

Int. Cl.³ F16D *13/00*

U.S. Cl. 192—53 C **11 Claims**



1. An improved change speed transmission of the type comprising selectively axially movable gears having clutch teeth associated therewith, clutch collars mounted directly to a shaft by a spline connection for rotative motion with said shaft, said clutch collars carrying clutch teeth for selective engagement with the clutch teeth associated with said gears, the improvement comprising:

said spline connection comprising axially extending interengaged spline teeth formed on the outer surface of said shaft and on the inner surfaces of said clutch collars, the spline teeth on one of said clutch collars and said shaft being of a substantially constantly varying circumferential thickness along at least a portion of the axial extension thereof, said constantly variable thickness spline teeth arranged such that, in the nonengaged position of said clutch collars, the circumferential spacing between cooperating clutch collar and shaft spline teeth is smallest at the end of the clutch collars closest the gear with which it is associated.

4,290,516

TORQUE LIMITER

Jeffery L. West, Winchester, and Randy Berry, Sudbury, both of Mass., assignors to Foster-Miller Associates, Inc., Waltham, Mass.

Filed Jun. 7, 1979, Ser. No. 46,448

Int. Cl.³ F16D *43/20*

U.S. Cl. 192—56 L **10 Claims**

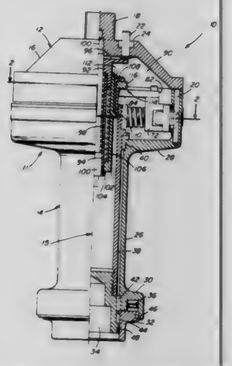
1. A device for applying a predetermined torque level to an object, said device comprising:

(a) a rotatable housing configured to be rotated by a driver, said rotatable housing having a series of evenly spaced dowel means disposed in a circular path about an interior surface thereof;

(b) torque means mounted within said housing, said torque means including driven member means having rollers configured to engage and to disengage adjacent ones of said dowel means, said torque means rotatable with said housing when said rollers and said dowel means are engaged, said driven member means including means for engaging the object to which the predetermined torque level is to be applied; and

(c) bias means mounted in said housing, said bias means

urging said rollers and said dowel means into engagement with a predetermined force, said dowel means and said



rollers disengaged when the torsional resistance on said driven member means exceeds said predetermined force.

4,290,517

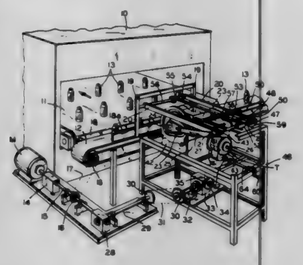
METHOD AND APPARATUS FOR REDUCING LOADER BAR IMPACT

Harry C. Hafferkamp, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 29, 1978, Ser. No. 964,330

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—427 **2 Claims**



1. Apparatus for pushing a line of ware onto the infeed end of a lehr from a moving row of ware, in which a pusher bar is carried at the forward end of a generally rectangular frame and the frame is pivotally mounted at the other end, with a pair of motor-driven cams lifting the forward end of the frame in a predetermined cycle and a crank arm driven by the motor and connected to move the frame forward and backward;

a crank driven by the motor in parallel with one of the lift cams;

a stationary box cam having a path that circumscribes the axis of rotation of the driven cam and crank;

an elongated, generally radially extending slot formed in said crank;

a cam follower positioned in both the elongated slot and in the stationary box cam;

means pivotally connecting one end of the crank arm to said cam follower:

a horizontal shaft extending across the width of said frame at the rearward end thereof and rotatable relative thereto;

means pivotally connecting the crank arm to the shaft on said frame; and

means drivingly connecting the sides of the frame together, whereby forward and backward movement of said frame is equally transmitted to both sides of said frame.

4,290,518

FILTER ATTACHMENT MACHINES

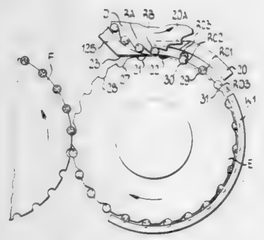
Derek H. Dyett; Ivan Y. Hirsh; Edward G. Preston, and Robert E. Williams, all of London, England, assignors to Molins Limited, London, England

Filed Aug. 3, 1979, Ser. No. 63,447

Claims priority, application United Kingdom, Aug. 3, 1978, 32143/78

Int. Cl.³ B65G *29/00, 47/68*

U.S. Cl. 198—450 **10 Claims**



1. A device for use in a filter attachment machine for staggering and aligning filter portions cut from multiple-length filter rods, comprising a first fluted drum which conveys the cut filter rods to a second fluted drum having adjacent to it means including a rolling plate for rolling at least one portion of each filter rod into a staggered position with respect to another portion of the same rod and at least one stationary finger extending into a circumferential recess in the second fluted drum to hold adjacent filter portions out of the flutes until they have been rolled into staggered positions by the rolling plate, and means for displacing at least some of the staggered filter portions along the flutes of the second fluted drum to bring all the filter portions into alignment.

4,290,519

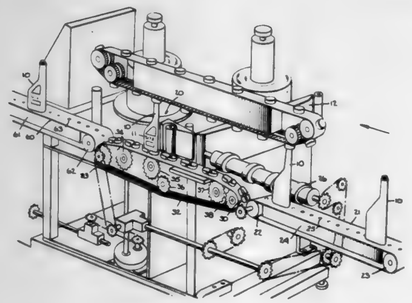
ARTICLE SUPPORT SYSTEM

Albert J. Harvey, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,317

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—483 **14 Claims**



1. An article support system adapted to engage and transport articles to be decorated through an article decorating station which comprises:

an endless conveyor having an input end and extending through said decorating station, said input end being gradually inclined towards the portion of said conveyor means extending through said decorating station;

means for driving said endless conveyor through said decorating station;

means for feeding articles to be decorated to said input end of said endless conveyor along a path generally parallel to the path of travel of said endless conveyor through said decorating station,

a plurality of spaced receptacles attached to said endless conveyor suitable for supporting the article to be decorated, each of said receptacles being contoured with a central recessed portion and upwardly extending edge portions, said contoured shape being in general conformance with the configuration of the bottom of the article to be decorated such that said receptacles are adapted to support the articles along a substantial portion of their lower peripheral shape, each of said receptacles being formed of two sections closely spaced to one another and separable along a line transverse to the path of travel of said endless conveyor so that said receptacle sections open away from one another when passing along a curved path, the inclination of said input end of said conveyor means and the separability of said two sections of said receptacles facilitating the sliding of the article to be decorated as fed by said feeding means into the path of travel of said endless conveyor and the engagement of the article to be decorated by said receptacle; and

means for attaching each half of said receptacle to said conveyor.

4,290,520

CONVEYOR BELT CLEANING DEVICE

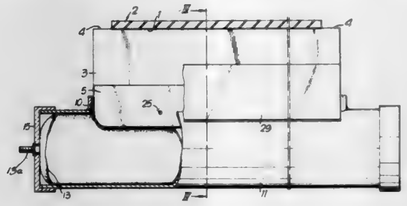
Ronald B. Rhodes, Retford, England, assignor to Salgar Supplies Ltd., England

Filed Oct. 18, 1979, Ser. No. 85,866

Claims priority, application United Kingdom, Oct. 20, 1978, 41356/78; Sep. 11, 1979, 31434/79

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **2 Claims**



1. A conveyor belt cleaning device comprising:

(a) an elongate scraper element having a longitudinal scraping edge which makes scraping contact with a surface of a conveyor belt to be cleaned, the scraper element having a longitudinally extending inner surface portion opposite to said longitudinal edge;

(b) a flexible-walled container the interior of which is pressurized for maintaining the said inner surface portion of the scraper in contact with the container and thereby maintaining the scraper element in contact with a conveyor belt surface to be cleaned;

(c) a housing enclosing the flexible-walled container and having a slot in which said scraper element is slidable;

(d) a debris shield structure interposed between the scraping edge of the scraper element and the housing and disposed on opposite lateral sides of the scraper element to prevent the ingress of dislodged debris from a conveyor belt being cleaned into the housing slot, said debris shield structure comprising support plates secured to the housing on opposite sides of the slot therein, the plates converging towards and making contact with opposite faces of the scraper element to support the scraper element laterally, externally of the housing, said support plates serving to deflect debris dislodged from the conveyor belt;

(e) the said surface portion of the scraper element in contact with the flexible-walled container having rounded edges and/or corners.

4,290,521

INFUSION PACKAGE AND METHOD OF MAKING SAME

Robert M. Mitchell, Norwalk, Conn., assignor to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Sep. 10, 1979, Ser. No. 74,260

Int. Cl.³ A47G *19/16;* B65B *1/00;* B65D *85/00*

U.S. Cl. 206—0.5 **6 Claims**



1. An infusion package including a bag of liquid permeable material having a substantially large volume stable configuration enclosing a three-dimensional interior space containing a substance to be infused, at least one fold flattening the bag from said large volume stable configuration to a configuration of substantially descreased internal volume, and a pull means affixed to the bag in cooperation with the fold and defining, with said fold, means for expanding the bag to the large volume stable configuration.

4,290,522

SPECTACLE HOLDER

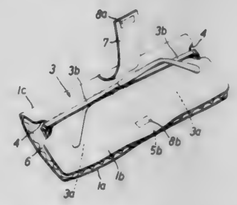
Takeo Takasaki, No. 4920-2, Oaza Hirano, Nichinan-shi, Miyazaki-ken, Japan

Filed Sep. 20, 1979, Ser. No. 77,261

Claims priority, application Japan, Sep. 20, 1978, 53-129899[U]

Int. Cl.³ A45C *11/04*

U.S. Cl. 206—5 **4 Claims**



1. A spectacle holder comprising:

a generally rectangular flexible holder sheet having a width longer than that of a spectacle frame and consisting of a main section and a flap section interconnected by a folding line to be foldable toward each other and holding between said main and flap sections spectacle glasses with the top portion of the spectacle frame facing toward the folding

line, said main and flap sections defining longitudinal edges distal to the folding line;

notches formed in the opposite end portions of said flap section adjacent to the folding line to receive base end portions of bows of said spectacle frame, said opposite end portions of said flap section extending beyond said base end portions between the notches and the longitudinal edge of the flap section so that the spectacle frame is embracingly held on said flap section between the opposite notches when said bows are folded along the outer periphery of said flap section, thereby preventing the spectacles from slipping off of the holder sheet; and

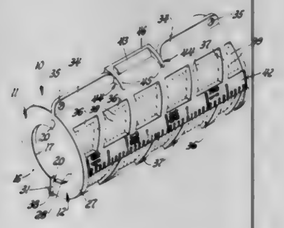
a cleaning cloth attached to the inner side of said holder sheet.

4,290,523

COIN HOLDER

James J. Wallace, Milpitas, Calif., assignor to Vacumet Finishing Inc., St. Clair, Mich.

Filed Mar. 24, 1980, Ser. No. 133,271
Int. Cl.³ B65D *8/04*; A45C *11/00*; B65D *25/54*
U.S. Cl. 206—0.82 **11 Claims**



1. A molded, polymeric, integral one-piece construction holder for coins, comprising:

(a) an elongated hollow cylindrical body having an internal circular cross-section of a diameter substantially that of a certain size coin to the retained in the holder, and which body includes two half-body portions, each having a semi-circular cross section;

(b) a continuous, elongated, integral living hinge member hingedly joining said half-body portions along an adjacent edge of each of said half-body portions;

(c) each of said half-body portions being provided with a longitudinal free edge and an integral partial end wall;

(d) one of the half-body portiona being formed with a plurality of geometric openings, which are disposed so that the outer periphery of each coin in the holder is visible, and which are disposed in at least two longitudinal rows, and with the geometric openings in one row being longitudinally offset from the geometric openings in the other row; and,

(e) integral fastener means for releasably locking the two half-body portions in a closed position including an inverted U-shaped latch member on the outer side of one of said half-body portions and extending tangentially from the longitudinal free edge thereof over the other of said half-body portions, and a lip fastener member on the other of said half-body portions and extended outward radially from the longitudinal free edge on said other half-body portion for releasable locking engagement with the latch member when the two half-body portions are swung to a closed position.

4,290,524

VIDEO MAGAZINE AND PACKAGE THEREFOR

Charles Azar, 4149 Bonita Ave., Coconut Grove, Fla. 33133

Filed Dec. 19, 1979, Ser. No. 105,348
Int. Cl.³ B65D *85/57, 85/671*; B42D *3/18*
U.S. Cl. 206—232 **6 Claims**



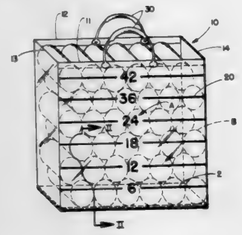
1. A video magazine for use with a video recording apparatus, comprising the combination of a video replay means having a series of indexable video programs thereon, and printed program means including a series of indica, each indicia corresponding to one of the series of indexable video programs on the video replay means whereby a user of the video magazine may, by referring to the printed program means, readily index the video replay means in the video recording apparatus, to the desired video program, including an integral packaging means accommodating said video replay means and said printed program means in a single unit, said packaging means comprising a first sleeve member receiving the printed program means, and a second sleeve member connected to an outer surface of said first sleeve member accommodating said video replay means, said second sleeve member including a cut-out portion and facilitating unloading of said video replay means, and retaining means secured to said outer surface of said first sleeve maintaining said video replay means within said second sleeve.

4,290,525

AUTOMATIC COUNT AND IDENTIFICATION CARRIER FOR REFUNDABLE CANS

Kimberley R. Sisson, 2300 Kent Blvd., N.E., Grand Rapids, Mich. 49503

Filed Sep. 17, 1979, Ser. No. 75,889
Int. Cl.³ B65D *5/36, 5/46, 33/02, 33/06*
U.S. Cl. 206—427 **1 Claim**



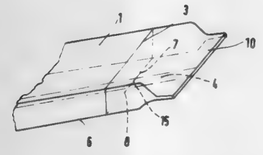
1. A reuseable carrier for transporting empty metal beverage containers of a uniform size and shape, said carrier having a generally flat base of a size and shape such that its length is slightly greater than a multiple of the diameter of one of the containers to be transported; a front panel, a rear panel and a pair of end panels, said front and rear panels being spaced apart just sufficiently to permit one of the beverage containers to be positioned lengthwise between them, said base, front panel, rear panel and end panels being formed of a liquid impervious and washable material; said end panels being spaced apart sufficiently to permit a plurality of the containers to be placed in side-by-side relationship lengthwise of the carrier; handle means for supporting said carrier; one of said front and rear panels being transparent; a plurality of vertically spaced lines on said one panel, said lines being spaced apart a distance equal to the vertical center to center spacing of the ends of the containers when they are arranged on their sides in tiers with one tier resting on the tier beneath; indicia displayed at each line indicating the cumulative number of containers in the carrier when the tier of containers corresponding to the line is full to provide an automatic count of the container content of the carrier; and a rigid stiffener panel removably disposed on said base, said rigid stiffener panel being formed from a liquid impervious washable material, said end panels defining foldlines positioned so that the front, rear and end panels may be folded around said stiffener panel.

4,290,526

PACKAGE, ESPECIALLY TUBULAR WRAPPER-TYPE CONTAINER WITH RE-USABLE CLOSURE, ESPECIALLY FOR CHOCOLATES OR CANDY

Manfred Haiss, Zeisigweg 17, 7035 Waldenbuch, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,068
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1979, 2840409
Int. Cl.³ B65D *5/54, 17/28*
U.S. Cl. 206—624 **15 Claims**



1. A package, especially tubular package for ice cream bars, candy bars, chocolate, and similar products including meltable articles such as ice, said package comprising in combination:

a substantially continuous body having a first end and a second end and a seal seam suitably located with said body;

at least at one end portion of said package including a tear-weakened section thereof extending around said package towards both sides of said seam and being adapted to break and to open said package at said last one end portion so as to expose only a part of the contents of said package protected against direct touching engagement with the contents thereof;

a hinge formed by a portion of said package extending over only part of periphery of the package for opening and closing thereof; and

a tongue pullable to apply transverse force that effects tearing of said tear-weakened section adjacent thereto.

4,290,527

SLUICE CONSTRUCTION

Winston F. Wright, 2660 Fair Cir., Reno, Nev. 89503

Filed Aug. 13, 1980, Ser. No. 177,796
Int. Cl.³ B03B *4/00, 5/06*
U.S. Cl. 209—12 **3 Claims**



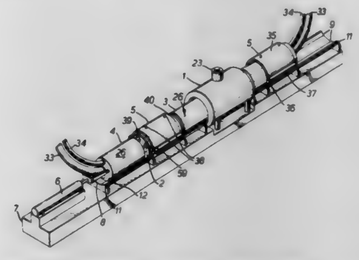
1. In a sluice element for mineral recovery comprising a lower wall, a pair of side walls bordering the longitudinal edges of said bottom wall to define a sluice channel, and a plurality of riffles for separating the solids from a liquid slurry disposed intermediate said first and second ends thereof, the improvement comprising: each of said riffles including a vertical wall having a lower edge supported by said bottom wall and an upper edge terminating below the upper edges of said side walls, a second wall in sloped relation to said vertical wall having an upper edge connecting with said upper edge of said vertical wall, and a lower edge supported by said bottom wall, and terminating a distance from a next vertical riffle wall, said bottom wall having a rectangular opening therein of axial length corresponding to said last mentioned distance; a rectangular frame detachably associated wih said opening, and a plurality of screens in congruent relation supported by said frame to underlie said opening.

4,290,528

MAGNETIC SEPARATING APPARATUS WITH MEANS FOR BALANCING MAGNETIC FORCES

Zdenek J. J. Stekly, Hampshire Ct., Wayland, Mass. 01778

Continuation-in-part of Ser. No. 881,811, Feb. 27, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,218
Int. Cl.³ B03C *1/10*
U.S. Cl. 209—223 R **7 Claims**



1. Magnetic separator apparatus comprising:

means for establishing a magnetic field in a predetermined zone;

a separating chamber provided with an inlet and an outlet for fluid;

fluid-permeable and magnetisable packing material disposed within said separating chamber;

a compensating element incorporating ferromagnetic material, being adjacent and coupled to said separating chamber; and

means for moving said separating chamber and said coupled compensating element in a common direction to thereby move said separating chamber between a first position in which the separating chamber is within the predetermined zone and a second position in which the separating chamber is outside the predetermined zone, while simultaneously bringing said adjacent compensating element into said predetermined zone and displacing said separating chamber thereat;

said compensating element having a size and a distribution of ferromagnetic material therein such that the magnetic force tending to draw said element into said predetermined zone when it is moved into said zone by said moving means, substantially balances the magnetic force resisting displacement of said separating chamber when it is moved from said zone by said moving means; the said magnetic field thereby interacting with said compensating element as said element displaces said separating chamber at said predetermined zone, to generate balancing forces reducing the force required to move said separating chamber between its two said positions.

4,290,529

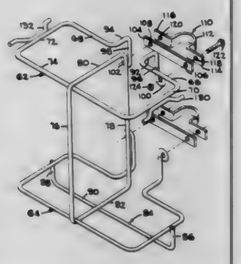
RACK FOR BOAT FENDERS

John H. Jones, 7540-155 Bay Island Dr., South, South Pasadena, Fla. 33707, and Lloyd P. Dewey, Canfield, Ohio, assignors to John H. Jones, South Pasadena, Fla.

Filed Dec. 26, 1978, Ser. No. 972,943
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—13 **3 Claims**

1. A rack for a boat fender of the type having an elongate cylindric body from at least one end of which extends a protu-

berance that defines a line attaching opening and has a thickness dimension, a width dimension greater than the thickness dimension and an opening extending through the thickness of the protuberance, the fender rack comprising an open framework formed by a plurality of elongate rigid members including upper and lower members bent to define first upper and lower congruent openings shaped to snugly receive the fender therein, means for supporting said members in vertically aligned spaced apart relation and a U-shaped member having spaced apart vertical legs joined to at least said lower member and a horizontal member extending between said vertical legs below said lower member, said U-shaped member being offset from the center of the openings formed by said upper and lower members so that when the width dimension of said



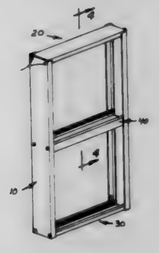
eye-forming protuberance is parallel to the horizontal leg the body of said fender is supported on said horizontal leg and so that when the fender is positioned so that the width dimension is oblique of the horizontal leg the eye-forming protuberance is supported on the horizontal leg, said rack also including upper and lower straps, each said strap having an arcuate portion adapted to circumscribe the vertical ship rail member and first and second tabs integral with and extending outward of the respective ends of said arcuate portion, said tabs being substantially coplanar with one another and defining tab holes therein, said upper and lower members forming fastener openings in registry with said tab holes, and threaded fasteners extendable through said fastener openings and said tab holes for retaining said straps in circumscribing relation to the vertical ship rail and for retaining said framework to said straps.

4,290,530

APPARATUS FOR STORING AND DISPLAYING RECORD ALBUMS

Kirk A. Wooster, 445 Bishop St. N.W., Atlanta, Ga. 30318

Filed Sep. 14, 1979, Ser. No. 75,407
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—40 **2 Claims**



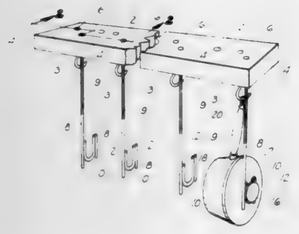
1. Apparatus for storing and displaying record albums of selected thickness and height comprising a plurality of frames and means for mounting said frames to a wall, and with each frame having an upright side wall from which at least two slide trays of widths substantially in excess of said record album thickness laterally extend in mutually parallel relation spaced one above the other a distance in excess of said album height, and a pair of upright supports mounted to the ends of said slide trays distal said upright side wall; and means for securing said frames together in a staggered formation with an upright support of one frame overlaying and being secured to a side wall of the other frame; whereby the plurality of frames may be mounted to a wall and sets of record albums slid between the pair of upright supports and stacked one behind the other on the slide trays for storage and display, members of each record album set sequentially slid partially back through the supports and partially off the slide trays to reveal record albums therebehind, and access provided to stacks of albums supported upon the trays of each frame.

4,290,531

DEVICE FOR HOLDING COOKING POTS AND LIDS

Fred Lazarus, III, c/o Federated Department Stores, Inc., 7 W. Seventh St., Cincinnati, Ohio 45202

Filed Oct. 15, 1979, Ser. No. 85,227
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—71 **10 Claims**



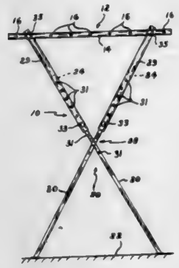
1. In combination in a holder for suspending a pot and its lid from an overhead support with the lid seated on the pot, a pot having a handle extending outwardly from one side thereof and a lid having a handle at its center, said holder comprising a first means for engaging and suspending said pot by its said handle, and a coacting second means for engaging and suspending said lid by its handle, said second means being positioned relative to said first means so as to hold the lid in seated position on said pot.

4,290,532

SUPPORT ASSEMBLY

Lawrence E. Reynolds, 1169 Garden Dr., New Port Richey, Fla. 33552

Filed Sep. 14, 1979, Ser. No. 75,807
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—200 **1 Claim**



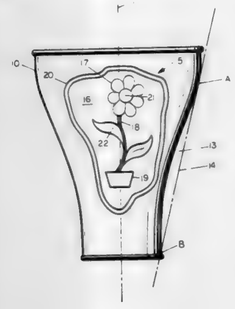
1. A supplementary support assembly of the type primarily designed to simultaneously support a plurality of clothes lines, said support assembly comprising: line engaging means disposed in supporting attachment with a plurality of parallel clothes lines comprising a substantially elongated bar element disposed in concurrent supporting engagement with the plurality of parallel clothes lines and oriented in substantially transverse relation to the longitudinal run of the plurality of clothes line, line attachment means formed on said elongated bar element and comprising a plurality of attachment elements, wherein each of the plurality of parallel clothes lines supported by said elongated bar element is in engageable relation with one of said attachment elements, said plurality of attachment elements comprise a plurality of apertures, each of said apertures is integrally formed in said elongated bar element in spaced apart relation to one another, each said plurality of apertures each disposed in surrounded disposition to one of the parallel clothes line, mounting means connected in supporting engagement with said line engaging means and disposed in interconnected relation between the ground and said line engaging means, said mounting means comprising at least two support elements, each said support element comprising two segments disposed in telescoping relationship relative to each other, each of said two segments including a plurality of apertures formed along the length thereof, corresponding segments of each of said two support elements being pivotally coupled by a pin extending through any corresponding said apertures of said corresponding segments, said two segments of each said two support elements being disposed in longitudinally movable relation relative to each other along the direction of the longitudinal axis of each said support element, each said support element varied in longitudinal dimension upon varying the position of said respective two segments, said corresponding segments being selectively locked relative to each other by pins extending through any corresponding said apertures, the upper portion of each said support element being coupled to said line engaging means by a pin extending through any one of said aperture formed on said elongated bar element such that the distance between said coupling is selectively varied, whereby the space between said line engaging means and the ground is varied upon selectively adjusting said longitudinal dimension, said pin extending through any of said corresponding aperture of said corresponding segments and said pins extending through any one of said aperture formed on said elongated bar element.

4,290,533

CERAMIC DECORATED GLASSWARE

Thomas F. Rupp, Sylvania, and Lowell J. Wells, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 809,951, Jun. 27, 1977, Pat. No. 4,143,183.
This application Dec. 21, 1978, Ser. No. 971,971
Int. Cl.³ A47G *19/22*; G03C *7/00*
U.S. Cl. 215—1 R **8 Claims**



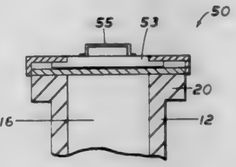
1. A glass container having an axis of rotation including a multicolor decoration on at least part of the exterior, said decoration comprising a halftone created image wherein the primary yellow glass enamel has a pigment content in the range of 10–20 percent, and the remaining primary color glass enamels have a pigment content in the range of 2–6 percent.

4,290,534

CANNULA PIERCEABLE SELF-SEALING CLOSURE

Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Division of Ser. No. 942,113, Sep. 13, 1978, Pat. No. 4,226,333, which is a division of Ser. No. 880,474, Feb. 23, 1978, Pat. No. 4,136,794, which is a division of Ser. No. 729,643, Oct. 5, 1976, Pat. No. 4,111,326, which is a continuation-in-part of Ser. No. 663,921, Mar. 4, 1976, abandoned. This application May 8, 1980, Ser. No. 147,951
Int. Cl.³ B65D *47/36*
U.S. Cl. 215—247 **1 Claim**



1. A cannula pierceable, self-sealing gas proof closure for sealing an open end of an air evacuated blood collection tube, which comprises;

(a) a tubular elastomeric body having
  (i) flexible, elastic sidewalls;
  (ii) an open first end; and
  (iii) a closed second end formed by a cannula pierceable, flexible, elastic end wall integral with said sidewalls;
(b) a flange disposed radially about the periphery of said sidewalls adjacent to said first end;
(c) a protective cap adhered to the outside of said closed second end;
(d) a puncturable diaphragm closing the open first end, and having inner and outer surfaces; and
(e) a removable disc covering the outer surface of the diaphragm;

said end wall having a convex inner surface and a concave outer surface when pressure on inner and on outer surfaces is equal, said tubular body having a diameter which bears a ratio to the height of the body of about 0.8:1 and to thickness of the second end of from 5.4:1 to 12.1:1;

whereby when the closure is emplaced in and sealing an open end of an air evacuated tube, the higher pressure on the convex inner surface of the end wall as compared to the lower pressure (vacuum) exerting itself on the concave outer surface creates a pressure differential on the end wall, flexing and flattening the concave-convex configuration and creating a radial force directed toward the periphery of the end wall, said force effecting a restraining and sealing force between the closed second end of the elastomeric body and the air evacuated tube.

4,290,535

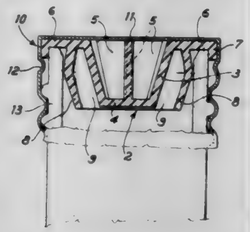
SEALING BUNG FOR BOTTLE CLOSURES

Erminia Reina, Milan, Italy, assignor to Alucaps Italiana S.p.A., Italy

Filed Dec. 6, 1979, Ser. No. 101,002
Claims priority, application Italy, Apr. 11, 1979, 21330/79[U]
Int. Cl.³ B65D *53/00*
U.S. Cl. 215—270 **9 Claims**

1. An improved bung for use in sealing an opening of a container in combination with a closure for the container, the improved bung comprising an annular flange, an edge depending from the radially outer periphery of said annular flange, a

hollow central body depending from the radially inner periphery of said annular flange, said central body being cone-shaped, said central body having a closed smaller end remote from said annular flange and an open larger end, and a lip depending



from said annular flange at a location intermediate and radially spaced from said central body and said edge, whereby said lip is adapted for sealingly engaging a surface of the container about the opening and said annular flange and edge are adapted for disposition against the closure.

4,290,536

CLOSURE FOR SEALING OPENINGS IN PANELS

Henri Morel, Maule, France, assignor to ITW de France, Beauchamp, France

Filed Mar. 27, 1980, Ser. No. 134,713
Claims priority, application France, Mar. 28, 1979, 79 07819
Int. Cl.³ B65D *41/00*
U.S. Cl. 220—359 **3 Claims**



1. A one piece plastic sealing plug device adapted to close and seal a complimentary aperture formed in panels, said plug being of the dished type having a bottom portion, a lateral encircling wall, external engagement means on said wall, a resilient head to be applied against the forward surface of the panel adjacent the edge of the aperture and ringlike thermofusible means disposed between the panel and said resilient head, said sealing plug device being characterized in that it includes resilient head means having a peripheral channel, said thermofusible means including a peripheral bead portion adapted to be captured within said resiliently urged channel and to be melted between said channel and panel upon application of an elevated temperature, whereby it is substantially retained under said head and caused to flow in its melted condition within the space that may occur between said sealing plug device and the aperture it is fitted in, whereby after colling such device becomes perfectly integral with said panel in said hole due to solidification of the thermofusible meas to the exact required shape without any loss of material regardless of the planarity and angular position in space said panel may assume.

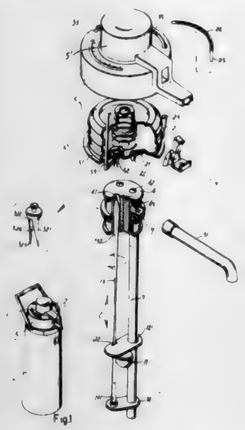
4,290,537

VOLUME AND TEMPERATURE INDICATORS FOR INSULATED AIR POT

Lo Chi-Jung, No. 28, Lane 223, Lung Chiang Rd., Taipei, Taiwan

Filed Oct. 3, 1979, Ser. No. 81,318
Int. Cl.³ B67D *5/22*; G01F *13/00*
U.S. Cl. 222—25 **8 Claims**

1. An insulated portable air pot for dispensing liquid, comprising a pot body having an opening at the top, a detachable circular cap closing said opening of said pot and having and upper face, a liquid discharge pipe extending from said cap down into said pot body, and a discharge spout connected with the upper end of said discharge pipe, said cap having a compressible air chamber and a central push portion for compressing said air chamber to force air into said pot body and thereby force liquid up through said discharge pipe and out through said spout, arcuate volume indicating means in the upper face of said cap approximately concentric with said cap, arcuate



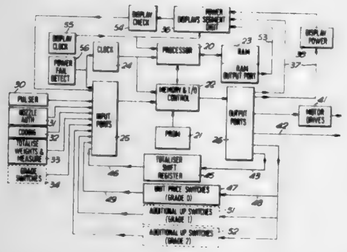
temperature indicating means in the upper face of said cap approximately concentric with said cap and opposite said volume indicating means, means in said pot for measuring the volume of liquid in said pot and detachable connecting means for transmitting said volume measurement to said volume indicating means, and means for transmitting the temperature of liquid in said pot to said temperature indicating means.

4,290,538

FUEL-DISPENSING SYSTEM WITH SELF-CHECKING MEANS

Roy L. White, Cambridge; David F. A. Leevers, St. Albans, and Peter W. Kitchin, Foxton, all of England, assignors to Dresser Europe S.A., Brussels, Belgium

Continuation of Ser. No. 732,476, Oct. 14, 1976, abandoned. This application Jan. 18, 1979, Ser. No. 4,316
Claims priority, application United Kingdom, Oct. 15, 1975, 42271/75
Int. Cl.³ B67D *5/08*; G06F *15/20*
U.S. Cl. 222—25 **18 Claims**



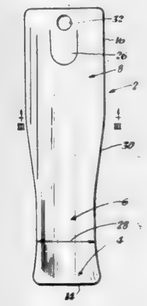
3. A self-contained fluid-dispensing machine comprising computer means including a processor within said machine; means within said machine responsive to a flow of fluid through said machine for measuring an amount of fluid as it is being dispensed, means responsive to said fluid measuring means for feeding information to the computer means relative to said amount of fluid dispensed and measured by the measuring means; means in the computer means for calculating the cost of the measured amount of fluid in accordance with a predetermined unit price; means responsive to said fluid-measuring means for visibly displaying on said machine the amount of said fluid which is dispensed and the corresponding cost thereof; and self-checking means entirely within said machine for operating said computer means in order to continuously, positively and actively check the display means, said display checking means including means for monitoring a signal applied within said machine in order to operate an element in the display means on said machine, means for comparing an output from the monitoring means with a parity signal from the computer means in order to verify the operation of said machine, and means for applying an output signal from the comparison means to the computer.

4,290,539

BOOT TOOL

Robert L. Lowery, 2115 8th St., Vero Beach, Fla. 32960

Filed Mar. 25, 1976, Ser. No. 670,580
Int. Cl.³ A47J *51/03*
U.S. Cl. 223—118 **3 Claims**



1. A boot tool for use in a boot with a long flexible sheath portion, a collar portion, an upper rim portion, a stiff heel portion and a lower heel all of which are connected together, the boot having a structure that extends from the top of said long flexible sheath portion, down through said collar portion of the boot and past said upper rim portion of said stiff heel portion of the boot, and ending near the upper inner surface of said lower heel of the boot, the boot tool comprising:

a single long generally uniform flexible body to allow conformity with the flexible portions of said boot,

said body including a lower rear heel portion with a lower end, a narrower collar portion sized for positioning against only the rear of said collar portion of said boot, and a sheath portion with an upper end for placement in boots of varying heights, said sheath portion sized to extend between a position above the top of said long flexible sheath portion of said boot to a position near said upper inner surface of said lower heel of said boot,

said body having a long longitudinal length for positioning it in boots with said lower end of said lower rear heel position near the top of said upper inner surface of said lower heel of said boot with the upper end of said sheath portion above the top rim of the boot,

said narrow collar portion sized and shaped to be positioned between said long flexible sheath portion of said boot and said stiff heel portion of said boot for opening up said collar portion by a passing foot of a user to allow the instep and heel of the user's foot to pass easily through said collar portion and past said upper rim portion of said boot without damaging the boot structure between the lower portion of said long flexible sheath portion and said upper rim portion of said boot, said narrow collar portion flexing to form a heel chute and designed to also flex into the shape of the normal distorted lower portion of said long flexible sheath portion of said boot as the user's foot moves through said collar portion, and said narrow collar portion positionable between and in contact with the heel of the user and the rear portion of said stiff heel portion,

said sheath portion connected to the said narrow collar portion for flexible use in contact along the inner length of said long flexible sheath of said boot,

said sheath portion conforming with the movement of said long flexible sheath portion as the heel of the user passes over said long flexible sheath portion, and

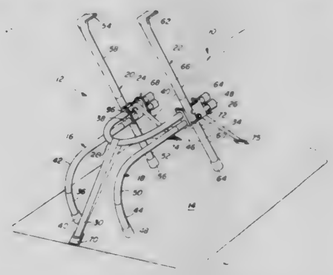
said sheath portion including a top portion connected near said upper end of said long flexible sheath portion of said boot for use over the top of said boot.

4,290,540

FOLDABLE BICYCLE CARRIER

Richard A. Allen, Bowles Ter., Lincoln, Mass. 01773

Continuation-in-part of Ser. No. 914,156, Jun. 9, 1978, abandoned, which is a division of Ser. No. 699,495, Jun. 24, 1976, Pat. No. 4,109,839. This application Jan. 10, 1980, Ser. No. 110,982
Int. Cl.³ B60R *9/10*
U.S. Cl. 224—314 **10 Claims**



1. A foldable carrier mountable on automobiles or the like, said carrier comprising:

(a) a pair of side members;

(b) a pair of carrying members, each said carrying member including a carrying arm and a body; and

(c) means for interconnecting said side members and said carrying members, each said side member and each said carrying member constrained for both slidable and rotational movement along and about parallel axes relative to said interconnecting means between extended and collapsed positions.

4,290,541

CONTROL SYSTEM FOR PNEUMATIC PUNCH PRESS FEEDERS

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820

Division of Ser. No. 20,174, Mar. 13, 1979. This application Apr. 25, 1980, Ser. No. 143,626
Int. Cl.³ B65H *17/36*
U.S. Cl. 226—150 **19 Claims**

1. A pneumatic feeder for intermittently advancing stock into the work station of a punch press or the like; comprising

a frame;

a feed slide reciprocally mounted on said frame;

stock gripping means mounted said feed slide;

fluid motor means for actuating said feed slide and stock gripping means through stock feed and index strokes;

main valve means for controlling the operation of said fluid motor means;

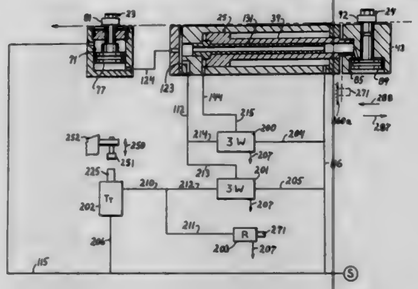
trigger means operative to control said valve means so as to cause initiation of a feed stroke of said feed slide;

said trigger means including;

a plunger means that is adapted to be movable between a

normal position and a depressed position in response to the operation of said press;

a pair of valves effectively coupled in series and each having a valving element associated therewith that is adapted to be displaced by the said movement of said



plunger means so that both of said valves are open during only a predetermined portion of the movement of said plunger means; and

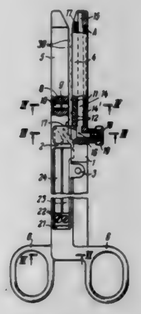
reverse means operative in response to the terminal portion of said feed stroke for controlling said valve means so as to cause initiation of an index stroke of said feed slide.

4,290,542

SURGICAL INSTRUMENT FOR STAPLE SUTURING OF ORGANS

Vladimir M. Fedotov, ulitsa Startovaya, 21, kv. 42; Boris A. Smirnov, ulitsa Borisa Galushkina, 17, kv. 26; Genrikh I. Lukomsky, pereulok Chisty, 5A, kv. 35, all of Moscow, and Iosif L. Lipovsky, proezd Ozerkovsky, 7, kv. 32, Leningrad, all of U.S.S.R.

Filed Dec. 20, 1979, Ser. No. 105,840
Claims priority, application U.S.S.R., Dec. 25, 1978, 2714120
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—155 **2 Claims**



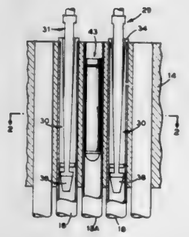
1. A surgical instrument for staple suturing of organs, comprising a supporting body, a staple body, a hinge joint for detachably articulating said supporting and staple bodies together, a jaw provided on the staple body and adapted for carrying removable staple magazines, the staple magazines accommodating staples for suturing and staple ejector means reciprocatingly mounted in the staple magazines for driving staples out of the magazines, a jaw having a lengthwise recess formed therein provided on the supporting body, a slidable member arranged in the lengthwise recess of said jaw of the supporting body for movement with respect to said supporting body so as to perform translating adjusting motion in a transverse direction with respect to the staple body for adjusting a gap between the slidable member and the staple body jaw, said slidable member having a surface thereof arranged parallel to the staple body jaw when the supporting body and staple body are in a stapling position, retainer means for fixing said slidable member in a preset position during adjusting motion thereof, recesses for bending staples formed in said slidable member, and actuator means for imparting adjusting motion to the slidable member wherein said actuator means comprises a crankshaft having journals held by the supporting body and a crank throw positioned between the journals, said slidable member having a slot formed therein to accommodate the crank throw, the crank throw being eccentric with respect to one of the journals so that rotation of the one journal results in translation of the slidable member by the crank throw.

4,290,543

SUPPORT PLUG

Gordon C. Larson, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 6, 1977, Ser. No. 784,993
Int. Cl.³ B23K *20/08*; F28F *9/14*
U.S. Cl. 228—2.5 **6 Claims**



1. In combination with a pressure vessel comprising tube sheet means transversely arranged therein, a plurality of fluid conveying tubes disposed within the vessel, the tubes having their ends connected to the tube sheet means, and including explosive activated plugs disposed for insertion into the ends of a leaky tube, means for detonating the explosive in the inserted plugs to fix the plugs to the surrounding tube walls thereby sealing the ends of the leaky tube, the improvement comprising means for supporting the tube sheet means and the ends of tubes adjacent to the leaky tube during detonation of the explosive, the supporting means including support plugs removably inserted into and bearing against the ends of said adjacent tubes.

4,290,544

APPARATUS FOR DEFORMING AN OBJECT AND SECURING IT TO A SUPPORT MEMBER

Jerome Grassin, Vanves; Maurice Thouvenin, Parmain, and Jean-Claude Epie, Montmorency, all of France, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 776,613, Mar. 11, 1977, Pat. No. 4,150,874.
This application Mar. 13, 1979, Ser. No. 20,191
Claims priority, application France, Mar. 17, 1976, 76 07756
Int. Cl.³ B23K *37/02, 37/04*
U.S. Cl. 228—7 **5 Claims**

1. Apparatus for forming a curvature in a deformable angle bar and for securing said bar to a support member which is rigid enough to hold said bar in the curvature to which said bar has been deformed, said apparatus comprising:

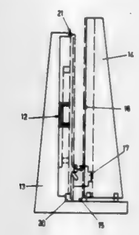
a first structure to which is secured the support member,

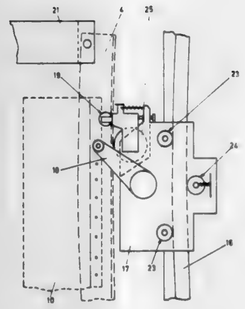
at least two spaced-apart thrust bearings designed to receive the deformable bar and hold it in proximity to said support member, said spaced-apart thrust bearings being oriented so as to support said deformable bar only at its ends so that said deformable bar is unsupported by said apparatus intermediate said thrust bearings,

a track mounted on a second structure and having a curvature that has the same shape as the curvature to which it is desired to deform the deformable angle bar,

a carriage mounted on said track and movable thereon through the curvature on said track,

means mounted on said carriage for bending said angle bar into the shape of the curvature of said track, said means comprising first and second rollers mounted at a fixed





distance from said track and positioned to grasp opposite surfaces of the angle bar, said rollers cooperating to bend the angle bar into substantial conformity with the curvature of said track as said carriage is moved along said track, and

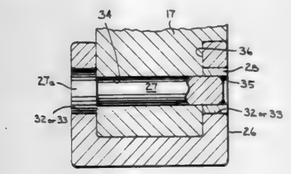
means mounted on said carriage for attaching the deformable angle bar to the support member while it is being bent by said bending means.

4,290,545

METHOD OF ATTACHING A PROTECTIVE CAP TO A SHREDDER COMPONENT

Richard P. Whitney, East Moline, Ill., assignor to Sivyer Steel Corporation, Milwaukee, Wis.

Division of Ser. No. 16,026, Feb. 28, 1979, Pat. No. 4,222,530.
This application Apr. 24, 1980, Ser. No. 143,392
Int. Cl.³ B02C *13/28*
U.S. Cl. 228—139 **4 Claims**



1. The method of attaching a protective cap to a shredder component without welding directly upon the cap or the component which comprises:

(a) providing a protective cap having a generally U-shaped channel with opposed walls for receiving a portion of the component desired to be protected, said opposed walls each having at least two openings extending therethrough with respective openings in opposed walls being aligned;

(b) providing the component with at least two openings which are aligned with the openings in the channel walls when the cap is in place said component openings being of less diameter than said channel wall openings;

(c) positioning the cap upon the component with the openings aligned;

(d) inserting pins through at least two of the aligned openings, said pins having a head at one end which is larger in diameter than the openings in the component but smaller in diameter than said channel wall openings, said pins being of sufficient length so that the pin extends through the aligned opening in the first wall of the cap, the opening in the component and into the opening in the second wall of the cap; and

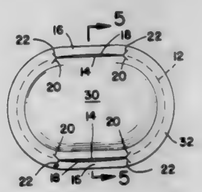
(e) then positioning at least two washers each having an outer diameter greater than the openings in the component but smaller than the openings in the channel walls about a portion of the other end of the pin and welding it thereto so that the pin and washer combinations cannot be removed from the aligned openings and will retain the cap in position on the component.

4,290,546

COVER FOR FOOD SERVING DISHES

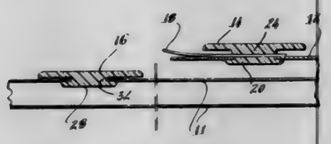
Amos R. Kanaga, and Stephen R. Kanaga, both of 2300 Palm Ave., San Mateo, Calif. 94403

Filed Sep. 6, 1979, Ser. No. 73,020
Int. Cl.³ B65D *5/64, 43/06*
U.S. Cl. 229—43 **4 Claims**



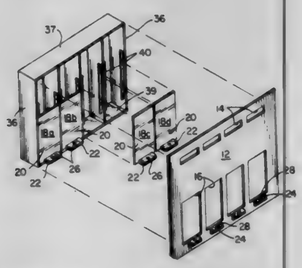
1. A cover for a food serving dish, said cover comprising a sheet of semi-rigid material selected from the group consisting of paper, paperboard, pressboard and plastic having transverse peripheral dimensions larger than corresponding transverse peripheral dimension of said dish, said dish having a pair of opposed arcuate peripheral edges of given length with the midpoints thereof spaced from each other by a given transverse peripheral dimension taken through the center of the area of said dish, said cover having a pair of substantially parallel rectilinear slits therethrough, said slits each having a length approaching said given length of said arcuate peripheral edges of said dish with the midpoints of said slits spaced from each other by a distance less than said given transverse peripheral dimension of said dish and corresponding ends of said slits being spaced from each other by a distance which is greater than corresponding transverse peripheral dimension of said dish on opposite sides of given transverse peripheral dimension of said dish, each said slit having an inwardly extending rectilinear extension at each end thereof forming an included angle of about 135° with respect to said slit.

4,290,547
RECLOSABLE ENVELOPE AND METHOD OF MANUFACTURE
John Sullivan, San Jose, and Harold R. Lillibridge, Burlingame, both of Calif., assignors to Champion International Corporation, Stamford, Conn.
Filed Mar. 12, 1980, Ser. No. 129,556
Int. Cl.³ B65D *27/12*; B42F *1/00*
U.S. Cl. 229—77 **14 Claims**



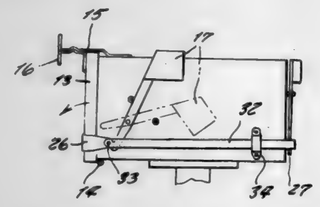
1. A reclosable envelope comprising:
an enclosed body portion hingedly connected to an overlying flap,
a first button connected to the outer surface of said flap,
a second button connected to the outer surface of said body portion, and
means for releasably connecting said first and second buttons to thereby releasably secure said overlying flap and said body portion,
said first and second buttons including
a base portion and at least one integral depending portion extending downwardly from said base portion through an opening in said flap and said body portion, respectively, of said envelope, said depending portion being flattened towards said base portion so that said buttons are permanently connected to said envelope.

4,290,548
HIGH SECURITY TAMPER-PROOF MAILBOX
Norbert J. Denhart, Cincinnati, Ohio, assignor to Elm Window Co., Cincinnati, Ohio
Filed Mar. 13, 1980, Ser. No. 130,111
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—24 **4 Claims**



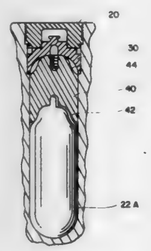
1. A security mailbox, comprising:
(a) a housing having a top wall, a bottom wall, a back wall and side walls;
(b) a plurality of spaced partition members extending from said back and bottom walls toward said top wall in parallel relationship to said side walls, said partition members dividing said housing into a plurality of compartments;
(c) a face plate in the form of a solid sheet securely affixed to the housing, said face plate being apertured in correspondency to said compartments, the outer edges of the face plate extending beyond the vertical and horizontal limits of the housing;
(d) retaining means securely fixed to the partitions on each side of the interior compartments and to a partition member and a side wall of the outermost compartments, said retaining means being spaced from the face plate by a predetermined distance and cooperating with said face plate to form channels therebetween;
(e) closure members slidably movable within said channels, said closure members being operative to close said apertures in a first position and being slidable to a second position which at least partially opens said apertures; and
(f) means for securing said closure member in said first position.

4,290,549
SELF-DROPPING FLAG FOR MAIL BOXES
John Getz, Jr., 2014 Naomi Dr., Brooksville, Fla. 33512
Filed Aug. 17, 1979, Ser. No. 67,388
Int. Cl.³ A47G *29/12*
U.S. Cl. 232—35 **1 Claim**



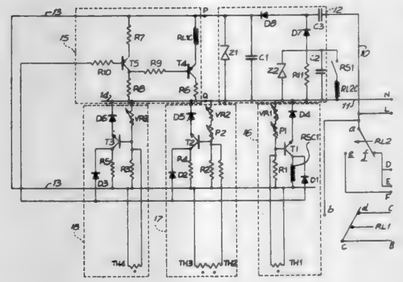
1. An improved mail box, comprising, in combination, an elongated box, an opening at a front of said box, a door pivoted to said box closing said opening, a first flag on a side of said box for signalling a resident; said first flag in a cocked position being raised upwardly for display, and a second flag in a cocked position being in a downwardly lowered, stored position, and said door tripping both said cocked positions when said door is pivoted open; an L-shaped plate, secured to said door, holding a flagstaff of said first flag from pivoting, and a sliding bar, attached to said plate, abutting against said second flag, retaining a flagstaff thereof from pivoting about a rivet secured to a rear wall of said box and extending through an intermediate portion of said flagstaff while an upward extending end of said flagstaff has a weight affixed thereto for being gravity activated for pivoting said flagstaff.

4,290,550
MODULAR SUPPORTING CAP AND SPACER FOR CENTRIFUGE TUBES
Steven J. Chulay, Los Altos, and Francis D. Richards, Sunnyvale, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Feb. 19, 1980, Ser. No. 122,214
Int. Cl.³ B04B *15/00*
U.S. Cl. 233—26 **10 Claims**



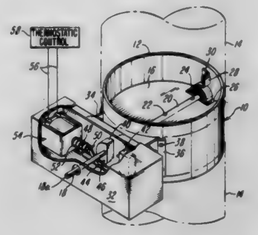
1. For use as a pressure-resisting cap above a sealed tube mounted in an upwardly opening cavity in a centrifuge rotor, the upper surface of said tube having a convexly shaped center portion projecting upwardly in the cavity, a modular cap adapted to engage the top of the tube and having a sliding fit in the cavity;
the lower surface of the cap having a concave center portion adapted to mate with the convex center portion of the upper surface of the tube; and
the upper surface of the cap having a convex center portion adapted to mate with a concave center portion of a lower surface of a substantially identical cap.

4,290,551
AUTOMATIC TEMPERATURE COMPENSATED BOILER THERMOSTAT
Frank Johnstone, Glasgow, Scotland, assignor to Carco Accessories Limited, Glasgow, Scotland
Filed Nov. 27, 1979, Ser. No. 97,829
Claims priority, application United Kingdom, Nov. 30, 1978, 46749/78
Int. Cl.³ F24D *5/10*, *3/00*
U.S. Cl. 236—9 R **15 Claims**



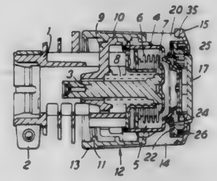
1. A control apparatus for a fuel fired central heating boiler providing circulating heating water for space heating comprising:
a first temperature control circuit for controlling the firing of said boiler and the temperature of said circulating heating water including a first temperature sensitive element for sensing an external ambient temperature and a second temperature sensitive element for sensing the temperature of said circulating heating water, said first and second temperature sensitive elements being connected in series and having different resistance/temperature characteristics from one another such that a change in said external ambient temperature corresponds to a greater change in the temperature of said circulating heating water and determines a maximum slope of temperature change within said circulating heating water for a given external ambient temperature;
a second temperature control circuit including a third temperature sensitive element for sensing the temperature in a space to be heated and in response thereto for controlling the firing of said boiler and the circulation of said circulating heating water and arranged to determine automatically the slope of the temperature change within said circulating heating water below said maximum slope; and
an output circuit for controlling the firing of said boiler coupled to both said first and second temperature control circuits and adapted to be responsive to said first temperature control circuit and/or said second temperature control circuit.

4,290,552
DAMPER CONTROL MECHANISM
John Prikkel, III, 2952 Ensley Ave., Dayton, Ohio 45414
Filed Aug. 14, 1980, Ser. No. 178,164
Int. Cl.³ F23N *3/00*
U.S. Cl. 236—1 G **10 Claims**



1. In a damper control mechanism of the type comprising a damper movable from a first position substantially closing a duct to a second position substantially opening said duct, yieldable means for biasing said damper to one of said first and second positions, motive means energizable to drive said damper against the bias of said yieldable means toward the other of said positions, and said duct having stop means for stopping said damper in one of said first and second positions, the improvement comprising thermally responsive means disposed in said duct and engaged to one of said damper and said stop means, said thermally responsive means having tab means engagable with the other of said damper and said stop means, said thermally responsive means exposed to matter passing through said duct for modulating the movement of said damper in response to the bias of said yieldable means.

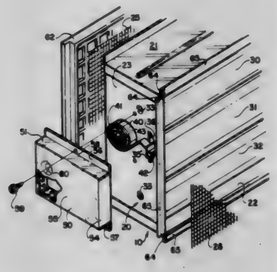
4,290,553
ROTARY KNOB FOR THERMOSTATIC VALVES OF RADIATORS
Aage Molgaard, Nordborg, and Niels P. G. Graversen, Augustenborg, both of Denmark, assignors to Danfoss A/S, Denmark
Filed May 13, 1980, Ser. No. 149,498
Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921522
Int. Cl.³ F24F *11/06*
U.S. Cl. 236—42 **5 Claims**



1. A thermostatic control assembly for radiator valves, comprising, a chassis member adapted to be attached to a valve casing, said chassis having an index marking, a generally cylindrically shaped knob surrounding said chassis member, said knob having index marking which is related to said index marking on said chassis, thread means between said knob and said chassis member to facilitate axial movement for said knob, a thermostatic operating unit disposed internally of said knob and attached thereto, said operating unit having an axially movable valve actuating rod, an end cap, said end cap and said knob having internal serrations for coupling purposes, a ring member for adjustably attaching said cap to said knob, said ring member having circumferentially arranged sets of rigid and resilient teeth engaging said serrations, said resilient teeth

allowing relative rotatable adjustments between said knob and said cap without relative axial movement therebetween to allow adjustments involving said index markings of said chassis member and said knob.

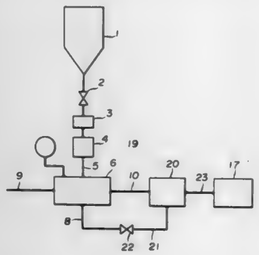
4,290,554
TEMPERATURE ACTUATED FOUNDATION VENTILATOR
Robert C. Hensley, Rte. 7, Box 551, Lincolnton, N.C. 28092
Filed Feb. 1, 1979, Ser. No. 8,529
Int. Cl.³ F24F 7/00
U.S. Cl. 236—49 **2 Claims**



1. In a ventilator having a frame including a pair of opposed walls and a plurality of louvers extending between and pivotally connected to the opposed walls, actuating means pivotally connected to the louvers, a bi-metallic element responsive to changes in temperature to expand in hot weather and contract in cold weather, outwardly opening bifurcated means connecting one end of the bi-metallic element to the frame, means connecting the other end of the bi-metallic element to the actuating means to cause the louvers to open and close in response to movement of the bi-metallic element, the combination of a protective cover connected to the frame and extending about the bi-metallic element and comprising a top wall, a bottom wall, a front wall, a rear wall and a side wall, said cover being dimensioned such that said bi-metallic element remains out of physical contact with said cover during the expansion and contraction of said bi-metallic element, and said front wall and bottom wall each having a plurality of apertures therethrough establishing communication between the bi-metallic element and the ambient temperature and exposing the bi-metallic element to the ambient temperature, the remaining walls of said protective cover protecting the bi-metallic element from contamination by wet mortar, insects and dirt, and a dimpled portion extending inwardly from the said side wall of the said protective cover and registrable with outer open end of said bifurcated means connecting the said one end of the bi-metallic element to said frame to retain the bi-metallic element on the bifurcated means.

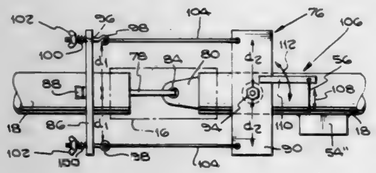
4,290,555
METHOD FOR SUPPLYING POWDER TO BE USED IN HOME SPRAY COATING OPERATION
Toshio Suwa, Tokyo; Yoshiaki Konagaya, Yokohama, and Hiroshi Ishii, Tokyo, all of Japan, assignors to Nippon Sanso K. K., Minato, Japan
Filed Feb. 15, 1980, Ser. No. 122,065
Claims priority, application Japan, Feb. 21, 1979, 54-19444
Int. Cl.³ B05D 1/10
U.S. Cl. 239—8 **4 Claims**

1. A method for supplying powder material to a flame spray coating burner by means of an ejector having a suction chamber therein, which comprises:
introducing a gas as jet gas into the ejector;
introducing powder material into the suction chamber, said jet gas drawing and carrying the powder material to form a gas-solid stream;
separating part of the gas from the gas-solid stream by means of a gas-solid separator;
introducing said part of said gas separated from the gas-solid stream into the suction chamber as suction gas;



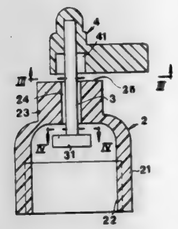
controlling the rate of introduction of said suction gas into said suction chamber, thereby controlling the pressure in said suction chamber and the rate at which powder material is introduced therein; and
conveying part of the gas-solid stream which is not separated to a flame spray coating burner while maintaining a combustion condition of said flame spray coating burner.

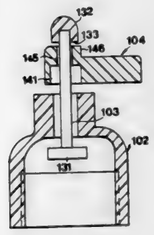
4,290,556
PARALLEL ANGULARITY SENSOR FOR CENTER PIVOT IRRIGATION SYSTEM
Lloyd A. McConnell, Greeley, Colo., assignor to Irrigation and Power Equipment, Inc., Evans, Colo.
Filed Mar. 2, 1979, Ser. No. 16,804
Int. Cl.³ B05B 3/02
U.S. Cl. 239—177 **6 Claims**



1. In a center-pivot irrigation system having a plurality of interconnected span units revolving in articulated relationship about a center pivot with each span unit comprising a water-carrying conduit supported on one end by a wheeled support tower driven by a motor under the control of a control unit having a moveable input connected to be responsive to the angular deviation in a horizontal plane between the span unit having the motor and the next adjacent span unit, the improved angularity sensor providing an angularity signal to the controller comprising:
(a) a first horizontal rigid bar member attached adjacent one end of the span unit conduit to extend normal to the longitudinal axis of said one span unit conduit equally in opposite directions in the horizontal plane when said one span unit is revolving in a horizontal plane;
(b) a second horizontal rigid bar member rotatably attached at its center adjacent the abutting end adjacent said first rigid bar of the next adjacent span unit conduit to said one span unit conduit for rotation in said horizontal plane and extending normal to the longitudinal axis of said next adjacent span unit conduit equally in opposite directions in said horizontal plane;
(c) a pair of first connecting means for pivotally interconnecting respective ends of said first and second horizontal bar members extending from said span unit conduits in the same direction, said first connecting means holding said first and second horizontal bar members under substantially equal tension forces on each side and being extensible and retractible under equal tension forces; and,
(d) second connecting means for interconnecting said second rigid bar member to the movable input of the controller to move the input in proportion to rotational movement of said second bar member corresponding to changes in angular deviation between said two adjacent span units.

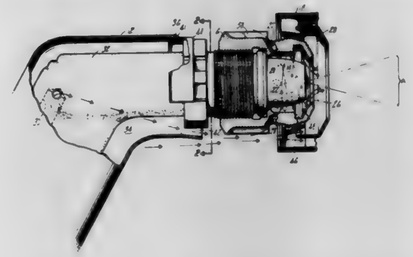
4,290,557
SPRINKLERS
Avner Rosenberg, Moshav Beit Shearim, Israel
Filed Feb. 25, 1980, Ser. No. 124,220
Int. Cl.³ B05B 3/04
U.S. Cl. 239—222.21 **9 Claims**





1. A sprinkler comprising:
a nozzle connectable to a pressurized-liquid supply pipe and formed with an axial bore having an inlet end for inletting the liquid from the supply pipe and an outlet end through which the liquid exits in the form of a jet;
a spindle extending through the bore and projecting outwardly of the outlet end thereof, said spindle including means for retaining same within the bore but having a smaller outer diameter than the diameter of said bore so as to be laterally movable within said bore;
and a deflector mounted on said spindle and having a recess facing, and slightly larger than, the outlet end of said nozzle bore so as to be impinged by the jet issuing from the nozzle and thereby to impart rapid lateral movements to the spindle causing the spindle to impact against the sides of the bore;
characterized in that said deflector is eccentrically mounted on said spindle, and said recess is formed eccentrically of said deflector, such that the impacts of the spindle against the sides of the bore impart a rotary movement to the deflector during impingement of the jet on the deflector.

4,290,558
FUEL NOZZLE WITH WATER INJECTION
Robert E. Coburn, Mansfield Center; Ronald M. Gabriel, Glastonbury, and Richard S. Tuthill, Bolton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Sep. 18, 1979, Ser. No. 76,638
Int. Cl.³ B05B 7/10
U.S. Cl. 239—400 **3 Claims**



1. Apparatus for reducing smoke emissions exhausting from a gas turbine engine during water injection mode of operation, including a nozzle support having a generally cylindrically shaped body, a nozzle supported at one end thereof, an aperture in one end of said nozzle for injecting fuel centrally of said nozzle in a conical array, said conical array having an apex, a nozzle nut threadably supported on one end of said nozzle support, said nozzle nut having a generally conically shaped end portion surrounding a central opening concentric to said nozzle from which said apex of said conical array of fuel is formed, means for leading water through a plurality of drilled passages spaced about the circumference of said nozzle nut into a generally annularly shaped passageway formed between the inner diameter of said nozzle nut and the outer diameter of said nozzle and communicating with said central opening, an annular recess having a radially outwardly extending bore at one end of said annularly shaped passageway remote from said passages formed in the inner diameter of said nozzle nut for collecting water admitted into said annularly shaped passageway and also having a conically shaped wall radiating from a larger diameter at the extreme radial position of said bore to a smaller diameter adjacent said central opening, whereby the water collected in said recess is discharged about the entire circumference of said opening in a spray of small droplet size.

4,290,559
END CONTROL, ELECTRICAL, POWER DRIVE UNIT FOR AGRICULTURAL SPRINKLER IRRIGATION SYSTEMS
Russel Mayer, P.O. Box 811, Milford, Utah 84751
Filed Jan. 10, 1980, Ser. No. 110,931
Int. Cl.³ B05B 3/18
U.S. Cl. 239—716 **5 Claims**



1. An electrical, end control, power drive mover unit for agricultural sprinkler irrigation systems, comprising a wheeled frame having a pipe section of an irrigation sprinkler pipeline rotatably mounted thereon substantially parallel with the axes of rotation of the wheels thereof; a bull gear rigidly affixed to said frame and encircling said pipe section; dual, mutually substantially symmetrically oriented, structurally separate

platforms rigidly attached in mutually parallel relationship to and supported by said pipe section in diametric opposition to each other and adjacent to said bull gear; structural means rigidly affixing said platforms in common to said pipe section, said structural means comprising an annular disc plate encircling the pipe section at a side of said platforms and rigidly affixed thereto; electric motor and speed reducing gear box sets mounted on the respective platforms in mutually substantially symmetrical orientation, the gear box of each set having an output shaft with a pinion drive gear thereon in mesh with said bull gear; an electrical connection for an elongate electrical power cable which is adapted to extend along the irrigation pipeline to an end thereof for connection with a source of electric power; and drive means connecting said pipe section with wheels of said wheeled frame for moving the mover unit when the electric motors are energized.

4,290,560

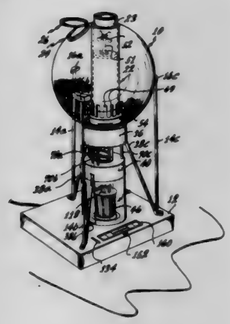
MACHINE FOR MAKING PURE PEANUT BUTTER

Victo V. Tabah, 431 Burnside Ave., Apt. 11-J, Los Angeles, Calif. 90036

Continuation-in-part of Ser. No. 959,593, Nov. 13, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 70,139

Int. Cl.[3] **B02C** *7/04*

U.S. Cl. 241—65 **11 Claims**



1. In a machine for grinding nuts for producing nut butter, in combination, vertically oriented means for holding a supply of nuts to be ground, grinding means, including horizontal grinding discs, one of which is rotated relative to the other, vertically oriented screw means for delivering the nuts to be ground into central opening means in the grinding discs, the discs having relatively movable grinding teeth positioned to cause the nuts being ground to move outwardly radially between the grinding discs to the periphery of the discs, and the lower disc being rotated, means for causing all of the ground material, after being ground and passing outwardly of said discs, to be moved inwardly toward the central axis of the discs below said lower disc.

4,290,561

REEL FOR THE UNREELING OF TAPES OR THE LIKE

Roland Satzinger, Euerdorf, Fed. Rep. of Germany, assignor to Gebhardt Satzinger Metallwarenfabrik, Bad Kissingen, Fed. Rep. of Germany

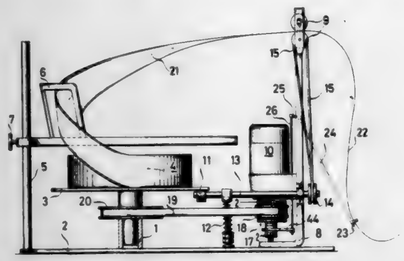
Filed Apr. 16, 1979, Ser. No. 30,508

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816179

Int. Cl.[3] **B65H** *75/02;* **B21C** *47/16*

U.S. Cl. 242—55 **10 Claims**

1. An apparatus for unreeling tapes and the like from reels which apparatus comprises a reel plate driven by a driving motor, said driving motor having a driving shaft provided with a driven wheel, said driven wheel connected via a transmission to a driving wheel, said driving wheel connected via a shaft to said reel plate, said driven wheel connected to a clutch, said clutch connected to an actuating feeler, said feeler engageable by tape unwound from a reel disposed on said reel plate



whereby when said feeler is engaged said clutch is engaged to transmit rotation of said driven wheel to said driving wheel through said transmission.

4,290,562

HUB FOR USE IN A MAGNETIC RECORDING TAPE CASSETTE

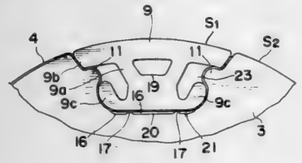
Shigeo Sasaki, Kyoto, and Osamu Yamamoto, Takatsuki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Oct. 20, 1980, Ser. No. 198,647

Claims priority, application Japan, Oct. 20, 1979, 54-145412[U]; Oct. 20, 1979, 54-145413[U]

Int. Cl.[3] **B65H** *75/28*

U.S. Cl. 242—74 **8 Claims**



1. A hub for use in a magnetic recording tape cassette which comprises

an annular body having a cylindrical outer peripheral surface on which a magnetic recording tape is wound,

an engagement recess defined in the outer peripheral portion of the annular body and

a clamp piece fitted in the engagement recess, wherein

said engagement recess comprising an entrance opening formed in the cylindrical outer peripheral surface of the annular body, a pair of protrusions protruded inwardly of the recess to define a first space narrower than the width of the entrance opening on the intermediate portion of the both lower side walls of the engagement recess and an inner recess defined by a bottom face of the engagement recess and the both side walls thereof with a second space wider than the first space,

said clamp piece comprising a top portion having an arcuated surface with the substantially same curvature as the cylindrical outer surface of the annular body and with such a length in a circumferential direction that the top portion closes the entrance opening, a bottom portion having a pair of lugs protruding substantially towards the top portion from the both sides of said bottom portion with such a length that, when the clamp piece is fitted in the engagement recess, the lugs are engaged with the lower side walls of the recess and an intermediate portion for connecting the top portion and the bottom portion, whereby when said clamp piece is fitted in the engagement recess with the magnetic tape inserted therebetween, the magnetic tape is secured on the hub in such manner that the magnetic tape is clamped between the ends of the lugs and at least one of the side walls of the engagement recess.

4,290,563

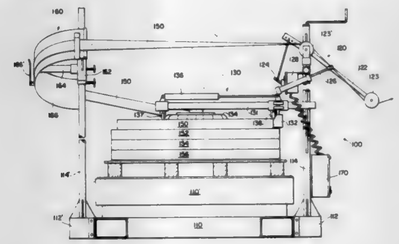
METHOD AND APPARATUS FOR DISPENSING COILED MATERIALS

Dannie L. Brooks, Red Lion, Pa., and Ronald S. Fields, Manakin, Va., assignors to Reel-O-Matic Systems, Incorporated, Wrightsville, Pa.

Continuation of Ser. No. 92,104, Nov. 7, 1979, Pat. No. 4,249,705. This application May 14, 1980, Ser. No. 149,718

Int. Cl.[3] **B21C** *47/16*

U.S. Cl. 242—78.6 **14 Claims**



1. A method of dispensing flexible material from unconfined coils, each coil having an open inner eye, a method comprising the steps of:

(a) setting at least one coil upon an upright turntable;

(b) conformably engaging the inner eye of said coil with an expandable core; and, concurrently therewith,

(c) engaging the outer periphery of said coil with a roller to apply radial compression thereto;

(d) drawing the flexible material from said coil.

4,290,564

SPRING-OPERATED REVERSABLY ROTATABLE BODY

Hans I. R. Karlsson, Vintervagen 17, 175 40 Jarfalla, Sweden

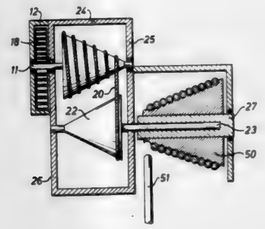
Division of Ser. No. 517,676, Oct. 24, 1974, Pat. No. 3,997,126. This application Nov. 9, 1976, Ser. No. 740,269

Claims priority, application Sweden, Oct. 30, 1973, 14694/73

The portion of the term of this patent subsequent to Dec. 14, 1993, has been disclaimed.

Int. Cl.[3] **B65H** *75/48*

U.S. Cl. 242—107 **5 Claims**



1. A spring operated winding device which comprises in combination:

(a) a rotatable output shaft that is mounted so that it is reversibly rotatable, and a reversibly rotatable input shaft mounted parallel to said rotatable output shaft,

(b) an elongated flexible member disposed concentrically around said rotatable output shaft so that when said rotatable output shaft is rotated in one direction said flexible member is in a wound condition and when said rotatable output shaft is rotated in the opposite direction said flexible member is in an unwound condition,

the surface of said output shaft upon which said elongated flexible member is disposed having a tapered configuration, said elongated flexible member forming one layer on said surface and being unwound from the top towards the base of said surface,

(c) a spring member having one end connected to said reversibly rotatable input shaft, said spring member being arranged to be stretched by the rotation of said output shaft during the unwinding of said elongated flexible member from said output shaft,

(d) means interconnecting said rotatable input shaft with one end of said rotatable output shaft, said means including

(1) a first tapered body having a base portion and a top, said first tapered body being drivingly connected to said rotatable output shaft in both directions of rotation,

(2) a second tapered body having a base portion and a top mounted on said rotatable input shaft, the taper of said second tapered body being disposed opposite to the taper of said first tapered body,

(3) a traction wire having one end attached to said base portion of said first tapered body, the other end attached to said base portion of said second tapered body, and the intermediate portion wound around the exterior surfaces of said first and second tapered bodies so that the rotation of the rotatable output shaft in one direction results in winding of the traction wire around said first tapered body and a stretching of said spring member so that said rotatable output shaft can then be caused to rotate in the opposite direction by releasing the tension of said spring member,

whereby the slope of the generatrix of said tapered bodies is such that the tractive force required to unwind said flexible member from said rotatable output shaft will be equalized over the course of said unwinding.

4,290,565

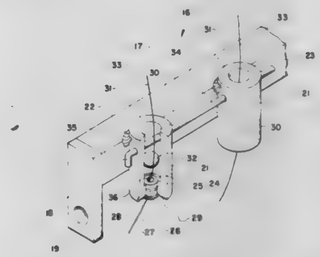
YARN TENSION DEVICE

Leonard R. Smith, 721 Green St., Raeford, N.C. 28370

Filed Mar. 13, 1980, Ser. No. 130,094

Int. Cl.[3] **B65H** *59/22*

U.S. Cl. 242—152.1 **5 Claims**



1. A device for use in conjunction with a textile type machine for tensioning a plurality of yarns, said device comprising: a mounting bar; means for mounting said bar for use in conjunction with said machine; a plurality of cup means fixedly secured to said bar; each cup means having a centrally disposed chamber therein through which a yarn is threaded and in which a tension applying ball is disposed; and an elongated ball retaining means extending through said plurality of cup means and across one end of the chambers of said plural cup means for retaining said balls within said chambers during threading of the yarns therethrough as well as during machine operation.

4,290,566

MAGNETIC TAPE HANDLER

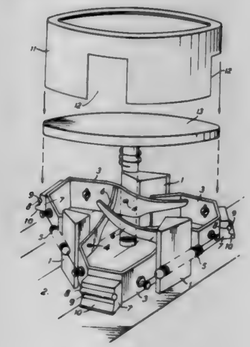
John Knott, Wells, and Robert V. Elliott, Westbury-sub-Mendip, both of England, assignors to EMI Limited, Hayes, England

Filed Dec. 10, 1979, Ser. No. 101,860

Claims priority, application United Kingdom, Dec. 15, 1978, 48667/78

Int. Cl.³ B65H *59/38, 63/02*

U.S. Cl. 242—189 **16 Claims**



12. A reel mounting device for supporting a reel having an internal support surface comprising,

(a) a base plate,

(b) at least three symmetrically disposed support means mounted to the base plate,

(c) a mounting member, pivotally supported between, and mounted to, each pair of adjacent support means each mounting member including an end member having a resilient peripheral surface and a lever arm extending from one pivot point substantially towards another support member, and

(d) means for resiliently coupling each said member to an adjacent member outside the pivot points,

wherein an introduced reel urges the end members into a hold position in which said peripheral surfaces frictionally engage the internal support surface of the reel and the base plate supports each end member, and the device has a release member adapted to urge the arms towards the base plate against the action of the resilient means until they at least pass through the said common plane to a position in which the reel is not held by the peripheral surfaces which then project above the common plane.

4,290,567

TAPE CASSETTE BRAKE ASSEMBLY

Kenzo Saito, Izumi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 927,129, Jul. 21, 1978. This application May 24, 1979, Ser. No. 42,044

Claims priority, application Japan, Jul. 22, 1977, 52-97064

Int. Cl.³ G11B *23/10*

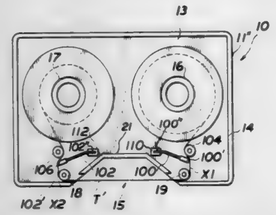
U.S. Cl. 242—198 **19 Claims**

1. In a cassette for use in a magnetic recording and/or reproducing apparatus and which is of the type having a housing containing rotatable reels having magnetic tape wound thereon with said tape extending between said reels being guided to direct a run thereof across an access opening in said housing, the improvement comprising:

support element means fixedly mounted to said housing adjacent one of said reels for sliding contact with a portion of said tape disposed between said adjacent reel and said access opening;

a resiliently flexible element including a fixed end portion and a free end portion, said first resiliently flexible element having first engaging means on said fixed end portion; and

holder means defining a gap for allowing said resiliently flexible element at said fixed end portion to be slidably disposed in said gap, said holder means being disposed in said housing adjacent said support element means such that said free end portion normally urges said portion of



said tape into pressing contact with said support element means, said holder means including,

second engaging means disposed in said gap for engaging said first engaging means when said fixed end portion of said resiliently flexible element is slidably disposed in said gap so as to prevent sliding movement of said fixed end portion out of said gap in the direction of said free end portion.

4,290,568

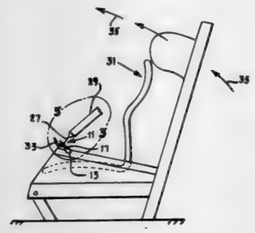
AIRCRAFT EJECTION SEAT SAFETYING DEVICE

Philip K. Vollmoeller, Riverhead, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 9, 1979, Ser. No. 92,818

Int. Cl.³ B64D *25/10*

U.S. Cl. 244—122 A **2 Claims**



1. A safetying device for attachment to an aircraft ejection seat having an arm/dearm lever positioned thereon, said device comprising an inverted U-shaped base member having a clearance hole through the center of the upper portion thereof, a bolt having a knurled head portion, a body portion and a threaded end portion positioned through the clearance hole in said base member, means for preventing said bolt from separating from the device when not in position on the seat, an upstanding brace portion extending upward at an angle adjacent to the arm/dearm lever on the ejection seat to prevent accidental arming thereof, and a red flag attached to said safetying device to indicate that the device is in position thereby allowing the ejection seat to be tilted forward for maintenance and repair work to be accomplished on avionics systems behind and under the seat without danger of accidentally arming the arm/dearm lever.

4,290,569

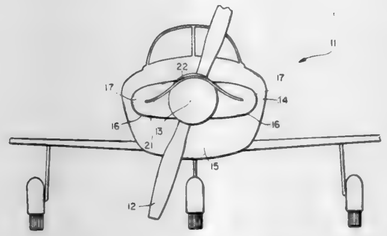
COWLING PORT CLOSURE AND METHOD

Charles A. McIntyre, Rte. 2, Box 554, Alexandria, Ind. 46001

Filed Nov. 1, 1979, Ser. No. 90,336

Int. Cl.³ B64D *29/00*

U.S. Cl. 244—129.4 **5 Claims**



1. Cowling port closure apparatus comprising:

a first closure member having an edge portion adapted to fit a cowling opening, said edge portion being resilient;

a flexible line extending from said closure member and engaged with said closure member for limited translational movement with respect to said closure member in one direction whereby, upon pulling that portion of said line remote from the closure member, the closure member will be moved by the line in the direction of the pull,

said closure member being a uniform homogeneous piece of polyurethane foam material having dimensions relatively large along two axes by comparison with the third axis, the third axis dimension being the thickness thereof,

said closure member having a generally centrally located aperture therein receiving a portion of said line therethrough;

a comparatively rigid washer around the portion of said line adjacent said closure member at one face of said closure member, and having an aperture therethrough larger than the line but smaller than a knot at the end of said line immediately adjacent such face;

the edge of said closure member being tapered in a direction such that the face thereof adjacent the washer is larger than the face thereof remote from the washer;

a second closure member at an opposite end of said line and substantially identical to said first closure member; and

a washer adjacent a central aperture in said second closure member and having a central aperture receiving the opposite end of said line therethrough and smaller than a knot at said opposite end of said line.

3. Apparatus for excluding birds from air intake openings of engine compartments comprising:

an aircraft engine housing portion having a pair of openings therein for air intake;

a central opening in said housing portion between said intake openings for a propeller shaft;

a propeller shaft extending through said central opening and having a propeller thereon;

a closure member in each of said openings;

a flexible line extending from each of said closure members around said propeller and to the other of said closure members; and

means on said line at said closure members to transmit a force from said line to said closure members for removal of said closure members from said openings upon application of tensile force to said line outside the engine housing portion;

said line being draped over the propeller hub in front of the propeller, and

said line extending forward from one of said closure members behind the plane of rotation of the propeller at one side of the propeller shaft axis, and around the front of the propeller above the shaft axis, and back to another of said closure members behind said plane and at the opposite side of said axis, said line being short enough to prevent it from falling down over the front of the hub while both closure members are in said openings.

4,290,570

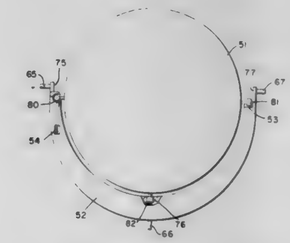
THREE POINT ATTACHMENT FOR AN EJECTABLE SPACECRAFT

John V. Smolik, Granada Hills; Ronald V. Swanson, San Pedro; Charles P. Rubin, Santa Monica; James C. Blaschke, Huntington Beach, and Roger J. Wagner, Northridge, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 910,722, May 30, 1978. This application Jun. 20, 1979, Ser. No. 50,256

Int. Cl.³ B64G *1/22, 1/14*

U.S. Cl. 244—158 R **1 Claim**



1. Apparatus for fastening a spacecraft in the payload bay of a space shuttle and for launching the spacecraft therefrom comprising:

a generally U-shaped cradle having three trunnions, one at each end and one at the bottom for mounting said cradle to the payload bay of the space shuttle, said trunnions lying in a plane transverse to the longitudinal axis of the shuttle to provide a statically determinant nonredundant connection to the shuttle;

a generally cylindrical spacecraft having three ball trunnions around the periphery thereof for mounting in slots provided in said cradle to form ball joint connections, said ball joint connections and said trunnions lying in a plane perpendicular to the central axis of said spacecraft at approximately the location of the center of mass thereof to eliminate the cantilever effect and thereby reduce loading on the spacecraft, and to permit said cradle to be the reaction platform for ejection of said spacecraft;

three lockable release mechanisms disposed in said cradle and engaging the trunnion balls of said spacecraft; and

an ejection mechanism disposed in said cradle and positioned to engage one of the trunnion balls of said spacecraft for pushing off said spacecraft from said shuttle, said ejection mechanism being arranged to apply its force at substantially zero longitudinal offset from the center of mass of said spacecraft.

4,290,571

HANGER DEVICE, PARTICULARLY FOR PIPELINES IN BUILDINGS

Walter Tremp, Schänis, Switzerland, assignor to Schlossfabrik Schulte & Co., Switzerland

Filed May 17, 1979, Ser. No. 39,828

Claims priority, application Switzerland, Aug. 30, 1978, 9135/78; Apr. 5, 1979, 3175/79

Int. Cl.³ E21F *17/02*

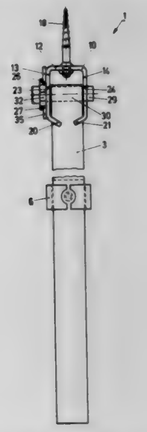
U.S. Cl. 248—59 **16 Claims**

1. A hanger device for pipelines, or the like, comprising:

a housing for being attached to a support; said housing including a wall;

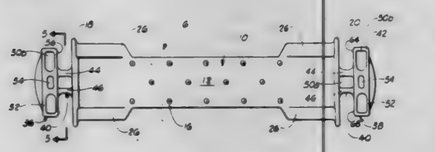
a roll onto which a hanger is rollable; said roll being sup-

ported by said housing wall for enabling annular rotation of said roll with respect to said housing;
first mating means on said roll for being engaged to prevent further rotation of said roll;
a lock; said housing wall including a support thereon for said lock; said support comprising claws pressed out from said housing wall, and said lock being positioned between said claws and said housing wall;
said lock including second mating means thereon for engaging said first mating means; said claws supporting said lock on said housing for preventing rotation of said lock with said roll with respect to said housing;



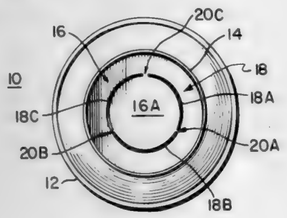
said lock being movable with respect to said claws of said housing wall for bringing said first and said second mating means into and out of engagement; said lock being supported on said housing to be movable with respect to said roll to a position at which said second mating means are separated from said first mating means, and said lock being supported and placed to normally move under its own weight to cause engagement of said first and said second mating means, for thereby halting further rotation of said roll;
a hanger windable on said roll.

4,290,572
PIPE CLAMP DEVICE
Harold T. Pate, Solon, Ohio, assignor to Indian Head Inc., New York, N.Y.
Continuation-in-part of Ser. No. 970,482, Dec. 18, 1978, Pat. No. 4,225,103. This application Apr. 18, 1980, Ser. No. 141,419
Int. Cl.³ F16H *3/08*
U.S. Cl. 248—74 B **7 Claims**



1. A pipe clamp device comprising:
an elongated flexible strap having a first side, a second side, a pair of opposed side edges, and a pair of opposite ends;
a pair of stop flanges each having one side secured to one of said ends of said strap and extending transversely across the strap;
a pair of tee subassemblies each connected to one of said stop flanges on the opposite side thereof from said strap, and each including:
a crossarm element having a tool-receiving slot therethrough in alignment with the longitudinal axis of said elongated strap for facilitating the twisting of said crossarm element about the longitudinal axis with a leverage tool inserted into said slot;
a flexible, resilient neck portion interconnecting the crossarm element with the respective adjacent one of said stop flanges; and
a locking tab projecting from each of the opposite ends of said crossarm elements toward said adjacent one of said stop flanges.

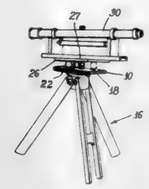
4,290,573
TWO-PIECE PAPER CUP FOR HOLDING ICE CREAM CONES AND THE LIKE
Henry Shapiro, Chicago, Ill., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed May 21, 1979, Ser. No. 40,536
Int. Cl.³ A47G *23/02*
U.S. Cl. 248—152 **5 Claims**



1. An ice cream cone holding and display means comprising:
a container of frustoconical configuration having a frustoconical sidewall open at one end and closed at its narrowmost end by a closure web; and
displaceable flap means defined in said closure web by an interrupted circular cut substantially centrally located in said closure web and having at least two interruptions therein;
one of said interruptions being of a greater extent than the other such that a breaking force applied to said flap means will result in said other of such interruptions being fractured while leaving the first intact;
said flap means being engageable by the apex of an ice cream cone to apply said breaking force to open a port in said closure web and said closure web, upon displacement of said flap, receiving said cone through said port and engageable with the periphery of said cone intermediate its apex and its open end to support said cone upright in said closure web.

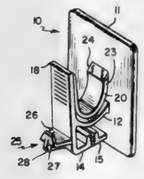
4,290,574
KINEMATIC RESTRAINT
John H. Archibald, P.O. Box 283, Golden, Colo. 80401
Filed Jun. 2, 1980, Ser. No. 155,493
Int. Cl.³ F16M *11/02*
U.S. Cl. 248—177 **8 Claims**

1. In a restraint apparatus for repeatedly connecting a precision instrument to a support frame in an identical position relative to said support frame, comprising a first plate secured to said support frame and having a generally horizontal planar surface, and a second plate secured to said instrument and having a generally horizontal planar surface, said horizontal planar surfaces of said first plate and said second plate facing one another, and carrying means for providing six contact points, the improvement wherein three of said contact points are provided by contact means comprising three first convex spherical members secured to said facing planar surface of said first plate in triangular array, and a second convex spherical member secured to the facing planar surface of said second plate, said second convex spherical member being seated upon



and simultaneously contacting each of said three first convex spherical members at a point and being spaced from said facing planar surface of said first plate.

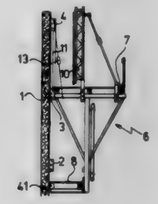
4,290,575
INTEGRAL CLIP AND HANGER
Everett W. Swartwout, 11 St. Andrews Way, South Yarmouth, Mass. 02664
Filed Jul. 25, 1979, Ser. No. 60,483
Int. Cl.³ A47F *5/00*
U.S. Cl. 248—316 D **9 Claims**



1. A clip comprising:
a pair of opposing jaws;
first and second support means, each having a first end attached to one of said jaws, and a second end distal to said jaw;
means for coupling together said first and second support means in a pivotal connection to permit them to pivot with respect to each other; and
an elongated member of resilient material pivotally attached to the distal end of one of said support means, said elongated member being adapted to be disposed between said support means in a U-shaped curve such that the closed end of the U-shaped curve is directed toward said coupling means and the open end of the U-shaped curve is directed toward the distal ends of the support means, whereby the elongated member abuts the respective first and second support means when disposed therebetween to urge said distal ends apart an urge said jaws together.

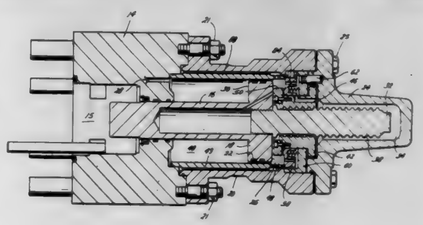
4,290,576
CLIMBING SCAFFOLDING
Artur Schwörer, Senden-Wullenstetten, Fed. Rep. of Germany, assignor to Peri-Werk Artur Schworer KG, Fed. Rep. of Germany
Filed Mar. 19, 1979, Ser. No. 21,406
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 2814930
Int. Cl.³ E04B *11/22*
U.S. Cl. 249—20 **16 Claims**

1. In a climbing scaffolding device, said scaffolding device being attachable to a wall of a structure:
a scaffolding platform,
framework means for supporting said scaffolding platform,
connecting means for attaching said framework means to said wall,
the improvement comprising:
said connecting means including at least two projections extending from and supported by said wall, said projections being spaced apart vertically,
said framework means comprising an engaging member that may be attached to either of said projections,



said framework means being constructed and arranged to enable it to be detached from one of said projections, moved to a position adjacent the other of said projections, and then attached to said other projection, and
guide means separate from and in addition to the engaging member for guiding the framework means between said projections while the framework means is being moved from the one to the other of said projections, said guide means extending between and being removably attached to said projections.

4,290,577
BLOWOUT PREVENTER RAM LOCK
Richard A. Olson, Houston, Tex., assignor to Hydril Company, Houston, Tex.
Filed Sep. 24, 1979, Ser. No. 78,093
Int. Cl.³ E21B *33/06*; F15B *15/26*
U.S. Cl. 251—1 A **28 Claims**



1. In a blowout preventer having at least one blowout preventer ram movable therein to adjustable closed positions for sealing contact with a well pipe or the like in a bore of the blowout preventer, a ram lock comprising:
(a) ram carrier means comprising a ram piston having a piston rod with a threaded surface formed thereon for moving the ram to the adjustable closed positions in the blowout preventer;
(b) cylinder means for receiving opening and closing fluid pressures to operate against said ram piston to move the ram to and from open and closed positions, respectively;
(c) lock means for locking said ram carrier means at the closed positions, comprising:
(1) a lock nut having a threaded surface formed thereon and engaged by said threaded surface on said ram piston rod for rotational movement with respect thereto during movement of the ram;
(2) a ram carrier clutch plate mounted with said lock nut for rotational movement therewith, said ram carrier clutch plate having ratchet teeth formed thereon;

(3) a body clutch plate having ratchet teeth formed thereon; and

(4) means for mounting said body clutch plate with the blowout preventer against relative rotational movement with respect thereto; and

(d) means for urging said ratchet teeth of said body clutch plate and said ram carrier clutch plate into engagement to lock said ram carrier means; and

(e) means for unlocking comprising cylinder liner means mounted in said cylinder and enclosing said piston of said ram carrier means;

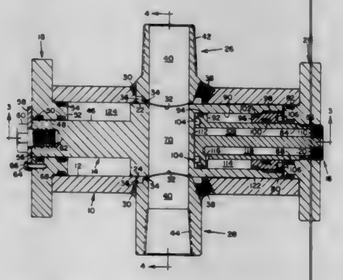
(f) said cylinder liner means including surface means responding to the opening fluid pressure to engage said body clutch plate to disable said means for urging and unlock said ram lock.

4,290,578

FAILSAFE CUTOFF VALVE FOR OIL AND GAS WELLS

Sherald B. Earp, P.O. Box 4586, Victoria, Tex. 77901; Louis L. Lutich, and Jesse W. Harris, both of 107 E. Turbo, San Antonio, Tex. 78216

Filed Sep. 1, 1978, Ser. No. 938,818
Int. Cl.³ F16K *31/143*
U.S. Cl. 251—63 **3 Claims**



1. A failsafe cutoff valve for use in production of fluid hydrocarbons from a well comprising:

cylindrical body portion having a longitudinal bore therethrough;

crossbores in said cylindrical body portion intersecting said longitudinal bore;

first flange means adapted for connecting to production tubing, said first flange means having undercuts and being secured in said crossbores and having flow passages therethrough;

piston means located in said longitudinal bore, said piston means having a transverse bore therethrough with a first position of said piston means aligning said transverse bore with said crossbores;

actuator means extending into said longitudinal bore for moving said piston means to a second position wherein a body portion of said piston means blocks flow through said crossbores;

means for retaining said piston means in said first position until desired movement by said actuator means;

second flange means for sealing ends of said cylindrical body portion; and

means for sealing around said flow passages between said cylindrical body portion and said piston means,

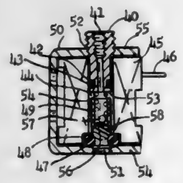
said actuation means including inlet and outlet flow passages extending through a stationary member into an internal bore in said body portion of said piston means, and stationary member slideably sealing with said internal bore, said actuation means sealably connecting through said second flange means to one end of said piston means and being adapted for remote operation to move said piston means to said second position.

4,290,579

O-RING SOLENOID VALVES

Richard Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Dec. 22, 1978, Ser. No. 972,287
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—139 **5 Claims**



1. A solenoid valve comprising:

an encapsulated bobbin coil with a central opening passing therethrough between a first top and a second bottom ends thereof provided with a small counterbore inside said bottom end of said opening to house a seal therein, said opening lined with a smooth protective coating preferably from plastics and adaptable to slidably receive a permanently secured solenoid iron in said first top end of said opening and also an axially movable plunger under said iron, adjacent said second bottom end of said opening, said plunger in valve service normally forced to rest against said seal rendering said valve normally closed,

said coil also including encapsulated and permanently secured protruding electrical terminals for an easy connection to electric circuit to actuate said valve, said plunger of elongated configuration provided with one end flat while the other end is contoured so as to provide better valve sealing when in contact with said seal of said opening bottom end, a means of sealing said iron inside said opening, a yoke of C-clamp configuration that embraces said ends of said coil for coupling said first top and said second bottom ends thereof to permanently secure said coil therebetween is provided with opposing alignment holes in the ends thereof capable of receiving said coil centrally therewith so that said seal inside said counterbore is in line with a bottom hole of said yoke and said solenoid iron in said first top end of said opening is in line with a top hole of said yoke,

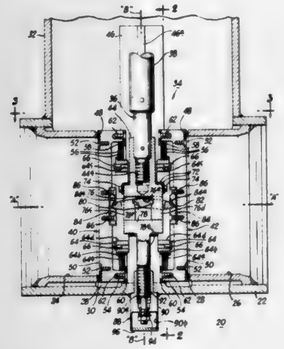
a fluid supply and exhaust means in said valve, and said iron providing a central fluid supply opening passing therethrough from a first yoke protruding top end to a second plunger facing bottom end thereof while said seal and said bottom hole of said yoke serving as a fluid exhaust opening when said solenoid coil is electrically energized to render said iron magnetic and capable of pulling said plunger against it from a first valve normally closed position to a second valve open to exhaust position for fluid communication between said fluid supply opening of said iron and said bottom exhaust via clearances and fluid passages between said plunger and said opening of said encapsulated coil for as long as said solenoid coil is electrically energized, de-energization of said coil electrically eliminates magnetic force said iron entailed and allows automatic return of said plunger to said first normally closed position by a fluid drag force flow is constantly exerting over it, in combination with said yoke holding said encapsulated coil, said iron and said plunger with seal comprising a most simple 2-way solenoid valve adaptable for use with low and moderate fluid pressures in service.

4,290,580

GATE VALVE

Harold J. Balhouse, Corona, Calif., assignor to Consolidated Controls Corporation, Bethel, Conn.

Filed Oct. 9, 1979, Ser. No. 82,967
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—169 **12 Claims**



1. A gate valve comprising:

a valve body including a flow passage having a pair of spaced apart annular valve seats defining a valve chamber therebetween;

a valve gate assembly including a base mounted for transverse movement relative to said passage, a pair of valve discs and a pair of annular spring washers for supporting said discs from said base, said annular spring washers being supported on said base concentrically with said valve discs and normally biasing said discs toward each other so that said assembly can be moved into and out of said chamber without engaging said valve seats;

actuator means for moving said assembly in a given direction from a valve open position in which said assembly is laterally disposed with respect to said valve chamber to a valve seat confronting position in which said discs are aligned with but spaced from said valve seats;

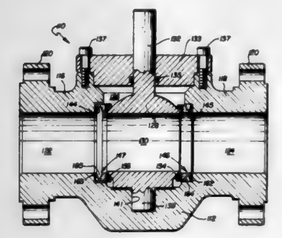
and toggle means interconnecting said actuator means and said discs and operative when said assembly is in said valve seat confronting position for moving said valve discs into engagement with said valve seats against the force of said concentric annular spring washers.

4,290,581

SEAT ASSEMBLY FOR BALL VALVES

George A. Moran, and John B. Williams, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,695
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—172 **4 Claims**



1. A valve comprising:

a valve body presenting a valve chamber and upstream and downstream flow passages on opposite sides of said valve chamber;

a valve member mounted in said valve chamber for opening and closing movement to open and close the valve to flow from the upstream to the downstream flow passage;

upstream and downstream seat pockets formed about the respective upstream and downstream flow passages adjacent the valve chamber, each seat pocket presenting a shoulder spaced from and facing generally toward the valve member;

an annular upstream valve seat mounted in said upstream seat pocket, said upstream seat including a body portion confronting the valve member for sealing therewith and a leg portion extending away from said body portion into sealing contact with said shoulder of the upstream seat pocket, said body and leg portions being flexible relative to one another, said annular upstream seat having a single annular groove about its inner peripheral surface separating said body and leg portions and having a cylindrical outer peripheral surface, said annular groove being exposed to said upstream flow passage for receiving pressure therefrom to spread the body and leg portions apart against the valve member and upstream shoulder when the upstream pressure exceeds the valve chamber pressure; and

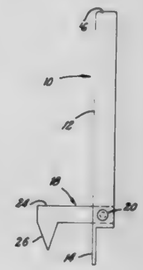
an annular downstream valve seat mounted in said downstream seat pocket, said downstream seat including a body portion confronting the valve member for sealing therewith and a leg portion extending away from the body portion into sealing contact with said shoulder of the downstream seat pocket, said body and leg portions of the downstream seat being flexible relative to one another, said annular downstream seat having a single annular groove about its outer peripheral surface separating said body and leg portions and having a cylindrical inner peripheral surface, said annular groove being exposed to said valve chamber for receiving pressure therefrom to spread apart the body and leg portions of said downstream seat against the valve member and downstream shoulder when the valve chamber pressure exceeds the downstream pressure.

4,290,582

WALL PULLER TOOL

Gene R. Eckelkamp, 316 Diener Rd., Washington, Mo. 63090

Filed Apr. 11, 1979, Ser. No. 29,673
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—15 **1 Claim**



1. A wall puller tool for pulling a skeleton construction wall having a plate member an incremental distance along a floor comprising an elongated steel handle member having a pointed end adapted to be struck at the top end into said floor at a pivot point and a laterally extending claw member pivotably connected at a first end to a lower portion of said handle and having a second end provided with a downward perpendicularly extending pointed portion to be struck into said plate, said handle being forcefully moveable away from said plate about

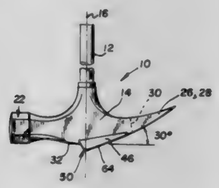
its pivoted end at the pivot point on the floor to cause said plate member to be pulled toward said pivot point, said claw member extending laterally from said pivotable connection about two to twelve inches and the top end of the handle member and the top of the second end of the claw member being provided with an impact surface adapted to be struck by a hammer, the shaft member and the claw member having a channel shaped cross-section to provide rigidity, said claw member cross-section including an integral member having opposed side walls and a top wall, said top wall providing an impact surface adapted to be struck by a hammer, and each of said side walls having a downwardly extending pointed portion at said second end and forming a bifurcated portion at said first end pivotably connected to said handle member.

4,290,583

CLAW HAMMER WITH IMPROVED FULCRUM

Michael Lombardi, 556 Princeton Ave., Bricktown, N.J. 08723

Filed Aug. 1, 1980, Ser. No. 174,717
Int. Cl.³ B25C *11/00*
U.S. Cl. 254—26 R **5 Claims**



1. A claw hammer comprising, in combination:
(a) an elongated handle having a longitudinal axis and adapted to receive a hammer head on one end thereof; and
(b) a hammer head having an opening provided therein adapted to receive and cooperate with said handle retaining said handle therein, said hammer being provided with a clawed portion extending forward of said handle longitudinal axis at an angle of between 0° and 30° from the contact surface thereof and an anvil portion extending rearward of said handle longitudinal axis, the contact surface of said hammer head between said clawed portion and said anvil portion being provided with an outwardly wedge-shaped extending portion providing a fulcrum point proximate the longitudinal axis of said handle when said clawed portion is utilized for extracting nails from a surface, the rise of said wedge-shaped extending portion being generally tangent with the surface of said clawed portion for providing a generally flat surface enabling said claw hammer to stand head down on a flat surface.

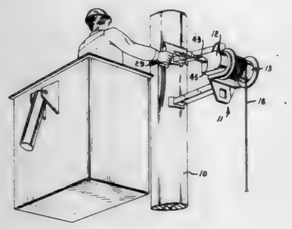
4,290,584

POLE MOUNTED WINCH

George H. Eckels, Overland Park, Kans.; Donald H. Groft, Forty Fort, Pa., and Wayne R. Stallard, Mission, Kans., assignors to Stelco Inc., Kansas City, Kans.

Filed Aug. 16, 1976, Ser. No. 714,854
Int. Cl.³ B66F *9/00*
U.S. Cl. 254—380 **9 Claims**

1. The combination of a portable winch equipped with a cable and a mounting bracket for supporting the winch from a pole,
said mounting bracket comprising a bracket support portion adapted to be removably secured to the pole and a winch coupling portion to be spaced from the pole, said coupling portion including a projection having a substantially horizontal axis and terminating in an upwardly projecting lip,
said winch having a base plate provided with an opening therethrough near one end for fitting over said lip and projection, the upper portion of the opening bearing on said projection thereby to suspend the winch from the projection with the lip preventing removal of the winch by axial movement along the projection,
said coupling portion of said bracket and base plate of said winch having cooperating abutting vertically oriented surfaces located remote from said opening which, when



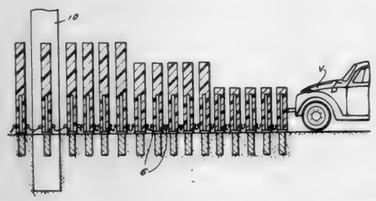
the winch is suspended on said projection, operate to prevent pivotal movement of said winch in any direction with respect to the pole except pivotal movement of said base plate and winch outwardly with the pivot axis coinciding generally with the portion of the opening bearing on the projection.

4,290,585

VEHICLE-STOPPING DEVICE FOR SAFETY BARRIERS

Ernest Glaesener, Luxembourg, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Apr. 12, 1979, Ser. No. 29,478
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816487
Int. Cl.³ E61F *15/00*
U.S. Cl. 256—13.1 **7 Claims**



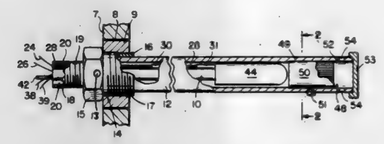
1. A safety barrier adapted to lie in the path of a vehicle directed toward a hazard and formed by an elongated array of spaced apart upright bodies extending toward said hazard, each of said bodies being provided with means enabling the shearing of an upper portion of a body from a lower portion thereof substantially at ground level, each of said bodies comprising:
a first tube received in the ground and defining said lower portion of said body;
an elongated rigid shearable link having upper and lower ends separated by a collar, said lower end having a larger diameter than said upper end and being removably received in said first tube with said collar lying substantially at ground level and facilitating the rupture of said link thereat;
a second tube positioned above said first tube and defining said upper portion of said body, said second tube being filled with a synthetic resin mass of foam formed with a space for removably receiving said upper end of said link in a spaced apart relationship with the wall of said second tube; and
a network of chains of fixed length interconnecting said upper portions of said bodies, said chains being attached to said upper portions adjacent the lower ends thereof.

4,290,586

FURNACE AND METHOD WITH SENSOR

William T. Kane, and William P. Whitney, II, both of Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,479
Int. Cl.³ C21B *7/24*
U.S. Cl. 266—80 **5 Claims**



1. A furnace for heat treatment of metal workpieces in non-oxidizing gas atmosphere containing platinum group metal contaminants, which furnace comprises
an enclosure defining a chamber adapted to contain the workpieces and the atmosphere, the enclosure including at least one wall portion having an oxygen sensor device extending therethrough to monitor the oxygen potential of the atmosphere,
the sensor device comprising a casing with one portion thereof mounted in an opening in the wall portion and a second portion of the casing protruding into the chamber,
the casing having an inlet in the second portion for the atmosphere to continuously enter and flow within the casing from the chamber,
an oxygen sensor mounted within the casing with an electroded portion of the sensor intermediate of the inlet and the one portion of the casing,
the electroded portion comprising a solid oxygen-ion-conducting electrolyte and a film electrode of platinum group metal attached on a surface of the electrolyte arranged to contact the atmosphere flowing within the casing, and
a platinum group metal contaminant getter consisting essentially of the same platinum group metal as in the electrode and arranged in the casing between the inlet and the electroded portion so that the atmosphere passes into contact therewith to effect gettering of the platinum group metal contaminants from the atmosphere.

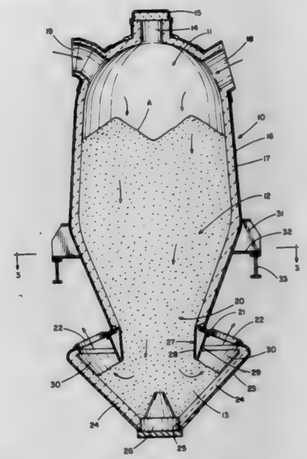
4,290,587

ORE TREATING APPARATUS

Larry A. Coccia, Elizabeth, Pa., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 4, 1979, Ser. No. 81,711
Int. Cl.³ F27B *1/20*
U.S. Cl. 266—191 **20 Claims**

1. In an apparatus for the gaseous reduction of metal oxide ore including a vessel having an outer wall defining
an upper cylindrical chamber portion
an intermediate chamber portion; and
a lower chamber portion
said upper chamber portion including a charging opening, a reduction gas inlet means and a hot gas inlet means,
said intermediate chamber portion being formed by a first frusto-conical portion of said cylindrical outer wall and having at its lower end a relatively narrower throat portion,
said lower chamber portion including a second frusto-conical wall portion at its upper end being of a greater diameter in cross-section than said upper chamber portion, and an upper wall being of frusto-conical shape, converging upwardly, inwardly and being connected to the upper portion of said second frusto-conical cylindrical wall portion and being connected to said narrower throat portion thereby enhancing cooling of said metal oxide ore by reducing gas independent of water cooling,
a plurality of gas outlets provided in said connecting upper wall to direct gas from said reactor outwardly of said vessel, and



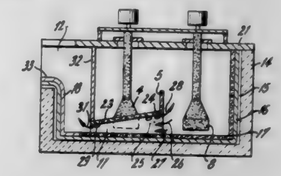
said second frusto-conical cylindrical wall portion having at its lower end a relatively narrow discharge portion.

4,290,588

APPARATUS FOR REFINING MOLTEN ALUMINUM

John F. Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,444
Int. Cl.³ C22B *9/00*
U.S. Cl. 266—225 **5 Claims**



1. In an apparatus for refining molten metal comprising, in combination:
(a) a vessel having four compartments: an inlet compartment, first and second refining compartments separated by a baffle, and an exit compartment separated from the first refining compartment by a common wall, the last three compartments sharing a common bottom surface, wherein (i) the inlet compartment provides a passageway for the molten metal running from the outside of the vessel to the top section of the first refining compartment; (ii) except as provided in (iii), the baffle is constructed in such a manner that it only permits the passage of molten metal over the top of the baffle, (iii) the bottom section of the second compartment is connected to the exit compartment by an exit tube having an opening on each end, a top wall, two side walls and a bottom wall, said exit tube (1) passing through the baffle and the first refining compartment, (2) having its bottom wall residing on the common bottom surface; and (3) having its inlet end opening into the second refining compartment and its outlet end opening into the exit compartment; and (iv) the exit compartment provides a passageway to the outside of the vessel;
(b) one rotating gas distributing device disposed at about the center of each refining compartment, said device comprising a shaft having drive means at its upper end and a rotor

fixedly attached to its lower end, the upper end being positioned in the top section of the compartment and the lower end being positioned in the bottom section of the compartment,

the improvement comprising providing an exit tube wherein (i) the top wall slants downward from inlet end to outlet end at an angle of about 5 to about 15 degrees from the horizontal and (ii) the ends of the exit tube are about flush with the baffle and the wall dividing the first refining compartment and the exit compartment.

4,290,589

TEEMING PIPE FOR USE AT THE OUTLET OF A MELT CONTAINER

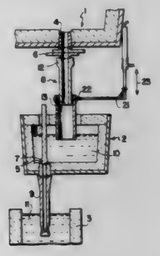
Ernst Lührsen, Bad Schwalbach, and Heinz Schermer, Eltville, both of Fed. Rep. of Germany, assignors to Didier-Werke AG., Wiesbaden, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,444

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2919880

Int. Cl.³ C21C *5/42*

U.S. Cl. 266—236 **32 Claims**



1. A refractory teeming pipe for use at the outlet of a melt container used in a teeming or casting operation, said teeming pipe comprising:

a refractory inner pipe member adapted to be connected to the outlet of a melt container;

a refractory outer pipe member telescopically slidably mounted about said inner pipe member for axial movement relative thereto between an upper retracted position and a lower extended position, said outer pipe member surrounding said inner pipe member with a narrow annular gap therebetween; and

an upper refractory seal supported by said outer pipe member adjacent the end thereof closest to the melt container, said upper refractory seal closing one end of said annular gap.

4,290,590

APPARATUS FOR SPARGING MOLTEN METAL BY GAS INJECTION

Luc Montgrain, Chicoutimi, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

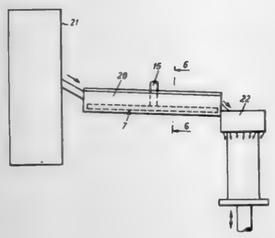
Filed Mar. 2, 1979, Ser. No. 17,165

Claims priority, application United Kingdom, Mar. 6, 1978, 8825/78

Int. Cl.³ C22B *21/06*

U.S. Cl. 266—225 **14 Claims**

1. A gas diffuser plate for supplying sparging gas to molten metal comprising a plate-like base resistant to molten metal, said base having a series of spaced protrusions on the upper surface thereof, gas supply orifice means extending upwardly from the lower surface of said plate-like base to outlets in the top surfaces of said protrusions, each of said protrusions having a minimum transverse dimension of 2–12.5 mm. at the outer ends thereof and being spaced from adjacent protrusions by a distance of at least 0.8 times said minimum transverse dimension, each protrusion having at least two opposed side surfaces steeply inclined to the plate-like base and meeting the top surface of the protrusion at an included angle of no more than 105°, constituting abrupt discontinuities between said top surface and said side surfaces in such manner that gas bubbles



growing at the outlets of said gas orifice means in contact with molten metal are restricted from lateral spread to prevent coalescence with bubbles growing at adjacent gas orifice means.

4,290,591

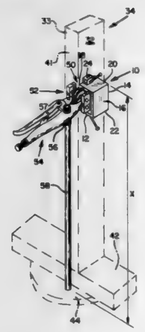
HAND TOOL FOR HOLDING ELECTRICAL OUTLET BOXES DURING INSTALLATION TO A STUD OR OTHER STRUCTURAL MEMBER

Sylvester J. Smith, Rte. E, Box 140A, Newport, Oreg. 97365

Filed Sep. 15, 1980, Ser. No. 187,436

Int. Cl.³ B25B *3/00*

U.S. Cl. 269—6 **9 Claims**



1. A hand tool for holding an electrical outlet box for installation to a stud or other structural member comprising:

box holding means for holding the electrical outlet box; and

box positioning means connected to said box holding means for spacing the front of the electrical outlet box a predetermined distance from the front of the structural member; and

in which said box holding means comprises first and second jaws each having an outlet box gripping surface, and handle means for supporting said jaws in lateral spaced relationship such that the box gripping surfaces of the jaws define a throat therebetween and a mouth through which a side panel of the electrical outlet box is insertable in one direction into the throat, said handle means comprising means for opening and closing said jaws to alternately release and grip a side panel of an electrical outlet box positioned within the throat; and

said box positioning means including stop member means supported by at least one of said jaws and positioned at least partially within the throat for limiting the depth of insertion of the side panel of the electrical outlet box into the throat and for aligning the edge of the side panel of the

electrical outlet box along a first line and thereby the positioning of the front of the electrical outlet box in a first plane containing the first line; and

a first spacing member detachably coupled to the first of said jaws and a second spacing member detachably coupled to the second of said jaws; said spacing members being positioned outside of said throat for engaging the structural member to position the first plane containing the front of the electrical outlet box parallel to a second plane containing the front surface of the structural member and for spacing the front of the electrical outlet box a predetermined distance from the front of the structural member.

4,290,593

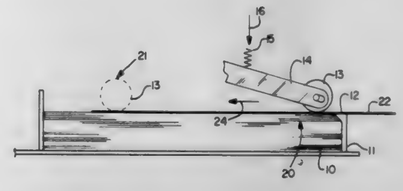
METHOD FOR SHEET FEEDING

Robert Irvine, Riverside, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 836,364, Sep. 26, 1977, abandoned. This application Jun. 27, 1979, Ser. No. 52,521

Int. Cl.³ B65H *3/02, 3/56*

U.S. Cl. 271—42 **2 Claims**



1. In a method of feeding a sheet along a longitudinal path from a stack of sheets, which stack of sheets may include relatively thin or relatively thick sheets, the steps comprising:

(a) supporting a stack of sheets;

(b) applying corner separators to laterally opposed corners of the top sheet of the stack of sheets;

(c) locating a feed roller above the stack in biased contact with said top sheet of the stack of sheets;

(d) moving the feed roller forward for a first stroke from a rest position toward the corner separators with the roller being in frictional contact with said top sheet;

(e) moving the feed roller away from the corner separators in rolling contact with said top sheet to a location further removed from the corner separators than the rest position; and

(f) moving the feed roller on a second stroke toward the corner separators in frictional contact with said sheet, said second stroke being longer than said first stroke and terminating at the rest position, the shorter length of the first stroke inducing stiffness and diminishing the buckling and jamming effects of the corner separators on relatively thin sheets so that said feed roller causes a relatively thin top sheet to separate from the corner separators on the first stroke and be partially advanced from the stack, which thin top is subsequently further advanced by the feed roller on the second stroke, and the longer length of the second feed stroke diminishing the resistance of relatively thick sheets to removal from the corner separators so that a relatively thick top sheet which is not removed from the corner separators by said feed roller on the first stroke will be removed therefrom and advanced from the stack on the second stroke.

4,290,592

APPARATUS FOR PAPER INTERLEAVING AND SEVERING

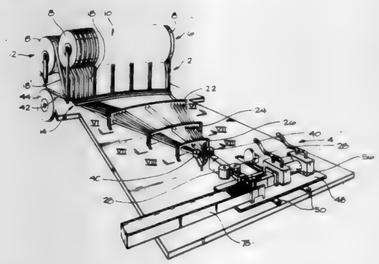
Arnold Kastner, 10220 Armand Lavergne, Montreal, Quebec, Canada

Filed Jan. 2, 1980, Ser. No. 109,094

Claims priority, application Canada, Dec. 6, 1979, 341322

Int. Cl.³ B41L *1/30*

U.S. Cl. 270—40 **8 Claims**



1. Apparatus for folding and interleaving continously moving strips of paper and cutting the interleaved strips into packets of interleaved paper sheets comprising

a plurality of rotatably mounted supply rolls of paper strip for continuously supplying strips of paper,

a series of formers and interleavers positioned sequentially outwardly from the supply rolls to fold and interleave the strips of paper,

drive means for continuously drawing strips of paper from the supply rolls and through the formers and interleavers to to form a strand of interleaved paper strips,

a knife for cutting the strand of interleaved paper strips into interleaved packets of paper sheets of predetermined length,

the knife being mounted on a movable knife plate carried by a platform,

means to reciprocably move the platform in a direction parallel to the direction of travel of the strand of interleaved paper strips a distance equal to the determined length of the packets,

means carried by the platform to reciprocably move the knife plate in a direction normal to the reciprocal movement of the platform, the knife plate advancing and the knife severing a packet from the strand during movement of the platform in the same direction and at the same speed as the moving strand, and

a pusher plate carried by and movable with the knife plate to displace a severed pocket laterally with respect to the direction of travel of the strand.

4,290,594

APPARATUS FOR STACKING SECTIONS OF DEVELOPED PHOTOGRAPHIC FILMS OR THE LIKE

Heinz Lüdemann, and Franz Ziegler, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,970

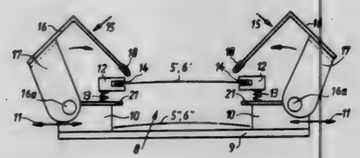
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847774

Int. Cl.³ B65H *29/44*

U.S. Cl. 271—180 **18 Claims**

1. Apparatus for stacking flexible strips, such as sections of photographic films, comprising a receptacle having an open side; a transfer mechanism including a pair of guide members flanking the open side of said receptacle, at least one of said guide members being movable relative to said receptacle so as to enable a flexible strip whose marginal portions are engaged by said guide members to advance between said guide members and into said receptacle, elastically yieldable means for biasing said one guide member to a predetermined position in

which said one guide member is ready to be engaged by an oncoming strip, and means for moving said one guide member relative to said receptacle against the opposition of said biasing means, including at least one pusher movable from a retracted



position to a second position between said guide members and into said receptacle to thereby transfer a strip from the guide members into the receptacle; and means for feeding sections seriatim into engagement with said guide members in the retracted position of said pusher.

4,290,595

ROTATABLE ADVANCE OR FORWARD GRIPPER DRUM

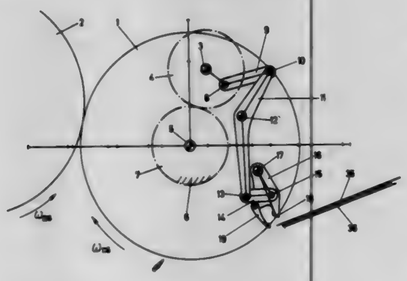
Norbert Thünker, Grossaschsen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 753,486, Dec. 22, 1976, abandoned. This application Oct. 26, 1978, Ser. No. 955,099

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2557866

Int. Cl.³ B65H 5/12, 5/14

U.S. Cl. 271—277 **4 Claims**



1. Continuously rotatable advance gripper drum assembly for sheet-fed rotary printing machines having an advance gripper drum and a gripper bridge movable relative to the drum comprising a camless transmission system including crank-driven linkage transmission means disposed on and rotatable with the drum and operatively connected to the gripper bridge for moving the gripper bridge, said linkage transmission means being mounted by a crank pivot point in the rotatable advance gripper drum, and means for driving said linkage transmission means, said driving means comprising a planetary gearing having a first gear rolling around on a stationary second gear disposed coaxially with the rotatable advance gripper drum, said first gear forming a link in said camless transmission system and being eccentrically connected articulatingly to said linkage transmission means and serving as a driving crank of said linkage transmission means.

3. Continuously rotatable advance gripper drum assembly for sheet-fed rotary printing machines having an advance gripper drum and a gripper bridge movable relative to the drum comprising crank-driven linkage transmission means disposed on and rotatable with the drum and operatively connected to the gripper bridge for moving the gripper bridge, and including a stationary machine frame, and wherein said linkage transmission means comprise a crank mounted in the machine frame, a rocking lever connected at one end thereof to the advance gripper drum, said crank being articulatingly connected to said rocking lever, and a connecting rod connecting the other end of said rocking lever to said gripper bridge, the gripper bridge being driven by said rocking lever.

4,290,596

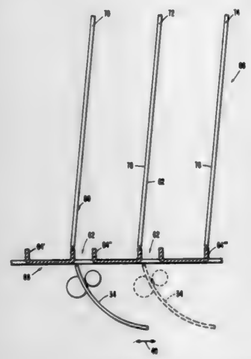
CARRIAGE BIN SYNCHRONIZATION FOR DUAL MODE COLLATOR

Gerald W. Baumann, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,464

Int. Cl.³ B65H 39/115

U.S. Cl. 271—292 **7 Claims**



1. Sorting device for collating sheets received from a sheet distributing device comprising:

a fixed module having a plurality of bin side wall members;

a movable module having a plurality of alternate sheet entry slots, and bin bottom wall members therein, said movable module being independently adjustable relative to the fixed module; and

indexing means operable to adjust the movable module so that the bin bottom wall members are movable into alternative alignments with the bin side wall members to form a plurality of bottom entry bins.

4,290,597

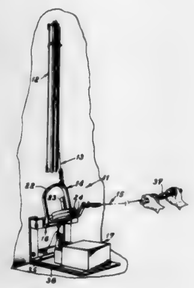
PHYSICAL EXERCISE APPARATUS

John J. Schleffendorf, 2312 Crescent Ave., Waukegan, Ill. 60085

Filed Mar. 10, 1980, Ser. No. 129,115

Int. Cl.³ A63B 21/08

U.S. Cl. 272—117 **13 Claims**



1. Physical exercise apparatus, comprising:

(a) a support bracket adapted to be fixedly secured in place;

(b) a flexible support line secured at one end to said support bracket and normally extending downwardly from the point of securement, and a free end at the opposite end of said support line;

(c) weight means secured to said free end of said support line, and supported thereby for upward swinging movement; and

(d) at least one flexible tug line secured at one end to said weight means at a point spaced from said free end of said support line for extending laterally therefrom, and having means at its other end by which a lateral tugging force may be applied thereto, whereby said weight means as it swings upwardly provides progressively greater resistance to said lateral tugging force.

4,290,598

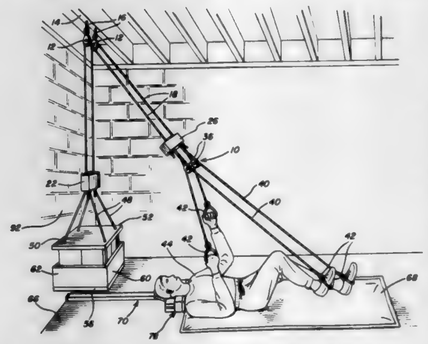
TENSION EXERCISER

Matt W. Flannery, 310 Berry Ave., Westwood, Ashland, Ky. 41101

Filed Mar. 4, 1980, Ser. No. 127,256

Int. Cl.³ A63B 21/06

U.S. Cl. 272—117 **9 Claims**



1. In combination with a horizontal first structure and a second structure elevated above said first structure, pulley means in anchored relation to said second structure, abutment means on said first structure spaced normal from an upstanding plane containing said pulley means and against which a person disposed on said first structure may abut at least one portion of his body to prevent sliding of said person relative to said first structure toward said plane, first elongated flexible tension member means having its midportion passed over said pulley means, a first end portion depending downwardly from said pulley means and a second end portion extending downwardly from said pulley means toward said first structure at an incline away from said plane, gravity weight means of predetermined selected value supported from a lower portion of said first end portion, anchor means supported from a lower portion of said second end portion, a pulley assembly supported from said anchor means, second elongated flexible tension member means having its longitudinal midportion guidingly engaged over said pulley assembly and including opposite end body limb engageable portions for engagement by arm and/or leg limbs with forces exerted by the limbs engaged therewith in opposition to the predetermined selected gravity weight value of said weight means supported from said lower portion of said first end portion of said first tension member means, said weight means including an anchor member to which said first end portion is anchored, a pair of superposed upper and lower generally horizontal panel members provided with four openings therethrough spaced about central areas of said panel members and with the openings in said panel members at least generally registered, four elongated upstanding flexible tension member sections having their lower ends slidingly received through corresponding openings in said panel members and anchored through the openings in the lower panel member, the upper ends of said tension member sections being upwardly convergent and anchored relative to said anchor member, and variable weight structure supported on said lower panel member and below the upper panel member.

4,290,599

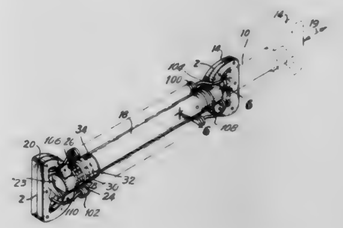
EXERCISER

Isaac Berger, c/o Ike Berger Enterprises, 263 W. 38th St., New York, N.Y. 10018, assignor to Issac Berger, New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,214

Int. Cl.³ A63B 21/00

U.S. Cl. 272—130 **14 Claims**



1. An exercising device with a pneumatic resistance element, said device comprising an inner tube, an outer tube in telescoping relationship with the inner tube, handles on the outer ends of the two tubes, the inner end of said inner tube terminating short of the outer end of said outer tube when the tubes are fully telescoped, means closing the outer end of the outer tube, means closing the inner end of the inner tube, said last-named means including flexible resilient means slidably and sealingly engaging the inner surface of the outer tube and substantially preventing the leakage of air between the periphery of said flexible resilient means and the inner surface of the outer tube, first and second check valves within and supported by said outer tube, said check valves carried by the sides of the outer tube end, being disposed between the outer end of the outer tube and said flexible resilient means, said first check valve permitting ingress of air into said outer tube but preventing egress of air from said outer tube, said second check valve preventing ingress of air into said outer tube but permitting egress of air from said outer tube, a sleeve rotatable on said outer tube, said sleeve having a plurality of openings different ones of which are selectively and alternatively coupleable with said check valves to variably control flow of air into or out of said outer tube.

4,290,600

PUSH-PULL PHYSICAL EXERCISING DEVICE

Gert F. Kölbel, Hanover, Fed. Rep. of Germany, assignor to Compret N.V., Amsterdam, Netherlands

Filed Feb. 21, 1978, Ser. No. 879,581

Claims priority, application United Kingdom, Sep. 9, 1977, 37820/77

Int. Cl.³ A63B 21/02

U.S. Cl. 272—137 **24 Claims**

1. A physical exerciser comprising: an elongate telescopic system having ends, said system being contractibile longitudinally by the application of pressure;

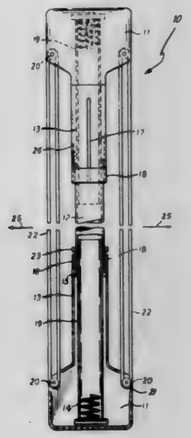
resilient biassing means arranged to resist said longitudinal contraction of said system;

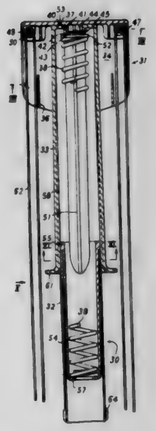
at least two flexible tension means, each said tension means extending longitudinally in at least two runs;

a guide member associated with each of said tension means, said guide member being substantially adjacent one end of said system, each tension means passing around said associated guide member, said at least two runs extending unbroken from said guide member to a location substantially adjacent the other end of said system,

said system contracting on pulling of said tension means

away from said system, the amount of said contraction for a given pulling force being selectable by selecting the





number of said runs of said tension means which are pulled.

4,290,601

WOBBLE PLATE EXERCISE DEVICE AND TOY

Robert A. Mittelstadt, 15117 Orchard Dr., Burnsville, Minn. 55337

Continuation of Ser. No. 799,544, May 23, 1977, abandoned, which is a continuation of Ser. No. 600,637, Jul. 31, 1975, abandoned. This application Apr. 2, 1979, Ser. No. 25,890

Int. Cl.[3] A63B *23/04*; A63G *1/12*

U.S. Cl. 272—146 **18 Claims**

1. An apparatus for imparting rotating and wobble motion to an operator, comprising:

a base member,

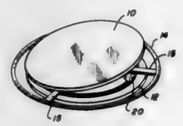
a board member disposed above said base member and adapted to support an operator standing thereon,

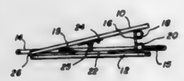
shaft means interconnecting said members for rotation and wobble motion of said board member relative to said base member about a predetermined axis of rotation,

roller means disposed between and engaging both of said members at a radial position relative to said axis and angularly separating said members,

and supporting means for said roller means,

said supporting means being mounted for rotation about said axis whereby the impartation of downward force on said board member by the foot of an operator standing thereon





causes said board member to rotate and wobble relative to said base member about said axis,

further comprising flywheel means attached to said supporting means and rotatable therewith about said axis.

4,290,602

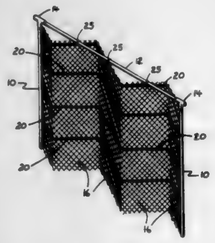
SPORTS FIELD BARRIER AND METHOD OF CONSTRUCTING SAME

Robert B. Kennedy, 8925 Huntcliff Lake Ct., Atlanta, Ga. 30338

Filed Apr. 27, 1979, Ser. No. 34,126

Int. Cl.[3] A63B *61/00*

U.S. Cl. 273—29 R **9 Claims**



1. A sports field barrier for arresting the flight of a ball moving in one direction over a field of play and for rebounding the ball in another direction generally and usually reciprocal to the one direction and with the barrier being erected uprightly along a zigzag course adjacent the field of play and comprising a pair of mutually spaced stanchions mounted uprightly along said course supporting a beam, and wire mesh fencing including a plurality of intermeshed wire coils extending generally horizontally along said zigzag course mounted to said pair of stanchions and suspended from said beam.

4,290,603

BALL EJECTING GOLF CUP

Howard H. Barnes, Box 14, Missouri City, Tex. 77459

Filed Jun. 9, 1980, Ser. No. 157,217

Int. Cl.[3] A63B *57/00*

U.S. Cl. 273—34 A **4 Claims**

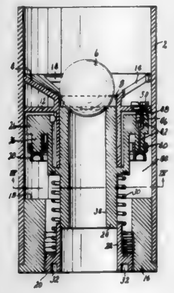
1. A golf cup comprising:

a. an open-end body member adapted to be sunk vertically into the turf of a golf green, with its open top substantially flush with the ground surface,

b. upper and lower closures mounted in said body member in vertically spaced apart relation to form a chamber therebetween, said upper closure being spaced below the top of said body member whereby to define, with said body member, an open-topped cup into which a golf ball may fall, said closures sealing against said body member and each having a central aperture opening therethrough, the diameter of the aperture of at least the upper closure being greater than that of a golf ball.

c. a plunger closely fitted in the central aperture of said closures for limited vertical sliding movement, and substantially sealing said chamber,

d. ejecting means biasing said plunger to the upper limit of its movement, a golf ball dropping into said cup coming to rest on the upper end of said plunger when the latter is at the upper limit of its movement, whereby when said plunger is then manually depressed by downward pressure on said ball and subsequently released, it will be raised rapidly by said ejecting means to throw said ball upwardly from the upper end of said body member,



e. retaining means operable to retain said plunger in its depressed position against the pressure of said ejecting means, and constituting a suction cup and anvil surface which may be moved into engaging relation by depression of said plunger, one carried by said plunger and the other by one of the closures of said body member, said suction cup and said anvil being disposed within said substantially sealed chamber of said body member, whereby to prevent the passage of dirt or other foreign material thereto, all portions of said chamber having free air communication around said plunger, whereby no motion-impeding vacuums or pressures are generated by the motion of said plunger, and

f. releasing means operable to reduce said retaining means after a pre-determined time lapse from its engagement, and constituting means operable to admit air between said suction cup and said anvil surface.

4,290,604

RACQUETBALL RACQUET HAVING A METAL FRAME MESHABLE WITH A THROAT PIECE

Franklin R. Held, San Diego, Calif., assignor to Ektelon, San Diego, Calif.

Filed Aug. 7, 1979, Ser. No. 64,367

Int. Cl.[3] A63B *49/02*

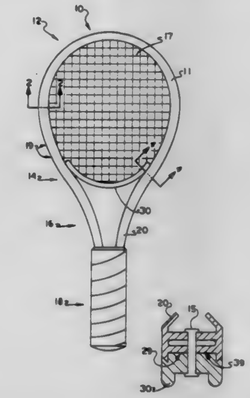
U.S. Cl. 273—73 G **4 Claims**

1. A racquet having a metallic frame with a throat piece, wherein the improvement comprises:

the frame structure having a flat inner surface having a width, an outer surface, two side portions, and two extending flanges protruding outwardly from said inner surface at said side portions; each of said extending flanges having a height and having a flat surface connected to said flat inner surface and further having an outwardly beveled surface connected to said side portion; said inner surface width greater than said extending flange height;

the combination of said flat surfaces of said extending flanges and said flat inner surface forming an orthogonal recess, having greater width than depth;

the throat piece structure having an inner surface, a flat outer surface, having a width, two side portions, and two notched recesses intruding inwardly from said throat piece outer surface at said throat piece side portions, each of said notches recesses having a depth and having a flat surface connected to said flat outer surface and further having an outwardly beveled surface connected to said side portion; said outer surface width greater than said notched recess depth; the combination of said outer surface and said notched recesses at said side portions forming an orthogonal protrusion having a greater width than height;



said orthogonal protrusion of said throat piece in meshable, mated contact with said orthogonal recess of said frame, said meshable, mated contact occurring at said flat inner frame surfaces contiguous with said flat outer throat surfaces, and at said flat recess surfaces contiguous with said flat flange surfaces;

said beveled recess surfaces contiguous with said beveled flange surfaces; whereby the combination of said throat piece structure and said frame structure resists differential stress and strain caused by bending and torsional stress and strain.

4,290,605

GAME HAVING PATHWAY TRAVERSING A PLURALITY OF INDEPENDENT OBJECT TRANSFER MECHANISMS

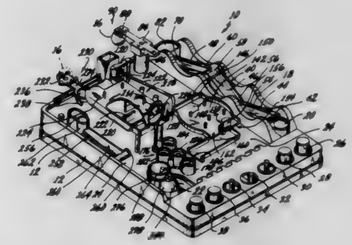
Takao Matsumoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 106,454

Claims priority, application Japan, Dec. 25, 1978, 53-180518[U]

Int. Cl.[3] A63F *7/00*; A63H *33/00*

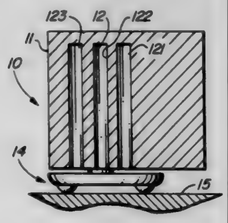
U.S. Cl. 273—110 **16 Claims**



1. A game of skill which comprises:

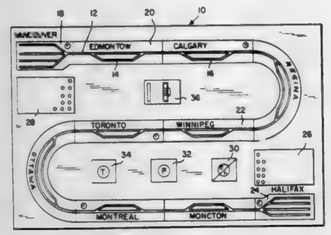
a support housing;
a plurality of independent object transfer mechanisms of at least two nonidentical types located on said housing and arranged in a sequence with respect to one another, at least a portion of each of said object transfer mechanisms movable with respect to said housing;
a plurality of control means located on said housing, each of said control means operatively connected to at least one of said object transfer mechanisms to move with respect to said housing that portion of said object transfer mechanism which is movable;
an object pathway passing through said sequence of object transfer mechanisms, said pathway having a starting end and a finishing end, said pathway including a plurality of pathway discontinuities located in said pathway between said starting end and said finishing end, said discontinuities dividing said pathway into segments so as to interpose a discontinuity between each two adjacent segments and a segment between each two consecutive discontinuities;
a spherical object capable of traveling over each of said segments of said pathway in response to movement of said movable portion of said object transfer mechanism which contains each segment, at least a portion of said discontinuities in said pathway located between two adjacent object transfer mechanisms and said spherical object capable of traversing over said discontinuity between said two adjacent segments on said two adjacent transfer mechanisms when the movable portion of said object transfer mechanism of at least one of said two adjacent object transfer mechanisms containing said two adjacent segments located on two adjacent object transfer mechanisms is realigned with respect to the other of the two adjacent object transfer mechanisms by moving said movable portion of said one of the two object transfer mechanisms;
said spherical object capable of traveling from said starting end of said pathway to said finishing end of said pathway when said spherical object successfully travels over all of said segments of said pathway and traverses all of said plurality of discontinuities in said pathway.

4,290,606
NONPREDICTABLE GAME PROJECTILE
Thomas J. Maxwell, 13252 N. 47th Pl., Phoenix, Ariz. 85032
Filed Nov. 5, 1979, Ser. No. 91,176
Int. Cl.³ A63F 7/40, 7/24
U.S. Cl. 273—128 R **6 Claims**



1. Apparatus in which a movable piece is projected across a playing surface comprising
a polyhedral projectile; and
low friction means for moving said polyhedral projectile across said playing surface coupled to said polyhedral projectile such that a vertical axis of symmetry of said low friction moving means is displaced from the mass center of said polyhedral projectile.

4,290,607
TRAVEL GAME DEVICE
Gerald F. McDonald, 169 Reveillon St., Apt. 10, Sept Iles, Quebec, G4R 3R3, Canada
Continuation-in-part of Ser. No. 692,365, Jun. 3, 1976, abandoned. This application May 17, 1979, Ser. No. 39,872
Int. Cl.³ A63F 3/00
U.S. Cl. 273—239 **4 Claims**

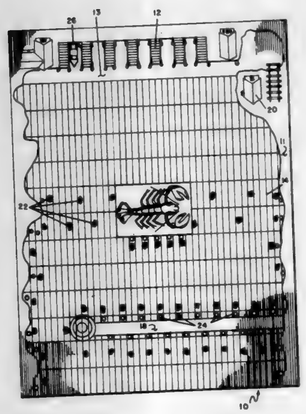


1. A game device comprising a game board having simulated map route means with starting and terminal destinations, intermediate destinations between said starting and terminal destinations marked thereon:
(1) a first set of cards, each card in said first set indicating at least one opportunity for:
(a) revenue generation,
(b) railroad car and/or locomotive drops,
(c) card trading,
(2) a second set of cards, each card of said second set indicating at least one opportunity for:
(a) train repairs without cost,
(b) advancing game pieces,
(c) revenue generation,
(3) a third set of cards, each card of said third set indicating at least one disadvantage of:
(a) road and equipment impediments to prevent the advance of a game piece,
(b) the assessment of fees,
(4) a fourth set of cards, each card of said fourth set indicating commodity hauling rights comprising a license for hauling commodities listed thereon, and the revenues to be gained from said commodity hauling rights;
(5) chance means having railroad signal light colors and indicia corresponding to said card sets for the selection of a card from said set or said railroad signal light color comprising dice means having green, yellow and red colored sides and one side each bearing indicia referring to said first set, second set and third set of cards;
(6) game piece means, the movement of said game piece being controlled by the selection of said railroad signals or one card from said sets of cards by said chance means, said chance means also operative to select one of said cards to control the play of said game.

4,290,608
LOBSTER TRAP GAME
Robert O. Brown, Nautilus Rd., Gloucester, Mass. 01930
Filed Oct. 5, 1979, Ser. No. 82,071
Int. Cl.³ A63F 3/00
U.S. Cl. 273—256 **2 Claims**

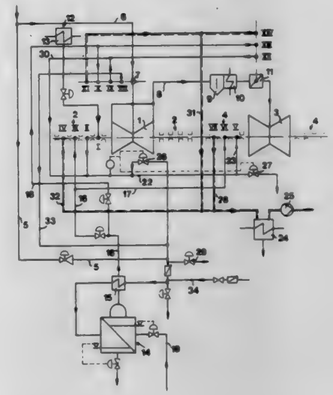
1. A game for at least two players comprising the steps of:
providing a board having a portion thereof depicting water with a grid of lines interposed thereover defining a plurality of spaces with a portion of said board further depicting around at least three edges shoreline with at least one dockage area;
providing at least one player piece in the shape of a lobster boat including means for carrying lobster trap indicia for movement on the spaces of water between said grid lines;

providing lobster trap indicia for placement on preselected of said spaces of water;
providing indication means for determining the weight of lobsters to be caught in said lobster trap indicia
providing rock indicia means on selected of said spaces of water;
providing high and low tide time indication means and means for determining the fate of a player piece positioned on a space having rock indicia means during low tide;
providing lobster trap position indicator means on preselected spaces;
providing a timer as said indication means for indicating periods of high tide and low tide, chance number selection means, and money indicia;
receiving by a player of a predetermined amount of money indicia;
determining by a player by said chance number selection means the price of lobster;
activating by a player said timing means to indicate the period of high tide;
determining by a player by said chance number selection means the number of spaces his lobster boat shall move;



moving by a player said lobster boat to said space starting on the first move from said dock;
depositing by a player a lobster trap indicia if desired upon a space having lobster trap receipt means if such space is adjacent to the space said lobster boat is on;
returning said lobster boat by a player by said chance selected number of moves to said dock after setting all of said traps;
recovering by a player all of said traps by moving in a desired direction said chance-selected number of moves; at the end of the period of high tide, each player whose lobster boat is on a space having rock indicia means thereon being assigned a fate through actuation of the fate determining means;
determining the weight of lobster in each trap after returning it to said dock by selecting one of said weight indication means; and
determining the price of the lobster in each trap by comparing the weight of the lobster therein and the determined price of lobster.

4,290,609
STEAM SEAL
Willy Dumont, Nussbaumen, Switzerland, assignor to BBC, Brown, Boveri & Co., Ltd., Baden, Switzerland
Filed Aug. 27, 1979, Ser. No. 70,107
Claims priority, application Switzerland, Aug. 31, 1978, 9183/78
Int. Cl.³ F16J 15/40
U.S. Cl. 277—3 **14 Claims**

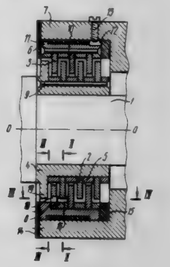


1. In a fluid seal apparatus for a member, which fluid seal apparatus includes a plurality of spaced-apart seal rings arranged about said member defining at least a first region, a second region, and a third region in communication with the atmosphere and with a low pressure chamber at a pressure below atmospheric pressure, which regions communicate with one another and which are sequentially arranged with respect to the member to be sealed, a first source of first fluid, and a second source of a second fluid, the improvement comprising:
first means for conducting said first fluid from said first source to said first region at a first pressure, said first pressure being below atmospheric pressure;
second means for conducting said second fluid from said second source to said second region at a second pressure, said second pressure being greater than atmospheric pressure;
third means for conducting a mixture of air and said second fluid from said third region to said low pressure chamber, said second fluid flowing from said second region to said third region and air flowing from the atmosphere to said third region; and
fourth means for withdrawing a mixture of said first and second fluids from said first region, said second fluid flowing from said second region to said first region, whereby pure seal steam may be supplied as said second fluid while impure seal steam may be supplied as said first fluid to prevent the leakage of said impure steam.

4,290,610
LABYRINTH SEAL
Vadim A. Lizogub, Orekhovy bulvar, 11, korpus 1, kv. 101; Alexandr P. Kushnir, Paveletskaya, naberezhnaya, 10 korpus 2, kv. 40; Alexandr M. Figatner, proezd Rusanova, 31, korpus 2, kv. 47, and Stepan E. Bondar, ulitsa Vvedenskogo, 22, korpus 2, kv. 297, all of Moscow, U.S.S.R.
Filed Feb. 28, 1980, Ser. No. 125,454
Claims priority, application U.S.S.R., Jan. 4, 1978, 2565435
Int. Cl.³ F16J 15/44
U.S. Cl. 277—13 **3 Claims**

1. A labyrinth seal for a shaft, comprising: a stationary sleeve coaxial with said shaft; a first set of ring plates rigidly fixed to said shaft; a second set of ring plates fixed to said stationary

sleeve; said ring plates of the first set and said ring plates of the second set being arranged in an alternating fashion in parallel with one another and coaxially with said shaft; said sleeve having at least one through passage; said through passage being arranged in a plane intersecting the axis of said shaft and



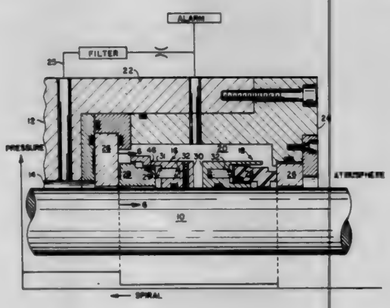
extending at an angle ranging from about −60° to about +60° to a radial plane disposed at a right angle to the axis of said shaft; said through passage terminating at one and thereof in the space between adjacent plates of said respective sets of ring plates to remove fluid from said space under the action of centrifugal force.

4,290,611

HIGH PRESSURE UPSTREAM PUMPING SEAL COMBINATION

Josef Sedy, Glenview, Ill., assignor to Crane Packing Co., Chicago, Ill.

Filed Mar. 31, 1980, Ser. No. 135,925
Int. Cl.³ F16J 15/16
U.S. Cl. 277—27 **12 Claims**



1. A mechanical end face seal combination for sealing the annular space between a housing and a rotating shaft, passing there through, said seal comprising:

(a) a first end face seal having a primary ring sealingly mounted for rotation with said shaft and a mating ring mounted in sealing engagement with said housing, said primary and secondary rings having mating, radial sealing faces;

(b) a second end face seal positioned inboard of said first seal to define a buffer zone between said first and second seals, said second seal including a primary ring constrained for rotation with said shaft and a mating ring carried by said housing, said rings having radial faces in mating sealing engagement; one of said rings having a flat circumferential dam area on a portion of the diameter of its face and spiral grooves extending for the remaining circumferential portion of its face, said grooves being positioned to pump fluid from the buffer zone of said seal across the dam face and into the inboard high pressure side of said second seal; and

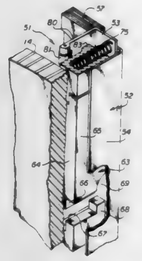
(c) said buffer zone containing a buffer fluid to be pumped inboard of said inboard seal against the pressure of the fluid to be sealed.

4,290,612

SURFACE CONFORMING THERMAL/PRESSURE SEAL

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Martin L. Stevens, Setauket, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,593
Int. Cl.³ B32B 9/04
U.S. Cl. 277—81 R **18 Claims**



1. A seal assembly for sealing a variable gap between the surface of a first element and a second element movable relative thereto comprising:

seal housing means attached to said second element for movement therewith and having a sealing surface thereon;

sealing means carried by said housing means having first and second conjugate sealing surfaces thereon, said first sealing surface for rubbing and sealing engagement with said first element surface, said second sealing surface for sliding and sealing engagement with said housing sealing surface; and

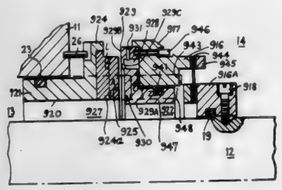
biasing means carried by said housing means for biasing said first and second conjugate sealing surfaces of said sealing means toward said sealing engagement with said first element surface and said housing sealing surface, respectively.

4,290,613

POSITIVE CLEARANCE RADIAL FACE SEALS

Peter A. J. Scott, Brighouse, England, assignor to Associated Engineering Limited, Warwickshire, England

Filed Sep. 20, 1979, Ser. No. 77,433
Claims priority, application United Kingdom, Sep. 22, 1978, 17715/78
Int. Cl.³ F16J 15/34
U.S. Cl. 277—96.1 **16 Claims**



1. A positive clearance radial face seal characterised in that at least one of its two opposed sealing faces comprises a pressure-deflectable elastic or elastically loaded element which initially provides a substantialy planar sealing face in the radial

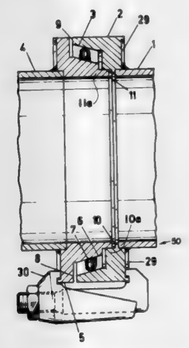
direction and which deflects, in steady state operating conditions, to provide a clearance between the sealing faces which converges in the radial direction to a minimum clearance at an annular zone between the downstream ends of the opposed sealing faces, the deflection changing with variations in the operating conditions in a manner to increase the convergence in the radial direction towards said downstream zone of the seal under the action of increased load on the seal and thereby tending to restore said steady state minimum clearance.

4,290,614

SEALING CONSTRUCTION FOR VACUUM CONNECTION

Eberhard Moll, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten, Liechtenstein

Filed Mar. 26, 1979, Ser. No. 23,782
Claims priority, application Switzerland, Mar. 30, 1978, 3390/78
Int. Cl.³ F16J 15/08
U.S. Cl. 277—205 **10 Claims**



1. A sealing construction for a vacuum connection comprising:

a first engageable member having a first conical sealing surface, an outer centering portion and a first stop surface;

a second engageable member having a second conical sealing surface juxtaposable adjacent said first conical sealing surface, an inner centering portion for receiving outer centering portion to center said first and second engageable members and a second stop surface abuttable against said first stop surface for fixing an axial relative displacement between said first and second engageable members and providing a space between said first and second conical sealing surfaces; and

an annular metallic ring having a C-shaped cross-section disposed between said first and second conical sealing surfaces with legs of said C-shaped cross-section rollable against said first and second conical sealing surfaces to produce a seal between said first and second engageable members.

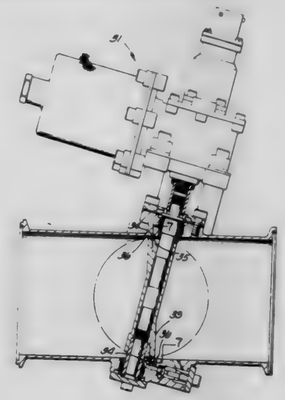
4,290,615

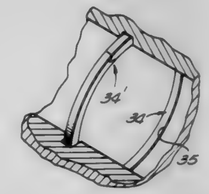
BUTTERFLY VALVE

John P. Etcheverry, Sylmar, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,499
Int. Cl.³ F16K 5/06
U.S. Cl. 277—221 **4 Claims**

1. A valve comprising: a hollow cylindrical conduit having an axis; pivot means extending through said conduit and through the axis thereof; a butterfly valve including a disc fixed to said pivot means in a manner to rotate therewith, said butterfly valve disc having a peripheral surface of revolution about said axis when said butterfly valve is closed, said conduit having a cylindrical groove therein symmetrical with said surface of revolution when said butterfly valve is closed; and a ring of rectangular cross section in said groove to seal against said surface of revolution, said groove having annular side walls, said ring being split at one point around its periphery and having mating ends at said point, one of said ends having a notch, the other of said ends having a projection to fit in said notch, said notch being V-shaped and being defined between two flat surfaces lying in planes normal to said side walls and inclined relative to each other at a predetermined angle, said two flat inclined planes intersecting in a line normal to said side walls, said projection having two surfaces inclined at said predetermined angle to form a wedge shaped body having an edge in a line normal to said side walls to fit contiguous to the bottom of said notch.



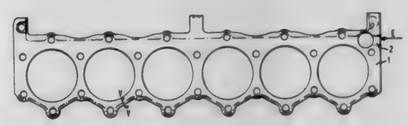


4,290,616

GASKETS

Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, County Durham, England

Filed Mar. 25, 1980, Ser. No. 133,843
Claims priority, application United Kingdom, Nov. 23, 1979, 40625/79
Int. Cl.³ F16J 15/08
U.S. Cl. 277—235 B **3 Claims**



1. A gasket comprising a pair of outer metal plates having outwardly directed corrugations formed therein and a central composite metal plate disposed between the two outer plates,

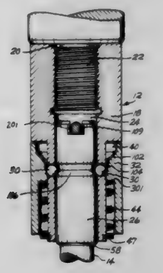
the said central composite plate comprising a central soft metal layer having hard metal layers on each surface.

4,290,617

MOTOR QUICK-CHANGE CHUCK SYSTEM FOR TOOL HAVING CYLINDRICALLY SHAPED ADAPTER PORTION WHEREIN RELATIVE LONGITUDINAL MOVEMENT BETWEEN CHUCK AND TOOL BEING DRIVEN IS ELIMINATED

Edward M. Yoshida, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 11, 1979, Ser. No. 47,537
Int. Cl.³ B23B *31/10*
U.S. Cl. 279—75 **1 Claim**



1. In combination:

a tool having cylindrically shaped adapter portion (26);

a tool-holding chuck assembly having a generally cylindrically shaped body member, said generally cylindrically shaped body member having a hollow first end portion, said hollow first end portion having an inner wall surface threaded to accept the mating threaded spindle of a stationary motor, said generally cylindrically shaped body member having a hollow second end portion concentrically disposed relative to said hollow first end portion for receiving said cylindrically shaped adapter portion in slip fit relationship therewith, said cylindrically shaped adapter portion having a transversely disposed slot (110) at one end thereof, said generally cylindrically shaped body member including a drive pin (109) disposed between said hollow first end portion and said hollow second end portion for engaging said transversely disposed slot (110) in said received cylindrically shaped adapter portion (26) and rotationally driving said tool, said drive pin (109) when also engaging said transversely disposed slop (110) further functioning to provide locking of said tool and preventing longitudinal movement;

said cylindrically shaped tool adapter portion including a groove circumferentially disposed in the outer surface of said cylindrically shaped adapter portion;

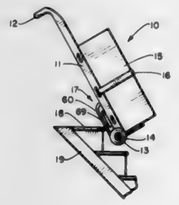
said tool-holding chuck assembly including three shperically shaped ball elements, a collar member (32) having an internal shoulder (301), a recess (40) and first (102) and second (104) ramp surface portions formed in the inner wall surface thereof, said second ramp surface portion (104) inclined with a slope of about five degrees with respect to the central axis of said collar member (32), a retaining ring (47), a spirally wound spring member (44) disposed between said retaining ring (47) and said internal shoulder (301), said collar member (32), retaining ring (47), and spirally wound spring member (44) coaxially disposed about the central axis, said collar member (32) adapted to be moved axially for compressing spirally wound spring member (44) between said retaining ring (47) and said internal shoulder (301) thereby positioning said recess (40) and first ramp surface portion 102 for receiving said three cylindrically shaped ball elements to provide release of said cylindrically shaped adapter portion of said tool from said tool holding chuck assembly.

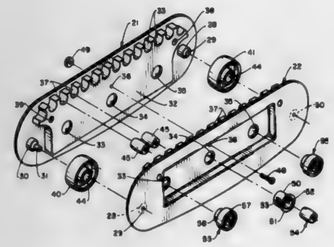
4,290,618

HAND TRUCK STAIR TREAD ENGAGING DEVICE

John C. Morton, Yuba City, Calif., assignor to Clamor Company, Marysville, Calif.

Filed Apr. 16, 1979, Ser. No. 30,459
Int. Cl.³ B62B *5/02*
U.S. Cl. 280—5.22 **12 Claims**





1. In a hand truck assembly having a wheel and handled frame, including side members, a tread engaging device secured to one of the side members of the frame, said tread engaging device including an endless V-belt for engaging the tread of a stairs and roller means thereon, the improvement which comprises:

said roller means including a plurality of barrell-shaped rollers having flat end walls and a bulging sidewall, each of said rollers being mounted in an individual cavity in said device and rotatable about their own axes, said rollers being generally linearly aligned and non-linearly movable with respect to said device, with said V-belt making full contact with more than one of said rollers only when said V-belt abuts against a generally flatsurface and said rollers, and making contact with only one of said rollers when a portion of said V-belt engages the edge of a stair and impacts against said only one of said rollers, said tread engaging device further including flange means at each of the two ends thereof to maintain said V-belt on said device.

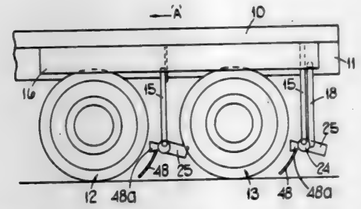
4,290,619

SPRAY INHIBITING MEANS FOR USE ON A ROAD VEHICLE

Maurice Goodall, Silverhill, Barton-under-Needwood, Burton-upon-Trent, Staffordshire, England

Filed Mar. 28, 1979, Ser. No. 24,515
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **4 Claims**

1. Spray-inhibiting means for use on a road vehicle, said means comprising a screen adapted to be mounted adjacent to a vehicle tire so as to be capable of intercepting air and water spray which, in wet conditions, will be thrown off said tire, collecting means for collecting such air and water intercepted by said screen, said collecting means including means for increasing pressure on said collected air and water spray, and discharging means for discharging the collected water from the vehicle, said discharging means being directed rearwardly of the vehicle so that vehicle velocity is subtracted from water



discharge velocity so water is discharged at such a velocity relative to the vehicle velocity that water deposited on the road surface by said discharging means will have zero or only a low velocity in a horizontal direction relative to said road surface.

4,290,620

STRUCTURE TO COUPLE TWO BICYCLES

John J. Chika, 1350 Orchard Ridge Rd., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 437,482, Jan. 28, 1974, abandoned. This application Aug. 8, 1975, Ser. No. 597,311
Int. Cl.² B62K *13/06*
U.S. Cl. 280—209 **71 Claims**



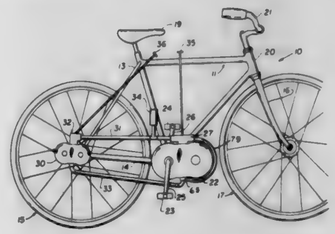
1. A torsionally resilient interconnecting structure for coupling two compatibly configured bicycles into side-by-side parallel relationship for simultaneous operation as a single four-wheel vehicle comprising: (1) a plurality of specifically configured cross members each bent to form a longer mid-portion and two shorter end-portions; said longer mid-portions positioned substantially horizontally and transversely between the coupled bicycles with said shorter end-portions being aligned with correspondingly positioned frame tubes of said bicycles and being attached to said frame tubes at two spaced apart points along each aligned section; and (2) a modified trapezium steering linkage operatively interconnecting conventional steerable front wheels of said bicycles enabling the vehicle to be efficiently steered from either one of said bicycles.

4,290,621

BICYCLES

Joseph A. Davey, 250 Beach 134th St., Belle Harbor, N.Y. 11694

Continuation-in-part of Ser. No. 961,718, Nov. 17, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,853
Int. Cl.³ B62M *19/00*
U.S. Cl. 280—216 **7 Claims**



1. In a bicycle having a frame with bifurcated members for supporting a drive wheel, a pair of rotatably supported pedal means for applying manual power to propel the bicycle, a drive wheel rotatably supported on said frame, said wheel including an axle member and a wheel rotating element, and a drive mechanism connected to said pedal means and to said wheel for rotating said wheel when manual power is applied to said pedal means to propel the bicycle, an improved drive mechanism comprising: pump means actuated by said pedal means; hydraulic motor means including a drive member adapted to engage said wheel rotating element, said motor means being supported on said axle member outwardly of the bifurcated frame members; means for detachably securing said motor means on said axle member with said drive member in engagement with said wheel rotating element; flexible hydraulic hose means connecting said pump means to said motor means for transmitting hydraulic fluid from said pump means to said motor means and returning the fluid from said motor means to said pump means; valve means for controlling the quantity of hydraulic fluid transmitted to said motor means when said pedal means are rotated at a fixed rate; and manually operated means for actuating said valve means to vary the quantity of hydraulic fluid transmitted to said motor means, the arrangement being such that the motor means drive member can be disengaged from said drive element to permit removal of said motor means from said axle member and said wheel from said frame without interrupting the hydraulic connections between said pump means and said motor means.

4,290,622

HINGE UNIT FOR ARTICULATED VEHICLES

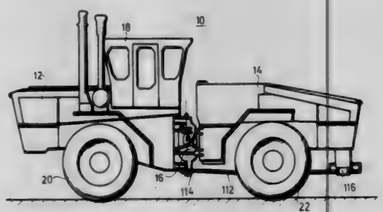
Tibor Horvath, Gyor, Hungary, assignor to Magyar Vagon- es Gepgyar, Györ, Hungary

Filed Jul. 25, 1978, Ser. No. 927,933
Claims priority, application Hungary, Aug. 15, 1977, MA 2903
Int. Cl.³ B62D *53/02*
U.S. Cl. 280—400 **4 Claims**

1. In a hinge unit for connecting a front frame structure and a rear frame structure of an articulated power vehicle permitting mutual angular displacement of said front frame structure and said rear frame structure about a vertical axis and about a horizontal axis, a front member connectable to said rear frame structure, and an intermediate member supported by a pair of bearings in said front member aligned along said vertical axis, and by a pair of bearings in said rear member aligned along said horizontal axis, the improvement in which the bearings of one of said pairs of bearings are on opposite sides of the axis of alignment of the bearings of the other pair of bearings, the front member carrying a traction bar arranged for pivotal

movements around said vertical axis and connected to said rear frame structure.

4. In a hinge unit for connecting a front frame structure and a rear frame structure of an articulated power vehicle permitting mutual angular displacement of said front frame structure and said rear frame structure about a vertical axis and about a horizontal axis, a front member connectable to said rear frame structure, and an intermediate member supported by a pair of bearings in said front member aligned along said vertical axis, and by a pair of bearings in said rear member aligned along said



horizontal axis, the improvement in which the bearings of one of said pairs of bearings are on opposite sides of the axis of alignment of the bearings of the other pair of bearings, each bearing of each pair of bearings having clearance with its associated said member in both axial directions, the clearance of each bearing in one axial direction being of different magnitude from the clearance of the bearing in the other axial direction, the clearances of each said pair of bearings being arranged in mirror image relation to each other thereby to prevent both bearings of the same pair of bearings from being loaded by axial forces simultaneously.

4,290,623

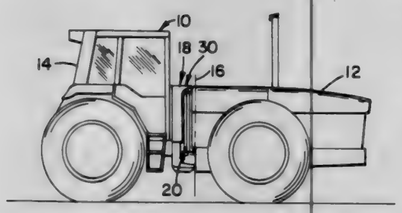
COVER FOR A TRACTOR'S ARTICULATION SPACE

George E. Bowman, Country Club Hills; David S. Faust, Bolingbrook, and David T. Kataoka, Berwyn, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1980, Ser. No. 114,434

Int. Cl.³ B62D *53/02*

U.S. Cl. 280—400 **5 Claims**



1. In an articulated tractor having front and rear sections pivotally connected on the articulation axis of said tractor, said articulation axis being in close proximity to the articulation space defined as the space between the trailing surface of said front section and the leading surface of said rear section, improvement including, in combination:

an enclosure substantially enclosing said articulation space, said enclosure including at least two flexible bellows defining an opaque area between the forward, rearward, top and bottom edges of each of said bellows, at least four bands, a plurality of elements rigidly securing one of said bands to each of said forward and rearward edges and a plurality of members rigidly secured to said bands;

a support rigidly secured to one of said front and rear sections to pivotally support said enclosure;

a mechanism pivotally connecting said enclosure and said support, said mechanism including a pair of primary pivotal connections between said mechanism and said support, and two corresponding pairs of secondary pivotal connections between said mechanism and said enclosure;

a plurality of retainers rigidly secured to said leading and trailing surfaces, said retainer being resiliently and slidably connected to said members; and

at least two stiffeners pivotally connected to said mechanism, one of said stiffeners flexibly reinforcing each of said bellows.

4,290,624

RELEASE SETTING INDICATING DEVICE FOR A SKI SAFETY BINDING

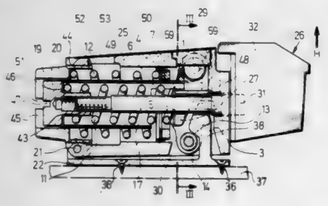
Ralf Storandt, Leonberg, Fed. Rep. of Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Leonberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 2455, Jan. 10, 1979. This application Aug. 10, 1979, Ser. No. 65,543

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835733

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—634 **25 Claims**



1. A release setting indicating device for a ski safety binding having sole clamp means retainable in a skiing position by first and second release mechanisms the release settings of which are respectively determined by first and second coil springs, wherein said first coil spring is disposed within said second coil spring and means are provided for independently adjusting the positions of respective adjustment ends of the first and second coil springs that are spatially remote from said first and second release mechanisms to adjust the release settings thereof, and wherein said indicating device is adapted to indicate the release setting of the first inner coil spring and comprises a tube surrounding said inner coil spring with play therebetween, and means constraining the tube for axial movement together with said adjustment end of the inner coil spring, said tube having an axial projection at its other end which projects beyond the adjacent end of the outer coil spring to a position in which said projection is visible from outside the binding.

4,290,625

FOLDABLE LUGGAGE CARRYING DEVICE

Alain Barriere, 30, rue Buffon, 94210 La Varenne, France

Filed Oct. 24, 1979, Ser. No. 87,781

Claims priority, application France, Feb. 12, 1979, 79 03442; Jul. 18, 1979, 79 18575

Int. Cl.³ A45C *13/38*; B62B *1/04*

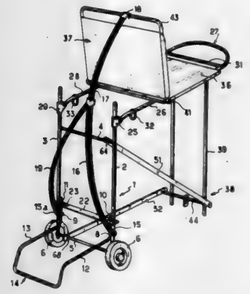
U.S. Cl. 280—654 **7 Claims**

1. A foldable luggage carrier comprising:

(a) a first frame having an upper end, a lower end, two upright sections, an upper horizontal bar generally transverse to said sections, and a lower horizontal bar generally transverse to said sections, wheels attached to said lower bar, and a baggage support;

(b) a second frame pivotably mounted to said upper end of said first frame and movable between an operative position in which said second frame forms an extension of said first frame, a storage position in which said second frame is pivoted against said first frame, and a seat position in which said second frame is generally horizontal, said second frame including a seat unit; and

(c) a movable prop journalled to said second frame and comprising means for simultaneously supporting said second frame in said generally horizontal seat position and said first frame in a generally vertical position, said prop comprising two parallel bars having lower ends, a first crossbar connecting said parallel bars at said lower ends, a



plurality of struts, each strut pivotably attached to said first crossbar at one strut end and having a hook at a second strut end, the length of said struts being selected so that when said second frame is in said seat position and said prop is in a generally vertical position with a free end of said prop resting on ground or other surface, the hook of one of said struts engages said lower horizontal bar of said first frame and the hook of another of said struts engages said upper horizontal bar of said first frame.

4,290,626

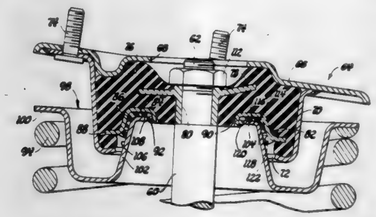
DUAL FUNCTION STRUT BEARING

Leo S. Sullivan, Jr., and Richard A. Muzechuk, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1980, Ser. No. 143,718

Int. Cl.³ B62D *17/00*

U.S. Cl. 280—692 **3 Claims**



1. In a vehicle having a sprung mass, an unsprung mass, and a strut type suspension system including relatively telescopable members disposed between said sprung and said unsprung masses for relative telescopic movement along a unit axis defined by said members, and a helical spring disposed around said telescopable members, one of said telescopable members being attached to said sprung mass and the other of said telescopable members being rotatable relative to said sprung mass, the improvement comprising, means rigidly attaching one end of said spring to one of said sprung mass and said other of said relatively telescopable members, bearing race means on the other of said sprung mass and said other of said telescopable members defining a first bearing surface for resisting force components directed parallel to said unit axis and a second bearing surface for resisting force components directed at an angle to said unit axis, retainer means disposed between the other end of said spring and said race means and including a third bearing surface parallel to said first bearing surface and a fourth bearing surface parallel to said second bearing surface, a unitary bearing member disposed between said first and said third bearing surfaces and between said second and said fourth bearing surfaces so that said spring supports said sprung mass on said unsprung mass with said bearing members accommodating relative sliding motion between itself and one of said retainer means and said bearing race means thereby to permit rotation of said other of said telescopable members and said spring relative to said sprung mass, said unitary bearing member being fabricated from a material exhibiting increasing coefficient of friction with increasing surface contact velocity so that said unitary bearing member retards rapid relative rotary oscillation between said bearing race means and said retainer means about said unit axis.

4,290,627

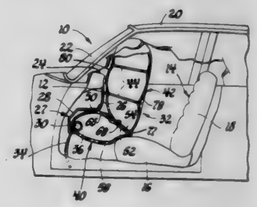
L-SHAPED INFLATABLE RESTRAINT CUSHION

Richard J. Cumming, Warren; John DeBano, Roseville; Harold J. Mertz, Jr., Harper Woods; Donald L. Nordeen, Birmingham; Vincent F. Sajewski, Sterling Heights, and John F. Zens, Algonac, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,870

Int. Cl.³ B60R *21/08*

U.S. Cl. 280—729 **3 Claims**



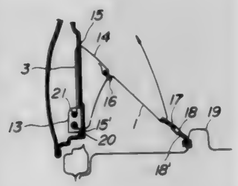
1. In combination with a vehicle body having a seat cushion and a seat back opposite a windshield and an instrument panel, the latter of which is provided with a cavity containing a gas generator, an inflatable restraint cushion for limiting forward movement of a seated occupant, said inflatable restraint cushion adapted to be connected to said gas generator in said cavity and to be deployed rearwardly relative thereto when inflated, said inflatable restraint cushion being formed from a flexible material and including a top wall and a bottom wall joined together so as to define a lower generally horizontally orientated compartment having a front end adapted to be attached to said gas generator and a rear end adapted to engage the knees of said seated occupant when said lower compartment is inflated; a front wall and a rear wall joined together to form an upper compartment having laterally spaced side portions; means connecting said front wall and said rear wall to said top wall so that said upper compartment is vertically orientated relative to said lower compartment to cover said instrument panel and said windshield when inflated by said gas generator, said top wall having at least one opening formed therein for allowing gas emanating from said gas generator to flow from said lower compartment to said upper compartment; and means located between said side portions for interconnecting said front wall to said rear wall so as to control the extent that said rear wall moves relative to said front wall and thereby minimize enveloping engagement between the torso of seated occupant and said inflatable restraint cushion when the latter is inflated.

4,290,628

PASSIVE SEAT BELT EQUIPMENT

Hiroo Okuyama, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 7, 1979, Ser. No. 101,240
Claims priority, application Japan, Dec. 20, 1978, 53-160477
Int. Cl.³ B60R 21/02
U.S. Cl. 280—803 2 Claims



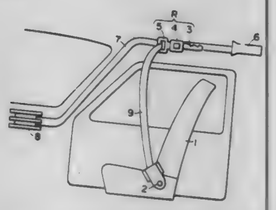
1. A passive seat belt equipment for a vehicle comprising;
a buckle to be connected to a central portion of a floor or to a seat of the vehicle,
a lap belt which is stretched between one end thereof coupled with a retractor to be installed inside of a rear bottom portion of a door of the vehicle and the other end thereof to be fixed on a rear top portion of the door through a ring having a tang which is coupled with said buckle,
an auxiliary belt which is stretched between one end thereof connected with a through ring through which said lap belt is stretched and the other end thereof coupled with a winding member to be installed inside of the door through a slit formed on the door above said retractor, and
a transmission means which is interposed between said retractor and said winding member so as to force said winding member to do reverse action against the winding and rewinding of said retractor respectively.

4,290,629

SEAT BELT EMERGENCY LOCKING DEVICE

Takeo Ueda, Fujisawa, and Shuichi Asano, Kawasaki, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,383
Claims priority, application Japan, Aug. 18, 1978, 53-101335
Int. Cl.³ B60R 21/10
U.S. Cl. 280—806 6 Claims



1. In a latching device for a vehicular seat belt for retaining the end portion of the seat belt during a sudden change in the motion of the vehicle, said latching device including a tongue portion held to the end portion of said seat belt, and a latch portion mountable within said vehicle and adapted to receive said tongue portion and retain it in response to a sudden change in the motion of the vehicle, the improvement wherein said tongue portion includes a retaining tooth and an auxiliary tooth spaced from said retaining tooth, said latch portion including inertia-sensitive means engaging said auxiliary tooth upon initially sensing a sudden change in the motion of the vehicle and retaining means thereafter actuated to engage said retaining tooth for securely holding said tongue portion whereby said inertia-sensitive means need not be capable of sustaining the full forces tending to separate said tongue portion from said latch portion.

4,290,630

SECURITY DEVICES

Peter D. Lee, Hertford, England, assignor to Governor & Company of the Bank of England, London, England

Filed Feb. 27, 1978, Ser. No. 881,502
Claims priority, application United Kingdom, Mar. 1, 1977, 8628/77
Int. Cl.³ B42D 15/00
U.S. Cl. 283—8 R 10 Claims



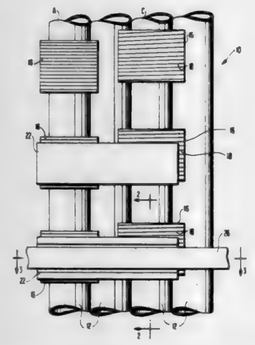
1. A currency document comprising a sheet element bearing thereon legible information and incorporating authenticating means in the form of a visible thin strip, said strip having along at least a portion of one edge of a width dimension of said strip a wave-form variation, said variation defining coded information relating to the document.

4,290,631

SUBMARINE PIPE CONSTRUCTION

J. Hilbert Anderson, York, Pa., assignor to Sea Solar Power, York, Pa.

Filed Apr. 6, 1979, Ser. No. 27,915
Int. Cl.³ F16L 39/00
U.S. Cl. 285—137 A 10 Claims



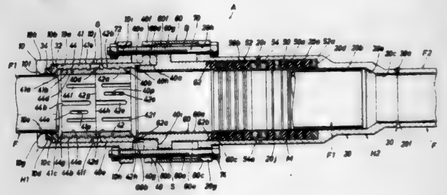
1. A large diameter pipe adapted to be submerged in a body of water in substantially a vertical direction, said pipe being constructed of a plurality of sections or segments of parallel hollow tubes or pipes arranged with their axes parallel to the axis of the pipe with the diameter of said tubes or pipes being less than the diameter of said pipe, an expansion sleeve positioned in the lower end of each tube of one section and in the upper end of each tube of the subjacent section for connecting and joining the ends of adjacent tubes, a shear sleeve segment provided on a portion of the external surface of said expansion sleeve, a shear clamp engaging said shear sleeves and tension means engaging said clamps for retaining them in engagement with said shear sleeves.

4,290,632

APPARATUS FOR CONNECTING TOGETHER FLOWLINE END PORTIONS

Luther L. Manchester, Jr., 810 Woodstock, Bellaire, Tex. 77401, and Bobby J. Reneau, 15527 Morales, Houston, Tex. 77032

Continuation of Ser. No. 1,758, Jan. 8, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 184,041
Int. Cl.³ F16L 21/06
U.S. Cl. 285—323 13 Claims



1. A grip-seal apparatus for connecting first and second flowline members for fluid flow therethrough, comprising:
a first housing having a bore therethrough for receiving the first flowline member;
a second housing having a bore therethrough adapted for partly receiving the first flowline member extending through said first housing bore;
gripper means having a bore therethrough mounted in said first housing bore for moving radially inwardly into gripping engagement with the first flowline member upon relative axial movement between said first and second housings;
sealing means mounted in said second housing bore for moving radially inwardly into sealing engagement with the first flowline member;
said gripper means including a gripper member having a flange portion mounted with said second housing;
an activating sleeve mounted partly in said gripper member and partly in said second housing bore for axial movement into engagement with said sealing means;
fastening means including a plurality of threaded shafts extending between said first and second housings, said fastening means cooperating with said flange portion of said gripper member, said activating sleeve, and said first and second housings for fastening said first and second housings together;
said gripper member being mounted for axial movement relative to said first housing for movement of said gripper means radially inwardly into gripping engagement with the first flowline member;
said activating sleeve mounted for axial movement relative to said second housing, said fastening means for moving said activating sleeve into engagement with said sealing means for moving said sealing means radially inwardly into sealing engagement with the first flowline member; and,
second housing connector means with said second housing for connecting said second housing to the second flowline member in order to establish fluid flow between the first and second flowline members.

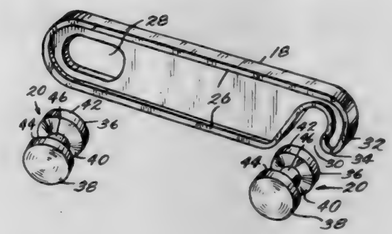
4,290,633

LOCK FOR HOUSEHOLD REFRIGERATORS

William P. Sullivan, 1400 Farrington Way, Columbia, S.C. 29210

Filed Oct. 9, 1979, Ser. No. 82,926
Int. Cl.³ E05C 5/02
U.S. Cl. 292—114 12 Claims

1. A refrigerator having a front door swingable on a vertical axis between open and closed positions and magnetic means for yieldably retaining said door in said closed position;
a pair of relatively short posts, each having a circumferential groove intermediate its ends, the end of one of said posts being adhesively secured to a flat surface on said refrigerator normal to its front with said one post projecting normally from said surface and the end of the other of said posts being adhesively secured to the edge of said door generally normal to said surface with said other post projecting normally from said edge, said posts being adjacent, generally parallel to each other and removed from said vertical axis; and
an elongated plate-like locking member of a thickness less than the width of said grooves in said posts, said member having in one end portion thereof an elongated slot extending generally lengthwise of said member, the width of said slot being less than the diameter of said posts but



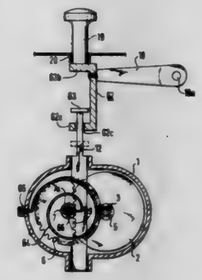
greater than the diameter of the bottom of said post grooves, said member having in its other end portion an elongated notch extending inwardly from one edge of said member to define a locking hook, the width of said notch being greater than the diameter of said bottom of said groove, said member being pivotally and slidably engaged with said one post with the side edges of said slot engaged within the groove therein and said hook being releasably engageable within the groove in said other post, whereby when said hook is so engaged said door is locked shut but when disengaged said door can be opened by a force sufficient to overcome the retaining force of said magnetic means.

4,290,634

ELECTRICALLY AND MANUALLY OPERABLE LOCKING MECHANISM AND DRIVE ARRANGEMENT FOR THE SAME

Egon Gelhard, Cologne, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Munich, Fed. Rep. of Germany

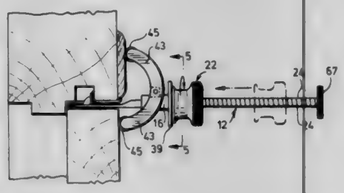
Continuation-in-part of Ser. No. 865,939, Dec. 30, 1977, which is a continuation-in-part of Ser. No. 739,818, Nov. 8, 1976, abandoned. This application May 3, 1978, Ser. No. 902,346
Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721970
Int. Cl.² E05C 13/10
U.S. Cl. 292—201 19 Claims



1. A drive arrangement comprising:

(a) an inertial mass having a center of gravity and mounted for rotation about an axis;
(b) an electric motor drivingly connected to said mass for rotating the same about said axis;
(c) a movable output member;
(d) motion transmitting means operatively interposed between said mass and said member, said motion transmitting means including
(1) delay means for transmitting motion from said mass to said member after acceleration of said mass about said axis, and
(2) disconnecting means for disconnecting said member from said mass after a predetermined motion of said member transmitted to said member by said motion transmitting means.

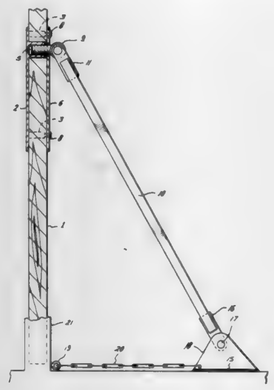
4,290,635
DOOR LOCKING DEVICE
Kenneth B. McKenzie, Weston, Canada, assignor to Port-A-Lock Incorporated, Weston, Canada
Filed Jul. 25, 1979, Ser. No. 59,894
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—290 **7 Claims**



1. A portable door lock comprising:
an elongated flat bar for insertion between a door and a door frame, the flat bar having flat sides, narrow upper and lower edges, and hook means at one end for engaging the frame,
a slide block having an internal opening for receiving said flat bar such that the slide block is slidable along the flat bar,
a brace member pivotally mounted on the slide block and supporting two spaced contact surfaces projecting in the direction of the hook means, whereby one surface can rest against the door and the other against either the frame or the wall adjacent the frame, the contact surfaces being formed by resilient plastic tubes mounted on metal posts,
and releasable means for preventing the slide block from moving along the flat bar in the direction away from the hook means.

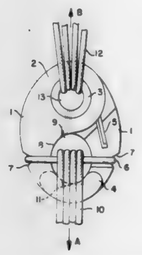
4,290,636
SECURITY DEVICE
Richard J. Steele, 2202 Harwell, Houston, Tex. 77026
Filed Jan. 29, 1980, Ser. No. 116,558
Int. Cl.³ E05C *17/36*
U.S. Cl. 292—338 **1 Claim**

1. In a security device, plates mounted on the door, an inwardly extending pivotally mounted bar mounted at one end on said plates, a base member pivotally mounted on the other end of said bar, means for maintaining said base member at a preselected distance inwardly from said door, said plates comprising an outside plate and an inside plate, the outside plate having inwardly extending, inwardly threaded sockets and the inside plate having ports to receive mounting screws and an



enlarged port to receive an eye-bolt to which the said bar is mounted.

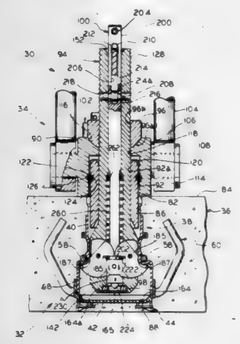
4,290,637
SEPARATION MECHANISM FOR RELEASING AN AERODYNAMIC BRAKING DEVICE FROM A LOAD
Klaus H. Fischer, Troisdorf; Heinz Kroschel, Troisdorf-Sieglar, and Heinrich Kolf, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany
Filed Aug. 6, 1979, Ser. No. 63,746
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834435
Int. Cl.³ B64D *17/38*
U.S. Cl. 294—83 A **29 Claims**



1. A separation mechanism for detaching an aerodynamic braking device from a load, the separation mechanism being adapted to be connected to at least one suspension element of the braking device and of the load and being adapted to automatically release at least one of the suspension elements upon a relief of a load thereon, characterized in that the separation mechanism is constructed as a closed system and includes at least two holding members, means are provided for connecting the two holding members to each other so as to enable relative movement therebetween, said holding members are arranged so as to form at least part of an enclosure which is closed along its entire periphery so as to define an opening for accommodating the at least one suspension element to be automatically released, means are provided for locking the holding members in a closed position defining the opening, said locking means are adapted to be released by a stress exerted on the suspension element, and in that, said holding members are constructed so that, even after a release of the locking means, the at least one suspension element to be released is held under a stress of at least one of the holding members and can be released only after

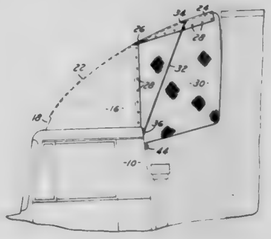
a relief of such stress, and wherein the holding members are held in the closed position by a stress applied by the suspension element after a release of the locking means and the holding members move relative to each other into an open position only upon relief of the stress with the relative movement of the holding members resulting in an interruption in the enclosure of the opening along a portion of the periphery of such enclosure thereby enabling the at least one suspension element to be released, and wherein said connecting means includes a common pivot means for mounting the two holding members so as to be pivotable with respect to each other, and in that the holding members together form the entire enclosure closed along its entire periphery defining the opening for accommodating the at least one suspension element to be released, the common pivot means including an opening for accommodating the suspension element which is not to be released.

4,290,638
APPARATUS FOR RELEASABLE CONNECTION TO AN EMBEDDED MEMBER
Lindley Manning, Reno, Nev., assignor to Superior Concrete Accessories, Inc., San Diego, Calif.
Filed Oct. 17, 1979, Ser. No. 85,913
Int. Cl.³ B66C *1/66*
U.S. Cl. 294—89 **22 Claims**



1. In apparatus for releasable connection to a member embedded in an object adjacent to a cavity which provides access to the member and communicates with an opening in an external surface of the object, said member having a plurality of lug-engagement surfaces disposed in angularly spaced relation about said cavity and each facing in a direction away from said external surface, the improvement comprising:
a housing having an inner end portion and an outer end portion and extending longitudinally therebetween, said housing being adapted for insertion of its inner end portion through said opening and into said cavity,
means defining a longitudinal bore in said housing,
means defining a plurality of lug-mounting sockets in said inner end portion, each of said sockets communicating with said bore laterally inwardly of the socket and having a laterally outer mouth disposed to face an adjacent one of said lug-engagement surfaces when said inner end portion is in said cavity,
a lug mounted in each of said sockets for reciprocal rotational movement therein between a first disposition wherein a portion of the lug protrudes laterally through the mouth of the socket into engagement with the adjacent lug-engagement surface to connect the apparatus to said member, and a second disposition wherein said lug portion is withdrawn from said engagement to release the apparatus from the member,
actuating means longitudinally movably mounted in said bore for reciprocation between first and second positions to engage said lugs and rotate them correspondingly between their first and second dispositions, said actuating means having first reaction surfaces disposed when in said first position between said lugs in engagement therewith and thereby providing resistance acting to prevent the lugs from being rotated out of their first dispositions by load forces exerted on the lug by said member, and
seating means for each lug included in said socket-defining means and providing a second reaction surface facing in a direction toward said external surface of the object and engaging the lug for transferring to said housing load forces exerted on the lug by said member.

4,290,639
WIND DEFLECTOR
Donald R. Herpel, 29466 Candlewood, Southfield, Mich. 48076
Filed Jan. 28, 1980, Ser. No. 116,038
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **7 Claims**

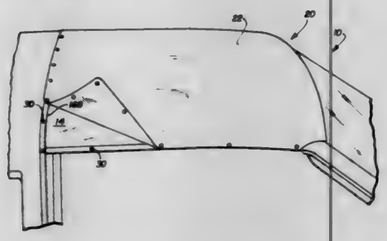


1. A device for reducing wind resistance of a road vehicle having a forward roof section and a second section having a portion positioned rearwardly and above said forward section comprising:
a pivotably mounted rigid fairing joined to the forward section with an outer surface for wind deflection and an interior portion;
said fairing pivotable between a rest position where the outer surface has no substantial wind deflection characteristics and a raised operative position where the outer portion directs air flow between the vehicle sections;
air actuating means for raising said fairing from rest to operative position during movement of the vehicle; and
said air actuating means comprising a member inflatable by a portion of the air flow passing over the forward section generated during forward movement of said vehicle where inflation of the member pivots the fairing to the operative position.

4,290,640
EXTERNAL COVER FOR AN AUTOMOBILE ROOF HAVING A MOVABLE PANEL
Gerald P. Dalton, 2520 Buena Vista, Arlington, Tex. 76010
Filed Dec. 26, 1979, Ser. No. 107,360
Int. Cl.³ B60J *1/20*
U.S. Cl. 296—95 R **13 Claims**

1. An external and supplemental cover assembly adapted for full-time use on an automobile, including those times when the automobile is being driven such that wind-related forces are present, comprising:
(a) a flexible cover adapted for selective attachment to an automobile roof so as to lie in intimate contact with said roof, and the cover having a size which is adequate to completely overlay that portion of an automobile roof having one or more movable panels, and the cover being sized to extend slightly beyond the joints between the fixed and the movable portions of the roof so as to cover those joints when the cover is installed;
(b) anchoring means adapted for selectively anchoring the leading edge of the cover to the roof near the top edge of the automobile's windshield, and said anchoring means

being effective to prevent air from being forced between the flexible cover and the automobile roof as the automobile is being driven; and



(c) mechanical connecting means adapted for selectively connecting the side and rear edges of the cover to rigid portions of the roof so as to hold the cover firmly next to the roof and thereby prevent falling rain from striking the joints between the movable and fixed portions of the roof.

4,290,641

METALLIC PANEL REINFORCING SYSTEM

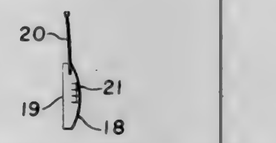
Seiroku Miyauchi, Yokohama; Yasuo Sagane, Zama, and Kazuo Irie, Yokohama, all of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,195

Claims priority, application Japan, Oct. 6, 1978, 53/122738; Dec. 6, 1978, 53/150032

Int. Cl.³ B60J *5/04*

U.S. Cl. 296—146 **5 Claims**



1. A reinforcing system for reinforcing a metallic panel, including a fiber reinforced plastic reinforcing beam extending substantially in parallel to said panel and comprising:

at least two flanges whose height extends in perpendicular to said panel, one edge of each said flange being positioned adjacent said metallic panel; and

a web plate connecting adjoining ones of each of said at least two flanges, each said web plate having a height extending parallel to said panel and being spaced from each said one edge by a distance, said distance being less than one half of said height of said at least two flanges.

4,290,642

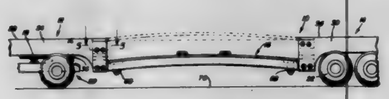
CONVERTIBLE FLAT/DROP TRAILER

Donald E. Wise, 128 E St., Apt. D, Springfield, Oreg. 97477

Filed May 13, 1980, Ser. No. 149,308

Int. Cl.³ B62D *27/02*

U.S. Cl. 296—182 **11 Claims**



1. A trailer construction including front, rear and center sections, said front section including hitch means for attachment to a towing vehicle and said rear section including ground engageable support wheels, said front and rear sections including longitudinally spaced generally horizontally aligned upper deck portions, said front section including rear vertically spaced upper and lower mounting portions, said rear section including front vertically spaced upper and lower mounting portions, said center section being horizontally elongated and defining an upper deck extending longitudinally therealong, the opposite ends of said center section including rear and front anchor means engageable with selected corresponding upper and lower mounting portions of said front and rear sections with which said anchor means are horizontally aligned upon relative longitudinal displacement between said center sections and said front and rear sections for releasable and substantially rigid anchoring to said upper and lower mounting portions, said upper deck being substantially horizontally aligned with said upper deck portions when said anchor means are anchored relative to said upper mounting portions and spaced appreciably below said upper deck portions when said anchor means are anchored relative to said lower anchor portions.

4,290,643

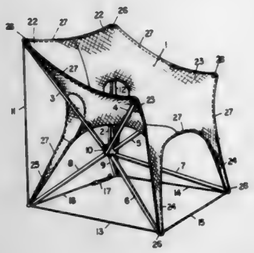
FOLDING CHAIR

William F. Logan, 3rd., 1329 Marlborough Ave., Plainfield, N.J. 07060

Filed Jan. 26, 1979, Ser. No. 6,782

Int. Cl.³ A47C *4/28*

U.S. Cl. 297—16 **3 Claims**



1. A folding chair formed of an integral support structure comprising, in combination, a central connection ring, eight compression members having inner ends pivotally connected to said central connection ring and outer ends, a first and a second of said compression members having their inner ends pivotable on said ring and extending forwardly and downwardly, a third and a fourth of said compression members having their inner ends pivotable on said ring about axes which coincide with the axes of pivotal connection to the ring of the first and second compression members, extending rearwardly and downwardly, said outer ends of said downwardly extending compression members resting on the floor, a fifth, a sixth, a seventh and an eighth of said compression members having their inner ends pivotable on said ring and extending upwardly and having outer ends generally above the outer ends of said downwardly extending compression members, the fifth and sixth compression members extending forwardly and in a common plane with the third and fourth compression members, said common plane being perpendicular to the plane of the ring, and the seventh and eighth compression members extending rearwardly, four collapsible tension members connecting the outer ends of said downwardly extending compression members and two generally vertical collapsible tension members connecting the outer ends of said rearwardly extending compression members, a seat of collapsible sheet material having a back edge connected between the outer ends of said rearwardly and upwardly extending compression members, and side edges forming arms each connected between the outer ends of an upwardly and rearwardly extending compression member and an upwardly and forwardly extending compression member, said seat being concave, collapsible means connecting the outer end of each forwardly and downwardly extending compression member to the outer end of the forwardly and upwardly extending compression member there-

above, and means disconnecting the collapsible tension member which connects the third and fourth compression members so that said compression members pivot together about said central connection ring folding said chair, and wherein the inner ends of the third and fourth compression members are each provided with respective toothed inward extensions which interengage at opposite sides of the inner ends of the third, fourth, fifth and sixth compression members to restrict pivotal movement to said common plane, whereby the ring is stabilized against tilting about diametrical axes thereof, and said collapsible means connecting the outer ends of each forwardly and downwardly extending compression member to the outer end of the forwardly and upwardly extending compression member thereabove is a forward extension of said seat, said forward extensions of said seat being connected to said outer ends of said forwardly and downwardly extending compression members.

4,290,644

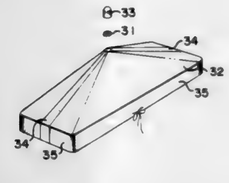
RECESS-VENTILATED COLLAPSIBLE TENT MOTORCYCLE SEAT

Jinn-Yih Hu; Kun-Si Hu, and Sue-Jan Hu, all of 3rd Fl., No. 74-2, Lan-Chu St., Taipei, Taiwan

Filed Dec. 5, 1979, Ser. No. 100,276

Int. Cl.³ B60J *7/20*; B62J *1/18*

U.S. Cl. 297—195 **1 Claim**



1. A recess ventilated collapsible tent motorcycle seat, a small wedge being mounted towards the front of said recess; in the middle of said recess, an erectable and collapsible mounting rod being provided, from which mounting rod is attached suspended a small heat-, rain- and dust-resistant tent on which tent are attached strips of relatively thicker material which can cover the entire mechanism when the tent is collapsed into the ventilation recess; which tent when erected leaves open a portion of the end of the ventilating recess to permit the flow of air, the ventilation recess having a plurality of venting holes in its bottom to permit further flow of air so as to render the tent heat resistant.

4,290,645

STACKING CHAIR

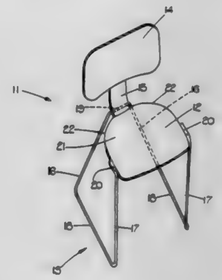
Michael Glickman, and Geoffrey A. Hollington, both of London, England, assignors to Pel Limited, Oldbury, England

Filed Jan. 17, 1980, Ser. No. 112,940

Int. Cl.³ A47C *3/04*

U.S. Cl. 297—239 **3 Claims**

1. A stacking chair comprising a seat (12), a backrest (14) connected to the rear edge of the seat, a frame for supporting the seat and including a pair of front legs (17) which are parallel to one another, and a pair of rear legs (16) which are inclined outwardly and downwardly, the rear portion (21) of the seat decreasing in width towards the rear of the chair, the seat width at the front of the said rear portion (21) being greater than the separation between the rear legs (16) at their upper ends and the maximum seat width at the rear of the said rear portion (21) being equal to the separation between the rear legs (16) at their upper ends so that a camming action occurs between the seat of one chair and the rear legs of a chair placed



downwardly thereover to thereby move the last named chair rearwardly during stacking.

4,290,646

INCLINABLE CHAIR

Hans J. Edel, Wittekindallee 17, D-4950 Minden, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,612

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 2846126

Int. Cl.³ A47C *1/02*

U.S. Cl. 297—327 **17 Claims**



1. An improved inclinable chair, comprising:

a support frame;

a seat frame pivotably supported by said support frame for inclination about a horizontal axis;

laterally movable lever means pivotably mounted on said seat frame; and

cam means comprising a laterally extending inclined slot mounted on said support frame in position for said lever means to extend through said slot, for causing said inclination of said seat frame to occur as said lever means moves with respect to said slot.

4,290,647

HINGE MOUNT ASSEMBLY FOR RECLINABLE SEAT

Wolfgang Hensel, Langenfeld; Hans-Joachim Berghof, and Heinz Werner, both of Remscheid, all of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. K.G., Remscheid, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,447

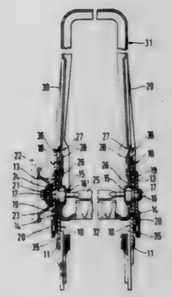
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 7830544[U]

Int. Cl.³ A47C *1/025*

U.S. Cl. 297—362 **7 Claims**

1. A hinge mount assembly for seats, particularly motor vehicle seats having a seat component and a reclinable backrest component, comprising a fixed hinge mount member secured to a lateral side of the seat component; a tiltable hinge mount member secured to the backrest component; a transverse pivot axle defining an intermediate eccentric portion and lateral concentric portions, said eccentric portion bearing on the fixed

hinge mount member and one of said concentric portions supporting the tiltable hinge mount member, an attachment frame for the backrest component secured to said tiltable hinge mount member; a position adjuster including an outer gear formed on said fixed hinge mount member and an inner gear



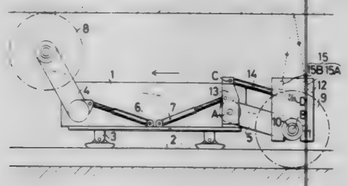
formed on said tiltable hinge mount member, said inner gear exceeding in diameter said outer gear and being in mesh therewith; and a bearing plate supported on the other concentric portion of the pivot axle and being connected to said attachment frame.

4,290,648

MINING APPARATUS

Ken Takahashi, Tokyo, and Tsunetoshi Ito, Yokohama, both of Japan, assignors to Taiheiyo Engineering Inc., Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,455
Claims priority, application Japan, Jun. 25, 1979, 54-79043
Int. Cl.³ E21C *27/24, 35/08*
U.S. Cl. 299—1 **13 Claims**



1. A mining apparatus comprising
(A) an apparatus body,
(B) a drum rotating shaft,
(C) a board connected to said rotating shaft,
(D) a linking bar pivotably connecting said apparatus body with said board,
(E) a position detection device mounted on said board comprising at least one projector and at least one receiver,
said position detection device measuring the position of said apparatus in a mine by receipt of projected signals reflected off an edge of said mine.

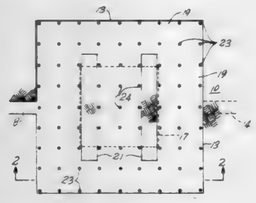
4,290,649

METHOD FOR EXPLOSIVELY EXPANDING A PILLAR FOR FORMING AN IN SITU OIL SHALE RETORT

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Nov. 7, 1979, Ser. No. 92,173
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **44 Claims**

1. A method for forming an in situ oil shale retort in a retort site in a subterranean formation containing oil shale, the in situ oil shale retort containing a fragmented permeable mass of formation particles within the boundaries of the retort comprising the steps of:
excavating at least one horizontally extending void within the boundaries of an in situ oil shale retort site leaving zones of unfragmented formation above and below such a void and leaving at least one pillar of unfragmented formation within the side boundaries of such a void for providing temporary support for overlying formation above the void;
placing explosive in such a pillar, the amount of explosive being sufficient to eject a principal portion of fragments of the pillar to at least the side boundaries of the void;



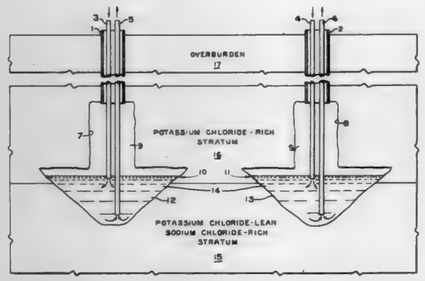
placing explosive in at least one such zone of unfragmented formation;
detonating explosive in the pillar for explosively expanding the pillar and ejecting pillar fragments towards side boundaries of the void; and
detonating explosive in such a zone of unfragmented formation for explosively expanding the zone towards the void, the time interval between detonation of explosive in the pillar and detonation of explosive in the zone being at least sufficient for a principal portion of the pillar fragments to travel to the side boundaries of the void.

4,290,650

SUBTERRANEAN CAVITY CHIMNEY DEVELOPMENT FOR CONNECTING SOLUTION MINED CAVITIES

Robert E. Thompson, Moose Jaw, Canada, assignor to PPG Industries Canada Ltd., Regina, Canada

Filed Aug. 3, 1979, Ser. No. 63,220
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—4 **13 Claims**



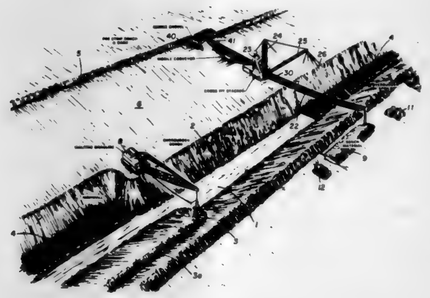
1. A method of connecting two subterranean cavities in a deposit having a potassium chloride-rich stratum that contains sodium chloride and which is disposed above a potassium chloride-lean, sodium chloride-rich stratum, which comprises the steps of:
(a) drilling adjacent boreholes into the sodium chloride-rich stratum,
(b) forming a substantially cylindrical chimney in each borehole by injecting aqueous solvent unsaturated with respect to sodium chloride and potassium chloride into the bottom of the borehole and withdrawing solvent enriched in potassium chloride and sodium chloride from the borehole at a level in the deposit that is at least the lowest level at which connection of the cavities is to be effected, said chimney having a diameter larger than the initial borehole and a volume sufficient to prevent inadvertent reduction in thickness during cavity development of the water-immiscible, non-solvent liquid blanket established in step (c),
(c) introducing water-immiscible, non-solvent liquid having a density lower than the aqueous solvent into said chimneys, thereby establishing a reservoir and blanket of said non-solvent on top of the aqueous solvent in said chimneys,
(d) introducing aqueous solvent into said chimneys below the surface of said blanket and withdrawing enriched solvent from near the bottom of the chimney, thereby expanding the chimneys laterally adjacent to the bottom of the non-solvent blanket and forming subterranean cavities,
(e) continuing to expand said cavities in the manner described in step (d) while raising the level of the non-solvent blanket in the cavities incrementally as the cavities expand laterally, thereby forming inverted cone-shaped cavities, and
(f) further expanding the cone-shaped cavities laterally while maintaining the non-solvent blanket in the adjacent cavities at about the same level until the cavities connect.

4,290,651

SURFACE MINING METHOD

Thomas I. Files, Marion, Ohio, and Donald H. Beutner, Newburgh, Ind., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 3, 1979, Ser. No. 26,638
Int. Cl.³ E21C *41/00*
U.S. Cl. 299—7 **5 Claims**



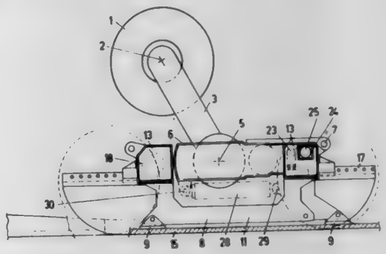
1. A method of surface mining along an elongated pit exposing a strip of the mineral seam between two opposed banks, using a cross-pit transporter having a conveying means extending completely across the pit and an overburden excavator moveable along the working bank of the pit within the normal working path of the cross-pit transporter comprising the steps of:
a. progressively excavating the topsoil layer along the working bank of the pit;
b. separately and progressively excavating the remaining overburden along said working bank using the overburden excavator and transferring the excavated overburden material and depositing it in spoils piles along the opposite bank of the pit;
c. separately transporting the topsoil directly across and over the pit using the cross-pit transporter and depositing such topsoil selectively with respect to said overburden material on the opposite bank while pivotably supporting said conveying means solely from one bank, whereby said cross-pit conveying means is occasionally pivoted to a non-interfering position to permit passing of said overburden excavator to change the relative positions of the two machines.

4,290,652

MACHINE FOR THE CUTTING OF ROCKS IN UNDERGROUND WORKS

Marie G. J. Legrand, Minderbroedersstraat 28, B - 3550 Heusden-Zolder, Belgium

Filed Apr. 1, 1980, Ser. No. 136,407
Claims priority, application Belgium, Apr. 13, 1979, 27726
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—45 **15 Claims**



1. Machine for cutting rocks in underground works, comprised of:
a slide way,
a carriage on said slide way,
means to move the carriage on said slide way,
a machine frame hinged relative to said carriage about a first axis at right angle to the lengthwise direction along which extends the slide way,
means imparting to said machine frame a swinging movement about said first axis relative to the carriage,
an arm hinged relative to the machine frame about a second axis in parallel relationship with said first axis,
means imparting to said arm a swinging movement about the second axis relative to the machine frame,
a cutting drum mounted relative to said arm, which rotates about a drum axis in parallel relationship with said first axis and second axis, and
means to rotate said cutting drum about the drum axis,
in which the sizes of the cutting drum, the arm, the machine frame and the carriage as well as the swinging motions imparted to the machine frame relative to the carriage and to the arm relative to the machine frame are so selected that the single cutting drum can be swung so far out at both ends of the slide way in the lengthwise direction thereof, that no single component extends further away in such a way that the cutting drum can cut free the machine at both ends of said slide way.

4,290,653

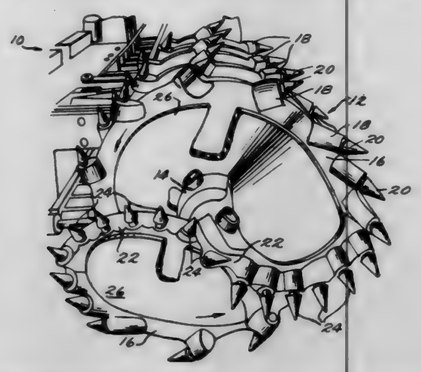
COAL MINING MACHINE CUTTER WITH NOISE SUPPRESSANT AND FLAME RESISTANT LAYER

Joseph V. Lagowski, Mabscott, W. Va., assignor to Fairchild Incorporated, Raleigh, W. Va.

Filed Jul. 30, 1979, Ser. No. 61,909
Int. Cl.³ E21C *35/04, 27/24*
U.S. Cl. 299—87 **6 Claims**

1. In a mining machine having a power driven cutter including metallic helical blade means having cutting bit means spaced along the exterior periphery thereof, the improvement which comprises said helical blade means having fixedly secured in surface-to-surface contact therewith energy absorbing layer means for dampening vibrations set up in the metal of said helical blade means when said cutter is in power operated

cutting relation so as to materially reduce the operating noise level of said cutter within the mine, said layer means being of



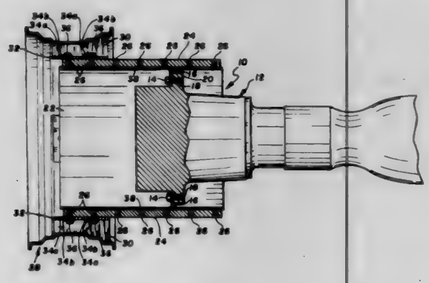
flame resistant resilient material having a flame spread index of less than 25 according to ASTM-E162.

4,290,654

WHEEL RIM MOUNTING DEVICE FOR VARIABLE WHEEL SPACING

David S. Majkrzak, West Fargo, and Dwight B. Hinkel, Fargo, both of N. Dak., assignors to Steiger Tractor, Inc., Fargo, N. Dak.

Filed Nov. 5, 1979, Ser. No. 91,589
Int. Cl.³ B60B *23/12*
U.S. Cl. 301—9 TV **12 Claims**



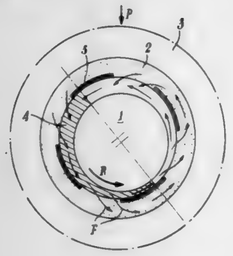
1. A wheel rim and a mounting device therefore for use with a conventional wheel hub attached to an axle of an off-the-road vehicle for making possible variations in the spacing between wheel rims, said rim and mounting device comprising:
- a cylindrical sleeve with an outer surface and an inner surface for attachment to a conventional wheel hub, said cylindrical sleeve having a plurality of rows of outwardly facing threaded apertures, the rows of apertures being positioned in a longitudinal axial direction;
- a wheel rim with an inner surface;
- a plurality of bracket means circumferentially spaced and rigidly attached to the inner surface of the wheel rim, each of said bracket means having an aperture therethrough alignable with a corresponding threaded aperture of the cylindrical sleeve,
- each of said bracket means being in the form of a U-shaped bracket having two end leg portions rigidly attached to the inner surface of the wheel rim and a base portion through which the aperture extends, the dimensions of said leg members of said bracket means being such that when no tension is exerted upon the base portions, the base portions of opposed brackets are spaced apart greater than the distance between adjacent points of the cylindrical sleeve so that the wheel rim will freely slide axially on the sleeve when the base portions are not under tension; and
- a screw threaded fastening means extending through the bracket means and threadedly engaging at least one of the threaded apertures of the cylindrical sleeve for securing the wheel rim to the cylindrical sleeve, the U-shaped brackets being sufficiently flexible that when said fastening means are tightened the base portions are drawn into engagement with the sleeve for firmly securing the rim to the sleeve.

4,290,655

SINTERED SELF LUBRICATING BEARINGS

Gennaro Apuzzo, and Gian F. Bocchini, both of Naples, Italy, assignors to Merisinter S.p.A., Arzano, Italy

Filed May 15, 1979, Ser. No. 39,569
Claims priority, application Italy, Jun. 6, 1978, 49737 A/78
Int. Cl.³ F16C *17/02, 33/10*
U.S. Cl. 308—121 **4 Claims**



1. A sintered self-lubricating bearing, comprising a sleeve of a porous material of a predetermined permeability having a central opening to receive a rotatable shaft, said opening defining an inner surface; and a plurality of areas of a relatively small thickness located on said inner surface, said areas being equally spaced from each other in a circumferential direction and axially extended along an axis of elongation of said sleeve, and having a permeability lower than that of said porous material of said sleeve, whereby said areas reduce the penetration of the lubricating oil into said porous material of said sleeve in the region of maximum pressure and also allow a free circulation of oil within the whole porous sleeve.

4,290,656

HYDRODYNAMIC BEARING WITH EXTENDED PRESSURE GRADIENT

Thomas L. Daugherty, Arnold, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1979, Ser. No. 88,728
Int. Cl.³ F16C *17/14, 33/22*
U.S. Cl. 308—121 **9 Claims**



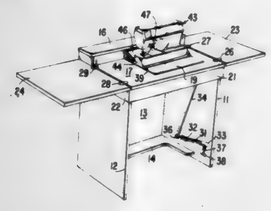
1. A water lubricated marine bearing comprising:
- a housing having a cylindrical opening therethrough and a plurality of stave pads annularly disposed about the opening for carrying a rotatable shaft extending therethrough;
- each stave pad including a rigid backing member adapted to be secured to the housing and a cap of resiliently deformable material facing inwardly defining a sliding load bearing surface for the rotatable shaft;
- each stave pad including means extending thereacross substantially from its leading edge to its trailing edge whereby the resilient cap in carrying the shaft is conformed across substantially its entire width to the curvature of the shaft and has pressure induced therein which reacts against the shaft as a force defined by a pressure profile which increases progressively across substantially the entire face of the resilient cap from leading edge to trailing edge for aiding the maintenance of a wedge of water lubricant between the cap and rotating shaft.

4,290,657

SEWING CABINET WITH VERTICALLY MOVABLE TABLE

Robert V. Haas, Edison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 6, 1980, Ser. No. 118,899
Int. Cl.³ D05B *75/00;* A47B *51/00*
U.S. Cl. 312—21 **13 Claims**



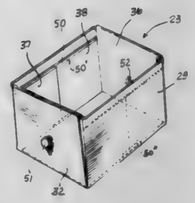
1. A cabinet structure comprising:
- first and second side support members spaced apart a fixed distance;
- a work table extending transversely between the first and second side members and movable vertically between an upper position and a lower position;
- a first bracket to support one end of the work table;
- a second bracket to support the other end of the work table;
- a first pair of support arms each comprising a first end pivotally attached to the first support member and a second end pivotally attached to the first bracket, the arms being pivotally moving substantially parallel to each other;
- a second pair of support arms substantially the same length as the first pair of arms, respectively, and each comprising a first end pivotally attached to the second support member and a second end pivotally attached to the second bracket, the arms of the second pair being pivotally movable substantially parallel to each other;
- pressure means connected to the arms of the first pair to pivot the first pair of arms between first positions in which the first bracket supports one end of the work table in its upper position and a second position in which the first bracket supports said one end of the work table in its lower position;
- connecting means connecting the arms of the first pair with the arms of the second pair to pivot the arms of the second pair simultaneously with the arms of the first pair to support the other end of the work table in corresponding upper and lower positions; and
- latching means to hold both of the brackets in a position in which the table means is elevated to its upper position.

4,290,658

DRAWER FILE CABINET

Dennis De Rosa, 267 E. Wrightwood, Glendale Heights, Ill. 60137

Filed Sep. 21, 1979, Ser. No. 77,750
Int. Cl.³ B65D *5/24*
U.S. Cl. 312—108 **2 Claims**



1. A file cabinet drawer formed from a sheet of blank material comprising,
- (a) a drawer having a rectangular shaped bottom wall,
- (b) exterior side walls connected to opposite side edges of said bottom wall by fold lines,
- (c) a front and rear wall connected to opposite end edges of said bottom wall by fold lines,
- (d) corner connecting means between said side walls and said front and rear walls adapted to be folded into facial abutment with the interior surface of said front and rear walls,
- (e) said corner connecting means including foldable flaps connected to certain end edges of said side walls and said front and rear walls with said flaps divided into equal sections by diagonal fold lines extending therethrough from the junction of certain fold lines of said front and rear walls and adapted to be folded inwardly of the drawer over said front and rear walls,
- (f) insert means connected to certain end edges of said front and rear walls and foldable inwardly of the drawer over said corner connecting means,
- (g) means provided by said insert means foldable into facial abutment with the interior surface of said side walls to form interior side wall panels when said flaps are folded inwardly of the drawer, and
- (h) means provided by said interior side wall panels comprising an exposed straight horizontally extending edge lying in a horizontal plane below the exposed edges of said exterior side walls of said drawer for supporting file carriers thereon within said drawer.

4,290,659

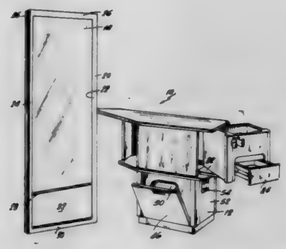
CABINET SYSTEM

Hidetoshi Yoshiyuki, Bridgewater, N.J., assignor to Takara Company, Somerset, N.J.

Filed Mar. 21, 1980, Ser. No. 132,384
Int. Cl.³ A47B *67/00;* G02B *5/08*
U.S. Cl. 312—224 **17 Claims**

1. A cabinet system comprising;
- a standing cabinet,
- a mirror standing adjacent to said cabinet, and adjustable connection means joining said cabinet to said mirror for changing the angle between said cabinetwherein said cabinet includes a body structure having a body member extending therefrom, said body member having said adjustable connection means affixed thereto, and wherein said mirror has a frame member formed with a groove in

one edge of the frame member for receiving said adjustable connection means, and wherein the angle between



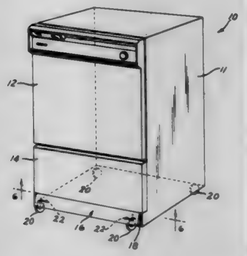
the mirror and cabinet is changed with the mirror and cabinet standing.

4,290,660

MOVABLE TOEKICK FOR CONVERTIBLE DISHWASHER

Bernard J. Brezosky, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 3, 1979, Ser. No. 99,261
Int. Cl.³ A47B 77/08, 91/00
U.S. Cl. 312—253 **11 Claims**



1. A movable toekick arrangement for a domestic appliance having a cabinet, and an access door at the front of the cabinet, said arrangement comprising:

support members mounted to the cabinet near the front thereof and rotatable between a forward position and a rearward position, in the forward position said support members intersecting the vertical plane of the front of the cabinet;

a toekick panel movably mounted to the cabinet at the lower front thereof for pivotal movement between a first position generally in the frontal plane of the cabinet and a second position projecting outwardly and upwardly from the cabinet at an angle to the frontal plane, said panel being operative to substantially hide said support members from view;

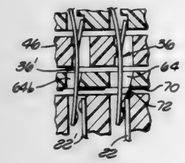
said support members being operative to engage said toekick panel in its first position and to pivotally move said toekick panel to its second position as said support members rotate from their rearward position to their forward position.

4,290,661

PROGRAMMABLE ELECTRICAL CONNECTOR

Edgar Burns, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,329
Int. Cl.³ H01R 25/00
U.S. Cl. 339—18 R **15 Claims**



1. An electrical connector comprising:

a first connector member having a first set of movable contacts therein;

a second connector member having a second set of fixed contacts therein, each contact in said second set being associated with one of the contacts in said first set;

the associated contacts of said first and second sets of contacts being positioned laterally adjacent to but spaced from each other when said connector members are initially mated;

means for laterally shifting said first set of contacts in tandem in a direction to engage said second set of contacts, said associated contacts, if engaged, providing predetermined electrical paths through the connector;

a program plate mounted between said first and second connector members having apertures therein through which said movable contacts extend; and

said program plate embodying means for controlling the electrical paths through the associated contacts of said first and second sets of contacts upon activation of said contact shifting means.

4,290,662

CONNECTOR ASSEMBLY WITH VISUAL, TACTILE AND AUDIBLE INDICATION

Joseph A. Storcel, North Riverside, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

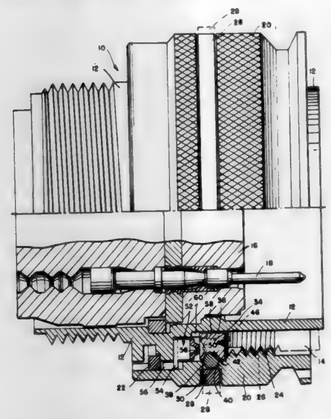
Filed Jul. 11, 1979, Ser. No. 56,663
Int. Cl.³ H01R 4/30
U.S. Cl. 339—89 M **35 Claims**

1. In a connector assembly which includes first and second connector members adapted for mating engagement;

a coupling member for drawing said connector members into mating engagement; and

indicating means associated with said coupling member and at least one of said connector members for movement between a first non-indicating position and a second indicating position in response to a predetermined positional

relationship of said connector members, said indicating means when in one of said positions being disposed outside



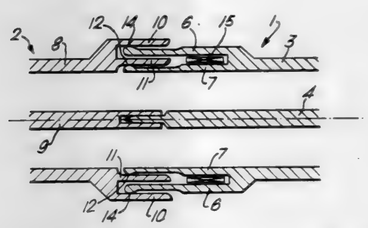
of and substantially entirely surrounding the peripheral bounds of the coupling member.

4,290,663

IN HIGH FREQUENCY SCREENING OF ELECTRICAL SYSTEMS

Eliot P. Fowler, Tolpuddle, and John R. Taylor, Wool, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 23, 1979, Ser. No. 87,480
Int. Cl.³ H01R 13/648
U.S. Cl. 339—143 R **8 Claims**



4. A method of electrically connecting the outer conductor of a screened co-axial cable to a co-axial connector or to a terminal, the method comprising making at least two connections between the outer conductor of the cable and the connector or component terminal and interposing between said at least two connections a magnetic toroid for reducing the magnetic reluctance between said at least two connections.

4,290,664

MULTIPLE OUTLET TELEPHONE LINE ADAPTER

Robert W. Davis, New Hope, Minn., and Paul D. Tracy, Lawrenceville, Ill., assignors to Communications Systems, Inc., Hector, Minn.

Filed Sep. 28, 1979, Ser. No. 80,154
Int. Cl.³ H01R 13/506
U.S. Cl. 339—156 R **5 Claims**

1. A bridge adaper assembly for a communication system having a plurality of communication line sets, each consisting of a plurality of conductors comprising:

a housing comprising upper and lower identical halves having first and second generally rectangular major surfaces generally parallel to one another, first and second generally rectangular side walls, and first and second generally rectangular end walls, the upper half comprising the first major surface and half of the first and second side walls and half of the first and second end walls, and the lower half comprising the second major surface and half of the first and second side walls and half of the first and second end walls;

the openings in the first and second side walls and the first and second end walls each having an opening defined therein and each opening being formed partially in the upper half and partially in the lower half of the housing;

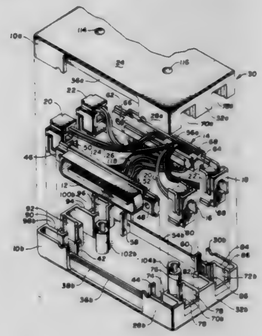
first multiple contact connector means mounted in an opening in the first side wall and having contacts for connection to more than one communication line set;

second multiple contact connector means mounted in an opening in the second side wall and having contacts for connection to more than one communication line set;

said first and second multiple contact connector means having flanges on the edges thereof, and being retained in the respective openings in either of two positions, each rotated 180° from the other position;

first and second modular connector means each having flanges on the edges thereof and each modular connector means being coupled to contacts for one communication line set of the multiple contact connector means;

first inner walls within the housing halves and proximate the opening in the first end wall, the first inner walls defining



a first pocket for slidably receiving and holding the first modular connector means;

second inner walls within the housing halves and proximate the opening in the second end wall, the second inner walls defining a second pocket for slidably receiving and holding the second modular connector means;

snap lock means for connecting together the top and bottom halves of the housing comprising first and second posts projecting from an inner surface of the first major surface, the first and second posts each having a lip and groove proximate their free ends, third and fourth connecting posts projecting from an inner surface of the second major surface, the third and fourth posts each having a lip and groove proximate their free ends, wherein the first and second posts and the third and fourth posts are positioned within the housing so that the lip and groove of the first post cooperate with the lip and groove of the third post, and the lip and the groove of the second post cooperate with the lip and groove of the fourth post to connect and hold together the upper and lower halves of the housing; and

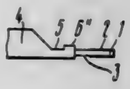
conductor means within the housing for connecting a plurality of communication line sets between the first and second multiple contact connector means, said conductor means having sufficient length to permit one of the multiple contact connector means to be rotated between its two positions.

4,290,665

METHOD OF MANUFACTURING A CONTACT CLIP

Valery A. Krasnov, Profsojuznaya ulitsa, 79, korpus 5, kv. 100; Yakov A. Klovsky, Scherbakovskaya ulitsa, 7, kv. 44.; Igor V. Dubov, 6 Parkovaya, 13, kv. 76.; Arkady V. Shtern, Veshnyakovskaya ulitsa, 27, korpus 3, kv. 130, all of Moscow; Viktor L. Vyatkin, poselok Tovarkovsky, ulitsa Kirova, 5, kv. 2., Bogoroditsk Tulskoi oblasti, and Lev A. Shavelzon, ulitsa Junykh Lenintsev, 95/13, korpus 1, kv. 24, Moscow, all of U.S.S.R.

Filed Sep. 25, 1979, Ser. No. 78,902
Int. Cl.³ H01R 11/08, 43/02
U.S. Cl. 339—276 T **4 Claims**



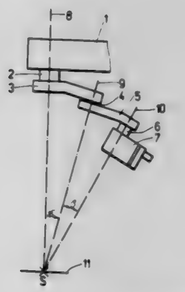
1. A process for manufacturing a contact clip, comprising the steps of:
- providing an aluminum body part having a planar end surface;
- providing an initially separate copper-clad aluminum lug part having a copper-free planar end surface adapted to abut the planar end surface of said body part;
- at least one of said parts having a projection adjacent the planar end surface thereof;
- positioning said parts with said end surfaces in mutual abutment; and
- butt welding said parts together at said end surfaces, so that said projection flows to provide filler material for the weld.

4,290,666

JOINT FOR AN OBSERVATION DEVICE

Reinhard Rüdel, 8, Hermann-Matern-Strasse, JENA-Lobeda, District of Gera, German Democratic Rep.

Filed Dec. 11, 1979, Ser. No. 96,303
Claims priority, application German Democratic Rep., Nov. 24, 1928, 209288
Int. Cl.³ G02B 7/24, 23/16
U.S. Cl. 350—85 **3 Claims**



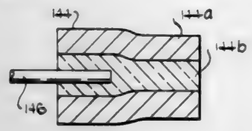
1. A joint for an observation device comprising
- a device mount,
- at least two joint members,
- an observation device,
- a first pivot, a second pivot and a third pivot,
  - said first pivot having a non-displaceable axis of rotation substantially at right angles relative to the object plane,
  - said second pivot having a first displaceable axis of rotation,
  - said third pivot having a second displaceable axis of rotation,
  - said first pivot seating for rotation one of the two joint members via one end portion of the latter relative to said mount,
  - said second pivot seating for rotation via one end portion the other of the two joint members to the other end portion of said one joint member,
  - said third pivot seating for rotation said other joint member via the other end portion of the latter to said observation device,
  - said non-displaceable axis of rotation,
  - said first and second axis of rotation intersecting in a common point of intersection in the observation plane,
  - said non-displaceable axis of rotation and said first axis of rotation, and said first axis of rotation and said second axis of rotation, respectively, include a constant angle, and
- means for directing an observation beam within the members mentioned hereinbefore.

4,290,667

OPTICAL FIBRE TERMINATIONS AND CONNECTORS

Martin Chown, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 842,516, Oct. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 763,255, Jan. 26, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,921
Claims priority, application United Kingdom, Feb. 3, 1976, 04174/76; Oct. 19, 1976, 43319/76; Jul. 5, 1977, 28067/77
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.18 **11 Claims**



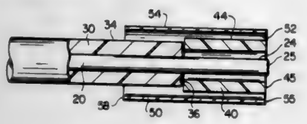
1. A graded index expanded beam optical fibre termination, including a socket having a blind hole for accepting the end of an optical fibre, which hole is aligned with the axis of a radially graded index collimating lens whose length is equal to an odd integral number of quarters of the characteristic sinusoidal wavelength of the lens, wherein said socket is formed by collapsing a sleeve of a radially graded index material about the end of a fibre to be terminated, the radially graded index material beyond the end of the fibre end forming the lens.

4,290,668

FIBER OPTIC WAVEGUIDE TERMINATION AND METHOD OF FORMING SAME

Roger H. Ellis, Atherton, and Raymond Clarke, Mt. View, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 29, 1978, Ser. No. 964,506
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.20 **24 Claims**



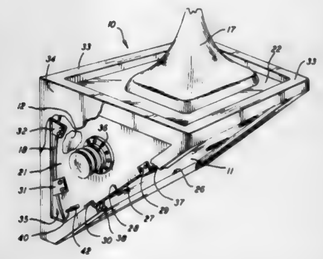
1. An optical waveguide comprising:
- a glass fiber core possessing at least one polished end surface and a substantially cylindrical exterior surface;
- a polymeric cladding disposed on and around said exterior surface of said core, said cladding having a refractive index numerically lower than the refractive index of said exterior surface of said core;
- a first polymeric sleeve having a refractive index numerically lower than the refractive index of said exterior surface of said core, and possessing an inner surface disposed around and directly bonded to a portion of said exterior surface of said core adjacent said at least one polished end surface from which the surrounding portion of said polymeric cladding has been removed, an outer surface and a pair of annular end surfaces one of which abuts the unremoved portion of said polymeric cladding and the other of which is substantially flush with said at least one polished end surface; and
- a second polymeric sleeve of greater longitudinal length than said first sleeve, said second sleeve possessing an inner surface, a portion of which is telescopically disposed around and bonded to said outer surface of said first sleeve, an outer surface and a pair of annular end surfaces, one of which is substantially flush with said at least one polished end surface and the other of which is disposed around said polymeric cladding whereby, the junction between the first sleeve and the unremoved portion of the polymeric cladding is strain relieved and the polished end surface is substantially centered and mechanically restrained from any motion relative to the outer surface of the second sleeve, all without substantial degradation of the light propagating capability of the waveguide.

4,290,669

OPTICAL DISPLAY APPARATUS

George M. Belva, Vestal, and Richard A. Mecklenborg, Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,299
Int. Cl.³ G02B 27/14
U.S. Cl. 350—174 **4 Claims**



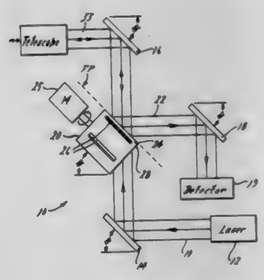
1. An optical reflector visual display system comprising:
- beamsplitter means to divide an incident image-bearing light beam in a predetermined manner,
- a reflective surface forming a predetermined angle with said beamsplitter means,
- means to form a gas-tight seal between said beamsplitter means and said reflective surface,
- end surface means forming closures at the ends of said beamsplitter means and reflective surface to define a space,
- top surface means forming a closure across the remaining opening of said beamsplitter means, said reflective surface and said end surface means,
- said top surface means being in the form of a relatively thin membrane which is effective to close the remaining opening and seal it hermetically,
- said means to form a gas-tight seal between said beamsplitter means and said reflective surface extends also around all joints between said end surface means and said top surface means,
- gas means substantially filling said space formed by said beamsplitter means, reflective surface and end surface means so that the reflective surfaces of both said beamsplitter means and said reflective surface are covered by said gas means,
- flexible expansion chamber means connected to the space defined by said beamsplitter means and the various surface means to allow for expansion and contraction of said gas means;
- CRT means positioned with its image-bearing surface adjacent the top surface means,
- contact fluid means between said image-bearing surface and said top surface means to form a substantially continuous refractive medium as a molecular, optical contact between the surface of said CRT means and said top surface means,
- said means to form a gas-tight seal including both gasket means and clamping means to draw the surfaces tightly together,
- metallic frame means about said beamsplitter means, said reflective surface, said end surface means and said top surface means to form a rigid support structure.
- separate end closure means over said frame means to cover both ends separate from said end surface means,
- rear surface means separate from said reflective surface to cover the space behind said frame means so that said frame means is substantially enclosed separately.

4,290,670

OPTICAL RECEIVER/TRANSMITTER SYSTEM EMPLOYING A COMMON OPTICAL APERTURE

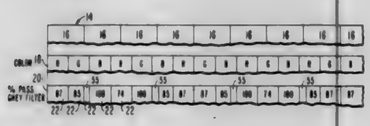
Wesley D. Gerber, Mission Diejo, Calif., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Oct. 3, 1979, Ser. No. 81,718
Int. Cl.³ G05D 25/00; G01C 3/08; G02B 7/88
U.S. Cl. 350—274 **7 Claims**



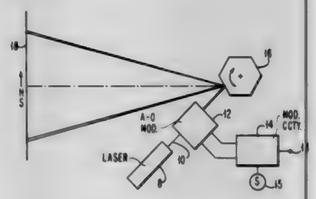
1. A system for alternately projecting and receiving electromagnetic radiation through a single optical aperture comprising:
- means for emitting a beam of electromagnetic radiation along a first optical path;
- first means for focusing said beam at a focal plane along the first optical path;
- means at said focal plane for gating said focused beam for a first predetermined period of time;
- second means for collimating said gated beam towards said optical aperture for projection thereby and for focusing radiation received by said optical aperture to said focal plane;
- said gating means includes a negative cylinder reflector element for reflecting said focused received radiation at said focal plane along a second optical path for a second predetermined period of time subsequent to said first predetermined period of time;
- third means located along said second optical path for collimating said reflected received radiation; and
- means for detecting said received radiation from said third means.

4,290,671
COLOR ENCODING FILTER
Roland N. Rhodes, Belle Mead, N.J.; Alfred C. Schroeder, Southampton, Pa., and Warren H. Moles, Flemington, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Feb. 19, 1980, Ser. No. 122,722
Int. Cl.[3] G02B 5/20; H04N 9/07
U.S. Cl. 350—317 8 Claims



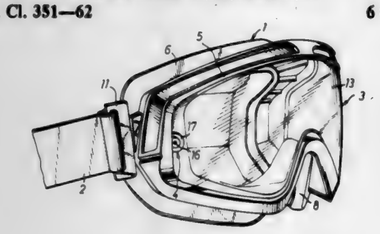
1. A filter for use with an image pick-up device having a plurality of columns of photosensors, said filter comprising: a plurality of vertical color filter stripes arranged in horizontally repeating cycles of color order and having a non-integral relationship with respect to said columns of photosensors; and means for controlling the amount of a particular color impinging upon a particular photosensor such that the fundamental and reduced undesired harmonics of the beat frequency between said columns and said stripes are generated in the resulting color signals from said photosensors.

4,290,672
PLURAL LINE ACOUSTO-OPTICALLY MODULATED LASER SCANNING SYSTEM
Rodney J. Whitefield, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 29, 1979, Ser. No. 53,466
Int. Cl.[3] G02F 1/11
U.S. Cl. 350—358 6 Claims



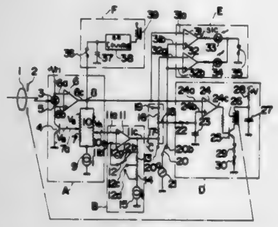
1. A plural line acousto-optically modulated scanning system of the type wherein a light beam is deflected by acousto-optical modulating apparatus in one direction, and in another direction by deflecting apparatus for creating a dot sequential raster image display in a plurality of pairs of scan lines, comprising
apparatus for generating a beam of light,
light deflecting apparatus intercepting light from said generating apparatus for scanning said raster substantially simultaneously in at least one pair of scan lines for creating said image display,
acousto-optical modulating apparatus interposed between said light generating apparatus and said light deflecting apparatus for producing a plurality of individually modulatable scanning beams,
said modulating apparatus comprising
apparatus for propagating a pair of acoustic waves in directions substantially normal to the path of said beam of light but offset by the Bragg angle and also normal with respect to each other, and
apparatus for individually modulating each of said waves in accordance with data representative of the image to be displayed.

4,290,673
SKI GOGGLES
Tamenobu Yamamoto, Higashi-Osaka, Japan, assignor to Yamamoto Bojin Megane Co., Ltd., Higashi-Osaka, Japan
Filed Jan. 29, 1980, Ser. No. 116,598
Claims priority, application Japan, May 14, 1979, 54-59277
Int. Cl.[3] G02C 11/08; A61F 9/02
U.S. Cl. 351—62 6 Claims



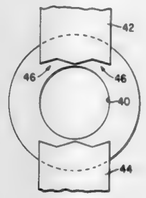
1. Ski goggles including a goggle lens comprising a pair of inner and outer lens plates and having a heat insulating interior space between the lens plates, the inner lens plate being formed with a pressure balancing air port close to an outer peripheral portion thereof, the ski goggles being characterized in that means is provided in opposed relation to the air port for preventing ingress of water into the interior space while permitting flow of air therethrough, the water ingress preventing means including a water-repellent air-permeable filter.

4,290,674
APPARATUS FOR ESTABLISHING AUTOMATIC EXPOSURE CONTROL MODES IN EXCHANGEABLE LENS CAMERA
Toshio Kobori, Sakai, and Masayoshi Sahara, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Dec. 21, 1979, Ser. No. 106,269
Claims priority, application Japan, Dec. 29, 1978, 53-163125
Int. Cl.[3] G03B 7/20, 17/18
U.S. Cl. 354—38 6 Claims



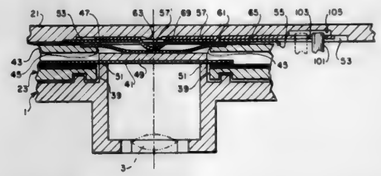
1. A lens exchangeable camera adapted for mounting an exchangeable lens having a diaphragm, a diaphragm presetting means settable to preset a diaphragm aperture size, and an aperture information transmitting means capable of transmitting respective first and second aperture information, said first aperture information representing that the diaphragm presetting means is preset at a minimum aperture size and said second aperture information representing each setting of the diaphragm presetting means other than the minimum aperture setting, said camera comprising:
a program exposure control circuit for generating signals adaptable to automatically control the diaphragm aperture size of said lens and to automatically control the shutter speed under a given program in accordance with scene brightness;
an aperture priority automatic shutter speed control circuit for automatically controlling the shutter speed in accordance with scene brightness measured through the diaphragm aperture actually stopped-down to the aperture size preset by said diaphragm presetting means; and
change-over means for selective actuation of said program exposure control circuit and said aperture priority automatic shutter speed control circuit, said change-over means actuating said program exposure control circuit when said first aperture information is transmitted, and actuating said aperture priority automatic shutter speed control circuit when said second aperture information is transmitted.

4,290,675
ANAGLYPH STEREOSCOPY
Leo Beiser, 151-77 28th Ave., Flushing, N.Y. 11354
Continuation-in-part of Ser. No. 966,054, Dec. 4, 1978, Pat. No. 4,222,653. This application Nov. 14, 1979, Ser. No. 93,979
Int. Cl.[3] G03B 35/00, 9/02
U.S. Cl. 354—112 17 Claims



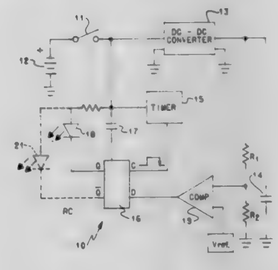
1. An anaglyph stereoscopic imaging device having a lens system, at least one aperture stop, left and right complementary color filters near said aperture stop for creating images having preselected color fringes in the defocus regions, wherein each of said complementary color filters essentially transmits one portion of the spectrum of visual frequencies and blocks the remaining frequencies, and an iris for restricting the amount of light passing through said aperture stop substantially in a vertical direction only, said iris comprising a pair of blades movable vertically relative to each other, with the iris opening being defined by edges of said blades.

4,290,676
PRESSURE MEMBER URGING MECHANISM
Nelson D. Hozman; Robert L. Reynolds, and Thomas G. Kirn, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 31,266, Apr. 18, 1979, abandoned. This application Aug. 27, 1979, Ser. No. 69,678
Int. Cl.[3] G03B 1/00, 17/00
U.S. Cl. 354—121 8 Claims



1. Mechanism for urging a pressure member against a photographic film to locate an exposure area of the film in an exposure plane, said mechanism comprising:
a strip member having first and second portions spaced from each other and a flexible urging portion between said first and second portions, said strip member being adjustable to one configuration in which said first and second portions are separated by a given distance at which said urging portion is ineffective to urge the pressure member against the film and another configuration in which said first and second portions are separated by a lesser distance at which said urging portion is bowed toward the exposure plane to urge the pressure member against the film; and
means for engaging said first portion and moving it with respect to said second portion to change the spacing between said portions for adjusting said strip member from one of said two configurations to the other.

4,290,677
APPARATUS FOR CHECKING THE OPERATIONAL STATUS OF AN ELECTRONIC STROBE UNIT'S BATTERY UNDER LOAD CONDITIONS
Hans-Peter Baumeister, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 8, 1980, Ser. No. 184,725
Int. Cl.[3] G03B 15/02
U.S. Cl. 354—127 6 Claims

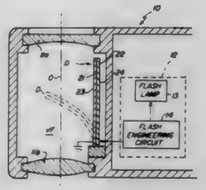


1. In a camera having a flash unit with a storage capacitor, and having a battery for charging the capacitor, apparatus for determining the charge condition of the battery during the charging of said capacitor, said apparatus comprising:
means for initiating the charging of said capacitor;
means for generating a reference voltage which is a predetermined fraction of a desired charging voltage of said capacitor;
means for measuring the charging voltage of said capacitor a predetermined time after initiation of charging, said time being a predetermined fraction of the time nominally required to charge said capacitor to its desired charging voltage;
an energizable indicator; and
means for comparing the measured voltage to the reference voltage and for energizing said indicator if the measured voltage bears a predetermined relationship to the reference voltage.

4,290,678
PIEZOELECTRIC FLASH-READY INDICATOR FOR PHOTOGRAPHIC CAMERA
Michael A. Marcus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 2, 1980, Ser. No. 182,896
Int. Cl.[3] G03B 15/02, 17/20
U.S. Cl. 354—128 12 Claims

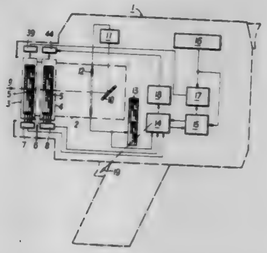
1. In a photographic camera comprising a housing, circuit means, including a charge storing element, for selectively energizing a flashlamp, such circuit means including means for charging such element to a predetermined level sufficient to ignite the flashlamp, and means for indicating to the camera user when the charge stored by the charge storing element has reached such predetermined level, the improvement wherein

said indicating means comprises a piezoelectric flexure device, operatively coupled to said charge storing element, said device



being adapted to change its shape in accordance with the level of charge stored by said charge storing element.

4,290,679
CAMERA
Peter Vockenhuber, Orges, Switzerland, assignor to Bolex International SA, Ste-Croix, Switzerland
Filed Jan. 23, 1979, Ser. No. 5,736
Claims priority, application Switzerland, Jan. 31, 1978, 1035/78
Int. Cl.³ G03B *3/08, 13/18, 17/18*
U.S. Cl. 354—196 **4 Claims**



1. In a photographic or cinematographic camera, in particular with a pancratic (zoom) objective lens and a comparator for comparison of the desired setting e.g. of the near point (punctum proximum) and of the far point (punctum remotum) of a camera space and of the actual setting e.g. of the depth of field, the desired setting being adjusted by means of presetters, the actual setting resulting from the actual setpoints of the objective lens, such as distance, diaphragm and under circumstances focal length, whereby upon differences between the desired setting and the actual setting, a signal can be released, which signal can be fed to an indicator device, and respectively, or to a control device, the improvement comprising

a comparator operatively connected to the objective lens so as to receive a first input representative of an actual value of a parameter of the actual setting of the objective lens,

a memory means including several memory sections each connected to said comparator,

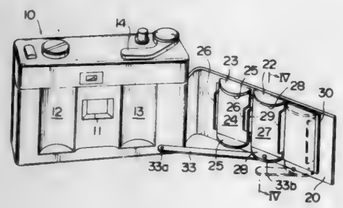
selection means connected to said memory means for transfering inputs representative of values of the actual settings of the objective lens and of the diaphragm to each of said memory sections,

said several memory sections having tabular-like fixed storage of all setpoints which are necessary for a plurality of settings and/or limit values of objective lens settings including corresponding fixed stored precalculated values of said parameter in said several memory sections, the several memory sections each being associated with different ranges of desired values of the depth of field, said memory means for being available for sending signals from each of said memory sections respectively to said comparator, said signals being representative of the stored precalculated values of said parameter, corresponding to said different ranges, for the actual setting of the objective lens and of the diaphragm,

said comparator constitutes means for comparing said signals with said first input and for providing outputs respectively representing the comparisons,

means comprising presetters representing desired values of the depth of field and for operatively selecting a desired depth of field value and for operatively selecting said signals of a corresponding of said memory sections and said outputs of said comparator representing the comparison of the latter mentioned said signals with said actual value of said parameter for providing an evaluation signal for a necessary readjustment of said parameter and said objective lens when said latter mentioned said signals and said first input are not equivalent.

4,290,680
PHOTOGRAPHIC CAMERA
Katsuji Muramatsu, and Yoshihiro Fujita, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Apr. 8, 1980, Ser. No. 138,333
Claims priority, application Japan, Apr. 13, 1979, 54-49276[U]
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—203 **5 Claims**



1. A photographic camera to be loaded with a film cartridge comprising a first container for accommodating unexposed roll film and a second container for taking up exposed roll film, the first and second containers being separably connected with each other, said photographic camera comprising,

an aperture for exposure,

a film cavity for receiving the first container formed on one side of the aperture,

a film take-up cavity for receiving the second container formed on the other side of the aperture,

a back lid which is hinged on one side of the camera body and is opened and closed to open and close the film cavity and the film take-up cavity,

a movable holding member for holding one of the first and second containers,

a stationary holding member for holding the other of the first and second containers, and

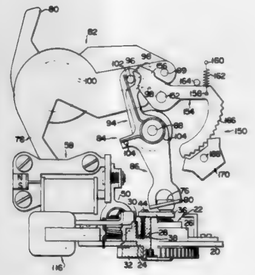
means for moving the movable holding member between a first position and a second position in response to opening and closing the back lid,

said stationary holding member being fixedly mounted on the inner surface of said back lid at a position confronting one of said cavities in which said other of the first and second containers held thereby is to be received when the back lid is closed,

said movable holding member being positioned in the first position when the back lid is opened, and being positioned in the second position when the back lid is closed,

in the first position, the movable holding member being positioned near the stationary holding member, thereby permitting the first and second containers to be respectively held in their unseparated state by the corresponding holding members, and in the second position, the movable holding member being positioned away from the stationary holding member, whereby the first and second containers are separated from each other, and confronting the other of said cavities when the back lid is closed.

4,290,681
PROGRAMMED SHUTTER DEVICE
Yoshihisa Maitani, and Katsuhiko Tsunefuji, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Dec. 20, 1979, Ser. No. 105,502
Claims priority, application Japan, Dec. 27, 1978, 53-163287
Int. Cl.³ G03B *9/24*
U.S. Cl. 354—230 **60 Claims**



1. A programmed shutter device comprising:

a charge mechanism to be charged with a driving force for rotation in response to a film winding operation;

a shutter driving mechanism connected to the charge mechanism to be rotated by the driving force for rotation which is charged in the charge mechanism;

a start position regulating member movable between a first position where the regulating member comes in contact with the shutter driving mechanism to stop the rotation of the shutter driving mechanism and a second position where the regulating member is released from the contact with the shutter driving mechanism to allow the rotation of the shutter driving mechanism;

a release controll means holding the start position regulating member in the first position and releasing the hold of the start position regulating member to shift the start position regulating member to the second position;

a shutter sector means to define the size of an exposure hole movable between a third position to close the exposure hole and fourth position to define the exposure hole;

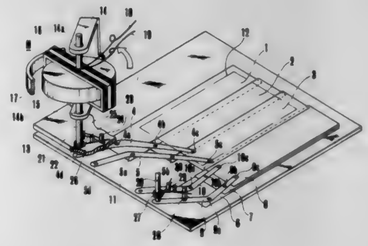
a connecting mechanism having an elastic member, the connecting mechanism connected to the shutter driving mechanism to be forward and backward reciprocated by the rotation of the shutter driving mechanism, and connected to the shutter sector means to move the shutter sector means from the third position to the fourth position by the elastic member during the forward motion and from the fourth position to the third position by the rotation of the shutter driving mechanism during the backward motion;

a shutter speed determining member movable between a fifth position where the shutter speed determining member is brought in contact with the shutter driving mechanism to stop the rotation of the shutter driving mechanism when the connecting mechanism is completed the forward motion and a sixth position where the shutter speed determining member is released from the contact with the shutter driving mechanism to allow the rotation of the shutter driving mechanism;

a shutter speed control means holding the shutter speed determining member in the fifth position for a fixed time in accordance with the light reflected from a foreground subject and releasing the hold of the shutter speed determiming member to shift the shutter speed determining member to the sixth position;

a speed control mechanism controlling speed of the forward motion of the connecting mechanism to control the speed of the movement of the shutter sector means from the third position to the fourth position.

4,290,682
ELECTROMAGNETICALLY OPERATED SHUTTER
Syuichiro Saito, Kawasaki; Takashi Uchiyama, Yokohama, and Syozo Yoshida, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 23, 1980, Ser. No. 162,323
Claims priority, application Japan, Jun. 26, 1979, 54-87362[U]
Int. Cl.³ G03B *9/08*
U.S. Cl. 354—234 **4 Claims**



1. An electromagnetically operated type slit exposure shutter comprising:

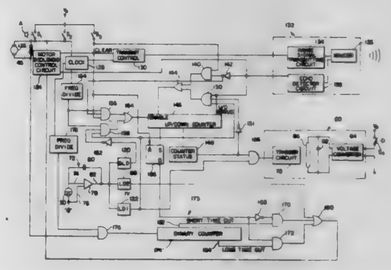
(a) electromagnetic drive sources each having a permanent magnet and a movable magnetic coil for receiving current to exert a rotative force;

(b) shutter blades arranged to open and close an exposure aperture;

(c) shutter blade actuating means for transmitting the rotative force of said electromagnetic drive sources to said shutter blades so as to make said shutter blades run down or up to effect an exposure and a resetting; and

(d) spring means for engaging said shutter blade actuating means, said spring means being arranged for imparting to said actuating means a driving force aiding the running of said shutter blades when said shutter blades start to run, and for imparting a braking force to said actuating means when said shutter blades near the end of movement thereof, while being energized by said actuating means.

4,290,683
SONAR RESPONSIVE SHUTTER BLADE TIME OUT CONTROL CIRCUIT
Judy Bagdis, Bradford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sep. 22, 1980, Ser. No. 189,849
Int. Cl.³ G03B *3/00, 7/097*
U.S. Cl. 354—234 **5 Claims**



1. An exposure control circuit for controlling the maximum

time out period for an exposure interval in a photographic camera apparatus of the type including means for defining a film plane, means for transmitting light from a scene along an optical path to expose photosensitive film located in the film plane, and an exposure control system for allowing the passage of scene light along the optical path to the film plane to define an exposure interval, said circuit comprising:

clock means for providing a train of clock pulses;

first counter means for counting said pulse train and providing a total pulse train count corresponding to the camera-to-subject distance range;

second counter means for counting said pulse train and providing a pulse train count which commences generally in synchronism with the initiation of the exposure interval; and

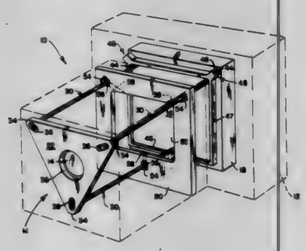
logic means responsive to said first counter means providing a pulse train count corresponding to a camera-to-subject distance less than a select camera-to-subject distance for enabling the decode of said second counter means to provide an exposure interval termination signal upon said second counter means reaching a pulse train count corresponding to a select maximum exposure interval time out period, and further responsive to said first counter means providing a pulse train count corresponding to a camera-to-subject distance greater than said select camera-to-subject distance for enabling the decode of said second counter means to provide an exposure interval termination signal upon said second counter means reaching a pulse train count corresponding to another maximum exposure interval time out period greater than said select maximum exposure interval time out period.

4,290,684

IMAGE STABILIZING APPARATUS

Stephen P. Hines, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1980, Ser. No. 114,931
Int. Cl.³ G03B *17/00*; G02B *23/00*
U.S. Cl. 354—286 **11 Claims**



6. In a camera of the type which includes a housing, a lens for focusing scene light at a film plane, and means for supporting such lens, the improvement comprising:

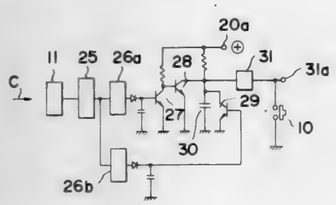
mounting means for mounting said support means for movement relative to said housing, said mounting means comprising a plurality of spaced struts, first mounting means for movably mounting each of said struts to said support means for gimbal movement about a first point; and second mounting means for movably mounting each of said struts to the camera housing for gimbal movement about a second point spaced from said first point, whereby said mounting means maintains the principal plane of the lens substantially parallel to the film plane during movement of the support means relative to said housing, random angular motion of the housing in first and second planes which are perpendicular to each other and to said film plane thereby being substantially decoupled from the lens.

4,290,685

REMOTE CONTROL DEVICE FOR CAMERA

Itsuki Ban, 829, Higashi-Oizumi-machi, Nerima-ku, Tokyo, Japan

Filed Feb. 22, 1980, Ser. No. 123,650
Int. Cl.³ G03B *17/38, 9/62*
U.S. Cl. 354—266 **4 Claims**



1. A remote control device for a camera, which comprises:

a housing incorporating a microphone for receiving an acoustic wave having a relatively high frequency in an audio frequency range, which is generated by a tone generating source, an amplifier circuit for amplifying an output of said microphone, a control circuit which applies an output of said amplifier circuit to a high-pass filter and a low-pass filter, and when said high-pass filter provides no output or said low-pass filter provides an output, stops the charging or discharging of a capacitor, and when only said high-pass filter provides an output, allows the charging or discharging of said capacitor, and a circuit for operating a shutter of said camera with the aid of an electrical signal which is provided when a voltage across said capacitor reaches a predetermined value, and an electric source for energizing said amplifier circuit; and

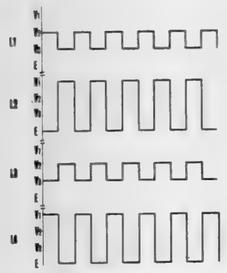
mounting means for fixedly securing said housing to said camera.

4,290,686

LIQUID CRYSTAL DISPLAY DEVICE FOR CAMERA

Ryoichi Suzuki, Kawasaki; Hiroyasu Murakami, Tokyo; Masaharu Kawamura, Kawasaki; Shinji Sakai, Tokyo; Takashi Uchiyama, and Kikuo Momiyama, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,172
Claims priority, application Japan, May 6, 1979, 54-70722
Int. Cl.³ G09F *9/35*; G03B *17/20*
U.S. Cl. 354—289 **8 Claims**



1. A liquid crystal display device for a camera comprising:

(a) a crystal cell, said cell including a first and a transparent second basic plate, on each of which plate a plural number of transparent electrodes are provided so as to form in rows a plural number of electrode pairs to be lit on both sides of the liquid crystal matter;

(b) pulse generating means, said means generating a first alternating voltage with amplitude V1, a first reversed alternating voltage in the reversed phase to that of the first alternating voltage, a second alternating voltage with amplitude V3 in the same phase as that of the first alternating voltage, and a second reversed alternating voltage in the reversed phase to that of the second alternating voltage, whereby, the first alternating voltage V1 is larger than the effective voltage value for lighting the crystal cell, while V3 as well as (V1-2V3) are smaller than the effective voltage value;

(c) gate means, said means applying the first alternating voltage wave to the transparent electrodes out of those provided on the first transparent basic plate, the second reversed alternating voltage wave to other electrode on the first transparent basic plate, the first reversed alternating voltage wave to the selected transparent electrodes on the second transparent basic plate and the second alternating voltage to other transparent electrodes on the second transparent basic plate in accordance with the input signal; and

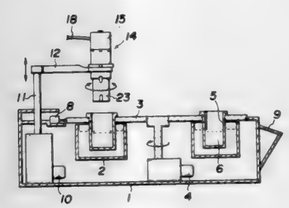
(d) input change over means, said means changing over a plural number of input signal groups at every determined time so as to selectively delivering the input signal group to the gate means in a time dividing way in such a manner that a plural number of the electrode pairs out of those in rows in the liquid crystal cell can be lit visually at the same time.

4,290,687

APPARATUS FOR DEVELOPING PHOTOGRAPHED FILM

Hidehiko Takahashi, 15-4, Soshigaya 4-chome, Setagaya-ku, Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,684
Claims priority, application Japan, Apr. 3, 1979, 54/43133[U]
Int. Cl.³ G03D *3/00*
U.S. Cl. 354—320 **4 Claims**



1. An apparatus for developing a photographed film roll by rotating the roll in a liquid developer, said apparatus comprising:

a case body;

a liquid chamber mounted on said case body;

a turn table rotatably mounted on said case body above said liquid chamber;

processing liquid cup-shaped containers detachably mounted on said turn table and downwardly projecting into said liquid chamber;

a cassette or magazine for housing a photographed film roll having a liquid permeable structure;

means for descending and ascending said cassette or magazine into and out of said containers, said means comprising:

a vertical shaft movable in the vertical direction and extending through said case body, and a horizontal arm extending above said turn table and connected to said vertical shaft;

means for rotating a photographed film roll in one and then the other direction, said means comprising:

a housing adapted to contain a motor,

a motor positioned in said housing and having an output shaft,

a rotary member connected to said output shaft and outwardly projected through said housing, and

a cylindrical holder detachably holding said housing, said holder having a peripheral wall including a flange portion detachably holding said cylindrical holder on said horizontal arm, and a hollow space surrounded by said wall and snugly containing said cassette or magazine; and

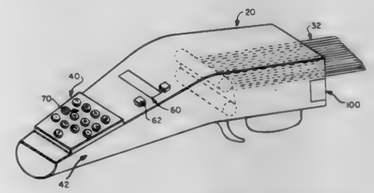
a rotary spool projecting into said cassette or magazine and rotatably connected thereto, said spool having one end connected to said rotary member and another end connected to a photographed film roll whereby when said motor imparts a rotational movement to said rotary member through said output shaft said spool imparts a corresponding rotational movement to a film roll.

4,290,688

APPARATUS FOR COLLECTING MARKET SURVEY DATA FROM UNIVERSAL PRODUCT TYPE CODED ITEMS

James Call, 8 Soundview Dr., Larchmont, N.Y. 10538

Filed Dec. 19, 1978, Ser. No. 970,986
Int. Cl.³ G03B *17/24, 27/00*
U.S. Cl. 355—1 **11 Claims**



1. A market survey data collection lenseless data recorder for universal product type code encoded market data, said data recorder comprising a housing, said housing having a first exposure aperture therein for admitting a source of light therethrough, a photographic recording medium disposed in said housing adjacent said first exposure aperture, means for controllably advancing said photographic recording medium past said first exposure apert for optically aligning a different predetermined portion of said photographic recording medium with said first exposure aperture each time said medium is advanced, said first exposure aperture being optically alignable with a universal product type code on a market item for which said survey data is to be collected, means for enabling reflective photographic recording of said universal product type code data on said medium for said market item in response to the reflection of the image of said universal product type code on to said medium through said first exposure aperture when exposed to said light source, and means disposed in said housing for enabling insertion and photographic recording of ancillary market survey data on said photographic recording medium corresponding to said market item adjacent said photographically recorded universal product type code, said ancillary data insertion and recording means comprising means for enabling direct photographic recording of said inserted ancillary market survey data in response to direct provision of an image corresponding to said inserted ancillary data on to said medium when exposed to said light source, said ancillary data recording means comprising a keyboard means for selectively inserting said corresponding ancillary data, said keyboard means comprising a plurality of keys each capable of providing an unique photographically recordable code designation image to said medium for selectively inserting said ancillary data to be recorded thereon, said ancillary data recording enabling means enabling said direct photographic recording of said selectively inserted code designation images on to said medium when exposed to said light source, said keys each comprising a second exposure aperture associated therewith for defining

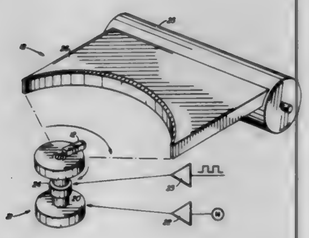
said unique ancillary data code image for each of said keys when said key is enabled for selectively inserting said unique code designation image on to said medium, said ancillary data photographic recording enabling means further comprising a first bundle of fiber optics optically alignable between said ancillary data code image producing keys and said photographic recording medium and selectively exposable to said light source through each of said key second exposure apertures for directly photographically recording said selectively inserted corresponding ancillary data when said key is enabled.

4,290,689

MOVING EXPOSURE SYSTEM

Donald J. Kleinschnitz, Jr., 5240 Sutton Ave., Melbourne, Fla. 32901

Filed Aug. 11, 1980, Ser. No. 177,222
Int. Cl.³ G03B *27/00*; B41B *13/00*
U.S. Cl. 355—1 **18 Claims**



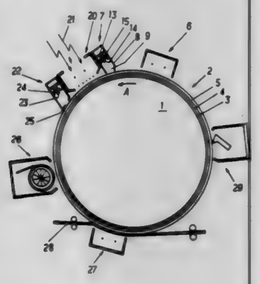
1. Apparatus for exposing a special surface to light rays comprising:
a semi-conductor light source with a light output;
means coupled to said light source for modulating said light source;
means for enabling scanning by the light output; and
means optically coupled to the light output for optically modifying said light output whereby any optical aberration in the light output due to the scanning is corrected.

4,290,690

DEVICE FOR CONTROLLING POTENTIAL OF LATENT IMAGE FOR USE IN ELECTROPHOTOGRAPHIC APPARATUS

Nobutaka Noda, Kawasaki; Kazuo Hamamura, Yokohama, and Yoichi Morita, Ageo, all of Japan, assignors to Kabushiki-Kaisha K I P, Tokyo, Japan

Division of Ser. No. 859,859, Dec. 12, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,269
Claims priority, application Japan, Dec. 27, 1976, 51-156250
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **11 Claims**



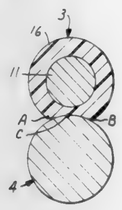
1. In an apparatus for electrophotography of the kind comprising: a photosensitive element on a movable drum and including an electrode layer, a photoconductive layer and a transparent insulating layer, these layers being integrally provided in the order described; a first corona discharging means for applying first charges of one polarity to said insulating layer of said photosensitive element under the condition that an interface between said photoconductive and insulating layers is substantially filled with trapped charge carriers which have flowed through said photoconductive layer; a second corona discharging means for applying second charges of a polarity opposite to said one polarity and simultaneously projecting a light image to said element; and means for projecting a substantially uniform light to said element; the recited means thereby completing formation of an electrostatic latent image on said insulating layer; and means for developing said latent image by use of a developing agent; the improvement comprising:
further uniform light projecting means in close contact with said second corona discharging means and operative just before said corona discharging means to release some of said charge carriers from the trapped condition, such that the released charge carriers can flow to said electrode layer during the application of said second charge to said insulating layer to control the potential of said latent image.

4,290,691

METHOD AND APPARATUS USING LOW GLOSS PRESSURE FUSING ROLL

Norman L. Giorgini, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 15, 1979, Ser. No. 84,987
Int. Cl.³ G03G *15/20, 13/20*
U.S. Cl. 355—3 FU **8 Claims**



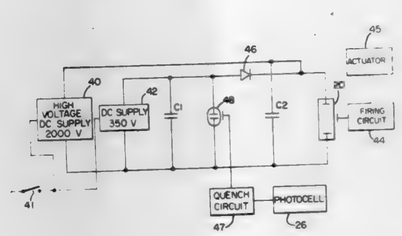
5. In a photocopy machine, an assembly for fixing pressure-fixable imaging powder to a receptor at ambient temperature so as to produce permanent low gloss image and non-image areas on said receptor, said assembly comprising:
means for providing an image of electrostatically held, unfixed, pressure-fixable imaging powder on a surface of said receptor;
first and second pressure members that have skewed axes with respect to each other, wherein said pressure members contact each other along a narrow nip therebetween, the first member having a compliant, textured surface that engages the imaged surface of said receptor, the second member having a non-compliant, textured surface that engages the non-imaged surface of said receptor, wherein said textured surface of said second member restricts slippage of said receptor with respect to said second member, and wherein said textured surface of said second member has sharp peaks thereon; and
means for rotating said pressure members in opposite directions while providing sufficient pressure at their nip to fix said powder to said receptor when said receptor passes between said members.

4,290,692

PHOTOGRAPHIC STROBE APPARATUS

Thomas A. Svatek, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 914,219, Jun. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 834,685, Sep. 19, 1977, abandoned. This application Jul. 6, 1979, Ser. No. 55,326
Int. Cl.³ G03B *27/72*; H05B *37/02*
U.S. Cl. 355—69 **3 Claims**



1. A photographic flash circuit having an electronic strobe tube operable at high voltage to produce a relatively large amount of illumination of high intensity, said circuit having a storage capacitor of relatively small capacitance, means for charging said capacitor to a relatively high voltage, means for coupling said storage capacitor to said strobe tube, and means for triggering said strobe tube into conductance to thereby produce a short, high intensity pulse of illumination responsive to discharge of said storage capacitor through said strobe tube, the improvement comprising:
means for automatically producing a relatively small amount of additional illumination of relatively constant low intensity from said strobe tube following said high intensity pulse, and means operable for terminating said low intensity illumination to thereby provide precise control over the total illumination produced, said producing means including an auxiliary capacitor of comparatively large capacitance, means for coupling said auxiliary capacitor to said strobe tube so as to permit current flow thereto while blocking current from said storage capacitor to said auxiliary capacitor whereby, following charging of said capacitors and upon triggering of said strobe tube, a burst of high intensity illumination of relatively short duration is automatically followed by additional illumination at an approximately constant level of comparatively low intensity for a comparatively long duration whose termination can be controlled to determine the total illumination.

4,290,693

ARRANGEMENT FOR MEASURING THE RANGE OR SPEED OF AN OBJECT

Karl-Ulrich Stein, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,813
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813913
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.³ G01C *3/08*; G01P *3/68*; G01J *1/36*; G03B *13/18*
U.S. Cl. 356—1 **24 Claims**

1. In an arrangement for measuring the range of an object, wherein two optical devices are provided which are offset relative to one another transverse to the direction of the object and which supply two images of such object, with a device being provided which analyzes the images, in the form of electrical signals, and by a comparison of the signals, forms a measured value which indicates the range, combination of the analyzing device containing two CTD image sensors which are individually assigned to the auxiliary images, and whose aligned image points are arranged parallel to one another and in the direction of mutual displacement of the auxiliary images, an evaluating circuit, having one input to which the output of one CTD image sensor is operatively connected, and a second input to which the output of the other image sensor is connected over a delay element which can be adjusted, in a stepped manner, in a setting sequence, for forming from the difference between a sequence of read-out signals from the two

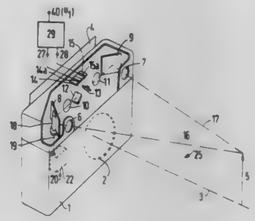


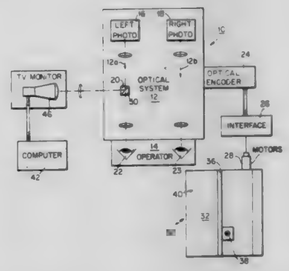
image sensors assigned to the setting sequence, a sequence of read-out signals integrated over said image points, and means in said evaluating circuit for forming a signal in correspondence to such read-out signals, which is characteristic of the delay set on the occurrence of the integrated read-out signal having the smallest amplitude, and which is representative of the range of the object.

4,290,694

PHOTOGRAMMETRIC PLOTTING APPARATUS

Hans J. Wehrli, Valhalla, and Timothy P. Roberts, Mohegan Lake, both of N.Y., assignors to Kern Instruments, Inc., Brewster, N.Y.

Filed Mar. 7, 1980, Ser. No. 127,947
Int. Cl.³ G01C *11/12*
U.S. Cl. 356—2 **13 Claims**



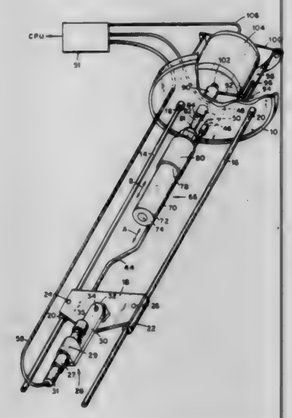
1. A photogrammetric plotting apparatus comprising:
(a) an optical system means for operator viewing of an image of a first stereomodel derived from a pair of stereoscopically related photograms.
(b) operator controlled means for effecting stereomodel exploring motions relative to the photograms.
(c) a tracing or display device;
(d) means for converting the exploring motions into plotting motions for the tracing or display device;
(e) means for scanning image data of a second model to produce an image of the second model;
(f) means for conveying the image of the second model to the optical system means;
wherein the optical system means includes a means for superimposing the image of the second model on the image of the first stereomodel for simultaneous viewing by the operator.

4,290,695

METHOD AND APPARATUS FOR MEASUREMENT OF TRANSMITTANCE AND SCATTER OF LIGHT IN WATER

Harold W. Schmitt, Knoxville, Tenn., assignor to Environmental Systems Corporation, Knoxville, Tenn.

Filed Sep. 28, 1979, Ser. No. 80,056
Int. Cl.[3] G01N *21/01*
U.S. Cl. 356—73 4 Claims



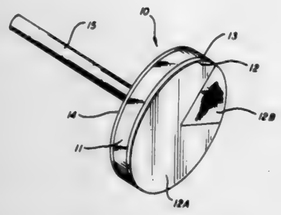
1. A method for measuring light transmittance and scatter in a liquid medium comprising the steps of directing a substantially collimated beam of relatively broad spectrum light into said medium from a source of said light, detecting the light intensity at a first axial location along the length of said beam, converting said detected light intensity to a first electrical signal, changing the relative angular positions of said beam and said detector to a first angular position wherein the axis of said beam is oriented at an angle with respect to said detector such that the projected solid acceptance angle of said detector intersects said beam to define a first sampling volume at a first sampling position along the length of said beam, detecting the light intensity in said first sampling volume employing said detector, converting said last mentioned detected light intensity to a second electrical signal that is representative of said light intensity in said first sampling volume, detecting the light intensity at a second axial location along the length of said beam employing the detector as aforesaid, such second axial location being spaced apart along the length of said beam from said first axial location by a known distance, converting said detected light intensity at said second axial position to a third electrical signal that is representative of said detected light intensity at said second axial position, changing the relative angular positions of said beam and said detector to a second angular position wherein the axis of said beam is oriented at an angle with respect to said detector such that the projected solid angle of acceptance of said detector intersects said beam to define a second sampling volume at a second position along the length of said beam, said first and second angular positions being angularly substantially equal, said second position of said second sampling volume being spaced apart along the length of said beam by a known distance, detecting the light intensity in said second sampling volume employing said detector, converting said detected light intensity to a fourth electrical signal that is representative of said light intensity in said second sampling volume, comparing said first and third electrical signals and converting their ratio to an electrical signal that is representative of the axial light transmittance of said medium, and comparing said second and fourth electrical signals and converting their ratio into an electrical signal that is representative of the light scatter in said medium.

4,290,696

SPECTROPHOTOMETRIC SYSTEM

Henry M. Mould, Penn, and George E. Hirst, High Wycombe, both of England, assignors to Perkin-Elmer Limited, Beaconsfield, England

Division of Ser. No. 819,837, Jul. 28, 1977, which is a division of Ser. No. 698,042, Jun. 21, 1976, abandoned. This application Sep. 24, 1979, Ser. No. 77,977
Claims priority, application United Kingdom, Oct. 24, 1975, 43723/74
Int. Cl.[3] G01J *3/02*
U.S. Cl. 356—300 11 Claims



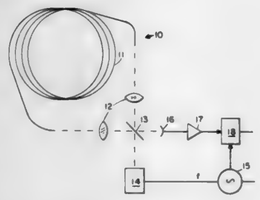
1. A spectrophotometric system comprising:
photometric optics including means for generating photometric radiation;
radiation receiving means is spaced relation with said radiation generating means;
an optical device, interposed between said radiation generating means and said radiation receiving means, for providing an optical path from said radiation generating means to said radiation receiving means, said optical device comprising;
a substantially opaque layer, said layer defining at least first and second coplanar face regions, said face regions having distinguishable optical functions being arranged in a predetermined geometrical relationship;
means for supporting said layer, said means being a rigid substrate;
a film bonding agent, between said layer and said rigid substrate means, for permanently maintaining said predetermined geometrical relationship, and
means for mounting said optical device for movement between different operative positions to selectively interpose said face regions between said radiation generating means and said radiation receiving means.

4,290,697

METHOD TO ELIMINATE FIBER INTERFEROMETER REFLECTIONS

Matthew N. McLandrich, Carlsbad, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 26, 1979, Ser. No. 60,943
Int. Cl.[3] G01C *19/64*
U.S. Cl. 356—350 5 Claims



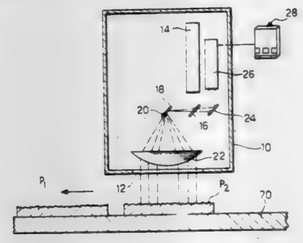
1. In a fiber interferometer gyro having a looped single-mode fiber coupled to bidirectionally transmit beams of light from a laser to a detector, an improvement therfor is provided comprising:
means disposed external the light beam paths and coupled to the laser and the detector for amplitude modulating the laser output and synchronously detecting the detector output with a reference signal of the same frequency as the amplitude modulating signal $\pi/2$ phase shifted with respect to the amplitude modulating signal to eliminate gyro reflections attributed to fiber ends and coupling lenses.

4,290,698

APPARATUS FOR TESTING SURFACE ROUGHNESS

Emilio Milana, Rivalta, Italy, assignor to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Aug. 23, 1979, Ser. No. 69,135
Claims priority, application Italy, Oct. 24, 1978, 69438 A/78
Int. Cl.[3] G01B *11/30*; G01N *21/55*
U.S. Cl. 356—371 6 Claims



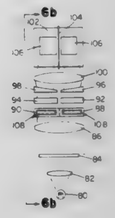
1. Apparatus for testing the surface roughness of a workpiece which has been subjected to a mechanical working operation, comprising in combination,
a support for the workpiece to be tested,
a laser radiation source,
a first optical system positioned in the path of radiation from said radiation source and operating to direct the beam of radiation emitted by said source onto the surface of a workpiece to be tested mounted on said support,
means for relatively displacing said support and said beam of radiation whereby to scan said beam of radiation over the region of interest of said surface of said workpiece under test,
a photomultiplier,
a second optical system positioned in the path of the specular component of radiation reflected from each point of said scanned region of said surface of said workpiece under test and operating to direct said specular component of the reflected radiation to said photomultiplier whereby to obtain at the output of said photomultiplier an electrical signal indicative of the intensity of said component,
an electronic processor circuit connected to the output from said photomultiplier, said processor circuit operating to derive a numerical value corresponding to the mean level of said output signal and to provide a numerical indication of at least one of the ratio and the difference between said numerical value and a reference numerical value,
said first and second optical systems together comprise:
a semi-transparent mirror positioned to deflect by 90° radiation incident thereon from said laser radiation source,
a cylindrical lens,
a first reflector positioned in the path of radiation reflected from said semi-transparent mirror so as to deflect it to said cylindrical lens, said cylindrical lens having its focal line passing through the point on said first reflector at which incident radiation from said semi-transparent mirror impinges and having its optical axis normal to the surface of said workpiece to be tested,
a second reflector positioned to deflect towards said photomultiplier the specular component of reflected radiation from each point of the scanned zone of the said surface, which arrives at said second reflector after having passed through said cylindrical lens, and said means for relatively displacing said support and said beam of radiation comprise means for causing said first reflector to oscillate about an axis parallel to the surface of said workpiece to be tested and passing through the focus of said cylindrical lens.

4,290,699

COLOR SYNTHESIZING

Elbert M. Idelson, 1603 Commonwealth Ave., West Newton, Mass. 02165

Filed Apr. 4, 1979, Ser. No. 26,928
Int. Cl.[3] G01J *3/46*
U.S. Cl. 356—420 12 Claims



1. A plural channel color synthesizing instrument comprising
a light source,
baffle structure for directing light from said source along a plurality of separate optical paths so that there is a beam of light from said source in each optical path,
light receiving means associated with each optical path for receiving light from said source in the beam transmitted along that optical path,
dispersion means disposed in said optical paths between said light source and said light receiving means for dispersing light in each said beam to form a spectrum of the source,
a mask holder disposed in each said path between said light source and said light receiving means for receiving a color synthesizing mask, each said mask holder defining a aperture and being arranged to receive a planar black-white type mask structure for insertion into and removal from the mask holder aperture in location coordinated with wavelength and amplitude parameters of the spectrum of the light source in that beam, and
color synthesizing mask structure for insertion into and removal for each said mask holder, each said mask structure being of the black-white type and having a light blocking portion effective to modify the spectrum when the mask structure is interposed in the corresponding beam of light,
each said light receiving means including means for recombining the light energy in unblocked portions of said spectrum for simultaneously synthesizing a different color at each said light receiving means.

4,290,700

MEASURING APPARATUS FOR SHOT DISPENSERS

George S. Hudimac, Jr., Allentown, Pa., assignor to Mechanical Service Company, Allentown, Pa.

Filed Nov. 8, 1979, Ser. No. 92,332
Int. Cl.[3] B28C *7/04*
U.S. Cl. 366—76 5 Claims

1. In apparatus for delivering accurate amounts of a mixture of at least two liquid ingredients, including ingredient supply means and mixer means to receive, mix and deliver said mixture, measuring means to be disposed between said supply and mixer means to determine the quantity of each ingredient to be

delivered to the mixer means, the measuring means comprising:

a hollow housing;

a plurality of pairs of ports in said housing, each pair comprising an inlet port and an outlet port and each port having a mouth;

working surface means extending around and between the inlet port and outlet port of each said pair, the mouth of each port being open to the working surface means;

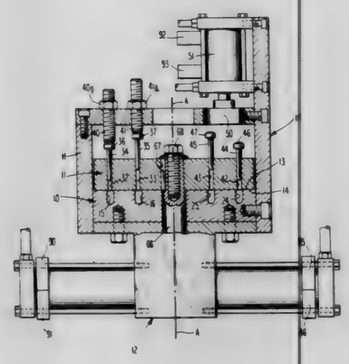
transporter means movably mounted in said housing for movement as between a charge position and a discharge position;

a plurality of cavities formed in said transporter means, each cavity having a mouth;

means to move said transporter means as between said positions;

working surface means on said transporter means, the mouth of each cavity being open to last said working surface means;

the first said working surface means and last said working surface means being in engagement when the transporter means is in said charge and discharge positions and as it moves between the same;



said cavities respectively being in registry with said inlet ports when said transporter means is in the charge position and being respectively in registry with said outlet ports when the transporter means is in the discharge position and said inlet ports and said cavities being closed off respectively by the engagement of said working surface means when the transporter means moves as between said charge and discharge positions;

inlet passage means in said housing respectively independently connecting each inlet port to the exterior of said housing for respectively independently delivering ingredients from the exterior of the housing to the inlet ports and thence into the respective cavities;

outlet passage means in said housing respectively independently connecting each outlet port to the exterior of said housing for respectively independently delivering ingredients from cavities to the exterior of the housing; and

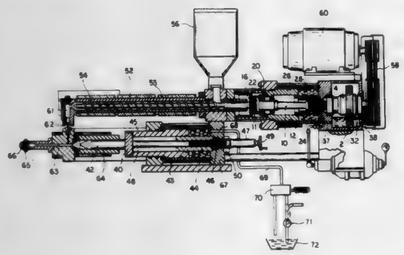
control means operative when the transporter means is in the charge position to control the amount of ingredient material to be received by a cavity and operative when the transporter means is in the discharge position to cause ingredient material in each cavity to flow out of the cavity and into said outlet passage means.

4,290,701

INJECTION-MOLDING MACHINE WITH RECIPROCATING PLASTICIZING SCREW

Robert D. Schad, Bolton, Canada, assignor to Husky Injection Molding Systems Inc., Bolton, Canada

Filed Jul. 6, 1979, Ser. No. 55,371
Int. Cl.³ B28C *7/16*
U.S. Cl. 366—77 **13 Claims**



1. In an injection-molding machine including a heated extruder barrel, a plasticizing screw rotatable and axially reciprocable in said barrel, drive means for rotating said screw, operating means for hydraulically advancing said screw for feeding plasticized molding material toward an injection orifice in one phase of a working cycle and for controlling the rearward motion of said screw under pressure of freshly plasticized molding material in another phase of the cycle, and feed means for supplying said molding material to said barrel,

the improvement wherein said drive means comprises a tubular input shaft with internal splines, a quill having a splined rear extremity slidably coupled with said input shaft by way of said internal splines, and a releasable coupling between said screw and a forward extremity of said quill;

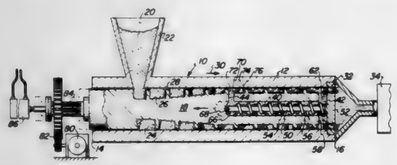
said operating means comprising an annular extruder cylinder coaxially surrounding said quill, a tubular extruder piston partly received in said extruder cylinder and provided with a projecting front end, bearing means operatively linking said front end with said quill for transmitting axial forces therebetween, a shooting pot alongside said barrel provided with a discharge channel terminating at said injection orifice and communicating with an outlet port of said barrel ahead of said screw, a plunger in said shooting pot controlled by hydraulic actuating means, and adjustable backstop means limiting the stroke of said plunger.

4,290,702

PLASTICATING APPARATUS FOR MOLDING DEVICES

Reuben Klein, Edison, and Imrich Klein, Highland Park, both of N.J., assignors to Scientific Process & Research, Inc., Highland Park, N.J.

Filed Dec. 17, 1979, Ser. No. 104,094
Int. Cl.³ B29B *1/06*
U.S. Cl. 366—77 **9 Claims**



1. Apparatus for plasticating material to be delivered intermittently to a molding device, said apparatus operating continuously during periods of delivery and non-delivery of plasticated material, said apparatus comprising:

a barrel;

a first screw conveyor in the barrel, said first screw conveyor including a flight defining a channel for continuously conveying the material in a downstream direction as the material is melted within the channel, said flight having a leading face facing downstream and a trailing face facing upstream, said channel extending between the leading face and the trailing face;

a backfeed passage within the first screw conveyor, said backfeed passage communicating with the channel at a downstream location and at an upstream location to establish a circuit along which the material will move through the channel and the backfeed passage;

a second screw conveyor located in said backfeed passage and arranged to convey material from the downstream location to the upstream location so as to enable recirculation of material along the circuit through the backfeed passage and the channel during continuous rotation of the first screw conveyor and intermittent delivery of plasticated material to the molding device;

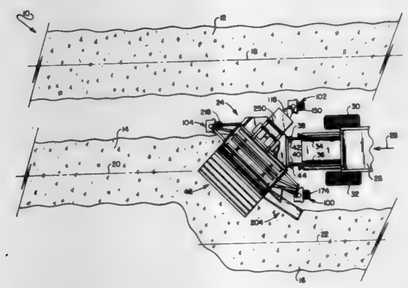
the first screw conveyor having a downstream terminal end and being mounted for axial movement relative to the barrel such that movement in the upstream direction will increase the capacity of the circuit to accommodate added plasticated material to be accumulated within the circuit as the first screw conveyor continues to rotate and generate the added plasticated material during periods of non-delivery of plasticated material to the molding device.

4,290,703

WINDROWING TYPE COMPOSTING APPARATUS

Walter C. Roman, Worthington, Ohio, assignor to Ultimate Resources, Inc., Westerville, Ohio

Filed Jan. 23, 1980, Ser. No. 114,634
Int. Cl.³ B02C *21/02*
U.S. Cl. 366—345 **11 Claims**



1. Windrowing apparatus for laterally transferring an elongate row of biodegradable material, said row being oriented along a given centrally disposed axis and having a given width, comprising:

a windrow conveyor having spaced, parallel mutually interconnected elongate paddles driveably movable and having a downwardly disposed region for confronting said row of material and progressively moving said material to form an adjacent said row thereof;

motor means for driving said paddles;

a rigid frame;

coupling means rearwardly disposed upon said frame for connecting said frame with the forward portion of a drive vehicle, said vehicle serving to push said apparatus in a forward direction having a principal horizontal vector substantially parallel and in alignment with said axis when said conveyor confronts said row;

mounting means for mounting said conveyor at a forwardly disposed portion of said frame such that said paddles within said downwardly disposed region are disposed at an acute angle with respect to said principal vector when said conveyor is urged into said confrontation with said row;

first and second freely rotatable wheel means connected with said frame and each being freely pivotal about vertical axes for supporting said frame for movement, said first and second wheel means being spaced apart having respective positions of attachment with said frame generally rearward of said conveyor and mutually disposed on opposite sides of said coupling means, said first wheel means being disposed at a first said side rearwardly of said conveyor downwardly disposed region, said second wheel means being disposed at a second said side outwardly of said downwardly disposed region; and

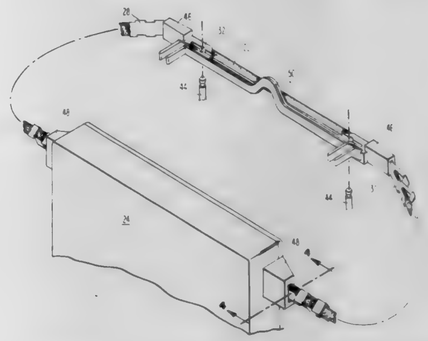
third freely rotatable wheel means freely pivotal about a vertical axis and attached to said frame at said second side in the vicinity of the forward portion of said downwardly disposed region for supporting said frame for movement at a predetermined level.

4,290,704

FLEXIBLE RIBBON GUIDE MEANS

Dan W. Matthias, Downingtown, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1979, Ser. No. 92,690
Int. Cl.³ B41J *31/12, 35/04*
U.S. Cl. 400—248 **10 Claims**



1. An improved leader means for use in a printing machine of the type utilizing a stationary ribbon supply means and flexible leader means for guiding ribbon to the print location of said machine, said print location being relatively moveable with respect to said supply means comprising:

a central web formed from a flexible material having tabs projecting in alternate fashion from said central web and being bent through an angle with respect to said web such that the distal ends of said tabs overlap with one another thereby forming a channel within which said ribbon may be guided, said leader being bendable in a first direction but not bendable past the flat in an opposite direction.

4,290,705

ELECTROMAGNETIC INTERFERENCE REDUCTION FOR ELECTRONIC LINE PRINTERS

Samuel Goldfarb, Roslyn, and Thomas Reilly, North Lindenhurst, both of N.Y., assignors to Litton Systems, Inc., Melville, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,658
Int. Cl.³ B41J *11/26*
U.S. Cl. 400—618 **4 Claims**

1. An electronic line printer of the electrical discharge type

characterized by reduced electromagnetic interference from such electrical discharge, comprising:

a printer chassis including record medium storage means;

a housing for said printer chassis;

said chassis being positionable within and without said housing;

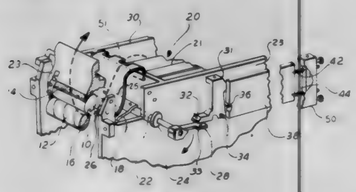
a platen comprising a fixed cylindrically-shaped member mounted on said chassis and adapted to be in contact with the record medium;

electronic printing means for contacting said record medium for printing visible symbols on said record medium; and

record medium tensioning means;

said tensioning means comprising a resilient laminar member disposed proximately to said platen and being provided with a free end adapted to be in contact with said record medium for applying a tension force thereto;

said platen being provided at its surface with a channel;



said record medium being adapted to be in contact with said platen in the vicinity of said channel;

said tensioning means being also provided with a fixed end;

said tensioning means fixed end being attached to an adjusting member comprising a rotatable shaft for adjusting said free end to a position of contact with said record medium and to a position out of contact with said record medium;

lever means mechanically connected to said housing;

said adjusting member rotatable shaft being rotated by said lever means in accordance with the position of the printer chassis with respect to said housing; whereby

when said chassis is positioned within said housing said lever means rotates said adjusting member rotatable shaft which adjusts said tensioning means free end to contact said record medium to thereby increase the tension of said record medium in the vicinity of said platen channel thereby reducing the electromagnetic interference which would otherwise be created by said printing means.

4,290,706

AGITATOR FOR CYLINDRICAL CONTAINES FILLED WITH PAINT OR THE LIKE

Rudolf H. Wandl, Binau, Fed. Rep. of Germany, assignor to Kurt Vogelsang GmbH, Hassmersheim, Fed. Rep. of Germany

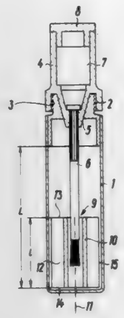
Filed Jan. 30, 1980, Ser. No. 116,965

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1979, 2903401; Oct. 24, 1979, 2942994

Int. Cl.³ B44D *3/12*

U.S. Cl. 401—4 **8 Claims**

1. Cylindrical container for paint or the like, comprising a hollow container body, a cap, a brush attached to the cap, and an agitator constructed as a tubular hollow member guided in the container in the axial direction of the latter, surrounding said brush attached to the cap, and having radially outwardly projecting ribs, characterized in that the ribs are fashioned in the manner of blades of a fan wheel and are uniformly distributed about the periphery of the hollow member, wherein the outer edges of the ribs are located on an imaginary cylinder, the diameter of which is slightly smaller than the inner diameter of the container body, and also characterized in that the ribs



are twisted helically with respect to the longitudinal axis of the hollow member.

4,290,707

WRITING INSTRUMENT HAVING MULTIPLE WRITING ELEMENTS

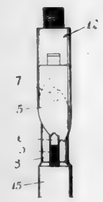
Tatsuo Ariga, 16-19, Haneki 1-Chome, Setagaya-ku, Tokyo, Japan

Filed Mar. 22, 1979, Ser. No. 22,879

Claims priority, application Japan, Mar. 31, 1978, 53/40983[U]

Int. Cl.³ B43K *5/16, 24/02*

U.S. Cl. 401—110 **5 Claims**



1. In a writing instrument having multiple writing elements, one of which includes a mechanical pencil element, wherein each of said writing elements has a cam follower fixed to the upper end thereof and further including a sleeve-type cam mounted for rotation and axial movement with respect to said writing elements, said cam including a pair of cam edge portions sloping downwardly towards each other, each of said cam followers being biased into engagement with a respective one of said cam edge portions, the improvement comprising:

said sleeve-type cam having a substantially vertically extending edge portion interconnecting the upper ends of said cam edge portions, whereby upon said pencil element being moved to its operative position, the cam follower fixed to the upper end of said other writing element is substantially aligned with the vertically extending edge portion so that upon axially moving the cam, the cam follower aligned with the vertically extending cam edge portion will not be moved; a head member having an axial portion fixed to the upper end of said cam; a clip member having a ring portion located over said axial portion of said head member; an actuator housing element having an open top; said cam and head member being fixed to said housing element with said axial portion extending through said open top; a retainer ring fixed to said axial portion for retaining the ring portion of said clip member in position; and a cap member fixed to said axial portion.

4,290,708

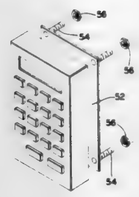
ATTACHABLE MICROPROCESSORS

John T. Siwula, 145 Sanford Dr., Jamestown, N.Y. 14701

Filed Aug. 7, 1978, Ser. No. 931,382

Int. Cl.³ F16B *1/00*

U.S. Cl. 403—24 **5 Claims**



1. An attachable microprocessor comprising the combination of:

(a) a microprocessor having a housing including a generally planar surface attachable to a separate object; and

(b) fastening means including a plurality of elongated fastening elements each connected to said microprocessor housing and extending therefrom in a direction generally perpendicular to the plane of said housing surface for connection to said object, each of said elongated fastening elements being of sufficient length and having such a cross sectional shape which enables it to be received in an opening provided in said object for securement to said object when in said opening, and each of said fastening elements being readily removable from said object and said microprocessor housing in a manner which is non-destructive to said fastening elements, object and microprocessor housing;

(c) whereby said fastening means attaches said microprocessor to said object in a manner such that said housing surface faces toward said object;

(d) said housing surface is defined by a plate removably secured to said microprocessor housing and provided with a plurality of formations to recieve and engage said fastening elements.

4,290,709

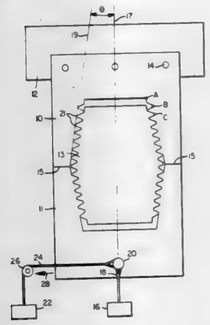
HIGH TAPER ANGLE CONNECTING PIN FOR GRAPHITE ELECTRODE JOINTS

Emanuel J. Seldin, Middleburg Heights, Ohio, and Tu-Lung Weng, San Jose, Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,887

Int. Cl.³ F16B *7/18;* **H05B** *7/06*

U.S. Cl. 403—296 **8 Claims**



1. A connecting pin for joining two graphite electrode sections, said pin being tapered and threaded on both ends, the angle of said taper from the centerline of said pin being between about 15° and about 35°.

4,290,710

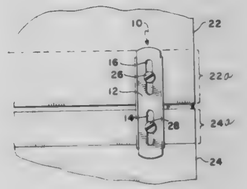
METAL FASTENING PLATE

Arthur Waller, Highland Park, Ill., assignor to Bull Dog Lock Co., Chicago, Ill.

Filed Mar. 10, 1980, Ser. No. 128,733

Int. Cl.³ F16B *12/00*

U.S. Cl. 403—306 **2 Claims**



2. A fastening plate for joining two adjacent pieces of furniture together utilizing screws, said plate comprising:

a longitudinal metal strip having at least two completely enclosed longitudinal apertures of uniform width for permitting a continuous selection of screw locations along the entire length of each aperture, said apertures extending sequentially along the length of the strip, each of the apertures being of sufficient length to substantially overlap one of the two adjacent pieces of furniture, and reinforcing flanges extending along the longitudinal edges of said strip,

whereby one screw inserted through an aperture secures one piece of furniture to the strip, the other piece of furniture secured to the strip by a second screw inserted through another aperture, thereby the plate joining two adjacent pieces of furniture together.

4,290,711

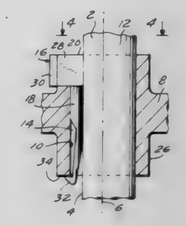
KEY SYSTEM FOR SHAFT AND GEAR OR THE LIKE

Ellis H. Paine, Woodstock, and Roger E. Anderson, Brooklyn, both of Conn., assignors to Moldex, Inc., Putnam, Conn.

Filed Jan. 7, 1980, Ser. No. 109,977

Int. Cl.³ F16D *1/08*

U.S. Cl. 403—358 **8 Claims**



1. In combination, a shaft portion and a hub mounted thereon, a wedge construction having a body portion with a top surface which is an arcuate segment of a cylinder and a bottom surface which is a flat surface in a plane parallel to the axis of said cylindrical surface, said shaft portion having an outer surface which is an arcuate segment of a cylinder and which compliments the first-named arcuate segment to form a substantially complete cylinder, said shaft portion having a flat surface which is coextensive with the first-named flat surface, said wedge and said hub having interlocking means which present mating surfaces which are positioned radially out-

wardly from said arcuate segments and which interengage so as to prevent said hub from turning around said axis relative to said wedge, and said hub and said shaft portion are held from turning relative to each other around said axis.

4,290,712

PLASTIC POST APPARATUS AND METHODS

Norman J. Hayes, P.O. Box 618, Cody, Wyo. 82414

Filed Apr. 2, 1979, Ser. No. 26,100
Int. Cl.³ E01F *9/01*
U.S. Cl. 404—10 **29 Claims**



1. Post apparatus made of one piece of molded polymeric material and comprising:

a vertically upwardly extending elongated post means portion for supporting apparatus mounted thereon;

a driving head means portion connected to and mounted below the lower end of said post means portion for application of force thereto without application of force to the upper end of said post means portion for forcibly driving the post apparatus into the ground;

stabilizing flange means portions mounted on said driving head means portion below the lower end of said post means portion for stabilizing and supporting the post apparatus in a vertical attitude after being forcibly driven into the ground;

a ground penetrating shaft means portion connected to and mounted below said stabilizing means portion for initial penetration of the ground during forcible driving of the post apparatus into the ground; and

said driving head means portion comprising an upwardly facing force applying surface means radially outwardly spaced from and extending circumferentially about said post means portion for receiving driving force applied to said head means portion, and

a downwardly inwardly tapered elongated core portion extending between said force applying surface means and said ground penetrating shaft means portion.

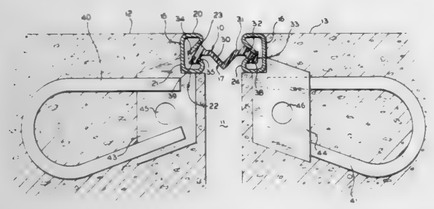
4,290,713

EXPANSION JOINT SEALING STRUCTURES

Delmont D. Brown, North Baltimore, Ohio, and Michael C. Rizza, Walnut Creek, Calif., assignors to The D. S. Brown Company, North Baltimore, Ohio

Filed Sep. 19, 1979, Ser. No. 76,908
Int. Cl.³ E01C *11/02*
U.S. Cl. 404—69 **7 Claims**

1. An expansion joint between adjacent pavement sections with an elastomer seal comprising a first frame of rolled steel mounted on and extending along one side of said joint, an opposing second frame of rolled steel mounted on and extending along the other side of said joint, and an elastomer sealing strip spanning the joint and having its respective longitudinal edges seated in a respective frame, said frames and said elastomer strip being characterized by an elongated strip of steel roll-formed into elongated, integral top, bottom and rear walls and an integral front wall which faces said joint on one frame opposing the front wall, which faces said joint, of said second



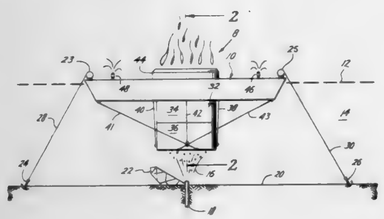
frame, said front wall of each frame comprising a downwardly and rearwardly sloping upper segment integral with said top wall and an upwardly projecting, lower segment integral with said bottom wall, each segment having a longitudinal edge spaced from the longitudinal edge of the other segment to form a longitudinal slot in each front face, and said elastomer sealing strip having respective, longitudinal, edge members seated in the respective longitudinal slots of said frames.

4,290,714

MARINE OIL LEAK CONTAINMENT AND RECOVERY APPARATUS

Booth B. Strange, Houston, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Filed Dec. 3, 1979, Ser. No. 99,388
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—60 **16 Claims**



1. An oil leak containment and recovery apparatus for use in water-covered areas comprising:

a floatation means having a deck and a well therethrough open to the water, the water in the well rising to a prescribed level;

a hollow oil containment sleeve, having a wall, open at its upper and lower ends, slidably mounted in said well;

means for lowering said oil containment sleeve through the well into the water beneath the floatation means when in use and for retracting said sleeve when underway;

means for anchoring said floatation means over an oil/gas leak so that an upward flow of said oil and gas becomes entrapped at the upper end of said sleeve; and

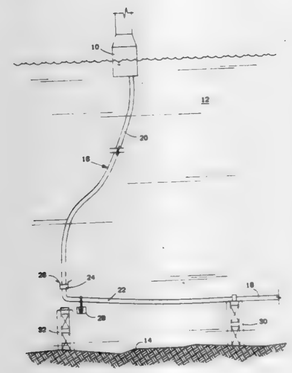
means for removing the entrapped oil to storage.

4,290,715

PIPELINE RISER FOR FLOATING PLATFORMS

Pierre A. Beynet, Tulsa, Okla., and Emil K. Williams, Gretna, La., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 5, 1979, Ser. No. 45,717
Int. Cl.³ E02D *21/00*; B23Q *1/08*; F16L *1/00*
U.S. Cl. 405—169 **9 Claims**



1. An unarticulated riser pipe for connecting a subsea pipeline to a floating structure in a body of water comprising:

(a) a vertical riser pipe section supported at the upper end by said floating structure;

(b) a section for providing flexibility including a horizontal pipe section connected at one end to said subsea pipeline and at the other end rigidly connected to said vertical riser pipe section, said horizontal pipe being supported from the bottom of said body of water only near said one end with the other end above said bottom; and

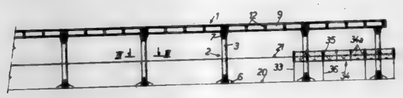
(c) weight means connected to and supported by the lower end of said vertical riser pipe section so as to apply a downward force to the lower end of said vertical riser pipe section.

4,290,716

PLATFORM RESTING ON THE BOTTOM OF A BODY OF WATER, AND METHOD OF MANUFACTURING THE SAME

Jacques E. Lamy, Fontenay-aux-Roses, France, assignor to Compagnie Generale pour les Developpements Operationnels des Richesses sous Marines "C. G. Doris", Paris, France

Filed Apr. 6, 1979, Ser. No. 27,828
Int. Cl.³ E02B *17/02*
U.S. Cl. 405—203 **5 Claims**



1. An offshore platform of the "gravity" type being designed for lying by virtue of its own weight on the bottom of a body of water and being composed basically of an underframe structure resting on the bottom of the body of water and supporting a bridge structure above the surface of the body of water, wherein:

said underframe structure comprises a plurality of longitudinally-spaced and transversely-extending piers, each of the plurality of piers including a pluraity of transversely-spaced upright posts in mutual transverse alignment, a common transverse base resting on the bottom of the body of water and carrying lower ends of the upright posts, and a common cross-beam overtopping upper ends of the upright posts, whereby an assembly of said upright posts, said base, and said cross-beam form together each of the plurality of piers in a vertically oriented, generally planar, and substantially two-dimensional array, and

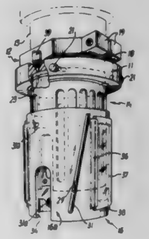
said bridge structure comprises a longitudinal plurality of bays, each of the plurality of bays including a plurality of transversely spaced and longitudinally-extending beams which rest upon cross-beams of the piers, and a plurality of longitudinally-spaced and transversely-extending joists interconnecting said beams whereby an assembly of said beams and said joists form together each of the plurality of bays in a horizontally oriented, generally planar, and substantially two-dimensional array.

4,290,717

MACHINERY SAFETY GUARDS

Douglas E. Aslen, 16 Pinfold La., Romiley, Cheshire, England

Continuation-in-part of Ser. No. 800,549, May 25, 1977, abandoned. This application Dec. 19, 1978, Ser. No. 971,080
Claims priority, application United Kingdom, May 28, 1976, 22389/76
Int. Cl.³ B23B *47/00*
U.S. Cl. 408—241 G **4 Claims**



1. A machinery safety guard for encircling a tool comprising a mounting ring for application to a non-rotatable part of a drilling machine or the like in generally coaxial relationship with the tool to be carried by such a machine; a generally tubular guard body releasably attachable to the said mounting ring; resilient, yieldable, retention means attaching the upper end of said guard body to said mounting ring for quick release thereof by an extraction force; a guard sleeve slidably mounted on said body and freely movable in the axial direction thereof, the sleeve being adapted and arranged so as to make visible the region of the drilling tool; respective access slots in the guard body and guard sleeve each extending upwardly from an open end in the lower edges thereof to facilitate application of the guard body to, and its removal from, the mounting ring in the presence of a drill bit, the open ended slots being of a lesser length than the elements in which the slots are respectively provided; at least one pin on the guard body for cooperation with at least one nearly vertical, sharply inclined slit in the sleeve, thereby to impart a rotational motion between the body and guard on relative axial motion therebetween to effect angular displacement, for a distance slightly greater than the width of an access slot, between the said access slots on such axial motion; whereby the respective open ended access slots in the guard body and guard sleeve register in radial and axial alignment in the retracted position of the sleeve on the body but are angularly spaced in the peripheral direction of the guard in the operative position of the sleeve to at least partially close the lower said access slot in said guard sleeve during use.

2. A machinery safety guard for encircling a tool comprising a mounting ring for application to a non-rotatable part of a drilling machine or the like in generally coaxial relationship with the tool to be carried by such machine, a generally tubular guard body releasably attachable to the said mounting ring,

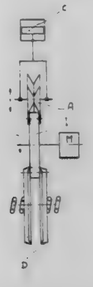
resilient, yieldable, retention means attaching the upper end of said guard body to said mounting ring for quick release thereof by an extraction force, a guard sleeve slidably mounted on the said body and freely movable in the axial direction thereof, the sleeve being adapted and arranged so as to make visible the region of the drilling tool, wherein the mounting ring is a hollow, unsplit bylinder of predetermined diameter free of slots and includes an integral, split clamping collar of reduced diameter arranged in closely spaced parallel disposition relative to the body of the mounting ring, the collar and ring body being one piece and secured together at one location, and the collar being split at an opposed diametrical location and having radial lugs thereat to receive a clamping bolt.

4,290,718

TOOLS FOR BEVELLING AND DEBURRING GEARS

Carlo Occhialini, Bologna, Italy, assignor to Samputensili S.p.A., Bologna, Italy

Filed Apr. 24, 1978, Ser. No. 899,468
Claims priority, application Italy, May 3, 1977, 3420 A/77
Int. Cl.³ B23F *19/10*
U.S. Cl. 409—8 **13 Claims**



11. A tool for bevelling and deburring gear teeth of gears, comprising

a first member forming a gear-shaped, toothed bevelling tool, having profiled teeth each formed with two sides, said sides being engageable simultaneously with four corners of gear teeth of gears to be bevelled,

both of said sides of said profiled teeth being straight and adjacent of said sides of adjacent of said profiled teeth all being inclined relative to an axis of the gears to be bevelled and tapering convergingly in a lateral direction away from the bevelling tool, and defining spaces therebetween adapted to receive the gear teeth of gears to be bevelled, said profiled teeth of each one of said cooperating parts define narrowmost bases opposite and freely spaced apart from each other with nothing therebetween at variable distances depending on the thicknesses of the gear teeth of the gears to be bevelled such that various thicknesses of the gear teeth of the gears to be bevelled can be accommodated between and contacting all said adjacent sides of said profiled teeth with said cooperating parts and said bases displaceable apart accommodatingly relative to each other, whereby both sides of the gear teeth of said gears to be bevelled are bevelled simultaneously by both said adjacent sides of said adjacent teeth of said cooperating parts, respectively,

a second member comprising a pair of deburring discs, said deburring discs having smooth profiles inclined relative to each other,

axial take-up means for always pressing said profiles of said deburring discs against opposite lateral sides of the gear teeth of said gears to be bevelled and deburred on only one continuous circumferential line,

means for keeping said two cooperating parts of said bevelling tool pressed against a gear being bevelled during an entire bevelling operation, whereby as a result of both said means all bevelling and deburring are performed with the same nominal dimensions,

a first axis,

a second axis, parallel to said first axis

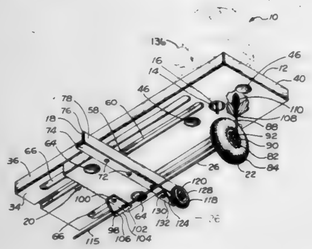
said bevelling tool and said deburring discs being respectively mounted coupled on said two separate parallel axes.

4,290,719

CUTTING GUIDE

Ronald L. Worthington, deceased, late of Selah, Wash., and by Florence Worthington, administratrix, 603½ B, N. 20th Ave., Yakima, Wash. 98902

Filed Jul. 19, 1979, Ser. No. 59,061
Int. Cl.³ B23C *1/20*
U.S. Cl. 409—180 **11 Claims**



1. A cutting guide for use with a power unit having a powered cutting tool to cut strips of materials from a larger sheet, said cutting guide comprising:

(a) a manually graspable base plate having an opening for receiving the cutting tool downwardly therethrough;

(b) means for mounting said power unit on said base plate;

(c) an elongate fence disposed below said base plate, said fence having a leading and a trailing end portion, and an upright work piece contacting guide face directed toward said base plate tool receiving opening;

(d) carriage means moveable along the bottom surface of said base plate for securely supporting said fence in selective locations relative to said base plate tool receiving opening; and

(e) strip support means cooperatively carried by said base plate and said carriage means for supporting the cut strip upwardly against the bottom surface of said base plate, said strip support means comprising:

a support roller disposed below said base plate at a location rearwardly of said cutting tool receiving opening and laterally between the central axis of said cutting tool receiving opening and said fence;

axle means for rotatably mounting said roller along an axis extending parallel to the bottom surface of said base plate and perpendicularly to the length of said fence guide face, and

means fur urging said roller upwardly towards the bottom surface of said base plate.

4,290,720

QUICK SELF-RELEASE AND RELOAD TOOLING DEVICE

Roberto J. Ferreira, Bellflower, Calif., assignor to R. F. B. Engineering Inc., Garden Grove, Calif.

Filed Dec. 17, 1979, Ser. No. 104,111
Int. Cl.³ B23B *5/26, 31/10, 5/22*
U.S. Cl. 409—233 **4 Claims**

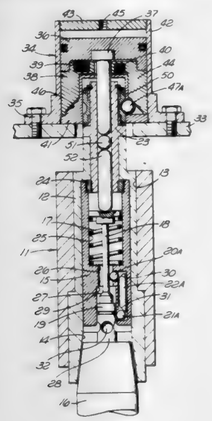
1. In a machine tool having a machine body and a rotatable machine spindle, a quick self-release and reload tooling device for a rotatable tool element, tool said device comprising:

a tool-holder device with an appendage and a plurality of radially disposed recesses on said appendage,

a tool-holder chuck device with locking means mounted within said machine spindle, said chuck having an axially disposed bore with three different diameters, a spring loaded shaped plunger means disposed within said bore and axially movable therein,

at least one radially disposed first hole communicating with said axial bore and having a first sphere disposed therein,

at least one radially disposed second hole axially displaced from said first hole and with said axial bore and having a second sphere disposed therein, axially inward of one end



of said chuck, a second bore disposed to communicate with said first and second hole, and a shaped pin disposed in said second bore and disposed to move axially therein, and

an axially perforated draw bar means with a free rotating gripper collar means,

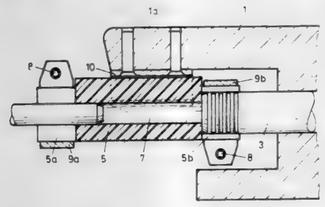
disposed on said machine at the other end of said chuck means having an air cylinder means and with locking and pushing means concentric with and axially in line with said spindle means.

4,290,721

TOOL HOLDER ASSEMBLY FOR A PORTABLE POWER TOOL

Fritz Knoll, Konradigasse 21, D-7750 Constance, Fed. Rep. of Germany

Filed Oct. 23, 1979, Ser. No. 87,486
Claims priority, application Switzerland, Nov. 6, 1978, 11408/78
Int. Cl.³ B23C *1/20*; B23B *31/00*
U.S. Cl. 409—234 **10 Claims**



1. A toolholder assembly incorporated in a portable power tool having a housing and a drive means disposed therein comprising in combination:

(a) a plastic toolholder body having a front end for carrying a tool bit;

(b) a first clamping assembly at a rear end of the toolholder body for releasably securing the toolholder body to the drive means for oscillating the toolholder body in a longitudinal direction by the drive means; said first clamping assembly including

(1) a first clamping yoke and

(2) a first tightening screw carried by said first clamping yoke;

(c) a second clamping assembly at said front end of said toolholder body for releasably securing a rear shank of the tool bit to said toolholder body; said second clamping assembly including

(1) a second clamping yoke and

(2) a second tightening screw carried by said second clamping yoke;

(d) longitudinal guide faces provided on said toolholder body between said first and second releasable securing means; and

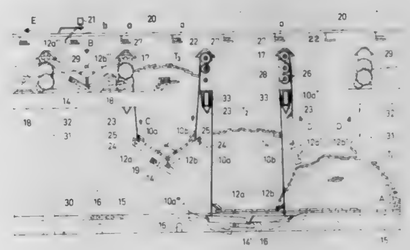
(e) a bearing member mounted in said housing and provided with longitudinal counterguide faces slidably cooperating with said longitudinal guide faces of said toolholder body for taking up forces transverse to the direction of the longitudinal oscillation of said toolholder body.

4,290,722

METHOD FOR USING TIMBER SORTING COMPARTMENTS AND A SORTING COMPARTMENT FOR SAID METHOD

Alpo Rysti, Friisilantie 36, 02240 Espoo 24, Finland; Seppo Anttila, Vantaa, and Veijo Maki-Hoimela, Espoo, both of Finland, assignors to Alpo Rysti, Espoo, Finland

Filed Aug. 6, 1979, Ser. No. 64,116
Int. Cl.³ B65G *65/00*
U.S. Cl. 414—48 **9 Claims**



1. A method for the use of timber sorting compartments, in which method a sorting compartment is filled with timber pieces (a,), after which the sorting compartment is opened and the accumulated timber lot (T_2) is allowed to discharge onto take-up equipment (**15**), by means of which the timber lot is then carried on to be further processed, after which the compartment is closed to be ready to receive the next timber lot; wherein the method comprises the steps of:

accumulating the timber lot (T_2) upon rigid supporting arms (**12***a*,**12***b*) suspended and extended by pairs of flexible suspending means (**10***a*,**10***b*), these means being located on both sides of the accumulated timber lot (T_2);

lengthening the pairs of flexible suspending means (**10***a*,**10***b*), then opening or allowing the supporting arms (**12***a*,**12***b*) to open;

lifting the supporting arms (**12***a*'',**12***b*'') independently and by separate paths to a top position by shortening the pairs of flexible suspending means (**10***a*,**10***b*);

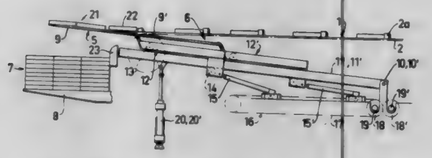
locking the supporting arms (**12***a*''',**12***b*''') to form a closed bottom of the compartment for receiving pieces of the next timber lot, and repeating the phases for the next timber lot.

4,290,723

TIMBER PACKAGE ARRANGER

Jan Johansson, Byske, Sweden, assignor to Renholmens Mekaniska Verkstad AB, Byske, Sweden

Continuation of Ser. No. 802,345, Jun. 1, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,568
Int. Cl.³ B65G *57/10*
U.S. Cl. 414—83 **5 Claims**



1. An apparatus for assembling timber output at the delivery end of a feed conveyor in packages of layers with or without sticks between the layers, comprising a device for transferring a layer of a predetermined number of timber pieces advanced one at a time to a liftable and lowerable stacking table provided after the conveyor in its feed direction, on which table the layers are positioned by the transfer device and stacked one above the other to form a timber package, and which is adapted with the growth of the timber package to correspondingly move in steps until the package is completed, characterized in that the feed conveyor delivers timber pieces in equally spaced relationship, the transfer device is provided in direct connection to the delivery end of the feed conveyor and comprises at least two carrier planes movable individually and after one another in a cyclic path, of which carrier planes always one in a phase of its cyclic movement constitutes a continuation of the feed conveyor for receiving timber pieces delivered from said conveyor to form a layer, which then is transferred by the same, and that each carrier plane during said phase of its cyclic movement moves ahead in agreement with the feed conveyor a distance equal to the width of the timber piece during the time the feed conveyor moves a distance substantially equal to the width of the timber piece and the spacing between them until a layer is completed.

4,290,724

CONVEYOR PAN IMMOBILIZING ASSEMBLY

Robert D. Lichti, 3318 Warwood Rd., Lakewood, Calif. 90712, and Frederick D. Hock, Los Alamitos, Calif., assignors to Park Mobile, Inc., New York, N.Y., by said Frederick D. Hock

Continuation-in-part of Ser. No. 873,520, Jan. 30, 1978. This application Dec. 26, 1979, Ser. No. 107,328
Int. Cl.³ E04H *6/14*
U.S. Cl. 414—251 **7 Claims**



1. A conveyor pan immobilizing assembly for immobilizing a conveyor pan having two opposite sides in a direction substantially perpendicular to the conveyed direction of the conveyor pan yet permitting movement of the conveyor pan in the conveyed direction, said assembly comprising

first and second subassemblies mounted for respective engagement with the sides of the conveyor pan that are substantially parallel to the conveyed direction, each subassembly comprising:

a roller for engaging the pan side;

means for rotatably mounting said roller; and

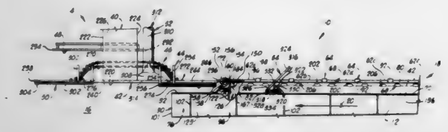
means for resiliently mounting said roller for movement in the substantially vertical direction, said roller being mounted such that the surface thereof when in engagement with the respective pan side forms an acute included angle with the vertical axis, said resilient mounting means comprising a housing; an elongate bracket, one end of said bracket rotatably mounting said roller and the other end of said bracket being pivotally mounted in said housing about a first pivot for a predetermined amount of rotation in a first direction and about a second pivot after continued rotation in said first direction beyond said predetermined amount of rotation; and spring means for resiliently urging said one end of said bracket in an upward direction.

4,290,725

PARTICULATE MATERIAL TRANSFER SYSTEM

Weldon K. Johnson, Boise, Id., assignor to Kerr-McGee Coal Corporation, Oklahoma City, Okla.

Filed Oct. 4, 1979, Ser. No. 81,888
Int. Cl.³ B65G *67/06*
U.S. Cl. 414—329 **19 Claims**



1. An apparatus for protecting particulate material from the surrounding outside environment during the transfer of the material from a storage assembly to a vehicle comprising:

a loading chute having a lower end and a channel extending therethrough, the channel being in communication with the storage assembly for transferring the particulate material from the storage assembly through the channel in the loading chute;

a temporary cover having an upper surface, a lower surface, a first end, an opposed second end, a first side, an opposed second side, the temporary cover being connected to the lower end of the loading chute with the channel of the loading chute extending through the temporary cover;

a body forming a portion of the vehicle having a first end, a second end, a first side, a second side, an upper side and a lower side, the body having a storage bin formed therein and the upper side of the body having a material receiving opening therein communicating with the storage bin;

a first cover assembly, comprising:

at least one hatch door having a first side, an opposed second side, a first end and an opposed second end, the hatch doors being connected to the body of the vehicle and positioned so that the hatch doors cover the material receiving opening of the body of the vehicle in a closed first position, the hatch doors each being movable from the material receiving opening in the body of the vehicle to an opened second position, a cover receiving opening being formed between the hatch door and the storage bin in the closed position of the hatch door for receiving the temporary cover; and

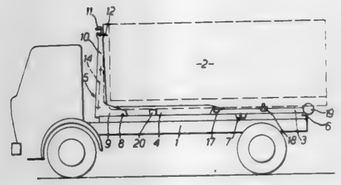
means for moving the hatch doors from the closed first position to the opened second position and for moving the hatch doors from the opened second position to the closed first position, the hatch door being adapted to be positioned above the storage bin, the temporary cover and the means for moving the hatch doors from the closed first position to the opened second position cooperating to position at least a portion of the temporary cover in the cover receiving opening between the storage bin of the vehicle and the hatch door prior to the hatch door being moved from the closed first position to the opened second position, the temporary cover being positioned over and covering a portion of the storage bin of the vehicle covered by the hatch door in the closed first position of the hatch door thereby covering the storage bin of the vehicle prior to the hatch door being moved to the opened second position, the particulate material being transferrable from the overhead storage bin to the storage bin of the vehicle via the channel in the chute while the temporary cover covers the storage bin of the vehicle.

4,290,726

EQUIPMENT FOR LOADING OF AN EXCHANGE PLATFORM OR CONTAINER

Leo Sutela, Turku, and Heikki Laitinen, Raisio, both of Finland, assignors to Oy Partek AB, Raisio, Finland

Filed Oct. 12, 1979, Ser. No. 84,059
Claims priority, application Finland, Nov. 8, 1978, 783401
Int. Cl.³ B60P *1/64*
U.S. Cl. 414—421 **5 Claims**



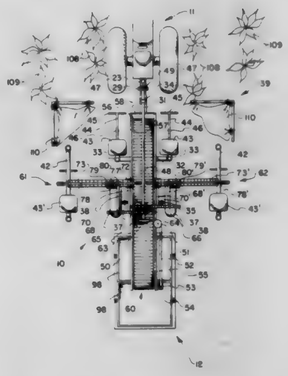
1. Apparatus provided on a vehicle for moving an exchangeable container onto the vehicle and for removing same from the vehicle and for tipping the container when mounted on the vehicle, said apparatus comprising a rear frame pivotably connected at its rear end to the rear end of the vehicle, a second frame pivotably connected at one end to said rear frame, a substantially L-shaped member having one limb pivotably connected to said second frame, the other limb of said L-shaped member being provided at its outer end with engaging means for engaging a member provided on the front end of the container, a first piston and cylinder device having one end connected to the vehicle and its other end connected to the second frame for pivoting the second frame, and a second piston and cylinder device arranged between the L-shaped member and the second frame for pivoting the L-shaped member about its pivot connection with the second frame, said L-shaped member being divided longitudinally from a point below the engaging means to form two branches which diverge from each other transversely of the vehicle and which at their lower end extend rearwardly to form said one limb, the forward end of said second frame extending forwardly beyond the pivot connection between the L-shaped member and said second frame by a distance substantially corresponding to the length of the parts forming said one limb of the L-shaped member, said second piston and cylinder device being located between said two diverging branches of the L-shaped member and being connected to said other limb and to the second frame at a position forwardly of the pivot connection between the L-shaped member and the second frame, the length of the cord between the position of the engaging means when said other limb is vertical and the position of the engaging means when the L-shaped member has been pivoted by the full stroke of the second piston and cylinder device about the pivot connection with the second frame being substantially double the length of said one limb of the L-shaped member, and said other limb of the L-shaped member being longer than said one limb.

4,290,727

HARVESTING DEVICE

William E. Davis, Sr., Kinston, N.C. 28501

Continuation-in-part of Ser. No. 947,578, Oct. 2, 1978, abandoned. This application Feb. 28, 1979, Ser. No. 16,189
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—508 **13 Claims**



1. A harvesting device of the tobacco type comprising: a frame means; a pair of front seat means mounted one on each side of said frame means and adjacent thereto; a foldable foot rest means mounted adjacent each of said front seat means whereby when said harvesting device is towed behind a separate vehicle, said foot rest can be folded out of the way during sharpe articulated turns; a pair of rear seat means mounted one on each side of said frame means outwardly of said front seat means a distance approximately equaling the width of a crop row; a longitudinally disposed, rearwardly driven conveyor means in the form of an open interconnected plurality of rod-like fingers mounted on said frame and extended from adjacent and between said front seat means rearwardly and upwardly to an elevated, outwardly projecting position behind said frame means; conveyor means extended upwardly and inwardly from adjacent each of said rear seat means to above said longitudinal conveyor means whereby as the crop adjacent each of said front seat means is harvested, it can be deposited directly on said longitudinal conveyor and as the crop adjacent each of said rear seat means is harvested, it can be conveyed therefrom to above and deposited on said longitudinal conveyor; and a crop receiving means articulatingly connected to and disposed rearwardly of said frame means below the rear portion of said longitudinal conveyor means whereby an improved harvester means is provided.

4,290,728

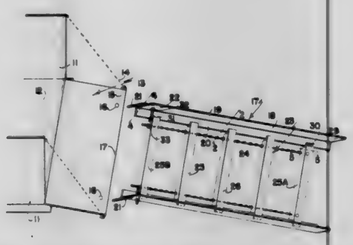
RAMP TO LOAD AND UNLOAD VEHICLES INTO AND FROM A TRUCK BODY

Lucien Leduc, Box 368, Assiniboia, Saskatchewan, Canada

Filed Sep. 10, 1979, Ser. No. 74,252
Claims priority, application Canada, Sep. 20, 1978, 311698
Int. Cl.³ B65G *67/02, 69/28*
U.S. Cl. 414—537 **12 Claims**

1. A ramp assembly for use with a truck body which includes a tail gate and means to support said tail gate when opened, at an inclined angle extending outwardly and downwardly towards the ground; said ramp assembly comprising in combination a pair of spaced and parallel, longitudinally extending stringers, having tail gate engaging ends and ground engaging ends, and a flexible ladder assembly operatively connected by one end thereof to adjacent one end of said stringers and rollable along said stringers from a rolled stored position, to an unrolled extended position and vice-versa, means to detachably secure the other end of said ladder assem-

bly to adjacent the other ends of said stringers when in the unrolled extended position, means to support said ladder assembly upon said stringers when in the unrolled extended position and means operatively and detachably connecting said stringers to said tail gate by said tail gate engaging ends thereof whereby said stringers extend downwardly and outwardly from said tail gate to the ground, said stringers comprising



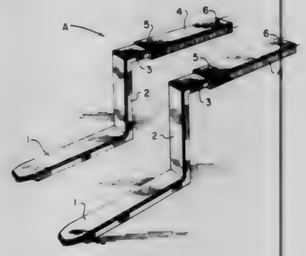
members having horizontal flanges and vertical flanges, said ladder assembly including flexible, longitudinally extending rung support means and a plurality of transverse rungs secured in spaced and parallel relationship along the length of said rung support means, the distal ends of said rungs engaging upon and being supported by the horizontal flanges of said stringers, the vertical flanges of said stringers acting as guide rails for the vehicle driven thereon.

4,290,729

ANGULAR DETACHABLE EXTENSIONS TO THE FORKS OF FORK LIFT TRUCKS

Arthur P. Cary, 2519 Farrington St., Dallas, Tex. 75207

Filed Nov. 20, 1978, Ser. No. 962,552
Int. Cl.³ B66F *9/06*
U.S. Cl. 414—607 **4 Claims**



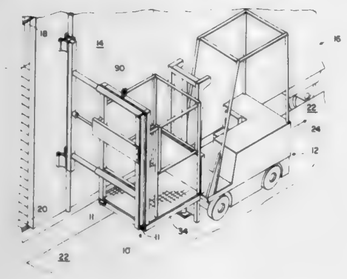
1. In a fork lift truck having wheels supporting the truck from a horizontal floor at one height and including forwardly extending forks adapted for vertical travel from the floor to a height above said floor, the improvement comprising:
   a. a modified S-shaped extension removably attached to said forks,
   b. surrogate forks at the distal end of said extension to engage a load,
   c. structural means in said extension between said point of attachment to said forks and the point of engagement with a load to position said surrogate forks at a lower level than said floor, whereby a load at said lower level may be lifted to and above said floor level for relocation on said floor by said truck, and wherein
   d. said modified S-shaped extension includes first horizontal member sections which comprise tubular members that removably and slideably engage said forks, and also slideably engage other members of said extension.

4,290,730

ATTACHMENT FOR FORK LIFT

James A. Weaver, Topeka, Kans., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 13, 1980, Ser. No. 129,914
Int. Cl.³ E05F *13/02;* **B66F** *9/19*
U.S. Cl. 414—607 **7 Claims**



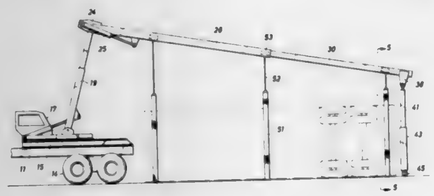
1. An attachment for a fork lift truck for opening or closing a sliding door comprising:
   a horizontal support member, said horizontal support member comprising elongate receiving means for receiving the forks of a fork lift truck such that the horizontal support member is carried in a substantially horizontal plane on the forks of the fork lift truck;
   a first door engaging member;
   a second door engaging member; and
   means for mounting each of said first and second door engaging members on said horizontal support structure for engaging a sliding door such that once engaged the sliding door can be moved by movement of a fork lift truck on which the attachment is carried, said first and second door engaging members being separated in a vertical direction a substantial distance whereby the upper of said door engaging members is adapted to engage a region of a sliding door a substantial distance above a region of the sliding door which is adapted to be engaged by the lower of said door engaging members.

4,290,731

APPARATUS FOR PICKING UP OVERTURNED VEHICLES

John A. Griffith, 8935 Solon, Houston, Tex. 77064

Filed Mar. 26, 1979, Ser. No. 23,690
Int. Cl.³ B66C *1/20, 23/78*
U.S. Cl. 414—678 **13 Claims**



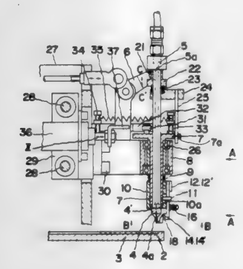
1. Emergency vehicle apparatus for engaging and uprighting an overturned elongate trailer or the like which comprises:
   (a) a truck-borne framework comprising first and second telescopically connected frame members having a specified lengthwise extent;
   (b) a truck-borne frame member being pivotally interconnected with said first frame member and being rotatable and elevatable relative to said truck for adjusting the height and position of said first and second frame members, said truck-borne frame member extending said first and second frame members approximately parallel to and along an overturned vehicle;
   (c) at least a pair of elongate slings supported by said frame members which are adapted to be selectively placed around and beneath an overturned vehicle;
   (d) means for selectively raising said slings to raise and elevate an overturned vehicle supported on said slings;
   (e) end located support leg means affixed to the end portions of said first and second frame members to enable said first and second frame members to be extended approximately over an overturned vehicle such that said leg means is located at one end of the overturned vehicle and the emergency vehicle apparatus is located at the other end thereof, said support leg means having ground contacting means facilitating movement of said end support leg means on the ground to permit movement of the vehicle to another location.

4,290,732

APPARATUS FOR CARRYING AND PLACING COMPONENTS

Yasuo Taki, Hirakata; Shigeru Araki, Katano; Kazuhiro Mori, Katano; Yoshihiko Misawa, Katano, and Souhei Tanaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Sep. 6, 1979, Ser. No. 72,850
Claims priority, application Japan, Sep. 8, 1978, 53-111187
Int. Cl.³ B65G *47/91;* **H01L** *21/58*
U.S. Cl. 414—752 **4 Claims**



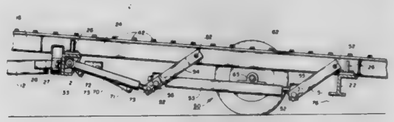
1. An apparatus for carrying and placing components, comprising:
   a body frame fixed at a position;
   a rod means movably supported on said body frame for movement in the vertical and horizontal directions;
   a moving means connected to said rod means for moving said rod means in the horizontal direction;
   a further moving means connected to said rod means for moving said rod means in the vertical direction;
   a suction tool on the lower end of said rod means for picking up a component;
   suction means connected to said suction tool for supplying a vacuum to said suction tool when the suction tool is carrying a component;
   at least one pair of positioning pawls rotatably mounted on said rod means and having free ends for grasping and positioning a component therebetween when the free ends are moved toward each other; and
   a means for rotating said positioning pawls in synchronization with the movement of said rod means and having a first spring connected between the pawls in each pair and urging the free ends of said pawls toward each other, a pawl supporting member slidable on said rod means, a second spring engaging said pawl supporting member and urging the pawl supporting members and pawls along said rod means in the axial direction thereof toward said suction tool, and at least one pin on said rod means and engaged by said pawls as said pawls move toward said suction tool for urging said pawls apart to move the free ends away from each other against the action of said first spring, whereby said pawls have the free ends apart when the suction tool on the rod means is in the lowered position for picking up or positioning a component, and when said rod means is moved to the raised position, said free ends are moved together by said first spring for engaging the free ends with a component picked up by said suction tool from opposite directions for properly positioning the component on said suction tool.

4,290,733

FORAGE STACK MOVER

Fritz Lahman, Hecla, S. Dak., assignor to Lahman Manufacturing Company, Inc., Hecla, S. Dak.

Filed Jan. 28, 1980, Ser. No. 115,945
Int. Cl.³ B60P *1/18, 1/36*
U.S. Cl. 414—476 **8 Claims**



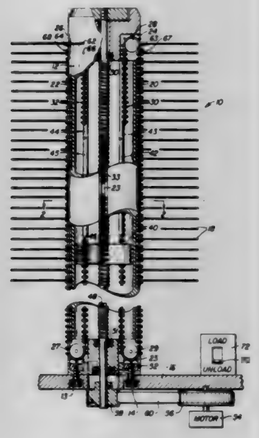
1. A mobile machine adapted to be drawn behind a prime mover for loading, unloading, and transporting a forage stack, comprising:
   a. a frame mechanism having one end thereof constructed and arranged for engagement with the draw bar of the prime mover;
   b. a bed mechanism having a plurality of longitudinal beam members secured to a plurality of transversely oriented longitudinally spaced cross brace members;
   c. means rigidly securing said frame mechanism to the front of said bed mechanism and securing each against movement with respect to the other;
   d. a plurality of endless chain elements having teeth extending normally from said chain for engaging the forage stack, said chain elements disposed on a plurality of said elongated beam members;
   e. a drive mechanism operably connected to said plurality of endless chain elements for driving the same in unison while loading and unloading a forage stack;
   f. a pair of fourbar linkages, each of which has a pair of substantially vertically extending arms spatially disposed longitudinally and pivotally secured at their upper ends to one of said plurality of elongated beam members, the lower ends of said pair of arms being pivotally joined to a longitudinally extending carriage member;
   g. a pair of wheels supported on a transverse axle secured to each of said longitudinally extending carriage members;
   h. a pair of journal blocks pivotally connected to the lower ends of said pair of vertically extending arms about axes transverse to said longitudinal beam members, said journal blocks having a pair of journal boxes with bores at right angles to said axes in said journal blocks, said longitudinally extending carriage members having ends extending through said journal box bores;
   i. and extensible means operably connected between said bed mechanism and said pair of fourbar linkages, said extensible means moving said carriage members vertically away from said bed and frame mechanisms during transporting of the mobile machine and moving said carriage members in vertical proximity to said bed and frame mechanisms during loading and unloading of the mobile machine.

4,290,734

RIGID DISC HANDLING DEVICE AND METHOD

Abraham J. Van Breen, Sunnyvale, Calif., assignor to Dysan Corporation, Santa Clara, Calif.

Filed May 19, 1980, Ser. No. 150,847
Int. Cl.³ B65G *1/12*
U.S. Cl. 414—786 **15 Claims**



1. Apparatus for stacking rigid magnetic discs having a central aperture, said apparatus comprising:

a hollow elongate member having external cross sectional dimensions slightly less than the inner dimensions of the central apertures of the discs, the outer surface of said member having at least two elongate axial recesses each terminating at openings at both ends of the recesses;

at least two endless loops supported proximate the openings so that the chains traverse the respective recesses and return within the elongate member, each said loop having a plurality of spaced nibs projecting outwardly beyond the outer surface of the elongate member;

a drive element located within the elongate member and attached to each of the loops; and

means for moving the drive element axially within the elongate member to move the loops in unison and allow serial loading and unloading of magnetic discs on the elongate member on sequential nibs of the loops.

14. A method for stacking rigid magnetic discs having central apertures comprising the steps of:

loading the discs by sequentially placing the discs over an elongate member into contact with the initial exposed projecting nibs of at least two endless loops axially disposed at the surface of the elongate member, sensing the presence of each disc in contact with the initially exposed nibs, and automatically moving the loops in unison a distance equal to the spacing between nibs upon sensing the presence of each disc so that the discs are spaced from one another along the elongate member by the loops; and

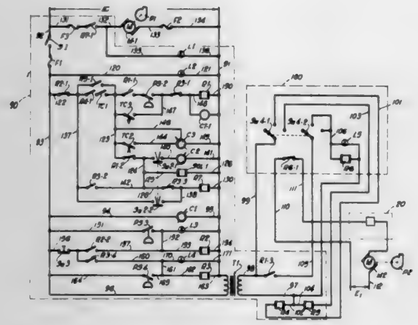
unloading the discs by sequentially removing the discs in contact with the initial exposed projecting nibs of the loops, sensing the removal of each disc in contact with the initially exposed nibs, and automatically moving the loops in unison a distance equal to the spacing between nibs upon sensing the absence of each disc to place the next disc in position to be removed.

4,290,735

WATER PRESSURE BOOSTER SYSTEM

James C. Sulko, Tucker, Ga., assignor to Syncroflo, Inc., Atlanta, Ga.

Filed Jun. 8, 1979, Ser. No. 46,772
Int. Cl.³ F04B *49/02*
U.S. Cl. 417—2 **17 Claims**



1. In a water booster system for buildings of the type having a main booster system including main booster pump means having a suction side and a discharge side, said suction side being connected to a source of water, a piping system having fixtures on various floors within said building and connected to the discharge side of main booster pump means for receiving water pumped from said source by said main booster pump means, said piping system extending upwardly in said building from said main pump means for supplying water to all of said fixtures, and control means for controlling the actuation and deactuation of said main booster pump means, the combination therewith:

(a) an auxiliary booster pump at a level in said building above said main booster pump means and having a suction side connected to and on one of said various floors communicating with an upper portion of said piping system, said auxiliary pump means having a discharge side;

(b) an accumulator tank communicating with said discharge side of said auxiliary pump means for receiving water from the discharge side of said auxiliary pump means; and

(c) means for releasing the water in said accumulator tank to said piping system.

4,290,736

OIL PUMP HAVING A SUCTION AND PRESSURE PIPE ARRANGEMENT

Felix Bernasconi, Zollikerberg, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Sep. 7, 1978, Ser. No. 940,192
Claims priority, application Switzerland, Sep. 7, 1977, 10924/77
Int. Cl.³ F04B *23/14*; F04C *2/18*
U.S. Cl. 417—87 **1 Claim**

1. A driven oil pump, of the type which is preferably driven only in one direction, comprising:

a housing mounted on a base;

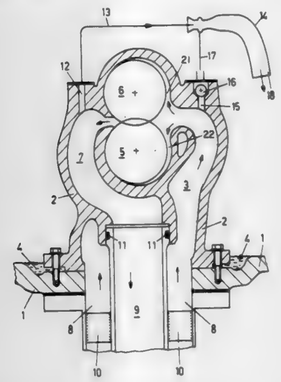
a pair of rotatable pump elements provided within the housing and having an intake side and a discharge side;

a suction chamber communicating with the intake side of the pump elements, the suction chamber being substantially within the housing and having substantially crescent-shaped portions at the intake side of the rotatable pump elements;

a pressure chamber communicating with the discharge side of the pump elements, the pressure chamber being substantially within the housing;

a suction pipe communicating with the suction chamber;

a pressure pipe communicating with the pressure chamber and concentrically disposed within the suction pipe such that a longitudinal axis of the pressure pipe intersects a rotational axis of each of the pump elements whereby the pump accommodates an opposite driving direction by a 180° turn of said housing around the longitudinal axis of the pressure pipe;



venting means for venting the suction chamber; and

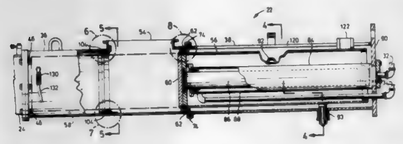
an oil sump which communicates with the base and the housing at the location of mounting to provide a seal between the housing and the base, and wherein the venting means vents to the oil sump.

4,290,737

RAM TYPE PUMP

Tymen Clay, 280 Huntingdon Ave., Stratford, Ontario, Canada (N5A 6P9)

Filed Sep. 25, 1979, Ser. No. 78,884
Claims priority, application Canada, Sep. 14, 1979, 335715
Int. Cl.³ F04B *15/02*
U.S. Cl. 417—403 **12 Claims**



1. A ram type pump for a manure handling system, said pump comprising:

a hollow, cylindrical pump housing having a transfer portion and an actuator portion, the transfer portion defining an outlet opening and an inlet hopper;

a cylindrical ram slidably located for reciprocating movement in the housing past the hopper, the ram being adapted to push manure entering the hopper through the transfer portion;

a releasable coupling connected between said transfer portion and said actuator portion at the junction thereof, the actuator portion thereby being separable from the transfer portion by releasing said coupling;

actuator means located in said actuator portion connected between the ram and said actuator portion for reciprocating the ram; and

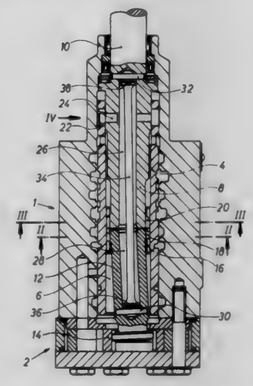
guide means located in said actuator portion for axial alignment of the ram in the housing, said guide means comprising a plurality of bearing pads extending radially inwardly from said actuator portion to slidingly engage the cylindrical ram.

4,290,738

STEERING VALVE WITH SPRING TORSION ROD

Karl-Heinz Liebert, Schwabisch Gmund, and Werner Tischer, Bobingen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,611
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1978, 2810970
Int. Cl.³ F01C *1/10*; F16D *31/04*
U.S. Cl. 418—61 B **4 Claims**



1. For use in a hydrostatic vehicle steering system having a pump (2) provided with a rotor (14), a steering control valve (1) for actuating the pump including a pump element (4), a drive shaft (10), a universal shaft (12) having a driven end pivotally and torsionally connected to the rotor, a spring torsion rod (34) having opposite ends coupled to the universal shaft and the drive shaft, and means (22, 24) responsive to torsional strain of the torsion rod for angularly displacing the valve element relative to the drive shaft; the improvement residing in articulated connecting means (32 and 30) for coupling said opposite ends (36 and 38) of the torsion rod to the drive shaft and said driven end of the universal shaft to minimize transmission of unbalanced radial forces to the valve element through the universal shaft.

4,290,739

HELICAL GEAR PUMP OR GEAR MOTOR WITH OPTIMAL RELIEF GROOVES FOR TRAPPED FLUID

Theodorus H. Korse, De Hazelaar 111, 6903 BD Zevenaar, Netherlands, assignor to Theodorus H. Korse, Delft, Netherlands

Filed Mar. 8, 1979, Ser. No. 18,718
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2810563
Int. Cl.³ F03C *2/08*; F04C *2/16, 15/02*
U.S. Cl. 418—189 **5 Claims**

1. A gear pump or gear motor comprising

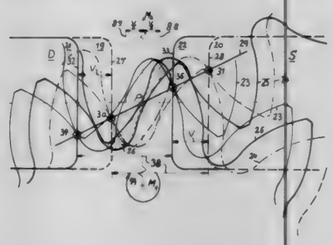
a pair of intermeshing driving and driven helical gears, a housing surrounding said gears and providing pressure ports and suction ports leading to said gears,

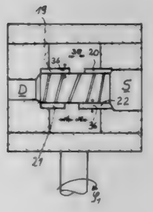
pressure port connected and suction port connected relief grooves, formed in the meshing area in the housing and/or the stationary parts, positioned in the pump,

said relief grooves facing the lateral faces of the helical gears; said pressure port connected and suction port connected relief grooves at the leading lateral face of the helical gears having been shifted, out of the symmetrical position with respect to the plane through the two rotation axes, over a distance V/2 in the direction of the suction port,

said pressure port connected and suction port connected

relief grooves at the lagging lateral face of the helical gears having been shifted, out of the symmetrical position with respect to the plane through the two rotation axes, over a distance V/2 in the direction of the pressure port, said distance V/2 having been given that value, that an enclosed tooth cavity is connected via the pressure port connected relief grooves with the pressure port, only with





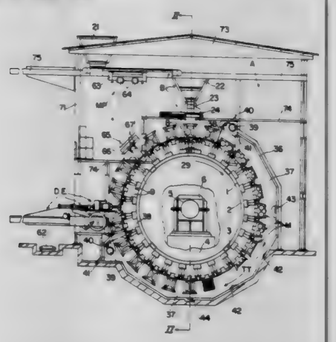
decreasing size of the area of the enclosed tooth cavity, considered in the transversal plane through the middle of the gears and that an enclosed tooth cavity is connected via the suction port connected relief grooves with the suction port, only with increasing size of the area of the enclosed tooth cavity, considered in the transversal plane through the middle of the gears.

4,290,740

ROTARY DRUM PLANT FOR THE MANUFACTURE OF CONCRETE, REINFORCED CONCRETE AND/OR PRESTRESSED CONCRETE PRODUCTS

Mircea Borcoman, 8, rue des Dardanelles, 75017 Paris, France

Filed Nov. 15, 1979, Ser. No. 94,679
Claims priority, application France, Nov. 22, 1978, 78 32891
Int. Cl.³ B28B *5/04, 5/10, 3/00, 13/05, 23/04*
U.S. Cl. 425—62 **10 Claims**



1. Plant for the manufacture of concrete, reinforced concrete and/or prestressed concrete products comprising a rotary drum with a horizontal axis of rotation, lined over its outer cylindrical surface with molding means and adapted to pass said molding means during its rotation, in front of various working stations, notably stations for concreting, for hardening, for demolding and for positioning cores, wherein the drum is equipped with beams with a composite profile fixed, notably by welding, longitudinally, over the outer periphery of the drum; said beams:

(1) having a cross-section which has areas adapted to form a roller track parallel to the longitudinal axis of the drum for the rolling and guidance of the compacting means for the concrete,

(2) being equipped with fastening means for the molds in a position situated radially outwards with respect to the said roller track,

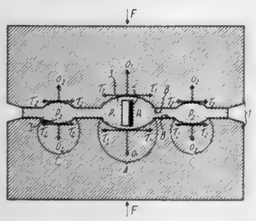
(3) having, in addition, sufficient mechanical strength to absorb the major part of the prestressing forces exerted on the cores in the case of the manufacture of prestressed concrete elements.

4,290,741

DEVICE FOR BUILDING-UP HIGH PRESSURE

Anatoly V. Kolchin, Simferopolsky proezd, 5, kv. 40; Vladimir I. Veprintsev, Chongarsky bulvar, II, korpus I, kv. 30; Lev I. Klyachko, ul. Televidenia, I9, korpus, 3, kv. 204; Alexandr S. Novgorodov, Timiryazevskaya ul., 34, korpus I, kv. 51; Vladimir M. Zubkov, Profsojusnaya ul. 39, kv. 45; Leonid F. Vereschagin, Kutuzovsky prospekt, 2/I, kv. 23, all of Moscow; Lev G. Khvostantsev, Shkolnaya ul., 4, kv. 62; Albert P. Novikov, Tsentralnaya ul, IO, kv. 59, both of Izmiran Moskovskaya oblast, Podolsky raion; By Sergei I. Yanshin, deceased, late of Moscow, Klavdia M. Yanshina; Elena S. Yanshina, both of Varshavskoe shosse, 6/8, kv. 145, Moscow; Ivan S. Yanshin, u. Ostrovskogo, 38, kv. 6, and Zinaida P. Yanshina, Krivoarbatsky pereulok, 6, kv. IO, both of Moscow, Administrators all of U.S.S.R.

Continuation of Ser. No. 547,343, Feb. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 498,667, Aug. 19, 1974, abandoned, which is a continuation of Ser. No. 424,079, Dec. 12, 1973, abandoned, which is a continuation of Ser. No. 261,636, Jun. 12, 1972, abandoned, which is a continuation of Ser. No. 104,231, Jan. 6, 1971, abandoned. This application Mar. 14, 1979, Ser. No. 20,409
Int. Cl.³ B30B *11/32*
U.S. Cl. 425—77 **6 Claims**



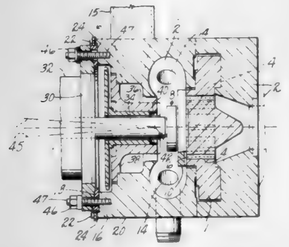
1. In a device for building up pressure comprising a pair of identical coaxial dies facing each other, the dies being capable of being drawn together and having faces, outer peripheries and central sections, adapted to receive between the sections a specimen to be studied; a solid medium arranged between the central sections and adapted to surround the specimen being studied, the solid medium being capable of transmitting to the specimen the pressure build-up in the solid medium when the dies are being drawn together and means for confining the solid medium in the central sections when the dies are being drawn together; the improvement wherein the means for confining the solid medium consists of at least one annular circular groove located identically in each die in the face thereof concentrically outwardly of the central section and inwardly of the outer periphery of each die, said grooves being adapted to be filled with the solid medium and being defined by depressions whose inner and outer sides have annular raised arms, said grooves forming a toroidal space filled with the solid medium upon the closure of the dies, the outer side of the outermost annular circular groove of said at least one groove in each die when closed upon said solid medium being open to atmospheric pressure; said solid medium being a unitary body extending from the central section through to the outer side of said outermost circular groove; wherein the solid medium is selected from the group consisting of pyrophyllite, catlinite, or their combination.

4,290,742

ADJUSTABLE PELLETIZING APPARATUS

Hans R. Scharer, Woodbridge; Richard D. Antrim, Newtown, and John R. Strang, Ansonia, all of Conn., assignors to USM Corporation, Farmington, Conn.

Filed Oct. 11, 1979, Ser. No. 83,675
Int. Cl.³ B29B *1/03*
U.S. Cl. 425—313 **4 Claims**



1. In a pellet cutting apparatus in which one or more rotatable blades are adapted to cut plastic strands extruded through a cutting surface of a perforated die plate including:

a housing support mounting the die plate for extrusion of material through said plate;

a unit adjustably secured to said housing and mounting the blades for rotation along said cutting surface;

means for aligning the plane of rotation of the blades with said cutting surface comprising an adjustable ring arranged between the housing and said unit, said ring having a wedge-like cross section forming a locating surface complementary to a mating surface on one of said unit and said support; and

means for adjusting said ring relative to said support and said unit in directions generally parallel to said cutting surface thereby varying the angular relation of the support and the unit for aligning the plane of rotation of the blades with said cutting surface, said adjustment means comprising several set screws in registration with said ring and said support to permit manual regulation and adjustment thereof.

4,290,743

DIE FOR EXTRUDING A HONEYCOMB STRUCTURAL BODY AND A METHOD FOR MANUFACTURING THE SAME

Kazuo Suzuki, Inazawa, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 21, 1980, Ser. No. 132,626
Claims priority, application Japan, Nov. 20, 1979, 54/149439
Int. Cl.³ B29F *3/00*
U.S. Cl. 425—461 **16 Claims**

1. A die for extruding a honeycomb structural body composing of an integral metal block provided with

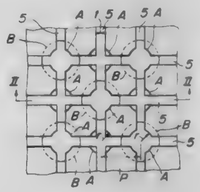
(a) one surface provided with a plurality of circular perforated holes A having a given depth and a given pattern and a grid-formed slits conforming to a cross-sectional shape of a extruded honeycomb structural body to be extruded and

(b) another surface provided with a plurality of perforated holes B having a given depth and a given pattern,

said slits connecting to the holes B, having a smaller width than a diameter of the holes A and passing through center of the holes A.

7. A method for manufacturing a die for extruding a honeycomb structural body, which comprises

(a) perforating a plurality of circular holes A having a given depth and a given pattern on one surface of an integral metal block,



(b) perforating a plurality of holes B having a given depth and a given pattern on another surface of said block and

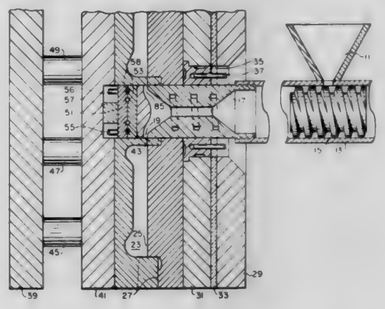
(c) providing a grid-formed slits conforming to a cross-sectional shape of a honeycomb structural body to be extruded and connecting to the holes B on the surface provided with the holes A, said slits having a smaller width than a diameter of the holes A and the slits which pass through the holes A, passing through center of the holes A.

4,290,744

APPARATUS FOR RUNNERLESS INJECTION-COMPRESSION MOLDING THERMOSETTING MATERIALS

W. Andrew Dannels, Grand Island, N.Y., and Robert W. Bainbridge, Gainesville, Ga., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 972,182, Dec. 21, 1978, abandoned. This application Feb. 5, 1980, Ser. No. 118,381
Int. Cl.³ B29F *1/08;* **B29G** *3/00*
U.S. Cl. 425—543 **11 Claims**



1. An improved injection-compression molding apparatus comprising:

a stationary assembly comprised of:

a stationary platen member,

a heat plate mounted thereon, means to heat said plate, and

a plurality of mold faces with runner channels mounted on said heat plate;

a moveable assembly comprised of:

a moveable platen member,

a heat plate mounted thereon, means for heating said plate, and

a plurality of mold faces mounted on said heat plate corresponding to and positioned to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

a feed nozzle assembly comprised of:

a housing having a closed end and an open end,

said open end adapted to be attached to the injection barrel of an injection molding machine,

said closed end and interior of said housing forming an internal chamber,

said internal chamber narrowing along a portion thereof to form a constricted zone,

the portion of said housing adjacent said constricted zone containing a means for controlling the temperature within said constricted zone,

said housing having a plurality of feed outlets positioned along the outside periphery thereof contiguous to said closed end, and

said feed outlets connecting with said internal chamber;

wherein said moveable assembly has a temperature-controlled area comprised of a temperature-controlled plate member that is in contact with and assists in cooling the closed end of said nozzle assembly when the moveable assembly is in contact with the stationary assembly;

means to move said moveable assembly to bring said moveable mold faces into close proximity and aligned with corresponding faces in said stationary assembly to form partially open mold cavities and runner channels connected to the exterior of the mold cavities,

means for feeding a supply of plasticized thermosetting molding material into the open end of said nozzle member, through said feed outlets, through said runner channels and into said partially open mold cavities,

means to seal off said runner channels to retain molding material in the mold cavities during the curing cycle,

means for closing said partially open mold cavities to compress and cure the thermosetting material enclosed within the mold cavities by pressure and heat, and

means for retracting said moveable assembly to separate said mold faces and remove a molded article.

4. An improved injection-compression molding apparatus comprising:

a stationary assembly comprised of:

a stationary platen member,

a heat plate mounted thereon, means to heat said plate, and

a plurality of mold faces with runner channels mounted on said heat plate;

a moveable assembly comprised of:

a moveable platen member,

a heat plate mounted thereon, means for heating said plate, and

a plurality of mold faces mounted on said heat plate corresponding to and positioned to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

a feed nozzle assembly comprised of:

a housing having a closed end and an open end,

said open end adapted to be attached to the injection barrel of an injection molding machine,

said closed end and interior of said housing forming an internal chamber,

said internal chamber narrowing along a portion thereof to form a constricted zone,

the portion of said housing adjacent said constricted zone containing a means for controlling the temperature within said constricted zone,

said housing having a plurality of feed outlets positioned along the outside periphery thereof contiguous to said closed end, and

said feed outlets connecting with said internal chamber;

wherein the stationary heat plate has a temperature-controlled sleeve member therein, positioned to surround the housing member of said nozzle assembly and separate said heat plate from said housing;

means to move said moveable assembly to bring said moveable mold faces into close proximity and aligned with corresponding faces in said stationary assembly to form partially open mold cavities and runner channels connected to the exterior of the mold cavities,

means for feeding a supply of plasticized thermosetting molding material into the open end of said nozzle member, through said feed outlets, through said runner channels and into said partially open mold cavities,

means to seal off said runner channels to retain molding material in the mold cavities during the curing cycle,

means for closing said partially open mold cavities to compress and cure the thermosetting material enclosed within the mold cavities by pressure and heat, and

means for retracting said moveable assembly to separate said mold faces and remove a molded article.

7. An improved injection-compression molding apparatus comprising:

a stationary assembly comprised of:

a stationary platen member,

a heat plate mounted thereon, means to heat said plate, and

a plurality of mold faces with runner channels mounted on said heat plate;

a moveable assembly comprised of:

a moveable platen member,

a heat plate mounted thereon, means for heating said plate, and

a plurality of mold faces mounted on said heat plate corresponding to and positioned to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

a feed nozzle assembly comprised of:

a housing having a closed end and an open end,

said open end adapted to be attached to the injection barrel of an injection molding machine,

said closed end and interior of said housing forming an internal chamber,

said internal chamber narrowing along a portion thereof to form a constricted zone,

the portion of said housing adjacent said constricted zone containing a means for controlling the temperature within said constricted zone,

said housing having a plurality of feed outlets positioned along the outside periphery thereof contiguous to said closed end,

said feed outlets connecting with said internal chamber; and

said feed nozzle assembly positioned such that feed outlets project beyond said stationary assembly;

means to move said moveable assembly to bring said moveable mold faces into close proximity and aligned with corresponding faces in said stationary assembly to form partially open mold cavities and runer channels connected to the exterior of the mold cavities, whereby said feed nozzle assembly is fixedly positioned with respect to said stationary assembly,

means for feeding a supply of plasticized thermosetting molding material into the open end of said nozzle member, through said feed outlets, through said runner channels and into said partially open mold cavities,

means to seal off said runner channels by movement of said moveable assembly with respect to said fixed nozzle assembly and said stationary assembly to retain molding material in the mold cavities during the curing cycle,

means for closing said partially open mold cavities to compress and cure the thermosetting material enclosed within the mold cavities by pressure and heat, and

means for retracting said moveable assembly to separate said mold faces and remove a molded article.

4,290,745

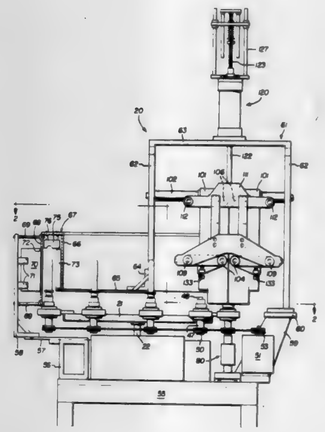
APPARATUS FOR BLOW MOLDING

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 2,146, Jan. 9, 1979, Pat. No. 4,234,297, which is a division of Ser. No. 886,488, Mar. 14, 1978, Pat. No. 4,224,263. This application May 9, 1980, Ser. No. 148,477

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—541 2 Claims



1. A blow mold arrangement comprising

first and second blow mold sections, horizontally openable and closable relative to a vertical closing plane and cooperably defining an interior blow mold cavity,

means guiding said sections for linear horizontal movement toward and away from said plane,

first and second horizontal actuating yokes, positioned on opposite sides of said sections and each bridging said plane, each yoke having first and second ends,

two tie bars which are parallel to each other and to said plane, each interconnecting an end of said first yoke to an end of said second yoke and being spaced apart sufficiently to accommodate full opening of said sections,

each yoke having a first pivot pin near its first end and a second pivot pin near its second end, said first pin being connected by a link to a third pivot pin rigidly attached to said first mold half; said second pin being connected by another link to a fourth pivot pin rigidly attached to said second mold half, said first and second pins being farther apart than said third and fourth pins,

power means for (1) simultaneously raising said first and second yokes with the elevation of said first and second pivot pins pivoting the links to move said third and fourth pivot pins away from each other and thus outwardly from the mold closing plane, thereby opening the mold sections and (2) simultaneously lowering said yokes with the lowering of said first and second pivot pins pivoting the links to move said third and fourth pivot pins toward each other and thus inwardly toward the mold closing plane, thereby closing the mold sections, and

means for limiting the movement of said links to a position where the links on either side of the mold closing plane are precisely horizontally aligned in a dead center position to resist separation of the blow mold sections.

4,290,746

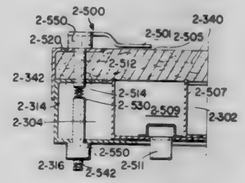
RADIANT HEATING

Thomas M. Smith, 114 Villinger Ave., P.O. Box C-94, Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 952,332, Oct. 18, 1978, and Ser. No. 775,838, Mar. 9, 1977, which is a continuation-in-part of Ser. No. 701,687, Jul. 1, 1976, abandoned, and Ser. No. 674,409, Apr. 7, 1976, Pat. No. 4,035,132. This application Mar. 13, 1979, Ser. No. 20,079

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—328 4 Claims



1. A gas-fired infra-red generator having a burner body defining a combustion mixture plenum that is encircled by a tubular air-seal plenum forming a shelf around the inside wall of the body, a ceramic fiber mat covering the plenum with the mat edges on the shelf, a series of lengths of hold-down angle extending around the periphery of the mat, and bolts engaging each length of hold-down angle and extending through the tubular plenum to the back of the burner body to clamp the angles to the back of the body and hold the mat in place.

4,290,747

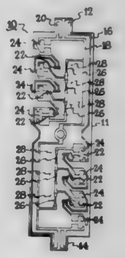
PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS

Edward J. Collins, Mentor-on-the-Lake, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,696

Int. Cl.³ F21K *5/00*

U.S. Cl. 431—359 13 Claims



1. In a circuit board for a photoflash array having a lamp firing circuit pattern deposited on a dielectric substrate and radiation sensitive switches connected in said circuitry for sequential firing of a plurality of flash lamps connected thereto, said circuit pattern comprising an organic resin matrix having particulated electrically conductive material dispersed therein and further including radiation sensitive fuse elements located at positions where the dielectric substrate has a reduced thickness relative to the remaining thickness of said dielectric substrate and with said fuse elements being formed by providing a more narrow width of said circuit pattern at the fuse locations than the remaining width of said circuit pattern, the improvement wherein said fuse elements are electrically connected together in a series circuit combination to increase the dielectric breakdown voltage of said combination upon successive actuation of the fuse elements, each of said flashlamps being

a plurality of mold faces mounted on said heat plate corresponding to and positioned to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

a feed nozzle assembly comprised of:

a housing having a closed end and an open end,

said open end adapted to be attached to the injection barrel of an injection molding machine,

said closed end and interior of said housing forming an internal chamber,

said internal chamber narrowing along a portion thereof to form a constricted zone,

the portion of said housing adjacent said constricted zone containing a means for controlling the temperature within said constricted zone,

said housing having a plurality of feed outlets positioned along the outside periphery thereof contiguous to said closed end, and

said feed outlets connecting with said internal chamber;

wherein said moveable assembly has a temperature-controlled area comprised of a temperature-controlled plate member that is in contact with and assists in cooling the closed end of said nozzle assembly when the moveable assembly is in contact with the stationary assembly;

means to move said moveable assembly to bring said moveable mold faces into close proximity and aligned with corresponding faces in said stationary assembly to form partially open mold cavities and runner channels connected to the exterior of the mold cavities,

means for feeding a supply of plasticized thermosetting molding material into the open end of said nozzle member, through said feed outlets, through said runner channels and into said partially open mold cavities,

means to seal off said runner channels to retain molding material in the mold cavities during the curing cycle,

means for closing said partially open mold cavities to compress and cure the thermosetting material enclosed within the mold cavities by pressure and heat, and

means for retracting said moveable assembly to separate said mold faces and remove a molded article.

4. An improved injection-compression molding apparatus comprising:

a stationary assembly comprised of:

a stationary platen member,

a heat plate mounted thereon, means to heat said plate, and

a plurality of mold faces with runner channels mounted on said heat plate;

a moveable assembly comprised of:

a moveable platen member,

a heat plate mounted thereon, means for heating said plate, and

a plurality of mold faces mounted on said heat plate corresponding to and positioned to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

a feed nozzle assembly comprised of:

a housing having a closed end and an open end,

said open end adapted to be attached to the injection barrel of an injection molding machine,

said closed end and interior of said housing forming an internal chamber,

said internal chamber narrowing along a portion thereof to form a constricted zone,

the portion of said housing adjacent said constricted zone containing a means for controlling the temperature within said constricted zone,

said housing having a plurality of feed outlets positioned along the outside periphery thereof contiguous to said closed end, and

said feed outlets connecting with said internal chamber;

wherein the stationary heat plate has a temperature-controlled sleeve member therein, positioned to surround the housing member of said nozzle assembly and separate said heat plate from said housing;

means to move said moveable assembly to bring said moveable mold faces into close proximity and aligned with corresponding faces in said stationary assembly to form partially open mold cavities and runner channels connected to the exterior of the mold cavities,

means for feeding a supply of plasticized thermosetting molding material into the open end of said nozzle member, through said feed outlets, through said runner channels and into said partially open mold cavities,

means to seal off said runner channels to retain molding material in the mold cavities during the curing cycle,

means for closing said partially open mold cavities to compress and cure the thermosetting material enclosed within the mold cavities by pressure and heat, and

means for retracting said moveable assembly to separate said mold faces and remove a molded article.

7. An improved injection-compression molding apparatus comprising:

a stationary assembly comprised of:

a stationary platen member,

a heat plate mounted thereon, means to heat said plate, and

a plurality of mold faces with runner channels mounted on said heat plate;

a moveable assembly comprised of:

a moveable platen member,

a heat plate mounted thereon, means for heating said plate, and

a plurality of mold faces mounted on said heat plate corresponding to and positioned to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

a feed nozzle assembly comprised of:

a housing having a closed end and an open end,

said open end adapted to be attached to the injection barrel of an injection molding machine,

said closed end and interior of said housing forming an internal chamber,

said internal chamber narrowing along a portion thereof to form a constricted zone,

the portion of said housing adjacent said constricted zone containing a means for controlling the temperature within said constricted zone,

said housing having a plurality of feed outlets positioned along the outside periphery thereof contiguous to said closed end,

said feed outlets connecting with said internal chamber; and

said feed nozzle assembly positioned such that feed outlets project beyond said stationary assembly;

means to move said moveable assembly to bring said moveable mold faces into close proximity and aligned with corresponding faces in said stationary assembly to form partially open mold cavities and runer channels connected to the exterior of the mold cavities, whereby said feed nozzle assembly is fixedly positioned with respect to said stationary assembly,

means for feeding a supply of plasticized thermosetting molding material into the open end of said nozzle member, through said feed outlets, through said runner channels and into said partially open mold cavities,

means to seal off said runner channels by movement of said moveable assembly with respect to said fixed nozzle assembly and said stationary assembly to retain molding material in the mold cavities during the curing cycle,

means for closing said partially open mold cavities to compress and cure the thermosetting material enclosed within the mold cavities by pressure and heat, and

means for retracting said moveable assembly to separate said mold faces and remove a molded article.

4,290,745

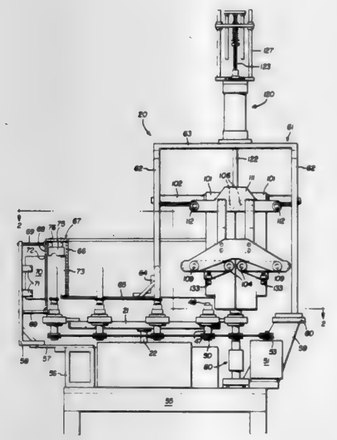
APPARATUS FOR BLOW MOLDING

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 2,146, Jan. 9, 1979, Pat. No. 4,234,297, which is a division of Ser. No. 886,488, Mar. 14, 1978, Pat. No. 4,224,263. This application May 9, 1980, Ser. No. 148,477

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—541 **2 Claims**



1. A blow mold arrangement comprising

first and second blow mold sections, horizontally openable and closable relative to a vertical closing plane and cooperably defining an interior blow mold cavity,

means guiding said sections for linear horizontal movement toward and away from said plane,

first and second horizontal actuating yokes, positioned on opposite sides of said sections and each bridging said plane, each yoke having first and second ends,

two tie bars which are parallel to each other and to said plane, each interconnecting an end of said first yoke to an end of said second yoke and being spaced apart sufficiently to accommodate full opening of said sections,

each yoke having a first pivot pin near its first end and a second pivot pin near its second end, said first pin being connected by a link to a third pivot pin rigidly attached to said first mold half; said second pin being connected by another link to a fourth pivot pin rigidly attached to said second mold half, said first and second pins being farther apart than said third and fourth pins,

power means for (1) simultaneously raising said first and second yokes with the elevation of said first and second pivot pins pivoting the links to move said third and fourth pivot pins away from each other and thus outwardly from the mold closing plane, thereby opening the mold sections and (2) simultaneously lowering said yokes with the lowering of said first and second pivot pins pivoting the links to move said third and fourth pivot pins toward each other and thus inwardly toward the mold closing plane, thereby closing the mold sections, and

means for limiting the movement of said links to a position where the links on either side of the mold closing plane are precisely horizontally aligned in a dead center position to resist separation of the blow mold sections.

4,290,746

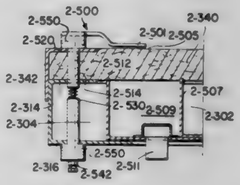
RADIANT HEATING

Thomas M. Smith, 114 Villinger Ave., P.O. Box C-94, Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 952,332, Oct. 18, 1978, and Ser. No. 775,838, Mar. 9, 1977, which is a continuation-in-part of Ser. No. 701,687, Jul. 1, 1976, abandoned, and Ser. No. 674,409, Apr. 7, 1976, Pat. No. 4,035,132. This application Mar. 13, 1979, Ser. No. 20,079

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—328 **4 Claims**



1. A gas-fired infra-red generator having a burner body defining a combustion mixture plenum that is encircled by a tubular air-seal plenum forming a shelf around the inside wall of the body, a ceramic fiber mat covering the plenum with the mat edges on the shelf, a series of lengths of hold-down angle extending around the periphery of the mat, and bolts engaging each length of hold-down angle and extending through the tubular plenum to the back of the burner body to clamp the angles to the back of the body and hold the mat in place.

4,290,747

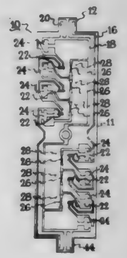
PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS

Edward J. Collins, Mentor-on-the-Lake, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,696

Int. Cl.³ F21K *5/00*

U.S. Cl. 431—359 **13 Claims**



1. In a circuit board for a photoflash array having a lamp firing circuit pattern deposited on a dielectric substrate and radiation sensitive switches connected in said circuitry for sequential firing of a plurality of flash lamps connected thereto, said circuit pattern comprising an organic resin matrix having particulated electrically conductive material dispersed therein and further including radiation sensitive fuse elements located at positions where the dielectric substrate has a reduced thickness relative to the remaining thickness of said dielectric substrate and with said fuse elements being formed by providing a more narrow width of said circuit pattern at the fuse locations than the remaining width of said circuit pattern, the improvement wherein said fuse elements are electrically connected together in a series circuit combination to increase the dielectric breakdown voltage of said combination upon successive actuation of the fuse elements, each of said flashlamps being

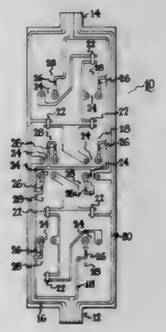
connected in branch circuits having a radiation sensitive switch connected between one side of each pair of successively connected flashlamps and a radiation sensitive fuse element connected between the remaining side of each pair of successively connected flashlamps.

4,290,748

PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS

Edward J. Collins, Mentor-on-the-Lake, Ohio, and William A. Lenkner, Neoga, Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,697
Int. Cl.³ F21K *5/00*
U.S. Cl. 431—359 **10 Claims**



1. In a circuit board for a photoflash lamp array having a lamp firing circuit pattern deposited on a dielectric substrate and radiation sensitive switches connected in said circuitry for sequential firing of a plurality of flash lamps connected thereto, the improvement wherein said circuit pattern comprises an organic resin matrix having particulated electrically conductive material and a radiation absorbing material dispersed therein, said circuit pattern further including radiation sensitive fuse elements located at positions where the dielectric substrate has a reduced thickness relative to the remaining thickness of said dielectric substrate and with said fuse elements being formed by providing a more narrow width of said circuit pattern at the fuse locations than the remaining width of said circuit pattern, each of said flashlamps and radiation fuse elements being connected in branch circuits having the radiation sensitive switches connected therebetween.

4,290,749

PERLITE EXPANSION PROCESS AND APPARATUS THEREFOR

Andre R. de Muinck, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Oct. 23, 1978, Ser. No. 953,376
Int. Cl.³ F27B *14/00*
U.S. Cl. 432—13 **14 Claims**

1. In a process for the expansion of perlite in which perlite granules are expanded by rapid heating in a flame zone in an expansion chamber, said flame zone is created by the combustion of combustible fuel in the presence of air, said combustion is initiated by a burner, and said perlite after expansion is conveyed out of said expansion chamber entrained in the flow stream formed of excess air and combustion products, the improvement whereby said process may be operated on combustible fuel comprising light fuel, heavy liquid fuel or mixtures thereof alternatively, without change in the apparatus by which means the process is practiced, said improvement comprising:

(a) preheating the air for combustion in an enclosure adjacent to the outer wall of said expansion chamber, said preheating being accomplished by contacting the air with said outer wall of said expansion chamber and absorption by said air of heat emanating from said wall;

(b) providing a conduit for said preheated air from said enclosure to said burner;

(c) locating a mixing chamber in said conduit at a point ahead of said burner;

(d) passing said preheated air to said mixing zone;

(e) providing to said mixing zone a quantity of combustion fuel sufficient to burn in the presence of said preheated air in said expansion chamber to form said flame zone, the combustion fuel and preheated air being mixed in said mixing zone;

(f) atomizing the heavy liquid fuel component of said combustion fuel and passing said mixed combustion fuel and air to a vaporization zone;

(g) vaporizing said atomized heavy liquid fuel component and the liquid fuel component of the light fuel component of said combustion fuel by contact with said preheated air in said vaporization zone; and

(h) passing the mixture of vaporized combustion fuel and preheated air to said burner and burning said combustion fuel in the presence of said air to form said flame zone.

4,290,750

CEMENTITIOUS PRODUCTS

Desmond Whiteley, Bedford, England, assignor to John Fletcher, Nottingham, England, a part interest

Filed Jul. 2, 1979, Ser. No. 53,769
Int. Cl.³ F27B *7/02*
U.S. Cl. 432—106 **10 Claims**



1. A rotating kiln for the manufacture of cementitious material, said kiln comprising in combination:

(a) an elongated tubular member mounted for rotation about an axis inclined to the horizontal and having a lower end, the central cross-section of said tubular member being free from any fixed obstruction to the flow of gases through said tubular member;

(b) means for feeding a material into said tubular member;

(c) means for permitting the exit of material from adjacent to the lower end of said tubular member;

(d) at least one lifting device, each said lifting device including:

i. at least one ring, each said ring including a plurality of lifting members rigidly fixed to the interior periphery of said tubular member and extending radially inwardly of said tubular member for lifting material from adjacent to the bottom of said tubular member and for allowing the material to drop back to the bottom of said tubular member, each said lifting member including an inlet opening through which the material enters said lifting member, an outlet opening from which the material leaves said lifting member and a passageway for the material between said inlet and outlet openings; and

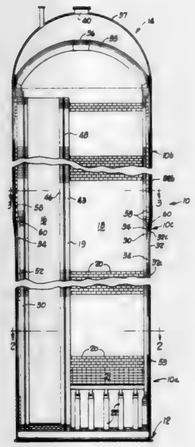
ii. banker rings disposed intermediate said rings for delaying passage of the material through said passageway of said lifting members in said rings said banker rings including means for restricting said outlet openings of said lifting members.

4,290,751

BLAST FURNACE STOVE

William H. Malone, Northfield; John Fischley, Chagrin Falls; Harry L. Anderson, Brecksville, and Edward J. Spirko, Broadview Heights, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Nov. 8, 1979, Ser. No. 92,447
Int. Cl.³ C21B *9/00*; F24H *7/00*
U.S. Cl. 432—214 **5 Claims**



1. A blast furnace stove having a continuous peripheral wall of substantially circular cross section extending from a base to a domed cover, comprising:

(a) a lower section including:

(i) a refractory ring wall of a predetermined thickness;

(ii) a lower metal shell having a substantially uniform diameter surrounding said ring wall;

(iii) a layer of insulation intermediate the ring wall and the metal shell;

(b) an upper, diametrically larger, section disposed above the lower section including:

(i) a continuation of the refractory ring wall of the lower section;

(ii) a layer of insulating brick surrounding said ring wall in the upper section;

(iii) an upper metal shell having a substantially uniform diameter surrounding said insulating brick;

(iv) a layer of insulation intermediate the insulating brick and the upper metal shell;

(c) an annular interconnecting section intermediate the lower and upper sections including:

(i) a continuation of the refractory ring wall of the lower section;

(ii) vertically tapered insulating bricks surrounding said refractory ring wall;

(iii) a layer of insulation surrounding said tapered insulating bricks;

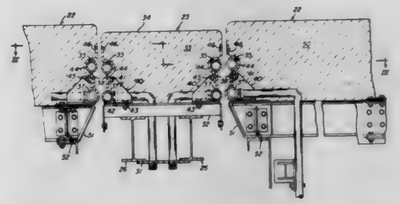
(iv) an annular interconnecting metal shell portion which obliquely joins the lower metal shell and upper metal shell to provide a gradual increasing diameter from the lower section to the upper section of the peripheral wall, said shell providing some vertical support for the tapered insulating bricks.

4,290,752

WALKING BEAM FURNACE

Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont & Associates, Inc., McMurray, Pa.

Filed Aug. 4, 1980, Ser. No. 175,303
Int. Cl.³ F27D *3/00*; F27B *9/14*
U.S. Cl. 432—235 **11 Claims**



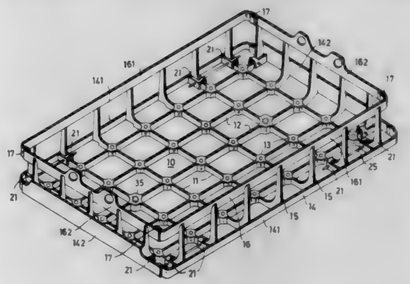
1. In a walking beam furnace having walls and a hearth forming a passageway for workpieces, said hearth including stationary and movable walking beam assemblies to support and advance the workpieces along the passageway, the combination wherein said walking beam assemblies include a body of refractory having a workpiece-engaging face, a support to carry said body of refractory, upper and lower runs of coolant pipes, means to join together said pipes to extend along each of the opposite lateral sides of said body of refractory below the workpiece-engaging face thereof, and clip means carried below the upper run of said coolant pipes while supported thereby to extend upwardly to a point spaced below the workpiece-engaging face of said body of refractory for cooling and lateral support thereof.

4,290,753

HEAT TREATING BASKET

Rudolf Klefisch, Siebengebirgsallee 165, D-5000 Kön 41, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,594
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904722
Int. Cl.³ C21D *9/00*; F27D *1/00*
U.S. Cl. 432—261 **9 Claims**



1. A heat treating basket for transporting material which is being heat treated which comprises

a bottom grating containing elements thereof which extend into upwardly projecting struts which define the vertical walls of the basket;

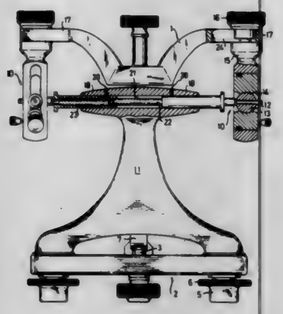
an upper frame member connecting together the upper end portions of said struts;

a lower rim member for connecting together the lower portions of said struts,

coupling members provided near the lower corners of said basket for loosely connecting the lower rim member to the bottom grating, and

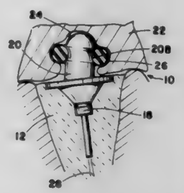
means for providing rigid connections between the lower rim member and the bottom grating, intermediate the coupling members.

4,290,754
ARTICULATOR FOR USE IN THE MAKING OF DENTURES OR PARTS THEREOF
Svante R. Edwardson, Solna, Sweden, assignor to AB Dentatus, Hagersten, Sweden
Filed Feb. 12, 1980, Ser. No. 120,886
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—56 **5 Claims**



1. In an articulator for use in making dentures or parts thereof, which comprises two principal members (1,2), provided with anchoring means (3) for carrying models of the upper and lower rows of teeth, said members (1,2) being pivotable in relation to each other by means of two condylar mechanisms (10), which simulate the movements of the jaw joint, and one of said members (2) supporting the other (1), for which purpose said one member (2) has a single slender arm or post (11); the improvement in which said arm or post (11) at its end toward the other principal member (1) carries condylar shafts (12), that are included in said condylar mechanisms (10), condylar balls (13) which are displacable on said shafts (12), the other said member (1) carrying condylar tracks (14), and said single arm or post (11) having two collinear but oppositely directed apertures (19) at its end toward said other principal member (1), in which apertures (19) said condylar shafts (12) are arranged extending in either direction from said arm or post (11).

4,290,755
DENTAL POST AND METHOD OF INSTALLING
Edward S. Scott, 1818 S. Cincinnati, Tulsa, Okla. 74119
Filed Mar. 5, 1979, Ser. No. 17,350
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **5 Claims**

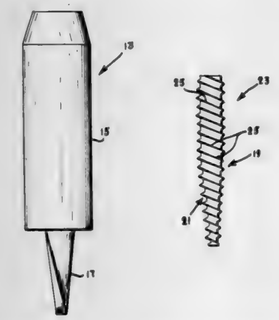


1. A dental post for removably securing a denture to the root of a tooth having a root canal, the tooth having a hole drilled therein following the root canal, the denture apparatus having therein a recess defined in part by an elastomeric member having an opening therethrough, the dental post comprising:

a body having an intermediate enlarged diameter circular portion and having an integral first symmetrical stem circular in all cross sectioned taken perpendicular the stem axis, the first stem being dimensioned for permanent attachment in a drilled hole formed in the root of a tooth; and

a second integral stem portion extending from said body in the direction opposite said first stem, the second stem having an enlarged outer head portion dimensioned to be received through a denture apparatus elastomeric member by compression of the elastomeric member whereby the elastomeric member applies retentative force to the head portion, and wherein the axis of said second stem is offset by a preselected angle from the axis of said first stem.

4,290,756
DENTAL TWIST-LOCK PIN AND DRILL
Wm. Ralph Sellers, 717 Moorside, San Antonio, Tex. 78239
Filed Jun. 22, 1979, Ser. No. 51,317
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—225 **2 Claims**



1. In combination, a tapered drill for drilling a tapered hole into sound tooth structure and a twist-lock pin for insertion into the hole drilled by the tapered drill, said twist-lock pin having a left hand thread on the outer surface thereof, said twist-lock pin having a tapered lower portion and a straight threaded upper portion for threadable engagement with a suitable insertion wrench, the tapered lower portion of said twist-lock pin being dimensioned to be fully insertable into the tapered hole in the tooth without threading for engagement with the entire tapered surface of the drilled hole in the tooth, the twist-lock pin being positively held in the wrench and inserted into the tapered drilled hole and rotated counterclockwise less than one revolution thereby causing the pin to be fully seated in the tooth.

4,290,757
BURST ON TARGET SIMULATION DEVICE FOR TRAINING WITH ROCKETS
Albert H. Marshall, Orlando, and Herbert C. Towle, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 9, 1980, Ser. No. 157,750
Int. Cl.³ F41G *3/26*; F41J *5/02*
U.S. Cl. 434—12 **22 Claims**

1. A burst on target simulator device for training with rockets, comprising in combination:

first broadcasting means having an input for projecting visual information along a first light path;

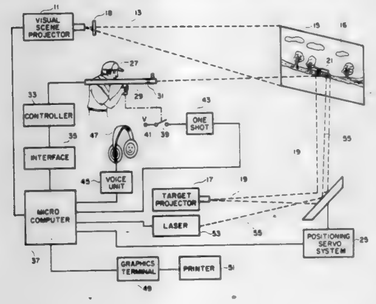
second broadcasting means for projecting target information along a second light path, said target information including a visual target and an infrared target spot in alignment with said visual target;

a reflective display screen spatially disposed downstream from said first broadcasting means adapted for receiving the visual information projected along said first light path so as to form thereon a background scene, and the target information projected along said second light path so as to form thereon said visual target and said infrared target spot in alignment therewith;

positioning means located between said second broadcasting means and said reflective display screen, and having an input for redirecting the target information projected along said second light path in a predetermined manner so as to move said visual target and the infrared target spot in alignment therewith in a predetermined direction upon said reflective display screen;

a weapon having a trigger mechanism for effecting the simulated firing thereof;

sensing means mounted within said weapon and having a data output for continuously sensing the position of said infrared target spot upon said reflective display screen,



and for continuously providing at the output thereof digital data bits indicative of the position of said infrared target spot upon said reflective display screen; and

computing means having a data input connected to the data output of said sensing means, trigger input connected to the output of the trigger mechanism of said weapon, a first output connected to the input of said positioning means, a second output connected to the input of said first broadcasting means, a third output, a fourth output, and a fifth output for extracting from said sensing means the digital data bits provided thereby only when a marksman activates the trigger mechanism of said weapon, for processing the digital data bits extracted from said sensing means so as to determine the extract position of said infrared target spot only when said marksman activates the trigger mechanism of said weapon, for providing indicator signals indicative of whether said marksman has scored a hit, miss, or near miss upon said visual target, and for providing a position control signal so as to activate said positioning means and thereby control the movement of said visual target, and the infrared target spot in alignment therewith upon said reflective display screen.

4,290,758
TRAINING AID
Rohn Lee Lucero, P.O. Box 1794, Tuba City, Ariz. 86045
Filed Sep. 13, 1979, Ser. No. 75,213
Int. Cl.³ G09B *13/00*
U.S. Cl. 434—227 **6 Claims**

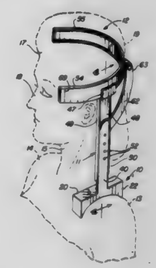
1. A training aid for engaging the shoulder of a student and for turning the head of the student in a predetermined direction relative to the shoulder of the student, said training aid comprising:

a. a shoulder engaging member for receiving and bearing only upon one shoulder of said student, said shoulder engaging member having a longitudinal axis;

b. a generally U-shaped head engaging member for receiving the back of the head, said head engaging member having an axis of symmetry;

c. an elongate substantially upright support member having,

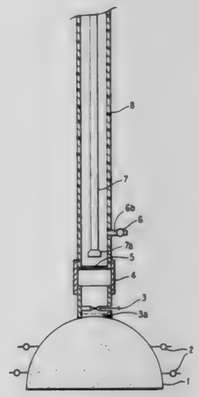
i. a lower portion immovably affixed to said shoulder engaging member, and



ii. an upper portion supporting said head engaging member above the ears of said head; and

d. bracket means for securing the head engaging member to the upper portion of the upright support member so that the axis of symmetry of the head engaging member is at an angle oc with respect to the longitudinal axis of the shoulder engaging member.

4,290,759
APPARATUS FOR TEACHING PRESSURE CONTROL IN OIL AND GAS DRILLING OPERATIONS
Ed. O. Seabourn, Hinna, Norway; Lewis W. Patterson, and Richard G. Stiverson, both of Lafayette, La., assignors to Saga Petroleum A.S. & Co., Stavanger, Norway
Filed Nov. 7, 1979, Ser. No. 68,332
Claims priority, application Norway, Aug. 23, 1978, 782860
Int. Cl.³ G09B *25/00*
U.S. Cl. 434—370 **9 Claims**



1. An apparatus for teaching pressure control in drilling for oil and gas, comprising

a complete miniature drilling rig,

a drilling pipe connected at one end thereof with said drilling rig,

a drilling bit connected with the other end of said drilling pipe,

a casing and a reservoir,

said reservoir including a container filled with particulate

material and being provided with means for controlling the supply of pressurized gas,

said casing including a transparent tube communicating with said reservoir through a screen,

a plug replaceably located in the lower part of said casing and adapted to be penetrated by said drilling bit when said drilling pipe is lowered from said miniature drilling rig, whereby the gas pressure in said reservoir is transmitted to said casing, and

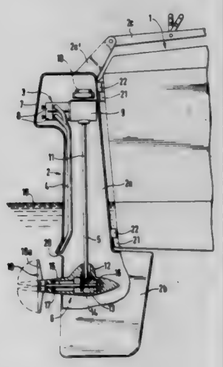
a miniature blow out preventer stack located in the upper part of said casing.

4,290,760

MANEUVERING DEVICE FOR SAILING BOATS

Karl-Erick Lindblad, Annelundsvägen 22, S-441 00 Alingsas, Sweden

Filed Jul. 27, 1979, Ser. No. 61,176
Claims priority, application Sweden, Aug. 8, 1978, 7808462
Int. Cl.³ B63H *25/06*
U.S. Cl. 440—51 **4 Claims**



1. Maneuvering device for sailing boats comprising a rudder, and propulsion means comprising a propeller unit and driving means therefore incorporated in the rudder so that the propulsion effect of said propulsion means relative to the water surrounding the rudder will be substantially directed along the vertical center plane of the rudder, said propulsion means being incorporated into a separate unit comprising a readily detachable insertion part of the rudder having a shape following the form of the rudder, quick coupling means for connecting said insertion part to the remainder of the rudder and for the removal of same, and a separate piece also having a shape following the form of the rudder and quick coupling means for connecting same to the remainder of the rudder, whereby said insertion part can be quickly substituted by said separate piece to fill the space left by said insertion part when the latter is removed, and said insertion part and said separate piece when connected to the remainder of the rudder cooperating with the latter to make a complete rudder having smooth side surfaces and a very low flow resistance.

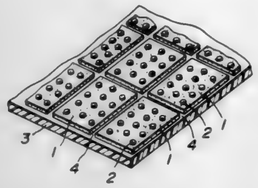
4,290,761

LAGGING BODY FOR BELT CONVEYOR PULLEY

Mutsuo Suginaka, Toyonaka, Japan, assignor to Nippon Tsusho Company Limited, Hiroshima, Japan

Filed Jun. 14, 1979, Ser. No. 48,567
Claims priority, application Japan, Dec. 26, 1978, 53/176675[U]; Jan. 8, 1979, 54/222; Apr. 11, 1979, 54/43839
Int. Cl.³ F16H *55/48*; B65G *23/12*
U.S. Cl. 474—190 **33 Claims**

1. A lagging body available for a belt conveyor pulley, comprising, a rubber substrate, a number of small plate-like ceramic lagging elements aligned in the lateral and longitudinal directions and secured on the surface of said rubber substrate, wherein said lagging element consists of 80–90% by weight of ceramic particles added with 20–10% by weight of an inorganic bonding agent selected from silica, sodium silicate and glaze of glassy material.

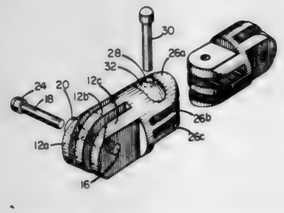


4,290,762

MULTIPLE LINK TRANSMISSION CHAIN

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Feb. 8, 1980, Ser. No. 119,986
Int. Cl.³ F16G *13/02*
U.S. Cl. 474—210 **8 Claims**



1. A multiple link chain composed of a plurality of identical links, each comprising:

a link body having a longitudinal axis and first and second link ends spaced along the axis, each identical to the other and each angularly disposed with respect to the other about the axis by 90 degrees;

each link end having a plurality of spaced members extending along the axis;

an opening in each of said members aligned along an axis orthogonal to the longitudinal axis, the orthogonal axis of one link end being orthogonal to the axis of the other link end; 'said aligned openings through said members accepting a pivot pin;

a protrusion at each link end and each outwardly extending from the outer one of the associated spaced members, each symmetrically disposed about the associated orthogonal axis and adapted for driving engagement with a sprocket wheel; and

each of said link ends being mateable to either link end of adjacent links by interdigitated connection of the spaced members of the adjacent links.

4,290,763

METHOD FOR PRODUCING ENCLOSED MULTIPANELED ENVELOPES

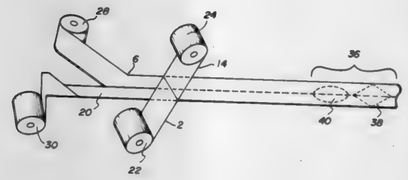
Gerald L. Hurst, 1401 Spring Garden, Austin, Tex. 78746

Filed Jun. 15, 1979, Ser. No. 48,787
Int. Cl.³ B31D *5/00*
U.S. Cl. 493—341 **11 Claims**

1. A method for producing an enclosed, multipaneled envelope suitable for inflation with a lighter than air gas to form a buoyant balloon from webs of nonelastomeric material which are sealable on one side only comprising the steps of:

(a) positioning a first web of said material of sufficient surface area to form a desired panel shape;

(b) positioning at least one folded web member of said material over said first web such that the edges of the panel shape to be formed therefrom will be coextensive with an edge of the panel shape to be formed from said first web, said folded web comprising at least one fold line along the line of symmetry of the panel shape to be formed therefrom;



(c) positioning a second web of said material over said first web and folded web such that the edges of the panel shape to be formed therefrom will be coextensive with the panel shape to be formed from said first web; and

(d) platen sealing said first web, folded web, and second web peripherally in the desired panel shape of said first and second webs;

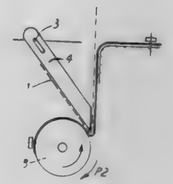
the panels of the resulting envelope having substantially the same circumferential measurement after inflation as before.

4,290,764

METHOD AND APPARATUS FOR FOLDING A CARDBOARD SHEET ALONG A STRAIGHT FOLD LINE

Jan Middel, Ijmuiden, Netherlands, assignor to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Jun. 15, 1979, Ser. No. 49,039
Claims priority, application Netherlands, Jun. 21, 1978, 7806683
Int. Cl.³ B65H *45/00, 45/14*
U.S. Cl. 493—395 **9 Claims**



1. Method of folding a sheet of cardboard along a straight fold line, comprising the steps of

(a) locating a first surface of said sheet, having a given dimension, against a first element having a straight edge of at least equal dimension to that of said sheet dimension which defines the fold line,

(b) locating an opposite surface of said sheet against a support surface having a dimension at least equal to said sheet dimension in the form of a tensioned flexible web which makes high-friction engagement with the cardboard sheet, and

(c) moving a second element having a dimension at least equal to said sheet dimension relative to said first element in a curved path about said straight edge so as to simultaneously engage and force said flexible web and said cardboard sheet adjacent the said edge of the first element to bend same around said edge, thereby folding the sheet and the web around the said edge to form the fold line in the sheet.

4,290,765

POLYOXYALKYLENE POLYCARBOXYLATE ESTERS AND A METHOD OF TREATING POLYESTER FABRIC

Stanley R. Sandler, Springfield, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

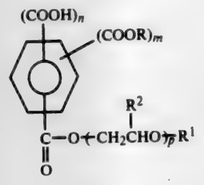
Filed Dec. 14, 1978, Ser. No. 969,594

Int. Cl.³ D06B *1/00*

U.S. Cl. 8—115.6 **4 Claims**

1. A method of treating polyester fabric to give the fabric a durable, soil resistancy and water wicking properties comprising

(a) wetting a polyester fabric with a composition containing a compound having the formula:



wherein

(1) the ring can have all positional isomer arrangements;

(2) R is selected from the group consisting of

(3) R^1 and R^2 are independently selected from the group consisting of hydrogen and $-CH_3$;

(4) n and m are independently selected from an integer of 0 to 3;

(5) p is an integer of 6 to 23; and

(6) q is an integer of 3 to 11;

(b) drying the polyester fabric until the fabric is dry to the touch; and

(c) curing the dried fabric in a temperature range of 190° to 200° C. for about 45 to 90 seconds.

4,290,766

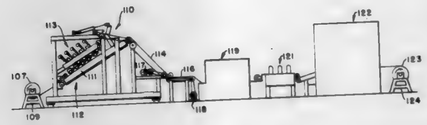
CHEMICALLY SCULPTURING ACRYLIC FABRICS AND PROCESS FOR PREPARING SAME

Alonzo M. Burns, Jr., Inman; Jeffrey E. Silliman, Spartanburg; Woodrow P. Gilbert, Spartanburg, and William M. Pascoe, Sr., Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 22, 1980, Ser. No. 189,460

Int. Cl.³ D06Q *1/02;* **D06P** *5/00;* **D06M** *3/16*

U.S. Cl. 8—491 **15 Claims**



1. In a process for sculpturing a pile fabric comprising at least about 80 percent by weight acrylic pile fibers with a jet dyeing apparatus including conveying means for transporting the textile, jet orifices for delivering a sculpturing composition to selected area of said pile fabric, said sculpturing composition containing at least one lower alkylene carbonate in a concentration sufficient to partially solvate the fibers of the pile in the selected areas, and control means for supplying data to control the operation of the application of the sculpturing composition by means of the jet dyeing apparatus by applying an aqueous admixture to the pile fabric in an amount sufficient to saturate the pile fabric, applying the sculpturing composition to the areas of the textile fabric to be provided with a sculptured effect, and recovering a resulting sculptured textile fabric, the improvement comprising incorporating E-caprolactam into the sculpturing composition in an amount of at least about 3 weight percent.

4,290,767

PROCESS FOR SLOP-PADDING TEXTILE CELLULOSE MATERIAL

Heinz Abel, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 20, 1979, Ser. No. 77,422

Claims priority, application Switzerland, Sep. 29, 1978, 10195/78

Int. Cl.³ D06P *1/56, 1/38, 3/66*

U.S. Cl. 8—496 **27 Claims**

1. A process for slop-padding textile cellulose material with anionic substantive dyes, which comprises applying to said material an aqueous dye liquor which, in addition to the dye, contains

(a) a quaternisation product of a poly adduct

(a_1) of 2 to 100 moles of alkylene oxide with 1 mole of a fatty amine containing at least 8 carbon atoms, or

(a_2) of 2 to 100 moles of alkylene oxide and 1 mole of styrene oxide with 1 mole of a fatty amine containing at least 8 carbon atoms,

(b) 2.5 to 15 g/l an etherified N-methylolmelamine, and

(c) an acid catalyst,

and then subjecting the textile material to a heat treatment.

4,290,768

PROCESS FOR DYEING AND PRINTING CELLULOSE FIBRES

Rütger Neeff, Leverkusen; Robert Kuth, Cologne; Werner Kühnel, and Wilhelm Gohrbandt, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

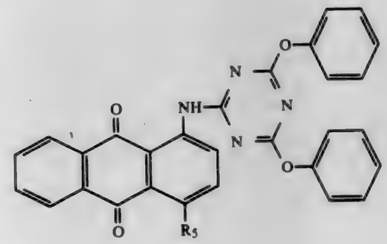
Filed Jan. 7, 1980, Ser. No. 110,033

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1979, 2903132

Int. Cl.³ D06P *3/852, 1/24;* **C09B** *1/26*

U.S. Cl. 8—532 **1 Claim**

1. Process for dyeing and printing cellulose fibres, or fibre mixtures containing cellulose fibres, which have been swollen with water-miscible swelling agents capable of maintaining the fibres in swollen condition after removal of water and boiling above 150° C., characterized in that the fibres are treated with a dyestuff of the general formula



wherein

R_5 is hydrogen, a hydroxyl or cyclohexyl group or a phenylamino or benzoylamino group, which can be substituted in the phenyl ring by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, and the dyestuff is fixed by means of a heat treatment.

4,290,769

STABILIZED ROMANOWSKY STAIN SOLUTION

John C. Liao; Chittaranjan P. Patel, both of Elkhart, and John L. Ponzo, Mishawaka, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 14, 1980, Ser. No. 196,365
Int. Cl.³ C09B 67/00
U.S. Cl. 8—602 **11 Claims**

1. In combination with a Romanowsky type stain comprising azures, Methylene Blue and an eosin dye in methanol solution, the improvement which comprises the presence of a stabilizing amount of an ammonium halide, a primary, secondary or tertiary alkylamine hydrohalide or a combination thereof in which the alkyl chains contain from 1 to 6 carbon atoms, said halide being selected from the group of chloride, bromide or iodide.

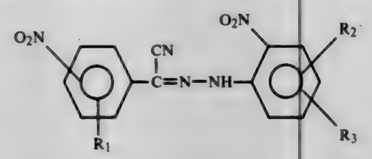
4,290,770

PROCESS FOR THE COLORATION OF HYDROPHOBIC FIBERS

Manfred C. Rau, La Campagne, France, assignor to P C U K Produits Chimiques Ugine Kuhlmann, Tour Manhattan-Courbevoie, France

Filed Dec. 31, 1979, Ser. No. 108,757
Claims priority, application France, Jan. 19, 1979, 79 01329
Int. Cl.³ C09B 55/00
U.S. Cl. 8—662 **11 Claims**

1. Process for the coloration of hydrophobic fibers in which the disperse dyestuff used is a compound of the formula:



in which R_1 represents hydrogen or nitro, R_2 represents hydrogen, halogen, nitro, trifluoromethyl, alkyl or alkoxy, and R_3 represents hydrogen, halogen or cyano.

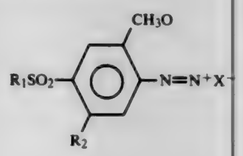
4,290,771

DIAGNOSTIC AGENT FOR THE DETECTION OF UROBILINOGEN

Wolfgang Hirsch, Wunstorf, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 74,748
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839931
Int. Cl.³ G01N 33/72
U.S. Cl. 23—230 B **4 Claims**

1. A method for the detection of urobilinogen which comprises contacting a sample suspected of containing urobilinogen with a diagnostic agent containing an effective amount of a compound having the formula



wherein

R_1 is selected from the group of radicals consisting of CH_3—, C_2H_5—, CH_2=CH—, HOC_2H_5— and $CH_3OC_2H_5$—,

R_2 is hydrogen or a (C_1–C_4)-radical, and X^- is a stabilizing anion.

4,290,772

REDUCING LIGHT SCATTER IN PHOTOMETRIC MEASUREMENTS INVOLVING SUSPENDED PARTICLES

Raymond Frey, Zurich, Switzerland, assignor to Contraves AG, Zürich, Switzerland

Filed Oct. 1, 1979, Ser. No. 80,188
Claims priority, application Switzerland, Nov. 1, 1978, 11239/78
Int. Cl.³ G01N 33/72, 21/15, 21/47
U.S. Cl. 23—230 B **5 Claims**

1. A method of reducing disturbances of photometric measurement due to scattered light in a suspension consisting of a suspension agent and a suspended phase comprising suspended particles, which suspension is to be photometrically measured, said suspension agent and said suspended phase each having a respective refractive index, comprising:

adding a chemical component to the suspension, said chemical component having a refractive index outside of the range encompassed by the refractive index of the suspension agent and the mean refractive index of the suspended phase and in a quantity effective to reduce such range.

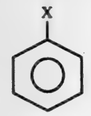
4,290,773

STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 13, 1979, Ser. No. 93,431
Int. Cl.³ G01N 33/52
U.S. Cl. 23—230 B **5 Claims**

1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound have the structure



wherein X is OH, CN, NO_2, CHO, SO_3R' or NRCOR'; R is lower alkyl; and R' is H or lower alkyl.

4,290,774

PURIFICATION OF LIPOPROTEIN CHOLESTEROL FOR USE AS A CHOLESTEROL REFERENCE MATERIAL

Makram M. Girgis, Bradley; David E. Jackson, Bourbonnais, and Frank J. Mannuzza, Peotone, all of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 7, 1980, Ser. No. 110,228
Int. Cl.³ G01N 33/68, 33/92, 33/96
U.S. Cl. 23—230 B **11 Claims**

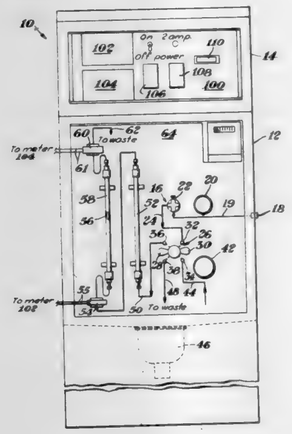
1. In a method for purifying lipoprotein cholesterol which involves the steps of adsorbing a solution of a lipoprotein-containing substance onto a silica adsorbant, separating the adsorbed lipoprotein from any excess solution present, freezing and thawing the adsorbed lipoprotein, eluting the adsorbed lipoprotein, concentrating the lipoprotein to a desired concentration and recovering purified lipoprotein cholesterol therefrom, the improvement comprising the steps of eluting the adsorbed lipoprotein at a pH from about 10 to 11.5, adjusting the salt concentration to about less than 0.05 M, heating the eluted lipoprotein to a temperature of from about 50° to 100° C. for a period of time sufficient to increase the storage stability of the purified lipoprotein cholesterol, adding an alkaline carbonate and an alkaline earth salt; adjusting the pH from about 6.5 to 9.0; and recovering therefrom said lipoprotein cholesterol.

4,290,775

ANALYTICAL METHOD FOR DETERMINING ACID/SALT AND BASE/SALT SPECIES CONCENTRATION IN SOLUTION

Timothy S. Stevens, and Theodore E. Miller, Jr., both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Filed Jan. 28, 1980, Ser. No. 115,837
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.
Int. Cl.³ G01N 31/04, 27/08
U.S. Cl. 23—230 R **18 Claims**



1. A flow injection method for determining acid or base species concentration in the presence of salt, comprising the steps of injecting sample into an aqueous carrier, analyzing the sample in carrier and storing the resulting signal thereby generated, said signal being proportionate to the acid/salt or base/-salt concentration of the sample, eluting the sample in carrier through an ion-exchanger effective to derivatize the acid or base species to water or absorb the acid species, and to derivatize the salt in whole or in part to a soluble hydroxide derivative or soluble hydrogen derivative, respectively, said elution step being carried out for acids in a basic ion-exchanger in the hydroxide ion form and/or free amine form and for bases in an acidic ion-exchanger in the hydrogen ion form, analyzing the effluent of the ion-exchanger to obtain a calibrated signal which is proportionate to the original salt concentration, and establishing the difference in signals to determine the acid or base species concentration in the original sample.

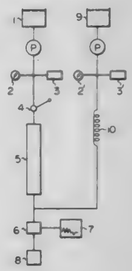
4,290,776

METHOD FOR ANALYZING ACIDIC SUBSTANCES BY HIGH SPEED LIQUID CHROMATOGRAPHY

Tsuyoshi Yamada, Yokohama, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 98,812, Nov. 30, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,647
Claims priority, application Japan, Dec. 6, 1978, 53/149917
Int. Cl.³ B01D 15/08
U.S. Cl. 23—230 R **4 Claims**

1. An improvement in a process for analyzing acidic substances by high speed liquid chromatography which comprises incorporating an aqueous pH indicator solution in an effluent from a column packed with a packing material, and monitoring the pH indicator-incorporated effluent by means of spectrophotometry; the improvement comprising using as the pH indicator a sulphonphthalein indicator which is at least slightly soluble in water and has a pH transformation range falling within the pH range of from about 3.0 to about 10.0 and which



exhibits, when maintained at a pH lower than the pH transformation range, a minimum transmittance at a wave length of about 420–440 nm and, when maintained at a pH higher than the pH transformation range, a minimum transmittance at a wave length of at least about 558 nm.

4,290,777

REGENERATION OF FERRIC IONS IN COAL DESULFURIZATION PROCESS

Edward L. Czenkusch, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Dec. 21, 1979, Ser. No. 106,344
Int. Cl.³ C10L 9/02
U.S. Cl. 44—1 SR **23 Claims**

1. A process for treating coal which comprises:

contacting the coal with an aqueous desulfurization reagent containing ferric ions and producing a reaction slurry comprising ferric ions, ferrous ions and hydrogen ions;

maintaining the hydrogen ion concentration of the reaction slurry at a level which inhibits precipitation of iron solids.

12. A process for treating coal which comprises:

contacting coal containing at least one naturally-occurring base with an aqueous desulfurization reagent containing ferric ions and producing a reaction slurry comprising ferric ions, ferrous ions and hydrogen ions;

regenerating ferric ions by oxidation of the ferrous ions;

maintaining the hydrogen ion concentration of the reaction slurry at a level which inhibits precipitation of iron solids during the regenerating step.

13. The process of claim 12 in which the hydrogen ion concentration is maintained by the controlled addition of acid to the reaction slurry.

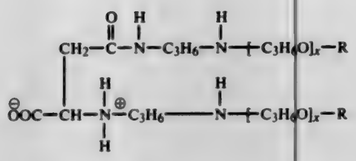
4,290,778

HYDROCARBYL ALKOXY AMINO ALKYLENE-SUBSTITUTED ASPARAGINE AND A MOTOR FUEL COMPOSITION CONTAINING SAME

Sheldon Herbstman, Spring Valley, and Peter Dorn, LaGrangeville, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 6, 1980, Ser. No. 204,414
Int. Cl.³ C10L 1/18, 1/22
U.S. Cl. 44—71 **13 Claims**

1. The compound represented by the formula:



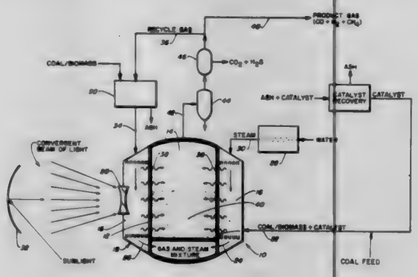
in which R represents an aliphatic hydrocarbon radical having from 8 to 24 carbon atoms and x has a value from 1 to 10.

4,290,779

SOLAR HEATED FLUIDIZED BED GASIFICATION SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Shaik A. Qader, 704 Marlboro Ct. Claremont, Calif., 91711

Filed May 15, 1980, Ser. No. 150,115
Int. Cl.³ C10B *1/00*
U.S. Cl. 48—89 **7 Claims**



1. A solar heated gasifier apparatus comprising:
a reactor defining a reaction zone;
means associated with a first end of said reactor for introducing a fluidizing gas into said reactor;
means for introducing a particulate material into said reactor where it is maintained in a fluidized state;
means for introducing gaseous reactant into said reactor where said gaseous reactant reacts with said material to form gaseous product;
an annular solar heat absorber positioned for directly and uniformly heating the reactor and including a gas permeable high heat capacity solid for heating said fluidizing gas and said gaseous reactant prior to the introduction of said fluidizing gas and said gaseous reactant into the reactor;
means for introducing solar heat into said solar heat absorber; and
means associated with a second end of said reactor for removing said gaseous product from the reactor.

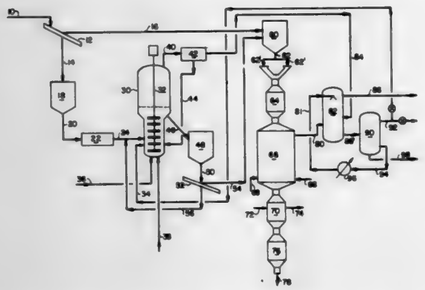
4,290,780

METHOD FOR GASIFYING FINELY-DIVIDED COAL IN A FIXED BED GASIFIER

Philip J. Dudt, Scenery Hill, Pa., assignor to Conoco Inc., Stamford, Conn.

Filed Nov. 16, 1979, Ser. No. 95,764
Int. Cl.³ C10J *3/00*
U.S. Cl. 48—210 **7 Claims**

1. A process for gasifying finely-divided coal in a fixed bed gasifier, said process comprising
(a) charging said finely-divided coal to a stirred semi-fluidized carbonizer reaction zone;
(b) charging a free oxygen containing gas to said reaction zone in an amount sufficient to maintain a temperature in said reaction zone from about 950° to about 1200° F.;
(c) charging an inert sweep gas to said reaction zone at a rate sufficient to provide a linear gas velocity in said reaction zone from about 0.1 to about 0.5 feet per second;
(d) recovering a gaseous stream from said reaction zone;



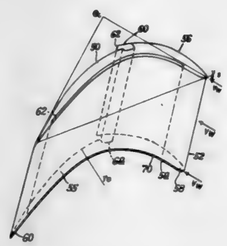
(e) recovering a particulate coal derived solids stream, at least a portion of said particulate solids stream being of a size consist greater than about ¼ inch for use as a feedstock to a fixed bed gasifier from said reaction zone; and
(f) charging at least said portion of said particulate solids stream to a fixed bed gasifier to produce a gaseous stream and an ash stream.

4,290,781

METHODS AND APPARATUS FOR SEPARATING GASES WITH VENTILATED BLADES

Chia-Gee Wang, P.O. Box 211, Millwood, N.Y. 10546

Continuation of Ser. No. 824,515, Aug. 15, 1977, Pat. No. 4,193,775, which is a continuation-in-part of Ser. No. 708,939, Jul. 22, 1976, abandoned. This application Mar. 2, 1979, Ser. No. 16,905
Int. Cl.³ B01D *59/20*
U.S. Cl. 55—17 **22 Claims**



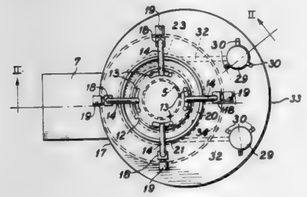
1. A method for separating an initial gas mixture of different molecular weight gas molecules on the basis of molecular weight of the different components of the mixture, comprising the steps of
introducing the gas mixture to be separated into a separation zone, rotatably moving at least one curved hydrodynamically smooth porous surface in said separation zone with a relative velocity v_w with respect to said gas mixture under non-turbulent conditions to provide a thin laminar boundary layer of said gas mixture adjacent said hydrodynamically smooth porous surface having a boundary layer displacement thickness δ_1, to provide an acceleration field having a strength of at least about 1×10^5 g immediately adjacent said thin laminar boundary layer, passing heavier molecular weight gas components through said thin laminar boundary layer with a differential sedimentation velocity of different molecular weight components through said thin laminar boundary layer which is largest for the highest molecular weight gas component, such that the highest molecular weight gas component is preferentially concentrated at said hydrodynamically smooth porous surface, and
conducting gas from immediately adjacent said hydrodynamically smooth porous surface which is preferentially concentrated in the highest molecular weight gas component through said porous surface to produce a separated higher molecular weight gas fraction which is enriched in said heaviest molecular weight gas component with respect to the composition of said initial gas mixture.

4,290,782

GAS SCRUBBER AND METHOD

Richard D. Johnson, 29 W. Ash St., Lombard, Ill. 60148

Filed Oct. 25, 1979, Ser. No. 88,170
Int. Cl.³ B01D *53/10*
U.S. Cl. 55—60 **9 Claims**



1. A method of scrubbing and accelerating the draft of flue gases, comprising:
leading flue gases through a flue from a source to a discharge end of the flue;
diverting the flue gases from said discharge end of the flue into the top of a vertical passage extending a substantial length downwardly;
producing a substantially uniform shower of gas-scrubbing at least predominately solid particulate material dispersed in the top of said passage in sufficient solid particulate material volume and individual solid particulate material particle mass to gravitate downwardly in the passage at accelerating speed and thereby effecting not only scrubbing contact of the solid particulate material with the flue gases but also causing a downdraft of the flue gases in the passage and thereby accelerating drawing of flue gases from said discharge end of the flue into said passage and improving flue draft;
and at the lower end of said passage separating the scrubbed gases from the particulate material.

4,290,783

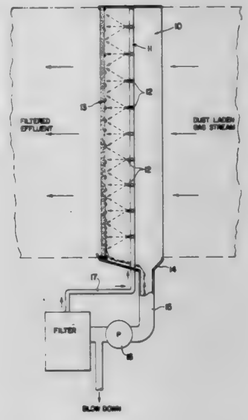
PROCESS FOR REMOVAL OF WATER SOLUBLE PARTICULATE MATERIAL FROM GAS STREAMS

Harry A. Adams, Bedford Heights, and William O. Fitzgibbons, Hudson, both of Ohio, assignors to Standard Oil Company (Sohio)

Filed Oct. 10, 1975, Ser. No. 622,181
Int. Cl.³ B01D *47/06*
U.S. Cl. 55—89 **12 Claims**

1. A process for the removal of urea particles entrained in an air stream by (1) contacting the particle-laden air stream with a continuous water spray partially wetting the urea particles, (2) passing the air stream containing partially wetted urea particles through a mist eliminator consisting of fiber compositions having an open area volume greater than 60 percent based on the total volume of the mist eliminator with sufficient velocity to cause impaction of some of the urea particles on the surface thereof, and (3) continuously removing the impacted urea particles from the surface of the mist eliminator by means of the continuous water spray directed towards its incoming surface.

9. Process for removing particulate material from a dust-laden gas exhausting from the top of a prilling tower, which comprises passing the dust laden gas through an aqueous scrubbing liquid spray and thence through a filter while simultaneously directing the scrubbing liquid spray against the filter in the same direction as the flow of gas for maintaining the filter in a continuously wetted and irrigated state, and passing cleaned gas from the downstream side of the filter out of the top of the tower.

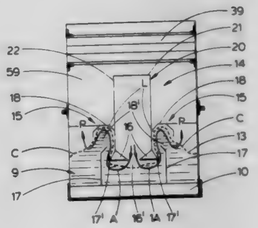


4,290,784

APPARATUS AND METHOD FOR EXTRACTING DUST FROM AIR

Bogdan J. Rawicki, 17, Stanwick Rd., London W14 8TZ, England

Continuation of Ser. No. 964,195, Nov. 28, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 65,837
Claims priority, application United Kingdom, Nov. 30, 1977, 49873/77
Int. Cl.³ B01D *47/02*
U.S. Cl. 55—95 **18 Claims**



1. A method of extracting air from dust which comprises passing air carrying dust therein through water in a reservoir, said reservoir being positioned between an inlet and an outlet said air being directed from the air inlet to the water reservoir through a main channel having side walls and providing a baffle means in said reservoir which shapes the water to form an essentially static mass and constrains the air to move through the mass of water in an extended sinuous or tortuous path such that the air enters the surface of said mass via one region and leaves the surface of said mass via another region without creating significant spray or turbulence, said baffle means comprising at least one wedge shaped member at the

lower end of at least one of said side walls of said main channel, at least one upstanding plate with an inwardly bent flange mounted to the bottom of said reservoir lateral to said respective wedge shaped member and at least one shaped plate mounted to the exterior of the sidewall of said main channel having the respective wedge shaped member at the lower end thereof, and thereafter introducing the air leaving said water into a stripping means for removing residual water from said air.

3. A dust extraction apparatus comprising an inlet means for receiving air carrying dust therein, a water reservoir, a means for directing the air from the inlet means to the water reservoir and outlet means for discharging the air after cleaning, said air directing means including a main channel having side walls, said air directing means further including a baffle means which shapes the water in said reservoir into a static mass and guides the air through said static mass of water to create an undulating surface, the air passing through the mass of water in an undulating path below said surface said air entering the mass of water via a lower region of said surface and leaving the mass without the creation of spray or turbulence via an upward region of the surface forming a lateral curtain of water in the reservoir, said baffle means comprising wedge shaped members at the lower ends of the side walls of said main channel, upstanding plates with inwardly bent flanges mounted to the bottom of said reservoir lateral to said wedge-shaped members, and a set of shaped plates mounted to the exterior of the side walls of said main channel having said respective wedge-shaped members at the lower ends thereof.

4,290,785

DUST COLLECTOR AND METHOD OF OPERATION

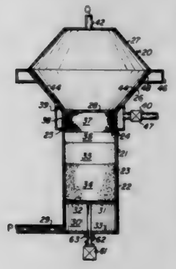
Robert L. Alldredge, 130 Pearl St., Apt. 1108, Denver, Colo. 80210

Filed Feb. 12, 1979, Ser. No. 11,442

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.³ B01D *41/02, 46/04, 46/30*

U.S. Cl. 55—96 **19 Claims**



1. A compressed media dust collector comprising:

(a) a generally vertical filter housing having upper and lower housing portions, the lower housing portion containing a vertical column of at least two contiguous layers of granular filter media, a relatively lower layer having defined coarseness and specific gravity, and a top layer relatively above said lower layer having greater coarseness and lower specific gravity such that the top layer is naturally graded to the top of the column following upwash of the media;

(b) diaphragm means contained in said upper housing portion and moveable between an applied position against said top layer during filter stage to compress the filter media into stationary position and a withdrawn position during wash stage to permit the media to be lifted by wash fluid into the upper housing portion;

(c) a top closing the upper portion of the housing above the diaphragm means;

(d) first fluid passageway means near the bottom of the lower housing portion communicating with said lower layer of the filter media;

(e) second fluid passageway means in said filter housing communicating with said top layer of said media; and

(f) means for supplying pressure to the upper side of the diaphragm means for holding the diaphragm in applied position during filter stage.

13. A method of filtering a dirty gas, comprising:

(a) passing a dirty gas from a supply of such gas into the lower end of a layered column of graded granular filter media contained in a filter housing;

(b) passing the dirty gas first through a lower layer of filter media that is relatively coarse and of defined specific gravity, and then passing the gas through a contiguous upper layer that is relatively finer and of defined specific gravity, the coarseness and specific gravity of the contiguous layers being such that the settling velocity of the media in the lower layer is greater than the settling velocity of the media in the upper layer;

(c) simultaneously with passing the gas through the media compressing the media vertically by means of a diaphragm applied from the top of the column to maintain all media layers in stationary position;

(d) passing gas filtered through the upper layer out of the housing through a first exit;

(e) cleaning captured dirt from the media column by withdrawing the diaphragm from the top thereof and passing wash gas into the lower end of the media column and upwardly therethrough, suspending media grains in the upward flow;

(f) passing the wash gas out of the housing through a second exit; and

(g) terminating the flow of wash gas to permit the media grains to settle in the housing in accordance with the settling velocities of the grains.

4,290,786

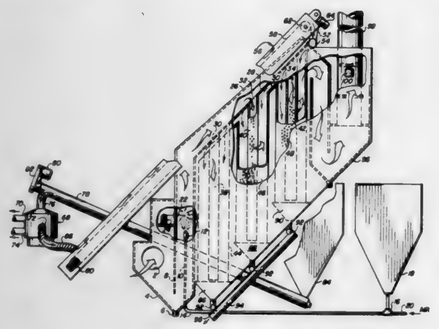
APPARATUS FOR REMOVING PARTICULATE MATTER FROM A GAS STREAM

Richard W. Schuff, Phoenix, Ariz., assignor to Ecotech Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 966,096, Dec. 4, 1978, Pat. No. 4,220,478. This application Jan. 21, 1980, Ser. No. 113,495

Int. Cl.³ B03C *3/12*

U.S. Cl. 55—107 **18 Claims**



1. An apparatus for removing particulate matter from a gas stream, said apparatus comprising in combination:

(a) an inlet plenum for conducting the gas stream containing the particulate matter;

(b) injector means communicating with said inlet plenum for injecting sorbent particles into the gas stream, said injector means injecting the sorbent particles along a predetermined path;

(c) electrostatic charging means located within said inlet plenum and positioned in the path of the injected sorbent particles for electrostatically charging the injected sorbent particles, the particulate matter contained by the gas stream becoming electrostatically charged either through direct contact with said electrostatic charging means or by mixing with the charged sorbent particles;

(d) a source of granular media;

(e) moving bed filter means for receiving granular media and continuously moving the received granular media therethrough, said moving bed filter means communicating with said inlet plenum for directing the gas stream, with the electrostatically charged particulate matter and electrostatically charged sorbent particles therein, through the continuously moving granular media for removing the particulate matter and sorbent particles from the gas stream;

(f) media distributing means coupled to said source of granular media for receiving granular media therefrom and coupled to said moving bed filter means for distributing granular media thereto; and

(g) clean gas outlet means coupled to said moving bed filter means for exhausting a cleaned gas stream therefrom.

11. An apparatus for removing particulate matter from a gas stream, said apparatus comprising in combination:

(a) an inlet plenum for conducting the gas stream containing the particulate matter, said inlet plenum including a distribution portion;

(b) injector means communicating with said inlet plenum for injecting sorbent particles into the gas stream, said injector means injecting the sorbent particles along a predetermined path;

(c) electrostatic charging means positioned in the path of the injected sorbent particles for electrostatically charging the injected sorbent particles, the particulate matter contained by the gas stream becoming electrostatically charged by mixing with the charged sorbent particles;

(d) a plurality of vertically oriented filter cells each having an upper and lower end, each of said filter cells including an outer container having perforated walls and an inner container having perforated walls, said inner container being positioned within said outer container, said filter cells each continuously moving granular media from the upper end of each filter cell to the lower end of each filter cell along a path bordered by said inner and outer containers;

(e) coupling means for coupling said inner container of each of said filter cells to the distribution portion of said inlet plenum to allow the gas stream, with the particulate matter and sorbent particles therein, to pass through the perforated walls of said inner container, through the moving granular media, and through the perforated walls of said outer container;

(f) clean gas outlet means communicating with said plurality of filter cells for exhausting the gas stream directed through the perforated walls of said inner and outer containers thereof;

(g) a source of granular media; and

(h) media distribution means coupled to the upper end of each of said filter cells for distributing the granular media to each of said filter cells, said media distribution means being inclined with respect to a horizontal plane and having an upper end coupled to said source of granular media;

whereby, the granular media falls under the force of gravity through said media distribution means and is distributed to said plurality of filter cells.

4,290,787

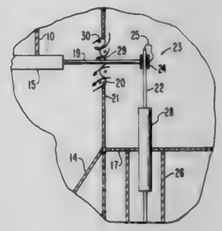
BOTTOM-POWERED ELECTROSTATIC PRECIPITATOR

Melvin R. Kahl, Richland, Pa., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed May 12, 1980, Ser. No. 148,846

Int. Cl.³ B03C *3/40*

U.S. Cl. 55—120 **3 Claims**



1. An electrostatic precipitator comprising a housing structure enclosing an array of elongate corona-generating electrodes, an upper end of each corona-generating electrode being attached to means for suspending said electrode within said housing structure, a lower end of each corona-generating electrode being attached to an electrically conductive means for applying electric power to said corona-generating electrodes, said electrically conductive means including a lead-in conductor extending outside said precipitator through an aperture in said housing structure to a step-up transformer, said transformer being supported at a level lower than said array of corona-generating electrodes, means for providing a flow of purging gas through said aperture into said housing structure during precipitator operation in order to inhibit accumulation of particulates on said lead-in conductor; and a screen member covering said aperture to prevent accumulation of particulates on said lead-in conductor.

4,290,788

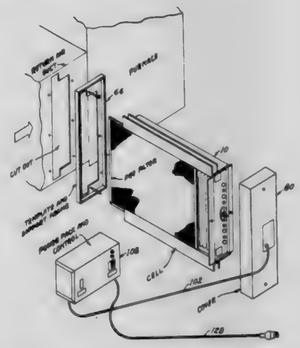
ELECTROSTATIC AIR CLEANER AND MOUNTING MEANS THEREFOR

Robert R. Pittman; Clifford B. Elbrader, and Jimmy L. Milum, all of Harrison, Ark., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 5, 1979, Ser. No. 100,474

Int. Cl.³ B03C *3/12, 3/34*

U.S. Cl. 55—138 **4 Claims**



1. The combination of an electrostatic air cleaner cell and a cutout template and support frame for defining a cutout to be made in the wall of a return air duct for the entry of said cell into the duct and for supporting one end of said cell in the duct

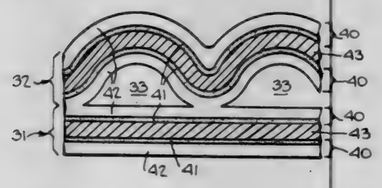
wall, said cell comprising an open, rectangular metal frame supporting positively charged ionizing and collector elements therein, said cell frame consisting of elongated front and rear end members connected at their ends to the ends of two elongated side members, said cutout template and support frame including a flat marginal portion adapted to lie flat against a duct wall and to define a cutout to be made in the duct wall for insertion of said cell, means for securely connecting said flat marginal portion to the duct wall, said elongated front cell frame member having flat portions extending along opposite sides thereof arranged to overlie said flat marginal portion, and guide pins mounted on said marginal portion and arranged to enter apertures in said overlying flat portions of said front frame member when said cell is inserted rear frame member first into the duct through a cutout therein defined by said marginal portion, and a cover member arranged for detachable connection to said template and support frame, and said cover member having portions thereof overlying and engaging said flat portions of said front frame member when said cell is inserted into the duct and said cover member is attached to said template and support frame.

4,290,789

TOTAL ENERGY EXCHANGE APPARATUS

Emerson H. Newton, Arlington, Mass., assignor to Wing Industries, Inc., Cranford, N.J.

Filed Mar. 8, 1979, Ser. No. 18,793
Int. Cl.³ B01D *53/28*
U.S. Cl. 55—269 **7 Claims**



1. Total energy exchange apparatus having a medium for transferring sensible and latent heat energy, accompanied or not by moisture, between two streams of air within which the apparatus is situated, said medium comprising a hub, a plurality of layers of corrugated sheet material and a corresponding plurality of layers of flat sheet material interleaved alternately with each other, said pluralities of layers being formed by spirally winding respective strips of each of said materials on and around said hub whereby said medium is disposed within an annular area extending outwardly from said hub, the corrugations of said layers of corrugated sheet material being parallel to each other so that, together with their respectively adjacent layers of flat sheet material, they provide passages for the flow of said air through said medium, and means retaining said medium in its said wound relation, at least one of said sheet materials being aluminum having an interractively adherent coating on its air passage surfaces comprising a mixture of hydrated calcium and alumium oxides.

4,290,790

FILTER APPARATUS AND FILTER SUPPORT FRAMES

Kunio Okubo, Nara, Japan, assignor to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan

Filed Jan. 9, 1980, Ser. No. 110,701
Int. Cl.³ B01D *46/02*; E04B *1/343*
U.S. Cl. 55—379 **14 Claims**

1. A frame for supporting a filter element, the frame comprising a support member, a plurality of rods extending from the support member and secured thereto, and at least one strap connecting the rods together, said at least one strap having a base part to which is secured each rod, and at least one side wall which projects from the base part, said at least one side wall being formed with a cut-out for each rod for retaining that rod therein such that said frame is generally flat with the support member and said at least one strap generally straight when in an unassembled condition and said support member is bent and said at least one strap is bent in the region of each cut-out until its ends meet or overlap, so that each cut-out is



deformed, to form a generally tubular frame in which each of said rods is substantially enclosed in one of said cut-outs of said at least one strap when in an assembled condition.

12. Filtering apparatus comprising at least one frame as claimed in claim 1 and a filter element mounted on the said at least one frame.

4,290,791

GAS-LIQUID SEPARATOR

Kunio Matsui; Hiroaki Tsuchiya, both of Yokohama; Ryushi Suzuki, Tokyo, and Takayoshi Omura, Matsudo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,799
Claims priority, application Japan, Mar. 29, 1979, 54/37295
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—399 **6 Claims**

1. A gas-liquid separator comprising:

(a) an outer cylinder having a peripheral sidewall and first and second end walls;

(b) a gas collecting inner cylinder having a gas discharge end and disposed within said outer cylinder, said inner and outer cylinders defining an annular space therebetween, said inner cylinder being formed with an arcuate opening in a sidewall portion thereof for communicating said annular space with the interior of said inner cylinder at a selected location between said outer cylinder end walls and being sized to receive gas separated from the introduced fluid by centrifugal separation;

(c) a fluid inlet provided proximate said first end wall of the outer cylinder, said fluid inlet being tangential to said peripheral sidewall of said outer cylinder for introducing fluid into said annular space and in conjunction with the said walls of said outer cylinder being adapted to impart an initial circular motion to the introduced fluid leaving said inlet;

(d) a fluid outlet provided proximate the second end wall of the outer cylinder;

(e) means for imparting a helical flow to the circulating fluid, the helical flow carrying the fluid in said annular space from proximate said fluid inlet to proximate said fluid outlet, said means including annular guide plates defining fluid passageways; and

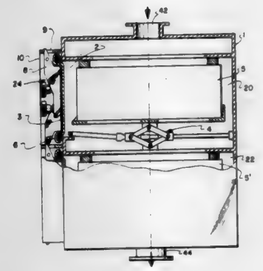
(f) means communicating with said discharge end of the inner cylinder for removing separated gas therefrom.

4,290,792

FILTER CONSTRUCTION

Wolfgang Eckstein, Sereetz; Karl-Heinz Schirk, Lübeck, and Detlef Reinhold, Bad Oldeslow, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,644
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936614
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—480 **3 Claims**



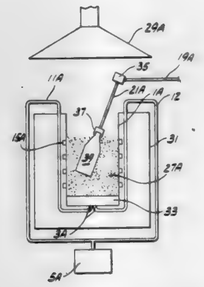
1. In a filter construction, particularly for vehicle compartments and other spaces closed to the outside, of the type having a housing with a filter compartment for containing a filter element and an opening to the compartment, and a removable cover closing the opening, an improved locking arrangement comprising a slot defined in the housing, a locking mechanism including a pedestal mounted to the cover, a lever member pivotably mounted to the pedestal having a nose extendable into said slot in a locked position and being movable out of said slot when said lever member is moved to an unlocked open position, means defining a bayonet catch between said pedestal and said lever member for interengaging said lever member with said pedestal when said lever member is in the locked position and being releasable to permit pivoting of said lever member to an unlocked position which brings said nose out of the spot, and spring means for resiliently urging said lever member away from said pedestal.

4,290,793

FLUID BED CHEMICAL STRENGTHENING OF GLASS OBJECTS

M. Clifford Brockway, Columbus, Ohio, assignor to Liberty Glass Company, Sapulpa, Okla.

Filed Dec. 8, 1978, Ser. No. 967,567
Int. Cl.³ C03B *25/06, 25/10, 27/00*
U.S. Cl. 65—30.14 **14 Claims**



1. A process for strengthening a glass object by chemical reaction at the glass surface of said object between the glass and a chemical strengthening agent reactive with the glass to alter its composition and thereby either directly generate compressive stress therein or reduce the thermal expansion coefficient thereof, comprising the steps of:

kinetically contacting said object with a chemical strengthening agent in a bed comprising gas-fluidized particulate solid material under conditions of temperature and active fluidization such that said reaction proceeds but the formation of either stress-concentrating surface defects or an adherent coating of said solid material on the surface of said object is substantially avoided, said solid particulate material comprising an ionic glass material containing cations whose ionic diameters are different from the ionic diameters of cations of the glass of which said object is constituted and said reaction comprising exchange of cations of the ionic glass material for the cations of the constituent glass of the object;

maintaining said object in said bed for a time sufficient for the reaction to alter the composition of a marginal stratum of said object adjacent said surface;

and

cooling said object, thereby producing an object of increased strength and toughness having said marginal stratum under compressive stress.

13. A process for strengthening a silicate glass object by a nitriding reaction at the glass surface of said object between the glass and a chemical strengthening agent effective for nitriding the glass to alter its composition and thereby either directly generate compressive stress therein or reduce the thermal expansion coefficient thereof, comprising the steps of:

kinetically contacting said object with a chemical strengthening agent in a bed comprising gas-fluidized particulate solid material under conditions of temperature and active fluidization such that said reaction proceeds but the formation of either stress-concentrating surface defects or an adherent coating of said solid material on the surface of said object is substantially avoided, said solid particulate material comprising boron nitride which serves as a nitriding agent for reaction with said glass object;

maintaining said object in said bed for a time sufficient for the reaction to alter the composition of a marginal stratum of said object adjacent said surface;

and

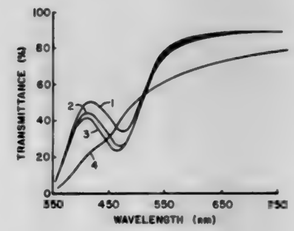
cooling said object, thereby producing an object of increased strength and toughness having said marginal stratum under compressive stress.

4,290,794

METHOD OF MAKING COLORED PHOTOCHROMIC GLASSES

Brent M. Wedding, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,436
Int. Cl.³ C03C *3/20*
U.S. Cl. 65—30.11 **11 Claims**



1. A method for producing different shades of a yellow to orange tint in a surface layer in a transparent photochromic glass article, the differences in shade being due to a major variation in luminous transmittance of the glass with a minor

shift in the chromaticity thereof and the hues of which will remain essentially unchanged after subsequent heat treatments up to about the strain point of the glass, said photochromic glass containing crystals selected from the group of silver chloride, silver bromide, and silver iodide as the photochromic agents and containing at least 0.5% lead, expressed as PbO, in the composition thereof, said method comprising exposing at least a portion of said photochromic article to a gaseous reducing environment at a temperature ranging from about the strain point to about 50° C. above the annealing point of the glass for a time of at least 0.5 hour to cause in the surface of said glass silver ions to be reduced to metallic silver particles and lead ions to be reduced to metallic lead particles which either coat or alloy with the metallic silver.

4,290,795

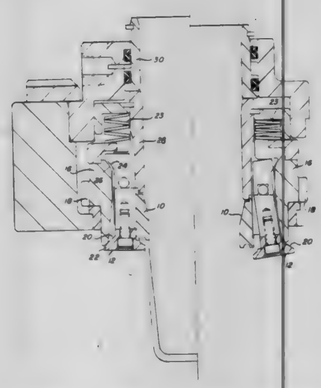
NECK RING ASSEMBLY FOR AUTOMATIC BLOW MOLDING MACHINES

Armando N. Cabrera, Monterrey, Mexico, assignor to Investigacion Fic Fideicomiso, Monterrey, Mexico

Filed May 13, 1980, Ser. No. 149,424

Int. Cl.³ C03B *9/325*

U.S. Cl. 65—260 **1 Claim**



1. A rotatable ware supporting neck ring assembly for a blow molding machine comprising in combination:

a horizontal support member;

an annular bushing mounted for rotation on a vertical axis on said support member;

a plurality of segments individually pivotally supported on horizontal axis and surrounding said bushing, each having a foot portion, which in the closed ware supporting position of the assembly are in intimate contact with each other and with the lower axial and radial faces of said bushing;

means defining a radially inwardly opening annular groove in the adjoining inner surfaces of said bushing and said segments in the closed position thereof said groove forming the mold for the rim of the parison;

an annular sleeve rotatably carried in said support member and concentrically surrounding said bushing and segments;

first and second cam surfaces at vertically opposite ends of each segment respectively;

third and fourth cam surfaces at opposite ends of said sleeve for engaging said first and second cam surfaces of said segments during the opening and closing movements of the assembly respectively;

means mounting said bushing and segments for sliding vertical movement on said support member between upper and lower positions so that in the upper position said foot portions of said segments are cammed radially inwardly into tight engagement with each other and with the lower portion of said bushing and in the lower position said segments are cammed out of engagement with each other and the lower portion of said bushing; and

hydraulic means for moving said bushing and segments downwardly to cam said segments to open, warereleasing position.

4,290,796

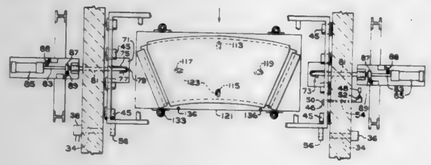
MOLD ALIGNMENT MEANS FOR GLASS SHEET SHAPING APPARATUS

Thomas J. Reese, Sarver, and Joseph J. Fisher, Oakmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1979, Ser. No. 90,943

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—287 **14 Claims**



1. An apparatus for shaping a glass sheet to a predetermined shape, comprising:

an elongated heating lehr comprising:

a heating zone to heat the sheet to its shaping temperature; and

a shaping station to shape the sheet;

a carriage;

a conveyor extending longitudinally through said lehr along a substantially horizontal longitudinal reference line from said heating zone to said shaping station for advancing said carriage from said heating zone into said shaping station along a path;

an outline sheet supporting mold;

means mounted on said carriage and acting on said supporting mold for longitudinally and laterally adjusting the position of said supporting mold with respect to said carriage to position a predetermined center of said supporting mold in vertical alignment with a corresponding predetermined center of said carriage;

stop means mounting said outline sheet supporting mold for guiding the sheet into a predetermined position on said sheet supporting mold with predetermined center of the sheet coincident with the predetermined center of said outline mold;

a lower shaping mold in said shaping station, said lower shaping mold having an upper shaping surface having a predetermined center;

means for moving said lower shaping mold to move the predetermined center of the shaping surface upward along a fixed vertical axis from a position beneath the path to a position to lift the sheet from said sheet supporting mold; and

mechanical alignment means mounted adjacent said conveyor and acting on said carriage for aligning and maintaining said sheet supporting mold in a predetermined horizontal orientation over said lower shaping mold with the predetermined center of said sheet supporting mold along the fixed vertical axis of said shaping surface of said lower shaping mold.

4,290,797

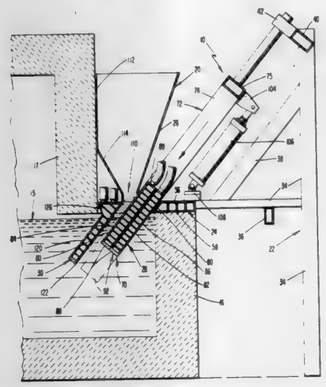
APPARATUS FOR DISPENSING AND SUBMERSING BATCH MATERIALS IN A MOLTEN GLASS FURNACE

Anthony T. Rossi, Bradenton, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.

Filed Feb. 6, 1980, Ser. No. 118,978

Int. Cl.³ C03B *3/00*

U.S. Cl. 65—335 **5 Claims**



1. Apparatus for feeding glass batch materials into a pool of molten glass within a furnace, comprising:

a base disposed at a batch-feeding end of the furnace above and extending over the pool of molten glass,

a hopper for dispensing glass batch materials mounted on said base and including an outlet disposed over said pool of molten glass such that all of the dispensed batch materials enter said pool from above,

a plunger means mounted on said base and including a reciprocable plunger and an actuator for reciprocating the plunger in a vertically inclined linear direction past said hopper outlet into and from the pool of molten glass at the location where batch materials are deposited thereon;

said plunger including a front pusher face for pushing dispensed batch materials beneath the surface of the pool of molten glass, and

a barrier mounted on said base and disposed on a side of said hopper outlet opposite said plunger, said barrier extending into the pool of molten material substantially parallel to the direction of reciprocation of said plunger and terminating adjacent the lowermost extent of travel of said pusher face so that batch materials submerged by said plunger travel beneath and past said barrier and are isolated from said batch depositing location.

4,290,798

HERBICIDAL COMPOUND AND METHOD OF USE

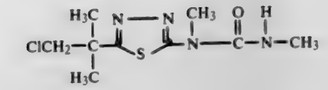
Tony Cebalo, Indianapolis, Ind., and Robert A. Walde, Allison Park, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 783,521, Apr. 1, 1977, abandoned, which is a division of Ser. No. 601,739, Aug. 4, 1975, abandoned, which is a continuation of Ser. No. 453,630, Mar. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 280,605, Aug. 14, 1972, abandoned. This application Nov. 29, 1978, Ser. No. 964,757

Int. Cl.³ A01N *47/36*; C07D *285/12*

U.S. Cl. 71—90 **3 Claims**

1. 1-[5-(2-Chloro-1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-1,3-dimethylurea, having the formula



2. A herbicidal composition comprising an inert carrier in admixture with a herbicidal proportion of the compound of claim 1.

3. A method of controlling undesired vegetation which comprises applying to the locus of the undesired vegetation a herbicidally-effective amount of the compound of claim 1.

4,290,799

FERROMAGNETIC METAL PIGMENT ESSENTIALLY CONSISTING OF IRON AND A PROCESS FOR ITS PRODUCTION

Gerhard Schroeder; Gunter Buxbaum; Franz Hund; Heinrich-Christian Schopper, and Rolf Naumann, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,399

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909480

Int. Cl.³ B22F *1/00*

U.S. Cl. 75—0.5 A **13 Claims**

1. A metal powder, suitable for magnetic recording, consisting essentially of iron, the individual particles being acicular and containing on average no more than 5 pores and consisting on average of no more than 2 metal cores.

4,290,800

PROCESS FOR FEEDING IRON SPONGE INTO AN ELECTRIC ARC FURNACE

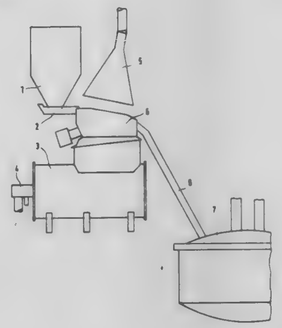
Siegfried Sensis, Seevetal; Joachim Schwerdtfeger, Barum; Klaus Walden, Buxtehude, and Dieter Ameling, Schwiederstorf, all of Fed. Rep. of Germany, assignors to Hamburger Stahlwerke GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,227

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840945

Int. Cl.³ C21C *5/52*

U.S. Cl. 75—12 **10 Claims**



1. A method of preheating carbon containing iron sponge, said method characterized by the non-combustion of said iron sponge, the method comprising steps of:

providing carbon bearing iron sponge which contains at least 0.5% carbon;

moving the iron sponge into a melting crucible;

providing a stream of oxidizing hot gas, the hot gas having a temperature of at least 1200° C. and having a flow rate of at least 1 m/s as measured at 20° C. and 760 Torr;

flowing the hot gas through the iron sponge in a direction

transverse to the direction of movement of the iron sponge and in direct contact with essentially all of the iron sponge;

effecting said direct contact between the hot gas and the iron sponge under conditions such that carbon present in the iron sponge is ignited and oxidized by the hot gas.

4,290,801

METHOD AND INSTALLATION FOR THE COOLING OF REDUCED MATERIAL SUCH AS FINE GRAINED ORE

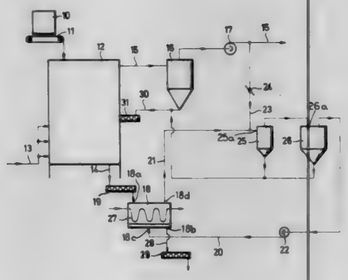
Alfred Kryczun, and Theodor Manshausen, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 17,550

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809172

Int. Cl.³ C21B *13/02*

U.S. Cl. 75—21 **1 Claim**



1. An in-line method of cooling reduced fine grained ore, from a reduction process, where quantities of oxygen free reduction gases are generated by the process which comprises the steps of:

cooling and cleaning a portion of the oxygen free reduction gases,

supplying reduced ore at a selected rate to an enclosed cooling chamber,

continuously recirculating at a positive pressure the cooled and cleaned oxygen free reduction gases through the reduced ore in the enclosed cooling chamber,

passing the ore to be cooled over a set of closed cooling pipes in the enclosed cooling chamber,

circulating cooling liquid through the closed cooling pipes,

removing the cooled ore from the enclosed chamber at a selected rate,

removing the cooling gases from the enclosed cooling chamber and recleaning and recooling them, and

replacing any oxygen free reduction gases lost during the recirculation and cooling process from the quantity generated by the reduction process.

4,290,802

STEEL MAKING PROCESS

Takeyuki Hirata; Nobuyoshi Hiroki, both of Ibaraki, and Seiichi Masuda, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Japan

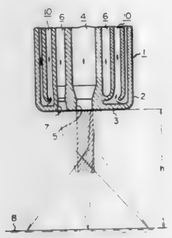
Filed May 29, 1980, Ser. No. 154,217

Claims priority, application Japan, Jul. 3, 1979, 54-84521

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—52 **5 Claims**

1. An oxygen top-blowing steelmaking process comprising preparing a molten metal suitable for producing steel in a basic oxygen furnace, carrying out top-blowing and bottom-blowing, said bottom-blowing being carried out at least partly during the period of time from the beginning of blowing to the tapping of the melt, and then tapping the resulting molten steel, characterized in that a powder of a slag-forming agent is introduced into the molten metal together with the top-blowing oxygen jet injected through an oxygen lance, said slag-forming



agent being passed on a carrier gas to the tip of the oxygen lance by a path separate from the oxygen lance.

4,290,803

PROCESS FOR DEPHOSPHORIZATION AND DENITRIFICATION OF CHROMIUM-CONTAINING PIG IRON

Shigeaki Maruhashi; Morihiro Hasegawa, and Takashi Yamauchi, all of Yamaguchi, Japan, assignors to Nisshin Steel Company, Ltd., Tokyo, Japan

Filed Jun. 13, 1980, Ser. No. 159,097

Claims priority, application Japan, Jun. 29, 1979, 54-081285

Int. Cl.³ C21C *7/02;* C22B *9/10*

U.S. Cl. 75—52 **14 Claims**

1. A process for dephosphorization-denitrification of molten pig iron containing not less than 3% of Cr, comprising maintaining the Si concentration of said molten pig iron at 0.2% by weight or less, contacting said pig iron with a slag comprising 30–80% by weight of at least one selected from fluorides and chlorides of alkaline earth metals, 0.4–30% by weight of at least one selected from lithium oxide and lithium carbonate, and 5–50% by weight of at least one of iron oxides and nickel oxide, said slag may contain less than 40% by weight of at least one selected from oxides and carbonates of alkaline earth metals, while controlling oxidation of Cr.

4,290,804

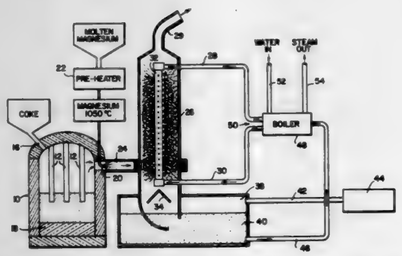
METHOD FOR PRODUCING MAGNESIUM

Julian M. Avery, 47 Old Orchard Rd., Chestnut Hill, Mass. 02167

Filed Feb. 26, 1980, Ser. No. 124,706

Int. Cl.³ C22B *45/00*

U.S. Cl. 75—67 R **9 Claims**



1. The process for recovering magnesium from a vaporous composition comprising magnesium and carbon monoxide, said composition having a temperature above the temperature at which substantial reaction of magnesium and carbon monoxide occurs which comprises contacting said vaporous composition with liquid magnesium heated to a temperature between about 800° C. and 1100° C. so as to vaporize a substantial portion of said liquid magnesium and to reduce the temperature of said vaporous composition to below about 1500° C. substantially instantaneously in order to minimize back oxidation of magnesium with carbon monoxide and subsequently cooling said vaporous composition to condense said magnesium.

4,290,805

METHOD FOR OBTAINING IRON-BASED ALLOYS ALLOWING IN PARTICULAR THEIR MECHANICAL PROPERTIES TO BE IMPROVED BY THE USE OF LANTHANUM, AND IRON-BASED ALLOYS OBTAINED BY THE SAID METHOD

Mario Gorgerino, Meyzieu, and Daniel Videau, Le Touvet, both of France, assignors to Compagnie Universelle D'Acetylene et D'Electro-Metallurgie, France

Filed Apr. 3, 1979, Ser. No. 26,778

Claims priority, application France, Apr. 6, 1978, 78 10254

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—130 R **17 Claims**

1. A method for obtaining iron-based alloys substantially devoid of pinholes and cavities in spheroidal graphite cast-irons, and of carbides in flaky graphite grey-iron, while providing improved castibility, rollability, anisotropy and mechanical properties thereof, which comprises adding 0.0001 to about 2 weight percent of lanthanum to the said iron-based alloy during its production.

4,290,806

COPPER ALLOY FOR RELIABLE ELECTRICAL CONNECTION

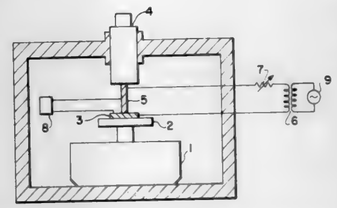
Sadao Inoue, Nikko; Tetsuya Umemura, Ichihara; Hiroshi Suzuki, Yokohama, and Makoto Tago, Tokyo, all of Japan, assignors to Furukawa Metals Company, Ltd., Tokyo, Japan

Filed Sep. 25, 1979, Ser. No. 78,883

Claims priority, application Japan, Sep. 25, 1978, 53/117727

Int. Cl.³ C22C *9/00*

U.S. Cl. 75—153 **3 Claims**



1. A copper alloy for giving a reliable connection in mechanical contact with an electric wire, which consists essentially of 0.6–3.9 wt. % of Co, 0.03–0.4 wt. % of P, the balance being composed of Cu and impurities thereof.

4,290,807

HARD ALLOY AND A PROCESS FOR THE PRODUCTION OF THE SAME

Tsuyoshi Asai; Naoji Fujimori, and Takaharu Yamamoto, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 13, 1978, Ser. No. 942,499

Claims priority, application Japan, Sep. 20, 1977, 52/112943; Dec. 23, 1977, 52/156145; Jan. 24, 1978, 53/007021; Jan. 24, 1978, 53/007022; Mar. 15, 1978, 53/30360; Mar. 16, 1978, 53/30357

Int. Cl.³ C22C *29/00;* B22F *3/00*

U.S. Cl. 75—233 **13 Claims**

1. A sintered hard alloy consisting of a metallic phase and a hard phase having a B1 type crystal structure and being represented by the following general formula:

$$(M_{1a}, M_{2b})(C_{1-x-y}, N_y, O_x)_z$$

in which M_1 is at least one of the Group IVa elements, M_2 is at least one of the Group VIa elements, C is carbon, N is nitrogen, O is oxygen, a, b, x and y are respectively atomic ratios satisfying the relations of $a+b=1$, $0.1 \leqq a/(a+b) \leqq 0.7$, $0.08 < x \leqq 0.5$, $0 \leqq y \leqq 0.5$ and $0.05 \leqq x+y \leqq 0.6$ and z is an atomic ratio of $(C+O+N)/(M_1+M_2)$ satisfying the relation of $0.1 \leqq z \leqq 0.5$.

11. A process for producing a sintered hard alloy represented by the following general formula:

$$(M_{1a}, M_{2b}, M_{3c})(C_{1-x-y}N_yO_x)_z$$

in which M_1 is at least one of the Group IVa elements, M_2 is at least one of the Group VIa elements, M_3 is at least one of the Group Va elements, C is carbon, N is nitrogen, O is oxygen, a, b, c, x, y and z are respectively atomic ratios satisfying the relations of $a+b+c=1$ in which c can be zero, $0.05 \leqq x \leqq 0.5$, $0 \leqq y \leqq 0.5$, $0.05 \leqq x+y \leqq 0.6$ and z is an atomic ratio of $(C+N+O)/(M_1+M_2+M_3)$ satisfying the relation of $0.1 \leqq z \leqq 0.5$, which comprises pressing and sintering the powdered starting materials necessary to produce the sintered alloy of the above formula, at least a part of the sintering step being carried out in an atmosphere of carbon monoxide of at least 10^{-1} Torr.

4,290,808

METALLIC GLASS POWDERS FROM GLASSY ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 23, 1979, Ser. No. 23,411

Int. Cl.³ B22F *9/04, 9/06*

U.S. Cl. 75—251 **4 Claims**

1. Metallic glass powder having particle size of less than 4 mesh (U.S. Standard) comprising platelets having thickness of less than 0.1 millimeter, each platelet being of substantially uniform thickness throughout, and each platelet being defined by an irregularly shaped outline resultant from fracture of a substantially uniform thickness rapidly solidified embrittled amorphous material.

4,290,809

RAW MIX FLUX FOR CONTINUOUS CASTING OF STEEL

Charles M. Loane, Jr., Bel Air, Md., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 6, 1980, Ser. No. 175,620

Int. Cl.³ C22B *9/10*

U.S. Cl. 75—257 **4 Claims**

1. A flux composition, said composition being a mix of ceramic raw materials and having the following theoretical analysis based on the composition formed on melting the raw materials:

K_2O: 0 to 5 percent by weight

Na_2O: 20 to 35 percent by weight

CaO: 5 to 25 percent by weight

MgO: 0 to 1 percent by weight

Al_2O_3: 3 to 10 percent by weight

B_2O_3: 15 to 30 percent by weight

SiO_2: 5 to 20 percent by weight

F: 10 to 25 percent by weight

Fe_2O_3: 0 to 1 percent by weight

and wherein the percentages of said ingredients total 100 percent by weight.

4,290,810

METHOD FOR FACILITATING TRANSPORTATION OF PARTICULATE ON A CONVEYOR BELT IN A COLD ENVIRONMENT

Carl T. Montgomery, Sperry, Okla., assignor to The Dow Chemical Co., Midland, Mich.

Continuation of Ser. No. 860,501, Dec. 14, 1977, Pat. No. 4,162,347. This application May 4, 1979, Ser. No. 36,219

Int. Cl.³ B32B *9/04;* **C09K** *3/118*

U.S. Cl. 106—13 **8 Claims**

1. A composition for treating a belt surface consisting essentially of from about 0.05 to about 2% by weight a dimethyl polysiloxane, with the balance consisting essentially of water soluble components

(A) a water soluble polyhydroxy compound or monoalkyl ether thereof, and, per part by weight of (A),

(B) from about 0.001 to about 2 parts a water soluble nonvolatile organic compound having at least one hydrophilic group, said compound (B) being different from said compound (A),

said composition being substantially free of corrosion inducing metal halide salts and said water soluble components contain less than about 5% of water immiscible liquids.

4,290,811

METHOD OF PRODUCING SILICATE BINDERS AND COATINGS

Kenneth H. Brown, and Kenneth M. Wolma, both of Evanston, Ill., assignors to Rust-Oleum Corporation, Vernon Hills, Ill.

Filed Mar. 31, 1980, Ser. No. 136,152

Int. Cl.³ C09D *5/10*

U.S. Cl. 106—1.17 **7 Claims**

1. A method of making a hydrolyzed alkyl silicate binder which comprises:

a. dissolving an alkyl silicate, wherein the alkyl groups range from 1 to 4 carbon atoms, in an organic solvent containing sufficient anhydrous strong acid form ion exchange resin to effectively catalyze the hydrolysis reaction; and

b. adding a quantity of water of an amount sufficient to provide 0.125 to 0.475 moles of water for each alkoxy group carried by the alkyl silicate,

and c. removing the ion exchange resin after the reaction is completed.

4. A method of making a zinc-rich coating which comprises:

a. dissolving an alkyl silicate, wherein the alkyl groups range from 1 to 4 carbon atoms, in an organic solvent containing sufficient anhydrous strong acid form ion exchange resin to effectively catalyze the hydrolysis reaction of the alkyl silicate;

b. adding a quantity of water of an amount sufficient to provide 0.125 to 0.475 moles of water for each alkoxy group carried by the alkyl silicate;

c. removing the ion exchange resin after the reaction is completed;

d. adding a quantity of pigments and rheological additives dispersed in anhydrous organic solvent; and

e. adding a quantity of finely divided zinc dust.

4,290,812

PROCESS FOR THE PRODUCTION OF INKS FREE OF FOREIGN SALTS

Ehrenfried Loock, Wilhelmshaven, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 173,069

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930491

Int. Cl.³ C09D *11/00;* **C07C** *107/00*

U.S. Cl. 106—22 **21 Claims**

1. A process for the production of an ink, free from foreign salts, from a technical anionic dye, comprising:

(a) dissolving at least one highly water-soluble dye in water to form an aqueous solution;

(b) precipitating the dye from this aqueous solution by adding a precipitant organic amine to form an insoluble precipitated dye;

(c) separating said precipitated dye from said solution;

(d) converting said precipitated dye into a highly water-soluble form by distillation in the presence of water and a water-soluble amine of low volatility; and

(e) dissolving the water-soluble dye obtained in step (d) in a solvent to obtain a dye solution.

4,290,813

PHOTOCHROMIC BORO-SILICATE GLASS

Harry Owen, Parbold, and Thomas Barrow, Ormskirk, both of England, assignors to Pilkington Brothers Limited, St. Helens, England

Continuation-in-part of Ser. No. 764,315, Jan. 31, 1977, Pat. No. 4,102,693. This application May 18, 1978, Ser. No. 907,222

Claims priority, application United Kingdom, Jan. 31, 1976, 3785/76

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.³ C03C *3/10, 3/08, 3/26*

U.S. Cl. 501—13 **5 Claims**

1. A photochromic boro-silicate glass which has a half-fading time of not more than 145 secs, which has silver halide crystals dispersed throughout the glass, and which is free from barium, consisting essentially of, in weight percentages:

SiO_2—31 to 59%
B_2O_3—18 to 28%
Al_2O_3—8 to 20%
R_2O—6 to 16%
MgO—0 to 2.6%
P_2O_5—0 to 12%
ZrO_2—0 to 7%
TiO_2—0 to 5%
PbO—0 to 7%

where R_2O represents one or more of Li_2O, Na_2O and K_2O in amounts within the ranges 0 to 3% Li_2O, 0 to 8% Na_2O and 0 to 16% K_2O,

and, in weight percentages expressed as quantities over and above the 100% total of all the other components:

silver, expressed as Ag_2O—0.05 to 4%
halide—0.13 to 1%
CuO—0 to 1%.

4,290,814

HIGH ALUMINA BRICK

Stanley R. Pavlica, Irwin, and Donald O. McCreight, Bethel Park, both of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 17, 1979, Ser. No. 67,582

Int. Cl.³ C04B *35/10, 35/12, 35/48*

U.S. Cl. 501—107 **3 Claims**

1. A ceramically bonded, high alumina, refractory brick produced by the process of pressing and firing a mixture consisting essentially of from about 3 to 30%, by weight, of at least one material selected from the group consisting of fused zirconia-mullite grain and fused zirconia-alumina grain, from about 1 to 15% by weight, of finely divided chromic oxide and the balance a high alumina granular refractory material, said fused grain being substantially all −4+65 mesh particle size, said brick being characterized by having relatively good spalling resistance.

4,290,815

USE OF CO-SOLVENTS IN AMINE N-OXIDE SOLUTIONS

Charles L. Henry, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jan. 28, 1980, Ser. No. 111,290

Int. Cl.³ C08J *3/04, 3/08;* **C08L** *1/02*

U.S. Cl. 106—203 **10 Claims**

1. A solution comprising:

(a) cellulose;

(b) a tertiary amine N-oxide solvent for said cellulose;

(c) a cellulose solubility-enhancing amount of water;

(d) a solution processability-enhancing amount of a co-solvent, miscible with said tertiary amine N-oxide, selected from compounds containing primary, or combinations of primary and secondary, amino groups wherein the amino groups are bonded to alkyl, alicyclic, alkyl ether or alkyl-/alicyclic radical(s) and wherein the number of carbon atoms divided by the number of primary amine groups is approximately equal to or less than 4, and the number of primary amine groups divided by the number of secondary amine groups is equal to or greater than 1.

4,290,816

SULFUR COMPOUNDS AND METHOD OF MAKING SAME

Allen C. Ludwig; John M. Dale, and Henry F. Frazier, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Jan. 29, 1979, Ser. No. 7,042

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—287.32 **18 Claims**

1. A process for modifying elemental sulfur to produce a material having properties such that it can be used as a substitute for asphalt or portland cement comprising reacting elemental sulfur

(1) with from 5 to 20 weight percent of the sulfur of a first hydrocarbon containing from 4 to 20 carbon atoms

(a) which is a diolefin or triolefin with the unsaturated portion being reactable with elemental sulfur and

(b) which by itself when reacted with elemental sulfur forms a gel and

(2) with from 5 to 20 weight percent of the sulfur of a second hydrocarbon containing from 2 to 20 carbon atoms

(a) which is a monolefin reactable with elemental sulfur and

(b) which by itself when reacted with sulfur does not form a gel but forms a brittle product and

(c) which when the first and second hydrocarbons are so reacted with sulfur prevents said gel from forming;

(3) said reaction being initiated by heating the reactants to a temperature in the range of 120° to 200° C. and sufficiently high to cause an exothermic reaction between the reactants and

(4) producing a product having a viscosity curve substantially that of asphalt, a penetration of from 5 to 100, a softening point of from 10° C. to 70° C. and a ductility of at least 100.

4,290,817

GLUCOHEPTONATE COMPOSITION

Jose' L. Villa, Bridgewater; Joseph V. Sinka, Mendham, and Joseph P. Fleming, East Brunswick, all of N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jan. 16, 1980, Ser. No. 112,564

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—315 **6 Claims**

1. A process for eliminating ammonia odor from water soluble salt of glucoheptonate having present residual ammonium ion when said salt is introduced into aqueous media having a pH above 9, comprising adding to an aqueous solution of said glucoheptonate before introducing said glucoheptonate into said aqueous media a free acid form of naphthalenesulfonic acid-formaldehyde condensation product in an amount sufficient to react with said ammonium ion.

4,290,818

PROCESS FOR UTILIZING THE WASTE HEAT CONTENT OF CONDENSATE AND/OR VAPOR PRODUCED IN THE MANUFACTURE OF SUGAR

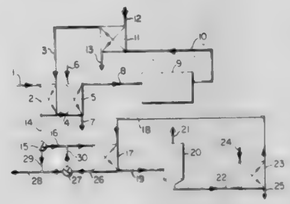
Herbert Huber, Waldseerstrasse 106, D6707 Schifferstadt, and Hubert Schiweck, John-F. Kennedy-Strasse 5, D-6520 Worms, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 916,508, Jun. 19, 1978, abandoned. This application Oct. 31, 1979, Ser. No. 89,863

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2729192

Int. Cl.³ C13D *3/00;* **C13G** *1/00;* **C13F** *1/00*

U.S. Cl. 127—52 **6 Claims**



1. A process for utilizing the waste heat content of condensate and vapour produced in the manufacture of sugar during the purification and the concentration of sugar-containing juice, which process comprises the steps of:

(a) cooling an initial first thin juice obtained by the filtration of juice from the first carbonation stage of a process for manufacturing sugar to produce a cooled first thin juice;

(b) subjecting the cooled first thin juice to one or more stages of flash evaporation to concentrate and further cool the juice to produce a concentrated first thin juice;

(c) heating the concentrated first thin juice in two stages to substantially the original temperature of said initial first thin juice by means of, in the first stage, condensate and-/or vapour produced elsewhere in the sugar manufacturing process and, in the second stage, said initial first thin juice, thereby cooling the latter;

(d) subjecting the juice obtained in (c) to a second carbonation stage to obtain an initial second thin juice;

(e) introducing the initial second thin juice from the second carbonation stage into a first evaporator of a multiple effect evaporating plant to produce a partially concentrated second thin juice;

(f) passing the partially concentrated second thin juice through at least one other evaporator of the evaporating plant to concentrate the juice further;

(g) introducing the juice from step (f) into a final evaporator of the evaporating plant to produce juice concentrated to a required degree and to produce a vapour; and

(h) compressing the vapour from the final evaporator and selectively returning the compressed vapour to one of the preceding evaporators of the evaporating plant for use in heating the juice being concentrated therein.

4,290,819

METHOD AND COMPOSITION FOR THE REMOVAL OF PHENOLIC RESIN COATINGS FROM ALUMINUM

Edwin P. Cornwall, and Walter Batiuk, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 3, 1980, Ser. No. 109,244

Int. Cl.³ C23G *1/02;* **C11D** *7/00;* **C23G** *1/02*

U.S. Cl. 134—3 **9 Claims**

1. A process for removing the phenolic resin coating from a phenolic resin coated aluminum object, comprising the steps of:

applying an aqueous solvent solution consisting essentially of from 60 to 76% by weight of HNO_3 and from 2 to 11% by weight of CrO_3 to the phenolic resin coating,

maintaining said solvent solution at a temperature of about 160° to 170° F. for a sufficient time to dissolve said phenolic coating, and

rinsing with water to remove the solution and drying.

4,290,820

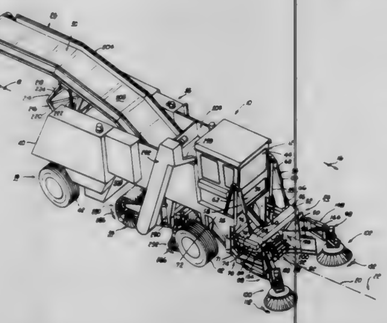
METHOD AND APPARATUS FOR COLLECTING PARTICULATE MATERIAL ON A ROADWAY

George W. Swisher, Jr.; Thomas L. Steele, both of Oklahoma City, and Richard A. Silbernagle, Moore, all of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 10,022, Feb. 7, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,455

Int. Cl.³ B08B 7/00

U.S. Cl. 134—6 **36 Claims**



35. A method for collecting particulate material scattered along a collection path on a roadway surface comprising the following steps in order:

(a) sweeping particulate material disposed along the collection path into a windrow substantially coincident with the collection path;

(b) collecting substantially all of the particulate material of the windrow by scooping said material onto a first material lifting apparatus as said material lifting apparatus is moved along the collection path;

(c) moving the collected particulate material on the first material lifting apparatus to an overhead discharge position;

(d) sweeping residual particulate material remaining on the roadway following step (b) into a residual windrow along the collection path;

(e) sweeping the residual particulate material of the residual windrow onto a second material lifting apparatus as said material lifting apparatus is moved along the collection path;

(f) moving the collected residual material on the second material lifting apparatus to the overhead discharge position so that the collected particulate material carried by the first material lifting apparatus and the collected residual material carried by the second material lifting apparatus are combined to form a combined discharge material; and

(g) dropping the combined discharge material into a selected trailing receiving vehicle.

4,290,821

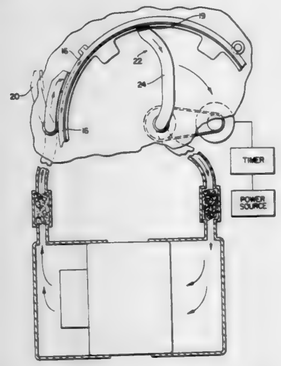
TAPE CARTRIDGE STRAP CLEANING METHOD

Phillip A. Cosby, Arlington, Tex., assignor to Graham Magnetics, Inc., North Richland Hills, Tex.

Division of Ser. No. 948,704, Oct. 5, 1978, Pat. No. 4,123,223. This application Feb. 28, 1980, Ser. No. 125,622

Int. Cl.³ B08B 9/04

U.S. Cl. 134—8 **4 Claims**



1. A process for cleaning interior walls of a ring-like strap of the type used to hold and release magnetic tape for fluidic feeding in tape-reading apparatus, the strap comprising an annular conduit between interior and exterior walls of said strap, said conduit terminating in spaced apertures in said interior wall thereof, said process comprising the steps of

(a) supplying the air through said exterior wall under pressure into said annular conduit to maintain positive air-streams coming out of said apertures in said interior wall and, thereby, preventing dirt in interior walls from being forced into said apertures while

(b) carrying out a relative rotation between (1) a suction-cleaning means mounted in biased contact with said interior wall and (2) the interior wall of said strap.

4,290,822

PROCESS FOR CLEANING A COLD TRAP

Jean-Pierre Maupre, and Jean Trouve, both of Pertuis, France, assignors to Commissariat a l'Energie Atomique, Paris, France

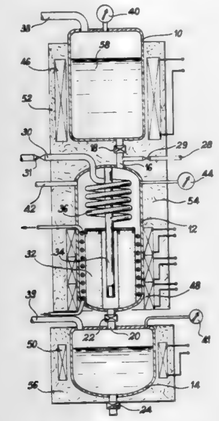
Filed Nov. 14, 1979, Ser. No. 94,165

Claims priority, application France, Dec. 4, 1978, 78 34093

Int. Cl.³ B08B 3/08, 3/10

U.S. Cl. 134—19 **4 Claims**

1. A process for cleaning a cold trap incorporated into a circuit for a liquid metal or a mixture of liquid metals, whereby in said trap are deposited impurities consisting of the hydride and the oxide of the liquid metal or liquid metals in question, comprising the steps of introducing into the trap an alkali metal hydroxide in liquid state and in excess compared with solubility limits of the hydride and the oxide, then heating of the trap up to total transformation of the impurities into liquid phases and draining off of the liquid phases contained in the trap said steps being carried out in the absence of water.



4,290,823

MANUFACTURE OF COPPER WIRE ROD

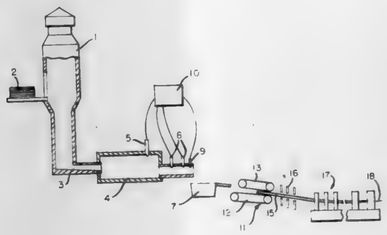
John Dompas, Olen, Belgium, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Continuation of Ser. No. 516,860, Oct. 22, 1974, abandoned. This application Oct. 25, 1979, Ser. No. 88,118

Claims priority, application Belgium, Oct. 22, 1973, 136901

Int. Cl.³ C22F 1/08

U.S. Cl. 148—2 **2 Claims**



1. A method for the continuous production of copper wire rod comprising:

(a) melting copper cathodes to thereby establish a supply of liquid copper containing from 0.006 to 0.0095% by weight of oxygen,

(b) introducing said liquid copper into a holding zone wherein the liquid copper is heated by direct contact with hot combustion gases,

(c) continuously analyzing the oxygen content of the molten copper in the holding zone by means of electrochemical means,

(d) automatically regulating the ratio of combustible gas to oxygen fed to the burners associated with said holding zone in accordance with the continuous analysis set forth in step (c) so that the oxygen content of the liquid copper in the holding zone will be maintained within the range of 0.006 to 0.0095% by weight of oxygen,

(e) passing the liquid copper from said holding zone to a casting ladle, and then introducing liquid copper from said casting ladle, at a temperature of less than 1130° C. and having between 0.006 and 0.0095% by weight of oxygen, into a continuous casting machine having an inclined straight molding cavity formed by two endless metallic belts and two side dams, said molding cavity having a rectangular cross section in which the base of the rectangle is larger than 1.5 times the height of the rectangle,

(f) removing from said casting machine a continuous copper bar that has an oxygen content that is twice as much due to oxygen pick-up from the air during the passage of the copper from the casting ladle to the continuous casting machine, said copper bar comprising a shell of solid copper and a core of liquid copper,

(g) cooling the copper bar after removal from said casting machine by repeated and direct contact with a cooling agent so as to completely solidify the copper bar,

(h) passing the solidified copper bar from step (g) through a horizontal rolling mill along a curved path having a maximum curvature of less than 0.25 m^{-1}, and

(i) recovering a wire rod having good ductility, an elongation higher than 40%, an SP number higher than 300, and the annealing capacity of tough pitch copper, the cross section of said wire rod being less than 1/70th the cross section of the cross section of the copper bar removed from step (e).

4,290,824

WATER SOLUBLE ROSIN FLUX

Hugh F. Cole, Carrollton, Tex., assignor to Cobar Resources, Inc., Dallas, Tex.

Filed Dec. 10, 1979, Ser. No. 101,474

Int. Cl.³ B23K 35/34

U.S. Cl. 148—23 **10 Claims**

1. A flux composition comprising: an activator in mix composition with a water soluble rosin derivative, proportioned by weight, respectively, one to a proportion in the approximate range of one-half to eighty, and a suitable diluent vehicle.

4,290,825

SEMICONDUCTOR DEVICES CONTAINING PROTONS AND DEUTERONS IMPLANTED REGIONS

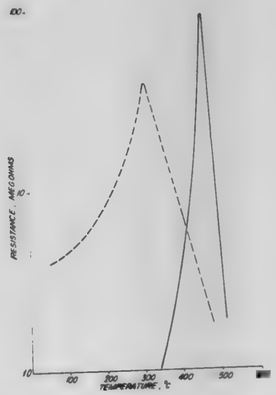
Geoffrey Dearnaley, Abingdon, England; Kenneth Steeples, Edinburgh, Scotland, and Ian J. Saunders, Morecambe, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 13, 1979, Ser. No. 11,959

Claims priority, application United Kingdom, Feb. 15, 1978, 5675/78

Int. Cl.³ H01L 21/265

U.S. Cl. 148—33.4 **10 Claims**



9. A semiconductor device comprising a substrate body including regions of low resistivity separated by regions into

which protons and deuterons have been implanted to form substantially uniform layers of high resistivity and dimensions such as to isolate electrically the regions of the substrate of low resistivity.

4,290,826

PROCESS FOR THE PRODUCTION OF COBALT-RARE EARTH ALLOY POWDERS

Maurice A. Clegg, Fort Saskatchewan, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Sep. 30, 1980, Ser. No. 192,408

Claims priority, application United Kingdom, Oct. 12, 1979, 35544/79

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—101 **16 Claims**

1. A process for producing cobalt-rare earth alloy powders suitable for forming into permanent magnets, including providing cobalt powder particles having refractory oxide dispersoid powder particles fixed in the surfaces of the cobalt particles, providing particles of a rare earth element, mixing the cobalt-dispersoid particles with the rare earth particles in a proportion corresponding to the composition of the alloy to be formed, and heating the mixture to cause the cobalt-dispersoid particles and the rare earth particles to form the desired alloy by diffusion with substantially no sintering.

12. A process for producing cobalt-rare earth alloy powders suitable for forming into permanent magnets, including providing cobalt powder particles with a particle size in the range of from about 0.2 to about 5 micrometers and with refractory oxide dispersoid powder particles fixed in the surfaces of the cobalt particles, said refractory oxide dispersoid powder particles having a size in the range of from about | to about 20 nanometers, the proportion of dispersoid particles to cobalt particles being from about 0.5 to about 2% by weight of the cobalt particles, providing particles of a rare earth element having a size in the range of from about 5 to about 44 micrometers, mixing the cobalt-dispersoid particles with the rare earth particles in a proportion corresponding to the composition of the alloy to be formed, and heating the mixture to cause the cobalt-dispersoid particles and the rare earth particles to form the desired alloy by diffusion with substantially no sintering.

4,290,827

PROCESS FOR PRODUCING NI-FE MAGNETIC TAPE CORES

Friedrich Pfeifer, Bruchkoebel, and Wernfried Behnke, Rodenbach, both of Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 27,154

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814640

Int. Cl.³ C21D *1/04*

U.S. Cl. 148—108 **8 Claims**

1. In a process for producing tape cores composed of a Ni-Fe alloy having 45 to 53 weight percent nickel with the remainder iron and including relatively small amounts of deoxidizing and processing additives whereby an ingot composed of said alloy is worked into a tape having a thickness of about 0.01 to 0.1 mm and wound into a tape core, which tape core is then subjected to at least a one hour final annealing at a temperature of at least about 900° C. and the so-annealed tape core is then subjected to a tempering treatment in a magnetic field in which the lines of force are applied in the tape plane perpendicular to the rolling direction of the tape, the improvement comprising wherein:

(1) before winding said tape core,

(a) said tape is heated to a temperature between approximately 600° and 700° C. and

(b) subjecting the so-heated tape to a final deformation of at least 90 percent of said tape's thickness before said final deformation; and

(2) after winding said tape into a tape core, subjecting said core to a final annealing at a temperature ranging between about 1050° and 1200° C. so as to produce a secondary recrystallization structure within said tape.

7. A Ni-Fe magnetic tape core comprised of 45 to 53 weight percent nickel with the remainder iron and including relatively small amounts of deoxidizing and processing additives, characterized by a secondary recrystallization structure therein and a relatively high impulse permeability of about 8300 with an induction rise of 1.0T, about 6400 with an induction rise of 1.2T, about 4800 with an induction rise of 1.3T and about 2900 with an induction rise of 1.4T.

4,290,828

METHOD FOR MANUFACTURING BIMETAL

Tatsuyoshi Aisaka; Mitsuo Kawai; Fumio Mori, and Shinzo Sugai, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 880,301, Feb. 22, 1978, Pat. No. 4,207,381. This application Jul. 11, 1979, Ser. No. 56,689

Claims priority, application Japan, Feb. 23, 1977, 52-18082; Mar. 2, 1977, 52-21496

Int. Cl.³ C22F *1/00;* **C21D** *7/00*

U.S. Cl. 148—11.5 Q **19 Claims**



1. A method of manufacturing a bimetal exhibiting a hysteresis and a rapid deflection over a predetermined temperature range, comprising the steps of:

(a) providing a first metal component of a high expansion metal alloy whose thermal expansion coefficient rapidly changes from 21.5×10^{-6}/°C. or less to 50×10^{-6}/°C. or more at a temperature of between 100° C. and 250° C.,

said high expansion metal alloy being selected from a first alloy consisting of 15 to 30% by weight of manganese and substantially iron as the remainder or a second alloy consisting essentially of 15 to 30% by weight of manganese, and a member selected from the group consisting of 2 to 15% by weight of chromium, 2 to 15% by weight of cobalt and 2 to 20% by weight of a mixture of chromium and cobalt and the balancce of iron;

(b) providing a second metal component of a low expansion metal alloy having a thermal expansion coefficient substantially constant regardless of temperature changes;

(c) annealing the first metal component repeatedly to substantially eliminate work strains contained therein; and

(d) bonding together said first and second metal components.

4,290,829

PROCESS FOR BOX ANNEALING A STEEL STRIP COIL

Hiromichi Koshiishi; Kunio Mori; Hiroshi Sato, and Akira Sakaida, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,673

Claims priority, application Japan, May 24, 1979, 54-64463

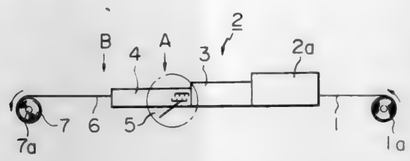
Int. Cl.³ C21D *9/52*

U.S. Cl. 148—130 **10 Claims**

1. A process for box annealing a steel strip coil, comprising the steps of:

pretreating a steel strip in such a manner that a side edge portion of said steel strip is subjected to a thermal treatment different from another thermal treatment to which the remaining portion, including an opposite side edge, of said steel strip is subjected, the difference between the thermal treatments applied to said side edge portion and said remaining portion causing the longitudinal length of said edge portion to become different from that of said remaining portion of said steel strip;

winding said pretreated steel strip under tension to form a coil in such a manner that greater tensile stresses are created in either one of said side edge portion and said remaining portion, which one has a longitudinal length smaller than that of the other one, than those produced in the other one;



placing said coil on a base plate in such a manner that a side edge included in said portion having the greater stresses, of said steel strip, is brought into contact with said base plate, and;

box annealing said coil on said base plate in a box annealing furnace.

4,290,830

METHOD OF SELECTIVELY DIFFUSING ALUMINIUM INTO A SILICON SEMICONDUCTOR SUBSTRATE

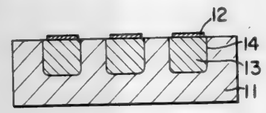
Yasuhiro Mochizuki; Sadao Okano, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 887,250, Mar. 16, 1978, abandoned. This application Oct. 16, 1979, Ser. No. 85,234

Claims priority, application Japan, Mar. 25, 1977, 52/33095

Int. Cl.³ H01L *21/225*

U.S. Cl. 148—187 **8 Claims**



1. A method of selectively diffusing aluminium into a single crystal silicon semiconductor substrate for fabricating a semiconductor device comprising the steps of:

forming a diffusion source layer for aluminium diffusion into said substrate, said diffusion layer having a predetermined thickness, on at least one major surface of said crystal silicon semiconductor substrate in a predetermined pattern; and

thermally treating said silicon semiconductor substrate having the diffusion source layer thereon to selectively diffuse aluminium into said substrate, said thermally treating step comprising: (a) a first step of subjecting said crystal silicon semiconductor substrate having said diffusion source layer thereon to oxidation by exposing said substrate to an atmosphere of oxygen, and (b) a subsequent second step of exposing said substrate to a non-oxidizing atmosphere, whereby aluminium is selectively diffused into said substrate without formation of cristobalite.

4,290,831

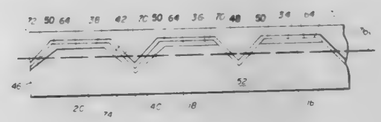
METHOD OF FABRICATING SURFACE CONTACTS FOR BURIED LAYER INTO DIELECTRIC ISOLATED ISLANDS

Kenneth A. Ports, Indialantic, and William G. Lucas, Indian Harbour Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 18, 1980, Ser. No. 141,504

Int. Cl.³ H01L *21/22*

U.S. Cl. 148—187 **6 Claims**



1. A method of fabricating an integrated circuit having a plurality of dielectrically isolated islands comprising:

etching a first surface of a substrate to form preselected portions of an isolation moat structure of preselected to be formed substrate islands using a first mask exposing said preselected portions;

non-selectively introducing impurities into said first surface and said preselected portions of said moat to form a low resistive region along said first surface and along said preselected portions of said moat;

etching said first surface to form a uniform isolation moat structure using a mask exposing the total isolation moat structure including said preselected portions;

forming a dielectric layer along said first surface and said moat structure;

covering said dielectric layer with material which over fills said moat and forms a support structure;

reducing the thickness of said substrate from a second surface opposite said first surface sufficiently to expose portions of said support structure in said moat and form isolated substrate islands; and

forming devices in said second surface of said substrate islands, said low resistive regions along said preselected island's wall forming a low resistive path to the buried low resistive region at said first surface of said preselected islands.

4,290,832

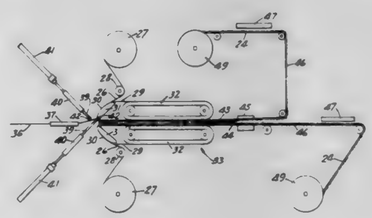
METHOD FOR MAKING FASTENERS

Melvin O. Kalleberg, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 714,132, Aug. 13, 1976, abandoned. This application Sep. 2, 1977, Ser. No. 830,174

Int. Cl.² B32B *31/00*

U.S. Cl. 156—72 **5 Claims**



1. A method for forming a strip material useful as part of a fastener, said method comprising the steps of:

moving two backing layers from generally opposite directions around parallel arcuate spaced guides and away from the guides in the same direction along parallel paths;

feeding spaced parallel flexible, resilient polymeric monofilaments between the spaced guides from the sides thereof opposite said parallel paths;

alternately pressing U-shaped lengths of the flexible monofilaments into engagement with one of the backing layers and then pressing U-shaped lengths of the monofilaments spaced therefrom into engagement with the other backing layer while bonding the U-shaped lengths of the monofilaments to the backing layers in the positions that they are pressed into engagement therewith so that lengths of the monofilaments between the U-shaped lengths extend generally normally between the backing layers as the layers move along the parallel paths;

severing the monofilaments midway between the backing layers to form two brush-like halves; and

heating the newly severed terminal ends of the monofilaments projecting from the backing layers to form heads having arcuate surfaces opposite the backing layers;

said feeding step including the step of varying the positions of said monofilaments transversely of said parallel paths so that successive rows of U-shaped lengths of the monofilaments along the backing layers will not be aligned longitudinally of the backing layers.

4,290,833

METHOD FOR SEALING CATION EXCHANGE MEMBRANES OF CARBOXYLIC ACID TYPE FLUORINATED POLYMERS

Igor V. Kadija, and Kenneth E. Woodard, Jr., both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 28, 1979, Ser. No. 79,678
Int. Cl.³ B29C *27/08*; B32B *31/20*
U.S. Cl. 156—94 **8 Claims**

1. A method for repairing portions of cation exchange membranes comprised of a fluorinated polymer having carboxylic acid type functional groups, said method which comprises:

(a) esterifying said portions to provide carboxylic acid type functional groups in the ester form,

(b) contacting portions of said membrane in said ester form to be repaired, and

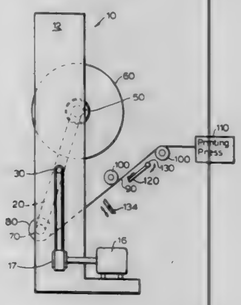
(c) ultrasonically sealing said portions.

4,290,834

WEB SPLICING METHOD

Paul M. Buettel, 86 Longfellow Dr., Colonia, N.J. 07067

Continuation of Ser. No. 43,899, May 30, 1979, abandoned, which is a continuation of Ser. No. 871,441, Jan. 23, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,309
Int. Cl.³ B65H *19/18*
U.S. Cl. 156—157 **2 Claims**



1. The method of splicing a new web to an old web comprising the steps of

transporting a first running web which is free of adhesive means adjacent the trailing edge portion from a first web roll to a printing press at a selected speed;

applying strips of double-sided, pressure-sensitive adhesive tape, having differential pressure-adhering characteristics, to the leading edge of a second web of a second new web roll,

bringing said second new web roll into contact with said first web, with said first web making contact with, but not adhering to, said strips of double-sided, pressure-sensitive adhesive tape, whereby said second web roll is caused to rotate at such a velocity that the line of contact of the second web roll with the first web is moving at the same speed as said first web, and

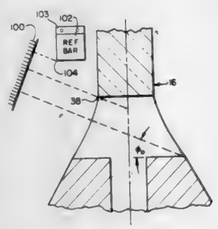
applying pressure to said running first web and said rotating second web roll at a preselected time to cause the web of the second web roll to adhere to the double-sided, pressure-sensitive adhesive tape and thus to the first web whereby said second web is transported to said printing press.

4,290,835

METHOD FOR CRYSTAL GROWTH CONTROL

Douglas A. Yates, Burlington; Arthur E. Hatch, Waltham, and Jeff M. Goldsmith, Medford, all of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Division of Ser. No. 915,443, Jun. 14, 1978. This application Jun. 19, 1980, Ser. No. 161,037
Int. Cl.³ C30B *15/26*
U.S. Cl. 156—601 **3 Claims**



1. A method of growing a crystalline body of selected material from a growth pool of melt so that said body has a selected cross-sectional shape for some preselected distance along its length, said growth pool being characterized by a meniscus which joins said body at said growth pool said method comprising:

positioning reference object means adjacent the junction where said meniscus meets said body;

observing said body, said reference object means and said meniscus along an optical axis which is substantially perpendicular to the surface of said meniscus where said meniscus meets said body and in which the reference object means appears spaced from the junction with a portion of said meniscus or said body spaced therebetween;

determining a first spatial position where a sharp contrast occurs between said body, and said meniscus and a second spatial position where a sharp contrast occurs between said portion of meniscus or body and said reference object means;

referencing said first spatial position relative to said second spatial position; and

controlling the speed at which said body is pulled from said growth pool or the temperature of said growth pool so that said first spatial position can be controlled relative to said second spatial position.

4,290,836

METHOD OF MAKING COMPOSITE PIPE HAVING AN INTEGRAL BELL END

Alex L. McPherson, Winfield, Ill.; Douglas E. Triestram, and James E. Lawrence, Jr., both of Coshocton, Ohio, assignors to Clow Corporation, Oak Brook, Ill.

Division of Ser. No. 879,158, Feb. 21, 1978, Pat. No. 4,240,470. This application Apr. 7, 1980, Ser. No. 138,160
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—171 **6 Claims**



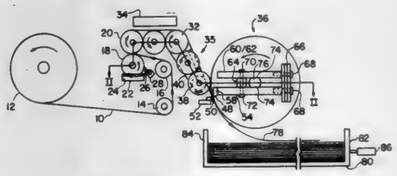
1. A method of making a composite reinforced plastic pipe having a generally cylindrical tubular portion defining a spigot end and an opposite integral bell end adapted to receive the spigot end of a similarly configured pipe therein; said method comprising the steps of forming an annular inner liner or resin impregnated surfacing veil defining an axial passage having a first tubular portion of substantially uniform cylindrical cross section, forming an annular butting area circumferentially of said inner liner adjacent said bell end so as to define an annular surface for abutment with the spigot end of a mating pipe inserted into said bell end, forming an inner layer circumferentially of said inner liner by winding a resin impregnated continuous fiberglass roving helically on the outer surface of said inner liner and continuing said inner layer axially beyond one end of said inner liner and said butting area to form a second tubular portion defining said bell end, said inner layer defining an internal annular seal receiving groove in said bell end, forming a core layer of sand-resin composition circumferentially about and directly on the outer peripheral surface of said inner layer, said core layer being of substantially uniform cross section and formed along the length of said first tubular portion but terminating at said bell end so as not to form a part of said bell end, said sand-resin composition having a sand to resin weight ratio in the range of approximately 80:20 to 70:30, forming an outer layer of a plurality of lays of resin impregnated continuous fiberglass roving circumferentially about said core layer and the exposed surface of said inner layer so as to cooperate with said inner layer in defining said bell end, and curing the resulting composite pipe to effect bonding between the various layers.

4,290,837

METHOD AND APPARATUS FOR MAKING UNEXPANDED HONEYCOMB MATERIAL

Joseph D. Bova, 2104 Harford Rd., Fallston, Md. 21047

Filed Dec. 28, 1979, Ser. No. 108,009
Int. Cl.³ B32B *31/00, 3/12*
U.S. Cl. 156—256 **20 Claims**



1. A method of forming a stack of unexpanded honeycomb core sheets from a continuous web of sheet material of which alternate ones of said sheets in said stack have linearly spaced and transversely extending lines of adhesive on one side thereof spaced equally between similar adhesive lines on the others of said sheets when stacked in even edge alignment, comprising the steps of: applying linearly spaced and transversely extending lines of adhesive to at least one face of said web by contacting said web with a printing roll having spaced lines of adhesive thereon; cutting said web parallel to said lines of adhesive and each succeeding cut being made a set distance from each other; said cutting being made by a rotary cutting roll, having a transversely extending cutting blade thereon, rotating once for a given number plus one-half revolutions of said printing roll for cutting said web along a linear center of a line of said adhesive on said web and on a succeeding rotation of said cutting roll, cutting said web between linearly spaced lines of adhesive on said web.

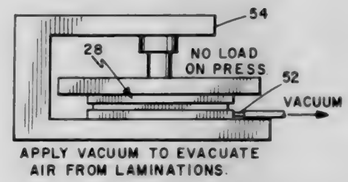
8. Apparatus for making a stack of unexpanded honeycomb core sheets from a continuous web comprising: a printing means including a gravure roll having an odd number of gravure lines spaced equally around the circumference of said roll for applying transversely extending lines of adhesive at linearly spaced intervals along the length of said web on one side thereof; a cutting means downstream from said printing means including a cutting roll with a transversely extending cutting blade thereon, said cutting roll having a cutting circumference equal to the length of the sheets to be cut from said web, such circumference also being equal to a given number plus one-half of the circumference of said gravure roll; a web pulling means between said printing means and said cutting means for pulling said web past such gravure roll and controlling the advance of said web past said cutting means; and a drive means linking said cutting means with such printing means for rotating said cutting roll once for each of a given number plus one-half revolutions of said gravure roll to cut said web transversely along the linear center of a line of said adhesive on said web during one revolution of said cutting roll and along the linear center of a space between said lines of adhesive on a succeeding revolution of said cutting roll.

4,290,838

METHOD FOR VACUUM LAMINATION OF FLEX CIRCUITS

Joseph A. Reavill, Mira Loma, and John M. Arachi, Riverside, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 965,976, Dec. 4, 1978, Pat. No. 4,234,373. This application Aug. 17, 1979, Ser. No. 67,254
Int. Cl.³ B29C *17/00*; B32B *31/00*
U.S. Cl. 156—286 **5 Claims**



1. A method of laminating printed circuits comprising:

selecting a sealable press fixture having opposed plates defining upper and lower planar faces and including a peripheral band seal extending between the plates;

forming a laminate of flexible sheets of circuits with an adhesive between said sheets;

placing the laminate of circuits between said plates in said fixture for engagement thereby;

closing said fixture;

applying a vacuum in the fixture for drawing air from between said sheets of circuit while supporting the face of said upper plate out of engagement with said laminate;

maintaining the vacuum for predetermined period of time; and

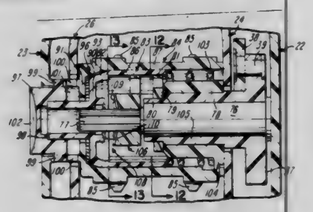
applying pressure to the press fixture for forcing the laminate to bond together.

4,290,839

LABEL PRINTING AND APPLYING APPARATUS

Robert M. Pabodie, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 9, 1980, Ser. No. 110,720
Int. Cl.³ B65C *11/02*
U.S. Cl. 156—384 **7 Claims**



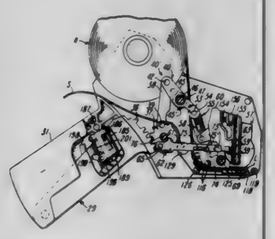
1. In a hand-held apparatus for printing and applying pressure sensitive labels releasably carried on a web of supporting material, comprising: a frame having a handle, an actuator disposed at the handle, means for printing on the labels, means for delaminating printed labels, means for applying printed labels, a toothed feed wheel engageable with the web, means coupled to the actuator for moving the printing means to print on a label and for moving the labels stepwise into registration with the printing means, the moving means including a pawl and ratchet mechanism, the pawl and ratchet mechanism having a ratchet wheel and a cooperable pawl, and means for varying the position to which the label is advanced into registration with the printing means, the improvement in the position varying means comprising a clutch having a first clutch member coupled to the ratchet wheel and a second clutch member coupled to the feed wheel and cooperable with the first clutch member, a shiftable and rotatable member operating for moving the first clutch member out of clutching rotation with the second clutch member and for moving the feed wheel to change the positional relationship between the feed wheel and the ratchet wheel, and means for preventing rotation of the ratchet wheel and movement of the second clutch member in either direction when the clutch is disengaged.

4,290,840

LABEL PRINTING AND APPLYING APPARATUS

Robert M. Pabodie, Dayton, and Paul H. Hamitch, Jr., Franklin, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 9, 1980, Ser. No. 110,733
Int. Cl.³ B32B *1/00*
U.S. Cl. 156—384 **28 Claims**



1. Hand-held apparatus for printing and applying pressure sensitive labels releasably carried on a web of supporting material, comprising: a frame having a handle, an actuator disposed at the handle and movable between an initial position and an actuated position, a platen, a print head, means mounting the print head for straight line movement into and out of printing cooperation with the platen, means disposed adjacent the platen for delaminating printed labels, means for applying the printed labels, means coupling the actuator and the print head, the coupling means including a link, a pivotally mounted lever having arms, means pivotally connecting the link and one arm of the lever, a spring device, means pivotally connecting another arm of the lever and the spring device, means for preventing movement of the print head toward the platen during a portion of the movement of the actuator from its initial position to its actuated position to load the spring device, and means effective when the actuator has moved through a predetermined distance for releasing the print head into printing cooperation with the platen.

4,290,841

APPARATUS FOR CONTINUOUSLY FORMING A COATING LAYER ON UNBONDED PC STEEL BARS

Tetsukazu Fukuhara, Hiratsuka, Japan, assignor to Neturen Company Ltd., Tokyo, Japan

Division of Ser. No. 974,513, Dec. 28, 1978. This application Aug. 7, 1979, Ser. No. 64,627
Claims priority, application Japan, May 19, 1978, 53/58874
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—464 **3 Claims**



1. A system for continuously coating unbonded PC steel bars moving along one after the other in an axial path, said system comprising:

an axial interval regulating device including first and second pairs of pinch rollers positioned upstream and downstream, respectively with respect to said axial path, a spacer movable between first and second specific points upstream and downstream, respectively of said upstream pair of pinch rollers along said axial path, means for separately moving said pinch rollers toward and away from said axial path, and means for moving said spacer back or forth between said first and second points;

a coating device including an outer nozzle, an inner nozzle positioned within said outer nozzle, said outer nozzle having therethrough a coating agent outflow path, and said inner nozzle being shiftable toward and away from said outer nozzle along said axial path to thereby block and clear said coating agent outflow path;

a taping device for applying tape around a plurality of said steel bars, thus axially joining said steel bars;

a transfer mechanism including a pair of symmetrical conveyor units vertically spaced from each other by a specified spacing on opposite sides of said axial path, each said unit including a chain belt stretched over spaced rotating bodies, each said conveyor unit including an upper chain holder in contact with the underside of the upper run of the respective said belt and a lower chain holder in contact with the inner side of the lower run of said respective belt, said upper chain holder and said lower chain holder being connected by a coupling member, the distance between the top side of said upper chain holder and the underside of said lower chain holder being greater than the diameter of said rotating bodies, a first fitting member provided adjacent to one end of said lower chain holder of the upper said conveyor unit, a second fitting member provided adjacent to the other end of said upper chain holder of the lower said conveyor unit, a first adjusting member connecting said first and second fitting members, a third fitting member provided adjacent to the other end of said lower chain holder of said upper conveyor unit, a fourth fitting member provided adjacent to one end of said upper chain holder of said lower conveyor unit, a second adjusting member connecting said third and fourth fitting members, said first and second adjusting members intersecting in an X-fashion and being pivotally connected, said lower chain holder of said upper conveyor unit and said upper chain holder of said lower conveyor unit thus being interlocked so that they may be displaced toward and away from each other, and said chain holders being mounted to be elastically slightly displaceable from each other; and

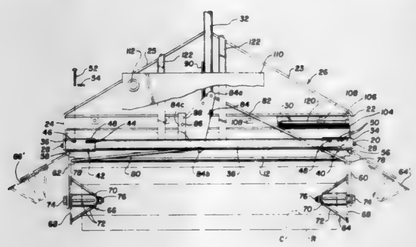
a cutting device including a pair of members symmetrically positioned on opposite sides of said axial path, each said member including a rotatable shaft, a rotatable arm having a first end fixed to said rotatable shaft, a fixed shaft, a swing arm having a first end coupled to said fixed shaft, a parallel member connected to second ends of said swing arm and said rotatable arm, and a cutter located substantially at the midpoint of said parallel member, said cutter including a heater, and the arrangement being such that by simultaneous opposite rotation of said rotatable arms of said two members, hollow tubular taped portions between adjacent said steel bars can be thermally severed by contact of said heaters of said two members.

4,290,842

FELT PAPER ROLLER ASSEMBLY

Wilburn K. Gable, 4203 Mt. Ranier St., Dallas, Tex. 75211

Filed Jan. 24, 1980, Ser. No. 115,071
Int. Cl.³ B44C *7/06*; E04D *15/06*
U.S. Cl. 156—577 **4 Claims**



1. A roller assembly for dispensing and applying felt paper comprising:

(a) a cylindrically shaped roller having a smooth, uninterrupted surface;

(b) a shaft journaled through said roller and extending outwardly therefrom to form an axle;

(c) frame means having a pair of legs joined by a connecting member with said shaft rotatably secured between said legs;

(d) handle means secured to said connecting member and extending upwardly therefrom;

(e) hand grips secured to said handle means;

(f) a pair of substantially conically shaped support rollers;

(g) means moveably supporting said support rollers in opposed positions on opposite sides of said frame means;

(h) control means for moving said support rollers from a first outer position to a second position wherein said support rollers engage the central hollow portion of a roll of felt paper and support said roll of felt paper between said support rollers;

(i) crank means pivotably secured to said frame means;

(j) connecting rods secured between said means moveably supporting said support rollers and said crank means to move said support rollers when said crank means is moved; and

(k) means for moving said crank means.

4,290,843

EPITAXIAL GROWTH OF MAGNETIC MEMORY FILM ON IMPLANTED SUBSTRATE

Ralph Korenstein, Plano, and Carlos A. Castro, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 19, 1980, Ser. No. 122,550
Int. Cl.³ B44C *1/22*
U.S. Cl. 156—628 **9 Claims**

1. A method for fabricating a magnetic memory film comprising the steps of:

depositing an ion mask on the surface of a crystalline substrate, and thereafter ion implanting said surface for the purpose of damaging the portion thereof exposed by the ion mask to the limited extent necessary to prevent monocrystalline growth upon said exposed portion;

growing an epitaxial layer of magnetizable material having a similar crystalline structure on the surface of said substrate, the layer having a polycrystalline structure where grown over the ion damaged areas and monocrystalline structure elsewhere;

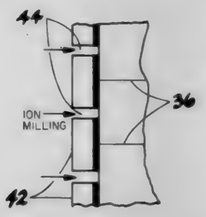
selectively removing the polycrystalline portions of the epitaxial layer.

4,290,844

FOCAL PLANE PHOTO-DETECTOR MOSAIC ARRAY FABRICATION

Ralph A. Rotolante, Acton, and Toivo Koehler, Lexington, both of Mass., assignors to Carson Alexiou Corporation, Costa Mesa, Calif.

Filed Feb. 26, 1979, Ser. No. 15,070
Int. Cl.³ H01L *21/302*
U.S. Cl. 156—630 **19 Claims**



1. A method for providing a mosaic of individual photodetector elements on the focal plane of a support structure having a multiplicity of individual electrical conductors buried within it and terminating in separate electrical contact points at its focal plane, which method comprises the following steps:

securing a thin wafer of detector material to the focal plane face of said supporting structure in such a way that the wafer material is in electrical contact with said contact points; and

thereafter delineating individual detector islands by removing material from the wafer to form channels located between the electrical contact points and dividing the wafer into a multiplicity of individual detector islands adapted to provide detector elements each of which is isolated from all the others and each of which is directly over and in electrical contact with a separate one of said contact points.

19. A method for providing a focal plane mosaic of photodetector elements on a supporting structure comprising:

applying a layer of electrically-conducting epoxy to the focal plane;

placing a wafer of mercury-cadmium telluride on the epoxy;

applying a titanium oxide mask on the exposed side of the wafer for the purpose of protecting individual islands of mercury cadmium telluride material; and

using an ion milling process to remove both detector mate-

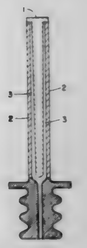
rial and epoxy material from the unprotected spaces between the islands of mercury cadmium telluride material.

4,290,845

PROCESS FOR THE PRODUCTION OF HIGH TEMPERATURE-RESISTANT METALLIC COMPONENTS WITH FINELY POROUS WALLS

Wolfgang Betz, Munich, and Axel Rossmann, Karlsfeld, both of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen Union, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,847
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911714
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—644 **8 Claims**



1. A process for producing high temperature-resistant metallic components of complex shape having finely porous walls, particularly such facilitating the diffusion therethrough of a cooling medium, comprising the steps of:
(a) imparting the configuration to said component from an alloy adapted for oriented eutectic solidification;
(b) effecting a short-term sintering to said component and controlled cooling so that the solidification propagation extends perpendicular to the wall surfaces, including wall surfaces of complex shape;
(c) and etching out formed needles or rods from the solidified component.

4,290,846

METHOD OF PROTECTING ORGANIC OR INORGANIC MATERIAL FROM ATTACK BY MICROORGANISMS

Rene Muntwyler, Hofstetten, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,193
Claims priority, application Switzerland, Aug. 8, 1978, 8472/78
Int. Cl.³ D21D *3/00*
U.S. Cl. 162—161 **12 Claims**

1. A method of protecting organic and inorganic material from attack by micro-organisms, which comprises incorporating in or applying to the surface of said material 3,5-dibromo-4-chlorophenol, 3,5-dibromo-4-fluorophenol or 3,5-dichloro-4-bromophenol or a mixture thereof, an amount of about 100 to 10,000 ppm based on the material to be protected.

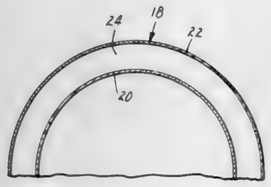
4. A method according to claim 1 for protecting paper-making slurries and machines used in the paper industry from the formation of slime induced by microorganisms.

4,290,847

MULTISHELL MICROCAPSULES

James R. Johnson, White Bear Lake, and William C. Flanagan, Jr., Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 10, 1975, Ser. No. 630,311
Int. Cl.² G21B *1/00*
U.S. Cl. 176—1 **11 Claims**



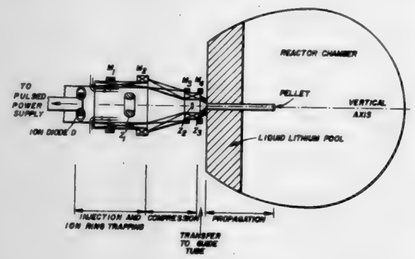
1. In an apparatus comprising means for extracting useful energy in a controlled manner from a microcapsule giving off useful energy in a controlled manner when imploded by an energy beam, said microcapsule having a free-flowing, rigid substantially spherical configuration ranging in diameter between 1 and 2,000 micrometers, comprising at least one nonporous inner wall of substantially uniform thickness consisting of homogeneous, non-vitreous, ceramic metal oxide in polycrystalline state having therein a single cavity containing a preselected radioactive composition consisting of the group including deuterium and tritium and mixtures and compounds thereof in gaseous, solid or liquid form, said inner wall being enclosed by at least one concentric outer shell of ceramic oxide, metal or pyrocarbon spaced apart from and surrounding said inner wall, said outer shell being spaced apart from said inner wall by means comprising a skeletal residue structure, wherein said residue structure is formed so as to provide a randomly oriented spacing means having portions thereof in contact with the other surface of said inner wall and the inner surface of said outer shell.

4,290,848

ION-RING IGNITOR FOR INERTIAL FUSION

Ravindra N. Sudan, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,959
Int. Cl.³ G21B *1/00*
U.S. Cl. 176—5 **14 Claims**



1. In a system comprising means for extracting useful energy in a controlled manner from a target imploded by an energy beam, said target giving off useful energy in a controlled manner when imploded by said beam,
a reactor chamber;
a target fuel pellet mounted within said reactor chamber;
means for producing an annular ring of ions;

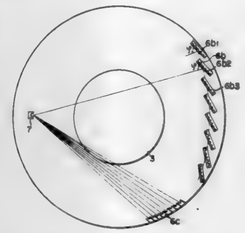
means to compress said ring of ions to increase its energy and decrease its size; and
means including a guide tube for transporting said ring of ions to impact said target pellet within said reactor chamber for the purpose of initiating a fusion reaction in the pellet by energy transfer from said ions to said pellet.

4,290,849

NUCLEAR REACTOR

Nobuo Uesugi, Yokohama; Tatsuo Miyazawa, Higashi; Mituaki Furudate; Keiichi Sasaki, both of Yokohama, and Hiroji Mizuguchi, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 20, 1978, Ser. No. 953,274
Claims priority, application Japan, Oct. 26, 1977, 52-127578
Int. Cl.³ G21C *17/00*
U.S. Cl. 176—19 R **7 Claims**



1. A nuclear reactor, comprising a reactor vessel, a core housed in the reactor vessel, an ultrasonic transducer mounted in the vicinity of the upper end of the core for emitting and receiving an ultrasonic wave pulse signal propagating above the core, means for rotating the transducer by a prescribed angle to scan horizontally the ultrasonic wave emitted from the transducer, a plurality of reflective members mounted in the vicinity of the upper end of the core in a manner to face the transducer for reflecting the ultrasonic wave signal emitted from the transducer, means for energizing the transducer, and means for displaying the ultrasonic wave signal reflected by the reflective members and received by the transducer in synchronism with the wave scanning motion of the transducer, wherein each of the reflective members is provided with a number of reflective surfaces arranged in the scanning direction of the ultrasonic wave and shaped to permit the incident ultrasonic wave to be reflected a plurality of times such that the reflected wave returning to the transducer runs along a path parallel with and differing from the path of the incident wave, and the reflective surfaces differ from each other in distance from the transducer so as to prevent interference among the reflected ultrasonic wave signals; wherein the difference (Δl) in round trip distance from the transducer between two adjacent reflective surfaces meets the following relationship:

$$\Delta l > c\tau$$

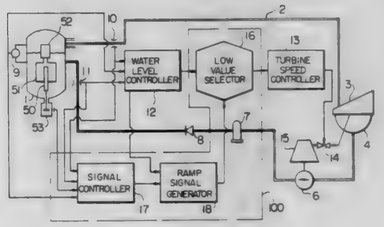
where,
c . . . speed of sound
τ . . . pulse width of the ultrasonic wave.

4,290,850

METHOD AND APPARATUS FOR CONTROLLING FEEDWATER FLOW TO STEAM GENERATING DEVICE

Takashi Omori, Kitaibaraki, and Takao Sato, Tokaimura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,819
Claims priority, application Japan, Sep. 1, 1978, 53-106260; Feb. 26, 1979, 54-20835
Int. Cl.³ G21C *7/00*
U.S. Cl. 176—20 R **4 Claims**



1. A method of controlling feedwater flow to a nuclear steam generating device in a tripped condition of the steam generating device, comprising the steps of:
(a) arithmetically calculating a first forecast length of time required for the water level in the steam generating device to attain its desired normal operation level on the basis of the detected water level and the rate of variation of the water level when said detected water level in the steam generating device is lower than said desired normal operation level, the detected flow rate of feedwater is larger than that of the main steam, and said rate of variation of the water level is positive;
(b) arithmetically calculating a second forecast length of time required for the flow rate of feedwater to decrease to a predetermined flow rate on the basis of the detected feedwater flow rate, the detected main steam flow rate and a substantially constant rate of variation of the flow rate of feedwater;
(c) decreasing the level of the output signal of ramp signal generator means at a rate of variation corresponding to said substantially constant rate of feedwater flow rate variation when the time difference obtained by subtracting $\frac{1}{2}$ of said second forecast length of time from said first forecast length of time becomes zero or negative; and
(d) selecting either the output signal of said water level controller means for generating a control output signal on the basis of various input signals applied thereto including an input signal indicative of the flow rate of main steam, and input signal indicative of the flow rate of feedwater, and an input signal indicative of water level in the steam generating device or the output signal of the ramp signal generator means, which has a lower value than the other to deliver it as the feedwater flow rate demand signal.

4,290,851

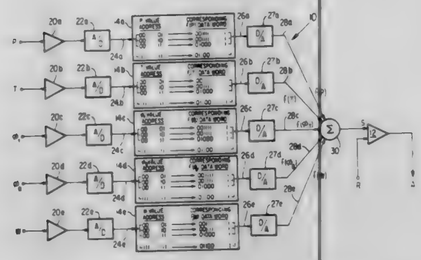
NUCLEAR REACTOR SAFETY SYSTEM

Russell M. Ball, Euclid, Ohio, and Robert C. Roberts, Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jan. 29, 1979, Ser. No. 7,077
Int. Cl.³ G21C *7/00*
U.S. Cl. 176—24 **9 Claims**

1. A safety system for a nuclear reactor comprising:
a series of transducers for measuring various different parameters of the nuclear reactor's operation;
a series of parallel-connected computer-type look-up tables each individually connected to each one of the transducers, each look-up table containing a precalculated function of that parameter measured by said transducer connected

to that look-up table indicative of percentage of full reactor load contributed by that parameter for a series of measured parameter values and outputing said precalculated function in response to the parameter signal measured by said transducer connected thereto;



a summing station for receiving all of the outputs of the respective computing stations and summing them up to establish a control signal indicative of percentage of allowable full power reactor operation.

4,290,852

ROOF REFLECTOR FOR A GAS-COOLED PEBBLE-BED REACTOR AND PROCESS FOR THE DISASSEMBLY OF THE ROOF REFLECTOR

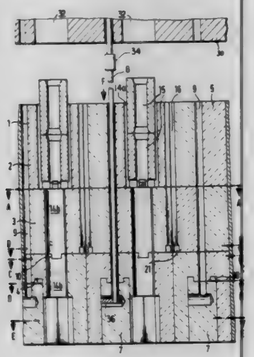
Rolf Fritz, Oftersheim; Bernhard Kalden, Leimen, and Karl-Friedrich Kissel, Hemsbach, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Mannheim, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,434

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817540

Int. Cl.³ G21C *11/06*

U.S. Cl. 176—58 PB **11 Claims**



1. In a gas-cooled pebble-bed reactor having a thermal cover shield, a roof reflector for suspension from said thermal cover shield, comprising:

a plurality of graphite blocks of essentially hexagonal cross-section grouped in a plurality of layers superposed such that blocks in adjacent said superposed layers are aligned to form plural adjacent columns;

a group of three adjacent said columns comprising a supportable unit with three said blocks forming a lowermost layer of said unit, each said block being associated with only one said unit;

a support block for supporting each said unit, each said support block arranged beneath at least a portion of said blocks forming a lowermost layer of a respective unit to be supported; and

a respective hanger bolt for releasably fastening each said support block to said thermal cover shield,

each said unit having an opening through which a said hanger bolt passes from a said support block to sad thermal cover shield, said blocks forming said lowermost layer of each said unit having lower means for interlocking with a respective said support block and upper means for interlocking with blocks in a said layer superposed on said lowermost layer, and each said unit having a sidewall portion shaped such that a group of three abutting said units defines a passage for receiving an absorber rod, each said unit being associated with only one said passage.

4,290,853

PROTECTION OF STEAM PIPING IN A NUCLEAR REACTOR

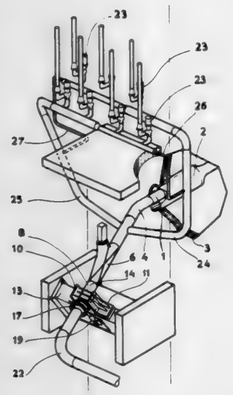
Roger Gigou, Herblay, France, assignor to Framatome, Courbevoie, France

Filed Oct. 16, 1978, Ser. No. 952,588

Claims priority, application France, Oct. 21, 1977, 77 31705

Int. Cl.³ G21C *5/12*

U.S. Cl. 176—87 **2 Claims**



1. An assembly for protecting a portion of steam piping in a nuclear reactor downstream of the leaktight passage of said piping through the confinement chamber wall of said reactor, said piping comprising a first portion extending from said passage in a mean radial plane of said passage and connected by a bend to a second portion extending in a direction substantially perpendicular to said radial plane, and a stopcock connected in said first piping portion, said assembly comprising a support fixed to said confinement chamber wall; guide means fixed to said support and having a pair of plane guide surfaces extending parallel to said radial plane and symmetrical relative thereto; guide element means fixed to said first piping portion between said bend and said stopcock and slidable on said guide surfaces; connecting rod means including shock absorbing means connected to said support and arranged symmetrically relative to said radial plane, said shock absorbing means compensating for deleterious forces exerted on the stopcock and connecting means fixed to said first piping portion between said bend and said stopcock and connected to said connecting rod means.

4,290,854

METHOD OF OPERATING HORIZONTAL COKE OVEN BATTERIES

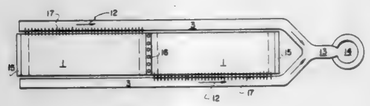
Manfred Strobel, and Friedrich, both of Thiersch, Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still, Fed. Rep. of Germany

Division of Ser. No. 967,612, Dec. 8, 1978, Pat. No. 4,256,540, which is a continuation-in-part of Ser. No. 853,817, Nov. 21, 1977, abandoned. This application Dec. 13, 1979, Ser. No. 103,232

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654555

Int. Cl.³ C10B *21/10*

U.S. Cl. 201—26 **1 Claim**



1. A method of operating a horizontal coke oven battery having a pusher side and a coke side with a plurality of coke ovens disposed in a row with a first waste gas flue extending along the pusher side and a second waste gas flue extending along the battery side, the coke oven battery having a center head in approximately the longitudinal middle of said row of coke ovens, the coke oven battery having a stack flue connected to said first and second waste gas flues, the cross-sectional area of said first waste gas flue being approximately equal to that of said second waste gas flue in the area of said stack flue, said stack flue having a cross-sectional area equal to the sum of the cross-sectional area of said first and second waste gas flues; the method comprising the steps of directing heating gases into approximately one half of the coke ovens in the coke oven battery for heating the coke oven by an upward gas flow, directng heating gases into the remaining coke ovens for heating the coke ovens by a downward gas flow, collecting the gases to be exhausted from said approximately one-half of said coke oven gases in one of said first and second waste flues to form approximately one half of the total gas flow to said stack flue, collecting waste gases from the remainder of said coke ovens in the other of said first and second waste gas flues, the coke ovens on one side of said center head being heated by said upward gas flow and the coke ovens on the other side of said center head being heated by said downward gas flow, the final total gas flow supplied in said first waste gas flue in the area of said stack flue being equal to the final total gas flow supplied in said second waste gas flue in the area of said stack flue, said stack flue having a gas flow supplied thereto of approximately twice that of said first and second waste gas flues.

4,290,855

METHOD OF ISOTOPE ENRICHMENT

Patrick H. O'Farrell, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 31, 1979, Ser. No. 108,778

Int. Cl.³ C25C *1/22*; C25B *7/00*; B01D *13/00*

U.S. Cl. 204—1.5 **18 Claims**

1. A method for separating in a separation chamber having longitudinally varying separation characteristics at least one isotope from a mixture of isotopic species in which the isotopic species exist as ions and comprising the steps of:

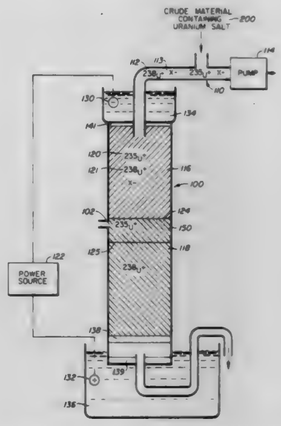
introducing said mixture into said chamber;

imparting said species with a movement in a first direction by flowing a carrier fluid through said chamber; and

applying an electric field across said chamber to electrophorese said species in a second direction counter to said first direction to segregate each of said species in an equilibrium zone within the chamber.

14. An apparatus for segregating at least one species of ions, said apparatus comprising:

means for producing longitudinally varying separation characteristics within a separation chamber;



means for imparting movement to said ions in a first longitudinal direction within the chamber; and

means for electrophoresing said ions in a second direction counter to said first direction to segregate said species into equilibrium zones within the chamber.

4,290,856

ELECTROPLATING APPARATUS AND METHOD

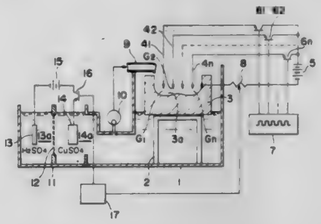
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Filed Jan. 24, 1980, Ser. No. 115,119

Claims priority, application Japan, Jan. 25, 1979, 54-7897

Int. Cl.³ C25D *1/10, 21/12, 21/18*

U.S. Cl. 204—4 **3 Claims**



1. An electroforming apparatus comprising:

a mold;

at least one electrode juxtaposed with said mold to form an electrodeposition gap therebetween;

a receptacle for an electroforming electrolyte containing a metal to be electrodeposited upon said mold;

pumping means for circulating said electrolyte through said electrodeposition gap to supply the latter with said electrolyte;

an electroforming power supply connected across said mold and said electrode for passing an electrodeposition current through said gap supplied with said electroforming electrolyte to electrolytically deposit said metal from said electrolyte;

electrolyzer means for electrolytically replenishing said metal in the electrolyte in said receptacle, said electrolyzer means including:

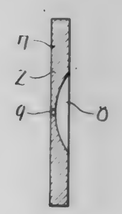
an anode composed of said metal;
an anode chamber defining the region of said anode;
an ion-exchange membrane separating the region of a cathode of said electrolyzer means from said anode chamber;
an electrolyzing power supply connected across said anode and said cathode for electrolytically dissolving said metal from said anode into said anode chamber; and
said anode chamber and said receptacle being contiguous with each other and interconnected to allow free circulation of said electroforming electrolyte between them and introduction of ions of said metal into said electrolyte in said receptacle at a rate proportional to the rate of electrolysis in said anode chamber.

4,290,857

METHOD OF FORMING FINE BORE

Kunio Ikeda, and Hiroshi Haga, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,131
Claims priority, application Japan, May 30, 1979, 54/67067
Int. Cl.³ C25D *1/02, 1/08*
U.S. Cl. 204—9 **10 Claims**



1. A method of forming a fine bore ink head comprising the steps of:
effecting electro-forming on a core wire having the same diameter as that of a fine bore to be formed to form an electro-formed layer around said core wire to thereby make an electro-formed rod having said core wire at its center;
slicing said electroformed rod to form a plurality of disc-shaped chips containing said core wire; and
removing said core wire by dissolution or heating to thereby form in said chips a fine bore of the same diameter as said core wire and to form said ink head.

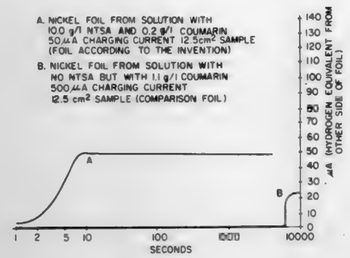
4,290,858

PROCESS FOR FORMING A NICKEL FOIL WITH CONTROLLED AND PREDETERMINED PERMEABILITY TO HYDROGEN

Darell E. Engelhaupt, Kansas City, Mo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 23, 1980, Ser. No. 189,991
Int. Cl.³ C25D *1/04, 3/12*
U.S. Cl. 204—12 **11 Claims**

1. A process for forming a nickel foil having a controlled and predetermined hydrogen permeability, said process comprising the steps of
(a) passing a nickel plating bath through a copper and gold cation-removing cation exchange resin, whereby there is provided a purified nickel plating bath free of copper and gold cations;
(b) immersing a readily-corrodible nickel anode and a cathode in said purified bath comprising a selected concentration of an organic sulfonic acid; said cathode being suitable for electrodeposition of nickel thereon and being separable from an electrodeposited nickel layer;
(c) electrodepositing a nickel layer having the thickness of a foil directly onto said cathode, while maintaining the cathode current density and bath temperature at selected values; and



(d) separating the electrodeposited nickel layer from said cathode to provide a nickel foil; whereby said nickel foil has a controlled and predetermined hydrogen permeability.

4,290,859

PROCESS FOR PREPARING ELECTRODE

Yoshio Oda; Hiroshi Otouma, and Eiji Endoh, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 10,257, Feb. 6, 1979, abandoned. This application May 16, 1980, Ser. No. 150,587
Claims priority, application Japan, Feb. 24, 1978, 53-19925
Int. Cl.³ C25D *15/00*; C25B *11/03, 11/04*
U.S. Cl. 204—16 **15 Claims**



1. An electrode which comprises a metal layer of silver bonded to a metallic electrode substrate, which metal layer contains partially exposed particles comprising silver, the content of the particles in the metal layer ranging from 5 to 80 wt.%.

4,290,860

PROCESS FOR MANUFACTURING ELECTRO-GALVANIZED STEEL SHEET EXCELLENT IN PAINT ADHERENCE

Kazuo Matsudo; Takeshi Adaniya; Masaru Ohmura; Masahiro Shoji, all of Fukuyama, and Tsutomu Watanabe, Yokosuka, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1980, Ser. No. 156,580
Claims priority, application Japan, Jul. 2, 1979, 54-82670
Int. Cl.³ C25D *7/06, 3/56*
U.S. Cl. 204—27 **2 Claims**

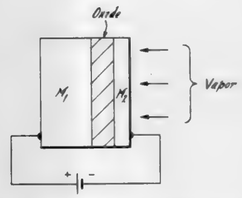
1. In a process for manufacturing a galvanized steel sheet, which comprises electro-galvanizing a steel sheet in an acidic galvanizing bath to form a galvanized layer excellent in paint adherence on the surface of said steel sheet;
the improvement characterized by comprising:
electro-galvanizing a steel sheet in an acidic zinc sulfate and iron sulfate galvanizing bath, with a pH value adjusted up to 1.5, containing iron of from 20 to 90 wt.% relative to the total amount of metals capable of being deposited in said galvanizing bath, with an electric current having a current density of from 10 to 40 A/dm², to form on the surface of said steel sheet a galvanized zinc-iron layer, containing iron of from 5 to 35 wt.% relative to the total amount of said galvanized layer in an amount of from 1 to 50 g/m² per side of said steel sheet.

4,290,861

GROWTH OF OXIDE FILMS BY VAPOR SOLID STATE ANODIZATION

Martin R. Gaerttner, Dearborn, and Robert C. Jaklevic, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 16, 1979, Ser. No. 58,041
Int. Cl.³ C25D *11/04, 11/06, 11/26*
U.S. Cl. 204—56 R **7 Claims**



1. A method of solid state anodization using fluid infusion which comprises:
(A) providing:
1. a solid anode,
2. a solid permeable cathode, and
3. a solid insulator that separates and contacts the anode and permeable cathode;
(B) contacting the permeable cathode with an oxidant that infuses through the permeable cathode; and
(C) biasing the anode sufficiently positive to cause the anodization.

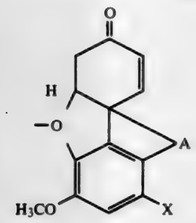
4,290,862

METHOD FOR THE PREPARATION OF NARWEDINE-TYPE ENONES

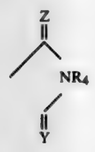
Radoslav Y. Vlahov; Dikran A. Krikoryan; Maria S. Zagorova; Maya H. Ninova, and Stoyan P. Parushev, all of Sofia, Bulgaria, assignors to Edinen Centar P Chimia, Sofia, Bulgaria

Filed Nov. 14, 1979, Ser. No. 94,352
Int. Cl.³ C25B *3/00*; C07D *221/18*
U.S. Cl. 204—59 R **2 Claims**

1. Method for the preparation of narwedine enones and derivates thereof of the formula



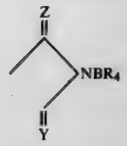
wherein A is selected from the group consisting of



(a)

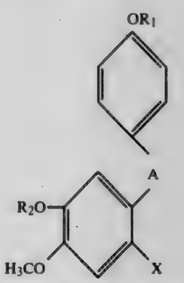
and

-continued



(b)

Z and Y being selected from the group consisting of H_2 and O, X being a halogen atom, R_4 a low order alkylic group selected from the group consisting of $CH_2C_6H_5$ and $CH_2C_6H_4OCH_3$ and B $HClO_4$ and related salts of organic and inorganic acids which comprises electrochemically oxidizing a diphenolic compound of the formula



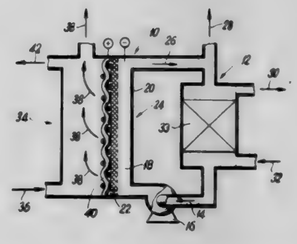
wherein A and X are as represented above and R_1, and R_2 are alkylic groups selected from the group consisting of $CH_2C_6H_5$ and $CH_2C_6H_4OCH_3$, said oxidizing being effected in a divided cell at an anode potential ranging from 1.1 to 1.7 volts in the presence of a solvent and a conductive salt.

4,290,863

PROCESS FOR ELECTROLYSIS OF BRINE BY MERCURY CATHODES

Eduardo D. Nogueira, Avda, Mediterraneo 47; Luis Alonso S. Infanzon, Avda, Valladolid 73, and Enrique H. Tezanos, Aniceto Marinas 110, all of Madrid, Spain

Continuation-in-part of Ser. No. 840,224, Oct. 7, 1977, Pat. No. 4,209,370. This application Dec. 18, 1979, Ser. No. 104,829
Claims priority, application Spain, Oct. 8, 1976, 452.238
The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.
Int. Cl.³ C25B *1/38*
U.S. Cl. 204—99 **7 Claims**



1. A process for electrolysis of brine by a mercury cathode, said process comprising:
providing an electrolytic cell;
dividing said cell into an anolyte section for discharge of chlorine and a cathode section by disposing a membrane in said cell;
providing an anode in said anolyte section;
employing a film of mercury in said cathode section as the

cathode, and employing the brine in said anolyte section as an anolyte;

continuously flowing said film of mercury across one side of said membrane, and continuously flowing said brine across an opposite side of said membrane;

positioning said membrane against said anode of said anolyte section to avoid breakage of said membrane due to pressure of said film of mercury;

providing said membrane with porous means impervious to passage of the mercury therethrough for preventing short circuits between said anode and said mercury cathode of said cell, said porous means being pervious to passage therethrough of ions electrolyzed from the brine; and

using said film of mercury to continuously remove an amalgam from said cathode section, said amalgam being converted from said ions in said cathode section.

4,290,864

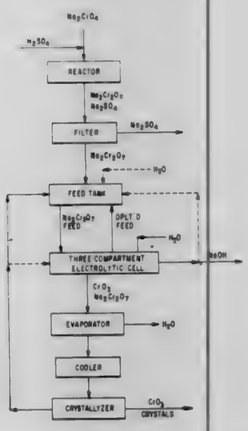
CHROMIC ACID PRODUCTION PROCESS USING A THREE-COMPARTMENT CELL

Nicholas Shuster, Perry; Andrew D. Babinsky, Chagrin Falls, and William E. Kidon, Chardon, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 43,382, May 29, 1979, abandoned. This application May 6, 1980, Ser. No. 147,210

Int. Cl.³ C25B *1/00, 1/16, 1/22*

U.S. Cl. 204—103 **34 Claims**



1. The method of producing concentrated chromic acid from alkali metal dichromate while coincidentally producing virtually chrome-free, concentrated alkali product, all at enhanced current efficiency, which process comprises:

(A) introducing to the center compartment of a three-compartment electrolytic cell, alkali metal dichromate at a concentration above about 900 grams per liter, said dichromate containing reduced forms of chromium, if such exist, at substantially below about 2 percent of the dichromate hexavalent chromium, the center compartment of said cell having porous diaphragm means separating same from an anode compartment, and further having substantially hydraulically impermeable cation-exchange membrane means separating the center compartment from a cathode compartment;

(B) permitting center compartment dichromate-containing electrolyte flow through said porous diaphragm to said anode compartment;

(C) introducing electrolyte to said cathode compartment;

(D) applying electrolyzing current to said electrolytic cell at a density above about 2 amperes per square inch;

(E) withdrawing from said cathode compartment electrolyzed catholyte solution having an alkali product concentration of above about 400 grams per liter and containing below about 2 p.p.m. chromium; and

(F) withdrawing from said anode compartment anolyte solution containing above about 700 grams per liter of chromic acid; whereby concentrated anolyte chromic acid can be produced at a current efficiency above about 90 percent while, simultaneously, concentrated catholyte alkali product can be prepared at a current efficiency above about 60 percent.

4,290,865

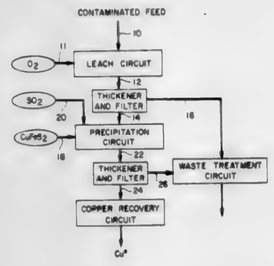
RECOVERING COPPER FROM A COPPER-BEARING SOURCE

Frank A. Baczek, Sandy; Bruce C. Wojcik, Kearns; Alexander A. Jueschke; Daniel M. Lewis, both of Salt Lake City; Jack C. Otto, Magna, and Lawrence L. Tuttle, Sandy, all of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Jan. 23, 1980, Ser. No. 114,477

Int. Cl.³ C25C *1/12*

U.S. Cl. 204—106 **12 Claims**



1. A process for recovering copper from a contaminated copper-bearing source, comprising:

a. leaching the copper-bearing source in an acidic leach solution to produce a liquor containing dissolved copper;

b. precipitating simple copper sulfides from said liquor by reacting said liquor with chalcopyrite and sulfur dioxide; and

c. recovering copper from said simple copper sulfides.

4,290,866

REMOVAL OF MANGANESE IONS FROM ZINC AND MANGANESE CONTAINING SOLUTIONS

Gerald L. Bolton, Fort Saskatchewan, Canada; Verner B. Sefton, Makati, Philippines, and Nicolaus Zubrycky, Edmonton, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

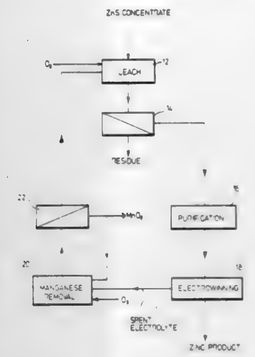
Filed Oct. 22, 1979, Ser. No. 86,877

Claims priority, application United Kingdom, Dec. 20, 1978, 49207/78

Int. Cl.³ C25C *1/16*

U.S. Cl. 204—119 **5 Claims**

1. A process for removing manganese ions from an aqueous acidic sulphate solution containing zinc and manganese ions without removing a substantial amount of zinc ions from the solution, said solution having a free acidity of from about 0.1 molar to about 2 molar and containing from about 5 gpl to about 170 gpl zinc ions and from about 1 to about 25 gpl manganese ions, comprising treating the solution with ozone to oxidize manganese ions to manganese dioxide, and removing manganese dioxide from the solution.



4,290,867

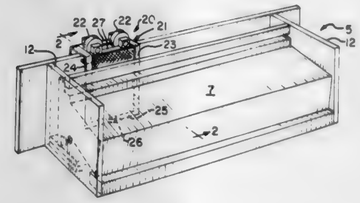
MEANS FOR AND METHOD OF PRODUCING SMOOTH ELECTRO-POLISHED SURFACES

John F. Jumer, 16 W. 131 Timber Trails Dr., Oak Brook, Ill. 60521

Filed Jun. 30, 1980, Ser. No. 163,982

Int. Cl.³ C25F *3/16, 7/00*; C25D *21/00, 17/04*

U.S. Cl. 204—129.35 **11 Claims**



1. A method of electro-polishing an elongated flat or slightly curved surface on an object which comprises positioning the object with said surface being vertically oriented on the horizontal leg of an elongated L-shaped member formed of impervious material and having the horizontal leg covered by a strip of resilient rubber-like material at least in the area on which said object is supported when said elongated vertical surface is uniformly spaced a small distance from the upright leg of said L-shaped member, positioning said object on said L-shaped member so that said elongated vertical surface and the opposing surface of the upright leg of said L-shaped member define two elongated walls of a vertical elongated chamber for holding a polishing bath, closing the opposite ends of said chamber by providing end wall members thereat in liquid-tight relationship therewith, movably supporting cathode means on said upright leg with said cathode having a generally planar active portion depending into said chamber and said polishing bath therein in uniformly spaced relationship with said elongated vertical surface when moved to different positions in said chamber, conducting direct electrical current between said elongated vertical surface having a positive charge and said active portion of said cathode having a negative charge, and moving said cathode means between opposite ends of said chamber until said elongated vertical surface is electro-polished.

4,290,868

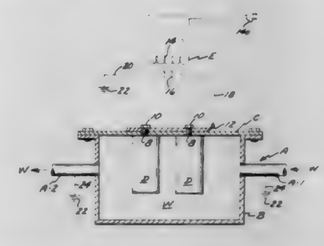
IRON PLUMBING CORROSION MINIMIZING METHOD

Michael H. Mack, 3101 S. Fairview Rd., No. 152, Santa Ana, Calif. 92704

Filed Apr. 7, 1980, Ser. No. 137,917

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—148 **2 Claims**



1. A method of protecting an iron plumbing system through which water containing soluble calcium salts flows intermittently from corrosion and the build up of scale therein which includes the steps of:

a. disposing at least one magnesium anode in a confined space that forms a part of said system and is located in the portion of said system adjacent the location where said water enters the same;

b. establishing electrical communication between said anode and system to provide a magnesium-iron galvanic cell in which the magnesium of the anode at the interface with said water tends to transform from the atomic to the ionic state with a driving force substantially greater than the iron of said plumbing system so long as said interface surface is not protected by a film of magnesium oxide or magnesium hydroxide, said magnesium as it goes into solution in said water removing free oxygen and carbon dioxide therefrom as said magnesium is in part transformed to soluble magnesium bicarbonate and will so remain until the portion of magnesium in the water in the form of magnesium hydroxide raises the pH of said water to above 8.7, and at least a portion of the magnesium hydroxide formed being in the gelatinous lyophilic colloid state that envelops insoluble particles in suspension in the water to prevent them from settling out; and

c. superimposing an alternating electric current on said magnesium iron galvanic cell to obtain optimum transformation of the magnesium in said anode from the atomic to the ionic state as said water flows by said anode.

4,290,869

PHOTOPOLYMERIZABLE ORGANOPOLYSILOXANE/SILANE COMPOSITIONS

Raymond Pigeon, Francheville, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jan. 23, 1980, Ser. No. 114,340

Claims priority, application France, Jan. 24, 1979, 79 01750

Int. Cl.³ C08F *2/46*

U.S. Cl. 204—159.13 **43 Claims**

1. A liquid, storage stable organopolysiloxane having a viscosity of from 60 mPa.s to 20,000 mPa.s at 25° C., comprising the reaction product of (i) an α,ω-dihydroxydiorganopolysiloxane oil, the organo functions being selected from the group consisting of methyl, ethyl, n-propyl, vinyl, phenyl and trifluoropropyl, with at least 70% of such functions being methyl and no greater than 3% being vinyl, and said oil having a viscosity ranging from about 70 to 500 mPa.s at 25° C., (ii) a silane having the formula $Z(G)SiR_a(Q)_{3-a}$ wherein Z is CH_2=C(R')—COO— or HS—, and further wherein the symbols R, which may be the same or different, are methyl, ethyl, n-propyl, vinyl or phenyl, R' is hydrogen or methyl, the sym-

bols Q, which may be the same or different, are methoxy, ethoxy, n-propoxy, β-methoxyethoxy or, when any two are taken together, the divalent radical —O—$C(CH_3)_2$—$C(CH_3)_2$—O—, G is a linear or branched chain alkylene radical having from 1 to 8 carbons, a is a number ranging from 0 to 2; and (iii) a catalyst selected from the group consisting of alkyl titanates and polytitanates and diorganotin salts of aliphatic carboxylic acids, said organopolysiloxane being prepared by reacting an intimate admixture of the α,ω-dihydroxydiorganopolysiloxane (i), the silane (ii) and the catalyst (iii) wherein the ratio of the hydroxyl functions of the oil (i) to the Q radicals of the silane (ii) comprises from about 0.1 to about 0.95 at a temperature of from about 5° to 180° C. for a contact time such that no greater than 45% by weight of the theoretical amount of byproduct alcohol, QH, is evolved during the reaction.

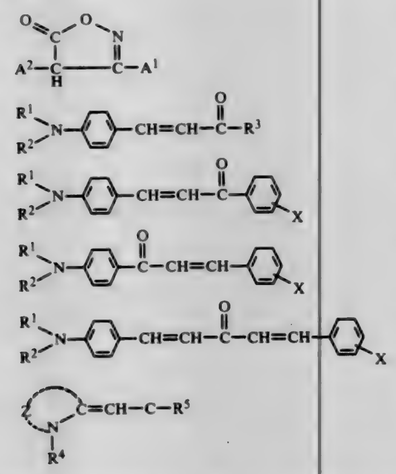
4,290,870

PHOTOPOLYMERIZABLE COMPOSITIONS

Syunichi Kondoh; Akihiro Matsufuji, and Akira Umehara, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 18, 1979, Ser. No. 40,370
Claims priority, application Japan, May 22, 1978, 53-60718
Int. Cl.³ C08F 2/50; G03C 1/68, 1/70
U.S. Cl. 204—159.15 **31 Claims**

1. In a photopolymerizable composition comprising (1) an addition-polymerizable compound having at least one ethylenically unsaturated double bond and (2) a photopolymerization initiator as essential components, the improvement which comprises said photopolymerization initiator comprising a combination of (a) a 5-isoxazolone represented by the general formula (1) and (b) an aromatic carbonyl compound, a dialkylamino aromatic carbonyl compound represented by any of formulae (2) to (5), a compound represented by the formula (6) or 2-(α-thioxophenetylidene)-3-methylnaphtho[1,2-d][1,3]thiazoline:



(1)

(2)

(3)

(4)

(5)

(6)

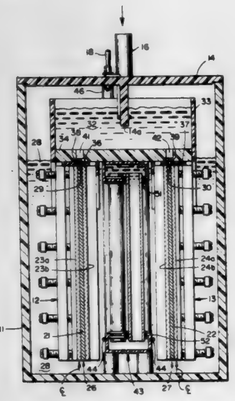
wherein in the formula (1) A^1 and A^2 each represent an alkyl group, an alkylcarbonyl group, an alkoxycarbonyl group, an aryl group, an arylcarbonyl group or a hydrogen atom and may be the same or different; in formulae (2) to (5) R^1 and R^2 each represent an alkyl group and may be the same or different, R^3 represents an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group or a 5- or 6-membered heteroaromatic ring, and X represents a substituent having a Hammett's σ value in the range of about −0.9 to +0.7; and in the formula (6) R^4 represents an alkyl group or an alkenyl group, R^5 represents an alkyl group, an aryl group, a thienyl group or a furyl group, and Z represents an atomic group necessary to form a nitrogen containing heterocyclic ring.

4,290,871

VERTICAL GEL SLAB ELECTROPHORESIS METHOD

Peter S. Hoefer, San Francisco, and Michael Whitesides, Dale City, both of Calif., assignors to Hoefer Scientific Instruments, San Francisco, Calif.

Division of Ser. No. 714, Jan. 3, 1979, Pat. No. 4,224,134. This application Feb. 13, 1980, Ser. No. 121,288
Int. Cl.³ G01N 27/26, 27/28
U.S. Cl. 204—180 G **5 Claims**



1. A vertical gel slab electrophoresis method using as a sample unit a pair of spaced plates which are filled with gel in a casting mode and with open top and bottom slots for contacting upper and lower buffer solutions across which a separating voltage is applied in an operational mode and including support means which include a buffer solution container for sealing said bottom slot in said casting mode and exposing both slots to said solutions in said operational mode, said method comprising the following steps: inserting an empty unit into said support means with said bottom slot of said unit being sealed against said support means; placing gel in said unit through its open top slot; thereafter removing such unit from said support means and reinserting said unit in said support means so that both top and bottom slots are exposed but that one of said slots is isolated from said lower buffer solution by contact with said support means; placing said top and bottom slots of said unit in liquid contact with said upper and lower buffer solutions including the step of filling said support means with upper buffer solution.

4,290,872

HIGH TEMPERATURE REFERENCE ELECTRODE

James V. Monter, Alliance; James P. Sorenson, Louisville, and George J. Theus, Canton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 857,850, Dec. 5, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 52,888
Int. Cl.³ G01N 27/30
U.S. Cl. 204—195 F **4 Claims**

1. A reference electrode for detecting dissolved oxygen in a high temperature reducing atmosphere above 400° F. comprising:

a tube having a closed end and an open end and made of a palladium alloy material predominantly palladium and being permeable to hydrogen;

a sleeve of material having a series of openings along the length thereof and being affixed around said alloy tube to define a space between said alloy tube and said sleeve; and



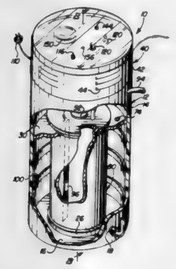
means for connecting the open end of said tube to a supply of hydrogen gas.

4,290,873

CHLORINE GAS GENERATOR APPARATUS

Ron L. Weaver, 11615 N. 33rd Ave., Phoenix, Ariz. 85029

Continuation-in-part of Ser. No. 51,444, Jun. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 5,211, Jan. 22, 1979, abandoned. This application May 15, 1980, Ser. No. 150,170
Int. Cl.³ C25B 15/08, 9/00, 11/03, 13/04
U.S. Cl. 204—228 **24 Claims**



1. Apparatus for electrolytically generating a gas from a salt solution, comprising, in combination:

first cylinder means adapted to contain a quantity of water, including,

a housing portion,

a cylinder disposed beneath the housing portion,

a bottom end wall closing the cylinder,

a plate disposed in the cylinder and spaced apart from the housing portion, and

a hole in the plate;

cathode electrode means disposed in the first cylinder means;

second cylinder means substantially coaxially aligned with the hole in the plate and disposed in the first cylinder means and in the quantity of water therein and adapted to contain a quantity of salt solution in which the salt is dissociated into ions and comprising a cell porous to the migration of ions from the salt solution but substantially impervious to chemical attack;

cathode electrode means disposed in the first cylinder means and in the quantity of water therein;

anode electrode means disposed in the second cylinder means and in the quantity of salt solution therein;

direct current means electrically connected to the anode electrode means and to the cathode electrode means for providing a current flow between the anode means and the cathode means for generating a gas from the dissociated salt ions; and

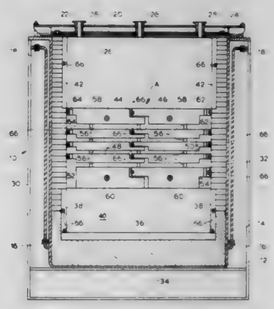
conduit means extending from the second cylinder means through which the generated gas flows out of the second cylinder means.

4,290,874

GASKET FOR SEALING JOINTS IN CARBONACEOUS ELEMENTS IN ELECTROLYSIS CELL

Matthew J. McMonigle, New Kensington, and Chester H. Klingensmith, Leechburg, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 25, 1980, Ser. No. 162,754
Int. Cl.³ C25C 3/08, 7/04; C25B 11/12
U.S. Cl. 204—243 R **4 Claims**



1. A cell for producing metal by electrolytic reduction of a metal halide dissolved in at least one molten halide of higher electrodecomposition potential than the metal halide, said cell having:

(a) a plurality of cell elements, including an inner refractory lining and a plurality of carbonaceous elements, said carbonaceous elements including:

(i) a plurality of carbonaceous lining elements located inside of, adjacent to and abutting a portion of the inner refractory lining, and

(ii) a plurality of carbonaceous electrode elements abutting and located adjacent to the inner refractory lining; and

(b) carbon felt gaskets located between at least some of the abutting elements for sealing of the joints of abutment in order to minimize the harmful effects of dislocation of such carbonaceous elements.

4,290,875

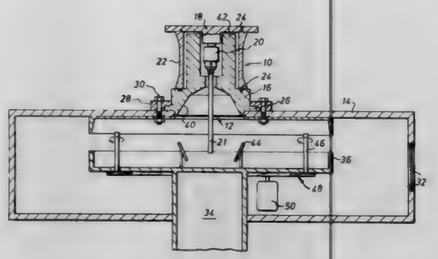
SPUTTERING APPARATUS

Roger G. Duckworth, Weybridge, England, assignor to Ultra Electronic Controls Limited, London, England

Filed Mar. 18, 1980, Ser. No. 131,506
Int. Cl.³ C23C 15/00
U.S. Cl. 204—298 **7 Claims**

1. A sputtering apparatus, comprising a cathode mount adapted to support a target rod and to be electrically connected to a source of high voltage, an anode supporting the cathode mount and electrically insulated therefrom, means for supporting an object to be sputter-coated arranged outside the volume bound by the anode and the target rod, wherein the anode has a surface greater in area than the target rod so as to enable the flow of a current of sufficient density to raise the

temperature of the target rod to substantially 1000° C., said anode surface being rotationally symmetrical and centered on



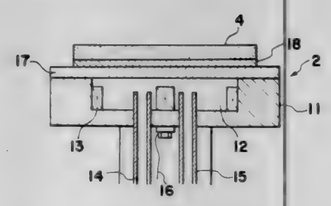
the target rod and so shaped as to direct the bombarding ions at an angle onto the surface of the target rod.

4,290,876

SPUTTERING APPARATUS

Hiroshi Nishiyama, Mukou; Takeshi Nakamura, Uji; Suehiro Kato, Nagaokakyo, and Kenji Ando, Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 5, 1980, Ser. No. 156,516
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **5 Claims**



1. A sputtering apparatus for the deposition of non-metallic thin-films on substrates, comprising:
- a pair of opposed electrodes;
- a substrate layer mounted on one of said electrodes;
- a target layer of a non-metallic material mounted on the other of said pair of electrodes, said target layer comprising Zn0;
- a low temperature melting alloy layer interposed between said target layer and the other of said pair of electrodes for soldering said target layer to said other of said pair of electrodes, said low temperature melting alloy layer including Pb, Sn, and Zn, and further including at least one additive selected from the group consisting of Sb, Al, Ti, Si, Cd and Cu.

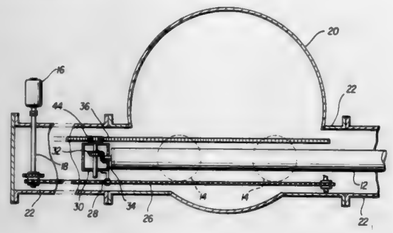
4,290,877

SPUTTERING APPARATUS FOR COATING ELONGATED TUBES AND STRIPS

Robert Blickensderfer, Albany, Oreg., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 8, 1980, Ser. No. 184,852
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **5 Claims**

1. Apparatus for sputter-coating a layer of uniform thickness onto the surface of an elongated workpiece, comprising:
- a sputtering chamber with at least one disk-shaped cathode located therein;
- means attached to said sputtering chamber for accommodating the entire length of said elongated workpiece; said means for accommodating said workpiece being greater in length than said vacuum chamber and locating a portion of said workpiece adjacent said at least one disk-shaped cathode;
- means for forming a sputtering plasma in said sputtering chamber; and



- means located within said accommodating means for simultaneously rotating said workpiece while moving said workpiece along the length of said accommodating means and past said at least one disk-shaped cathode during a sputtering operation to deposit a coating of uniform thickness on said elongated workpiece.

4,290,878

NO_x CONTROL IN PLATINUM-PROMOTED COMPLETE COMBUSTION CRACKING CATALYST REGENERATION

William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 965,978, Dec. 8, 1978, abandoned. This application May 5, 1980, Ser. No. 146,831
Int. Cl.³ C10G *11/18, 11/22*
U.S. Cl. 208—120 **5 Claims**

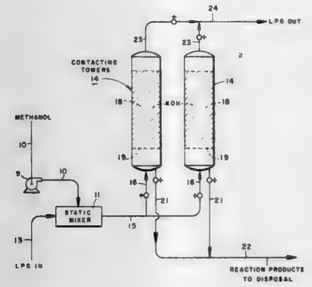
1. In a process for cracking hydrocarbons in the absence of externally supplied molecular hydrogen in a cracking system employing an inventory of circulating particulate solids including cracking catalyst particles, said inventory being cycled between a cracking zone and a catalyst regeneration zone, wherein said hydrocarbons are cracked in contact with said catalyst particles and coke is formed on said catalyst particles at cracking conditions in said cracking zone, flue gas is formed by burning coke off said catalyst particles with a molecular oxygen-containing and molecular nitrogen-containing gas at regeneration conditions in said regeneration zone, and carbon dioxide and nitrogen oxides are formed by combusting carbon monoxide in the presence of carbon monoxide combustion promoter particles comprising a combustion-promoting metal or compound of a metal associated with at least one particulate solid, said particulate solid being selected from at least one of (1) at least a portion of said catalyst particles, (2) a particulate solid physically admixed with said catalyst particles in said inventory of particulate solids, and (3) a particulate solid retained in said regeneration zone, the method for reducing the amount of nitrogen oxides in said flue gas comprising:
- employing carbon monoxide combustion promoter particles including from 0.1 to 10,000 parts per million, by weight, of platinum and, for each part of platinum, from 0.001 to 1 part, by weight, of a nitrogen oxides-reducing component comprising at least one metal selected from rhodium and iridium.

4,290,879

REMOVAL OF CARBONYL SULFIDE FROM LIQUID HYDROCARBON STREAMS

Robert M. Woodall; Eugene Damron, both of New Orleans, La., and Martin B. Mick, Pensacola, Fla., assignors to Exxon Production Research Company, Houston, Tex.

Filed Aug. 10, 1976, Ser. No. 713,171
Int. Cl.³ C10G *19/073*
U.S. Cl. 208—232 **5 Claims**



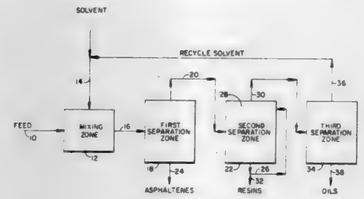
1. In a process for removing carbonyl sulfide from an essentially water-free liquid hydrocarbon stream the improvement comprising:
- mixing said hydrocarbon stream containing carbonyl sulfide with liquid methanol;
- passing said mixed methanol-hydrocarbon stream upwardly through a bed of solid potassium hydroxide arranged in a reaction vessel, said potassium hydroxide, methanol and carbonyl sulfide reacting to form reaction products H_2O and $KSCOOCH_3$;
- the superficial velocity of said hydrocarbon stream being less than about one foot per minute; and
- separating said reaction products from said treated hydrocarbon stream by downward flow of said reaction products and upward flow of said treated hydrocarbon stream in said vessel to provide essentially 100% removal of said carbonyl sulfide from said liquid hydrocarbon stream.

4,290,880

SUPERCRITICAL PROCESS FOR PRODUCING DEASPHALTED DEMETALLIZED AND DERESINED OILS

Robert E. Leonard, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed Jun. 30, 1980, Ser. No. 164,599
Int. Cl.³ C10G *21/00*
U.S. Cl. 208—309 **14 Claims**



1. A process for producing a low metals content deasphalted oil from a heavy hydrocarbon material comprising:
- introducing a heavy hydrocarbon material comprising oils, resins, asphaltenes and associated organometallic compounds and a solvent into a first separation zone maintained at a temperature at least equal to the critical temperature of said solvent and a pressure at least equal to the critical pressure of said solvent to effect a separation of said heavy hydrocarbon material and solvent into a first light phase comprising oils, resins, some of the organometallic compounds and solvent and a first heavy phase comprising asphaltenes, organometallic compounds and some solvent;
- introducing said first light phase into a second separation zone maintained at a temperature level higher than the temperature in said first separation zone and at an elevated pressure to effect a separation of said first light phase into a second light phase comprising oils, entrained resins and organometallic compounds and solvent which collects in an upper portion of said second separation zone and a second heavy phase comprising resins and some solvent;
- withdrawing at least a portion of said second heavy phase from said second separation zone;
- recycling at least a portion of said withdrawn second heavy phase into said upper portion of said second separation zone to contact said second light phase and settle through said second light phase to remove at least a portion of the entrained resins and organometallic compounds; and
- recovering said second light phase comprising solvent and deasphalted oil having a reduced metals content after contact with said recycled second heavy phase.

4,290,881

PROCESS FOR THE SEPARATION OF UNSATURATED COMPOUNDS FROM LIQUID HYDROCARBON MIXTURES

Maximillian Dielacher, Hamburg, and Uwe Hansen, Jesteburg, both of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 799,634, May 23, 1977, abandoned. This application May 10, 1979, Ser. No. 37,805
Int. Cl.³ C10G *25/02*
U.S. Cl. 208—310 R **13 Claims**

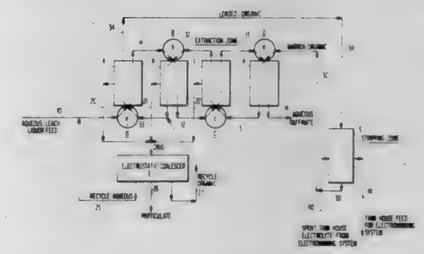
1. A process for the separation of unsaturated hydrocarbon compounds from a liquid, paraffin-rich hydrocarbon mixture comprising:
- (a) contacting the hydrocarbon mixture with a dehydrated, macroporous cation exchange resin in the form of a metal salt whereby the unsaturated compounds are adsorbed by the resin,
- (b) contacting said dehydrated macroporous cation exchange resin containing adsorbed unsaturated compounds with a mononuclear aromatic hydrocarbon at a temperature of 50° to 150° C. whereby the adsorbed unsaturated compounds are desorbed.

4,290,882

ELECTROSTATIC SEPARATION OF IMPURITIES PHASE FROM LIQUID-LIQUID EXTRACTION

John P. Dempsey, Lakeland, Fla., assignor to Davy Powergas Inc., Lakeland, Fla.

Filed Dec. 21, 1978, Ser. No. 971,748
Int. Cl.³ B01D *11/04*
U.S. Cl. 210—634 **5 Claims**



1. In a liquid-liquid extraction process wherein metal values

are recovered from an aqueous metal-containing leach liquor by treating said liquor with an organic extracting medium comprising an organic solvent containing an organic extracting agent and wherein during the separation of the organic extracting medium phase from the aqueous solution phase in a separation vessel used in such a process, a third phase dispersion layer of impurities is formed containing a major amount of organic solvent and minor amounts of aqueous solution and undissolved particulate matter, the improvement which comprises:

(a) removing said third phase layer from the organic extract and aqueous phases in said separation vessel;

(b) feeding said removed third phase layer to a coalescing zone through which an electrostatic field is applied so as to cause the aqueous solution and particulate matter entrained in the organic solvent of the third phase layer to coalesce and separate and thereby directly form in said coalescing zone an organic phase depleted in aqueous and particulate matter suitable for return to the organic extracting medium of the extraction process, an aqueous phase depleted in organic and particulate matter suitable for return to the leach liquor of the extraction process, and a separate aqueous material containing undissolved particulate matter;

(c) separating the formed organic phase, aqueous phase and aqueous material containing undissolved particulate matter;

(d) returning said separated organic phase to the extraction process; and

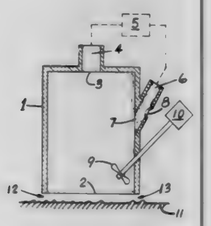
(e) returning said separated aqueous phase to the extraction process.

4,290,883

CLASSIFYING DEVICE FOR AGGREGATES IMMERSED IN A FLUID

Nicholas Sama, 19120 Bel Aire Dr., Miami, Fla. 33157

Filed Jul. 5, 1977, Ser. No. 812,487
Int. Cl.³ E04H *3/20*
U.S. Cl. 210—169 **8 Claims**



1. In combination with an external pumping and filtering apparatus, an aquarium gravel sweep comprising:

a chamber having at least one inlet port, at least one outlet port, and an open mouth in movable close proximity to the aquarium gravel being swept;

at least one outlet duct connecting each of said outlet ports to the intake of the pumping and filtering apparatus; and,

at least one inlet duct connecting each of said inlet ports to the discharge of said pumping and filtering apparatus.

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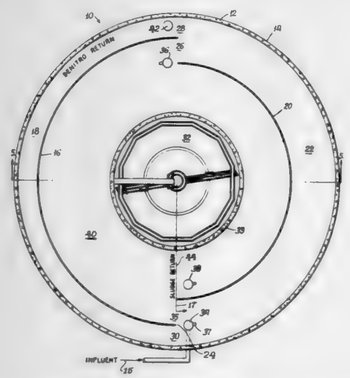
NITRIFICATION-DENITRIFICATION SYSTEM

Mikkel G. Mandt, Cedar Falls, Iowa, assignor to Clevepak Corporation, White Plains, N.Y.

Continuation of Ser. No. 936,910, Aug. 25, 1978, abandoned.
This application Aug. 18, 1980, Ser. No. 179,239
Int. Cl.³ C02F *3/30*
U.S. Cl. 210—195.3 **3 Claims**

1. An activated sludge treatment system for removal of pretreatment BOD and nitrogen values from waste water, comprising a mixed liquor tank and a clarifier centrally located at the interior of said mixed liquor tank for receiving mixed liquor from said mixed liquor tank for providing a clarified effluent and a return sludge component for return to said mixed liquor tank,

said mixed liquor tank comprising partition means for defining in said tank an aeration zone for maintaining mixed liquor biomass therein under endogenous oxygenation respiration conditions, a nitrate cracking channel adjacent said aeration zone for maintaining mixed liquor biomass therein under endogenous nitrate respiration conditions, and a dentrification return channel adjacent said aeration zone for maintaining mixed liquor biomass therein under oxygen-limited denitrification reaction conditions, said denitrification return channel and said nitrate cracking channel adjoining each other at the respective ends thereof and together forming a substantially continuous nitrification-denitrification channel surrounding said aeration zone, said nitrate cracking channel being in fluid communication at a first end thereof with a respective first end of said denitrification return channel and with said aeration zone for receiving aerated mixed liquor from said aeration zone and substantially all of the oxygen-limited mixed liquor discharge from said denitrification return channel, and said nitrate cracking channel being in fluid communication at a second end thereof with said aeration zone and a respective second end of said denitrification



return channel for mixed liquor discharge thereto such that a first portion of the discharge from said nitrate cracking channel is received by said aeration zone and a second portion of said discharge is received by said second end of said denitrification return channel, said denitrification channel being adapted to maintain under anoxic conditions said second portion of the mixed liquor discharge received from said nitrate cracking channel and discharged to said second end of said nitrate cracking channel such that mixed liquor flowing around said aeration zone in said nitrification-denitrification channel is maintained and conditioned under oxygen limited conditions suitable for denitrification,

means for aerating the mixed liquor in said aeration zone, and means for establishing a flow pattern in said mixed liquor tank such that mixed liquor from said aeration zone and substantially all of the discharge from said denitrification return channel flow into said nitrate cracking channel, and mixed liquor from said nitrate cracking channel flows into both said aeration zone and said denitrification return channel,

means for introducing waste water influent to be treated into the nitrate cracking channel,

means for conducting mixed liquor from said aeration zone to said clarifier, and

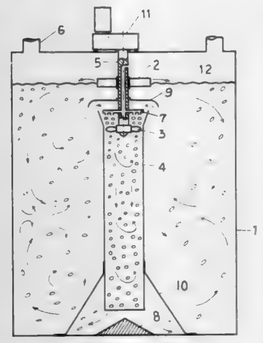
means for conducting return sludge from said clarifier to said first end of said nitrate cracking channel.

4,290,885

AERATION DEVICE

Dochan Kwak, 1935 Farragut Way, San Jose, Calif. 95133

Continuation of Ser. No. 863,068, Dec. 22, 1977, abandoned.
This application Mar. 2, 1979, Ser. No. 16,890
Int. Cl.³ C02F *3/16;* **B28B** *1/26*
U.S. Cl. 210—197 **4 Claims**



1. An apparatus for aerating liquid, especially wastewater located in a basin, comprising a basin containing the liquid defining a free surface above which a gas space filled with oxygen mixture is provided, a vertically disposed shaft, means operatively connected for rotating said shaft about a substantially vertical axis, a rotatable surface aeration device mounted on said shaft and immersible into said liquid for circulating and aerating said liquid near the surface, a flow guide tube vertically disposed and extending upwardly from a point just above the basin floor to a level just below said surface aerator, said guide tube surrounding said shaft and defining an inlet region at its top end thereof, at least one down pumping impeller disposed in said guide tube and mounted on said shaft for creating a downward flow in said guide tube, at least one gas conduit for communicating said gas space above the liquid surface with the inlet region of said guide tube, restriction means for guiding flow of liquid into the inlet region, said restriction means located between the surface aerator and the top end of said guide tube, wherein said downward flow creates a low pressure in said inlet region of said guide tube so that the oxygen mixture is entrained therein by self-aspiration through said gas conduit, and the mixture of entrained gas and liquid thusly formed and traveling downwardly in said guide tube is discharged at its lower end into said basin.

4,290,886

FLOTATOR

Takeshi Takakuwa, Sapporo, Japan, assignor to Nagata Seisakusho Co., Ltd., Japan

Filed Feb. 29, 1980, Ser. No. 126,157
Claims priority, application Japan, Mar. 3, 1979, 54-24046
Int. Cl.³ B03D *1/00*
U.S. Cl. 210—219 **9 Claims**

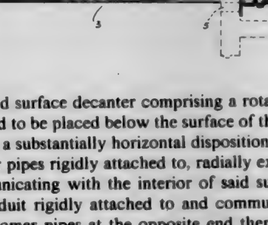
1. An improved flotator assembly for generating bubbles in a cell containing a quantity of liquid, and comprising:

separate, substantially coaxially disposed hollow sleeve members including an upper sleeve member partially immersed in a liquid contained within said cell, and further including a lower sleeve member totally surrounded by said liquid, said upper and lower sleeves including open, interior portions spaced from one another a predetermined distance, thereby defining a spaced region between said sleeves which is located more closely to the surface of said liquid than to a bottom surface of said cell;

rotatable upper blade means located within said spaced region and having an area of rotation confronting the open, interior portion of said upper sleeve for generating a substantially bubble-rich flow of liquid within the immediate area of rotation of said upper blade means;

rotatable lower blade means located within said spaced region and having an area of rotation confronting the open, interior portion of said lower sleeve for recycling a high velocity flow of liquid between the interior portion of said lower sleeve and a remaining portion of said liquid-filled cell, wherein said high velocity flow is substantially devoid of bubbles;

partition means located between said upper and lower blade means and substantially spanning said spaced region for



preventing said bubble-rich flow of liquid from mixing with said high velocity flow within said spaced region; and

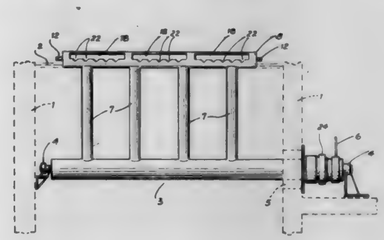
frusto-conical stabilizer means surrounding said spaced region for directing said high velocity flow toward the bottom surface of said cell, thereby generating a jet stream effect which effectively draws the bubble-rich liquid flow from the area of rotation of said upper blade means and into contact with said high velocity flow during passage through the remaining portion of said liquid-filled cell, significantly increasing the chance of contact between said bubbles and any solid particles contained within said high velocity flow.

4,290,887

LIQUID SURFACE DECANTER

Arthur D. Brown, and Stephen G. B. Jones, both of 65 Ocean Ave., Double Bay, New South Wales 2028, Australia

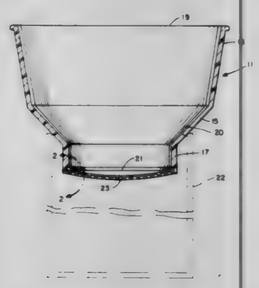
Filed Oct. 2, 1979, Ser. No. 81,294
Claims priority, application Australia, Oct. 3, 1978, PD6205
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.1 **9 Claims**



1. A liquid surface decanter comprising a rotatable support pipe adapted to be placed below the surface of the liquid to be decanted in a substantially horizontal disposition, one or more downcomer pipes rigidly attached to, radially extending from and communicating with the interior of said support pipe, a header conduit rigidly attached to and communicating with said downcomer pipes at the opposite end thereof from said support pipe, said header conduit being orientated substantially

parallel with said support pipe, a buoyancy float arranged to support said header conduit on said liquid surface, and one or more weir slots longitudinally oriented in said header conduit and laterally displaced therein so that when said header conduit is supported on the surface of said liquid by said buoyancy float said liquid flows through said slots into said header conduit and hence down said downcomer pipes to said support pipe to be discharged therefrom, said weir slots incorporating opposed leading and trailing edges arranged so that liquid flows firstly over said trailing and then over said leading edge as said header conduit is lowered relative to said support pipe by rotation thereabout, and wherein said leading and trailing edges subtend a predetermined angle at the axis of said header conduit.

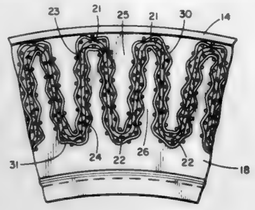
4,290,888
STRAINER
Hans H. Gartmann, and Achim K. Gartmann, both of 3900 Hicks Rd., Sebastopol, Calif. 95472
Continuation-in-part of Ser. No. 16,328, Feb. 27, 1979, abandoned. This application Feb. 26, 1980, Ser. No. 124,782
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—356 **8 Claims**



1. A unitary strainer adapted to be disposed within the opening of an open top container which container is adapted to receive strained material, said strainer comprising a funnel shaped body having a relatively large opening at one end and a relatively small opening at its other end, a screen having a mesh of between 145 and 230 integrally bonded to said body and extending entirely across the relatively small opening of said body, the overall dimensions of said screen extending across the relatively small opening of the said body being slightly larger than the dimension of said opening itself whereby the screen is free to flex, said funnel shaped body including a first frusto-conical section at its one end, a cylindrical section at its other end and a second frusto-conical section intermediate its two ends, said cylindrical section having an outside diameter of between 70% and 90% of the diameter of the opening of said container, outside diameter of said cylindrical section being between 40% and 60% of the largest outside diameter of said first frusto-conical section.

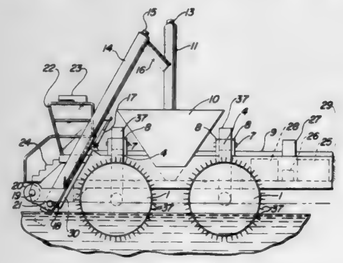
4,290,889
SUPPORT FOR BACKFLUSHABLE FILTER MEDIA
Arnold R. Erickson, Orange City, Fla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jan. 24, 1980, Ser. No. 115,031
Int. Cl.³ B01D *27/06, 29/32*
U.S. Cl. 210—484 **21 Claims**

1. A fluid filter comprising:
(a) a pair of spaced end caps;
(b) a pleated filter material extending between the end caps and secured thereto, the media having inner and outer pleated surface, the outer pleats having outwardly projecting crowns, the media having a pore size of X and a density of Y; and,
(c) anti-bellowing means mounted between the outer media pleats for preventing the diaphragmic movement of the filter pleats when fluid is forced through the media in cyclic fashion, the anti-bellowing means comprising a



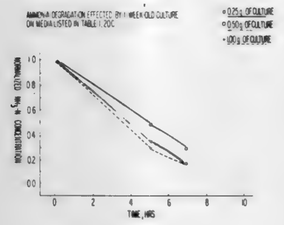
plurality of metal staples in a three-dimensional, randomly oriented array forming a layer, the layer having a density less than Y and a pore size greater than X whereby the primary function of the layer is not that of a filter media.

4,290,890
SLUDGE DEWATERING PROCESS AND VEHICLE FOR USE IN SUCH PROCESS
William J. Bauer, 422 S. Park Rd., LaGrange, Ill. 60525
Filed Feb. 12, 1979, Ser. No. 11,122
Int. Cl.³ C02C *3/00*; B01D *1/00*
U.S. Cl. 210—608 **10 Claims**



1. A process of obtaining dried or dewatered sludge from a sludge lagoon including:
reducing the moisture content of the sludge near the surface of the lagoon by exposing such sludge to the atmosphere for drying;
periodically agitating at least the surface portion of said sludge, including breaking and submerging the surface crust which forms during such drying, thereby exposing further wet sludge to the atmosphere, wherein said agitation is performed by operating upon the lagoon a buoyant vehicle which is supported on said lagoon by its buoyancy, propelling the vehicle across the surface of the lagoon and thereby agitating the sludge by breaking up the relatively dry sludge crust near the surface of the lagoon, until a thickened crust layer of relatively dry sludge of substantial thickness is formed at the surface of the lagoon over a body of wet sludge; and
removing the upper portion of said thickened crust layer of said relatively dry sludge from said lagoon while leaving such body of wet sludge in said lagoon.

4,290,891
METHOD FOR GROWING A DEAMMONIFYING CULTURE AND USE THEREOF IN WASTEWATER TREATMENT
Roy A. Ackerman, P.O. Box 5072, Charlottesville, Va. 22903
Division of Ser. No. 891,975, Mar. 30, 1978, Pat. No. 4,218,540. This application Mar. 7, 1980, Ser. No. 128,207
Int. Cl.³ C02F *3/34*
U.S. Cl. 210—611 **6 Claims**



1. A method for treating waste water and for degrading ammonia in said waste water which comprises:
a. obtaining a culture having the identification of ATCC 31381 or one of its primary cultures, or mixtures thereof;
b. adding said culture to said waste water in an amount sufficient to degrade a predetermined quantity of said ammonia;
c. said culture and waste water being under aerobic conditions.

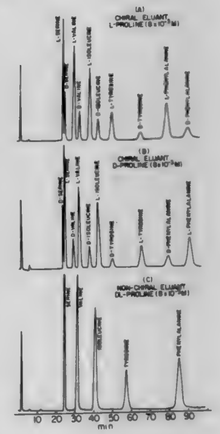
4,290,892
ANION EXCHANGE CHROMATOGRAPHIC SEPARATION OF POLYFUNCTIONAL COMPOUNDS
Seth R. Abbott, Concord, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 953,380, Oct. 23, 1978. This application Mar. 2, 1979, Ser. No. 16,847
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—656 **14 Claims**

1. A method of separating the components of a biological sample, said method comprising the steps of:
(a) placing the biological sample in a column packed with a weak anion exchange composition comprising an inert porous particle having a size of about 5 to about 20 microns, and a modified tetra-substituted silane material of the general formula

$$R_3—Si—(CH_2)_x—NYZ$$

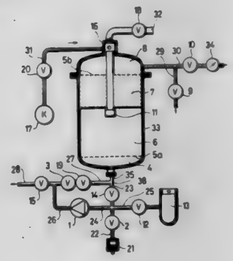
wherein R is an alkyl or alkoxy, having 1 to 5 carbon atoms, x is an integer of 2 or 3, and Y and Z are hydrogen, alkyl, substituted alkyl, or an alkyl amine; said modified tetra-substituted silane material having been fixedly attached by covalent chemical bonding to the surface of said particle; with said modified tetra-substituted silane material fixedly attached by covalent bonding having been washed with an acid to produce said weak anion exchange composition, and;
(b) separating said biological sample into its components using a solvent system comprising an aqueous buffer.

4,290,893
SEPARATION OF AMINO ACIDS BY LIQUID CHROMATOGRAPHY USING CHIRAL ELUANTS
P. Edgar Hare, Adelphi, Md., and E. Gil-Av, Rehovot, Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel
Continuation-in-part of Ser. No. 37,061, May 8, 1979. This application Jun. 14, 1979, Ser. No. 48,422
Int. Cl.³ B01B *15/08*
U.S. Cl. 210—656 **11 Claims**



1. A process for separating enantiomers which comprises contacting the same on a solid non-chiral chromatographic support, with an aqueous solution containing less than about 10 volume % organic solvent, and containing a chiral ligand and a suitable metal ion capable of forming with the enantiomers inner sphere complexes of different stability and/or different partition coefficient.

4,290,894
PROCESS AND APPARATUS FOR CLEANING CONTAMINATED WATER
Gabor Török; Lajos Sárosi; Ferenc Grof; Tamas Becsei, and Peter Barta, all of Budapest, Hungary, assignors to Egyesült Müszaki Tömitö és Gépszakmai Ipari Szövetkezet, Budapest, Hungary
Continuation of Ser. No. 926,122, Jul. 19, 1978, abandoned. This application Apr. 25, 1980, Ser. No. 143,771
Int. Cl.³ D01A *15/02*
U.S. Cl. 210—661 **8 Claims**



1. A process for cleaning contaminated raw water, comprising: introducing raw water and a flocculator into the reaction space of a pressure vessel, which vessel has said reaction space at the bottom thereof, a filter space above the reaction space

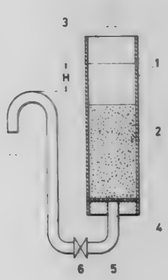
and containing a filter made of particles of elastic, granular material, and a clean water space above the filter space so that the raw water passes through said three spaces, whereby pollution material contained in the raw water becomes enclosed by the cells of the floccules of the flocculator and the floccules become absorbed by the filter particles; removing accumulated pollution material from the filter particles by regenerating the filter with a fluid flowing from the clean water space through the filter space into the reaction space; checking the purity of the water leaving the clean water space; and adjusting the purity by varying the velocity of the raw water introduced into the reaction space, to thereby adjust compactness of the filter material in the filter space and thereby the percentage of voids in the filter.

4,290,895

METHOD FOR ELIMINATING AMMONIA NITROGEN FROM SEWAGE

Tsuneo Iwamoto, 9-19, Karikuchidai 5-chome, Tarumi-ku, Kobe-City, Hyogo, Japan

Filed Feb. 6, 1980, Ser. No. 118,947
Claims priority, application Japan, Mar. 6, 1979, 54/26327
Int. Cl.³ C02F *1/28*
U.S. Cl. 210—669 **6 Claims**



1. A method for eliminating ammonia nitrogen from sewage comprising the steps of:

adding alkali to sewage to convert ammonium ions to dissolved ammonia; and,

contacting the alkali-treated sewage with alkali-conditioned silica gel to adsorb said dissolved ammonia onto said alkali-conditioned silica gel.

4,290,896

DEWATERING FINE COAL SLURRIES USING ORGANOPOLYSILOXANES

David J. Gordon, Essexville, and James K. Wessel, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 27, 1980, Ser. No. 153,809
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—710 **13 Claims**

1. A process for dewatering an aqueous slurry of fine coal, said process comprising

(I) mixing a dewatering-improving amount of a water-dispersible organopolysiloxane with the aqueous slurry of fine coal, said organopolysiloxane having the formula $R_aH_bSiO_{(4-a-b)/2}$ wherein a and b are numbers, the sum of which has an average value of from greater than zero to less than four, b has an average value of from zero to a and R denotes an organic radical bonded to a silicon atom by a silicon-carbon bond,

(II) separating the organopolysiloxane-containing aqueous slurry of fine coal into an aqueous portion and a fine coal portion, said fine coal portion having a water content of less than 20 percent by weight,

4,290,897

DEWATERING FINE COAL SLURRIES USING TWO TYPES OF ORGANOPOLYSILOXANES

Terence J. Swihart, Essexville, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 27, 1980, Ser. No. 153,810
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—710 **10 Claims**

1. A process for dewatering an aqueous slurry of fine coal, said process comprising

(I) mixing a dewatering-improving amount of a water-soluble organopolysiloxane plus a water-emulsifiable organopolysiloxane with the aqueous slurry of fine coal, said water-soluble organopolysiloxane and said water-emulsifiable organopolysiloxane having the formula $R_aH_bSiO_{(4-a-b)/2}$ wherein a and b are numbers, the sum of which has an average value of from greater than zero to less than four, b has an average value of from zero to a and R denotes an organic radical bonded to a silicon atom by a silicon-carbon bond, the weight ratio of the water-soluble organopolysiloxane to the water-emulsifiable organopolysiloxane having a value of from 1/99 to 99/1,

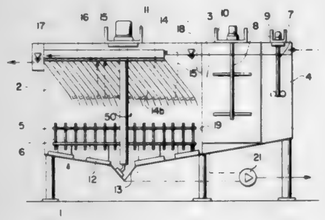
(II) separating the organopolysiloxanes-containing aqueous slurry of fine coal into an aqueous portion and a fine coal portion, said fine coal portion having a water content of less than 20 percent by weight.

4,290,898

METHOD AND APPARATUS FOR MECHANICALLY AND CHEMICALLY TREATING LIQUIDS

Gunter von Hagel, Aarbergen, and Norbert Berlenbach, Wiesbaden-Dotzheim, both of Fed. Rep. of Germany, assignors to Passavant-Werke, Aarbergen, Fed. Rep. of Germany

Continuation of Ser. No. 15,722, Feb. 27, 1979, abandoned, which is a continuation of Ser. No. 309,905, Nov. 27, 1972, Pat. No. 4,142,970, which is a continuation-in-part of Ser. No. 296,775, Oct. 12, 1972, abandoned. This application Apr. 7, 1980, Ser. No. 137,785
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1971, 7138603[U]
The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.
Int. Cl.³ B01D *21/16*
U.S. Cl. 210—738 **26 Claims**



1. A method for mechanical or mechanical-chemical treatment of liquids containing pollutants therein by means of destabilization, flocculation, sedimentation and thickening of the pollutants therein, leaving separated essentially solid-free liquid, comprising the steps of: destabilizing the liquid in a separate destabilization compartment, passing the destabilized liquid from the destabilization compartment into a separate flocculation compartment downstream from the destabilization compartment aiding the formation, in the separate flocculation compartment, of settleable flocculated solids, and then passing the liquid from the separate flocculation compartment into a first zone which is a sedimentation zone, dividing the liquid in the first zone into a plurality of parallel flow paths in the form of channels which are inclined, flowing said liquid through said channels and settling out the settleable floccu-

lated solids as the liquid flows through the channels, discharging said solids from the bottom ends of said flow paths so that they fall in a uniformly distributed manner downwardly into a second zone which is a thickening zone, said discharging step including distributing the said solids over an area between 50 and 100% of the area of the top of the second zone, removing the separated solid-free liquid at a location above the bottom ends of said channels to substantially minimize the flow of liquids below the channels so that the discharged solids can fall into the thickening zone with a minimized liquid flow within the thickening zone, thickening the said solids within the thickening zone with mechanical means located in the thickening zone and positioned to contact the said solids as they fall therethrough, and removing the thickened solids out of the said thickening zone with a removing means separate from the thickening means and located below the thickening means.

4,290,899

THERMAL STABILIZER FOR NON-CLAY WELLBORE FLUIDS

Thomas R. Malone, Charleston, WV; Talmage D. Foster, Jr., deceased, late of St. Albans, W. Va., and Sue T. Foster, executrix, Senaca, S.C., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 4, 1979, Ser. No. 885
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 A **10 Claims**

1. In the method of drilling, workover or completion of oil and gas wells using an aqueous polysaccharide solution non-clay well bore fluid, said polysaccharide being a viscosifier and selected from the class consisting of hydroxyalkyl cellulose having 2 to 4 carbons in the alkyl, carboxymethyl hydroxyethyl cellulose, hydroxyalkylated guar gum, xanthan gum or hydroxyethyl carboxyethyl cellulose wherein said wellbore fluid is injected into the wells in contact with the formation, the improvement which comprises incorporating into said solution about 0.5 to about 13% by weight of calcined dolomite, based on the weight of polysaccharide.

4,290,900

METHOD AND COMPOSITION FOR REMOVING ELEMENTAL SULFUR FROM HIGH TEMPERATURE, HIGH PRESSURE WELLS AND FLOW LINES

Shelby P. Sharp, Tulsa, Okla., and Lyman Yarborough, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,517
Int. Cl.³ E21B *43/00*; C23G *5/02*
U.S. Cl. 252—8.55 B **5 Claims**

1. A method of dissolving a deposit of elemental sulfur in a high temperature, high pressure sour gas well, characterized in that a four to twelve carbon atom aliphatic amine activated dialkyl disulfide sulfur solvent will not exist in a liquid phase at bottomhole conditions of said well for sufficient time to effect the removal of said sulfur deposit, involving the steps of:

(a) preparing a relatively nonvolatile, high molecular weight fatty amine activated dialkyl disulfide sulfur solvent capable of existing in a liquid phase at said bottomhole conditions consisting of a dialkyl disulfide to which has been added an amount in excess of 30 parts by weight of a fatty amine, having in excess of twelve carbon atoms, per 100 parts by weight dialkyl disulfide, and

(b) injecting said relatively nonvolatile, high molecular weight fatty amine activated dialkyl disulfide sulfur solvent prepared in step (a) into said sour gas well to dissolve and thus remove said sulfur deposit.

4,290,901

DEMULSIFIER FOR INCLUSION IN INJECTED ACIDIZATION SYSTEMS FOR PETROLEUM FORMATION STIMULATION

Rae A. Royle, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,437
Int. Cl.³ E21B *43/27*
U.S. Cl. 252—8.55 C **5 Claims**

1. In an acidization process wherein an aqueous acidizing solution comprising hydrochloric and hydrofluoric acids is injected through a well into a subterranean petroleum formation, the improvement comprising the addition to the acidizing solution of an effective amount of a demulsifier selected from the group consisting of sorbitan monolaurate, sorbitan monopalmitate, sorbitan monooleate, and mixtures thereof.

4,290,902

OXYMOLYBDENUM DIALKYLDITHIOPHOSPHATES AND LUBRICANTS CONTAINING SAME

Stephen A. Levine, Fishkill, and William R. White, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,680
Int. Cl.³ C10M *1/48*
U.S. Cl. 252—32.7 E **23 Claims**

1. A compound of the formula:

$$[(RO)_2PS_2]_2Mo_2O_4$$

wherein R is a hydrocarbyl radical having from 1 to 30 carbon atoms, and containing from about 11.7% to about 20.0% of molybdenum.

9. A process of forming a molybdenum-containing compound comprising treating an ammonium or alkali metal molybdate with more than the stoichiometric amount of a concentrated hydrohalic acid required to simply acidify the molybdate salts, at a temperature ranging from ambient to 80° C.; then, adding not more than two moles of dialkyl phosphorodithioic acid for each mole of molybdenum in the molybdate reactant; refluxing the reaction mixture and removing the water of reaction azeotropically.

10. The process of claim 9, wherein said hydraholic acid is hydrochloric acid and one mole of dialkyl phosphorodithioic acid is added for each mole of molybdenum in said reactant.

4,290,903

PACKAGED FREE FLOWING BLEACH ACTIVATOR PRODUCT

Neil A. Macgilp, Morpeth, and Duncan A. Mann, Fenham, both of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 20, 1979, Ser. No. 50,236
Claims priority, application United Kingdom, Jun. 26, 1978, 27854/78; Jun. 26, 1978, 27855/78
Int. Cl.³ C11D *17/04, 17/06*
U.S. Cl. 252—91 **4 Claims**

1. Process for preparing free flowing granular bleach activator product comprising the steps of

(a) contacting powdered bleach activator with molten organic compound to form granular product with a particle size ranging from about 1 to about 4 mm maximum dimension, said granular product comprising a matrix of (i) from about 15% to about 70% bleach activator and (ii) from about 85% to about 30% of said organic compound, said bleach activator being selected from the group consisting of tetra acetyl ethylene diamine and tetra acetyl methylene diamine and mixtures thereof, said organic compound being selected from the group consisting of C_{10}–C_{24} primary and secondary alcohol ethoxylates having an average of at least 15 ethylene oxide groups per mole of alcohol, C_8–C_{18} alkyl phenol ethoxylates containing at least 20

ethylene oxide groups per mole of alkyl phenol, polyethylene glycols of molecular weight greater than 4000, and mixtures thereof;

(b) contacting the granules of said granular product with sodium tripolyphosphate particles of size less than 500 microns to provide a surface coating thereon of said sodium tripolyphosphate particles at a level ranging from about 0.1% to about 30% by weight of said matrix;

to thereby provide granular bleach activator product with a flowability defined by a cake strength of less than about 0.9 kg and characterized by a rate of dispersion such that after addition into a standard detergent peroxy bleach solution at least 50% of the organic peroxy bleach theoretically available from the bleach activator is generated within 8 minutes.

4,290,904

TRANSPARENT SOAP

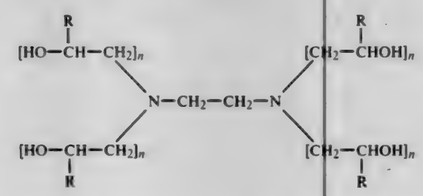
Maxwell H. Poper, Westminster, Calif., and Eric Jungermann, Phoenix, Ariz., assignors to Neutrogena Corporation, Los Angeles, Calif.

Filed Dec. 1, 1980, Ser. No. 211,557
Int. Cl.³ C11D *9/30, 9/48, 10/06, 17/00*
U.S. Cl. 252—118 **34 Claims**

1. A transparent, low alkalinity soap composition in solid form, comprising:

about 10–30 weight percent of a sodium soap prepared by saponification of fatty oils;

about 5–20 weight percent of a tetrakis (hydroxyalkyl) ethylene diamine having the formula



wherein R is hydrogen or an alkyl group having one to four carbon atoms and n is one to four;

a polyhydric alcohol in an amount sufficient to assure transparency; and

a fatty acid superfatting agent.

12. A transparent soap composition in solid form comprising:

about 10–30 weight percent of a sodium soap prepared by saponification of a mixture of tallow, coconut oil and castor oil, said castor oil comprising about 10 to about 30 weight percent of said misture, the weight ratio of tallow to coconut oil being about 50:50 to about 85:15;

about 5–20 weight percent of N,N,N',N'-tetrakis (2-hydroxypropyl)-ethylenediamine;

about 10–40 weight percent of propylene glycol as solvent for said diamine;

about 6–16 weight percent of superfatting agent comprising stearic acid;

about 5–10 weight percent of an anionic or amphoteric surfactant; and

about 6–15 weight percent of added water.

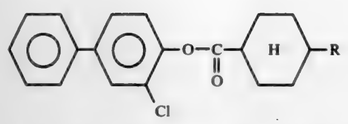
4,290,905

ESTER COMPOUND

Sadao Kanbe, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,002
Int. Cl.³ G02F *1/13;* **C09K** *3/34;* **C07C** *69/74*
U.S. Cl. 252—299.63 **6 Claims**

1. Ester compound useful in liquid crystal displays, said compound having the formula



where R is an n-alkyl group of from 3 to 6 carbon atoms.

3. Liquid crystal composition useful in liquid crystal displays, said composition consisting essentially of

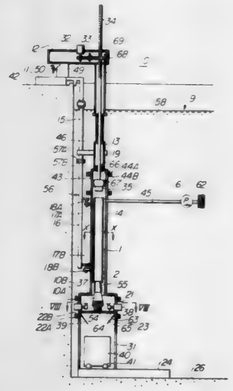
	Percentage by weight of components
4-n-butyl benzoic acid-4'-cyanophenylester	10%
4-n-amyl benzoic acid-4'-cyanophenylester	14%
4-n-heptyl benzoic acid-4'-cyanophenylester	22%
4-n-octyl benzoic acid-4'-cyanophenylester	24%
4-n-amyl benzoic acid-4'-hexyloxyphenylester	10%
4-n-hexyl oxybenzoic acid-4'-n-heptylphenylester	10%
4-n-amyl cyclohexane-1-carboxylic acid-2'-chloro-4'-phenylphenylester	10%

4,290,906

APPARATUS FOR CUTTING CHANNEL BOX FOR FUEL ASSEMBLY AND METHOD THEREFOR

Takashi Saito; Masataka Ohwada, and Shozo Saito, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,362
Claims priority, application Japan, Aug. 14, 1978, 53-98189
Int. Cl.³ G21C *19/32;* **G21F** *9/28*
U.S. Cl. 252—301.1 W **14 Claims**



1. Apparatus for cutting a channel box for a fuel assembly, comprising:

guide means having the channel box inserted therein following its removal from the fuel assembly, said channel box being formed with a plurality of axially extending vertexes;

means for pressing against said channel box and for moving said channel box from one end of said guide means to the other end thereof;

first cutting means axially fixedly mounted for continuously cutting said channel box axially along said vertexes as the channel box is being moved through said guide means; and

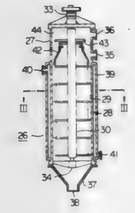
second cutting means positioned downstream of said first cutting means in the direction of movement of said channel box for cutting said channel box in a direction intersecting the axis thereof while said channel box is being supported in a condition in which the channel box can be cut axially by said first cutting means.

4,290,907

PROCESS FOR TREATING RADIOACTIVE WASTE

Susumu Horiuchi; Mikio Hirano, both of Hitachi; Hideo Yusa, Katsuta; Koichi Chino, and Tatsuo Hayashi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 963,119
Claims priority, application Japan, Nov. 28, 1977, 52/142417
Int. Cl.³ G21F *9/30*
U.S. Cl. 252—301.1 W **5 Claims**





1. A process for treating a granular radioactive waste, which comprises:

supplying an aqueous slurry of a used radioactive granular, water-insoluble, ion exchange resin discharged from a radioactive material-handling facility into a thin film drier including a shell equipped with a heated wall surface and a rotating shaft having blades that pass closely adjacent to said heated wall surface, and

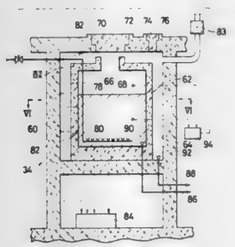
pressing the radioactive granular, water-insoluble ion exchange resin onto the heated wall surface by moving said blades past said heated wall surface with rotation of said rotating shaft, thereby pulverizing the radioactive granular, water-insoluble, ion exchange resin into a powder.

4,290,908

METHOD AND APPARATUS FOR TREATMENT OF RADIOACTIVE WASTES

Susumu Horiuchi, Hitachi; Takashi Taniguchi, Mito; Masaki Takeshima; Mikio Hirano, both of Hitachi, and Hideo Yusa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,151
Claims priority, application Japan, Jul. 19, 1978, 53-88657
Int. Cl.³ G21F *5/00, 7/06, 9/00*
U.S. Cl. 252—301.1 W **16 Claims**



1. An apparatus for the treatment of radioactive wastes, which comprises a drying device for drying and powdering a radioactive waste discharged from a source of wet radioactive waste material, a granulator for pelletizing the powder of the radioactive waste, a storage means for temporarily storing a large mass of the initially formed pellets for a predetermined period for attenuating the radioactivity of the pellets, said storage means including shielding means for preventing leakage of radioactivity into the atmosphere surrounding said storage means, a pellet transporting means for transporting the initially formed pellets from the granulator to the storage means, with the amount of pellets being transported being controlled so that the surface dose of radioactivity of the transported pellets is maintained at a predetermined allowable level, a sealing vessel for packing a smaller mass of the radioactivity-attenuated pellets together with a binder, and a pellet treating device for taking out the smaller mass of the pellets from the storage means and transporting the smaller mass of pellets into the sealing vessel.

4,290,909

PROCESS FOR PRODUCING A LITHIUM BORATE THERMOLUMINESCENT AND FLUORESCENT SUBSTANCE

Mutsuo Takenaga, Katano, and Osamu Yamamoto, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 30, 1979, Ser. No. 61,999
Claims priority, application Japan, Aug. 3, 1978, 53-95322
Int. Cl.³ C09K *11/28*
U.S. Cl. 252—301.4 R **7 Claims**

1. Process for producing a lithium borate ($Li_2B_4O_7$) thermoluminescent and fluorescent substance of substantially spherical form containing lithium borate ($Li_2B_4O_7$) as the main component which comprises mixing $Li_2B_4O_7$ powder with an activator element compound and heat-treating the resultant mixture in air at a temperature of about 850° C. to just below the melting point of $Li_2B_4O_7$ for a time sufficient to diffuse the activator element into the crystal interior of the $Li_2B_4O_7$ powder and effect formation of $Li_2B_4O_7$ thermoluminescent substance of substantially spherical form.

4,290,910

FATTY EMULSION AND PROCESS FOR THE PREPARATION THEREOF

Kiyoshi Harada, Kyoto; Yoshiyuki Koida, Katano, and Hiroshi Miura, Takatuki, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Aug. 30, 1979, Ser. No. 71,041
Claims priority, application Japan, Sep. 8, 1978, 53/111089
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—312 **24 Claims**

1. A fatty emulsion comprising an oil-in-water type fatty emulsion which is regulated to a pH value of 6.0 to 8.0 with a pH value regulator consisting of a combination of at least one organic amine selected from the group consisting of lysine, arginine, ornithine, histidine, trishydroxymethylaminomethane and triethanolamine and at least one buffer solution selected from the group consisting of a potassium dihydrogen phosphate-dipotassium hydrogen phosphate buffer, potassium dihydrogen phosphate-disodium hydrogen phosphate, potassium dihydrogen phosphate-trisodium phosphate, sodium dihydrogen phosphate-disodium hydrogen phosphate, citric acid-disodium hydrogen phosphate, and tris-HCl.

4,290,911

AGAROSE COMPOSITION, AQUEOUS GEL AND METHOD OF MAKING SAME

Richard B. Cook, Rockland, and Henry J. Witt, Rockport, both of Me., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 7, 1979, Ser. No. 10,033
Int. Cl.³ B01J *13/00;* **B01D** *57/02*
U.S. Cl. 252—316 **8 Claims**

1. A dry solid composition capable of forming an aqueous gel free from electroendosmosis and suitable for use as a medium for isoelectric focusing, said composition consisting es-

sentially of a blend of purified agarose having an electroendosmosis value (−Mr) less than 0.10 in an amount from 2 to 99% by weight and a gum soluble in boiling water without gelling, said gum being free from hull fragments and other impurities interfering with staining, free from charged groups and stable against hydrolysis which forms charged groups, and soluble by itself in water to form a solution of gum having a viscosity at a concentration no greater than 10% by weight of at least 10 cps at 25° C., said gum being clarified locust bean gum, clarified guar gum, polyvinyl alcohol or dextran.

2. An aqueous gel free from electroendosmosis having a gel strength of at least 100 g/cm^2 and suitable for use as a medium for isoelectric focusing consisting essentially of a gelled solution in water of the composition claimed in claim 1, the amount of said composition present being from 0.2 to 10% by weight of the water.

4,290,912

VOLATILE CORROSION INHIBITING ARTICLE

Fred P. Boerwinkle, St. Paul, Minn., and Donald A. Kubik, Somerset, Wis., assignors to Northern Instruments Corporation, Lino Lakes, Minn.

Filed Feb. 21, 1980, Ser. No. 123,395

Int. Cl.^{3} C23F *11/02, 11/12, 11/18*

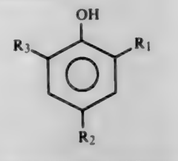
U.S. Cl. 252—389 R **7 Claims**

1. An article having volatile corrosion inhibiting properties comprising

(a) a polyolefin polymer

(b) an inorganic nitrite salt

(c) a phenol of the formula



where R_1, R_2 and R_3 are selected from alkyl, aryl, alkenyl, hydroxyalkyl, hydroxyalkenyl and where the sum of carbon atoms in R_1, R_2 and R_3 is in the range of 3 and about 18, and

(d) fumed silica.

4,290,913

CATALYTIC COMPOSITE USEFUL FOR THE TREATMENT OF MERCAPTAN-CONTAINING SOUR PETROLEUM DISTILLATE

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

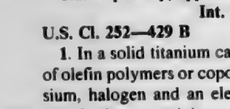
Continuation-in-part of Ser. No. 927,318, Feb. 24, 1978, Pat. No. 4,124,493. This application Nov. 7, 1979, Ser. No. 91,929

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.^{3} B01J *23/04, 31/18*

U.S. Cl. 252—428 **11 Claims**

1. A catalytic composite comprising a metal chelate, an alkali metal hydroxide, and a quaternary ammonium hydroxide disposed on an adsorptive support, the quaternary ammonium hydroxide represented by the structural formula



wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl and R′ is a substantially straight-chain alkyl radical containing from about 5 to about 20 carbon atoms, said alkali metal hydroxide comprising at least about 10 wt. % of said catalytic composite.

4,290,914

CATALYTIC MATERIALS AS FOR OLEFIN POLYMERIZATION

Stanley J. Katzen, Cincinnati, and Louis J. Rekers, Wyoming, both of Ohio, assignors to National Petro Chemicals Corp., New York, N.Y.

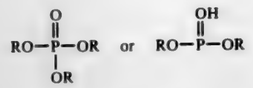
Continuation of Ser. No. 923,111, Jul. 10, 1978, abandoned, which is a division of Ser. No. 759,213, , and a continuation-in-part of Ser. No. 759,213, Jan. 13, 1977, Pat. No. 4,100,104. This application Jun. 16, 1980, Ser. No. 159,992

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.^{3} C08F *4/78;* B01J *31/14, 21/12*

U.S. Cl. 252—428 **2 Claims**

1. A process for the preparation of a catalyst material comprising coating a xerogel consisting of silica as the major constituent and having surface hydroxyl groups, a surface area in the range of 200 to 500 m^2/g, a pore volume greater than about 2.0 cc/g, a major portion of which pore volume is provided by pores having pore diameters in the range of from 300 to 600 A with an aluminum compound capable of reacting with said surface hydroxyl groups and having the formula $Al(X)_a(OR)_b$, wherein X is R, a is 0–2, b is 1–3, a+b is 3, and R is an alkyl group having from 1 to 8 carbon atoms in an amount sufficient to provide from about 0.1 to 10% of aluminum by weight based on the weight of the xerogel, calcining the support material having the aluminum compound thereon at temperatures of at least 200° F., depositing on the aluminum coated calcined material an organophosphoryl chromium reaction product of chromium trioxide and an organophosphorus compound of the formula:



wherein R is hydrogen, or alkyl, aralkyl, aryl, or cycloalkyl, but al least one R is other than hydrogen in an amount sufficient to provide from about 0.25 to 2.5% of chromium by weight based on the weight of the Xerogel; and activating the thus treated support in a non-reducing atmosphere at temperatures of from 1550° F. and up to the decomposition temperature of the support, said activating temperature being in excess of said calcining temperature.

2. The process according to claim 1, wherein the activation is carried out at a temperature of from about 1550° F. to 1800° F.

4,290,915

SOLID TITANIUM CATALYST COMPOSITION FOR PRODUCTION OF AN OLEFIN POLYMER OR COPOLYMER

Akinori Toyota, and Norio Kashiwa, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 137,638

Claims priority, application Japan, Apr. 10, 1979, 54-42494

Int. Cl.^{3} C08F *4/64*

U.S. Cl. 252—429 B **5 Claims**

1. In a solid titanium catalyst component for the production of olefin polymers or copolymers, comprising titanium, magnesium, halogen and an electron donor as essential ingredients and further containing an inert liquid hydrocarbon, the improvement wherein the liquid hydrocarbon is present in an amount of, based on the weight of said component, about 1 to about 10% when said component has a uniformity coefficient of at least 4, and about 1 to about 25% when said component has a uniformity coefficient of less than 4.

4,290,916

CATALYTIC COMPOSITE, METHOD OF MANUFACTURE, AND PROCESS FOR USE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

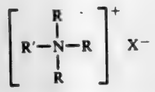
Continuation-in-part of Ser. No. 80,638, Oct. 1, 1979. This application Jan. 14, 1980, Ser. No. 111,752

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.^{3} B01J *31/32*

U.S. Cl. 252—430 **26 Claims**

1. A method of manufacture of a catalytic composite which comprises contacting a molecular sieve support with a substituted ammonium compound represented by the structural formula:



wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl, R′ is a substantially straight-chain alkyl radical containing from about 5 to about 20 carbon atoms, and X is an anion selected from the group consisting of halide, nitrate, nitrite, sulfate, phosphate, acetate, citrate, tartrate and hydroxide, drying the resulting composite, thereafter contacting the resulting composite with a metal chelate and with an alkali metal hydroxide, said alkali metal hydroxide being in a weight ratio with said molecular sieve support from about 0.1:1 to about 1:1, and thereafter drying the resulting catalytic composite.

4,290,917

METHOD OF MANUFACTURING A CATALYTIC COMPOSITE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

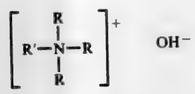
Continuation-in-part of Ser. No. 80,638, Oct. 1, 1979. This application Jan. 14, 1980, Ser. No. 111,757

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.^{3} B01J *31/22*

U.S. Cl. 252—430 **12 Claims**

1. A method of manufacture of a catalytic composite which comprises contacting an adsorptive support with a substituted ammonium compound represented by the structural formula:



wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl and R′ is a substantially straight-chain alkyl radical containing from about 5 to about 20 carbon atoms, drying the resulting composite, thereafter contacting the resulting composite with a metal chelate and with an alkali metal hydroxide, said alkali metal hydroxide being in a weight ratio with said adsorptive support from about 0.1:1 to about 1:1, and thereafter drying the resulting catalytic composite.

4,290,918

SOLUBLE POLYMERIZATION CATALYSTS, PRODUCTION OF THE SAME AND THEIR USE

Ernst Bayer, and Mohamed Kutubuddin, both of Tubingen, Fed. Rep. of Germany, assignors to Heyl & Co., Chemisch-Pharmazeutische Fabrik, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,679

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2835944

Int. Cl.^{3} B01J *31/12*

U.S. Cl. 252—431 R **8 Claims**

1. As a soluble catalyst for polymerization reactions, an organic polymer having at least one functional group bound to a metal component and having a molecular weight of 1000–10,000,000, wherein the organic polymer is a polystyrene, polyvinyl alcohol, polyvinyl ether, polyvinyl amine, polyacrylic acid, polymethacrylic acid, polyvinyl pyrrolidone, polyethylene glycol, polypropylene glycol, polyethylene imine, polyurethane, polyester or mixed polymerisate of mixed condensate of the corresponding monomer, and wherein the metal component is at least one of the metals selected from the group consisting of Ti, U, V, Zr, Co, Ni, Cr, Mo, W, Al, Zn and Fe.

4,290,919

CRACKING CATALYSTS PASSIVATED BY TUNGSTEN

Dwight L. McKay; Brent J. Bertus, and Harold W. Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Jul. 23, 1979, Ser. No. 59,839

Int. Cl.^{3} C10G *11/05*

U.S. Cl. 252—437 **6 Claims**

6. A modified cracking catalyst obtained by contacting a zeolite-modified silica-alumina cracking catalyst and at least one passivating compound containing tungsten and phosphorus, under elevated temperature conditions.

4,290,920

SB-CONTAINING CATALYSTS BY SB-OXIDE IMPREGNATION

Dev D. Suresh, Macedonia; James F. Brazdil, Lyndhurst, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 107,942

Int. Cl.^{3} B01J *27/02, 23/10, 23/84, 23/64*

U.S. Cl. 252—439 **17 Claims**

1. A process for improving the catalytic performance of a used antimony-containing oxide complex catalyst comprising adding to said catalyst an antimony-containing compound in an amount such that the amount of antimony added to said catalyst is 0.1 to 25% based on the antimony in said catalyst.

4,290,921

ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 965,372, Nov. 30, 1978, Pat. No. 4,197,188, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Mar. 17, 1980, Ser. No. 130,655

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.^{3} B01J *27/08, 27/10, 23/64*

U.S. Cl. 252—441 **18 Claims**

1. A catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state during the incorporation of the rhenium carbonyl component, and of a zirconium component.

4,290,922

AMMOXIDATION CATALYST FOR THE PRODUCTION OF ACRYLONITRILE FROM PROPYLENE AND PROCESS FOR PRODUCING THE SAME

Sumio Umemura; Kyoji Ohdan; Mikio Hidaka, and Toshio Kurafuji, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Mar. 26, 1980, Ser. No. 134,053
Claims priority, application Japan, Apr. 18, 1979, 54/46728
Int. Cl.[3] B01J *21/06, 23/24*
U.S. Cl. 252—456 8 Claims

1. A catalyst for producing acrylonitrile by the catalytic ammoxidation of propylene, said catalyst comprising an oxide composition of the empirical formula (I):

$$Mo_aCo_bNi_cFe_dBi_eV_fCa_gK_hX_iSi_jO_k \quad (I)$$

wherein X represents at least one element selected from the group consisting of zirconium and chromium, the subscripts a, b, c, d, e, f, g, h, i and j respectively denote the number of the respective atoms of the elements, and the ratio a:b:c:d:e:f:g:h:i:j is in a range of 10:0 to 8:0 to 8:0.3 to 7:0.01 to 3:0.01 to 2:0.01 to 5:0.05 to 0.5:0 to 2:10 to 50, the ratio a:(b+c) being in a range of 10:2 to 10, and the subscript k denotes the number of oxygen atoms which satisfies the average valency of the elements other than oxygen, the ratio a:k being in a range of 10:30 to 80, and said catalyst is prepared by

(a) mixing an aqueous liquid with (1) a molybdenum-containing compound, (2) at least one member selected from cobalt- and nickel-containing compounds, (3) an iron-containing compound, (4) a bismuth-containing compound, (5) a vanadium-containing compound, (6) a calcium-containing compound, (7) a potassium-containing compound, (8) at least one member selected from zirconium- and chromium-containing compounds, and (9) a silicon-containing compound, each in an amount sufficient to satisfy the abovespecified atomic ratio of the elements in the empirical formula (I), to prepare an aqueous slurry, said aqueous slurry containing not more than 15% of the sum of the respective element-containing compounds, which are in the form of solid particles having a size of 2 microns or less, based on the entire weight of said aqueous slurry, and having a pH of 1.0 or less;

(b) spray drying said aqueous slurry to form a dried solid precursor catalyst, and

(c) calcining said precursor catalyst at a temperature of from 500° to 750° C. to prepare an activated catalyst.

4,290,923

RARE-EARTH-MANGANESE OXIDATION CATALYSTS AND PROCESS OF PRODUCING SAME

Peter G. Mein, and Arno H. Reidies, both of La Salle, Ill., assignors to Carus Corporation, LaSalle, Ill.

Continuation-in-part of Ser. No. 8,591, Feb. 1, 1979, abandoned.
This application Feb. 4, 1980, Ser. No. 118,553
Int. Cl.[3] B01J *23/10, 23/34*
U.S. Cl. 252—462 24 Claims

1. The process of producing a rare earth-manganese oxidation catalyst by ion exchange reaction, comprising the steps of:

(a) forming a suspension of finely-divided alkali metal delta manganese dioxide hydrate in an aqueous solution containing rare earth metal salt ions, said suspension having an initial pH of from 5.0 to 7.0, the rare earth metal ions being provided by one or more rare earths of the ceria subgroup;

(b) exchanging the alkali of said alkali metal manganese dioxide hydrate with said rare earth metal ions at a temperature of at least 30° C. and under acidic pH conditions;

(c) continuing said exchanging reaction until the manganese reaction product contains not over 0.05 moles of bound alkali metal per mole of manganese and at least one mole of total ceria subgroup rare earth metal per 5 to 7 moles of manganese;

(d) separating said reaction product from said aqueous solution; and

(e) preparing dried porous catalytic pellets from said reaction product.

4,290,924

CATALYST COMPOSITION USEFUL FOR PREPARING 2,6-XYLENOL

Bruce E. Leach, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Division of Ser. No. 45,571, Jun. 4, 1979, Pat. No. 4,227,024.
This application Apr. 4, 1980, Ser. No. 137,195
Int. Cl.[3] B01J *23/78, 23/82, 23/86*
U.S. Cl. 252—469 5 Claims

1. A catalyst composition consisting essentially of the following materials in percent by weight: Fe_2O_3—about 90 to about 97; SnO_2—about 0.5 to about 5; Cr_2O_3—about 0.5 to about 5; K_2O—about 0.01 to about 1.

4,290,925

LUBRICATING OIL ADDITIVES

Horst Pennewiss, Darmstadt-Neu-Kranichstein; Rainer Benda, Rossdorf; Heinz Jost, Modautal, and Helmuth Knoell, Lautertal, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 29, 1980, Ser. No. 116,449
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905954
Int. Cl.[3] C10M *1/26, 1/18, 3/20, 3/12*
U.S. Cl. 252—56 S 11 Claims

1. A concentrated polymer emulsion useful as a lubricating oil additive for improving the viscosity index thereof, said emulsion comprising:

(1) a dispersed phase of an olefinic copolymer having a molecular weight complementary with respect to the thickening effect desired;

(2) a dispersing phase of a polymer predominantly comprising at least one member selected from the group consisting of acrylate ester and methacrylate ester monomers;

(3) a vehicle which is a good solvent for the esters in said dispersing phase and a substantially less good solvent for the olefinic copolymer by virtue of the esters dissolved in said vehicle; and

(4) an emulsifier, stabilizing phase distribution, which is a member selected from the group consisting of graft copolymers and block copolymers formed from olefinic monomers and at least one member selected from the group consisting of acrylate ester and methacrylate ester monomers.

4,290,926

NON-HALOGENATED IMPREGNANT FOR CAPACITORS COMPRISING AN AROMATIC CARBOXYLIC ACID ESTER AND AN ALKENE

David G. Shaw, Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 784,143, Apr. 4, 1977, abandoned, which is a division of Ser. No. 669,755, Mar. 24, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 916,770
Int. Cl.[3] H01B *3/22, 3/20*
U.S. Cl. 252—579 11 Claims

1. A composition for use as a dielectric liquid under stress in an electrical apparatus comprising

a. a dielectric liquid aromatic carboxylic ester which is hydrogen gas absorbing at a temperature between 40° and 100° C., and

b. 5 to 30 percent by volume of an alpha unsaturated alkene normally liquid at room temperature dissolved therein, said alkene containing from 10 to less than 20 carbon atoms and having a significantly higher hydrogen gas absorbing value than the dielectric liquid aromatic ester,

c. said composition being essentially halogen free.

4,290,927

VULCANIZABLE POLYBLEND

Chiaki Tanaka, Chita; Masanobu Morikawa, Nagoya, and Yoshio Kohno, Okazaki, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 585, Jan. 2, 1979, abandoned, which is a continuation of Ser. No. 745,928, Nov. 29, 1976, abandoned.
This application Apr. 16, 1980, Ser. No. 140,888
Claims priority, application Japan, Nov. 27, 1975, 50/141175; Nov. 27, 1975, 50/141176
Int. Cl.[3] C08L *7/00, 67/06*
U.S. Cl. 260—3 13 Claims

1. A vulcanizable polyblend which comprises an intimate mixture of about 5 to 90% by weight of a thermoplastic polyester which is a condensation polymer prepared from a dicarboxylic acid and a glycol component comprising at least 50 mol percent of 1,4-butanediol, the remainder of said glycol component being selected from the group consisting of ethylene glycol, propanediols, 1,6-hexanediol, xylylene glycol, cyclohexane dimethanol and 1,4-cyclohexanediol; said polyblend also comprising 95 to 10% by weight of a vulcanizable rubber.

12. A vulcanizable polyblend as defined in claim 1 wherein the rubber comprises natural rubber.

4,290,928

BINDER FOR DRY HOT COAT FOUNDRY PROCESS

Kyohei Funabiki; Noriaki Matsushima, and Naomitsu Inouye, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Division of Ser. No. 865,558, Dec. 29, 1977, Pat. No. 4,196,114.
This application Mar. 21, 1980, Ser. No. 132,599
Claims priority, application Japan, Aug. 4, 1977, 52/90950
Int. Cl.[3] C08L *61/10*
U.S. Cl. 260—28 P 17 Claims

1. A lubricant-containing binder for the dry hot coat foundry method consisting essentially of a solid resol-type phenolic resin produced by the reaction comprising condensation of reactants consisting of a phenol and a formaldehyde source followed by dehydration of the reaction mixture, and a lubricant in an amount of about 0.5 to 10 percent by weight with respect to said phenolic resin, wherein said lubricant is added prior to or during the course of the reaction to produce said solid resol-type phenolic resin.

11. A process for producing resin-coated sand for use in a shell mold which comprises coating heated sand particles with a lubricant containing binder comprising a solid resol-type phenolic resin produced by the reaction comprising condensation of reactants consisting of a phenol and a formaldehyde source followed by dehydration of the reaction mixture, and a lubricant in an amount of about 0.5 to 10 percent by weight with respect to said phenolic resin, wherein said lubricant is added after the condensation step, but before the dehydration step of the reaction to produce said solid resol-type phenolic resin.

4,290,929

AQUEOUS SOLUTIONS OF POLYESTERIMIDES AND METHODS OF MAKING THE SAME

Charles W. McGregor; Joseph Karkoski, both of Fort Wayne, Ind., and John D. Shurboff, Coral Springs, Fla., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Jul. 13, 1979, Ser. No. 57,521
Int. Cl.[3] C08L *79/08*
U.S. Cl. 260—29.2 N 13 Claims

1. A process of producing an aqueous solution of a polyesterimide having a weight average molecular weight of 16,000 to 600,000, an acid number less than 2 and consisting of a tricarboxylic acid anhydride component, a diamine component, an ester component, and a polycarboxylic cross-link material, comprising:

mixing the polyesterimide with a low boiling amine solubilizing agent of K_b less than 10^{-5}, heating the mixture until an acid number greater than 50 is attained, and diluting with water to attain a viscosity at 30° C. less than 2,500 cps and a polymer solids content greater than 30% by weight.

4,290,930

AQUEOUS VINYL PLASTICS DISPERSION CONTAINING WATER SOLUBLE SALT OF POLYBASIC PHOSPHONIC ACID DERIVATIVE

Ernst Nölken, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,732
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810348
Int. Cl.[3] C08K *5/50*
U.S. Cl. 260—29.6 MP 8 Claims

1. An aqueous dispersion of vinyl polymer plastic containing 0.005 to 5% by weight, calculated on the total amount of vinyl monomer(s), of a water-soluble salt of a polybasic phosphonic acid derivative having two to four phosphorus atoms wherein said dispersion contains polymer particles with an average diameter of 0.05 to 5.0 μm.

4,290,931

AQUEOUS PLASTICS DISPERSION ON THE BASIS OF VINYL ESTER POLYMERS, PROCESS FOR THE MANUFACTURE THEREOF, AND COATING MATERIAL MADE THEREFROM

Ernst Nölken, and Hans G. Oesterlin, both of Bad Soden am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

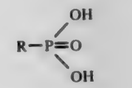
Filed May 24, 1979, Ser. No. 42,089
Claims priority, application Fed. Rep. of Germany, May 29, 1978, 2823301
Int. Cl.[3] C08K *5/53*
U.S. Cl. 260—29.6 RW 17 Claims

1. In an aqueous plastics dispersion having a base of a vinyl ester polymer:

a water-soluble salt of a copolymer of styrene and maleic acid anhydride, semiester or semiamide, the copolymer containing styrene units and comonomer units in a ratio of from 1.5:1 to 6:1,

a hydroxy group-containing polyether which under normal conditions is liquid or water soluble, and

a dispersing agent of a monophosphono-alkane compound of the formula



wherein R is alkyl of 6 to 24 carbon atoms, unsubstituted or substituted by a phenyl, hydroxyl or carboxyl.

4,290,932

ACRYLIC RESIN-ACRYLIC MICROGEL COMPOSITIONS

Howard J. Wright, Kansas City, Mo.; David P. Leonard, Overland Park, Kans., and Roger A. Etzell, Gladstone, Mo., assignors to Cook Paint and Varnish Company, Kansas City, Mo.

Filed Nov. 27, 1979, Ser. No. 98,115
Int. Cl.[3] C08L *33/14*
U.S. Cl. 260—29.6 WB 8 Claims

1. A method of making an acrylic microgel resin for use in paint systems to provide coatings of improved pigment orientation and sag resistance which comprises preparing an aqueous microgel emulsion by the emulsion polymerization in

water of a mixture of ethylenically unsaturated monomers, at least one of said monomers being an acrylic or methacrylic acid, or an —OH substituted alkyl ester thereof, and containing a —COOH or —OH group, and at least another of said monomers being selected from an alkyl ester of an acrylic or methacrylic acid, styrene and alpha-methyl styrene, and being free from —COOH and —OH groups, and a multifunctional crosslinking agent present in an amount of 5–70 percent by weight of the total weight of said ethylenically unsaturated monomers and crosslinking agent, removing water from the emulsion by coagulation and/or azeotropic distillation with an organic solvent in which the microgel is insoluble and which forms an azeotrope with water, and incorporating the microgel into an acrylic resin prepared by polymerizing two or more ethylenically unsaturated monomers in an organic solvent solution wherein at least one of said monomers is an —OH substituted alkyl ester of an acrylic or methacrylic acid and optionally a monomer containing a —COOH group selected from an acrylic or methacrylic acid, and another of said monomers being selected from an alkyl ester of an acrylic or methacrylic acid, styrene and alpha-methyl styrene, and being free from —COOH and —OH groups to provide said acrylic microgel resin wherein the amount of microgel solids is in the range of 5 to 15 percent by weight of the total resin solids.

4,290,933

ADHESIVE COMPOSITION FOR MAKING FORM SETS FROM CARBONLESS COPY PAPER SHEETS

William J. Becker, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Continuation of Ser. No. 928,143, Jul. 26, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 139,116

Int. Cl.³ C08K *3/38*

U.S. Cl. 260—29.6 MM **5 Claims**

1. An adhesive composition for making form sets from carbonless copy paper sheets consisting essentially of:
(a) an acrylic polymer latex emulsion,
(b) at least one water-miscible organic solvent, and
(c) sodium tetraborate decahydrate.

4,290,934

PLASTICIZED POLYCARBONATE COMPOSITION

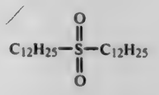
Victor Mark, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Jun. 29, 1977, Ser. No. 811,064

Int. Cl.³ C08K *5/41*

U.S. Cl. 260—30.8 R **3 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an organic plasticizer having the following formula:



4,290,935

HIGHLY RIGID POLYAMIDE COMPOSITION

Toshio Muraki, Nagoya, Japan, assignor to Toray Industries, Incorporated, Tokyo, Japan

Filed Oct. 25, 1979, Ser. No. 88,386

Claims priority, application Japan, Oct. 27, 1978, 53-131562; Feb. 8, 1979, 54-13729

Int. Cl.³ C08K *5/20*

U.S. Cl. 260—32.6 NA **14 Claims**

1. A highly rigid polyamide which comprises poly-ε-caprolactam containing about 50 to 5000 ppm of combined barium, said barium combined with the poly-ε-caprolactam, and having a γ-type crystal ratio of about 0.3 to 0.7 in the crystalline phase.

4,290,936

PROCESS FOR PREPARING POLYIMIDE SOLUTION

Yoshikazu Sasaki, Takatsuki; Hiroshi Inoue, Hirakata; Ichiro Sasaki, Chiba; Hiroshi Itatani, Chiba, and Mikito Kashima, Chiba, all of Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Nov. 8, 1979, Ser. No. 92,508

Claims priority, application Japan, Nov. 9, 1978, 53-137356; Sep. 6, 1979, 59113558

Int. Cl.³ C08K *5/13*

U.S. Cl. 260—33.4 P **11 Claims**

1. A process for preparing a polyimide solution, which comprises the step of polymerizing ingredients consisting essentially of:
(A) a tetracarboxylic acid ingredient consisting of, based on the tetracarboxylic acid ingredient,
(a) approximately 80 to 100% by mole of 3,3′,4,4′-biphenyltetracarboxylic acid or its functional derivative and
(b) 0 to 20% by mole of at least one compound selected from the group consisting of 2,3,3′,4′-biphenyltetracarboxylic acid, 2,2′,3,3′-biphenyltetracarboxylic acid, 3,3′,4,4′-benzophenonetetracarboxylic acid, bis(3,4-dicarboxyphenyl) methane, 2,2-bis-(3,4-dicarboxyphenyl) propane, bis(3,4-dicarboxyphenyl) ether, bis(3,4-dicarboxyphenyl)thioether, bis(3,4-dicarboxyphenyl) sulfone, 2,3,6,7-naphthalenetetracarboxylic acid, pyromellitic acid and functional derivatives thereof, and
(B) an aromatic diamine ingredient containing at least approximately 50% by mole, based on the aromatic diamine ingredient, of 4,4′-diaminodiphenyl ether, at a temperature of from approximately 100° to 300° C. in phenol or a halogenated phenolic compound; the amounts of the tetracarboxylic acid ingredient and the aromatic diamine ingredient being approximately equimolar to each other; whereby the tetracarboxylic acid ingredient and the aromatic diamine ingredient are polymerized, while being accompanied by imidation, to produce a homogeneous polyimide solution containing a polyimide having a logarithmic viscosity of from 0.7 to 6, as measured at 50° C., on a solution of 0.5 g polymer in 100 ml of p-chlorophenol.

4,290,937

THERMOPLASTIC MOLDING COMPOSITIONS

Stuart C. Cohen, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 866,008, Dec. 30, 1977, Pat. No. 4,185,047. This application May 29, 1979, Ser. No. 43,218

Int. Cl.³ C08L *67/02*

U.S. Cl. 260—40 R **5 Claims**

1. An improved molding composition having improved mold releasability, said composition consisting essentially of:
(a) poly(1,4-butylene terephthalate);
(b) from about 0.25 to 4.5 percent by weight, based on the total composition, of polyethylene or an olefin-based copolymer selected from propylene-ethylene copolymer, ethylene-vinyl acetate copolymer, ethylene-acrylic acid copolymer or mixtures thereof; and
(c) from about 0.02 to about 0.5% by weight, based on the total composition, of talc.

4,290,938

THERMOSETTING INJECTION MOLDING COMPOUND

Hideo Miyake; Junichi Sakamoto, both of Otsu; Masakazu Sawaki, Kyoto, and Mamoru Hara, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha Co., Ltd., Japan

Filed Jan. 4, 1980, Ser. No. 109,736

Claims priority, application Japan, Jan. 5, 1979, 54-859

Int. Cl.³ C08K *3/40;* **C08L** *67/06*

U.S. Cl. 260—40 R **8 Claims**

1. A thermosetting injection molding compound which comprises
(A) crystalline unsaturated polyester which comprises (A) a crystalline unsaturated polyester consisting of acid components: terephthalic acid/fumaric acid=5/5 to 1/9 by mol and glycol components: 1,4-butanediol/other glycol=7/3 to 10/0 by mol, and having a Gardner-holdt bubble viscosity of N to W (measured in a 70% by weight solution in tetrachloroethane at 25° C.), a melting point of 50° to 130° C. and an acid value of not more than 20, and (B) at least one monomer selected from the group consisting of a styrene type monomer and an allyl type monomer;
(C) a glass fiber; and
(D) an additive selected from the group consisting of a filling agent, a fire retardant agent, a releasing agent, a colorant, a polymerization initiator and a polymerization inhibitor;
said components being incorporated in the ratios of B/(A+B)=5 to 40% by weight, C(A+B+C+D)=5 to 30% by weight, and (C+D)/(A+B)=90/10 to 40/60 by weight;
and said molding compound having an extension in a disc flow test of 80 to 110 mm.

4,290,939

UNSATURATED POLYESTER RESINS AND MOLDING COMPOSITIONS CONTAINING SAME

Robert J. Bertsch, Brecksville, and Changkiu K. Riew, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 27, 1980, Ser. No. 134,371

Int. Cl.³ C08L *67/02;* **C08G** *63/20*

U.S. Cl. 260—40 R **24 Claims**

13. Molding composition comprising polyester resin and a particulate filler, said polyester resin being the reaction of an acid and/or anhydride with a hydroxyl-containing compound which forms ester groups upon reaction with the acid and/or anhydride, the improvement comprising co-reacting a carboxyl or a hydroxyl terminated liquid polymer with said acid or anhydride and the hydroxyl containing compound.

4,290,940

PYRROLE STABILIZERS FOR CHLORINE-CONTAINING THERMOPLASTICS

Hermann O. Wirth; Jürgen Büssing, both of Bensheim, and Hans-Helmut Friedrich, Lautertal, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

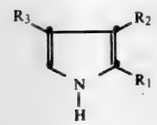
Filed Jun. 30, 1980, Ser. No. 164,194

Claims priority, application Switzerland, Jun. 28, 1979, 6035/79

Int. Cl.³ C07D *207/32, 207/333;* **C08K** *5/34*

U.S. Cl. 260—45.8 N **13 Claims**

1. A chlorine-containing thermoplastic, containing a pyrrole of the formula I



(I)

in which R_1 is hydrogen, alkyl, cycloalkyl, aryl, alkoxycarbonylmethyl, free or esterified α-hydroxyalkyl, free or esterified α-hydroxycycloalkylmethyl, free or esterified α-hydroxyaralkyl, alkoxymethyl, alkylthiomethyl, aryloxymethyl, arylthiomethyl, cycloalkoxymethyl, cycloalkylthiomethyl, aralkoxymethyl, aralkylthiomethyl, alkoxy, alkylthio, cycloalkoxy, cycloalkylthio, aralkoxy, arylalkylthio, aryloxy, arylthio, halogen, mercapto, mercaptomethyl or hydroxyl, R_2 is hydrogen, alkyl, cycloalkyl, aryl, free or esterified α-hydroxyalkyl, in which the alkyl moiety together with R_1 can be alkylene, or free or esterified α-hydroxycycloalkylmethyl, free or esterified α-hydroxyaralkyl, alkoxy, cycloalkoxy, aralkoxy, aryloxy, alkylthio, cycloalkylthio, aralkylthio, arylthio, alkoxymethyl, alkylthiomethyl, aryloxymethyl, arylthiomethyl, cycloalkoxymethyl, cycloalkylthiomethyl, aralkoxymethyl, aralkylthiomethyl, hydroxyl, cyano, free carboxyl or carboxyl in the form of a salt or an ester, or acyl, it being possible for acyl together with R_1 to be —CO-alkylene, in which —CO— is bonded in the 3-position, or R_2 is halogen, mercapto or mercaptomethyl, and R_3 is alkyl, cycloalkyl, aralkyl, aryl, free or esterified hydroxymethyl, alkoxymethyl, alkylthiomethyl, cycloalkoxymethyl, cycloalkylthiomethyl, aralkoxymethyl, arylalkylthiomethyl, aryloxymethyl or arylthiomethyl, alkoxy, alkylthio, cycloalkoxy, cycloalkylthio, aralkoxy, aralkylthio, aryloxy, arylthio, halogen, mercapto or mercaptomethyl, or if R_2 is carboxyl in the form of a salt, R_3 is hydrogen and R_1 is as defined, or in which R_3 is hydroxyl and R_1 is hydrogen, alkyl or aryl and R_2 is hydrogen, alkyl, aryl or acyl, or a salt thereof.

4,290,941

STABILIZATION SYSTEMS FROM TRIARYLPHOSPHITES AND PHENOLS

Horst Zinke, Ernsthofen; Hans J. Lorenz, Bensheim-Auerbach, both of Fed. Rep. of Germany, and Helmut Linhart, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

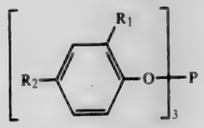
Continuation of Ser. No. 802,921, Jun. 2, 1977, Pat. No. 4,187,212, which is a continuation of Ser. No. 658,312, Feb. 17, 1976, abandoned. This application Aug. 24, 1979, Ser. No. 69,480

Claims priority, application Switzerland, Feb. 20, 1975, 2155/75; Sep. 19, 1975, 12231/75

Int. Cl.³ C08K *5/52*

U.S. Cl. 260—45.85 B **12 Claims**

1. A stabilized composition consisting essentially of (a) a polymer that is derived from a singly unsaturated acyclic hydrocarbon, or mixtures or copolymers thereof; and (b) from 0.005 to 5% of a mixture of (1) a triarylphosphite of the general formula



wherein R_1 is tert.butyl or 1,1-dimethylpropyl, and R_2 is methyl, tert.butyl or 1,1-dimethylpropyl, and (2) a hindered phenolic antioxidant selected from the group consisting of 2,6-di-tert.butyl-4-methylphenol, 2,2′-methylene-bis(6-tert.butyl-4-methylphenol), 2,2′-methylene-bis(6-tert.butyl-4-ethylphenol), 2,2′-methylene-bis(4-methyl-6-α-methylcyclohexyl) phenol, 1,1,3-tris(5-tert.butyl-4-hydroxy-2-methylphenyl) butane, 4,4′-thiobis(6-tert.butyl-3-methylphenol), 3,5-di-tert.butyl-4-hydroxybenzyl-phosphonic acid diethylester, N,N′-di-(3,5-di-tert.butyl-4-hydroxyphenylpropionyl)-hexamethylenediamine, 1,2-bis(3,5-di-tert.butyl-4-hydroxyphenyl-propionyloxy)-ethane, 1,5-bis(3,5-di-tert.butyl-4-hydroxyphenyl-propionyloxy)-2-thiapentane, 1,3-bis(3,5-di-tert.butyl-4-hydroxyphenyl-propionyloxy)-2,2-dimethylpropane and 1,1-bis(5-tert.butyl-4-hydroxy-2-methylphenyl)-butane; the ratio of the phosphite to the antioxidant being from 10:1 to 1:5.

4,290,942

HEAT-STABILIZED CHLORINE-CONTAINING THERMOPLASTIC

Rainer Schneider, Bensheim-Auerbach, and Gerd Abeler, Griesheim über Darmstadt, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 941,822, Sep. 11, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,858

Claims priority, application Switzerland, Sep. 30, 1977, 11983/77

Int. Cl.³ C08K *5/37*

U.S. Cl. 260—45.85 H **1 Claim**

1. A method for stabilizing chlorine-containing thermoplastics, which comprises incorporating into said thermoplastic a stabilizing amount of an epoxidised plasticizer, a phosphite, and a mercaptan of the formula (I)

$$R-(CH_2-SH)_n \quad (I)$$

wherein n is an integer from 2 to 4 and R represents a divalent to quadrivalent benzene or naphthalene, benzene or naphthalene substituted with alkyl of 1 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms, or alkoxycarbonyl of 2 to 18 carbon atoms, or a divalent to quadrivalent group of the formula II

$$-Ar-X-Ar- \quad (II)$$

wherein Ar represents an phenyl group, unsubstituted or substituted with alkyl of 1 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms, or alkoxycarbonyl of 12 to 18 carbon atoms, which carries the free valencies, and X represents a direct bond, alkylene, alkylidene or cycloaklylidene, O, S, SO or SO_2.

4,290,943

METHOD OF PREPARING POLYPEPTIDES

Christian Birr, Leimen, Fed. Rep. of Germany, assignor to Max-Plank-Gesellschaft, Gottingen, Fed. Rep. of Germany

Filed May 17, 1979, Ser. No. 39,979

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830442

Int. Cl.³ C07C *103/52*; **C08L** *37/00*

U.S. Cl. 260—112.5 R **4 Claims**

1. Method for the preparation of a polypeptide comprising the steps of

(a) condensing a carrier material consisting of less than 0.5% cross-linked polystyrene gel and including bromacetyl phenyl groups whereby the gel is activated with a member selected from the group consisting of peptide fragments composed of at least 3 amino-acids, isoleucine, leucine, valine, protective group bearing cysteine and protective group bearing lysine, each member having an N-terminal of alpha-alpha-dimethyl-3,5-dimethoxy benzyloxycarbonyl to protect the N-terminal and provide a means for photometric following of the reaction;

(b) condensing the resulting carrier bound member with one or more amino-acids or peptide fragments to form a peptide moiety;

(c) splitting off the peptide moiety;

(d) separating the peptide from contaminating byproducts;

(e) introducing an N-terminal of alpha-alpha-dimethyl-3,5-dimethoxybenzyloxycarbonyl into the peptide moiety; and

(f) condensing the product of step (e) again with the carrier material of step (a) and repeating steps (b) to (f) until the peptide moiety, formed on the carrier material, is equivalent to the desired end product polypeptide, and thereafter splitting off the peptide moiety and isolating the desired end product polypeptide thus freed.

4,290,944

ANTIGENIC PEPTIDE COMPOUND

Erwin Goldberg, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Jul. 31, 1980, Ser. No. 174,011

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. The antigenic linear peptide compound having the formula: N-Met-Gln-Lys-Asp-Leu-Glu-Leu-C wherein N-Met is N-terminal L-methionine, Leu-C is C-terminal L-leucine, and Gln, Lys, Asp, Glu, and Leu are the L-amino acid forms, respectively, of glutamine, lysine, aspartic acid, glutamic acid, and leucine.

4,290,945

α,α-AZO-BIS-ISOBUTYRIC ACID α,ω-BIS ALKYL ESTER DERIVATIVES AND METHOD FOR PREPARING SAME

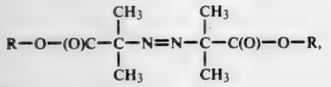
Anatoly A. Syrov, ulitsa 3 Internatsionala, 52, kv. 51; Sergei S. Ivanchev, ulitsa Nalichnaya, 36, korpus 3, kv. 97; Oleg N. Primachenko, Suzdalsky prospekt, 38, korpus 1, kv. 13; Valentina A. Demidova, Poljustrovsky prospekt, 7, kv. 16; Boris V. Polozov, prospekt Smirnova, 20, korpus 3, kv. 32; Vladimir I. Fionov, ulitsa Komsomola, 49, kv. 5, and Evgeny N. Barantsevich, ulitsa Ordzhonikidze, 59, kv. 55, all of Leningrad, U.S.S.R.

Filed Nov. 6, 1979, Ser. No. 91,774

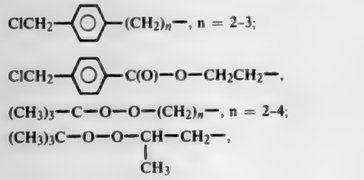
Int. Cl.³ C07C *107/00*

U.S. Cl. 260—192 **7 Claims**

1. α,α′-Azo-bis-isobutyric acid α,ω-bis-alkyl ester derivatives of the formula:



wherein R:



4,290,946

PREPARATION OF HEXAMETHYLENEIMINE

Yasunobu Takahashi, Tokyo; Einosuke Fujimoto, Nobeoka; Toshio Shimizu, Nobeoka, and Takeo Kato, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1975, Ser. No. 598,914

Claims priority, application Japan, Jul. 25, 1974, 49-84665; Aug. 15, 1974, 49-92756; Oct. 8, 1974, 49-115181; Nov. 28, 1974, 49-135875; Mar. 13, 1975, 50-29461

Int. Cl.³ C07D *295/02*

U.S. Cl. 260—239 B **12 Claims**

1. A process for preparing hexamethyleneimine from hexamethylenediamine, which comprises the steps of continuously reacting hexamethylenediamine in the absence of hydrogen at about 80° to 150° C., 30 mmHg to 8 kg/cm² pressure in an inert solvent using a nickel catalyst and/or cobalt catalyst while maintaining the concentrations of hexamethyleneimine and hexamethylenediamine in the reaction mixture at 5% by weight or less and 10% by weight or less, respectively, by removing the hexamethyleneimine from the reaction system as soon as the hexamethyleneimine is formed.

4,290,947

PROCESS FOR THE PREPARATION OF THIENAMYCIN AND INTERMEDIATES

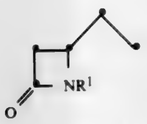
Burton G. Christensen, Scotch Plains; Ronald W. Ratcliffe, Matawan, and Thomas N. Salzman, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 34,052, Apr. 27, 1979, abandoned. This application May 29, 1980, Ser. No. 154,190

Int. Cl.³ C07D *205/08, 487/04*

U.S. Cl. 260—239 A **1 Claim**

1. The compound:



I

wherein R^1 is a protecting group selected from t-butyl-dimethylsilyl, t-butyldiphenylsilyl, triphenylsilyl, isopropyldimethylsilyl, and 3,4-dimethoxybenzyl.

4,290,948

PROCESS FOR THEIR PREPARATION OF β-LACTAM ANTIBACTERIAL AGENTS

Edward G. Brain, Reigate, and Neal F. Osborne, Cranleigh, both of England, assignors to Beecham Group Limited, England

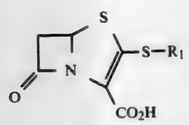
Filed Nov. 7, 1979, Ser. No. 91,978

Claims priority, application United Kingdom, Nov. 22, 1978, 45629/78

Int. Cl.³ C07D *499/00*

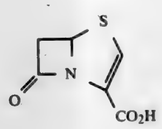
U.S. Cl. 260—245.2 R **8 Claims**

1. A process for the preparation of the compounds of the formula (II):



(II)

and salts and esters thereof convertible by hydrogenolysis, hydrolysis or fluoride ion wherein R_1 is a hydrocarbon group of up to 12 carbon atoms and which optionally also has up to 4 heteroatoms selected from oxygen, nitrogen, sulphur or chlorine and bromine which process is carried out by the reaction of an ester of a compound of the formula (III):



(III)

with one equivalent of a strong base of low nucleophilicity and thereafter with a compound of the formula (IV) or (V):

$$R^2SO_2SR_1^1 \quad (IV)$$

$$Cl-S-R_1^1 \quad (V)$$

wherein R_1^1 is a group R_1 in which any amino substituent is protected and R^2 is an alkyl group of 1–4 carbon atoms optionally substituted by a phenyl group or is a phenyl group optionally substituted by an alkyl group of 1–4 carbon atoms and thereafter when desired converting the ester moiety to the acid form of the formula (II) or a salt thereof and removing the protecting group from any protected amino group present in R_1^1.

4,290,949

ESTERS OF 2-VINYLCLAV-2-EM-3-CARBOXYLIC ACID AND PROCESS FOR PREPARING SAME

Peter C. Cherry, South Harrow; Christopher E. Newall, Ealing; Nigel S. Watson, Greenford; Gordon I. Gregory, Chalfont St. Peter, and Peter Ward, Northolt, all of England, assignors to Glaxo Operations UK Limited, Greenford, England

Filed Jun. 24, 1977, Ser. No. 809,915

Claims priority, application United Kingdom, Jun. 25, 1976, 26595/76; Sep. 9, 1976, 37446/76

Int. Cl.³ C07D *498/04*

U.S. Cl. 260—245.3 **1 Claim**

1. Crystalline 4-nitrobenzyl (5R)-2-vinylclav-2-em-3-carboxylate.

4,290,950

SULFO-SUBSTITUTED-3,6-DI(N-INDOLINYL)-9-SULFONAMIDOPHENYL-XANTHENES

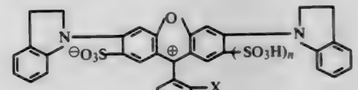
Richard L. Cournoyer, Waltham, and James W. Foley, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 106,938, Dec. 26, 1979. This application May 30, 1980, Ser. No. 154,618

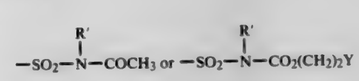
Int. Cl.³ C07D *209/08*

U.S. Cl. 260—326.12 R **5 Claims**

1. A compound of the formula



wherein X is



wherein R′ is methyl; Y is an electron-withdrawing group having a positive sigma value greater than 0.60; and n is 0 or 1.

4,290,951

3,6-DI(N-INDOLINYL)-9-SULFONAMIDOPHENYL-XANTHENES

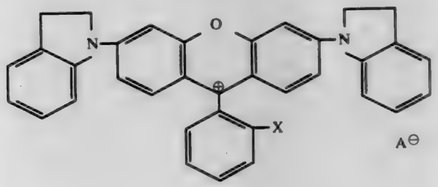
James W. Foley, Andover; Louis Locatell, Jr., Wellesley Hills, and Charles M. Zepp, Boylston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 106,905, Dec. 26, 1979. This application May 30, 1980, Ser. No. 154,619

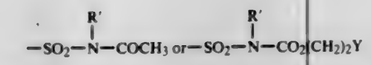
Int. Cl.³ C07D *209/08*

U.S. Cl. 260—326.12 R **5 Claims**

1. A compound of the formula



wherein X is



wherein R′ is methyl; Y is an electron-withdrawing group having a positive sigma value greater than 0.60; and A is an anion.

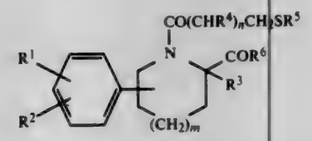
4,290,952

ARYL-1-MERCAPTOALKANOYLPROLINE AND HOMOPROLINE DERIVATIVES

Meier E. Freed, Paoli, and James L. Diebold, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,967
Int. Cl.³ C07D *207/16, 211/60*
U.S. Cl. 260—326.47 **8 Claims**

1. A compound of the formula:



wherein

R^1 and R^2, are independently, hydrogen, alkyl of one to six carbon atoms, alkoxy of one to six carbon atoms or halo;

R^3 is hydrogen or alkyl of one to six carbon atoms;

R^4 is hydrogen or alkyl of one to six carbon atoms;

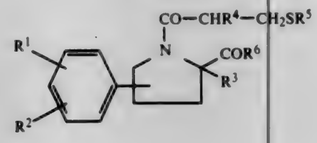
R^5 is hydrogen, alkanoyl of two to six carbon atoms or benzoyl;

R^6 is —OH or —OM where M is a pharmaceutically acceptable cation;

m is one of the integers 0 or 1; and

n is one of the integers 0, 1 or 2.

2. A compound of the formula:



wherein

R^1 and R^2 are, independently, hydrogen or alkoxy of one to three carbon atoms;

R^3 is hydrogen or methyl

R^4 is hydrogen or alkyl of one to three carbon atoms;

R^5 is hydrogen, acetyl or benzoyl; and

R^6 is —OH or —OM where M is a pharmaceutically acceptable cation.

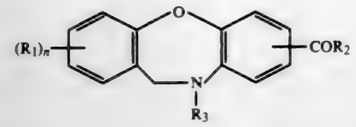
4,290,953

BENZOXAZEPINE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Masuo Koizumi, Mizumotolizuka; Kazuo Sasahara, Ohmiya; Yasushi Murakami, Tokyo; Sakae Wada, Kashiwa; Hiroshi Nakakimura, Kamakura; Noboru Kubodera, Saitama, and Shun-Ichi Hata, Yokohama, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1979, Ser. No. 100,437
Claims priority, application Japan, Dec. 6, 1978, 53-149934
Int. Cl.³ C07D *498/00*
U.S. Cl. 260—333 **24 Claims**

1. A dibenzoxazepine derivative represented by the formula



wherein R_1 is hydrogen, a halogen, a lower alkyl group or a lower alkoxyl group; n is an integer of 1 or 2; R_2 is a hydroxyl group, a lower alkoxyl group or a nuclear-substituted or unsubstituted anilino group; and R_3 is hydrogen or an carboxylic group.

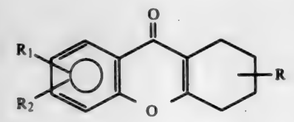
4,290,954

TETRAHYDROXANTHONE DERIVATIVES

Kazuhiro Onogi; Hisashi Kunieda; Kiyoshi Kawamura; Masami Shirotsuchi, all of Higashimurayama; Masahiko Nagakura, Sayama, all of Japan; Naoki Machida, deceased, late of Higashimurayama, Japan, and by Takayasu Miwa, heir, Nagoya, Japan, assignors to Kowa Company Limited, Nagoya, Japan

Filed Oct. 30, 1979, Ser. No. 89,403
Claims priority, application Japan, Nov. 1, 1978, 53-134958
Int. Cl.³ C07D *311/86, 413/10, 405/10*
U.S. Cl. 260—335 **9 Claims**

1. A tetrahydroxanthone compound of the formula:



wherein R_1 and R_2 are each halogen, cyano, lower alkyl or carboxyl and R is hydrogen or lower alkyl.

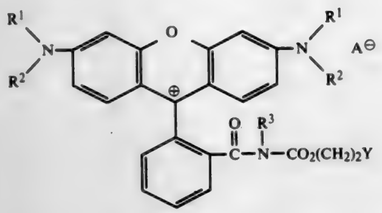
4,290,955

3,6-DI(ALKYL/PHENYL)AMINO-9-CARBOXAMIDOPHENYL-XANTHENES

Louis Cincotta, and James W. Foley, both of Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 106,902, Dec. 26, 1979. This application May 30, 1980, Ser. No. 154,620
Int. Cl.³ C07D *311/82*
U.S. Cl. 260—336 **6 Claims**

1. A compound of the formula



wherein each R^1 the same or different is hydrogen or alkyl having 1 to 4 carbon atoms, each R^2 the same or different is alkyl or phenyl having 1 to 4 carbon atoms, R^3 is phenyl or alkyl having 1 to 4 carbon atoms, Y is an electron-withdrawing group having a positive sigma value greater than 0.6 as defined by Hammett's Equation, and A is an anion.

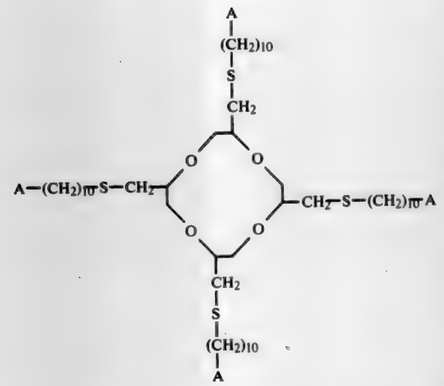
4,290,956

TENSIO-ACTIVE POLYPOD COMPOUNDS, PROCESS FOR PREPARING THEM AND COMPOSITIONS CONTAINING THEM

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 10, 1979, Ser. No. 56,204
Claims priority, application France, Jul. 13, 1978, 78 21081
Int. Cl.³ C07D *323/00*
U.S. Cl. 260—338 **28 Claims**

1. Tensio-active cyclic polyethers of the general formula:



wherein A refers to a cationic, anionic, zwitterionic or non-ionic hydrophile block which includes one or more groupings, identical or different, selected from the group consisting of amine, ammonium, ammonio alkyl carboxylate, ammonio alkyl sulfonate, carboxylic amide, ether, thioether, hydroxyl, carboxylic ester and carboxylic acid groupings.

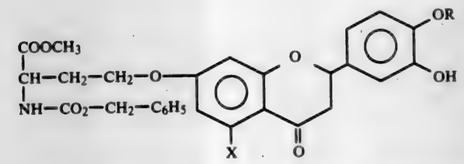
4,290,957

FLAVONONE PRECURSORS FOR ALPHA AMINO ACID DIHYDROCHALCONES

Grant E. Du Bois, Palo Alto; Rebecca A. G. Stephenson, Redwood City, and Guy A. Crosby, Palo Alto, all of Calif., assignors to Dynapol, Palo Alto, Calif.

Continuation-in-part of Ser. No. 19,054, Mar. 9, 1979, Pat. No. 4,226,804. This application Dec. 12, 1979, Ser. No. 102,699
Int. Cl.³ C07D *311/32*
U.S. Cl. 260—345.2 **3 Claims**

1. The flavanone represented by the formula



wherein X is selected from between hydrogen and hydroxy and R is an alkyl of from 1 to 4 carbons.

4,290,958

SPIRO[CYCLOHEXANE-1,1′(3′H)-ISOBENZOFURAN]S

Lawrence L. Martin, Lebanon, N.J., and Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 73,055, Sep. 6, 1979, Pat. No. 4,263,317. This application Nov. 28, 1980, Ser. No. 211,153
Int. Cl.³ C07D *307/94*
U.S. Cl. 260—346.73 **2 Claims**

1. 4-Oximino-3′-phenylspiro[cyclohexane-1,1′(3′H)-isobenzofuran].

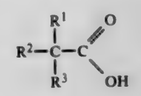
4,290,959

PREPARATION OF PROPYLENE OXIDE

Robert S. Barker, Bloomfield, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Continuation of Ser. No. 941,603, Sep. 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 806,980, Jun. 16, 1977. This application Jan. 7, 1980, Ser. No. 110,424
Int. Cl.³ C07D *301/03*
U.S. Cl. 260—348.24 **14 Claims**

1. A process for preparing propylene oxide which comprises contacting propylene in a reaction zone with a thallic salt consisting essentially of a thallic alkanoate derived from an alkanoic acid containing from 1 to 20 carbon atoms, in the presence of an acidic aqueous reaction medium consisting essentially of water, said thallic alkanoate and at least one alkanoic monocarboxylic acid which possesses at least seven carbon atoms per molecule and which is selected from the group consisting of (a) acids of the formula (I):



(I)

wherein R^1, R^2 and R^3 are the same or different and are selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, alkaryl, aralkyl, and derivatives of the foregoing groups in which a non-carbonyl carbon is replaced by oxygen, and (b) halogenated derivatives of the above acids, with the proviso that when R^1 is aryl or alkaryl, R^2 and R^3 are not both hydrogen.

4,290,960

PREPARATION OF 2,5-DIMETHYL-4-HYDROXY-2,3-DIHYDROFURAN-3-ONE

Karl-Heinz Ross, Mutterstadt; Christian Dudeck, Limburgerhof; Walter Himmele, Walldorf; Rolf Lebkuecher, Ludwigshafen, and Wolfgang Sauer, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,467
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910131
Int. Cl.³ C07D *303/14, 307/32, 307/20*
U.S. Cl. 260—348.57 **1 Claim**

1. 3,4-Epoxy-hexane-2,5-diol.

4,290,961

PROCESS FOR CATALYTICALLY REDUCING CARBONYL COMPOUNDS

Giovanni Mestroni; Grazia Zassinovich, and Annamaria Camus, all of Trieste, Italy, assignors to Montedison S.p.A., Milan, Italy

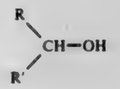
Filed Mar. 7, 1980, Ser. No. 128,049

Claims priority, application Italy, Mar. 7, 1979, 20822 A/79; Feb. 4, 1980, 19671 A/80

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.4 **22 Claims**

1. A process for catalytically reducing carbonyl compound by transfer of hydrogen from alcohols to aliphatic, alicyclic, aromatic homo- and heterocyclic ketones or aldehydes, catalyzed by complexes of rhodium or of iridium, comprising the reaction of a primary or secondary alcohol of formula (I) or a glycol:



(I)

with a ketonic compound of formula (II):



in which R and R′ and respectively R″ and R‴, also linked with each other according to homo- or heterocycles, are indifferently a hydrogen atom or a hydrocarbyl group having up to 30 atoms of carbon, provided that at least one of the symbols R″ and/or R‴ is different respectively from R and/or R′, in the presence of a complex catalyst of rhodium or of iridium selected from those having formulas (III) and (IV):

$$[M\ Chel\ (L{-}L)]^{+}\ X^{-} \text{ and } [Rh\ (Chel)_2Y_2]^{-}\ X^{-} \cdot nH_2O$$

(III) (IV)

in which:

M is selected from Rh and Ir;

Chel is a chelating bidentate nitrogenous compound;

L-L is a molecule of a diolefin, or two molecules of a monoolefin;

X^- is an anion selected from Cl^-, Br^-, J^-, FF_6^-, BF_4^-, ClO_4^-, $B(C_6H_5)_4^-$;

Y is a halogen; and

n is an integer from 0 to 3;

and in the presence of a compound selected from among mineral alkalis, at a temperature ranging from about 20° C. to the boiling temperature of the reaction mass.

4,290,962

NOVEL HYDROCORTISONE DERIVATIVE

Yasuhide Tachi, Tokyo; Kazuhiko Michishita, Omiya; Jozi Nakagami, Hasuda; Jiro Sawada, Tokyo; Mitsunori Washitake, Omiya, and Yoshiaki Kamano, Tokyo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 24,111

Claims priority, application Japan, Mar. 29, 1978, 53-36251

Int. Cl.³ C07J *5/00*

U.S. Cl. 260—397.45 **1 Claim**

1. 17α-butyryloxy-11β-hydroxy-21-propionyloxy-4-pregnen-3,20-dione.

4,290,963

PROCESS FOR PREPARING $\Delta^{9(11)}$ AND/OR Δ^{16}-UNSATURATED STERNOIDS

Paul-Eberhard Schulze, and Ulrich Kerb, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,210

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929558

Int. Cl.³ C07J *5/00*

U.S. Cl. 260—397.45 **10 Claims**

1. A process for preparing a $\Delta^{9(11)}$-and/or Δ^{16}-unsaturated steroid of the pregnane series which consists essentially of heating the corresponding 9,11- and/or 16- saturated steroid substituted by 17α-acyloxy, 16α-chloro or 17α-acyloxy and 9α-chloro, in an inert, aprotic high-boiling solvent at 180°–350° C.

4,290,964

UNDESCANOIC ACIDS AND ESTERS THEREOF

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Paul Lienhard, Frenkendorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

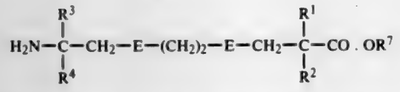
Filed Feb. 29, 1980, Ser. No. 126,081

Claims priority, application Switzerland, Mar. 12, 1979, 2330/79

Int. Cl.³ C09F *5/00*

U.S. Cl. 260—404 **8 Claims**

1. A compound of the formula I



(I)

wherein each of R^1 and R^3 independently is hydrogen or a straight chain or branched alkyl radical of 1 to 8 carbon atoms, and R^3 is also a phenyl radical, R^2 is a straight chain or branched alkyl radical of 1 to 8 carbon atoms and R^4 is a straight chain or branched alkyl radical of 1 to 18 carbon atoms, or R^1 and R^2 R^3 and R^4 or both pairs together with the carbon atom to which they are individually attached each form a cycloaliphatic ring containing 4 to 8 carbon atoms, and wherein each E represents one of the radicals



and



in which each of R^5 and R^6 independently is hydrogen or alkyl of 1 to 4 carbon atoms and R^7 is hydrogen or a straight chain or branched alkyl radical containing altogether 1 to 18 carbon atoms.

4,290,965

METHOD OF MAKING I^{123} LABELED FATTY ACIDS

Gerhard Stöcklin, Jülich; Peter Laufer, Niederzier-Steinstrasse, and Jürgen Machulla, Essen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,928

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914089

Int. Cl.³ C09F *7/00*; C11C *3/00*

U.S. Cl. 260—408 **5 Claims**

1. A method of making a ω-I^{123}-labeled fatty acid which comprises the steps of:

(a) applying a thin layer of an ω-bromo-fatty acid to an inert support;

(b) contacting said layer on said support with an I^{123} containing iodide; and

(c) heating said layer on said support in contact with said I^{123} iodide to a temperature sufficient to effect halogen substitution whereby said ω-bromo-fatty acid is converted into the corresponding ω-I^{123}-fatty acid.

4,290,966

PROCESS FOR THE PREPARATION OF TRAUMATIN

Jeannette E. Brown, Summit; Edward F. Rogers, Middletown, and Donald W. Graham, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 3, 1980, Ser. No. 193,790

Int. Cl.³ C11C *1/00*

U.S. Cl. 260—413 **6 Claims**

1. A process for the preparation of traumatin which comprises:

(a) treating 10-oxomethyldecanoate in a non-polar organic solvent with (triphenylphosphoranylene)acetaldehyde to obtain 12-oxomethyldodecenoate;

(b) treating the product of Step (a) with ethylene glycol in a non-polar organic solvent to obtain methyl 11-(1,3-dioxalane-2-yl)-10-undecenoate;

(c) hydrolyzing the product of Step (b) to obtain 11-(1,3-dioxalane-2-yl)-10-undecenoic acid;

and

(d) hydrolyzing the product of Step (c) to obtain traumatin.

4,290,967

PROCESS FOR RECOVERY OF PALLADIUM FROM NUCLEAR FUEL REPROCESSING WASTES

David O. Campbell, Oak Ridge, and Samuel R. Buxton, Wartburg, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 159,892

Int. Cl.³ C01G *55/00*; G21F *9/04*

U.S. Cl. 260—429 R **8 Claims**

1. A method for selective removal of palladium from a nitric acid solution of nuclear fuel reprocessing wastes, from which fuel values have been removed, comprising the steps of:

(a) adjusting the concentration of nitric acid in the solution to 8–12 M,

(b) adding to the resulting 8–12 M nitric acid solution a mono- or disaccharide in an amount sufficient to react with palladium contained in the solution,

(c) heating the resulting mixture containing mono- or disaccharide under reflux until precipitation of a palladium-containing solid ceases, and

(d) separating the palladium-containing solid from a supernatant liquid.

4,290,968

PREPARATION OF POLYISOCYANATES FROM POLYCARBAMATES

John J. Leonard, Springfield, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 23, 1980, Ser. No. 171,522

Int. Cl.³ C07C *118/00*

U.S. Cl. 260—453 P **3 Claims**

1. In the process of producing polyisocyanates by

(a) condensing an alkyl-N-phenylcarbamate having 1 to 3 carbons in the alkyl moiety in the presence of an acid to produce condensate containing diphenylmethane dicarbamates and polymethylene polyphenyl carbamates with by-product N-benzyl compounds, rearranging said N-benzyl compounds in said condensate with acid catalyst to obtain a pyrolysis feed mixture containing diphenylmethane dicarbamates, polymethylene polyphenyl carbamates and 0.02 to 1.0 percent by weight of amine impurities as NH_2 groups, and

(b) thermally decomposing the carbamate moieties in the pyrolysis feed mixture to isocyanate moieties to produce polyisocyanates,

the improvement comprises increasing the percent isocyanate content of said polyisocyanates by prior to step (b) converting any amine salt by-products in said pyrolysis feed mixture to free amine by-products by contacting the mixture with a weakly basic tertiary amine anion exchange resin and removing any free amine by-products by contacting the feed mixture with a strongly acidic sulfonated polyaromatic ion exchange resin whereby the amine impurity in the pyrolysis feed mixture is reduced to less than 0.001 percent by weight as NH_2 groups.

4,290,969

PROCESS FOR THE CONTINUOUS PRODUCTION OF POLYISOCYANATE

Kazurou Komatsu; Sojiro Matsumoto; Takeshi Maniwa, and Nobuyuki Shinmura, all of Hyuga, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1980, Ser. No. 177,961

Int. Cl.³ C07C *119/042, 127/24*

U.S. Cl. 260—453 AB **13 Claims**

1. A process for the continuous production of a polyisocyanate by reacting an organic diisocyanate with an adduct-producing agent that reacts with an isocyanate group to form an intermediate product having a urea bond and a gas, the initial stage of the reaction being performed in one or two continuous complete mixing type reactors until the amount of gas generated is at least about 80% of the amount of gas to be generated during the entire reaction, and the subsequent stage of the reaction is performed in a plug-flow type reactor.

4,290,970

PROCESS FOR THE MANUFACTURE OF AROMATIC DI- AND/OR POLYISOCYANATES

Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,814

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942503

Int. Cl.³ C07C *118/00, 125/07*

U.S. Cl. 260—453 P **14 Claims**

1. A process for the preparation of an aromatic di- and/or polyisocyanate comprising the steps of

A. preparing an aromatic di- and/or polyurethane by

1. reacting a primary aromatic di- and/or polyamine with an O-alkyl carbamate at temperatures greater than 100° C.;

2. separating ammonia and other by-products from the aromatic di- and/or polyurethane;

B. cleaving the aromatic di- and/or polyurethanes at temperatures from 175° C. to 600° C.; and

C. isolating the di- and/or aromatic polyisocyanate resulting from step B.

4,290,971

METHOD OF PREPARING 2-(PHENYLAMINO)-IMIDAZOLINES-(2)

Atanas G. Georgiev; Kino D. Andreev, and Kina V. Konstantinova, all of Sofia, Bulgaria, assignors to DSO "Pharmachim", Sofia, Bulgaria

Continuation-in-part of Ser. No. 4,982, Jan. 19, 1979, abandoned, and a continuation-in-part of Ser. No. 4,984, Jan. 19, 1979, abandoned. This application Jan. 9, 1980, Ser. No. 110,608

Int. Cl.³ C07C *157/14*

U.S. Cl. 260—453.5 **2 Claims**

1. A compound selected from the group consisting of:

(a) N-(2,6-dichlorophenyl)-N′-acetyl-S-methyl-isothiourea;

(b) N-(2,6-dichlorophenyl)-N′-acetyl-S-ethylosothiourea;

(c) N-(2,6-dichlorophenyl)-N′-benzoyl-S-methylisothiourea;

(d) N-(2,6-dichlorophenyl)-N′-propionyl-S-methyl-isothiourea;

(e) N-(2,6-dichlorophenyl)-N′-acetyl-S-benzyl-isothiourea;

(f) N-(2,6-dichlorophenyl)-N′-acetyl-S-n-butylisothiourea;

(g) N-(2,5-dichlorophenyl)-N'-acetyl-S-methyl-isothiourea;
(h) N-(3-iodophenyl)-N'-acetyl-S-methyl-isothiourea;
(i) N-(o-fluorophenyl)-N'-benzoyl-S-ethylisothiourea;
(j) N-(o-nitrophenyl)-N'-acetyl-S-methyl-isothiourea; and
(k) N-(2,6-dichlorophenyl)-N'-acetyl-S-isobutylisothiourea.

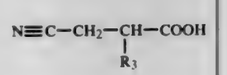
4,290,972

PROCESS FOR THE PRODUCTION OF 4-AMINOBUTYRIC ACID OR ITS DERIVATIVES

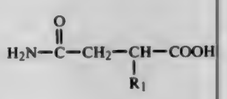
Toshio Yoneta, Yokohama; Seiji Shibahara, Tokyo; Shigeo Seki, Tokyo, and Shunzo Fukatsu, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 805, Jan. 4, 1979, abandoned. This application Nov. 9, 1979, Ser. No. 92,940
Claims priority, application Japan, Jan. 25, 1978, 53-6142
Int. Cl.³ C07C *99/10, 121/42, 121/453*
U.S. Cl. 260—465 B **10 Claims**

1. A process for preparing a nitrile compound of the formula



wherein R_3 is hydrogen, R_2COO— wherein R_2 is alkyl of 1-6 carbon atoms, or a protected amino group R_1, which comprises reacting a propionic acid compound of the formula



wherein R_1 is hydrogen, hydroxyl, or a protected amino group, with an alkanoic acid anhydride of the formula

$(R_2CO)_2O$

wherein R_2 has the above-indicated values in a liquid reaction medium consisting essentially of pyridine to form said nitrile compound.

4. A process according to claim 2, further comprising reducing the resultant nitrile product with hydrogen to form the corresponding 4-amino-2-hydroxybutyric acid derivative.

6. A process according to claim 5, further comprising reducing the resultant nitrile compound to form the corresponding 4-aminobutyric acid derivative.

10. A process according to claim 9, further comprising removing the amino-protecting groups to form the corresponding 2,4-diaminobutyric acid derivative.

4,290,973

PROCESS FOR MANUFACTURING PETROLEUM SULFONATES AND THE RESULTANT PRODUCTS

Robert Aude, Biviers; Pierre Baumgartner, Grenoble; Jean-Pierre Desmarquest, Mesnil Le Roi, and Jean-Pierre Franck, Bougival, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 17, 1980, Ser. No. 141,246
Claims priority, application France, Apr. 17, 1979, 79 09830
Int. Cl.³ C07C *143/24*
U.S. Cl. 260—505 R **27 Claims**

1. A process for manufacturing petroleum sulfonates, which comprises the steps of:

(a) treating a hydrocarbon charge, having an aromatic hydrocarbon content of at least 20% by weight and an average molecular weight of at least 250, by contacting said charge with hydrogen in the presence of a carrier-supported NiW or NiMo hydrogenation catalyst having a Ni/W or Ni/Mo ratio, expressed as gram-atoms of the metals, of from 0.1:1 to 1:1, at a temperature of from 200° to 450° C., a total pressure of from 10 to 200 bars and an amount of hydrogen of at least 20 Nm^3 per m^3 of said hydrocarbon charge, said treatment with hydrogen being so effected as to decrease the sulfur content by at least 50% without decreasing the aromatic hydrocarbons content by more than 35%, the latter remaining at least 20% by weight after said treatment;

(b) reacting the hydrotreated effluent from step (a) with a sulfonating agent comprising SO_3; and

(c) neutralizing the sulfonation product with a base and recovering the resultant neutralized sulfonated product.

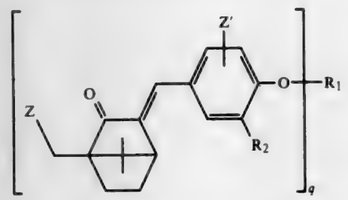
4,290,974

OXYBENZYLIDENE-BORNANONES, THEIR PREPARATION AND THEIR USE IN COSMETICS

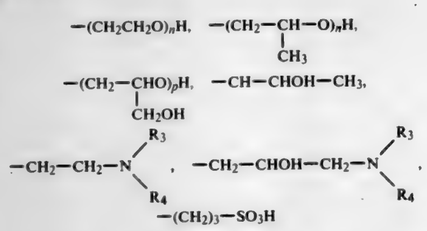
Claude Bouillon, Eaubonne, and Charles Vayssie, Villepinte, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 10, 1979, Ser. No. 56,262
Claims priority, application France, Jul. 11, 1978, 78 20701
Int. Cl.³ C07C *143/36, 49/573, 49/563*
U.S. Cl. 260—511 **10 Claims**

1. Compound having the general formula:



in which: Z and Z' independently denote a hydrogen atom or a SO_3H radical or a salt thereof with an inorganic or organic base, at least one of Z and Z' denoting a hydrogen atom; R_1 denotes a hydrogen atom, an alkyl radical containing 2 to 18 carbon atoms when R_2 is other than an alkoxy radical, an alkyl radical containing 1 to 18 carbon atoms when R_2 is an alkoxy radical, an alkenyl radical containing 3 to 18 carbon atoms, a radical of formula



or a salt thereof with an organic or inorganic base, or $—(CH_2)_mCO_2R$, in which R denotes H or an alkyl radical containing 1 to 8 carbon atoms, or a divalent radical of formula $—(CH_2)_m—$ or $—CH_2—CHOH—CH_2$, m having a value from 1 to 10, n having a value from 1 to 20 and p having a value from 1 to 6, and R_3 and R_4 each independently denote a hydrogen atom or an optionally branched or hydroxy alkyl radical, or R_3 and R_4 together form a morpholino or a piperidino ring with the nitrogen atom to which they are attached; R_2 denotes a hydrogen atom, an alkoxy radical containing 1 to 4 carbon atoms or a divalent radical —O— bonded to the radical R_1 if the latter is also divalent; q denotes 1 or 2, such that if q is 2, R_1 is a said divalent radical, with the proviso that if R_1 denotes hydrogen R_2 also denotes hydrogen; when q is 1, at least one of Z, Z', R_1 and R_2 is not hydrogen and when Z and Z' are both hydrogen, R_1 is not $—CH_2—$ when R_2 is —O—.

4,290,975

N-SULFONYL AMINE-MEDIATED SULFAMATION OF AMINES

Grant E. DuBois, 4256 Ruthelma Ave., Palo Alto, Calif. 94306

Filed Apr. 14, 1980, Ser. No. 140,063
Int. Cl.³ C07C *143/86*
U.S. Cl. 260—513.6 **10 Claims**

1. The process for sulfamation of primary organic amine which comprises the steps of:

(a) contacting said primary organic amine in liquid phase with catechol sulfate at a low to moderate temperature for a period of from about 1 hour to about 72 hours, thereby forming an O-2-hydroxyphenyl sulfamic acid ester, and

(b) hydrolyzing the O-2-hydroxyphenyl sulfamic acid ester by contacting it with a strong base at a temperature of from 50° C. to 200° C. for from 1 minute to 12 hours, thereby forming the sulfamic acid salt corresponding to said strong base.

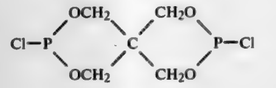
4,290,976

PROCESS FOR THE PREPARATION OF PHENOL-FREE PHOSPHITES

Ingenuin Hechenbleikner, West Cornwall, Conn.; James D. Klicker, Morgantown, W. Va., and William P. Enlow, Falls Village, Conn., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation-in-part of Ser. No. 561,129, Mar. 24, 1975, abandoned. This application Jul. 22, 1976, Ser. No. 707,576
Int. Cl.³ C07F *9/15*
U.S. Cl. 260—973 **4 Claims**

1. A process for preparing phenol-free dialkyl pentaerythritol diphosphite comprising reacting an alcohol having 10–20 carbon atoms with a pentaerythritol diphosphite having the structure



4,290,977

PROCESS FOR THE PRODUCTION OF NEUTRAL PHOSPHORIC ACID ESTERS

Uwe Hucks, Alpen; Claus Wulff, Krefeld; Erhard Tresper, Krefeld; Hugo Vernaleken, Krefeld, and Harald Selbeck, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,736
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833342
Int. Cl.³ C07F *9/09*
U.S. Cl. 260—973 **9 Claims**

1. In the process for the production of neutral phosphoric acid esters comprising reacting a phosphorus halide selected from the group consisting of phosphorus oxyhalides, phosphorus pentahalides, phosphoric acid monoester dihalides and phosphoric acid diester halides with at least one phenolic compound in a two phase mixture of an organic solvent and an aqueous solution of a hydroxide of an alkali metal, alkaline earth metal or mixtures thereof, the improvement comprises using 1.01 to 4 moles of said phenolic compound and 1.01 to 2 moles of said hydroxide for each mole equivalent of phosphorus halide, the organic solvent being present in sufficient amount to form a 10 to 50% by weight solution of the product neutral phosphoric acid ester and upon completion of the reaction separating the organic solvent phase from the aqueous phase and isolating the neutral phosphoric ester by removing the organic solvent.

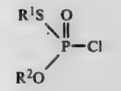
4,290,978

PRODUCTION OF PHOSPHORO CHLORIDE THIOLATES

Shigeo Kishino; Junichi Saito; Toyohiko Kume, and Kunihiro Isono, all of Tokyo, Japan, assignors to Nihon Tokushu Noyasu Seizo K.K., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,714
Claims priority, application Japan, Apr. 19, 1979, 54-47192
Int. Cl.³ C07F *9/20*
U.S. Cl. 260—973 **7 Claims**

1. A process for the production of a phosphoro chloride thiolate of the formula



wherein

R^1 is alkyl, alkoxyalkyl, aryl, or aryl substituted by alkyl, alkoxy or halogen, and

R^2 is alkyl,

comprising reacting a mixture of a dialkyl chlorophosphite of the formula

$(R^2O)_2PCl$

and an alkyl dichloro phosphite of the formula

$(R^2O)PCl_2$

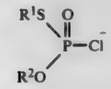
substantially free of trialkyl phosphite of the formula

$(R^2O)_3P$

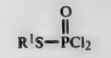
with a substantially quantitative amount of a sulphenyl chloride of the formula

R^1SCl

to produce a mixture of a phosphorochloridothiolate of the formula



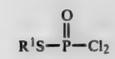
and a phosphoro dichloride thiolate of the formula



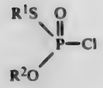
and reacting the mixture without isolation with an alcohol of the formula

R^2OH

in the presence of a dehydrochlorinating agent thereby to convert the phosphoro dichloride thiolate of the formula



to additional phosphorochloridothiolate

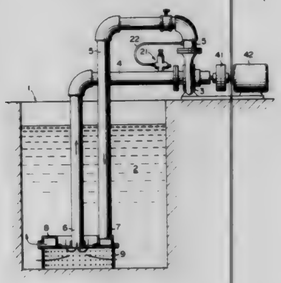


4,290,979

AERATION APPARATUS

Eiichi Sugiura, 149, Matsumotocho, Hekinan-shi, Aichi-ken, Japan

Filed Feb. 22, 1980, Ser. No. 123,761
Claims priority, application Japan, Feb. 24, 1979, 54-21054
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—4 5 Claims



1. An apparatus for supplying air to a liquid within a tank, comprising:
a pump connected to a drive source;
a suction pipe for feeding a liquid from the tank to the pump;
a discharge pipe for returning the liquid from the pump to the tank;
an air intake device disposed in the suction pipe and including a body having an air passage which provides a communication between the interior of the suction pipe and the atmosphere, a valve disposed in the air passage, and means including a conduit connecting the valve with the discharge pipe intermediate its ends for controlling the size of the air passage in accordance with the discharge pressure of the pump; and
an injector disposed within the tank and connected to the outlet end of the discharge pipe and including a housing which defines an annular passage, means for connecting the outlet end of the discharge pipe to the annular passage, and a plurality of injection ports spaced apart around the housing and communicating with the annular passage.

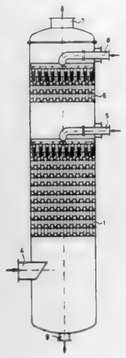
4,290,980

MASS EXCHANGER WITH PACKAGING

Jerzy Pikon, Gliwice, and Jan Hehlmann, Kodzierzyn-Kozle, both of Poland, assignors to Politechnika Slaska im. Wincentego Pstrowdkiego, Gliwice, Poland

Continuation of Ser. No. 954,213, Oct. 24, 1978, abandoned, which is a continuation of Ser. No. 797,863, May 17, 1977, abandoned. This application Apr. 8, 1980, Ser. No. 138,525
Claims priority, application Poland, Jun. 12, 1976, 190405
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—94 1 Claim

1. A mass exchanger apparatus with a packing, said apparatus being defined by a chamber, inlet means connected to said chamber for directing fluid into said chamber interior; packing disposed in said chamber for contacting said fluid to act thereon; means for further treating said fluid; outlet means to direct said finally treated fluid outside of said chamber; and including a cellular packing the form of a checkerwork matrix defining perpendicular cells open at a top part thereof and having a bottom part provided with skew bends, said cells having gaps so formed at the bottom part by the skew bends permitting accumulation of liquid in said cells, said gaps are



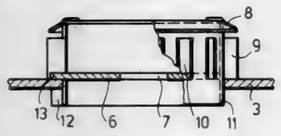
disposed to permit gas flow therethrough causing liquid in said cells to be foamed and excess liquid to be deflected by said bends and travel from said upper part to said bottom part.

4,290,981

EXCHANGER ELEMENT FOR BOTTOMS IN MATERIAL EXCHANGER COLUMNS

Arno Schramm, Moselstrasse 23, 6800 Mannheim, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,371
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848386
Int. Cl.[3] B01D *3/20*
U.S. Cl. 261—114 VT 1 Claim



1. An exchanger element for bottoms in material exchanger columns, comprising a cylinder fixed vertically in a bottoms opening, said cylinder having a vertical side wall provided with grid openings (**10**) for the passage of gas, said cylinder supporting a stationary cover plate (**8**) having a closed top for the deflection of the gas out through the grid openings and including an inner mobile valve plate (**6**) beneath the cover plate, said valve plate being equipped with one or more apertures allowing flow of gas therethrough, said grid openings being wholly above the bottoms to cooperate with the valve plate in regulating the volume of gas flow, said valve plate having guide straps (**13**) guidably mounted in selected of the grid openings, and said grid openings being defined by radially directed guide vanes (**9**).

4,290,982

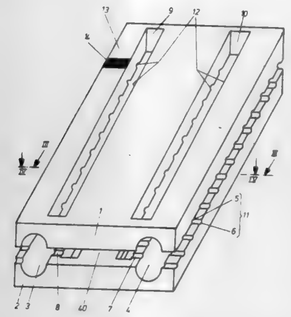
BUBBLER MAT WITH SEPARATE BOX TYPE MAT ELEMENTS

Ludwig Bauman, CH-9527, Niederhelfenschwil SG, Switzerland

Filed Jul. 9, 1979, Ser. No. 55,899
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829835
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—124 26 Claims

1. A bubbler mat having at least one box-like element connectable to an air supply, said mat element being formed of a pair of opposing part shells (**1, 2, 21, 22, 31, 32**) having surfaces

abuttable along a connection plane (**40**), said part shells having complementary grooves for forming at least one air-supply canal (**3, 4**) connectable to the air supply and lying along said connection plane when said shells are brought into abutment,



said abutting surfaces of said mat elements being so formed as to provide a plurality of air discharge openings (**11, 12**) lying along said connection plane, said air discharge openings being connected to said air supply canal and opening on the exterior of said part shells for producing streams of air on said exterior.

4,290,983

PIEZOELECTRIC AND PYROELECTRIC FILM AND METHOD FOR PREPARING THE FILM

Tohru Sasaki; Syuuzi Terasaki, and Tomoo Susa, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,379
Claims priority, application Japan, Nov. 21, 1978, 53-143735
Int. Cl.[3] B29C *17/02*
U.S. Cl. 264—22 8 Claims

1. A method for preparing a piezoelectric and pyroelectric film comprising the steps of,
biaxially stretching a film made from a resin composition of a polymer of vinylidene fluoride;
additionally stretching the thus obtained biaxially stretched film at a temperature of lower than the crystallizing temperature of said resin composition, which additional stretching temperature is lower than the temperature at the biaxially stretching by more than 20° C. and is higher than the secondary transition temperature of said resin composition; and
at the same time or after the additional stretching polarizing the thus additionally stretched film

4,290,984

METHOD FOR TREATING REFRACTORY BLOCK

LeRoy J. Gaffney, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Oct. 9, 1979, Ser. No. 82,918
Int. Cl.[3] C04B *41/24*
U.S. Cl. 264—30 25 Claims

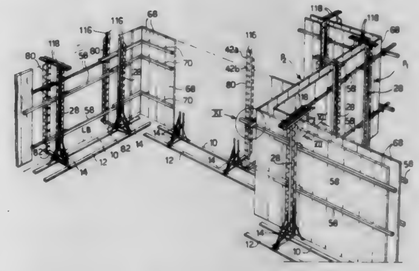
1. A method for improving the resistance to slag penetration of a refractory lining block for a furnace in which is conducted a process which produces slag, said method comprising the steps of:
forming a porous block of uncured refractory material consisting essentially of relatively coarse grains of a first refractory material in a matrix of relatively fine grains of a refractory material which is compatible with the refractory material in said coarse grains;
sintering said block to form a fully cured block, less porous than the unsintered block, but having some pores extending from the surface of said block inwardly along the matrix between coarse grains, said pores having cross-sectional spaces which are sufficiently large to permit penetration by said slag;
soaking said block in a first liquid which penetrates said pores and impregnates said block, said first liquid having a composition which reacts with refractory material in said block to form, in said matrix, a reaction product which is compatible with all the refractory material in said block and which, upon formation, reduces the size of the cross-sectional spaces in said pores to decrease the penetrability of said pores by said slag;
removing said block from said liquid and heating the block, while still impregnated with said first liquid, to promote said reaction to fuse together, by the heat of the reaction, discrete portions of said reaction product;
soaking said block, after said heating step, in a second liquid differing in composition from said first liquid and containing very fine particles of a refractory material which is compatible with the refractory material of which said block is composed and with said reaction product, to impregnate said block with said second liquid and deposit said very fine particles in said pores, to further decrease the penetrability of said pores by said slag;
said very fine particles penetrating said pores during said last recited soaking step; and
assembling said block into a refractory lining in said furnace.

4,290,985

SHUTTERING SYSTEM FOR CASTING CONCRETE WALLS OR PARTITIONS, AND A METHOD FOR ITS ASSEMBLY

Giuseppe Barale, Via Provinciale 3, Roccaforte Mondovi (Cuneo), Italy

Filed Jun. 10, 1980, Ser. No. 158,081
Claims priority, application Italy, Mar. 28, 1979, 67643 A79
Int. Cl.[3] E04G *11/08*
U.S. Cl. 264—31 10 Claims



1. In a shuttering system for casting a concrete wall or partition comprising:
metal uprights arranged to face each other in two spaced-apart rows;
respective panels fastened to said uprights of each said row to form a pair of flat opposing surfaces which define a casting cavity for said concrete;
respective adjustable support means associated with each said upright in one row to maintain said uprights in their vertical positions of use and enable adjustment of the transverse perpendicularity of said uprights and the respective said surface supported thereby, and
respective upper and lower transverse connecting members which interconnect the upper and lower parts of respective said uprights facing each other across said cavity, said transverse connecting members enabling adjustment of the spacing between said upper and lower parts of said uprights, whereby the perpendicularity of said surface supported by said uprights in the other said row is adjustable to ensure said surfaces are parallel,
the improvements wherein:

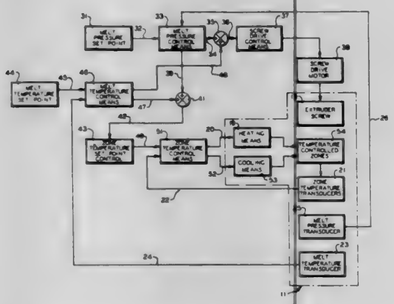
a plurality of fixing means are spaced along each upright on it side which, in use, faces said casting cavity;
coupling elements are provided for fastening to said fixing means;
stringers are engageable with at least two said coupling elements fixed at substantially the same level in respective said fixing means on adjacent said uprights, in such a way that a flat side of said stringer faces said casting cavity and defines a vertical plane with said flat sides of neighbouring stringers, each said stringer at least partially comprising a soft material which forms an exposed face of said stringer;
fastening means are driven into and retained by said soft material of said stringers to fasten said panels to said flat side of said stringers, and
said panels are elongate with arbitrary widths, and are fastened to said stringers side-by-side.

4,290,986

METHOD FOR CONTROLLING A PLASTIC EXTRUDER

John E. Koschmann, Northwood, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 930,625, Aug. 3, 1978, Pat. No. 4,197,070. This application Jun. 14, 1979, Ser. No. 48,576
Int. Cl.³ B29C *3/02*
U.S. Cl. 264—40.3 **7 Claims**



1. A method for controlling the temperature at a predetermined point in an extruder apparatus having a barrel including a rotatable screw for moving extrusion material from an inlet to an outlet of the barrel and through a die attached to the barrel at the outlet comprising the steps of
a. generating a temperature set point signal representing the desired temperature at said predetermined point;
b. generating a signal representing the actual temperature at said predetermined point in the extruder apparatus;
c. generating a first temperature control signal in response to said temperature set point signal;
d. generating an error signal representing the difference between said temperature set point signal and said actual temperature signal;
e. generating a second temperature control signal in response to said error signal and said first temperature control signal; and
f. controlling the temperature at said predetermined point in the extruder apparatus in response to said second temperature control signal.

4,290,987

PROCESS FOR PREPARING MICROPOROUS HOLLOW FIBERS

John W. Soehngen, Berkeley Heights, and John C. Chen, Westfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,050
Int. Cl.³ B29D *27/00*; D01D *5/24*
U.S. Cl. 264—41 **5 Claims**

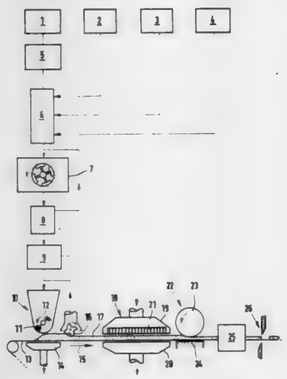
1. A process for preparing hollow open-celled microporous fibers which comprises:
(a) providing from at least one polyolefin having both an amorphous component and a crystalline component, solidified polymeric non-porous hollow precursor fibers with a degree of molecular orientation characterized by a birefringence of from about 0.0008 to about 0.005;
(b) contacting said hollow precursor fibers with a swelling agent, said swelling agent comprising a non-aqueous solvent having a Hildebrand solubility parameter at or near that of the polymeric hollow precursor fibers, for a time sufficient to permit absorption of the swelling agent into the hollow fibers;
(c) stretching said hollow precursor fibers while in contact with the swelling agent, which is maintained at a temperature greater than the glass transition temperature of the precursor fibers and the freezing point of the swelling agent and less than the temperature at which the precursor fibers dissolve, at a degree of stretch of from about 150 to about 400% based on the initial precursor fiber length and a strain rate of from about 5 to about 150%/min.; and
(d) removing the swelling agent from said hollow fibers while maintaining said hollow fibers in the stretched state.

4,290,988

METHOD FOR THE MANUFACTURE OF CELLULOSIC FIBROUS MATERIAL WHICH CAN BE PRESSED INTO MOULDED PARTS

Herbert Nopper, Kuppenheim, and Wolfgang Knoch, Gernsbach, both of Fed. Rep. of Germany, assignors to Casimir Kast GmbH & Co. KG, Gernsbach, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,763
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845112
Int. Cl.³ D04H *1/20*
U.S. Cl. 264—112 **22 Claims**



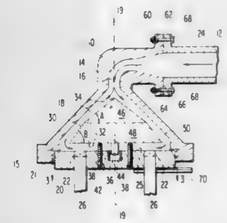
1. A method of manufacturing a dry shaped cellulosic fibrous transportable mat suitable for future compressing into a molded article, comprising:
(a) passing a dry celulosic fibrous waste material composed predominantly of paper, cardboard and/or textiles through a mill to pre-pulverize said material,
(b) mixing said pre-pulverized material with a dry thermoplastic bonding agent and a dry thermosetting bonding agent,
(c) grinding, and blending said mixture,
(d) feeding said mixture to a forming head, and depositing said mixture therefrom as a layer upon a moving endless conveyor having a suction chamber therebeneath,
(e) setting the thickness of said layer on the upper surface of said moving layer,
(f) passing said layer on said moving conveyor through a heater to plasticize the thermoplastic bonding agent while avoiding setting of the thermosetting bonding agent,
(g) passing said heated layer beneath a pressing roll to compact said layer to a transportable mat,
(h) cooling said compacted mat, and
(i) cutting said mat to desired lengths.

4,290,989

METHOD AND APPARATUS FOR EXTRUDING A PLURALITY OF RIBBONS

Michael G. Topor, Farmer's Branch; Peter A. Wicklund, and John T. Ivers, both of Lewisville, all of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Dec. 10, 1979, Ser. No. 101,701
Int. Cl.³ B29F *3/06*; A21C *11/16*
U.S. Cl. 264—142 **17 Claims**



10. An extruder head for substantially simultaneously forming extruded material into a plurality of ribbons comprising:
a housing having:
an inlet passage for directing the extrudant flow along an axis in a downward direction; and,
a flared extrudant flow section flared outwardly in the direction of extrudant flow and in fluid communication with and downstream of said inlet passage;
a plurality of constricted orifices positioned in a plane aligned generally perpendicular to said axis and in fluid communication with and downstream of said flared section for shaping said extrudant flow into a plurality of ribbons;
generally cone-shaped mandrel supported in said flow in said flared section of said housing having an upper portion directed into said extrudant flow and having a base of a sufficient diameter to overlie essentially all of said orifices thereby shaping the extrudant flow into a generally cone shaped shell configuration from the base of which said ribbons emanate through said orifices.

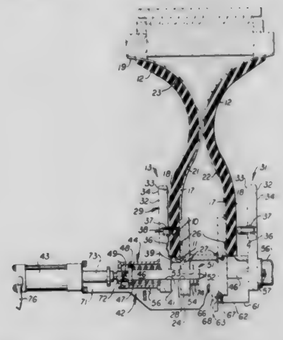
12. A method of substantially simultaneously forming a flow of dough extrudant into a plurality of vertically-extending extrudant ribbons having a substantially uniform flow rate of extrudant for each ribbon comprising the steps of:
directing a flow of extrudant under pressure in a downward direction along an axis;
forming said extrudant flow into an annular shell flaring outwardly from said axis in the direction of said flow;
turning said flow radially inward toward said axis thereby forming a generally cone-shaped extrudant flow envelope; and,
discharging said flow to a reduced pressure area essentially only through a plurality of orifices within the vertical projection of the base of said cone-shaped flow envelope.

4,290,990

METHOD OF FORMING THE MOUNTING PORTION OF A SIDEWALL PROTECTOR

Richard W. Kizer, Morton; Arlynn W. Anderson, Peoria, and Robert W. Untz, Hanna City, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 131,729, Dec. 17, 1979, Pat. No. 4,247,275. This application Sep. 16, 1980, Ser. No. 187,693
Int. Cl.³ B29C *11/00, 23/00*
U.S. Cl. 264—156 **3 Claims**



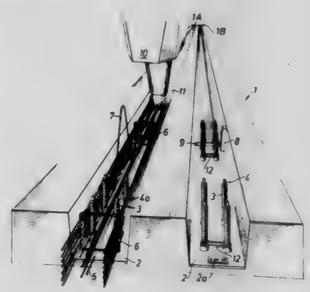
1. A method of forming a mounting portion of an annular article (12) made from uncured elastomer on a rigid mold (19) comprising the steps of:
moving a plate (32) having a plurality of punches (37) extending from one side (33) thereof toward the rigid mold;
piercing the annular article with the punches and forming a plurality of holes (10) in the annular article;
connecting the plate to the rigid mold with at least a portion of the annular article sandwiched therebetween;
placing the rigid mold, annular article and plate in a vulcanizing apparatus; and
curing the elastomer annular article.

4,290,991

METHOD OF MANUFACTURING CONCRETE SLEEPER BLOCKS AND A MATRIX ARRAY FOR CARRYING OUT THE METHOD

Stig Thim, Växjö, Sweden, assignor to A-Betong AB, Växjö, Sweden

Filed Nov. 19, 1979, Ser. No. 95,718
Claims priority, application Sweden, Dec. 5, 1978, 7812505
Int. Cl.³ B28B *23/06*
U.S. Cl. 264—157 **5 Claims**



1. A method of manufacturing concrete sleeper blocks for the construction of a railway switching point, comprising:
(a) providing a plurality of thin matrices having differing lengths corresponding to the desired lengths of differently

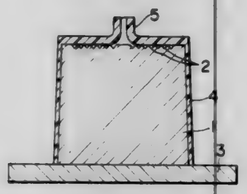
dimensioned sleeper blocks required for the construction of a given switching point,
(b) detachably mounting a variable plurality of upwardly extending attachment means to each matrix point at variable positions thereon as between different matrices in accordance with predetermined design specifications,
(c) placing the matrices in end to end abutment in an elongate mould bed,
(d) disposing and tensioning a plurality of reinforcing rods longitudinally within the mould bed,
(e) pouring concrete into the mould bed and allowing the concrete to cure,
(f) removing the hardened coherent concrete body from the mould,
(g) removing the matrices from said concrete body and the attachment means cast therein, and
(h) cutting the concrete body into finished sleeper blocks of different desired lengths at the transverse lines of abutment between adjacent matrices.

4,290,992

HEAT-SHRINKABLE FILM TUBE WITH AN INTERNALLY RIBBED CLOSED END, AND A METHOD OF MAKING IT

Masaaki Fujio, Suita, Japan, assignor to Fuji Seal Industry Co., Ltd., Osaka, Japan

Filed Sep. 6, 1979, Ser. No. 73,068
Claims priority, application Japan, Sep. 28, 1978, 53-118615
Int. Cl.³ B29C *27/00*
U.S. Cl. 264—163 **7 Claims**



1. In a method for closing the end of a tube of heat shrinkable film which is placeable over a cylindrical mold, the improvement comprising the steps:
a—forming grooves in the surface of a first end of said cylindrical mold,
b—positioning said mold within said tube so that a portion of the tube extends beyond said first end,
c—heating and thereby causing said tube to shrink until an end part of the tube covers substantially entirely the first end of said mold with a protruding part of the tube extending outward from said end part thereof,
d—pressing said shrunk end part and protruding part against said grooved first end of the mold with a heated smooth plate, thereby causing the film of said shrunk end part and protruding part to flow until the film adjacent said grooved surface conforms generally thereto, and the outer surface of said pressed film is generally smooth, and
e—cooling said tube and removing it from said mold.

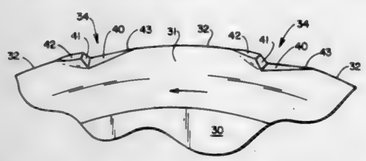
4,290,993

METHOD AND APPARATUS FOR MAKING NODULE FILAMENT FIBERS

Robert E. Maringer, Worthington, Ohio, assignor to Battelle Development Corp., Columbus, Ohio

Filed Jan. 10, 1980, Ser. No. 110,891
Int. Cl.³ B29C *5/04*
U.S. Cl. 264—164 **12 Claims**

1. In the method of producing filament fibers by rotating a heat extracting disk having an edge tapering to a narrow peripheral surface and having the peripheral surface indented at intervals, followed by introducing the rotating disk into the surface of a pool of molten material to form a film on the edge segments between indentations, and removing heat from the film while at least partially solidifying the film on the edge segments, the improvement comprising introducing a widened portion of the tapered edge segment at the leading surface of



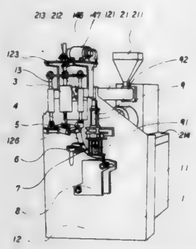
the indentations into the surface of the molten material followed by introducing a narrowed portion of the edge segment into the surface of the molten material, and then introducing a second widened portion of the tapered edge segment into the molten material as the edge is withdrawn from the molten material.

4,290,994

METHOD OF MOLDING HOLLOW BODIES

Kenkichi Murakami, Osaka, and Yoshiharu Kikuzawa, Takarazuka, both of Japan, assignors to Kabushiki Kaisha Plastic Kogaku Kenkyusho, Osaka, Japan

Continuation of Ser. No. 932,659, Aug. 10, 1978, abandoned.
This application May 6, 1980, Ser. No. 147,284
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—515 **8 Claims**



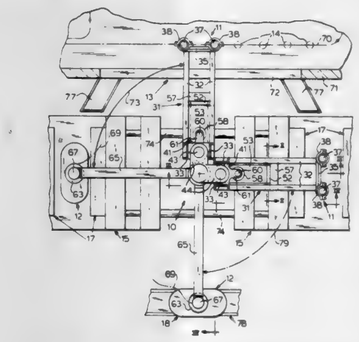
1. In a method of molding a hollow body by:
(a) continuously extruding downwardly into free space a melt of synthetic resin from a die thereby forming a moving tubular parison having a free end;
(b) closing and sealing the free end with a means for forming a bottom thereby forming a closed end on the parison;
(c) holding the parison with a means for holding;
(d) cutting the parison with a means for cutting thereby forming a cut-off tube with the closed end; and
(e) blowing a fluid into the cut-off tube retained in a mold thereby forming said hollow body;
the improvement wherein:
(1) steps b-d are performed in a successive order of (c) holding, (d) cutting, and (b) sealing;
(2) the die accommodates a mandrel extendable in the direction of extrusion to provide a mandrel extension having an end;
(3) the means for forming a bottom comprises a frame surrounding the path of movement of the parison, sealing members circumferentially spaced about the frame and radially movable, and means for moving said sealing members, and the step of closing and sealing comprises moving said sealing members from outside the parison toward its center, bringing said sealing members into contact with each other while filling the resin of the free end into a space provided between said end of said mandrel extension and said sealing members to form the closed end which is a bottom;
(4) the means for holding holds the portion of the moving parison which becomes the cut-off tube by its outside surface and is positioned at a distance away from the die in the direction of extrusion, the means for cutting is positioned between the die and the means for holding, and the means for forming a bottom is positioned between the means for cutting and the die; and
(5) the method further comprises during the steps of cutting and sealing, moving the means for forming a bottom, the means for cutting, the means for holding, and said mandrel extension at substantially the same speed and in substantially the same direction as the movement of the parison extruded from the die.

4,290,995

METHOD OF PRODUCING ARTICLES FROM THERMOPLASTIC PARISONS

David C. Oas, Lenox, Mass., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 38,893, May 14, 1979, Pat. No. 4,251,203.
This application Jul. 25, 1980, Ser. No. 172,187
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—532 **11 Claims**



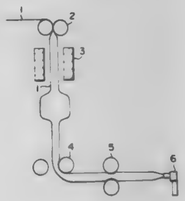
1. A method of producing articles from thermoplastic parisons, comprising:
cyclically oscillating about a vertical axis a mechanism having at least two adjacent but angularly spaced vertically reciprocable combination parison pickup and mold loading devices, and at least two vertically reciprocable molded article transfer devices angularly spaced from each other and from said loading devices;
presenting successive parisons at a pickup station located within reach of said pickup and loading devices;
providing a plurality of molding stations spaced from said pickup station and located within reach of said pickup and loading devices, and each of said molding stations having mold means adapted for receiving and molding the parisons into articles;
providing an article discharge station spaced from said molding stations and from said pickup station and located within reach of said transfer devices;
and operating said mechanism and said devices in a step-by-step cycle comprising, in the following order:
(1) orienting one of said loading devices in a parison pickup position above said pickup station and orienting a second of said loading devices above one of said molding stations, and in coordination therewith orienting one of said transfer devices above a second of said molding stations and orienting a second of said transfer devices above said discharge station;
(2) lowering said loading devices and transfer devices and thereby picking up a parison at said pickup station by means of said one loading device and loading a parison into said one molding station by means of said second loading device, and in coordination therewith entering said one transfer device into molded article stripping relation to said second molding station and discharging a molded article to said discharge station from said second transfer device;
(3) raising said loading and transfer devices above said stations;
(4) turning said mechanism in one direction of oscillation and orienting said one loading device over said second molding station, orienting said second loading device over said pickup station, orienting said one transfer device over said discharge station and orienting said second transfer device over said one molding station;
(5) lowering said loading devices and said transfer devices downwardly and loading a parison into said second molding station from said one loading device, picking up a parison at said pickup station with said second loading device, and in coordinated relation therewith discharging a molded article to said discharge station from said one transfer device and entering said second transfer device into article stripping relation to said one molding station;
(6) raising said loading devices and said transfer devices above said stations; and
(7) turning said mechanism in the opposite direction of oscillation and thereby returning said one loading device to said pickup station, returning said second loading device to said one molding station, returning said one transfer device to said second molding station and returning said second transfer device to said discharge station, for repeating the operating cycle.

4,290,996

METHOD FOR INITIATING BIAXIAL STRETCHING OF PLASTIC TUBES AND APPARATUS THEREFOR

Kohtaro Hayashi, Chibaken; Ko Morihara, Chibashi, and Kohji Nakamura, Chibaken, all of Japan, assignors to Chisso Engineering Co.Ltd., Tokyo, Japan

Filed Jan. 24, 1980, Ser. No. 115,018
Claims priority, application Japan, Jan. 27, 1979, 54-8368
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—564 **7 Claims**



1. In the method of simultaneously stretching a plastic tube in the longitudinal and transverse directions by passing said plastic tube between at least one pair of delivery nip rolls and at least one pair of take-up nip rolls and making use of the pressure of a gas enclosed in said tube and the difference between the velocities of both the delivery and take-up nip rolls, the improvement in the step of enclosing a pressurized gas in said plastic tube between said delivery and take-up nip rolls, by extending the clearance of said at least one pair of take-up nip rolls and connecting an inlet for introducing a pressurized gas with said tube, on the downstream side of said take-up nip rolls which includes
passing said tube through between at least one pair of nipping means for enclosing a pressurized gas, which are provided on the upstream side and/or the downstream side of said take-up nip rolls in relation to film movement and driven at the same peripheral speed as that of said take-up nip rolls;

adjusting the clearance of said nipping means for enclosing a pressurized gas to from 1 mm to 10 mm when said pressurized gas is to be enclosed; and

taking up said tube while transmitting to said tube, a revolving power of said nipping means for enclosing a pressurized gas, by way of a frictional force between said tube and said nipping means created by the inside pressure of said tube.

4. In an apparatus for simultaneously stretching a plastic tube in the longitudinal and transverse directions by passing said plastic tube between at least one pair of delivery nip rolls and at least one pair of take-up nip rolls and making use of the pressure of a gas enclosed in said tube and the difference between the velocities of both said delivery and take-up nip rolls, the improvement which comprises at least one pair of nipping means, which are provided on the upstream side and/or the downstream side of said take-up nip rolls in relation to film movement and driven at the same peripheral speed as that of said take-up rolls; the clearance between said at least one pair of nipping means being adjustable within the range of 1 mm or 10 mm; and which can cause a frictional force between these nipping means and said tube capable of taking up said tube through the inner pressure of said tube, when the clearance between said take-up nip rolls is extended and a pressurized gas is enclosed in said tube between said delivery nip rolls and said take-up nip rolls, to thereby initiate stretching of said tube.

4,290,997

APPARATUS FOR AUTOMATIC MEASUREMENT OF THE RESULTS OF AGGLUTINATION TESTS

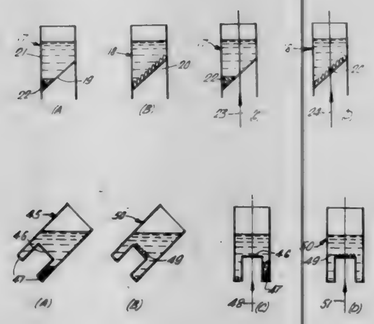
Osmo A. Suovaniemi, Helsinki, Finland, assignor to Kommanditti yhtio Finnpipette Osmo A. Suovaniemi, Finland

Filed Feb. 26, 1979, Ser. No. 15,316

Claims priority, application Finland, Feb. 28, 1978, 780670

Int. Cl.³ G01N *1/00, 33/54, 35/00*

U.S. Cl. 422—73 **2 Claims**



1. An apparatus useful for the automatic measurement of the results of agglutination tests, said apparatus comprising at least one reaction vessel for the incubation of a sample to be tested prior to said testing, said reaction vessel having (a) at least one vertical side wall portion and a bottom portion, (b) at least one recess for receiving the non-agglutinated particles, said recess comprising an angle formed between said vertical side wall portion and said bottom portion, (c) an area for receiving the agglutinated particles such that said recess is out of the position of passage of a measurement beam which is adapted to measure the amount of agglutination which takes place within said reaction vessel, and (d) a measurement window for passage of said measurement beam, said apparatus being adapted for use in a vertical position.

4,290,998

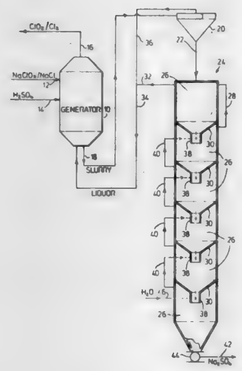
WASHING APPARATUS IN CHLORINE DIOXIDE PRODUCTION

Peter D. Dick, Brampton, and Gerald Cowley, Mississauga, both of Canada, assignors to Erco Industries Limited, Islington, Canada

Division of Ser. No. 971,790, Dec. 21, 1978. This application Dec. 17, 1979, Ser. No. 104,151

Int. Cl.³ B01J *8/12;* B01D *12/00, 43/00*

U.S. Cl. 422—193 **3 Claims**



1. An apparatus consisting of:

an elongate generally cylindrical upright tower having a cross-sectional dimension corresponding to a unit area value of about 0.07 to about 0.11 ft.²/ton solids/day,

a plurality of superimposed compartments within said tower extending from an upper-most compartment to a lower-most compartment, each separated from the next-lower compartment by a downwardly-sloping frusto-conical bottom wall,

each said bottom wall having a central opening and being joined to a short axially downwardly-directed unobstructed pipe having an inlet coinciding with the central opening in said bottom wall, said short pipe establishing a fluid relationship between adjacent superimposed compartments and having a cross-sectional dimension corresponding to a unit area value of about 0.005 to about 0.015 ft.²/ton solids/day,

slurry inlet means communicating with an upper region of the upper-most of said superimposed compartments for feeding thereto a slurry of solid materials to be treated in the apparatus,

slurry outlet means communicating with a lower region of the lower-most compartment for removing therefrom a slurry of solid materials treated in the apparatus,

treatment liquid inlet means communicating directly with the short pipe extending between the lower-most compartment and the next-higher compartment for feeding treatment liquid to said apparatus,

spent treatment liquid outlet means communicating directly with an upper region of the upper-most compartment for removing spent treatment liquid for said apparatus,

first liquid transfer means extending directly between an upper region of each said compartment in said column, with the exception of the two upper-most compartments, and said short pipe entering the next-higher compartment for transfer of liquid therethrough from one compartment to the next-higher compartment, and

second liquid transfer means extending directly between an upper region of the next-lower than said upper-most compartment and an upper region of said upper-most compartment for transfer of liquid therethrough to said upper-most compartment.

4,290,999

APPARATUS FOR DIRECT LIQUEFACTION

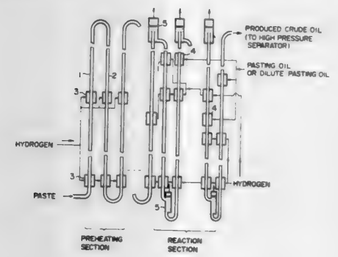
Minoru Morita; Shimio Sato; Takao Hashimoto, all of Yonezawa, and Yoji Kitaoka, Ichihara, all of Japan, assignors to The President of Yamagata University, Japan

Division of Ser. No. 9,828, Feb. 6, 1979. This application Nov. 1, 1979, Ser. No. 90,259

Claims priority, application Japan, Feb. 8, 1978, 53-12288

Int. Cl.³ B01J *8/20, 10/00;* G10G *1/08*

U.S. Cl. 422—194 **6 Claims**



1. An apparatus adapted for direct liquefaction of coal, comprising a preheating section including a plural number of first pipe units, each first pipe unit being formed with a pressure resistant vertical gas-liquid ascendant pipe and a pressure resistant vertical gas-liquid descendant pipe and said first pipe units forming through respective pipe walls at several locations in both ascendant and descendant pipes thereof apertures for a hydrogen injection; a reaction section including a plural number of second pipe units, each second pipe unit being formed with a pressure resistant vertical gas-liquid ascendant pipe, a pressure resistant vertical gas-liquid descendant pipe and a high pressure gas/liquid separator disposed between said ascendant and descendant pipes, and said second pipe units forming through respective pipe walls at several locations in both ascendant and descendant pipes thereof apertures for a hydrogen injection and apertures for a paste of a low concentration or heavy oil injection, a high pressure separator, a first condensor for crude oils of low boiling points and a second condensor for crude oils of high boiling points, each of said first and second pipe units being formed in such a manner that a Reynolds number of 3×10^3 or greater and an axial dispersion coefficient (D/uL) of 0.05 or smaller are achieved for the fluid flows therein; and the pipe diameter ratio of a descendant pipe to an ascendant pipe is from 0.5 to 0.85.

4,291,000

PROCESS FOR THE PRODUCTION OF CHROMIUM TRIOXIDE

Danvers A. Swales, and Michael A. Marshall, both of Darlington, England, assignors to British Chrome & Chemicals Limited, Cleveland, England

Filed Feb. 11, 1980, Ser. No. 120,432

Claims priority, application United Kingdom, Feb. 17, 1979, 05656/79

Int. Cl.³ C01G *37/033*

U.S. Cl. 423—53 **10 Claims**

1. A process in which a purified product containing more than 95% chromium trioxide and less than 3% total sulphate, expressed as sodium bisulphate, is obtained from a crude crystalline product made by reacting concentrated aqueous sodium dichromate with sulphuric acid and separating the resultant crystalline crude product from the reaction liquor, the process comprising washing the crude crystalline product with a purifying wash liquor selected from the group consisting of water and an aqueous solution of chromic acid and in which part at least of the washing is conducted by spraying the wash liquor onto the crude product while the product and the liquor are at a temperature above 50° C. and below the fusion temperature while centrifuging and wherein centrifuging is continued until the water content is less than 3%.

4,291,001

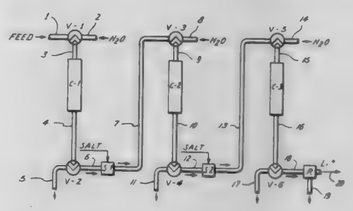
RECOVERY OF LITHIUM FROM BRINE

Wendy J. Repsher, Lake Jackson, and Kirby T. Rapstein, Brazoria, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1979, Ser. No. 106,961

Int. Cl.³ C01D *15/00*

U.S. Cl. 423—179.5 **10 Claims**



1. In a process for removing Li^+ values from a Li^+-containing aqueous solution by passing the solution through a resin-/aluminate composite,

wherein said Li^+-containing aqueous solution is one which is not substantially loaded with non-competing metal salt, and

which composite comprises an anion exchange resin having crystalline $LiX.2Al(OH)_3$ dispersed therein, where x is halide, thereby substantially loading the said composite with Li^+ values, the improvement which comprises

loading the Li^+-containing solution with at least one non-competing metal salt prior to passing it through the resin-/aluminate.

4,291,002

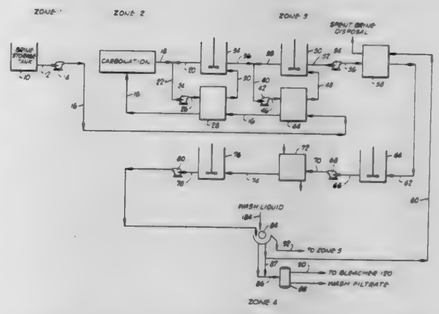
PROCESS FOR PRODUCING SODIUM CARBONATE FROM COMPLEX BRINES

Donald S. Arnold, Bethany, Okla.; James L. Fairchild; Donald A. Nichols, both of Trona, Calif., and Merlin D. Coe, Oklahoma City, OK, assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Oct. 25, 1977, Ser. No. 844,847

Int. Cl.³ C01D *7/00, 7/37*

U.S. Cl. 423—189 **12 Claims**



1. A process for producing sodium carbonate comprising:

providing a brine containing sodium carbonate;

subjecting said brine to carbonation in carbonators to produce a hot carbonated brine slurry containing crystallized sodium bicarbonate;

maintaining the temperature level of said carbonated brine

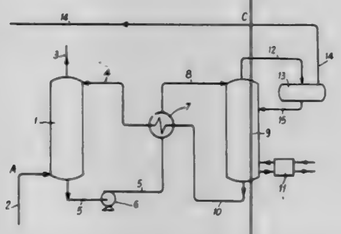
slurry in said carbonators within a range of from about 125 degrees F. to about 165 degrees F.;
passing said hot carbonated brine slurry to a multistage crystallizer to precipitate additional crystallized sodium bicarbonate in the slurry;
filtering said slurry to produce at least one stream comprising a sodium bicarbonate filter cake or wet cake;
withdrawing said filter cake or wet cake and subjecting said filter cake or wet cake to pre-drying by heating in a predryer to produce without substantial decomposition a predried wet cake possessing a free moisture content of from about 6 percent to about 12 percent by weight of solids;
withdrawing said predried wet cake;
passing said predried wet cake to a mixer wherein said predried wet cake is mixed with a portion of an unbleached light ash produced by drying said predried wet cake in a dryer to form a mixture;
maintaining the mixing ratio of said predried wet cake and said unbleached light ash such that an amount greater than 110 percent by weight of the quantity of unbleached light ash which is stoichiometrically required to chemically bind all of the free moisture in said predried wet cake is introduced into said mixture;
withdrawing the mixture from the mixer;
passing said mixture to said dryer wherein said mixture is dried without substantial sticking of the mixture to the heat transfer surfaces of the dryer to produce said unbleached light ash and a dryer off gas;
withdrawing a portion of said unbleached light ash from the dryer and mixing said portion of unbleached light ash with said predried wet cake in the mixer to form said mixture;
withdrawing another portion of said unbleached light ash from the dryer and subjecting said portion to bleaching in a bleacher to remove organic impurities to produce a bleached light ash;
subjecting said bleached light ash to recrystallization and drying to produce recrystallized sodium carbonate; and,
withdrawing and recovering said recrystallized sodium carbonate.

4,291,003

PROCESS FOR THE PURIFICATION OF RESIDUAL INDUSTRIAL GASES CONTAINING SMALL QUANTITIES OF SULFUR COMPOUNDS

Jacques Batteux, Serres Morlaas; Claude Blanc, and Pierre Grancher, both of Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed May 15, 1979, Ser. No. 39,384
Claims priority, application France, May 16, 1978, 78 14427
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **4 Claims**



1. A purification process for residual industrial gases having a water content of from about 24 to about 34% and containing small quantities of H_2S, SO_2, CS_2, COS or sulfur vapor, as well as large quantities of CO_2 and N_2, comprising subjecting the residual gases to a catalytic reduction to transform the sulfur containing compounds in said residual gases into H_2S, washing the residual gases with an aqueous amine solution to form a H_2S enriched aqueous amine solution and effluent gases and discharging the burnt effluent gases to the atmosphere, regenerating the H_2S enriched aqueous amine solution by heating to produce gases comprising H_2S and CO_2 and regenerated aqueous amine solution, and, returning said gases comprising H_2S and CO_2 to a sulfur manufacturing unit; characterized in that the temperature of the gases in the process are permanently maintained at a level higher than the dew point of the water contained in the gases at each point in the process such that the H_2O contained in the residual gases is discharged into the atmosphere with said burnt effluent gases.

4,291,004

PROCESS FOR REMOVING SULFUR DIOXIDE FROM FLUE GAS

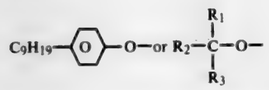
Craig R. McCaffrey, Woodbury, and Gary O. Barraclough, Vincentown, both of N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sep. 28, 1979, Ser. No. 79,672
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **21 Claims**

1. A flue gas desulfurization process comprising in sequence:
(1) contacting sulfur dioxide-containing flue gas with scrubbing liquor to remove sulfur dioxide therefrom and produce scrubber sludge,
(2) subjecting said scrubber sludge to primary dewatering,
(3) adding to said scrubber sludge an effective amount as a dewatering aid of polyethylene oxide compound having the formula

$$R—CH_2CH_2—O—xH,$$

where X is about 2-40 and R is OH, sorbitan monooleate—O—, soya amine,



where R_1, R_2 and R_3 are selected from the group consisting of hydrogen and alkyl such that the sum of the total number of carbon atoms in R_1, R_2 and R_3 is an average of from about 8 to 20, and
(4) subjecting said scrubber sludge to secondary dewatering.

4,291,005

SETTLING OUT SUSPENDED SOLIDS IN PHOSPHORIC ACID PRODUCT SOLUTIONS

Andrew C. Poulos, and Michael J. Thibodeau, both of Lakeland, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 23, 1979, Ser. No. 32,594
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 R **4 Claims**

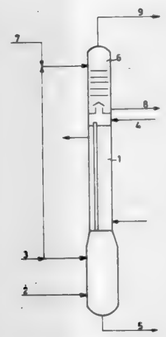
1. In the process for manufacture of phosphoric acid by dissolving phosphate rock in aqueous sulfuric acid solution and separating solids comprising insoluble sulfates from said solution by means comprising flocculation of suspended solids with an organic polymeric flocculating agent, the improvement wherein said flocculating agent is a copolymer consisting essentially of a predominant proportion of polymeric acrylic acid or acrylate units and a minor porportion of acrylamide units.

4,291,006

COMBINED PROCESS FOR THE PRODUCTION OF UREA AND AMMONIA

Giorgio Pagani; Vincenzo Lagana, both of Milan, and Francesco Saviano, Segrate, all of Italy, assignors to Snamprogetti S.p.A, Milan, Italy

Continuation of Ser. No. 880,139, Feb. 22, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,217
Int. Cl.³ C01C *1/04*
U.S. Cl. 423—359 **7 Claims**



1. In a method for the concurrent production of ammonia and urea comprising the steps of producing ammonia in an ammonia-synthesis apparatus, absorbing ammonia at the exit of the ammonia-synthesis reactor with water, thus obtaining a concentrated aqueous solution of ammonia, utilizing the concentrated solution of ammonia for the absorption of the CO_2 contained in the raw gases for the synthesis of ammonia, obtaining ammonium carbamate, converting the ammonium carbamate partially into urea in a urea-synthesis reactor, thermally decomposing the carbamate which has not been converted into urea and stripping the decomposition products with a gas selected from the group consisting of ammonia, CO_2 and inerts, discharging from the stripping zone a solution of urea which still contains carbamate, recycling the products of decomposition of the carbamate to the urea-synthesis reactor, distilling under a pressure of from 3 to 30 atm, in at least one stage, the solution of urea to obtain liquid ammonia and one or more ammoniacal solutions of ammonium carbonate, and an aqueous solution of urea deprived of ammonium carbamate the improvement which comprises introducing the CO_2-containing gas at the bottom, or near the bottom, of an absorber which is split into two sections, the lower section being a film-absorber and the upper section being a plate-absorber, the absorbing solution in the upper section being the concentrated aqueous solution of ammonia aforesaid, the absorbing solution in the lower section being one or more of the aqueous ammoniacal solutions of ammonium carbonate as obtained by distillation of the solution of urea under a pressure of from 3 to 30 atm. with addition of liquid ammonia.

4,291,007

PROCESS FOR THE SEPARATION OF A STRONG MINERAL ACID FROM AN AQUEOUS SOLUTION

Avraham M. Baniel, Jerusalem, Israel, assignor to Yissum Research & Development Co. of Hebrew Univ. of Jeru., Jerusalem, Israel

Filed Mar. 28, 1980, Ser. No. 134,918
Claims priority, application Israel, Apr. 9, 1979, 57024
Int. Cl.³ B01D *11/09*
U.S. Cl. 423—390 **17 Claims**

1. A process for the separation of a strong mineral acid from other species present in an aqueous solution and the recovery thereof under reversible conditions which obviate the consumption of chemicals for regeneration comprising the steps of:
(a) bringing an aqueous solution containing said mineral acid to be separated into contact with a substantially immiscible extractant phase, said extractant phase comprising:
(1) a strong organic acid which acid is oil soluble and substantially water immiscible both in free and in salt form;
(2) an oil soluble amine which amine is substantially water insoluble both in free and in salt form; and
(3) a carrier solvent for said organic acid and said amine, wherein the molar ratio of said organic acid to said amine is between about 0.5:2 and 2:0.5,
whereupon said predetermined mineral acid selectively and reversibly transfers to said extractant phase;
(b) separating said two phases; and
(c) backwashing said extractant phase with an aqueous system to recover substantially all the mineral acid contained in said extractant phase.

4,291,008

PROCESS FOR CALCINING AND DESULFURIZING PETROLEUM COKE

Harry L. Hsu, Johnson City; Edward E. Hardin, and Lloyd I. Grindstaff, both of Elizabethton, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,806
Int. Cl.³ C01B *31/02*
U.S. Cl. 423—461 **3 Claims**

1. A process for producing calcined petroleum coke having a sulfur content in the range of about 1.8 to about 2.5 wt. % and a vibrated bulk density of at least about 78 g/100 cc from raw petroleum coke having a sulfur content of at least about 3.5 wt. % an a volatile content of at least about 7 wt. % which comprises:
(a) heating the coke at a temperature in the range of about 600° C. to about 800° C. in the absence of added hydrogen for a time sufficient to reduce the volatile content of the coke to a value in a range of about 3 to about 6 wt. %;
(b) heating the partially devolatilized coke at a temperature in the range of about 600° C. to about 800° C. in an atmosphere containing added hydrogen for a period of time sufficient to reduce the sulfur content of said coke to a level in the range of about 2.8 to about 3.3 wt. %; and
(c) heating the partially desulfurized coke at a temperature in the range of about 1350° C. to about 1600° C. in the absence of added hydrogen for a period of time sufficient to reduce the sulfur content of the coke to within the range of about 1.8 to about 2.5. wt. %.

4,291,009

CATALYTIC PROCESS FOR THE PRODUCTION OF ALKALI METAL STANNATES

John A. Franks, Jr., Vermilion, Ohio, assignor to Vulcan Materials Company, Birmingham, Ala.

Continuation of Ser. No. 48,828, Jun. 15, 1979, abandoned. This application Jun. 19, 1980, Ser. No. 161,507
Int. Cl.³ C01G *19/00*
U.S. Cl. 423—593 **12 Claims**

1. A catalytic process for the production of alkali metal stannates, comprising the steps of:
(a) contacting at a temperature between about 150° and 235° F. an aqueous alkali metal hydroxide solution with an excess of metallic tin in the presence of activated carbon in an amount of from about 1 to 15 percent by weight of said metallic tin;
(b) passing a molecular oxygen supplying agent selected from the group consisting of oxygen and air through said solution in the presence of said metallic tin and said activated carbon at a rate sufficient to promote the conversion of said metallic tin to alkali metal stannate and to form an alkali metal stannate solution, said rate being sufficient to

provide from about 0.02 to 0.4 liters of oxygen per minute per liter of solution; and

(c) recovering the resulting alkali metal stannate solution.

4,291,010

HEAT STABLE YELLOW IRON OXIDES

Jihei Senda; Yoshihiro Inoue; Toshiaki Uenishi; Hidefumi Harada; Kouji Nakata, and Akio Akagi, all of Ube, Japan, assignors to Titan Kogyo Kabushiki Kaisha, Ube, Japan

Filed Sep. 5, 1979, Ser. No. 72,805

Int. Cl.³ C01F *7/30;* C01G *49/02*

U.S. Cl. 423—594 **7 Claims**



4. A method of preparing FeAl(OOH), comprising the steps of:

(a) forming an aqueous slurry of ferric sulfate and an alkali metal hydroxide,

(b) curing the slurry, until α-FeOOH seeds are formed,

(c) adding sodium aluminate to the cured slurry,

(d) subjecting the resultant slurry to hydrothermal treatment, and

(e) separating the treated slurry into a solid phase and a liquid phase, with the solid phase consisting essentially of solid solution (FeAl)OOH.

7. The solid solution of the compound (FeAl)OOH.

4,291,011

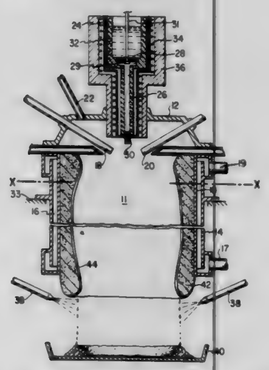
METHOD FOR PRODUCTION OF ALUMINUM OXIDE

Griffiths, Kenneth F., 31 London Ter., New Rochelle, N.Y. 10804

Continuation of Ser. No. 963,338, Nov. 24, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,435

Int. Cl.³ C01F *7/42*

U.S. Cl. 423—625 **27 Claims**



1. A method of producing aluminum oxide which comprises:

(a) introducing aluminum at a controlled rate into a reaction chamber at least partially bounded by a downwardly extending side wall of solid aluminum oxide,

(b) introducing oxygen into said chamber at a controlled rate sufficient to maintain in at least part of said chamber an atmosphere with a stoichiometric excess of oxygen with respect to oxidizable matter there,

(c) supplying heat to said chamber sufficient to initiate a flame-type reaction therein between said aluminum and oxygen wherein aluminum is converted to aluminum oxide,

(d) cooling at least a portion of the exterior surface of said wall to collect aluminum oxide formed in said flame-type reaction upon the inner surface of said wall as a downwardly flowing film of molten aluminum oxide, and

(e) recovering said downwardly flowing aluminum oxide.

4,291,012

TECHNETIUM-LABELLED DIAGNOSTIC AGENT FOR THE EXAMINATION OF THE RES

Helmut Strecker, Seeheim-Jugenheim; Michael Molter, Frankfurt am Main; Gerhard Kloss, Kelkheim, and Eberhard Schickel, Selters, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 4, 1979, Ser. No. 908

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800538

Int. Cl.³ A61K *49/00, 43/00;* G01T *1/00*

U.S. Cl. 424—1 **7 Claims**

1. A process for the preparation of a diagnostic agent for scanning the RES, which comprises mixing the sodium salt of 1-phenyl-2,3-dimethyl-pyrazolone-4-methylamino-methylsulfonic acid or 1-phenyl-2,3-dimethyl-pyrazolone in an aqueous solution with tin(II) salt in a molar ratio of 15:1 to 110:1, adjusting the resulting solution to a pH between 4 and 9, and afterwards adding from 0.1 to 100 mCi of ^{99m}Tc-pertechnetate in 1 to 10 ml of physiological saline solution.

4,291,013

MEDICINALLY USEFUL, SHAPED MASS OF COLLAGEN RESORBABLE IN THE BODY

Helmut Wahlig, Darmstadt; Elvira Dingeldein, Dreieich, and Dietrich Braun, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,520

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843963

Int. Cl.³ A61K *9/22, 9/26;* A61F *13/00;* A61L *15/03*

U.S. Cl. 424—16 **7 Claims**

1. A collagen based drug delivery system which is resorbable in the body, is sterilized and has been compacted into the shape of a tablet, spheroid, foil, pipe, plate, fiber, granule, strand or tube implantable into the body, by the application of heat of a temperature of 130°–200° C., optionally also with application of pressure of 300–1200 bar, with extrusion, with injection molding or with sintering and which, upon administration to the body, essentially maintains its shape and effects a retarded liberation of the drug, comprising 0.2–20 weight percent of a pharmacologically active drug material, 1–25 weight percent of a bioresorbable binding agent for collagen, and the balance being finely ground collagen, the binding agent consisting essentially of a co- or homopolymer of lactide or glycolide or a co- or a homopolymer of a C_{2-16} α-hydroxyalkanoic acid.

4,291,014

POLYMERIC DIFFUSION MATRIX CONTAINING ESTRADIOL DIACETATE

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 109,242, Jan. 3, 1980, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned, and Ser. No. 47,084, Jun. 11, 1979, abandoned. This application Jul. 11, 1980, Ser. No. 167,729

Int. Cl.³ A61L *15/03;* A61K *31/79*

U.S. Cl. 424—28 **16 Claims**

1. A self-supporting polymeric diffusion matrix for the sustained release of estradiol diacetate in order to deliver said estradiol diacetate to a patient and provide said patient with a uterine wall maintenance effect, said matrix comprising from about 2 to about 60% of a polar plasticizer, from about 6 to about 20% by weight polyvinylalcohol, from about 2 to about 10% by weight polyvinylpyrrolidone, and a pharmaceutically effective amount of estradiol diacetate to provide a sustained release of said estradiol diacetate over a prolonged period.

4,291,015

POLYMERIC DIFFUSION MATRIX CONTAINING A VASODILATOR

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 109,242, Jan. 3, 1980, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned, and Ser. No. 47,084, Jun. 11, 1979, abandoned. This application Jun. 26, 1980, Ser. No. 163,262

Claims priority, application Japan, Aug. 14, 1979, 54/103459

Int. Cl.³ A61L *15/03;* A61K *31/21, 31/79*

U.S. Cl. 424—28 **25 Claims**

1. A self-supporting polymeric diffusion matrix suitable for the transdermal delivery of a vasodilator comprising from about 2 to about 60% of the polar plasticizer selected from the group consisting of glycerol, propylene glycol, and a polyalkylene glycol, from about 2 to about 15% of a matrix component selected from the group consisting of polyvinylalcohol, a polymer of hydroxyethylacrylate, a polymer of hydroxyethylmethacrylate, a polymer of hydroxypropylacrylate, and a polymer of hydroxypropylmethacrylate, from about 2 to about 10% of a water-soluble polymer with hydration sites which in combination with the remaining ingredients yields a matrix capable of sustained release of a vasodilator dispersed therein, at least one vasodilator suitable for transdermal delivery to a patient, and the balance water, the percentages being by weight.

4,291,016

ENTERIC COATED MIXTURE OF 4-(2-HYDROXY-3-ISOPROPYLAMINO-PROPOXY) INDOLE AND SODIUM LAURYL SULPHATE

Jean-Pierre Nougaret, St. Louis, France, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 36,690, May 7, 1979, abandoned, which is a continuation of Ser. No. 950,155, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 910,824, May 30, 1978, abandoned, which is a continuation of Ser. No. 818,092, Jul. 22, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 107,167

Claims priority, application Switzerland, Jul. 27, 1976, 9588/76; Oct. 14, 1977, 12585/77

Int. Cl.³ A61K *9/36, 9/62, 31/405*

U.S. Cl. 424—35 **10 Claims**

1. A pharmaceutical composition having a medicament matrix core comprising a mixture of 4-(2-hydroxy-3-isopropylaminopropoxy)indole, and sodium lauryl sulphate, and a physiologically acceptable film which is resistant to gastric juices and breaks down at pH of 5 or more coating the mixture.

4,291,017

METHOD FOR LIMITING ADHERENCE OF PLAQUE AND DENTAL COMPOSITION THEREFOR

John W. Beierle, San Marino, and Dale E. Grenoble, Malibu, both of Calif., assignors to Dental Concepts, Inc., Santa Monica, Calif.

Filed Nov. 19, 1979, Ser. No. 95,699

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **11 Claims**

1. A method for reducing the adherence to teeth of plaque, comprising applying to a person's teeth a dentrifice containing 0.001–0.05% by weight titanium tetrafluoride and either at least 0.05% by weight of xylitol or at least 0.01% by weight of saccharin.

4,291,018

LIPSTICK OF THE CORE-SHEATH TYPE

Ichiro Oeda, and Isao Sano, both of Odawara, Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,372

Claims priority, application Japan, Feb. 23, 1978, 53-20150

Int. Cl.³ A61K *7/025, 7/027*

U.S. Cl. 424—64 **9 Claims**

1. In a lipstick of the core-sheath type comprising two different compositions A and B arranged in core-sheath relationship along the longitudinal axis thereof, the improvement wherein said composition A consists essentially of a homogeneous mixture of

(i) from 55 to 75% by weight of a low-viscosity oily ingredient having a viscosity of less than approximately 80 centipoises at 36° C.;

(ii) from 8 to 28% by weight of a viscous oily ingredient having a viscosity of at least approximately 200 centipoises at 36° C.; and

(iii) from 17 to 30% by weight of a waxy ingredient which is solid at 36° C.;

and wherein said composition B consists essentially of a homogeneous mixture of

(iv) from 50 to 75% by weight of (ii);

(v) from 15 to 30% by weight of (iii); and

(vi) from 5 to 20% by weight of (i);

said compositions A and B comprising from 77 to 100% by weight of the respective homogeneous mixture and having melting points of from 60° to 75° C. and the temperature difference therebetween being from 0° to 5° C.;

the weight of the composition of the core with respect to that of the sheath being in a weight ratio ranging from 1:2 to 2:1.

4,291,019

VACCINE FOR INFECTIOUS BOVINE RHINOTRACHEITIS

Harold W. Lupton, Walkersville, Md., and David E. Reed, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 55,821, Jul. 9, 1979, abandoned. This application May 2, 1980, Ser. No. 146,141

Int. Cl.³ A61K *39/265*

U.S. Cl. 424—89 **8 Claims**

1. A parenteral vaccine in injectable dose form for prevention in bovines of infectious bovine rhinotracheitis (IBR), characterized by containing an effective IBR disease-preventing amount of IBR viral envelope protein, said viral envelope protein having been obtained by propagating virulent IBR virus in a cell culture medium containing growing cells capable of promoting the multiplication of said virus, said IBR viral envelope protein collecting on the membranes of said cells during said propagation, separating the infected cells from the mixture, contacting the cellular membranes of the separated cells with an aqueous solution of a non-ionic detergent to obtain an aqueous solution of said viral envelope protein, and

separating said aqueous solution containing the solubilized viral envelope protein from the non-solubilized residue.

4,291,020

INACTIVATION OF NON-A, NON-B HEPATITIS AGENT

Edward Tabor, Rockville, and Robert J. Gerety, Potomac, both of Md., assignors to The United States of America as represented by the Secretary of Health & Human Services, Washington, D.C.

Filed May 16, 1980, Ser. No. 150,320
Int. Cl.³ A61K *39/29*
U.S. Cl. 424—89 **4 Claims**

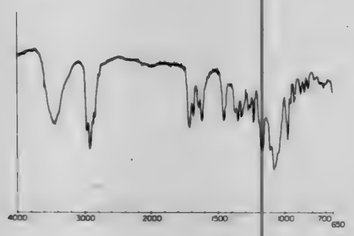
1. A method of treating an agent of human non-A, non-B hepatitis virus with formalin at a concentration of 1:1,000–1:10,000 for 24–120 hours to inactivate said agent.

4,291,021

NOVEL MACROLIDE ANTIBIOTICS AND PREPARATION THEREOF

Masaru Otani; Shuzo Satoi; Naoki Muto; Tetsu Saito, all of Shizuoka; Tadashiro Fujii, Mishima; Seiji Katsumata, Susono; Mitsuo Hayashi, and Masaru Ono, both of Shizuoka, all of Japan, assignors to Toyo Jozo Company, Ltd., Shizuoka, Japan

Filed May 10, 1979, Ser. No. 37,846
Claims priority, application Japan, May 10, 1978, 53-54373; Mar. 2, 1979, 54-24788; Mar. 16, 1979, 54-31316
Int. Cl.³ C12P *19/60*; A61K *35/74*
U.S. Cl. 424—121 **11 Claims**



1. A novel antibiotic substance A 11725 I or a pharmaceutically acceptable salt thereof having the following properties:
Appearance: white powders;
Molecular formula: $C_{37}H_{61}NO_{12}$;
Molecular weight: 711;
Melting point: 103° to 107° C.;
$[\alpha]_D$: −40.0° (C=1, methanol);
Ultra-violet absorption spectrum: as shown in FIG. 3;
Infra-red absorption spectrum: as shown in FIG. 1;
Nuclear magnetic resonance spectrum: as shown in FIG. 5;
Coloration reaction:
Discoloration of aqueous potassium permanganate solution: +;
Ninhydrin reaction, Sakaguchi's reaction and ferric chloride reaction: −;
Acid or basic nature: Basic;
Solubility: soluble in acidic water, methanol, acetone, ethyl acetate and benzene, difficulty soluble in basic water.

4,291,022

ORGANIC COMPOUNDS

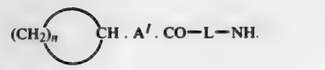
Edmond Sandrin, Riehen, and Wilfried Bauer, Lampenberg, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 84,661, Oct. 15, 1979, which is a continuation of Ser. No. 915,181, Jun. 14, 1978, abandoned, which is a continuation of Ser. No. 829,855, Sep. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 663,824, Mar. 4, 1976, abandoned. This application May 23, 1980, Ser. No. 152,706
Claims priority, application Switzerland, Mar. 11, 1975, 3055/75; Mar. 20, 1975, 3572/75; Aug. 14, 1975, 10610/75; Sep. 22, 1975, 12282/75; Sep. 29, 1975, 12586/75; Nov. 21, 1975, 15117/75; Nov. 21, 1975, 15118/75; Nov. 21, 1975, 15119/75; Nov. 25, 1975, 15252/75
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 **7 Claims**

1. A compound of formula I,



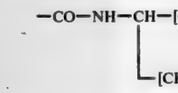
wherein R_1 is
(i) H,
(ii) NH_2,
(iii) H—Ala—NH—; H—Tyr—NH—; H—Cys—NH—; H—Val—NH—; H—Lys—NH—; H—(α-amino-isobutyryl)—NH—; H—Phe—NH
(iv) NH_2—NH—CO—NH—;
(v) C_6H_5.NH—CO—Gly—NH—; H—Ala—Gly—NH—; H—Val—Gly—NH—; H—α—phenyl—Gly—NH—,
(vi) R_2—A—CO—NH—,
wherein
R_2 is lower alkyl, phenyl, or phenyl substituted by halogen, hydroxy, amino lower alkyl or lower alkoxy,
A is a direct bond, alkylene containing up to 6 carbon atoms or —NH—,
(vii) R_2—Ala—NH—; R_2—Ala—Gly—NH—; wherein R_2 is as defined above,
(viii) $C_6H_5.A^1.CO—M—NH—$,
wherein
A^1 is an alkylene chain of up to 6 carbon atoms, and
—M— is —(mono- or di-Hal)—Phe, —Gly— or —Ala—,
(ix) T—(mono- or di-Hal)—Phe—NH, wherein T— is H—, H—Val— or benzoyl—,
(x)



wherein
A^1 is as defined above, and
—L— is —Val—(mono- or di-Hal)— Phe—α—phenyl—Gly—, and
n is an integer between 4 and 10,
each B is hydrogen or the two radicals B form a direct bond,
X is —Lys—, or —Nle—, and
Y is —Asn—, —Gln— or —Thr—, and
Z signifies the radicals:
(i) —CO—asparaginol; —CO—leucinol; —CO—isoleucinol; —CO—valinol; —CO—norleucinol; —CO—glutaminol; —CO—threoninol;
(ii) —CO—Leu; —CO—Ser; —CO—Iso—Leu; —CO—Val, and their corresponding amides, wherein the amide portion signifies the radical —CO—NR_4R_5 (wherein R_4 and R_5 independently are hydrogen or lower alkyl) or the radical



(wherein n is as defined above);
(iii) —CO—$ThrOR_3$ or —CO—$SerOR_3$ (wherein R_3 is lower alkyl); or
(iv) —CO—NH—$(CH_2)_k$—OH (wherein k is an integer between 2 and 6), or



(wherein 1_1 and 1_2 independently signify a whole number from 1 to 6); wherein in formula I the unit containing radicals R_1, X, Y and Z, as well as in the remaining units of the peptide sequence, at least one unit may be present in D form,
with the proviso that when R_1 is H—Cys—NH or H—(D-)—Cys—NH, B—B is other than a direct bond,
or a pharmaceutically acceptable acid addition salt or complex thereof.

4,291,023

METHOD FOR TREATING TUMORS USING CIS-DIAMMINEPLATINUM (II) ORGANOPHOSPHATE COMPLEXES

James D. Hoeschele, Oak Ridge, Tenn., and Alan R. Amundsen, Somerville, N.J., assignors to Engelhard Minerals & Chemicals Corp., Iselin, N.J.

Division of Ser. No. 17,992, Mar. 9, 1979, Pat. No. 4,234,499. This application Dec. 26, 1979, Ser. No. 106,440
Int. Cl.³ A61K *31/70, 31/685, 31/66, 31/28*
U.S. Cl. 424—180 **11 Claims**

1. A method for treating malignant tumors selected from the group consisting of sarcoma 180 ascites, lymphoid leukemia L1210 and lymphocytic leukemia P388 in a mammal afflicted therewith, which comprises administering to said mammal an effective amount of a platinum(II) organophosphate complex for treating said tumors, said complex having a structure of the formula:

$$[Pt(NH_3)_2(R^1(OPO_3)_z)_y]$$

wherein $R^1(OPO_3)_z$ is an organophosphate moiety in which R^1 is selected from the group consisting of the monovalent residue of glycerol and the monovalent or divalent residue of a monosaccharide; y is an integer having a value of from about 0.4–0.9; and z is 1 or 2.

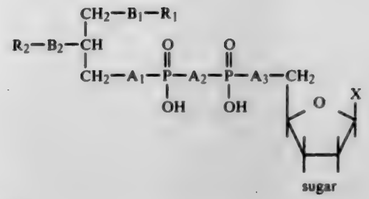
4,291,024

CYTOTOXIC LIPONUCLEOTIDE ANALOGS

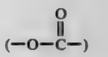
Joseph G. Turcotte, 30 Greenwood Dr, Peace Dale, R.I. 02879

Continuation of Ser. No. 895,231, Apr. 10, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,403
Int. Cl.³ A61K *31/70*; C07H *19/10, 19/20*
U.S. Cl. 424—180 **13 Claims**

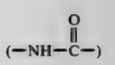
1. A compound selected from the group consisting of compounds of the formula:



in which:
R_1 and R_2 are each predominantly straight, saturated or unsaturated multispecies fatty chains of 6–24 carbon atoms each;
at least one of A_1, A_2 and A_3 is methylene and the others of A_1, A_2 and A_3 are each independently divalent oxygen or methylene;
B_1 and B_2 are each independently divalent oxygen (—O—), methylene (—CH_2—), ester



or amide



functions;
X is a nucleoside base selected from the group consisting of cytosine, uracil, thymine, adenine, guanine, dihydrouracil, 5-fluorouracil, 5-azauracil, 6-azauracil, 5-azacytosine, 6-azacytosine, tetrahydropyridine dione, 2-amino tetrahydropyridine dione, 6-mercaptopurine, thioguanine, selenoguanine, 8-azaadenine-7-carboxamide and N-methyl-2-amino-1,2,4-triazolopurine;
sugar is selected from the group consisting of ribose, deoxyribose, lyxose, xylose and arabinose, provided that the sugar is not ribose or deoxyribose when the heterocycle is cytosine;
and their physiologically acceptable acid addition salts.
7. A pharmaceutical composition comprising a safe and cytotoxically effective amount of a compound according to claim 1 in combination with a pharmaceutically acceptable carrier.

4,291,025

AGAR GEL TOPICAL DRESSING

Michael A. Pellico, Los Angeles, Calif., assignor to Laclede Professional Products, Inc., Brooklyn, N.Y.

Filed Apr. 11, 1980, Ser. No. 139,500
Int. Cl.³ A01N *31/00*; A61K *31/70*
U.S. Cl. 424—180 **13 Claims**

1. An agar gel topical dressing, which comprises about 5 to about 12 wt.% agar, about 20 to about 75 wt.% diethylene glycol and water to 100 wt.%.
4. A method for preparing a thermally reversible, agar gel topical dressing having a gelation temperature from about 24° to abour 49° C, which comprises heating and agitating an admixture containing about 5 to about 12 wt.% agar, about 20 to about 75 wt.% diethylene glycol and water to 100 wt.% to solubilize the agar and allowing the resulting solution to cool and set in the form of a gel.
8. A method for applying an agar gel topical dressing to a burn area or other area of skin impairment, which comprises:
(a) heating a thermally reversible, agar gel topical dressing containing about 5 to about 12 wt.% agar, about 20 to about 75 wt.% diethylene glycol and water to 100 wt.%

to obtain a sol, said sol having a gelation temperature from about 24° to about 49° C.;
(b) applying the sol at a tissue compatible temperature to the burn area or other area of skin impairment; and
(c) allowing the sol to cool and set in the form of a gel.

4,291,026

ANTIBIOTIC BM123ν PAMOATE COMPLEXES

Martin Tobkes, Spring Valley; Murray Dann, Pearl River, both of N.Y.; Irving Klothen; Larry D. Spicer, both of Princeton, N.J., and David R. Williams, Stony Point, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 28, 1979, Ser. No. 70,460
Int. Cl.³ A61K *31/71*
U.S. Cl. 424—181 **12 Claims**

1. A process of recovering an antibiotic trans-BM123ν pamoate complex from a fermentation whole harvest mash containing the antibiotic trans-BM123ν which comprises the steps of:
(a) producing a fermentation liquor by clarifying the whole harvest mash; and
(b) adding a water soluble pamoate salt selected from the group consisting of ammonium pamoate, alkali metal pamoate, alkaline earth metal pamoate and combinations thereof while maintaining the liquor at a pH of from 4.0 to 8.0 by addition of a pharmacologically acceptable acid, or base, and
(c) removing the precipitated antibiotic trans-BM123ν pamoate complex; and
(d) drying the antibiotic trans-BM123ν pamoate complex.

4,291,027

METHOD FOR TREATING TUMORS WITH ETHYLENEDIAMINE PLATINUM (II) AND 1,2-DIAMINOCYCLOHEXANE-PLATINUM (II) PYROPHOSPHATE COMPLEXES

James D. Hoeschel, Oak Ridge, Tenn., and Alan R. Amundsen, Somerville, N.J., assignors to Engelhard Minerals & Chemicals Corp., Iselin, N.J.

Division of Ser. No. 17,993, Mar. 7, 1979, Pat. No. 4,234,500.
This application Dec. 26, 1979, Ser. No. 106,439
Int. Cl.³ A61K *31/685, 31/66, 31/28*
U.S. Cl. 424—197 **5 Claims**

1. A method for treating malignant sarcoma 180 ascites, lymphoid leukemia L1210, lymphocytic leukemia P388 or B16 melanoma tumors in a mammal afflicted therewith which comprises administering to said mammal an effective amount of an amine platinum(II) pyrophosphate complex useful for treating said tumors, said complex having a structure of the formula:

$$[\{Pt(A)\}_2P_2O_7]$$

wherein A is a diamine of the formula: NR^1R^2—CHR^3—$CHR^4NR^5R^6$ in which R^1-R^6, taken separately, are selected from hydrogen or lower alkyl and R^3 and R^4, taken together, represent the divalent radical: —CHR^7—CHR^8—CHR^9—CHR^{10}— wherein R^7-R^{10} are selected from the group consisting of hydrogen and lower alkyl.

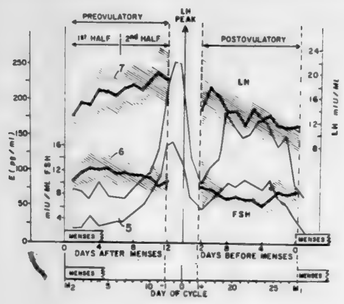
4,291,028

FOLLICULAR PHASE ESTROGEN OR PROGESTIN WITH PHYSIOLOGIC ESTROGEN/PROGESTIN LUTEAL PHASE REPLACEMENT DRUG DELIVERY SYSTEM

Nichols Vorys, 336 S. Columbia Ave., Columbus, Ohio 43209

Continuation of Ser. No. 865,851, Dec. 30, 1977, abandoned.
This application Oct. 11, 1979, Ser. No. 83,636
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—238 **9 Claims**

1. A treatment method for regulating the menstrual cycle of a presenting patient, the menstrual cycle having a first occurring follicular phase followed by a luteal phase, and the patient having a presenting endogenous estrogen characteristic, comprising:
(A) determining the presenting endogenous estrogen characteristic of the patient and identifying the patient's presenting endogenous estrogen characteristic as one of (1) euestrogenic, (2) hyperestrogenic, (3) hypoestrogenic;
(B) administering to the patient effective dosages of pharmacologically active steroid compositions in an ordered temporal succession based on the identified endogenous estrogen characteristic of the patient, in which succession:
(1) during the follicular phase of the menstrual cycle there is:
(a) a first period of absence of administration of any pharmacologically active steroid composition; and



(b) a following period of administration of a low dose of one pharmacologically active steroid composition adapted to the identified endogenous estrogen characteristic of the patient and selected from the group of estrogenic active steroids and progestational active steroids; and
(2) during the luteal phase of the menstrual cycle, there is administered an effective dosage of a pharmacologically active composition which comprises a combination of an estrogenic active steroid and a progestational active steroid;
whereby a follicular and luteal phase correspondence is established between the pharmacological activity characteristics of the compositions administered and the menstrual cycle of the patient.

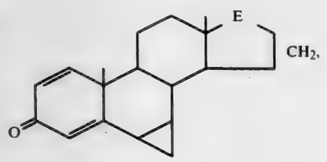
4,291,029

6β,7β;15,16-DIMETHYLENE-1,4-ANDROSTADIEN-3-ONES, THEIR PREPARATION AND USE AS MEDICINAL AGENTS

Rudolf Wiechert; Dieter Bittler; Ulrich Kerb; Klaus Prezewowsky; Jorge Casals-Stenzel, and Wolfgang Losert, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

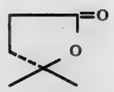
Filed May 29, 1980, Ser. No. 154,194
Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922500
Int. Cl.³ A61K *31/33;* C07J *1/00*
U.S. Cl. 424—238 **10 Claims**

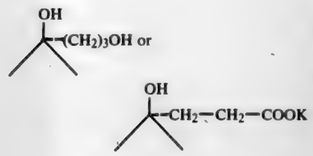
1. A 6β,7β;15,16-dimethylene-1,4-androstadien-3-one of the formula



wherein

the 15,16-methylene group is in the α- or β-position, and E is





7. A method of achieving a diuretic effect in a patient in need of such treatment comprising administering to the patient a diuretically effective amount of a compound of claim 1.

4,291,030

METHOD OF LOWERING BLOOD CHOLESTEROL

Michael G. Mulinos, Westfield, N.J., assignor to Unimed, Inc., Somerville, N.J.

Filed Jul. 25, 1980, Ser. No. 172,132
Int. Cl.³ A61K *31/555*
U.S. Cl. 424—245 **4 Claims**

1. Method of reducing blood cholesterol in an animal in need of such treatment, which comprises administering to said animal a blood cholesterol lowering effective amount of a spirogermanium selected from the group consisting of dimethyl spirogermanium, deithyl spirogermanium dipropyl spirogermanium and dibutyl spirogermanium.

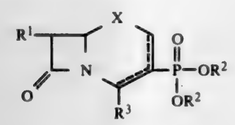
4,291,031

3-PHOSPHONOCEPHALOSPORANIC ACID DERIVATIVES, AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Takao Takaya, Kawanishi, and Toshiyuki Chiba, Osaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 7, 1980, Ser. No. 119,437
Claims priority, application United Kingdom, Feb. 19, 1979, 05790/79
Int. Cl.³ C07D *501/20*
U.S. Cl. 424—246 **17 Claims**

1. A compound of the formula:



(I)

wherein
R^1 is acylamino,
R^2 is hydrogen or lower alkyl,
R^3 is carboxy or a protected carboxy group,
X is —S—or



and the dotted line bridging the 2 to 4-positions of the formula indicates that the compound may be 2 or 3-cephem derivative, and
pharmaceutically acceptable salts thereof.

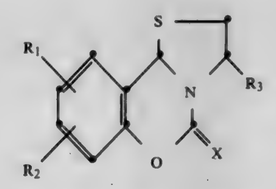
4,291,032

THIAZOLO(3,2-c)BENZOXAZINE DERIVATIVES

Christian Berger, Le Plessis Robinson; Daniel Farge, Thiais; Claude Moutonnier, Le Plessis Robinson, and Gerard Wolff, Thiais, all of France, assignors to Rhone Poulenc Industries, Paris, France

Filed Oct. 2, 1980, Ser. No. 192,988
Claims priority, application France, Oct. 5, 1979, 79 24833
Int. Cl.³ A61K *43/90;* C07D *513/04*
U.S. Cl. 424—248.51 **6 Claims**

1. A thiazolo[3,2-c]-1,3-benzoxazine derivative of the formula:



in which X represents an oxygen or sulfur atom, the symbols R_1 and R_2, which are identical or different, each represent a hydrogen or halogen atom or an alkyl, alkoxy, alkylthio or trifluoromethyl radical, in the 7-, 8-, 9- or 10-position, and R_3 represents a hydrogen atom or a carboxyl radical, the alkyl radicals and portions being linear or branched and containing 1 to 4 carbon atoms, and also its metal salts and its addition salts with nitrogen-containing organic bases, in the case where R_3 represents a carboxyl radical, in its diastereoisomeric forms and mixtures thereof.

6. A pharmaceutical composition which contains a thiazolo[3,2-c]-1,3-benzoxazine derivative as claimed in claim 1 or, if appropriate, a pharmaceutically acceptable salt of this product, in association with at least one pharmaceutically acceptable diluent.

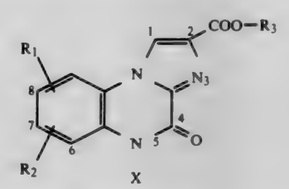
4,291,033

OXOIMIDAZOQUINOXALINES

Alan C. Barnes, Cirencester, and David P. Kay, Swindon, both of Great Britain, assignors to Roussel Uclaf, Paris, France

Filed Feb. 4, 1980, Ser. No. 118,522
Claims priority, application United Kingdom, Feb. 9, 1979, 04648/79; Jun. 7, 1979, 19847/79
Int. Cl.³ C07D *487/04;* A61K *31/495*
U.S. Cl. 424—250 **15 Claims**

1. A compound selected from the group consisting of oximidazoquinoxalines of the formula



wherein R_1 and R_2 are individually selected from the group consisting of hydrogen, chlorine and bromine, X is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms and cycloalkylalkyl of 4 to 6 carbon atoms, R_3 is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, alkali metal, alkaline earth metal, aluminum, $—NH_4$ and non-toxic, pharmaceutically acceptable organic amine and their non-toxic, pharmaceutically acceptable acid addition salts.

11. A method of treating allergic symptoms in warm-blooded animals comprising administering to warm-blooded

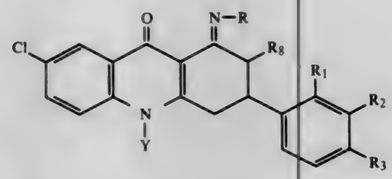
animals an antiallergically effective amount of a compound of claim 1.

4,291,034
7-CHLORO-3-SUBSTITUTED ARYL-3,4-DIHYDRO-1,9(2H,10H) AND 10 HYDROXY ACRIDINEDIONEIMINES HAVING ANTIMALARIAL ACTIVITY

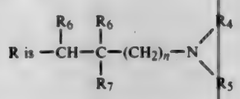
Leslie M. Werbel, Ann Arbor, Mich., assignor to Warner Lambert Company, Morris Plains, N.J.

Filed Mar. 20, 1980, Ser. No. 132,362
Int. Cl.³ A61K 31/47; C07D 219/08
U.S. Cl. 424—250 **12 Claims**

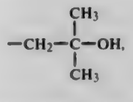
1. A compound having the formula



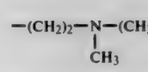
where Y is hydrogen or hydroxy; R_1 is hydrogen, fluorine, chlorine, bromine or iodine; R_2 and R_3 are hydrogen, fluorine, chlorine, bromine, iodine or trifluoromethyl;



wherein n=0 to 5; R_4 and R_5 are hydrogen, alkyl containing one to four carbon atoms, $-CH_2-CH_2-OH$,



allyl, or R_4 and R_5 together are $(CH_2)_4$ to 5, or



R_6 and R_7 are hydrogen, methyl, or ethyl; R_8 is hydrogen or methyl; and pharmaceutically acceptable salts thereof.

11. A pharmaceutical composition for treating malaria in mammals comprising an effective amount of a compound according to claim 1 or a non-toxic pharmaceutically acceptable salt thereof, together with an inert pharmaceutical carrier.

12. A method of treating malaria in mammals comprising the administration of an effective amount of a compound according to claim 1 or non-toxic pharmaceutically acceptable salts thereof.

4,291,035
PHARMACEUTICAL COMPOSITIONS COMPRISING TRIMETHOPRIM AND N-ETHYL-γ-PYRIDONE-3-CARBOXYLIC ACID DERIVATIVES

Alfio Bertolini, Scandiano, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Jul. 11, 1979, Ser. No. 56,657
Claims priority, application Italy, Jul. 13, 1978, 50274 A/78
Int. Cl.³ A61K 31/505, 31/47, 31/44
U.S. Cl. 424—251 **2 Claims**

2. A therapeutical method for treating a patient suffering from a bacterial infection of the urinary tract, which comprises administering to said patient

(a) from 2 to 8 mg/kg/day of trimethoprim, and

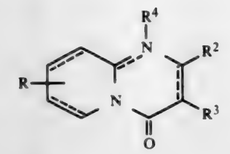
(b) from 10 to 40 mg/kg/day of oxolinic acid, in a weight ratio of trimethoprim to oxolinic acid of 1:5.

4,291,036
PYRIDO[1,2-A]PYRIMIDINE DERIVATIVES AND METHOD OF ANALGESIC TREATMENT

Jozsef Knoll; Zoltan Meszaros; Istvan Hermecz, all of Budapest; Ferenc Fülöp; Gabor Bernath, both of Szeged; Sandor Virag, Budapest; Gabor Nagy, Budapest, and Peter Szentmiklosi, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 934,801, Aug. 17, 1978, Pat. No. 4,219,649. This application Mar. 14, 1980, Ser. No. 130,371
Claims priority, application Hungary, Aug. 19, 1977, CI 1765
Int. Cl.³ A61K 31/505; C07D 487/04
U.S. Cl. 424—251 **4 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof wherein

R is carboxy in the 6-, 7- or 8-position or lower alkoxycarbonyl in the 6-, 7- or 8-position;

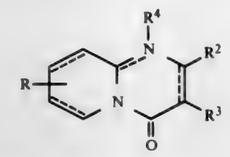
R^2 is C_1 to C_6 alkyl;

R^3 is C_1 to C_6 alkyl; and

R^4 is a single election pair, hydrogen or lower alkyl; and the dotted lines represent saturated or unsaturated bonds.

2. 2-methyl-3-ethyl-8-ethoxycarbonyl-4-oxo-4H-pyrido(1,2-a)pyrimidine or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

3. An analgesic method of treatment which comprises the step of administering to an afflicted animal an analgesically effective amount of a compound of the formula



or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof, wherein

R is carboxy in the 6-, 7- or 8-position or lower alkoxycarbonyl in the 6-, 7- or 8-position;

R^2 is C_1 to C_6 alkyl;

R^3 is C_1 to C_6 alkyl; and

R^4 is a single electron pair, hydrogen or lower alkyl; and the dotted lines represent saturated or unsaturated bonds.

4,291,037
7-(OXOALKYL)-1,3-DI-N-ISO-PROPYL XANTHINES AND THEIR PRODUCTION

Günther Brenner, Erkrath-Unterbach; Joachim Goring, Gronau; Eskendar Ali Khan, Gronau; Oskar Rohte, Gronau, and Manfred Tauscher, Gronau, all of Fed. Rep. of Germany, assignors to Johann A. Wulfing, Fed. Rep. of Germany

Continuation of Ser. No. 943,815, Sep. 19, 1978, which is a continuation of Ser. No. 753,931, Dec. 23, 1976, abandoned, which is a continuation of Ser. No. 542,449, Jan. 20, 1975, abandoned. This application Jun. 4, 1979, Ser. No. 45,381
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1974, 2402908
The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.
Int. Cl.³ C07D 473/08
U.S. Cl. 424—253 **18 Claims**

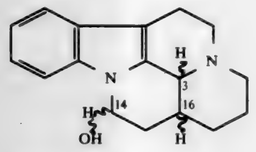
1. 7-(1-methyl-3-oxobutyl)-1,3-di-isopropyl xanthine.

4,291,038
CEREBRAL VASODILATING 20,21-DINOREBURNAMENINE DERIVATIVES

Andre Farcilli, Rosny-sous-Bois; Italo Medici, Bondy; Robert Fournex, Paris, all of France, and Fernando Barzaghi, Monza, Italy, assignors to Roussel Uclaf, Romainville, France

Continuation of Ser. No. 879,387, Feb. 21, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,913
Claims priority, application France, Feb. 22, 1977, 77 05067
Int. Cl.³ A61K 31/445; C07D 461/00
U.S. Cl. 424—256 **16 Claims**

1. A compound selected from the group consisting of compounds having the formula I



(I)

wherein the hydroxyl in the 14-position of the molecule is in either of the two possible positions at the carbon atom in the 14-position and the hydrogens in the 3-position and the 16-position of the molecule are in cis- or in trans-position to each other, racemates and mixtures thereof or a pharmaceutically-acceptable acid addition salt thereof.

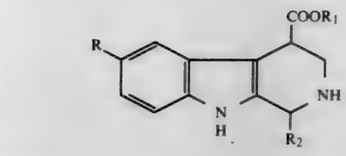
16. A method of treatment of cerebral vascular disorders and cerebral syndroms provoked by an alteration of the cerebral vascular circulation which comprises the step of administering to a human being in need of such treatment an effective vasodilating amount of a compound as defined in claim 6.

4,291,039
TETRAHYDRO β-CARBOLINES HAVING ANTI-HYPERTENSIVE ACTIVITY

John W. Van Dyke, Jr., and Elva Kurchacova, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

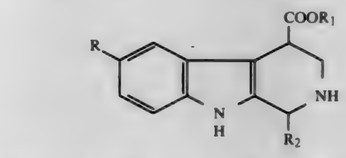
Filed Aug. 8, 1980, Ser. No. 176,407
Int. Cl.³ C07D 487/14; A01N 43/44
U.S. Cl. 424—256 **8 Claims**

1. Tetrahydro β-carbolines of the formula:



wherein R is H, OCH_3 or F, R_1 is H or CH_3 and R_2 is COOH or $COOCH_3$.

5. A method of treating hypertension in an individual for whom such therapy is indicated which method comprises administering orally or parenterally to such individual an antihypertensively effective amount of a compound characterized by the formula:



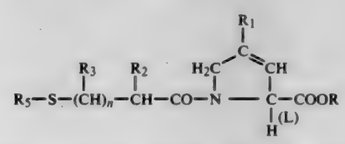
wherein R is H, OCH_3 or F; R_1 is H or CH_3 and R_2 is COOH or $COOCH_3$.

4,291,040
MERCAPTOACYL DERIVATIVES OF 4-DISUBSTITUTED PROLINES AND 4-SUBSTITUTED DEHYDROPROLINES

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 22, 1979, Ser. No. 86,905
Int. Cl.³ A61K 31/40; C07D 201/277, 401/06
U.S. Cl. 424—263 **17 Claims**

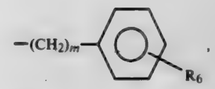
1. A compound of the formula



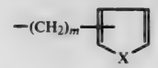
and pharmaceutically acceptable salts thereof wherein

R is hydrogen or lower alkyl;

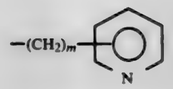
R_1 is lower alkenyl, lower alkynyl,



$-(CH_2)_m$-cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbon atoms, α-naphthyl, β-naphthyl,



wherein said $-(CH_2)_m-$ bridge is attached to an available carbon atom, or



wherein said $-(CH_2)_m$ bridge is attached to an available carbon atom;

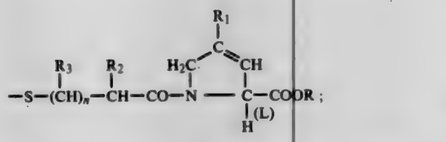
R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, and halo substituted lower alkyl;

n is zero, one or two;

R_5 is hydrogen,



p-methoxybenzyl, t-butoxycarbonyl, p-methoxybenzyloxycarbonyl, or

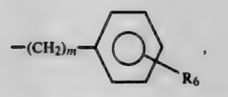


R_6 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, bromo, trifluoromethyl or hydroxy;

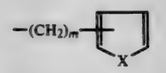
m is zero, one, two or three;

X is O or S; and

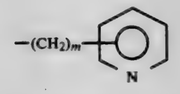
R_7 is lower alkyl of 1 to 6 carbons, lower alkyl substituted with one or more chloro, bromo or fluoro groups,



$-(CH_2)_m$-cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbons,

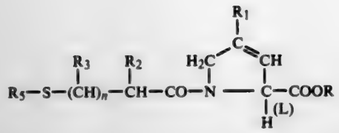


wherein said $-(CH_2)_m$— bridge is attached to an available carbon atom, or



wherein said $-(CH_2)_m$— bridge is attached to an available carbon atom.

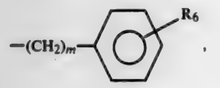
16. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and one or more hypotensive agents of the formula



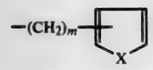
and pharmaceutically acceptable salts thereof wherein

R is hydrogen or lower alkyl;

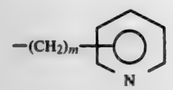
R_1 is lower alkenyl, lower alkynyl,



$-(CH_2)_m$—cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbon atoms, α-naphthyl, β-naphthyl,



wherein said $-(CH_2)_m$— bridge is attached to an available carbon atom, or

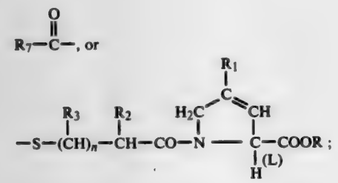


wherein said $-(CH_2)_m$— bridge is attached to an available carbon atom;

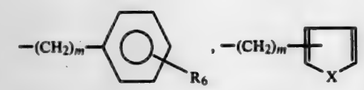
R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alky, lower alkylthio, and halo substituted lower alkyl;

n is zero, one or two;

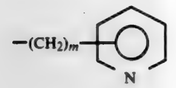
R_5 is hydrogen,



R_7 is lower alkyl of 1 to 6 carbons, lower alkyl substituted with one or more chloro, bromo or fluoro groups, $-(CH_2)_m$cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbons



wherein said $-(CH_2)_m$— bridge is attached to an available carbon atom, and



wherein said $-(CH_2)_m$— bridge is attached to an available carbon atom;

R_6 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, bromo, trifluoromethyl, or hydroxy;

m is zero, one, two or three; and

X is O or S.

4,291,041

ALICYCLIC PIPERIDINE DERIVATIVES AS INSECT REPELLENTS

Terrence P. McGovern, Bowie, Md., and Carl E. Schreck, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

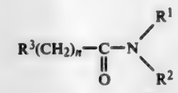
Filed Feb. 2, 1979, Ser. No. 8,814

Int. Cl.³ A01N *43/40*; C07D *295/18*

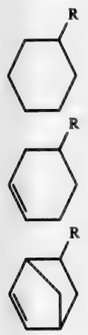
U.S. Cl. 424—267 **7 Claims**

1. In an insect repellent composition containing an insect repelling effective amount of an active ingredient and a carrier, the improvement wherein said active ingredient is selected from the group consisting of

(a) a compound of the, formula



wherein R^3 is one of the groups, A, B, or C



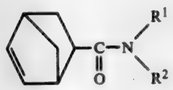
(A)

(B)

(C)

R is hydrogen or lower alkyl, n the positive integer one, two, or three, and R^1 and R^2 together with the N is selected from the group consisting of 1-piperidyl, 2-methyl-1-piperidyl, 3-methyl-1-piperidyl, 4-methyl-1-piperidyl, 2-ethyl-1-piperidyl, and 2,6-dimethyl-1-piperidyl;

(b) a compound of the formula



wherein R^1 and R^2 taken together with the N is 2-methyl-1-piperidyl, 3-methyl-1-piperidyl, 4-methyl-1-piperidyl, 2-ethyl-1-piperidyl or 2,6-dimethyl-1-piperidyl.

4,291,042

ANTIDEPRESSANT PIPERIDINE DERIVATIVES

Terence J. Ward, Cippenham, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

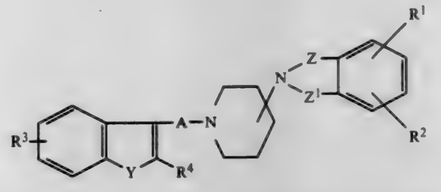
Filed Jan. 21, 1980, Ser. No. 113,938

Claims priority, application United Kingdom, Jan. 26, 1979, 02824/79; Oct. 16, 1979, 35865/79

Int. Cl.³ A61K *31/445*; C07D *409/14, 401/14*

U.S. Cl. 424—267 **25 Claims**

21. An antidepressant composition comprising an antidepressant amount of a compound of the formula:

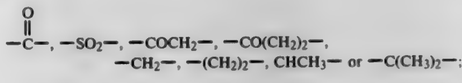


or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof, wherein the piperidine ring is substituted in the 3- or 4-position and in which

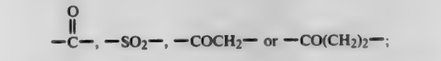
Y is $-NR^5-$, $-O-$, or $-S-$, where R^5 is hydrogen or alkyl of 1 to 6 carbon atoms;

A is alkylene of 1 to 6 carbon atoms or hydroxyalkylene of 1 to 6 carbon atoms;

Z is



Z^1 is



R^1, R^2 and R^3 are, independently, hydrogen, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, nitro, amino, alkylamino of 1 to 6 carbon atoms, trifluoromethyl, alkanoylamino of 2 to 6 carbon atoms, hydroxy, or phenylalkoxy of 7 to 12 carbon atoms;

or

R^1 and R^2 taken together with adjacent carbon atoms to which they are attached form a six membered carbocyclic ring;

and

R^4 is hydrogen or alkyl of 1 to 6 carbon atoms; with the proviso that when A is $-CH_2-$, R^1 and R^2 are other than nitro;

and a pharmaceutically acceptable carrier.

4,291,043

1-N,N-DIMETHYLCARBAMOYL-3(5)-ALKYL-5(3)-ALKYLTHIOALKYLTHIO-1,2,4-TRIAZOLES, A PROCESS FOR THEIR MANUFACTURE, COMPOSITIONS WHICH CONTAIN THEM AND THEIR USE IN PEST CONTROL

Odd Kristiansen, Mölin, and Jozef Drabek, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,215

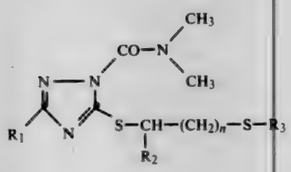
Claims priority, application Switzerland, Sep. 6, 1978, 9374/78; Apr. 11, 1979, 3481/79; Aug. 9, 1979, 7310/79

Int. Cl.³ A01N *47/38;* **C07D** *249/12*

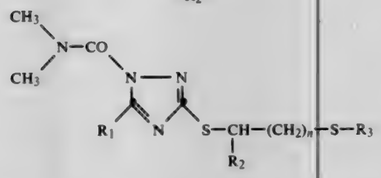
U.S. Cl. 424—269 **13 Claims**

1. A compound of the formula IA or IB

(IA)



(IB)



wherein R_1 is i-propyl, s-butyl, t-butyl or optionally methyl substituted cyclopropyl, R_2 is hydrogen or methyl, R_3 is C_1–C_4-alkyl and n is zero or the integer 1 and mixtures thereof.

11. A pesticidal composition comprising a pesticidally effective amount of a compound as claimed in claim **1** together with an inert, solid or liquid diluent or carrier therefor.

4,291,044

COMBATING FUNGI WITH 1-(AZOL-1-YL)-2-SUBSTITUTED-ALKEN-3-ONES

Gerhard Jäger; Udo Kraatz, both of Leverkusen; Karl H. Büchel, Wuppertal; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

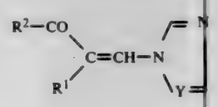
Filed Oct. 12, 1979, Ser. No. 84,208

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2846980

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *233/60, 249/08*

U.S. Cl. 424—269 **12 Claims**

1. A 1-(azol-1-yl)-2-substituted-alken-3-one of the formula



in which

R^1 is phenoxy optionally substituted by halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 to 2 carbon atoms and 1 to 5 halogen atoms, phenyl or halophenyl, and

R^2 is alkyl with 1 to 4 carbon atoms, cycloalkyl with 5 to 8 carbon atoms, phenyl, or phenyl substituted with halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 2 carbon atoms and 1 to 5 halogen atoms, phenyl or halophenyl, and

Y is a nitrogen atom or the CH group,

or an addition product thereof with an acid or a metal salt.

4. A fungicidal composition containing as active ingredient a fungicidally effective amount of a compound according to claim **1** in admixture with a diluent.

4,291,045

METHOD OF REDUCING DENTAL CARIES

Donald A. M. Mackay, Pleasantville; Frank Witzel, Spring Valley, both of N.Y., and Harald A. B. Linke, Highland Park, N.J., assignors to Life Savers, Inc., New York, N.Y.

Continuation of Ser. No. 683,108, May 4, 1976, abandoned. This application May 23, 1980, Ser. No. 152,886

Int. Cl.³ A61K *31/425, 9/68, 7/16, 7/22*

U.S. Cl. 424—270 **2 Claims**

1. A method of inhibiting the growth of *Streptococcus mutans,* which consists essentially of the step of contacting *Streptococcus mutans* with a saccharin compound selected from the group consisting of sodium saccharin, ammonium saccharin, calcium saccharin or the free acid form of saccharin in an amount sufficient to inhibit growth of *Streptococcus mutans.*

4,291,046

PREPARATION OF NOVEL FUNGICIDALLY ACTIVE SPIRO DERIVATIVES OF 3-(3,5-DIHALOGENOPHENYL)-OXAZOLIDINE-2-THION-4-ONES

Hans-Joachim Knops, Wuppertal; Hans-Georg Heine, Krefeld; Wilfried Draber, Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 117,134

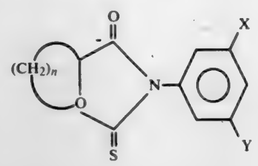
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905780

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ A01N *43/76;* **C07D** *263/04*

U.S. Cl. 424—272 **15 Claims**

1. A spiro derivative of 3-(3,5-dihalogenophenyl)-oxazolidine-2-thion-4-one of the formula



in which

X and Y each independently is halogen, and

n is 2 or 3.

14. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim **1**.

4,291,047

COMBATING FUNGI WITH α-AZOLYL-β-HYDROXY-KETONES

Eckart Kranz; Wolfgang Krämer; Karl H. Büchel, all of Wuppertal; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

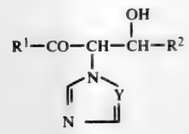
Filed Jul. 2, 1979, Ser. No. 54,061

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832233

Int. Cl.³ A01N *43/64, 43/50;* **C07D** *249/08, 233/60*

U.S. Cl. 424—273 R **10 Claims**

1. An α-azolyl-β-hydroxy-ketone of the formula



in which

R^1 is C_{1-4}-alkyl; C_{1-4}-alkyl substituted by halogen, C_{1-4}-alkyl carbonyl, phenylcarbonyloxy, halophenylcarbonyloxy, methylphenylcarbonyloxy, ethylphenylcarbonyloxy, cyanophenylcarbonyloxy, nitrophenylcarbonyloxy, halomethylphenylcarbonyloxy, haloethylphenylcarbonyloxy, C_{1-4}-alkylcarbamoyloxy, di-C_{1-4}-alkyl-carbamoyloxy, C_{1-4}-alkylsulphonyloxy, phenylsulphonyloxy, ethylphenylsulphonyloxy, halomethylphenylsulphonyloxy, haloethylphenylsulphonyloxy, cyanophenylsulphonyloxy, nitrophenylsulphonyloxy, di-C_{1-4}-alkylaminosulphonyloxy, C_{1-4}-alkoxy, phenoxy, halophenoxy, methylphenoxy, ethylphenoxy, halomethylphenoxy, haloethylphenoxy, cyanophenoxy or nitrophenoxy; phenyl; halophenyl; cyanophenyl; nitrophenyl; C_{1-4}-alkylphenyl; C_{5-7}cycloalkyl-phenyl; halomethylphenyl; haloethylphenyl; diphenyl; phenoxyphenyl; benzylphenyl; or halocyano-, and/or nitro-substituted diphenyl, phenoxyphenyl or benzylphenyl;

R^2 is $-CX^1X^2R^3$ or C_{1-4}-alkoxy-carbonyl;

R^3 is halo; or halo-C_{1-4}-alkyl with up to 3 halogen atoms; and

X^1 and X^2, which may be identical or different, each represents hydrogen or halogen, and

Y represents a nitrogen atom or the CH group,

or a physiologically acceptable metal-salt complex thereof or addition salt with an acid selected from the group consisting of hydrochloric acid, hydrobromic acid, phosphoric acid, nitric acid, sulphuric acid, acetic acid, maleic acid, succinic acid, fumaric acid, tartaric acid, citric acid, salicylic acid, sorbic acid, lactic acid, p-toluenesulphonic acid and 1,5-naphthalenedisulphonic acid.

9. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound, salt or complex according to claim **1**.

4,291,048

METHOD OF TREATING TUMORS AND CANCEROUS CACHEXIA WITH L-TRYPTOPHAN

Joseph Gold, 127 Edgemont Dr., Syracuse, N.Y. 13214

Continuation of Ser. No. 922,502, Jul. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 756,648, Jan. 4, 1977, abandoned, which is a continuation of Ser. No. 558,254, Mar. 14, 1975, abandoned, which is a continuation of Ser. No. 372,097, Jun. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 198,995, Nov. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 861,176, Sep. 25, 1969, abandoned. This application May 31, 1979, Ser. No. 44,303

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 **1 Claim**

1. A method of treating a transplanted B-16 melanoma which comprises parenterally administering to a mammal so afflicted L-tryptophan in an effective amount to inhibit the growth of said tumor.

4,291,049

ACYL ANILINES EXERTING A FUNGICIDAL ACTION

Enrico Bosone, Milan; Giovanni Camaggi, Lodi, both of Italy; Lambertus de Vries, Hilversum, Netherlands; Carlo Garavaglia, Cuggiono, Italy; Luigi Garlaschelli, Pavia, Italy; Franco Gozzo, San Donato Milanese, Italy; Jan C. Overeem, Scherpenzeel, Netherlands, and Simone Lorusso, San Giuliano Milanese, Italy, assignors to Montedison S.p.A., Milan, Italy

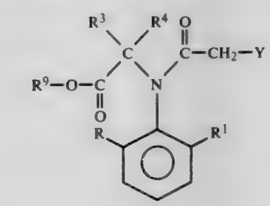
Filed Feb. 1, 1979, Ser. No. 8,584

Claims priority, application Italy, Feb. 2, 1978, 19896 A/78; Jul. 4, 1978, 25295 A/78

Int. Cl.³ A01N *43/08, 43/10;* **C07D** *333/24, 307/54*

U.S. Cl. 424—275 **12 Claims**

1. Compounds having the formula:



wherein:

R and R^1, the same or different, are H; CH_3; C_2H_5; nC_3H_7; $-CH_2-CH=CH_2$; $-CH=CH-CH_3$;

R^3 and R^4 are H; C_1–C_3 alkyl; halomethyl; alkoxymethyl; Cl; F; CN; O-alkyl; S-alkyl; or together are (CH_2=);

R^9 is C_1–C_3 alkyl; and

Y is furyl or thienyl.

4. A fungicidal composition containing as active principle a fungicidally effective amount of at least one of the compounds of claim **1**.

7. A method of fighting infections of phytophatogenous fungi on useful plants, which consists in distributing a fungicidally effective amount of at least one of the compounds of claim **1** on the plants or on the soil, as such or in a fungicidal formulation.

4,291,050

6,7-DISUBSTITUTED-2 OR 2,2-SUBSTITUTED-5-SUBSTITUTED-1-INDANONES

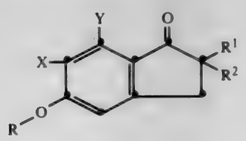
Otto W. Woltersdorf, Jr., Chalfont, and Edward J. Cragoe, Jr., Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 21, 1979, Ser. No. 50,851

Int. Cl.³ A61K *31/335;* **C07C** *49/67*

U.S. Cl. 424—278 **6 Claims**

1. A compound of the formula



wherein

X is halo or methyl

Y is halo or methyl;

R is

hydroxy ethyl;

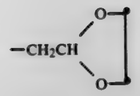
2-oxo propyl;

1,2-dihydroxypropyl, provided that X or Y is not methyl;

amino ethyl;

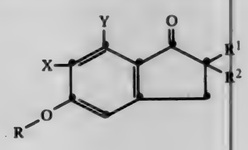
formyl methyl;

dialkoxy (C_{1-6}) methyl; or

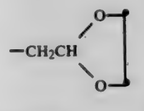


R^1 is hydrogen or C_{1-6}alkyl;
R^2 is C_{1-6} alkyl, C_{3-6} cycloalkyl, aryl, aralkyl or substituted aryl wherein the substituent is halo or C_{1-3} alkyl.

5. A pharmaceutical composition useful in the treatment of edema and hypertension which comprises a anti-edema and hypertensive effective amount of a compound of the formula

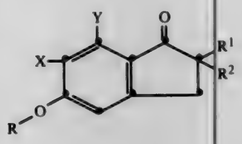


wherein
X is halo or methyl
Y is halo or methyl;
R is
hydroxy ethyl;
2-oxo propyl;
1,2-dihydroxypropyl, provided that X or Y is not methyl;
amino ethyl;
formyl methyl;
dialkoxy (C_{1-6}) methyl; or

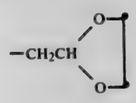


R^1 is hydrogen or C_{1-6}alkyl;
R^2 is C_{1-6} alkyl, C_{3-6} cycloalkyl, aryl, aralkyl or substituted aryl wherein the substituent is halo or C_{1-3} alkyl
and a pharmaceutically inert carrier.

6. A method of treating edema and hypertension which comprises administering to a patient in need of such treatment a anti-edema and hypertensive effective amount of a compound of the formula:



wherein
X is halo or methyl
Y is halo or methyl;
R is
hydroxy ethyl;
2-oxo propyl;
1,2-dihydroxypropyl, provided that X or Y is not methyl;
amino ethyl;
formyl methyl;
dialkoxy (C_{1-6}) methyl; or



R^1 is hydrogen or C_{1-6}alkyl;
R^2 is C_{1-6} alkyl, C_{3-6} cycloalkyl, aryl, aralkyl or substituted aryl wherein the substituent is halo or C_{1-3} alkyl.

4,291,051
1,5-DIMETHYL-6,7-DIOXABICYCLO[3.2.1]-OCTANE AND USE TO CONTROL PINE BEETLES
R. Marshall Wilson, Cincinnati, Ohio, and John W. Rekers, Spartanburg, S.C., assignors to Research Corporation, New York, N.Y.
Filed Apr. 14, 1980, Ser. No. 140,206
Int. Cl.³ A01N *43/26*; C07D *317/06*
U.S. Cl. 424—278 **3 Claims**

1. 1,5-Dimethyl-6,7-dioxabicyclo[3.2.1]octane.

3. A method of limiting the infestation of a wooded area by western or southern pine beetles comprising treating the infested area with an effective amount of a compound of claim **1**.

4,291,052
ARTHROPODICIDAL GRANULAR FORMULATION
Christopher Gillings, Linton, and John H. Palmer, Saffron Walden, both of England, assignors to Fisons Limited, London, England
Continuation-in-part of Ser. No. 877,812, Feb. 14, 1978, Pat. No. 4,198,397. This application Dec. 31, 1979, Ser. No. 108,787
Claims priority, application United Kingdom, Feb. 16, 1977, 6366/77; Mar. 17, 1977, 1392/77; Sep. 27, 1977, 40111/77
Int. Cl.³ A01N *43/16*
U.S. Cl. 424—282 **13 Claims**

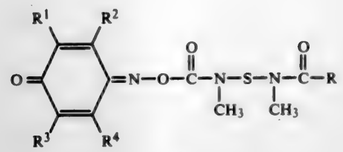
1. A method of combating corn rootworm which method comprises contacting corn rootworm with bendiocarb at a locus at which corn is growing or is to be grown by applying to the locus of corn rootworm combating amount of granules containing a corn rootworm combating amount of bendiocarb.

4,291,053
AGENT TO BE ADMINISTERED ORALLY TO DOMESTIC ANIMALS WITHOUT CELLULOSE DIGESTION IN THE RUMEN
Günter Dost, Kelkheim, and Fritz Bauer, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation of Ser. No. 790,602, Apr. 25, 1977, abandoned. This application Nov. 1, 1979, Ser. No. 90,263
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618269
Int. Cl.³ A61K *31/335*
U.S. Cl. 424—283 **14 Claims**

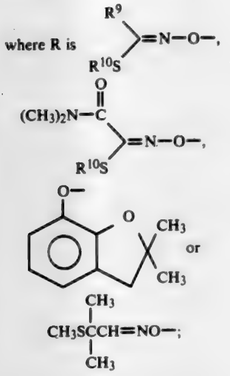
1. The method for the therapeutic treatment of swine dysentery caused by *Treponema hyodysenteriae* in pigs which comprises orally administering thereto an effective amount of an active agent selected from the group consisting of Salinomycin, physiologically acceptable salts thereof, and physiologically acceptable esters thereof.

4,291,054
INSECTICIDAL CARBAMOYL SULFIDES
Jiin-Duey Cheng, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 10, 1979, Ser. No. 101,799
Int. Cl.³ A01N *43/08, 37/28*; C07D *307/77, 307/82*
U.S. Cl. 424—298 **52 Claims**

1. A compound of the formula



where R is



R^1, R^2, R^3, and R^4 are independently H, F, Cl, Br, NO_2, CN, CF_3, C_1–C_{12} alkyl, C_1–C_4 alkoxy, or COR^5;
R^5 is OR^6 or NR^7R^8;
R^6 is C_1–C_4 alkyl;
R^7 is C_1–C_4 alkyl or methoxy;
R^8 is C_1–C_4 alkyl;
R^9 and R^{10} are independently methyl or ethyl; or
R^1 and R^2 are taken together to form

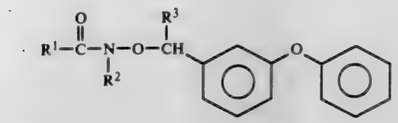


provided that:
(1) The total of R^9 and R^{10} is not greater than three carbon atoms;
(2) Only one of R^1, R^2, R^3 and R^4 can be CN, NO_2, COR^5, or CF_3;
(3) If R^2 and R^4 are both alkyl, then R^2 and R^4 are independently CH_3 or CH_2CH_3;
(4) If any two of R^1, R^2, R^3, and R^4 are independently halogen or alkoxy, then the other two are independently hydrogen or CH_3;
(5) The total number of carbons R^1 to R^4 is not greater than 26;
(6) If R^1 and R^2 are both alkyl, then R^2 must be CH_3 or CH_2CH_3;
(7) If R^3 and R^4 are both alkyl, then R^4 must be CH_3 or CH_2CH_3.

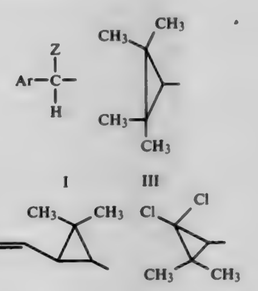
18. An agricultural composition for insecticidal use consisting essentially of a surfactant, diluent or combinations thereof and a compound of claim **1**.

4,291,055
INSECTICIDAL PHENOXY HYDROXAMATES
Albert C. Chen, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Jan. 4, 1980, Ser. No. 109,693
Int. Cl.³ A01N *37/28*; C07C *83/10*
U.S. Cl. 424—298 **18 Claims**

1. Insecticidal hydroxamates having the formula:



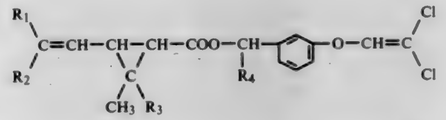
wherein R^1 may represent I, II, III, or IV:



wherein Ar is phenyl; phenyl substituted in the 2-to-6 position with 1-5 halogen (Cl, Br, F, I), C_1–C_4 alkyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, C_1–C_4 alkoxy, methylenedioxy, C_1–C_4 alkylthio, trifluoromethyl, trifluoromethoxy, difluoromethoxy, trifluorothiomethyl, difluorothiomethyl, C_1–C_4 haloalkyl, C_1–C_4 alkylthioalkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, cyano, C_1–C_4 cyanoalkyl, C_1–C_4 carboalkoxy, C_1–C_4 alkylsulfonyl, C_1–C_4 alkoxyalkyl, C_1–C_4 haloalkenyl, C_1–C_4 acyl, indanyl or naphthalyl; Z is C_2–C_4 alkyl, C_3–C_6 cycloalkyl, alkylcycloalkyl or C_2–C_4 alkenyl; Y is F, Cl, or Br; and R^2 and R^3 are the same or different H, alkyl, CN, CHO, C≡CH, $CH_2C{\equiv}CH$ $CH_2CH{=}CH_2$, CH_2O-alkyl, CH_2S-alkyl, or S-alkyl; alkyl being C_1–C_4; and II saturated on the vinyl group with Br.

4,291,056
PESTICIDAL ESTERS
Willy Meyer, Riehen; Jozef Drabek, Allschwil; Saleem Farooq, Aesch; Laurenz Gsell, Füllinsdorf, and Friedrich Karrer, Zofingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jul. 20, 1976, Ser. No. 707,136
Claims priority, application Switzerland, Jul. 28, 1975, 9859/75; Jun. 4, 1976, 7110/76
Int. Cl.³ A01N *53/00*; C07C *69/743, 121/75*
U.S. Cl. 424—304 **11 Claims**

1. A compound of the formula



wherein R_1 and R_2 are the same and represents a fluorine, chlorine or bromine atom or a methyl group, R_3 represents a methyl group and R_4 represents a cyano group.

7. A method for combatting insects and acarids which comprises applying to the locus thereof an insecticidally and acaricidally effective amount of a compound according to claim **1**.

4,291,057

BIOCIDAL ESTERS OF HALO-4-ALKENOIC ACIDS

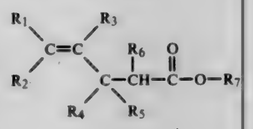
Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,212

Int. Cl.[3] **A01N** *37/06;* **C07C** *57/03*

U.S. Cl. 424—304 **23 Claims**

1. A composition of the formula:



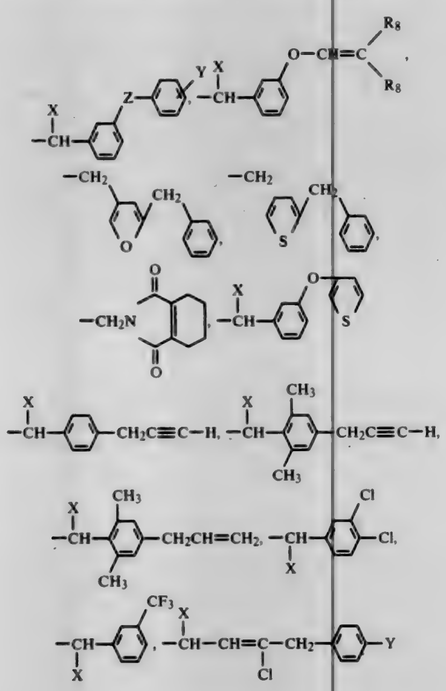
wherein

R_1, R_2, and R_3 are independently H, a lower alkyl group having from 1 to 3 carbon atoms or halogen;

R_4 and R_5 are independently H, a lower alkyl group having from 1 to 3 carbon atoms, polyhaloalkyl, haloalkyl, halogen, a lower alkenyl group having from 2 to 3 carbon atoms, a lower cycloalkyl group having from 3 to 5 carbon atoms, a lower cycloalkenyl group having from 3 to 5 carbon atoms, cyano, nitro, a lower alkoxy group having from 1 to 3 carbon atoms, arloxy, a lower alkylthio group having from 1 to 3 carbon atoms, arylthio, a lower alkylsulfinyl group having from 1 to 3 carbon atoms, arylsulfinyl, a lower alkylsulfinyl group having from 1 to 3 carbon atoms, arylsulfonyl, acylamido, or a lower dialkylamino group having from 1 to 3 carbon atoms;

R_6 is selected from the group consisting of: (1) cycloalkyl, alkenyl, branched alkenyl, or cycloalkenyl; or (2) a branched alkyl group having from 3 to 5 carbon atoms or an alkyl group having from 1 to 5 carbon atoms, with the proviso that R_4 or R_5 is other than hydrogen.

R_7 is a member selected from the group consisting of:



wherein:

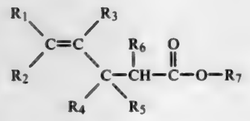
X is hydrogen, cyano, ethynyl, thiamido, a lower alkyl group having from 1 to 3 carbon atoms, a lower cycloalkyl group having from 3 to 5 carbon atoms, a lower alkenyl group having from 2 to 5 carbon atoms, a low cycloalkenyl group having from 3 to 5 carbon atoms or polyhaloalkyl;

Y is hydrogen, a lower alkyl group having from 1 to 3 carbon atoms, polyhaloalkyl, haloalkyl, halogen, cyano, nitro, a lower alkoxy group having from 1 to 3 carbon atoms, aryloxy, a lower alkylthio group having from 1 to 3 carbon atoms, arylthio, a lower alkylsulfinyl group having from 1–3 carbon atoms, arylsulfonyl, alkylsulfonyl, acylamido, or a lower dialkylamino group having from 1 to 3 carbon atoms;

R_8 is bromine or chlorine; and

Z is oxygen, sulfur or its oxides, or methylene.

17. A method of controlling insects and mites which comprises subjecting them to a lethal amount of a composition of the formula:



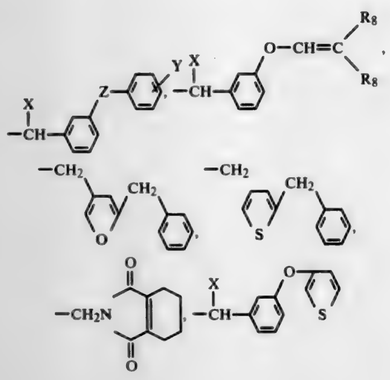
wherein

R_1, R_2, and R_3 are independently H, a lower alkyl group having from 1 to 3 carbon atoms or halogen;

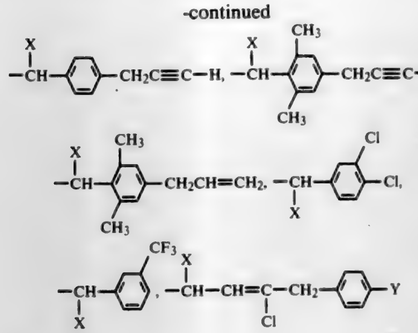
R_4 and R_5 are independently H, a lower alkyl group having from 1 to 3 carbon atoms, polyhaloalkyl, haloalkyl, halogen, a lower alkenyl group having from 2 to 3 carbon atoms, a lower cycloalkyl group having from 3 to 5 carbon atoms, a lower cycloalkenyl group having from 3 to 5 carbon atoms, cyano, nitro, a lower alkoxy group having from 1 to 3 carbon atoms, arloxy, a lower alkylthio group having from 1 to 3 carbon atoms, arylthio, a lower alkylsulfinyl group having from 1 to 3 carbon atoms, arylsulfinyl, a lower alkylsulfonyl group having from 1 to 3 carbon atoms, arylsulfonyl, acylamido, or a lower dialkylamino group having from 1 to 3 carbon atoms;

R_6 is selected from the group consisting of: (1) cycloalkyl, alkenyl, branched alkenyl, or cycloalkenyl; or (2) a branched alkyl group having from 3 to 5 carbon atoms or an alkyl group having from 1 to 5 carbon atoms, with the proviso that R_4 or R_5 is other than hydrogen;

R_7 is a member selected from the group consisting of:



-continued



wherein:

X is hydrogen, cyano, ethynyl, thiamido, a lower alkyl group having from 1 to 3 carbon atoms, a lower cycloalkyl group having from 3 to 5 carbon atoms, a lower alkenyl group having from 2 to 5 carbon atoms, a low cycloalkenyl group having from 3 to 5 carbon atoms or polyhaloalkyl;

Y is hydrogen, a lower alkyl group having from 1 to 3 carbon atoms, polyhaloalkyl, haloalkyl, halogen, cyano, nitro, a lower alkoxy group having from 1 to 3 carbon atoms, aryloxy, a lower alkylthio group having from 1 to 3 carbon atoms, arylthio, a lower alkylsulfinyl group having from 1–3 carbon atoms, arylsulfonyl, alkylsulfonyl, acylamido, or a lower dialkylamio group having from 1 to 3 carbon atoms;

R_8 is bromine or chlorine; and

Z is oxygen, sulfur or its oxides, or methylene.

4,291,058

NAPHTHALENECARBOXYLIC ACID ESTERS

Milos Suchy, Pfaffhausen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

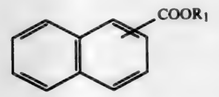
Continuation of Ser. No. 909,585, May 25, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 74,214

Claims priority, application Switzerland, Jun. 7, 1977, 6995/77

Int. Cl.[3] **A01N** *37/10*

U.S. Cl. 424—308 **3 Claims**

1. A method for the control of insects and acarids which comprises topical application to the insects and acarids of an amount of an insecticidal and acaricidal composition comprising a compatible carrier material and a compound of the formula



where R_1 is lower alkynyl which is effective as an insecticide and acaricid.

4,291,059

CYCLOALIPHATIC COMPOUNDS, ANALGESIC COMPOSITIONS THEREOF AND METHOD OF USE THEREOF AS ANALGESICS

Derek P. Reynolds, Hertfordshire, England, assignor to Glaxo Group Limited, England

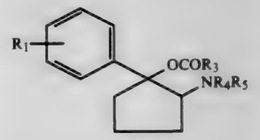
Filed Oct. 19, 1979, Ser. No. 86,333

Claims priority, application United Kingdom, Oct. 25, 1978, 41871/78; Oct. 25, 1978, 41873/78

Int. Cl.[3] **A61K** *31/55, 31/40;* **C07D** *295/10*

U.S. Cl. 424—311 **19 Claims**

1. A compound of the formula (I):



(I)

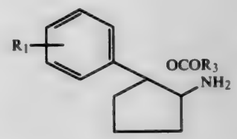
in which

R_1 represents a hydrogen atom, a halogen atom or a group OR_2, in which R_2 represents a hydrogen atom, an alkyl group containing 1 to 6 carbon atoms, an alkanoyl group containing 1 to 6 carbon atoms, an alkenoyl group containing 3 to 6 carbon atoms or a benzoyl group;

R_3 represents a hydrogen atom or an alkyl containing 1 to 6 carbon atoms, alkenyl containing 3 to 6 carbon atoms or a phenyl group;

R_4 and R_5, which may be the same or different, each represents a hydrogen atom or an alkyl containing 1 to 6 carbon atoms, alkenyl containing 3 to 6 carbon atoms or alkynyl group containing 3 to 6 carbon atoms optionally substituted by a phenyl or cycloalkyl group containing 3 to 6 carbon atoms; or R_4 and R_5 together with the nitrogen atom to which they are attached form a saturated four to seven membered ring in which said nitrogen atom is the only heteroatom in said ring; with the provisos that, when R_4 and R_5 simultaneously represent hydrogen atoms, (i) when R_1 represents a hydrogen atom, R_3 does not represent a methyl group, and (ii) the compound of formula (I) is the β-isomer, and its physiologically accepted salts.

12. A compound of the formula (I)a:



(I)a

in which R_1 represents a hydrogen atom, a halogen atom or a group OR_2 in which R_2 represents a hydrogen atom, an alkyl group containing 1 to 6 carbon atoms, an alkanoyl group containing 1 to 6 carbon atoms, an alkenoyl group containing 3 to 6 carbon atoms or a benzoyl group and R_3 represents an alkyl group containing 1 to 6 carbon atoms with the proviso that R_3 cannot be methyl when R_1 is a hydrogen atom; and its physiologically acceptable salts.

4,291,060

COMPOUNDS DERIVED FROM FORMYLPHENOXYACETIC ACID AS ANTIVIRAL AGENTS IN ANIMALS

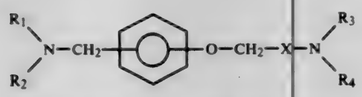
Allen R. Kraska, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 933,958, Aug. 15, 1978, abandoned. This application Feb. 5, 1979, Ser. No. 9,288

Int. Cl.³ A01N *37/30, 37/18;* **C07C** *103/28, 93/06*

U.S. Cl. 424—316 **12 Claims**

1. A compound of the formula



and the non-toxic acid addition salts thereof wherein

R_1 is hydrogen, lower alkyl or lower hydroxyalkyl;

R_2 is hydrogen or lower hydroxyalkyl;

R_3 is hydrocarbyl containing 14 to 18 carbon atoms;

R_4 is hydrocarbyl containing 14 to 18 carbon atoms;

and X is —CO— or —CH_2—.

12. A process for combating viral infections in vertebrates comprising the parenteral, intranasal or topical administration of an antivirally effective amount of a compound of claim **1**.

4,291,061

1H-INDEN-1-ONE DERIVATIVES, PROCESSES FOR PRODUCING THEM, THEIR USE IN MICROBICIDAL COMPOSITIONS, AND FOR COMBATING MICROORGANISMS

Elmar Sturm, Aesch, and Robert Nyfeler, Basle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

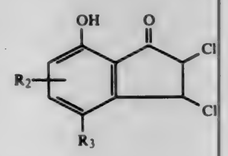
Filed Oct. 31, 1979, Ser. No. 89,830

Claims priority, application Switzerland, Nov. 6, 1978, 11528/78

Int. Cl.³ A01N *35/06;* **C07C** *49/633*

U.S. Cl. 424—331 **13 Claims**

1. A 2,3-dichloro-7-hydroxy-1H-inden-1-one derivative of the formula



wherein

R_2 and R_3 independently of one another are each hydrogen fluorine, chlorine, bromine, C_1–C_4-alkyl, trifluoromethyl or nitro.

6. A microbicidal composition containing as active ingredient an effective amount of a compound according to claim **1**, together with suitable carriers.

4,291,062

PHARMACEUTICAL COMPOSITIONS CONTAINING UREA

Steven Leigh, South Croydon, England, and Peter J. Ayres, Norwich, N.Y., assignors to Phares Pharmaceutical Research N.V., Curacao, Netherlands Antilles

Filed Jun. 15, 1979, Ser. No. 49,057

Claims priority, application United Kingdom, Jun. 16, 1978, 27115/78

Int. Cl.³ A61K *31/17*

U.S. Cl. 424—322 **8 Claims**

1. A pharmaceutical composition for application topically or by means of a suppository comprising:

(a) an effective concentration of a medicament for administration topically or by means of a suppository,

(b) from 5% to 40% of small particles of an inclusion compound of urea with at least one straight-chain aliphatic compound having from 4 to 30 carbon atoms per molecule,

(c) up to 50% of a powder that is inert to and insoluble in the remaining ingredients,

(d) from 25% to 90% of a carrier material which does not dissolve or react with any of components (a), (b), or (c), optionally together with a thickening agent to provide a composition of the desired consistency,

components (a), (b) and (c) being dispersed in component (d).

4,291,063

TREATMENT OF PROTEINACEOUS MATERIALS WITH ANHYDROUS AMMONIA GAS

John A. Ridgway, LaPorte, Ind., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 68,592, Aug. 22, 1979. This application Sep. 2, 1980, Ser. No. 183,206

Int. Cl.³ A23J *3/00;* **A23L** *1/34*

U.S. Cl. 426—319 **9 Claims**

1. A method for improving the texture of spray-dried yeast comprising exposing the spray-dried yeast to gaseous anhydrous ammonia at a treating temperature of from about 0° C. to about 100° C. and an ammonia pressure of from about 15 to about 45 percent of the vapor pressure of liquid ammonia at the treating temperature for from about 15 minutes to about 2 hours.

4,291,064

METHOD FOR MAKING LARGE SIZED BLOCKS OF CHEESE

Wilfred F. Retzlaff, New Franken, Wis., assignor to L. D. Schreiber Cheese Co., Inc., Green Bay, Wis.

Filed Apr. 16, 1979, Ser. No. 30,119

Int. Cl.³ A01J *25/11, 25/13, 25/15*

U.S. Cl. 426—397 **4 Claims**

1. A method for manufacturing blocks of cheese from cheese curd particles containing whey comprising the steps of:

(a) providing an open ended container;

(b) enclosing the bottom end of the container with a drain plate including perforations;

(c) locating a drain screen including two substantially parallel, narrowly spaced apart and fixed foraminous sidewalls centrally in said container; and applying a supporting means to said drain screen to retain said drain screen over said drain plate with the gap in said drain screen communicating with the perforations in said drain plate; said drain screen being of substantially parallel construction throughout its extent in the container and being of sufficient width and height in relation to the container such that the whey has a relatively short distance to travel to the drain screen and thus is easiy drainable over substantially the entire volume of the curd;

(d) partially filling said container with said cheese curd particles containing whey until said drain screen is supported by said curd, removing said supporting means from said container, and thereafter resuming and completing the filling step;

(e) allowing said cheese curd to settle and a quantity of whey to drain due to the weight of said cheese curd;

(f) applying pressure to said cheese curd through said top open end of said container;

(g) draining the whey from the curd through the drain screen and through said perforations of said drain plate;

(h) releasing said pressure on said curd;



(i) inverting said container;

(j) removing said drain plate and drain screen from now the top of said container;

(k) reapplying pressure to said curd through now the top open end of said container closing any remaining voids in said curd thereby, completing the interfusing of said curd producing substantially homogeneously solid block of cheese;

(l) releasing said pressure on said curd; and

(m) sealing the open ends of said container for shipping.

4,291,065

STALING RESISTANT BAKED FOOD PRODUCT

Henry F. Zobel, Darien, and James L. Maxwell, Clarendon Hills, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 892,615, Apr. 3, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,159

Int. Cl.³ A21D *13/00*

U.S. Cl. 426—549 **2 Claims**

1. A staling resistant sweet baked goods food product comprising a starch, water and between 15% and 40% by weight of a maltotriose-containing sweetener composition in a solid, fine and essentially homogeneous dispersion wherein said sweetener composition comprises between 30% and 100% by weight of maltotriose.

4,291,066

PROCESS FOR PRODUCING AN AMBIENT STABLE, STARCH-CONTAINING CONCENTRATE

Pieter J. Anema, Zevenaar, Netherlands; Derek R. Haisman, Bedford, and Rose M. Adams, Wellingborough, both of England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Dec. 6, 1979, Ser. No. 100,884

Claims priority, application United Kingdom, Dec. 7, 1978, 47554/78

Int. Cl.³ A23L *1/40*

U.S. Cl. 426—578 **8 Claims**

1. A process for producing an ambient stable concentrate which on dilution with water or an aqueous liquid forms at a temperature from 65° to 100° C. into a lump-free, thick soup, sauce, gravy or dessert, which process comprises:

(1) producing a concentrate containing:

(a) water

(b) starch,

(c) a proportion of an appropriate osmotic-pressure increasing agent sufficient to substantially reduce the rate of swelling of the starch and prevent gelatinisation during a pasteurization treatment carried out at 60°–100° C., and

(d) a proportion of a water-activity depressing agent conducive to a water activity not exceeding 0.92,

(2) filling the concentrate into containers and sealing the containers, and

(3) pasteurizing the concentrate in the sealed containers at 60°to 100° C.

4,291,067

WHEY PROTEIN RECOVERY

Marcel Buhler, Tolochenaz; Mats Olofsson, Yverdon, both of Switzerland, and Pierre-Yves Fosseux, Pont-Hebert, France, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 7, 1979, Ser. No. 36,427

Claims priority, application Switzerland, May 11, 1978, 5134/78

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—582 **15 Claims**

1. A process for recovering proteins from lactoserum, which comprises subjecting a lactoserum to a heat treatment to denature the proteins to an extent of about 35 to 70% by weight of the proteins present in it, separating the denatured proteins from the other non-fat constituents of the lactoserum by ultrafiltration, said proteins being found in the ultrafiltration retentate along with undenatured proteins, and subjecting the retentate to a complementary heat treatment for a time and temperature sufficient for denaturing the undenatured proteins.

4,291,068

METHOD OF MAKING SEMICONDUCTOR PHOTODETECTOR WITH REDUCED TIME-CONSTANT

Terry L. Jones, Springfield, and Brian S. Miller, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 31, 1978, Ser. No. 956,315

Int. Cl.³ B05D *5/12;* **H01L** *27/14, 31/00*

U.S. Cl. 427—88 **1 Claim**

1. A method of making a photocathode with at least a photon-absorbing portion and with an electron-emitting portion having a patterned surface, wherein said photocathode includes a semiconductor layer, including the steps of:

coating said layer with an insulating layer;

coating said insulating layer with an electron-sensitive layer;

scanning said electron-sensitive layer with an electron beam in a predetermined pattern;

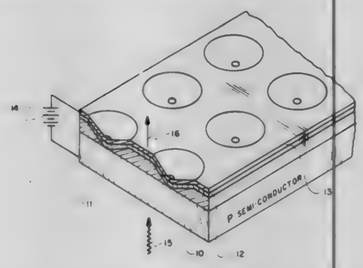
developing said scanned layer to produce a perforated mask;

etching said insulating layer through said mask to produce a dimpled surface;

removing said mask;

depositing a conductive material onto the dimpled surface to form a conductive layer with a dimpled surface;

wherein said semiconductor layer acts as the photon-absorbing



portion of said photocathode and said conductive layer acts as said electron-emitting portion of said photocathode when a voltage potential is applied therebetween to allow said photocathode to emit electrons in accordance with photons impinging thereon.

4,291,069

RENDERING POROUS STRUCTURES IMPERMEABLE BY TREATMENT WITH GELLABLE AMINE POLYMERS

Richard J. Pilny, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 20, 1977, Ser. No. 817,271

Int. Cl.³ B32B *35/00*

U.S. Cl. 427—140 **13 Claims**

11. In a method for grouting sewers and water wells which comprises locating a leaking area in a subterranean conduit, isolating said leaking area with packing devices and pumping a gellable composition into and over said area, the improvement which comprises preparing said gellable composition by admixing an aqueous solution of at least five weight percent of a water-soluble amide polymer with sufficient of an aqueous solution of a water-soluble aliphatic dialdehyde to provide from about 0.01 to about 0.067 mole of dialdehyde per mole of amide monomer combined in said polymer and with sufficient of an inorganic alkaline reagent to produce a pH of greater than 7.5.

4,291,070

COATING OF PARTICLES

Stuart R. Brown, Reading; Eric A. Feest, Wallingford, and Fred Lesch, Wantage, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 20, 1980, Ser. No. 208,775

Claims priority, application United Kingdom, Dec. 5, 1979, 42058/79

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—213 **5 Claims**

1. A method of coating metallic-particles with a ceramic material which comprises generating a fluidised bed of metallic-particles; contacting the metallic-particles in the bed with a wash-coat comprising a suspension of a non-dispersible ceramic powder in a sol of colloidal-particles convertible to the ceramic material thereby to coat the metallic-particles with the ceramic-particles and the colloidal-particles; and subsequently firing to produce a coating of the ceramic material.

4,291,071

WASHING AND SOFTENING COMPOSITIONS

Richard G. Harris, Mitford; Allan C. McRitchie, Tyne & Wear, and Alexander D. Wilson, Newcastle upon Tyne, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

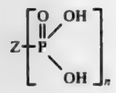
Filed Jun. 18, 1979, Ser. No. 49,677

Claims priority, application United Kingdom, Jun. 20, 1978, 27380/78

Int. Cl.³ C11D *1/86, 11/00, 17/06*; D06M *13/46*

U.S. Cl. 427—220 **1 Claim**

1. In a process for preparing a softening and detergent composition consisting essentially of, by weight, (a) from about 3% to 30% of one or more polyethoxy nonionic surfactants having a hydrophilic-lipophilic balance in the range from about 8 to about 15 and having not more than an average of about 16 ethoxy units per molecule; (b) from about 1% to about 15% of one or more cationic textile softeners; (c) from about 10% to about 80% of one or more detergency builders selected from the group consisting of water-soluble carbonates, borates, phosphates, polyphosphates, tripolyphosphates, bicarbonates, silicates, sulfates, amino polyacetates, phytates, polycarboxylates and water-insoluble aluminosilicates; and (d) from about 0.1% to about 5% of a discoloration inhibitor which is a water-soluble polyphosphonic acid having the general formula:



or a water soluble salt thereof, where n is at least 2 and Z is a connecting organic moiety having an effective covalency equal to n; said composition being characterized in that the weight ratio of nonionic detergent to cationic textile softener is in the range from about 10:1 to about 1:1, and further characterized in that said composition optionally contains only minor amounts anionic surfactants up to a weight ratio of anionic surfactant:cationic softener less than 1:5, which process comprises the steps of: (i) preparing spray-dried carrier granules containing discoloration inhibitor component (d) and at least part of the detergency builder component (c), (ii) preparing a fluid mixture of nonionic surfactant component (a) and cationic softener component (b), (iii) spraying said fluid mixture on to a moving bed of said carrier granules, the improvement which comprises:

including in the spray dried carrier granules (i) from about 0.1% to about 5% of an anionic surfactant selected from alkali metal C_9–C_{16} alkyl benzene sulphonates, and C_{12}–C_{20} alkali metal soaps, and maintaining the weight ratio of anionic surfactant to cationic softener (b) less than 1:5, whereby an appropriate product density is secured;

melting components (a) and (b) together and adding to the resulting molten mixture from about 0.3% to about 5.0%, by weight of the composition, of a second discoloration inhibitor selected from the group consisting of C_{10}–C_{20} primary alcohol ethoxylates condensed with from about 17 to about 100 molar proportions of ethylene oxide, polyethylene glycols of molecular weight from about 1000 to about 3000, and mixtures thereof, and spraying the molten mixture on a moving bed of the carrier granules which are maintained at a temperature from about 40° C. to about 75° C. during and for about 0.5 to about 5 minutes after said spraying operation, whereby a free-flowing composition is secured.

4,291,072

METHOD OF PRODUCING AIR-PERMEABLE FABRIC CONDITIONER SHEET FOR LAUNDRY DRYER

John H. Barrett, La Mirada, and Brian P. Flynn, Long Beach, both of Calif., assignors to Purex Corporation, Lakewood, Calif.

Division of Ser. No. 840,102, Oct. 6, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,472

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—243 **13 Claims**

1. The method of producing a fabric conditioner to be used in a laundry dryer, that includes

(a) treating an air permeable sheet, including distributing a fabric conditioner composition on the surface of said sheet,

(b) said treating including variably displacing said distributed composition on the sheet by application of displacing media thereto thereby providing substantially regularly distributed composition concentrations occluding interior interstitial spaces at certain regions of the sheet interior to block airflow therethrough, and greater air permeability at other sheet interior regions located adjacent to and between said concentrations than at said concentrations, said other regions of the sheet characterized by interstitially open spaces including relatively larger spaces from which conditioner composition has been removed by said variable displacement step, and relatively smaller spaces at which conditioner composition remains.

4,291,073

METHOD FOR FORMING LUBRICATING FILMS

Michael D. Soutsos, 5475 Colorado St., Long Beach, Calif. 90814

Filed Aug. 4, 1980, Ser. No. 175,051

Int. Cl.³ F16N *15/00*

U.S. Cl. 427—314 **2 Claims**

1. A method of coating articles with a dry lubricating film comprising the steps of:

heating the article until a surface temperature of 300°–500° F. is achieved thereon;

depositing an emulsion of powdered molybdenum disulfide emulsified in a solution of methylbenzene and paraphenyl phenol formaldehyde; and

heating the coated article in an oven at a temperature of 300°–500° F. until the solution sets up.

4,291,074

PROCESS FOR PRODUCING A SHEET OR STRIP WHICH IS LIGHTLY GALVANIZED ON ONE OR BOTH SIDES AND PRODUCTS OBTAINED BY SAID PROCESS

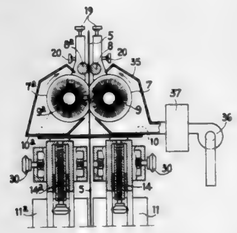
Bernard Schoeps, Strasbourg, and Michel Foret, Wantzenau, both of France, assignors to Laminoirs de Strasbourg, Strasbourg, France

Filed Oct. 31, 1979, Ser. No. 89,796

Claims priority, application France, Nov. 9, 1978, 78 31663; Oct. 9, 1979, 79 25090

Int. Cl.³ C23C *1/02*

U.S. Cl. 427—367 **9 Claims**



1. In a process for producing a hot galvanized press-formable steel sheet or strip having an extremely light coating on at least one side, comprising continuously passing the sheet or strip in a conventional hot dipping galvanizing bath and scraping or wiping a part of the liquid zinc on the sheet or strip when it issues from the bath; the improvement comprising determining the distance from the surface of the bath of a region of the sheet or strip in which the temperature of the zinc coating on the sheet or strip is in the range in which the zinc passes through a liquid-solid transitory state which is characterized by the friability of the zinc, and exerting in this region a mechanical action on at least one of the sides of the sheet or strip a little after the complete solidification of the zinc so as to completely remove the whole of the non-alloyed zinc and leavy only a thin layer of iron-zinc alloy.

4,291,075

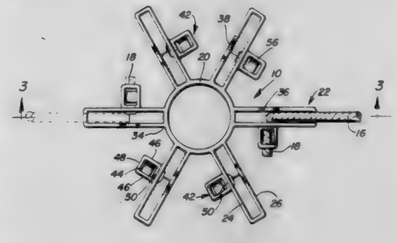
BRACKET FOR ARTIFICIAL CHRISTMAS TREE BRANCHES

Salvatore J. Puleo, 435 Division St., Elizabeth, N.J. 07201

Filed Oct. 29, 1979, Ser. No. 89,562

Int. Cl.³ A47G *33/06*

U.S. Cl. 428—8 **6 Claims**



1. A bracket for mounting artificial tree branches to an artificial tree trunk comprising:

an annular member concentrically and fixedly positionable on said tree trunk;

a plurality of outwardly extending arms on said annular member, said arms being circumferentially spaced on said annular member and rigidly mounted thereto, each of said arms defining an upwardly opening channel for receiving an inner end of an artificial tree branch, said channel being defined by first and second parallel spaced vertical walls interconnected by an upwardly and outwardly inclined bottom wall, said first vertical wall including a generally vertical slot communicating with an upper edge thereof and said second vertical wall including an opening generally in alignment with a lower end portion of the slot for receiving a laterally extending portion of said inner end of said tree branch with said slot enabling the tree branch integral with and adjacent to the laterally extending inner end to be moved into the channel and to be supported by the inclined bottom wall of said channel which serves to limit a downward swinging movement of said artificial tree branch;

means on each arm pivotally supporting the inner end of said tree branch to enable the tree branch to pivot about an axis transverse to the trunk; and

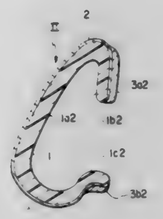
means on each arm to limit the downwardly swinging movement of the tree branch so as to position the tree branch in a position which simulates its natural relation to the tree trunk with the tree branch being freely pivotal upwardly to a position alongside the tree trunk.

4,291,076

TRIM MOLDING STRIPS FOR A VEHICLE

Hisanori Katoh, Tokyo, Japan, assignor to Inoue Gomu Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 9, 1979, Ser. No. 28,188
The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.
Int. Cl.³ B60R *13/02, 13/04*
U.S. Cl. 428—31 **11 Claims**



1. A trim molding strip for a vehicle comprising:

(a) a synthetic resin body member of a material having a high resistance to deformation selected from the group consisting essentially of acrylonitrile-butadiene-styrene, polycarbonate, poly-phenylene oxide, acrylonitrile-styrene, polypropylene, polyvinyl chloride, or polyamide, said body member having a center portion, a first end portion at one end of said center portion and a second end portion at the other end of said center portion;

(b) a metal foil bonded to said body member, said metal foil covering the center portion of said body member and covering at least a part of said first and second end portions; and

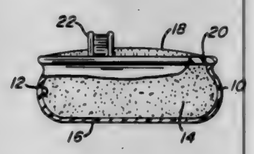
(c) plastic protective layer means selected from the group consisting of soft polyvinyl chloride, ethylene-vinyl acetate copolymer, ionomer, thermoplastic polyurethane, thermoplastic rubber, acrylonitrile butadiene rubber, butyl rubber or a compound of the rubbers and plastic or a foamed one of the rubbers, bonded to said metal foil only on the portions of the metal foil which cover the first and second end portions of said body member, said protective layer means covering at least a portion of the metal foil which covers the part of said first and second end portions of said body member, said protective layer means being soft relative to said body member and adapted for positioning between said metal foil and a vehicle for contacting said vehicle and forming a protective layer between said metal foil and the surface of said vehicle at the first and second end portions of said body member.

4,291,077

METHOD AND APPARATUS FOR INSTALLING A WHEEL COVER

Robert D. Mundell, 221 Penhurst Dr., Pittsburgh, Pa. 15235

Filed Aug. 8, 1979, Ser. No. 64,671
Int. Cl.³ A41D *13/08*
U.S. Cl. 428—76 **6 Claims**



1. An apparatus to distribute an impact force along a selected surface, comprising:

a semi-rigid stiffener sheet having an exposed surface and an unexposed surface;

a deformable casing secured at its periphery to said stiffener sheet;

said casing and the said unexposed surface of said stiffener sheet defining an enclosure;

finely divided solid material filling said enclosing;

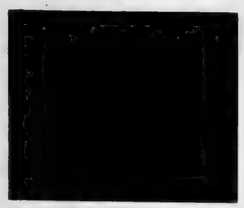
retaining means secured to the said apparatus to retain the said exposed surface against the hand of a user of the apparatus.

4,291,078

BREATHABLE LEATHER-LIKE MATERIALS AND PROCESS FOR MAKING SAME

Harold D. Lyons, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 687,411, May 14, 1976, abandoned, which is a division of Ser. No. 389,023, Aug. 16, 1973, abandoned. This application Mar. 27, 1980, Ser. No. 134,615
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—91 **8 Claims**



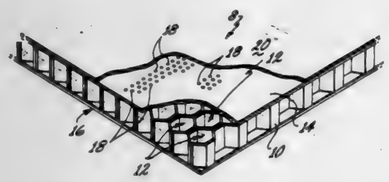
1. A leather-like material with a high degree of air permeability, good abrasion resistance and resistance to cracking at low temperatures consisting essentially of a porous, fibrous substrate having fibers extending from a surface thereof, and a polymer layer comprising from about 7 percent to about 15 percent by weight, based upon the substrate and formed of a polymeric composition having a gas entrapped therein, said polymer layer being secured substantially exclusively along said ascending fibers and forming a discontinuous polymer phase and a continuous pore phase wherein the discontinuous polymer phase of said polymer layer covers from about 30 percent to about 70 percent of surface of said material with the remainder being the continuous pore phase, said leather-like material having a surface luster from about −0.7 to about +5.7.

4,291,079

METHOD OF MANUFACTURING A HONEYCOMB NOISE ATTENUATION STRUCTURE AND THE STRUCTURE RESULTING THEREFROM

Felix Hom, La Mesa, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Dec. 12, 1979, Ser. No. 102,766
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—116 **8 Claims**



1. A process for manufacturing an improved acoustic sand-

wich panel for attenuating a wide range of noise frequencies which is suitable structurally for use in a severe environment, said sandwich panel including a central cellular core positioned between an imperforate facing sheet and a perforated facing sheet having a plurality of perforations therethrough, the opposite side of the perforated sheet from said central cellular core having a thin layer of porous fibrous material bonded thereto that has a predetermined flow through resistance, the steps of the process comprising:

(a) cleaning and degreasing the imperforate sheet, central cellular core, perforate facing sheet and thin layer of porous fibrous material;

(b) applying a layer of a solvent base adhesive to one side of the perforated sheet;

(c) removing the solvent from the layer of solvent base adhesive;

(d) securing together the solvent base coated surface to the perforate sheet and the thin sheet of porous fibrous material under a positive pressure;

(e) curing the solvent base adhesive and removing the positive pressure;

(f) coating the fibers of the thin sheet of porous fibrous material and the perforated sheet surface adjacent thereto with a solution comprising an anti-wetting agent and an indicator;

(g) inspecting the opposite perforated surface of the combined perforated sheet for any trace of the indicator thereon;

(h) removing any indicator with accompanying nonwetting agent from the opposite perforated surface;

(i) applying a layer of a second adhesive between the imperforate sheet and the central cellular core and between the perforation exposed surface of the combined perforated sheet and thin layer of porous fibrous material and the central cellular core;

(j) securing together the imperforate sheet, central cellular core and combined peforate facing sheet and thin sheet of porous fibrous material under a positive pressure; and

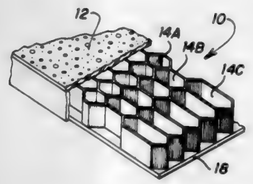
(k) curing the second adhesive and removing the positive pressure.

4,291,080

SOUND ATTENUATING STRUCTURAL PANEL

Richard A. Ely, Dallas, and Sherwood W. McClaren, III, Grand Prairie, both of Tex., assignors to Vought Corporation, Dallas, Tex.

Filed Mar. 31, 1980, Ser. No. 135,388
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—116 **21 Claims**



1. A sound-suppressing panel for use on a structure adjacent which a fluid is to flow and upon which sound waves impinge, comprising:

(a) a top sheet forming a cover, adjacent which a fluid flow is adapted to pass and cause a turbulent boundary layer of fluid to be in direct contact with the cover, and there being a plurality of linear passages through the cover, and the separation of adjacent passages being no more than about ten times the diameter of the smaller of any two adjacent passages;

(b) a bottom sheet;

(c) a plurality of walls extending between the bottom sheet and the top sheet, and the walls having various orientations and intersecting one another at various locations so as to form cells, and the walls having different dimensions so as to create at least two differently sized cells, and each cell having a characteristic frequency which is determined by the cell volume and the size and quantity of linear passages leading into a respective cell, and there being combinations of cell and passage sizes so as to produce at least two different characteristic frequencies associated with sound-induced oscillatory flow through the linear passages;

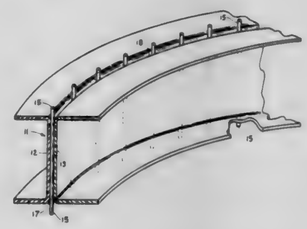
(d) and the cells being arranged in a side-by-side fashion, with differently sized cells being positioned adjacent one another, and the linear passages also being located adjacent each other so as to insure that the localized vortices associated with the sound-induced oscillatory flow through a respective linear passage interacts with the localized oscillatory flow through the adjacent linear passages, whereby the intermixing of vortices generated by adjacent linear passages contributes to an enhanced mixing of said localized vortices with the turbulent boundary layer flow that is passing over said vortices.

4,291,081

LACED COMPOSITE STRUCTURE

Nejat A. Olez, Rancho Palos Verdes, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Jul. 26, 1979, Ser. No. 60,896
Int. Cl.³ E04C *3/02*
U.S. Cl. 428—119 **6 Claims**



1. A bonded joint comprising, in combination:

a. at least one skin panel;

b. two upstanding members having abutting surfaces bonded side by side, and flanges which are bonded to said skin panel forming said bonded joint; and

c. lacing, cocured under tension, extending through said panel and between said abutting surfaces of said upstanding members through a plurality of holes provided between said abutting surfaces to transfer tension and shear loads occurring normal to said skin panel into and through said upstanding members.

4,291,082

BREATHABLE FABRIC AND SACK MADE THEREFROM

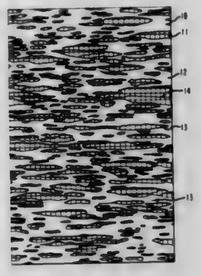
Alan D. Stall, Omemee, Canada, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 14, 1979, Ser. No. 94,110
Claims priority, application United Kingdom, Nov. 15, 1978, 044572/78
Int. Cl.³ B32B *3/10, 5/20;* **B65D** *29/02*
U.S. Cl. 428—138 **13 Claims**

1. A breathable fabric comprising a structure woven from synthetic thermoplastic polymeric tapes, said structure having a foamed porous lace-like coating of synthetic thermoplastic polymeric material bonded to at least one side thereof.

9. A process for making a breathable fabric comprising melt extruding a coating of a synthetic thermoplastic polymer onto

and bonding the coating to a woven structure of synthetic polymeric tapes, wherein the coating material contains a blow-



ing agent in an amount sufficient to make the coating into a porous lace-like layer upon extrusion.

4,291,083

SLIDING BARRIER FOR FURNITURE DEVICES AND OPENINGS IN BUILDINGS

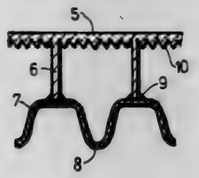
Jens Breitenbach, Haan, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,081

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855652

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—163 **6 Claims**



1. A sliding barrier for furniture, devices and openings in buildings, comprising a flat plastic web provided with narrow plastic reinforcing ribs which extend in a transverse direction to the sliding direction of the barrier, the ribs having ends joined by a resilient plastics film which is preshaped at least partially concavely and/or convexly between adjacent reinforcing ribs.

4,291,084

WARP-FREE MULTI-LAYER STAMPABLE THERMOPLASTIC SHEETS

Leon Segal, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 889,573, Mar. 23, 1978, abandoned. This application Aug. 16, 1979, Ser. No. 67,483

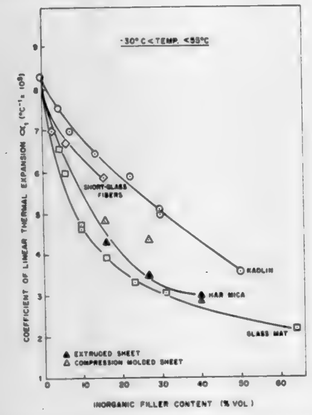
Int. Cl.³ B32B *5/16, 27/04*

U.S. Cl. 428—212 **16 Claims**

1. A warp-free laminated sheet comprised of at least one pair of thermoplastic layers, the total number of said layers being even, wherein each pair of layers is comprised of:

(a) a surface layer consisting essentially of a thermoplastic polymer and about 10 to 75 weight percent, based on the total weight of the surface layer, of mica having an aspect ratio of at least 20 to 1; and

(b) a strength layer adjacent to said surface layer comprised of a thermoplastic polymer and about 10 to 60 weight percent, based on the total weight of the strength layer, of a long glass fiber mat comprised of fibers having a length of at least 1 inch, said mat being substantially encased in a matrix of said thermoplastic, wherein the ratio of the volume percent of said mica in the surface layer to the



volume percent of said glass fiber mat in the strength layer is about 1.75 to 2.5.

4,291,085

PACKAGING MATERIAL FOR FOOD TO BE SUBJECTED TO HIGH-TEMPERATURE SHORT-TIME STERILIZATION AND PROCESS FOR THE PREPARATION THEREOF

Senji Ito, Ebina, and Kenji Suzuki, Yokohama, both of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 413,256, Nov. 6, 1973, abandoned. This application May 4, 1976, Ser. No. 682,908

Claims priority, application Japan, Nov. 10, 1972, 47-113388; Jun. 19, 1973, 48-068295

Int. Cl.³ B65D *65/40*

U.S. Cl. 428—215 **18 Claims**

1. A packaging material for food to be subjected to high-temperature short-time sterilization, which comprises a flexible laminate sheet including (a) a heat-sealable inner face layer of a crystalline polypropylene and (b) a heat-resistant resin outer face layer of a thermoplastic resin having a melting point or decomposition point higher than the melting point of said polypropylene, said thermoplastic resin being selected from the group consisting of

(a) polyesters and copolyesters comprising recurring units expressed by the following formula

$$\leftarrow O-R_1-O-\overset{O}{\overset{\|}{C}}-R_2-\overset{O}{\overset{\|}{C}}\rightarrow \quad \text{or} \quad \leftarrow O-R_1-O-R_2-\overset{O}{\overset{\|}{C}}\rightarrow$$

wherein R_1 is an alkylene or cycloalkylene group having 2 to 8 carbon atoms, and R_2 is an arylene group,

(b) polyamides and copolyamides comprising recurring units expressed by the following formula

$$\leftarrow NH-(CH_2)_n-\overset{O}{\overset{\|}{C}}\rightarrow \quad \text{or} \quad \leftarrow NH-(CH_2)_n-NH-\overset{O}{\overset{\|}{C}}-(CH_2)_m-\overset{O}{\overset{\|}{C}}\rightarrow$$

wherein n is a number of 3 to 13 and m is a number of 4 to 11,

(c) polycarbonates comprising recurring units represented by the following formula

$$\leftarrow O-R_3-O-\overset{O}{\overset{\|}{C}}\rightarrow$$

wherein R_3 is a hydrocarbon group having 8 to 15 carbon atoms,

(d) biaxially stretched isotactic polypropylene films, and

(e) acetyl cellulose,

said heat-sealable inner face layer of said crystalline polypropylene film being characterized in that (i) said film is one prepared by melting in an extruder a crystalline polypropylene having a melt flow index of 0.5 to 3, extruding the melt in the form of a film at a temperature of 230° to 260° C., through a T die, and contacting the extruded film with a chill roll having a surface temperature of 20° to 70° C., to thereby cool rapidly and solidify the film, (ii) when the film is extracted in salad oil at 130° C. for 30 minutes, the amount extracted of the polypropylene is smaller than 1500 ppm, (iii) the polypropylene film has a pseudohexagonal crystal form or a crystal form of a combination of the pseudohexogonal system and α-monoclinic system and a degree of orientation not higher than 3.0 and (iv) the surface of the polypropylene film confronting the layer (b) has a tension in the wet state (T_1) of at least 38 dyne/cm when it is allowed to stand still in an atmosphere of a temperature of 20° C. and a relative humidity of 40% for 1 week.

4,291,086

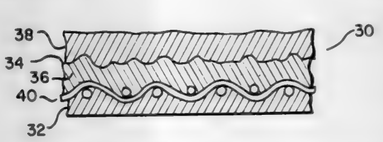
COATING SYSTEM FOR ROOFS, SWIMMING POOLS AND THE LIKE

Jerry P. Auten, Rte. 6, Box 752, Charlotte, N.C. 28204

Continuation-in-part of Ser. No. 39,805, May 17, 1979, Pat. No. 4,212,913. This application Jul. 10, 1980, Ser. No. 168,419

Int. Cl.³ B32B *7/00, 17/04;* **E04D** *5/10*

U.S. Cl. 428—242 **12 Claims**



1. A coating system of high tensile strength and resilience for use as a coating for roofs, swimming pools and the like comprising an underlayer of asphalt material, an intermediate layer of woven fiber glass fabric, a first overlayer of coating material bonded to said underlayer and intermediate layer with said intermediate fiber glass fabric layer embedded between said underlayer and said first overlayer, and a second overlayer of said coating material bonded to said first overlayer, said woven fiber glass fabric including strands of bulked yarn in a relatively loose weave, and said coating material comprising an acrylic resin emulsion.

4,291,087

NON-WOVEN FABRICS BONDED BY RADIATION-CURABLE, HAZARD-FREE BINDERS

Charles E. Warburton, Jr., Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 12, 1979, Ser. No. 47,839

Int. Cl.³ B05D *3/06;* **B32B** *27/04, 27/12, 31/28;* **D04H** *1/58*

U.S. Cl. 428—288 **12 Claims**

1. A process for making a non-woven fabric comprising:

a. providing a mass of fibers associated in a random or regular pattern to form a web or mat, at least 50% by weight of the fibers being hydrophobic;

b. contacting with the fibers a hydrophobic binder, which does not contain conventional polymerizable crosslinking agents or unpolymerized ethylenic unsaturation and which does not contain a photosensitive group or compound, comprising a polymer polymerized from a monomer mixture comprising at least one polymerizable monoethylenically unsaturated monomer selected from the group consisting of C_2-C_{18} alkyl acrylates, C_2-C_{18} alkyl methacrylates, vinyl aromatic compounds, vinyl halides, vinylidene halides, vinyl esters of saturated carboxylic acids, polymerizable ethylenically unsaturated mono-carboxylic and dicarboxylic acids and esters thereof, acrylonitrile, methacrylonitrile, alpha-olefins, and diene monomers, the polymer having a molecular weight of from about 50,000 to 10,000,000 and a glass transition temperature of from about −60° C. to 40° C.;

c. drying the binder-containing mass of fibers at a temperature above the glass transition temperature of the polymer to effect fusion of the polymer and bonding of the mass of fibers thereby; and

d. exposing the dried binder-containing mass of fibers to a source of radiation, wherein the radiation consists of ultraviolet radiation and electron beam radiation, for a period of time sufficient to effect cure of the polymer by crosslinking the polymer chains, thereby rendering the resulting non-woven fabric resistant to organic dry-cleaning solvents and laundering and increasing the wet strength of the resulting non-woven fabric.

10. An article of manufacture produced by the process of claim **1**.

4,291,088

FOAM PRODUCTS FROM FURFURYL ALCOHOL-AMINO-FORMALDEHYDE

Per L. Wolff, Birkerod, Denmark, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Aug. 14, 1979, Ser. No. 66,583

Claims priority, application Netherlands, Jul. 10, 1979, 7905380

Int. Cl.³ B32B *5/18, 17/04*

U.S. Cl. 428—313 **8 Claims**

1. A non-inflammable, non-flashing foam product, particularly foam board, comprising:

(a) a layer of a rigid foam product of a furfuryl alcohol-aminoformaldehyde resin composition containing at least a sufficient amount of a boron compound so that the foam will pass the muffle furnace test at 500° C. and has no second exotherm at 200° C.;

(b) at least one surface of said layer of rigid foam product having, as an integral part of its surface layer, a porous glass fibre tissue;

(c) a solid or semi-solid layer of an inorganic material applied subsequently onto the glass fibre tissue containing surface.

4,291,089

COMPOSITE POWDERS SPRAYABLE TO FORM ABRADABLE SEAL COATINGS

Emilija Adamovic, Edmonton, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Nov. 6, 1979, Ser. No. 91,870

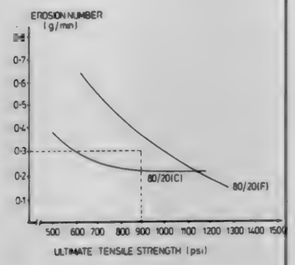
Int. Cl.³ B05D *1/10;* **B32B** *5/16*

U.S. Cl. 428—325 **30 Claims**

1. A composite powder sprayable by thermal spraying onto a substrate to form an abradable seal coating with suitable strength and erosion resistance, said powder comprising particles each having a core of non-metallic solid material surrounded by a layer of metallic material selected from the group consisting of nickel and nickel alloys,

at least about 95% by weight of the particles having a size less than about 150 microns,

at least about 50 to about 90% by weight of the particles having a size greater than about 75 microns; and



less than about 10% by weight of the particles having a size less than about 45 microns.

4,291,090

HEAT SEALABLE PLASTIC FILMS COATED WITH A COATING COMPOSITION

Fujisawa Kenji, 1-3, Honcho 1-Chome, Jyoetsu; Katsube Kazuo, 30; Yako Tadataka, 1100, both of Oaza Arai, Arai; Uemura Koich, 5-1-506, Higashi Izumigaoka 2-chome, Toyonaka; Harada Yuichi, and Sakai Yasumasa, both of 238, Aza Hayashi, Tsugiya, Amagasaki, all of Japan

Continuation-in-part of Ser. No. 948,006, Oct. 2, 1978, abandoned, which is a division of Ser. No. 806,579, Jun. 15, 1977, abandoned. This application Dec. 19, 1978, Ser. No. 971,117

Claims priority, application Japan, Jun. 21, 1976, 51-73498; Dec. 20, 1977, 52-154122

Int. Cl.[3] B32B *5/16, 27/08, 27/28*

U.S. Cl. 428—327 **10 Claims**

1. A heat sealable coated plastic film comprising a polyolefin or polyester plastic film substrate coated with a composition, which comprises an aqueous dispersion containing, in substantially particulate form, a copolymer of:

(a) at least one α,β-unsaturated carboxylic acid, in an amount of from 0.1 to 10 percent by weight of the copolymer,

(b) at least one acrylic ester selected from the group consisting of alkyl acrylates whose alkyl group contains one to twelve carbon atoms and alkyl methacrylates whose alkyl group contains one to twelve carbon atoms, and

(c) at least one copolymerizable hydroxyalkyl ester of α,β-unsaturated carboxylic acids, the amount of component (c) being from 0.1 to 80 percent by weight of the copolymer;

said ingredients being incorporated in the copolymer in proportions such that the copolymer has an average molecular weight of from 5,000 to 150,000 a second-order transition temperature of from 30° to 70° C., and comprises particles whose size is primarily from 0.01 to 1.0 micron; and said copolymer being incorporated in the aqueous dispersion in an amount of from 10 to 60 percent by weight thereof.

4,291,091

BUBBLE MEMORY OPTIMIZATION BY ADJUSTING PROPERTIES OF QUARTZ FILM

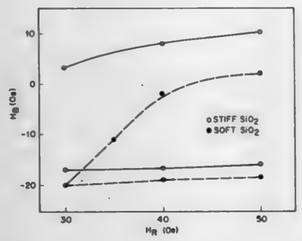
Martin J. Casey, Lansdale; Barry F. Stein, Dresher, and Herman E. Wetterskog, Douglasville, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Division of Ser. No. 839,699, Oct. 5, 1977. This application Jun. 11, 1980, Ser. No. 158,194

Int. Cl.[3] B32B *9/04*

U.S. Cl. 428—336 **4 Claims**

1. A bubble memory device comprising a substrate, a magnetic bubble film formed on said substrate, a conductor and a permalloy film the improvement comprising,



a. a quartz layer interposed between said conductor and said bubble film, and between said conductor and said permalloy film, said quartz layer having a stiffness characteristic obtained by a p-etch deposition rate below 6 Å/second.

4,291,092

HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF ETHYLENE COPOLYMER AND PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,344

Int. Cl.[3] B32B *27/08, 27/32*

U.S. Cl. 428—349 **9 Claims**

1. A multiple-layer, heat-sealable film comprising

(a) a substrate layer consisting essentially of a homopolymer of polypropylene, a copolymer of polypropylene, or a blend of said homopolymer of copolymer containing up to 40% by weight of a different compatible polyolefin; and

(b) on at least one of the surfaces of the substrate layer, a surface layer comprising

a blend of less than 25 weight percent or greater than 90 weight percent of a copolymer of ethylene (1–9.5 mole percent) and a higher olefin having 4 or more carbon atoms (99–90.5 mole percent), and greater than 75 weight percent or less than 10 weight percent of a copolymer of propylene (80–95 mole percent) and a higher olefin having 4 or more carbon atoms (20–5 mole percent).

4,291,093

STABILIZED POLYOLEFIN SUBSTRATE OVERCOATED WITH AN ETHOXYLATED LUBRICANT AND A PHOSPHATE ESTER

Marvin Wishman; Peter A. Taylor, and James C. Leininger, all of Greenville, S.C., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Oct. 5, 1979, Ser. No. 82,390

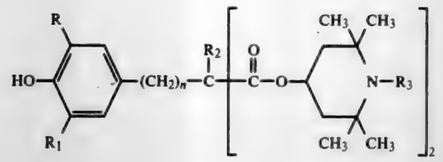
Int. Cl.[3] B32B *27/02, 27/06, 27/18, 27/32*

U.S. Cl. 428—379 **24 Claims**

1. Degradation resistant articles of manufacture prepared from

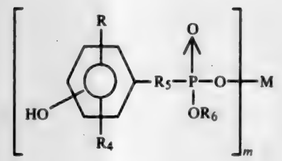
(A) stabilized polymeric compositions comprising a major amount of a polymer of a mono-1-olefin having incorporated therein a small, but effective, stabilizing amount, sufficient to stabilize said composition against the deteriorative action of ultraviolet radiation, of

(1) at least one hindered amine represented by the formula



where R, R^1, R^2 are the same or different, each being an alkyl group having from 1 to about 6 carbon atoms, R^3 is an alkyl group having from 1 to about 12 carbon atoms, and n is an integer of 1 to 4, and

(2) at least one metal phosphonate represented by the formula



where R is as before, R^4 is hydrogen or alkyl having from 1 to about 6 carbon atoms, R^5 is an alkylene radical having from 1 to about 4 carbon atoms, R^6 is hydrogen or alkyl having from 1 to about 30 carbon atoms, M is a metal selected from among aluminum, barium, cadmium, calcium, chromium, cobalt, nickel, sodium, tin, and zinc, and m is an integer of 1, 2 or 3, and

(B) overcoated with a finish composition comprising

(a) at least one ethoxylated textile lubricant in an amount sufficient to impart lubricating properties to said composition, and

(b) an antistatic agent comprising phosphate esters in an amount sufficient to impart antistatic properties to said composition and increase the stability of said articles.

7. An article according to claim 1 which is a filament.

13. A process comprising

(A) forming a shaped article from a stabilized polymeric composition comprising a major amount of a polymer of a mono-1-olefin having incorporated therein a small, but effective, stabilizing amount sufficient to stabilize said composition against the deteriorative action of ultraviolet radiation of

(1) at least one hindered amine and

(2) at least one metal phosphonate, with the further proviso that both (1) and (2) have a structural formula as defined in claim 1, and

(B) applying to the thus-shaped article, a finish coating composition comprising

(a) an ethoxylated textile lubricant in an amount sufficient to impart lubricating properties to said composition and

(b) an antistatic agent comprising phosphate esters in an amount sufficient to impart antistatic properties to said composition and to increase the stability of said shaped articles.

21. A process for preparing a polyolefin textile material comprising

(a) melt spinning a polyolefin resin containing a stabilizing system comprising a hindered amine and a metal phosphonate, each of which has a structural formula as defined in claim 1 and

(b) applying to said melt spun polyolefin a finish composition comprising an ethoxylated textile lubricant in a major amount sufficient to impart lubricating properties to said composition and an antistatic agent comprising phosphate esters in a minor amount sufficient to impart antistatic properties to said composition and increase the stability of said melt spun polyolefin textile materials.

4,291,094

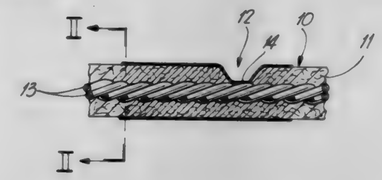
PULP INSULATION REPAIR

William P. Trumble, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 29, 1979, Ser. No. 89,226

Int. Cl.[3] B32B *15/14;* **C08K** *5/12*

U.S. Cl. 428—380 **8 Claims**



1. A fibreless compound for use as a spray material on pulp insulation consisting essentially of of an electrical conductor comprising from 5.0 to 9.0 parts by weight of polyvinylpyrrolidone-polyvinylacetate copolymer, from 0.5 to 0.9 parts by weight of a copper corrosion inhibitor and from 1.0 to 3.0 parts by weight of a plasticizer.

8. An electrically insulated conductor having at least one conducting member insulated with a covering layer of pulp insulation and the fibers of the pulp having a covering of the compound according to claim 1 which has penetrated between the fibers while substantially avoiding air spaces formed between the fibers.

4,291,095

COATING COMPOSITION FOR GLASS FIBERS

Kenneth P. Chase, Newark, and Dale E. McCoy, Granville, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 821,379, Aug. 3, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,779

Int. Cl.[3] C08L *27/14;* **D02G** *3/00*

U.S. Cl. 428—391 **9 Claims**

1. A coloring agent-containing coating composition comprising in aqueous dispersion: a film-forming elastomeric latex polymer, an epoxy-functional silane, and a coloring agent comprising an acid-functional latex polymer, a mercapto-functional silane, and a cationic dye.

8. A glass fiber substrate at least a portion of the surface of which is coated with a coating of the cured aqueous coating composition of claim 1.

4,291,096

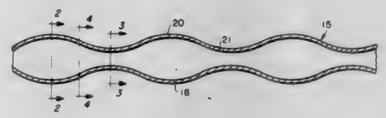
NON-UNIFORM CROSS-SECTIONAL AREA HOLLOW FIBERS

John A. Taylor, Furlong, Pa., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Mar. 12, 1979, Ser. No. 19,972

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—398 **12 Claims**



1. A semipermeable hollow fiber comprising cuprammonium regenerated cellulose, said fiber having a hollow core extending continuously throughout the length thereof and

having a uniform wall thickness and a non-uniform cross-sectional area, said fiber having along its length a first plurality of points of maximum outside diameter and a second plurality of points of minimum outside diameter, said maximum outside diameters ranging from about twenty microns to about one thousand microns and said minimum outside diameters ranging from about 0.25 times the maximum outside diameter to about 0.9 times the maximum outside diameter.

4,291,097

SCRATCH-RESISTANT, DYEABLE COATING COMPOSITIONS FOR SYNTHETIC RESIN ARTICLES

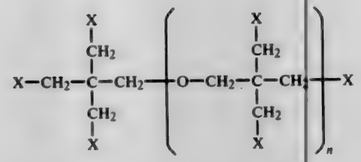
Kazumasa Kamada; Isao Sasaki, and Kenji Kushi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,625
Claims priority, application Japan, Dec. 22, 1978, 53-160561
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—412 **21 Claims**

1. A coating composition comprising:

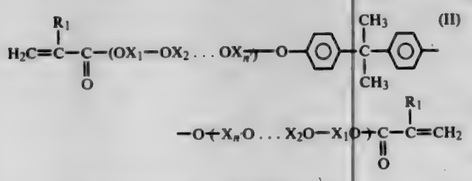
5 to 90 parts by weight of a monomer mixture (A), which monomer mixture consists essentially of:

(1) from about 30 to about 95% by weight of a polyfunctional monomer of a mono or polypentaerythritol poly(-meth)acrylate having at least three (meth)acryloyloxy groups per molecule and represented by the formula:



wherein at least 3 of X are CH_2=CR—COO— groups and the rest are —OH groups, n is an integer of 0 to 4 and R is hydrogen or a methyl group;

(2) up to about 60% by weight of a bifunctional monomer represented by the formula:

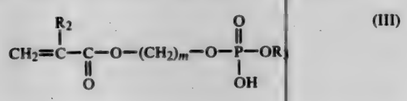


(II)

wherein R_1 is hydrogen or a methyl group, X_1, X_2, —$X_{n'2}$ which may be the same or different, alkylene groups containing at least 6 carbon atoms or of an alkylene-type group containing at most 6 carbon atoms in which one hydrogen atom is replaced with a hydroxyl group, and n'2 is an integer of 0 to 5;

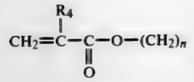
(3) from about 3 to about 40% by weight of a monomer containing not more than 2 (meth)acryloyloxy groups in one molecule, having a boiling point not below 150° C. under atmospheric pressure and a viscosity not higher than 20 centipoises at 20° C.;

(4) from about 1 to about 20% by weight of a phosphoric acid ester-type monomer represented by the formula



(III)

wherein R_2 is hydrogen or a methyl group, R_3 is hydrogen or a



group, R_4 is hydrogen or a methyl group, n and m are an integer of 1 to 5; and

(5) from about 1 to about 10% by weight of an ethanolamine-type compound represented by the formula:

$$NR_5R_6(CH_2CH_2OH) \quad \text{(IV)}$$

wherein each of R_5 and R_6 is independently hydrogen, an alkyl group of 1 to 15 atoms or a CH_2CH_2OH group);

(B) from about 95 to about 10 parts by weight of at least one organic solvent that forms a uniform solution when mixed with said monomer mixture (A); and

(C) up to 10 parts by weight of a photosensitizing agent per 100 parts by weight of the total of the mixture (A) and organic solvent (B);

said coating capable of forming a dyeable cross-linked, hardened film high in abrasion resistance, surface smoothness and antistaticity when irradiated with active energy rays in air.

4,291,098

ORGANOALKOXYSILANE COATING COMPOSITIONS FOR PLASTIC ARTICLES

Mitsuaki Tanaka, and Masaharu Suzuki, both of Kobe, Japan, assignors to Nippon Fine Chemical Co., Ltd. and Nippon Aspherical Lens Co., Ltd., both of Osaka, Japan

Filed Jan. 9, 1980, Ser. No. 110,744
Claims priority, application Japan, Jan. 22, 1979, 54-6654
Int. Cl.³ B32B *27/36;* **B05D** *3/02;* **C09D** *3/82*
U.S. Cl. 428—412 **14 Claims**

14. A plastics article having a cured coating of a composition comprising

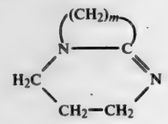
(A) 100 parts by weight of hydrolyzed product of an organoalkoxysilane represented by the formula

$$R^1_nSi(OR^2)_{4-n} \quad \text{(I)}$$

wherein R^1 is a saturated or unsaturated hydrocarbon residue having 1 to 4 carbon atoms, R^2 is a saturated hydrocarbon residue having 1 to 4 carbon atoms, and n is 0, 1 or 2,

(B) about 1 to about 10 parts by weight of an epoxy resin having an epoxy equivalent of about 120 to about 700, and

(C) about 0.05 to about 5 parts by weight of a bicyclic amidine represented by the formula



(II)

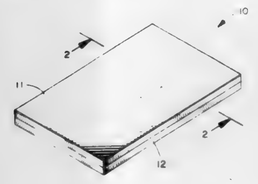
wherein m is 3 or 5, or a salt thereof.

4,291,099

POLYVINYLIDENE FLUORIDE-POLYURETHANE LAMINATES AND METHOD

Albert Strassel, Oullins, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Division of Ser. No. 3,633, Jan. 15, 1979, Pat. No. 4,221,757. This application Jan. 17, 1980, Ser. No. 112,957
Claims priority, application France, Jan. 20, 1978, 78 01590
Int. Cl.³ B32B *27/00, 31/00*
U.S. Cl. 428—421 **4 Claims**



1. A laminate comprising a layer of a polyvinylidene fluoride resin having adhered to at least one surface thereof without any intermediate bonding agent, a layer of a thermoplastic polyurethane resin, said laminate being formed by bringing into contact at least one fluid stream of each of said resins while said stream of a polyvinylidene fluoride has, at 200° C., an apparent viscosity, in poises, between the minimum and maximum values set forth below for at least two of the velocity gradients, in sec^{-1}, set forth below:

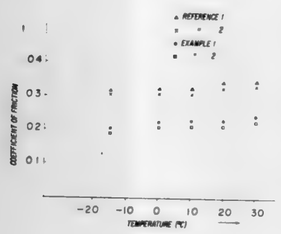
VELOCITY GRADIENT	APPARENT VISCOSITY VALUES	
	Minimum	Maximum
3.54	30×10^3	200×10^3
11.81	18×10^3	93×10^3
35.4	11×10^3	47×10^3
118	6.5×10^3	21×10^3
354	3.9×10^3	10×10^3
1181	2.3×10^3	4.5×10^3

4,291,100

MAGNETIC RECORDING MEDIUM

Eiji Horigome; Hiroshi Ota, and Hitoshi Azegami, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,573
Claims priority, application Japan, Jun. 23, 1979, 54/79296
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—424.2 **6 Claims**



1. A magnetic recording medium which comprises a substrate coated with a magnetic layer wherein a magnetic powder is oriented in a binder and a polyoxyethylenesorbitane higher fatty acid ester surfactant.

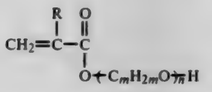
4,291,101

WOOD FIBROUS MATERIAL AND A METHOD FOR IMPROVING THE QUALITIES THEREOF

Yoshiharu Tanizaki; Kenichiro Minagawa, both of Yokohama; Shinichi Akimoto, Machida, and Kuninori Horioka, Tokyo, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1979, Ser. No. 64,314
Claims priority, application Japan, Aug. 11, 1978, 53-97399
Int. Cl.³ B32B *23/08, 27/10;* **B05D** *3/00, 3/02*
U.S. Cl. 428—514 **6 Claims**

1. Wood fiber material impregnated with a polymer made of one or more monomers having the formula



wherein R is hydrogen or methyl, m is an integer of from 2 to 4 and n is an integer of from 2 to 20.

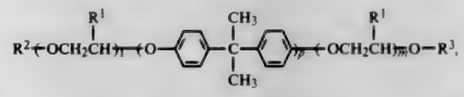
4,291,102

DESENSITIZER FOR NO-CARBON COPY PAPER

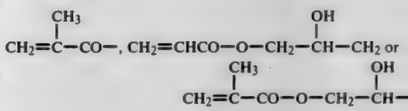
Hirokazu Tsukahara; Mitsuru Fuchigami, and Nobuhiro Kagota, all of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Division of Ser. No. 863,951, Dec. 23, 1977. This application Dec. 13, 1979, Ser. No. 103,564
Claims priority, application Japan, Jan. 17, 1977, 52-3826; Feb. 2, 1977, 52-10543
Int. Cl.³ B32B *21/06*
U.S. Cl. 428—537 **7 Claims**

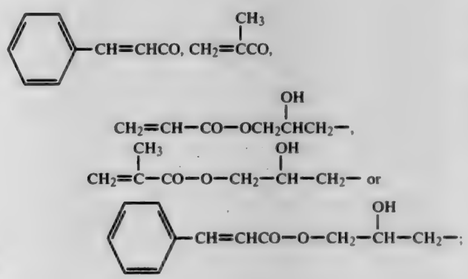
1. No-carbon paper containing a pigment and a desensitizer which is a compound represented by the formula



wherein R^1 represents a hydrogen atom or methyl group; R^2 represents hydrogen atom, a methyl group, a phenyl group which may have as substituent an alkyl group having 1 to 12 carbon atoms, CH_2=CHCO—,

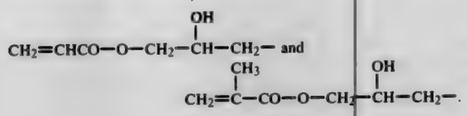


R^3 represents CH_2=CHCO—;



l and m are 1 or integers greater than 1, l+m being not greater

than 46; and p is zero or an integer of 1, provided that when p is zero R^2 is the groups other than



4,291,103

ASSEMBLY OF THIN-WALLED PLATES

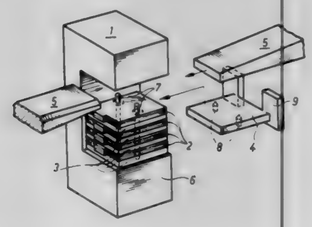
Karl-Heinz Fischbeck, Wilhelmshaven, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,734

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2824539

Int. Cl.³ B32B *3/24, 7/08;* B21D *28/26*

U.S. Cl. 428—589 **10 Claims**



1. An assembly comprising:

a stack of thin-walled plates each provided with at least one reamed hole for mounting the plate on a centering element which extends through the hole, wherein the largest dimension of the reamed hole in one direction, when no centering element is present, is smaller than the smallest dimension of the centering element in the same direction, each said plate being further provided with two elongate perforations located adjacent, and at opposite sides of, said hole, said perforations being spaced from the edge of said hole to define plate portions in the form of bars between said perforations and said hole, and said bars being displaceable into the region of said perforations upon insertion of a centering element into said hole; and

a centering element passing through said hole in each said plate to displace said bars into the regions of their associated perforations and align said plates with one another.

4,291,104

BRAZED CORROSION RESISTANT LINED EQUIPMENT

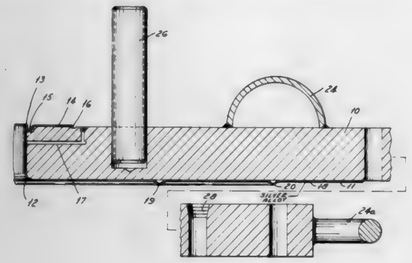
Hibbard G. Keifert, Torrance, Calif., assignor to Fansteel Inc., N. Chicago, Ill.

Continuation of Ser. No. 897,756, Apr. 17, 1978, abandoned, which is a continuation of Ser. No. 708,060, Jul. 25, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,326

Int. Cl.³ B01J *19/02*

U.S. Cl. 428—594 **9 Claims**

1. A wall assembly having a first structural layer of metal selected from the group consisting of iron, nickel, and cobalt base metals and alloys thereof, a comparatively thin second layer of a corrosion resistant metal selected from the group consisting of titanium, zirconium, hafnium, tantalum, columbium, vanadium, and fabricatable and weldable alloys thereof, and said second layer at least in part overlying said first layer, the improvement comprising said second layer having a hole therethrough, said second layer extending in the range between said hole and the end of said flange at least ten inches outwardly beyond the entire periphery of said hole, at least a portion of one face of said second layer being united by a brazing alloy to a face of an adjacent portion of said first layer essentially throughout an area within said range and extending at least ten inches outwardly beyond the entire periphery of said hole, said second layer having at least one convolution encircling said hole and in said portion of said second layer having said one face brazed to said face of said adjacent portion of said first layer, said second layer being brazed to said first layer immediately adjacent both sides of said convolution,



and said hole and said convolution being present in said second layer prior to the brazing of said one face of said second layer to said face of said adjacent portion of said first layer such that said second layer, when brazed to said first layer, remains united to said first layer without wrinkling, buckling, puckering, or separating of said second layer, both when said wall assembly is initially cooled after brazing from its brazing temperature to an ambient temperature and if subsequently raised to an elevated temperature of about 200° C.

4,291,105

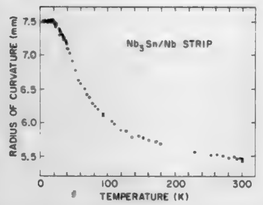
BIMETALLIC STRIP FOR LOW TEMPERATURE USE

Jean F. Bussiere, Yaphank; David O. Welch, Poquott, and Masaki Suenaga, Bellport, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 7, 1979, Ser. No. 64,595

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—616 **4 Claims**



1. A bi-layer structure consisting essentially of:

(a) a first layer of a group 5B transition metal; and,

(b) a second layer consisting essentially of an intermetallic compound between the metal of said first layer, and a metal or metalloid selected from the group consisting of gallium, indium, silicon, germanium, tin, arsenic or antimony, said second layer having been bonded to said first layer to form said bi-layer structure, said structure defining a plane, and said structure having been subjected to compressive stresses essentially in the plane of said structure, said stresses having been chosen to cause plastic deformation of said first layer without causing such deformation of said second layer, whereby said structure assumes a curved shape upon removal of said compressive stresses.

4,291,106

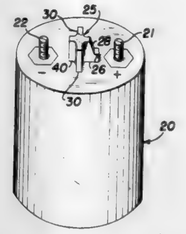
BATTERY LINKAGE SYSTEM

John W. Hooke, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed May 27, 1980, Ser. No. 153,760

Int. Cl.³ H01M *2/20*

U.S. Cl. 429—1 **18 Claims**



1. A system for joining a plurality of electrochemical cells comprising:

keying means disposed in each of said cells among the terminals thereof; and

link means for electrically coupling a terminal of one of said cells with a terminal of a second of said cells, the arrangement of said keying means and said terminals in each of said cells providing for a mating of one end of said link means with a predesignated terminal in one of said cells.

4,291,107

GLASS SEALS FOR SEALING BETA-ALUMINA IN ELECTRO-CHEMICAL CELLS OR OTHER ENERGY CONVERSION DEVICES, GLASSES FOR USE IN SUCH SEALS AND CELLS OR OTHER ENERGY CONVERSION DEVICES WITH SUCH SEALS

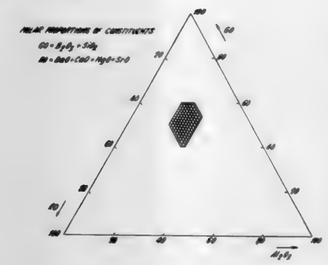
Thomas I. Barry, Hampton Hill; Gary S. Schajer, London, and Francis M. Stackpool, Frodsham, all of England, assignors to Chloride Silent Power Limited, London, England

Filed Apr. 15, 1980, Ser. No. 140,633

Claims priority, application United Kingdom, Apr. 19, 1979, 13668/79

Int. Cl.³ H01M *10/39*

U.S. Cl. 429—104 **20 Claims**



1. A glass for sealing to beta-alumina in an electro-chemical cell or other energy conversion device containing sodium, said glass consisting essentially of:

(a) 40–60 mol % glass former consisting of 28–48 mol % B_2O_3 and 0–20 mol % SiO_2

(b) 16–28 mol % Al_2O_3

(c) 18–33 mol % of at least one alkaline earth oxide selected from the group consisting of BaO, CaO, MgO and SrO,

where the proportions of the constituents furthermore are such that:

$$0.0517\,A_1+0.0354\,A_2-0.0063\,A_3+0.168\,A_4+0.1336\,A_5+0.098\,A_6+0.1597\,A_7$$

lies between 5.7 and 6.4, where A_1, A_2, A_3, A_4, A_5, A_6 and A_7 are the respective molar percentages of B_2O_3, SiO_2, Al_2O_3, BaO, CaO, MgO and SrO.

4,291,108

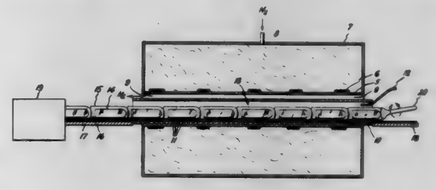
PRODUCTION OF β-ALUMINA CERAMIC TUBES

Vincent J. DeCarlo, Clifton Park; Robert W. Powers, Schenectady, and Stephan P. Mitoff, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,601

Int. Cl.³ H01M *2/00;* F27D *3/00*

U.S. Cl. 429—193 **20 Claims**



1. A method for producing a sintered polycrystalline ceramic hollow cylindrical tube open at least on one end without significant out-of-roundness which comprises shaping ceramic powder into a hollow green cylindrical tube, providing a cylindrical sagger open at least on one end and having an inner volume at least sufficient to accommodate said green tube substantially horizontally and allow said tube to rotate therein, disposing said green tube substantially horizontally within said sagger, providing a substantially horizontally disposed open-ended firing tube containing a sintering zone, positioning a layer of friction-reducing spheres on the surface of the lower portion of said horizontally-disposed firing tube along the length thereof, providing said firing tube with an atmosphere which has no significant deleterious effect on said tube being sintered, heating said sintering zone to sintering temperature, passing said tube-containing sagger through said firing tube on said spheres, continuously and simultaneously advancing and alternately rotating said tube-containing sagger through said firing tube so that all portions of said tube therewithin are subjected to at least substantially the same gravitational effect, said advancement and alternate rotation having no significant deleterious effect on said tube therewithin, one completed alternate rotation being comprised of a rotation and a counter-rotation in predetermined amounts, the angles of all said rotations being substantially equal, the angles of all said counter-rotations being substantially equal, the rate of said alternate rotation being at least sufficient to make at least one completed alternate rotation of said tube within said sagger in an advancing distance equivalent to the outer circumference of said tube within said sagger, said tube-containing sagger being advanced through said sintering zone at a rate at least sufficient to sinter said tube therewithin.

4,291,109

ADDITIVE COLOR IMAGING USING A SILVERLESS RECORDING ELEMENT

Keith E. Whitmore, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,254

Int. Cl.³ G03C *7/04, 5/18, 5/00*

U.S. Cl. 430—42 **5 Claims**

1. A method for producing color transparent images of a multicolored object on a multilayered recording element which includes an additive color screen and a silverless imaging layer, such imaging layer being substantially insensitive and

transparent to visible radiation and responsive to ultraviolet radiation incident thereon to become less transparent to visible radiation, said method comprising the steps of:

(a) forming a monochrome image containing color information of the multicolored object on a panchromatic auxiliary recording element that is separate from said multilayered recording element and is substantially transparent to ultraviolet radiation in a pattern corresponding to image information, said image-forming procedure comprising the steps of illuminating the multicolored object with visible radiation and imagewise exposing the auxiliary recording element to the illuminated object, said imagewise exposure being effected through the multilayered recording element while the relative positions of the auxiliary and multilayered recording elements are substantially fixed; and

(b) exposing the silverless imaging layer of the multilayered recording element to ultraviolet radiation, such exposure being effected through the monochrome image formed on the panchromatic auxiliary recording element while said auxiliary recording element and said multilayered recording element occupy substantially the same relative positions as occupied during said imagewise exposing step, whereby the color image information in the panchromatic auxiliary recording element is transferred to the silverless imaging layer of the multilayered recording element.

4,291,110

SILOXANE HOLE TRAPPING LAYER FOR OVERCOATED PHOTORECEPTORS

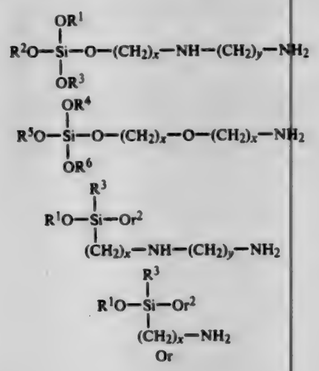
Lieng-Huang Lee, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 11, 1979, Ser. No. 47,461

Int. Cl.³ G03G 5/14, 5/10

U.S. Cl. 430—59 **8 Claims**

1. A layered photosensitive imaging member which comprises from the bottom up (a) a support substrate; (b) a layer of electrode material capable of injecting holes into a layer on its surface, this layer being comprised of materials selected from the group consisting of graphite, carbon, carbon dispersed in a polymer, or gold; (c) a hole transport layer in operative contact with the layer of hole injecting material which transport layer comprises a combination of a highly insulating organic polymer having dispersed therein small molecules of an electrically active material, the combination of which is substantially non-absorbing to visible light but allows injection of photogenerated holes from a charge generator in contact with the hole transport layer, and electrically induced holes from the layer of the injecting electrode material, (d) a layer of photocharge generating material on and in operative contact with the charge transport layer; (e) a hole trapping layer comprised of nitrogen-containing siloxanes or nitrogen-containing titanium compounds of the formulas



I.

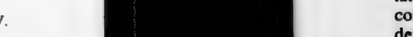
II.

III.

IV.

wherein R^1, R^2, R^3, R^4, R^5, and R^6 which may be the same or different radicals, are selected from aliphatic, substituted aliphatic, aromatic, and substituted aromatic, x and y are numbers from 2 to about 10, m and n are numbers of from 1 to 3, the sum of m and n being equal to 4, and Z is sulfonyl ($—SO_2$) or a carboxyl ($—CO_2$) radical, and (f) a layer of insulating organic polymer overlaying the layer of generating material.

-continued



V.

4,291,111

NITROGEN-CONTAINING ADDITIVES FOR MAGNETIC TONERS HAVING HYDROPHOBIC AND HYDROPHILIC MOIETY

Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 854,861, Nov. 25, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 11,621

Int. Cl.³ G03G 9/00, 9/08

U.S. Cl. 430—107 **6 Claims**

1. A single component field dependent toner that has a resistivity of 10^{13} ohm/cm to 10^{18} ohm/cm, and thus is conductive at high fields of up to 1,000 volts/cm, thereby allowing substantially complete transfer of the toner when said toner is utilized in an electrophotographic imaging system, this toner being comprised of a resin, a magnetic pigment, and between about 0.5 to about 10 weight percent of a nitrogen containing compound comprising at least one hydrophobic moiety and one hydrophilic moiety, the nitrogen containing compound being dimethyl dihydrogenated tallow ammonium chloride, tallow trimethylene diamine dioleate, distearyl dimethyl ammonium chloride, or stearylimidazoline.

4,291,112

MODIFICATION OF PIGMENT CHARGE CHARACTERISTICS

Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 11, 1978, Ser. No. 941,539

Int. Cl.³ G03G 9/10

U.S. Cl. 430—110 **21 Claims**

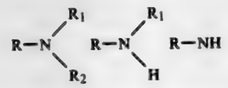
1. A positively charged dry electrophotographic developer composition comprised of a resin, a carrier, and as a pigment carbon black precoated with a nitrogen containing compound, the nitrogen containing compound being selected from the group consisting of

(a) quaternary ammonium compounds of the formula:



wherein R is hydrogen, hydrocarbon radicals containing from 1 to about 22 carbon atoms, or mixtures thereof, and A is an anion selected from sulfate, sulfonate, nitrate, borate, chlorate, and halogen;

(b) primary, secondary, or tertiary amines of the formula:



wherein R is an aliphatic radical containing from about 8 to about 22 carbon atoms, and R_1 and R_2 are hydrocarbon radicals containing from 1 to about 22 carbon atoms; and

(c) an alkyl pyridinium compound, whereby the coated carbon black pigment is positively charged.

9. A method of imaging comprising forming an electrostatic latent image on a photoreceptor contacting the image with the compositions of claim 1 and subsequently transferring the developed image to a permanent substrate and permanently affixing the image thereto.

4,291,113

METHOD FOR DISPERSING PHOTOGRAPHIC ADDITIVES

Junji Minamizono; Masakazu Yoneyama, and Jun Sasaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 21, 1980, Ser. No. 123,311

Claims priority, application Japan, Feb. 22, 1979, 54/20133

Int. Cl.³ G03C 1/72

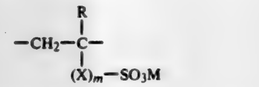
U.S. Cl. 430—202 **22 Claims**

1. A method for dispersing an oil-soluble photographic additive into water or a hydrophilic colloid composition wherein an oil-soluble photographic additive is dispersed in water or a hydrophilic colloid composition in the presence of a polymer having a recurring unit represented by the following general formula (I):



(I)

wherein A represents a monomer unit of the formula (II):



(II)

wherein R represents a hydrogen atom or a methyl group; m represents 0 or 1; M represents a cation; and X represents an alkylene group having 1 to 4 carbon atoms, an arylene group, an aralkylene group having 7 to 11 carbon atoms or a —CO—NH—Y— group where Y is an alkylene group having 1 to 6 carbon atoms or a phenylene group; B represents a copolymerizable ethylenically unsaturated monomer; x is about 10 to 100 mol%; and y is about 0 to 90 mol%.

4,291,114

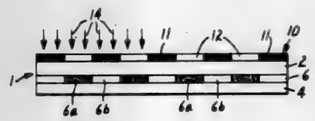
IMAGEABLE, COMPOSITE-DRY TRANSFER SHEET AND PROCESS OF USING SAME

William R. Berggren, Woodbury, and Shelby J. Brownley, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation-in-part of Ser. No. 67,322, Oct. 18, 1978, abandoned. This application Jun. 19, 1980, Ser. No. 158,951

Int. Cl.³ G03C 11/12, 1/78, 1/68

U.S. Cl. 430—253 **31 Claims**



1. An imageable composite dry-transfer sheet that comprises (a) a cover sheet that is transmissive to activating radiation and has at least one oleophilic surface, (b) a photopolymerizable layer on the oleophilic surface of said cover sheet that comprises a cationically polymerizable organic material, and from about 0.1 to 10 parts by weight per 100 parts by weight of said organic material of a cationic photopolymerization initiator, and (c) a base sheet that has an oleophobic surface in contact with said photopolymerizable layer;

wherein said photopolymerizable layer has a complex shear modulus of, at most, 1×10^6 dyne/cm^2; and

wherein, after image-wise exposure to activating radiation, the interfacial adhesion of the unexposed areas of said photopolymerizable layer is greater for said cover sheet than for said base sheet; the interfacial adhesion of the exposed areas of said photopolymerizable layer is greater for said base sheet than for said cover sheet; and

wherein, after separation of said cover and said base sheets, the unexposed areas of said layer are rendered burnishable by subsequent exposure to activating radiation through said cover sheet.

4,291,115

ELEMENTS AND METHOD WHICH USE PHOTOPOLYMERIZABLE COMPOSITIONS BASED ON SALT-FORMING POLYMERS AND POLYHYDROXY POLYETHERS

William J. Chambers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 76,621, Sep. 18, 1979, Pat. No. 4,245,031, which is a continuation-in-part of Ser. No. 892,296, Mar. 31, 1978, abandoned. This application Sep. 17, 1980, Ser. No. 188,223

Int. Cl.³ G03C 1/68, 5/90

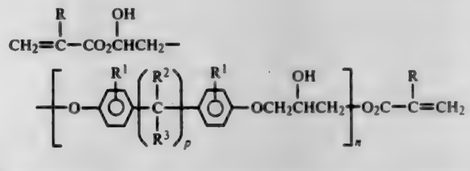
U.S. Cl. 430—271 **13 Claims**

1. A photopolymerizable element which comprises a substrate coated with a layer of a photopolymerizable composition comprising 0 to 70% by weight of components which do not contribute to the photoactivity of the composition and 30 to 100% by weight of photoactive system components consisting essentially of

(1) polymer having a number average molecular weight of at least 500, at least two-salt forming groups selected from the group consisting of carboxylic acid groups and amine groups per polymer molecule, and at least 0.025 equivalent of salt-forming group per 1000 grams of polymer;

(2) addition-polymerizable, nongaseous, ethylenically unsaturated compound having at least one complementary salt-forming group selected from the group consisting of carboxylic acid groups and amine groups and being capable of forming a polymer by free-radical initiated, chain-propagating addition polymerization; the ratio of equivalents of complementary salt-forming groups in compound (2) to equivalents of salt-forming groups in polymer (1) being 1:2 to 50:1;

(3) ethylenically unsaturated diester polyhydroxy polyether of the formula



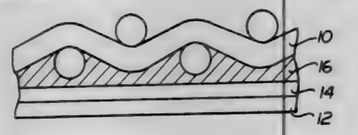
wherein R is H or CH_3; R^1 is H or an alkyl group of 1–4 carbon atoms; n is 1–15; p is 0 or 1; and when p is 1, R^2 is H or CH_3 and R^3 is H, CH_3 or C_2H_5; the amount of polyether (3) being 10 to 75% by weight of the combined total of components (1), (2) and (3); and

(4) 1 to 20% by weight, based on the total photopolymerizable composition, of a free-radical generating system, activatable by actinic radiation, which initiates polymerization of the unsaturated compounds;

said layer having a thickness in the range from a coating weight of 1 mg/dm^2 to 5 mils in thickness.

4,291,116
METHOD OF IMAGE REPRODUCTION AND MATERIALS THEREFOR

Charles C. Tibbetts, 800 Inverness Dr., Flintridge, Calif. 91101
Continuation-in-part of Ser. No. 846,325, Oct. 28, 1977, abandoned. This application Jul. 19, 1979, Ser. No. 58,816
Int. Cl.³ G03C 5/00
U.S. Cl. 430—308 **28 Claims**



1. The method of reproducing a screen stencil image from an image on a transparent member for printing and like purposes comprising the steps of:
filling the interstices of the screen and substantially covering both sides of the screen with spreadable uncured radiation curable material comprising an acidic constituent;
placing the transparent member on one side of the screen in direct facing contact with the spreadable material;
exposing the material through the transparent member to a radiation source for a time sufficient to at least partially cure and harden the material in the pattern of the image such that where cured the material hardens about the screen;
again spreading a layer of the material on the side of the screen opposite the transparent member, to a depth greater than is desired for the final stencil;
exposing the material to the radiation source through the transparent member for a second time sufficient to cure the material to a depth greater than the screen thickness but less than the total depth of the material;
removing the transparent member from the cured layer;
removing uncured material from the screen to leave open screen areas through which a printing medium may pass; and
removing the stencil from the screen with immersion in an alkaline solution.

4,291,117
PLATE MAKING PROCESS WITH NOVEL USE OF SURFACTANT

Chikashi Ohishi, and Akira Hasegawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Feb. 27, 1980, Ser. No. 125,056
Claims priority, application Japan, Feb. 27, 1979, 54/22297
Int. Cl.³ G03C 7/08
U.S. Cl. 430—309 **14 Claims**

1. In a plate-making process comprising the steps of (a) imagewise exposing a presensitized plate comprising an aluminum support having thereon a light-sensitive layer, (b) developing said imagewise exposed presensitized plate to remove either the exposed area or the unexposed area of said light-sensitive layer to reveal the surface of said aluminum support and (c) subjecting said developed plate without conducting water washing to a process selected from the group consisting of (i) application of a developing ink, (ii) retouching process and (iii) gumming process, the improvement which comprises processing the developed plate with an aqueous solution consisting essentially of a surfactant between step (b) and (c).

4,291,118
RELIEF IMAGING LIQUIDS

Paul Boduch, Arlington, and Robert Trasavage, Mashpee, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Dec. 26, 1979, Ser. No. 106,816
Int. Cl.³ G03C 5/00
U.S. Cl. 430—313 **14 Claims**

1. A method of relief imaging a liquid polymeric composition comprising forming said liquid polymeric composition into a liquid mass, exposing said liquid mass to a first polymerizing actinic radiation chemical hardening treatment sufficient to solidify said liquid mass, thereafter further treating said solidified mass with polymerizing actinic radiation in a pattern and differentiating the chemical condition of said solidified mass in said pattern from the chemical condition of said solidified mass not in said pattern and thereafter selectively removing the portion of said solidified mass subjected to only said first polymerizing actinic radiation leaving that portion of said solidified mass subjected to said further polymerizing actinic radiation as a relief image.

4,291,119
RECORDING MATERIAL

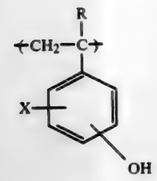
Keishiro Kido; Satoshi Yoshida, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 875,066, Feb. 3, 1978, Pat. No. 4,188,214, which is a continuation of Ser. No. 695,212, Jun. 11, 1976, abandoned. This application Jan. 23, 1980, Ser. No. 114,457
Claims priority, application Japan, Aug. 11, 1975, 50-97251
Int. Cl.³ G03C 5/24
U.S. Cl. 430—348 **11 Claims**

1. A material for recording a high temperature energy source scanned imagewise by evaporating or thermally deforming the scanned portions by melting of at least one recording layer thereof by the heat energy of said high temperature energy source, which comprises a support and at least one recording layer, said at least one recording layer containing at least one distinct metal layer comprising at least one metal selected from the group consisting of Sn, Bi, In, Zn, Al and Cu and said recording layer also comprising at least one distinct compound layer comprising at least one compound selected from the group consisting of CrS, Cr_2S, Cr_2S_3, MoS_2, MnS, FeS, FeS_2, CoS, Co_2S_3, NiS, Ni_2S, PdS, Cu_2S, Ag_2S, ZnS, In_2S_3, In_2S_2, GeS_X, wherein x is a positive integer of 2 to 9, SnS, SnS_2, PbS, As_2S_3, Sb_2S_3, Bi_2S_3, MgF_2, CaF_2, RhF_3, MoO, In_2O, In_2O_3, GeO, and PbO, and at least one layer which contains one or more of said metals in combination with one or more of said compounds and wherein the total thickness of all metal layers present is from about 300 to about 1,500 A, the total thickness of all compound layers present is from about 10 to about 200 A, and the optical density of the at least one distinct metal layer is at least about 2.0.

4,291,120
HEAT DEVELOPABLE PHOTOSENSITIVE MATERIAL

Tomoyuki Kobayashi; Toshimasa Usami, both of Asaka; Hiroshi Misu, and Hidefumi Sera, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 15, 1980, Ser. No. 121,855
Claims priority, application Japan, Feb. 15, 1979, 54-16341
Int. Cl.³ G03C 1/02
U.S. Cl. 430—531 **12 Claims**

1. A heat developable photosensitive material having two or more polymeric binder layers superposed on a support and containing at least (a) an organic silver salt, (b) a photocatalyst and (c) a reducing agent in one or more said layers, at least one of said layers containing as an additive, in an amount sufficient to improve contact between said layers, (d) a polymer having about 5 to 200 repeating units of the formula:



(A)

wherein R is a hydrogen atom or a lower alkyl group; and X is a hydrogen atom, or one to three groups selected from the class consisting of a halogen atom, a nitro group, a cyano group, an alkyl group, an alkoxy group, an alkoxycarbonyl group, an alkylsulfonyl group, an aryloxy group, an acyl group, an acyloxy group and an acylamido group.

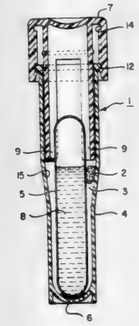
4,291,121
BILIRUBIN-RESISTANT DETERMINATION OF URIC ACID AND CHOLESTEROL

Giancarlo Acquati, Robbiate; Giovanni Berti, Malgrate, and Piero Fossati, Lissone, all of Italy, assignors to Miles Laboratories, Inc., Elkhart, Ind.
Continuation-in-part of Ser. No. 29,670, Apr. 13, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,533
Int. Cl.³ G01N 33/52, 33/92, 33/72
U.S. Cl. 435—10 **17 Claims**

1. Composition for the determination of an analyte selected from uric acid and cholesterol in a fluid sample of the type comprising means responsive to the presence of said analyte in said sample, a phenol or napthol and 4-aminophenazone wherein the improvement comprises reagent means comprising a ferrocyanide ion.

4,291,122
BIOLOGICAL INDICATOR FOR STERILIZATION PROCESSES

Paula A. Orelski, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Aug. 14, 1980, Ser. No. 178,096
Int. Cl.³ C12Q 1/22
U.S. Cl. 435—31 **19 Claims**



1. A unitary sterilization indicator consisting of a transparent vial containing
fermentable microorganism accessible to and subject to sterilization to substantially the equivalent degree as those objects being sterilized, and a carbohydrate in discrete solid dry form unavailable for metabolism by said microorganism prior to the dissolving of said carbohydrate; and
an inner frangible ampul contained within the said vial and containing a liquid carbohydrate-free growth medium and pH color indicator, whereby
upon completion of a sterilization cycle in which the said unitary indicator is contained within the sterilizer and removal of the indicator therefrom, the frangible ampul is broken and the said liquid medium and pH indicator are released into dissolving contact with the carbohydrate and the so-formed solution into contact with surviving said microorganism.

4,291,123
PRODUCTION OF FRUCTOSE AND FRUCTOSE-BASE SYRUPS AND MEANS FOR CARRYING OUT SUCH PRODUCTION

Ludwig Degen; Paolo Branduzzi; Roberto Olivieri, and Nadia Cimini, all of Rome, Italy, assignors to Snamprogetti, S.p.A., Milan, Italy
Filed Jun. 8, 1978, Ser. No. 913,536
Claims priority, application Italy, Jul. 5, 1977, 25380 A/77
Int. Cl.³ C12P 19/24
U.S. Cl. 435—94 **1 Claim**

1. A method for the production of fructose and syrups containing fructose and glucose, said method comprising contacting a solution of glucose with a Streptomyces sp. NRRL 11,120 or NRRL 11,121 or with enzyme originated thereby.

4,291,124
PROCESS FOR THE ACID HYDROLYSIS OF CARBOHYDRATE POLYMERS AND THE CONTINUOUS FERMENTATION OF THE SUGARS OBTAINED THEREFROM TO PROVIDE ETHANOL

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.
Continuation-in-part of Ser. No. 52,038, Jun. 25, 1979, Pat. No. 4,242,455. This application Mar. 12, 1980, Ser. No. 129,518
Int. Cl.³ C12P 7/14
U.S. Cl. 435—162 **19 Claims**

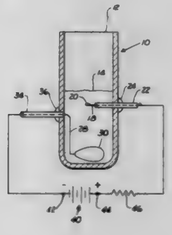
1. A process for the acid hydrolysis of carbohydrate polymer and the continuous fermentation of the fermentable sugars therefrom to provide ethanol which comprises:
(a) substantially uniformly mixing a pressurized acidified aqueous slurry of carbohydrate polymer particles with relatively high pressure stream;
(b) passing the acidified carbohydrate polymer slurry through a conduit under substantially steady state temperature and pressure for a period sufficient to convert at least about 60% by weight of the carbohydrate polymer to fermentable sugar but without appreciable conversion of carbohydrate polymer to non-fermentable products;
(c) reducing the pressure of the hydrolyzed carbohydrate polymer slurry to a level at which undesirable reactions of the fermentable sugar present in solution therein cannot readily occur; and
(d) continuously fermenting the fermentable sugar, previously adjusted to a pH suitable for carrying out fermentation, with or without partial hydrolysate therein having been previously further saccharified, in a series of fermentation vessels in which the ethanol content of the fermentation medium is progressively increased in each fermentation vessel as the fermentable sugar is consumed therein, the fermentation employing at least two different strains of ethanol-producing yeast, one of which provides a high rate of ethanol production in a fermentation medium containing a relatively low concentration of ethanol and a relatively high concentration of sugar and the other of which provides a high rate of ethanol production in a fermentation medium containing a relatively high concentration of ethanol and a relatively low concentration of fermentable sugar.

4,291,125

METHOD FOR ELECTRONIC CONTROL OF INFECTIONS USING SILVER IONS

Wilson Greatbatch, 5220 Donnington Rd., Clarence, N.Y. 14031

Filed Jan. 16, 1980, Ser. No. 112,704
Int. Cl.[3] C12N *5/00;* A01N *59/16*
U.S. Cl. 435—240 6 Claims



1. A method of killing plant bacteria and plant viroids to control plant infection while growing plant cells comprising the steps of:

(a) placing a quantity of host plant tissue in an electrolyte nutrient medium; and

(b) treating said host plant tissue with anodically generated silver ions in said medium in an amount sufficient to kill plant bacteria and plant viroids without causing damage to said host plant tissue.

4,291,126

PROCESS FOR MANUFACTURING ALCOHOLS AND MORE PARTICULARLY SATURATED LINEAR PRIMARY ALCOHOLS FROM SYNTHESIS GAS

Andre Sugier, and Edouard Freund, both of Rueil-Malmaison, France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 19, 1979, Ser. No. 105,312
Claims priority, application France, Dec. 19, 1978, 78 35870
Int. Cl.[3] C07C *27/06*
U.S. Cl. 518—713 26 Claims

1. In a process for manufacturing saturated linear primary alcohols by contacting a gaseous mixture comprising carbon monoxide and hydrogen, and optionally carbon dioxide, with a multimetallic catalyst having a high selectivity for alcohol production, at a temperature of from 150° to 400° C. and a pressure of from 20 to 250 bar;

the improvement wherein said multimetallic selective catalyst comprises at least five elements, said elements, and the proportion by weight of each element as metal relative to the total weight of said elements as metals, being:

(a) copper, from 20 to 60%;

(b) cobalt, from 5 to 50%;

(c) at least one metal M selected from chromium, iron, vanadium and manganese, from 5 to 30%;

(d) at least one rare earth metal N, from 5 to 40%; and

(e) at least one alkali or alkaline earth metal A, from 0.1 to 5%;

whereby the yield of saturated linear primary alcohols having at least two carbon atoms is increased.

4,291,127

PLASTICIZER COMPOSITION

Hiroshi Akabayashi; Eiji Ohyama; Susumu Shoji; Masami Adachi; Koretoshi Uemura, all of Tokyo, and Yoshihisa Ogawa, Ichihara, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 969,869, Dec. 15, 1979, abandoned.
This application May 1, 1980, Ser. No. 145,696
Claims priority, application Japan, Dec. 23, 1977, 52-155410
Int. Cl.[3] C07C *69/80*
U.S. Cl. 560—76 3 Claims

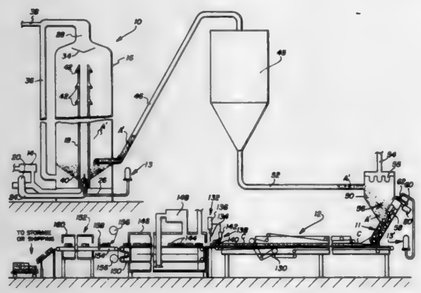
1. A plasticizer composition which comprises phthalates of C_9 alcohols obtained by an oxo reaction and a hydrogenation of C_8 olefins which have 3 to 20 wt.% of olefins having one isobutane skeleton and less than 3 wt.% of olefins having quaternary carbon and more than 90 wt.% of a total of n-octenes, monomethylheptenes and dimethylhexenes and 0.8–2.0 of a ratio of a total of n-octenes and monomethylheptenes to dimethylhexenes.

4,291,128

PROCESS FOR MAKING UREA-FORMALDEHYDE INSULATION

Charles E. Elmore, and David H. Harmon, both of Dallas, Tex., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,870
Int. Cl.[3] C08J *9/36*
U.S. Cl. 521—54 12 Claims



1. A method of producing cured urea-formaldehyde foam in desired shapes from urea-formaldehyde foam comprising:

(a) forming discrete urea-formaldehyde particles from the urea-formaldehyde foam such that the discrete urea-formaldehyde particles, when cured, are between about one-half and six inches in length and between about one-quarter and one inch in cross-sectional dimension;

(b) curing said discrete urea-formaldehyde particles;

(c) mixing said cured particles with uncured urea-formaldehyde foam to form a resulting mixture that is a coherent mass, wherein said resulting mixture contains said uncured foam and cured particles in a volume ratio of uncured foam to cured particles of between about 1:1 and 1:4;

(d) forming said resulting mixture into the desired shape; and thereafter

(e) curing the uncured urea-formaldehyde foam present in said mixture to provide a cured mass of urea-formaldehyde of the desired shape.

4,291,129

COMPOSITION AND A METHOD FOR CONTROLLING REACTION PRESSURES DURING THE FOAMING PROCESS RESULTING IN AN EASILY FLAME RETARDED FOAM-IN PLACE INSULATION

Richard B. Kennedy, Ridgefield, Conn., assignor to Patrick James. Crehan and Richard J. Fricke, both of Ridgefield, Conn., part interest to each

Filed Jun. 25, 1980, Ser. No. 162,821
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—103 14 Claims

1. A low reactive pressure flame-retardant polyurethane foam made by reacting together a polymeric isocyanate, a conventional polyol, a surfactant, a blowing agent and an aqueous solution of a carbohydrate, calcium acid phosphate, sodium aluminum sulfate, sodium bicarbonate, and flame retardant.

4,291,130

PROCESS OF MAKING THERMOSET FOAMS OF ACRYLIC POLYMERS

Frank L. Saunders, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1980, Ser. No. 109,019
Int. Cl.[3] C08J *9/02;* B32B *5/20*
U.S. Cl. 521—136 3 Claims

1. A process for producing a thermoset foam consisting essentially of the steps of (1) mixing a normally solid, hydroxy-functional acrylic polymer and an aminoplast resin crosslinking agent and (2) heating the resulting mixture to a heat plastified state until the polymer and crosslinking agent react to form at least one volatile by-product which foams the residual heat-plastified mixture which crosslinks to form the thermoset foam.

4,291,131

PLASTIC NOZZLES OF MOLDABLE POLYETHYLENE AND POLYPROPYLENE POLYMERS HAVING ORGANIC ACIDS DISPERSED THEREIN

John M. McIntire, and Richard H. Blair, both of Kingsport, Tenn., assignors to Permabond International Corp., Englewood, N.J.

Filed Dec. 10, 1979, Ser. No. 101,661
Int. Cl.[3] C08F *8/46*
U.S. Cl. 525—5 7 Claims

1. A nozzle for use on containers for holding cyanocrylate adhesives, said nozzle being comprised of moldable materials selected from polyethylene, polypropylene and crystallizable copolymers of polypropylene containing up to about 10% ethylene, and having an organic acid selected from the group consisting of citric acid, maleic acid and fumaric acid dispersed in said moldable materials in an amount effective to provide an acidic surface for inhibiting the polymerization of said adhesves within said nozzle.

4,291,132

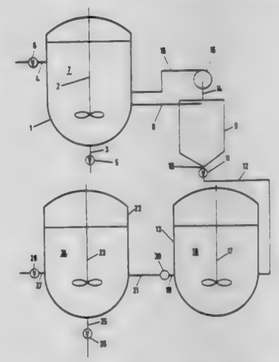
POLYMERIZATION PROCESS

Michael L. Clifford, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 676,342, Apr. 12, 1976, Pat. No. 4,187,278.
This application Aug. 22, 1979, Ser. No. 68,628
Claims priority, application United Kingdom, Apr. 18, 1975, 16064/75
Int. Cl.[3] C08F *2/02, 2/06*
U.S. Cl. 525—53 8 Claims

1. A process for the production of an olefine polymer in which polymerization is effected in at least two stages wherein, the one stage, there is present a liquid medium which is at least one liquid olefine monomer and the liquid monomer is polymerized in the presence of a Ziegler olefine polymerization catalyst, a product mixture of a solid olefine polymer and a liquid olefine monomeric phase is removed from the liquid polymerization stage, the liquid olefine monomeric phase is partially separated from the solid olefine polymer to give a concentrated mixture of solid olefine polymer and liquid olefine monomeric phase, which concentrated mixture has a higher content of solid olefine polymer than is in the mixture removed from the liquid polymerization stage, the concentrated mixture is passed to a subsequent polymerization stage and, in the subsequent polymerization stage, at least one gaseous olefine monomer is contacted with the solid olefine polymer in the presence of the Ziegler olefine polymerization catalyst to effect polymerization in the substantial absence of a liquid phase.

8. A process for the production of an olefine polymer in which polymerization is effected in at least two stages wherein, in one stage, there is present a liquid medium which is at least one liquid olefine monomer and the liquid monomer is polymerized in the presence of a Ziegler olefine polymerization



catalyst, a product mixture of a solid olefine polymer and a liquid olefine monomeric phase is removed from the liquid polymerization stage, the liquid olefine monomeric phase is partially separated from the solid olefine polymer to give a concentrated mixture of solid olefine polymer and liquid olefine monomeric phase, which concentrated mixture has a higher content of solid olefine polymer than is in the mixture removed from the liquid polymerization stage, wherein the liquid olefine monomeric phase which has been partially separated from the solid olefine polymer is recycled directly to the stage in which polymerization is effected in a liquid medium and the concentrated mixture is passed to a subsequent polymerization stage in which at least one gaseous olefine monomer is contacted with the solid olefine polymer in the presence of the Ziegler olefine polymerization catalyst to effect polymerization in the substantial absence of a liquid phase.

4,291,133

NONTHROMBOGENIC POLYMER SURFACE

Vaclav Horak, 5508 Oakmont Ave., Bethesda, Md. 20034, and Jiri Janata, 2231 Logan Ave., Salt Lake City, Utah 84108

Filed Apr. 5, 1979, Ser. No. 27,366
Int. Cl.[3] C08L *35/00, 27/06, 27/12*
U.S. Cl. 525—74 10 Claims

1. A surface-modified polymeric substrate comprising:

a polymeric hydrophobic substrate swellable by selected solvents: and

a branched-chain polymer having a substantially linear hydrocarbon backbone, substantially linear hydrocarbon aliphatic side chains spaced along said backbone and a plurality of pendant reactive groups which are negatively charged or which may be reacted with compounds having a negative charge depending from said backbone, said linear aliphatic side chains having not over twenty (20) carbon atoms and being substantially embedded in said polymeric substrate.

4,291,134

MOLDING MATERIALS CONTAINING STYRENE/ACRYLONITRILE COPOLYMERS AND ETHYLENE OXIDE/PROPYLENE OXIDE THREE-BLOCK COPOLYMERS

Jürgen Hambrecht, Neckargemuend-Dilsberg; Gerhard Lindenschmidt, Letmen, and Walter Regel, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 9, 1980, Ser. No. 138,536

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916668

Int. Cl.[3] **C08L** *25/12, 71/02*

U.S. Cl. 525—92 **3 Claims**

1. A molding material which contains

A. styrene/acrylonitrile copolymers and

B. three-block copolymers X-Y-X, which copolymers contain

b_1. a central block Y which substantially consists of propylene oxide units and has a number-average mean molecular weight of up to 3,000, and

b_2. at each of the two ends, at least one block X, consisting substantially of ethylene oxide units, the proportion of b_2, based on three-block copolymer, being less than 85% by weight, with or without

C. effective amounts of other, conventional additives, wherein the styrene/acrylonitrile copolymers A substantially consist of

(a_1) from 20 to 35% by weight of acrylonitrile units and

(a_2) from 80 to 65% by weight of styrene units and/or α-methylstyrene units, or a mixture of the said units, component B is present in an amount of from 0.1 to 2% by weight, based on the sum of A and B, and the proportions of b_1 and b_2, based on the three-block copolymer X-Y-X, are

(b_1) from 80 to 95% by weight and

(B_2) from 5 to 20% by weight,

whilst the number-average mean molecular weight of (b_1) is greater than 700 and the number-average mean molecular weight of the sum of the X blocks (b_2) is from 140 to 1,000.

4,291,135

BINDERS FOR COATING COMPOSITIONS

Peter Höhlein, Krefeld, and Michael Sonntag, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 49,290, Jun. 18, 1979, abandoned. This application May 22, 1980, Ser. No. 152,567

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827592

Int. Cl.[3] **B05D** *3/02;* **B32B** *15/08, 27/00*

U.S. Cl. 525—101 **4 Claims**

1. Binders for the preparation of coating compositions, obtainable by reacting components A, B and C at 70°–200° C. with elimination of water or alcohol until at least 20% of the theoretically possible quantity of water or alcohol has been eliminated, wherein

component A is 1–97 parts by weight of copolymer resins which contain, per molecule, at least two functional hydroxyl, carboxyl, alkoxy and/or epoxide groups, which resins are prepared by copolymerization of

a. 0–50 parts by weight of at least one hydroxyalkyl ester of acrylic or methacrylic acid having 2–4 C-atoms in the hydroxyalkyl group,

b. 0–60 parts by weight of at least one compound of the group comprising styrene, α-methylstyrene, o-chlorostyrene, p-chlorostyrene, o-, m- or p-methylstyrene, p-tertiary butyl styrene or methyl methacrylate,

c. 10–90 parts by weight of at least one acrylic acid ester having 1–12 C atoms in the alcohol group and/or at least one methacrylic acid ester having 2–12 C-atoms in the alcohol group,

d. 0–30 parts by weight of at least one α,β-mono-olefinically unsaturated mono- or dicarboxylic acid having 3–5 C-atoms and/or dicarboxylic acid having 3–5 C-atoms and/or at least one maleic acid semi-ester having 2–14 C-atoms in the alcohol group, or reaction products thereof with a monoglycidyl compound,

e. 0–50 parts by weight of at least one acrylic or methacrylic acid glycidyl ester, or reaction products thereof with aliphatic and/or aromatic monocarboxylic acids and amino compounds,

f. 0–40 parts by weight of an acrylic or methacrylic acid amide having 1–20 C-atoms in the amino group, or alkoxylated hydroxymethyl acrylic acid amides which may also be produced in situ, and

g. 0–60 parts by weight of acrylonitrile, with the sum of the parts by weight of reactants (a) through (g) being 100;

component B is 97—1 parts by weight of alkyd resins and/or oil-free polyesters; and

component C is 0.5–50 parts by weight of at least one polysiloxane having hydroxyl and/or alkoxy groups.

4,291,136

WATER-CURABLE SILANE MODIFIED ALKYLENE ALKYLACRYLATE COPOLYMER AND A PROCESS FOR ITS PRODUCTION

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Aug. 29, 1979, Ser. No. 70,785

Int. Cl.[3] **C08F** *255/02;* **C08L** *23/26, 23/32*

U.S. Cl. 525—102 **32 Claims**

1. A process for preparing a water-curable silane modified alkylene alkylacrylate copolymer which comprises reacting an alkylene alkylacrylate copolymer with a silane characterized by the following formula:

$$X—(CH_2)_aSiY_3$$

wherein

X is SH, NH_2 or

$$\begin{matrix} & O & \\ & \| & \\ R—C—O— & & \end{matrix},$$

wherein R therein is

$$\begin{matrix} CH_2=C— \\ \quad | \\ \quad R_1 \end{matrix}$$

or C_1 to C_{18} alkyl; R_1 is independently hydrogen or C_1 to C_{18} alkyl; a is an integer of 1 to 18; Y is independently hydrogen, a hydrocarbon radical of 1 to 18 carbon atoms, C_1 to C_{18} alkoxy or $—O—(CH_2)_aO—(CH_2)_aH$, with the proviso that at least one of Y is other than hydrogen or hydrocarbon,

said reaction being carried out at a temperature between about 25° C. and the volatility temperature of the silane, in the presence of a catalytic amount of organo titanate catalyst.

4,291,137

ONE-PACK HIGH SOLID COATING COMPOSITION

Yasushi Nakate; Hiroshi Iwai, and Kiyoshi Nanishi, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Aug. 31, 1979, Ser. No. 71,795

Claims priority, application Japan, Sep. 8, 1978, 53-110473

Int. Cl.[3] **C08L** *61/20, 63/00*

U.S. Cl. 525—162 **6 Claims**

1. A one-pack high solid coating composition consisting essentially of

(I) 100 parts by weight of an acrylic resin which is a copolymer having a glass transition temperature of −30° to −50° C. and a hydroxyl number of 40 to 280 and being prepared from

(a) one or more members selected from hydroxyalkyl acrylates and methacrylates of the formula

$$CH_2=\underset{\displaystyle R}{\overset{}{C}}—\overset{\displaystyle O}{\overset{\|}{C}}—O—R_1—OH$$

wherein R represents a hydrogen atom or a methyl group and R_1 represents a divalent alkyl group having 2 to 5 carbon atoms, and

(b) one or more members selected from alkyl acrylates and methacrylates of the formula

$$CH_2=\underset{\displaystyle R}{\overset{}{C}}—\overset{\displaystyle O}{\overset{\|}{C}}—O—R_2$$

wherein R is as defined above and R_2 represents a monovalent alkyl group having 1 to 12 carbon atoms,

and glycidyl acrylates and methacrylates of the formula

$$CH_2=\underset{\displaystyle R}{\overset{}{C}}—\overset{\displaystyle O}{\overset{\|}{C}}—O—R_3—\underset{\displaystyle O}{\overset{/\ \backslash}{CH—CH_2}}$$

wherein R is as defined above and R_3 represents a divalent alkyl group having 1 to 5 carbon atoms,

(II) 20 to 160 parts by weight of an amino-formaldehyde resin etherified with a monohydric alcohol having 1 to 4 carbon atoms, and

(III) 0.5 to 6 parts by weight, per 100 parts by weight of the total of the acrylic resin as component (I) and the etherified amino-formaldehyde resin as component (II) combined, of a sulfonic acid catalyst blocked by an epoxy resin, said amount of the blocked acid catalyst being expressed in the amount of its acid.

4,291,138

PRODUCTION OF MODIFIED POLYPROPYLENES

Hideo Sato, Yokkaichi, and Toshio Yagi, Aichi, both of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

Filed Nov. 19, 1979, Ser. No. 95,922

Claims priority, application Japan, Nov. 24, 1978, 53-145164

Int. Cl.[3] **C08F** *297/08*

U.S. Cl. 525—247 **11 Claims**

1. A process for producing a modified polypropylene in the presence of a stereoregular polymerization catalyst which comprises, in combination:

Step 1 wherein propylene is polymerized at a temperature of not higher than 60° C. to produce 0.5 to 30% by weight of a crystalline propylene polymer on the basis of the total polymerization product obtained in Steps 1 through 3;

Step 2 wherein propylene is further polymerized at a temperature which is at least 10° C. higher than that of Step 1 to produce 60 to 95% by weight of a crystalline propylene polymer on the basis of the total polymerization product in Steps 1 through 3, the quantity of the crystalline propylene polymer being the total quantity through Steps 1 and 2; and

Step 3 wherein a member selected from the group consisting of ethylene and an ethylene-propylene mixture is polymerized to produce 5 to 40% by weight of an ethylene polymer on the basis of the total polymerization product in Steps 1 through 3, the ethylene content in the resulting ethylene polymer being 100 to 20% by weight.

4,291,139

PROCESS FOR PREPARATION OF BLOCK COPOLYMERS

Adel F. Halasa, Bath; James E. Hall, and Adolph Para, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 9, 1977, Ser. No. 776,048

Int. Cl.[3] **C08F** *297/04*

U.S. Cl. 525—314 **11 Claims**

1. In the process of preparing block copolymers predominantly of the structure S-B-S with one or two small polybutadiene terminal blocks, wherein S represents a block of polystyrene and B represents a block of polybutadiene, by the steps of polymerizing the individual monomers to form the respective blocks, such polymerizations being initiatated by a lithium compound, the improvement whereby:

(a) said polymerization is effected in a solvent consisting essentially of hexane;

(b) said polymerization is initiated by a hydrocarbyl lithium compound having up to 10 carbon atoms;

(c) as a precursor to the preparation of a first block of polystyrene, there is prepared initially a block of homopolybutadiene representing 2–12 parts by weight per 100 parts by weight of the block of polystyrene to which this initial block of polybutadiene will be attached, by reacting said hydrocarbyl lithium with an appropriate amount of butadiene to give said size block and thereby produce a polybutadiene*-Li product, wherein * indicates said small size block;

(d) sufficient styrene is added to the product of step (c) to give the desired molecular weight of the desired first S block and effecting polymerization of said styrene with said polybutadiene*-Li to give the product polybutadiene*-polystyrene-Li while still dispersed in said hexane;

(e) thereafter adding an appropriate amount of butadiene to the dispersed product of step (d) to form a desired size block of polybutadiene and effecting polymerization of said butadiene with said polybutadiene*-polystyrene-Li to give the product polybutadiene*-polystyrene-polybutadiene-Li while still dispersed in said hexane, and

(f) thereafter effecting the addition of a second block of polystyrene onto said polybutadiene*-polystyrene-polybutadiene-Li.

4,291,140

NOVEL PROPYLENE COPOLYMERS

Masaki Fujii; Mitsutaka Miyabayashi, both of Yokkaichi; Hironori Todaka, Suzuka, and Satoru Hattori, Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

Filed Oct. 20, 1980, Ser. No. 198,921

Claims priority, application Japan, Oct. 24, 1979, 54-137171

Int. Cl.[3] **C08F** *297/08*

U.S. Cl. 525—321 **5 Claims**

1. A propylene copolymer which comprises a block comprising a homopolymer of propylene and a block comprising a ternary random copolymer of propylene, ethylene, and hexene-1, and in which:

(a) the proportion of the propylene homopolymer block in the propylene copolymer is 3 to 20 percent by weight;

(b) the proportion of the ternary randon copolymer block in the propylene copolymer is 97 to 80 percent by weight;

(c) the ternary random copolymer block comprises the portions based on the propylene, ethylene, and hexene-1 of 80 to 98 percent, 5 to 1 percent, and 15 to 1 percent, respectively, all percentages being by weight; and

(d) the intrinsic viscosity of the propylene copolymer in decalin at 135° C. is 0.3 to 15 dl/g.

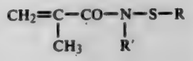
4,291,141

VULCANIZABLE RUBBER COMPOSITIONS CONTAINING N-(SULFENYL) METHACRYLAMIDES AS SCORCH INHIBITORS

Eiichi Morita, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 30, 1979, Ser. No. 62,265
Int. Cl.³ C08C *19/22, 19/20*
U.S. Cl. 525—351 **11 Claims**

1. A vulcanizable rubber composition comprising sulfur-vulcanizable diene rubber, sulfur-vulcanizing agent, organic vulcanization accelerating agent and, in an amount effective to inhibit premature vulcanization, a compound of the formula



in which R and R′ are the same or different radicals selected from the group consisting of primary or secondary alkyl of 1–20 carbon atoms, benzyl, cycloalkyl of 5–12 carbon atoms, phenyl or mono-, di-, or tri-substituted phenyl wherein the substituents are lower alkyl, lower alkoxy or halo, or R′ is —SR.

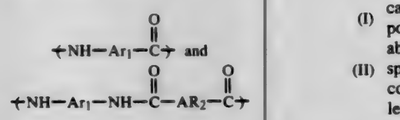
4,291,142

CROSSLINKED AROMATIC POLYAMIDE FILM AND PROCESS FOR PRODUCING THE SAME

Yorikazu Tamura; Akihiro Aoki, and Keizo Shimada, all of Iwakuni, Japan, assignors to Teijin, Limited, Osada, Japan

Filed Jul. 6, 1979, Ser. No. 55,475
Claims priority, application Japan, Jul. 18, 1978, 53-86785
Int. Cl.³ C08G *69/48*
U.S. Cl. 525—420 **11 Claims**

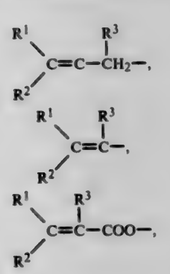
1. An aromatic polyamide film comprising at least one aromatic polyamide containing repeating units of the formula selected from the group consisting of



(I)

(II)

wherein Ar_1 and Ar_2 respectively represent, independently from each other, a member of the group consisting of unsubstituted and substituted divalent aromatic radicals which comprise a single aromatic ring, two or more aromatic rings that are condensed together, two or more aromatic rings that are linked together by a single bond, or two more aromatic rings that are linked together by a bridging atom or radical, which is oriented either meta or para, said aromatic polyamide molecules being cross-linked with at least one cross-linking compound selected from the group consisting of compounds which have at least one radical selected from the group consisting of radicals of the formulae (III), (IV), (V) and (VI):



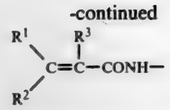
(III)

(IV)

(V)

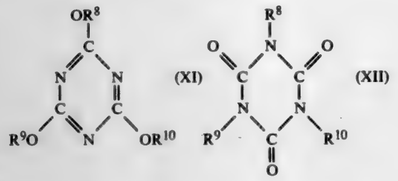
and

-continued



(VI)

wherein R^1, R^2, and R^3 respectively represent, independently from each other, a member selected from the group consisting of hydrogen and alkyl radicals having 1 to 6 carbon atoms, and compounds of the formulae (XI) and (XII):



(XI) (XII)

wherein R^8, R^9 and R^{10} respectively represent, independently from each other, a member selected from the group consisting of hydrogen, alkyl radicals having 1 to 10 carbon atoms, hydroxyalkyl radicals having 1 to 10 carbon atoms, carboxyalkyl radicals having 1 to 10 carbon atoms and halogenated alkyl radicals having 1 to 10 carbon atoms.

4,291,143

POLYMERIZATION OF UNSATURATED HYDROCARBYL HALIDE COMPOUNDS

Edwin H. Homeier, Maywood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 16, 1979, Ser. No. 67,083
Int. Cl.³ C08F *4/78*
U.S. Cl. 526—123 **10 Claims**

1. A process for the polymerization of an unsaturated hydrocarbyl halide compound which comprises treating said compound at a temperature in the range of from about 50° C. to about 200° C. and a pressure in the range of from about atmospheric to about 100 atmospheres in the presence of a catalyst comprising a Group VIB metal carbonyl and a promoter selected from the group consisting of an alkali metal hydroxide, an alkali metal carbonate and an alkali metal hydrogen carbonate, and recovering a polymer resultant from said polymerization.

4,291,144

EPOXY-BASED CURABLE COMPOSITIONS

Toshio Takago, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

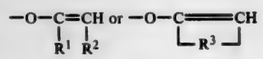
Filed Feb. 6, 1980, Ser. No. 119,114
Claims priority, application Japan, Feb. 15, 1979, 54-16502
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—26 **7 Claims**

1. A room temperature-curable epoxy resin composition which comprises

(a) an epoxy compound having at least two epoxy groups in a molecule,

(b) a curing agent, and

(c) an organosilicon compound having, in a molecule, at least one group represented by the general formula



wherein R^1 and R^2 are each a hydrogen atom or a monovalent hydrocarbon group and R^3 is a divalent hydrocarbon group, directly bonded to the silicon atom.

4,291,145

ANTIMONY HALIDE-ORGANIC PHOSPHATE ESTER CATIONIC POLYMERIZATION CATALYSTS

Robert J. Balchunis, St. Paul, and Stephen W. Bany, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 26, 1980, Ser. No. 124,837
Int. Cl.³ C08F *4/20;* C08G *2/06*
U.S. Cl. 528—89 **5 Claims**

1. A method for polymerizing a cationically polymerizable organic monomer comprising the steps:

(a) providing a latent polymerizable composition consisting of a solution of said organic monomer in a polar organic solvent and an effective amount of an antimony pentahalide-organic phosphate ester complex catalyst of the formula:



wherein:

R^1 is independently selected from alkyl groups of 1 to 18 carbon atoms,

(b) removing said solvent to form a residue, and

(c) heating the resulting residue to a temperature in the range of 50° to 150° C. to effect curing of said organic monomer.

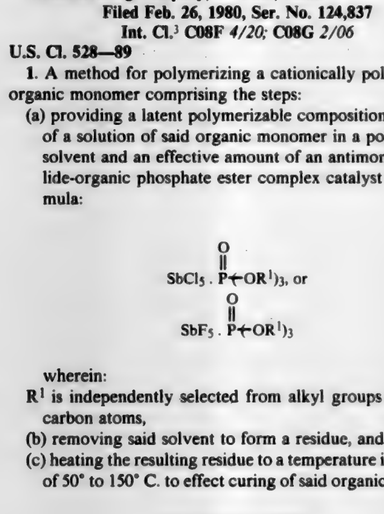
4,291,146

HEAT-CURABLE MIXTURES, WHICH ARE STABLE ON STORAGE, OF EPOXIDE RESINS AND β-AMINOCROTONIC ACID DERIVATIVES

Theobald Haug, Frenkendorf, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,014
Int. Cl.³ C08G *59/52*
U.S. Cl. 528—119 **4 Claims**

1. A heat-curable mixture which is stable on a storage, which contains (a) an epoxide compound with, on average, more than one epoxide group in the molecule and (b) a β-aminocrotonic acid derivative of the formula I to X



(I)

(II)

(III)

(IV)

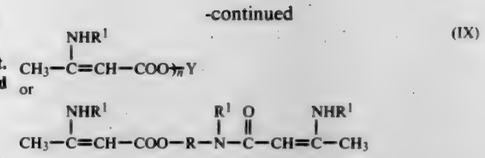
(V)

(VI)

(VII)

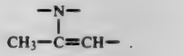
(VIII)

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(IX)

in which R^1 and R^2 independently of one another are each a hydrogen atom, alkyl having 1 to 6 C atoms, cycloalkyl having 5 or 6 C atoms or aryl having 6 to 10 C atoms, Y is a n-valent organic radical having 2 to 30 C atoms, R is an aromatic or aliphatic radical having not more than 30 C atoms, E, together with the two N atoms, is a heterocyclic, five-membered or six-membered ring and n is a number from 1 to 3, the curable mixture containing 2 to 8 epoxide equivalents per 1 equivalent of β-aminocrotonic acid derivative, containing the grouping



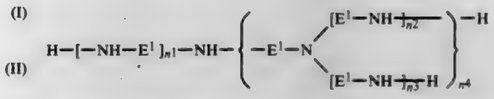
4,291,147

POLYADDUCTS OF AMMONIA AND EPOXIDE COMPOUNDS, PROCESSES FOR THEIR MODIFICATION, AND THEIR USE

Fritz E. Kempter, Mannheim; Eberhard Schupp, Schwetzingen; Hans-Uwe Schenck, Wachenheim, and Erich Gulbins, Heidelberg-Neuenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

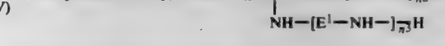
Filed Apr. 7, 1980, Ser. No. 137,748
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1979, 2914297
Int. Cl.³ C08G *59/40*
U.S. Cl. 528—119 **6 Claims**

1. A polyadduct of ammonia and epoxide compounds, which consists of epoxide-free reaction products of ammonia and diepoxides, triepoxides and/or tetraepoxides, from 1.75 to 10 moles of ammonia having been employed per epoxide group and 1 mole of ammonia having been reacted with from 1.2 to 2.0 equivalents of epoxide, so that if diepoxide compounds are used products of the general formula (I)



(I)

are obtained, whilst if triepoxides and/or tetraepoxide compounds are used, by themselves, or together with diepoxide compounds, products of the general formula II



(II)

are produced; in these formulae, the E^1's are identical or different hydroxyl-containing divalent radicals and the E^2's are identical or different hydroxyl-containing trivalent or tetravalent radicals, resulting from the opening of the oxirane rings of epoxide compounds containing two, three or four epoxide groups in the molecule, n^1, n^3 and n^5 are from 0 to 3, n^2 and n^4 are from 1 to 3 and X is 0 or 1, and one or more of the divalent radicals E^1 in the general formula (II) may or may not be replaced by polyvalent radicals E^2.

4,291,148

PROCESS FOR PREPARATION OF A PHENOLIC-POLYBUTADIENE-HCHO RESIN COMPOSITION USEFUL FOR LAMINATED SHEET

Seimei Yasui, Takarazuka; Masakazu Sagou; Takanobu Noguchi, both of Osaka; Yoshiki Toyoshima, and Junzo Saito, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 12, 1979, Ser. No. 47,946
Claims priority, application Japan, Mar. 2, 1979, 54-24823
Int. Cl.[2] C08G 8/12, 8/30
U.S. Cl. 528—142 **9 Claims**

1. A process for the preparation of a phenol resin modified with a liquid polybutadiene, which comprises reacting a polybutadiene having a number average moleucular weight of 150 to 5,000 with a phenol in the presence of an acid catalyst to obtain a composition of a polybutadiene-phenol adduct wherein one molecule of phenol per 3 to 8 butadiene units is added to the polybutadiene, and reacting the composition of the polybutadiene-phenol adduct with a formaldehyde in the presence of a basic catalyst, said basic catalyst comprising a primary amine of the formula: $R—NH_2$ wherein R is a hydrocarbon group having 1 to 20 carbon atoms in an amount of 0.01 to 0.5 mole per 1 mole of the phenol used for the preparation of the composition.

4,291,149

INJECTION MOLDABLE AMIDE IMIDE COPOLYMERS AND TERPOLYMERS

Robert G. Keske, and James R. Stephens, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 16, 1980, Ser. No. 112,651
Int. Cl.[3] C08G 69/26, 69/32
U.S. Cl. 528—188 **36 Claims**

1. A process for the preparation of tailored linear injection moldable polyamide-imide copolymers and terpolymers containing both aromatic and aliphatic moieties derived from aromatic and aliphatic diamines which process comprises reacting at a temperature of about 50° to 700° F. fully or partially acylated, aromatic or aliphatic diamines with tricarboxylic acid anhydride compounds and aliphatic or aromatic diamines wherein the ratio of the total moles of fully or partially acylated diamines and unacylated diamines to the tricarboxylic acid anhydride compound is 1:1 and about one half of the total amine functionality is acylated.

4,291,150

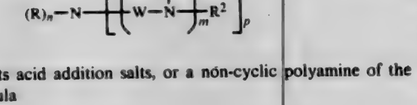
PROCESS FOR PREPARING POLYCARBONATE USING NON-CYCLIC POLYAMINE CATALYSTS

Victor Mark, Evansville, Ind., assignor to General Electric Co., Mt. Vernon, Ind.

Filed Dec. 28, 1979, Ser. No. 107,721
Int. Cl.[3] C08G 63/62
U.S. Cl. 528—199 **14 Claims**

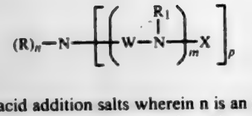
1. An interfacial polymerization process for preparing high molecular weight aromatic polycarbonates which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of a non-cyclic polyamine of the formula

Formula 1



and its acid addition salts, or a non-cyclic polyamine of the formula

Formula 2



and its acid addition salts wherein n is an integer equal to 3-p; p is an integer having a value from 1 to 3, inclusive; m is an integer having a value from 1 to 3, inclusive; R, R^1 and R^2 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl, substituted cycloalkyl, and aralkyl radicals; W is selected from the group consisting of divalent aliphatic and cycloaliphatic radicals; and X is a 5 to 6 membered nitrogen-containing heterocyclic radical selected from the group consisting of pyrrole, mono to tetra C_1 to C_5 alkyl substituted pyrrole, pyridine, and mono to tetra C_1 to C_5 alkyl substituted pyridine radicals.

4,291,151

PROCESS FOR PREPARING POLYCARBONATE USING CYCLIC DI- OR TRIAMINE CATALYST

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1979, Ser. No. 107,730
Int. Cl.[3] C08G 63/62
U.S. Cl. 528—199 **16 Claims**

1. An interfacial polymerization process for preparing high molecular weight aromatic polycarbonates which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of a catalyst selected from the group consisting of, cyclic triamines, and salts of cyclic triamines.

4,291,152

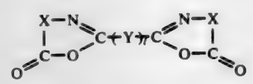
PROCESS FOR PRODUCING AROMATIC POLYESTERS HAVING INCREASED DEGREES OF POLYMERIZATION

Hiroo Inata, Hino; Shunichi Matsumura, Hachioji, and Makoto Ogasawara, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 25, 1980, Ser. No. 133,797
Claims priority, application Japan, Mar. 27, 1979, 54/35010; May 14, 1979, 54/57985; Jun. 22, 1979, 54/78009
Int. Cl.[3] C08G 63/44, 73/16
U.S. Cl. 528—289 **26 Claims**

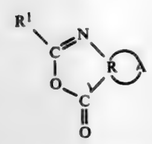
1. A process for producing an aromatic polyester having an increased degree of polymerization which comprises reacting a hydroxyl-terminated, substantially linear, fiber-forming aromatic polyester having an aromatic dicarboxylic acid as a main acid component at an elevated temperature with a bis-cyclic imino ester compound of the formula

(I)



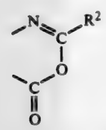
wherein Y represents a divalent hydrocarbon group which may further contain a hetero atom, X represents a divalent hydrocarbon group which contains 1 or 2 carbon atoms as members of the above imino ester ring and is non-reactive under the reaction conditions, and l is 0 or 1, or of the following formula

(II)



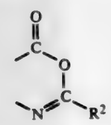
wherein A represents a grouping of the formula

(II)-a



in which R^2 represents a monovalent hydrocarbon group, or a grouping of the formula

(II)-b



in which R^2 is as defined above, R represents a tetravalent aromatic group which may further contain a hetero atom, and R^1 represents a monovalent aromatic hydrocarbon which is identical to or different from R^2;
thereby bonding the molecular chains of the aromatic polyester to each other by the terminal hydroxyl groups thereof and forming rapidly said aromatic polyester having an increased degree of polymerization.

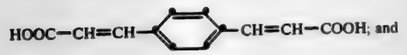
4,291,153

WATER-DISPERSIBLE POLYESTER ADHESIVES FOR PHOTOGRAPHIC MATERIALS

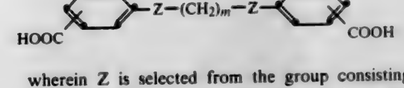
John M. Noonan, and Robert C. McConkey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,419
Int. Cl.[3] C08G 63/68, 75/00
U.S. Cl. 528—290 **21 Claims**

1. An adhesive composition comprising a water-dispersible polyester which comprises
A. an acid component comprising:
(1) from about 8 to about 16 mole percent of units derived from at least one dicarboxylic acid having an ionic iminosulfonyl moiety containing a monovalent cation as an imino nitrogen substituent;
(2) from about 40 to about 70 mole percent of units derived from at least one dicarboxylic acid selected from the group consisting of aliphatic dicarboxylic acids having the formula $HOOC—(CH_2)_n—COOH$ wherein n is an integer from 2 to 12, cycloaliphatic dicarboxylic acids having from 6 to 22 carbon atoms and aromatic dicarboxylic acids having from 6 to 12 carbon atoms;
(3) from about 5 to about 20 mole percent of units derived from a dicarboxylic acid having the formula:

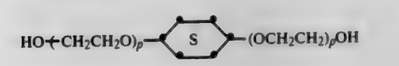


(4) from about 5 to about 25 mole percent of units derived from at least one dicarboxylic acid having the formula:



wherein Z is selected from the group consisting of carbonylimino and iminocarbonyl and m is an integer from 6 to 10; and
B. a diol component consisting essentially of:
(1) at least 50 mole percent of units derived from at least one diol having a formula selected from the group consisting of:

(I)



wherein p is an integer from 1 to 4, and

$HO—(RO)_q—H$ (II)

wherein q is an integer from 2 to 4 and R is alkylene having from 2 to 4 carbon atoms; and
(2) from 0 to 50 mole percent of units derived from at least one diol having the formula

$HO—R'—OH$

wherein R' is an alkylene group having up to 16 carbon atoms, cycloalkylene having from 6 to 20 carbon atoms, cycloalkylenebisalkylene having from 8 to 20 carbon atoms, or arylenebisalkylene having from 8 to 20 carbon atoms,
with the proviso that said diol component (1), selected from the group consisting of (I) and (II), must comprise at least 90 mole percent of the diol component when said acid component (1), having an ionic iminosulfonyl moiety, comprises less than 10 mole percent of said acid component.

4,291,154

PROCESS FOR THE PRODUCTION OF POLYAMIDE SILICATE RESINOUS PRODUCT

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 908,106, May 22, 1978, Pat. No. 4,198,491, which is a continuation-in-part of Ser. No. 845,464, Oct. 25, 1977, Pat. No. 4,120,937. This application Mar. 13, 1980, Ser. No. 130,015
Int. Cl.[3] C08G 69/26, 77/02
U.S. Cl. 528—335 **13 Claims**

1. The process for the production of polyamide silicate resinous product by mixing and reacting the following components:
(a) halosilicon acids, 0.5 to 1 mol, produced by reacting 0.5 to 2 mols of hydrated silica compound with 1 mol of a silicon halide; the mols of halosilicon acid is based on the mols of silicon halide used,
(b) organic polyamine, 1 to 2 mols,
(c) polycarboxylic acid, polycarboxylic acid anhydride, or mixture thereof, 1 to 2 mols.

4,291,155

METHOD OF MAKING LACTONE-EPOXIDE COPOLYMER POLYOLS

Jacques Brochet, Bethune, France, assignor to Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Mar. 14, 1979, Ser. No. 20,343
Claims priority, application France, Mar. 14, 1978, 78 07256
Int. Cl.[3] C08G 63/08, 63/10
U.S. Cl. 528—358 **6 Claims**

1. A method for the manufacture of a copolymeric polyol

comprising forming a reaction mixture of a lactone, an epoxide, a chain initiator having at least two active hydrogen atoms per mole, and an alkaline catalyst and copolymerizing at a temperature and substantially constant corrected pressure during addition of the lactone and epoxide and for a time sufficient to form a copolymeric polyol having the general formula:

$$I—PCL—PCL—POA)_mOH]_n$$

wherein I represents the remainder of the initiator, PCL represents a lactonic polyester sequence, POA represents a polyether sequence, m has a mean value less than 2, and n is an integer from 2 to 6, said copolymeric polyol having a central portion predominating in polylactone segments and terminal portions predominating in polyether segments.

4,291,156

POLYSACCHARIDE S-53 AND BACTERIAL FERMENTATION PROCESS FOR ITS PREPARATION

Kenneth S. Kang, La Jolla, and George T. Veeder, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 28, 1979, Ser. No. 16,253
Int. Cl.³ C12P *19/06*
U.S. Cl. 536—1 **1 Claim**

1. Heteropolysaccharide S-53, containing 4.8% pyruvate, 7% acetyl, and 18–19% uronic acid; the rest being neutral sugar, 51% glucose and 49% fucose; said heteropolysaccharide being incompatible with methylene chloride dye and compatible with milling green dye, being substantially insoluble in water-miscible alcohols, such as methanol, ethanol and isopropanol, and ketones like acetone, and soluble in water and having an infrared spectra characterized by peaks at 3400 cm^{-1}, 2950 cm^{-1}, 1720 cm^{-1}, and 1600 cm^{-1}.

4,291,157

OCTANOYLHYDRAZONE DERIVATIVES OF ADRIAMYCIN

David W. Henry, Chapel Hill, N.C., and George L. Tong, Cupertino, Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jul. 22, 1980, Ser. No. 171,083
Int. Cl.³ A61K *31/71*; C07H *15/24*
U.S. Cl. 536—17 A **2 Claims**

1. Adriamycin octanoylhydrazone and its pharmaceutically acceptable acid addition salts.

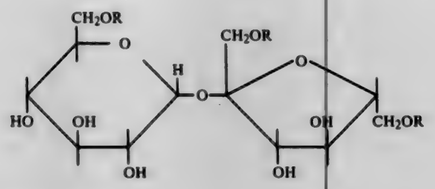
4,291,158

SUCROSE ESTER OF 2-METHOXY-3,6-DICHLOROBENZOIC ACID

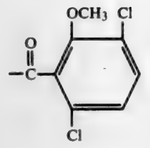
George F. Luteri, Mt. Prospect, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jan. 28, 1980, Ser. No. 115,637
Int. Cl.³ C07H *13/00, 11/00, 15/00*
U.S. Cl. 536—115 **1 Claim**

1. The compound sucrose tri(2-methoxy-3,6-dichlorobenzoate) having the formula



wherein each R is



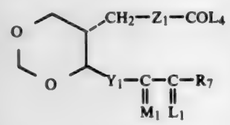
4,291,159

9,11-DIDEOXY-10-OXA-TXB INTERMEDIATES

Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 19,752, Mar. 12, 1979. This application Jan. 28, 1980, Ser. No. 116,323
Int. Cl.³ C07D *319/06, 405/12*
U.S. Cl. 542—400 **1 Claim**

1. A thromboxane intermediate of formula IX,



IX

wherein Y_1 is
(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3) $—CH_2CH_2—$, or
(4) -C≡C-,
wherein M_1 is α-R_5:β-OH, α-OH:β-R_5, or α-H:β-H, wherein R_5 is hydrogen or methyl;
wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and β-R_3:α-R_4, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_1 is
(1) cis—CH=CH-CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—(CH_2)—$_g$—CH_2—,
(7) —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—, or
(8) trans-CH_2—$(CH_2)_g$—CH_2—CH=CH—;
wherein g is one, 2 or 3;
wherein R_7 is
(1) —$(CH_2)_m$—CH_3, wherein m is an integer from one to 5 inclusive;
(2) phenoxy;
(3) phenoxy substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, icnlusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(4) phenyl;
(5) phenyl substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(6) phenylmethyl, phenylethyl, or phenylpropyl; or
(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein L_4 is
(a) amino of the formula —$NR_{21}R_{22}$, wherein R_{21} and R_{22} are
(i) hydrogen;
(ii) alkyl of one to 12 carbon atoms, inclusive;
(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(iv) aralkyl of 7 to 12 carbon atoms, inclusive;
(v) phenyl;
(vi) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
(vii) carboxyalkyl of 2 to 5 carbon atoms, inclusive;
(viii) carbamoylalkyl of 2 to 5 carbon atoms, inclusive;
(ix) cyanoalkyl of 2 to 5 carbon atoms, inclusive;
(x) acetylalkyl of 2 to 5 carbon atoms, inclusive;
(xi) benzoylalkyl of 7 to 11 carbon atoms, inclusive;
(xii) benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
(xiii) pyridyl;
(xiv) pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;
(xv) pyridylalkyl of 6 to 9 carbon atoms, inclusive;
(xvi) pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy or alkoxy of one to 3 carbon atoms, inclusive;
(xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;
(xviii) dihydroxyalkyl of one to 4 carbon atoms, or
(xix) trihydroxyalkyl of one to 4 carbon atoms;
with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;
(b) cycloamino selected from the group consisting of
(i) pyrrolidino,
(ii) piperidino,
(iii) morpholino,
(iv) piperazino,
(v) hexamethyleneimino,
(vi) pyrrolino,
(vii) 3,4-didehydropiperidinyl, or
(viii) pyrrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl substituted by one or two alkyl of one to 12 carbon atoms, inclusive;
(c) carbonylamino of the formula —$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is other than hydrogen, but otherwise as defined above; or
(d) sulfonylamino of the formula —$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined in (c).

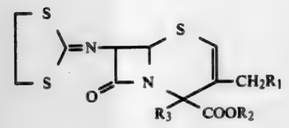
4,291,160

7-(1,3-DITHIOLAN-2-IMINO)-Δ^2-CEPHALOSPORANIC ACID DERIVATIVES

Boyd L. Harrison, and Joseph E. Dolfini, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 19,415, Mar. 12, 1979, Pat. No. 4,208,516. This application Nov. 5, 1979, Ser. No. 91,464
Int. Cl.³ C07D *501/16*
U.S. Cl. 544—17 **4 Claims**

1. A 7-(1,3-dithiolan-2-imino)-Δ^2-cephalosporanic acid derivative having the formula



wherein
R_1 is selected from the group consisting of 5-methyl-1,3,4-thiadiazol-2-ylthio, 1-methyl-1,2,3,4-tetrazol-5-ylthio and 1,2,3-triazol-4-ylthio;
R_2 is selected from the group consisting of hydrogen, t-butyl, 2,2,2-trichloroethyl, benzhydryl, formyloxymethyl and alkanoyloxymethyl in which the alkanoyl group contains from 2 to 5 carbon atoms;
R_3 is selected from the group consisting of alkyl having from 1 to 4 carbon atoms, carboxymethyl, alkoxycarbonyl and (alkoxycarbonyl)methyl wherein the alkoxy group has from 1 to 4 carbon atoms, halomethyl, benzyl and substituted benzyl wherein the benzyl substituent is methoxy or halo;
and the pharmaceutically acceptable salts thereof.

4,291,161

TRIMERIZATION OF METHYL-ISOTHIOCYANATE AND N,N',N''-TRIMETHYL 2-IMINODITHIOISOCYANURATE

Hendrik Dolman, and Johannes Kuipers, both of Weesp, Netherlands, assignors to Dupaar International Research B.V., Netherlands

Division of Ser. No. 952,376, Oct. 18, 1978, Pat. No. 4,221,792. This application Feb. 25, 1980, Ser. No. 123,880
Claims priority, application Netherlands, Nov. 4, 1977, 7712169
Int. Cl.³ C07D *251/46, 251/38*
U.S. Cl. 544—193 **3 Claims**

1. A method of preparing N,N',N''-trimethyl trithioisocyanurate by trimerization of methylisothiocyanate, wherein the trimerization is carried out in the presence of sodium hydride in a dipolar organic solvent.
3. N,N',N''-trimethyl 2-iminodithioisocyanurate.

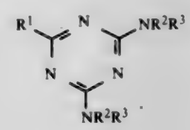
4,291,162

AMINOTRIAZINEPOLYCARBOXYLIC ACIDS AND PARTIAL ESTERS THEREOF

Derek J. R. Massy, Linton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

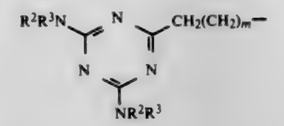
Filed Jul. 15, 1980, Ser. No. 169,063
Claims priority, application United Kingdom, Jul. 25, 1979, 25963/79
Int. Cl.³ C07D *251/70, 251/48*
U.S. Cl. 544—199 **9 Claims**

1. A compound of the formula



I

where
R^1 represents a group of formula —NR^2R^3, a straight chain or branched alkyl group of from 1 to 17 carbon atoms, a mononuclear aryl group of 6 to 10 carbon atoms, a phenylalkylene group wherein the alkylene moiety has from 1 to 4 carbon atoms, or a group of formula

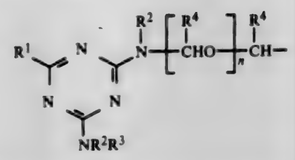


II

R^2 and R^3 may be the same or different and each represents a hydrogen atom, a group of formula —CHR^4OR^5, a group of formula

—CHR^4—S—R^6—COOQ IIA

or a group of formula



III

R^2 and R^3 in formulae I and III being selected such that at most one of them represents a group of formula III and at least two of them each represent a group of formula IIA;
m represents an integer of from 1 to 3;
each R^4 represents a hydrogen atom or a straight chain or branched alkyl group of from 1 to 3 carbon atoms;
each R^5 represents a hydrogen atom or a straight chain or branched alkyl group of from 1 to 8 carbon atoms;
each R^6 represents a divalent straight chain or branched alkylene group of from 1 to 4 carbon atoms, or a divalent straight chain or branched alkylene group of from 1 to 4 carbon atoms which is substituted by a group of formula

—COOQ IIB;

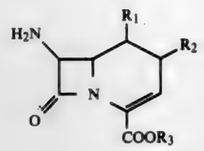
each Q represents a hydrogen atom or a straight chain or branched alkyl group of from 1 to 8 carbon atoms, such that at least two Q in the formulae IIA and IIB each represent a hydrogen atom; and n represents zero or 1.

4,291,163
DECAHYDROQUINOLINE-2-CARBOXYLIC ACID COMPOUNDS
George C. Wright, and Ronald E. White, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Jan. 23, 1980, Ser. No. 114,675
Int. Cl.³ C07D *215/16*
U.S. Cl. 546—164 **1 Claim**

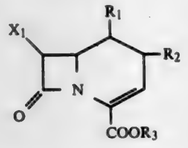
1. A compound selected from the group consisting of:
A. 1-(3-Benzoylthio-1-oxopropyl-decahydroquinoline-2-carboxylic acid dicyclohexylamine salt hemihydrate,
B. Decahydro-1-(3-mercapto-1-oxopropyl)quinoline-2-carboxylic acid tetartohydrate; and
C. Decahydro-1-(3-mercapto-1-oxopropyl)quinoline-2-carboxylic acid sodium salt ½ hydrate.

4,291,164
CEPHALOSPORIN ANALOGS AND METHODS FOR PRODUCTION THEREOF
Tadashi Hirata, Yokohama; Takehiro Ogasa, Machida; Hiromitsu Saito, Machida, and Nobuhiro Nakamizo, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Mar. 23, 1979, Ser. No. 23,645
Claims priority, application Japan, Mar. 20, 1978, 53-34696; Oct. 4, 1978, 53-122404; Oct. 28, 1978, 53-133072; Dec. 26, 1978, 53-162005; Jan. 27, 1979, 54-8408
Int. Cl.³ C07D *221/02*
U.S. Cl. 546—183 **3 Claims**

1. A process for producing compounds represented by the formula



wherein R_1 represents a hydrogen atom, a halo group, a hydroxy group, a lower alkoxy group having 1 to 5 carbon atoms, a lower alkylthio group having 1 to 5 carbon atoms, a phenylthio group, a benzylthio group, a lower alkylsulfinyl group corresponding to the alkylthio group described above, a lower alkylsulfonyl group corresponding to the alkylthio group described above, a phenylsulfonyl group corresponding to the phenylthio group described above, or a benzylsulfonyl group corresponding to the benzylthio group described above, R_2 is a group as defined for R_1 or represents an alkanoyl group, a lower alkyl group having 1 to 5 carbon atoms, a lower alkyl group having 1 to 5 carbon atoms and substituted with a halo group, a nitrile group or an amino group represented by the formula NR_9R_{10} wherein R_9 and R_{10} may be the same or different and represent a hydrogen atom, a lower aklyl group having 1 to 5 carbon atoms, a phenyl group, or a benzyl group, wherein the alkyl group in R_1 and R_2 is a straight-chain alkyl group, and R_3 represents a hydrogen atom or a substituted or unsubstituted alkyl, aryl, aralkyl or silyl group selected from methyl group, ethyl group, n-propyl group, isopropyl group, n-butyl group, isobutyl group, t-butyl group, a chloromethyl group, 2,2,2-trichloroethyl group, 2,2,2-trifluoroethyl group, benzyl group, diphenylmethyl group, triphenylmethyl group, trimethylsilyl group and triphenylsilyl group, among which benzyl group, diphenylmethyl group and triphenylmethyl group may have a methoxy or nitro group on the phenyl group, and acid addition salts thereof, wherein an X_1 group of the compound represented by the formula



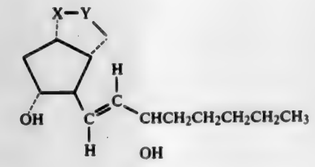
wherein X_1 represents an azido group and R_1, R_2 and R_3 have the same significance as defined above is reduced by catalytic reduction to an amino group using pallidium on charcoal, Raney nickel, palladium black or platinum oxide at a temperature of 0° to 100° C. and at a pressure of 1 to 50 atmospheres.

4,291,165
PROCESS FOR MAKING 2-BROMOPYRIDINE
Max M. Boudakian, Pittsford, N.Y., assignor to Olin Corporation, New Haven, Conn.
Filed Aug. 18, 1980, Ser. No. 179,390
Int. Cl.³ C07D *213/61*
U.S. Cl. 546—345 **18 Claims**

1. In the process for producing 2-bromopyridine by the diazotization-bromination reaction of 2-aminopyridine with HBr in the presence of Br_2 and a diazotization agent, wherein the improvement comprises:
conducting said reaction in the additional presence of H_2SO_4, employing a molar ratio of HBr:2-aminopyridine in the range from about 1:1 to about 3.5:1, and employing a molar ratio of H_2SO_4:HBr in the range from about 2:8 to about 8:2.

4,291,166
PHARMACEUTICALLY ACTIVE 6,9-THIAPROSTACYCLIN ANALOGS AND DERIVATIVES THEREOF
Kyriacos C. Nicolaou, Philadelphia; William E. Barnette, Levittown, both of Pa., and Ronald L. Magolda, Vineland, N.J., assignors to Research Corporation, New York, N.Y.
Filed Mar. 13, 1978, Ser. No. 886,141
Int. Cl.³ C07D *333/78*
U.S. Cl. 549—51 **15 Claims**

1. Biologically active 6,9α-thiaprostacyclin derivatives having the formula:



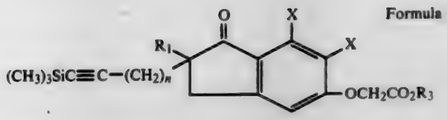
wherein
X represents >S, >SO or $>SO_2$;
Y represents (E) and (Z) $>C{=}CH{-}CH_2CH_2CH_2COOR$; (E)$>CH{-}CH{=}CH{-}C_2CH_2COOR$ or $>CH{-}CH_2CH_2CH_2CH_2COOR$; and
R represents a pharmaceutically acceptable cation or a pharmaceutically acceptable lower alkyl group.

4,291,167
PREPARATION OF TETRAMETHYLDISILANE FROM 1,2-TETRAMETHYLDICHLORODISILANE
Ronald J. Allain, Naperville, Ill., and Joseph P. Maniscalco, Sugar Land, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.
Filed Jul. 28, 1980, Ser. No. 172,611
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—430 **5 Claims**

1. A process of producing TMDS by:
(a) reacting purified TMDCDS with a substoichiometric mixture of NaH and $NaBH_4$ in the presence of a complexing ether solvent to produce TMDS and a BH_3.ether complex, and
(b) adding incrementally additional substoichiometric amounts of NaH to the reaction mixture obtained from step (a) to react with the BH_3.ether complex to produce $NaBH_4$, and
(c) allowing the thus-formed $NaBH_4$ to react in situ with the remaining TMDCDS to produce TMDS and a BH_3.ether complex, and
(d) continuing the sequence of steps (b) and (c) until fully stoichiometric amounts of NaH have been added to the reaction mixture of step (a), so as to complete the reaction converting TMDCDS to TMDS, and
(e) separating and recovering the thus-formed TMDS and recovering and recycling the ether solvent and the unreacted NaH and $NaBH_4$ reactants.

4,291,168
SILYLATED INDANYLOXYACETATES
Porter C. Johnson, Evansville, Ind., and William L. Matier, Libertyville, Ill., assignors to Mead Johnson & Company, Evansville, Ind.
Division of Ser. No. 27,961, Apr. 9, 1979, Pat. No. 4,247,715. This application Sep. 24, 1980, Ser. No. 190,159
Int. Cl.³ C07F *7/08, 7/04*
U.S. Cl. 556—441 **7 Claims**

1. A silylated compound of Formula IV

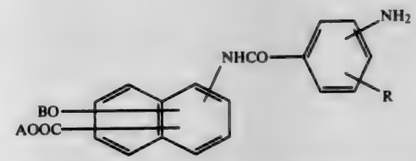


Formula IV

wherein
n is 1 or 2;
X is halo;
R_1 is phenyl or p-halophenyl; and
R_3 is lower alkyl.

4,291,169
SUBSTITUTED NAPHTHOIC ACIDS
Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 118,006, Feb. 4, 1980. This application Dec. 10, 1980, Ser. No. 214,914
Int. Cl.³ C07C *103/84*
U.S. Cl. 560—45 **4 Claims**

1. A compound of the formula:



wherein A is selected from the group consisting of hydrogen, lower (C_1–C_6)alkyl and a pharmaceutically acceptable salt cation; B is selected from the group consisting of hydrogen, lower (C_1–C_6)alkanoyl and a pharmaceutically acceptable salt cation; and R is selected from the group consisting of hydrogen and lower (C_1–C_3)alkyl.

4,291,170
PREPARATION OF DELTA-KETO-ESTERS
Sijbrandus E. Schaafsma, Beek; Johannes H. A. Hofman, Maastricht, and Johannes E. L. Claassens, Heerlen, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands
Continuation of Ser. No. 413,436, Nov. 7, 1973, abandoned. This application May 20, 1977, Ser. No. 798,888
Claims priority, application Netherlands, Nov. 11, 1972, 7215305
Int. Cl.³ C07C *67/313*
U.S. Cl. 560—126 **9 Claims**

1. Process for the preparation of a delta-keto-ester comprising reacting together in the liquid phase at a temperature of about 75° to 250° C. of an ester of an alpha-beta unsaturated carboxylic acid derived from acids having from 3 to 8 carbon atoms with a ketone having 3 to 10 carbon atoms, provided that said ketone has at least one hydrogen atom in the alpha position thereof, in the presence of primary amine containing from 1 to 6 carbon atoms, a Schiff base of said amine, or both, and an acid compound to form the corresponding delta-keto-ester:

4,291,171

ESTERS OF 2-FLUORO-2,2-DINITROETHYLMALONATE AND 2,2-DINITROPROPYLMALONATE

Kurt Baum, Pasadena, and Allen M. Guest, San Dimas, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1980, Ser. No. 179,863
Int. Cl.³ C07C *79/41*
U.S. Cl. 560—156 **4 Claims**

1. The compound, dimethyl 2-fluoro-2,2-dinitroethylmalonate.

3. The compound, dimethyl 2,2-dinitropropylmalonate.

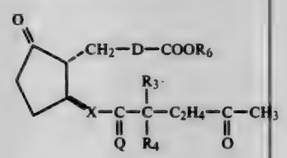
4,291,172

13,14-DIHYDRO-INTER-OXA-11-DEOXY-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,040
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_2—O—(CH_2)CH_2—$, or
(3) $—CH_2—O—(CH_2)_3—$,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is $—CH_2CH_2—$.

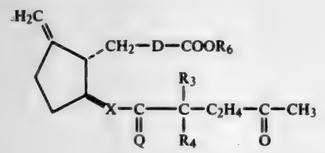
4,291,173

13,14-DIHYDRO-INTER-OXA-11-DEOXY-9-DEOXY-9-METHYLENE-19-OXO-PFG$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,061
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_2—O—(CH_2)CH_2—$, or
(3) $—CH_2—O—(CH_2)_3—$,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogn or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inslusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptble cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 fluoro only when the other is hydrogen or fluoro; and
wherein X is $—CH_2CH_2—$.

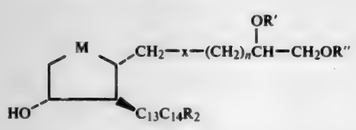
4,291,174

1-HYDROXYMETHYL-15-HYDROXY-PROSTEN-1-OL DERIVATIVES

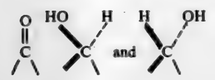
Allan Wissner, Ardsley, and Middleton B. Floyd, Jr., Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 3, 1980, Ser. No. 137,050
Int. Cl.³ C07C *49/597, 35/06, 49/798*
U.S. Cl. 568—330 **60 Claims**

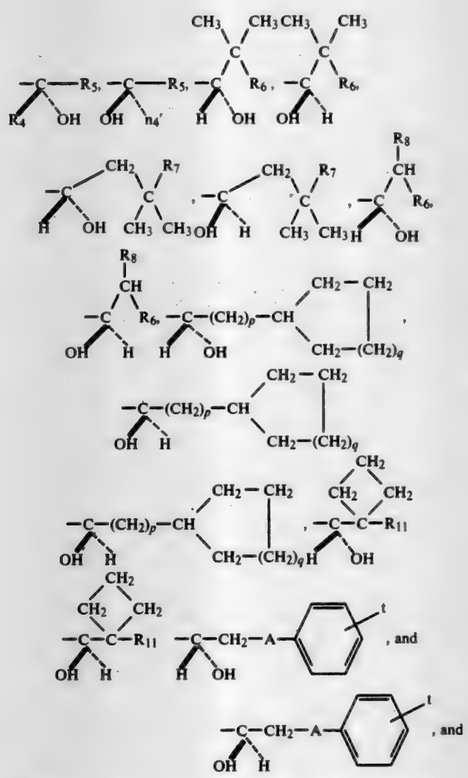
1. Compounds of the formula:



n is the integer 3–5 inclusive;
wherein M is the divalent moiety selected from the group



X is $—CH=CH—$(trans) and $—CH=CH—$(cis); R′ and R″ are the same or different and are hydrogen, C_1 to C_4 alkyl, C_1 to C_6 alkanoyl or optionally substituted benzoyl, the substituents selected from the group C_1 to C_4 alkoxy, halo and trifluoromethyl; C_{13}–C_{14} is selected from the group $—CH=CH—$(trans) and $—CH_2CH_2—$; and R_2 is selected from the group



wherein R_4 is hydrogen or methyl; R_5 is selected from the group consisting of C_4–C_7 alkyl; R_6 is selected from the group consisting of C_3–C_6 alkyl; R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; A is a divalent radical selected from $—CH_2—$ and $—O—$; p is an integer from o to 3; q is the integer 1 or 2; t is selected from the consisting of hydrogen, chloro, fluoro, dichloro, trifluoromethyl and methoxy; and n is the integer 3, 4 or 5.

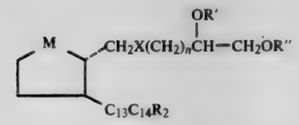
4,291,175

1-HYDROXYMETHYL-11-DEOXY-15-HYDROXY-PROSTEN-1-OL-DERIVATIVES

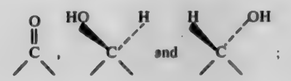
Allan Wissner, Ardsley, and Middleton B. Floyd, Jr., Suffern, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 3, 1980, Ser. No. 137,082
Int. Cl.³ C07C *35/06, 49/597, 49/798*
U.S. Cl. 568—330 **18 Claims**

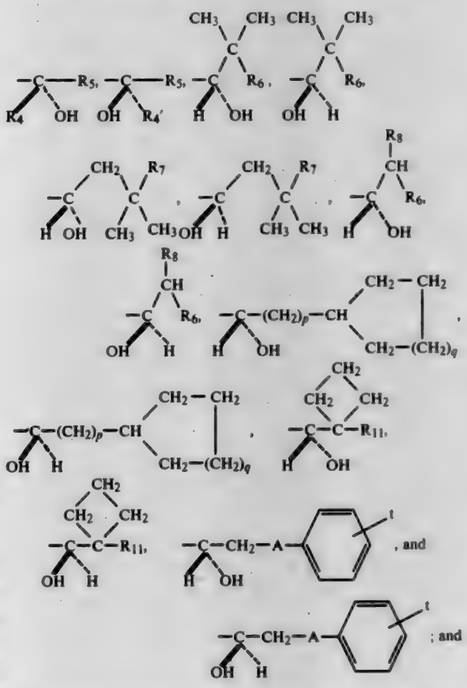
1. A compound of the formula



wherein
M is a radical selected from the group



X is $—CH_2CH_2—$;
R′ and R″ are the same or different and are hydrogen, C_1 to C_4 alkanoyl or optionally substututed benzoyl, the substituents selected from the group C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halo and trifluoromethyl;
$C_{13}C_{14}$ is selected from the group $—CH=CH—$(trans) and $—CH_2—CH_2—$; and R_2 is selected from the group



wherein R_4 is hydrogen or methyl; R_5 is selected from the group consisting of C_4–C_7 alkyl; R_6 is selected from the group consisting of C_4–C_7 alkyl; R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_{11} is selected from the group consisting of C_3–C_6 alkyl; A is a divalent radical selected from $—CH_2—$ and $—O—$; p is an integer from o to 3; q is the integer 1 or 2; t is selected from the consisting of hydrogen, chloro, fluoro, dichloro, trifluoromethyl and methoxy; and n is the integer 3, 4 or 5.

group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; A is a divalent radical selected from —CH_2— and —O—; p is an integer from o to 3; q is the integer 1 or 2; t is selected from the consisting of hydrogen, chloro, fluoro, dichloro, trifluoromethyl and methoxy; and n is the integer 3, 4 or 5.

4,291,176

PRODUCTION OF INSECTICIDALLY ACTIVE VINYL-CYCLOPROPANE CARBOXYLIC ACID ESTERS

Hans-Georg Heine, and Willy Hartmann, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

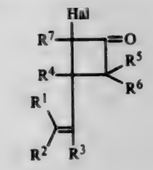
Filed Aug. 24, 1977, Ser. No. 827,514

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 2638356

Int. Cl.[3] **C07C** *49/27, 49/533, 49/45, 49/54, 49/80*

U.S. Cl. 568—381 **7 Claims**

1. An α-halogenocyclobutanone of the formula



(II)

in which

R^1, R^2 and R^3 each independently is hydrogen, halogen, CN, optionally substituted alkyl or alkenyl, aralkyl, aryl, alkoxycarbonyl, alkylsulphonyl, arylsulphonyl, acyloxy or dialkylaminocarbonyl, at least one of the radicals R^1, R^2 and R^3 containing halogen,

R^4, R^5, R^6 and R^7 each independently is hydrogen, optionally substituted alkyl or alkenyl, halogen, CN, aralkyl or aryl, or any of the pairs R^1 and R^2, R^2 and R^3, R^1 and R^4, R^4 and R^5, R^4 and R^7 and R^5 and R^6, conjointly with the adjacent carbon atom or atoms form a carbocyclic ring with up to 8 ring carbon atoms, and

Hal is halogen.

4,291,177

PROCESS FOR OBTAINING HALOGENATED DIPHENOLS

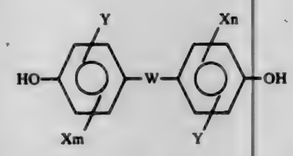
Victor Mark, Evansville, Ind., and Charles A. Wilson, II, Greenville, S.C., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 882,191, Feb. 28, 1978. This application Dec. 6, 1979, Ser. No. 100,864

Int. Cl.[3] **C07C** *39/16, 43/23, 39/00, 147/10, 147/14*

U.S. Cl. 568—726 **13 Claims**

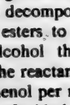
1. A halogenated diphenol mixture having a significantly reduced quantity of trihalo substituted and tetrahalo substituted diphenol, said mixture containing predetermined, statistical quantities of unreacted diphenol, monohalodiphenol and dihalodiphenol, said halogenated diphenol being represented by the general formula:



wherein Xm and Xn are each independently a halogen and mixtures thereof; Y is independently selected from the group consisting of C_1–C_4 alkyl and hydrogen; m and n are each 0–2 with the proviso that m+n equal at least 0.1, but more than 2.0; and, W is a member selected from the following group:

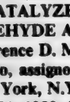
(a) $-(CH_2)_r-$, wherein r is 0–10 with the proviso that when both Xm and Xn are chlorine and m and n are each 1, r is 0 or 2–10;

(b)



wherein R is a member of the group consisting of C_1–C_{10} alkyl and C_6–C_{14} aryl;

(c)



wherein R and R′ can each independently be the same as R in (b) above;

(d)



wherein p and q can each independently be 0–1; and,

(e) —O— (e) cyclohexylidene; (f) 2,2,2-trichloroethylidene; (h) dichlorovinylidene.

4,291,178

PREPARATION OF ORTHO-HYDROXYBENZYL ALCOHOLS

Joël L. Ludec, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jul. 5, 1979, Ser. No. 55,071

Claims priority, application France, Jul. 11, 1979, 78 21591

Int. Cl.[3] **C07C** *37/00, 27/00*

U.S. Cl. 568—764 **14 Claims**

1. In a process for the preparation of an orthohydroxybenzyl alcohol by (a) reacting a phenol with boric acid to form boric acid esters of said phenol, (b) condensing said boric acid esters with formaldehyde or a formaldehyde-generating compound to form the corresponding ortho-hydroxybenzyl alcohol boric acid esters, and then (c) decomposing said orthohydroxybenzyl alcohol boric acid esters to liberate the corresponding ortho-hydroxybenzyl alcohol therefrom the improvement comprising employing the reactants in step (a) in a ratio of at least 1.1 mols of said phenol per mol of boric acid to form in step (a) boric acid esters of said phenol which comprise phenol orthoborates.

4,291,179

RHODIUM CATALYZED PROCESS FOR ACETALDEHYDE AND ETHANOL

Richard W. Goetz; Lawrence D. Meixsel, and David W. Smith, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,285

Int. Cl.[3] **C07C** *29/14, 31/08, 47/06*

U.S. Cl. 568—882 **17 Claims**

1. A process which comprises reacting formaldehyde, carbon monoxide and hydrogen in a solvent comprising an aprotic organic amide at a temperature of from about 75° to about 250° C. and superatmospheric pressure to form acetaldehyde in a first reaction stage and then ethanol in a second reaction stage, wherein a catalyst system initially comprised of a source of rhodium and a source of halide is present at least during said first reaction stage and wherein said second reaction stage is carried out in the presence of hydrogen, a hydrogenation catalyst and under sufficient conditions of temperature and pressure to effect hydrogenation.

4,291,180

CO-PRODUCTION OF INDENE AND STYRENE

Oliver A. Kiikka, Willoughby, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 107,963

Int. Cl.[3] **C07C** *5/42, 5/367, 4/12, 5/48*

U.S. Cl. 585—320 **8 Claims**

1. A process for co-production of indene and styrene from a mixture of cyclopentadiene or dicyclopentadiene and butadiene which comprises the steps of

(a) reacting cyclopentadiene, dicyclopentadiene or mixtures thereof with butadiene at an elevated temperature pressure to form a mixture comprising tetrahydroindene, vinylcyclohexene and vinylnorbornene,

(b) recovering the tetrahydroindene and vinylcyclohexene,

(c) contacting the mixture of tetrahydroindene and vinylcyclohexene with an oxygen donor and a catalyst comprising cobalt oxide and molybdenum oxide at a temperature above about 300° C. for a period of from 0.1 to 30 seconds, and

(d) recovering a mixture of indene and styrene.

4,291,181

INDENES FROM TETRAHYDROINDENES

Oliver A. Kiikka, Willoughby, and George S. Li, Macedonia, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 108,258

Int. Cl.[3] **C07C** *5/42, 5/367, 4/12, 5/48*

U.S. Cl. 585—320 **15 Claims**

1. A dehydrogenation process for producing indene and substituted indenes from tetrahydroindene or substituted tetrahydroindene which comprises contacting said tetrahydroindene or substituted tetrahydroindene with a catalyst comprising cobalt oxide and molybdenum oxide at an elevated temperature for a period of from 0.1 to 30 seconds.

4,291,182

PROCESS FOR THE PREPARATION OF AROMATIC HYDROCARBONS AND HYDROGEN FROM BUTANE

Frits M. Dautzenberg, and Nigel Wagstaff, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 11, 1980, Ser. No. 129,446

Claims priority, application Netherlands, Mar. 14, 1979, 7902018

Int. Cl.[3] **C07C** *2/76, 15/02*

U.S. Cl. 585—415 **5 Claims**

1. A process for the preparation of aromatic hydrocarbons and hydrogen, which comprises contacting in a contact zone as feed a C_4 paraffin or a hydrocarbon mixture which consists of more than 75% w C_4– paraffins and more than 50% w C_4 paraffins with a catalyst consisting essentially of a zinc-promoted crystalline silicate at a temperature of from 350° to 700° C., a space velocity of from 0.1 to 20 $g.g^{-1}.h^{-1}$ and at a pressure below 5 bar, which silicate is characterized as having the following properties after 1 hour's calcining in air at 500° C.:

(a) thermally stable up to a temperature above 600° C.,

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A.

TABLE A

Radiation: Cu-K 2θ	Wavelength 0.15418 nm relative intensity
7.8–8.2	S
8.7–9.1	M

TABLE A-continued

Radiation: Cu-K 2θ	Wavelength 0.15418 nm relative intensity
11.8–12.1	W
12.4–12.7	W
14.6–14.9	W
15.4–15.7	W
15.8–16.1	W
17.6–17.9	W
19.2–19.5	W
20.2–20.6	W
20.7–21.1	W
23.1–23.4	VS
23.8–24.1	VS
24.2–24.8	S
29.7–30.1	M

wherein the letters used have the following meanings:
VS = very strong;
S = strong;
M = moderate;
W = weak;
θ = angle according to Bragg's law.

(c) after conversion of the silcate into the H-form and after evacuation at 2×10^{-9} bar and 400° C. for 16 hours and measured at a hydrocarbon pressure of 8×10^{-2} bar and 100° C., the adsorption of n-hexane is at least 0.8 mmol/g, the adsorption of 2,2-dimethylbutane at least 0.5 mmol/g and the ratio

$$\frac{\text{absorption of n-hexane}}{\text{absorption of 2,2-dimethylbutane}} \text{ at least 1.5,}$$

(d) the composition, expressed in moles of the oxides, is as follows:

$$y(1.0\pm0.3)M_{n/2}O.y.Al_2O_3.SiO_2$$

wherein M = H and/or alkali metal and/or alkaline-earth metal, n is the valency of M and $0.0065 < y \leq 0.0017$; said catalyst containing 0.05 to 20% w zinc and withdrawing an aromatic hydrocarbon mixture and a hydrogen-containing gaseous mixture from said contact zone.

4,291,183

PRODUCTION OF TERTIARY-BUTYLSTYRENE

Glen F. Crum, Odessa, Tex., and Samuel J. Paton, Wilaya D'Oran, Algeria, assignors to El Paso Products Company, Odessa, Tex.

Filed Jan. 29, 1980, Ser. No. 116,657

Int. Cl.[3] **C07C** *5/48*

U.S. Cl. 585—443 **6 Claims**

1. A process for the production of tertiary-butylstyrene under oxydehydrogenation conditions which comprises contacting a feed mixture of tertiary-butylethylbenzene and oxygen at moderate conditions with a coprecipitated aluminum-calcium-cerium phosphate catalyst, wherein the cerium metal is in the plus three valence state, and the aluminum, calcium and cerium metal elements, respectively, are present in the catalyst in an atomic ratio of about 5–20:5–20:1 and the phosphate component is present in a sufficient quantity to satisfy the valences of the metal elements, and wherein the selectivity to tertiary-butylstyrene is at least 80 mole percent, and the selectivity to dialkenylbenzene is essentially zero mole percent.

4,291,184

PROCESS FOR PRODUCING TERTIARY-BUTYLSTYRENE

Glen F. Crum, Odessa, Tex., and Samuel J. Paton, Wilaya D'Oran, Algeria, assignors to El Paso Products Company, Odessa, Tex.

Filed Jan. 29, 1980, Ser. No. 116,658
Int. Cl.³ C07C 5/48
U.S. Cl. 585—443 **5 Claims**

1. A process for the production of tertiary-butylstyrene under moderate oxydehydrogenation conditions which comprises contacting a feed mixture of tertiary-butylethylbenzene and oxygen with a coprecipitated nickel-zirconium-cerium phosphate catalyst, wherein the cerium metal is in the plus three valence state, and the nickel, zirconium and cerium metal elements, respectively, are present in the catalyst in an atomic ratio of about 5–20:1:1 and the phosphate component is present in a sufficient quantity to satisfy the valences of the metal elements, and wherein the conversion selectivity to tertiary-butylstyrene is at least 80 mole percent, and the conversion selectivity to divinylbenzene is essentially zero mole percent.

4,291,185

ALKYLATION OF BENZENE IN PETROLEUM

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 969,626, Dec. 14, 1978. This application Aug. 8, 1979, Ser. No. 64,962
Int. Cl.³ C07C 2/68
U.S. Cl. 585—467 **8 Claims**

1. A process for the selective reaction of benzene relative to toluene in hydrocarbon mixtures comprising benzene, toluene and other aliphatic and aromatic hydrocarbons, said selective conversion process comprising contacting said hydrocarbon mixture with propylene, at a temperature of between about 100° C. and the critical temperature of the benzene reactant at a pressure of between about 10^5 N/m² and about 6×10^6 N/m², in the presence of a selective catalyst comprising ZSM-12 zeolites.

5. A process for upgrading motor fuels containing benzene therein, said process comprising contacting said motor fuel with propylene, at a temperature of between about 100° C. and the critical temperature of said benzene and a pressure of between about 10^5 N/m² and 6×10^6 N/m², in the presence of a crystalline zeolite comprising ZSM-12.

4,291,186

TRANSALKYLATION PROCESS

Hosheng Tu, Shorewood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 13, 1980, Ser. No. 129,940
Int. Cl.³ C07C 5/22
U.S. Cl. 585—475 **2 Claims**

1. A transalkylation process which comprises contacting toluene at transalkylation conditions including a temperature in the range of from about 400° C. to about 520° C., a pressure in the range of from about atmospheric to about 100 atmospheres, a hydrogen to hydrocarbon mole ratio of from about 2:1 to about 20:1 with a catalyst consisting essentially of mordenite, alumina and arsenic.

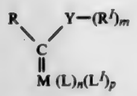
4,291,187

OLEFIN DISPROPORTIONATION PROCESS

Dennis S. Banasiak, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 57,246, Jul. 11, 1979, Pat. No. 4,247,417. This application Sep. 5, 1980, Ser. No. 184,551
Int. Cl.³ C07C 6/00
U.S. Cl. 585—644 **22 Claims**

1. A process for the disproportionation of olefins comprising contacting at least two suitable non-conjugated olefinic reactants under suitable reaction conditions with a catalytic amount of a catalyst composition consisting essentially of (1) at least one neutral carbene complex having the general formula



wherein R is an aryl or substituted aryl radical containing 6 to 30 carbon atoms per radical wherein the substituted aryl radical can have one or more substituents each of which can be the same or different and selected from the group consisting of halides, alkoxides and alkyl radicals containing 1 to 20 carbon atoms per radical; R^I is selected from the group consisting of alkyl, cycloalkyl, aryl, substituted aryl, trialkylsilyl, and triarylsilyl radicals containing 1 to 30 carbon atoms per radical with the aryl substituents being the same as for the sustituted aryl of R; Y is 0, Se, S, N, or P; m is 1 when Y is 0, Se, or S and 2 when Y is N or P; M is tungsten or rhenium; each L is individually selected from CO, NO, PF_3, PCl_3, or pyridine; L^I is cyclopentadienyl or allyl; p is 0 or 1; and n is 5 when p is 0 or 2 when p is 1, and

(2) at least one activator selcted from chlorinated or chlorobrominated saturated organic compound having 1 to 20 carbon atoms per molecule and containing only carbon and chlorine or carbon, chlorine, and bromine.

4,291,188

PROCESS FOR THE PREPARATION OF METHANE AND/OR ETHANE

Nigel Wagstaff, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 11, 1980, Ser. No. 129,445
Claims priority, application Netherlands, Mar. 14, 1979, 7902021
Int. Cl.³ C07C 4/02
U.S. Cl. 585—752 **9 Claims**

1. A process for the preparation of methane and/or ethane, which comprises contacting as feed a C_{2-4} paraffin or a hydrocarbon mixture which consists of more than 75% C_{2-4} paraffins and which C_{2-4} paraffins have an average molar carbon number which is at least 0.5 higher than that of the C_2^- paraffin fraction of the product, at an elevated temperature of from 400° to 800° C., a pressure of above 10 to below 100 bar, and a space velocity of from 0.1 to 20 $g.g^{-1}.h^{-1}$ in a contact zone with a crystalline silicate as the catalyst, which silicate is characterized in that after 1 hour's calcining in air at 500° C. it has the following properties:

(a) thermally stable up to a temperature above 600° C.,

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections give in Table A.

TABLE A

Radiation : Cu—K 2 θ	Wavelength 0.15418 nm relative intensity
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8.7–9.1	M
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15.4–15.7	W
15.8–16.1	W
17.6–17.9	W
19.2–19.5	W
20.2–20.6	W
20.7–21.1	W
23.1–23.4	VS
23.8–24.1	VS
24.2–24.8	S
29.7–30.1	M

wherein the letters used have the following meanings:

VS=very strong; S=strong; M=moderate; W=weak; θ=angle according to Bragg.

(c) after conversion of the silicate into the H-form and after evacuation at 2×10^{-9} bar and 400° C. for 16 hours and measured at a hydrocarbon pressure of 8×10^{-2} bar and 100° C. the adsorption of n-hexane is at least 0.8 mmol/g, the adsorption of 2,2-dimethylbutane at least 0.5 mmol/g and the ratio

$$\frac{\text{adsorption of n-hexane}}{\text{adsorption of 2,2-dimethylbutane}} \text{ at least 1.5,}$$

(d) the composition, expressed in moles of the oxides, is as follows:

$y.(1.0\pm0.3)M_{n/2}O.y.Al_2O_3.SiO_2$

wherein M=H and/or alkali metal and/or alkaline-earth metal, n is the valency of M and $y\geqq0.01$; and withdrawing a methane and ethane containing product from said catalyst zone.

4,291,189

ALKYLATION PROCESS IMPROVEMENT

David B. Bishkin, Houston, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 28, 1980, Ser. No. 144,733
Int. Cl.³ C07C 7/00
U.S. Cl. 585—860 **7 Claims**

1. A method of neutralizing and rendering entrained phosphoric acid soluble in isopropylbenzene alkylate comprising addition to said alkylate and said entrained phosphoric acid in amount of a primary amine effective to neutralize and render said phosphoric acid soluble.

4,291,190

FLUID-COOLED HOLDER FOR AN ELECTRODE TIP

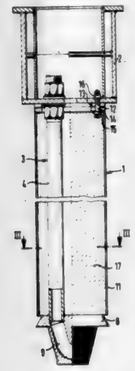
Emil Elsner; Rudolf Kasper, both of Baden-Baden, Fed. Rep. of Germany, and William E. Schwabe, Middleburg Heights, Ohio, assignors to Korf & Fuchs Systemtechnik GmbH, Willstadt-Legel-shurst, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,144

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845367

Int. Cl.³ H05B *7/06*

U.S. Cl. 13—18 R **16 Claims**



1. A fluid-cooled holder for the tip of an electrode of an electric arc smelting furnace, comprising: a holding portion adapted to be secured to an electrode support arm, a metal cooling system for cooling said electrode and for carrying electrode current, said cooling system being secured to said holding portion and having a free-end carrying a screw-threaded portion for screwing on the electrode tip, an electrically insulating refractory substance surrounding said cooling system, and a metal tube snuggly fitting around said substance and being electrically insulated with respect to said cooling system, said refractory substance being sufficiently thermally conductive so that the temperature of the metal tube is kept to a value below the softening temperature of the material of the metal tube upon insertion of said holder in an electric arc smelting furnace.

4,291,191

SOLAR CELL ARRANGEMENT

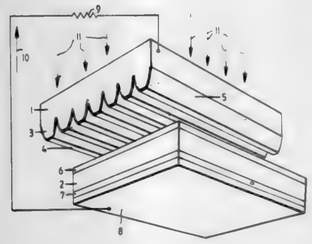
Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,108

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926754

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—246 **18 Claims**



1. A solar cell arrangement, in which two separate plates or discs are provided; one plate or disc comprises light-transmissive material; one side of this plate or disc has a regular structure of light-transmissive elevations which taper parabolically; these parabolic elevations are cut off parallel to the surface of the plate or disc at the level of their focal points or lines; the surface of the parabolic elevations is coated with an at least partially light-transmissive, electrically conductive layer; the second plate or disc of the arrangement comprises semiconductor or metallically conductive material; and both plates or discs are assembled mechanically so that the cut off surfaces of the parabolic elevations form photovoltaic or non-blocking electrical contacts with the surface of the semiconductor or metallically conductive plate or disc so that light which passes through the light-transmissive plate or disc is concentrated at the contacts.

4,291,192

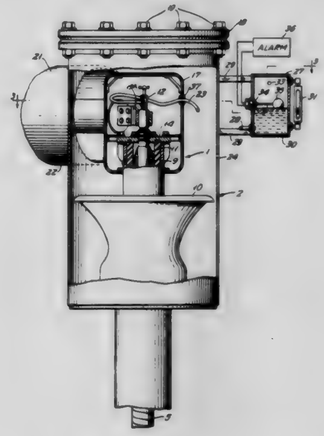
VENTING APPARATUS FOR AN ELECTRIC CABLE POTHEAD

Thomas F. Eccleston, Jeanette, and Walter M. Wilson, Greensburg, both of Pa., assignors to Consolidated Edison Company of New York, Inc., New York, N.Y.

Filed May 1, 1980, Ser. No. 145,592

Int. Cl.³ H02G *15/22*

U.S. Cl. 174—11 BH **16 Claims**



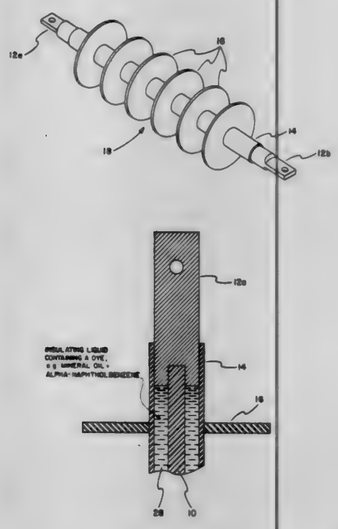
1. In combination with a housing enclosing a portion of an electrical cable which operates at a predetermined voltage which is different from the voltage of said housing, said cable having fluid under pressure above atmospheric pressure therein, venting means for venting fluid from said cable exteriorly of said housing, said venting means comprising a tube of insulating material connected in fluid communication with a portion of said cable at said predetermined voltage and extending to at least a wall of said housing for conveying fluid out of said cable and to the outside of said housing, a closed reservoir externally of said housing and connected to said tube for receiving fluid from said cable, and means connected to said reservoir for venting said fluid from said reservoir, said tube having a length and being made of an insulating material which has physical and electrical properties which will withstand the pressure of said fluid and withstand said voltage without breakdown.

4,291,193

SELF-MONITORING HIGH VOLTAGE TRANSMISSION LINE SUSPENSION INSULATOR

Gary E. Stemler, and Donald N. Scott, both of Vancouver, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 9, 1980, Ser. No. 148,322
Int. Cl.³ H01B *17/02, 17/34, 17/36*
U.S. Cl. 174—11 R **2 Claims**



1. A high voltage transmission line suspension insulator for connecting a high voltage transmission line to a transmission line support structure comprising:

a. an elongated generally cylindrical dielectric rod with two ends;

b. two generally cylindrical end fittings, one of said end fittings coaxially affixed to one end of said rod and the other of said end fittings coaxially affixed to the other end of said rod, for connecting one end to said high voltage transmission line and the other end to said transmission line support structure, each of said end fittings having a diameter greater than the diameter of said rod;

c. a generally cylindrical dielectric tube with sheds, said tube enclosing and spaced from said rod and hermetically sealed to said end fittings forming a liquidtight space within said tube between said end fittings around said rod;

d. a pressurized dielectric liquid disposed within said space; and

e. a non-ionic organic discoloring dye disposed in said space for detecting loss of pressurized liquid from said space.

4,291,194

NEGATIVE CORONA SHIELDING OF LINE AND STATION HARDWARE

Olaf Nigol, Etobicoke; Herbert J. Houston, Oakville, and Adolf Gretzinger, Ancaster, all of Canada, assignors to Slater Steel Industries Limited, Hamilton, Canada

Filed Jul. 10, 1979, Ser. No. 56,203
Int. Cl.³ H02G *7/05;* **H01T** *19/00;* **H01B** *17/42*
U.S. Cl. 174—40 R **6 Claims**

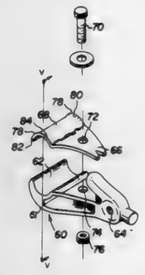
1. A clamp for use with a conductor comprising:

a body member having an axially extending arcuate-shaped recess formed therein for receiving the conductor;

a clamping member having an axially extending arcuate-shaped recess formed therein cooperating with the recess in the body member to clamp the conductor and an external surface having a first portion thereof shaped and structured to generate a localized increase in voltage gradient thereon;

means for interconnecting said body member and said clamping member; and

shielding means including convergent surfaces intersecting to define a sharp edge adjacent an end of the recess in one of the clamping member and body member to promote a negative corona discharge adjacent said first portion, said sharp edge being located in a plane extending perpendicular to the axis of one of the recesses, whereby said negative



corona discharge produces a positive space charge to reduce said voltage gradient at said first portion.

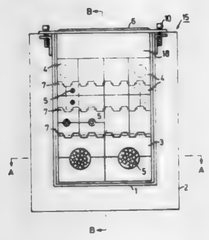
6. A method of inhibiting positive corona discharge from a portion of one side of an external surface of a conductor clamp having an axially extending recess formed therein, said portion being shaped and structured to generate a localized increase in voltage gradient thereon, comprising the step of providing shielding means on said one side of said clamp for promoting negative corona discharge adjacent said portion, said shielding means having convergent surfaces intersecting to define a sharp edge so as to produce a positive space charge to thereby reduce the voltage gradient at said portion, the sharp edge being located in a plane extending substantially perpendicular to the axis of the recess.

4,291,195

LEAD-THROUGH FOR THE FIREPROOF DISPOSITION OF ELECTRIC CABLES THROUGH A WALL

John-Erik V. Blomqvist, and Erik M. Blomqvist, both of Karlskrona, Sweden, assignors to AB Lyckeaborgs Bruk, Karlskrona, Sweden

Filed Nov. 15, 1979, Ser. No. 94,477
Claims priority, application Sweden, Jan. 18, 1979, 7900463
Int. Cl.³ H02G *3/22*
U.S. Cl. 174—48 **16 Claims**



1. A lead-through or transit for the fireproof disposition of electric cables through an opening in a wall or the like, comprising a metal frame the opening of which accommodates the cables and modularly dimensioned blocks surrounding each

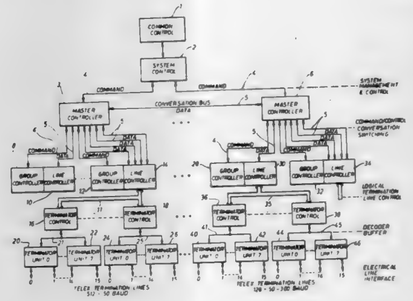
cable, as well as stay strips inserted between rows of blocks for stiffening the pack formed by the blocks, characterized in that the frame is formed by at least one frame half which is fitted on one side of the wall directly opposite the opening in said wall, the frame half on at least three sides comprising comparatively thin metal plate or sheet, extending substantially perpendicular to the wall and including a profiled portion in the form of a channel or trough, which has its longitudinal axis substantially parallel to the edge of the sheet remote from the wall, said portion extending towards the wall from the vicinity of this edge, with its bottom in a plane outside the non-profiled portion of the frame half side, while the fourth side of the frame half is formed by at least one pressure plate bearing against the blocks in the transit, said plate having the same profile as the channel-like portions of the other three sides along its edge portion remote from the wall, and that the opening in the frame half is filled with blocks and throughgoing cables such that the appropriate sides of peripheral blocks engage against the bottoms of said channels formed by said profiled portions.

4,291,196

CIRCUIT FOR HANDLING CONVERSATION DATA IN A DISTRIBUTED PROCESSING TELEX EXCHANGE

John W. Spaniol, Studio City, Calif.; John J. Bowerman, Rock Ridge, Md., and Marvin Perlman, Granada Hills, Calif., assignors to Frederick Electronics Corp., Frederick, Md.

Filed Nov. 6, 1979, Ser. No. 92,424
Int. Cl.³ H04L *11/00;* **H04Q** *3/54*
U.S. Cl. 178—3 **9 Claims**



1. For use in a distributed procesing telex exchange in which the customer terminations connected to the exchange are divided into a predetermined number of groups having a predetermined number of terminations in each group and where each call to or from each termination involves the handling or serialized conversation data bits, a circuit for enabling the systematic handling of the conversation data from a calling party to a called party comprising:

(a) a plurality of frame memories, each memory having an addressable memory location associated with each termination connected to the exchange, for temporarily storing the conversation data generated by every termination connected to the exchange; and

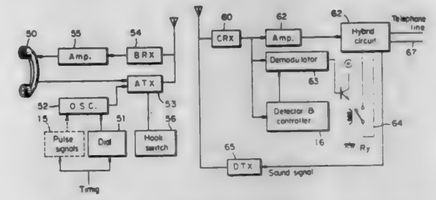
(b) a plurality of vector memories, one vector memory from said plurality of vector memories associated with a corresponding frame memory from said plurality of said frame memories, each said vector memory having addressable memory locations associated with each of the predetermined number of terminations in a group, for storing in each vector memory location the address within its associated frame memory of the conversation data to be forwarded to the termination within the group that corresponds to the vector memory address.

4,291,197

REMOTE TELEPHONE SYSTEM

Yoshifumi Yonaga, Tokyo, Japan, assignor to Maruyoshi Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1979, Ser. No. 44,069
Claims priority, application Japan, May 31, 1978, 53-64221; Aug. 22, 1978, 53-101413
Int. Cl.³ H04Q *7/04*
U.S. Cl. 179—2 EA **8 Claims**



1. A remote telephone system comprising a remote station having a remote transmitter and receiver means, and a base station having a base transmitter and receiver means, wherein said remote station includes pulse code means for generating a pulse signal corresponding to at least one predetermined decimal number, said remote transmitter means transmitting said pulse signal to said base radio station, and said base receiver means receiving said transmitted pulse signal, and wherein said base radio station includes discriminator means, coupled to said base receiver means, for determining if said pulse signal corresponds to said at least one predetermined decimal number, a dialing signal demodulator means, and enabling means, responsive to said discriminator means, for enabling said dialing signal demodulator if said transmitted pulse signal corresponds to said at least one predetermined decimal number, and wherein said base station includes counter means for counting the pulses in said pulse signal and for providing an output corresponding to the number of pulses counted; and gate means having one input coupled to the output of said counter means corresponding to said at least one predetermined decimal number and another input coupled to said dial signal demodulator means, whereinsaid base station includes means for disabling said counter means after its response to said pulse signal corresponding to said predetermined decimal number, and means for resetting said counter means in response to a carrier signal from said remote station and wherein the output of said gate means is coupled to a dialing relay means for controlling the opening and closing thereof.

4,291,198

GENERAL-PURPOSE ELECTRONIC TELEPHONE STATION SET

Robert V. Anderson, Westfield; Douglas L. Bayer, Somerset; David W. Hagelbarger, Morris Township, Morris County, and Peter S. Kubik, South Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 28, 1979, Ser. No. 53,099
Int. Cl.³ H04M *11/08, 1/02*
U.S. Cl. 179—2 DP **25 Claims**

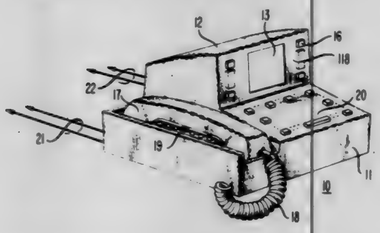
1. A general-purpose electronic telephone station set for use in conjunction with a host computer (40) and having plural user-controllable operations, said set including transducers (17) for audio input/output of received or transmitted signal information, a display screen (13) for video output of information, a keyboard (20) including a plurality of keys for manual input of signal information, and data processing means (43) for electrically intercoupling the keyboard, the screen, and the transducers for programmable interaction, the improvement comprising

plural function keys (16) arrayed along at least one side of the screen in positions corresponding to different line positions on the screen, said function keys being coupled

to said data processing means for inclusion in said programmable interaction, and

said data processing means including

means, responsive to signals from said host computer, for displaying in text on said screen an initial set (**140**) of user-selectable choices of station set operations, such choices including at least one called station calling mode (CALL BY TYPING),



means, responsive to actuation of at least one of said function keys, for sending to said host computer signals identifying such one key, and

means, responsive to signals from said host computer directing the one of said calling modes corresponding to the identified function key, to produce signals identifying said called station.

4,291,199

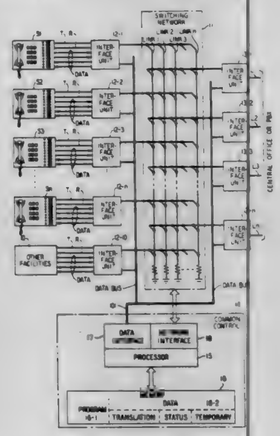
COMMUNICATION SYSTEM TRACKING ARRANGEMENT

Wayne Densmore, Eatontown, and Thomas M. Quinn, Little Silver, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 28, 1979, Ser. No. 24,724

Int. Cl.³ H04M *1/22, 3/22, 3/42*

U.S. Cl. 179—18 AB **23 Claims**



1. A station tracking control arrangement for use in a communication system having a plurality of stations having communication capability among each other over communication links, said arrangement comprising

means for determining the busy-idle status of each said station,

means controlled from a first station for temporarily establishing in association with said first station a selected other station as a target station,

means separate from said communication links for providing a first indication at said first station when said target station is busy, and

means separate from said communication links for providing a second indication at said first station when said target station is idle.

4,291,200

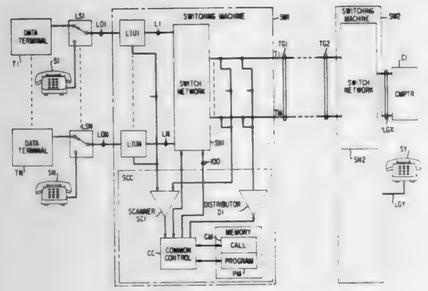
VOICE AND DATA SWITCHING ARRANGEMENT

Nicholas K. Smith, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 31, 1979, Ser. No. 89,769

Int. Cl.³ H04M *3/58*

U.S. Cl. 179—18 BD **13 Claims**



1. A telecommunications system for providing data transmission on each of a plurality of communication lines having subscriber apparatus connected thereto, said telecommunication system comprising:

a switching network for controlling the connection of a communication path among said communication lines or between said communication lines and a trunk to another switching network in response to control signals;

a system control circuit connected to said switching network and to said plurality of communication lines for monitoring and controlling conditions on said communication lines and applying connect and disconnect control signals to said switching network;

said system operable for establishing data transmission connections as well as voice transmission connections, and

characterized in that

said control circuit includes

a call memory,

means responsive to an origination signal of a call received over a first one of said communication lines for generating a connect control signal,

means for determining if said origination signal is associated with a data transmission connection,

means responsive to a determined data transmission origination signal for generating an associated reconnect signal,

means for storing said reconnect signal in said call memory,

means responsive to a reorigination control signal of a subsequent data transmission call received over said first communication line for obtaining said reconnect signal from said memory, and

means controlled by said obtained reconnect signal for generating said connect control signal for establishing a new data transmission connection independent of any previously established data transmission connection.

4,291,201

PUSH-BUTTON DIAL ASSEMBLY FOR TELEPHONES

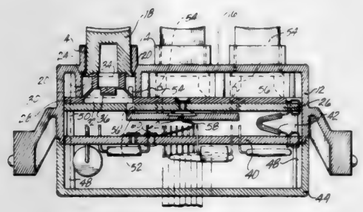
Walter R. Johnson, Simi Valley, and Gary M. Petaja, Sierra Madre, both of Calif., assignors to American Telecommunications Corporation, El Monte, Calif.

Filed Apr. 9, 1979, Ser. No. 28,166

Int. Cl.³ H04M *1/50, 1/23*

U.S. Cl. 179—90 K **5 Claims**

1. A multiple push-button switch comprising a frame member, a plurality of depressable push-buttons, means supporting each of the push-buttons on the frame member in a cluster, a common switch plate movably supported adjacent the back of the cluster of push-buttons, spring means mounted on the frame and engaging the switch plate for urging the switch plate toward the back of the push-buttons, means extending between each of the push-buttons and the switch plate for moving the switch plate against the urging of the spring means by depressing any one of the push-buttons, and switch means actuated by movement of the switch plate for breaking an electrical circuit when the switch plate is moved by any one of the push-buttons, the spring being a leaf spring mounted in cantilever fash-



ion at one end to the frame member adjacent the switch plate, the other end of the leaf spring having a portion bearing against the switch plate, the end of the leaf spring bearing against the switch plate including a tip portion extending through an opening in the switch plate, the tip forming the moving contact of the switch means, the switch means including a fixed contact on the opposite side of the switch plate from the spring means, the tip portion normally contacting the fixed contact under the urging of the spring, movement of the switch plate by any of said push-buttons moving the plate and tip of the leaf spring away from the fixed contact to separate the contacts and break an electrical circuit.

4,291,202

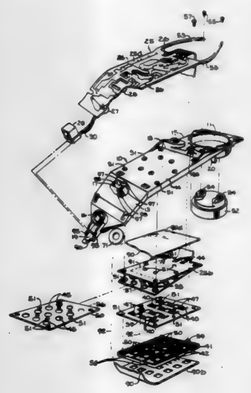
TELEPHONE HANDSET CHASSIS AND FLEXIBLE PRINTED CIRCUIT

William J. Adams, Franklin; William F. Wernet, Nashville, and Steve W. Haskins, Laverne, all of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada

Filed Sep. 25, 1979, Ser. No. 78,693

Int. Cl.³ H04M *1/03, 1/23*

U.S. Cl. 179—103 **18 Claims**



1. Apparatus for use in a telephone handset, comprising:

a rigid chassis of elongate form and including a transmitter mounting position at a first end, a receiver mounting position at a second end and a pushbutton dial position intermediate said ends, and a transverse slot through said chassis positioned between said dial position and said transmitter mounting position;

a flexible printed circuit member including a first portion extending from said receiver mounting position along a back surface of said chassis to said slot, said printed circuit member extending through said slot and including a second portion extending back over a front surface of said chassis, said second portion extending over said front surface having a pushbutton switch circuit thereon;

a pushbutton dial assembly mounted on said front surface of said chassis over said pushbutton switch circuit of said circuit member, at said dial position;

a receiver mounted on said circuit member and attached to said chassis at said receiver mounting position; and

a transmitter mounted at said transmitter mounting position.

4,291,203

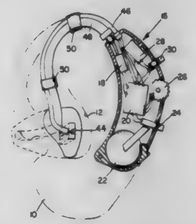
HEARING AID DEVICE

Gaspare Bellafiore, 58 Stevens Rd., Cranston, R.I. 02910

Filed Sep. 11, 1979, Ser. No. 74,425

Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 E **2 Claims**



2. A hearing aid device, comprising an ear plug for insertion into the auditory canal of the user's ear, a microphone having a body portion and sound inlet portion that projects outwardly of said body portion, the body portion of said mircophone being completely embedded in said ear plug so as to be located in said auditory canal and said sound inlet portion projecting outwardly of said ear plug for being directly exposed to transmitted sound waves, a housing for location in close proximity to the ear of the user and having an amplifier located therein, said amplifier and microphone being electrically interconnected for the electrical transmission of sound waves received by said microphone to said amplifier, a transducer located in said housing and being electrically connected to said amplifier, and a sound tube, one end of which extends through said plug for communication with said auditory canal and the other end of which projects into said housing for communication with said transducer, wherein the amplified sound received from said microphone is transmitted by said transducer and sound tube to the auditory canal of the user, the interior of said sound tube being free and unobstructed to provide for fidelity of sound as transferred through said sound tube to the auditory canal of the user, said ear plug having a recess formed therein, said microphone being received in said recess and being located in the auditory canal such that the longitudinal axis of the microphone is parallel to the longitudinal axis of said ear plug, the sound inlet portion of said microphone extending outwardly beyond the adjacent surface thereof for insuring the exposure of said microphone to sound waves, a second microphone located in said housing and having a sound inlet portion that is exposed exteriorly of said housing, wherein said second microphone complements the first-named microphone for picking up all available sound waves for amplification and transmission to the auditory canal of the user.

4,291,204

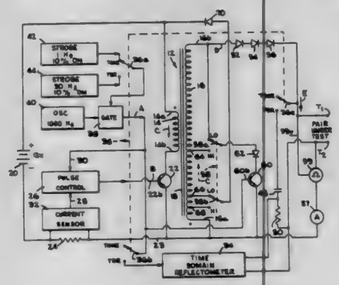
FAULT LOCATING SYSTEM FOR ELECTRIC CABLES AND THE LIKE

Robert G. Crick, 850 Mesa Ave., Palo Alto, Calif. 94306

Continuation-in-part of Ser. No. 876,503, Feb. 9, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,077

Int. Cl.³ G01R *31/08*; H04B *3/46*

U.S. Cl. 179—175.3 F **28 Claims**



1. A system for locating a high resistance fault between a conductor pair comprising a switchable current pulse source for producing a current pulse at a voltage sufficient to temporarily arc across the fault to form at the fault a temporary arc plasma having a low resistance current path therethrough, nondissipating current limiting means for limiting the current through the low resistance path to limit the power dissipated in the arc so as to avoid fusing the conductor, and detecting means for affording detection of the location of the low resistance path during the presence of the arc plasma.

4,291,205

LAMINATED LOUDSPEAKER DIAPHRAGM WITH HONEYCOMB CORE AND DAMPING LAYERS

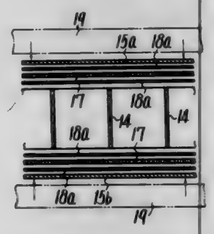
Yoshiyuki Kamon, Yokohama, and Jun Kishikami, Urawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,492

Claims priority, application Japan, Sep. 19, 1978, 53-114892

Int. Cl.³ H04R *7/10*

U.S. Cl. 179—181 R **10 Claims**



1. A diaphragm for an electro acoustic transducer, comprising:
first and second sheet members;
a honeycomb core member sandwiched between said first and second sheet members; and
a damping layer interposed between each said sheet member and said core member for increasing the internal energy loss of the diaphragm.

4,291,206

CONTACT BREAKER ASSEMBLY

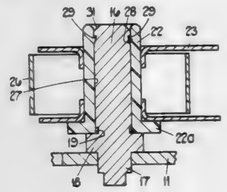
Richard D. Edmonds, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 30, 1979, Ser. No. 34,542

Claims priority, application United Kingdom, May 9, 1978, 18389/78

Int. Cl.³ H01H *19/00*

U.S. Cl. 200—19 R **4 Claims**



1. A contact breaker assembly including a pivot post, a fixed electrical contact, a heel assembly pivotally mounted on said post and a movable contact carried by said heel assembly and movable into and out of engagement with said fixed contact by pivotal movement of the heel assembly about said post, said heel assembly including a member having extending therein a bore within which a part of said post is received to pivotally mount the heel assembly on said post, said part of said post being formed with a circumferentially extending recess, and a radially inwardly extending projection on the wall of said bore which is resiliently engaged in said recess, said projection and recess co-operating to limit axial movement of the heel assembly relative to the post at least in one axial direction.

4,291,207

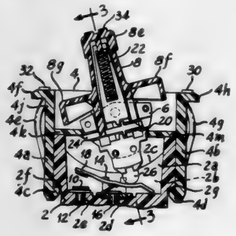
REMOVABLE PUSH-TO-UNLOCK ACTUATOR FOR LOCKING PIVOTED-SUBACTUATOR SELF-ENCLOSED ELECTRIC SWITCH

William L. Reinke, Cedarburg, Wis., and John W. Stearley, Smithfield, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 11, 1980, Ser. No. 111,149

Int. Cl.³ H01H *27/00*

U.S. Cl. 200—42 R **4 Claims**



4. A self-enclosed, pivoted-actuator, maintained-contact electric switch comprising:
a switch housing;
stationary and movable contacts in said housing;
a subactuator pivotally mounted on said housing for closing and opening said contacts;
locking means in said subactuator normally operative to catch on said housing to lock said subactuator in "off" position;
a push-to-unlock actuator fitting over said subactuator;
means for snap-in mounting said push-to-unlock actuator on said subactuator;
a spring trapped in said subactuator for biasing said push-to-unlock actuator into its ineffective position and being effective when pushed in to act on said locking means to retract the same and unlock said subactuator whereafter pivotal actuation of said push-to-unlock actuator carries said subactuator therewith to close said switch contacts;
said push-to-unlock actuator being removable by pulling it from said subactuator to prevent unauthorized closure of said switch contacts;
and said subactuator comprising an upstanding portion that retains said bias spring when said push-to-unlock actuator is removed and serves as a handle for actuating said subactuator from contacts-closed to contacts-open position wherein said locking means automatically catches on said housing to lock the switch.

4,291,208

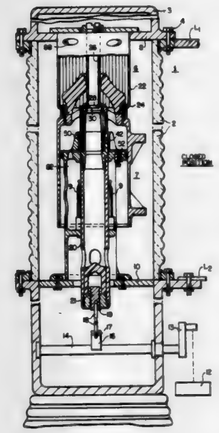
GAS-INSULATED CIRCUIT-INTERRUPTER HAVING IMPROVED INSULATING NOZZLE

Charles F. Cromer, Penn Township, Allegheny County; Kue H. Yoon, Pittsburgh; Robert L. Hess, North Versailles, all of Pa.; Thomas Kelsey, Northumberland, England, and Michael G. Caithness, Edinburgh, Scotland, assignors to Westinghouse Electric Corp., Pittsburgh, Pa. and Northern Engineering Industries Ltd., Newcastle upon Tyne, England

Filed Nov. 24, 1978, Ser. No. 963,633

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **9 Claims**



1. A gas-insulated circuit interrupter comprising:
a stationary contact assembly including stationary main contact means and stationary arcing contact means;
a movable contact assembly including movable main contact means and movable arcing contact means, said movable main contact means being cooperable with said stationary main contact means and said stationary arcing contact means being cooperable with said movable arcing contact means;
means for moving said movable contact assembly;
means for establishing a first flow of insulating gas in said circuit interrupter during an opening operation;
a hollow insulating nozzle having an interior surface and an exterior surface, said nozzle interior surface directing said first flow of insulating gas to blast into the arc established between said stationary and movable arcing contact means, said nozzle exterior surface being contoured to deflect said first flow of insulating gas away from said movable main contact means; and
means establishing a second flow of insulating gas past said movable main contact means.

4,291,209

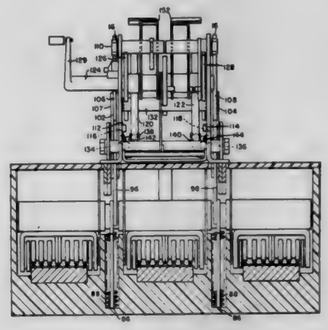
CIRCUIT BREAKER HAVING IMPROVED MOVABLE CONTACT-DRIVE MECHANISM INTERCONNECTION

Eugene H. Seidling, Monroeville, and Nicholas A. Salemi, Plum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 967,670, Dec. 8, 1978, abandoned, which is a continuation of Ser. No. 808,572, Jun. 21, 1977, abandoned. This application May 9, 1980, Ser. No. 148,436

Int. Cl.³ H01H *1/22*

U.S. Cl. 200—153 G **4 Claims**



1. A circuit breaker comprising:
stationary contact means;
a plurality of movable contacts operable between open and closed positions with respect to said stationary contact means, said movable contacts being pivotally movable about a first axis;
a contact carrier engaging said movable contacts for holding said movable contacts such that said movable contacts move together between said open and closed positions;
a molded plastic insulating holder secured to said contact carrier and having an aperture therethrough;
a cross arm disposed within said holder aperture and extending outwardly, along a second axis different from said first axis, from opposite sides of said holder, said cross arm being electrically isolated from said movable contacts, said holder, said contact carrier, and said movable contacts moving upon movement of said cross arm; and
means directly engaging said cross arm on opposite sides of said holder for effecting movement of said cross arm to move said movable contacts between said open and closed positions.

4,291,210

SLIDE SWITCH

Robert Wolber, Lauterbach, and Walter Obergfell, Schramberg, both of Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,591

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 7827035[U]

Int. Cl.³ H01H *1/36, 15/00*

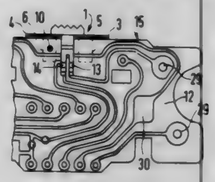
U.S. Cl. 200—252 **6 Claims**

1. A slide switch in combination with a circuit board of the type which is generally planar having opposed surfaces and a peripheral edge extending between said surfaces, one of said surfaces including electrical conductor tracks, said switch comprising:
a guide bar disposed in facing relationship with said edge

and carrying a hand-manipulable grip projecting away from said edge to enable said guide bar to be slid relative to said edge between a plurality of positions, and

guide means extending from opposite sides of said guide bar in straddling relationship with said circuit board, and in resilient gripping engagement therewith to frictionally mount said switch on said circuit board, said guide means including:

a contact element extending from one side of said guide



bar and across said one surface of said circuit board, said contact element including contact fingers which resiliently engage and electrically interconnect respective ones of said conductive tracks when said guide bar is in one of said positions, and

a pair of guide elements extending from the opposite side of said guide bar and across the other surface of said circuit board in resilient engagement with said other surface with a force directed opposite to that of said contact fingers.

4,291,211

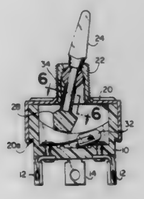
ILLUMINATED TOGGLE SWITCH

Frank J. Discenza, Rocky Hill, Conn., assignor to Carling-switch, Inc., West Hartford, Conn.

Filed Dec. 3, 1979, Ser. No. 99,612

Int. Cl.³ H01H *9/16*

U.S. Cl. 200—311 **5 Claims**



1. An electric switch comprising a case, a cover for the case defining an opening, a transparent plastic operating member with a portion projecting outwardly through said cover opening, annular collar means received on said member and defining a shoulder which bears against the inside of the cover opening to allow pivotal motion of the operating member in at least one plane, fixed and movable switch contact elements provided in the case, at least one light source located in fixed position inside the case remote from said collar shoulder, actuator means mounted on the inner end of said transparent operating lever and including means for engaging said movable contact element in response to pivotal operating lever movement, said actuator means defining light transparent window means movable over said light source when said operating member is in one position for transmitting light to the projecting portion of the operating member in said one position.

4,291,212

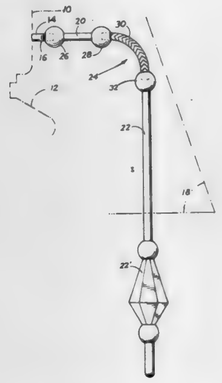
LAMP SOCKET SWITCH OPERATOR EXTENSION

Tren V. Bui, 5243 SW. Idaho St., Portland, Oreg. 97221

Filed Dec. 3, 1979, Ser. No. 99,758

Int. Cl.³ H01H *19/00, 3/10*

U.S. Cl. 200—331 **9 Claims**



1. For use with an electric lamp socket switch having a rotary operator shaft extending laterally from the socket, a switch operator extension comprising:

(a) a connector member arranged for connection at one end to the rotary shaft of an electric lamp socket switch for rotation with and about the same axis as said rotary shaft,

(b) an elongated extension member having one end portion arranged for gripping by the fingers for rotation of the extension member about its longitudinal axis, and

(c) a coupler member interconnecting the end of the connector member opposite the rotary shaft and the end of the extension member opposite the finger gripping end portion,

(d) the coupler comprising a length of snake chain characterized by being longitudinally flexible and rotationally substantially rigid and allowing the extension member to hang freely downward by gravity from the connector member and to be rotated about its longitudinal axis to rotate the connector member about its longitudinal axis simultaneously therewith when the axis of rotation of the connector member is disposed perpendicular to the axis of the extension member.

4,291,213

LEVER OPERATOR SWITCH ACTUATOR

Richard A. Felland, Waterloo, and James A. Miller, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

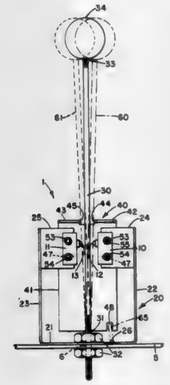
Filed Sep. 22, 1980, Ser. No. 189,479

Int. Cl.³ H01H *21/24*

U.S. Cl. 200—335 **2 Claims**

1. Control mechanism for mounting on a horizontal support, comprising: U-shape bracket means having a flat base abutting the support and fore-and-aft spaced apart front and rear legs integral with the base and rising therefrom to co-terminous upper ends, said ends respectively having flanges disposed in a common, fore-and-aft upright plane and directed toward each other and spaced apart fore and aft; means affixing the base of the bracket means to the support; a member in the form of an inverted L having a first part depending flatwise alongside the flanges and a second part extending laterally over the flanges and overlying and spaced above the base of the bracket means, said second part having a rectangular notch therein including front and rear laterally directed stop edges spaced apart fore and aft less than the fore-and-aft spacing of the bracket means legs; an elongated, upright control lever having a lower end affixed to the support and extending upwardly through the

notch in substantially centered relation to the stop edges, said lever being of resilient material so as to be selectively deflectible fore and aft in a range limited by the stop edges, said lever being recoverable to resume its substantially centered position; and front and rear actuators disposed respectively adjacent to the front and rear flanges of the bracket means to be selectively engaged by fore-and-aft movement of the lever; and front and rear means respectively securing the actuators to the flanges



and to the first part of the L-shaped member, said front and rear securing means being selectively releasable and re-securable, and the legs of the bracket means being deflectible fore and aft upon release of the said rear securing means so as to enable selective fore-and-aft changes in the position of the notch, re-securing of said front and rear means serving then to retain the deflected positions of the legs and the changed position of the notch.

4,291,214

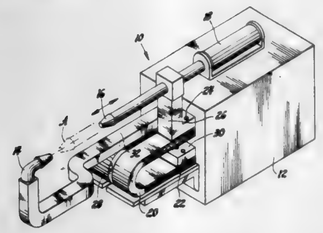
WELDING APPARATUS HAVING CLOSELY MOUNTED SHUNTS

John W. Arthurs, Bloomfield Hills, and Ronald Perkowski, South Lyons, both of Mich., assignors to Bra-Con Industries, Inc., Livonia, Mich.

Filed Dec. 19, 1978, Ser. No. 970,913

Int. Cl.³ B23K *11/10*

U.S. Cl. 219—86.1 **5 Claims**



1. In a spot welding machine, the combination comprising:

a transformer;

a first electrode;

a second electrode, movable with respect to the first electrode;

means for moving the second electrode toward the first electrode in a welding motion;

a first flexible shunt comprising a plurality of thin, elongated flexible metal strips having their ends joined together to collectively form a first leg, a second leg, and a bight connecting the first leg and the second leg, one end of said shunt being connected to the first electrode and its opposite end being connected to the transformer to form an electrical connection therebetween;

a second flexible shunt comprising a plurality of thin, elongated flexible metal strips having their ends joined together to collectively form a first leg, a second leg, and a bight connecting the first leg and the second leg, one end of the second shunt being connected to the transformer and its opposite end being connected to the second electrode to form an electrical connection therebetween;

the second shunt being mounted such that the first leg thereof is disposed parallel to the first leg of the first shunt, the second leg of the second shunt is disposed parallel to the second leg of the first shunt, the distance between the respective first legs of said shunts being substantially the same as the distance between the respective second legs of said shunts; and

said metal strips having a common width and the legs of the second shunt being disposed a distance from the legs of the first shunt a fraction of said common width.

5. In a spot welding machine, a combination comprising:

a transformer;

a first electrode;

a second electrode movable with respect to the first electrode;

means for moving the second electrode toward the first electrode in a welding motion;

a first shunt having a planar surface and forming an electrically-conductive connection between the transformer and the first electrode;

a second shunt comprising a plurality of thin, elongated metal strips having their ends joined together to collectively form a first leg, a second leg, and a bight connecting the first leg and the second leg, one end of the second shunt being connected to the transformer and its opposite end being connected to the second electrode to accommodate the second electrode in said welding motion, said first and second legs having a common side edge disposed adjacent the planar surface of the first shunt such that the planar surface of the first shunt is parallel to the full length of the second shunt along said common side edge; and

the common side edge of the second shunt being disposed a distance from the planar surface of the first shunt of about ten percent of the width of said metal strips.

4,291,215

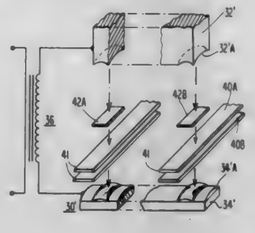
BONDING A HIGHLY CONDUCTIVE ARC-RESISTANT ELECTRICAL CONTACT PAD ON A METAL BODY

Moreland P. Bennett, and Edward A. Vrabel, both of Hickory, N.C., assignors to General Electric Company, Philadelphia, Pa.

Filed Mar. 29, 1979, Ser. No. 25,158

Int. Cl.³ B23K *11/20*

U.S. Cl. 219—118 **8 Claims**



1. A method of joining a highly conductive arc-resistant electrical contact pad of thin sheet form to a predetermined portion of a surface of a metal body, comprising the steps of:

(a) providing a contact pad of silver and of thin sheet form having a thickness of 0.0005 to 0.010 inches,

(b) providing a metal body to which said contact pad is to be joined,

(c) providing between said contact pad and said predetermined surface portion of said body an intermediate layer having opposed surfaces that respectively contact said pad and said surface portion, each of said opposed surfaces being of a metal that: (i) has a melting point of about 450° F. and lower than that of the metal of the surface it contacts and (ii) is compatible with the metal of the surface it contacts;

(d) placing the combination of said contact pad, said intermediate layer, and said metal body between a pair of opposed electrodes that contact said pad and said body and applying pressure through said electrodes that forces said contact pad toward said metal body with said intermediate layer located between said pad and said body,

(e) passing current between said electrodes while said pressure is being applied, thereby heating said pad, said layer, and said body,

(f) discontinuing said current for a brief cooling interval and then repeatedly passing current between said electrodes until the metal of said opposed surfaces of said intermediate layer has been sufficiently heated to melt,

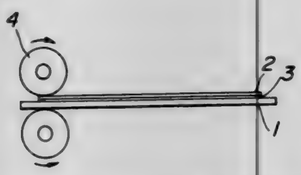
(g) discontinuing said heating and allowing the molten metal of said intermediate layer to solidify, thereby providing a metallurgical bond between said pad and said body.

4,291,216

PROCESS FOR WELDING OF NOBLE METAL FOIL

Kiyosumi Takayasu, No. 5-1, Horida-Dori, Mizuhomku Nagoya City, Japan

Filed Apr. 12, 1979, Ser. No. 29,436
Claims priority, application Japan, Apr. 22, 1978, 53/48058
Int. Cl.³ B23K *11/16*
U.S. Cl. 219—118 **6 Claims**



1. A process for welding a noble metal foil having a thickness of not more than 10μ to a metal plate having a high corrosion resistance and a high electrical conduction, there additionally being a thin metal sheet having a high electrical resistance, the process comprising:

piling on one another: the thin metal sheet, the noble metal foil and the metal plate with the noble metal foil being arranged between the plate and sheet;

welding the sheet, the foil and the plate together by electric resistance welding to form a laminate; and

dissolving out the thin metal sheet to leave the noble metal foil welded to the metal plate.

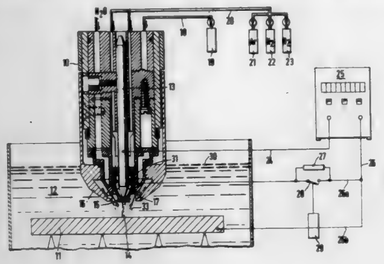
4,291,217

PROCESS FOR UNDERWATER PLASMA CUTTING OF WORKPIECES

Werner Braun, Munich, Fed. Rep. of Germany, assignor to Messer Griesheim, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,638
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842693
Int. Cl.³ B23K *9/00, 9/16*
U.S. Cl. 219—121 PH **1 Claim**

1. In a process for the underwater plasma cutting of workpieces such as structural steel, the improvement being carrying out the cutting process with a plasma burner having a needle electrode and transmitted plasma arc at small distances under the water level, and enveloping the plasma cutting arc during the ignition cutting by a compressed-air sheath solely outside of the nozzle which strongly contracts the plasma cutting arc, flowing the compressed-air sheath at a velocity in the range of



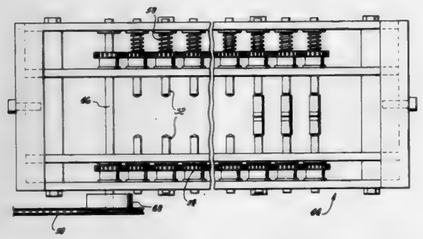
3,000 to 15,000 m/minute, utilizing a current density in the range of 50 to 80 A/mm², and directing the compressed-air sheath to the area of the cut by flowing the compressed air from slots in the nozzle located close to the discharge opening of the nozzle.

4,291,218

TRANSDUCER DIAPHRAGM ELEMENTS AND METHODS AND APPARATUS FOR MAKING SAME

Kjell E. Myhre, 941 Enterprise Ave., Inglewood, Calif. 90302

Continuation of Ser. No. 752,108, Dec. 20, 1976, abandoned.
This application Sep. 4, 1979, Ser. No. 71,807
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 EC **11 Claims**



1. In apparatus for making edge mounted diaphragm elements by electron beam welding, each diaphragm element including a diaphragm and a heat-conducting first tubular member, the improvement comprising in combination:

a fixture including a first shaft for retaining a first tubular member in heat-transfer relationship with a first peripheral region on one major surface of a diaphragm and a second shaft axially aligned with and spaced from said first shaft for retaining a heat-conducting second tubular member in heat-transfer relationship with a second peripheral region on the opposite major surface of said diaphragm; and

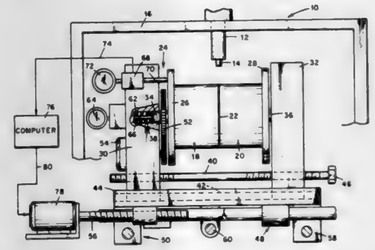
means for rotating via said first and second shafts said diaphragm and, respectively, said retained first and second tubular members in mutual heat-transfer relationship relative to an electron beam, including means coupled to both of said first and second shafts for simultaneously driving both of said shafts.

4,291,219

APPARATUS FOR MAINTAINING ALIGNMENT OF A SHRINKING WELD JOINT IN AN ELECTRON-BEAM WELDING OPERATION

Jett B. Trent, Knoxville, and Jimmy L. Murphy, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 3, 1980, Ser. No. 109,364
Int. Cl.³ B23K *15/00*; G05D *3/12*; B23K *37/04*
U.S. Cl. 219—121 EY **5 Claims**



1. Apparatus for maintaining accurate alignment of a weld joint with respect to an electron beam due to shrinkage in the weld joint area during a multipass, electron-beam welding operation comprising, fixture means for supporting the fay surfaces of workpieces to be joined together by electron-beam welding in an abutting relationship, said fixture means including a first portion thereof disposed contiguous to one of said workpieces, a second portion of said fixture means spaced from said workpiece by said first portion and supporting said first portion in a relatively movable manner with respect thereto, bias means intermediate to and bearing against said first portion and said second portion for urging said first portion away from said second portion and towards said workpieces, sensing means for measuring the displacement of said first portion away from said second portion in a direction towards said workpiece upon said shrinkage in the weld joint area, and moving means coupled to said fixture means for displacing the latter in response to a signal from said sensing means indicative of said displacement of said first portion for effecting the said alignment of the weld joint.

4,291,220

METHOD OF WELDING UTILIZING BOTH CONSUMABLE AND NON-CONSUMABLE ELECTRODES

Gerald G. Lessmann, Pleasant Hills, Pa.; Ronald P. Simpson, Old Saybrook, Conn.; William J. Reichenecker, Penn Hills, and Ronald D. O'Brokta, Kiski Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 12, 1979, Ser. No. 102,598
Int. Cl.³ B23K *9/16*
U.S. Cl. 219—137 R **2 Claims**

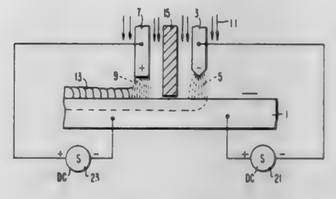
1. A method of welding a highly conductive workpiece comprising the steps of:

connecting a power source of straight polarity to a non-consumable electrode and a power source of reverse polarity to a consumable electrode;

producing a first arc between said non-consumable electrode and said highly conductive workpiece, and moving said first arc relative to said highly conductive workpiece at a generally uniform rate;

producing a second arc between said consumable electrode and said highly conductive workpiece;

positioning said second arc adjacent said first arc and moving said second arc relative to said highly conductive workpiece generally at said generally uniform rate; and



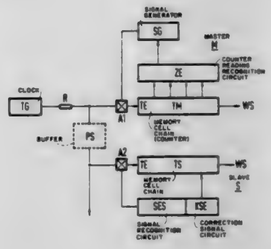
blanketing said highly conductive workpiece in the vicinity of said arcs with inert gas to weld said highly conductive workpiece.

4,291,221

DIGITAL SEMICONDUCTOR CIRCUIT

Otto Muehlbauer, Munich; Klaus D. Bigall, Vaterstetten, and Helmut Roessler, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,605
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828822; Mar. 20, 1979, 2910919
Int. Cl.³ G06M *3/12*
U.S. Cl. 235—92 CC **16 Claims**



1. A digital semiconductor apparatus, comprising:

a clock for generating standard clock pulses;

first and second pulse counters each comprising a plurality of memory cells, an input terminal connected to receive clock pulses and a plurality of outputs, each counter operable to count clock pulses applied thereto;

signal generator means connected between said plurality of outputs of said first counter and said input terminal of said second counter and operable in response to a predetermined count to produce a digital pulse to modulate a pulse onto the clock pulse appearing at the input terminal of said second counter to provide a modulated clock pulse;

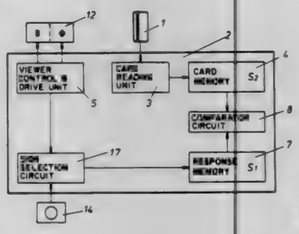
a modulated clock pulse recognition circuit connected to said input terminal of said second counter and operable to produce a recognition signal in response to the occurrence of a modulated clock pulse; and

a correction signal circuit connected between said modulated clock pulse recognition circuit and each of said memory cells of said second counter, and responsive to a recognition signal to set said second counter to a predetermined count.

4,291,222
METHOD AND APPARATUS FOR CARD AUTHENTICATION USING DISPLAY OF SYMBOLS FOR IDENTIFICATION OF A PERSONAL CODE WORD

Helmut Gröttrup, Munich, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 52,033
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758754
Int. Cl.³ G06K 5/00
U.S. Cl. 235—380 21 Claims

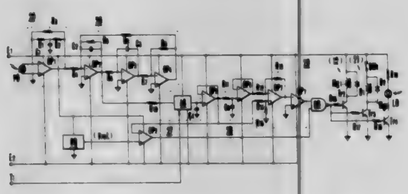


9. In apparatus for verifying use by an authorized person of a card having readable code information thereon, symbol presentation means for presenting symbols to a user, said symbols including a set of symbols which form a personal code word supplied to an authorized user and which corresponds to said code information and additional symbols which do not form said personal code word, response means for operation by a user to develop response signals measuring his response to symbols presented by said presentation means, and comparator means for comparing said response signals with code information obtained from a card presented by the user.

4,291,223
DISTANCE DETECTING DEVICE

Toshio Sakane, Yokohama; Tetsuya Taguchi, Kawasaki; Masahiko Ogawa, Hino; Shuichi Tamura, and Tokuichi Tsunekawa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,294
Claims priority, application Japan, Feb. 24, 1978, 53-20659; Jul. 25, 1978, 53-90585
Int. Cl.³ G03B 3/10; G01C 3/08
U.S. Cl. 250—201 30 Claims

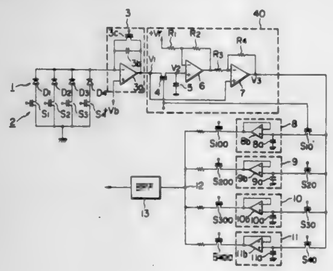


1. A distance detecting device for detecting a distance between an object and the device, comprising:
(A) means for projecting a radiation to the object;
(B) means for sensing the radiation reflected by and coming from the object, said sensing means producing an output signal indicative of the intensity of the received radiation;
(C) means for relatively changing an incident position of the projected radiation to said sensing means, said changing means being shiftable from a predetermined position to change said incident position of the projected radiation to the sensing means relatively, each shifting position of the changing means being indicative of the distance between the object and the device; and
(D) circuit means responsive to the output signal of said sensing means, said circuit means including:
(D-1) delay means receiving the output signal of the sensing means and providing a delayed signal having a predetermined delay relative to the output signal of the sensing means, and
(D-2) means for detecting the coincidence between the output signal of the sensing means and the delayed signal provided by said delay means, said detecting means producing an output signal indicative of the coincidence of said two signals when detecting the coincidence of the two signals;
thereby the distance between the object and the device is indicated by the shifting position of the changing means at the time when the detecting means produces the output signal indicative of the coincidence of the two signals.

4,291,224
LIGHT IMAGE SPACE FREQUENCY COMPONENT EXTRACTING DEVICE

Hiroshi Shirasu, Kawasaki; Akira Ogasawara, and Ken Utagawa, both of Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,153
Claims priority, application Japan, Nov. 30, 1978, 53-163826[U]
Int. Cl.³ G01U 1/20
U.S. Cl. 250—204 4 Claims



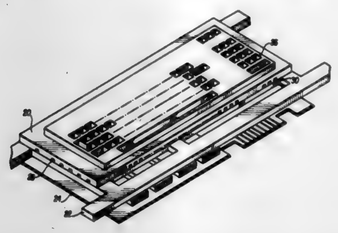
1. A device for extracting the space frequency component of an image formed by an optical system, comprising:
(a) means having a photoelectric element array including a plurality of photoelectric elements on which said image is projected and time-sequentially generating, at a predetermined period, a pulse output having a magnitude corresponding to the intensity of light received by each of said photoelectric elements;
(b) means for successively storing the respective pulse outputs;
(c) means for converting each of the stored pulse outputs into an AC signal; and
(d) means for adding together said AC signals and generating the same.

4,291,225
MOLDED PLASTIC PHOTO-OPTICAL KEYBOARD

Edward I. Nelson, Sunrise, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,366
Int. Cl.³ G01D 5/34
U.S. Cl. 250—229 18 Claims

1. A photo-optical keyboard comprising: a keyboard housing having a matrix of rows and column of apertures for key mounting, the underside surface of said housing having a light channel for each row passing between the apertures in each row and a light channel for each column passing between the



apertures ineach column, each said light channel opening up to the underside surface of said keyboard housing.

4,291,226
CORONA DISCHARGE ELECTRODE SYSTEM

Werner Rueggeberg, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 10, 1980, Ser. No. 128,540
Int. Cl.³ H01T 19/04; G01M 21/01
U.S. Cl. 250—324 9 Claims



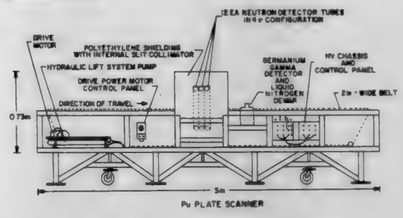
1. A liquid cooled, liquid-quartz buffered corona discharge electrode system capable of sustaining a power density of up to 200 watts per square inch comprising:
(a) a cylindrical electrode;
(b) a quartz tube of larger diameter than the electrode, encasing the electrode and providing a cylindrical passageway between the surface of the electrode and the inside wall of the quartz tube, the quartz tube having at one end a liquid inlet means and at the other end a liquid outlet means for the passage of a liquid buffer dielectric/coolant whereby the liquid buffer dielectric/coolant is supplied through the inlet means, passes through the cylindrical passageway in contact with the surface of the electrode and exits through the outlet means;
(c) a plurality of spacer means interposed between the electrode and the inside wall of the quartz tube serving to hold the electrode stationary in the quartz tube whereby the electrode is prevented from deflecting due to the electrical forces generated during corona formation; and,
(d) a ground electrode means positioned parallel to and spaced a distance apart from the quartz tube forming therebetween a corona discharge region including a gas wherein a material to be treated is passed.

4,291,227
RAPID SCANNING SYSTEM FOR FUEL DRAWERS

John T. Caldwell; Paul E. Fehlau, and Stephen W. France, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 2, 1979, Ser. No. 90,845
Int. Cl.³ G01T 1/00; H01J 47/12
U.S. Cl. 250—328 12 Claims

1. In a system for rapidly investigating nuclear fuel drawers, the method comprising:
(a) quantitative sensing of neutrons produced by nuclear decomposition;
(b) simultaneous, energy resolved monitoring of emitted gamma rays;

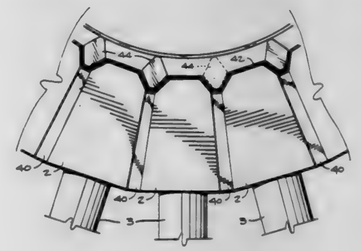


(c) automatic reading of fuel drawer identifying information; and
(d) analyzing in real time the information obtained for said fuel drawers by steps (a) through (c) utilizing a microprocessor.

4,291,228
DETECTOR SHAPE AND ARRANGEMENT FOR POSITRON ANNIHILATION IMAGING DEVICE

Christopher J. Thompson, Montreal, Canada, assignor to Montreal Neurological Institute, Montreal, Canada

Filed Aug. 28, 1979, Ser. No. 70,372
Claims priority, application Canada, Jun. 19, 1979, 330087
Int. Cl.³ G01T 1/20
U.S. Cl. 250—363 S 10 Claims



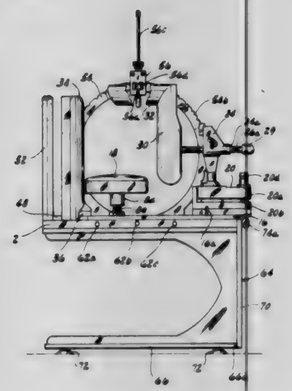
1. A scintillation detector for use in the detection of annihilation radiation in a positron disintegration process, said detector comprising an array of detector elements, each element being a crystal of bismuth germanate, each crystal having a first end face of a first area and a second, opposite and parallel end face of a second area larger than said first area, at least the side surfaces of each crystal having a light reflective coating thereon, said plurality of detector elements being disposed in a common plane, equally spaced apart about a common circle with each detector element having its said first end face directed to and spaced apart from the center of said circle for exposure to radiation from points within said circle and within said common plane and adjacent planes, allowing radiation from the points to pass into said first end face of each of said crystals, through each of said crystals, and out said second end face of each of said crystals; and a light amplifying device in optical contact with said second end face of each of said crystals.

4,291,229

SUPPORT AND RESTRAINING DEVICE FOR ARTHOGRAPHIC EXAMINATION OF THE KNEES

Kenneth W. Patt, 5131 Warren Rd., Imperial, Mo. 63052

Filed Dec. 10, 1979, Ser. No. 101,675
Int. Cl.³ G21K 5/08; G03B 41/16; H01J 37/20
U.S. Cl. 250—451 8 Claims



1. A support and restraining device for arthrographic examination of a knee, comprising:

a horizontal platform;

a clamp unit means mounted on said platform for supporting and restraining a patient's leg above said platform;

said clamp unit means including a vertically adjustable horizontal support member adapted to support the weight of such leg above said platform and an adjustable restraining means for securing such leg in a selective position on said support member and for permitting stress to be applied to such knee in order to open the knee joint; an upstanding member adjacent one side of said support member and a pressure member mounted adjacent the side of said support member opposite said one side;

said pressure member being supported on said platform by adjustable positioning means which provide selectively adjustable and secure placement of said pressure member with respect to said support member and said upstanding member

said pressure member having a first generally planar section positioned so as to generally face said upstanding member and a second generally planar section immovably secured to said first section and positioned over and in generally facing relationship with said support member;

said adjustable positioning means including a universal joint unit for selective tilting and secure location of said pressure member with respect to said platform and a linear adjustment means for selective movement of said pressure member towards and away from said upstanding member and said support member and for secure location with respect thereto.

4,291,230

FLUOROMETRIC ANALYZER INCLUDING SHUTTER MEANS FOR SIMULTANEOUSLY SHIELDING SAMPLE AND PHOTODETECTOR DURING SAMPLE CHANGE

Louis R. Heiss, Annapolis, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 7, 1979, Ser. No. 18,152
Int. Cl.³ G01N 21/38; G01J 1/58; G01N 21/01
U.S. Cl. 250—458 7 Claims

1. A head assembly for a fluorometric analyzer for measuring fluorescence in a liquid sample element contained within a test cell, wherein the analyzer includes,

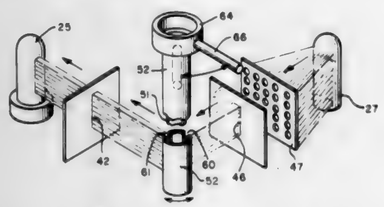
an excitation lamp element for applying radiation to the sample, and

a photodetector element for detecting light produced as a result of fluorescence in the sample;

said head assembly comprising, in combination:

a housing defining a bore-shaped chamber, and further defining a first optical passageway between the excitation lamp element and the test cell, and a second optical passageway between the test cell and the photodetector element, said optical passageways being arranged at generally right angles to each other and to the axis of the bore-shaped chamber;

shutter means comprising a cylindrical sleeve member slidably received within said bore-shaped chamber for simultaneously controlling the passage of light through said



first and second optical passageways, said sleeve being mounted for rotation about the axis of said bore-shaped chamber between first and second positions and including a central recess for slidably receiving the test cell, said test cell rotating about said axis with rotation of said sleeve; and

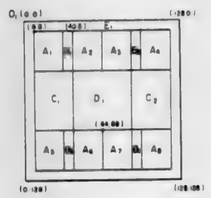
said sleeve further including first and second apertures arranged for alignment with said first and second optical passageways and said sample-receiving recess for establishing light communication between the excitation lamp element, the sample element, and the photodetector element when said sleeve is in said first position, and arranged for non-alignment with said first and second optical passageways for blocking light communication between said elements when said sleeve is in said second position.

4,291,231

ELECTRON BEAM EXPOSURE SYSTEM AND AN APPARATUS FOR CARRYING OUT THE SAME

Kenichi Kawashima, Yokohama; Hiroshi Yasuda, and Kenyu Uema, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Japan

Filed Dec. 21, 1978, Ser. No. 971,693
Claims priority, application Japan, Dec. 30, 1977, 52-158411
Int. Cl.³ H01J 37/00
U.S. Cl. 250—492 A 8 Claims



1. An electron beam exposure system for projecting an image on a material at a plurality of locations with respect to said material, said image being composed of a plurality of patterns of regions to be exposed, said patterns being arranged at predetermined locations with respect to said image and said regions being arranged at predetermined locations with respect

to the corresponding pattern, at least one of said patterns appearing more than once within said image so that not all of the patterns forming said image are unique, comprising

first memory means for storing pattern data for each unique pattern in at least one image, the pattern data for each pattern corresponding to the dimensions of each region forming said pattern and to the position of each region forming said pattern with respect to said pattern;

second memory means for storing image data for said at least one image, said image data corresponding to the position with respect to said at least one image at which each unique pattern forming said at least one image appears on every occurrence thereof;

electron beam exposure column means for projecting an electron beam having a rectangular cross-section, said electron beam exposure column means including positioning means for positioning said material for exposure to said electron beam, first deflection means for controlling the dimensions of said electron beam, and second deflection means for controlling the position of said electron beam;

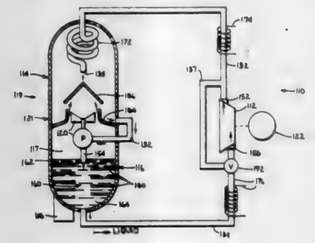
and control means operatively connected to said first and second memory means and to said electron beam exposure column means for projecting said at least one image, said control means comprising first means for moving said positioning means to allow material supported thereon to achieve said at least one image, second means for combining said pattern data and said image data to derive a position signal corresponding to the position of each region within said at least one image to be exposed, said position signal being communicated to said second deflection means, and third means for deriving from said pattern data a dimension signal corresponding to the rectangular dimensions of each region within said at least one image to be exposed, said dimension signal being communicated to said first deflection means.

4,291,232

LIQUID POWERED, CLOSED LOOP POWER GENERATING SYSTEM AND PROCESS FOR USING SAME

Joseph T. Cardone, 18348 Lahey St., Northridge, Calif. 91324, and Kenneth J. Shatz, 1865 N. Fuller, Hollywood, Calif. 90046

Filed Jul. 9, 1979, Ser. No. 55,991
Int. Cl.³ F01K 25/10
U.S. Cl. 290—1 R 15 Claims



1. A liquid powered, closed loop power generating system comprising:

(a) a power generating means for generating power substantially as a result of the flow of a pressurized solvent medium therethrough from an inlet to an outlet;

(b) means for physically dissolving a gas in said solvent medium to produce a solution, thereby lowering the pressure of said gas and maintaining said flow of said solvent medium; said dissolving means containing said solution therein, and having gas and solvent medium inlets located above said solution, the incoming gas and incoming solvent medium coming into direct contact at a zone within said dissolving means;

(c) means for separating said dissolved gas from said solvent medium in said solution and increasing the pressure of said gas, said separating means containing a body of said solution therein, including an upper portion and a lower portion of said body, and containing a space above said body of solution;

(d) means for connecting said space above said body of solution in said separating means to said dissolving means to supply said separated gas thereto;

(e) means for connecting said outlet of said power generating means to said dissolving means to pass said solvent medium thereto;

(f) means for connecting said dissolving means to the upper portion of the body of solution in said separating means, and means for impelling said solution to said upper portion of said body of solution; and

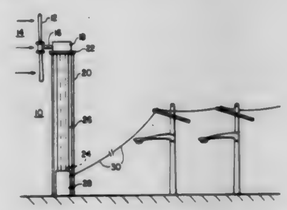
(g) means for supplying the separated solvent medium from the lower portion of the body of solution in the separating means to said inlet of said power generating means, whereby the separated solvent medium is recycled into the power generating system.

4,291,233

WIND TURBINE-GENERATOR

Herbert S. Kirschbaum, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1980, Ser. No. 116,372
Int. Cl.³ F03D 1/00
U.S. Cl. 290—1 C 2 Claims



1. A wind turbine generator system comprising:

(a) a turbine and affixed shaft rotatable by a wind;

(b) gearing for transposing the rotational energy of said turbine and affixed shaft into rotational energy of a first shaft rotating in one direction and a second concentric shaft rotating in the opposite direction;

(c) a generator rotor;

(d) a stator disposed concentrically about said rotor; and

(e) planetary gearing cooperatively relating said shafts and said rotor and stator such that said rotor rotates in one direction and said stator rotates about said rotor in the opposite direction, said stator being rigidly connected to the outer one of said concentric shafts so as to rotate at the same velocity as said outer shaft, said rotor being driven by said planetary gearing to rotate at a velocity different than the rotational velocity of the inner one of said concentric shafts.

4,291,234

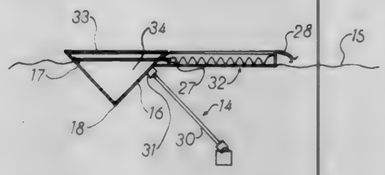
APPARATUS FOR GENERATING ELECTRICITY

Steven J. Clark, Apt. 12, 1544 Meadowlark Dr., Great Falls, Mont. 59404

Filed Dec. 17, 1979, Ser. No. 104,004
Int. Cl.³ F03B 13/12
U.S. Cl. 290—53 12 Claims

1. Apparatus for generating electricity including a chamber, anchoring means for positioning said chamber in a body of water with wave movement, means for generating an electrical current disposed within said chamber, and means for transfer-

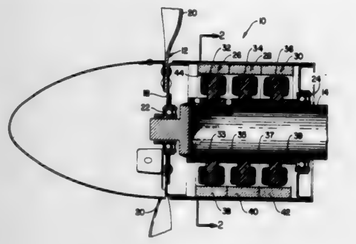
ring said electrical current from said chamber; said chamber including first and second sidewall sections spaced from each other over at least a portion of their surfaces, endwall sections connecting said sidewall sections, said sidewall sections and said endwall sections being connected to each other to form a substantially liquid tight chamber, said anchoring means including means for maintaining the first of said sidewall sections remote from said waves and fixed against movement from the action of said waves, said anchoring means including for anchoring the second of said sidewall sections in the path of said

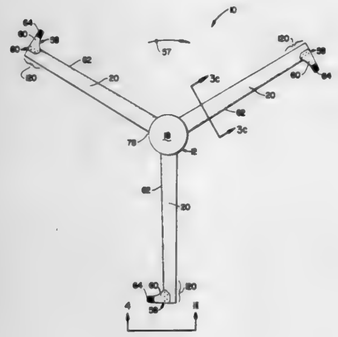


waves while permitting said second sidewall section to be moved by the action of said waves, said generating means including electrically conductive coil means, magnet means associated with said coil means and movable with respect thereto, said coil means being affixed to one of said sidewall sections and said magnet means being affixed to the other of said sidewall sections, said transfer means being connected to said coil means, and biasing means urging said second sidewall section away from said first sidewall section against the action of said waves.

4,291,235
WINDMILL
Karl H. Bergey, Jr., and Michael L. S. Bergey, both of Rte. 1, Box 151-B, Norman, Okla. 73069
Filed Feb. 26, 1979, Ser. No. 15,290
Int. Cl.³ F03D *9/00*; H02P *9/04*; H02K *7/00*; B63H *1/26*
U.S. Cl. 290—55 **31 Claims**

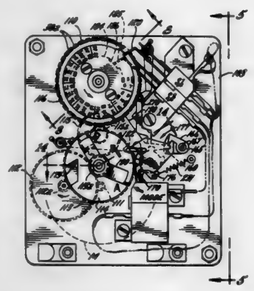
13. A windmill, comprising:
a shaft;
a turbine blade system;
first and second permanent magnet alternators, each of said alternators including a multiple pole stator fixedly mounted on said shaft and a multiple magnet permanent magnet structure rotatably mounted coaxial with said stator, said turbine blade system being connected to said magnet structures to rotate therewith, the poles of said stator of said second alternator being angularly offset from the poles of said first alternator and wherein the magnets of said magnet structures of said first and second alternators are aligned in axial rows so that only one of said first and second alternators can have the poles of its stator





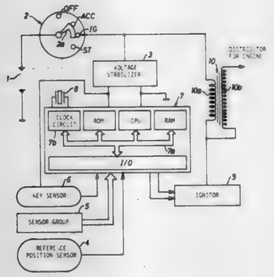
radially aligned with the magnets of its magnet structure at any given time.

4,291,236
REMOTE RECEIVER FOR LOAD AND RATE CONTROL IN A POWER TRANSMISSION SYSTEM
Charles C. Patton, Springfield, Ill., assignor to Sangamo-Weston, Inc., Atlanta, Ga.
Filed Jun. 29, 1979, Ser. No. 53,295
Int. Cl.³ H02J *3/14*
U.S. Cl. 307—40 **6 Claims**



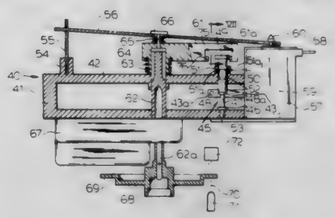
1. In a power transmission system of the type in which pulsed coded messages are imposed on the power lines for signaling, the message having a plurality of defined pulse positions, an improved receiver connected to the power lines for decoding and responding to said messages comprising, a code cam having a defined start position, a plurality of manually selectable preselect positions and a plurality of manually selectable operate positions; means for intiating rotation of the code cam upon receipt of a start pulse in said message and rotating said code cam in synchronism with said pulse positions, means associated with the code cam and manually selected preselect and operate positions thereon for detecting preselect and operate pulses assigned to said receiver, means for arming the receiver in response to detection of the assigned preselect pulse, output means having two conditions for performing a control function, means for switching the output means only in response to receipt of the assigned operate pulse, and means for disabling switching of said output means in response to the operate pulse until the receiver is armed by the preselect pulse.

4,291,237
ANTI-THEFT SYSTEM FOR AUTOMOTIVE VEHICLES
Takio Kitano, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed May 31, 1979, Ser. No. 44,212
Claims priority, application Japan, Jun. 2, 1978, 53-66996
Int. Cl.³ B60R *25/04*
U.S. Cl. 307—10 AT **4 Claims**



1. In combination with an electrical control apparatus adapted for controlling the prime mover of an automotive vehicle, said electrical control apparatus having control means for controlling the operation of said prime mover in accordance with changes of a condition of said prime mover, switch means for selectively connecting or disconnecting said apparatus to and from a source of electricity, a first electrical circuit for generating an electrical binary signal indicative of a condition of said prime mover at a selected instant in time during the operation of said prime mover, a digital computer for calculating a value corresponding to a setting of said control means by receiving therein said electrical binary signal, said computer being programmed to calculate said value from a function describing a desired relationship between the condition of said prime mover and the setting of said control means, and a second electrical circuit coupled between said digital computer and said control means for converting said value into the setting of said control means, an anti-theft system comprising:
an electrical control circuit associated with said switch means for generating a control signal therefrom only when said switch means is operated in an authorized manner to connect said apparatus to said source of electricity, and said computer is arranged to be activated even when said apparatus is connected to said source of electricity in an unauthorized manner, and wherein said computer is further programmed to discriminate whether the control signal is produced or not and to halt calculation of said value upon discriminating lack of the control signal to make said second electrical circuit inoperative.

4,291,238
POWER SWITCH MODULE
Albert T. Braga, Lincoln Township, Berrien County; Roger J. Cartier, Benton Township, Berrien County; Edward H. Getz, Pipestone Township, Berrien County, and Warren R. Hafstrom, Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Feb. 4, 1980, Ser. No. 118,599
Int. Cl.³ H01H *43/04, 43/10*
U.S. Cl. 307—141.4 **19 Claims**



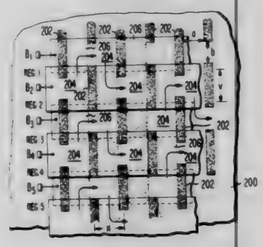
1. A power switch module for use with a control device for sequential energization of a plurality of electrical components connected in circuit with said module, said module comprising:
a rotatable shaft;
means for rotating said shaft;
a plurality of switches each having an open and a closed state;
a plurality of switch actuators disposed around said shaft, said actuators being movable to change a switch state, each said actuator having a head thereon;
a hammer mounted on said shaft for rotational movement and for axial movement from a first plane above said actuator heads to a second plane wherein portions of said hammer are engageable with portions of said actuator heads said hammer having means carried thereon for engagement with selected actuator heads in said second plane for moving selected actuators to change switch states;
means operated by said control device for moving said hammer from said first plane to said second plane for engagement with selected ones of said heads; and
a feedback means associated with said shaft to relay a signal corresponding to the angular position of said shaft to said control device,
whereby said control device operates said hammer moving means upon receipt of a pre-determined angular position signal to engage said hammer with an actuator head to change a switch state.

4,291,239
ARCHITECTURE LINE-TRANSFER CCD IMAGERS
Paul K. Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 25, 1980, Ser. No. 124,103
Int. Cl.³ G11C *19/28*; H01L *29/78, 27/14, 31/00*
U.S. Cl. 307—221 D **24 Claims**

1. A charge-transfer imager of the line transfer type comprising;
a substrate,
means for dividing said substrate into a predetermined two-dimensional array of spaced charge-storage islands that communicate with one another through charge-transfer regions, said array defining a substantially uniform spatial distribution pattern of said storage islands and transfer regions,
wherein said storage islands are arranged in n spaced rows numbered 1, 2 . . . (n−1), n, with each row comprised of a plurality of spaced islands and with each island of each row being coupled through respective individual transfer regions to each of first and second neighboring islands of an adjacent row on one side thereof and also to each of

first and second islands of an adjacent row on the other side thereof, and

means for applying predetermined control voltages to any selected row and to at least one of the rows adjacent thereto, said predetermined control voltages having certain values relative to each other as a given periodic function of time such that said selected row and the row or



rows adjacent thereto to which such predetermined control voltages are applied form a charge-transfer register for a separate line of picture elements in which said picture elements of that separate line are transferred in a given direction along that charge-transfer register from storage island to adjacent storage island thereof at a rate determined by said given periodic function of time.

4,291,240

TWO OUTPUT CLOCK FOR INTEGRATED SEMICONDUCTOR DIGITAL CIRCUITS

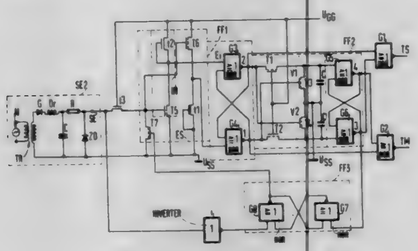
Helmut Rösler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,678

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837882

Int. Cl.³ H03K *5/00*

U.S. Cl. 307—262 **8 Claims**



1. A clock pulse converter for use with integrated semiconductor digital circuits, said converter having an input connected to a periodic signal supply and having two signal outputs at which different digital pulses having the same period appear, said converter comprised of:

an input level circuit having an input resistor connected to said signal supply and having controlled inverted and non-inverted signal outputs;

a first flip-flop cell having two inputs connected to respective ones of said input level circuit outputs and having first and second signal outputs;

two equivalent delay lines each having an input connected to a respective one of said first flip-flop cell outputs, and each having an output;

a second flip-flop cell having two signal inputs each connected to a respective one of said delay line outputs, said second flip-flop cell having a first signal output which in the absence of a delay between the signal inputs of the first flip-flop cell and the signal outputs of the second flip-flop cell would be synchronized with and have the same logical state as the inverted signal input to the first flip-flop cell, said second flip-flop cell also having a second output having the opposite logical state;

a third flip-flop cell having two signal inputs, one of which is connected to said first signal output of said second flip-flop cell and the other of which is connected through an inverter to said signal supply, said third flip-flop cell having two available outputs, only one of which is connected to said input level circuit for controlling the output thereof, said connected third flip-flop cell output changing to a controlling logical state in sequence after the other available output reaches said state;

a first output logic gate having two signal inputs, one of which is connected to said first output of said second flip-flop cell, and the other of which is connected to the output of said first flip-flop cell which, in the absence of the delay lines would be synchronized with and display the same logic level as the first output of said second flip-flop cell, said output logic gate having an output forming one converter output; and

a second logic output gate having two signal inputs, one of which is connected to the second signal output of the second flip-flop cell, and the other of which is connected to the output of said first flip-flop cell not connected to the first logic output gate, said second logic output gate having an output forming one of the converter outputs.

4,291,241

TIMING SIGNAL GENERATING CIRCUIT

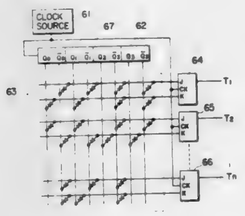
Koichi Mayama, Mobara; Noboru Yamaguchi, Kokubunji; Mamoru Sugie, Hachioji; Yuzo Kita, Fuchu, and Shigeru Yoshizawa, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,708

Claims priority, application Japan, Feb. 20, 1978, 53-17662

Int. Cl.³ H03K *5/15*

U.S. Cl. 307—269 **10 Claims**



1. A timing signal generating circuit comprising clock source means for generating basic clock pulses of a predetermined period, binary counter means for counting the number of clock pulses from said clock source means and for providing the count value as a binary code output, means forming a logical array for decoding the output of said binary counter means and providing outputs, said logical array means including semiconductor elements arrayed in the form of a matrix, and flip-flop means for being set and reset in response to outputs of said logical array means at the timing of the clock pulses applied thereto from said clock source means and providing outputs for utilization as timing signals.

4,291,242

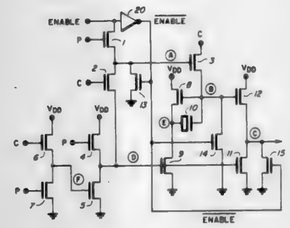
DRIVER CIRCUIT FOR USE IN AN OUTPUT BUFFER

Gene A. Schriber, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 21, 1979, Ser. No. 41,227

Int. Cl.³ H03K *5/135, 17/10, 17/284, 19/096*

U.S. Cl. 307—270 **7 Claims**



1. A high speed driver circuit having field effect transistors and a first and a second voltage node, comprising: a first pair of transistors connected in series between the first and second voltage nodes and having a first and a second control electrode and having an output node formed between the first pair of transistors, the first control electrode being coupled to a clocking signal, the second control electrode being coupled to a precharge signal; a second pair of transistors coupled in series between the first and second voltage nodes and having a first and a second control electrode and providing an output, the first control electrode being coupled to the precharge signal and the second control electrode being coupled to the output of the first pair of transistors; a third pair of transistors coupled between an enable signal input and the output of the second pair of transistors and having a first and a second control electrode and providing an output, the first control electrode being coupled to the precharge signal and the second control electrode being coupled to the clocking signal; an inverter having an input and an output, the input being coupled to the enable signal input; a fourth pair of transistors coupled between the first and second voltage nodes and having a first and a second control electrode and an output, the second control electrode being coupled to the output of the second pair of transistors; a fifth pair of transistors coupled between the clocking signal and the second voltage node and having a first and a second control electrode and an output, the first control electrode being coupled to the output of the third pair of transistors and the second control electrode being coupled to the output of the inverter, the output of the fifth pair of transistors being coupled to the first control electrode of the fourth pair of transistors; capacitor means coupled between the output of the fourth pair of transistors and the first control electrode of the fourth pair of transistors; a first transistor coupled from the output of the third pair of transistors and the second voltage node and having a control electrode coupled to the output of the inverter; a sixth pair of transistors coupled between the first and second voltage nodes and having a first and a second control electrode and an output, the first control electrode being coupled to the output of the fifth pair of transistors, the second control electrode being coupled to the output of the second pair of transistors; and a second transistor coupled between the output of sixth pair of transistors and the second voltage node and having a control electrode coupled to the output of the inverter.

4,291,243

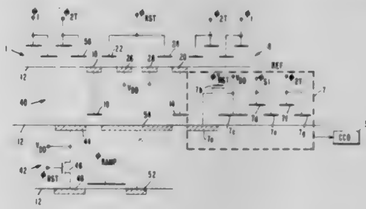
CHARGE COUPLED DEVICE CHARGE COMPARATOR REFRESHER

James M. Hamilton, Hawthorne, Calif., and Craig L. Carrison, Golden Valley, Minn., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 21, 1979, Ser. No. 106,313

Int. Cl.³ H03K *3/353;* **G11C** *19/28;* **H03K** *5/153;* **H01L** *29/78*

U.S. Cl. 307—304 **3 Claims**



1. A charge transfer device comparator refresher formed on the surface of a semiconductive substrate having a substrate electrical potential, comprising:

an input source of charge packets to be refreshed;

an output charge flow channel;

a first voltage source;

means for forming a first potential well in said substrate surface potential to store charge in said potential well, said potential well having a charge storing potential depth proportional to the voltage of said first voltage source;

means for forming a signal potential barrier in said substrate surface potential, said signal barrier having a height proportional to the size of charge packets to be refreshed from said input source;

means for forming a reference potential barrier of a selected reference height in said substrate surface potential;

means for changing the voltage of said first voltage source to eject charge stored by said potential well forming means and overflow one of said signal and reference potential barriers whenever one of said signal and reference potential barrier heights is less than the other, respectively;

means for injecting charge into said output charge flow channel in response to charge overflowing one of said reference and signal barriers wherein said means for forming a first potential well comprise a ramp electrode overlying said substrate and connected to said voltage source; and wherein said device further comprises:

an input diffusion in said substrate surface;

a drain voltage source connected to said input diffusion;

a floating diffusion in said substrate surface adjacent said ramp electrode;

a reset transistor connected between said floating diffusion and said drain voltage source;

an intermediate diffusion in said substrate surface adjacent said ramp electrode; and

an output diffusion in a portion of said substrate between said signal snd reference potential barriers.

4,291,244

ELECTRETS

William F. Beach, Bridgewater, and Dennis M. Mahoney, Long Valley, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,302

Int. Cl.³ G11C *13/02;* **H01H** *1/02*

U.S. Cl. 307—400 **8 Claims**

1. A process for preparing polymer electrets comprising the following steps:

(a) providing two electrodes in a deposition zone, said electrodes being in a spaced relationship to one another, having opposing surfaces, and being connected to an external

voltage source capable of impressing an intense electric field between the opposing surfaces;
(b) providing a dipolar p-xylylene monomer vapor in sufficient amount to coat the opposing surfaces of the electrodes;
(c) activating the power source to provide sufficient potential to align the dipoles of the p-xylene monomer coat; and
(d) introducing the vapor from step (b) into the deposition zone, said zone being under vacuum and at a temperature at which the vapor will condense,
whereby the vapor condenses on the opposing surfaces of the electrodes, the monomer polymerizing to parylene, coating said surfaces, and forming electrets.

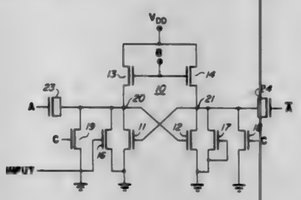
4. An electret comprising, in combination, a conductive metal layer coated with a film of a dipolar parylene, said parylene film having aligned electric dipoles and an external electric field.

4,291,245
ELECTRETS
Thomas E. Nowlin, Somerset, N.J., and Curt R. Raschke, Dallas, Tex., assignors to Union Carbide Corporation, New York, N.Y.
Filed Sep. 4, 1979, Ser. No. 72,303
Int. Cl.³ G11C *13/02*
U.S. Cl. 307—400 **6 Claims**

1. A process for preparing polymer electrets comprising the following steps:
(a) providing a parylene film having one side affixed to a metal layer and grounding said metal layer;
(b) charging the free side of the film with a direct current corona, the charge being of sufficient magnitude to convert the film to an electret;
(c) providing a p-xylylene monomer vapor in sufficient amount to coat the charged film; and
(d) introducing the vapor from step (c) and the electret into a deposition zone, said zone being under vacuum and at a temperature at which the vapor will condense, whereby the electret is conformally coated with parylene.

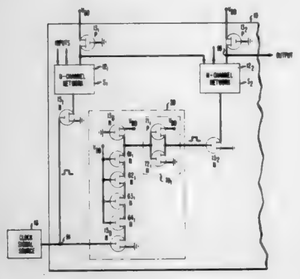
4. An electret comprising, in combination, (i) a metal layer coated with a film of parylene, said parylene film having a surface charge; (ii) an external electric field; and (iii) a conformal parylene overcoat on the charged surface.

4,291,246
DIFFERENTIAL CAPACITIVE BUFFER
William L. Martino, Jr., and Jerry D. Moench, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.
Filed Mar. 5, 1979, Ser. No. 17,524
Int. Cl.³ H03K *5/01, 3/356, 17/30;* **G11C** *8/00*
U.S. Cl. 307—475 **10 Claims**



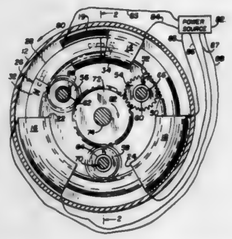
1. A buffer circuit useful in a digital memory and having a single ended input and providing complementary outputs, comprising:
a first and a second cross-coupled field effect transistor; a first load device coupled to the first transistor;
a second load device coupled to the second transistor;
an input transistor coupled in parallel to the first transistor and having a control electrode for receiving the input; and
a first and a second capacitor, the first capacitor being coupled to the second transistor for applying a first control signal to the second transistor, and the second capacitor being coupled to the first transistor for applying a second control signal to the first transistor.

4,291,247
MULTISTAGE LOGIC CIRCUIT ARRANGEMENT
James A. Cooper, Jr., and Robert H. Krambeck, both of Warren, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 860,339, Dec. 14, 1977, abandoned. This application Sep. 21, 1979, Ser. No. 77,753
Int. Cl.³ H03K *19/017, 19/096*
U.S. Cl. 307—481 **6 Claims**



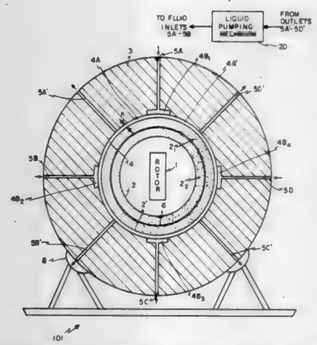
1. An electronic circuit with at least first and second stages, each of said stages including an output node and being connected between a supply voltage and a reference voltage for applying an output signal to a next consecutive stage, a logic network comprising a plurality of first active elements responsive to input signals for selectively connecting an associated one of said nodes to said reference voltage, each of said networks being connected to said reference voltage via a second active element, a load element connected between each of said nodes and said supply voltage, clock means for applying a single signal to said circuit for switching said second elements, said circuit including an on-chip delay means for avoiding premature switching of said second active element in said next consecutive stage, said first stage having a first characteristic response time, said delay means having a second characteristic response time greater than said first.

4,291,248
ELECTRIC MOTOR
Michael A. Rainbolt, Farmington, N. Mex., assignor to Rainbolt Research, Inc., Farmington, N. Mex.
Filed Dec. 26, 1978, Ser. No. 972,984
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—14 **7 Claims**



1. An electromechanical energy conversion device comprising, in combination:
(a) housing means;
(b) three induction coils equally disposed about a circular path and affixed to said housing means forming a stator;
(c) toroidally-shaped armature means disposed within said induction coils, said armature means including only one permanent magnet and a segment of non-magnetic material, said non-magnetic material comprising 60 degrees of said toroid with said permanent magnet comprising 300 degrees of said toroid;
(d) gear means connected to said armature means by equally spaced rotatable members in contact therewith, said gear means including an output shaft operatively coupled thereto; and
(e) timing and distribution means connected to each of said coils for a predetermined time period during each cycle.

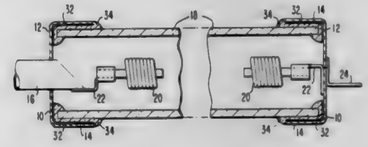
4,291,249
ROTATING ELECTRIC MACHINE WITH FLUID SUPPORTED PARTS
Joseph L. Smith, Jr., Concord, and James L. Kirtley, Jr., Brookline, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Apr. 5, 1979, Ser. No. 27,344
Int. Cl.³ H02K *3/48*
U.S. Cl. 310—214 **14 Claims**



1. A rotating electric machine comprising, in combination: a rotor and a stator mounted for relative rotation therebetween, said stator comprising an armature winding, a stator core, and a frame adapted for supporting said stator core, there being a narrow gap of thickness h between at least portions of the armature winding and the stucture of the stator adjacent thereto, a viscous liquid disposed in said gap, the narrow gap of the thickness h extending over a substantial part of the winding surface; and means to pressurize the liquid within the narrow gap, said liquid being further pressurized at local locations by virtue of relative motion that changes the gap thickness h, said pressurized liquid together with the viscosity of the liquid adapted to support said armature winding with respect to said structure adjacent thereto, said gap being maintained by the liquid with a thickness $h>0$ at all times at said local locations and at other locations during transient and steady-state loading.

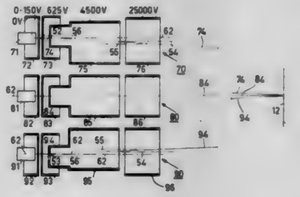
4,291,250
ARC DISCHARGE TUBE END SEAL
Ranbir S. Bhalla, Pine Brook, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 7, 1979, Ser. No. 36,948
The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.
Int. Cl.³ H01J *61/30, 61/36*
U.S. Cl. 313—220 **7 Claims**

1. A sealed high pressure sodium discharge lamp arc tube, said arc tube comprising:
an elongated alumina arc tube body;
a refractory metal end cap associated with each end of said arc tube body; and
means sealing said end caps to the ends of said arc tube body, said means sealing said end caps to said ends of said arc



tube body including a coating of a refractory metal silicide on the interior surface of said refractory metal end caps and a glassy sealing frit principally comprising alumina and calcia interposed between said refractory metal silicide coating and said alumina arc tube body.

4,291,251
COLOR DISPLAY TUBE
Jan Bijma, Eindhoven, Netherlands; Helmut Joeres, Aachen, Fed. Rep. of Germany, and Johannes H. M. Johanns, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 24, 1979, Ser. No. 69,440
Claims priority, application Netherlands, Sep. 8, 1978, 7809160
Int. Cl.³ H01J *29/50*
U.S. Cl. 313—413 **2 Claims**



1. An electric discharge tube comprising an envelope having a main axis, a display screen and an electron gun system for producing a plurality of electron beams and converging the beams on the display screen, the electron gun system comprising first electrode means for generating the electron beams, the first electrode means being situated along axes parallel to the main axis of said tube; second electrode means situated along the path of the electron beams between the first electrode means and the display screen, said second electrode means comprising respective last electrodes situated on the side toward the dislay screen and an associated preceding electrode, with electrodes in use constitute a lens field which focuses the electron beams symmetrically; and third electrode means between the first and the second electrode means for forming an asymmetric lens field to coverge the electron beams on the display screen, characterized in that
the axes of the electrodes of all electrode means are parallel to said axes of the first electrode means; and
the last electrodes (**76, 96, 106**), situated on the side toward the display screen, of those second electrode means which are situated eccentrically with respect to the main axis of the tube, have axes (**54**) which are situated eccentrically with respect to the axes (**55**) of the associated preceding electrodes (**75, 95, 105**) and to the axes (**62**) of the associated first electrode means, the axes (**55**) of said preceding electrodes (**75, 95, 105**) having a smaller distance to the main axis of the tube than the axes (**54**) of the associated last electrodes (**76, 96, 106**) situated on the side toward the display screen, said axes (**54**) of said last electrodes in turn having a smaller distance to the main axis of the tube than

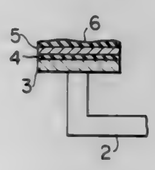
the axes (62) of the associated first electrode means (71, 72, 73, 91, 92, 93).

4,291,252

ELECTRON TUBE CATHODE

Toshiyuki Aida, Chofu; Shigehiko Yamamoto, Tokorozawa; Sadanori Taguchi, Tokyo; Isamu Yuito, Ome; Yukio Honda, Fuchu; Ushio Kawabe, Tokyo; Akira Misumi, Mobara; Takao Kawamura; Hiroshi Fukushima, both of Chiba, and Yoshio Degawa, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 95,983
Claims priority, application Japan, Nov. 29, 1978, 53-146488
Int. Cl.³ H01J *1/14, 19/06;* H01K *1/04*
U.S. Cl. 313—346 R **8 Claims**



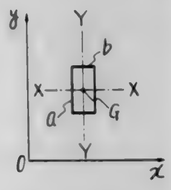
1. An electron tube cathode comprising a base metal of Ni alloy containing W solved therein up to its solubility limit and a reducing impurity of small amount, a layer of an oxide of metal provided on said base metal including at least one material selected from a group consisting of Zr and Hf, a thin film of metal provided on said metal oxide layer including one selected from a group consisting of Pt and Re, and a coating of electron emissive material provided on said thin metal film including an alkaline earth metal oxide.

4,291,253

GRID STRUCTURE FOR COLOR PICTURE TUBE

Akio Ohkoshi; Eiji Ishii, both of Tokyo; Akira Nakayama, Fuchu; Shoji Kato, Yokohama, and Yoshiyuki Tanaka, Koganei, all of Japan, assignors to Sony Corporation and Sumitomo Metal Mining Co., Ltd., both of Tokyo, Japan

Filed Sep. 27, 1978, Ser. No. 946,377
Claims priority, application Japan, Sep. 30, 1977, 52-118425
Int. Cl.³ H01J *1/46, 29/07*
U.S. Cl. 313—348 **15 Claims**



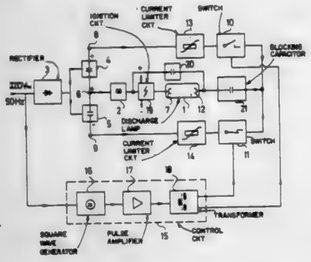
1. A grid structure for a color picture tube, comprising:
a pair of elongated frame elements disposed in substantially parallel, spaced apart relation;
a pair of mechanically resilient brace members extending between said frame elements for maintaining the latter in said spaced apart relation;
means defining a plurality of grid wires with slits therebetween which extend between said frame elements and which are affixed to the latter adjacent the opposite ends of the grid wires with said brace members being prestressed so as to urge said frame elements away from each other and thereby longitudinally tension said grid wires;
each of said brace members including a mid-portion and end portions extending from the latter and being affixed to said frame elements at locations on the latter spaced inwardly from respective ends of said frame elements, each of said brace members further having a cross-sectional shape with different section moduli in respect to correspondingly different axes passing through the centroid of said cross-sectional shape, said mid-portion of each of the brace members being disposed so that an axis of said cross-sectional shape which passes through said centroid at right angles to the axis about which there is a maximum section modulus of said cross-sectional shape is disposed in a plane which contains the lines of action of forces acting on said frame elements at predetermined points adjacent the respective end portions of the frame elements.

4,291,254

DISCHARGE LAMP ENERGIZATION CIRCUIT, PARTICULARLY FOR AUDIO AND SUPERSONIC FREQUENCY OPERATION OF HIGH-PRESSURE DISCHARGE LAMPS

Joachim Arlt, Munich, and Dietrich Fromm, Warngau, both of Fed. Rep. of Germany, assignors to Patent-und-Gesellschaft für elektrische Glühlampen m.b.H., Munich, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,372
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909605
Int. Cl.³ H05B *41/36*
U.S. Cl. 315—240 **18 Claims**



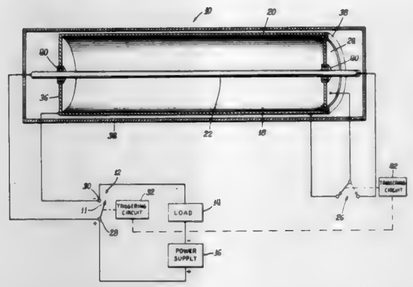
1. Discharge lamp energization circuit to energize a lamp (1) with alternating current at a frequency high with respect to power line frequency (50, 60 Hz) having
an inductance (2) serially connected to a terminal (7) of the lamp (1) and forming a series circuit therewith, and means (3) supplying a d-c voltage to operate the lamp,
and comprising, in accordance with the invention,
two capacitors (4, 5) of equal capacity value, serially connected across the d-c voltage supply (3), the series circuit of the inductance (2) and the lamp (1) being connected to the junction (6) of the serially connected capacitors;
a first electronically controlled switch (10) connected to the free terminal (8) of one capacitor (4);
a second electronically controlled switch (11) connected to the free terminal (9) of the other capacitor (5),
said switches being connected to the other lamp terminal (12) forming the free terminal of the series circuit;
and a timing control circuit (15) connected to and controlling both said switches to be alternately conductive,
the timing control circuit providing a frequency-stable output control signal to said switches at a frequency matched to a certain operating frequency of the lamp (1) and controlling the electronically controlled switches to essentially instantaneous conduction and cut-off, respectively, and providing an essentially square-wave voltage to said electronically controlled switches at said frequency matched to the lamp operating frequency, and thus supplying a-c square-wave voltage to the lamp circuit.

4,291,255

PLASMA SWITCH

Igor Alexeff, 1907 Holston River Rd., Knoxville, Tenn. 37914

Filed Aug. 17, 1979, Ser. No. 67,467
Int. Cl.³ H01J *11/04, 13/48;* H05B *37/00, 39/00, 41/00*
U.S. Cl. 315—340 **9 Claims**



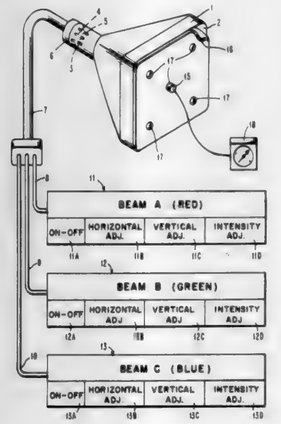
1. A plasma switch including means for defining a substantially evacuated chamber, a tubular cathode disposed within said chamber, an elongated anode disposed within said cathode, a first conductive end plate disposed at one end of said cathode insulated from said anode and said cathode and substantially closing said one end of said cathode, means substantially closing the opposite end of said cathode, and means for selectively connecting said first end plate to said anode or to said cathode.

4,291,256

ALIGNMENT OR CORRECTION OF ENERGY BEAM TYPE DISPLAYS

Richard L. Garwin, Scarsdale, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,609
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—368 **9 Claims**



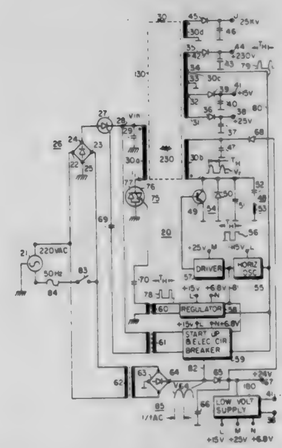
1. In the process of correction or alignment of a display of the type where multiple electronically driven independent energy source beams interact at a plurality of closely adjacent display spots on a viewing surface the improvement performable at at least one of a plurality of locations over said viewing surface comprising the steps of:
identifying an accurately positioned location on the viewing surface of said display;
positioning a photodetector adapted for sensing of the order of only a single display spot out of said plurality of closely adjacent display spots at said identified location on said viewing surface;
directing the position of a first of said energy source beams to said photodetector while simultaneously disabling each remaining said energy source beam and thereafter serially directing the position of each remaining said energy source beam individually to said photodetector while simultaneously disabling each other said energy source beam.

4,291,257

REGULATED DEFLECTION CIRCUIT WITH START-UP AND ELECTRONIC CIRCUIT BREAKER CONTROL

Walter Böhringer, Schlieren, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 167,996
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—408 **17 Claims**



1. A regulated deflection circuit with start-up circuitry, comprising:
a deflection winding;
a deflection generator coupled to said deflection winding for generating scanning current in said deflection winding, a deflection rate voltage with an alternating polarity component voltage being developed at a deflection generator terminal;
a source of supply frequency alternating polarity voltage;
a controllable regulator switch;
an input transformer with first and second windings, said first winding being coupled to said source and to said regulator switch for transferring energy from said source to a load circuit coupled to a winding of said input transformer other than said first winding in accordance with the conduction time of said regulator switch, said second winding being coupled to said deflection generator terminal;
a regulator control circuit coupled to said regulator switch for turning on said regulator switch at a controlled instant within a first polarity interval of said deflection rate alternating polarity component voltage to draw current in said first winding from said source, said deflection rate alternating polarity component voltage being applied to said second winding for reflecting a resonant current to said first winding to commutate off said regulator switch during the alternate polarity interval;
means for developing a signal representative of variations of a deflection circuit energy level;
means for applying said deflection circuit energy level varia-

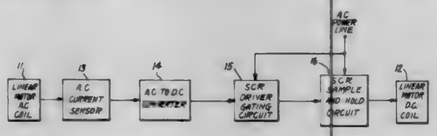
tions representative signal to said regulator control circuit to vary said conduction time of said regulator switch with deflection circuit energy level variations;
a second controllable switch coupled in the path of current from said source to said first winding of said input transformer;
a second control circuit coupled to said second switch for generating a second switch turn-on signal to enable current from said source to flow in said first winding of said input transformer;
means coupled to said second control circuit and responsive to said supply frequency alternating polarity voltage for enabling said second control circuit to generate said second switch turn-on signal at an instant prior to a zero-crossover instant within a cycle of said supply frequency alternating polarity voltage during deflection circuit start-up prior to steady-state operation; and
means for phase advancing the occurrence of said second switch turn-on signal from said zero-crossover instant during the transition from start-up to steady-state operation.

4,291,258

DC EXCITATION CONTROL FOR LINEAR OSCILLATING MOTORS

Howard L. Clark, Ballston Lake; Richard A. Dorman, Troy, and Paul Back, Clifton Park, all of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jun. 17, 1980, Ser. No. 160,305
Int. Cl.³ H02K *33/00*
U.S. Cl. 318—124 **11 Claims**



1. A control system for proportionally controlling the magnitude of DC excitation current supplied to the DC field coil of a linear reciprocating motor in quasi-proportion to the magnitude of the AC excitation current supplied to the AC field coil of the motor; said control system comprising AC coil current sensing means for sensing the magnitude of the AC current flowing in the AC coils of the linear reciprocating motor and deriving a control signal voltage representative of the magnitude of the AC coil current, and means responsive to the control signal voltage for deriving an output DC coil excitation current which is quasi-proportional to the magnitude of the AC coil excitation current for supply to the DC field coil of the linear motor.

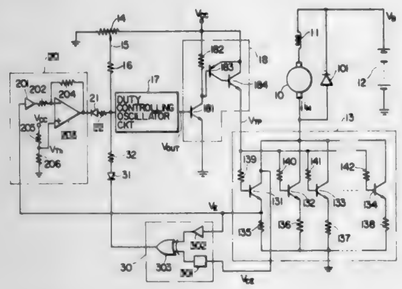
4,291,259

CONTROL APPARATUS FOR CONTROLLING TRANSISTOR CHOPPER FOR USE IN CURRENT SUPPLY FOR ELECTRIC MOTOR

Katsuji Marumoto, and Tsutomu Ohmae, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 101,844
Claims priority, application Japan, Dec. 8, 1978, 53-151145
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—139 **21 Claims**

1. A control apparatus for controlling the supply of current for an electric motor, comprising a source for supplying direct current to the motor; transistor chopper circuit means, including a plurality of power switching transistors connected in parallel, which is series connected with said direct current source for controlling the current to be supplied to the electric motor; means for producing a command signal representing the desired speed of said motor; duty controlling oscillator circuit means for generating an output signal on the basis of the command signal from said command signal producing means, by which the duty factor of the current supplied for the electric motor via said transistor chopper circuit means is determined by controlling the ON-OFF operation of said transistor chopper circuit means on the basis of said output signal; means connected to a preselected one of said plurality of power transistors for detecting the amplitude of current flowing



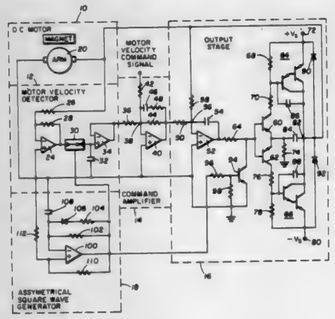
therethrough; and limiter circuit means for controlling said duty controlling oscillator circuit means in response to the output from said current detecting means, whereby the duty factor of the current supplied for the electric motor is regulated in dependence on the amplitude of the current flowing through said preselected one of said plurality of power transistors of said chopper circuit means.

4,291,260

MOTOR VELOCITY CONTROL SERVO AMPLIFIER

John M. Nixon, 902 NW. 4th Ave., Mineral Wells, Tex. 76067

Continuation of Ser. No. 897,200, Apr. 17, 1978. This application Jan. 28, 1980, Ser. No. 115,753
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—331 **5 Claims**



1. A sampling servo amplifier for controlling the velocity of a motor having at least one motor winding, comprising in combination:
first means connected to a winding of the motor and generating a motor velocity signal varying with the motor back emf, said first means including means for storing the motor velocity signal during a motor sample time interval, and further including first switching means for connecting the motor velocity signal to said means for storing in response to a timing signal during the motor sample time interval,
means for combining the motor velocity signal and a motor command signal into a motor drive voltage,
an amplifier responsive to the motor drive signal for generating a voltage during the motor drive time having an amplitude varying with the amplitude of the motor drive signal,

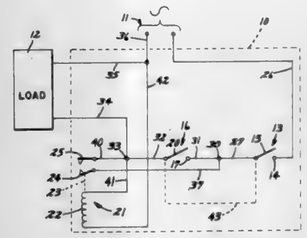
a first power amplifier connected to a first voltage for energizing the motor to rotate in a first direction,
a first switch actuated by the motor drive signal of said amplifier of a first sense during the motor drive time to turn on said first power amplifier to connect the first voltage to the motor,
a second power amplifier connected to a second voltage for energizing the motor to rotate in a second direction,
a second switch actuated by the motor drive signal of said amplifier of a second sense during the motor drive time to turn on said second power amplifier to connect the second voltage to the motor,
second switching means for interrupting the application of the output voltage of said amplifier to said first and second switches during the motor sample time interval and for connecting the output of said amplifier to said switches in response to the timing signal during the motor drive time, and
means for generating the timing signal to said first means for switching and to said second means for switching.

4,291,261

ELECTRICAL LOAD CONTROL CIRCUIT USEFUL IN LIQUID LEVEL CONTROL SYSTEMS

Stephen P. Johnston, Detroit Lakes, Minn., assignor to S. J. Electro Systems, Inc., Detroit Lakes, Minn.

Filed Nov. 21, 1979, Ser. No. 96,550
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—482 **4 Claims**



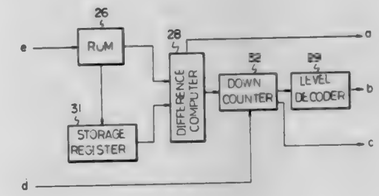
1. Apparatus for maintaining the level of liquid in a chamber between upper and lower levels, comprising, in combination:
a pump for causing flow of liquid with respect to the chamber;
an electric motor energizable to cause operation of said pump;
and means for controlling the energization of said motor including a relay, having a winding and a set of normally open contacts which are closed and opened, after short delays, upon energization and deenergization respectively of said winding, first switch means and second switch means responsive respectively to the presence of liquid at upper and lower levels in said chamber, first circuit means for supplying electrical energy from a source to said winding and said motor through said first switch means and said second switch means in series, and a second circuit means for supplying electrical energy from said source to said motor and said winding through one of said first and second switch means and said contacts of said relay, said second circuit means connecting said contacts in parallel with the other of said first and second switch means, so that initial energization of said motor and relay as said liquid reaches one of said levels is accomplished by the closing of said first and second switch means in series and initial deenergization of said motor and relay as said liquid reaches the other of said levels is accomplished by the opening of said one of said switch means, with both said energization and deenergization occurring during said delays by said switch means rather than by said contacts.

4,291,262

SERVO POSITIONING APPARATUS

Yoshinori Nakajima, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,805
Claims priority, application Japan, Nov. 14, 1978, 53-140145
Int. Cl.³ G05B *19/28*
U.S. Cl. 318—603 **8 Claims**



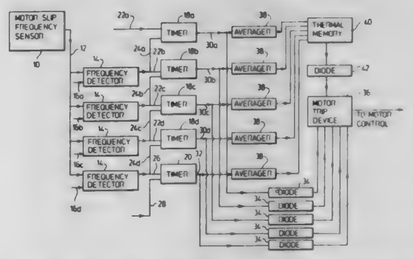
1. A servo positioning apparatus including a motor having a shaft and drive means for applying drive power to the motor, characterized by comprising:
position difference storage means for storing a present position difference between a previous command shaft position and a present command shaft position, the drive means applying drive power to the motor in accordance with the present position difference;
computing means for computing a new position difference between a new command shaft position and the present command position while the shaft is moving from the previous command position to the present command position; and
control means for controlling the position difference storage means to store the new position difference when the shaft reaches the present command position.

4,291,263

AMORTISSEUR WINDING PROTECTION SYSTEM

Andrew C. Stevenson; Gordon W. Herzog, both of Peterborough, and James C. Murdoch, Cavan, all of Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada

Filed Sep. 17, 1979, Ser. No. 76,214
Claims priority, application Canada, Mar. 9, 1979, 323159
Int. Cl.³ H02H *7/08*
U.S. Cl. 318—706 **10 Claims**



5. An apparatus for protecting an amortisseur winding during starting of a synchronous motor, said motor having a safe-time within which said motor accelerates to a speed near synchronous speed without damaging said winding, comprising:
means sensing a characteristic of achieved motor speed,
timing means providing a plurality of timing segments which measure succeeding periods of time within said safe-time,
comparing means associating with each timing segment a characteristic of desired motor speed above which said

motor is required to accelerate prior to said timing segment expiring, said comparing means comparing said achieved characteristic and said desired characteristic of each timing segment so as to detect when achieved motor speed exceeds desired motor speed, and

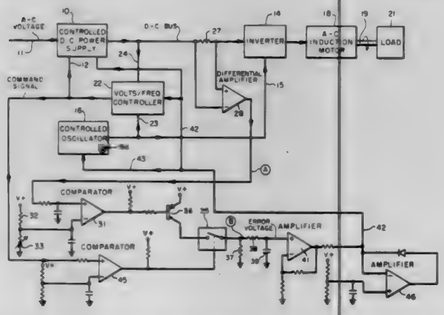
said timing means responsive to said comparing means stopping said motor upon failure of said comparing means to detect the achieved motor speed exceeding the desired motor speed prior to expiration of said desired characteristic's associated timing segment.

4,291,264

POWER FACTOR CONTROL SYSTEM FOR INVERTER-DRIVEN A-C INDUCTION MOTOR

Edward C. Siemon, Newfield, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,523
Int. Cl.³ H02P *1/24, 1/42, 3/18, 5/28*
U.S. Cl. 318—729 **9 Claims**



1. A control system for controlling the power factor in an a-c induction motor driven by the output a-c voltage from an inverter which in turn is energized by a d-c voltage received over a d-c bus from a d-c power supply, the d-c bus current alternately flowing through the inverter to the motor as real current and back from the motor and through the inverter to the d-c power supply as reactive current, said control system comprising:

means for sensing the d-c bus current and developing therefrom an alternating voltage which varies around a zero axis and reflects the actual power factor in the induction motor, the voltage above the zero axis representing the real current to the motor while the voltage below the axis represents the reactive current from the motor;

means for providing a reference voltage representing the desired power factor in the induction motor;

means for comparing said alternating voltage with said reference voltage to produce an error voltage which varies as a function of the difference between the desired power factor and the actual power factor;

and control means responsive to said error voltage for varying the amplitude of the a-c inverter voltage to change the reactive power in order to maintain the desired power factor.

4,291,265

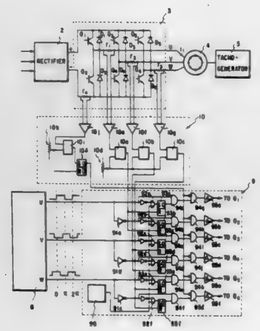
PROTECTIVE SYSTEM FOR INVERTER CIRCUIT USED IN DRIVING AC MOTORS

Shigeki Kawada, Hino; Hiroshi Ishida, Hamura, and Keiji Sakamoto, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Oct. 31, 1979, Ser. No. 89,735
Claims priority, application Japan, Nov. 4, 1978, 53/136067
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—782 **6 Claims**

1. In a protective system for an inverter circuit used in driving an AC motor, which system includes an inverter circuit for converting a direct current into a three-phase alternating current in the form of a rectangular wave by the switching action of transistors, three-phase rectangular signal generating means for generating a three-phase rectangular signal of a frequency in accordance with a deviation between an instructed speed and an actual speed, and an inverter drive circuit which receives the three-phase rectangular signal to regulate the output frequency of the inverter circuit to a prescribed value, the AC motor being made to rotate by the alternating current supplied by the inverter circuit, the improvement comprising:

first current detection means for detecting a maximum rated current flowing through the transistors which constitute the inverter circuit, the operation of the inverter circuit being terminated when said first current detection means responds upon detecting the maximum rated current; and



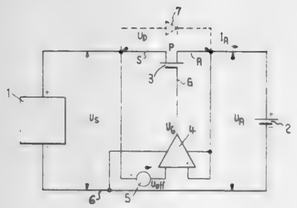
second detection means, provided for each of the three phases, for detecting a fixed overcurrent value in each of the three phases, which overcurrent value is less than the value of the maximum rated current, wherein when said second current detection means for a given one of the three phases responds upon detecting the fixed overcurrent value, only that transistor in the inverter circuit corresponding to said given phase is switched on and off at a fixed period to chop only the primary voltage of said given phase, whereby the current flowing through the transistor corresponding to said given phase is limited to a value which is less than the fixed overcurrent value.

4,291,266

DEVICE FOR CHARGING AN ACCUMULATOR FROM AN ELECTRICAL ENERGY SOURCE MORE PARTICULARLY FOR AN ELECTRONIC WATCH

Hubert Portmann, Colombier, Switzerland, assignor to Ebauches SA, Neuchatel, Switzerland

Filed May 8, 1979, Ser. No. 36,984
Claims priority, application Switzerland, May 8, 1978, 4957/78
Int. Cl.³ H02J *7/10;* **G04C** *3/00*
U.S. Cl. 320—2 **5 Claims**



1. An electronic device for the charging of an accumulator from a source of electrical energy, for use, more particularly,

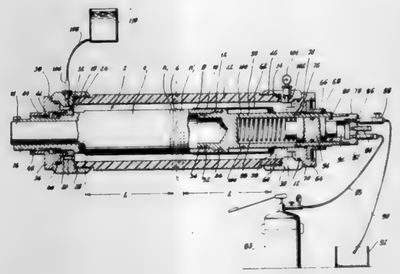
in an electronic watch, said accumulator and said energy source each having a first and a second pole, said second poles being connected together, comprising conducting means having a control electrode and two main electrodes connected respectively to said first poles of the energy source and the accumulator; a differential amplifier having two inputs respectively coupled to said main electrodes and an output connected to said control electrode, said amplifier responding to the potential difference between the first poles of said energy source and said accumulator for controlling the conduction of said conducting means; and means for adjusting the off-set voltage of said differential amplifier at a predetermined value and polarity, in order to render negligible the voltage drop in said conducting means and to avoid the discharge of said accumulator into said energy source.

4,291,267

METHOD AND APPARATUS FOR TESTING THE INTEGRITY OF THE ELECTRICAL INSULATION OF A WELL LOGGING SONDE

Jean L. Bonnet, Chatenay Malabry, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,822
Claims priority, application France, Oct. 28, 1977, 77 32583
Int. Cl.³ G01R *31/16, 31/02*
U.S. Cl. 324—54 **31 Claims**



1. Apparatus, for testing the integrity of the electrical insulation of a logging sonde having a plurality of electrodes in order to measure the electrical resistivity of earth formations traverse by a borehole, said sonde being adapted to be lowered into said borehole, comprising:

an enclosure capable of containing a fluid introduced therein;

means connecting said sonde to said enclosure for positioning selected ones of said electrodes within said interior;

means communicating with said interior for introducing within said enclosure, between said sonde and said enclosure, a conductive fluid, said enclosure and said connecting means being so constructed and arranged that electrical conduction paths are capable of being established through said fluid and said enclosure; and

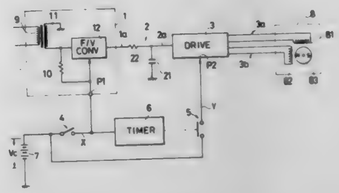
means for effecting electrical communication between respective ones of said electrodes and the environment exterior of said enclosure in order to accommodate a measurement of parameters associated with the operation of said sonde within said enclosure and said fluid such as to permit the derivation therefrom of an indication of the integrity of said electrical insulation.

4,291,268

APPARATUS FOR DRIVING A DEFLECTING COIL TYPE METER

Hideo Okuyama, Omiya, Japan, assignor to Kanto Seiki Company, Limited, Omiya, Japan

Filed Oct. 25, 1979, Ser. No. 88,129
Claims priority, application Japan, Oct. 27, 1978, 53-148056[U]
Int. Cl.³ G01R *19/00, 7/08*
U.S. Cl. 324—76 R **7 Claims**



1. Apparatus for driving a deflecting coil type meter having a pair of coil windings angularly positioned with respect to each other, a magnetic rotor pivotally mounted so as to rotate under the influence of the resultant magnetic field produced by said coil windings, a pointer mechanically connected to said magnetic rotor and having an initial position, and a calibrated dial scale to which deflection of said pointer can be referred, which apparatus comprising:

(a) a power switch connected to a power supply;

(b) means for gradually decreasing the voltage of an input signal when said power switch is turned off, said input signal carrying information to be indicated by said meter, so that said coil windings receive said gradually decreasing input signal after said power switch is turned off;

(c) a driving stage responsive to the output signal of said means, for producing driving currents which are applied to said coil windings;

(d) a timer circuit responsive to the voltage applied through said power switch for producing an output signal during the time that said power switch is on and for a predetermined interval after said power switch is turned off; and

(e) switching means for supplying said driving stage with electrical power in accordance with said output signal of said timer circuit to rotate said magnetic rotor to cause said pointer to return to its initial position after said power switch is turned off.

4,291,269

SYSTEM AND METHOD FOR FREQUENCY DISCRIMINATION

Edward J. Nossen, Camden, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,733
Int. Cl.³ G01R *23/14*
U.S. Cl. 324—79 D **15 Claims**

1. A system for determining the frequency of an input signal received during a time period T and comprising:

means for digitizing said input signal at a bit rate f_c and for storing the digitized bits of said input signal during said time period T;

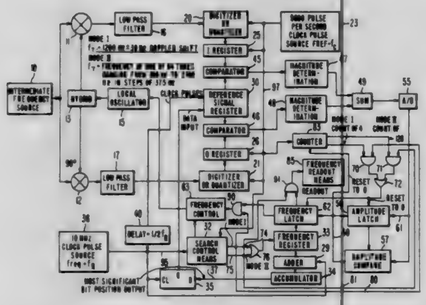
means for generating a successive series of digitized reference signals whose frequencies are represented by different patterns of binary 1's and 0's, with said frequencies being spaced apart by predetermined frequency intervals and including a reference signal having the same frequency as that of said received signal;

reference register means;

means for clocking said series of digitized reference signals into said reference register means during said time period T;

means for comparing the stored digitized input signal with

successive reference signals entered into said reference register means to produce output signals whose magnitudes are proportional to the degree of correlation therebetween; and



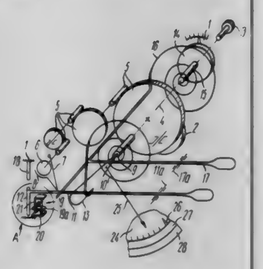
means for determining the largest output signal and the frequency of the particular reference signal which resulted in said largest output signal.

4,291,270

APPARATUS WITH A PERMANENT MAGNET FOR GAUGING THE THICKNESS OF COATINGS ON METAL PRODUCTS WITH MAGNETIC SHUNT TO ADJUST FOR DEMAGNETIZATION OF THE PERMANENT MAGNET

Alexandr A. Lukhvich, ulitsa A. Kulman, 15, kv. 18; Valery A. Rudnitsky, ulitsa Slavinskogo, 35, kv. 36; Ivan I. Linnik, prospekt Partizansky, 32, korpus 1, kv. 91, and Genrikh B. Gavris, Leninsky prospekt, 127, kv. 265, all of Minsk, U.S.S.R.

Filed Apr. 4, 1979, Ser. No. 27,071
Claims priority, application U.S.S.R., Apr. 4, 1978, 2598349
Int. Cl.[3] G01B *7/10*; G01R *33/12*
U.S. Cl. 324—230 **3 Claims**



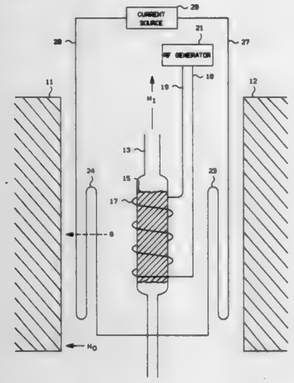
1. An apparatus for gauging the thickness of coatings on metal products, comprising:
a casing;
a wheel system including shafts mounted in said casing;
spring actuator means linked to said wheel system for rotating said wheel system;
means for winding said spring actuator means;
a permanent magnet for gauging the thickness of coatings on metal products effected through interaction of its magnetic field with a ferromagnetic coating on the product or with a metallic base of a product having a nonmagnetic coating;
two levers independently balanced in a static state;
a first of said levers carrying said permanent magnet;
a second of said levers interacting with said first lever when the force of the latter necessary to break away the permanent magnet from the product being gauged is insufficient;
two coiled springs;
a first of said coiled springs being connected through one end thereof with said first lever and through its second end with one of the shafts of said wheel system;
spring tensioning control means for controlling the tension of a second of said coiled springs, the second spring being connected through one end thereof with said second lever and through the other end with the spring tensioning control means;
a magnetic element attached to said casing and adapted to attract said permanent magnet after it has broken away from the product being gauged;
a reset lever for returning said first lever to an initial position, said reset lever being rigidly fixed to a central shaft of said wheel system;
an adjusting shunt mounted in the said casing for movement along said permanent magnet, said shunt correcting the attractive force of said magnet to thereby adjust for demagnetization of the permanent magnet;
a round scale secured to said casing;
a pointer fixed on the central shaft of said wheel system for providing thickness indication on said round scale.

4,291,271

METHOD FOR DETERMINING PORE SIZE DISTRIBUTION AND FLUID DISTRIBUTION IN POROUS MEDIA

Donald E. Lauffer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 1, 1979, Ser. No. 90,180
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—307 **21 Claims**



1. A method for determining the pore size distribution of a porous media comprising the steps of:
(a) substantially saturating a sample of said porous media with a fluid which exhibits a response in a nuclear magnetic resonance spectrometer;
(b) positioning the thus saturated sample in a static magnetic field H_o and a magnetic field gradient G which is superpositioned on said static magnetic field H_o;
(c) subjecting the thus positioned sample to a first radiofrequency pulse at a time t_1 to thereby rotate the precessing nuclear magnets associated with the fluid in said sample approximately 90° to generally the positive Y-axis of a reference frame which is rotating around the direction of the static magnetic field H_o where the direction of the static magnetic field H_o is the positive Z axis of said reference frame and the direction of the alternating magnetic field H_1 produced by said first radio frequency pulse is the positive X axis of said reference frame;
(d) subjecting the thus treated sample to a second radio frequency pulse at a time t_2, which is later in time that said time t_1, to thereby rotate said precessing nuclear magnets

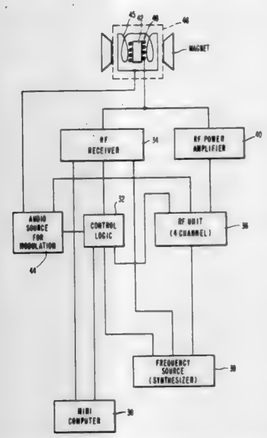
approximately another 90° to generally the X-Z plane of said reference frame;
(e) subjecting the thus treated sample to a third radiofrequency pulse at a time t_3, which is later in time than said time t_2, to thereby rotate said precessing nuclear magnets approximately another 90° to generally the X-Y plane of said reference frame;
(f) measuring, by means of a nuclear magnetic spectrometer, the amplitude of the spin echo signal which occurs when the magnetization of said precessing nuclear magnets refocuses on generally the negative Y-axis of said reference frame after said time t_3;
(g) changing the magnetic field gradient G to a different magnitude;
(h) repeating steps c–g to obtain a plurality of spin echo amplitudes as a function of the magnitude of the magnetic field gradient G; and
(i) determining the pore size distribution of said sample based on the plurality of spin echo amplitudes which are a function of the magnetic field gradient G.

4,291,272

METHOD FOR REDUCING HOMONUCLEAR BROADENING IN MAGNETIC RESONANCE SPECTRA OF SOLIDS

Donald C. Hofer, Hopewell Junction, N.Y.; Raymond D. Kendrick, San Jose, and Costantino S. Yannoni, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,254
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—313 **6 Claims**



1. In a method of operation of a magnetic resonance spectrometer employing a Zeeman field and at least one orthogonal radio frequency (rf) field for energization of the material, the improvement comprising:
varying the Zeeman field to produce a sinusoidal off-resonance component of the Zeeman field of amplitude

$$\beta \frac{\omega_a}{\gamma} / \sqrt{3}$$

and of frequency ω_a;
where ω_a is a constant which is large with respect to the width of an NMR line of the material and β is a constant;
applying a first rf field normal to said off-resonance component of the Zeeman field and modulating the amplitude of said rf field to produce a sinusoidal envelope of amplitude

$$\frac{\sqrt{2}}{\sqrt{3}} \beta \frac{\omega_a}{\gamma}$$

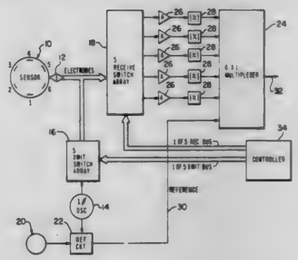
and of frequency ω_a;
selecting β such that $J_0(2\beta) = -2J_0(\beta) = 0$;
by eliminating said first rf field for about 2 to 5 microseconds at or about the zero crossing of said sinusoidal envelope once per audio cycle to introduce discontinuities therein; and
employing said discontinuities for observation windows for the NMR signals.

4,291,273

FLOW REGIME DETECTING

Ronald L. Dechene, Boxford; Frank G. Grimaldi, and Robert E. Newton, both of Tewksbury, all of Mass., assignors to Auburn International, Inc., Danvers, Mass.

Filed Jun. 14, 1979, Ser. No. 48,765
Int. Cl.[3] G01N *27/42*
U.S. Cl. 324—343 **4 Claims**



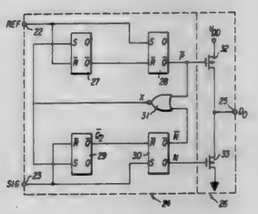
1. Method of determining phase cross-section distribution of mixed phase fluids comprising,
establishing a cyclically rotating pattern of substantially limited, to less than full cross section, diametral and chord voltage fields and measuring the diametral and chord conductances under said voltage fields,
establishing ratios of essentially simultaneous diametral and chord conductances,
providing a signal based on said ratios.

4,291,274

PHASE DETECTOR CIRCUIT USING LOGIC GATES

Yasoji Suzuki, Ayase, and Nobuyuki Kamimaru, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

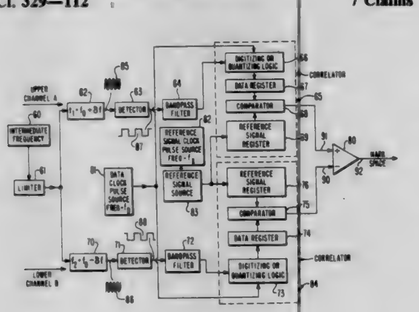
Filed Nov. 20, 1979, Ser. No. 96,056
Claims priority, application Japan, Nov. 22, 1978, 53-144611; Jun. 29, 1979, 54-81459
Int. Cl.[3] H03D *13/00*; H03K *5/26*
U.S. Cl. 328—133 **5 Claims**



1. A phase detector circuit comprising:
two input terminals at which input signals are applied;

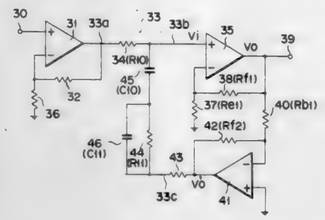
two output terminals at which output signals relative to the phases of the input signals are produced;
a first dominant type flip-flop circuit connected to one input terminal and whose output signal is transferred to one output terminal;
a second dominant type flip-flop circuit connected to the other input terminal and whose output signal is transferred to the other output terminal;
a third flip-flop circuit connected to one input terminal and whose output signal is transferred to the first dominant type flip-flop circuit;
a fourth flip-flop circuit connected to the other input terminal and whose output signal is transferred to the second dominant type flip-flop circuit;
gate means for receiving the output signals of the first and second dominant type flip-flop circuits and whose output signal is applied to the third and fourth flip-flop circuits.

4,291,275
FREQUENCY DEMODULATION SYSTEM
Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jun. 13, 1979, Ser. No. 48,167
Int. Cl.³ H03D *3/00*
U.S. Cl. 329—112 **7 Claims**



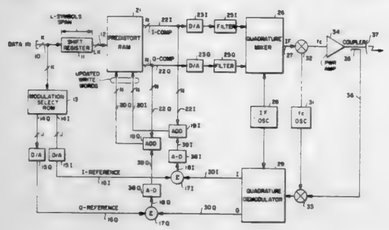
1. Means for demodulating a received encoded signal encoded with at least one predetermined pattern of successive signal segments of frequencies f_1 and f_2, and comprising:
first signal processing means responsive to said encoded signal and comprising first correlation means;
said first correlation means comprising first register means containing a first staticized reference signal having a first pattern of binary 1's and 0's correlative with the signal segments of frequency f_1 to produce a first output signal when correlation occurs;
second signal processing means responsive to said encoded signal and comprising second correlation means;
said second correlation means comprising second register means containing a second staticized reference signal having a second pattern of binary 1's and 0's complementary to said first staticized pattern and correlative with the signal segments of frequency f_2 to produce a second output signal when correlation occurs; and
means for combining said first and second output signals to produce a resultant output signal indicating correlation with said at least one pattern of signal segments.

4,291,276
EQUALIZER AMPLIFIER
Masaru Ida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 5, 1979, Ser. No. 91,484
Claims priority, application Japan, Nov. 16, 1978, 53-157836
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—85 **8 Claims**



1. An equalizer amplifier circuit comprising:
an RC circuit having frequency characteristics substantially identical with the RIAA reproduction characteristics, said RC circuit including: a first terminal to receive an input signal; a second terminal to deliver an output signal; and a third terminal;
a first amplifier having: an input coupled to said second terminal of said RC circuit; and an output; and
a second amplifier having: an input coupled to said output of said first amplifier; and an output coupled to said third terminal of said RC circuit;
one of said first and second amplifiers being a noninverting amplifier and the other of said first and second amplifiers being an inverting amplifier.

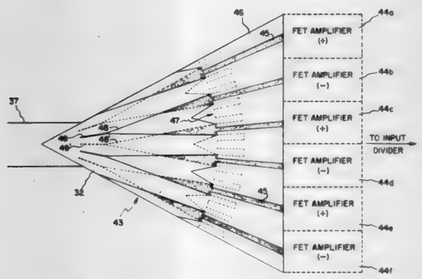
4,291,277
ADAPTIVE PREDISTORTION TECHNIQUE FOR LINEARIZING A POWER AMPLIFIER FOR DIGITAL DATA SYSTEMS
Robert C. Davis, Indialantic, and Robert W. Boyd, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed May 16, 1979, Ser. No. 39,362
Int. Cl.³ H03F *1/32*
U.S. Cl. 330—149 **17 Claims**



1. In a communication system wherein signals to be transmitted are coupled through a modulation distorting amplifier that subjects the signals to shifts in signal characteristics away from their intended values, an arrangement for compensating for the distorting action of said amplifier comprising:
first means, coupled to receive input signals representative of data to be transmitted, for generating first output signals representative of the intended output of said amplifier in the absence of its distortion action;
second means, coupled to receive said input signals, for storing predistored modulation signals to be coupled through said amplifier in response to said input signals, said predistortion signals having characteristics such that the distortion action of said amplifier is compensated thereby; and

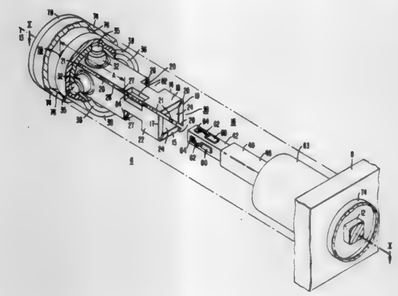
third menas, coupled to said first and second means and to the output of said amplifier, for modifying predistorted modulation signals stored in said second means, in response to changes in the distortion action of said amplifier.

4,291,278
PLANAR MICROWAVE INTEGRATED CIRCUIT POWER COMBINER
John P. Quine, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed May 12, 1980, Ser. No. 148,790
Int. Cl.³ H03F *3/60, 3/68;* H01P *1/16, 1/162*
U.S. Cl. 330—286 **16 Claims**



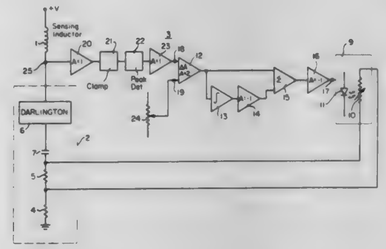
1. A microwave power combiner comprising:
a dielectric substrate having metallization patterns on both sides which form an array of fin-line transitions from microstrip to waveguide, said patterns having plural microstrip lines with a given characteristic impedance and an opposing continuous ground plane which transition to an unbalanced-to-balanced transformer and hence to plural fin-lines arranged such that the fin-lines on one substrate surface are staggered relative those on the other surface; and
a plurality of microwave solid state amplifiers mounted on said dielectric substrate, each of which is connected to one of said microstrip lines;
said array of fin-line transitions and attached solid state amplifiers being contained within a waveguide structure.

4,291,279
MICROWAVE COMBINER ASSEMBLY
Daniel C. Buck, Hanover, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 16, 1979, Ser. No. 95,173
Int. Cl.³ H03F *3/60;* H03B *7/14*
U.S. Cl. 330—287 **9 Claims**



1. Microwave apparatus comprising:
a coaxial transmission line having a center conductor and an outer conductor, said conductors symmetrically disposed about the longitudinal axis of said line;
the center conductor having a hollow first section assembly and a second section assembly, each assembly symmetrically disposed about said longitudinal axis;
said first section assembly having a plurality of segments having edges parallel to said longitudinal axis and positioned to form an interior hollow space of predetermined dimension segments;
each segment having a first part and a second part of predetermined lengths whereby a slot formed between the longitudinal edges of respective segments in said first part is filled with a lossy dielectric means of predetermined impedance;
a plurality of diodes each suitable for providing negative resistance each having a first terminal in contact with respective segments in said first part at a predetermined position along said center conductor said diodes being in a radial configuration about said axis, and each diode having a second terminal coupled a heat sink means and to said outer conductor;
a compression means to secure said heat sink means, diodes, segments, and lossy dielectric means in fixed mechanical relationship to each other and to said axis;
said second section assembly inserted into said hollow space of the first section assembly and having a conductive means to couple a bias current to each segment and a microwave conductive means to couple microwave signals to said segments; and
said outer conductor surrounding the combined first section and second section assemblies.

4,291,280
AC GENERATOR SYSTEM HAVING STABILIZED SENSITIVITY FOR SENSING THE PRESENCE OR ABSENCE OF A CONDUCTIVE OBJECT
George A. Gardner, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Nov. 15, 1978, Ser. No. 960,918
Int. Cl.³ G01R *33/00;* G01V *3/11*
U.S. Cl. 331—65 **2 Claims**



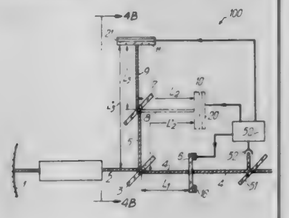
1. A conductive object sensing system comprising, in combination, an oscillator for generating an alternating current and having inductance means responsive to a conductive object proximate thereto for causing said oscillator to stop generating said current;
regulator means connected to said oscillator for sensing said current and for producing a control signal in response thereto and in its value being in correspondence with both magnitude of deviation of said current from a predetermined level and duration of said deviation;
said predetermined level being that corresponding to there being no conductive object proximate to said sensor;
said oscillator having variable impedance through which said current flows, and which is connected to said regulator means for being varied by said control signal for changing the level of said current in accordance with the value of said control signal.

4,291,281

SINGLE MODE DOUBLE MICHELSON-TYPE LASER CAVITY RESONATOR

Michel Pinard, La Queue en Brie, France; Carl Aminoff, Helsinki, Finland; Gerard Trenec, and Franck Laloë, both of Paris, France, assignors to Agence National de Valorization de la Recherche, Neuilly sur Seine, France

Filed Sep. 5, 1978, Ser. No. 939,710
Claims priority, application France, Sep. 2, 1977, 77 26695
Int. Cl.³ H01S *3/082*
U.S. Cl. 331—94.5 C **3 Claims**



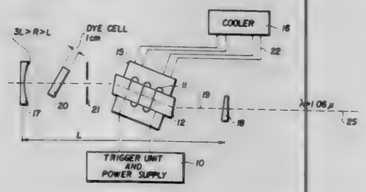
1. Cavity resonator arrangement for a single mode laser comprising:
means for producing and emitting a laser beam, said means including:
a cavity resonator;
a laser active material in said cavity resonator;
pumping means for activating said laser active material;
energy abstracting means; said cavity resonator comprising:
a first fully reflecting mirror on one side of said active material;
a first beam splitter means on the other side of said active material receiving said laser beam and splitting the same into first and second split beams directed along first and second split beam paths respectively perpendicular to each other said first and second beam paths and defining a reference plane;
a partially reflecting mirror in the first split beam path;
a second beam splitter means in the second split beam path, said second beam splitter means receiving said second split beam and splitting the same into a third split beam aligned with said second beam and a fourth split beam perpendicular to the reference plane, said third and fourth split beams being directed along third and fourth split beam paths;
a second fully reflecting mirror in the third split beam path;
a third fully reflecting mirror in the fourth split beam path; and
piezoelectric means for positioning the second and third mirrors along the third and fourth beam paths respectively.

4,291,282

STABILIZED PULSE PRODUCING MODE LOCKED LASER SYSTEM

Robert R. Alfano, New York, and Bruce H. Green, Forest Hills, both of N.Y., assignors to The Research Foundation of the City University of New York, New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,441
Int. Cl.³ H01S *3/13*
U.S. Cl. 331—94.5 S **18 Claims**



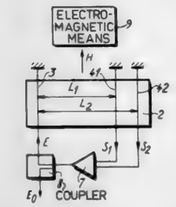
1. A stabilized pulse producing laser system with a mirror having a reflection surface and a specified radius condition, comprising in combination, a laser active material, input trigger pulsing means selectively inducing an envelope pulse of oscillations in said laser material, an optical path of length L passing through said laser material and terminating in two mirrors respectively located on opposite sides of the laser material, at least one said mirror having a radius of curvature R meeting the condition $3L>R>L$ and at least one of said mirrors having a wedge shape so that the reflection surface is disposed at an angle on the order of less than 2°, a dye cell disposed in said path between the two mirrors to produce mode locking presenting a dye thickness in said path in the order of one centimeter, and means for passing laser output pulses through one of said mirrors, whereby the output pulses present similar intensity profiles in response to successive input trigger pulses without critical alignment tolerances.

4,291,283

SINGLE-MODE TUNABLE OSCILLATOR USING MAGNETOSTATIC WAVES

Jean P. Castera, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 27, 1979, Ser. No. 34,183
Claims priority, application France, May 3, 1978, 78 13090
Int. Cl.³ H03B *5/30*
U.S. Cl. 331—96 **6 Claims**



1. A single-mode tunable oscillator comprising:
amplifier means having an input and an output,
two magnetostatic wave delay lines providing different delays and interconnected in feedback loops from said output to said input, said lines being made in a magnetic material arranged in a layer formed between short-circuited input and output strip couplers deposited on said layer,
electromagnetic means simultaneously subjecting said two lines to an external magnetic field,
extracting means for extracting a fraction of the electric signal present at said output, the frequency f of said signal being varied by variation of the intensity of said magnetic field.

4,291,284

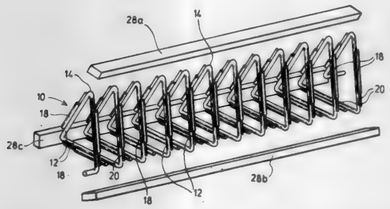
ANTENNA COUPLER

Michael A. Valeriote, R.R. #1, Puslinch, Ontario; Louis C. Kellman, 210 Edinburgh Rd. N., and Don E. Brandigampola, 40 Venier Dr., #903, both of Guelph, Ontario, all of Canada

Filed Sep. 17, 1979, Ser. No. 76,351
Int. Cl.³ H03H *7/38, 7/40*
U.S. Cl. 333—17 M **26 Claims**

1. An impedance coupling device in the form of a reactive circuit in turn comprising;
a plurality of reactive elements each being a segment of an inductor coil;
at least one electrically conductive member unconnected to said elements;
a plurality of movable contact elements operatively associated with respective ones of said reactive elements for electrically and selectively connecting and disconnecting

respective ones of said reactive elements and said at least one electrically conductive member, and,
a plurality of fluid operated cylinders each housing a movable piston having a piston rod effectively constituting a respective one of said movable contact elements, and



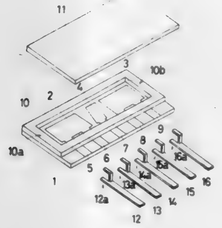
forming remotely operable actuating means and being unaffected by the presence of an electromagnetic field generated by said reactive circuit so to connect and disconnect respective ones of said reactive elements and said at least one electrically conductive member so in turn to vary the electrical characteristics of said reactive circuit.

4,291,285

SURFACE ACOUSTIC WAVE DEVICE AND METHOD OF MANUFACTURING

Michio Kadota, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 12, 1980, Ser. No. 120,784
Claims priority, application Japan, Feb. 22, 1979, 54-20455
Int. Cl.³ H03H *9/05, 9/09, 9/10, 9/145*
U.S. Cl. 333—150 **18 Claims**



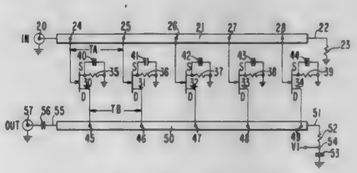
1. A surface acoustic wave device, comprising:
a substrate having a main surface, transducer means located on said main surface and connected to withdrawing means which is also located on said main surface, said withdrawing means for connecting said transducer means to an external circuit;
a sheet member mounted on said main surface of said substrate and having an electrically conductive property in a direction perpendicular to said main surface and an insulating property a direction parallel to said main surface;
an interposing member interposed between said substrate and sheet member but not interposed between a portion of said withdrawing means and said sheet member, for forming a predetermined gap between said sheet member and said transducer means; and
a lead-out terminal electrically connected to said sheet member at a location which causes said lead-out terminal to be electrically connected to said withdrawing means through said sheet member by virtue of said directionally conductive property of said sheet member.

4,291,286

HIGH BANDWIDTH TRANSVERSAL FILTER

Gary L. Wagner, Menlo Park, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 17, 1979, Ser. No. 104,624
Int. Cl.³ H03H *15/00;* H01P *1/201*
U.S. Cl. 333—166 **5 Claims**



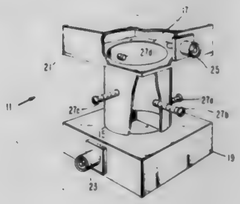
1. A transversal filter having an input and an output comprising:
a delay line connected to said input;
a summer connected to said output; and
at least two field effect transistors each having an input connected to said delay line at a different point thereon and each having an output connected to said summer at a different point thereon;
wherein the gain of each transistor is variable by changing said transistor's source current by means of adjusting a variable resistor that is connected between said source and ground.

4,291,287

EVANESCENT MODE FILTER

Frederick A. Young, and Edward L. Griffin, both of Huntington Beach, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 10, 1979, Ser. No. 101,592
Int. Cl.³ H01P *1/219, 1/208*
U.S. Cl. 333—210 **3 Claims**

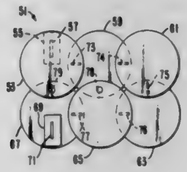


1. An evanescent mode filter for ultra-high and microwave frequency bandpass filter applications, comprising:
a hollow waveguide member dimensioned below cutoff at an operating frequency, said waveguide member including a side wall and an input end and an opposite output end;
input/output coupling means associated with said input and output ends of said cylindrical waveguide member for respectively coupling RF energy into and out of said evanescent mode filter;
a plurality of evanescent resonators disposed in said waveguide member, alternate ones of said resonators forming internal bridge couplings; and
an evanescent resonator loading structure disposed in each of said evanescent resonators, at least one of said loading structures being oriented about the axis of said waveguide member at an angle with respect to at least one other of said loading structures.

4,291,288
FOLDED END-COUPLED GENERAL RESPONSE FILTER

Frederick A. Young; Edward L. Griffin, both of Huntington Beach, and Louis W. Hendrick, Hermosa Beach, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 10, 1979, Ser. No. 102,290
Int. Cl.³ H01P *1/208, 7/06*
U.S. Cl. 333—212 **4 Claims**



1. A folded end-coupled general response filter, comprising:

a filter structure having adjacent first and second cavity levels, each level including at least one TE_{011} cavity structure, each cavity structure in one of said levels overlapping at least one cavity structure in the other of said levels, the overlapping structure defining common end walls of said cavity structure;

mainline coupling means in said common end walls of each of said cavity structures for sequentially coupling all mainline electromagnetic energy between each of said cavity structures in one of said levels with an overlapping cavity structure in the other of said levels;

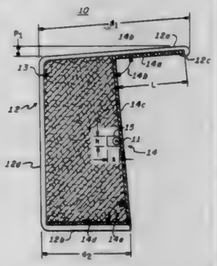
bridge coupling means in selected ones of said common end walls for coupling all bridge coupling energy and allowing implementation of all possible canonical couplings; and

input/output means mounted on said filter structure and including an input coupling fixture coupled to one of said cavity structures and an output coupling fixture coupling to another of said cavity structures for introducing an input signal to a first of said cavity structures and providing an output signal from a sequentially last of said cavity structures.

4,291,289
SHIELDED SURFACE WAVE TRANSMISSION LINE

Basrur R. Rao; Gerald F. Ross, and Harry M. Cronson, all of Lexington, Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,951
Int. Cl.³ H01P *1/30*
U.S. Cl. 333—240 **8 Claims**



1. A transmission line apparatus comprising:

a C-shaped channel having an open side and upper and lower sections of unequal length with an interconnecting section therebetween, said upper section of a length greater than said lower section;

propagation means for guiding signal waves;

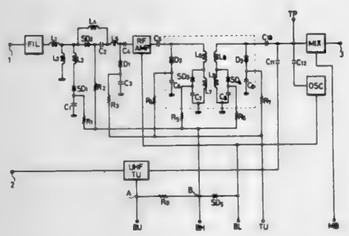
means, constructed of a first dielectric material, for supporting said propagation means adjacent said open side of said C-shaped channel; and

means, constructed of a second dielectric material, and Z-shaped having an upper section, a lower section and an interconnecting section therebetween, positioned in said C-shaped channel with said upper and lower sections thereof adjacent said upper and lower sections of said C-shaped channel respectively for shielding and containing said propagation means and said support means, said upper section extending from said interconnecting section of said Z-shape along said upper section of said C-shaped channel towards the end of said upper section of said C-shaped channel adjacent said open side and said lower section extending from said interconnecting section of said Z-shape, along said lower section of said C-shaped channel towards said interconnecting section of said C-shaped channel.

4,291,290
UHF-VHF TUNER HAVING DAMPING MEANS TO REDUCE INTERFERENCE IN UHF BAND

Sadayoshi Ijichi, Soma, and Eiji Nishizawa, Kakuda, both of Japan, assignors to Alps Electric Company, Ltd., Tokyo, Japan

Filed Aug. 3, 1979, Ser. No. 63,148
Claims priority, application Japan, Aug. 4, 1978, 53/95048
Int. Cl.³ H03J *3/18;* **H04B** *1/10*
U.S. Cl. 334—1 **6 Claims**



1. In an electronic tuner having a VHF tuning portion including a resonant circuit having a switching diode for switching between a band of the lower channels of the VHF band and a band of the higher channels of the VHF band, and a UHF tuning portion, the improvement comprising damper means connected to said switching diode for supplying a voltage partially biasing said switching diode during operation of the UHF tuning portion whereby said switching diode will provide a resistance damping said resonant circuit.

4,291,291
CIRCUIT BREAKER PROVIDED WITH COLLAPSIBLE TELESCOPING LINKAGE

Donald K. Merchant, Cambridge, Md., assignor to North American Philips Controls Corp., Cambridge, Md.

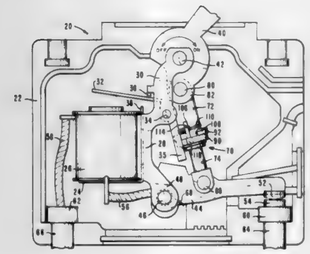
Filed Sep. 18, 1979, Ser. No. 76,668
Int. Cl.³ H01H *5/00*
U.S. Cl. 335—191 **17 Claims**

1. A circuit breaker comprising: an overcurrent sensor for sensing an electrical overload; a stationary contact; a movable contact electrically coupled to said overcurrent sensor and movable between open and closed positions out of and into contact with said stationary contact, respectively; collapsible coupling means coupled to said movable contact and adapted to be tripped by said overcurrent sensor, said movable contact being movable between its closed and open positions in response to tripping of said collapsible coupling means; and actuator means movable in response to an overload condition detected by said overcurrent sensor for tripping said collapsible coupling means; wherein said collapsible coupling means comprises:

a pair of telescoping members relatively slideable one within the other;

locking means movably supported by the outer one of said pair of telescoping members and movable into and out of locking engagement with the inner one of said pair to telescoping members upon movement of said inner member to a predetermined extended position wherein said outer member, wherein, in the locking position, said locking means substantially prevents said telescoping members from moving relative to each other, and, in the unlocking position, said locking means permits relatively slideable movement of said telescoping members;

restraining means supported on said outer telescoping member and movable between a first position in which said



restraining means prevents movement of said locking means out of said locking position and a second position in which said restraining permits movement of said locking means out of said locking position toward and into said unlocking position; and

bias means biasing said restraining means toward said first position to automatically move said locking means into said locking position upon movement of said inner member to said predetermined extended position within said outer member;

wherein said actuator means is movable in response to an overload condition detected by said overcurrent sensor for engaging said restraining means and moving said restraining means toward and into said second position against the force of said bias means to thereby permit movement of said locking means into said unlocking position and thereby further permit collapsing of said coupling means and movement of said movable contact into its open position.

4,291,292
ELECTRIC COIL LEAD ATTACHMENT MEANS AND METHOD

William J. Witchger, 4241 Kessler Lane East Dr., Indianapolis, Ind. 46220

Filed May 21, 1979, Ser. No. 40,555
Int. Cl.³ H01F *15/10*
U.S. Cl. 336—192 **9 Claims**

8. An electric coil assembly having a coil winding of a plurality of turns of coil wire between shoulders of a bobbin and having a layer of tape encircling the winding and retaining the coil wire in place between the bobbin shoulders;

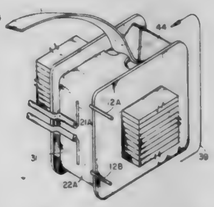
an elongate strip of resilient material having first latching means adjacent one end and second latching means longitudinally spaced from said first latching means and cooperable with said first latching means to secure said strip in a loop configuration;

a first electric lead fastened to said strip at a point and disposed entirely on one face of said strip, an insulated portion of said lead extending away from said strip, and a non-insulated portion of said lead extending parallel to the face of said strip from said point and immediately adjacent said face,

said one end of said strip being generally pointed, with said first latching means including at least one shoulder, the shoulder and pointed end establishing a pointed head on the strip,

said second latching means being an aperture in said strip, said aperture being of a size such that its largest dimension is less than the dimension transverse to said strip at said shoulder, whereby said head must be deformed at said shoulder to permit said head to pass through said aperture, pointed end first, the material being sufficiently resilient for said head to restore itself from its deformed state after passage through said aperture, whereby said shoulder is abuttingly engaged with said strip at said aperture to retain said head in latched state and maintain said strip in said loop configuration,

said lead being fastened to said strip at a point adjacent said head, said strip having a tail portion extending from said aperture in a direction away from said head and for a



distance greater than the distance from said head to said lead for insulating the non-insulated portion outboard of said face after connection to a coil lead and wrapping said tail portion over said non-insulated portion,

a second electric lead fastened to said strip,

each of said leads including an electrically insulated conductor and surrounding insulator, the leads being spaced in a plane containing said strip at the points of fastening said leads to the strip, and the fastening of the leads to the strip being by attachment of the insulator to the one outside face of the strip so that the insulated portions of the leads project transversely from the strip,

said strip being mounted on said tape layer with the inside face of the loop configuration of the strip encircling the tape layer snugly and resiliently, and the leads on the outside face of the strip, the lead conductors being attached to opposite ends of said coil wire to provide two lead connections, said lead connections being on the outside face of the strip and extending in opposite directions from the locations of fastening of the leads to the strip;

and the tail portion of the strip extending from the head in a second layer covering the said connections.

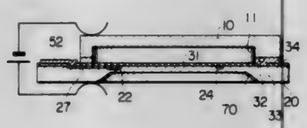
4,291,293
SEMICONDUCTOR ABSOLUTE PRESSURE TRANSDUCER ASSEMBLY AND METHOD

Kazuji Yamada; Seiko Suzuki; Motohisa Nishihara; Kanji Kawakami; Hideo Sato; Shigeyuki Kobori; Ryosaku Kanzawa; Minoru Takahashi, and Hitoshi Minorikawa, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1979, Ser. No. 76,813
Claims priority, application Japan, Sep. 27, 1978, 53/119016
Int. Cl.³ G01L *1/22*
U.S. Cl. 338—4 **10 Claims**

1. A semiconductor pressure transducer assembly comprising: a silicon diaphragam assembly having a thin pressure sensitive diaphragm portion and a thick supporting portion surrounding the pressure sensitive diaphragm portion; piezoresistive elements constructed on the pressure sensitive dia-

phragm portion of said silicon diaphragm assembly, the resistance values of the piezoresistive elements varying depending on the strain appearing in the diaphragm portion in response to pressure applied thereto; conducting paths constructed on said silicon diaphragm assembly for electrically connecting of said piezoresistive elements; a passivating layer of insulating material covering a surface of said silicon diaphragm assembly on which said piezoresistive elements and said conducting paths



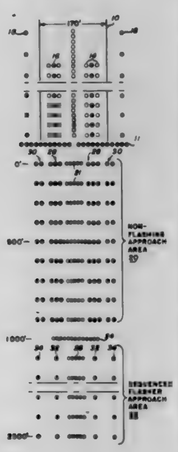
are constructed; a layer of conductive material formed on a surface of said passivating layer; and a covering member of insulating material mounted and bonded onto said silicon diaphragm assembly in contact with said conductive material layer on said passivating layer using Anodic Bonding method, wherein said piezoresistive elements and said conducting paths are constructed on said silicon diaphragm assembly using Ion Implantation method.

4,291,294

SPECTRALLY BALANCED CHROMATIC LANDING APPROACH LIGHTING SYSTEM

Wendell D. Chase, Saratoga, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 10, 1976, Ser. No. 749,420
Int. Cl.³ B64F *1/20*
U.S. Cl. 340—26 **7 Claims**



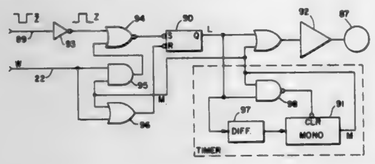
1. In an aircraft runway approach lighting system wherein said runway has a longitudinal centerline and said system includes a matrix of white lights delineating an approach area and straddling an axis coincident with said centerline, said matrix comprising rows of white lights transverse to said axis, each row having a left and a right end, the improvement comprising:
   - a first linear array of red/blue light combinations adjacent said left row ends; and
   - a second linear array of red/blue light combinations adjacent said right row ends, said arrays each being substantially parallel to said axis.

4,291,295

VEHICLE SPEED ENFORCEMENT SIGNAL

Robert D. Arnold, 1505 N. Quinn St., Apt. 17, Arlington, Va. 22209

Continuation-in-part of Ser. No. 955,297, Oct. 27, 1978, Pat. No. 4,250,487. This application May 6, 1980, Ser. No. 147,009
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—53 **6 Claims**



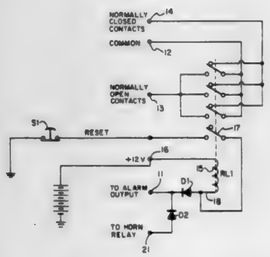
1. A vehicle speed monitoring device, comprising:
   - means, connected to the speedometer of said vehicle, for indicating that said vehicle has exceeded a predetermined speed;
   - timing means, attached to said indicating means, for extending the activation period of said indicating means;
   - means, connected to the speedometer of said vehicle, for generating a signal that is active when said vehicle is in motion; and
   - logic means, connected to said signal generating means, to said indicating means, and to said timing means, for deactivating said indicating means when said vehicle stops and remains at rest for a predetermined period of time.

4,291,296

ENGINE DISABLING

Monte G. Seifers, 2 Vantage Way, Nashville, Tenn. 37228

Filed Feb. 28, 1980, Ser. No. 125,621
Int. Cl.³ B60R *25/04, 25/10*
U.S. Cl. 340—64 **4 Claims**



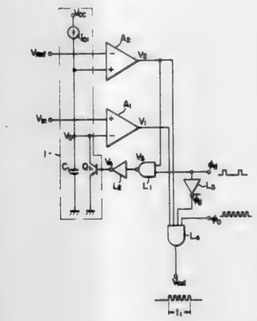
1. Vehicle engine disabling apparatus comprising,
   - a first terminal for receiving an alarm output signal,
   - a second terminal for connection to a horn relay,
   - a common terminal,
   - relay means having a winding with first and second ends and latching and at least one other set of contacts,
   - a power terminal for receiving electrical potential from a source thereof connected between said power terminal and said common terminal,
   - said first end of said winding connected to said power terminal,
   - normally closed reset switching means for selectively interrupting current flow to said winding.
   - means including a first unilaterally conducting device for coupling said second end of said winding to said first terminal,
   - means including a second unilaterally conducting device for coupling said first terminal to said second terminal,
   - means including said latching contacts on said relay means and said reset switching means connecting said common terminal to said second end of said winding for maintaining said relay means operated in response to the occurrence of an alarm signal on said first terminal until said reset switching means is open.
   - said first and second unilaterally conducting devices being oppositely poled so that said first unilaterally conducting device prevents said second terminal from receiving a horn relay operating potential and said second unilaterally conducting device prevents operation of said relay means upon the occurrence of a potential on said second terminal for operating a horn relay produced by manual actuation of a horn switch by a vehicle driver,
   - and at least first and second output terminals intercoupled by a first of said other set of contacts for connection to a vehicle engine electrical system for disabling the vehicle engine when said relay means is operated and allowing operation of the vehicle engine when said relay means is not operated.

4,291,297

SINGLE RAMP COMPARISON ANALOG TO DIGITAL CONVERTER

Kenji Kanemaru, Musashino, and Takashiro Iwasaki, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 809,007, Jun. 22, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 927
Int. Cl.³ H03K *13/20*
U.S. Cl. 340—347 AD **8 Claims**



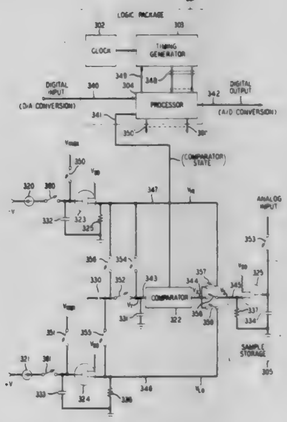
5. In an electronic circuit with a charging and discharging circuit comprising:
   - a charging and discharging circuit including a capacitor and a switching means coupled to said capacitor for enabling said capacitor to charge or discharge, said switching means having a control electrode for controlling the conductivity thereof; and
   - a control pulse signal supplied to said control electrode of the switching means for defining the period of charging or discharging action of said capacitor, said control signal having a predetermined voltage level generated during said period to cause said switching means to be conductive or non-conductive,
   - the improvements in said electronic circuit comprising:
   - a first voltage comparator means for comparing the terminal voltage appearing across said capacitor with a reference voltage and delivering an output signal;
   - a first logic means for applying said control pulse signal to said switching means, said first logic means receiving the output signal of said first voltage comparator means and said control pulse signal, and inhibiting said predetermined voltage level of said control signal from being supplied to said control electrode of the switching means at the time when the terminal voltage of said capacitor has a predetermined relationship to said reference voltage in the period of said control pulse signal, thereby to prevent unnecessary charging or discharging action defined in said period of said control pulse signal;
   - a second voltage comparator means for comparing the terminal voltage of said capacitor with an analog input voltage and delivering an output signal having a pulse width corresponding to the amplitude of said analog input voltage; and
   - a second logic means for receiving the output signals of said first and second voltage comparator means and a clock pulse signal, and passing said clock pulse signal within the period corresponding to said pulse width of the output signal of the second voltage comparator means and thereby obtaining a digital output signal which has the number of clock pulses corresponding to the value of said analog voltage, further comprising;
   - a third logic means for receiving the output signal of said first voltage comparator means and for stopping the supply of power to said charging and discharging circuit.

4,291,298

REVERSIBLE ANALOG TO DIGITAL CONVERTER WITH HIGH PRECISION

Robert L. Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 821,241, Aug. 2, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 67,780
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **13 Claims**



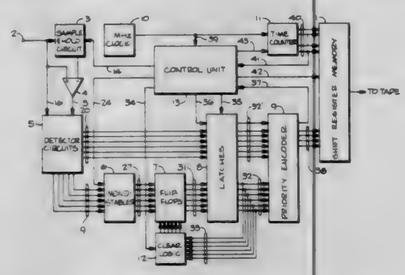
1. A signal generator characterized by:
   - means for storing upper and lower limit voltages that are initially set to predetermined maximum and minimum levels respectively;
   - means for averaging the stored upper and lower limit voltages to form a trial voltage;
   - means for lowering the magnitude of the stored upper limit voltage to the level of the trial voltage in response to one state of a binary signal to form a new upper limit voltage;
   - means for raising the magnitude of the stored lower limit voltage to the level of the trial voltage in response to an other state of the binary signal to form a new lower limit voltage; and
   - means for averaging the magnitude of the new upper limit voltage with the magnitude of the new lower limit voltage to form a new trial voltage.

4,291,299

ANALOG TO DIGITAL CONVERTER USING TIMED LEVEL CHANGES

Lorne C. Hinz, Richmond, and William P. Thomas, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 31, 1979, Ser. No. 89,937
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **14 Claims**



1. An analog to digital converter comprising:

sampling means for sampling an analog signal in response to a sample command;

timing means for providing a digital representation of elapsed time following the last preceding sample command;

means, responsive to the analog signal, and responsive to the difference between the analog signal and the last preceding sample thereof, crossing respective predetermined levels, for producing respective digital signals each comprising a code representing the particular level crossing and the digital representation of the elapsed time at which this level crossing occurred;

means, responsive to elapse of a predetermined period following the last preceding sample command, for producing a further digital signal comprising a code representing the elapse of said period; and

control means for supplying a sample command to the sampling means, and for resetting the timing means, on the production of any of the digital signals;

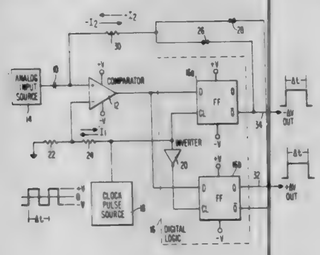
whereby said digital signals constitute a digital representation of said analog signal.

4,291,300

TRACKING ANALOG-TO-DIGITAL CONVERTER FOR AC SIGNALS

Clifford J. Bader, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1979, Ser. No. 90,253
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **10 Claims**



1. An analog-to-digital converter system for converting input AC signals derived from at least a single source thereof to delta-format digital output pulses comprising:

capacitive means having a pair of terminals, one terminal of which is connected to a source of AC signals for storing a charge representative of the amplitude thereof,

comparison means coupled to the other terminal of said capacitive means, a reference potential and means for incrementally varying the latter potential by superimposing a component of voltage thereon, said comparison means comparing the potential corresponding to the charge on said capacitive means with said reference potential and providing periodic voltage transitions in response to the incremental variation of the reference potential when the potentials being compared are substantially equal and further providing voltage levels in the absence of said voltage transitions when said last mentioned potentials are unequal,

digital logic means coupled to said comparison means and being responsive to said voltage levels for generating said delta-format digital output pulses as indicative of a predetermined increment of change in the amplitude of said AC signals,

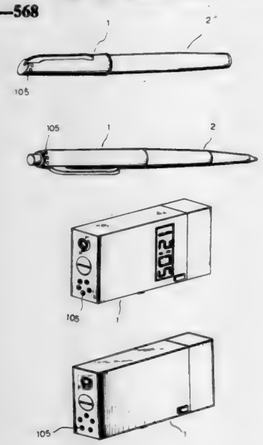
a feedback loop coupling said digital logic means to said other terminal of said capacitive means, said feedback loop being actuated by said digital logic means, concurrently with the generation of said delta-format digital output pulses, by causing selective bipolar currents to flow therein for a predetermined time, said bipolar currents restoring a balanced condition by charging said capacitive means to the difference in potential between a given amplitude AC signal and said reference potential, the direction of said bipolar currents being determined by said voltage levels provided by said comparison means.

4,291,301

REMINDER ALARM SYSTEM FOR PREVENTING MISLAYING OF PERSONAL ARTICLES

Han-Saw Chan, Room 1105, 185 Sung-Kang Rd., Taipei, Taiwan

Filed Jan. 28, 1980, Ser. No. 116,005
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—568 **4 Claims**



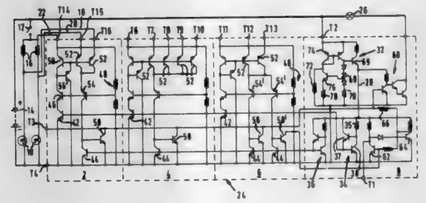
1. An electronic reminder for a usable personal article having a fixed general orientation during use thereof, said electronic reminder comprising a gravity activated position sensing switch, a battery, an electrically activated audio generator, and a compartment within said article for containing said position sensing switch, battery, and generator; which position sensing switch is for triggering the audio generator by a specified deviation of said article from said fixed general orientation; which usable personal article is a lighter; and said electronic reminder includes a switch attached to the lighter flintlock switch is triggered synchronously with the flintlock as the flintlock is cocked to light said lighter, and a shutting button; which flintlock switch is for switching the electronic reminder from an off-condition in which said position sensing switch cannot trigger said audio generator, to an on-condition in which said position sensing switch can trigger said audio generator, and which shutting button is for returning said electronic reminder from said on-condition to said off-condition.

4,291,302

LAMP MONITORING CIRCUITS

Gordon A. King, Buckingham; George R. Nimmo, Bexhill-on-Sea, and Wolfgang Bial, Borehamwood, all of England

Filed Nov. 7, 1979, Ser. No. 91,970
Claims priority, application United Kingdom, Nov. 13, 1978, 44221/78
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—642 **18 Claims**



1. A monitoring circuit for monitoring the voltage across a sensing resistor in series with a load, comprising a power supply line, means arranged to furnish two reference currents, which currents are each dependent both on temperature and on the voltage on the power supply line, a temperature-dependent voltage-stabilizing circuit for supplying the power supply line, said voltage-stabilizing circuit having a temperature co-efficient of such a sense and magnitude that the changes in a reference current due directly to changes in temperature are substantially offset by the changes in that reference current due to changes in the voltage on its power supply line, which changes are in turn due to the same changes in temperature; current-repeating means arranged to receive one of the said reference currents, and to provide an output current which is dependent both on the said one reference current, and on the potential difference across the series sensing resistor, the value of the output current at a predetermined value of the said potential difference being directly related to the value of the said one reference current; and comparing means connected for comparing the output current with the other reference current and to provide an output signal indicating whether the said potential difference is above or below the said predetermined value, in accordance with the result of the comparison.

4,291,303

TOUCH PAD AND DISPLAY TUBE CIRCUITRY

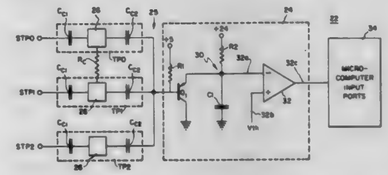
Scott E. Cutler, and Charles W. Eichelberger, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1979, Ser. No. 68,753
Int. Cl.³ G06F *3/14*; G09F *9/32*
U.S. Cl. 340—711 **52 Claims**

1. A touch pad circuit comprising:

first and second touch pads each having an input and an output, and having a common face plate which permits contaminants located on said face plate to form ohmic and/or dielectric couplings between said touch pads;

scan pulse generator means for applying touch pad scan pulses to said inputs of said touch pads to cause first and second touch response signals to appear at the outputs of said first and second touch pads, respectively; said touch pad scan pulses having a sufficiently fast rise-time that said first and second touch response signals initially pulse to an initial level determined by the capacitance to ground of said first and second touch pads, respectively, and thereafter change their value due to ohmic and/or capacitive coupling between said first and second touch pads caused



by contaminants on said common face plate if contaminants of a sufficient amount are located on said face plate; and

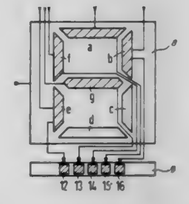
detector circuit means coupled to said touch pads for determining which, if any, of said touch pads is being touched by an operator of said touch pad circuit by examining said initial level of said touch pad response signals.

4,291,304

ELECTRO-OPTICAL DISPLAY DEVICE

Karl-Heinz Walter, Grafing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,365
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743907
Int. Cl.³ G08B *5/36*
U.S. Cl. 340—715 **2 Claims**



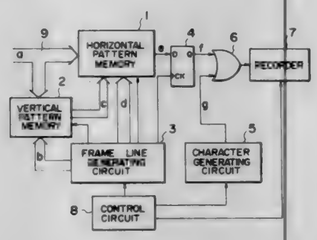
1. A process for operating an electro-optical display device, said device comprising a front and rear plate spaced apart to form a cavity for receiving a switchable medium, said front plate on a surface facing the medium being provided with at least one segmented electrode having segments and the rear plate on a surface facing the front plate and the medium being provided with a rear electrode assembly for each segmented electrode, said segments of the segmented electrode being individually energized along with the rear electrode assembly to switch the optical properties of the medium lying therebetween, an additional front control electrode electrically connected with each of the endangered electrode segments of the segmented electrode, said endangered electrode segments being segments whose malfunction leads to a representation of another possible character from the originally intended character being applied to the segmented electrode and a back control electrode disposed on the rear plate overlying the control electrode, said process comprising energizing the electrodes with a multiplex operation with two steps, said operation including during the first step of the two steps energizing the selected segments of the segmented electrode and its associated rear electrode assembly to display the selected information and during the last step energizing the back and front control electrodes.

4,291,305

METHOD FOR GENERATING FORMAT LINES AND CHARACTER DATA IN AN IMAGE SCANNING SYSTEM

Tsutomu Kimura; Hitoshi Miyoshi, and Sumio Mori, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 5, 1979, Ser. No. 72,773
Claims priority, application Japan, Sep. 5, 1978, 53-108959
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—734 **1 Claim**



1. In an image recording or displaying system using a light beam scanning means employing a raster scanning light beam modulated by a signal carrying character data, a method of generating format data to be combined with said character data so as to record or display format lines together with characters, comprising the steps of: preparing a horizontal pattern memory for memorizing a plurality of kinds of horizontal patterns in a direction parallel to scanning lines of the raster scanning means, preparing a vertical pattern memory for memorizing pattern codes which indicate the kind of said horizontal patterns with respect to vertical positions of the raster, causing said horizontal pattern memory to memorize all kinds of horizontal patterns of a format to be recorded or displayed together with the characters, causing said vertical pattern memory to memorize said pattern codes to memorize which kind of said all kinds of horizontal patterns of said format should be recorded or displayed at which vertical position of the raster, inputting a scanning line signal into said vertical pattern memory to cause the same to output one of said pattern codes in the form of a pattern select signal according to the vertical position of the raster, and inputting the pattern select signal into said horizontal pattern memory to cause the same to output one of said horizontal patterns in the form of a pattern signal according to the input pattern code.

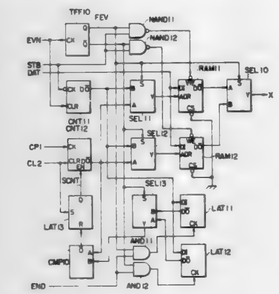
4,291,306

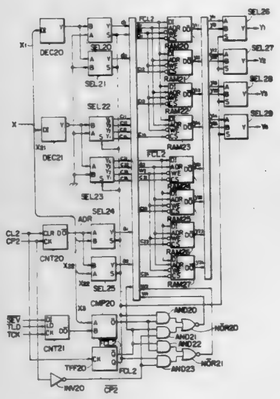
FIGURE DISPLAYING DEVICE

Kazuyuki Kodama, Kokubunji; Kunihiro Okada, Hinode; Takakazu Huno, Tachikawa; Takeyuki Endo, Hinode, and Yasutaka Shibuya, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 96,682
Claims priority, application Japan, Dec. 4, 1978, 53-149104
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—744 **4 Claims**

1. A figure displaying device for displaying a figure on the screen of a raster scan television in accordance with a plurality of dots, comprising: first memory means for storing dot information indicative of the ordinate and abscissa values of the respective dots on said screen; second memory means for storing preset information in a designated address by using the abscissa value of said dot information as an address; first control means for locating the dot information having the desired ordinate value from said first memory means so that the preset information may be stored in the address of said second memory means corresponding to the abscissa value of the dot information located; and second control means for sequentially reading out the information stored in said second memory means in accordance with the scanning operation of said





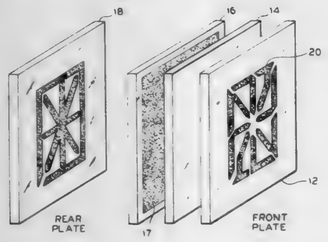
screen so that the figure may be displayed on said screen in accordance with the information read out.

4,291,307

PLANAR ALPHANUMERIC DISPLAY

Thomas B. Peelle, Farmington Hill, and Roland K. Kolter, Dearborn, both of Mich., assignors to International Telephone and Telegraph Corp., New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 22,085
Int. Cl.³ G09F *9/32*
U.S. Cl. 340—756 **3 Claims**



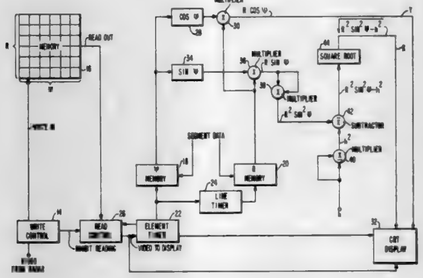
1. A plural character alphanumeric display, in which said display is comprised of two panels in spaced superimposed relationship with an optical medium therebetween, and said characters comprise complementary arrays of conductive segments at plural character locations on both said panels in aligned superimposed relationship adapted to be driven in a pattern by the application of a voltage to selected segments on both of said panels, the invention wherein each of said characters is comprised of a plurality of segments including a first group of segments forming the periphery of the character and a second group of segments radially disposed within the character, there being a like number of segments in each group, and wherein on a first of said panels the segments of the first group of each character are connected for driving connection to a voltage source, and the segments of the second group of each character are connected for driving connection to a voltage source, with the connection from both groups from each character being in multiple with the conductors from the like group of said other characters, and in which on the other panel, the segments of each character are paired with the segment of each pair being in alignment with separate groups within the character and each pairing is connected to a like pairing of the remaining characters for multiplexing of characters in a two step sequence by selective driving of selected pairings simultaneously with selective driving of the first and second groups of respective successive characters to illuminate selected alphanumeric characters at each of said locations.

4,291,308

NON-LINEAR RASTER GENERATOR

Daniel J. Provine, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 1, 1979, Ser. No. 44,616
Int. Cl.³ G01S *13/89*
U.S. Cl. 343—5 SC **4 Claims**



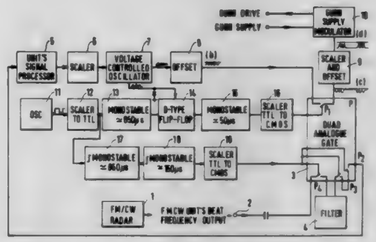
1. A system for displaying data using a non-linear raster comprising
(1) memory means for storing video data to be displayed;
(2) first means for reading said stored video data to generate a video data signal;
(3) timer means for initiating said raster;
(4) first storage means for storing first non-linear scan parameters;
(5) second storage means for storing second non-linear scan parameters;
(6) second means for reading said first and second non-linear scan parameters from said first and said second storage means and for processing said first and second non-linear scan parameters, to generate non-linear x and y deflection signals; and
(7) display means responsive to said x and y deflection signals and said video data signal to display said video data signal using a non-linear raster.

4,291,309

FM/CW RADAR

Basil H. R. Spiller, Byfleet, and Allan F. Pratt, Sutton, both of England, assignors to Decca Limited, London, England

Filed Aug. 23, 1979, Ser. No. 69,076
Claims priority, application United Kingdom, Aug. 25, 1978, 34621/78
Int. Cl.³ G01S *13/32*
U.S. Cl. 343—7.5 **7 Claims**



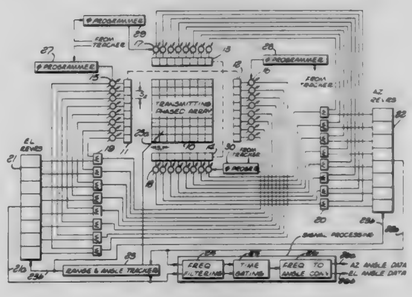
1. In a radar in which a signal in the form of a cyclically frequency modulated carrier wave is radiated and is also compared with an echo signal to derive a beat frequency signal, the improvement comprising:
means for interrupting detection of said beat frequency for intervals which are short relative to respective cycles of modulation of the carrier wave; and
means for impressing secondary modulation on said carrier wave during said intervals.

4,291,310

ADAPTIVE TWO-DIMENSIONAL NULL FORMING RECEIVING ANTENNA SYSTEM

Bradford E. Kruger, Woodland Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,798
Int. Cl.³ G01S *13/00*
U.S. Cl. 343—16 R **10 Claims**



1. A radar system capable of minimizing its receiving response to an interfering radiation source angularly separated from a target of interest, comprising:
first means for illuminating said target with radiant energy;
second means comprising at least one interferometer array having a pair of sub-arrays each with a plurality of elements mounted one on a first side of said first means and the other on the side opposite said first side, said sub-arrays being connected to provide an interferometer pattern having a main lobe and angularly spaced nulls in a first spatial angular coordinate on both sides of said main lobe;
array processing signal receiver means responsive to signals received through said second means as a result of illumina-

tion by said first means to provide target angle information;

third means responsive to said receiver means for developing a variable phase shift program for said sub-array elements to steer a null in said interferometer pattern within said first spatial angular coordinate so as to substantially eliminate received energy from said interfering radiation source, echo signals from said target being within said main lobe.

4,291,311

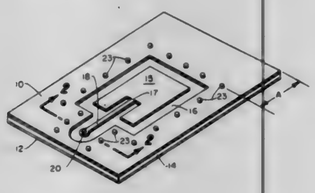
DUAL GROUND PLANE MICROSTRIP ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 837,058, Sep. 28, 1977. This application Aug. 23, 1979, Ser. No. 68,998

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS **33 Claims**



1. A dual ground plane strip-line fed electric microstrip antenna having low physical profile and conformal arraying capability, comprising:

a. a pair of thin conducting parallel ground planes;

b. a dielectric substrate separating and spacing apart said ground planes one from the other to provide an upper and a lower ground plane; said upper ground plane having a portion of predetermined dimensions of the area thereof removed;

c. a thin electrically conducting radiating element having a feedpoint thereon being formed coplanar with said upper ground plane within said removed area thereof, and being electrically separated from said coplanar upper ground plane and from said lower ground plane;

d. a stripline transmission line being located within said dielectric substrate between said upper and lower ground planes; said stripline transmission line being positioned within and surrounded on all surfaces by said dielectric substrate, and being non-copolanar with and electrically separated from said upper and lower ground planes; said stripline transmission line having one end thereof extending within said dielectric substrate to a point beneath said radiating element feedpoint;

e. means for electrically connecting said one end of the stripline transmission line to said radiating element feedpoint;

f. said upper and lower ground planes being shorted together by a plurality of electrically conductive shorting means; the strategic positioning of said shorting means on said upper ground plane and the location and dimensions of the area of said upper ground plane being operable to eliminate induced current and charge oscillation modes from occurring in said upper ground plane and prevent undesirable radiation from the upper ground plane including undesirable cross-polarization radiation;

g. said dual ground planes adjacent the area of said stripline transmission line operating to cause a reduction in transmission line leakage losses from said stripline transmission line without adversely affecting the operation of said radiating element, and said shorted upper ground plane operating to reduce coupling between closely spaced microstrip radiation elements.

4,291,312

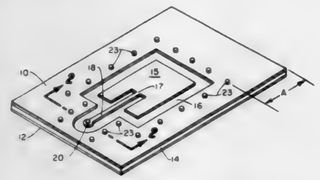
DUAL GROUND PLANE COPLANAR FED MICROSTRIP ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 837,058, Sep. 28, 1977. This application Aug. 23, 1979, Ser. No. 68,999

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS **32 Claims**



1. A dual ground plane coplanar-fed electric microstrip antenna having low physical profile and conformal arraying capability, comprising:

a. a pair of thin conducting parallel ground planes;

b. a dielectric substrate separating and spacing apart said ground planes one from the other to provide an upper and a lower ground plane; said upper ground plane having a portion of predetermined dimensions of the area thereof removed;

c. a thin electrically conducting microstrip radiating element having at least one feed point thereon being formed coplanar with said upper ground plane within said removed area thereof and being electrically separated from said coplanar upper ground plane and from said lower ground plane;

d. a microstrip transmission line for each said at least one feedpoint being located coplanar with said upper ground plane in a portion of said removed area thereof for feeding each said at least one feedpoint;

e. each said coplanar microstrip transmission line being electrically separated from said upper ground plane and have one end thereof electrically connected to one feedpoint on said radiating element;

f. said upper and lower ground planes being shorted together by a plurality of electrically conductive ground plane shorting means; strategic positioning of said shorting means on said upper ground plane and locations and dimensions of the area of said upper ground plane operating to eliminate induced current and prevent charge oscillation modes from occurring in said upper ground plane and prevent undesirable radiation from the upper ground plane including undesircross-polarization radiation;

g. said dual ground planes adjacent the area of said microstrip transmission line operating to cause a reduction in transmission line leakage losses from said microstrip transmission line without adversely affecting the operation of said microstrip radiating element.

4,291,313

RECORDING APPARATUS

Berthold Dold, Schramberg, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

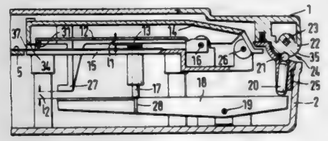
Filed Apr. 16, 1980, Ser. No. 140,747

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917329

Int. Cl.³ G01D *9/00*

U.S. Cl. 346—68 **9 Claims**

1. Recording apparatus comprising a planar support for supporting a recording medium, means for driving the recording medium at a given rate, at least one recording instrument arranged to be movable relative to said support for providing a recording on the recording medium when said recording instrument is moved into contact with the recording medium and the recording medium is driven, a lid for covering the recording medium wherein said lid is arranged for pivotal movement about a hinge axis which extends parallel to said planar support between open and closed positions relative to said support to move said recording instrument into contact with the recording medium when said lid is in said closed position and to raise said recording instrument out of contact



from the recording medium when said lid is in said open position, a guide part which is movable into contact with said recording instrument to raise said recording instrument out of contact from the recording medium when said lid is moved toward said open position, and drive means between said lid and said guide part for providing movement to said guide part when said lid is pivoted from said closed position toward said open position so that said recording instrument is held in a fixed position out of contact from the recording medium.

4,291,314

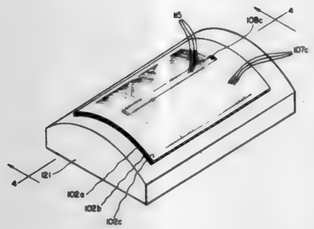
TRANSVERSE MAGNETIC PRINTING HEAD

Bernard D. Nathan, Lynchburg, Va., and Donald R. Witter, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 21, 1979, Ser. No. 40,586

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—74.5 **8 Claims**



1. A transverse magnetic printing head for impressing latent magnetic images on a magnetizable medium moving relative to said head, said head comprising:

a plurality of nonintersecting, conductive word lines disposed on a first, insulating substrate, said word lines crossing a first elongated gap in said first substrate, said word lines being insulated along those portions crossing said gap;

a plurality of nonintersecting, conductive digit lines disposed on a second, insulating substrate, said digit lines crossing a second elongated gap in said second substrate, said digit lines being insulated along those portions crossing said gap, said first and second elongated gaps being adjacently aligned and having substantially the same dimensions, each of said digit lines being substantially parallel to and opposite a word line where said lines cross said gaps;

a plurality of nonintersecting, sacrificial conductive lines disposed on a third, insulating substrate, said sacrificial lines crossing a third elongated gap in said third substrate, said second and third elongated gaps being adjacently aligned and having substantially the same dimensions, each of said sacrificial lines being substantially parallel to and opposite a digit line where said lines cross said gaps; and

magnetically permeable material electrodeposited between adjacent word, digit, and sacrificial lines so as to form magnetic pole pieces along said elongated gap, so that adjacent magnetic pole pieces may be selectively energized by coincident current electrical signals present on said digit and word lines.

4,291,315

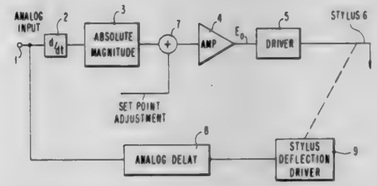
APPARATUS FOR PROVIDING A CONSTANT DENSITY TRACE OF ECG ANALOG SIGNALS

John V. Mizzi, Goldens Bridge, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,112

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 R **9 Claims**



1. Apparatus for providing a constant density trace of an analog signal the minimum rise and fall times of which are of the same order of magnitude as the thermal time constant of an associated thermal stylus comprising:

a record member having a thermally sensitive recording surface,

a thermal stylus having a given thermal time constant disposed adjacent said record member,

means connected to said thermal stylus for deflecting said stylus in response to said analog signal,

means connected to said thermal stylus for applying power to said thermal stylus which is a function of the magnitude of the rate of change of amplitude of said analog signal, and

means for introducing a delay of at most said given thermal time constant connected to said means for deflecting said stylus.

4,291,316

SYSTEM FOR DRIVING INK DROP GENERATOR OF INK-JET PRINTER

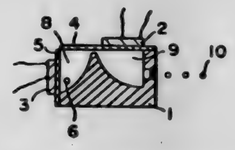
Sadao Kakeno, Yokohama; Taisen Hayashi, Tokyo; Hiromichi Komai, Kawasaki, and Hiroshi Yamazaki, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1979, Ser. No. 50,458

Claims priority, application Japan, Jun. 27, 1978, 53-77785

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **3 Claims**



1. A system for driving an ink drop generator comprising:

(A) a first ink drop issuing chamber provided with a first

diaphragm and communicating with an ink drop issuing nozzle,

(B) a second pressure biasing chamber provided with a second diaphragm for exerting a bias pressure to the ink in said second chamber and communicating with said first ink chamber and an ink source,

(C) means for driving said second diaphragm at a predetermined frequency, and

(D) means for driving said first diaphragm at a frequency twice as high as the frequency of said second diaphragm in synchronism with the driving of said second diaphragm during the positive going half cycle of the driving voltage applied to said second diaphragm to thereby issue ink drops through said nozzle.

4,291,317

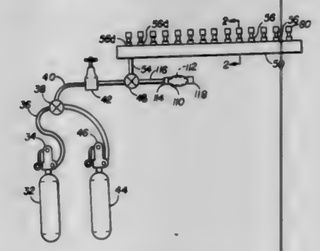
INKING SYSTEM FOR MULTI-PEN RECORDERS

William C. Corwin, La Grange, and Raymond M. Pawlak, Addison, both of Ill., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 914,089, Jun. 9, 1978. This application Nov. 13, 1979, Ser. No. 93,721

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **10 Claims**



1. In a multi-pen recorder, a plurality of recording pens, means including a plurality of separate ink reservoirs one for each pen for normally supplying ink to said pens on a gravity-fed capillary basis, a gas manifold common to said recording pens, means for supplying gas under pressure to said manifold, and valve means for individually connecting said ink reservoirs to said manifold, thereby selectively to prime any one of said recording pens.

4,291,318

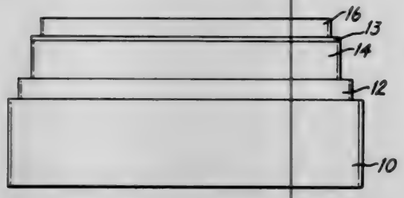
AMORPHOUS SILICON MIS DEVICE

Joseph L. Sansregret, Scotch Plains, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 3, 1979, Ser. No. 99,420

Int. Cl.³ H01L *45/00*

U.S. Cl. 357—2 **1 Claim**



1. An amorphous silicon semiconductor device having increased open circuit voltage and photovoltaic longevity, said device comprising:

a substrate;

a layer of amorphous silicon containing hydrogen deposited on said substrate and having a region of SiOx where x is defined by the relationship $1 \leqq x \leqq 2$, said SiOx layer formed by first etching a surface region of the amorphous silicon to provide a normal surface than oxidizing said normal surface with a sulfur based oxidant;

a metallic layer, contiguous to said oxide and forming a junction to said amorphous silicon, SiOx or the combination thereof.

4,291,319

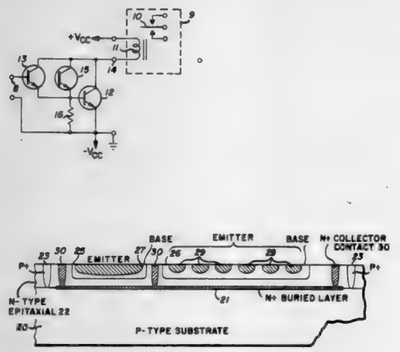
OPEN BASE BIPOLAR TRANSISTOR PROTECTIVE DEVICE

Charles P. Carinalli, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 687,722, May 19, 1976, abandoned. This application Jun. 27, 1979, Ser. No. 52,531

Int. Cl.³ H01L *29/90*

U.S. Cl. 357—13 **5 Claims**



1. An integrated circuit for switching inductive load devices which generate transient voltages that may rise to levels in excess of transistor collector breakdown, said integrated including means for arresting said transient voltages to limit them to levels below said transistor collector breakdown and comprising:

a semiconductor substrate;

at least one isolated region in said substrate;

an output transistor located in said isolated region, said output transistor having a base, a collector and an emitter made up of a plurality of individual small area emitter sections, the combination of which provides the total collector current capability, and

a protective active transistor located in said substrate, said protective transistor having a floating, unconnected base, a collector coupled in common with said collector of said output transistor, and an emitter coupled to said base of said output transistor whereby said collector of said protective transistor in reverse biased when acting as a protective device, said emitter of said protective transistor being composed solely of a single emitter section having an area that is large in relation to the area of an individual one of said small area emitter sections to create a base region in said protective transistor that is thinner than the base region in said output transistor, said protective transistor having an active and higher base to collector current gain and a collector breakdown voltage that is close to but lower than the collector breakdown voltage of said output transistor.

4,291,320

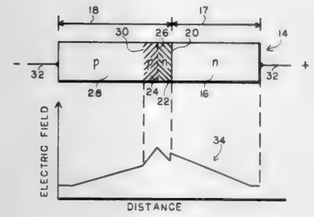
HETEROJUNCTION IMPATT DIODE

Cheng P. Wen, Mission Viejo, Calif.; Reidar L. Kuvas, Eiksmarka, Norway, and Anthony A. Immorlica, Jr., Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 10, 1980, Ser. No. 110,965

Int. Cl.³ H01L *29/90, 29/161*

U.S. Cl. 357—13 **7 Claims**



1. A double drift IMPATT diode comprising:

a first semiconductor of a first conductivity type having a first bandgap, said first semiconductor comprising a drift region of said first conductivity type;

a second semiconductor of a conductivity type opposite said first conductivity type joined to said first semiconductor by a heterojunction, said second semiconductor having a second bandgap, said second bandgap being lower than said first bandgap;

a first avalanche region of said first conductivity type in said second semiconductor adjacent said heterojunction;

a second avalanche region of said opposite conductivity in said second semiconductor abutting said first avalanche region to form a p-n junction;

a drift region of said opposite conductivity type in said second semiconductor abutting said second avalanche region, said drift region of opposite conductivity type being less heavily doped than said second avalanche region; and

means for applying a reverse bias to said first and second semiconductors of sufficient voltage to cause avalanche multiplication of electrons and holes in said first and second avalanche regions, and drift of charge carriers of said first conductivity type in said drift region of first conductivity type, and drift of charge carriers of said opposite conductivity type in said drift region of opposite conductivity type.

4,291,321

MIS-FIELD EFFECT TRANSISTOR HAVING A SHORT CHANNEL LENGTH AND METHOD OF MAKING THE SAME

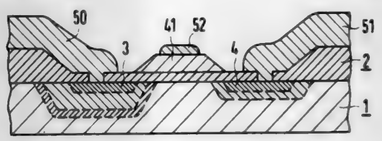
Hans-Jörg Pfleiderer, Zorneding, and Dietrich Widmann, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 245

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802838

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **16 Claims**



1. An MIS field effect transistor having a short channel length, comprising a semiconductor substrate, on the surface of which there is arranged an insulating layer, which is in turn, provided with a gate electrode, a drain zone and a source zone, of the first conductivity type, provided in the semiconductor substrate, which zones meet the substrate surface, an additional doped zone of the second conductivity type laying below said source zone and surrounding the latter, at least in the direction of said drain zone, and which meets the substrate surface, spaced laterally with respect to said source zone below said gate electrode layer, a second less heavily doped zone of the first conductivity type extending between the source zone and said additional zone of opposite conductivity type, a less heavily doped zone of the first conductivity type surrounding said drain zone, at least in the direction of said source zone, said zone of the second conductivity type and the less heavily doped zones of the first conductivity type containing implanted dopant particles.

4,291,322

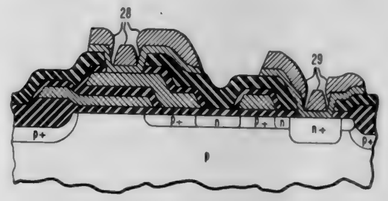
STRUCTURE FOR SHALLOW JUNCTION MOS CIRCUITS

James T. Clemens, Allentown, and Kay M. Locke, Northampton, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 30, 1979, Ser. No. 61,664

Int. Cl.³ H01L *29/78, 29/04, 23/48*

U.S. Cl. 357—23 **10 Claims**



1. An MOS integrated circuit including source and drain regions (**20** and **21**) of one conductivity type formed in one major surface of a semiconductor body (**10**) of opposite conductivity type so as to form p-n junctions therein and a structure for making electrical contact to portions of the circuit comprising an insulating layer (**23**) formed over the circuit and including windows (**24** and **25**) formed therein exposing the portions to be contacted, a layer (**26**) of polycrystalline silicon selectively formed over said insulating layer so as to form a continuous coating over the side walls of said windows, and a layer of metal (**28** and **29**) formed over said polycrystalline silicon layer CHARACTERIZED IN THAT the junction depths of the source and drain regions are 0.40 μm or less, the side walls of the windows are steep with sharp edges, the layer of metal is essentially discontinuous at the side walls, and the polycrystalline silicon layer provides a low resistance to current conduction in the areas of the side walls.

4,291,323

INDIUM PHOSPHIDE ARSENIDE BASED DEVICES

Klaus J. Bachmann, Piscataway, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1980, Ser. No. 145,610

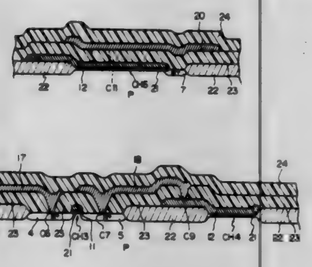
Int. Cl.³ H01L *31/00, 31/06*

U.S. Cl. 357—30 **4 Claims**

1. A device comprising a region of a first semiconductor material comprising $InAs_{1-x}P_x$ in intimate contact with a region of a second material and means for applying a voltage to said first semiconductor material CHARACTERIZED IN THAT said first semiconductor material is $InAs_{1-x}P_x$ where $0.85 \leqq x < 1$ and wherein said second material comprises a

composition chosen from the group consisting of indium tin oxide and indium oxide whereby a rectifying junction is formed.

3. A device comprising a region of a first semiconductor



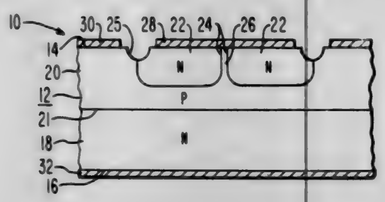
material comprising $InAs_{1-x}P_x$ in intimate contact with a region of a second material and means for applying a voltage to said first semiconductor material CHARACTERIZED IN THAT said first semiconductor material is $InAs_{1-x}P_x$ where $0.85 \leqq x < 1$ and wherein said second material is $In_yGa_{1-y}As$.

4,291,324

SEMICONDUCTOR POWER DEVICE HAVING SECOND BREAKDOWN PROTECTION

Sebastian W. Kessler, Jr., San Mateo, Calif., and John A. Olmstead, Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,453
Int. Cl.³ H01L *29/72*
U.S. Cl. 357—36 **10 Claims**



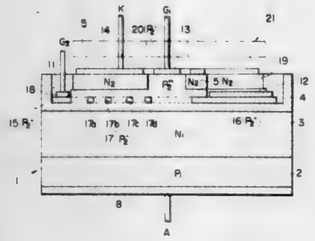
1. A semiconductor power device, comprising:
a semiconductor pellet having first and second opposing major surfaces and incuding, in series, emitter, base and collector regions of alternate conductivity type;
the collector region being substantially planar and adjacent to the second surface;
the base region adjacent to the collector region and extending to the first surface;
the emitter region extending relatively deeply into the pellet from the first surface and being substantially surrounded by the base region; the emitter region substantially surrounding a substantially centrally located extension of the base region, said extension being of relatively high resistance and extending to the first surface;
an emitter electrode contacting the emitter region and said base region extension;
a collector electrode contacting the collector region; and
a base electrode contacting the base region.

4,291,325

DUAL GATE CONTROLLED THYRISTOR WITH HIGHLY DOPED CATHODE BASE GRID COVERED WITH HIGH RESISTIVITY BASE LAYER

Tetsuro Sueoka, Numazu, and Satoshi Ishibashi, Higashimine, both of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Filed Jan. 4, 1980, Ser. No. 109,677
Claims priority, application Japan, Jan. 29, 1979, 54-9566
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **6 Claims**



1. A gate controlled semiconductor device comprising:
a semiconductor wafer made of: a first layer of one conductivity type; a second layer of an opposite conductivity type, connected to the first layer; a third layer of said one conductivity type connected to said second layer; said first and third layers having exposed surfaces; a high resistance layer of said one conductivity type formed on said third layer at said surface thereof to a selected depth; and a fourth layer of said second conductivity type connected into said high resistance layer having a surface;
an anode electrode connected to said first layer exposed surface;
a cathode electrode connected to said fourth layer surface;
a first gate electrode layer connected to an exposed surface of said high resistance layer;
said third layer having a first slot in the exposed surface thereof;
a first low resistance layer at the bottom of said first slot;
said third layer having a plurality of second slots extending into said fourth layer and communicating with said first slot;
a second low resistance layer at the bottom of each of said plurality of second slots connected to said first low resistance layer;
a second gate electrode layer for supplying an OFF signal to the device connected over a surface of said first and second low resistance layers; and
at least one buried low resistance layer which is narrower than said first and second low resistance layers; embedded in said third layer and spaced from said second and fourth layers, connected to each of said second low resistance layers.

4,291,326

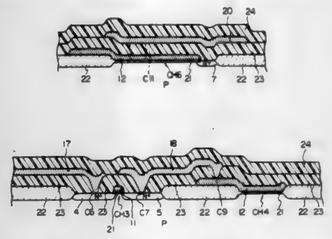
SEMICONDUCTOR DEVICE

Mitsuo Higuchi, Tokyo, and Kiyoshi Miyasaka, Yokohama, both of Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 20, 1979, Ser. No. 96,217
Claims priority, application Japan, Nov. 27, 1978, 53-146248
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—51 **15 Claims**

1. A semiconductor device for use in bootstrap circuits, comprising:
a semiconductor substrate, having a surface, of a first conductivity type;
first, second and third regions of a second conductivity type formed in said semiconductor substrate;

a first insulating layer having a first portion with a surface formed on the surface of said semiconductor substrate between said first and second regions, said first insulating layer further having a second portion with a surface formed on the surface of said semiconductor substrate adjacent to said third region;
a first electrically conductive layer formed on the surface of said first portion of said first insulating layer, said first electrically conductive layer, said first portion of said first insulating layer and said first and second regions forming an MIS transistor;
a second electrically conductive layer, having a surface, formed on the surface of said second portion of said first



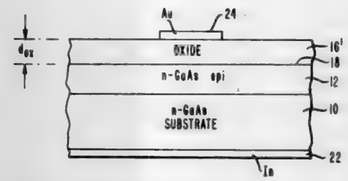
insulating layer, wherein a capacitor is formed by said surface of said second electrically conductive layer and by the surface of said substrate adjacent to said third region, said surface of said second electrically conductive layer and said surface of said substrate separated by said second portion of said first insulating layer, said second electrically conductive layer electrically connected to said second region; and
a substantially radiation opaque layer, having a first contact formed on said second region and having a second contact formed on said second electrically conductive layer, for preventing radiation from penetrating into said second region, said substantially radiation opaque layer overlying the whole of said second region.

4,291,327

MOS DEVICES

Won-Tien Tsang, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 937,318, Aug. 28, 1978. This application Jan. 23, 1980, Ser. No. 114,683
Int. Cl.³ H01L *29/34*
U.S. Cl. 357—52 **4 Claims**



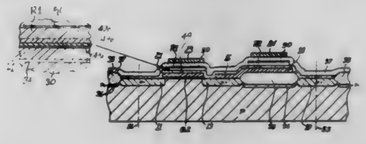
1. An MIS capacitor comprising:
a GaAs single crystal semiconductor body,
an insulating layer formed on a major surface of said body, and
a metal electrode formed on said insulating layer, characterized in that:
said insulating layer is formed by a process comprising the steps of:
epitaxially growing a layer of $Al_xGa_{1-x}As$ on said body and thermally treating said $Al_xGa_{1-x}As$ in an atmosphere containing oxygen for a time sufficient to convert said $Al_xGa_{1-x}As$ layer to said insulating layer, said conversion being essentially self-terminating at said major surface.

4,291,328

INTERLEVEL INSULATOR FOR INTEGRATED CIRCUIT WITH IMPLANTED RESISTOR ELEMENT IN SECOND-LEVEL POLYCRYSTALLINE SILICON

Jih-Chang Lien, Sugarland, and Te-Long Chiu, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1979, Ser. No. 48,961
Int. Cl.³ H01L *29/04, 27/02, 29/78*
U.S. Cl. 357—59 **4 Claims**



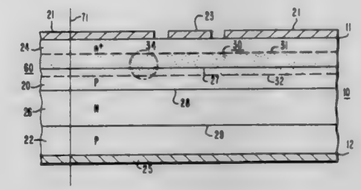
1. In a semiconductor integrated circuit,
(a) a first level of polycrystalline silicon overlying a face of a semiconductor body and patterned to define electrodes of circuit elements and interconnections between electrodes,
(b) a second level of polycrystalline silicon overlying said face and at least partially overlying said first level of polycrystalline silicon, said second level being patterned to define parts of circuit elements and interconnections,
(c) and a triple layer insulator separating said first and second levels of polycrystalline silicon, the first layer being thermal silicon oxide on the first level, the second layer being doped low-temperature deposited silicon oxide and the third layer being undoped low-temperature deposited silicon oxide.

4,291,329

THYRISTOR WITH CONTINUOUS RECOMBINATION CENTER SHUNT ACROSS PLANAR EMITTER-BASE JUNCTION

Maurice H. Hanes, Murrysville, and Earl S. Schlegel, Plum, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 31, 1979, Ser. No. 71,631
Int. Cl.³ H01L *29/167*
U.S. Cl. 357—64 **4 Claims**



1. A semiconductor thyristor comprising:
(a) top and bottom surfaces;
(b) a first layer of semiconductor material adjacent to said top surface;
(c) a second layer of semiconductor material adjacent to said first layer of semiconductor material and forming a first metallurgical p-n junction therewith;
(d) a third layer of semiconductor material adjacent to said second layer of semiconductor material and forming a second metallurgical p-n junction therewith;
(e) a fourth layer of semiconductor material adjacent to said

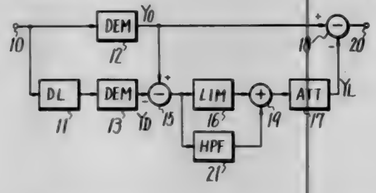
third layer of semiconductor material and adjacent to said bottom surface and forming a third metallurgical p-n junction with said third layer of semiconductor material; and

(f) a recombination region extending only about said first metallurgical p-n junction and spaced apart from said top surface and from said second metallurgical p-n junction, said recombination region having a predetermined concentration of lattice dislocation therein for eliminating current carriers therein.

4,291,330
VIDEO SIGNAL PROCESSING CIRCUIT FOR ELIMINATING AN INTERFERING SIGNAL

Jun Hirai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1979, Ser. No. 32,926
Claims priority, application Japan, Apr. 28, 1978, 53-51819
Int. Cl.³ H04N 5/21, 5/785
U.S. Cl. 358—8 **8 Claims**



2. A video signal processing circuit for eliminating an interfering signal included in a video signal, said circuit comprising:

delaying means for delaying said video signal for a predetermined number of horizontal line intervals to produce a delayed video signal;

first combining means for combining said video signal with said delayed video signal, said first combining means producing a first difference signal representing the difference between said video signal and said delayed video signal;

means for limiting amplitude excursions of said first difference signal to produce a limited difference signal; and

second combining means for combining said video signal with said limited difference signal to produce an output signal representing the difference between said video signal and said limited difference signal, whereby said second combining means produces said output signal free of said interfering signal.

4,291,331
DIGITAL PROCESSING OF N.T.S.C. COLOR TELEVISION SIGNALS

Victor G. Devereux, Cheam, England, assignor to British Broadcasting Corporation, London, England

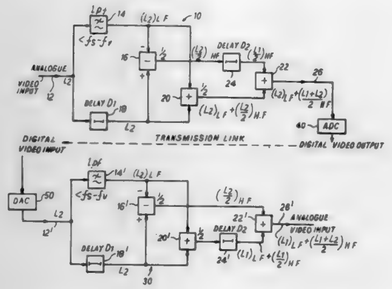
Filed Jan. 21, 1980, Ser. No. 114,041
Claims priority, application United Kingdom, Jan. 26, 1979, 02912/79
Int. Cl.³ H04N 9/02
U.S. Cl. 358—13 **35 Claims**

1. A method of processing an N.T.S.C. colour television signal, comprising:

at a transmitter, digitising an input signal with a sampling frequency f_s which has a mean value equal to $m.f_L \pm (p+\frac{1}{4})f_F$, where m and p are integers, f_L is the line scan frequency and f_F is the field scan frequency; and

at a receiver, comb filtering the received signal at least over the frequency range $(f_r - f_v)$ to f_v, where f_v is the frequency of the highest substantial frequency component of the original N.T.S.C. signal;

wherein said filtering comprises the steps of: delaying the signal by an integral number of line periods equal to one field period minus half a line period; and

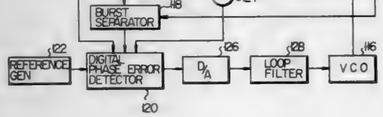


providing over the said frequency range a signal equal to the average of the delayed and undelayed signals.

4,291,332
PHASE-LOCKED CIRCUIT

Masaaki Kato, Kawasaki, and Keisuke Ogi, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 10, 1980, Ser. No. 138,896
Int. Cl.³ H04N 9/46; H04L 7/08
U.S. Cl. 358—19 **30 Claims**



1. A phase-locked circuit comprising:

voltage controlled oscillation means;

analog-digital converter means converting an analog input signal containing a reference phase signal component into a digital signal in response to a clock signal from said voltage controlled oscillation means;

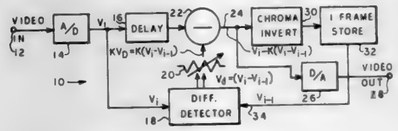
reference phase signal separator means for extracting a digital reference phase signal corresponding to said reference phase signal component from a digital output signal supplied from said analog-digital converter means; and

operation means digitally calculating an error signal corresponding to the difference between a predetermined reference phase difference and a phase difference between said analog reference phase signal component and said clock signal on the basis of the digital reference phase signal from said reference phase signal separator means, and supplying said voltage controlled oscillation means with an analog output signal corresponding to said error signal as a control signal, thereby causing the phase difference between the output signal from said voltage controlled oscillation means and said analog reference phase signal component to be made equal to said predetermined reference phase difference.

4,291,333
NOISE FILTER

Richard B. Warnock, Bountiful, and John A. Briggs, Midvale, both of Utah, assignors to Fernseh Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 41,455, May 22, 1979, abandoned. This application May 9, 1980, Ser. No. 148,437
Int. Cl.³ H04N 9/535
U.S. Cl. 358—36 **14 Claims**



1. A recursive filter for reducing noise in an incoming digitized, multi-bit television type signal having at least luminance components, comprising:

subtracting means having first and second inputs and an output;

means for applying the incoming television signal to the first input of said subtracting means without substantially attenuating the incoming signal;

delay means coupled to the output of said subtracting means for developing a signal delayed by an interval substantially equal to a selected multiple of a television field interval;

a motion detector receiving the incoming television signal and the delayed signal from said delay means for developing a difference signal representative of the differences between the incoming television signal and the delayed signal;

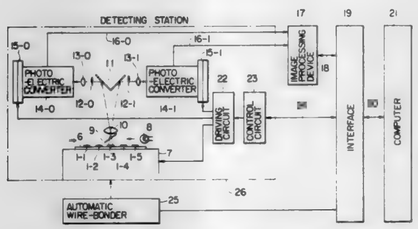
an attenuator receiving the difference signal for selectively attenuating the same as a function of the amplitude of the difference signal; and

means for coupling the attenuated difference signal to the second input of said subtracting means.

4,291,334
SYSTEM FOR DETECTING THE POSITION OF AN OBJECT

Michihiro Mese; Seiji Kashioka, both of Hachioji; Masakazu Ejiri, Tokorozawa; Takafumi Miyatake, Hachioji; Isamu Yamazaki, Tachikawa, and Toshimitsu Hamada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 17, 1977, Ser. No. 797,848
Claims priority, application Japan, May 19, 1976, 51-56519
Int. Cl.³ H04M 7/00; G01B 11/00
U.S. Cl. 358—101 **25 Claims**



1. A system for detecting the position of an object comprising:

first means for photo-electrically converting at least one portion image in said object;

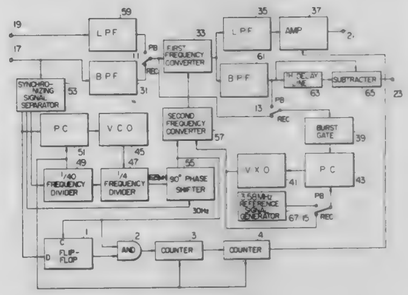
second means connected to said first means and adapted to detect an approximate position of a specific pattern of said portion image photo-electrically converted by said first means by determining the coincidence of said specific pattern with a standard mask pattern; and

third means connected to said first and second means for examining the area of the specific brightness of each of the images of a plurality of regions within said portion image corresponding to said approximate position of the specific pattern detected by said second means to detect the exact position of said specific pattern.

4,291,335
VERTICAL SYNCHRONIZING SIGNAL DETECTOR

Isao Nakagawa, Katsuta, and Norio Minami, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 98,632
Claims priority, application Japan, Dec. 1, 1978, 53-147888
Int. Cl.³ H04N 5/10
U.S. Cl. 358—154 **5 Claims**



4. In a vertical synchronizing signal detector comprising:

(a) a synchronizing signal source for outputting a composite synchronizing signal including a horizontal synchronizing signal and a vertical synchronizing signal, each synchronizing signal having a reference level;

(b) a pulse source for generating a clock pulse of a frequency higher than that of the horizontal synchronizing signal; and

(c) counting means having an input terminal for counting the number of pulses supplied to said input terminal during each recurrent period of horizontal synchronizing signal and for producing a detection signal when the counted number exceeds a predetermined value;

the improvement which comprises:

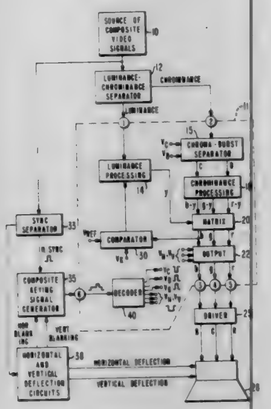
(d) latch means supplied with said composite synchronizing signal and said clock pulse for sampling the level of said composite synchronizing signal at a predetermined incidence of each said clock pulse and holding the thus-sampled level till the next sampling at the predetermined incidence of a succeeding clock pulse, so that a latched signal whose presence substantially corresponds to the presence of the synchronizing signals at the reference level is obtained;

(e) gate means connected between said pulse source and said input terminal of said counting means for allowing said clock pulse to pass therethrough during the presence of said latched signal output from said latch means and for preventing said clock pulse from passing therethrough during the absence of said latched signal.

4,291,336
COMPOSITE KEYING SIGNAL GENERATOR FOR A TELEVISION RECEIVER

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 18, 1980, Ser. No. 113,214
Int. Cl.[3] H84N 5/44
U.S. Cl. 358—160 9 Claims



1. In a color television receiver for processing a composite color television signal containing an image information component occurring during image intervals and an image synchronizing component occurring during image blanking intervals, said synchronizing component including a horizontal synchronizing component and a succeeding color burst component occurring during horizontal image blanking intervals; said receiver including means for providing a periodic horizontal reference pulse representative of said horizontal synchronizing component; means for deriving horizontal and vertical blanking signals from said synchronizing component; keyed signal processing circuits; and apparatus for generating a composite keying signal comprising a first pulse of desired magnitude substantially coincident with said blanking interval and a second pulse superimposed on said first pulse and encompassing the burst component interval, said apparatus comprising:

keyed means responsive to said horizontal reference pulse for producing a gate pulse encompassing said burst interval;

means for coupling said derived horizontal and vertical blanking signals to a common point;

means, operative in common with respect to said derived horizontal and vertical blanking signals, coupled to said common point for clipping amplitude excursions of said derived horizontal and vertical blanking signals to a given level;

means, operative in common with respect to said clipped horizontal and vertical blanking signals, for translating said clipped horizontal and vertical blanking signals to produce horizontal and vertical blanking signals of a desired magnitude;

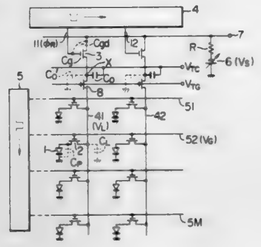
means for combining said burst gate pulse and said translated horizontal and vertical blanking signals to produce said composite keying signal; and

means for coupling said composite keying signal to said keyed signal processing circuits.

4,291,337
ELECTRIC CHARGE TRANSFER APPARATUS

Tooru Takamura, Takatsuki; Sumio Terakawa, Ibaraki; Hirokuni Nakatani, and Izumi Murozono, both of Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Sep. 20, 1979, Ser. No. 77,262
Claims priority, application Japan, Sep. 27, 1978, 53-119588
Int. Cl.[3] H04N 5/30
U.S. Cl. 358—213 8 Claims

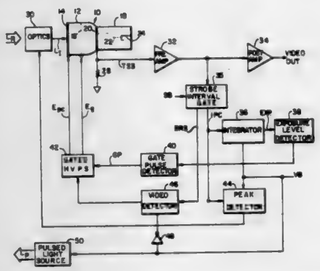


5. An electric charge transfer apparatus for transferring a fluctuating electric charge, said charge having a magnitude controlled by the amount of incident light received by a detector comprising: a capacitance element storing said electric charge, read means for detecting the electric charge on said capacitance element fluctuated in accordance with the radiation of light, and an auxiliary capacitance element provided between said capacitance element and said read means, said auxiliary capacitance element supplying a bias electric charge to said capacitance element, said bias electric charge improving the efficiency of charge transfer from said capacitance element to said read means.

4,291,338
AUTOMATIC EXPOSURE CONTROL FOR PULSED ACTIVE TV SYSTEMS

Larry A. Thomas, Pasadena, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1980, Ser. No. 144,811
Int. Cl.[3] H04N 5/26
U.S. Cl. 358—228 6 Claims



1. An exposure control system for television cameras of the type wherein a pulsed light source provides input illumination, comprising:

image tube means for converting the input illumination to an electrical video signal, said electrical video signal including a photocathode current signal;

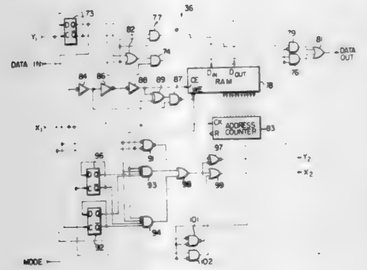
switch means coupled to said image tube means for time-separating said photocathode current signal from said electrical video signal; and

first control loop means connected to said image tube means and said switch means for processing said photocathode current to determine the total instantaneous input illumination upon said image tube means so that said image tube means is gated off when the total instantaneous illumination reaches a predetermined level.

4,291,339
FACSIMILE TRANSCEIVER

Mutsuo Ogawa; Noboru Murayama; Akira Konishi, and Norisada Takeuchi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 15, 1978, Ser. No. 906,013
Claims priority, application Japan, May 16, 1977, 52-56775; May 16, 1977, 52-56777
Int. Cl.[3] H04N 7/12
U.S. Cl. 358—260 9 Claims



1. A facsimile apparatus having a transmitter and a receiver, the transmitter comprising:

a scanner for scanning an original document in two orthogonal directions and producing first binary data signals representing the document; and

an extractor for extracting relevant data from the first data signals and producing second data signals corresponding thereto in a number less than the first data signals; the receiver comprising;

an interpolator for sensing the second data signals and inserting data signals thereinto which correspond to the sensed data signals in a predetermined manner; and

a printer for reproducing the original document in response to the second data signals and inserted data signals;

the second data signals corresponding to logical sums of first data signals in corresponding positions in two adjacent scan lines;

the extractor being constructed to make a first data signal in a scan line logically low if a first data signal in a corresponding position in a preceding scan line which is adjacent to said scan line is logically high.

4,291,340
JET DROP COPIER WITH MULTIPLEX ABILITY

John W. Donahue, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 12, 1979, Ser. No. 75,064
Int. Cl.[3] H04N 1/24; G01D 15/18
U.S. Cl. 358—296 8 Claims

1. Method of document reproduction comprising the steps of:

(1) viewing a picture frame within said document and projecting an image thereof toward an imaging plane,

(2) sensing said image and generating picture signals representing adjacent image columns collectively defining said image,

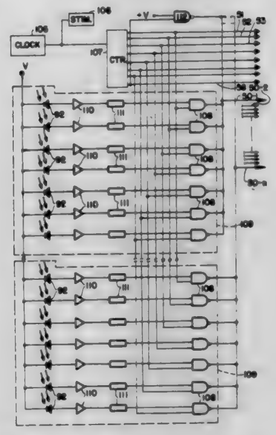
(3) scanning said image in the columnar direction while continuing to generate said picture signals,

(4) sampling picture signals representing image columns within groups of side-by-side image columns,

(5) multiplexing samples of said picture signals in each group to generate a plurality of printing control signals,

(6) forming a spaced arrangement of liquid printing streams corresponding in number to the number of said groups of photosensing elements,

(7) transporting a print receiving member through the printing region of said printing streams,



(8) scanning said streams cyclically sideward and producing a series of contiguous printing tracks,

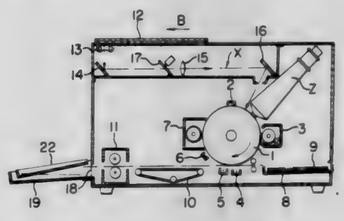
(9) selectively directing said streams along catching paths in accordance with the information content of said printing control signals, and

(10) catching said streams when they are directed along said catching paths.

4,291,341
COMPOSITE RECORDING APPARATUS FOR RECORDING INFORMATION FROM DIFFERENT INFORMATION SOURCES

Tatsuo Yajima, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1979, Ser. No. 66,424
Claims priority, application Japan, Aug. 18, 1978, 53-100012
Int. Cl.[3] G03G 15/00; H04N 1/22
U.S. Cl. 358—300 4 Claims



1. In a recording apparatus for recording information on copy sheets from multiple sources and including a photosensitive medium, an optical system for projecting an image of an original to be copied onto the medium in an optical copying operation, reproducing means for producing an electrostatic latent image on the medium in accordance with an electric information signal in a reproduction operation, and a sheet receiving tray for receiving sheets discharged from the recording apparatus, and wherein receipt by the apparatus of an electric information signal during an optical copying operation

in progress initiates production on the medium of a latent image in accordance with the information signal upon completion of the optical copying operation then in progress, the improvement comprising:

at least a sorting tray movably connected to the receiving tray for receiving discharged copy sheets upon which information in accodance with electric information signals is recorded, and

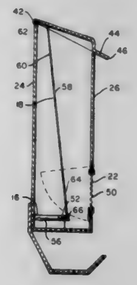
operative means for relatively moving the receiving tray and said sorting tray such that discharged copy sheets of optical copying operations are directed to the receiving tray and discharged sheets of reproduction operations are directed to said sorting tray.

4,291,342

TALKING MAILBOX STRUCTURE AND METHOD

Dermot O'Connor, 2311 N. Vermont Ave., Royal Oak, Mich. 48073

Filed Jun. 14, 1979, Ser. No. 48,349
Int. Cl.³ G11B *5/00*
U.S. Cl. 360—12 **1 Claim**



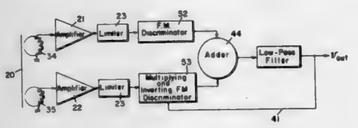
1. A mailbox comprising a substantially rectangular enclosure having a top thereon hinged at one side thereof for opening and closing on pivotal movement about the one side thereof, a message player in the bottom of the enclosure for accepting messages and playing them including a lever type on-off switch pivotally mounted at one end thereof for rotation about the pivotal mounting thereof to turn the message player on and off and resilient means for biasing the on-off switch into an off-position, and means operably associated with the enclosure top and message player for initiating playing of a message by the message player on opening of the mailbox comprising a linear member connected at one end to the top of the enclosure at a distance from the hinged one side thereof and at the other end to the free end of the on-off lever whereby on opening of the mailbox by pivoting of the enclosure top about the one side thereof the on-off lever is pivoted to an on position through the linear member and on closing of the enclosure top the on-off lever is pivoted into an off position by the resilient biasing means, a door in the front of the enclosure adjacent the bottom hinged at the upper side thereof for swinging movement into the mailbox to permit access to the message player having a sound transparent central area, said message player being positioned on the bottom of the enclosure and being of a size to permit free swinging movement of the door into the mailbox, said on-off lever and linear member are positioned adjacent one side of the enclosure so as not to interfere with the swinging movement of the door whereby a message may be provided for a mailman or the like by pre-recording the message on the message player in the mailbox so that the message player is turned on in response to the mailman opening the top of the mailbox, and turned off in response to the mailman closing the top of the mailbox.

4,291,343

FREQUENCY-RATIO APPARATUS

Herbert S. Riddle, Jr., Nine Grant Cir., Sharon, Mass. 02067

Continuation-in-part of Ser. No. 828,425, Aug. 29, 1977, Pat. No. 4,148,078, which is a continuation of Ser. No. 681,759, Apr. 20, 1976, abandoned, which is a continuation of Ser. No. 459,071, Apr. 8, 1974, abandoned. This application Mar. 5, 1979, Ser. No. 17,360
The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.
Int. Cl.³ G11B *5/04*
U.S. Cl. 360—30 **5 Claims**



1. Apparatus for producing a signal which varies as the ratio of the frequency of a first, frequency stream to the frequency of a second, frequency stream, the apparatus comprising:

(a) a first-stream frequency-discriminating means which transforms said first, frequency stream into a third signal of value proportional to the frequency of said first stream,

(b) a second-stream frequency-discriminating means which multiplies said second, frequency stream by a feedback value to form a fourth signal of value proportional to the product of said second-stream frequency times said feedback value,

(c) a combining means which combines the third and fourth signals and generates an output value proportional to the feedback value, and

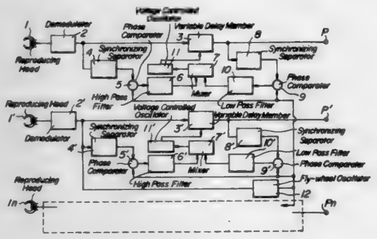
(d) a feedback loop which returns said feedback value to the second-stream frequency-discriminating means, whereby the feedback loop in said apparatus causes the output value to vary in a manner which is proportional to the ratio of the first-stream frequency divided by the second-stream frequency.

4,291,344

TIME BASE CORRECTING SYSTEM

Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,457
Claims priority, application Japan, Nov. 18, 1978, 53-143078
Int. Cl.³ H04N *5/785*; G11B *27/10, 5/02*
U.S. Cl. 360—36 **3 Claims**



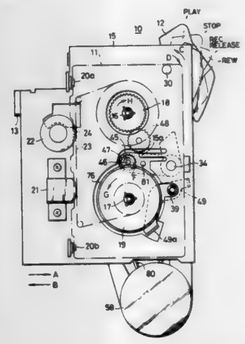
1. In a system for correcting time base for use in a fixed head type magnetic recording and reproducing apparatus, comprising a fixed head for picking up video signals, a demodulator for reproducing the picked video signals, a variable delay member for correcting time base variations of the reproduced video signals, characterized in means for comparing the output signals of the variable delay member with reference signals in order to detect time base variations caused by tape running irregularity in the reproduced video signals and the time base variations caused by changes with time contained in output signals of the variable delay member, a low-pass filter and a mixer for feeding back the time base variation signals to the variable delay member to control the delay member, means for comparing the phase of input signals of the variable delay member with the phase of the reference signals to correct high frequency components of the time base variations which are removed by the low-pass filter, and a high pass filter for supplying the time base variation signals to the variable delay member to control the delay member.

4,291,345

CASSETTE TYPE TAPE RECORDER

Tsunehisa Ohira, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 7, 1979, Ser. No. 73,526
Claims priority, application Japan, Sep. 12, 1978, 53/124993[U]; Sep. 12, 1978, 53/124994[U]
Int. Cl.³ G11B *15/12*
U.S. Cl. 360—62 **11 Claims**



1. In a cassette type tape recorder provided with a record control member manually operated for operating a record circuit when the tape recorder is to be set in the record mode, and a single main control member to be switched over and set in play, stop, and rewind positions, which are arranged in named order the improvement comprising:

a lock mechanism for locking said record control member in the operative position;

a mechanism for setting said main control member in a click stop manner in a specific record release position intermediate the stop position and the rewind position;

a mechanism for releasing said lock mechanism when said main control member is manually set in said specific position; and

a rewind mechanism operated when said main control member passes said specific position and is set at the rewind position.

4,291,346

OPTOELECTRONIC SYSTEM FOR DETERMINING THE POSITION OF A MAGNETIC HEAD TRANSDUCER ON A FLEXIBLE MAGNETIC RECORDING DISC

Harold J. Beecroft, Austin, and Max G. Davis, Jr., Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,142
Int. Cl.³ G11B *21/10, 5/55*
U.S. Cl. 360—75 **15 Claims**

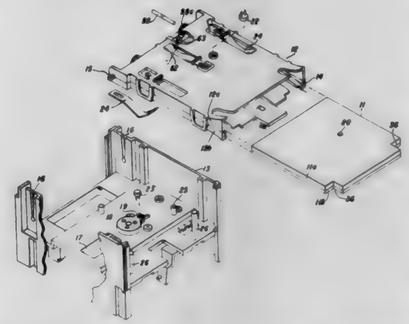
1. A system for reading and/or writing information on a sheet of flexible information storage media, said system comprising:

(a) a cartridge contaning said sheet of information storage media, said cartridge having a first opening for providing access to said media to impart rotational motion thereto and a second opening for providing access to a recording surface of said media to read and/or write information thereon;

(b) rotational means for extending through said first opening to engage said media and impart rotational motion thereto;

(c) a magnetic head transducer disposed in registration with said second opening for reading and/or writing information on the recordng surface of said media; and

(d) an optoelectronic system for optically determining the position of the head transducer with respect to the media in generating an electrical signal indicative thereof, said optoelectronic system having a movable shutter member with a plurality of apertures formed at predetermined



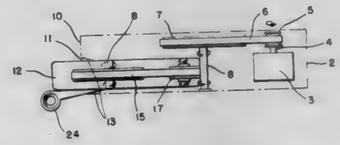
intervals thereon for being moved relative to a stationary mask member, light energy being permitted to pass through selected portions of said mask member in dependence upon the position of said head transducer, said shutter member being comprised of substantially the same flexible material as said media and being formed by cutting said flexible material diagonally with respect to a first axis of the flexible material so that the differences in the thermal and hygroscopic expansion coefficients of the material along the first axis from the corresponding expansion coefficients along a second axis are compensated for and the average thermal and hygroscopic expansion coefficients of the shutter member are substantially the same as those of said media.

4,291,347

EIGHT TRACK TAPE ALIGNMENT INSTRUMENT

James T. Baroni, Box 113, Elton, Pa. 15934

Filed Feb. 27, 1980, Ser. No. 125,143
Int. Cl.³ G11B *15/66, 23/00*
U.S. Cl. 360—93 **5 Claims**



1. An eight track magnetic tape alignment instrument for use with a tape player including a housing having a motor driven capstan therein and formed with a generally rectangular cavity for receiving a generally rectangular tape cartridge having a magnetic tape wound and rotatable therein for conveyance over a cartridge wheel at one end of said cartridge, said wheel and said tape engaging with and being driven by said capstan, comprising an elongated narrow flat body, said body tapering from a relatively thick rear end to a near zero front end, ring-like hollow handle means integrally formed on and projecting

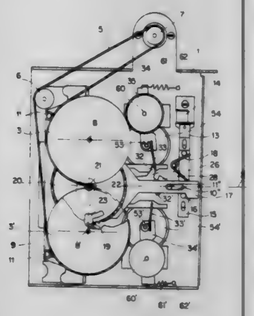
from said rear end whereby said handle means may be grasped between a finger and thumb of the same hand to wedgingly insert said tapered front end under the front of and for tilting the forward end of said cartridge upwardly and pushing said cartridge wheel end magnetic tape inwardly relative to said capstan to create a tighter driving fit therebetween and correct any misalignment of said tape and insure travel thereof at the desired speed to correct malfunctioning.

4,291,348

ACTUATING DEVICE FOR THE ADVANCEMENT OF THE TAPE IN A CASSETTE-TYPE TAPE RECORDING/PLAYBACK APPARATUS

Vittorio Pera, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Jun. 22, 1979, Ser. No. 51,098
Claims priority, application Italy, Jun. 27, 1978, 50036 A/78
Int. Cl.³ G11B *15/26*
U.S. Cl. 360—96.4 **10 Claims**



1. An actuating device for the advancement of the tape in cassette-type tape recording/playback apparatus of the type having a frame, two counter-rotating flywheels driven by a motor through a belt transmission, two capstans each of which is integral and coaxial with one of the flywheels, a pressure roller for each of the capstans, two hub-carrying disks, each driven by a friction wheel, rotatable about a pin fixed onto the frame, and there being defined on said plane of the frame a central axis equidistant from the axes of rotation of the two flywheels and equidistant from the axes of rotation of the two disks, which device is characterized by the fact of comprising: a slide constrained onto the frame so as to be able to translate in a parallel manner with respect to the center axis so as to assume alternatively an operative position and a rest position and urged by return springs toward the rest position; unidirectional motion transmitting means, which transmit the motion of a flywheel to the slide when it is in the rest position, to effect its translation toward the operative position, against the action of said return springs; a latch apt to hold said slide in the operative position, and to free said slide under an unlocking control signal to cause said slide to return to the rest position under the action of said return springs; two rocking levers, each freely hinged on the pin of each disk, each rocking lever rotatably supporting, in a fixed position, spaced from said pin, a pulley integral with a sprocket wheel, each rocking lever being able to effect an angular displacement such as to engage or disengage in entrainment said pulley with or from the flywheel which is located on its same side with respect to the center axis to effect or interrupt an entrainment contact with it, said sprocket wheel being in constant entraining engagement with said friction wheel, each rocking lever having an elastic ledge on the side opposite to said pulley with respect to said pin and being urged toward the disengagement position by spring means; an oscillating guide apt to effect an angular displacement between two set positions around a pivot integral to the frame, located on the center axis; a rocker member swinging about a pin secured to said slide and having an end apt to follow the profile of said guide and to push it toward its other set position, and having also two fingers each engageable with either of said elastic ledges of said rocking levers, depending on the position assumed by said guide, said rocker member having additionally thereon two legs, each engageable with either of the two pressure roller supports, depending on the position assumed by said guide; a magnetic head arm rotatably connected to the slide at one end and elastically connected to the slide at the other end so as to be elastically urged toward a position of engagement with the magnetic tape, of the recording/playback magnetic head secured to said magnetic head arm; two pressure roller supports rotatably connected with said slide, each of which rotatably supports a pressure roller, and urged elastically toward the respective capstan, said supports having a profiled end comprising an abutment for one of the legs of the rocker member so as to prevent, depending on the angular position assumed by the rocker member, an engagement of the pressure roller carried by the respective support, with the respective capstan, whereby, with the guide disposed in a first of its two set positions, the translation of the slide toward its operative position causes the rocker member to angularly move in the direction which results from following the profile of said guide and at the same time said guide be pushed in its second set position, said rocker member coming into engagement with the elastic ledge of either rocking lever, depending on said first set position of said guide, thus angularly displacing said lever, bringing the respective pulley into engagement with the respective flywheel and effecting the rotation of said friction wheel, as at the same time said translating slide actuates the magnetic head arm bringing a pressure roller into engagement with the respective capstan and maintaining the other pressure roller disengaged from its capstan, depending on the direction of rotation effected by said rocking member, so as to entrain and wind up the tape in one of its two directions of advancement, while a return of the slide in its rest position and a further translation of the slide toward the operative position, causes the magnetic tape to be advanced and wound in the direction opposite to the preceding one, depending on said second set position of the guide, and the winding of the magnetic tape at a fast speed is obtained by rotating the magnetic head arm against the action of its return spring, in the operative position of said slide.

4,291,349

DIVERTER MEANS FOR FLEXIBLE DISK PACK AND ASSOCIATED METHOD

Herbert U. Ragle, Thousand Oaks, and Dean DeMoss, Camarillo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 922,026, Jul. 5, 1978, abandoned, which is a continuation of Ser. No. 792,592, May 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 711,628, Aug. 4, 1976, Pat. No. 4,134,143. This application Jun. 5, 1979, Ser. No. 45,718
The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.
Int. Cl.³ G11B *23/02, 25/04*
U.S. Cl. 360—98 **21 Claims**



1. An improved partitionable disk recording subsystem including:

a disk pack comprising a stack of flexible recording disks adapted to be co-rotated and to be partitioned, "end-wise"—that is normal to major disk surfaces—by thrust means projected into the pack, and not "from the side"—that is, not from the direction of a disk edge;—the thrust means being adapted to cooperate with disk structure and comprising further means which preclude impeding of said disk pack structure during rotation thereof; the disk stack being arranged to generate at least one prescribed partition gap, each such gap exposing, at least partially, a respective disk recording surface for transducer operation; and

transducer assembly means adapted to be selectably projected into a selected one of said gaps, with the gap being maintained, partitioningly, while this assembly means presents at least one transducer-head means into transducing relation with the associated disk recording surface;

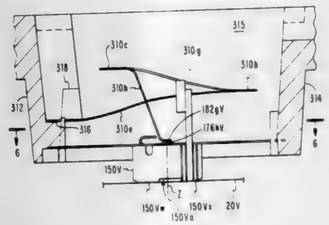
said assembly means including transducer actuator means adapted to selectively reciprocate said transducer head means into, and out of, said associated gap; as well as being operatively associated with at least one diverter means adapted to make initial entry into said partition gap and to maintain this gap during rotation of the pack, while shielding an associated transducer-head means protectingly.

4,291,350

SPRING SUSPENSION FOR MAGNETIC TRANSDUCER

Francis K. King, San Jose, Calif., and Donald J. Wanek, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 974,600, Dec. 29, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 76,719
Int. Cl.³ G11B *5/48, 21.16*
U.S. Cl. 360—104 **6 Claims**



1. A transducer suspension assembly comprising:

a rigid support,

a gimbal spring of thin flexible material attached to said support,

a transducer fixed to and thereby supported and carried by said gimbal spring, and

a backup spring of thin sheet spring material having a first leg fixed at one end thereof to said rigid support, a second leg connected serially with said first leg and folded back with respect to said first leg to permit flexure of said second leg in a pivotal direction opposite the pivotal direction of flexure of said first leg and a third leg connected serially with said second leg and folded back with respect to said second leg and having its distal end backing up said transducer and thereby applying a force on the transducer.

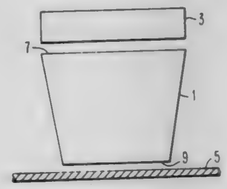
4,291,351

FLUX EXTENDER OR GUIDE FOR MAGNETIC READ HEAD HAVING A MAGNETORESISTIVE FLUX SENSOR

George F. Pennell, Vestal, N.Y.; Ralph D. Silkensen, Tucson, Ariz., and Joseph E. Wallace, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,286
Int. Cl.³ G11B *5/30*
U.S. Cl. 360—113 **1 Claim**

1. A flux guide for a magnetic reading head having a magneto-resistive reading element spaced apart from the area of said head which contacts the reading medium, comprising a wedge shaped flux guide element spaced between said magneto-resistive element and said contact area, said guide element having its wider end closest to said magneto-resistive element, said wider end having a width substantially equal to that of the magneto-resistive element, each edge of said guide element being straight throughout its length, said guide element having a thickness which is constant and substantially greater than the thickness of the magneto-resistive element, said guide element being fabricated from material which is less corrosive than said magneto-resistive element, and having a higher flux density than said magneto-resistive element, said guide element having a width at its narrow end substantially equal to seventy five percent of the width of the wider end of said guide element, and having a length which is less than the minimum distance between flux transitions in the media.

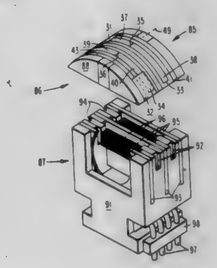


4,291,352

MULTICHANNEL TRANSDUCER STRUCTURE WITH IMPROVED INTERCHANNEL CROSS TALK REJECTION

Beverley R. Gooch, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 27, 1980, Ser. No. 125,001
Int. Cl.³ G11B *5/11, 5/22, 5/28*
U.S. Cl. 360—121 **17 Claims**



1. A multichannel magnetic transducer structure having a plurality of spaced transducing channels, each channel having a pair of magnetic poles defining a transducing gap therebetween, a magnetic back core contiguous with the poles and an associated transducing winding, comprising in combination:

a plurality of members of magnetic material firmly attached to said transducer structure at a front end surface thereof, each member being associated with one magnetic pole of each pair of poles and provided in close proximity thereof to form a low reluctance magnetic path therewith, each member extending substantially across said associated pole in the direction of a recording track width and provided at a distance from both said transducing gap and from an associated magnetic medium to prevent magnetic coupling therewith, respectively, said members of magnetic material being associated alternatively with poles located on the opposite sides of said transducer front end

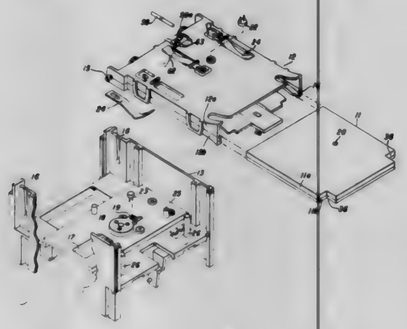
surface on consecutive adjacent channels to form an asymmetrical multichannel magnetic transducer structure.

4,291,353

SYSTEM AND METHOD FOR CLEANING A MAGNETIC HEAD TRANSDUCER

Robert L. Fletcher, Richardson; Richard D. VanLandingham, Garland; Sheldon H. Brown, Garland, and Alan H. Rittman, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,141
Int. Cl.³ G11B 5/41, 23/02
U.S. Cl. 360—128 **20 Claims**



1. A system for reading and/or writing information on a sheet of flexible information storage media, said system comprising:

(a) a sheet of flexible information storage media having opposite major surfaces, at least one of said major surfaces for recording information thereon;

(b) a recording cartridge in the form of a rigid envelope containing said media therein, said cartridge having a first opening for providing access to said media to impart rotational motion thereto and a second opening for providing access to said media for reading and/or writing information thereon;

(c) rotational means extending through said first opening for engaging said media and imparting said rotational motion thereo;

(d) a magnetic head transducer positioned in registration with said second opening for reading and/or writing information on a recording surface of said media; and

(e) an apparatus for cleaning said head transducer to remove debris and other contaminants therefrom, said apparatus comprising:

(i) a portable head cleaning cartridge in the form of a rigid envelope defining an internal chamber which contains a sheet of flexible abrasive material therein, said head cleaning cartridge for replacing said recording cartridge and said media when said head transducer is to be cleaned, said head cleaning cartridge having a first opening for permitting access to said sheet of abrasive material by said rotational means for imparting rotational motion thereto and a second opening for said head transducer to contact said abrasive material when said head cleaning cartridge is inserted into the system, said cartridge having a recess formed on an external surface thereof;

(ii) sensor means having a sensor member for mating with said recess when a head cleaning cartridge is inserted into the system to indicate that a head cleaning cartridge and not a recording cartridge has been inserted; and

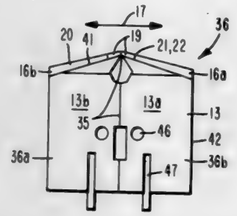
(iii) means for moving said head transducer back and forth across the surface of said abrasive material for a predetermined period while the sheet of abrasive material is being rotated, thereby removing debris and other contaminants from the head tranducer.

4,291,354

EXTENDED LIFE MULTICHANNEL MAGNETIC TRANSDUCER

James P. Chase, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 4, 1979, Ser. No. 45,558
Int. Cl.³ G11B 5/11, 5/22, 5/27, 5/42
U.S. Cl. 360—129 **15 Claims**



1. In a multichannel magnetic transducer assembly having a pole tip plate of a nonmagnetic material, formed of two corresponding half-tip plates abutting at a transducing gap plane, said half-tip plates each including a plurality of machined spaced parallel slots receiving a plurality of magnetic pole tips securely mounted therein, corresponding pole tips of each half-tip plate being mounted in registration with each-other having nonmagnetic transducing gap material disposed between them, a core holder made of a nonmagnetic electrically conductive material, supporting a plurality of spaced magnetic core members with coil means, said core holder having a surface receiving the pole tip plate in mated secured engagement and with the pole tips engaging the core members to form an integral multichannel transducer assembly having a plurality of magnetic transducer circuits, the improvement comprising:

(a) each half-tip plate having a first part (**19**) made of a nonmagnetic, wear-resistant, machineable material, extending in the transducer-to-medium interface area and a contiguous second part (**20**) made of a nonmagnetic, conductive, machineable material, said first part having a first (**21**) and a second (**35**) opposite planar surface, said second part (**20**) having a third planar surface (**22**) confronting with said first planar surface (**21**) of said first part (**20**);

(b) a bond integrally joining said first (**19**) and second (**20**) parts at said respective confronting first (**21**) and third (**22**) planar surfaces;

(c) said plurality of parallel slots (**127**) extending transversely with respect to said integrally joined planar surfaces (**21**; **22**); and

(d) said corresponding half-tip plates (**16***a*; **16***b*) being assembled with their respective first parts (**19**) abutting at said respective second planar surfaces (**35**) forming said transducing gap plane.

4,291,355

PROGRAMMABLE OVERLOAD CIRCUIT

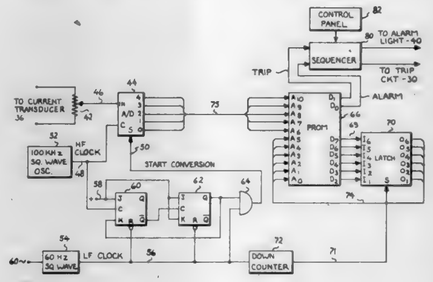
Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Jul. 30, 1979, Ser. No. 61,683
Int. Cl.³ H02H 7/085
U.S. Cl. 361—31 **15 Claims**

1. An overload protective circuit for a load drawing current from a power source and being operable to effect a predetermined operation in response to a thermal overload condition of said load comprising:

(a) digital memory means programmed with discrete multibit data words representative of the temperature characteristic of said load for plural values of load current and being operable in response to an applied address signal corresponding to the value of the present load current and the present load temperature to provide a digital output signal having a predetermined number of bits representative of a predicted load temperature to be reached by said load in a predetermined elapsed time interval and at least one bit adapted to signal a predetermined temperature level being reached by said load;

(b) means providing and coupling a digital signal proportional to the absolute value of the load current to said memory means as a partial address signal;



(c) means coupled to said memory means and being operable to temporarily store said predetermined number of bits of said output signal for said predetermined elapsed time interval and thereafter feed said predetermined number of bits back to said memory means as a partial address signal corresponding to the present load temperature,

said partial address signals being applied concurrently as a composite address signal to said memory means; and

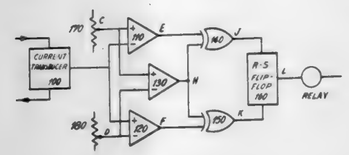
(d) means responsive to said at least one bit of said digital output signal and being adapted to effect said predetermined operation when said predetermined temperature level is signalled.

4,291,356

APPARATUS FOR ANALYZING A PHYSICAL QUANTITY

Serge Mathieu, Ste-Foy, Canada, assignor to h.o.p. Consulab Inc., Quebec, Canada

Filed Aug. 2, 1979, Ser. No. 63,093
Int. Cl.³ H02H 3/26
U.S. Cl. 361—87 **5 Claims**



1. An apparatus for analyzing a physical quantity and for providing an indication of said quantity to an actuating element, comprising:

(a) means providing an input signal representative of said physical quantity;

(b) double adjustment means defining a pair of predetermined reference points, a first of said reference points determining a first value of said physical quantity for which said actuating element is to be energized, a second of said reference points determining a second value of said physical quantity for which said actuating element is to be de-energized;

(c) means comparing said input signal to said first and second values;

(d) a pair of EXCLUSIVE OR gates connected to said comparing means, one of said gates producing a given signal when said element is to be energized and the other of said gates producing a given signal when said element is to be de-energized;

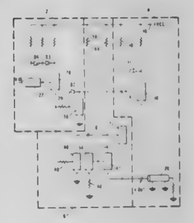
(e) means responsive to said signals from said gates and said comparing means to provide an indication to said actuating element, said indication consisting of: energizing said actuating element, de-energizing said actuating element, or effecting no change to the state of said actuating element.

4,291,357

SHORT CIRCUIT PROTECTION CIRCUIT

Ju-Hi J. Hong, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,734
Int. Cl.³ H02H 9/02
U.S. Cl. 361—101 **7 Claims**



1. A short circuit protection circuit for a line driver comprising:

an output transistor having an emitter output for connection between a source and a load and developing an output voltage;

a first bias resistor connected between the source and the base of said output transistor;

a switching transistor connected between the base of said output transistor and the load for switching the bias of said output transistor for on and off operation thereof;

a voltage tracking transistor coupled across the load and connected to the base of said switching transistor;

a second bias resistor connected between the source and the base of said switching transistor for developing a voltage thereacross which is a function of the output voltage and which is used to bias said switching transistor;

a first and second inverting transistor for providing an input signal in parallel at the base of said switching transistor and at the base of said output transistor, respectively, said first inverting transistor providing a later input signal response at the base of said switching transistor than the signal response at the base of said output transistor thereby disabling said protection circuit during low voltage portions of the output signal rise time.

4,291,358

MAGNETIC VALVE WITH ELECTRONIC CONTROL

Heinrich Dettmann, Niedernhall, and Wolfgang Pfeiffer, Künzelsau-Garnberg, both of Fed. Rep. of Germany, assignors to Bürkert GmbH, Ingelfingen, Fed. Rep. of Germany

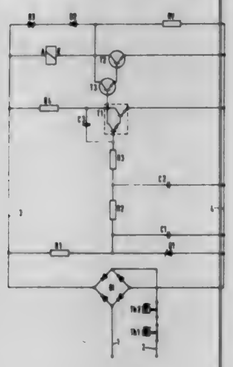
Filed Jul. 6, 1979, Ser. No. 55,930
Claims priority, application European Pat. Off., Jul. 6, 1978, 781000313.2
Int. Cl.³ H01H 47/10
U.S. Cl. 361—154 **5 Claims**

1. An electronic control circuit for a magnetic valve having an energizing coil with two terminals for supplying an energizing current to said electronic control circuit comprising:

two input terminals for connection with said electric power source;

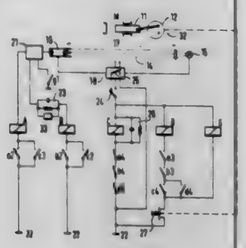
a full wave rectifier having two ac terminals and two dc

terminals, said ac terminals being connected to said input terminals;
a current limiting resistor mounted between one of said dc terminals and one of said coil terminals, the other of said coil terminals being connected with the other of said dc terminals;
a transistor switch, mounted in parallel with said current limiting resistor and having a control terminal;



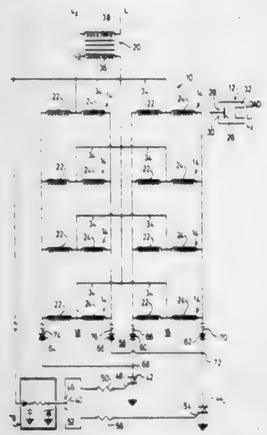
a biassing circuit for biassing said transistor switch into its conductive state during an initial energization period of said valve by providing a biassing current to said control terminal; and
a timing circuit comprising a capacitor and a resistor for defining the duration of said initial energization period, said timing circuit being adapted to deactivate said biassing circuit at the end of said initial energization period.

4,291,359
SAFETY CIRCUIT FOR A POTENTIALLY DANGEROUS MACHINE MONITORED BY LIGHT
Gerhard Dieterle, Gutach, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany
Filed Jun. 29, 1979, Ser. No. 53,242
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831089
Int. Cl.³ G01R *31/00*; H01H *49/00*
U.S. Cl. 361—173 **7 Claims**



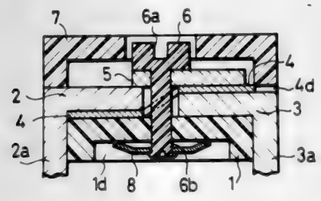
7. Safety circuit for a potentially dangerous machine monitored by light, especially a machine having a drive circuit and which operates in a cycle between a dangerous position and a non-dangerous position and which is made safe by a light barrier or light curtain against intervention, said safety circuit including a first main relay which is energized when the region being monitored is free and which has a make contact located in the drive circuit of the machine, said safety circuit comprising a test circuit including a series of further relays, each having a plurality of compulsorily guided contacts at least one of each of which is disposed in the energizing circuit of at least one of the other relays whereby, during one working cycle of the machine, each relay is switched at least once from an energized to a de-energized condition whereby all relay contacts are switched in sequence at least once from an open to a closed position and wherein the interconnection of the relay contacts prevents a further cycle of machine operation if said sequence is interrupted due to one of the following causes:
(a) any relay contact sticking and
(b) untimely intervention in the monitoring light barrier.

4,291,360
REMOTE CONTROL WIRING SYSTEM
Tony Quant, Toronto, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada
Filed Dec. 26, 1979, Ser. No. 106,840
Claims priority, application Canada, Feb. 23, 1979, 322184
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—189 **8 Claims**



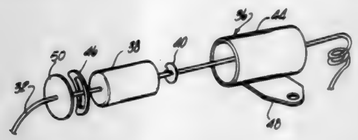
1. In a remote control wiring system for remotely controlling a plurality of high voltage load circuits having a lower voltage wiring sub-system, said sub-system comprising:
a first set and a second set of low voltage relays movable in a first and a second direction to respectively open and close the high voltage loading circuits;
switching means having an inhibit state in which said means precludes a low voltage signal having a positive and a negative portion from energizing said first set and said second set of relays, said means having a first enable state in which it permits said signal to energize said first set and said second set of relays to cause them to move in said first direction, and said means having a second enable state in which it permits said signal to energize said first set and said second set of relays to move them in said second direction; and,
a circuit operable with said switching means for precluding the negative portion of said signal from energizing said first set of relays and for precluding the positive portion of said signal from energizing said second set of relays; said circuit including a first and a second current blocking device each respectively blocking the negative portion of the signal from energizing said first set of relays when said switching means is respectively its first and second enable states, and a third and a fourth current blocking device each respectively blocking the positive portion of said signal from energizing said second set of relays when said switching means is respectively in its first and second enable states.

4,291,361
TRIMMER CAPACITOR
Takashi Shirakawa, Morioka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jun. 9, 1980, Ser. No. 157,943
Claims priority, application Japan, Jun. 12, 1979, 54-799657[U]
Int. Cl.³ H01G *5/06*
U.S. Cl. 361—293 **3 Claims**



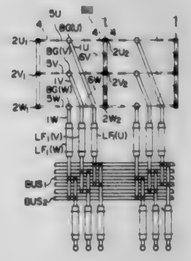
1. In a trimmer capacitor having an insulating substrate, a ground stator plate member disposed over half of the surface of the insulating substrate, a hot stator plate member disposed over the other half of the surface of the insulating substrate having its upper surface engaged with a dielectric film, and a substantially semicircular rotor plate member adapted to slide on both the stator plate members while being electrically connected with the ground stator plate member;
a trimmer capacitor characterized in that one half of said dielectric film is interposed between said hot stator plate member and said rotor plate member, while the other half of said dielectric film is interposed between said insulating substrate and said ground stator plate member.

4,291,362
FEED THROUGH CAPACITORS AND METHOD OF INSTALLING
Deane B. MacMillan, 1119 Wheaton Dr., Troy, Mich. 48099, and Carolyn L. Donigan, 685 Hickory Heights Dr., Bloomfield Hills, Mich. 48013
Filed Dec. 10, 1979, Ser. No. 102,063
Int. Cl.³ H01G *4/42*
U.S. Cl. 361—302 **4 Claims**



4. An offset winding feed through capacitor comprising:
a central insulated lead line;
a contact disc-retainer clip comprising a generally flat element having prongs formed thereon adapted to penetrate the insulated lead line and to be crimped in position on said lead line;
a capacitor winding assembled with said lead line extending therethrough, with one end face of said winding in abutment against the crimped contact disc-retainer clip;
a metallic housing enclosing said winding and contact disc-retainer clip; and
an electrically conductive clip positioned against an opposite face of said capacitor winding in contact with the interior of said housing.

4,291,363
GAS-INSULATED SWITCHGEAR APPARATUS
Kazuaki Oishi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 15, 1980, Ser. No. 150,098
Claims priority, application Japan, May 31, 1979, 54-67601; Jun. 1, 1979, 54-69284
Int. Cl.³ H02B *5/02*
U.S. Cl. 361—333 **6 Claims**



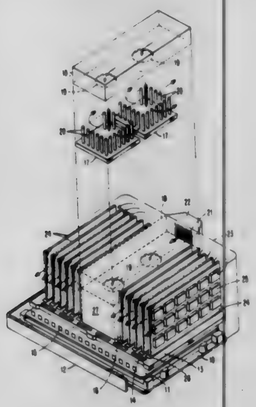
1. A gas-insulated switchgear apparatus comprising:
(a) three-phase gas-insulated main buses extending substantially along a straight path;
(b) line feeder switching units corresponding to the three phases respectively, said line feeder switching units being arranged to extend in a horizontal direction orthogonal with respect to the axial direction of said gas-insulated main buses and connected at one end thereof to said gas-insulated main buses respectively;
(c) three entry gantries of respectively different heights for anchoring three-phase AC power transmission lines respectively while maintaining a required vertical open-air insulation distance between said power transmission lines, said entry gantries being spaced apart from each other by a predetermined open-air insulation distance in said horizontal direction and disposed in such a relation that a taller one of them anchors a higher one of said power transmission lines and is located at a position remoter than that of the next adjacent one in the incoming direction of said power transmission lines;
(d) bushings connected to the other end of said three-phase line feeder switching units respectively, each of said bushings being connected with the corresponding entry gantry of the same phase while being spaced apart from the next adjacent one by a predetermined open-air insulation distance in said horizontal direction;
(e) means for anchoring said power transmission lines to said entry gantries in such a relation that the higher one of said power transmission lines is anchored to the taller one of said entry gantries; and
(f) incoming lines electrically connecting said power transmission lines of the three phases to the external terminals of said bushings of the corresponding phases respectively.

4,291,364
AIR-COOLED HYBRID ELECTRONIC PACKAGE
Frank E. Andros, Binghamton; Ghazaros K. Kerjilian; Bert E. Stevens, both of Vestal, and Reinhold E. Tomek, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1979, Ser. No. 106,966
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—384 **4 Claims**

1. A hybrid electronic package assembly which comprises:
a chamber housing a plurality of first circuit modules mounted on a planar printed circuit board;
a plurality of printed circuit cards arranged vertically on opposite sides of said chamber and having a plurality of second circuit modules mounted thereon;

a top air plenum located over said chamber and having bottom openings located directly over each of said first circuit modules;

means supplying a flow of air into said top plenum, said air flowing through said openings and impinging against the top of each of said first circuit modules; and



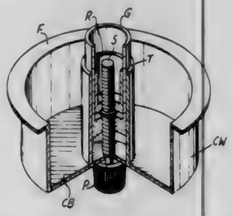
a back air plenum connected to the back of said chamber directing the air flow out of said chamber, through said back plenum, and across said circuit cards and said second circuit modules.

4,291,365

SIGNAL LANTERNS FOR OPTIONAL COLORED LIGHT EMITTANCE

Amar N. Tandon, P.O. Box 189 Aishbagh, and Ram B. Bhasin, 3/2 Talkatora Colony, both of Lucknow, India

Filed Jan. 28, 1980, Ser. No. 115,791
Int. Cl.³ F21V 9/00
U.S. Cl. 362—281 **8 Claims**



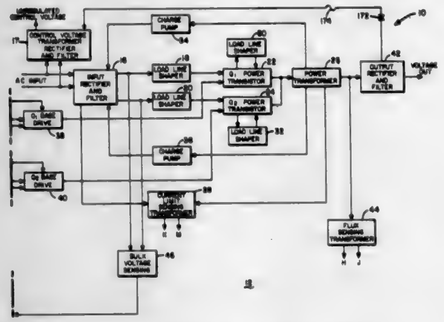
1. Attachment for a lamp, particularly for a signalling lamp, said lamp including a reflector, such as a flashlight, said attachment adapted to be mounted opposite light source, such as bulb, of the lamp, and comprising two co-axial substantially transparent tubular bodies having mutual guide means so as to be movable along their common axis, said tubular bodies being held in support-cum-guide means adapted to be mounted on face (reflecttor side) of the lamp and rotary means such as herein described to advance on rotation thereof (said rotary means) in one direction of one or the first tubular body to envelope the light source, such rotation causing retraction of the second tubular body if it already enveloped the light source and un-covering of the latter, while rotation of the rotary means in the other direction causing said first tubular body to retract and uncover the light source and the second tubular body to advance and cover the said light source, each said tubular body or at least that portion of each as will cover the light source being of different colour.

4,291,366

SWITCHING REGULATED POWER SUPPLY

Hilding E. Nelson, Scandia, Minn., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 24, 1979, Ser. No. 78,352
Int. Cl.³ H02M 7/217
U.S. Cl. 363—17 **15 Claims**



8. A switching regulated power supply comprising:

(a) power head means for converting an alternating current voltage to direct current voltage, including an input rectifier and filter capacitor means for developing an unregulated direct current voltage from said alternating current voltage input, a pair of power transistors connected to said input rectifier and filter capacitor means, a power transformer connected to said power transistors, and an output rectifier and filter connected to said power transformer;

(b) charge pump means for equalizing voltage charge on said input rectifier and filter capacitor means, coupled between said power transformer and said input rectifier and filter capacitor means;

(c) control logic means for alternately switching said power transistors and a control voltage means for supplying power to said control logic means; and

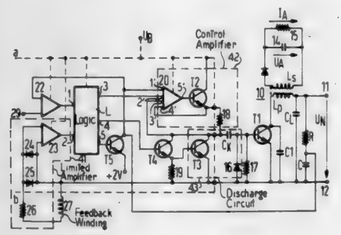
(d) power feedback means for regulating the direct current output voltage from said power head means, connected between said power head means and said control voltage means, whereby said power feedback means provides control voltage power to said control voltage means.

4,291,367

POWER SUPPLY CIRCUIT WITH A SELF-OSCILLATING BLOCKING OSCILLATOR

Roman Haas, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,674
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849619
Int. Cl.³ H02M 3/335
U.S. Cl. 363—21 **4 Claims**



1. A self-sustaining blocking oscillator power supply circuit,

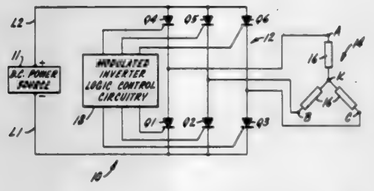
comprising: a primary circuit formed of a DC supply voltage connected to a switching transistor through a primary of a transformer; rectifying means connected to a secondary of the transformer for producing a DC output voltage; regulating circuit means connecting to a control input of the switching transistor for controlling the switching transistor as a function of a comparison voltage derived from the primary circuit; an integration means connected parallel to the DC supply voltage for producing a periodic, approximately sawtooth-shaped signal which substantially corresponds to a current flowing in the primary circuit at the primary of the transformer, the sawtooth-shaped signal driving the regulating circuit means for triggering of the switching transistor; and the integration means comprising an RC member connected to be discharged via a switch means for synchronous operation with the switching transistor.

4,291,368

PULSE-WIDTH MODULATED INVERTER SYSTEM AND METHOD

Raymond J. Yarema, Glen Ellyn, and George H. Studtmann, Mount Prospect, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 30, 1979, Ser. No. 25,417
Int. Cl.³ H02M 1/12
U.S. Cl. 363—41 **20 Claims**



1. A pulse-width modulated inverter system for providing three-phase power to a load at a preselectable output frequency and a preselectable output voltage, said inverter system including voltage control apparatus comprising in combination:

a power supply having positive and negative supply terminals;

switching means for operatively connecting said power supply to a load having A, B and C output terminals; and

modulated control means for activating said switching means to produce waveforms at said output terminals having at least one pulse of a variable width disposed symmetrically about the center point and only in the middle 60° portion in each half cycle thereof.

4,291,369

VOLTAGE MULTIPLIER AND DRIVER CIRCUIT

Paul E. Hochstrate, Bristol, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Sep. 19, 1979, Ser. No. 77,258
Int. Cl.³ H02H 7/25
U.S. Cl. 363—60 **8 Claims**

1. A voltage multiplier and driver circuit energized by a DC supply voltage source comprising:

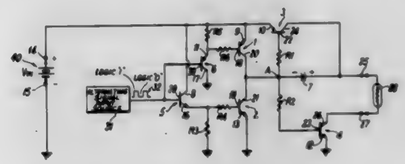
means for providing an alternating control signal;

first and second switch means connected in series across the DC supply voltage source each being responsive to the alternating control signal for alternately connecting first and second terminals of the DC supply voltage source to the connection between said first and second switch means defining a junction;

a capacitor connected between a first terminal for a load device to be energized and the common junction between said first and second switch means;

third switch means connected between the first terminal of the DC supply voltage source and a second junction between the capacitor and the first terminal for a load device and responsive to said control signal for periodically connecting the first terminal of the DC supply voltage to said second junction; and

fourth switch means connected between the second terminal of the DC supply voltage source and a second terminal for a load device and responsive to said control signal for periodically connecting the second terminal for a load device to the second terminal of the DC supply voltage source; whereby during each alternate half cycle of the



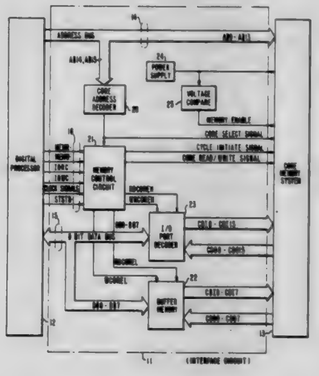
alternating control signal the second and third switch means are rendered conductive to connect the capacitor in parallel circuit relationship across the DC supply voltage source and thereby charge the capacitor to the voltage of the supply voltage source with the first and fourth switch means being maintained off, and during the remaining alternate half cyles of the control signal the first and fourth switch means are rendered conductive with the second and third switch means turned off to thereby connect the DC supply voltage source and the capacitor in its charged state in series circuit aiding relationship across the load device terminals.

4,291,370

CORE MEMORY INTERFACE FOR COUPLING A PROCESSOR TO A MEMORY HAVING A DIFFERING WORD LENGTH

Larry L. Charles, Fallston, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1978, Ser. No. 936,299
Int. Cl.³ G06F 13/00, 5/00
U.S. Cl. 364—200 **4 Claims**



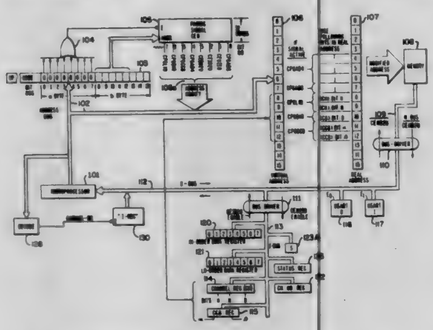
1. An interface circuit for coupling a digital processor having an address bus, an N bit data bus and a data word length of N bits to a memory having 2 N bit data input and data output buses, an address bus and a data word length of 2 N bits where N is an integer, comprising:

(a) means for coupling said address bus of said processor to said address bus of said memory;

(b) an N bit bidirectional buffer coupling the data bus of said

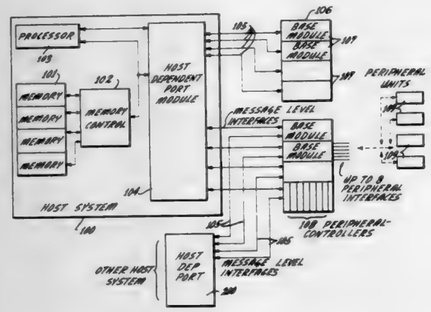
digital processor to the data input and data output buses of said memory;
(c) means responsive to the execution of an output instruction by said digital processor to transfer a data word having N bits from said processor into said bidirectional buffer;
(d) means responsive to the execution of a store instruction by said digital processor to transfer said data word having N bits stored in said bidirectional buffer and a data word having N bits from said processor into said memory as a data word having 2 N bits at a storage location determined by an address signal present on said address bus of said processor;
(e) means responsive to the execution of a read instruction by said digital processor to read from an address specified by an address signal present on said address bus of said processor, a data word having 2 N bits from said memory and transfer a data word having N bits to said ditigal processor and a data word having N bits into said bidirectional buffer; and
(f) means responsive to the execution of an input instruction by said digital processor to transfer a data word having N bits from said bidirectional buffer into said processor whereby;
(g) said interface circuit couples said N bit data bus of said processor to said 2 N bit data input and data output buses of said memory.

4,291,371
I/O REQUEST INTERRUPT MECHANISM
Thomas O. Holtey, Newton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 2, 1979, Ser. No. 315
Int. Cl.[3] G06F 7/00
U.S. Cl. 364—200 **6 Claims**



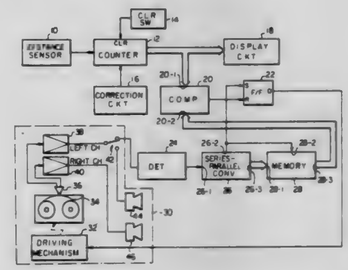
1. In a computer system having a microprocessor (μP) for executing channel routines and subroutines, a U-bus coupled to said microprocessor, a main memory, an M-bus coupled to said main memory, a bus-driver coupled to said M-bus and said U-bus for enabling and disabling information flow between said M-bus and said U-bus, an instruction register (I-register) coupled to said U-bus for storing instructions which initiate or obviate interrupt operation and a plurality of communication devices also coupled to said U-bus for generating interrupt requests, an interrupt apparatus for processing interrupt requests, said interrupt apparatus comprising:
(a) first means for generating signals forming a predetermined address at the end of every channel subroutine;
(b) second means coupled to said μP for interrupting said μP, said second means being enabled by said predetermined address signals;
(c) third means for deriving signals forming the next sequential address from said predetermined address, said next sequential address signals used for enabling said I-register to transfer said instructions to said U-bus and for disabling said bus-driver, whereby a normal memory read data path including said M-bus and said bus-driver is disabled; and
(d) fourth means coupled to said I-register and to said plurality of communication devices for intercepting an interrupt request from one of said plurality of communication devices and for forming said instructions in said I-register.

4,291,372
MICROPROCESSOR SYSTEM WITH SPECIALIZED INSTRUCTION FORMAT
Brian K. Forbes, Huntington Beach, and Robert D. Catiller, Garden Grove, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Jun. 27, 1979, Ser. No. 52,350
Int. Cl.[3] G06F 3/04
U.S. Cl. 364—200 **7 Claims**



1. A universal-type microprocessor system which cooperates with an application-dependent logic module to form a peripheral-controller capable of handling data transfers between main memory of a host computer and a plurality of peripheral terminal units which can be either "word-oriented" or "byte-oriented", and wherein said application-dependent logic module provides external register means having bus connections to said plurality of peripheral terminal units and to said host computer, and wherein said application-dependent logic module further includes an external memory for storage of programs related to control of said peripheral terminal units and for temporary storage of data undergoing transfer, and wherein said application-dependent logic module further includes control logic means for communicating with and controlling said external register means, said external memory and communicating with a decoder-controller in said microprocessor system, the said microprocessor system comprising:
(a) data processing means including:
(a1) an Arithmetic Logic Unit providing an output to a shift logic circuit and to a byte-swap circuit;
(a2) said shift logic circuit providing output to an I/O bus, said shift logic circuit functioning to rotate one or more bits of a word being processed to the right or to the left;
(a3) said byte-swap circuit providing output to said I/O bus, said byte-swap circuit functioning to exchange the sequential positions of the higher order byte and the lower order byte of a received two-byte word;
(b) said I/O bus providing connection lines from said data processing means to said external register, to said external memory, to an accumulator register means, and to an addressing means;
(c) addressing means receiving input data from said I/O bus and storing addresses useful for accessing data from an internal memory or said external memory, said addressing means including:
(c1) a program counter storing consecutive addresses of data located in said internal program memory;
(c2) a memory reference register connected to said decoder-controller for storing addresses of data located in said external memory, and including:
(c2-1) a memory address bus which connects to the said external memory;
(c2-2) and wherein a dedicated non-address bit (byte-select bit) in said memory reference register being set to signal said decoder-controller to initiate a byte-swap operation in said byte-swap circuit, or when not-set, to pass data without a byte-swap operation;
(c2-3) a bus connection from said memory reference register to said decoder-controller;
(c3) an address register in said decoder-controller connecting by means of an address bus to said accumulator register means, which include a plurality of accumulator registers, for selection of an addressed accumulator register as a destination for data or as a source of data;
(d) said internal program memory for storing program instructions and data words, said internal memory being addressed from said program counter and providing instruction words and data, via an instruction bus, to an instruction register and memory operand register;
(e) register means for temporary storage of data, said register means including;
(e1) said plurality of addressable accumulator registers which provide an output to the input of said Arithmetic Logic Unit, said accumulator registers receiving input data words from said I/O bus;
(e2) a memory operand register for receiving operand data from said internal program memory via an instruction bus or from said external memory via a memory data bus;
(e3) an instruction register for receiving instruction words from said internal program memory via said instruction bus and providing instruction words to said decoder-controller;
(f) said instruction decoder-controller receiving instruction signals from said instruction register, and including incoming and outgoing control signal lines connected to said data processing means, to said addressing means, to said register means, to said internal and external memory means, to said external registers and said control logic means, said instruction decoder-controller further including:
(i) circuitry responsive to each data field of an instruction word for executing the requirements of each of said data field;
(g) said external memory data bus for carrying data from said external memory to said instruction register and said memory operand register;
(h) an instruction word format in said internal program memory which includes:
(h1) a basic function instruction field for initiating transfer of the contents of a selected register to another selected register or for selecting an Arithmetic Logic Unit operator or a program stack operator;
(h2) a variant function field for initiating selection of:
(i) an addressed external register for a GET operation or a PUT operation;
(ii) an Arithmetic Logic Unit OP code or
(iii) a condition test or program stack operator;
(h3) a destination field for:
(i) placement of data resulting from GET and Arithmetic Logic Unit operators;
(ii) placement of data resulting from PUT and Program Stack operators;
(h4) a source field for initiating selection of data for:
(i) an Arithmetic Logic Unit or PUT operation;
(ii) a GET operation;
(iii) a Program Stack operation;
(h5) a bit field for parity information;
(h6) a single bit field "M" for signaling said decoder-controller to select either said program counter or said memory reference register as an address source for operands of the current instruction;
(h7) a single bit field "C" for signaling said decoder-controller to initiate or not initiate the said Arithmetic Logic Unit to copy its output into said memory reference register.

4,291,373
NAVIGATIONAL INFORMATION ANNOUNCING SYSTEM FOR MOTOR VEHICLE
Masanori Mizote, Yokosuka; Kiyoshi Yamaki, Yokohama; Takashi Oka, Tokyo; Hideoki Matsuoka, Yokohama; Hiroyuki Nomura, Yokohama, and Takaaki Mogi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jan. 19, 1979, Ser. No. 4,992
Claims priority, application Japan, Jan. 20, 1978, 53-5619
Int. Cl.[3] G06F 15/50; G08G 1/12; G11B 5/00
U.S. Cl. 364—443 **8 Claims**



1. A navigational information announcing system for a motor vehicle comprising:
(a) first means for producing a first signal indicative of a measured distance travelled by a motor vehicle;
(b) a tape player for reproducing first and second data respectively pre-recorded on a magnetic tape, said tape player including a tape driving mechanism, said first datum including plural pieces of distance information along a predetermined course, said second datum including plural pieces of navigational information in audio form;
(c) second means responsive to said first datum, said second means producing a second signal upon termination of reproduction of one of said plural pieces of distance information and a third signal indicative of a reference distance expressed by said one piece of distance information;
(d) third means for producing a fourth signal when said measured distance indicated by said first signal has a predetermined relationship with respect to said reference distance indicated by said third signal;
(e) fourth means for controlling said tape driving mechanism of said tape player, said fourth means causing said tape driving mechanism to establish a pause operation in response to said second signal and to re-establish a normal playback operation in response to said fourth signal so as to reproduce one of said pieces of navigational information;
said second means comprising:
(a) a detector responsive to said first datum which is prerecorded in the form of binary coded data;
(b) a series-parallel converter responsive to the output data of said detector, said series-parallel converter producing a binary coded datum in parallel form, said series-parallel converter producing a memory control signal when series-parallel conversion of a predetermined number of bits is completed; and
(c) a memory responsive to the output data of said series-parallel converter, said data being stored in response to said memory control signal.

4,291,374

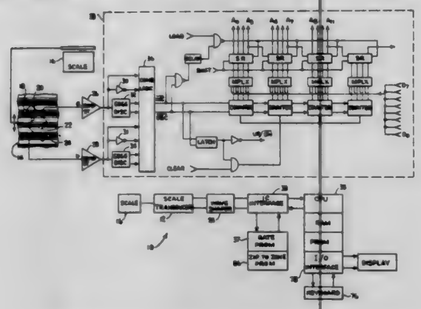
MAILING SYSTEM

Daniel F. Dlugos, Huntington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 927,705, Jul. 24, 1978, Pat. No. 4,179,747, which is a division of Ser. No. 750,534, Dec. 14, 1976, Pat. No. 4,131,946. This application Jun. 5, 1979, Ser. No. 45,791

Int. Cl.[3] **G01G** *3/00;* **H03K** *21/00*

U.S. Cl. 364—466 **2 Claims**



1. An interface for providing information transfer channels between a transducer generating cyclic signals and a processing unit, the interface being operatively connected to said processing unit for facilitating transfer of data thereto, said interface including logic means coupled to the transducer for generating pulses in response to the cyclic signals, counter means and means operatively interconnecting the logic means and the counter means, the interface further including register means adapted to receive counter information from said counter means and control means adapted to prevent the transfer of counter information to the register means during propagation of a count through the counter means from the logic means, the control means comprising timing means coordinated with count propagation time of the counter means for storing a time interval and means monitoring the cyclic signals, said monitoring means being adapted to actuate the timing means when said propagation of said count through said counter means occurs, inhibiting means for inhibiting the counter information from being transferred to said register means until a predetermined time interval after completion of said count propagation has elapsed.

4,291,375

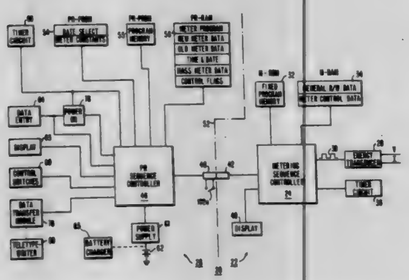
PORTABLE PROGRAMMER-READER UNIT FOR PROGRAMMABLE TIME REGISTERING ELECTRIC ENERGY METERS

Thomas G. Wolf, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1979, Ser. No. 25,514

Int. Cl.[3] **G01R** *21/00;* **G06F** *15/56, 15/20*

U.S. Cl. 364—483 **22 Claims**



1. A programmer-reader unit for a programmable time registering AC electric energy meter including a transducer producing pulse signals related to an electric energy quantity to be measured, a clock producing real time data, a memory containing program control data, said program control data including constant data items representative of metering rates and variable data items representative of real time categories, a meter sequence controller comparing said real time data to said variable data items and selecting a constant data item in response to said comparison, said metering sequence controller accumulating said pulse signals in response to said selected constant data item, and an external data communications interface responsive to said sequence controller, said programmer-reader unit comprising:

first memory means including memory locations for storing meter programming input data items transmittable to said meter;

second memory means including memory locations for storing meter output data items receivable from said meter, said data items including said accumulations of said metering pulses;

timer circuit means generating regularly occurring timing signals;

means generating, independently of said meter, reference real time data in response to said timing signals and storing said reference time data at a predetermined data item memory location of said first memory means;

bidirectional communication interface means for communicating with said external data communications interface of said meter, said communications including the transfer of the data items of said program control data from said meter to said memory locations of said second memory means for meter output data items and the transfer of the meter programming input data items from said memory locations of said first memory means to said meter thereby replacing predetermined ones of said data items of said program control data utilized by said meter including the real time data items so as to program said meter with said reference time data during each transfer of data between said meter and said unit;

data comparison means for measuring time differences between the real time data items received from said meter and stored in said second memory means and said reference real time data produced by said means generating said reference real time data; and

error indicating means responsive to a predetermined value of time difference measured by said data comparison means.

4,291,376

DIGITAL ENERGY MONITOR

David I. McCahill, Champion, Pa., assignor to Three Rivers Enterprises, Inc., Pittsburgh, Pa.

Filed Aug. 8, 1979, Ser. No. 64,789

Int. Cl.[3] **G06F** *15/20;* **G01R** *21/06;* **G05B** *15/00;* **H02J** *3/14*

U.S. Cl. 364—483 **6 Claims**

1. A digital apparatus for generating a log of energy usage for instant recall and analysis comprising:

(a) a microprocessor having an interrupt capability with associated read-only memory, read/write (RAM) memory, data, address, and control buses;

(b) a timer connected with said microprocessor to provide continuous real-time/date data;

(c) a keyboard and keyboard encoder connected with said microprocessor for establishing certain initial conditions in the read/write memory and for selecting certain displays and functions;

(d) a display and display controller connected with said microprocessor for displaying data;

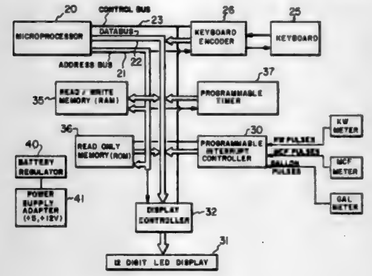
(e) an interrupt controller connected with said microprocessor, said interrupt controller having a plurality of input terminals connectable with the pulse outputs of energy metering devices;

said read-only memory permanently programmed

(i) with a task to cause the microprocessor to have a continuously updated date and time stored at a selected location in the read/write memory,

(ii) with a task to process each interrupt corresponding to each pulsed input to add one unit to a read/write memory location corresponding to the date and the particular input terminal, and

(iii) with a task to select and display the contents of the memory locations corresponding to date or dates and particular input terminals.



4,291,377

APPARATUS FOR MEASURING ELECTRICAL POWER

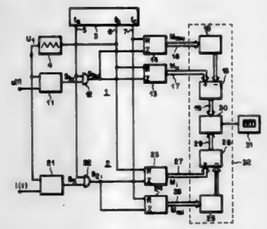
Gernot Schneider, Baar, and Benedikt Steinle, Zug, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG., Zug, Switzerland

Filed Nov. 2, 1979, Ser. No. 90,734

Claims priority, application Switzerland, Nov. 13, 1978, 11634/78

Int. Cl.[3] **G01R** *11/32*

U.S. Cl. 364—483 **11 Claims**



1. An apparatus for measuring power delivered at an alternating voltage by an alternating current to a load comprising in combination:

sampling means for periodically sampling the alternating voltage and the alternating current delivered to the load at selected sampling points,

converter means, including impulse generator means, for converting the sampled points to first and second sequences of a plurality of pulses, the number of pulses in each sequence being substantially proportional to the instaneous values of the alternating voltage and of the alternating current, respectively,

first counting means for counting the first sequence of pulses,

second counting means for counting the second sequence of pulses,

averaging means for determining the average value of said first and second sequence of pulses, respectively, over at least one period of the alternating current,

subtractor meansn for obtaining difference values between said average value, and said first and second sequences of pulses, respectively,

multiplier means for multiplying said respective difference values, to obtain successive product values,

integrating means for integrating said successive product values over said at least one period so as to measure the power delivered to said load, whereby any error in determining said average value is eliminated from the power measurement.

4,291,378

STEAM POWER PLANT AND CONTROL ELEMENT FOR THE PLANT

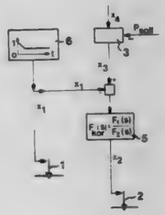
Karel Skala, Windisch, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Mar. 16, 1979, Ser. No. 21,309

Claims priority, application Switzerland, Mar. 21, 1978, 3057/78

Int. Cl.[3] **F01D** *19/00, 17/00*

U.S. Cl. 364—494 **12 Claims**



1. A steam turbine plant comprising:

an intake valve;

a by-pass valve; live-steam generation means for supplying steam to both the intake and the by-pass valves;

regulating circuit means for controlling the opening and closing of both the intake and the by-pass valves in accordance with first and second transfer functions, respectively; and,

a correction element for one of the by-pass and the intake valves, said correction element having a transfer function which modifies one of said first and second transfer functions such that the modified transfer function is approximately equal to the other of said first and second transfer functions.

4,291,379

METHOD AND AN INSTALLATION FOR REGENERATING MOLDING SANDS

Renzo Cappelletto, 57 rue de Foussard, Tavers, 45190 Beaugency, and Jean Willame, 66 avenue de Ferriere, 59131 Rousies, both of France

Filed Nov. 1, 1979, Ser. No. 90,449

Claims priority, application France, Nov. 10, 1978, 78 31830

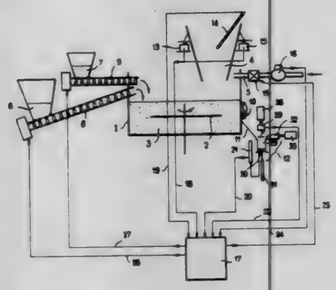
Int. Cl.[3] **G06F** *15/46*

U.S. Cl. 364—506 **4 Claims**

2. An installation for automatically regenerating molding sands comprising a pug mill adapted to receive the spent sand, means for automatically and intermittently withdrawing a cylindrical test sample of sand from the spent sand contained in said pug mill, means for automatically and intermittently measuring the compactibility of the test sample by determining the reduction of height of said sample under the action of a predetermined force, means for automatically measuring the compressive strength of the test sample which has been subjected to the precedent measurement, means for determining the quantity of water which must be added to the spent sand for its regeneration by the following relation:

$$V=P[K(ASV-ASM)+BT]$$

where V is the volume of water, P is the weight of sand, K is a coefficient which varies between 0 and about 0.2 according to the nature of the sand, ASV is the contemplated degree of compactibility, ASM is the measured compactibility, BT is a correction factor for temperature and varies between 0 and about 2%, means for determining the quantity of bentonite



which must be added to the spent sand for its regeneration, by calculating an index of cohesion Ic of the sand by means of the relation: $Ic=Rec/(ASM)$, where Rec is the compressive strength of the sand, ASM is the measured compactibility, said index Ic is compared with the contemplated index Ic and the quantity of bentonite required is determined so as to adjust the measured index Ic to the contemplated index Ic, and means for adding to the spent sand a quantity of water and bentonite as determined above.

4,291,380

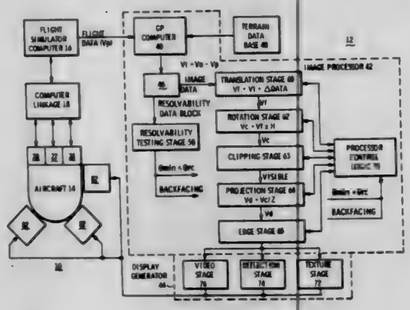
RESOLVABILITY TEST AND PROJECTION SIZE CLIPPING FOR POLYGON FACE DISPLAY

Michel Rohner, San Jose, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed May 14, 1979, Ser. No. 38,617

Int. Cl.³ G09B 9/08; H04N 7/18

U.S. Cl. 364—522 **12 Claims**



1. An image system for providing selected image data to a display device which displays polygon object faces as viewed from an observation point in simulated relative motion with the polygon object faces, by combining object data defining the positions of the vertices of the polygon object faces with the observer data defining the position and orientation of the observation point relative to the object faces, and eliminating the data representing polygon object faces having a display size less than a minimum predetermined size, the image system comprising:

object data base means for providing the object data;

resolution standard means for defining the minimum predetermined size;

resolvability means responsive to the object data and to the observer data for determining the display size of each polygon face, and responsive to the resolution standard means for eliminating from the flow of the object data representing polygon faces the data representing those faces having a size less than the minimum predetermined size; and

image data processing means responsive to the polygon object data remaining in the flow of object data and to the observer data, for providing control signals and display data to the display device.

4,291,381

PROCESS FOR RUNNING WIDTH ADJUSTMENT

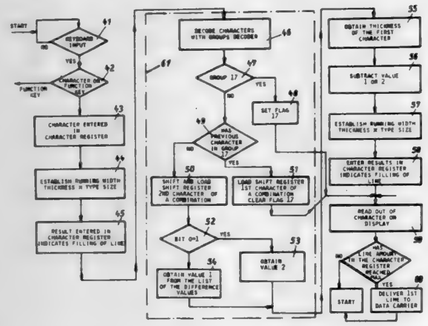
Helmut Siebeck, Berlin, Fed. Rep. of Germany, assignor to H. Berthold, AG., Berlin, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 66,097

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2836317

Int. Cl.³ G06F 15/20

U.S. Cl. 365—523 **10 Claims**



1. A process for running width adjustment of adjacently positioned characters in a photocomposing machine to enhance the visual impression of the composed material, said process comprising the steps of:

assigning the characters of a font into a plurality of groups in accordance with their suitability for running width adjustment;

establishing the possibility and amount of running width adjustment to be provided for each combination of adjacently positioned character groups;

determining the running width of each character to be photocomposed,

subjecting the characters to be photocomposed to classification into the aforesaid groups;

ascertaining, by reference to the group of the first character and the group of the second character of an adjacently positioned pair, the amount of running width adjustment to be provided; and

applying the adjustment to the running width of one of the adjacently positioned characters.

4,291,382

RELATIVE MANIFOLD VACUUM OF AN INTERNAL COMBUSTION ENGINE

Gary G. Full, Ellington, and Rinaldo R. Tedeschi, Newington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,803

Int. Cl.³ G01L 23/24; G06F 15/20; G01M 15/00

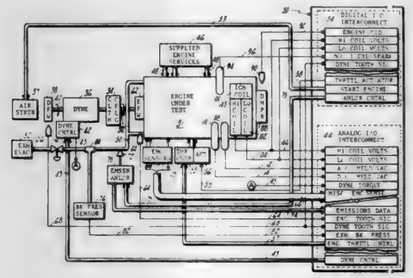
U.S. Cl. 364—551 **7 Claims**

1. Apparatus for measuring the relative manifold vacuum contribution between cylinders of an internal combustion (IC) engine connected through its crankshaft to the drive shaft of an engine load and running at a selected speed, comprising:

position sensing means, adapted to be disposed along the drive shaft for providing crankshaft position signals indicative of the instantaneous angular position of the engine crankshaft at successive angle intervals within the engine cycle, each angle interval being less than that associated with a cylinder sub-cycle;

manifold vacuum sensing means, adapted to be disposed on the engine for providing signals indicative of the actual engine manifold vacuum; and

signal processing means, responsive to said crankshaft posi-



tion signals and said actual engine manifold vacuum signals and having memory means for storing signals including signals definitive of the engine cycle,

for sampling and storing in said memory means, successive values of said actual manifold vacuum signals in response to the presense of each of said crankshaft position signals, to provide an indication of the sub-cyclic fluctuations in manifold vacuum over at least one engine cycle, and

for comparing the magnitudes of each of said sub-cyclic fluctuations occurring in a common engine cycle with each other to provide signal indications of the relative manifold vacuum contribution between cylinders.

4,291,383

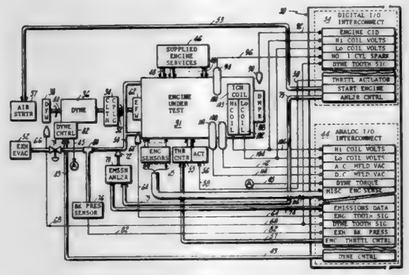
SPARK PLUG LOAD TESTING FOR AN INTERNAL COMBUSTION ENGINE

Rinaldo R. Tedeschi, Newington, and Gary G. Full, Ellington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,680

Int. Cl.³ G01R 21/00; G06F 15/20; G01M 15/00

U.S. Cl. 364—551 **5 Claims**



1. Apparatus for indicating the efficiency of the ignition system of an internal combustion (IC) engine connected at its crankshaft to the drive shaft of an engine load, the ignition circuitry providing secondary voltage signals as the spark plug voltage signal to each engine cylinder in each engine cycle, in the presence of associated ignition circuitry primary voltage signals, comprising:

first voltage sensing means for sensing the presence of each primary voltage signal and for providing a Lo-Coil voltage signal indicative thereof;

second voltage sensing means for sensing the actual magnitude of each secondary voltage signal and for providing a Hi-Coil voltage signal indicative thereof;

position sensing means, responsive to the interconnected engine crankshaft and load drive shaft, for providing engine crankshaft position signals indicative of the actual crankshaft angular position at successive crankshaft angle intervals in each engine cycle, said crankshaft angle intervals being less than that associated with a cylinder sub-cycle; and

signal processing means, responsive to said Lo-Coil voltage signals, said Hi-Coil voltage signals, and said crankshaft position signals, and having memory means for storing signals including specification signals defining the required crankshaft position of each cylinder spark plug voltage signal in each engine cycle in terms of actual crankshaft angle value,

for sampling, in response to each of said Lo-Coil voltage signals in a common engine cycle, and registering in said memory means, each of said Hi-Coil voltage signals and said crankshaft position signal appearing simultaneously therewith, and

for providing ratio signals of the actual magnitude of each of said Hi-Coil voltage signals sampled in a common engine cycle divided by the average value of all of said Hi-Coil voltage signals sampled in the same engine cycle, said ratio signals providing in combination an indication of the relative spark efficiency of the engine.

4,291,384

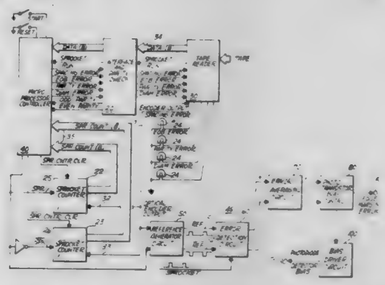
TAPE GAUGE SYSTEM

James M. Burton, Seattle; Robert L. Miller, Bothell, and Jansey D. Tieden, Puyallup, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 16, 1980, Ser. No. 150,512

Int. Cl.³ G06K 5/04

U.S. Cl. 364—560 **3 Claims**



1. A system for dynamically testing the dimensional accuracy of punched tape comprising in combination:

a tape reader having a plurality of error condition lights;

said tape reader having an optical encoder output signal;

a first binary counter having a count directly proportional to sprocket hole diameter;

a second binary counter having a count directly proportional to space between holes;

said optical encoder output signal coupled to said first and second binary counters;

a microprocessor controller coupled to said first and second binary counters for examining the contents of said first and second binary counters and comparing the respective values obtained from said first and second binary counters with predetermined limits, said microprocessor controller further coupled to said tape reader for stopping said tape

reader and illuminating one of said plurality of error condition lights in the event of the detection of an out of tolerance condition; and,

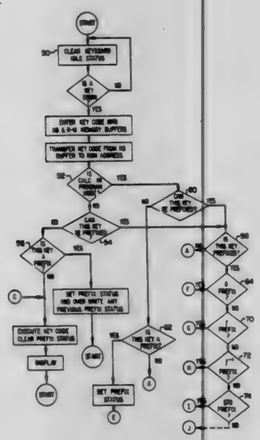
an edge margin error detection circuit responsive to said optical encoder output signal for providing a signal at an output terminal representative of edge margin error.

4,291,385

CALCULATOR HAVING MERGED KEY CODES

Thomas E. Osborne, San Francisco, and Richard K. Stockwell, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 425,341, Dec. 17, 1973, Pat. No. 4,099,246.
This application Oct. 14, 1977, Ser. No. 842,134
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—709 **2 Claims**



1. A method for storing a sequence of instructions entered via a keyboard into a programmable electronic calculator, the method comprising the steps of electronically:

detecting the actuation of a key on the keyboard;

generating a key code representing the key actuated in response to the detection of the actuation;

deciding whether a status indicator has been set in a status register;

if no status indicator has been set, deciding whether the key code of the key actuated can be merged with a subsequently generated key code; if it can be merged, setting a status indicator and storing the key code; if it cannot be merged, storing the key code; and

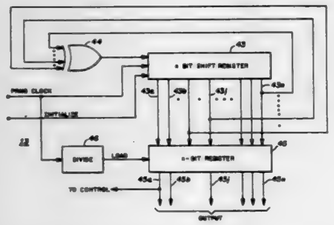
if a status indicator has been set, deciding whether the key code of the key actuated can be merged with a previously generated and stored key code; if it can be merged, generating a merged key code representing both the previously generated and stored key code and the key code of the key actuated, erasing the status indicator and the previously generated and stored key code, and storing the merged key code; if it cannot be merged, storing the key code of the key actuated and erasing the status indicator.

4,291,386

PSEUDORANDOM NUMBER GENERATOR

David S. Bass, Floral Park, N.Y., assignor to Sperry Corporation, New York, N.Y.

Division of Ser. No. 965,122, Nov. 30, 1978, Pat. No. 4,222,514.
This application Feb. 4, 1980, Ser. No. 118,180
Int. Cl.³ H03B *29/00*
U.S. Cl. 364—717 **1 Claim**



1. A pseudorandom number generator comprising:

shift register means having tap means at each stage thereof, data input means and clock input means;

K bit modulo two adder means coupled at input means thereof to K selected tap means of said shift register means and at output means thereof to said data input means of said shift register means;

register means with each stage thereof coupled correspondingly to said tap means of said shift register means, said register means having tap means at each stage thereof and clock input means; and

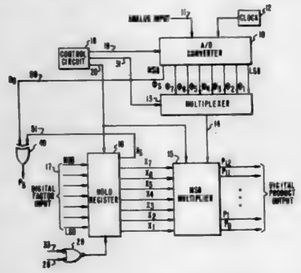
means coupled between said clock input means of said shift register means and said clock input means of said register means for providing a clock pulse to said clock input means after a preselected number of clock pulses have been applied to said clock input means of said shift register means whereby after each clock pulse applied to said register means a data code is available at said tap means of said register means.

4,291,387

ANALOG TO DIGITAL CONVERSION WEIGHTING APPARATUS

James E. Buchanan, Bowie, Md., and Marshall L. Field, Jr., Cedar Rapids, Iowa, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1979, Ser. No. 17,664
Int. Cl.³ G06F *7/52*
U.S. Cl. 364—757 **2 Claims**



1. In apparatus for converting an analog signal to a multi-bit digital word that is the product of the digital signal and a selected weighting factor, that includes:

an analog to digital converter operative to generate a plurality of information bits that corresponds to the input signal in sequence from the most significant to the least significant bit of a word, and a digital multiplier operative to sequentially process each of said bits in sequence from the most significant to the least significant bit of the word to generate a multi-bit word product wherein the improvement comprises:

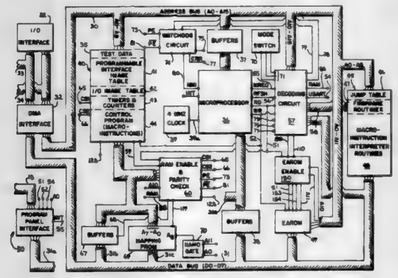
control means including a multiplexer connecting the converter and multiplier operative to transfer from the converter to the multiplier each of the bits in succession to process in succession the most significant to the least significant bit prior to the completion of the conversion of the entire multi-bit digital word, and including a holding register operative to apply bits of a digital word to the multiplier to weight the converted bits.

4,291,388

PROGRAMMABLE CONTROLLER WITH DATA ARCHIVE

Donald R. Ecker, Jr., Euclid; Ernst Dummermuth, Chesterland, and Odo J. Struger, Chagrin Falls, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 20, 1978, Ser. No. 971,593
Int. Cl.³ G06F *11/16*
U.S. Cl. 364—900 **12 Claims**



1. An improved digital controller of the type having a random-access read/write memory which stores control data that is used in controlling a machine, wherein the improvement comprises:

an erasable, read-mostly memory, for nonvolatile storage of control data;

loading means coupled to both the read/write memory and the read-mostly memory for transferring control data from the read/write memory into the read-mostly memory to form a non-volatile master copy;

data-checking means coupled to the read/write memory for verifying the control data in the read/write memory; and

reloading means, coupled to both the read/write memory and the read-mostly memory and responsive to a failure of the data-checking means to verify the control data in the read/write memory, for transferring the master copy of control data from the read-mostly memory into the read/write memory.

4,291,389

MEMORY SYSTEM USING FAULTY BUBBLE MEMORY DEVICES

Dolan H. Toth, Circle Pines, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 20, 1979, Ser. No. 96,099
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—15 **2 Claims**

1. A word organized, fault tolerant bubble memory system comprising:

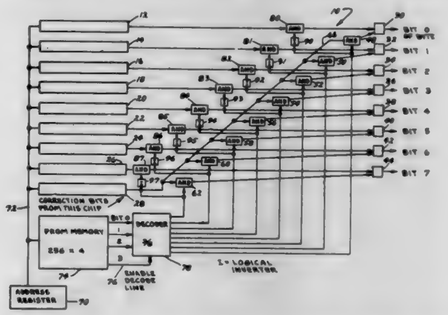
a plurality of bubble memory chips, each having the same number of minor loops as is required for a nominal memory size, equivalent in number to the word size of the memory system,

a correction bit bubble memory chip,

memory means responsive to input addresses for identifying defective bit locations in said plurality of bubble memory chips,

means for providing addresses to said memory means and to said memory system,

means for substituting, in reading and writing operations, correction bits from said correction bit bubble memory chip for bits in any one of said plurality of bubble memory chips in response to output signals from said memory means identifying a defective bit location, wherein said means for substituting is comprised of a decoder associated with an output address from said memory means for identifying a particular one of said plurality of bubble



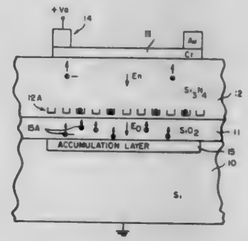
memory chips having a defective location and logic gate means which in response to a signal from said decoder connects said correction bit chip with the appropriate input or output of said memory system in reading and writing operations, said logic gate means being comprised of AND gates associated with each of said bubble memory chips, each of said AND gates receiving a common data bit input from said correction bit bubble memory chip and a unique input from said decoder for gating said input in response to an enable signal from said decoder together with AND gate means for disabling the output from any one of said bubble memory chips in response to an inverted enable signal from said decoder when a bit from said correction bit chip is to be gated.

4,291,390

ANALOG SOLID STATE MEMORY

Ernest R. Stern, Concord; Richard W. Ralston, Bedford; Daniel L. Smythe, Jr., Carlisle, and Barry E. Burke, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 28, 1979, Ser. No. 80,098
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—183 **26 Claims**



1. An analog signal storage device comprising

a plurality of storage elements, each comprising a semicon-

ductor substrate having at least two layers, at least one of said layers having a non-linear current vs. field conductivity characteristic and at least one other layer being capable of storing carrier charges therein;

a charge-coupled device having a plurality of storage wells, each associated with one of said plurality of storage elements;

means for applying an analog signal to said charge-coupled device so that a charge is temporarily stored in each of the storage wells thereof, the charge in each of said storage wells being proportional to the amplitude of a portion of said analog signal which is applied to said charge-doupled device;

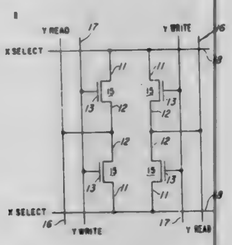
storage control means for transferring the stored charges in each of the temporary storage wells of said charge-coupled device to said storage elements so that controlled amounts of carrier charges are stored in said at least one other layer of each of said storage elements, the controlled amounts of carrier charges stored in each said storage element being linearly proportional to the stored charges associated therewith and being stored for a time period longer than the time period of storage in said storage wells.

4,291,391

TAPER ISOLATED RANDOM ACCESS MEMORY ARRAY AND METHOD OF OPERATING

Pallab K. Chatterjee, Dallas, Tex., and Geoffrey W. Taylor, Murray Hill, N.J., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 14, 1979, Ser. No. 75,574
Int. Cl.³ G11C *11/40, 7/00*
U.S. Cl. 365—184 **8 Claims**



1. A method of operating an X-Y array of semiconductor random access memory cells by writing information into, storing information in, and reading information out of a single cell in the array without disturbing the state of other cells in the array, wherein each memory cell has a single depletion mode, buried channel, metal-oxide-semiconductor transistor with a source, drain, and gate, the array being arranged in rows and columns of memory cells, all the drains in each column of the array being connected to a Y-read line for that column, all the sources in each row of the array being connected to an X-select line for that row, and all the gates in each column of the array being connected to a Y-write line for that column, said method comprising:

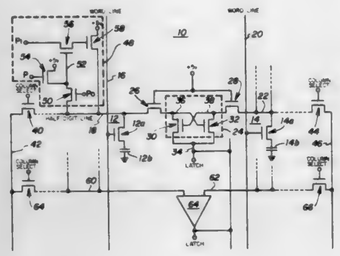
applying appropriate signals to a particular X-select line and a particular Y-write line, and sensing the signal on a Y-read line corresponding to the selected single cell while maintaining the potential at a high reference voltage magnitude V_{DD} on all other X-select lines and while maintaining the potential at an intermediate voltage magnitude V_{GG} less than V_{DD} but greater than a low reference voltage magnitude V_{SS} on all other Y-write lines.

4,291,392

TIMING OF ACTIVE PULLUP FOR DYNAMIC SEMICONDUCTOR MEMORY

Robert J. Proebsting, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Feb. 6, 1980, Ser. No. 119,292
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—203 **5 Claims**



1. A method for writing data into a memory cell of a dynamic semiconductor memory circuit comprising the steps of:

driving a digit line associated with the memory cell to at least a first voltage in response to an external command to write data into the memory cell, said first voltage less than the supply voltage for the memory circuit;

activating a pullup circuit after said digit line has been driven to at least said first voltage, to elevate the voltage on said digit line to approximately said supply voltage; and

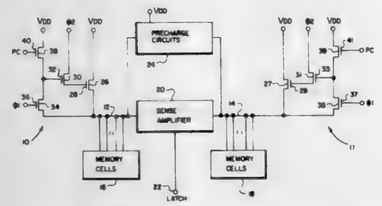
coupling said digit line to the memory cell to charge the memory cell to approximately said supply voltage.

4,291,393

ACTIVE REFRESH CIRCUIT FOR DYNAMIC MOS CIRCUITS

Dennis R. Wilson, Boise, Id., assignor to Mostek Corporation, Carrollton, Tex.

Filed Feb. 11, 1980, Ser. No. 120,268
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **48 Claims**



1. Circuitry for selectively refreshing a capacitive node to a high logic state as a function of a preestablished voltage level on that node comprising:

a first transistor having a channel connected between a source of a drain supply voltage and said node, and a gate;

a second transistor having a source connected to said first transistor gate, a drain. and a gate;

a third transistor having a source connected to said node, a drain connected to said second transistor gate, and a gate; and

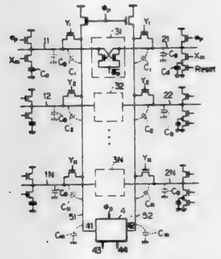
control means for sequentially: precharging said second transistor gate to a first potential near said drain supply voltage; applying a reference potential to said third transistor gate, said reference potential being less than one threshold above a minimum voltage representing a high logic state; and, applying a second potential near said drain supply voltage to the drain of said second transistor.

4,291,394

SEMICONDUCTOR MEMORY DEVICE HAVING FLIP-FLOP CIRCUITS

Masao Nakano; Tomio Nakano; Yoshihiro Takemae, and Katsuhiko Kabashima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Oct. 22, 1979, Ser. No. 87,389
Claims priority, application Japan, Oct. 26, 1978, 53/132049
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—206 **3 Claims**



1. A semiconductor memory device having flip-flop circuits, comprising:

a first bit lines arranged on one side of the flip-flop circuits;

second bit lines arranged on the other side of said flip-flop circuits, the potential of the second bit lines being opposite to the potential of the first bit lines;

a first data bus line operatively connected to and crossing perpendicularly to said first bit lines;

a second data bus line operatively connected to and crossing perpendicularly to said second bit lines;

a first dummy line arranged adjacent to and in parallel with said first data bus line and connected to said second data bus line; and

a second dummy line arranged adjacent to and in parallel with said second data bus line and connected to said first data bus line,

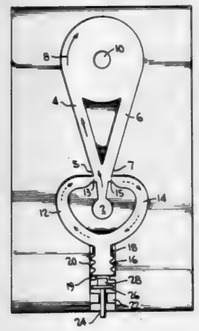
whereby noise generated by the coupling between said first and second bit lines and said first and second data bus lines is cancelled.

4,291,395

FLUID OSCILLATOR

Allen B. Holmes, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1979, Ser. No. 64,451
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—83 **6 Claims**



1. A pulsing device having an inlet and alternate paths for fluid flow and means for generating pulses in a fluid entering said inlet and flowing through said device, comprising fluid feedback oscillating means for directing the fluid flow from said inlet to said alternate paths, and vortex valve means in communication with said paths for alternately increasing and decreasing resistance to fluid flow received from said alternate paths by reversal of vortical flow to generate said pulses,

pulse regulating means for increasing the frequency of oscillation of said fluid feedback oscillating means above a threshold level precluding reversal of vortical flow for preventing generation of said pulses,

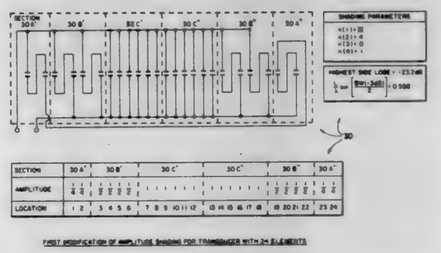
said pulse regulating means comprising means for regulating the frequency of oscillation of said fluid feedback oscillating means below said threshold level to control the rate at which said pulses are generated.

4,291,396

DISCRETE AMPLITUDE SHADING FOR LOBE-SUPPRESSION IN DISCRETE ARRAY

Gordon E. Martin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1980, Ser. No. 114,780
Int. Cl.³ H04R *1/32*
U.S. Cl. 367—154 **10 Claims**



1. A transducer array, generally linear, of a plurality of discrete transducer elements, which are shaded discretely, the array comprising a plurality of parallel combinations of the transducer elements, one end of each combination being connected to a common connection, the other end of each combination being connected to another common connection, the parallel combinations being distributed, that is, positioned, symmetrically about the middle of the array, wherein:

the transducer elements of the two parallel combinations which are positioned at each end of the array are connected serially to each other.

4,291,397

MANUAL DATE ADVANCE MECHANISM FOR A WATCH

Paul Wuthrich, Watertown, and Frank Mascia, Bristol, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

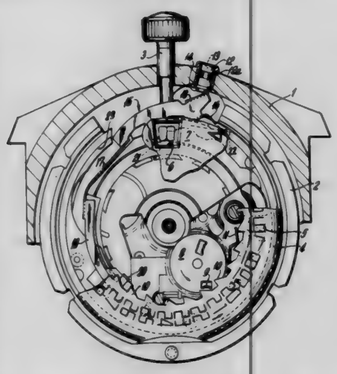
Filed Oct. 15, 1979, Ser. No. 85,168
Int. Cl.³ G04B *19/24*
U.S. Cl. 368—35 **4 Claims**

1. In a calendar watch of the type having a frame, a date ring with internal teeth rotatably mounted in said frame, means for periodically rotatably advancing said date ring, and spring detent means for holding the date ring in position when advanced, the improvement comprising:

a manual actuator disposed adjacent said frame and having a portion movable with respect to the frame, and

a date change lever pivotably mounted on the frame, said lever including integral therewith: a first integral spring portion having a first contact area cooperating with said frame and biasing the lever to a rest position, a second contact area defined by said lever disposed to cooperate

with the movable portion of said actuator to cause said lever to pivot, an integral arm having a tab portion adapted to cooperate with said date ring internal teeth when the lever is pivoted toward an operating position, and a second integral spring portion adapted to flex when said integral arm and tab are pivoted toward an operating



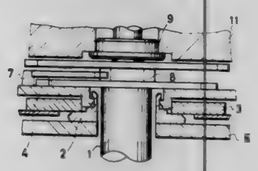
position, said lever being arranged to move said tab into engagement with said internal teeth when the actuator is operated, said second spring portion being arranged to hold the tab in position as the first spring portion returns the lever to rest position whereby the date ring is rotatably advanced.

4,291,398

CALENDAR DISPLAY WHEEL GUARD CONSTRUCTION OF TIMEPIECE

Shigeyuki Masuda, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,280
Claims priority, application Japan, Jul. 25, 1978, 53-90833
Int. Cl.³ G04B *19/24, 19/04*
U.S. Cl. 368—37 **5 Claims**



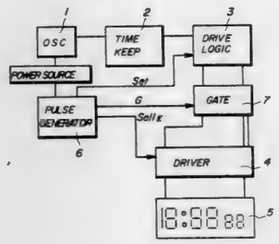
1. In a calendar timepiece: a dial plate; a calendar display wheel; a back plate, wherein said dial plate, said calendar display wheel and said back plate each have a central opening therethrough and are positioned facing each other in the named order with their central openings aligned; and calendar display wheel guard means mounted on said back plate for rotatably mounting said calendar display wheel and for spacing said dial plate from said calendar display wheel, wherein said calendar display wheel guard means has a bore extending therethrough aligned with the respective central openings of said dial plate, said calendar display wheel, and said back plate, said calendar display wheel guard means has a first end face surrounding the opening of the bore at a first end of said calendar display wheel guard means, said first end face of said display wheel guard means abutting said dial plate for maintaining said dial plate spaced from said calendar display wheel, and no portion of said calendar display wheel guard means extends into the central opening through said dial plate.

4,291,399

INITIAL BLEACH IN AN ELECTROCHROMIC DISPLAY

Shigeki Imai, Tenri, and Hiroaki Fukuda, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1979, Ser. No. 52,219
Claims priority, application Japan, Jun. 28, 1979, 53/79371
Int. Cl.³ G09F *9/00;* **G04C** *19/00*
U.S. Cl. 368—82 **11 Claims**



1. An electrochromic display drive system comprising:
an electrochromic display device having at least two segment electrodes;
driver circuit means for developing a coloration signal and a bleaching signal for coloring and bleaching, respectively, one of said at least two segment electrodes of the electrochromic display device;
selection circuit means for selecting at least one of said segment electrodes for coloring or bleaching by said driver circuit means;
a power supply source for activating said selection circuit means and said driver circuit means; and
an initial condition stabilizing means, including
a detection means for developing a detection output when the supply of power from said power supply source is initiated, said detection output energizing said selection circuit means, the operative condition of said selection circuit means remaining fixed in response to said detection output, said detection means including a differentation circuit connected to said power supply source and devloping a differentiated output signal, and
a monomultivibrator for developing said detection output of a predetermined time length in response to said differentiated output signal from said differentiation circuit;
a bleaching signal developing means for bleaching the display on said electrochromic display device in response to said detection output derived from the detection means while the operative condition of said selection circuit means remains fixed.

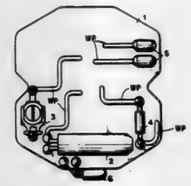
4,291,400

ELECTRONIC TIMEPIECE

Katsuhiko Komiyama, and Toshio Hiruta, both of Tokyo, Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 831,509, Sep. 8, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,364
Claims priority, application Japan, Sep. 14, 1976, 51-119494
Int. Cl.³ G04C *19/00, 23/02*
U.S. Cl. 368—84 **11 Claims**

1. A liquid crystal display timepiece module including electronic components comprising:
(a) a liquid crystal display cell;
(b) a support frame made of insulating plastic and supporting said liquid crystal display cell;
(c) a protective cover of insulating plastic adjacent to said support frame;
(d) a circuit substrate disposed between said liquid crystal display cell and said protective cover, said circuit substrate including a wiring pattern mounted on one surface thereof and connected to said electronic components;
(e) a plurality of electrode terminals formed on the under surface of said circuit substrate and electrically connected to said wiring pattern;
(f) a plurality of contact switches operable by an external control member being fixed on one surface of said protective cover between said protective cover and said circuit substrate, each of said contact switches including a terminal portion ending at an outer periphery of said protective cover;
(g) a resilient contact formed to each of said contact switches, said resilient contact mounted on said protective cover in electrical contact with said electrode terminals; and
(h) joining means for joining said liquid crystal display cell, said support frame, said circuit substrate and said protective cover to form the module.

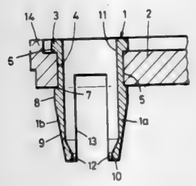


4,291,401

DEVICE FOR SECURING A WATCH DIAL TO A WATCH-MOVEMENT PLATE

Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach, Switzerland

Filed Nov. 21, 1979, Ser. No. 96,394
Claims priority, application Switzerland, Nov. 30, 1978, 12276/78
Int. Cl.³ G04B *19/06*
U.S. Cl. 368—236 **4 Claims**



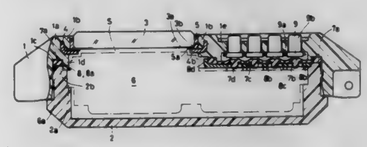
1. A device for securing a watch dial having two or more integral dial-feet to a watch-movement plate including opposing substantially planar faces and a like number of holes for receiving said dial-feet, of the type having a sleeve inserted through each of said holes, each said sleeve including a first portion sunk in said plate and a second portion projecting from the face of said plate intended to be situated remote from said dial, said second portion being formed of a plurality of claws separated from one or more slots, wherein the improvement comprises:
said sleeves are made of substantially non-deformable metal,
a cylindrical bearing segment included in each said first portion and situated within the associated one of said holes,
two radially outwardly extending substantially non-deformable shoulders, preformed before insertion of the sleeve into the respective hole, bounding said bearing segment and each having a planar face which abuts a respective substantially planar face of said plate, the exterior of said second portion being frustoconical in shape, the diameter of the smaller base thereof, most remote from said plate, being less than the diameter of said holes,
said one or more slots extending from the end of said second portion remote from said plate to within said bearing segment, and
said one or more slots being of sufficient length and width to permit said claws to bend resiliently toward the interior of said sleeve, thereby allowing the one of said non-deformable shoulders nearest said second portion to enter the associated one of said holes during insertion of said sleeve.

4,291,402

PLASTIC WATCH CASE

Koichi Nakajima, and Hidetaka Tsuchiya, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 141,976
Claims priority, application Japan, May 25, 1979, 54-69586[U]
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—276 **6 Claims**



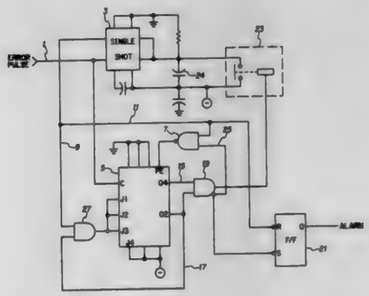
1. A glass mounting structure for watches comprising a watch case made of plastic, said watch case having an opening, a flange member made of metal plate embedded in a portion of said watch case surrounding said opening, said flange member comprising an axially extending annular wall portion embedded in said watch case along an inside wall of said opening and an inside flange portion which is laterally projected into said opening, a packing engaged in the inside wall of said opening and a glass engaged on an inner side of said packing and supported by said flange portion.

4,291,403

DIGITAL IMPLEMENTATION OF PARITY MONITOR AND ALARM

John W. Waddill, Plano, and Bahram Pourmand, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 22, 1979, Ser. No. 41,452
Int. Cl.³ G06F *11/30;* **H04B** *17/00*
U.S. Cl. 371—5 **2 Claims**



1. An error monitor and alarm generator for providing an alarm signal when an error rate exceeds a first established threshold and for maintaining the alarm signal for as long as the error rate exceeds a second established threshold, the error rate being indicated by the accumulation of an error count,

during a fixed period of time, of error pulses generated by an error code checker that checks periodically placed error codes on a digital data stream, the error monitor and alarm generator, comprises:

single shot multivibrator means for generating a time period, and for providing an enabling signal during the time period, the single shot multivibrator being triggered by the occurrence of a first error pulse;

presettable counter means for accumulating the error count which is updated at the occurrence of each error pulse;

detector circuit means for detecting when the error count accumulated by the presettable counter means exceeds a first preselected number of counts, and for providing an activate alarm signal at the detection of the error count exceeding the first preselected number of counts, the first preselected number of counts being related to the first established threshold in that when the first selected number of counts is accumulated during the time period the first established threshold has been exceeded;

flip-flop means for providing an alarm signal in response to the activate alarm signal, and for maintaining the alarm signal until the enabling signal is removed by the single shot multivibrator means;

switch means, responsive to the activate alarm signal and in response thereto, for reinitializing the time period;

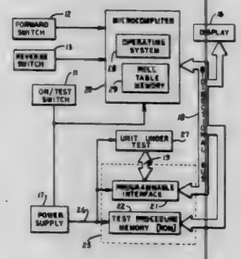
circuit means, responsive to the activate alarm signal and in response thereto, for presetting the counter means to a second preselected number of counts, the presetting of the presettable counter means causes the activate alarm signal to be removed by the detector circuit means, the second established threshold being related to a difference between being the first preselected number of counts and the second preselected number of counts in that when the difference is accumulated during the reinitialized time period, the second established threshold has been exceeded.

4,291,404

AUTOMATIC CIRCUIT TESTER WITH IMPROVED VOLTAGE REGULATOR

William G. Steiner, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Nov. 20, 1979, Ser. No. 96,030
Int. Cl.³ G06F *11/22*
U.S. Cl. 371—20 **3 Claims**



1. An automatic circuit testing apparatus comprising in combination:

a receptacle means for providing electrical contact with a unit under test;

at least one integrated circuit input/output memory device including memory, at least one input/output port, a data bus, a port/memory selector pin connected to a signal source corresponding to selection of memory, a read input responsive to an active state thereon to read onto said data bus data from said memory when said port/memory selector pin is in a first state and to read onto said data bus data from said input/output port when said port/memory selector pin is in a second state, a port read input responsive to an active state thereon to cause data present at said input/output port to be provided onto said data bus and a port write input responsive to an active state thereon to write data present on said data bus to said input/output port;

a microcomputer including a microcomputer data bus, a write output for providing an active output state in response to said microcomputer executing an instruction to write data present on said computer data bus to an external device, a read output having an active state corresponding to said microcomputer accepting data from said computer data bus and a program store output having an active state corresponding to said computer seeking to accept data on said computer data bus as an instruction;

means for electrically connecting said input/output port and said receptacle means; and

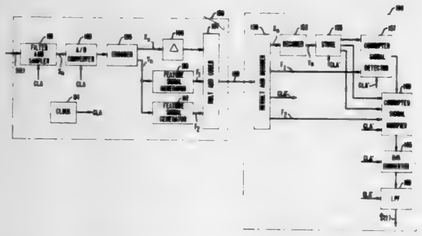
means for connecting said microcomputer to said integrated circuit input/output memory device including a means for connecting said computer data bus to said data bus, a connection between said write output and said port write input, a connection between said read output and said port read input, and a connection between said program store output and said read input.

4,291,405

ERROR REDUCTION SPEECH COMMUNICATION SYSTEM

Nuggehally S. Jayant, Short Hills; Carolyn E. Schmidt, Gillette, and Raymond Steele, Hazlet, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 7, 1979, Ser. No. 73,207
Int. Cl.³ G06F *11/00*; G08C *25/00*
U.S. Cl. 371—31 **34 Claims**



1. An error reduction arrangement in a communication system comprising transmitting means including means for receiving an input signal, means for converting said input signal into blocks of coded signals, and means for applying said blocks of coded signals to a transmission medium; and receiving means for converting the coded signal blocks from said transmission medium into a replica of said input signal;

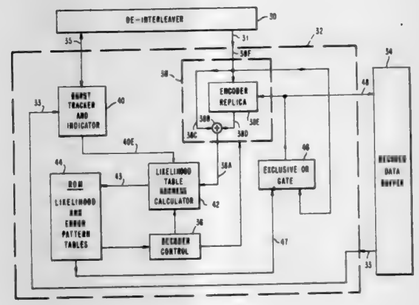
CHARACTERIZED IN THAT said transmitting means (**180**) further comprises feature signal generating means (**110,112**) responsive to said blocks of coded signals for generating a signal representative of a first set of features of the waveform of said input signal and a signal corresponding to a second set of features of the waveform of said input signal; and said receiving means (**190**) further comprises means (**153, 157**) jointly responsive to the received first waveform feature signal and the received block coded signals for detecting corrupted received coded signals; and means (**160**) operative upon detection of each received corrupted coded signal jointly responsive to said received second waveform feature signal and the received block coded signals for modifying the value of said corrupted coded signal to reduce errors in said signal replica.

4,291,406

ERROR CORRECTION ON BURST CHANNELS BY SEQUENTIAL DECODING

Lalit R. Bahl, Amawalk; John Cocke, Bedford; Clifton D. Cullum, Jr., Putnam Valley, all of N.Y., and Joachim Hagenauer, Seefeld, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,223
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—44 **13 Claims**



1. A sequential decoder and system for determining error patterns for making error correction on burst and random noise channels using convolutionally encoded data comprising:

de-interleaver means for time-demultiplexing the convolutionally encoded data from a data channel into a predetermined transformed order;

a decoded data buffer for storing received data which has been decoded by said de-interleaver;

a syndrome bit generator connected to the output of said de-interleaver means for calculating a syndrome bit from a combination of the presently received subblock together with a given number of previous sub-blocks received from said de-interleaver means and stored in said decoded data buffer, said syndrome bit indicating if the current assumption of the path through a convolutional tree is correct;

burst tracking means, connected to the output of said de-interleaver means, for tracking burst errors and deriving burst indicator bits which indicate the presence of burst errors in a channel, said burst tracking means also being connected to said decoded data buffer which stores previously decoded received data;

memory means for storing tables of error likelihood and error pattern values derived from known error statistics about the data channel, statistics of probability of random errors and burst errors, error severity within a burst, and average burst duration, said memory means being connected to and addressed by a calculating means for providing error likelihood and error pattern values to said decoded data buffer; and

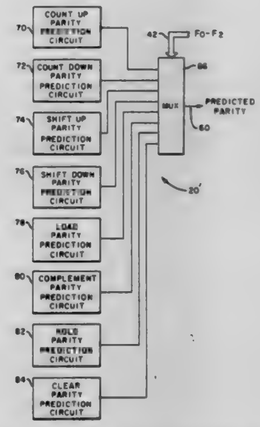
said calculating means connected to both said syndrome bit generator and said burst tracking means for using said syndrome bits and said burst indicator bits to calculate a table address in said tables of error likelihood and error pattern values, said table address providing a likelihood value and an error pattern which are used to update a total likelihood value and determine an error pattern which are used to change received subblock data.

4,291,407

PARITY PREDICTION CIRCUITRY FOR A MULTIFUNCTION REGISTER

Rolfe D. Armstrong, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 10, 1979, Ser. No. 74,036
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—49 **11 Claims**



1. In a data processing system, the combination of:

a register for storing data and operating on the data in accordance with any one of a plurality of predetermined functions, said register having control input means for receiving control signals and in response selecting one of the functions; and

parity prediction circuitry connected to said register for predicting the parity of the data stored in said register, said parity prediction circuitry comprising:

a plurality of circuit means, with one of said circuit means associated with each function for predicting the parity of the data when said register operates on the data in accordance with that function; and

selecting means connected for receiving the control signals received at said control input means of said register and in response selecting the one of said circuit means associated with the function selected by said control input means to provide its predicted parity.

4,291,408

SYSTEM FOR MONITORING BIT ERRORS

Kazuo Ogawa, Tokyo, and Eiji Suzuki, Kawasaki, both of Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 30, 1979, Ser. No. 98,988
Claims priority, application Japan, Dec. 5, 1978, 53-149678
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—49 **13 Claims**

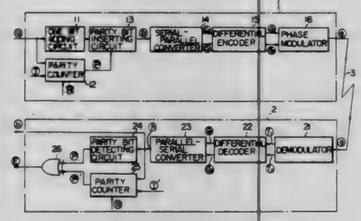
1. A system, operatively connected to means for generating a first pulse train having "1" pulses, and means for receiving a carrier signal, for monitoring bit errors in digital differential phase modulation communications, comprising:

first parity counter means for counting the "1" pulses among n successive bits at intervals of n bits, where n is a positive integer, in the first pulse train, and for providing the counted result as a first parity bit;

inserting means, operatively connected to said first parity counter means, for inserting said first parity bit into the first pulse train, the first pulse train and said first parity bit being converted into a second pulse train;

differential encoder means, operatively connected to said inserting means, for calculating modulo 2 sums of two

successive elements of said second pulse train to provide a calculation signal;
phase modulator means, operatively connected to said differential encoder means, for modulating the carrier signal with said calculation signal and for transmitting a modulated signal;
demodulator means, operatively connected to said phase modulator means, for demodulating said modulated signal to provide a demodulated signal;
differential decoder means, operatively connected to said demodulator means, for calculating modulo 2 differences between two successive elements of said demodulated signal to reproduce said second pulse train;

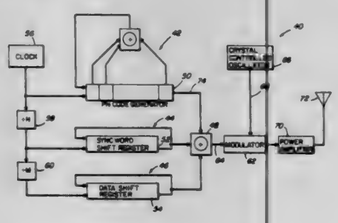


detecting means, operatively connected to said differential decoder means, for detecting said first parity bit in said reproduced second pulse train;
second parity counter means, operatively connected to said differential decoder means, for counting "1" pulses among n successive bits at intervals of n bits in said reproduced second pulse train except for said first parity bit and for producing the counted result as a second parity bit; and
comparing means, operatively connected to said second parity counter means and said detecting means, for comparing said first parity bit with said second parity bit, and for generating an error signal when said first and second parity bits are different from each other, said error signal indicating the generation of bit errors.

4,291,409
SPREAD SPECTRUM COMMUNICATIONS METHOD AND APPARATUS

Aaron Weinberg; Paul M. Ebert, both of Potomac; Joseph J. Fee, Wheaton, all of Md.; Yaroslav Kaminsky, Herndon, Va.; Feisal S. Keblawi, Vienna, Va., and Walter C. Scales, McLean, Va., assignors to The Mitre Corporation, Bedford, Mass.

Continuation of Ser. No. 917,290, Jun. 20, 1978, abandoned. This application Jul. 18, 1978, Ser. No. 925,847
Int. Cl.³ H04B *15/00*; H04K *1/04*
U.S. Cl. 375—1 **23 Claims**

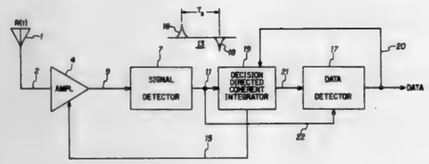


6. In a spread spectrum system having a carrier signal angle modulated by a message to be transmitted, and wherein the transmitted message comprises plural message bits synchronously combined with a repeating pseudorandom code sequence, a receiving method comprising the steps of
non-coherently acquiring and tracking said pseudorandom code sequence by employing non-coherent, recursive integration, and
thereafter acquiring and tracking the transmitted carrier frequency and phase.

4,291,410
MULTIPATH DIVERSITY SPREAD SPECTRUM RECEIVER

Edgar L. Caples, Garland; Robert K. Marston, Plano, and Khalil E. Massad, Richardson, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 24, 1979, Ser. No. 87,910
Int. Cl.³ H04B *1/12*; H04J *13/00*
U.S. Cl. 375—1 **13 Claims**

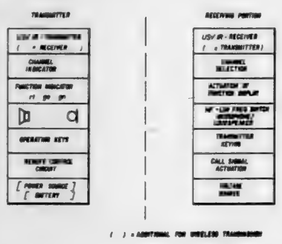


1. A multipath diversity spread spectrum receiver for receiving spread spectrum signals, comprising:
detector means for detecting the spread spectrum signals and to provide a stream of correlation pulses that relate to transmitted data;
integrator means for decision directed coherent integrating the stream of correlation pulses including:
normalizer means for normalizing the stream of correlation pulses to obtain a stream of normalized pulses,
first summing means for summing each member of the stream of normalized pulses with a corresponding member of a stream of output pulses to obtain a stream of combination pulses,
delay register means for delaying each member of the stream of combination pulses one symbol period to obtain the stream of output pulses, and
feedback path means for connecting the stream of output pulses to the summing means; and
first data detector means for decoding the transmitted data from the stream of output pulses to obtain a stream of detected data symbols.

4,291,411
REMOTE CONTROL FOR RADIOTELEPHONES

Horst Müller, and Helmut Vorwerk, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,466
Claims priority, application Fed. Rep. of Germany, May 3, 1978, 2819386
Int. Cl.³ H04B *1/40, 9/00, 11/00*
U.S. Cl. 455—88 **11 Claims**



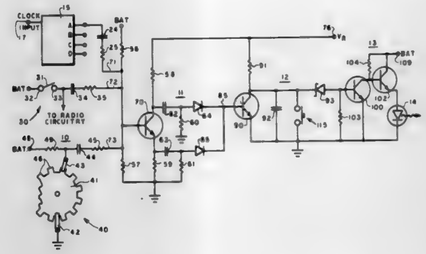
1. In a radiotelephone system having a radio frequency

transmitting/receiving device, a low frequency and control signal transmitting/receiving unit remote from the device, and means connected between the device and the unit for conducting therebetween system operation function control signals, constituted by a form of energy selected from among ultrasonic energy and infrared energy, the improvement wherein said means comprise: a first transmitter and receiver connected in said unit for transmitting and receiving said signals constituted by said selected form of energy; a second transmitter and receiver connected to said device for transmitting and receiving said signals constituted by said selected form of energy; each transmitter and receiver including means for coupling said first and second transmitter and receivers together to permit conduction therebetween of said signals constituted by said selected form of energy over a signal conducting path constituted by a selected one of an air path and a cable containing a maximum of four conductors; said unit comprises a function indicator and said device further comprises a channel selector, a call signal actuator, a transmitter keying device, a microphone/loudspeaker switch, a noise barrier, and a function display actuator, connected to be controlled by signals from said second transmitter and receiver and connected to control the operation of said device and of said function indicator.

4,291,412
PORTABLE RADIO FREQUENCY/CHANNEL DISPLAY SYSTEM

Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 162,761
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—154 **5 Claims**

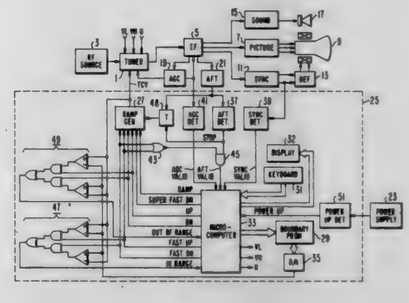


1. In a portable radio device of the type which is powered by a battery or other depletable power source, and which includes a plurality of controls for operating a corresponding plurality of radio functions and a display for indicating the frequency or channel to which the radio is tuned, a display control system comprising: sensing means coupled to said controls for generating an initiation signal in response to the operation of any of said functions by said controls; detecting means coupled to said sensing means and responsive to said initiation signal for developing a control signal in response to the generation of said initiation signal; signal lengthening means coupled to said detector means and responsive to said control signal for effectively lengthening the duration of said control signal for a predetermined amount of time; and switch means coupled between said display and said battery and responsive to said lengthened control signal for causing said display to be energized by said battery for said predetermined amount of time, whereby the display is energized whenever a control is operated and is automatically de-energized after the passage of a predetermined amount of time to thus conserve the battery.

4,291,413
SEARCH TYPE TUNING SYSTEM WITH DIRECT ADDRESS CHANNEL SELECTION APPARATUS

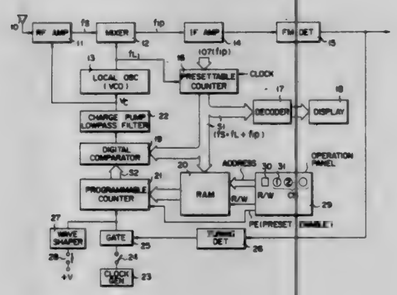
John G. N. Henderson, Princeton, and Robert J. Maturo, Bricktown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,105
Int. Cl.³ H03J *7/22*
U.S. Cl. 455—164 **6 Claims**



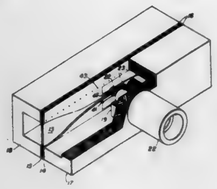
1. In a receiver including tuning means for selectively tuning the RF carriers associated with respective channels in response to the magnitude of a tuning control signal and deriving from a selected one of said RF carriers an IF signal having at least one information bearing carrier, apparatus comprising:
channel selection means for generating binary signals representing the channel number of a selected channel;
memory means having a plurality of memory locationns for storing binary signals representing lower and upper boundaries of the tuning control signal for each of said channels;
control means responsive to said binary signals representing the channel number of said selected channel for selectively addressing the memory locations associated with at least one of the lower or upper boundaries for said selected channel when a new channel is selected;
generator means for generating said tuning control signal and cooperating with at least said control means and said memory means for selectively causing its magnitude to increase or decrease in ramp-like fashion from a magnitude substantially equal to a first boundary for said selected channel;
comparison means for comparing the boundary associated with an addressed one of said memory locations and the magnitude of said tuning control signal; and
detector means for determining when said IF signal has predetermined conditions when enabled in response to one of said control means and said comparison means when the magnitude of said tuning control signal substantially equals said first boundary for said selected channel;
said generator means being enabled in response to said detector means to cause the magnitude of said tuning control signal to remain substantially constant after said IF signal has said predetermined conditions;
said generator means being enabled in response to said comparison means to cause the magnitude of said tuning control signal to stop changing in said selected sense when the magnitude of said tuning control signal corresponds to the second boundary for the selected channel in a predetermined manner.

4,291,414
RADIO RECEIVER OPERABLE IN STATION SEARCH MODE OR STATION SELECT MODE
Shigenobu Kimura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 30, 1980, Ser. No. 145,349
Claims priority, application Japan, May 2, 1979, 54-54509; May 2, 1979, 54-54510
Int. Cl.³ H03J 7/26
U.S. Cl. 455—164 **6 Claims**



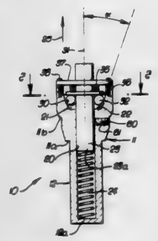
1. A radio receiver comprising:
local oscillator means for producing a local frequency signal;
mixer means for producing an intermediate frequency signal by mixing said local frequency signal from said local oscillator means with a broadcast signal received by said receiver;
detector means coupled to said mixer means for demodulating said intermediate frequency signal;
computing means connected to receive said local frequency signal for computing an algebraic sum of a number corresponding to the local frequency of said local oscillator means and a fixed number corresponding to the intermediate frequency, said algebraic sum representing tuned frequency information of said receiver;
counter means for counting clock pulses within a range between numbers corresponding to upper and lower limits of a receiving frequency band of said receiver, a count of said counter means representing broadcast frequency information to be received by said receiver;
comparing means for comparing the count of said counter means with output information from said computing means;
means coupled to said comparing means for controlling the oscillating frequency of said local oscillator means in response to said comparing means by shifting the oscillating frequency of said local oscillator means when said tuned frequency information from said computing means is not coincident with said broadcast frequency information from said counter means, and fixing the oscillating frequency of said local oscillator means when said tuned frequency information from said computing means is coincident with said broadcast frequency information from said counter means;
clock pulse generating means for supplying said clock pulses to said counter means so as to shift said broadcast frequency information from said counter means;
tuning detecting means coupled with said detector means for detecting that said receiver is tuned to the broadcast signal; and
means responsive to said tuning detecting means to disable said counter means from counting said clock pulses from said clock pulse generating means when said receiver is tuned to the broadcast signal.

4,291,415
MICROWAVE INTEGRATED CIRCUIT DOUBLE BALANCED MIXER
Charles D. Buntschuh, Bedford, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.
Filed Dec. 3, 1979, Ser. No. 99,858
Int. Cl.³ H04B 1/26; H03H 7/42
U.S. Cl. 455—328 **10 Claims**



1. A double-balanced mixer of the star-configuration type for microwave-frequency electromagnetic waves comprising, a sheet of dielectric substrate, two electrical conductors on each side of said substrate forming a balanced four-wire line in a substantially rectangular configuration, first terminal means coupled to said line in a parallel mode, second terminal means coupled to said line in a transverse-mode, a common star-configuration point electrically available from both sides of said substrate in the vicinity of said four-wire line, four non-linear devices connected two in series defining an intermediate terminal therebetween and with the two connected between the two conductors on each side of said substrate and having their respective intermediate terminals connected to said common point, a common reference terminal for said four-wire line, and third terminal means connected between said common point and said common reference terminal.

4,291,416
CHAIN TENSIONER
Herbert W. Hoeptner, III, 273 Hermosa, San Luis Obispo, Calif. 93401
Filed Mar. 12, 1979, Ser. No. 19,557
Int. Cl.³ F16H 7/12
U.S. Cl. 474—138 **12 Claims**



1. A tensioning device for tensioning a chain, comprising
(a) an axially elongated body means having a stem portion with a bore therein,
(b) a plunger carried by the body means and movable axially relative thereto in the bore, and a first compression spring in the bore urging the plunger axially in a first direction to exert biasing force operable to tension said chain,
(c) the body means having an interior ramp surface facing the plunger, the ramp tapering inwardly in a second direction which extends generally opposite said first direction,
(d) wedgable means located between the ramp surface and the plunger, and urging means urging the wedgable means into wedging engagement with the ramp surface and the plunger whereby the plunger may be displaced by the first spring in said one direction but is blocked against displacement in said opposite direction,
(e) and a holder defining a socket receiving said stem portion for locating said stem portion so that said plunger is urged in a chain tensioning direction by said first spring.

DESIGN PATENTS

GRANTED SEP. 22, 1981

ERRATA

For CLASS	See PATENT NO.
D32-040	260,845
D32-022	260,900
D32-032	260,901

DESIGNS

SEPTEMBER 22, 1981

260,820
PINBALL GAME HOUSING FOR PRE-SCHOOL AGE CHILDREN

Yuji Kato, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

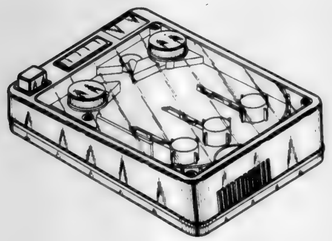
Filed Aug. 20, 1979, Ser. No. 67,825

Claims priority, application Japan, May 23, 1979, 54-20898

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D2—7



260,821
LUGGAGE BAG

Louis Schneider, Landsham, and Hans A. Muth, Hechendorf, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

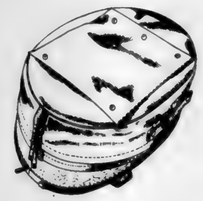
Filed Mar. 14, 1979, Ser. No. 20,321

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 11455

Term of patent 14 years

Int. Cl. D3—*01*

U.S. Cl. D3—71





260,822
COMBINED HAIR BRUSH AND HAND SHIELD THEREFOR

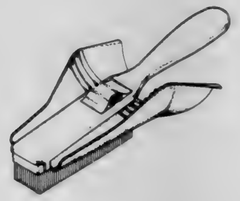
Giuseppe Sapronetti, 12731 Victory Blvd., North Hollywood, Calif. 91606

Filed Dec. 10, 1979, Ser. No. 101,902

Term of patent 14 years

Int. Cl. D4—*02*; D28—*03*

U.S. Cl. D4—35



260,823
GAME CHAIR

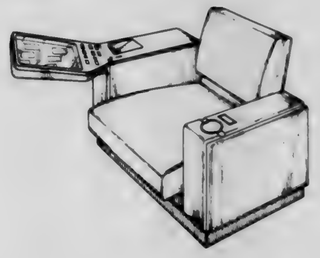
Edward L. Stulik, Jr., Calabasas, Calif., assignor to Michael Wichinsky, Las Vegas, Nev.

Filed Jun. 30, 1978, Ser. No. 920,853

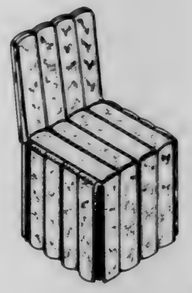
Term of patent 14 years

Int. Cl. D6—*05*

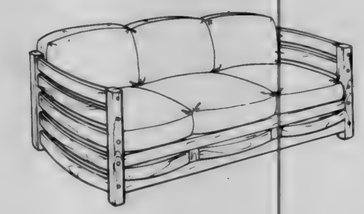
U.S. Cl. D6—42



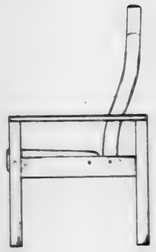
260,824
CHAIR COVER
Bernard Nusinow, 1110 Lake Shore Dr., Chicago, Ill. 60611
Filed Nov. 13, 1978, Ser. No. 959,661
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—48



260,825
SOFA
Jobie G. Redmond, High Point, N.C., assignor to Jack Daniel Distillery, Lem Motlow, Prop., Inc., Lynchburg, Tenn.
Filed Nov. 8, 1978, Ser. No. 958,846
The portion of the term of this patent subsequent to Jul. 14, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—60



260,826
ARM CHAIR
Ned Steinberger, York, Pa., assignor to Thonet Industries, Inc., York, Pa.
Filed Dec. 7, 1978, Ser. No. 967,312
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



260,827
COMBINED CRIB, DRESSING TABLE AND STORAGE UNIT
Peter A. Sommer, 2911 Bayview Ave., Suite 112-D, Willowdale, Ontario, Canada (M2K 1E8)
Filed Nov. 13, 1978, Ser. No. 959,543
Claims priority, application Canada, Jul. 25, 1978, 25077810
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—80



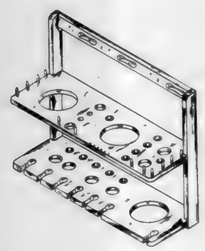
260,828
TOILET TISSUE HOLDER
Paul Cordray, Ocie, Mo. 65719, and Migdonio Seidler, 1108 S. College, Pittsburg, Kans. 66762
Filed May 7, 1979, Ser. No. 36,867
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



260,829
KEY RACK OR THE LIKE
Joan K. Creamer, East Greenwich, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 21, 1980, Ser. No. 143,062
Term of patent 14 years
Int. Cl. D6—*04*; D8—*08*
U.S. Cl. D6—114



260,830
SPORTS EQUIPMENT STORAGE RACK
E. Donald Trouba, 413 Winterburn, Elkhorn, Nebr. 68022
Filed Jul. 18, 1980, Ser. No. 170,205
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—125



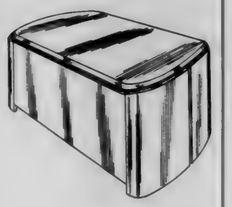
260,831
TOOL HOLDER
John E. Hotchkiss, 451 Cedar Hill Dr., San Rafael, Calif. 94903
Filed Jun. 2, 1980, Ser. No. 155,100
Term of patent 14 years
Int. Cl. D6—*04*; D8—*08*
U.S. Cl. D6—130

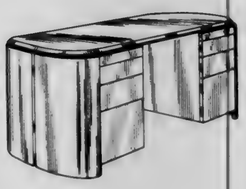


260,832
TRAY
Sandra R. Verdesca, and Joseph T. Verdesca, both of Dallas, Tex., assignors to Computer Roomers, Dallas, Tex.
Continuation-in-part of Ser. No. 732,453, Oct. 14, 1976, Pat. No. Des. 250,380. This application Jul. 21, 1978, Ser. No. 926,714
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—132

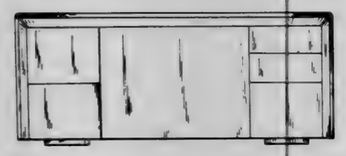


260,833
DESK OR SIMILAR ARTICLE
Lydia de Polo, and Jack G. Dunbar, both of New York, N.Y., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Jun. 4, 1979, Ser. No. 45,156
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—161

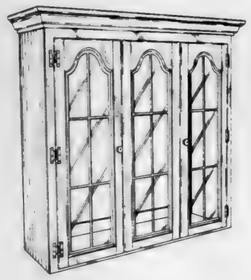




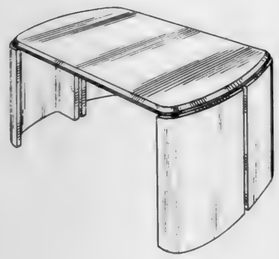
260,834
DESK
Warren Platner, Guilford, Conn., assignor to Litton Business Systems, Inc., Burlington, Iowa
Filed Jun. 9, 1978, Ser. No. 914,285
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



260,835
HUTCH
Melbourne F. Smith, Jr., Hickory, N.C., assignor to Broyhill Furniture Industries, Inc., Lenoir, N.C.
Filed Oct. 12, 1978, Ser. No. 950,707
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—172



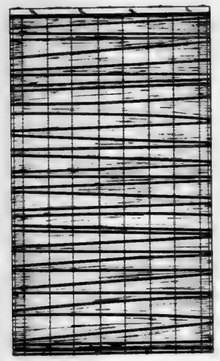
260,836
TABLE OR SIMILAR ARTICLE
Lydia de Polo, and Jack G. Dunbar, both of New York, N.Y., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Jun. 4, 1979, Ser. No. 45,155
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—177



260,837
SERVING TABLE
Philip L. Tome, Malta, Ohio, assignor to Taylor Woodcraft, Malta, Ohio
Filed May 23, 1979, Ser. No. 41,930
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

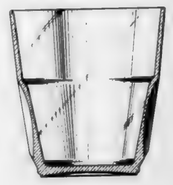


260,838
BLIND
Seiichi Kato, 356, Tsuchihara 4-chome, Tenpaku-ku, Nagoya City, Aichi, Japan
Filed May 4, 1979, Ser. No. 36,019
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205



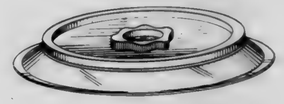
260,839
TUMBLER OR SIMILAR ARTICLE
Jean-Jacques Durand, LaGarenne, 62510 Arques, France
Filed Jan. 3, 1980, Ser. No. 109,353
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—14



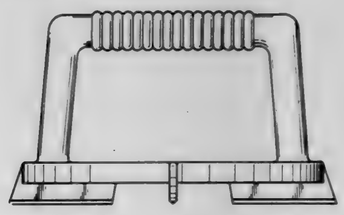


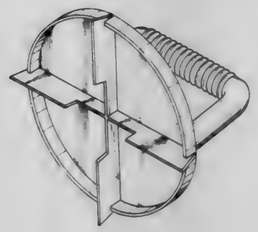
260,840
DISPLAY PLATE HAVING A REMOVABLE TEMPLATE
Sheldon Lieberman, Allentown, Pa., assignor to Binney & Smith, Northampton, Pa.
Filed Dec. 12, 1977, Ser. No. 859,656
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—22



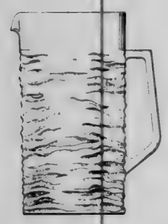


260,841
BOLOGNA CUTTER
Nancy K. Gilmore, 109 Shamrock Dr., Summerville, S.C. 29483
Filed Nov. 13, 1979, Ser. No. 2,879
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—43





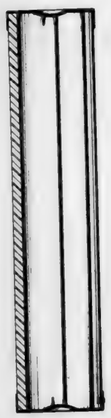
260,842
PITCHER
Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 13, 1979, Ser. No. 29,610
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—64



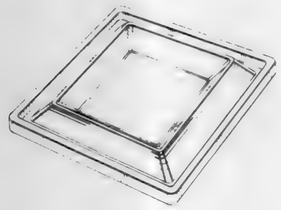


260,843
INSULATED HOLDER FOR BEVERAGE CANS OR THE LIKE
Richard A. Laird, Oakwood Close, Chiselhurst, Kent, and Geoffrey Burnham, The White House, North End La., Kent, both of England
Filed Jan. 17, 1979, Ser. No. 4,245
Claims priority, application United Kingdom, Jul. 19, 1978, 985513/78; Jan. 2, 1979, 987913/79
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—77

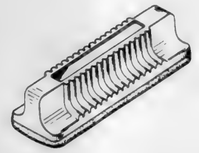




260,844
COVER FOR A FOOD CONTAINER
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Feb. 12, 1979, Ser. No. 11,245
The portion of the term of this patent subsequent to Jan. 20, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D07—*01, 07*
U.S. Cl. D7—131



260,845
RECORD BRUSH OR SIMILAR ARTICLE
Virgil R. Friebel, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 11, 1979, Ser. No. 29,580
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—40



260,846
PLASMA CUTTING-WELDING TORCH HEAD
John E. Summers, 302 Meacham St., Charlotte, N.C. 28203, and Hiroshi Tanida, 5-2-1, Sakuragawa, Naniwa-Ku, Osaka, Japan
Filed Feb. 5, 1979, Ser. No. 9,534
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



260,847
PNEUMATIC ORBITAL POLISHER
Irving Biederman, 4166 Inverrary Dr., Lauderhill, Fla. 33319
Filed Apr. 25, 1979, Ser. No. 33,336
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—62



260,848
SET OF VICE BLOCKS
Arley C. Hemeyer, Johnson County, Kans., assignor to Unique Products, Lenexa, Kans.
Filed Sep. 27, 1979, Ser. No. 79,509
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



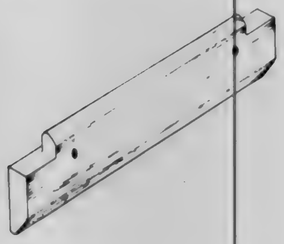
260,849
HANDLE FOR ABRADING TOOL
Robert F. West, W. Simsbury, and Laird F. Covey, Easton, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Dec. 21, 1978, Ser. No. 971,933
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94



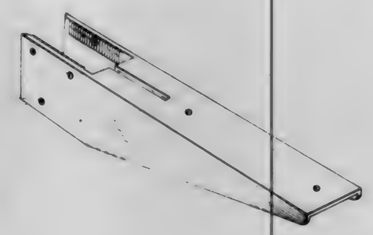
260,850
MEDICAL FLEXIBLE TUBE SUPPORT
Gordon M. Greenblatt, 5800 N. 19th Ave., Phoenix, Ariz. 85015
Filed May 29, 1979, Ser. No. 43,826
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



260,851
WASTEBASKET HANGER
Pamela J. Parker, 8456 E. Wildcat Dr., Tucson, Ariz. 85730
Filed Oct. 2, 1978, Ser. No. 947,705
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—376



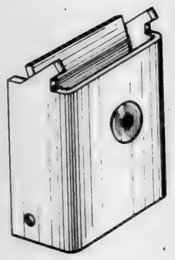
260,852
SHELF BRACKET
Lester L. Loeschen, P.O. Box 621, Mishawaka, Ind. 46544
Filed May 14, 1979, Ser. No. 38,542
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—381



260,853
CHAIN ANCHOR FOR A CONCRETE FLOOR OR THE LIKE
William J. Meis, 6 Valley Dr., Crescent, Iowa 51526
Filed Sep. 26, 1977, Ser. No. 836,645
Term of patent 14 years
Int. Cl. D8—*08, 99*
U.S. Cl. D8—385



260,854
CONNECTING COUPLING FOR JOINING STRUCTURAL MEMBERS
Jean-Francois Sergeant, 105, Rue Anatole France, 92290 Chatenay Malabry, France
Filed Dec. 12, 1978, Ser. No. 968,781
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395



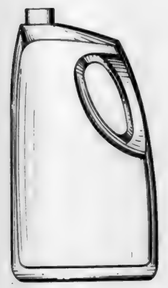
260,855
CORNER GUARD
Haydn H. Hobson, 420 Reed Cir., Napa, Calif. 94558
Filed May 11, 1979, Ser. No. 38,085
Term of patent 14 years
Int. Cl. D8—*99*; D6—*06*
U.S. Cl. D8—403



260,856
BOTTLE
Arlen R. Sillerud, 807 E. Third Ave., Ada, Minn. 56510
Filed Sep. 4, 1979, Ser. No. 71,874
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—372



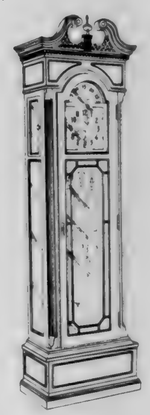
260,857
BOTTLE
John Pardo, Yonkers, N.Y., assignor to The Drackett Company, Cincinnati, Ohio
Filed Oct. 9, 1979, Ser. No. 83,078
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—376



260,858
COMBINED BOTTLE AND CAP
André Courréges, 27 rue Delabordére, Neuilly sur Seine, Hauts de Seine, France
Filed Nov. 3, 1978, Ser. No. 957,416
Claims priority, application France, May 3, 1978, 41341
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—386



260,859
GRANDFATHER CLOCK WITH MIRRORED MOVEMENT
John Boukma, Grandville, Mich., assignor to Howard Miller Clock Company, Zeeland, Mich.
Filed Oct. 22, 1979, Ser. No. 87,462
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—16



260,860
PARKING GUIDE
Theodore L. Doman, 32863 Myrna, Livonia, Mich. 48154
Filed Feb. 21, 1979, Ser. No. 12,968
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—110



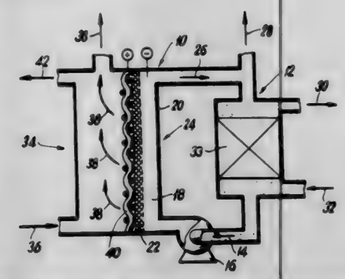
260,861
BARREL-SHAPED PENDANT
Sang W. Han, 444 Nahua St., #910, Honolulu, Hi. 96815
Filed Dec. 26, 1979, Ser. No. 107,184
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79



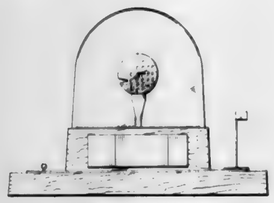
260,862
JEWEL SETTING CROWN OR THE LIKE
Jesse O. Linzer, 760 Market St., San Francisco, Calif. 94102
Filed Feb. 28, 1979, Ser. No. 15,925
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—92



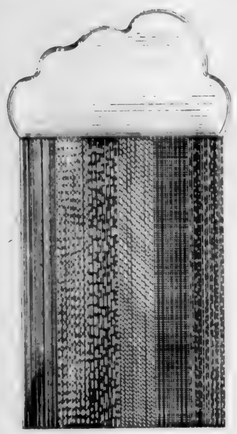
260,863
ARTIFICIAL CHRISTMAS GARNITURE
Stephanie J. Green, 22323 Erwin St., Woodland Hills, Calif. 91367
Filed May 29, 1979, Ser. No. 42,731
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—121



260,864
TROPHY
Richard C. Perry, 1675 Hays St., San Francisco, Calif. 94577
Filed May 4, 1979, Ser. No. 35,921
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157



260,865
SOFT SCULPTURE
Kerry L. Smith, 299 Hillcrest Dr., Leucadia, Calif. 92024
Filed Aug. 13, 1979, Ser. No. 65,916
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157



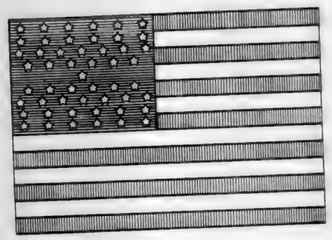
260,866
NOVELTY TROPHY AND BASE THEREFOR
M. David Richards, 1109 E. Date St., Brea, Calif. 92621
Filed Sep. 17, 1979, Ser. No. 76,247
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—160



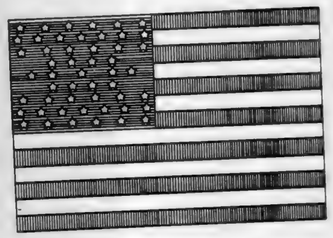
260,867
FIGURINE OR SIMILAR ARTICLE
Homer E. Evans, 2107 N. 70th Pl., Scottsdale, Ariz. 85257
Filed Oct. 22, 1979, Ser. No. 86,746
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—160



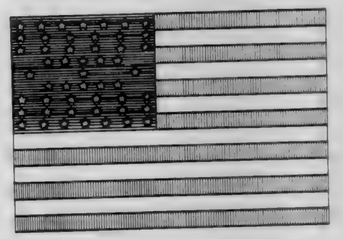
260,868
FLAG
Harold Chaskin, 131 Bennett Ave., New York, N.Y. 10033
Filed Mar. 23, 1979, Ser. No. 23,132
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—180



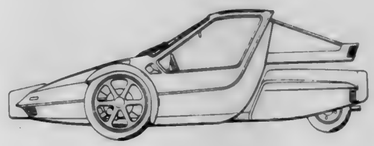
260,869
FLAG
Harold Chaskin, 131 Bennett Ave., New York, N.Y. 10033
Filed May 16, 1979, Ser. No. 39,344
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—180



260,870
FLAG
Harold Chaskin, 131 Bennett Ave., New York, N.Y. 10033
Filed May 16, 1979, Ser. No. 39,345
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—180



260,871
AUTOMOBILE
W. Allen Cargile, 4210 Estes Rd., Nashville, Tenn. 37215
Filed Dec. 4, 1978, Ser. No. 966,107
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—85



260,872
TIRE
David A. Wright, Louisville, Colo., and Maija V. Strauts, Akron, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Feb. 21, 1980, Ser. No. 123,221
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

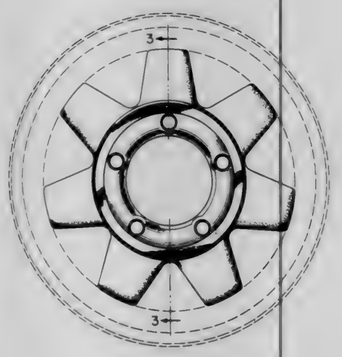


260,873
FOOT CONTROL FOR AN ELECTRIC GOLF CAR OR THE LIKE
Craig A. Johnson, R.R. Rte. 1, Lake View, Iowa 51450
Filed Feb. 21, 1979, Ser. No. 13,258
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—174

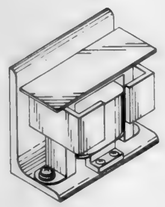


260,874
COMBINED WHEEL CENTER AND HUB
Merlyn R. Reppert, 28045 Palos Verdes Dr. E., Rancho Palos Verdes, Calif. 90274
Division of Ser. No. 85,401, Oct. 16, 1979. This application Aug. 8, 1980, Ser. No. 176,598
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209

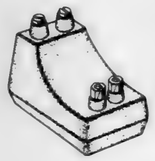




260,875
POWER SUPPLY MODULE
John W. Tully Jr., San Diego, Calif., assignor to Omni-Dynamics, Inc., San Diego, Calif.
Filed Oct. 6, 1978, Ser. No. 949,246
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D13—01



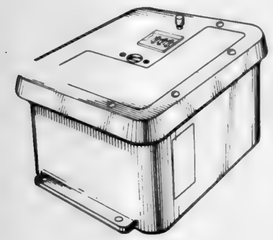
260,876
CURRENT-TO-VOLTAGE TRANSFORMER
Robert S. Pershyn, Buffalo, N.Y., assignor to Clarence Controls Inc., Buffalo, N.Y.
Filed Sep. 7, 1979, Ser. No. 73,257
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—4



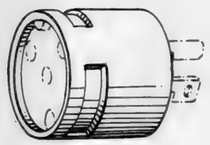
260,877
PRECISION CURRENT TRANSFORMER
Brent E. Scott, and Robert S. Pershyn, both of Buffalo, N.Y., assignors to Clarence Controls Inc., Buffalo, N.Y.
Filed Sep. 7, 1979, Ser. No. 73,258
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—4



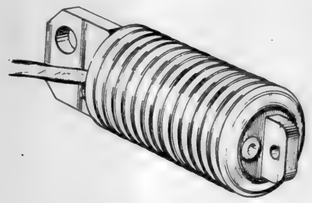
260,878
JUNCTION BOX
Kevin D. Dolinar, Canonsburg, and John F. Burr, Bethel Park, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Filed Nov. 22, 1978, Ser. No. 963,106
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—13



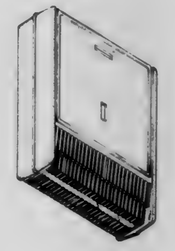
260,879
ELECTRICAL CONNECTOR HOUSING
Radosav Avramovich, Libertyville, Ill., assignor to Daniel Woodhead, Inc., Northbrook, Ill.
Filed Aug. 3, 1978, Ser. No. 930,729
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—28



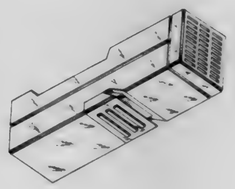
260,880
WEIGHING TRANSDUCER
Martin Spoor, Cambridge, Mass., assignor to Bofors America, Inc., Edison, N.J.
Filed Oct. 26, 1978, Ser. No. 954,908
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—99



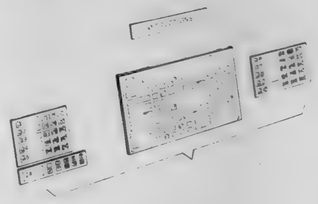
260,881
MEMORY MODULE HOUSING
Kevin P. McKinsey, Scotts Valley, and James C. Asher, San Jose, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.
Filed Mar. 22, 1979, Ser. No. 22,571
Term of patent 14 years
Int. Cl. D14—*01*; D16—*99*
U.S. Cl. D14—11



260,882
MICROPHONE
Lawrence G. McCain, Beverly Hills, Calif., assignor to Answerex, Inc., Los Angeles, Calif.
Filed Oct. 26, 1978, Ser. No. 955,094
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



260,883
VARIABLE KEYBOARD FOR COMPUTER TERMINAL, OR THE LIKE
Martin D. Husted, Simi Valley, Calif., assignor to MSI Data Corporation, Costa Mesa, Calif.
Filed Jan. 10, 1979, Ser. No. 2,258
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—115



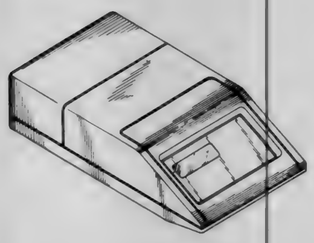
260,884
TELLER'S MACHINE
Junichi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Dec. 4, 1978, Ser. No. 965,729
Claims priority, application Japan, Jun. 9, 1978, 53-24049
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—105



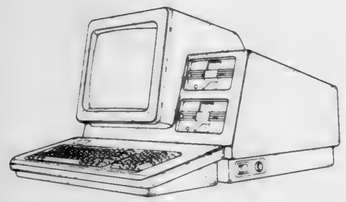
260,885
SPIROMETRIC COMPUTER
William C. Jones, 36 Baybrook La., Ginger Creek, Oak Brook, Ill. 60521
Filed Feb. 23, 1979, Ser. No. 14,824
Term of patent 14 years
Int. Cl. D14—*02*; D24—*01*
U.S. Cl. D14—106



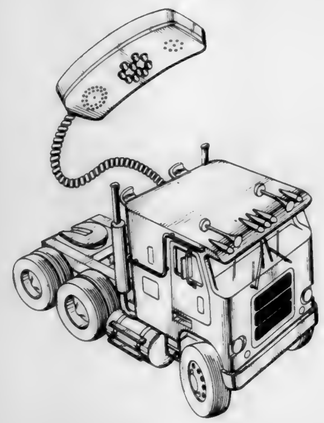
260,886
VEHICULAR TWO-WAY DATA TERMINAL OR SIMILAR ARTICLE
Terrance N. Taylor, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 19, 1979, Ser. No. 21,523
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



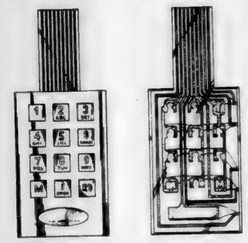
260,887
DISPLAY SCREEN-TERMINAL
Hartmut Esslinger; Andreas Haug, and Georg Spreng, all of Altensteig, Fed. Rep. of Germany, assignors to CTM Computertechnik Müller GmbH, Fed. Rep. of Germany
Filed Apr. 23, 1979, Ser. No. 32,533
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, 195
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D14—106



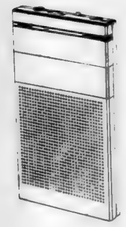
260,888
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed May 7, 1979, Ser. No. 36,593
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



260,889
TOUCH-PAD FOR A TELEPHONE
James D. McLean, 1133 Blaine Ave., Riverside, Calif. 92507, and David E. Snider, 1649 Davis, Corona, Calif. 91720
Filed Jan. 2, 1979, Ser. No. 297
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



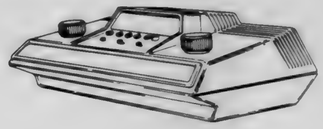
260,890
RADIO RECEIVER
Iwao Nakajima; Kikuo Ohta, both of Ikoma, and Benito Mishiro, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Nov. 30, 1979, Ser. No. 99,190
Claims priority, application Japan, May 31, 1979, 54-22451
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



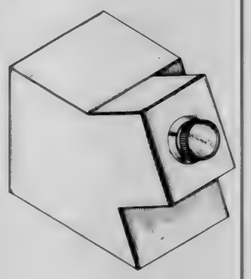
260,891
PORTABLE RADIO
David Fink, Dix Hills, N.Y., assignor to Windsor Industries, Inc., Mellville, N.Y.
Filed Dec. 4, 1978, Ser. No. 966,468
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



260,892
COMBINED CLOCK, RADIO AND LAMP
Wing H. Yeung, 79 Chun Yeung St., 7th Floor, Hong Kong
Filed May 8, 1979, Ser. No. 37,230
Claims priority, application United Kingdom, Nov. 9, 1978, 987213
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—73



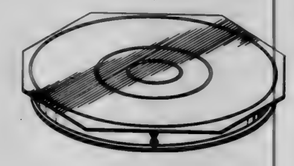
260,893
PROJECTION TELEVISION CABINET OR SIMILAR ARTICLE
Emilio J. Verrillo, 634 Meadowbrook Ave., Ambler, Pa. 19002
Filed Nov. 27, 1979, Ser. No. 97,817
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—77



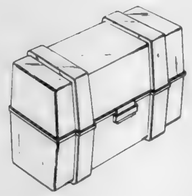
260,894
TELEVISION CAMERA
Konrad Ellermeier, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 13, 1978, Ser. No. 895,931
Claims priority, application Benelux, Oct. 17, 1977, 52225-00
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—78



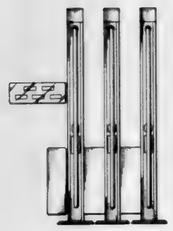
260,895
DIRECTIONAL ANNULAR SLOT ANTENNA
Arthur Luedtke, Marietta, and William F. Bentley, Smyrna, both of Ga., assignors to The United States of America as represented by Field Operations Bureau Office, FCC, Washington, D.C.
Filed Mar. 14, 1979, Ser. No. 20,295
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86



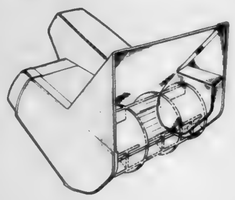
260,896
AIR COMPRESSOR
Edwin L. Schwartz, and Allen W. Langan, both of Los Angeles, Calif., assignors to Rite Autotronics Corporation, Los Angeles, Calif.
Filed Oct. 24, 1979, Ser. No. 87,727
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9



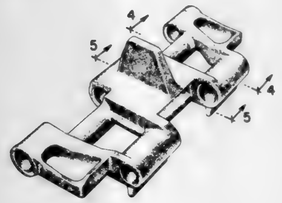
260,897
MULTI-PRODUCT FUEL DISPENSER
John A. Todd, Salisbury, Md., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 17, 1978, Ser. No. 952,166
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9.2



260,898
SNOW THROWER HOUSING
Robert Chieda; Robert W. Johnson, both of Westport, Conn.; Douglas W. Smith, Oakland, N.J., and Eugene J. Casey, Jr., Rowayton, Conn., assignors to The Toro Company, Minneapolis, Minn.
Filed Jan. 16, 1980, Ser. No. 112,539
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D15—12



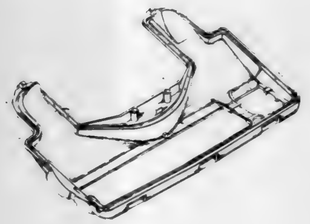
260,899
VEHICLE TRACK SHOE
George L. Joseph, Morgan Hill, and George A. Travinski, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Oct. 27, 1978, Ser. No. 955,299
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—28



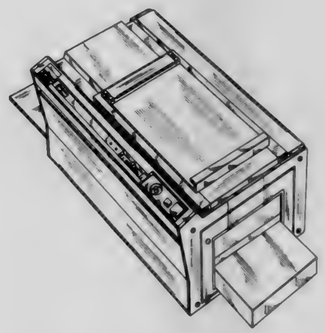
260,900
VACUUM CLEANER
Tönis Käo, Munich, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 2, 1979, Ser. No. 656
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 4852
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—22



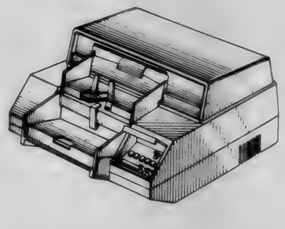
260,901
VACUUM CLEANER ACCESS PLATE
Don W. Vermillion, Anderson, S.C., assignor to The Singer Company, Stamford, Conn.
Filed Jun. 22, 1979, Ser. No. 51,335
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—32



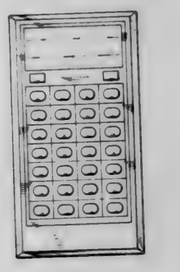
260,902
ELECTROSTATIC COPYING MACHINE
Shigeru Kurozumi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed May 25, 1979, Ser. No. 42,624
Claims priority, application Japan, Dec. 4, 1978, 53-51512
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—27



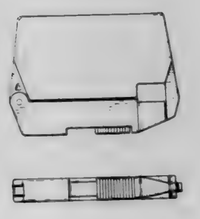
260,903
MICROFILM CAMERA
John W. Overman, Phoenix, Ariz., assignor to Bell & Howell Company, Del.
Filed Jun. 4, 1979, Ser. No. 45,486
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—27



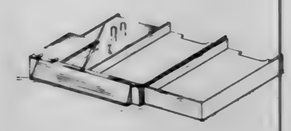
260,904
COMBINED ELECTRONIC CALCULATING MACHINE AND TIMEPIECE
Matafumi Ikeda, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 16, 1979, Ser. No. 85,332
Claims priority, application Japan, Apr. 20, 1979, 54/16480
Term of patent 14 years
Int. Cl.[3] D18—*01*
U.S. Cl. D18—7



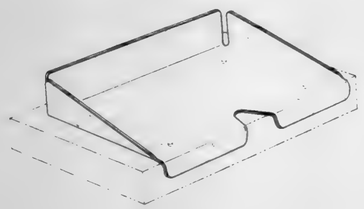
260,905
FOLDABLE PEN
Michael C. Klaber, 10526 Caminito Obra, San Diego, Calif. 92126
Filed Dec. 4, 1978, Ser. No. 966,239
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—41



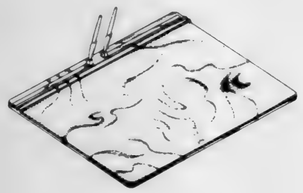
260,906
COMBINED DESK TRAY, CALENDAR PAD HOLDER AND DESK SET
Dale E. Grusing, 4917 - 15th St., Lubbock, Tex. 79416
Filed Jun. 5, 1978, Ser. No. 912,568
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



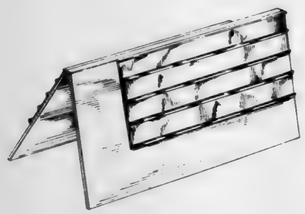
260,907
DESK TRAY
James E. Giulie, and Joe D. Giulie, both of 1015 Corporation Way, Palo Alto, Calif. 94303
Filed Jul. 30, 1979, Ser. No. 61,813
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



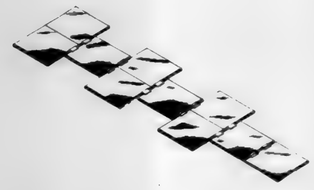
260,908
COMBINED DESK PAD AND PEN ASSEMBLIES
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1978, Ser. No. 907,380
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—95



260,909
GAME BOARD
M. David Richards, 1109 E. Date St., Brea, Calif. 92621
Filed Apr. 9, 1979, Ser. No. 28,060
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15



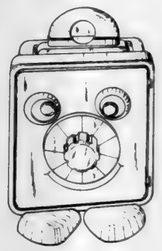
260,910
GAME BOARD
Harold L. Moseley, 102 Talco Rd., Lancaster, Tex. 75146
Filed Jul. 24, 1978, Ser. No. 927,118
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15



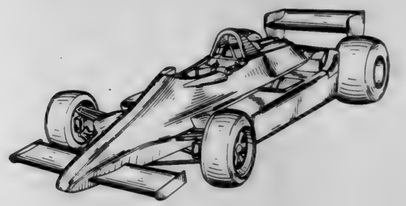
260,911
TOY WHIRLER OR SIMILAR ARTICLE
Edward C. Anderson, 6750 School St., Apt. 306, Des Moines, Iowa 50311
Filed Oct. 30, 1978, Ser. No. 956,072
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—92



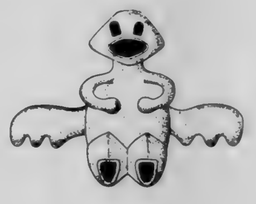
260,912
TOY SAFE
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039; Paul B. Means, III, Basking Ridge, N.J.; James J. Wilcox, Summit, N.J., and David W. Reina, Huntington, N.Y., assignors to Mel Appel, Livingston, N.J.
Filed Apr. 11, 1979, Ser. No. 29,114
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



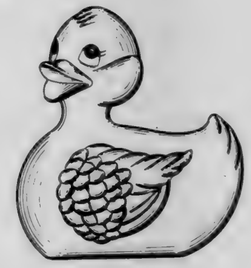
260,913
MODEL RACING CAR
Anthony C. B. Chapman, Norwich, England, assignor to Lotus Cars Limited, Norfolk, England
Filed Nov. 3, 1978, Ser. No. 957,341
Claims priority, application United Kingdom, May 3, 1978, 984427/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137



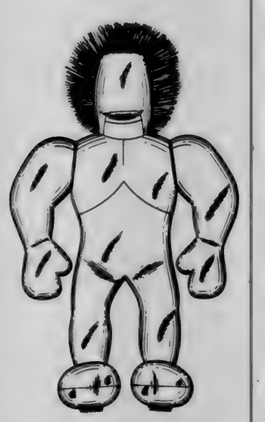
260,914
STUFFED TOY
Georgia A. Jones, Rte. 1, Box 213, Myersville, Md. 21773
Filed Dec. 19, 1977, Ser. No. 861,655
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148



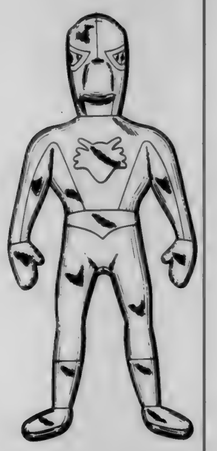
260,915
ORNAMENTAL DESIGN FOR A DUCK
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Oct. 22, 1979, Ser. No. 87,082
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—160



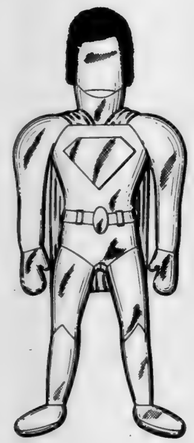
260,916
DOLL
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Oct. 19, 1979, Ser. No. 86,287
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—171



260,917
DOLL
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Oct. 19, 1979, Ser. No. 86,286
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—177



260,918
DOLL
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Oct. 22, 1979, Ser. No. 87,169
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—177



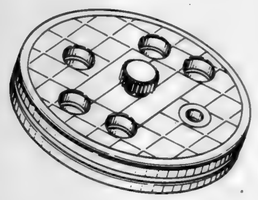
260,919
RACKET BALL HOLDER
James M. DeLuca, 2535 E. Bethel St., Anaheim, Calif. 92806
Filed Jun. 20, 1979, Ser. No. 50,448
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—206



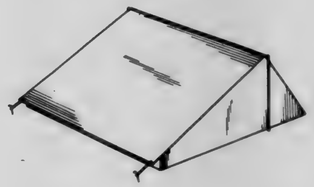
260,920
CURLING BROOM
Fernand Marchessault, 2251 Sherbrooke St., Montreal, Canada (H2K 1E4)
Filed Jul. 13, 1979, Ser. No. 57,311
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—211



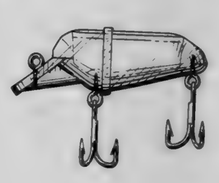
260,921
RACQUET SWING WEIGHT DEVICE
Pedro B. Mena, Box 1046, Morgan Hill, Calif. 95037
Filed Sep. 12, 1979, Ser. No. 75,002
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212



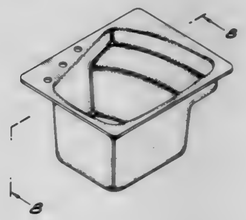
260,922
TENT
Maxwell W. Day, 401-5 Little Bourke St., Melbourne, Victoria, Australia
Filed Jul. 12, 1978, Ser. No. 923,983
Claims priority, application Australia, Jun. 13, 1978, 75043
The portion of the term of this patent subsequent to Jun. 23, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—253



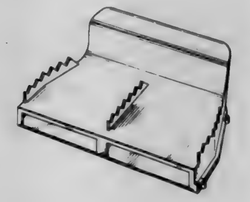
260,923
FISHING LURE
James R. Cope, 10500 Cherokee La., Leawood, Kans. 66206
Filed Feb. 8, 1980, Ser. No. 119,678
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



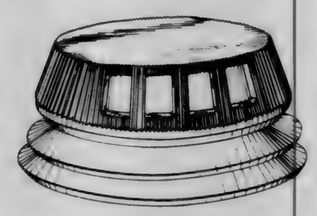
260,924
SINK
Michael E. Hurray, 313 Diamond, Balboa Island, Calif. 92662
Filed Aug. 6, 1979, Ser. No. 64,198
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



260,925
CASTING FOR FIREPLACE HEAT EXCHANGER
Thomas V. Metz, Portland, and W. James Sirois, Beaverton, both of Oreg., assignors to Pacific Fireplace Furnishings, Inc., Portland, Oreg.
Filed Dec. 7, 1978, Ser. No. 967,439
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



260,926
DISPENSER FOR AIR TREATING MATERIAL
Russell L. Dusek, Armonk, N.Y., assignor to The Drackett Company, Cincinnati, Ohio
Filed Aug. 1, 1980, Ser. No. 174,398
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



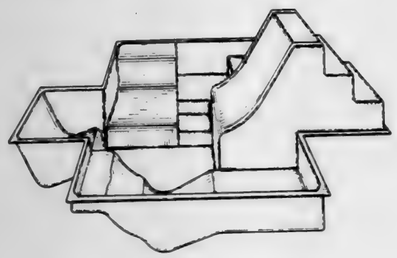
260,927
DOWELL PIN POSITIONER
Edward C. Glenn, 1455 NE. 55th St., Fort Lauderdale, Fla. 33334
Filed Mar. 14, 1979, Ser. No. 20,522
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



260,928
BODY MASSAGER
Jean-Louis H. Gueret, Paris, France, assignor to L'Institut Jeanne Piaubert, Paris, France
Filed Dec. 10, 1979, Ser. No. 101,797
Claims priority, application France, Jul. 25, 1979, 79 77767
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



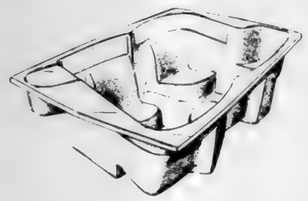
260,929
RECTANGULAR SLIDE SPA
John L. Haller, 7249 Carrizo Dr., La Jolla, Calif. 92037
Filed Dec. 6, 1978, Ser. No. 966,907
Term of patent 14 years
Int. Cl. D24—*01*; D23—*02*
U.S. Cl. D24—38



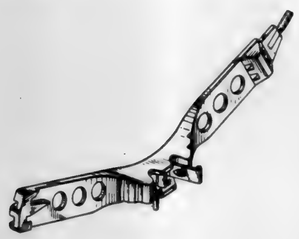
260,930
COVER FOR A HYDROTHERAPY POOL OR THE LIKE
Jonathan Watkins, San Marcos, Calif., assignor to Watkins Manufacturing Co., San Marcos, Calif.
Filed Jan. 29, 1979, Ser. No. 7,334
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—38



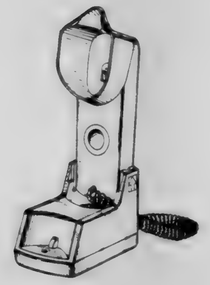
260,931
HYDROTHERAPY SPA
Richard G. Reineman, Newport Beach, Calif., assignor to Marlin Fiberglass, Inc., Huntington Beach, Calif.
Filed Aug. 27, 1979, Ser. No. 69,801
Term of patent 14 years
Int. Cl. D24—*01*; D25—*99*; D23—*02*
U.S. Cl. D24—38



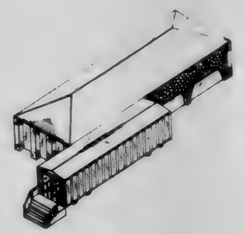
260,932
NASO-GASTRIC TUBE STABILIZER
Ingram S. Chodorow, Upper Saddle River, N.J., and Richard Hall, New Canaan, Conn., assignors to Technalytics, Inc., Upper Saddle River, N.J.
Filed Jan. 8, 1979, Ser. No. 1,759
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—53



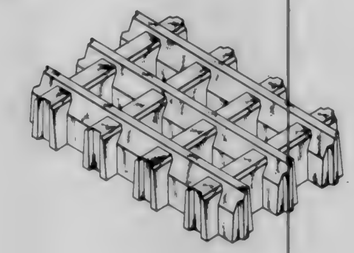
260,933
INHALATOR
Ernst Reichl, Munich, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 10, 1978, Ser. No. 932,757
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 4809
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—62



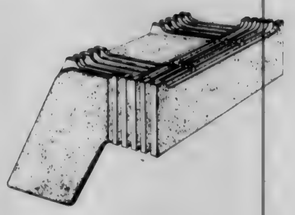
260,934
RAILROAD RESTAURANT
Gary M. Levin, 940 E. 19 St., Brooklyn, N.Y. 11230
Division of Ser. No. 928,387, Jul. 27, 1978. This application Apr. 30, 1980, Ser. No. 145,049
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—11



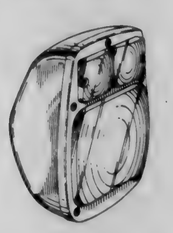
260,935
PAVING BLOCK
Thomas Pratt, deceased, late of Farnham Royal, England (by Gladys E. Pratt, executrix), assignor to Mono Concrete Limited, Croydon, England
Filed Oct. 25, 1978, Ser. No. 954,613
Claims priority, application United Kingdom, Apr. 27, 1978, 984358/78
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



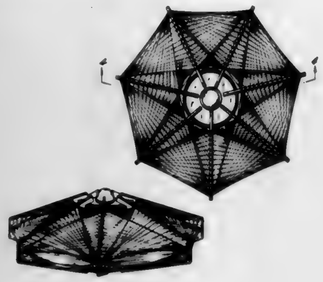
260,936
COMBINATION TRUCK TAIL LIGHT AND LICENSE PLATE HOLDER
Hans E. Strand, Uppsala, Sweden, assignor to Kjell Folke Ohlson, Sweden
Filed Aug. 22, 1978, Ser. No. 936,582
Claims priority, application Sweden, Feb. 22, 1978, 780514
Term of patent 14 years
Int. Cl. D26—*06*; D20—*03*
U.S. Cl. D26—28



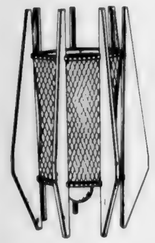
260,937
AUXILIARY LIGHT FOR VEHICLE HAVING ATTACHED PLOW BLADE
Vernon L. Hetrick, North Olmsted, Ohio, assignor to Meyer, Products, Inc., Cleveland, Ohio
Filed Nov. 15, 1978, Ser. No. 961,030
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—35



260,938
LUMINAIRE
Frederic Zurcher, Le Paquis, St. Julien en Genevois, France (74160)
Filed May 23, 1978, Ser. No. 908,841
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—91



260,939
LUMINAIRE
Frederic Zurcher, Le Paquis, St. Julien en Genevois, France (74160)
Filed May 23, 1978, Ser. No. 908,842
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93



260,940
DECORATIVE LAMP
John H. Holtvoigt, Tipp City, Ohio, assignor to The Dolly Toy Company, Tipp City, Ohio
Filed Feb. 21, 1979, Ser. No. 13,051
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—97



260,941
LIGHTER
Bernd Figur, Rodgau, Fed. Rep. of Germany, assignor to Rowenta-Werke, GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Oct. 2, 1978, Ser. No. 948,198
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 510097
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



260,942
LIGHTER
Franz A. Stuetzer, Mühlheim, Fed. Rep. of Germany, assignor to Rowenta-Werke, GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Apr. 23, 1979, Ser. No. 32,202
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 510144
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



260,943
LIGHTER
Franz A. Stützer, Mühlheim, and Bernd Figur, Seligenstadt, both of Fed. Rep. of Germany, assignors to Rowenta-Werke, GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Jul. 2, 1979, Ser. No. 54,372
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 510153
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



260,944
RAZOR
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Aug. 1, 1979, Ser. No. 62,881
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF SEPTEMBER, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. C. Company: *See*—
Gibson, Joseph T.; and Duhon, Gerald L., 4,290,305, Cl. 73-155.000.

AB Dentatus: *See*—
Edwardson, Svante R., 4,290,754, Cl. 433-56.000.

AB Lyckeaborgs Bruk: *See*—
Blomqvist, John-Erik V.; and Blomqvist, Erik M., 4,291,195, Cl. 174-48.000.

AB Svenska Flaktfabriken: *See*—
Johansson, Eric G. B., 4,290,210, Cl. 34-156.000.

Abbott Laboratories: *See*—
Bujan, Albert F., 4,290,346, Cl. 92-90.000.

Abbott, Randle L., to P.I.V. Antrieb Werner Reimers Kommanditgesellschaft. Continuously variable transmission mechanisms. 4,290,320, Cl. 74-689.000.

Abbott, Seth R., to Varian Associates, Inc. Anion exchange chromatographic separation of polyfunctional compounds. 4,290,892, Cl. 210-656.000.

Abe, Shigeya: *See*—
Iyoda, Michio; and Abe, Shigeya, 4,290,406, Cl. 123-645.000.

Abel, Heinz, to Ciba-Geigy Corporation. Process for slop-padding textile cellulose material. 4,290,767, Cl. 8-496.000.

Abeler, Gerd: *See*—
Schneider, Rainer; and Abeler, Gerd, 4,290,942, Cl. 260-45.85H.

Ableitner, Erich: *See*—
Sorsche, Joachim H.; Ableitner, Erich; Gobien, Ernst; and Minning, Manfred, 4,290,397, Cl. 123-195.00A.

ACF Industries, Inc.: *See*—
Basch, Walter E., 4,290,347, Cl. 92-102.000.
Moran, George A.; and Williams, John B., 4,290,581, Cl. 251-172.000.
Tipton, Larry J., 4,290,405, Cl. 123-590.000.

Ackerman, Roy A. Method for growing a deammonifying culture and use thereof in wastewater treatment. 4,290,891, Cl. 210-611.000.

Acquati, Giancarlo; Berti, Giovanni; and Fossati, Piero, to Miles Laboratories, Inc. Bilirubin-resistant determination of uric acid and cholesterol. 4,291,121, Cl. 435-10.000.

Adachi, Masami: *See*—
Akabayashi, Hiroshi; Ohyama, Eiji; Shoji, Susumu; Adachi, Masami; Uemura, Koretoshi; and Ogawa, Yoshihisa, 4,291,127, Cl. 560-76.000.

Adachi, Yoshiharu, to Aisin Seiki Kabushiki Kaisha. Hydraulic booster. 4,290,340, Cl. 91-31.000.

Adamovic, Emilija, to Sherritt Gordon Mines Limited. Composite powders sprayable to form abradable seal coatings. 4,291,089, Cl. 428-325.000.

Adams, Frederick J., to Cam Gears Limited. Gear assembly. 4,290,344, Cl. 91-467.000.

Adams, Harry A.; and Fitzgibbons, William O., to Standard Oil Company (Ohio). Process for removal of water soluble particulate material from gas streams. 4,290,783, Cl. 55-89.000.

Adams, Mamie I. Blair: *See*—
Blair, Joseph N., 4,290,231, Cl. 49-173.000.

Adams, Peter J.: *See*—
Ruhe, Anthony; and Adams, Peter J., 4,290,388, Cl. 122-235.00A.

Adams, Rose M.: *See*—
Anema, Pieter J.; Haisman, Derek R.; and Adams, Rose M., 4,291,066, Cl. 426-578.000.

Adams, William J.; Wernet, William F.; and Haskins, Steve W., to Northern Telecom, Inc. Telephone handset chassis and flexible printed circuit. 4,291,202, Cl. 179-103.000.

Adaniya, Takeshi: *See*—
Matsudo, Kazuo; Adaniya, Takeshi; Ohmura, Masaru; Shoji, Masahiro; and Watanabe, Tsutomu, 4,290,860, Cl. 204-27.000.

Adrian, Adolf: *See*—
de Baan, Johannes J.; and Adrian, Adolf, 4,290,511, Cl. 188-322.170.

Advanced Machine and Tool Corporation: *See*—
Arnold, Richard B., 4,290,190, Cl. 29-596.000.

Aeroquip Corporation: *See*—
Knowles, Steven M., 4,290,276, Cl. 62-299.000.

Agence National de Valorization de la Recherche: *See*—
Pinard, Michel; Aminoff, Carl; Trenec, Gerard; and Laloe, Franck, 4,291,281, Cl. 331-94.50C.

Agfa-Gevaert AG: *See*—
Ludemann, Heinz; and Ziegler, Franz, 4,290,594, Cl. 271-180.000.

Agostino, Michael. Light-weight floor-standing drain cleaner. 4,290,162, Cl. 15-104.3SN.

Ahrbeck, Harold, to Du Pont de Nemours, E. I., and Company. Thermoplastic pipe stub end. 4,290,456, Cl. 138-109.000.

Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, to Hitachi, Ltd. Electron tube cathode. 4,291,252, Cl. 313-346.00R.

Aileo, Jackson A., to Gentex Corporation. Method of making an individually fitted helmet. 4,290,149, Cl. 2-414.000.

Air Products and Chemicals, Inc.: *See*—
Cebalo, Tony; and Walde, Robert A., 4,290,798, Cl. 71-90.000.

Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, to Tokyo Shibaura Electric Co., Ltd. Method for manufacturing bimetal. 4,290,828, Cl. 148-11.50Q.

Aisan Industry Co., Ltd.: *See*—
Takada, Shigetaka; and Morino, Toshiharu, 4,290,399, Cl. 123-439.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Adachi, Yoshiharu, 4,290,340, Cl. 91-31.000.

Aiyama, Fumihiko: *See*—
Hiramatsu, Kenzo; and Aiyama, Fumihiko, 4,290,165, Cl. 15-330.000.

Akabayashi, Hiroshi; Ohyama, Eiji; Shoji, Susumu; Adachi, Masami; Uemura, Koretoshi; and Ogawa, Yoshihisa, to Nissan Chemical Industries, Ltd. Plasticizer composition. 4,291,127, Cl. 560-76.000.

Akagi, Akio: *See*—
Senda, Jihei; Inoue, Yoshihiro; Uenishi, Toshiaki; Harada, Hidefumi; Nakata, Kouji; and Akagi, Akio, 4,291,010, Cl. 423-594.000.

Akebono Brake Industry Co. Ltd.: *See*—
Maehara, Toshifumi; and Kawase, Kazuo, 4,290,265, Cl. 60-561.000.

Aketa, Masahiro: *See*—
Sakano, Kenji; Yamashita, Masahiro; Yamashita, Kenji; and Aketa, Masahiro, 4,290,395, Cl. 123-192.00B.

Akimoto, Shinichi: *See*—
Tanizaki, Yoshiharu; Minagawa, Kenichiro; Akimoto, Shinichi; and Horioka, Kuninori, 4,291,101, Cl. 428-514.000.

Akzona Incorporated: *See*—
Henry, Charles L., 4,290,815, Cl. 106-203.000.

Albertson, Michael D.: *See*—
Noar, Raymond; Zedekar, Stanley L.; Albertson, Michael D.; Pointer, Carl W.; Gall, Chester E.; and Fuller, Alfred B., 4,290,316, Cl. 74-5.460.

Alcan Research and Development Limited: *See*—
Montgrain, Luc, 4,290,590, Cl. 266-225.000.

Alderman, Robert J. Fluid flow insulation system. 4,290,247, Cl. 52-173.00R.

Alexeff, Igor. Plasma switch. 4,291,255, Cl. 315-340.000.

Alfano, Robert R. Method and apparatus for detecting the presence of caries in teeth using visible luminescence. 4,290,433, Cl. 128-665.000.

Alfano, Robert R.; and Green, Bruce H., to Research Foundation of the City University of New York, The. Stabilized pulse producing mode locked laser system. 4,291,282, Cl. 331-94.50S.

Ali Khan, Eskendar: *See*—
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,291,037, Cl. 424-253.000.

Allain, Ronald J.; and Maniscalco, Joseph P., to Nalco Chemical Company. Preparation of tetramethyldisilane from 1,2-tetramethyldichlorodisilane. 4,291,167, Cl. 556-430.000.

Alldredge, Robert L. Dust collector and method of operation. 4,290,785, Cl. 55-96.000.

Allen-Bradley Company: *See*—
Ecker, Donald R., Jr.; Dummermuth, Ernst; and Struger, Odo J., 4,291,388, Cl. 364-900.000.

Allen, Richard A. Foldable bicycle carrier. 4,290,540, Cl. 224-314.000.

Allied Chemical Corporation: *See*—
Ray, Ranjan, 4,290,808, Cl. 75-251.000.
Segal, Leon, 4,291,084, Cl. 428-212.000.
Smith, Robert W.; Hemmat, Naim S.; Bedell, John R.; Kavesh, Sheldon; and Draizen, Seymour, 4,290,476, Cl. 164-423.000.

Alloy Surfaces Company, Inc.: *See*—
Baldi, Alfonso L., 4,290,391, Cl. 122-511.000.

Alpha Solarco Inc.: *See*—
Uroshevich, Miroslav, 4,290,418, Cl. 126-439.000.

Alps Electric Company, Ltd.: *See*—
Ijichi, Sadayoshi; and Nishizawa, Eiji, 4,291,290, Cl. 334-1.000.
Shirakawa, Takashi, 4,291,361, Cl. 361-293.000.

Altman, Jay C.: *See*—
Boots, W. Stewart; and Altman, Jay C., 4,290,373, Cl. 111-3.000.

Alucaps Italiana S.p.A.: *See*—
Reina, Erminia, 4,290,535, Cl. 215-270.000.

Aluminum Company of America: *See*—
McMonigle, Matthew J.; and Klingensmith, Chester H., 4,290,874, Cl. 204-243.00R.

ALZA Corporation: *See—*
Luschen, Joseph G.; and Theeuwes, Felix, 4,290,426, Cl. 128-260.000.

Amada Company, Ltd.: *See—*
Washio, Isomi; and Onishi, Kenji, 4,290,330, Cl. 83-820.000.

Amancharla, Amareswar: *See—*
Beall, Clifford H.; Amancharla, Amareswar; and Luke, Michael A., 4,290,484, Cl. 166-242.000.

Ameling, Dieter: *See—*
Sensis, Siegfried; Schwerdtfeger, Joachim; Walden, Klaus; and Ameling, Dieter, 4,290,800, Cl. 75-12.000.

American Cyanamid Company: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,291,169, Cl. 560-45.000.
Poulos, Andrew C.; and Thibodeau, Michael J., 4,291,005, Cl. 423-321.00R.
Tobkes, Martin; Dann, Murray; Klothen, Irving; Spicer, Larry D.; and Williams, David R., 4,291,026, Cl. 424-181.000.
Wissner, Allan; and Floyd, Middleton B., Jr., 4,291,174, Cl. 568-330.000.
Wissner, Allan; and Floyd, Middleton B., Jr., 4,291,175, Cl. 568-330.000.

American Home Products Corporation: *See—*
Freed, Meier E.; and Diebold, James L., 4,290,952, Cl. 260-326.470.
Helfer, Joel N.; and Ferrara, Elisa M., 4,290,425, Cl. 128-133.000.

American Newspaper Publishers Association: *See—*
Fowler, William H.; and Warner, Frederick L., 4,290,361, Cl. 101-182.000.

American Optical Corporation: *See—*
Siegmund, Walter P., 4,290,421, Cl. 128-6.000.

American Sterilizer Company: *See—*
Orelski, Paula A., 4,291,122, Cl. 435-31.000.

American Telecommunications Corporation: *See—*
Johnson, Walter R.; and Petaja, Gary M., 4,291,201, Cl. 179-90.00K.

Ames, Adolf: *See—*
Wagner, Alfred; and Ames, Adolf, 4,290,290, Cl. 72-256.000.

Aminoff, Carl: *See—*
Pinard, Michel; Aminoff, Carl; Trenec, Gerard; and Laloe, Franck, 4,291,281, Cl. 331-94.50C.

AMP Incorporated: *See—*
Bakermans, Johannes C. W.; and Neiman, Richard A., 4,290,179, Cl. 29-33.00M.

Ampex Corporation: *See—*
Chase, James P., 4,291,354, Cl. 360-129.000.
Gooch, Beverley R., 4,291,352, Cl. 360-121.000.

Amtel, Inc.: *See—*
Kuntz, Francis A., Jr., 4,290,158, Cl. 9-8.00P.

Amundsen, Alan R.: *See—*
Hoeschel, James D.; and Amundsen, Alan R., 4,291,027, Cl. 424-197.000.
Hoeschele, James D.; and Amundsen, Alan R., 4,291,023, Cl. 424-180.000.

Anderson, Arlynn W.: *See—*
Kizer, Richard W.; Anderson, Arlynn W.; and Untz, Robert W., 4,290,990, Cl. 264-156.000.

Anderson, Harry L.: *See—*
Malone, William H.; Fischley, John; Anderson, Harry L.; and Spirko, Edward J., 4,290,751, Cl. 432-214.000.

Anderson, J. Hilbert, to Sea Solar Power. Submarine pipe construction. 4,290,631, Cl. 285-137.00A.

Anderson, John B. Folding step stool. 4,290,502, Cl. 182-33.000.

Anderson, Loren A., to Rousemount Inc. Optically coupled calibrator for transmitters. 4,290,297, Cl. 73-1.00R.

Anderson, Robert V.; Bayer, Douglas L.; Hagelbarger, David W.; and Kubik, Peter S., to Bell Telephone Laboratories, Incorporated. General-purpose electronic telephone station set. 4,291,198, Cl. 179-2.0DP.

Anderson, Roger E.: *See—*
Paine, Ellis H.; and Anderson, Roger E., 4,290,711, Cl. 403-358.000.

Anderson, Weston A., to Varian Associates, Inc. Ultrasonic imaging system using digital control. 4,290,310, Cl. 73-625.000.

Anderton, John J.; and Graham, Lynette E., to GTE Products Corporation. Connector extractor tool. 4,290,193, Cl. 29-764.000.

Ando, Kenji: *See—*
Nishiyama, Hiroshi; Nakamura, Takeshi; Kato, Suehiro; and Ando, Kenji, 4,290,876, Cl. 204-298.000.

Andreev, Kino D.: *See—*
Georgiev, Atanas G.; Andreev, Kino D.; and Konstantinova, Kina V., 4,290,971, Cl. 260-453.500.

Andros, Frank E.; Kerjilian, Ghazaros K.; Stevens, Bert E.; and Tomek, Reinhold E., to International Business Machines Corporation. Air-cooled hybrid electronic package. 4,291,364, Cl. 361-384.000.

Anema, Pieter J.; Haisman, Derek R.; and Adams, Rose M., to Thomas J. Lipton, Inc. Process for producing an ambient stable, starch-containing concentrate. 4,291,066, Cl. 426-578.000.

Antos, George J., to UOP Inc. Attenuated superactive multimetallic catalytic composite. 4,290,921, Cl. 252-441.000.

Antrim, Richard D.: *See—*
Scharer, Hans R.; Antrim, Richard D.; and Strang, John R., 4,290,742, Cl. 425-313.000.

Anttila, Seppo: *See—*
Rysti, Alpo; Anttila, Seppo; and Maki-Hoimola, Veijo, 4,290,722, Cl. 414-48.000.

Aoki, Akihiro: *See—*
Tamura, Yorikazu; Aoki, Akihiro; and Shimada, Keizo, 4,291,142, Cl. 525-420.000.

Appel, Eggert; Nissen, Peter; Geisler, Gottfried; and Kiene, Wilfried, to Fischer & Porter Company. Electromagnetic flowmeter system. 4,290,313, Cl. 73-861.170.

Appleton Papers Inc.: *See—*
Becker, William J., 4,290,933, Cl. 260-29.6MM.

Apuzzo, Gennaro; and Bocchini, Gian F., to Merisinter S.p.A. Sintered self lubricating bearings. 4,290,655, Cl. 308-121.000.

Arachi, John M.: *See—*
Reavill, Joseph A.; and Arachi, John M., 4,290,838, Cl. 156-286.000.

Araki, Shigeru: *See—*
Taki, Yasuo; Araki, Shigeru; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,290,732, Cl. 414-752.000.

Arbed S.A.: *See—*
Glaesener, Ernest, 4,290,585, Cl. 256-13.100.

Archambel, S.A.: *See—*
van den Berg, Johan H., 4,290,164, Cl. 15-250.320.

Archibald, John H. Kinematic restraint. 4,290,574, Cl. 248-177.000.

Ariga, Tatsuo. Writing instrument having multiple writing elements. 4,290,707, Cl. 401-110.000.

Arlt, Joachim; and Fromm, Dietrich, to Patent-und-Gesellschaft fur elektrische Gluhlampen m.b.H. Discharge lamp energization circuit, particularly for audio and supersonic frequency operation of high-pressure discharge lamps. 4,291,254, Cl. 315-240.000.

Armco Inc.: *See—*
Lawson, John E., 4,290,483, Cl. 166-237.000.

Armstrong Cork Company: *See—*
Rueggeberg, Werner, 4,291,226, Cl. 250-324.000.

Armstrong, Rolfe D., to NCR Corporation. Parity prediction circuitry for a multifunction register. 4,291,407, Cl. 371-49.000.

Arnold, Donald S.; Fairchild, James L.; Nichols, Donald A.; and Coe, Merlin D., to Kerr-McGee Chemical Corporation. Process for producing sodium carbonate from complex brines. 4,291,002, Cl. 423-189.000.

Arnold, Joe F.: *See—*
Jameikis, Saulius M.; Stalcup, Robert K.; Arnold, Joe F.; and Hon, Robert K., 4,290,237, Cl. 51-34.00A.

Arnold, Richard B., to Advanced Machine and Tool Corporation. Method and apparatus for spreading stator windings. 4,290,190, Cl. 29-596.000.

Arnold, Robert D. Vehicle speed enforcement signal. 4,291,295, Cl. 340-53.000.

Arthurs, John W.; and Perkowski, Ronald, to Bra-Con Industries, Inc. Welding apparatus having closely mounted shunts. 4,291,214, Cl. 219-86.100.

Asahi Communications Inc.: *See—*
Shimamura, Juky, 4,290,227, Cl. 46-206.000.

Asahi Glass Company, Limited: *See—*
Miyauchi, Seiroku; Sagane, Yasuo; and Irie, Kazuo, 4,290,641, Cl. 296-146.000.
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,290,859, Cl. 204-16.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Komatsu, Kazurou; Matsumoto, Sojiro; Maniwa, Takeshi; and Shinmura, Nobuyuki, 4,290,969, Cl. 260-453.0AB.
Takahashi, Yasunobu; Fujimoto, Einosuke; Shimizu, Toshio; and Kato, Takeo, 4,290,946, Cl. 260-239.00B.

Asai, Tsuyoshi; Fujimori, Naoji; and Yamamoto, Takaharu, to Sumitomo Electric Industries, Ltd. Hard alloy and a process for the production of the same. 4,290,807, Cl. 75-233.000.

Asano, Shuichi: *See—*
Ueda, Takeo; and Asano, Shuichi, 4,290,629, Cl. 280-806.000.

Aslen, Douglas E. Machinery safety guards. 4,290,717, Cl. 408-241.00G.

Associated Engineering Limited: *See—*
Scott, Peter A. J., 4,290,613, Cl. 277-96.100.

Atlantic Richfield Company: *See—*
Leonard, John J., 4,290,968, Cl. 260-453.00P.

Atlas Powder Company: *See—*
Janoski, Florian B., 4,290,366, Cl. 102-202.300.

Aubert, Paul; Quinton, Christian; and Pannier, Gerard, to Regie Nationale des Usines Renault. Apparatus for controlling an automatic transmission. 4,290,324, Cl. 74-866.000.

Auburn International, Inc.: *See—*
Dechene, Ronald L.; Grimaldi, Frank G.; and Newton, Robert E., 4,291,273, Cl. 324-343.000.

Aude, Robert; Baumgartner, Pierre; Desmarquest, Jean-Pierre; and Franck, Jean-Pierre, to Institut Francais du Petrole. Process for manufacturing petroleum sulfonates and the resultant products. 4,290,973, Cl. 260-505.00R.

August Bilstein, Firma: *See—*
de Baan, Johannes J.; and Adrian, Adolf, 4,290,511, Cl. 188-322.170.

Ausschnitt, Christopher P.; and Huchital, David A., to Perkin-Elmer Corporation, The. Coating apparatus. 4,290,384, Cl. 118-722.000.

Auten, Jerry P. Coating system for roofs, swimming pools and the like. 4,291,086, Cl. 428-242.000.

Autotron Equipment Corporation: *See—*
Holm, Donald C., 4,290,205, Cl. 33-180.00R.

Autovox S.p.A.: *See—*
Pera, Vittorio, 4,291,348, Cl. 360-96.400.

Avery, Julian M. Method for producing magnesium. 4,290,804, Cl. 75-67.00R.

Ayres, Peter J.: *See—*
Leigh, Steven; and Ayres, Peter J., 4,291,062, Cl. 424-322.000.

Azar, Charles. Video magazine and package therefor. 4,290,524, Cl. 206-232.000.

Azegami, Hitoshi: *See—*
Horigome, Eiji; Ota, Hiroshi; and Azegami, Hitoshi, 4,291,100, Cl. 428-424.200.

B. F. Goodrich Company, The: *See—*
Bertsch, Robert J.; and Riew, Changkiu K., 4,290,939, Cl. 260-40.00R.

Babcock & Wilcox Company, The: *See—*
Ball, Russell M.; and Roberts, Robert C., 4,290,851, Cl. 176-24.000.
Larson, Gordon C., 4,290,543, Cl. 228-2.500.
Monter, James V.; Sorenson, James P.; and Theus, George J., 4,290,872, Cl. 204-195.00F.

Babinsky, Andrew D.: *See—*
Shuster, Nicholas; Babinsky, Andrew D.; and Kidon, William E., 4,290,864, Cl. 204-103.000.

Bachmann, Klaus J., to Bell Telephone Laboratories, Incorporated. Indium phosphide arsenide based devices. 4,291,323, Cl. 357-30.000.

Bachmann, Peter, to Ebauches Bettlach S.A. Device for securing a watch dial to a watch-movement plate. 4,291,401, Cl. 368-236.000.

Back, Paul: *See—*
Clark, Howard L.; Dorman, Richard A.; and Back, Paul, 4,291,258, Cl. 318-124.000.

Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., to Envirotech Corporation. Recovering copper from a copper-bearing source. 4,290,865, Cl. 204-106.000.

Bader, Clifford J., to Burroughs Corporation. Tracking analog-to-digital converter for AC signals. 4,291,300, Cl. 340-347.0AD.

Bagdis, Judy, to Polaroid Corporation. Sonar responsive shutter blade time out control circuit. 4,290,683, Cl. 354-234.000.

Bahl, Lalit R.; Cocke, John; Cullum, Clifton D., Jr.; and Hagenauer, Joachim, to International Business Machines Corporation. Error correction on burst channels by sequential decoding. 4,291,406, Cl. 371-44.000.

Bainbridge, Robert W.: *See—*
Dannels, W. Andrew; and Bainbridge, Robert W., 4,290,744, Cl. 425-543.000.

Baker, Gordon P.: *See—*
Smith, James E.; and Baker, Gordon P., 4,290,493, Cl. 173-124.000.

Baker International Corporation: *See—*
Beall, Clifford H.; Amancharla, Amareswar; and Luke, Michael A., 4,290,484, Cl. 166-242.000.

Bakermans, Johannes C. W.; and Neiman, Richard A., to AMP Incorporated. Cable harness assembly machine. 4,290,179, Cl. 29-33.00M.

Balchunis, Robert J.; and Bany, Stephen W., to Minnesota Mining and Manufacturing Company. Antimony halide-organic phosphate ester cationic polymerization catalysts. 4,291,145, Cl. 528-89.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Diffusion treated articles. 4,290,391, Cl. 122-511.000.

Balhouse, Harold J., to Consolidated Controls Corporation. Gate valve. 4,290,580, Cl. 251-169.000.

Ball, Russell M.; and Roberts, Robert C., to Babcock & Wilcox Company, The. Nuclear reactor safety system. 4,290,851, Cl. 176-24.000.

Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten: *See—*
Moll, Eberhard, 4,290,614, Cl. 277-205.000.

Ban, Itsuki. Remote control device for camera. 4,290,685, Cl. 354-266.000.

Banasiak, Dennis S., to Phillips Petroleum Company. Olefin disproportionation process. 4,291,187, Cl. 585-644.000.

Baniel, Avraham M., to Yissum Research & Development Co. of Hebrew Univ. of Jeru. Process for the separation of a strong mineral acid from an aqueous solution. 4,291,007, Cl. 423-390.000.

Bany, Stephen W.: *See—*
Balchunis, Robert J.; and Bany, Stephen W., 4,291,145, Cl. 528-89.000.

Barale, Giuseppe. Shuttering system for casting concrete walls or partitions, and a method for its assembly. 4,290,985, Cl. 264-31.000.

Barantsevich, Evgeny N.: *See—*
Syrov, Anatoly A.; Ivanchev, Sergei S.; Primachenko, Oleg N.; Demidova, Valentina A.; Polozov, Boris V.; Fionov, Vladimir I.; and Barantsevich, Evgeny N., 4,290,945, Cl. 260-192.000.

Barker, Robert S., to Halcon Research and Development Corp. Preparation of propylene oxide. 4,290,959, Cl. 260-348.240.

Barnes, Alan C.; and Kay, David P., to Roussel Uclaf. Oxoimidazoquinoxalines. 4,291,033, Cl. 424-250.000.

Barnes, Howard H. Ball ejecting golf cup. 4,290,603, Cl. 273-34.00A.

Barnetche, Eduardo. Automatic wear compensating seal device. 4,290,497, Cl. 175-371.000.

Barnette, William E.: *See—*
Nicolaou, Kyriacos C.; Barnette, William E.; and Magolda, Ronald L., 4,291,166, Cl. 549-51.000.

Baroni, James T. Eight track tape alignment instrument. 4,291,347, Cl. 360-93.000.

Barraclough, Gary O.: *See—*
McCaffrey, Craig R.; and Barraclough, Gary O., 4,291,004, Cl. 423-242.000.

Barrett, John H.; and Flynn, Brian P., to Purex Corporation. Method of producing air-permeable fabric conditioner sheet for laundry dryer. 4,291,072, Cl. 427-243.000.

Barriere, Alain. Foldable luggage carrying device. 4,290,625, Cl. 280-654.000.

Barrow, Thomas: *See—*
Owen, Harry; and Barrow, Thomas, 4,290,813, Cl. 501-13.000.

Barry, Thomas I.; Schajer, Gary S.; and Stackpool, Francis M., to Chloride Silent Power Limited. Glass seals for sealing beta-alumina in electro-chemical cells or other energy conversion devices, glasses for use in such seals and cells or other energy conversion devices with such seals. 4,291,107, Cl. 429-104.000.

Barta, Peter: *See—*
Torok, Gabor; Sarosi, Lajos; Grof, Ferenc; Becsei, Tamas; and Barta, Peter, 4,290,894, Cl. 210-661.000.

Barthe, Henry P.; and Cobb, William R., to Schroeder Brothers Corporation. Roof bolting device. 4,290,490, Cl. 173-23.000.

Barzaghi, Fernando: *See—*
Farcilli, Andre; Medici, Italo; Fournex, Robert; and Barzaghi, Fernando, 4,291,038, Cl. 424-256.000.

Basch, Walter E., to ACF Industries, Inc. Crashworthy fuel pump. 4,290,347, Cl. 92-102.000.

BASF Aktiengesellschaft: *See—*
Hambrecht, Jurgen; Lindenschmidt, Gerhard; and Regel, Walter, 4,291,134, Cl. 525-92.000.
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,291,147, Cl. 528-119.000.
Merger, Franz; and Towae, Friedrich, 4,290,970, Cl. 260-453.00P.
Ross, Karl-Heinz; Dudeck, Christian; Himmele, Walter; Lebkuecher, Rolf; and Sauer, Wolfgang, 4,290,960, Cl. 260-348.570.

Bass, David S., to Sperry Corporation. Pseudorandom number generator. 4,291,386, Cl. 364-717.000.

Batiuk, Walter: *See—*
Cornwall, Edwin P.; and Batiuk, Walter, 4,290,819, Cl. 134-3.000.

Battelle Development Corp.: *See—*
Maringer, Robert E., 4,290,993, Cl. 264-164.000.

Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, to Societe Nationale Elf Aquitaine (Production). Process for the purification of residual industrial gases containing small quantities of sulfur compounds. 4,291,003, Cl. 423-228.000.

Bauer, Fritz: *See—*
Dost, Gunter; and Bauer, Fritz, 4,291,053, Cl. 424-283.000.

Bauer, Werner R., to Robertshaw Controls Company. Reversing valve construction and method of making the same. 4,290,453, Cl. 137-625.430.

Bauer, Wilfried: *See—*
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Bauer, William J. Sludge dewatering process and vehicle for use in such process. 4,290,890, Cl. 210-608.000.

Baum, Heinz W., to Lucas Industries Limited. Disc brake pad assemblies. 4,290,508, Cl. 188-73.380.

Baum, Kurt; and Guest, Allen M., to United States of America, Navy. Esters of 2-fluoro-2,2-dinitroethylmalonate and 2,2-dinitropropylmalonate. 4,291,171, Cl. 560-156.000.

Bauman, Ludwig. Bubbler mat with separate box type mat elements. 4,290,982, Cl. 261-124.000.

Baumann, Gerald W., to International Business Machines Corporation. Carriage bin synchronization for dual mode collator. 4,290,596, Cl. 271-292.000.

Baumeister, Hans-Peter, to Eastman Kodak Company. Apparatus for checking the operational status of an electronic strobe unit's battery under load conditions. 4,290,677, Cl. 354-127.000.

Baumgartner, Pierre: *See—*
Aude, Robert; Baumgartner, Pierre; Desmarquest, Jean-Pierre; and Franck, Jean-Pierre, 4,290,973, Cl. 260-505.00R.

Baxter Travenol Laboratories, Inc.: *See—*
Heiss, Louis R., 4,291,230, Cl. 250-458.000.

Bayer Aktiengesellschaft: *See—*
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Heine, Hans-Georg; and Hartmann, Willy, 4,291,176, Cl. 568-381.000.
Hohlein, Peter; and Sonntag, Michael, 4,291,135, Cl. 525-101.000.
Hucks, Uwe; Wulff, Claus; Tresper, Erhard; Vernaleken, Hugo; and Selbeck, Harald, 4,290,977, Cl. 260-973.000.
Jager, Gerhard; Kraatz, Udo; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,291,044, Cl. 424-269.000.
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, 4,291,046, Cl. 424-272.000.
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,291,047, Cl. 424-273.00R.
Neeff, Rutger; Kuth, Robert; Kuhnel, Werner; and Gohrbandt, Wilhelm, 4,290,768, Cl. 8-532.000.
Schroeder, Gerhard; Buxbaum, Gunter; Hund, Franz; Schopper, Heinrich-Christian; and Naumann, Rolf, 4,290,799, Cl. 75-0.50A.

Bayer, Douglas L.: *See—*
Anderson, Robert V.; Bayer, Douglas L.; Hagelbarger, David W.; and Kubik, Peter S., 4,291,198, Cl. 179-2.0DP.

Bayer, Ernst; and Kutubuddin, Mohamed, to Heyl & Co., Chemisch-Pharmazeutische Fabrik. Soluble polymerization catalysts, production of the same and their use. 4,290,918, Cl. 252-431.00R.

BBC Brown, Boveri & Company, Ltd.: *See—*
Bernasconi, Felix, 4,290,736, Cl. 417-87.000.
Dumont, Willy, 4,290,609, Cl. 277-3.000.
Skala, Karel, 4,291,378, Cl. 364-494.000.

Beach, William F.; and Mahoney, Dennis M., to Union Carbide Corporation. Electrets. 4,291,244, Cl. 307-400.000.

Beall, Clifford H.; Amancharla, Amareswar; and Luke, Michael A., to Baker International Corporation. Seal receptacle assembly. 4,290,484, Cl. 166-242.000.

Becker, William J., to Appleton Papers Inc. Adhesive composition for making form sets from carbonless copy paper sheets. 4,290,933, Cl. 260-29.6MM.

Beckman Instruments, Inc.: *See—*
Chulay, Steven J.; and Richards, Francis D., 4,290,550, Cl. 233-26.000.
Corwin, William C.; and Pawlak, Raymond M., 4,291,317, Cl. 346-140.00R.
Becsei, Tamas: *See—*
Torok, Gabor; Sarosi, Lajos; Grof, Ferenc; Becsei, Tamas; and Barta, Peter, 4,290,894, Cl. 210-661.000.
Becton, Dickinson and Company: *See—*
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Bedell, John R.: *See—*
Smith, Robert W.; Hemmat, Naim S.; Bedell, John R.; Kavesh, Sheldon; and Draizen, Seymour, 4,290,476, Cl. 164-423.000.
Beecham Group Limited: *See—*
Brain, Edward G.; and Osborne, Neal F., 4,290,948, Cl. 260-245.20R.
Beecroft, Harold J.; and Davis, Max G., Jr., to Texas Instruments Incorporated. Optoelectronic system for determining the position of a magnetic head transducer on a flexible magnetic recording disc. 4,291,346, Cl. 360-75.000.
Behnke, Wernfried: *See—*
Pfeifer, Friedrich; and Behnke, Wernfried, 4,290,827, Cl. 148-108.000.
Behringwerke Aktiengesellschaft: *See—*
Hirsch, Wolfgang, 4,290,771, Cl. 23-230.00B.
Beierle, John W.; and Grenoble, Dale E., to Dental Concepts, Inc. Method for limiting adherence of plaque and dental composition therefor. 4,291,017, Cl. 424-52.000.
Beisch, Hanspeter E.: *See—*
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Beiser, Leo. Anaglyph stereoscopy. 4,290,675, Cl. 354-112.000.
Bela, Romvari; and Gyula, Kakonyi, to Elzett Muvek. Cylindrical lock with a magnetic body. 4,290,285, Cl. 70-276.000.
Bell Telephone Laboratories, Incorporated: *See—*
Anderson, Robert V.; Bayer, Douglas L.; Hagelbarger, David W.; and Kubik, Peter S., 4,291,198, Cl. 179-2.0DP.
Bachmann, Klaus J., 4,291,323, Cl. 357-30.000.
Carbrey, Robert L., 4,291,298, Cl. 340-347.0AD.
Clemens, James T.; and Locke, Kay M., 4,291,322, Cl. 357-23.000.
Cooper, James A., Jr.; and Krambeck, Robert H., 4,291,247, Cl. 307-481.000.
Densmore, Wayne; and Quinn, Thomas M., 4,291,199, Cl. 179-18.0AB.
Jayant, Nuggehally S.; Schmidt, Carolyn E.; and Steele, Raymond, 4,291,405, Cl. 371-31.000.
Smith, Nicholas K., 4,291,200, Cl. 179-18.0BD.
Tsang, Won-Tien, 4,291,327, Cl. 357-52.000.
Bellafiore, Gaspare. Hearing aid device. 4,291,203, Cl. 179-107.00E.
Beloit Corporation: *See—*
Oas, David C., 4,290,995, Cl. 264-532.000.
Belva, George M.; and Mecklenborg, Richard A., to Singer Company, The. Optical display apparatus. 4,290,669, Cl. 350-174.000.
Benda, Rainer: *See—*
Pennewiss, Horst; Benda, Rainer; Jost, Heinz; and Knoell, Helmuth, 4,290,925, Cl. 252-56.00S.
Bendix Corporation, The: *See—*
Jackson, Robert W., 4,290,181, Cl. 29-458.000.
Benjamin Manufacturing Company, Inc.: *See—*
Benjamin, William H., 4,290,154, Cl. 4-538.000.
Benjamin, Milton L.; Miles, Wilbur N.; and Majkrzak, Edward A., to Erickson Tool Company. Tool presetting fixture. 4,290,206, Cl. 33-185.00R.
Benjamin, William H., to Benjamin Manufacturing Company, Inc. Bathtub structure. 4,290,154, Cl. 4-538.000.
Bennett, Moreland P.; and Vrabel, Edward A., to General Electric Company. Bonding a highly conductive arc-resistant electrical contact pad on a metal body. 4,291,215, Cl. 219-118.000.
Berg, Charles A., to Pyreflex Corporation. Ingot casting. 4,290,475, Cl. 164-513.000.
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, to Rhone Poulenc Industries. Thiazolo(3,2-C)benzoxazine derivatives. 4,291,032, Cl. 424-248.510.
Berger, Fritz: *See—*
Bruckner, Georg F.; Geike, Bernd; Berger, Fritz; and Schoen, Bernd-Jurgen, 4,290,147, Cl. 2-18.000.
Berger, Isaac, to Berger, Issac. Exerciser. 4,290,599, Cl. 272-130.000.
Berger, Issac: *See—*
Berger, Isaac, 4,290,599, Cl. 272-130.000.
Bergey, Karl H., Jr.; and Bergey, Michael L. S. Windmill. 4,291,235, Cl. 290-55.000.
Bergey, Michael L. S.: *See—*
Bergey, Karl H., Jr.; and Bergey, Michael L. S., 4,291,235, Cl. 290-55.000.
Berggren, William R.; and Brownley, Shelby J., to Minnesota Mining and Manufacturing Co. Imageable, composite-dry transfer sheet and process of using same. 4,291,114, Cl. 430-253.000.
Berghof, Hans-Joachim: *See—*
Hensel, Wolfgang; Berghof, Hans-Joachim; and Werner, Heinz, 4,290,647, Cl. 297-362.000.
Bergmann, Horst, to Daimler-Benz Aktiengesellschaft. Gas-operated internal combustion engine. 4,290,402, Cl. 123-327.000.
Berlenbach, Norbert: *See—*
von Hagel, Gunter; and Berlenbach, Norbert, 4,290,898, Cl. 210-738.000.
Bernasconi, Felix, to BBC Brown, Boveri & Company, Ltd. Oil pump having a suction and pressure pipe arrangement. 4,290,736, Cl. 417-87.000.
Bernath, Gabor: *See—*
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,291,036, Cl. 424-251.000.
Bernstein, Seymour: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,291,169, Cl. 560-45.000.
Berry, Randy: *See—*
West, Jeffery L.; and Berry, Randy, 4,290,516, Cl. 192-56.00L.
Berti, Giovanni: *See—*
Acquati, Giancarlo; Berti, Giovanni; and Fossati, Piero, 4,291,121, Cl. 435-10.000.
Bertolini, Alfio, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Pharmaceutical compositions comprising trimethoprim and N-ethyl-γ-pyridone-3-carboxylic acid derivatives. 4,291,035, Cl. 424-251.000.
Bertsch, Robert J.; and Riew, Changkiu K., to B. F. Goodrich Company, The. Unsaturated polyester resins and molding compositions containing same. 4,290,939, Cl. 260-40.00R.
Bertus, Brent J.: *See—*
McKay, Dwight L.; Bertus, Brent J.; and Mark, Harold W., 4,290,919, Cl. 252-437.000.
Bettencourt, Darryl G.: *See—*
Schmidt, Lewis W.; Bettencourt, Darryl G.; Dietz, Charles F.; and Marshall, George E., Jr., 4,290,352, Cl. 100-100.000.
Betz Laboratories, Inc.: *See—*
McCaffrey, Craig R.; and Barraclough, Gary O., 4,291,004, Cl. 423-242.000.
Betz, Wolfgang; and Rossmann, Axel, to MTU Motoren-und Turbinen Union. Process for the production of high temperature-resistant metallic components with finely porous walls. 4,290,845, Cl. 156-644.000.
Beutner, Donald H.: *See—*
Files, Thomas I.; and Beutner, Donald H., 4,290,651, Cl. 299-7.000.
Bevan, William G., to General Battery Corporation. Flow control device for use with a battery formation tub. 4,290,444, Cl. 137-255.000.
Beynet, Pierre A.; and Williams, Emil K., to Standard Oil Company (Indiana). Pipeline riser for floating platforms. 4,290,715, Cl. 405-169.000.
Bhalla, Ranbir S., to Westinghouse Electric Corp. Arc discharge tube end seal. 4,291,250, Cl. 313-220.000.
Bhasin, Ram B.: *See—*
Tandon, Amar N.; and Bhasin, Ram B., 4,291,365, Cl. 362-281.000.
Bial, Wolfgang: *See—*
King, Gordon A.; Nimmo, George R.; and Bial, Wolfgang, 4,291,302, Cl. 340-642.000.
Bigall, Klaus D.: *See—*
Muehlbauer, Otto; Bigall, Klaus D.; and Roessler, Helmut, 4,291,221, Cl. 235-92.0CC.
Bihn, Daniel; and Gordon, Pat L., to Intermedics, Inc. Pacer analyzer. 4,290,430, Cl. 128-419.0PT.
Bijma, Jan; Joeres, Helmut; and Johanns, Johannes H. M., to U.S. Philips Corporation. Color display tube. 4,291,251, Cl. 313-413.000.
Binge, Derek S., to RCA Corporation. Hinge construction with positive locking means. 4,290,168, Cl. 16-175.000.
Biotronick Mess-und Therapiegerate GmbH & Co. Ingenieurburo Berlin: *See—*
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Birr, Christian, to Max-Plank-Gesellschaft. Method of preparing polypeptides. 4,290,943, Cl. 260-112.50R.
Bishkin, David B., to Monsanto Company. Alkylation process improvement. 4,291,189, Cl. 585-860.000.
Bisque, Ramon E.: *See—*
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Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Prezewowsky, Klaus; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,291,029, Cl. 424-238.000.
Black & Decker Inc.: *See—*
Sides, Daniel H.; and Beisch, Hanspeter E., 4,290,492, Cl. 173-118.000.
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Schmidt, Lewis W.; Bettencourt, Darryl G.; Dietz, Charles F.; and Marshall, George E., Jr., 4,290,352, Cl. 100-100.000.
Blair, Joseph N., to Adams, Mamie I. Blair. Window assembly. 4,290,231, Cl. 49-173.000.
Blair, Richard H.: *See—*
McIntire, John M.; and Blair, Richard H., 4,291,131, Cl. 525-5.000.
Blanc, Claude: *See—*
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Blanton, William A., Jr., to Chevron Research Company. NO_x control in platinum-promoted complete combustion cracking catalyst regeneration. 4,290,878, Cl. 208-120.000.
Blanz, John H., to United States of America, Energy. Flexible shaft and roof drilling system. 4,290,494, Cl. 173-149.000.
Blaschke, James C.: *See—*
Smolik, John V.; Swanson, Ronald V.; Rubin, Charles P.; Blaschke, James C.; and Wagner, Roger J., 4,290,570, Cl. 244-158.00R.
Blaser, Reinhard, to Biotronick Mess-und Therapiegerate GmbH & Co. Ingenieurburo Berlin. Battery monitoring circuit in a cardiac pacemaker. 4,290,429, Cl. 128-419.0PT.

Blickensderfer, Robert, to United States of America, Interior. Sputtering apparatus for coating elongated tubes and strips. 4,290,877, Cl. 204-298.000.
Blockley, Alec G.: *See—*
McConnell, Edmund A.; Yearsley, Norman; and Blockley, Alec G., 4,290,514, Cl. 192-30.00W.
Blomqvist, Erik M.: *See—*
Blomqvist, John-Erik V.; and Blomqvist, Erik M., 4,291,195, Cl. 174-48.000.
Blomqvist, John-Erik V.; and Blomqvist, Erik M., to AB Lyckeaborgs Bruk. Lead-through for the fireproof disposition of electric cables through a wall. 4,291,195, Cl. 174-48.000.
Blount, David H. Process for the production of polyamide silicate resinous product. 4,291,154, Cl. 528-335.000.
Bocchini, Gian F.: *See—*
Apuzzo, Gennaro; and Bocchini, Gian F., 4,290,655, Cl. 308-121.000.
Boduch, Paul; and Trasavage, Robert, to W. R. Grace & Co. Relief imaging liquids. 4,291,118, Cl. 430-313.000.
Boeing Company, The: *See—*
Burton, James M.; Miller, Robert L.; and Tieden, Jansey D., 4,291,384, Cl. 364-560.000.
Cornwall, Edwin P.; and Batiuk, Walter, 4,290,819, Cl. 134-3.000.
Yoshida, Edward M., 4,290,617, Cl. 279-75.000.
Boerwinkle, Fred P.; and Kubik, Donald A., to Northern Instruments Corporation. Volatile corrosion inhibiting article. 4,290,912, Cl. 252-389.00R.
Boettcher, Charles E.: *See—*
Klein, Thomas; Varadi, Andrew G.; and Boettcher, Charles E., 4,290,186, Cl. 29-576.00B.
Bogema, Edward J.; and Richards, Elmer A., to Eaton Corporation. Transmission with resilient shifting mechanism. 4,290,515, Cl. 192-53.00C.
Bohringer, Walter, to RCA Corporation. Regulated deflection circuit with start-up and electronic circuit breaker control. 4,291,257, Cl. 315-408.000.
Boiko, Georgy A.: *See—*
Medovar, Boris I.; Boiko, Georgy A.; Dubinsky, Rudolf S.; and Egorov, Sergei P., 4,290,474, Cl. 164-470.000.
Bolen, Laurance R. Foot controllable boat anchor rope locking device. 4,290,380, Cl. 114-210.000.
Bolex International SA: *See—*
Vockenhuber, Peter, 4,290,679, Cl. 354-196.000.
Boller, Hans; and Oschwald, Max. Target sight recording apparatus. 4,290,219, Cl. 42-1.00R.
Bolliger, Martin: *See—*
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,290,477, Cl. 164-430.000.
Bolton, Gerald L.; Sefton, Verner B.; and Zubryckyj, Nicolaus, to Sherritt Gordon Mines Limited. Removal of manganese ions from zinc and manganese containing solutions. 4,290,866, Cl. 204-119.000.
Bonas Machine Company Limited: *See—*
Griffith, John D., 4,290,461, Cl. 139-450.000.
Bondar, Stepan E.: *See—*
Lizogub, Vadim A.; Kushnir, Alexandr P.; Figatner, Alexandr M.; and Bondar, Stepan E., 4,290,610, Cl. 277-13.000.
Bonnet, Jean L., to Schlumberger Technology Corporation. Method and apparatus for testing the integrity of the electrical insulation of a well logging sonde. 4,291,267, Cl. 324-54.000.
Boots, W. Stewart; and Altman, Jay C., to Mechanical Transplanter Company. Seedling tranplanter. 4,290,373, Cl. 111-3.000.
Borcoman, Mircea. Rotary drum plant for the manufacture of concrete, reinforced concrete and/or prestressed concrete products. 4,290,740, Cl. 425-62.000.
Borg-Warner Chemicals, Inc.: *See—*
Hechenbleikner, Ingenuin; Klicker, James D.; and Enlow, William P., 4,290,976, Cl. 260-973.000.
Borg-Warner Corporation: *See—*
Siemon, Edward C., 4,291,264, Cl. 318-729.000.
Yarema, Raymond J.; and Studtmann, George H., 4,291,368, Cl. 363-41.000.
Borner, Alfred. Apparatus for cutting foodstuffs. 4,290,196, Cl. 36-122.000.
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, to Montedison S.p.A. Acyl anilines exerting a fungicidal action. 4,291,049, Cl. 424-275.000.
Boudakian, Max M., to Olin Corporation. Process for making 2-bromopyridine. 4,291,165, Cl. 546-345.000.
Bouillon, Claude; and Vayssie, Charles, to L'Oreal. Oxybenzylidene-bornanones, their preparation and their use in cosmetics. 4,290,974, Cl. 260-511.000.
Bova, Joseph D. Method and apparatus for making unexpanded honeycomb material. 4,290,837, Cl. 156-256.000.
Bowerman, John J.: *See—*
Spaniol, John W.; Bowerman, John J.; and Perlman, Marvin, 4,291,196, Cl. 178-3.000.
Bowman, George E.; Faust, David S.; and Kataoka, David T., to International Harvester Company. Cover for a tractor's articulation space. 4,290,623, Cl. 280-400.000.
Boyd, Robert W.: *See—*
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Bra-Con Industries, Inc.: *See—*
Arthurs, John W.; and Perkowski, Ronald, 4,291,214, Cl. 219-86.100.
Braga, Albert T.; Cartier, Roger J.; Getz, Edward H.; and Hafstrom, Warren R., to Whirlpool Corporation. Power switch module. 4,291,238, Cl. 307-141.400.
Brain, Edward G.; and Osborne, Neal F., to Beecham Group Limited. Process for their preparation of β-lactam antibacterial agents. 4,290,948, Cl. 260-245.20R.
Brandes, Wilhelm: *See—*
Jager, Gerhard; Kraatz, Udo; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,291,044, Cl. 424-269.000.
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Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,291,047, Cl. 424-273.00R.
Brandigampola, Don E.: *See—*
Valeriote, Michael A.; Kellman, Louis C.; and Brandigampola, Don E., 4,291,284, Cl. 333-17.00M.
Branduzzi, Paolo: *See—*
Degen, Ludwig; Branduzzi, Paolo; Olivieri, Roberto; and Cimini, Nadia, 4,291,123, Cl. 435-94.000.
Brauer, Walter H.: *See—*
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Braun, Dietrich: *See—*
Wahlig, Helmut; Dingeldein, Elvira; and Braun, Dietrich, 4,291,013, Cl. 424-16.000.
Braun, Werner, to Messer Griesheim. Process for underwater plasma cutting of workpieces. 4,291,217, Cl. 219-121.0PH.
Brause, Joachim; Gerhard, Thomas; Keller, Manfred; and Olszok, Henry, to Waggonfabrik Uerdingen A.G. Overhead conveyor. 4,290,367, Cl. 104-105.000.
Brazdil, James F.: *See—*
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Bredeweg, Roger L.; and Sitek, George J., to Leco Corporation. Method and apparatus for gas dosing for linearization. 4,290,296, Cl. 73-1.00G.
Breitenbach, Jens, to Bayer Aktiengesellschaft. Sliding barrier for furniture devices and openings in buildings. 4,291,083, Cl. 428-163.000.
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, to Wulfing, Johann A. 7-(Oxoalkyl)-1,3-di-n-iso-propyl xanthines and their production. 4,291,037, Cl. 424-253.000.
Brewer, Given A., to United States of America, Energy. Dilatometer. 4,290,311, Cl. 73-730.000.
Brewer, Thomas D.; Purcell, Robert J.; and Sturges, James R., to Caterpillar Tractor Co. Method and apparatus for manufacturing a contoured internal diameter bushing. 4,290,236, Cl. 51-5.00A.
Brezosky, Bernard J., to General Electric Company. Movable toekick for convertible dishwasher. 4,290,660, Cl. 312-253.000.
Bricmont & Associates, Inc.: *See—*
Bricmont, Francis H., 4,290,752, Cl. 432-235.000.
Bricmont, Francis H., to Bricmont & Associates, Inc. Walking beam furnace. 4,290,752, Cl. 432-235.000.
Briggs, Aubrey C. Combination impact and pressure liquid rock drill. 4,290,496, Cl. 175-321.000.
Briggs, John A.: *See—*
Warnock, Richard B.; and Briggs, John A., 4,291,333, Cl. 358-36.000.
Briles, Wayne A. Portable security fire escape. 4,290,503, Cl. 182-47.000.
Brisco, David P., to Halliburton Company. Plug container. 4,290,482, Cl. 166-70.000.
Bristol Corporation: *See—*
Turner, Larry G., 4,290,445, Cl. 137-359.000.
British Aerospace Public Limited Company: *See—*
Haines, Derrick J., 4,290,264, Cl. 60-518.000.
British Broadcasting Corporation: *See—*
Devereux, Victor G., 4,291,331, Cl. 358-13.000.
British Chrome & Chemicals Limited: *See—*
Swales, Danvers A.; and Marshall, Michael A., 4,291,000, Cl. 423-53.000.
Brochet, Jacques, to Chimiques Ugine Kuhlmann. Method of making lactone-epoxide copolymer polyols. 4,291,155, Cl. 528-358.000.
Brockway, M. Clifford, to Liberty Glass Company. Fluid bed chemical strengthening of glass objects. 4,290,793, Cl. 65-30.140.
Brooks, Dannie L.; and Fields, Ronald S., to Reel-O-Matic Systems, Incorporated. Method and apparatus for dispensing coiled materials. 4,290,563, Cl. 242-78.600.
Brookstein, David S.; and Colcord, Alton R., to Union Carbide Corporation. Device for aligning the attenuating fiber mats. 4,290,170, Cl. 19-236.000.
Brown, Arthur D.; and Jones, Stephen G. B. Liquid surface decanter. 4,290,887, Cl. 210-242.100.
Brown, Delmont D.; and Rizza, Michael C., to D. S. Brown Company, The. Expansion joint sealing structures. 4,290,713, Cl. 404-69.000.
Brown, Jeannette E.; Rogers, Edward F.; and Graham, Donald W., to Merck & Co., Inc. Process for the preparation of traumatin. 4,290,966, Cl. 260-413.000.
Brown, Kenneth H.; and Wolma, Kenneth M., to Rust-Oleum Corporation. Method of producing silicate binders and coatings. 4,290,811, Cl. 106-1.170.
Brown, Lawrence G. Actuating system and apparatus for brakes and clutches and the like. 4,290,507, Cl. 188-24.150.
Brown, Robert O. Lobster trap game. 4,290,608, Cl. 273-256.000.

Brown, Sheldon H.: *See—*
Fletcher, Robert L.; VanLandingham, Richard D.; Brown, Sheldon H.; and Rittman, Alan H., 4,291,353, Cl. 360-128.000.

Brown, Stuart R.; Feest, Eric A.; and Leach, Fred, to United Kingdom Atomic Energy Authority. Coating of particles. 4,291,070, Cl. 427-213.000.

Browning, James S.; Pfeiler, Peter F.; and Lowery, Vernon. Surveying instrument. 4,290,207, Cl. 33-295.000.

Brownley, Shelby J.: *See—*
Berggren, William R.; and Brownley, Shelby J., 4,291,114, Cl. 430-253.000.

Bruckner, Georg F.; Geike, Bernd; Berger, Fritz; and Schoen, Bernd-Jurgen, to Metzeler Schaum GmbH. Handprotector for athletes. 4,290,147, Cl. 2-18.000.

Brunone, William T., to Champion International Corporation. Beverage carrier handle feeder and inserter. 4,290,254, Cl. 53-413.000.

Brunswick Corporation: *See—*
Erickson, Arnold R., 4,290,889, Cl. 210-484.000.
Frank, Roy W.; and Staerzl, Richard E., 4,290,394, Cl. 123-73.00A.

Brusasca, Gianfranco; and Garzulano, Gianfranco, to Rockwell-Rimoldi, S.p.A. Auxiliary transport device for sewing machines. 4,290,376, Cl. 112-121.260.

Bryant, Emerson C., to National-Standard Company. Tire building apparatus. 4,290,472, Cl. 156-416.000.

Buchanan, James E.; and Field, Marshall L., Jr., to Westinghouse Electric Corp. Analog to digital conversion weighting apparatus. 4,291,387, Cl. 364-757.000.

Buchanan, John G.; and MacBean, Donald G., to Jwi Ltd. Dryer fabric. 4,290,209, Cl. 34-123.000.

Buchel, Karl H.: *See—*
Jager, Gerhard; Kraatz, Udo; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,291,044, Cl. 424-269.000.
Kranz, Eckart; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,291,047, Cl. 424-273.00R.

Buchner, Helmut, to Daimler-Benz Aktiengesellschaft. Method for recouping combustion heat. 4,290,267, Cl. 60-648.000.

Buck, Daniel C., to Westinghouse Electric Corp. Microwave combiner assembly. 4,291,279, Cl. 330-287.000.

Budd Company, The: *See—*
Hulse, David O., 4,290,509, Cl. 188-181.00A.
Jahnle, Herbert A.; and Freeman, Richard B., 4,290,235, Cl. 49-502.000.

Budzich, Tadeusz. Load responsive control valve. 4,290,448, Cl. 137-596.130.

Budzich, Tadeusz. Load responsive control valve. 4,290,449, Cl. 137-596.130.

Buettel, Paul M. Web splicing method. 4,290,834, Cl. 156-157.000.

Buhler, Marcel; Olofsson, Mats; and Fosseux, Pierre-Yves, to Societe d'Assistance Technique pour Produits Nestle S.A. Whey protein recovery. 4,291,067, Cl. 426-582.000.

Bui, Tren V. Lamp socket switch operator extension. 4,291,212, Cl. 200-331.000.

Bujan, Albert F., to Abbott Laboratories. Intravenous pump chamber. 4,290,346, Cl. 92-90.000.

Bull Dog Lock Co.: *See—*
Waller, Arthur, 4,290,710, Cl. 403-306.000.

Bunker Ramo Corporation: *See—*
Storcel, Joseph A., 4,290,662, Cl. 339-89.00M.

Buntschuh, Charles D., to Microwave Associates, Inc. Microwave integrated circuit double balanced mixer. 4,291,415, Cl. 455-328.000.

Burke, Barry E.: *See—*
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,291,390, Cl. 365-183.000.

Burkert GmbH: *See—*
Dettmann, Heinrich; and Pfeiffer, Wolfgang, 4,291,358, Cl. 361-154.000.

Burns, Alonzo M., Jr.; Silliman, Jeffrey E.; Gilbert, Woodrow P.; and Pascoe, William M., Sr., to Milliken Research Corporation. Chemically sculpturing acrylic fabrics and process for preparing same. 4,290,766, Cl. 8-491.000.

Burns, Edgar, to International Telephone and Telegraph Corporation. Programmable electrical connector. 4,290,661, Cl. 339-18.00R.

Burns, Richard D., to General Electric Company. Apparatus for making dynamoelectric machine stators. 4,290,291, Cl. 72-316.000.

Burroughs Corporation: *See—*
Bader, Clifford J., 4,291,300, Cl. 340-347.0AD.
Forbes, Brian K.; and Catiller, Robert D., 4,291,372, Cl. 364-200.000.
Nelson, Edward I., 4,291,225, Cl. 250-229.000.
Ragle, Herbert U.; and DeMoss, Dean, 4,291,349, Cl. 360-98.000.

Burton, Charles V. Surgical headlight system. 4,290,422, Cl. 128-23.000.

Burton, Gary B. Knot retainer for shoelaces. 4,290,172, Cl. 24-117.000.

Burton, James M.; Miller, Robert L.; and Tieden, Jansey D., to Boeing Company, The. Tape gauge system. 4,291,384, Cl. 364-560.000.

Burwen, Richard S.: *See—*
Herbert, Normand C.; Burwen, Richard S.; and Mentelos, Richard A., 4,290,431, Cl. 128-635.000.

Bussiere, Jean F.; Welch, David O.; and Suenaga, Masaki, to United States of America, Energy. Bimetallic strip for low temperature use. 4,291,105, Cl. 428-616.000.

Bussing, Jurgen: *See—*
Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, 4,290,940, Cl. 260-45.80N.

Butler Greenwich Inc.: *See—*
Kapoor, Vinod, 4,290,359, Cl. 101-148.000.

Buxbaum, Gunter: *See—*
Schroeder, Gerhard; Buxbaum, Gunter; Hund, Franz; Schopper, Heinrich-Christian; and Naumann, Rolf, 4,290,799, Cl. 75-0.50A.

Buxton, Samuel R.: *See—*
Campbell, David O.; and Buxton, Samuel R., 4,290,967, Cl. 260-429.00R.

C. Mayo, Inc.: *See—*
Mayo, Carlos, 4,290,409, Cl. 126-121.000.

Cabrera, Armando N., to Investigacion Fic Fideicomiso. Neck ring assembly for automatic blow molding machines. 4,290,795, Cl. 65-260.000.

Caithness, Michael G.: *See—*
Cromer, Charles F.; Yoon, Kue H.; Hess, Robert L.; Kelsey, Thomas; and Caithness, Michael G., 4,291,208, Cl. 200-148.00A.

Caldwell, John T.; Fehlau, Paul E.; and France, Stephen W., to United States of America, Energy. Rapid scanning system for fuel drawers. 4,291,227, Cl. 250-328.000.

Call, James. Apparatus for collecting market survey data from universal product type coded items. 4,290,688, Cl. 355-1.000.

Cam Gears Limited: *See—*
Adams, Frederick J., 4,290,344, Cl. 91-467.000.

Camaggi, Giovanni: *See—*
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,291,049, Cl. 424-275.000.

Campagnolo, Tullio. Fixture for special gears, particularly of bicycles. 4,290,180, Cl. 29-240.000.

Campbell, Charles A.: *See—*
Wynosky, Thomas A.; Campbell, Charles A.; and Mischke, Robert J., 4,290,262, Cl. 60-262.000.

Campbell, David O.; and Buxton, Samuel R., to United States of America, Energy. Process for recovery of palladium from nuclear fuel reprocessing wastes. 4,290,967, Cl. 260-429.00R.

Campbell, Frank, Jr. Truncated triangular insulator. 4,290,457, Cl. 138-149.000.

Camus, Annamaria: *See—*
Mestroni, Giovanni; Zassinovich, Grazia; and Camus, Annamaria, 4,290,961, Cl. 260-397.400.

Canadian General Electric Company Limited: *See—*
Quant, Tony, 4,291,360, Cl. 361-189.000.
Stevenson, Andrew C.; Herzog, Gordon W.; and Murdoch, James C., 4,291,263, Cl. 318-706.000.

Canon Kabushiki Kaisha: *See—*
Saito, Syuichiro; Uchiyama, Takashi; and Yoshida, Syozo, 4,290,682, Cl. 354-234.000.
Sakane, Toshio; Taguchi, Tetsuya; Ogawa, Masahiko; Tamura, Shuichi; and Tsunekawa, Tokuichi, 4,291,223, Cl. 250-201.000.
Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; Sakai, Shinji; Uchiyama, Takashi; and Momiyama, Kikuo, 4,290,686, Cl. 354-289.000.

Caples, Edgar L.; Marston, Robert K.; and Massad, Khalil E., to Rockwell International Corporation. Multipath diversity spread spectrum receiver. 4,291,410, Cl. 375-1.000.

Cappelletto, Renzo; and Willame, Jean. Method and an installation for regenerating molding sands. 4,291,379, Cl. 364-506.000.

Capriotti, Alfred J., to United States Steel Corporation. Spacial alignment method for rolling mill rolls and chocks. 4,290,289, Cl. 72-31.000.

Carbrey, Robert L., to Bell Telephone Laboratories, Incorporated. Reversible analog to digital converter with high precision. 4,291,298, Cl. 340-347.0AD.

Carco Accessories Limited: *See—*
Johnstone, Frank, 4,290,551, Cl. 236-9.00R.

Cardone, Joseph T.; and Shatz, Kenneth J. Liquid powered, closed loop power generating system and process for using same. 4,291,232, Cl. 290-1.00R.

Carinalli, Charles P., to National Semiconductor Corporation. Open base bipolar transistor protective device. 4,291,319, Cl. 357-13.000.

Carl Still, Firma: *See—*
Strobel, Manfred; and Thiersch, Friedrich, both of, 4,290,854, Cl. 201-26.000.

Carlingswitch, Inc.: *See—*
Discenza, Frank J., 4,291,211, Cl. 200-311.000.

Carlson, David H. J., to UOP Inc. Catalytic composite, method of manufacture, and process for use. 4,290,916, Cl. 252-430.000.

Carlson, David H. J., to UOP Inc. Method of manufacturing a catalytic composite. 4,290,917, Cl. 252-430.000.

Carrison, Craig L.: *See—*
Hamilton, James M.; and Carrison, Craig L., 4,291,243, Cl. 307-304.000.

Carson Alexiou Corporation: *See—*
Rotolante, Ralph A.; and Koehler, Toivo, 4,290,844, Cl. 156-630.000.

Carter, Festus A. Suppression of surface foam on detergent-contaminated lagoons. 4,290,379, Cl. 114-26.000.

Cartier, Roger J.: *See—*
Braga, Albert T.; Cartier, Roger J.; Getz, Edward H.; and Hafstrom, Warren R., 4,291,238, Cl. 307-141.400.

Carus Corporation: *See—*
Mein, Peter G.; and Reidies, Arno H., 4,290,923, Cl. 252-462.000.

Carver, Joseph. Sucrose density gradient system. 4,290,300, Cl. 73-32.00R.

Cary, Arthur P. Angular detachable extensions to the forks of fork lift trucks. 4,290,729, Cl. 414-607.000.

Casals-Stenzel, Jorge: *See—*
Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Prezewowsky, Klaus; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,291,029, Cl. 424-238.000.

Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., to Sperry Corporation. Bubble memory optimization by adjusting properties of quartz film. 4,291,091, Cl. 428-336.000.

Casimir Kast GmbH & Co. KG: *See—*
Nopper, Herbert; and Knoch, Wolfgang, 4,290,988, Cl. 264-112.000.

Castera, Jean P., to Thomson-CSF. Single-mode tunable oscillator using magnetostatic waves. 4,291,283, Cl. 331-96.000.

Castro, Carlos A.: *See—*
Korenstein, Ralph; and Castro, Carlos A., 4,290,843, Cl. 156-628.000.

Caterpillar Tractor Co.: *See—*
Brewer, Thomas D.; Purcell, Robert J.; and Sturges, James R., 4,290,236, Cl. 51-5.00A.
Kizer, Richard W.; Anderson, Arlynn W.; and Untz, Robert W., 4,290,990, Cl. 264-156.000.
Stepe, Visvaldis A., 4,290,214, Cl. 37-141.00T.

Catiller, Robert D.: *See—*
Forbes, Brian K.; and Catiller, Robert D., 4,291,372, Cl. 364-200.000.

Cebalo, Tony; and Walde, Robert A., to Air Products and Chemicals, Inc. Herbicidal compound and method of use. 4,290,798, Cl. 71-90.000.

Celanese Corporation: *See—*
Soehngen, John W.; and Chen, John C., 4,290,987, Cl. 264-41.000.

Centro Ricerche Fiat S.p.A.: *See—*
Milana, Emilio, 4,290,698, Cl. 356-371.000.

Chambers, William J., to Du Pont de Nemours, E. I., and Company. Elements and method which use photopolymerizable compositions based on salt-forming polymers and polyhydroxy polyethers. 4,291,115, Cl. 430-271.000.

Champion International Corporation: *See—*
Brunone, William T., 4,290,254, Cl. 53-413.000.
Sullivan, John; and Lillibridge, Harold R., 4,290,547, Cl. 229-77.000.

Chan, Han-Saw. Reminder alarm system for preventing mislaying of personal articles. 4,291,301, Cl. 340-568.000.

Chan, Tsiu C.: *See—*
McKenny, Vernon G.; and Chan, Tsiu C., 4,290,185, Cl. 29-571.000.

Charlebois, Thomas F.; and Roswog, Edward J., to General Electric Company. Diagnostic ultrasound apparatus having automatic isocentric rotator. 4,290,309, Cl. 73-621.000.

Charles, Larry L., to Westinghouse Electric Corp. Core memory interface for coupling a processor to a memory having a differing word length. 4,291,370, Cl. 364-200.000.

Charpentier, Jean, to Sietam S.A. Device for cleaning mechanical parts. 4,290,439, Cl. 134-107.000.

Chase, James P., to Ampex Corporation. Extended life multichannel magnetic transducer. 4,291,354, Cl. 360-129.000.

Chase, Kenneth P.; and McCoy, Dale E., to Owens-Corning Fiberglass Corporation. Coating composition for glass fibers. 4,291,095, Cl. 428-391.000.

Chase, Wendell D., to United States of America, National Aeronautics and Space Administration. Spectrally balanced chromatic landing approach lighting system. 4,291,294, Cl. 340-26.000.

Chatterjee, Pallab K.; and Taylor, Geoffrey W., to Texas Instruments Incorporated. Taper isolated random access memory array and method of operating. 4,291,391, Cl. 365-184.000.

Chen, Albert C., to Mobil Oil Corporation. Insecticidal phenoxy hydroxamates. 4,291,055, Cl. 424-298.000.

Chen, John C.: *See—*
Soehngen, John W.; and Chen, John C., 4,290,987, Cl. 264-41.000.

Cheng, Jiin-Duey, to Du Pont de Nemours, E. I., and Company. Insecticidal carbamoyl sulfides. 4,291,054, Cl. 424-298.000.

Cherry, Peter C.; Newall, Christopher E.; Watson, Nigel S.; Gregory, Gordon I.; and Ward, Peter, to Glaxo Operations UK Limited. Esters of 2-vinylclav-2-em-3-carboxylic acid and process for preparing same. 4,290,949, Cl. 260-245.300.

Chevron Research Company: *See—*
Blanton, William A., Jr., 4,290,878, Cl. 208-120.000.

Chi-Jung, Lo. Volume and temperature indicators for insulated air pot. 4,290,537, Cl. 222-25.000.

Chiba, Toshiyuki: *See—*
Takaya, Takao; and Chiba, Toshiyuki, 4,291,031, Cl. 424-246.000.

Chika, John J. Structure to couple two bicycles. 4,290,620, Cl. 280-209.000.

Chimiques Ugine Kuhlmann: *See—*
Brochet, Jacques, 4,291,155, Cl. 528-358.000.

Chin, Albert K., to Fogarty, Thomas J. Endarterectomy apparatus. 4,290,427, Cl. 128-304.000.

Chino, Koichi: *See—*
Horiuchi, Susumu; Hirano, Mikio; Yusa, Hideo; Chino, Koichi; and Hayashi, Tatsuo, 4,290,907, Cl. 252-301.10W.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,291,036, Cl. 424-251.000.

Chisso Engineering Co.Ltd.: *See—*
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,290,996, Cl. 264-564.000.

Chiu, Te-Long: *See—*
Lien, Jih-Chang; and Chiu, Te-Long, 4,291,328, Cl. 357-59.000.

Chloride Silent Power Limited: *See—*
Barry, Thomas I.; Schajer, Gary S.; and Stackpool, Francis M., 4,291,107, Cl. 429-104.000.

Chown, Martin, to International Standard Electric Corporation. Optical fibre terminations and connectors. 4,290,667, Cl. 350-96.180.

Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzman, Thomas N., to Merck & Co., Inc. Process for the preparation of thienamycin and intermediates. 4,290,947, Cl. 260-239.00A.

Chrysler Corporation: *See—*
Warren, Richard J., 4,290,510, Cl. 188-218.0XL.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Koizumi, Masuo; Sasahara, Kazuo; Murakami, Yasushi; Wada, Sakae; Nakakimura, Hiroshi; Kubodera, Noboru; and Hata, Shun-Ichi, 4,290,953, Cl. 260-333.000.

Chulay, Steven J.; and Richards, Francis D., to Beckman Instruments, Inc. Modular supporting cap and spacer for centrifuge tubes. 4,290,550, Cl. 233-26.000.

Ciba-Geigy Corporation: *See—*
Abel, Heinz, 4,290,767, Cl. 8-496.000.
Elmore, Charles E.; and Harmon, David H., 4,291,128, Cl. 521-54.000.
Haug, Theobald, 4,291,146, Cl. 528-119.000.
Kristiansen, Odd; and Drabek, Jozef, 4,291,043, Cl. 424-269.000.
Massy, Derek J. R., 4,291,162, Cl. 544-199.000.
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Karrer, Friedrich, 4,291,056, Cl. 424-304.000.
Muntwyler, Rene, 4,290,846, Cl. 162-161.000.
Reinehr, Dieter; and Lienhard, Paul, 4,290,964, Cl. 260-404.000.
Schneider, Rainer; and Abeler, Gerd, 4,290,942, Cl. 260-45.85H.
Sturm, Elmar; and Nyfeler, Robert, 4,291,061, Cl. 424-331.000.
Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, 4,290,940, Cl. 260-45.80N.
Zinke, Horst; Lorenz, Hans J.; and Linhart, Helmut, 4,290,941, Cl. 260-45.85B.

Cimini, Nadia: *See—*
Degen, Ludwig; Branduzzi, Paolo; Olivieri, Roberto; and Cimini, Nadia, 4,291,123, Cl. 435-94.000.

Cincotta, Louis; and Foley, James W., to Polaroid Corporation. 3,6-Di(alkyl/phenyl)amino-9-carboxamidophenyl-xanthenes. 4,290,955, Cl. 260-336.000.

Citizen Watch Co. Ltd.: *See—*
Komiyama, Katsuhiko; and Hiruta, Toshio, 4,291,400, Cl. 368-84.000.
Nakajima, Koichi; and Tsuchiya, Hidetaka, 4,291,402, Cl. 368-276.000.

Claassens, Johannes E. L.: *See—*
Schaafsma, Sijbrandus E.; Hofman, Johannes H. A.; and Claassens, Johannes E. L., 4,291,170, Cl. 560-126.000.

Clamor Company: *See—*
Morton, John C., 4,290,618, Cl. 280-5.220.

Clark, Clyde C., to Vermont American Corp. Ratchet handle. 4,290,328, Cl. 81-62.000.

Clark, Howard L.; Dorman, Richard A.; and Back, Paul, to Mechanical Technology Incorporated. DC Excitation control for linear oscillating motors. 4,291,258, Cl. 318-124.000.

Clark, Steven J. Apparatus for generating electricity. 4,291,234, Cl. 290-53.000.

Clarke, Raymond: *See—*
Ellis, Roger H.; and Clarke, Raymond, 4,290,668, Cl. 350-96.200.

Clay, Bobby J., to Natmar, Inc. Independently operable multihead endless band printer. 4,290,357, Cl. 101-111.000.

Clay, Tymen. Ram type pump. 4,290,737, Cl. 417-403.000.

Clegg, Maurice A., to Sherritt Gordon Mines Limited. Process for the production of cobalt-rare earth alloy powders. 4,290,826, Cl. 148-101.000.

Clemens, James T.; and Locke, Kay M., to Bell Telephone Laboratories, Incorporated. Structure for shallow junction MOS circuits. 4,291,322, Cl. 357-23.000.

Clevepak Corporation: *See—*
Mandt, Mikkel G., 4,290,884, Cl. 210-195.300.

Clifford, Michael L., to Imperial Chemical Industries Limited. Polymerization process. 4,291,132, Cl. 525-53.000.

Clow Corporation: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,290,836, Cl. 156-171.000.

CMI Corporation: *See—*
Swisher, George W., Jr.; Steele, Thomas L.; and Silbernagle, Richard A., 4,290,820, Cl. 134-6.000.

Cobar Resources, Inc.: *See—*
Cole, Hugh F., 4,290,824, Cl. 148-23.000.

Cobb, William R.: *See—*
Barthe, Henry P.; and Cobb, William R., 4,290,490, Cl. 173-23.000.

Coburn, Robert E.; Gabriel, Ronald M.; and Tuthill, Richard S., to United Technologies Corporation. Fuel nozzle with water injection. 4,290,558, Cl. 239-400.000.

Coccia, Larry A., to Pullman Incorporated. Ore treating apparatus. 4,290,587, Cl. 266-191.000.

Cocke, John: *See—*
Bahl, Lalit R.; Cocke, John; Cullum, Clifton D., Jr.; and Hagenauer, Joachim, 4,291,406, Cl. 371-44.000.

Coe, Merlin D.: *See—*
Arnold, Donald S.; Fairchild, James L.; Nichols, Donald A.; and Coe, Merlin D., 4,291,002, Cl. 423-189.000.

Cohen, Stuart C., to General Electric Company. Thermoplastic molding compositions. 4,290,937, Cl. 260-40.00R.

Colcord, Alton R.: *See—*
Brookstein, David S.; and Colcord, Alton R., 4,290,170, Cl. 19-236.000.

Cole, Hugh F., to Cobar Resources, Inc. Water soluble rosin flux. 4,290,824, Cl. 148-23.000.

Collins, Edward J., to General Electric Company. Photoflash lamp array circuit board having radiation sensitive fuse elements. 4,290,747, Cl. 431-359.000.

Collins, Edward J.; and Lenkner, William A., to General Electric Company. Photoflash lamp array circuit board having radiation sensitive fuse elements. 4,290,748, Cl. 431-359.000.

Colombo, Piero. Drawing and straightening machine for use in continuous casting plants. 4,290,479, Cl. 164-448.000.

Combustion Engineering, Inc.: *See—*
Palchik, David, 4,290,389, Cl. 122-406.00S.

Commissariat a l'Energie Atomique: *See—*
Maupre, Jean-Pierre; and Trouve, Jean, 4,290,822, Cl. 134-19.000.

Communications Systems, Inc.: *See—*
Davis, Robert W.; and Tracy, Paul D., 4,290,664, Cl. 339-156.00R.

Compagnie Generale pour les Developpements Operationnels des Richesses sous Marines "C. G. Doris": *See—*
Lamy, Jacques E., 4,290,716, Cl. 405-203.000.

Compagnie Universelle D'Acetylene et D'Electro-Metallurgie: *See—*
Gorgerino, Mario; and Videau, Daniel, 4,290,805, Cl. 75-130.00R.

Compret N.V.: *See—*
Kolbel, Gert F., 4,290,600, Cl. 272-137.000.

Conoco Inc.: *See—*
Dudt, Philip J., 4,290,780, Cl. 48-210.000.
Leach, Bruce E., 4,290,924, Cl. 252-469.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Substituted naphthoic acids. 4,291,169, Cl. 560-45.000.

Consolidated Controls Corporation: *See—*
Balhouse, Harold J., 4,290,580, Cl. 251-169.000.

Consolidated Edison Company of New York, Inc.: *See—*
Eccleston, Thomas F.; and Wilson, Walter M., 4,291,192, Cl. 174-11.0BH.

Conti, Hugo; and Drelicharz, Joseph A. Connector receiver for pontoon causeways. 4,290,382, Cl. 114-266.000.

Contraves AG: *See—*
Frey, Raymond, 4,290,772, Cl. 23-230.00B.

Control Data Corporation: *See—*
Toth, Dolan H., 4,291,389, Cl. 365-15.000.

Cook Paint and Varnish Company: *See—*
Wright, Howard J.; Leonard, David P.; and Etzell, Roger A., 4,290,932, Cl. 260-29.6WB.

Cook, Richard B.; and Witt, Henry J., to FMC Corporation. Agarose composition, aqueous gel and method of making same. 4,290,911, Cl. 252-316.000.

Cooper Industries, Inc.: *See—*
Mayer, James R., 4,290,491, Cl. 173-43.000.

Cooper, James A., Jr.; and Krambeck, Robert H., to Bell Telephone Laboratories, Incorporated. Multistage logic circuit arrangement. 4,291,247, Cl. 307-481.000.

Coppa, Anthony P., to General Electric Co. Method of fabricating a low cost diagonal type MHD generator channel frame element. 4,290,189, Cl. 29-596.000.

Cornell Research Foundation, Inc.: *See—*
Sudan, Ravindra N., 4,290,848, Cl. 176-5.000.

Corning Glass Works: *See—*
Kane, William T.; and Whitney, William P., II, 4,290,586, Cl. 266-80.000.
Wedding, Brent M., 4,290,794, Cl. 65-30.110.

Cornwall, Edwin P.; and Batiuk, Walter, to Boeing Company, The. Method and composition for the removal of phenolic resin coatings from aluminum. 4,290,819, Cl. 134-3.000.

Corwin, William C.; and Pawlak, Raymond M., to Beckman Instruments, Inc. Inking system for multi-pen recorders. 4,291,317, Cl. 346-140.00R.

Cosby, Phillip A., to Graham Magnetics, Inc. Tape cartridge strap cleaning method. 4,290,821, Cl. 134-8.000.

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Cowley, Gerald: *See—*
Dick, Peter D.; and Cowley, Gerald, 4,290,998, Cl. 422-193.000.

CPC International Inc.: *See—*
Zobel, Henry F.; and Maxwell, James L., 4,291,065, Cl. 426-549.000.

Cragoe, Edward J., Jr.: *See—*
Woltersdorf, Otto W., Jr.; and Cragoe, Edward J., Jr., 4,291,050, Cl. 424-278.000.

Crane Packing Co.: *See—*
Sedy, Josef, 4,290,611, Cl. 277-27.000.

Creative Anglers: *See—*
Ostenberg, John R.; and Ligas, Kenneth M., 4,290,223, Cl. 43-54.50R.

Creative Craftsmen, Inc.: *See—*
Pfender, Thomas E., 4,290,383, Cl. 118-630.000.

Crehan, Patrick James.: *See—*
Kennedy, Richard B., 4,291,129, Cl. 521-103.000.

Crick, Robert G. Fault locating system for electric cables and the like. 4,291,204, Cl. 179-175.30F.

Cromer, Charles F.; Yoon, Kue H.; Hess, Robert L.; Kelsey, Thomas; and Caithness, Michael G., to Westinghouse Electric Corp.; and Northern Engineering Industries Ltd. Gas-insulated circuit-interrupter having improved insulating nozzle. 4,291,208, Cl. 200-148.00A.

Cronson, Harry M.: *See—*
Rao, Basrur R.; Ross, Gerald F.; and Cronson, Harry M., 4,291,289, Cl. 333-240.000.

Crosby, Guy A.: *See—*
Du Bois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., 4,290,957, Cl. 260-345.200.

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Crum, Glen F.; and Paton, Samuel J., to El Paso Products Company. Production of tertiary-butylstyrene. 4,291,183, Cl. 585-443.000.

Crum, Glen F.; and Paton, Samuel J., to El Paso Products Company. Process for producing tertiary-butylstyrene. 4,291,184, Cl. 585-443.000.

Csengeri, George. Ventilating outsole. 4,290,211, Cl. 36-3.00B.

Cuba, Cary. Tree-mounted deer stand. 4,290,504, Cl. 182-187.000.

Cullum, Clifton D., Jr.: *See—*
Bahl, Lalit R.; Cocke, John; Cullum, Clifton D., Jr.; and Hagenauer, Joachim, 4,291,406, Cl. 371-44.000.

Cumming, Richard J.; DeBano, John; Mertz, Harold J., Jr.; Nordeen, Donald L.; Sajewski, Vincent F.; and Zens, John F., to General Motors Corporation. L-shaped inflatable restraint cushion. 4,290,627, Cl. 280-729.000.

Curtiss-Wright Corporation: *See—*
De Feo, Angelo; and Hosek, William, 4,290,387, Cl. 122-4.00D.

Cutler, Scott E.; and Eichelberger, Charles W., to General Electric Company. Touch pad and display tube circuitry. 4,291,303, Cl. 340-711.000.

Czenkusch, Edward L., to Phillips Petroleum Co. Regeneration of ferric ions in coal desulfurization process. 4,290,777, Cl. 44-1.0SR.

D. S. Brown Company, The: *See—*
Brown, Delmont D.; and Rizza, Michael C., 4,290,713, Cl. 404-69.000.

Dahlberg, Reinhard, to Licentia Patent-Verwaltungs G.m.b.H. Solar cell arrangement. 4,291,191, Cl. 136-246.000.

Daimler-Benz Aktiengesellschaft: *See—*
Bergmann, Horst, 4,290,402, Cl. 123-527.000.
Buchner, Helmut, 4,290,267, Cl. 60-648.000.
Sorsche, Joachim H.; Ableitner, Erich; Gobien, Ernst; and Minning, Manfred, 4,290,397, Cl. 123-195.00A.

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Dalton, Gerald P. External cover for an automobile roof having a movable panel. 4,290,640, Cl. 296-95.00R.

Damron, Eugene: *See—*
Woodall, Robert M.; Damron, Eugene; and Mick, Martin B., 4,290,879, Cl. 208-232.000.

Damron, William M. Archery guiding device for archery bow. 4,290,407, Cl. 124-41.00A.

Danfoss A/S: *See—*
Molgaard, Aage; and Graversen, Niels P. G., 4,290,553, Cl. 236-42.000.

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Daniels, Patricia K., administratrix: *See—*
Daniels, Larry K., deceased; and Daniels, Patricia K., administratrix, 4,290,160, Cl. 15-29.000.

Daniels, Stephen, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Decompression bubble detectors. 4,290,432, Cl. 128-660.000.

Dann, Murray: *See—*
Tobkes, Martin; Dann, Murray; Klothen, Irving; Spicer, Larry D.; and Williams, David R., 4,291,026, Cl. 424-181.000.

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Dau, Gary J., to Electric Power Research Institute, Inc. Method of monitoring defects in tubular products. 4,290,308, Cl. 73-602.000.

Daugherty, Thomas L., to United States of America, Navy. Hydrodynamic bearing with extended pressure gradient. 4,290,656, Cl. 308-121.000.

Dausseing, Jean-Paul: *See—*
Fish, Aaron M.; and Dausseing, Jean-Paul, 4,290,279, Cl. 70-38.00A.

Dautzenberg, Frits M.; and Wagstaff, Nigel, to Shell Oil Company. Process for the preparation of aromatic hydrocarbons and hydrogen from butane. 4,291,182, Cl. 585-415.000.

Davey, Joseph A. Bicycles. 4,290,621, Cl. 280-216.000.

Davis, Max G., Jr.: *See—*
Beecroft, Harold J.; and Davis, Max G., Jr., 4,291,346, Cl. 360-75.000.

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Davis, Robert W.; and Tracy, Paul D., to Communications Systems, Inc. Multiple outlet telephone line adapter. 4,290,664, Cl. 339-156.00R.

Davis, William E., Sr. Harvesting device. 4,290,727, Cl. 414-508.000.

Davy Powergas Inc.: *See—*
Dempsey, John P., 4,290,882, Cl. 210-634.000.

Dearnaley, Geoffrey; Steeples, Kenneth; and Saunders, Ian J., to United Kingdom Atomic Energy Authority. Semiconductor devices containing protons and deuterons implanted regions. 4,290,825, Cl. 148-33.400.

de Baan, Johannes J.; and Adrian, Adolf, to August Bilstein, Firma. Load-carrying strut construction. 4,290,511, Cl. 188-322.170.

DeBano, John: *See—*
Cumming, Richard J.; DeBano, John; Mertz, Harold J., Jr.; Nordeen, Donald L.; Sajewski, Vincent F.; and Zens, John F., 4,290,627, Cl. 280-729.000.

Deborde, Albert H., to Saurer-Diederichs. Active auxiliary nozzle for a shuttle-less loom with pneumatic weft insertion. 4,290,460, Cl. 139-435.000.

DeCarlo, Vincent J.; Powers, Robert W.; and Mitoff, Stephan P., to General Electric Company. Production of β-alumina ceramic tubes. 4,291,108, Cl. 429-193.000.

Decca Limited: *See—*
Spiller, Basil H. R.; and Pratt, Allan F., 4,291,309, Cl. 343-7.500.

Dechene, Ronald L.; Grimaldi, Frank G.; and Newton, Robert E., to Auburn International, Inc. Flow regime detecting. 4,291,273, Cl. 324-343.000.

Deere & Company: *See—*
Felland, Richard A.; and Miller, James A., 4,291,213, Cl. 200-335.000.

De Feo, Angelo; and Hosek, William, to Curtiss-Wright Corporation. Fluidized bed combustor and tube construction therefor. 4,290,387, Cl. 122-4.00D.

Degawa, Yoshio: *See—*
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.

Degen, Ludwig; Branduzzi, Paolo; Olivieri, Roberto; and Cimini, Nadia, to Snamprogetti, S.p.A. Production of fructose and fructose-base syrups and means for carrying out such production. 4,291,123, Cl. 435-94.000.

DeGeorge, Bernard J.; Hermanson, Dean E.; and Tomas, Carlos, to Youngstown Sheet and Tube Company. Loading arm. 4,290,463, Cl. 141-387.000.

del ser Gonzalez, Clemente. Machines for pitting and stuffing olives. 4,290,350, Cl. 99-494.000.

De Maria, Carmine. Demountable window construction. 4,290,234, Cl. 49-415.000.

Demidova, Valentina A.: *See—*
Syrov, Anatoly A.; Ivanchev, Sergei S.; Primachenko, Oleg N.; Demidova, Valentina A.; Polozov, Boris V.; Fionov, Vladimir I.; and Barantsevich, Evgeny N., 4,290,945, Cl. 260-192.000.

Demirel, Turgut; and Handy, Richard L., to Iowa State University Research Foundation, Inc. Basement waterproofing system. 4,290,252, Cl. 52-742.000.

DeMoss, Dean: *See—*
Ragle, Herbert U.; and DeMoss, Dean, 4,291,349, Cl. 360-98.000.

Dempsey, John P., to Davy Powergas Inc. Electrostatic separation of impurities phase from liquid-liquid extraction. 4,290,882, Cl. 210-634.000.

de Muinck, Andre R., to Johns-Manville Corporation. Perlite expansion process and apparatus therefor. 4,290,749, Cl. 432-13.000.

Denhart, Norbert J., to Elm Window Co. High security tamper-proof mailbox. 4,290,548, Cl. 232-24.000.

Densmore, Wayne; and Quinn, Thomas M., to Bell Telephone Laboratories, Incorporated. Communication system tracking arrangement. 4,291,199, Cl. 179-18.0AB.

Dental Concepts, Inc.: *See—*
Beierle, John W.; and Grenoble, Dale E., 4,291,017, Cl. 424-52.000.

De Rosa, Dennis. Drawer file cabinet. 4,290,658, Cl. 312-108.000.

Desmarquest, Jean-Pierre: *See—*
Aude, Robert; Baumgartner, Pierre; Desmarquest, Jean-Pierre; and Franck, Jean-Pierre, 4,290,973, Cl. 260-505.00R.

Dettmann, Heinrich; and Pfeiffer, Wolfgang, to Burkert GmbH. Magnetic valve with electronic control. 4,291,358, Cl. 361-154.000.

Deutsche Texaco Aktiengesellschaft: *See—*
Dielacher, Maximillian; and Hansen, Uwe, 4,290,881, Cl. 208-310.00R.

Devereux, Victor G., to British Broadcasting Corporation. Digital processing of N.T.S.C. color television signals. 4,291,331, Cl. 358-13.000.

de Vries, Lambertus: *See—*
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,291,049, Cl. 424-275.000.

Dewey, Lloyd P.: *See—*
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Diamond International Corporation: *See—*
Harvey, Albert J., 4,290,519, Cl. 198-483.000.

Diamond Shamrock Corporation: *See—*
Shuster, Nicholas; Babinsky, Andrew D.; and Kidon, William E., 4,290,864, Cl. 204-103.000.
Villa, Jose L.; Sinka, Joseph V.; and Fleming, Joseph P., 4,290,817, Cl. 106-315.000.

Dick, Peter D.; and Cowley, Gerald, to Erco Industries Limited. Washing apparatus in chlorine dioxide production. 4,290,998, Cl. 422-193.000.

Didier-Werke AG.: *See—*
Luhrsen, Ernst; and Schermer, Heinz, 4,290,589, Cl. 266-236.000.

Diebold, James L.: *See—*
Freed, Meier E.; and Diebold, James L., 4,290,952, Cl. 260-326.470.

Dielacher, Maximillian; and Hansen, Uwe, to Deutsche Texaco Aktiengesellschaft. Process for the separation of unsaturated compounds from liquid hydrocarbon mixtures. 4,290,881, Cl. 208-310.00R.

Diemi, Werner, to Styner & Bienz AG. Method for producing aerosol can tops. 4,290,294, Cl. 72-348.000.

Dieterle, Gerhard, to Erwin Sick GmbH Optik-Elektronik. Safety circuit for a potentially dangerous machine monitored by light. 4,291,359, Cl. 361-173.000.

Dietz, Charles F.: *See—*
Schmidt, Lewis W.; Bettencourt, Darryl G.; Dietz, Charles F.; and Marshall, George E., Jr., 4,290,352, Cl. 100-100.000.

Dingeldein, Elvira: *See—*
Wahlig, Helmut; Dingeldein, Elvira; and Braun, Dietrich, 4,291,013, Cl. 424-16.000.

Dinger, Edward H., to General Electric Company. Programmable overload circuit. 4,291,355, Cl. 361-31.000.

Discenza, Frank J., to Carlingswitch, Inc. Illuminated toggle switch. 4,291,211, Cl. 200-311.000.

Disco, Paulus J.; Quargentan, Ernesto; and Santalucia, Pietro, to U.S. Philips Corporation. Heat pump water heater. 4,290,275, Cl. 62-238.600.

Dissmore, James R. Fuel system for IC engine. 4,290,392, Cl. 123-1.00A.

Dixie Electrical Manufacturing Company: *See—*
Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, 4,290,245, Cl. 52-157.000.

Dlugos, Daniel F., to Pitney Bowes Inc. Mailing system. 4,291,374, Cl. 364-466.000.

Dold, Berthold, to Kienzle Apparate GmbH. Recording apparatus. 4,291,313, Cl. 346-68.000.

Dolfini, Joseph E.: *See—*
Harrison, Boyd L.; and Dolfini, Joseph E., 4,291,160, Cl. 544-17.000.

Dolman, Hendrik; and Kuipers, Johannes, to Dupaar International Research B.V. Trimerization of methyl-isothiocyanate and N,N',N''-trimethyl 2-iminodithioisocyanurate. 4,291,161, Cl. 544-193.000.

Domke, Klaus; and Saur, Walter, to Robert Bosch GmbH. Method of producing sealed packaging containers. 4,290,253, Cl. 53-410.000.

Domloge, Rami: *See—*
Hart, William B.; and Domloge, Rami, 4,290,393, Cl. 123-41.120.

Dompas, John, to Metallurgie Hoboken-Overpelt. Manufacture of copper wire rod. 4,290,823, Cl. 148-2.000.

Donahue, John W., to Mead Corporation, The. Jet drop copier with multiplex ability. 4,291,340, Cl. 358-296.000.

Donigan, Carolyn L.: *See—*
MacMillan, Deane B.; and Donigan, Carolyn L., 4,291,362, Cl. 361-302.000.

Dorman, Richard A.: *See—*
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Dorn, Peter: *See—*
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Dost, Gunter; and Bauer, Fritz, to Hoechst Aktiengesellschaft. Agent to be administered orally to domestic animals without cellulose digestion in the rumen. 4,291,053, Cl. 424-283.000.

Dotson, Harold C., Sr. Minnow dippers. 4,290,221, Cl. 43-4.000.

Dow Chemical Company, The: *See—*
Free, Dustin L.; and Phillips, Howard M., 4,290,485, Cl. 166-281.000.
Montgomery, Carl T., 4,290,810, Cl. 106-13.000.
Pilny, Richard J., 4,291,069, Cl. 427-140.000.
Repsher, Wendy J.; and Rapstein, Kirby T., 4,291,001, Cl. 423-179.500.
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Stevens, Timothy S.; and Miller, Theodore E., Jr., 4,290,775, Cl. 23-230.00R.

Dow Corning Corporation: *See—*
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Drabek, Jozef: *See—*
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Dresser Europe S.A.: *See—*
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Dresser Industries, Inc.: *See—*
Files, Thomas I.; and Beutner, Donald H., 4,290,651, Cl. 299-7.000.
Pavlica, Stanley R.; and McCreight, Donald O., 4,290,814, Cl. 501-107.000.

Dreyer, Andre T. Shotshells. 4,290,365, Cl. 102-449.000.

Drueck, Fred, Jr. Ceiling module. 4,290,218, Cl. 40-553.000.

DSO "Pharmachim": *See—*
Georgiev, Atanas G.; Andreev, Kino D.; and Konstantinova, Kina V., 4,290,971, Cl. 260-453.500.
Dubinsky, Rudolf S.: *See—*
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Du Bois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., to Dynapol. Flavonone precursors for alpha amino acid dihydrochalcones. 4,290,957, Cl. 260-345.200.
DuBois, Grant E. N-Sulfonyl amine-mediated sulfamation of amines. 4,290,975, Cl. 260-513.600.
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Duckworth, Roger G., to Ultra Electronic Controls Limited. Sputtering apparatus. 4,290,875, Cl. 204-298.000.
Dudeck, Christian: *See—*
Ross, Karl-Heinz; Dudeck, Christian; Himmele, Walter; Lebkuecher, Rolf; and Sauer, Wolfgang, 4,290,960, Cl. 260-348.570.
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Dunlop Limited: *See—*
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Cheng, Jiin-Duey, 4,291,054, Cl. 424-298.000.
Stall, Alan D., 4,291,082, Cl. 428-138.000.
Durand, Alain J. M.; and Farcot, Jean C. Catheter with bulb. 4,290,428, Cl. 128-349.00B.
Dyett, Derek H.; Hirsh, Ivan Y.; Preston, Edward G.; and Williams, Robert E., to Molins Limited. Filter attachment machines. 4,290,518, Cl. 198-450.000.
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E. R. Squibb & Sons, Inc.: *See—*
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Earp, Sherald B.; Lutich, Louis L.; and Harris, Jesse W. Failsafe cutoff valve for oil and gas wells. 4,290,578, Cl. 251-63.000.
Eastman Kodak Company: *See—*
Baumeister, Hans-Peter, 4,290,677, Cl. 354-127.000.
Hines, Stephen P., 4,290,684, Cl. 354-286.000.
Hozman, Nelson D.; Reynolds, Robert L.; and Kirn, Thomas G., 4,290,676, Cl. 354-121.000.
Marcus, Michael A., 4,290,678, Cl. 354-128.000.
Noonan, John M.; and McConkey, Robert C., 4,291,153, Cl. 528-290.000.
Whitmore, Keith E., 4,291,109, Cl. 430-42.000.
Eaton Corporation: *See—*
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Reinke, William L.; and Stearley, John W., 4,291,207, Cl. 200-42.00R.
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Eccleston, Thomas F.; and Wilson, Walter M., to Consolidated Edison Company of New York, Inc. Venting apparatus for an electric cable pothead. 4,291,192, Cl. 174-11.0BH.
Eckel, Emery L., to Eckel Manufacturing Company, Inc. Back-up power tongs and method. 4,290,304, Cl. 73-862.250.
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Eckel, Emery L., 4,290,304, Cl. 73-862.250.
Eckelkamp, Gene R. Wall puller tool. 4,290,582, Cl. 254-15.000.
Eckels, George H.; Groft, Donald H.; and Stallard, Wayne R., to Stelco Inc. Pole mounted winch. 4,290,584, Cl. 254-380.000.
Ecker, Donald R., Jr.; Dummermuth, Ernst; and Struger, Odo J., to Allen-Bradley Company. Programmable controller with data archive. 4,291,388, Cl. 364-900.000.
Eckstein, Wolfgang; Schirk, Karl-Heinz; and Reinhold, Detlef, to Dragerwerk Aktiengesellschaft. Filter construction. 4,290,792, Cl. 55-480.000.
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Edel, Hans J. Inclinable chair. 4,290,646, Cl. 297-327.000.
Edinen Centar P Chimia: *See—*
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Edwardson, Svante R., to AB Dentatus. Articulator for use in the making of dentures or parts thereof. 4,290,754, Cl. 433-56.000.
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Eichelberger, Charles W.: *See—*
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Dau, Gary J., 4,290,308, Cl. 73-602.000.
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Denhart, Norbert J., 4,290,548, Cl. 232-24.000.
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Ely, Richard A.; and McClaren, Sherwood W., III, to Vought Corporation. Sound attenuating structural panel. 4,291,080, Cl. 428-116.000.
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Price, Samuel T.; and Hoffsommer, Kay P., 4,290,177, Cl. 28-254.000.
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Schmitt, Harold W., 4,290,695, Cl. 356-73.000.
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Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,290,865, Cl. 204-106.000.
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Shook, Jackson A., 4,290,232, Cl. 49-277.000.
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Farcilli, Andre; Medici, Italo; Fournex, Robert; and Barzaghi, Fernando, to Roussel Uclaf. Cerebral vasodilating 20,21-dinoreburnamenine derivatives. 4,291,038, Cl. 424-256.000.
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Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Karrer, Friedrich, 4,291,056, Cl. 424-304.000.
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Weinberg, Aaron; Ebert, Paul M.; Fee, Joseph J.; Kaminsky, Yaroslav; Keblawi, Feisal S.; and Scales, Walter C., 4,291,409, Cl. 375-1.000.
Fee, Robert W.; TenEyck, Richard E.; and Smith, Lloyd T., to S/V Tool Company, Inc. Hand instrument. 4,290,465, Cl. 145-61.00R.
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Fehlau, Paul E.: *See—*
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Ferreira, Roberto J., to R. F. B. Engineering Inc. Quick self-release and reload tooling device. 4,290,720, Cl. 409-233.000.
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Files, Thomas I.; and Beutner, Donald H., to Dresser Industries, Inc. Surface mining method. 4,290,651, Cl. 299-7.000.
Fincoil-teollisuus Oy: *See—*
Gronberg, Pauli, 4,290,315, Cl. 73-861.610.
Finike Italiana Marposs, S.p.A.: *See—*
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Fiorenza, Castenzio. Toaster accessory. 4,290,349, Cl. 99-388.000.
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Fischbeck, Karl-Heinz, to Olympia Werke AG. Assembly of thin-walled plates. 4,291,103, Cl. 428-589.000.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft Offenbach. Selective ink and wetting liquid, or wetting liquid only, application system for offset printing presses. 4,290,360, Cl. 101-148.000.
Fischer, Klaus H.; Kroschel, Heinz; and Kolf, Heinrich, to Dynamit Nobel Aktiengesellschaft. Separation mechanism for releasing an aerodynamic braking device from a load. 4,290,637, Cl. 294-83.00A.
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Fish, Aaron M.; and Dausseing, Jean-Paul, to Unican Security Systems, Ltd. Padlock with interchangeable cylinder. 4,290,279, Cl. 70-38.00A.
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Fishering, Ronald G.; and Fishering, Peter M. Automated carwash brush assembly. 4,290,161, Cl. 15-53.0AB.
Fishing Innovations, Inc.: *See—*
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Fisons Limited: *See—*
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Fitzgibbons, William O.: *See—*
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Flannery, Matt W. Tension exerciser. 4,290,598, Cl. 272-117.000.
Fleckenstein, Andrew; and Mortl, Michael, to L. W. Fleckenstein, Inc. Water conditioning system controls. 4,290,451, Cl. 137-624.150.
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Fletcher, Robert L.; VanLandingham, Richard D.; Brown, Sheldon H.; and Rittman, Alan H., to Texas Instruments Incorporated. System and method for cleaning a magnetic head transducer. 4,291,353, Cl. 360-128.000.
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Wissner, Allan; and Floyd, Middleton B., Jr., 4,291,175, Cl. 568-330.000.
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Foley, James W.; Locatell, Louis, Jr.; and Zepp, Charles M., to Polaroid Corporation. 3,6-Di(N-indolinyl)-9-sulfonamidophenyl-xanthenes. 4,290,951, Cl. 260-326.12R.
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Forbes, Brian K.; and Catiller, Robert D., to Burroughs Corporation. Microprocessor system with specialized instruction format. 4,291,372, Cl. 364-200.000.
Ford Aerospace & Communications Corp.: *See—*
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Wagner, Gary L., 4,291,286, Cl. 333-166.000.
Ford Motor Company: *See—*
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Gaerttner, Martin R.; and Jaklevic, Robert C., 4,290,861, Cl. 204-56.00R.
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Foster, Sue T., executrix: *See—*
Malone, Thomas R.; Foster, Talmage D., Jr., deceased; and Foster, Sue T., executrix, 4,290,899, Cl. 252-8.50A.
Foster, Talmage D., Jr., deceased: *See—*
Malone, Thomas R.; Foster, Talmage D., Jr., deceased; and Foster, Sue T., executrix, 4,290,899, Cl. 252-8.50A.
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Fowler, Eliot P.; and Taylor, John R., to United Kingdom Atomic Energy Authority. In high frequency screening of electrical systems. 4,290,663, Cl. 339-143.00R.
Fowler, William H.; and Warner, Frederick L., to American Newspaper Publishers Association. On the fly adjusting mechanism for rotary printing presses. 4,290,361, Cl. 101-182.000.
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Frame, Robert R., to UOP Inc. Catalytic composite useful for the treatment of mercaptan-containing sour petroleum distillate. 4,290,913, Cl. 252-428.000.
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Frank, Roy W.; and Staerzl, Richard E., to Brunswick Corporation. Two-cycle engine with fuel injection. 4,290,394, Cl. 123-73.00A.
Franks, John A., Jr., to Vulcan Materials Company. Catalytic process for the production of alkali metal stannates. 4,291,009, Cl. 423-593.000.
Frantello, Alfred A. Rotary assembly for cutting grass and other vegetation. 4,290,257, Cl. 56-12.700.
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Frederick Electronics Corp.: *See—*
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Free, Dustin L.; and Phillips, Howard M., to Dow Chemical Company, The. Reduction of water production from hydrocarbon containing subsurface formations. 4,290,485, Cl. 166-281.000.
Freed, Meier E.; and Diebold, James L., to American Home Products Corporation. Aryl-1-mercaptoalkanoylproline and homoproline derivatives. 4,290,952, Cl. 260-326.470.
Freeman, Richard B.: *See—*
Jahnle, Herbert A.; and Freeman, Richard B., 4,290,235, Cl. 49-502.000.
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Frey, Raymond, to Contraves AG. Reducing light scatter in photometric measurements involving suspended particles. 4,290,772, Cl. 23-230.00B.
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Friese, Egon F., to International Telephone and Telegraph Corporation. Assembly apparatus for electrical connectors. 4,290,178, Cl. 29-33.00M.
Frito-Lay, Inc.: *See—*
Topor, Michael G.; Wicklund, Peter A.; and Ivers, John T., 4,290,989, Cl. 264-142.000.
Fritz, Rolf; Kalden, Bernhard; and Kissel, Karl-Friedrich, to Hochtemperatur-Reaktorbau GmbH. Roof reflector for a gas-cooled pebble-bed reactor and process for the disassembly of the roof reflector. 4,290,852, Cl. 176-58.0PB.
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Frosch, Robert A.; and Qader, Shaik A., to United States of America, National Aeronautics and Space Administration. Solar heated fluidized bed gasification system. 4,290,779, Cl. 48-89.000.
Fuchigami, Mitsuru: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
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Kobayashi, Tomoyuki; Usami, Toshimasa; Misu, Hiroshi; and Sera, Hidefumi, 4,291,120, Cl. 430-531.000.
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Minamizono, Junji; Yoneyama, Masakazu; and Sasaki, Jun, 4,291,113, Cl. 430-202.000.
Muramatsu, Katsuji; and Fujita, Yoshihiro, 4,290,680, Cl. 354-203.000.
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Fujii, Tadashiro: *See—*
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Fujimori, Naoji: *See—*
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Fujio, Masaaki, to Fuji Seal Industry Co., Ltd. Heat-shrinkable film tube with an internally ribbed closed end, and a method of making it. 4,290,992, Cl. 264-163.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
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Fujitsu Fanuc Limited: *See—*
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Fujitsu Limited: *See—*
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Ichinose, Yoshito; Fukuda, Takeshi; and Kobayashi, Naoaki, 4,290,188, Cl. 29-591.000.
Kawashima, Kenichi; Yasuda, Hiroshi; and Uema, Kenyu, 4,291,231, Cl. 250-492.00A.
Nakano, Masao; Nakano, Tomio; Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,291,394, Cl. 365-206.000.
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Fukuda, Hiroaki: *See—*
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Fukuhara, Tetsukazu, to Neturen Company Ltd. Apparatus for continuously forming a coating layer on unbonded PC steel bars. 4,290,841, Cl. 156-464.000.
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Full, Gary G.; and Tedeschi, Rinaldo R., to United Technologies Corporation. Relative manifold vacuum of an internal combustion engine. 4,291,382, Cl. 364-551.000.
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Fuller, Alfred B.: *See—*
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Funabiki, Kyohei; Matsushima, Noriaki; and Inouye, Naomitsu, to Sumitomo Durez Company, Ltd. Binder for dry hot coat foundry process. 4,290,928, Cl. 260-28.00P.
Furudate, Mituaki: *See—*
Uesugi, Nobuo; Miyazawa, Tatsuo; Furudate, Mituaki; Sasaki, Keiichi; and Mizuguchi, Hiroji, 4,290,849, Cl. 176-19.00R.
Furukawa Metals Company, Ltd.: *See—*
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Tago, Makoto, 4,290,806, Cl. 75-153.000.
G P A International: *See—*
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Gable, Wilburn K. Felt paper roller assembly. 4,290,842, Cl. 156-577.000.

Gabriel, Ronald M.: *See—*
Coburn, Robert E.; Gabriel, Ronald M.; and Tuthill, Richard S., 4,290,558, Cl. 239-400.000.
Gaerttner, Martin R.; and Jaklevic, Robert C., to Ford Motor Company. Growth of oxide films by vapor solid state anodization. 4,290,861, Cl. 204-56.00R.
Gaffney, LeRoy J., to Inland Steel Company. Method for treating refractory block. 4,290,984, Cl. 264-30.000.
Gale, Jean L. Combination horizontally and vertically mounted display. 4,290,216, Cl. 40-152.100.
Gall, Chester E.: *See—*
Noar, Raymond; Zedekar, Stanley L.; Albertson, Michael D.; Pointer, Carl W.; Gall, Chester E.; and Fuller, Alfred B., 4,290,316, Cl. 74-5.460.
Gallagher, Ronald M.; Nadler, Michael E.; Highsmith, Charles E.; and Minchey, Richard L., to Unarco Industries, Inc. Stackable pallet assembly. 4,290,370, Cl. 108-53.500.
GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Grottrup, Helmut, 4,291,222, Cl. 235-380.000.
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Gardner, George A., to Sybron Corporation. AC Generator system having stabilized sensitivity for sensing the presence or absence of a conductive object. 4,291,280, Cl. 331-65.000.
Garlaschelli, Luigi: *See—*
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Gartmann, Achim K.: *See—*
Gartmann, Hans H.; and Gartmann, Achim K., 4,290,888, Cl. 210-356.000.
Gartmann, Hans H.; and Gartmann, Achim K. Strainer. 4,290,888, Cl. 210-356.000.
Garwin, Richard L., to International Business Machines Corporation. Alignment or correction of energy beam type displays. 4,291,256, Cl. 315-368.000.
Garzulano, Gianfranco: *See—*
Brusasca, Gianfranco; and Garzulano, Gianfranco, 4,290,376, Cl. 112-121.260.
Gavris, Genrikh B.: *See—*
Lukhvich, Alexandr A.; Rudnitsky, Valery A.; Linnik, Ivan I.; and Gavris, Genrikh B., 4,291,270, Cl. 324-230.000.
GD-Anker Gebirgs-Dubel-Anker GmbH & Co. KG: *See—*
Gruber, Rudolf, 4,290,338, Cl. 411-21.000.
Gebhardt Satzinger Metallwarenfabrik: *See—*
Satzinger, Roland, 4,290,561, Cl. 242-55.000.
Gebruder Junghans GmbH: *See—*
Wolber, Robert; and Obergfell, Walter, 4,291,210, Cl. 200-252.000.
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Bruckner, Georg F.; Geike, Bernd; Berger, Fritz; and Schoen, Bernd-Jurgen, 4,290,147, Cl. 2-18.000.
Geisler, Gottfried: *See—*
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General Battery Corporation: *See—*
Bevan, William G., 4,290,444, Cl. 137-255.000.
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Reavill, Joseph A.; and Arachi, John M., 4,290,838, Cl. 156-286.000.
General Electric Company: *See—*
Bennett, Moreland P.; and Vrabel, Edward A., 4,291,215, Cl. 219-118.000.
Brezosky, Bernard J., 4,290,660, Cl. 312-253.000.
Burns, Richard D., 4,290,291, Cl. 72-316.000.
Charlebois, Thomas F.; and Roswog, Edward J., 4,290,309, Cl. 73-621.000.
Cohen, Stuart C., 4,290,937, Cl. 260-40.00R.
Collins, Edward J., 4,290,747, Cl. 431-359.000.
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Coppa, Anthony P., 4,290,189, Cl. 29-596.000.
Cutler, Scott E.; and Eichelberger, Charles W., 4,291,303, Cl. 340-711.000.
DeCarlo, Vincent J.; Powers, Robert W.; and Mitoff, Stephan P., 4,291,108, Cl. 429-193.000.
Dinger, Edward H., 4,291,355, Cl. 361-31.000.
Hooke, John W., 4,291,106, Cl. 429-1.000.
Mark, Victor; and Wilson, Phillip S., 4,290,934, Cl. 260-30.80R.
Mark, Victor, 4,291,150, Cl. 528-199.000.
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Mark, Victor; and Wilson, Charles A., II, 4,291,177, Cl. 568-726.000.
Nathan, Bernard D.; and Witter, Donald R., 4,291,314, Cl. 346-74.500.
Pohl, Walter J., 4,290,481, Cl. 165-26.000.
Quine, John P., 4,291,278, Cl. 330-286.000.
Shaw, David G., 4,290,926, Cl. 252-579.000.
Vakil, Himanshu B., 4,290,272, Cl. 62-114.000.
General Foods Corporation: *See—*
Weaver, James A., 4,290,730, Cl. 414-607.000.
General Motors Corporation: *See—*
Cumming, Richard J.; DeBano, John; Mertz, Harold J., Jr.; Nordeen, Donald L.; Sajewski, Vincent F.; and Zens, John F., 4,290,627, Cl. 280-729.000.
Mann, Gamdur S.; Tendulkar, Dilip V.; and Parker, William J., 4,290,263, Cl. 60-311.000.
Pomerantz, Allen J., 4,290,400, Cl. 123-440.000.
Sullivan, Leo S., Jr.; and Muzechuk, Richard A., 4,290,626, Cl. 280-692.000.
General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi, 4,291,412, Cl. 455-154.000.
Gentex Corporation: *See—*
Aileo, Jackson A., 4,290,149, Cl. 2-414.000.
Georgiev, Atanas G.; Andreev, Kino D.; and Konstantinova, Kina V., to DSO "Pharmachim". Method of preparing 2-(phenylamino)-imidazolines-(2). 4,290,971, Cl. 260-453.500.
Gerber, Wesley D., to Ford Aerospace & Communications Corp. Optical receiver/transmitter system employing a common optical aperture. 4,290,670, Cl. 350-274.000.
Gerety, Robert J.: *See—*
Tabor, Edward; and Gerety, Robert J., 4,291,020, Cl. 424-89.000.
Gerhard, Thomas: *See—*
Brause, Joachim; Gerhard, Thomas; Keller, Manfred; and Olszok, Henry, 4,290,367, Cl. 104-105.000.
Geronime, Robert L., to Rosemount Inc. Target flowmeter. 4,290,314, Cl. 73-861.520.
Getz, Edward H.: *See—*
Braga, Albert T.; Cartier, Roger J.; Getz, Edward H.; and Hafstrom, Warren R., 4,291,238, Cl. 307-141.400.
Getz, John, Jr. Self-dropping flag for mail boxes. 4,290,549, Cl. 232-35.000.
Gibson, Joseph T.; and Duhon, Gerald L., to A. C. Company. Drilling fluid circulating and monitoring system and method. 4,290,305, Cl. 73-155.000.
Gigou, Roger, to Framatome. Protection of steam piping in a nuclear reactor. 4,290,853, Cl. 176-87.000.
Gil-Av, E.: *See—*
Hare, P. Edgar; and Gil-Av, E., 4,290,893, Cl. 210-656.000.
Gilbert, Woodrow P.: *See—*
Burns, Alonzo M., Jr.; Silliman, Jeffrey E.; Gilbert, Woodrow P.; and Pascoe, William M., Sr., 4,290,766, Cl. 8-491.000.
Gillings, Christopher; and Palmer, John H., to Fisons Limited. Arthropodicidal granular formulation. 4,291,052, Cl. 424-282.000.
Giorgini, Norman L., to Minnesota Mining and Manufacturing Company. Method and apparatus using low gloss pressure fusing roll. 4,290,691, Cl. 355-3.0FU.
Girgis, Makram M.; Jackson, David E.; and Mannuzza, Frank J., to Miles Laboratories, Inc. Purification of lipoprotein cholesterol for use as a cholesterol reference material. 4,290,774, Cl. 23-230.00B.
Glaesener, Ernest, to Arbed S.A. Vehicle-stopping device for safety barriers. 4,290,585, Cl. 256-13.100.
Glaxo Group Limited: *See—*
Reynolds, Derek P., 4,291,059, Cl. 424-311.000.
Glaxo Operations UK Limited: *See—*
Cherry, Peter C.; Newall, Christopher E.; Watson, Nigel S.; Gregory, Gordon I.; and Ward, Peter, 4,290,949, Cl. 260-245.300.
Glickman, Michael; and Hollington, Geoffrey A., to Pel Limited. Stacking chair. 4,290,645, Cl. 297-239.000.
Gobien, Ernst: *See—*
Sorsche, Joachim H.; Ableitner, Erich; Gobien, Ernst; and Minning, Manfred, 4,290,397, Cl. 123-195.00A.
Gobler, Hans. Lawnmower blades. 4,290,258, Cl. 56-295.000.
Goethert, Bernhard H.: *See—*
Hopkins, Harry C.; Goethert, Bernhard H.; and Power, Joseph K., 4,290,500, Cl. 180-117.000.
Goetz, Richard W.; Meixsel, Lawrence D.; and Smith, David W., to National Distillers and Chemical Corp. Rhodium catalyzed process for acetaldehyde and ethanol. 4,291,179, Cl. 568-882.000.
Gohrbandt, Wilhelm: *See—*
Neeff, Rutger; Kuth, Robert; Kuhnel, Werner; and Gohrbandt, Wilhelm, 4,290,768, Cl. 8-532.000.
Gold, Joseph. Method of treating tumors and cancerous cachexia with L-tryptophan. 4,291,048, Cl. 424-274.000.
Goldberg, Erwin, to Northwestern University. Antigenic peptide compound. 4,290,944, Cl. 260-112.50R.
Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Toy vehicles with automatic banking. 4,290,228, Cl. 46-262.000.
Goldfarb, Samuel; and Reilly, Thomas, to Litton Systems, Inc. Electromagnetic interference reduction for electronic line printers. 4,290,705, Cl. 400-618.000.
Goldsmith, Jeff M.: *See—*
Yates, Douglas A.; Hatch, Arthur E.; and Goldsmith, Jeff M., 4,290,835, Cl. 156-601.000.
Gooch, Beverley R., to Ampex Corporation. Multichannel transducer structure with improved interchannel cross talk rejection. 4,291,352, Cl. 360-121.000.
Goodall, Maurice. Spray inhibiting means for use on a road vehicle. 4,290,619, Cl. 280-154.50R.
Goodman, Ronald D.; Krueger, Wallace F.; and Shaw, Anthony R., to Libbey-Owens-Ford Company. Solar energy collector. 4,290,413, Cl. 126-426.000.
Goodwin, Joseph. Field dressing device. 4,290,201, Cl. 30-294.000.
Gordon, David J.; and Wessel, James K., to Dow Corning Corporation. Dewatering fine coal slurries using organopolysiloxanes. 4,290,896, Cl. 210-710.000.

Gordon, Pat L.: *See—*
Bihn, Daniel; and Gordon, Pat L., 4,290,430, Cl. 128-419.0PT.

Gorgerino, Mario; and Videau, Daniel, to Compagnie Universelle D'Acetylene et D'Electro-Metallurgie. Method for obtaining iron-based alloys allowing in particular their mechanical properties to be improved by the use of lanthanum, and iron-based alloys obtained by the said method. 4,290,805, Cl. 75-130.00R.

Goring, Joachim: *See—*
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,291,037, Cl. 424-253.000.

Gospodar, Reinhard. Apparatus for controlling the closing limit of a carburetor throttle valve. 4,290,323, Cl. 74-860.000.

Goto, Kenji: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.

Governor & Company of the Bank of England: *See—*
Lee, Peter D., 4,290,630, Cl. 283-8.00R.

Gozzo, Franco: *See—*
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Graham, Donald W.: *See—*
Brown, Jeannette E.; Rogers, Edward F.; and Graham, Donald W., 4,290,966, Cl. 260-413.000.

Graham, Lawrence L. Storm sashes and method and apparatus for manufacturing. 4,290,251, Cl. 52-656.000.

Graham, Lynette E.: *See—*
Anderton, John J.; and Graham, Lynette E., 4,290,193, Cl. 29-764.000.

Graham Magnetics, Inc.: *See—*
Cosby, Phillip A., 4,290,821, Cl. 134-8.000.

Gram, Martin M., to MTS Systems Corporation. High volume poppet valve with orifice opening speed control. 4,290,343, Cl. 91-461.000.

Grancher, Pierre: *See—*
Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, 4,291,003, Cl. 423-228.000.

Granger, Donald W., to Waukesha-Pearce Industries, Inc. Nitrogen liquid to gas converter. 4,290,271, Cl. 62-53.000.

Grasselli, Robert K.: *See—*
Suresh, Dev D.; Brazdil, James F.; and Grasselli, Robert K., 4,290,920, Cl. 252-439.000.

Grassin, Jerome; Thouvenin, Maurice; and Epie, Jean-Claude, to Saint Gobain Industries. Apparatus for deforming an object and securing it to a support member. 4,290,544, Cl. 228-7.000.

Graversen, Niels P. G.: *See—*
Molgaard, Aage; and Graversen, Niels P. G., 4,290,553, Cl. 236-42.000.

Great Lakes Carbon Corporation: *See—*
Hsu, Harry L.; Hardin, Edward E.; and Grindstaff, Lloyd I., 4,291,008, Cl. 423-461.000.

Greatbatch, Wilson. Method for electronic control of infections using silver ions. 4,291,125, Cl. 435-240.000.

Green, Bruce H.: *See—*
Alfano, Robert R.; and Green, Bruce H., 4,291,282, Cl. 331-94.50S.

Green, Talmage O., to Snap-on Tools Corporation. Torque release wrench of the preset type. 4,290,329, Cl. 81-477.000.

Gregory, Gordon I.: *See—*
Cherry, Peter C.; Newall, Christopher E.; Watson, Nigel S.; Gregory, Gordon I.; and Ward, Peter, 4,290,949, Cl. 260-245.300.

Gregory, William T., Jr. Greenhouse tubular insulation barrier. 4,290,242, Cl. 52-2.000.

Grenoble, Dale E.: *See—*
Beierle, John W.; and Grenoble, Dale E., 4,291,017, Cl. 424-52.000.

Gretzinger, Adolf: *See—*
Nigol, Olaf; Houston, Herbert J.; and Gretzinger, Adolf, 4,291,194, Cl. 174-40.00R.

Griffin, Edward L.: *See—*
Young, Frederick A.; and Griffin, Edward L., 4,291,287, Cl. 333-210.000.
Young, Frederick A.; Griffin, Edward L.; and Hendrick, Louis W., 4,291,288, Cl. 333-212.000.

Griffith, John A. Apparatus for picking up overturned vehicles. 4,290,731, Cl. 414-678.000.

Griffith, John D., to Bonas Machine Company Limited. Yarn feed controlling device. 4,290,461, Cl. 139-450.000.

Griffiths, Kenneth F. Method for production of aluminum oxide. 4,291,011, Cl. 423-625.000.

Grimaldi, Frank G.: *See—*
Dechene, Ronald L.; Grimaldi, Frank G.; and Newton, Robert E., 4,291,273, Cl. 324-343.000.

Grindstaff, Lloyd I.: *See—*
Hsu, Harry L.; Hardin, Edward E.; and Grindstaff, Lloyd I., 4,291,008, Cl. 423-461.000.

Grof, Ferenc: *See—*
Torok, Gabor; Sarosi, Lajos; Grof, Ferenc; Becsei, Tamas; and Barta, Peter, 4,290,894, Cl. 210-661.000.

Groft, Donald H.: *See—*
Eckels, George H.; Groft, Donald H.; and Stallard, Wayne R., 4,290,584, Cl. 254-380.000.

Gronberg, Pauli, to Fincoil-teollisuus Oy. Apparatus for determining the differential pressure and the volumetric fluid flow in a conduit. 4,290,315, Cl. 73-861.610.

Gross, Henry; and Gross, Samuel. Ticket printing and advancing device. 4,290,355, Cl. 101-69.000.

Gross, Samuel: *See—*
Gross, Henry; and Gross, Samuel, 4,290,355, Cl. 101-69.000.

Grottrup, Helmut, to GAO Gesellschaft fur Automation und Organisation mbH. Method and apparatus for card authentication using display of symbols for identification of a personal code word. 4,291,222, Cl. 235-380.000.

Gruber, George W.: *See—*
Harman, Douglas G.; Lambert, Ralph E.; and Gruber, George W., 4,290,303, Cl. 73-105.000.

Gruber, Rudolf, to GD-Anker Gebirgs-Dubel-Anker GmbH & Co. KG. Straddle cartridge for a straddle cartridge anchor. 4,290,338, Cl. 411-21.000.

Gsell, Laurenz: *See—*
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Karrer, Friedrich, 4,291,056, Cl. 424-304.000.

GTE Products Corporation: *See—*
Anderton, John J.; and Graham, Lynette E., 4,290,193, Cl. 29-764.000.

Guerre-Berthelot, Pierre, to G P A International. Improved protective helmets and fastening devices therefor. 4,290,150, Cl. 2-421.000.

Guest, Allen M.: *See—*
Baum, Kurt; and Guest, Allen M., 4,291,171, Cl. 560-156.000.

Gulbins, Erich: *See—*
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,291,147, Cl. 528-119.000.

Gyula, Kakonyi: *See—*
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H. Berthold, AG.: *See—*
Siebeck, Helmut, 4,291,381, Cl. 365-523.000.

h.o.p. Consulab Inc.: *See—*
Mathieu, Serge, 4,291,356, Cl. 361-87.000.

Haas, Robert V., to Singer Company, The. Sewing cabinet with vertically movable table. 4,290,657, Cl. 312-21.000.

Haas, Roman, to Siemens Aktiengesellschaft. Power supply circuit with a self-oscillating blocking oscillator. 4,291,367, Cl. 363-21.000.

Hafferkamp, Harry C., to Owens-Illinois, Inc. Method and apparatus for reducing loader bar impact. 4,290,517, Cl. 198-427.000.

Hafstrom, Warren R.: *See—*
Braga, Albert T.; Cartier, Roger J.; Getz, Edward H.; and Hafstrom, Warren R., 4,291,238, Cl. 307-141.400.

Haga, Hirosi: *See—*
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Hagelbarger, David W.: *See—*
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Hagenauer, Joachim: *See—*
Bahl, Lalit R.; Cocke, John; Cullum, Clifton D., Jr.; and Hagenauer, Joachim, 4,291,406, Cl. 371-44.000.

Haines, Derrick J., to British Aerospace Public Limited Company. Stirling cycle apparatus. 4,290,264, Cl. 60-518.000.

Haisman, Derek R.: *See—*
Anema, Pieter J.; Haisman, Derek R.; and Adams, Rose M., 4,291,066, Cl. 426-578.000.

Haiss, Manfred. Package, especially tubular wrapper-type container with re-usable closure, especially for chocolates or candy. 4,290,526, Cl. 206-624.000.

Halasa, Adel F.; Hall, James E.; and Para, Adolph, to Firestone Tire & Rubber Company, The. Process for preparation of block copolymers. 4,291,139, Cl. 525-314.000.

Halcon Research and Development Corp.: *See—*
Barker, Robert S., 4,290,959, Cl. 260-348.240.

Hall, James E.: *See—*
Halasa, Adel F.; Hall, James E.; and Para, Adolph, 4,291,139, Cl. 525-314.000.

Halliburton Company: *See—*
Brisco, David P., 4,290,482, Cl. 166-70.000.

Hamada, Toshimitsu: *See—*
Mese, Michihiro; Kashioka, Seiji; Ejiri, Masakazu; Miyatake, Takafumi; Yamazaki, Isamu; and Hamada, Toshimitsu, 4,291,334, Cl. 358-101.000.

Hamamura, Kazuo: *See—*
Noda, Nobutaka; Hamamura, Kazuo; and Morita, Yoichi, 4,290,690, Cl. 355-3.00R.

Hambrecht, Jurgen; Lindenschmidt, Gerhard; and Regel, Walter, to BASF Aktiengesellschaft. Molding materials containing styrene/acrylonitrile copolymers and ethylene oxide/propylene oxide three-block copolymers. 4,291,134, Cl. 525-92.000.

Hamburger Stahlwerke GmbH: *See—*
Sensis, Siegfried; Schwerdtfeger, Joachim; Walden, Klaus; and Ameling, Dieter, 4,290,800, Cl. 75-12.000.

Hamilton, James M.; and Carrison, Craig L., to Hughes Aircraft Company. Charge coupled device charge comparator refresher. 4,291,243, Cl. 307-304.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Print head. 4,290,358, Cl. 101-111.000.

Hamisch, Paul H., Jr.: *See—*
Pabodie, Robert M.; and Hamisch, Paul H., Jr., 4,290,840, Cl. 156-384.000.

Handy, Richard L.: *See—*
Demirel, Turgut; and Handy, Richard L., 4,290,252, Cl. 52-742.000.

Hanes, Maurice H.; and Schlegel, Earl S., to Westinghouse Electric Corp. Thyristor with continuous recombination center shunt across planar emitter-base junction. 4,291,329, Cl. 357-64.000.

Hansen, Uwe: *See—*
Dielacher, Maximillian; and Hansen, Uwe, 4,290,881, Cl. 208-310.00R.

Hanson, Paul B. Articulated bed. 4,290,155, Cl. 5-465.000.

Hanyu, Susumu; and Kato, Kenji, to Janome Sewing Machine Co., Ltd. Sewing machine. 4,290,377, Cl. 112-158.00E.

Hara, Mamoru: *See—*
Miyake, Hideo; Sakamoto, Junichi; Sawaki, Masakazu; and Hara, Mamoru, 4,290,938, Cl. 260-40.00R.

Hara, Masanori: *See—*
Tonomura, Yoshinobu; Fujimura, Toshio; Hara, Masanori; and Takenoya, Hideaki, 4,290,375, Cl. 112-121.120.

Harada, Hidefumi: *See—*
Senda, Jihei; Inoue, Yoshihiro; Uenishi, Toshiaki; Harada, Hidefumi; Nakata, Kouji; and Akagi, Akio, 4,291,010, Cl. 423-594.000.

Harada, Kiyoshi; Koida, Yoshiyuki; and Miura, Hiroshi, to Tanabe Seiyaku Co., Ltd. Fatty emulsion and process for the preparation thereof. 4,290,910, Cl. 252-312.000.

Hardin, Edward E.: *See—*
Hsu, Harry L.; Hardin, Edward E.; and Grindstaff, Lloyd I., 4,291,008, Cl. 423-461.000.

Hare, P. Edgar; and Gil-Av, E., to Yeda Research & Development Co. Ltd. Separation of amino acids by liquid chromatography using chiral eluants. 4,290,893, Cl. 210-656.000.

Harman, Douglas G.; Lambert, Ralph E.; and Gruber, George W., to Westinghouse Electric Corp. Apparatus for measuring surface scratches on a tube. 4,290,303, Cl. 73-105.000.

Harmon, David H.: *See—*
Elmore, Charles E.; and Harmon, David H., 4,291,128, Cl. 521-54.000.

Harris, Clarence J., to United States of America, Air Force. Biaxial shear force gauge. 4,290,302, Cl. 73-86.000.

Harris Corporation: *See—*
Davis, Robert C.; and Boyd, Robert W., 4,291,277, Cl. 330-149.000.
Ports, Kenneth A.; and Lucas, William G., 4,290,831, Cl. 148-187.000.

Harris, James: *See—*
Parvin, Charles V.; and Harris, James, 4,290,259, Cl. 56-364.000.

Harris, Jesse W.: *See—*
Earp, Sherald B.; Lutich, Louis L.; and Harris, Jesse W., 4,290,578, Cl. 251-63.000.

Harris, Richard G.; McRitchie, Allan C.; and Wilson, Alexander D., to Procter & Gamble Company, The. Washing and softening compositions. 4,291,071, Cl. 427-220.000.

Harrison, Boyd L.; and Dolfini, Joseph E., to Richardson-Merrell Inc. 7-(1,3-Dithiolan-2-imino)-Δ^2-cephalosporanic acid derivatives. 4,291,160, Cl. 544-17.000.

Hart, William B.; and Domloge, Rami. Fan unit. 4,290,393, Cl. 123-41.120.

Hartmann, Willy: *See—*
Heine, Hans-Georg; and Hartmann, Willy, 4,291,176, Cl. 568-381.000.

Harvey, Albert J., to Diamond International Corporation. Article support system. 4,290,519, Cl. 198-483.000.

Hasegawa, Akira: *See—*
Ohishi, Chikashi; and Hasegawa, Akira, 4,291,117, Cl. 430-309.000.

Hasegawa, Morihiro: *See—*
Maruhashi, Shigeaki; Hasegawa, Morihiro; and Yamauchi, Takashi, 4,290,803, Cl. 75-52.000.

Hashimoto, Shuji. Cutting apparatus for a rusty nut. 4,290,199, Cl. 30-180.000.

Hashimoto, Takao: *See—*
Morita, Minoru; Sato, Shimio; Hashimoto, Takao; and Kitaoka, Yoji, 4,290,999, Cl. 422-194.000.

Haskins, Steve W.: *See—*
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Hata, Shun-Ichi: *See—*
Koizumi, Masuo; Sasahara, Kazuo; Murakami, Yasushi; Wada, Sakae; Nakakimura, Hiroshi; Kubodera, Noboru; and Hata, Shun-Ichi, 4,290,953, Cl. 260-333.000.

Hata, Yoshitaka; and Okamura, Kenji, to Nissan Motor Company, Limited. Fuel supply control system. 4,290,404, Cl. 123-571.000.

Hatch, Arthur E.: *See—*
Yates, Douglas A.; Hatch, Arthur E.; and Goldsmith, Jeff M., 4,290,835, Cl. 156-601.000.

Hattori, Satoru: *See—*
Fujii, Masaki; Miyabayashi, Mitsutaka; Todaka, Hironori; and Hattori, Satoru, 4,291,140, Cl. 525-321.000.

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Haug, Theobald, to Ciba-Geigy Corporation. Heat-curable mixtures, which are stable on storage, of expoxide resins and β-aminocrotonic acid derivatives. 4,291,146, Cl. 528-119.000.

Hauni-Werke Korber & Co. KG: *See—*
Reuland, Joachim, 4,290,436, Cl. 131-108.000.

Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, to Chisso Engineering Co.Ltd. Method for initiating biaxial stretching of plastic tubes and apparatus therefor. 4,290,996, Cl. 264-564.000.

Hayashi, Mitsuo: *See—*
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Kakeno, Sadao; Hayashi, Taisen; Komai, Hiromichi; and Yamazaki, Hiroshi, 4,291,316, Cl. 346-140.00R.

Hayashi, Tatsuo: *See—*
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Hayes, Norman J. Plastic post apparatus and methods. 4,290,712, Cl. 404-10.000.

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Vignon, Louis, 4,290,169, Cl. 19-159.00R.

Hechenbleikner, Ingenuin; Klicker, James D.; and Enlow, William P., to Borg-Warner Chemicals, Inc. Process for the preparation of phenol-free phosphites. 4,290,976, Cl. 260-973.000.

Hedstrom, Bengt O. A.; and Svensson, Claes G. S., to MoDo-Chemetics AB. Process for the efficient conversion of water-containing organic materials as fuels into energy. 4,290,269, Cl. 60-670.000.

Hehl, Karl. Precision drive for rotary switching controls of reciprocating unit. 4,290,317, Cl. 74-89.200.

Hehl, Walter H., to International Business Machines Corporation. Actuator mechanism for a print hammer or the like. 4,290,356, Cl. 101-93.340.

Hehlmann, Jan: *See—*
Pikon, Jerzy; and Hehlmann, Jan, 4,290,980, Cl. 261-94.000.

Heidelberger Druckmaschinen AG: *See—*
Thunker, Norbert, 4,290,595, Cl. 271-277.000.

Heine, Hans-Georg; and Hartmann, Willy, to Bayer Aktiengesellschaft. Production of insecticidally active vinyl-cyclopropane carboxylic acid esters. 4,291,176, Cl. 568-381.000.

Heine, Hans-Georg: *See—*
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, 4,291,046, Cl. 424-272.000.

Heiss, Louis R., to Baxter Travenol Laboratories, Inc. Fluorometric analyzer including shutter means for simultaneously shielding sample and photodetector during sample change. 4,291,230, Cl. 250-458.000.

Held, Franklin R., to Ektelon. Racquetball racquet having a metal frame meshable with a throat piece. 4,290,604, Cl. 273-73.00G.

Helfer, Joel N.; and Ferrara, Elisa M., to American Home Products Corporation. Infant support board. 4,290,425, Cl. 128-133.000.

Hellman, Lars G. Process for the dehumidification of moist air or saturated water vapor. 4,290,208, Cl. 34-9.000.

Hemmat, Naim S.: *See—*
Smith, Robert W.; Hemmat, Naim S.; Bedell, John R.; Kavesh, Sheldon; and Draizen, Seymour, 4,290,476, Cl. 164-423.000.

Henderson, John G. N.; and Maturo, Robert J., to RCA Corporation. Search type tuning system with direct address channel selection apparatus. 4,291,413, Cl. 455-164.000.

Hendrick, Louis W.: *See—*
Young, Frederick A.; Griffin, Edward L.; and Hendrick, Louis W., 4,291,288, Cl. 333-212.000.

Henry, Charles L., to Akzona Incorporated. Use of co-solvents in amine N-oxide solutions. 4,290,815, Cl. 106-203.000.

Henry, David W.; and Tong, George L., to SRI International. Octanoylhydrazone derivatives of adriamycin. 4,291,157, Cl. 536-17.00A.

Hensel, Wolfgang; Berghof, Hans-Joachim; and Werner, Heinz, to Keiper Automobiltechnik GmbH & Co. K.G. Hinge mount assembly for reclinable seat. 4,290,647, Cl. 297-362.000.

Hensley, Robert C. Temperature actuated foundation ventilator. 4,290,554, Cl. 236-49.000.

Herbert, Normand C.; Burwen, Richard S.; and Mentelos, Richard A., to Novametrix Medical Systems, Inc. Transcutaneous oxygen and local perfusion measurement. 4,290,431, Cl. 128-635.000.

Herbstman, Sheldon; and Dorn, Peter, to Texaco Inc. Hydrocarbyl alkoxy amino alkylene-substituted asparagine and a motor fuel composition containing same. 4,290,778, Cl. 44-71.000.

Herlau, Henrik. Method and means for releasable securing of strings. 4,290,173, Cl. 24-118.000.

Herman Miller, Inc.: *See—*
Propst, Robert L.; and Raftery, William B., 4,290,369, Cl. 108-53.300.

Hermanson, Dean E.: *See—*
DeGeorge, Bernard J.; Hermanson, Dean E.; and Tomas, Carlos, 4,290,463, Cl. 141-387.000.

Hermecz, Istvan: *See—*
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,291,036, Cl. 424-251.000.

Herpel, Donald R. Wind deflector. 4,290,639, Cl. 296-1.00S.

Herzog, Gordon W.: *See—*
Stevenson, Andrew C.; Herzog, Gordon W.; and Murdoch, James C., 4,291,263, Cl. 318-706.000.

Hess, Robert L.: *See—*
Cromer, Charles F.; Yoon, Kue H.; Hess, Robert L.; Kelsey, Thomas; and Caithness, Michael G., 4,291,208, Cl. 200-148.00A.

Hewlett-Packard Company: *See—*
Osborne, Thomas E.; and Stockwell, Richard K., 4,291,385, Cl. 364-709.000.

Heyl & Co., Chemisch-Pharmazeutische Fabrik: *See—*
Bayer, Ernst; and Kutubuddin, Mohamed, 4,290,918, Cl. 252-431.00R.

Hidaka, Mikio: *See—*
Umemura, Sumio; Ohdan, Kyoji; Hidaka, Mikio; and Kurafuji, Toshio, 4,290,922, Cl. 252-456.000.
Highsmith, Charles E.: *See—*
Gallagher, Ronald M.; Nadler, Michael E.; Highsmith, Charles E.; and Minchey, Richard L., 4,290,370, Cl. 108-53.500.
Higuchi, Megumu: *See—*
Takahashi, Koichi; and Higuchi, Megumu, 4,290,452, Cl. 137-625.230.
Higuchi, Mitsuo; and Miyasaka, Kiyoshi, to Fujitsu Limited. Semiconductor device. 4,291,326, Cl. 357-51.000.
Hilsey, Arthur F. Multi-purpose precast concrete panels, and methods of constructing concrete structures employing the same. 4,290,246, Cl. 52-169.100.
Himmele, Walter: *See—*
Ross, Karl-Heinz; Dudeck, Christian; Himmele, Walter; Lebkuecher, Rolf; and Sauer, Wolfgang, 4,290,960, Cl. 260-348.570.
Hines, Stephen P., to Eastman Kodak Company. Image stabilizing apparatus. 4,290,684, Cl. 354-286.000.
Hinkel, Dwight B.: *See—*
Majkrzak, David S.; and Hinkel, Dwight B., 4,290,654, Cl. 301-9.0TV.
Hinz, Lorne C.; and Thomas, William P., to Northern Telecom Limited. Analog to digital converter using timed level changes. 4,291,299, Cl. 340-347.0AD.
Hiraga, Masaharu; and Kimura, Seishi, to Sankyo Electric Company Limited. Refrigerant compressors. 4,290,345, Cl. 92-79.000.
Hirai, Jun, to Sony Corporation. Video signal processing circuit for eliminating an interfering signal. 4,291,330, Cl. 358-8.000.
Hiramatsu, Kenzo; and Aiyama, Fumihiko, to Kioritz Corporation. Collecting apparatus. 4,290,165, Cl. 15-330.000.
Hirano, Mikio: *See—*
Horiuchi, Susumu; Hirano, Mikio; Yusa, Hideo; Chino, Koichi; and Hayashi, Tatsuo, 4,290,907, Cl. 252-301.10W.
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Hirata, Tadashi; Ogasa, Takehiro; Saito, Hiromitsu; and Nakmizo, Nobuhiro, to Kyowa Hakko Kogyo Co., Ltd. Cephalosporin analogs and methods for production thereof. 4,291,164, Cl. 546-183.000.
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Hirata, Takeyuki; Hiroki, Nobuyoshi; and Masuda, Seiichi, 4,290,802, Cl. 75-52.000.
Hirsch, Wolfgang, to Behringwerke Aktiengesellschaft. Diagnostic agent for the detection of urobilinogen. 4,290,771, Cl. 23-230.00B.
Hirsh, Ivan Y.: *See—*
Dyett, Derek H.; Hirsh, Ivan Y.; Preston, Edward G.; and Williams, Robert E., 4,290,518, Cl. 198-450.000.
Hirst, George E.: *See—*
Mould, Henry M.; and Hirst, George E., 4,290,696, Cl. 356-300.000.
Hiruta, Toshio: *See—*
Komiyama, Katsuhiko; and Hiruta, Toshio, 4,291,400, Cl. 368-84.000.
Hitachi, Ltd.: *See—*
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.
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Kanamaru, Hisanobu; Tatsumi, Hideo; Tohkairin, Akira; and Sayo, Kosaku, 4,290,295, Cl. 72-356.000.
Kanemaru, Kenji; and Iwasaki, Takashiro, 4,291,297, Cl. 340-347.0AD.
Kodama, Kazuyuki; Okada, Kunihiro; Huno, Takakazu; Endo, Takeyuki; and Shibuya, Yasutaka, 4,291,306, Cl. 340-744.000.
Marumoto, Katsuji; and Ohmae, Tsutomu, 4,291,259, Cl. 318-139.000.
Mayama, Koichi; Yamaguchi, Noboru; Sugie, Mamoru; Kita, Yuzo; and Yoshizawa, Shigeru, 4,291,241, Cl. 307-269.000.
Mese, Michihiro; Kashioka, Seiji; Ejiri, Masakazu; Miyatake, Takafumi; Yamazaki, Isamu; and Hamada, Toshimitsu, 4,291,334, Cl. 358-101.000.
Mochizuki, Yasuhiro; Okano, Sadao; and Ogawa, Takuzo, 4,290,830, Cl. 148-187.000.
Nakagawa, Isao; and Minami, Norio, 4,291,335, Cl. 358-154.000.
Oishi, Kazuaki, 4,291,363, Cl. 361-333.000.
Omori, Takashi; and Sato, Takao, 4,290,850, Cl. 176-20.00R.
Saito, Takashi; Ohwada, Masataka; and Saito, Shozo, 4,290,906, Cl. 252-301.10W.
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.
Hitachi Maxell, Ltd.: *See—*
Sasaki, Shigeo; and Yamamoto, Osamu, 4,290,562, Cl. 242-74.000.
Hochstrate, Paul E., to Timex Corporation. Voltage multiplier and driver circuit. 4,291,369, Cl. 363-60.000.
Hochtemperatur-Reaktorbau GmbH: *See—*
Fritz, Rolf; Kalden, Bernhard; and Kissel, Karl-Friedrich, 4,290,852, Cl. 176-58.0PB.
Hock, Frederick D.: *See—*
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Hoechst Aktiengesellschaft: *See—*
Dost, Gunter; and Bauer, Fritz, 4,291,053, Cl. 424-283.000.
Nolken, Ernst, 4,290,930, Cl. 260-29.6MP.
Nolken, Ernst; and Oesterlin, Hans G., 4,290,931, Cl. 260-29.6RW.
Strecker, Helmut; Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, 4,291,012, Cl. 424-1.000.
Hoechst-Roussel Pharmaceuticals, Inc.: *See—*
Martin, Lawrence L.; and Worm, Manfred, 4,290,958, Cl. 260-346.730.
Hoefer, Peter S.; and Whitesides, Michael, to Hoefer Scientific Instruments. Vertical gel slab electrophoresis method. 4,290,871, Cl. 204-180.00G.
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Hoefer, Peter S.; and Whitesides, Michael, 4,290,871, Cl. 204-180.00G.
Hoeptner, Herbert W., III. Chain tensioner. 4,291,416, Cl. 474-138.000.
Hoeschel, James D.; and Amundsen, Alan R., to Engelhard Minerals & Chemicals Corp. Method for treating tumors with ethylenediamine platinum (II) and 1,2-diaminocyclohexane-platinum (II) pyrophosphate complexes. 4,291,027, Cl. 424-197.000.
Hoeschele, James D.; and Amundsen, Alan R., to Engelhard Minerals & Chemicals Corp. Method for treating tumors using cis-diammine-platinum (II) organophosphate complexes. 4,291,023, Cl. 424-180.000.
Hofer, Donald C.; Kendrick, Raymond D.; and Yannoni, Costantino S., to International Business Machines Corporation. Method for reducing homonuclear broadening in magnetic resonance spectra of solids. 4,291,272, Cl. 324-313.000.
Hoffmann-La Roche Inc.: *See—*
Suchy, Milos, 4,291,058, Cl. 424-308.000.
Hoffsommer, Kay P.: *See—*
Price, Samuel T.; and Hoffsommer, Kay P., 4,290,177, Cl. 28-254.000.
Hofman, Johannes H. A.: *See—*
Schaafsma, Sijbrandus E.; Hofman, Johannes H. A.; and Claassens, Johannes E. L., 4,291,170, Cl. 560-126.000.
Hohlein, Peter; and Sonntag, Michael, to Bayer Aktiengesellschaft. Binders for coating compositions. 4,291,135, Cl. 525-101.000.
Hokushin Electric Works, Ltd.: *See—*
Kobayashi, Tamotsu, 4,290,312, Cl. 73-861.120.
Holleis, Gunter: *See—*
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Hollington, Geoffrey A.: *See—*
Glickman, Michael; and Hollington, Geoffrey A., 4,290,645, Cl. 297-239.000.
Holm, Donald C., to Autotron Equipment Corporation. Rim surface measuring guage for wheel balances. 4,290,205, Cl. 33-180.00R.
Holmes, Allen B., to United States of America, Army. Fluid oscillator. 4,291,395, Cl. 367-83.000.
Holtey, Thomas O., to Honeywell Information Systems Inc. I/O Request interrupt mechanism. 4,291,371, Cl. 364-200.000.
Hom, Felix, to Rohr Industries, Inc. Method of manufacturing a honeycomb noise attenuation structure and the structure resulting therefrom. 4,291,079, Cl. 428-116.000.
Homeier, Edwin H., to UOP Inc. Polymerization of unsaturated hydrocarbyl halide compounds. 4,291,143, Cl. 526-123.000.
Hon, Robert K.: *See—*
Jameikis, Saulius M.; Stalcup, Robert K.; Arnold, Joe F.; and Hon, Robert K., 4,290,237, Cl. 51-34.00A.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Honda, Shoichi; and Watanabe, Nobuyoshi, 4,290,455, Cl. 137-855.000.
Nishimura, Sadanori, 4,290,325, Cl. 74-869.000.
Nishimura, Sadanori; and Yamada, Yoji, 4,290,513, Cl. 192-3.220.
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Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.
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Severson, Asbjorn M., 4,290,298, Cl. 73-3.000.
Honeywell Information Systems Inc.: *See—*
Holtey, Thomas O., 4,291,371, Cl. 364-200.000.
Hong, Ju-Hi J., to International Business Machines Corp. Short circuit protection circuit. 4,291,357, Cl. 361-101.000.
Hoogovens Ijmuiden, B.V.: *See—*
Middel, Jan, 4,290,764, Cl. 493-395.000.
Hooke, John W., to General Electric Company. Battery linkage system. 4,291,106, Cl. 429-1.000.
Hooker Chemicals & Plastics Corp.: *See—*
Dannels, W. Andrew; and Bainbridge, Robert W., 4,290,744, Cl. 425-543.000.
Hopkins, Harry C.; Goethert, Bernhard H.; and Power, Joseph K. Ground effect flying platform. 4,290,500, Cl. 180-117.000.
Horak, Vaclav; and Janata, Jiri. Nonthrombogenic polymer surface. 4,291,133, Cl. 525-74.000.
Horigome, Eiji; Ota, Hiroshi; and Azegami, Hitoshi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,291,100, Cl. 428-424.200.
Horioka, Kuninori: *See—*
Tanizaki, Yoshiharu; Minagawa, Kenichiro; Akimoto, Shinichi; and Horioka, Kuninori, 4,291,101, Cl. 428-514.000.

Horiuchi, Susumu; Hirano, Mikio; Yusa, Hideo; Chino, Koichi; and Hayashi, Tatsuo, to Hitachi, Ltd. Process for treating radioactive waste. 4,290,907, Cl. 252-301.10W.
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Hornsby, William M.: *See—*
Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, 4,290,245, Cl. 52-157.000.
Horvath, Tibor, to Magyar Vagon- es Gepgyar. Hinge unit for articulated vehicles. 4,290,622, Cl. 280-400.000.
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Houston, Herbert J.: *See—*
Nigol, Olaf; Houston, Herbert J.; and Gretzinger, Adolf, 4,291,194, Cl. 174-40.00R.
Hozman, Nelson D.; Reynolds, Robert L.; and Kirn, Thomas G., to Eastman Kodak Company. Pressure member urging mechanism. 4,290,676, Cl. 354-121.000.
Hsu, Harry L.; Hardin, Edward E.; and Grindstaff, Lloyd I., to Great Lakes Carbon Corporation. Process for calcining and desulfurizing petroleum coke. 4,291,008, Cl. 423-461.000.
Hu, Jinn-Yih; Hu, Kun-Si; and Hu, Sue-Jan. Recess-ventilated collapsible tent motorcycle seat. 4,290,644, Cl. 297-195.000.
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Hubbard, S. Eugene, to Kawneer Company, Inc. Safety door entrance. 4,290,233, Cl. 49-383.000.
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, to Swiss Aluminium Ltd. Nozzle for strip casting. 4,290,477, Cl. 164-430.000.
Huber, Herbert; and Schiweck, Hubert. Process for utilizing the waste heat content of condensate and/or vapor produced in the manufacture of sugar. 4,290,818, Cl. 127-52.000.
Huchital, David A.: *See—*
Ausschnitt, Christopher P.; and Huchital, David A., 4,290,384, Cl. 118-722.000.
Hucks, Uwe; Wulff, Claus; Tresper, Erhard; Vernaleken, Hugo; and Selbeck, Harald, to Bayer Aktiengesellschaft. Process for the production of neutral phosphoric acid esters. 4,290,977, Cl. 260-973.000.
Hudimac, George S., Jr., to Mechanical Service Company. Measuring apparatus for shot dispensers. 4,290,700, Cl. 366-76.000.
Hughes Aircraft Company: *See—*
Hamilton, James M.; and Carrison, Craig L., 4,291,243, Cl. 307-304.000.
Smolik, John V.; Swanson, Ronald V.; Rubin, Charles P.; Blaschke, James C.; and Wagner, Roger J., 4,290,570, Cl. 244-158.00R.
Young, Frederick A.; and Griffin, Edward L., 4,291,287, Cl. 333-210.000.
Young, Frederick A.; Griffin, Edward L.; and Hendrick, Louis W., 4,291,288, Cl. 333-212.000.
Huitema, Thomas W., to J. I. Case Company. Electronic transmission control. 4,290,322, Cl. 74-752.00A.
Hulse, David O., to Budd Company, The. Anti-lock system. 4,290,509, Cl. 188-181.00A.
Hund, Franz: *See—*
Schroeder, Gerhard; Buxbaum, Gunter; Hund, Franz; Schopper, Heinrich-Christian; and Naumann, Rolf, 4,290,799, Cl. 75-0.50A.
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Kodama, Kazuyuki; Okada, Kunihiro; Huno, Takakazu; Endo, Takeyuki; and Shibuya, Yasutaka, 4,291,306, Cl. 340-744.000.
Hurst, Gerald L. Method for producing enclosed multipaneled envelopes. 4,290,763, Cl. 493-341.000.
Husky Injection Molding Systems Inc.: *See—*
Schad, Robert D., 4,290,701, Cl. 366-77.000.
Huston, Wilmer S.: *See—*
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Hydra-Rig, Inc.: *See—*
Elliston, Thomas L., 4,290,495, Cl. 175-85.000.
Hydril Company: *See—*
Olson, Richard A., 4,290,577, Cl. 251-1.00A.
Ibach, Adolf; and Konen, Heinz, to Sulberg, Carl. Method of making a forged mowing finger. 4,290,326, Cl. 76-101.00R.
Ichinose, Yoshito; Fukuda, Takeshi; and Kobayashi, Naoaki, to Fujitsu Limited. Process for producing bipolar semiconductor device utilizing predeposition of dopant and a polycrystalline silicon-gold film followed by simultaneous diffusion. 4,290,188, Cl. 29-591.000.
Ida, Masaru, to Nippon Gakki Seizo Kabushiki Kaisha. Equalizer amplifier. 4,291,276, Cl. 330-85.000.
Idelson, Elbert M. Color synthesizing. 4,290,699, Cl. 356-420.000.
Ijichi, Sadayoshi; and Nishizawa, Eiji, to Alps Electric Company, Ltd. UHF-VHF tuner having damping means to reduce interference in UHF band. 4,291,290, Cl. 334-1.000.
Ikeda, Kunio; and Haga, Hirosi, to Ricoh Co., Ltd. Method of forming fine bore. 4,290,857, Cl. 204-9.000.
Ikeda, Tomoaki: *See—*
Kido, Keishiro; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,291,119, Cl. 430-348.000.
Imai, Shigeki; and Fukuda, Hiroaki, to Sharp Kabushiki Kaisha. Initial bleach in an electrochromic display. 4,291,399, Cl. 368-82.000.
Imazeki, Kazuyoshi, to General Research of Electronics, Inc. Portable radio frequency/channel display system. 4,291,412, Cl. 455-154.000.
Immorlica, Anthony A., Jr.: *See—*
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Imperial Chemical Industries Limited: *See—*
Clifford, Michael L., 4,291,132, Cl. 525-53.000.
Porter, Kenneth, 4,290,278, Cl. 66-84.00A.
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, to Teijin Limited. Process for producing aromatic polyesters having increased degrees of polymerization. 4,291,152, Cl. 528-289.000.
Indian Head Inc.: *See—*
Pate, Harold T., 4,290,572, Cl. 248-74.00B.
Indiana Wood Specialty, Inc.: *See—*
Snitzer, Morton; and Fehrenbacher, Gary L., 4,290,371, Cl. 108-159.000.
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Judge, Edward E., Jr., 4,290,238, Cl. 51-58.000.
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Zimmer, Ernst, 4,290,239, Cl. 51-126.000.
Infanzon, Luis Alonso S.: *See—*
Nogueira, Eduardo D.; Infanzon, Luis Alonso S.; and Tezanos, Enrique H., 4,290,863, Cl. 204-99.000.
Inland Steel Company: *See—*
Gaffney, LeRoy J., 4,290,984, Cl. 264-30.000.
Inoue Gomu Kogyo Kabushiki Kaisha: *See—*
Katoh, Hisanori, 4,291,076, Cl. 428-31.000.
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Sasaki, Yoshikazu; Inoue, Hiroshi; Sasaki, Ichiro; Itatani, Hiroshi; and Kashima, Mikito, 4,290,936, Cl. 260-33.40P.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,290,856, Cl. 204-4.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electroplating apparatus and method. 4,290,856, Cl. 204-4.000.
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Tago, Makoto, to Furukawa Metals Company, Ltd. Copper alloy for reliable electrical connection. 4,290,806, Cl. 75-153.000.
Inoue, Yoshihiro: *See—*
Senda, Jihei; Inoue, Yoshihiro; Uenishi, Toshiaki; Harada, Hidefumi; Nakata, Kouji; and Akagi, Akio, 4,291,010, Cl. 423-594.000.
Inouye, Naomitsu: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; and Inouye, Naomitsu, 4,290,928, Cl. 260-28.00P.
Institut Francais du Petrole: *See—*
Aude, Robert; Baumgartner, Pierre; Desmarquest, Jean-Pierre; and Franck, Jean-Pierre, 4,290,973, Cl. 260-505.00R.
Sugier, Andre; and Freund, Edouard, 4,291,126, Cl. 518-713.000.
Insulation Materials, Inc.: *See—*
Kusenda, Stephen R., 4,290,250, Cl. 52-404.000.
Intermedics, Inc.: *See—*
Bihn, Daniel; and Gordon, Pat L., 4,290,430, Cl. 128-419.0PT.
International Business Machines Corporation: *See—*
Andros, Frank E.; Kerjilian, Ghazaros K.; Stevens, Bert E.; and Tomek, Reinhold E., 4,291,364, Cl. 361-384.000.
Bahl, Lalit R.; Cocke, John; Cullum, Clifton D., Jr.; and Hagenauer, Joachim, 4,291,406, Cl. 371-44.000.
Baumann, Gerald W., 4,290,596, Cl. 271-292.000.
Garwin, Richard L., 4,291,256, Cl. 315-368.000.
Hehl, Walter H., 4,290,356, Cl. 101-93.340.
Hofer, Donald C.; Kendrick, Raymond D.; and Yannoni, Costantino S., 4,291,272, Cl. 324-313.000.
Hong, Ju-Hi J., 4,291,357, Cl. 361-101.000.
King, Francis K.; and Wanek, Donald J., 4,291,350, Cl. 360-104.000.
Mizzi, John V., 4,291,315, Cl. 346-76.00R.
Pennell, George F.; Silkensen, Ralph D.; and Wallace, Joseph E., 4,291,351, Cl. 360-113.000.
Whitefield, Rodney J., 4,290,672, Cl. 350-358.000.
International Harvester Company: *See—*
Bowman, George E.; Faust, David S.; and Kataoka, David T., 4,290,623, Cl. 280-400.000.
International Standard Electric Corporation: *See—*
Chown, Martin, 4,290,667, Cl. 350-96.180.
International Telephone and Telegraph Corporation: *See—*
Burns, Edgar, 4,290,661, Cl. 339-18.00R.
Etcheverry, John P., 4,290,615, Cl. 277-221.000.
Friese, Egon F., 4,290,178, Cl. 29-33.00M.
Kruger, Bradford E., 4,291,310, Cl. 343-16.00R.
Peelle, Thomas B.; and Kolter, Roland K., 4,291,307, Cl. 340-756.000.
Investigacion Fic Fideicomiso: *See—*
Cabrera, Armando N., 4,290,795, Cl. 65-260.000.
Iowa State University Research Foundation, Inc.: *See—*
Demirel, Turgut; and Handy, Richard L., 4,290,252, Cl. 52-742.000.
Lupton, Harold W.; and Reed, David E., 4,291,019, Cl. 424-89.000.
Irie, Kazuo: *See—*
Miyauchi, Seiroku; Sagane, Yasuo; and Irie, Kazuo, 4,290,641, Cl. 296-146.000.
Irrigation and Power Equipment, Inc.: *See—*
McConnell, Lloyd A., 4,290,556, Cl. 239-177.000.
Irvine, Robert, to Pitney Bowes Inc. Method for sheet feeding. 4,290,593, Cl. 271-42.000.
Isakson, Larry E., to Midland-Ross Corporation. Hydraulic booster valve. 4,290,342, Cl. 91-391.00R.
Ishibashi, Satoshi: *See—*
Sueoka, Tetsuro; and Ishibashi, Satoshi, 4,291,325, Cl. 357-38.000.

Ishida, Hiroshi: *See—*
Kawada, Shigeki; Ishida, Hiroshi; and Sakamoto, Keiji, 4,291,265, Cl. 318-782.000.

Ishii, Eiji: *See—*
Ohkoshi, Akio; Ishii, Eiji; Nakayama, Akira; Kato, Shoji; and Tanaka, Yoshiyuki, 4,291,253, Cl. 313-348.000.

Ishii, Hiroshi: *See—*
Suwa, Toshio; Konagaya, Yoshiaki; and Ishii, Hiroshi, 4,290,555, Cl. 239-8.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Matsui, Kunio; Tsuchiya, Hiroaki; Suzuki, Ryushi; and Omura, Takayoshi, 4,290,791, Cl. 55-399.000.

Isono, Kunihiro: *See—*
Kishino, Shigeo; Saito, Junichi; Kume, Toyohiko; and Isono, Kunihiro, 4,290,978, Cl. 260-973.000.

Itatani, Hiroshi: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Sasaki, Ichiro; Itatani, Hiroshi; and Kashima, Mikito, 4,290,936, Cl. 260-33.40P.

Ito, Senji; and Suzuki, Kenji, to Toyo Seikan Kaisha Limited. Packaging material for food to be subjected to high-temperature short-time sterilization and process for the preparation thereof. 4,291,085, Cl. 428-215.000.

Ito, Teruyoshi: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.

Ito, Tsunetoshi: *See—*
Takahashi, Ken; and Ito; Tsunetoshi, 4,290,648, Cl. 299-1.000.

ITT Industries, Inc.: *See—*
Klein, Otto, 4,290,191, Cl. 29-597.000.

ITW de France: *See—*
Morel, Henri, 4,290,536, Cl. 220-359.000.

Ivanchev, Sergei S.: *See—*
Syrov, Anatoly A.; Ivanchev, Sergei S.; Primachenko, Oleg N.; Demidova, Valentina A.; Polozov, Boris V.; Fionov, Vladimir I.; and Barantsevich, Evgeny N., 4,290,945, Cl. 260-192.000.

Ivers, John T.: *See—*
Topor, Michael G.; Wicklund, Peter A.; and Ivers, John T., 4,290,989, Cl. 264-142.000.

Iwai, Hiroshi: *See—*
Nakate, Yasushi; Iwai, Hiroshi; and Nanishi, Kiyoshi, 4,291,137, Cl. 525-162.000.

Iwamoto, Tsuneo. Method for eliminating ammonia nitrogen from sewage. 4,290,895, Cl. 210-669.000.

Iwasaki, Takashiro: *See—*
Kanemaru, Kenji; and Iwasaki, Takashiro, 4,291,297, Cl. 340-347.0AD.

Iyoda, Michio; and Abe, Shigeya, to Nippondenso Co., Ltd. Ignition system for internal combustion engine. 4,290,406, Cl. 123-645.000.

Izdebski, Jerzy. Pick-up for a musical instrument. 4,290,331, Cl. 84-1.140.

J. I. Case Company: *See—*
Huitema, Thomas W., 4,290,322, Cl. 74-752.00A.

Jackson, David E.: *See—*
Girgis, Makram M.; Jackson, David E.; and Mannuzza, Frank J., 4,290,774, Cl. 23-230.00B.

Jackson, Robert W., to Bendix Corporation, The. Ball joint forming method and apparatus therefor. 4,290,181, Cl. 29-458.000.

Jager, Gerhard; Kraatz, Udo; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with 1-(azol-1-yl)-2-substituted-alken-3-ones. 4,291,044, Cl. 424-269.000.

Jahnle, Herbert A.; and Freeman, Richard B., to Budd Company, The. Intrusion resisting strap for automobile doors. 4,290,235, Cl. 49-502.000.

Jaklevic, Robert C.: *See—*
Gaerttner, Martin R.; and Jaklevic, Robert C., 4,290,861, Cl. 204-56.00R.

Jameikis, Saulius M.; Stalcup, Robert K.; Arnold, Joe F.; and Hon, Robert K., to United Technologies Corporation. Fixture for use in forming cylindrical surfaces of accurate dimension. 4,290,237, Cl. 51-34.00A.

Janata, Jiri: *See—*
Horak, Vaclav; and Janata, Jiri, 4,291,133, Cl. 525-74.000.

Janome Sewing Machine Co., Ltd.: *See—*
Hanyu, Susumu; and Kato, Kenji, 4,290,377, Cl. 112-158.00E.
Tonomura, Yoshinobu; Fujimura, Toshio; Hara, Masanori; and Takenoya, Hideaki, 4,290,375, Cl. 112-121.120.

Janoski, Florian B., to Atlas Powder Company. Energy transmission device. 4,290,366, Cl. 102-202.300.

Jayant, Nuggehally S.; Schmidt, Carolyn E.; and Steele, Raymond, to Bell Telephone Laboratories, Incorporated. Error reduction speech communication system. 4,291,405, Cl. 371-31.000.

Jensen, Ragnar, Jr. Collapsible boat. 4,290,157, Cl. 9-2.00C.

Jet Research Center, Inc.: *See—*
Regalbuto, John A., 4,290,486, Cl. 166-297.000.

Jewett, Warren R., to Vita Vet Research Group Inc. Blood pressure measuring device. 4,290,434, Cl. 128-680.000.

Joeres, Helmut: *See—*
Bijma, Jan; Joeres, Helmut; and Johanns, Johannes H. M., 4,291,251, Cl. 313-413.000.

Johanns, Johannes H. M.: *See—*
Bijma, Jan; Joeres, Helmut; and Johanns, Johannes H. M., 4,291,251, Cl. 313-413.000.

Johansson, Eric G. B., to AB Svenska Flaktfabriken. Device for drying web material. 4,290,210, Cl. 34-156.000.

Johansson, Jan, to Renholmens Mekaniska Verkstad AB. Timber package arranger. 4,290,723, Cl. 414-83.000.

John Wyeth & Brother Limited: *See—*
Ward, Terence J., 4,291,042, Cl. 424-267.000.

Johns-Manville Corporation: *See—*
de Muinck, Andre R., 4,290,749, Cl. 432-13.000.

Johnson, James R.; and Flanagan, William C., Jr., to Minnesota Mining and Manufacturing Company. Multishell microcapsules. 4,290,847, Cl. 176-1.000.

Johnson, Porter C.; and Matier, William L., to Mead Johnson & Company. Silylated indanyloxyacetates. 4,291,168, Cl. 556-441.000.

Johnson, Richard D. Gas scrubber and method. 4,290,782, Cl. 55-60.000.

Johnson, Walter R.; and Petaja, Gary M., to American Telecommunications Corporation. Push-button dial assembly for telephones. 4,291,201, Cl. 179-90.00K.

Johnson, Weldon K., to Kerr-McGee Coal Corporation. Particulate material transfer system. 4,290,725, Cl. 414-329.000.

Johnston, Stephen P., to S. J. Electro Systems, Inc. Electrical load control circuit useful in liquid level control systems. 4,291,261, Cl. 318-482.000.

Johnstone, Frank, to Carco Accessories Limited. Automatic temperature compensated boiler thermostat. 4,290,551, Cl. 236-9.00R.

Jones, John H.; and Dewey, Lloyd P., to Jones, John H. Rack for boat fenders. 4,290,529, Cl. 211-13.000.

Jones, Stephen G. B.: *See—*
Brown, Arthur D.; and Jones, Stephen G. B., 4,290,887, Cl. 210-242.100.

Jones, Terry L.; and Miller, Brian S., to United States of America, Army. Method of making semiconductor photodetector with reduced time-constant. 4,291,068, Cl. 427-88.000.

Jost, Heinz: *See—*
Pennewiss, Horst; Benda, Rainer; Jost, Heinz; and Knoell, Helmuth, 4,290,925, Cl. 252-56.00S.

Judge, Edward E., Jr., to Industrial Metal Products Corporation. Universal crankshaft finishing machine. 4,290,238, Cl. 51-58.000.

Jueschke, Alexander A.: *See—*
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,290,865, Cl. 204-106.000.

Juett, George C.; and Rez, Donald H., to Rez, Donald H.; and Rez, Betty. Refractory lattice and fabrication. 4,290,408, Cl. 126-25.00R.

Jumer, John F. Means for and method of producing smooth electro-polished surfaces. 4,290,867, Cl. 204-129.350.

Jungermann, Eric: *See—*
Poper, Maxwell H.; and Jungermann, Eric, 4,290,904, Cl. 252-118.000.

Juzi, Heinz, to Sulzer Brothers Limited. Steam generator. 4,290,390, Cl. 122-406.00S.

Jwi Ltd.: *See—*
Buchanan, John G.; and MacBean, Donald G., 4,290,209, Cl. 34-123.000.

Kabashima, Katsuhiko: *See—*
Nakano, Masao; Nakano, Tomio; Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,291,394, Cl. 365-206.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Masuda, Shigeyuki, 4,291,398, Cl. 368-37.000.

Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho: *See—*
Okubo, Kunio, 4,290,790, Cl. 55-379.000.

Kabushiki-Kaisha K I P: *See—*
Noda, Nobutaka; Hamamura, Kazuo; and Morita, Yoichi, 4,290,690, Cl. 355-3.00R.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Sakashita, Masao, 4,290,333, Cl. 84-1.240.

Kabushiki Kaisha Meidensha: *See—*
Sueoka, Tetsuro; and Ishibashi, Satoshi, 4,291,325, Cl. 357-38.000.

Kabushiki Kaisha Plastic Kogaku Kenkyusho: *See—*
Murakami, Kenkichi; and Kikuzawa, Yoshiharu, 4,290,994, Cl. 264-515.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kanbe, Sadao, 4,290,905, Cl. 252-299.630.

Kadija, Igor V.; and Woodard, Kenneth E., Jr., to Olin Corporation. Method for sealing cation exchange membranes of carboxylic acid type fluorinated polymers. 4,290,833, Cl. 156-94.000.

Kadota, Michio, to Murata Manufacturing Co., Ltd. Surface acoustic wave device and method of manufacturing. 4,291,285, Cl. 333-150.000.

Kaeding, Warren W., to Mobil Oil Corporation. Alkylation of benzene in petroleum. 4,291,185, Cl. 585-467.000.

Kagerhuber, Franz; and Holleis, Gunter, to Voest-Alpine Aktiengesellschaft. Guiding stand to be used in a continuous casting plant. 4,290,478, Cl. 164-448.000.

Kagota, Nobuhiro: *See—*
Tsukahara, Hirokazu; Fuchigami, Mitsuru; and Kagota, Nobuhiro, 4,291,102, Cl. 428-537.000.

Kahl, Melvin R., to Envirotech Corporation. Bottom-powered electrostatic precipitator. 4,290,787, Cl. 55-120.000.

Kakeno, Sadao; Hayashi, Taisen; Komai, Hiromichi; and Yamazaki, Hiroshi, to Ricoh Co., Ltd. System for driving ink drop generator of ink-jet printer. 4,291,316, Cl. 346-140.00R.

Kalden, Bernhard: *See—*
Fritz, Rolf; Kalden, Bernhard; and Kissel, Karl-Friedrich, 4,290,852, Cl. 176-58.0PB.

Kalleberg, Melvin O., to Minnesota Mining and Manufacturing Company. Separable fastener and article for making same. 4,290,174, Cl. 24-204.000.

Kalleberg, Melvin O., to Minnesota Mining and Manufacturing Company. Method for making fasteners. 4,290,832, Cl. 156-72.000.

Kaloi, Cyril M., to United States of America, Navy. Dual ground plane microstrip antennas. 4,291,311, Cl. 343-700.0MS.

Kaloi, Cyril M., to United States of America, Navy. Dual ground plane coplanar fed microstrip antennas. 4,291,312, Cl. 343-700.0MS.

Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, to Mitsubishi Rayon Co., Ltd. Scratch-resistant, dyeable coating compositions for synthetic resin articles. 4,291,097, Cl. 428-412.000.

Kamano, Yoshiaki: *See—*
Tachi, Yasuhide; Michishita, Kazuhiko; Nakagami, Jozi; Sawada, Jiro; Washitake, Mitsunori; and Kamano, Yoshiaki, 4,290,962, Cl. 260-397.450.

Kamimaru, Nobuyuki: *See—*
Suzuki, Yasoji; and Kamimaru, Nobuyuki, 4,291,274, Cl. 328-133.000.

Kaminsky, Yaroslav: *See—*
Weinberg, Aaron; Ebert, Paul M.; Fee, Joseph J.; Kaminsky, Yaroslav; Keblawi, Feisal S.; and Scales, Walter C., 4,291,409, Cl. 375-1.000.

Kamon, Yoshiyuki; and Kishikami, Jun, to Sony Corporation. Laminated loudspeaker diaphragm with honeycomb core and damping layers. 4,291,205, Cl. 179-181.00R.

Kanaga, Amos R.; and Kanaga, Stephen R. Cover for food serving dishes. 4,290,546, Cl. 229-43.000.

Kanaga, Stephen R.: *See—*
Kanaga, Amos R.; and Kanaga, Stephen R., 4,290,546, Cl. 229-43.000.

Kanamaru, Hisanobu; Tatsumi, Hideo; Tohkairin, Akira; and Sayo, Kosaku, to Hitachi, Ltd. Method of making V-grooved pulley assembly. 4,290,295, Cl. 72-356.000.

Kanbe, Sadao, to Kabushiki Kaisha Suwa Seikosha. Ester compound. 4,290,905, Cl. 252-299.630.

Kane, William T.; and Whitney, William P., II, to Corning Glass Works. Furnace and method with sensor. 4,290,586, Cl. 266-80.000.

Kanebo Ltd.: *See—*
Oeda, Ichiro; and Sano, Isao, 4,291,018, Cl. 424-64.000.

Kaneko, Hideo: *See—*
Murakami, Keikichi; and Kaneko, Hideo, 4,290,306, Cl. 73-354.000.

Kanemaru, Kenji; and Iwasaki, Takashiro, to Hitachi, Ltd. Single ramp comparison analog to digital converter. 4,291,297, Cl. 340-347.0AD.

Kang, Kenneth S.; and Veeder, George T., to Merck & Co., Inc. Polysaccharide S-53 and bacterial fermentation process for its preparation. 4,291,156, Cl. 536-1.000.

Kansai Paint Co., Ltd.: *See—*
Nakate, Yasushi; Iwai, Hiroshi; and Nanishi, Kiyoshi, 4,291,137, Cl. 525-162.000.

Kanto Seiki Company, Limited: *See—*
Okuyama, Hideo, 4,291,268, Cl. 324-76.00R.

Kanzawa, Ryosaku: *See—*
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.

Kapoor, Vinod, to Butler Greenwich Inc. Dampening assembly. 4,290,359, Cl. 101-148.000.

Karkoski, Joseph: *See—*
McGregor, Charles W.; Karkoski, Joseph; and Shurboff, John D., 4,290,929, Cl. 260-29.20N.

Karlsson, Hans I. R. Spring-operated reversably rotatable body. 4,290,564, Cl. 242-107.000.

Karrer, Friedrich: *See—*
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Karrer, Friedrich, 4,291,056, Cl. 424-304.000.

Kashima, Mikito: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Sasaki, Ichiro; Itatani, Hiroshi; and Kashima, Mikito, 4,290,936, Cl. 260-33.40P.

Kashioka, Seiji: *See—*
Mese, Michihiro; Kashioka, Seiji; Ejiri, Masakazu; Miyatake, Takafumi; Yamazaki, Isamu; and Hamada, Toshimitsu, 4,291,334, Cl. 358-101.000.

Kashiwa, Norio: *See—*
Toyota, Akinori; and Kashiwa, Norio, 4,290,915, Cl. 252-429.00B.

Kasper, Rudolf: *See—*
Elsner, Emil; Kasper, Rudolf; and Schwabe, William E., 4,291,190, Cl. 13-18.00R.

Kastner, Arnold. Apparatus for paper interleaving and severing. 4,290,592, Cl. 270-40.000.

Kataoka, David T.: *See—*
Bowman, George E.; Faust, David S.; and Kataoka, David T., 4,290,623, Cl. 280-400.000.

Kato, Kenji: *See—*
Hanyu, Susumu; and Kato, Kenji, 4,290,377, Cl. 112-158.00E.

Kato, Masaaki; and Ogi, Keisuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Phase-locked circuit. 4,291,332, Cl. 358-19.000.

Kato, Shoji: *See—*
Ohkoshi, Akio; Ishii, Eiji; Nakayama, Akira; Kato, Shoji; and Tanaka, Yoshiyuki, 4,291,253, Cl. 313-348.000.

Kato, Suehiro: *See—*
Nishiyama, Hiroshi; Nakamura, Takeshi; Kato, Suehiro; and Ando, Kenji, 4,290,876, Cl. 204-298.000.

Kato, Takeo: *See—*
Takahashi, Yasunobu; Fujimoto, Einosuke; Shimizu, Toshio; and Kato, Takeo, 4,290,946, Cl. 260-239.00B.

Katoh, Hisanori, to Inoue Gomu Kogyo Kabushiki Kaisha. Trim molding strips for a vehicle. 4,291,076, Cl. 428-31.000.

Katsumata, Seiji: *See—*
Otani, Masaru; Satoi, Shuzo; Muto, Naoki; Saito, Tetsu; Fujii, Tadashiro; Katsumata, Seiji; Hayashi, Mitsuo; and Ono, Masaru, 4,291,021, Cl. 424-121.000.

Katzen, Stanley J.; and Rekers, Louis J., to National Petro Chemicals Corp. Catalytic materials as for olefin polymerization. 4,290,914, Cl. 252-428.000.

Kavesh, Sheldon: *See—*
Smith, Robert W.; Hemmat, Naim S.; Bedell, John R.; Kavesh, Sheldon; and Draizen, Seymour, 4,290,476, Cl. 164-423.000.

Kawabe, Ushio: *See—*
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.

Kawada, Shigeki; Ishida, Hiroshi; and Sakamoto, Keiji, to Fujitsu Fanuc Limited. Protective system for inverter circuit used in driving AC motors. 4,291,265, Cl. 318-782.000.

Kawai, Mitsuo: *See—*
Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, 4,290,828, Cl. 148-11.50Q.

Kawakami, Kanji: *See—*
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.

Kawakubo, Mitsushige; Sakai, Yoshihiro; and Ohno, Akira, to NHK Spring Co., Ltd. Device for narrowing the breadth of a sheet spring material in an apparatus for manufacturing a taper leaf spring. 4,290,288, Cl. 72-7.000.

Kawamura, Kiyoshi: *See—*
Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and Miwa, Takayasu, heir, 4,290,954, Cl. 260-335.000.

Kawamura, Masaharu: *See—*
Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; Sakai, Shinji; Uchiyama, Takashi; and Momiyama, Kikuo, 4,290,686, Cl. 354-289.000.

Kawamura, Takao: *See—*
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Murakami, Keikichi; and Kaneko, Hideo, 4,290,306, Cl. 73-354.000.

Kawase, Kazuo: *See—*
Maehara, Toshifumi; and Kawase, Kazuo, 4,290,265, Cl. 60-561.000.

Kawashima, Kenichi; Yasuda, Hiroshi; and Uema, Kenyu, to Fujitsu Limited. Electron beam exposure system and an apparatus for carrying out the same. 4,291,231, Cl. 250-492.00A.

Kawneer Company, Inc.: *See—*
Hubbard, S. Eugene, 4,290,233, Cl. 49-383.000.

Kay, David P.: *See—*
Barnes, Alan C.; and Kay, David P., 4,291,033, Cl. 424-250.000.

Kayser, Franz: *See—*
Pav, Josef; Kayser, Franz; and Kemna, Axel, 4,290,351, Cl. 100-47.000.

Kazuo, Katsube: *See—*
Kenji, Fujisawa; Kazuo, Katsube; Tadataka, Yako; Koich, Uemura; Yuichi, Harada; and Yasumasa, Sakai, 4,291,090, Cl. 428-327.000.

Keblawi, Feisal S.: *See—*
Weinberg, Aaron; Ebert, Paul M.; Fee, Joseph J.; Kaminsky, Yaroslav; Keblawi, Feisal S.; and Scales, Walter C., 4,291,409, Cl. 375-1.000.

Keifert, Hibbard G., to Fansteel Inc. Brazed corrosion resistant lined equipment. 4,291,104, Cl. 428-594.000.

Keiper Automobiltechnik GmbH & Co. K.G.: *See—*
Hensel, Wolfgang; Berghof, Hans-Joachim; and Werner, Heinz, 4,290,647, Cl. 297-362.000.

Keith, Alec D.; and Snipes, Wallace, to Key Pharmaceuticals, Inc. Polymeric diffusion matrix containing estradiol diacetate. 4,291,014, Cl. 424-28.000.

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Andros, Frank E.; Kerjilian, Ghazaros K.; Stevens, Bert E.; and Tomek, Reinhold E., 4,291,364, Cl. 361-384.000.
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Wehrli, Hans J.; and Roberts, Timothy P., 4,290,694, Cl. 356-2.000.
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Stocklin, Gerhard; Laufer, Peter; and Machulla, Jurgen, 4,290,965, Cl. 260-408.000.
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Arnold, Donald S.; Fairchild, James L.; Nichols, Donald A.; and Coe, Merlin D., 4,291,002, Cl. 423-189.000.
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Johnson, Weldon K., 4,290,725, Cl. 414-329.000.
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Kido, Keishiro; Yoshida, Satoshi; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Recording material. 4,291,119, Cl. 430-348.000.
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Shuster, Nicholas; Babinsky, Andrew D.; and Kidon, William E., 4,290,864, Cl. 204-103.000.
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Appel, Eggert; Nissen, Peter; Geisler, Gottfried; and Kiene, Wilfried, 4,290,313, Cl. 73-861.170.
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Kimura, Kenji, to Olympus Optical Company Limited. Time base correcting system. 4,291,344, Cl. 360-36.000.
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King, Francis K.; and Wanek, Donald J., to International Business Machines Corporation. Spring suspension for magnetic transducer. 4,291,350, Cl. 360-104.000.
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Hiramatsu, Kenzo; and Aiyama, Fumihiko, 4,290,165, Cl. 15-330.000.
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Kirschbaum, Herbert S., to Westinghouse Electric Corp. Wind turbine-generator. 4,291,233, Cl. 290-1.00C.
Kirtley, James L., Jr.: *See—*
Smith, Joseph L., Jr.; and Kirtley, James L., Jr., 4,291,249, Cl. 310-214.000.
Kise, Yaeko. Badge with pin. 4,290,215, Cl. 40-1.500.
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Kitaoka, Yoji: *See—*
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White, Roy L.; Leevers, David F. A.; and Kitchin, Peter W., 4,290,538, Cl. 222-25.000.
Kizer, Richard W.; Anderson, Arlynn W.; and Untz, Robert W., to Caterpillar Tractor Co. Method of forming the mounting portion of a sidewall protector. 4,290,990, Cl. 264-156.000.
Klefisch, Rudolf. Heat treating basket. 4,290,753, Cl. 432-261.000.
Klein, Imrich: *See—*
Klein, Reuben; and Klein, Imrich, 4,290,702, Cl. 366-77.000.
Klein, Otto, to ITT Industries, Inc. Method for making a commutator for an electric motor. 4,290,191, Cl. 29-597.000.
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Kleinewefers GmbH: *See—*
Pav, Josef; Kayser, Franz; and Kemna, Axel, 4,290,351, Cl. 100-47.000.
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Kleinschnitz, Donald J., Jr. Moving exposure system. 4,290,689, Cl. 355-1.000.
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McMonigle, Matthew J.; and Klingensmith, Chester H., 4,290,874, Cl. 204-243.00R.
Klockner-Humboldt-Deutz AG: *See—*
Kryczun, Alfred; and Manshausen, Theodor, 4,290,801, Cl. 75-21.000.
Kloss, Gerhard: *See—*
Strecker, Helmut; Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, 4,291,012, Cl. 424-1.000.
Klothen, Irving: *See—*
Tobkes, Martin; Dann, Murray; Klothen, Irving; Spicer, Larry D.; and Williams, David R., 4,291,026, Cl. 424-181.000.
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Krasnov, Valery A.; Klovsky, Yakov A.; Dubov, Igor V.; Shtern, Arkady V.; Vyatkin, Viktor L.; and Shavelzon, Lev A., 4,290,665, Cl. 339-276.00T.
Klyachko, Lev I.: *See—*
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.
Knaack, Howard L.; and Weger, Kenneth F., Jr., to Knaack Manufacturing Company. Lock system. 4,290,281, Cl. 70-54.000.
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Knoch, Wolfgang: *See—*
Nopper, Herbert; and Knoch, Wolfgang, 4,290,988, Cl. 264-112.000.
Knoell, Helmuth: *See—*
Pennewiss, Horst; Benda, Rainer; Jost, Heinz; and Knoell, Helmuth, 4,290,925, Cl. 252-56.00S.
Knoll, Fritz. Tool holder assembly for a portable power tool. 4,290,721, Cl. 409-234.000.
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Pyrido[1,2-A]pyrimidine derivatives and method of analgesic treatment. 4,291,036, Cl. 424-251.000.
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Preparation of novel fungicidally active spiro derivatives of 3-(3,5-dihalogenophenyl)-oxazolidine-2-thion-4-ones. 4,291,046, Cl. 424-272.000.
Knott, John; and Elliott, Robert V., to EMI Limited. Magnetic tape handler. 4,290,566, Cl. 242-189.000.
Knowles, Steven M., to Aeroquip Corporation. Valve with frangible closure. 4,290,276, Cl. 62-299.000.
Knutson, Dale, to Dynex/Rivett Inc. Electrohydraulic proportional valve. 4,290,447, Cl. 137-596.200.
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Ichinose, Yoshito; Fukuda, Takeshi; and Kobayashi, Naoaki, 4,290,188, Cl. 29-591.000.
Kobayashi, Tamotsu, to Hokushin Electric Works, Ltd. Signal generator for electromagnetic flowmeter. 4,290,312, Cl. 73-861.120.
Kobayashi, Tomoyuki; Usami, Toshimasa; Misu, Hiroshi; and Sera, Hidefumi, to Fuji Photo Film Co., Ltd. Heat developable photosensitive material. 4,291,120, Cl. 430-531.000.
Kobler, Ingo; Mamberer, Hans; and Zwosta, Helge, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inking system for a printing machine, particularly of the offset or gravure type. 4,290,362, Cl. 101-350.000.
Kobler, Ingo, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inking system for a printing machine. 4,290,363, Cl. 101-351.000.
Kobori, Shigeyuki: *See—*
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.
Kobori, Toshio; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Apparatus for establishing automatic exposure control modes in exchangeable lens camera. 4,290,674, Cl. 354-38.000.
Kockerols, Erhard; and Sagemuller, Albert, to Thyssen Industrie AG. Method and apparatus for generating a controlled current flow and waves in a water pool. 4,290,153, Cl. 4-491.000.
Kodama, Kazuyuki; Okada, Kunihiro; Huno, Takakazu; Endo, Takeyuki; and Shibuya, Yasutaka, to Hitachi, Ltd. Figure displaying device. 4,291,306, Cl. 340-744.000.
Koehler, Toivo: *See—*
Rotolante, Ralph A.; and Koehler, Toivo, 4,290,844, Cl. 156-630.000.
Kohno, Yoshio: *See—*
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Koizumi, Masuo; Sasahara, Kazuo; Murakami, Yasushi; Wada, Sakae; Nakakimura, Hiroshi; Kubodera, Noboru; and Hata, Shun-Ichi, to Chugai Seiyaku Kabushiki Kaisha. Benzoxazepine derivatives and process for preparing the same. 4,290,953, Cl. 260-333.000.
Kolbel, Gert F., to Compret N.V. Push-pull physical exercising device. 4,290,600, Cl. 272-137.000.
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P. Device for building-up high pressure. 4,290,741, Cl. 425-77.000.
Kolf, Heinrich: *See—*
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Kolter, Roland K.: *See—*
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Komai, Hiromichi: *See—*
Kakeno, Sadao; Hayashi, Taisen; Komai, Hiromichi; and Yamazaki, Hiroshi, 4,291,316, Cl. 346-140.00R.
Komatsu, Kazurou; Matsumoto, Sojiro; Maniwa, Takeshi; and Shinmura, Nobuyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the continuous production of polyisocyanate. 4,290,969, Cl. 260-453.0AB.
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Kommandiittiyhtio Finnpipette Osma A. Suovaniemi: *See—*
Suovaniemi, Osmo A., 4,290,997, Cl. 422-73.000.
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Kondoh, Syunichi; Matsufuji, Akihiro; and Umehara, Akira, to Fuji Photo Film Co., Ltd. Photopolymerizable compositions. 4,290,870, Cl. 204-159.150.
Konen, Heinz: *See—*
Ibach, Adolf; and Konen, Heinz, 4,290,326, Cl. 76-101.00R.
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Konishi, Akira: *See—*
Ogawa, Mutsuo; Murayama, Noboru; Konishi, Akira; and Takeuchi, Norisada, 4,291,339, Cl. 358-260.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Yajima, Tatsuo, 4,291,341, Cl. 358-300.000.
Konstantinova, Kina V.: *See—*
Georgiev, Atanas G.; Andreev, Kino D.; and Konstantinova, Kina V., 4,290,971, Cl. 260-453.500.
Kontz, Robert F., to Owens-Illinois, Inc. Apparatus for blow molding. 4,290,745, Cl. 425-541.000.
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Konucik, George Joseph: *See—*
McLennan, Charles I.; Stokes, Marshall G.; and Konucik, George J., 4,290,159, Cl. 9-9.000.
Korenstein, Ralph; and Castro, Carlos A., to Texas Instruments Incorporated. Epitaxial growth of magnetic memory film on implanted substrate. 4,290,843, Cl. 156-628.000.
Korf & Fuchs Systemtechnik GmbH: *See—*
Elsner, Emil; Kasper, Rudolf; and Schwabe, William E., 4,291,190, Cl. 13-18.00R.
Korse, Theodorus H., to Korse, Theodorus H. Helical gear pump or gear motor with optimal relief grooves for trapped fluid. 4,290,739, Cl. 418-189.000.
Koschmann, John E., to Owens-Illinois, Inc. Method for controlling a plastic extruder. 4,290,986, Cl. 264-40.300.
Koshiishi, Hiromichi; Mori, Kunio; Sato, Hiroshi; and Sakaida, Akira, to Nippon Steel Corporation. Process for box annealing a steel strip coil. 4,290,829, Cl. 148-130.000.
Kowa Company Limited: *See—*
Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and Miwa, Takayasu, heir, 4,290,954, Cl. 260-335.000.
Kraatz, Udo: *See—*
Jager, Gerhard; Kraatz, Udo; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,291,044, Cl. 424-269.000.
Krambeck, Robert H.: *See—*
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Kramer, Justin. Electronic wave sharing synthetic sound system. 4,290,334, Cl. 84-1.260.
Kramer, Louis T., to McDonnell Douglas Corp. Pin centered brake. 4,290,505, Cl. 188-18.00A.
Kramer, Wolfgang: *See—*
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Krapcho, John, to E. R. Squibb & Sons, Inc. Mercaptoacyl derivatives of 4-disubstituted prolines and 4-substituted dehydroprolines. 4,291,040, Cl. 424-263.000.
Kraska, Allen R., to Pfizer Inc. Compounds derived from formylphenoxyacetic acid as antiviral agents in animals. 4,291,060, Cl. 424-316.000.
Krasnov, Valery A.; Klovsky, Yakov A.; Dubov, Igor V.; Shtern, Arkady V.; Vyatkin, Viktor L.; and Shavelzon, Lev A. Method of manufacturing a contact clip. 4,290,665, Cl. 339-276.00T.
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Krikoryan, Dikran A.: *See—*
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Ninova, Maya H.; and Parushev, Stoyan P., 4,290,862, Cl. 204-59.00R.
Kristiansen, Odd; and Drabek, Jozef, to Ciba-Geigy Corporation. 1-N,N-dimethylcarbamoyl-3(5)-alkyl-5(3)-alkylthioalkylthio-1,2,4-triazoles, a process for their manufacture, compositions which contain them and their use in pest control. 4,291,043, Cl. 424-269.000.
Kronman, Albert F.: *See—*
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Kroschel, Heinz: *See—*
Fischer, Klaus H.; Kroschel, Heinz; and Kolf, Heinrich, 4,290,637, Cl. 294-83.00A.
Krueger, Wallace F.: *See—*
Goodman, Ronald D.; Krueger, Wallace F.; and Shaw, Anthony R., 4,290,413, Cl. 126-426.000.
Kruger, Bradford E., to International Telephone and Telegraph Corporation. Adaptive two-dimensional null forming receiving antenna system. 4,291,310, Cl. 343-16.00R.
Kryczun, Alfred; and Manshausen, Theodor, to Klockner-Humboldt-Deutz AG. Method and installation for the cooling of reduced material such as fine grained ore. 4,290,801, Cl. 75-21.000.
Kubik, Donald A.: *See—*
Boerwinkle, Fred P.; and Kubik, Donald A., 4,290,912, Cl. 252-389.00R.
Kubik, Peter S.: *See—*
Anderson, Robert V.; Bayer, Douglas L.; Hagelbarger, David W.; and Kubik, Peter S., 4,291,198, Cl. 179-2.0DP.
Kubodera, Noboru: *See—*
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Kubota Ltd.: *See—*
Sakano, Kenji; Yamashita, Masahiro; Yamashita, Kenji; and Aketa, Masahiro, 4,290,395, Cl. 123-192.00B.
Sato, Shitomi, 4,290,372, Cl. 110-173.00R.
Kuhnel, Werner: *See—*
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Kuipers, Johannes: *See—*
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Kume, Toyohiko: *See—*
Kishino, Shigeo; Saito, Junichi; Kume, Toyohiko; and Isono, Kunihiro, 4,290,978, Cl. 260-973.000.

Kunieda, Hisashi: *See—*
Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and Miwa, Takayasu, heir, 4,290,954, Cl. 260-335.000.

Kuntz, Francis A., Jr., to Amtel, Inc. Mooring buoy. 4,290,158, Cl. 9-8.00P.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. Method of making post-metal programmable MOS read only memory. 4,290,184, Cl. 29-571.000.

Kurafuji, Toshio: *See—*
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Kurchacova, Elva: *See—*
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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kurt Vogelsang GmbH: *See—*
Wandl, Rudolf H., 4,290,706, Cl. 401-4.000.

Kusenda, Stephen R., to Insulation Materials, Inc. Method and apparatus for insulating buildings. 4,290,250, Cl. 52-404.000.

Kushi, Kenji: *See—*
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,291,097, Cl. 428-412.000.

Kushnir, Alexandr P.: *See—*
Lizogub, Vadim A.; Kushnir, Alexandr P.; Figatner, Alexandr M.; and Bondar, Stepan E., 4,290,610, Cl. 277-13.000.

Kuth, Robert: *See—*
Neeff, Rutger; Kuth, Robert; Kuhnel, Werner; and Gohrbandt, Wilhelm, 4,290,768, Cl. 8-532.000.

Kutubuddin, Mohamed: *See—*
Bayer, Ernst; and Kutubuddin, Mohamed, 4,290,918, Cl. 252-431.00R.

Kuvas, Reidar L.: *See—*
Wen, Cheng P.; Kuvas, Reidar L.; and Immorlica, Anthony A., Jr., 4,291,320, Cl. 357-13.000.

Kuwata, Takeo; Shimada, Shoji; and Usa, Mikio, to Nittetsu Bolten Kabushiki Kaisha. Fastener set. 4,290,337, Cl. 411-2.000.

Kwak, Dochan. Aeration device. 4,290,885, Cl. 210-197.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Hirata, Tadashi; Ogasa, Takehiro; Saito, Hiromitsu; and Nakmizo, Nobuhiro, 4,291,164, Cl. 546-183.000.

L. D. Schreiber Cheese Co., Inc.: *See—*
Retzlaff, Wilfred F., 4,291,064, Cl. 426-397.000.

L. W. Fleckenstein, Inc.: *See—*
Fleckenstein, Andrew; and Mortl, Michael, 4,290,451, Cl. 137-624.150.

Labrecque, Clovis. Hub cap lock device. 4,290,283, Cl. 70-167.000.

Laclede Professional Products, Inc.: *See—*
Pellico, Michael A., 4,291,025, Cl. 424-180.000.

Lagana, Vincenzo: *See—*
Pagani, Giorgio; Lagana, Vincenzo; and Saviano, Francesco, 4,291,006, Cl. 423-359.000.

Lagowski, Joseph V., to Fairchild Incorporated. Coal mining machine cutter with noise suppressant and flame resistant layer. 4,290,653, Cl. 299-87.000.

Lahman, Fritz, to Lahman Manufacturing Company, Inc. Forage stack mover. 4,290,733, Cl. 414-476.000.

Lahman Manufacturing Company, Inc.: *See—*
Lahman, Fritz, 4,290,733, Cl. 414-476.000.

Laitinen, Heikki: *See—*
Sutela, Leo; and Laitinen, Heikki, 4,290,726, Cl. 414-421.000.

Laitram Corporation, The: *See—*
Lapeyre, James M., 4,290,762, Cl. 474-210.000.

Laloe, Franck: *See—*
Pinard, Michel; Aminoff, Carl; Trenec, Gerard; and Laloe, Franck, 4,291,281, Cl. 331-94.50C.

Lambert, Ralph E.: *See—*
Harman, Douglas G.; Lambert, Ralph E.; and Gruber, George W., 4,290,303, Cl. 73-105.000.

Laminoirs de Strasbourg: *See—*
Schoeps, Bernard; and Foret, Michel, 4,291,074, Cl. 427-367.000.

Lamy, Jacques E., to Compagnie Generale pour les Developpements Operationnels des Richesses sous Marines "C. G. Doris". Platform resting on the bottom of a body of water, and method of manufacturing the same. 4,290,716, Cl. 405-203.000.

Landstingens Inkopscentral, Ekonomisk Forening: *See—*
Wahl, Karl I.; and Lindstrom, Lars G., 4,290,424, Cl. 128-91.00A.

Lapeyre, James M., to Laitram Corporation, The. Multiple link transmission chain. 4,290,762, Cl. 474-210.000.

Larson, Gordon C., to Babcock & Wilcox Company, The. Support plug. 4,290,543, Cl. 228-2.500.

Laufer, Peter: *See—*
Stocklin, Gerhard; Laufer, Peter; and Machulla, Jurgen, 4,290,965, Cl. 260-408.000.

Lauffer, Donald E., to Phillips Petroleum Company. Method for determining pore size distribution and fluid distribution in porous media. 4,291,271, Cl. 324-307.000.

Lautenschlager, Horst, to Mepla Inc. Hinge for furniture pieces with a frame extending into the door opening. 4,290,167, Cl. 16-129.000.

Lawrence, Hopeton S., to Western Electric Co., Inc. Methods and apparatus for measuring the temperature of a continuously moving strand of material. 4,290,182, Cl. 29-527.400.

Lawrence, James E., Jr.: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,290,836, Cl. 156-171.000.

Lawson, John E., to Armco Inc. Latch means for well tools and components. 4,290,483, Cl. 166-237.000.

Lazarus, Fred, III. Device for holding cooking pots and lids. 4,290,531, Cl. 211-71.000.

Leach, Bruce E., to Conoco, Inc. Catalyst composition useful for preparing 2,6-xylenol. 4,290,924, Cl. 252-469.000.

Leach, Fred: *See—*
Brown, Stuart R.; Feest, Eric A.; and Leach, Fred, 4,291,070, Cl. 427-213.000.

Leavell, Charles. Vibrationless pneumatic tools. 4,290,489, Cl. 173-17.000.

Lebkuecher, Rolf: *See—*
Ross, Karl-Heinz; Dudeck, Christian; Himmele, Walter; Lebkuecher, Rolf; and Sauer, Wolfgang, 4,290,960, Cl. 260-348.570.

Leco Corporation: *See—*
Bredeweg, Roger L.; and Sitek, George J., 4,290,296, Cl. 73-1.00G.

Leduc, Lucien. Ramp to load and unload vehicles into and from a truck body. 4,290,728, Cl. 414-537.000.

Lee, Lieng-Huang, to Xerox Corporation. Siloxane hole trapping layer for overcoated photoreceptors. 4,291,110, Cl. 430-59.000.

Lee, Peter D., to Governor & Company of the Bank of England. Security devices. 4,290,630, Cl. 283-8.00R.

Leevers, David F. A.: *See—*
White, Roy L.; Leevers, David F. A.; and Kitchin, Peter W., 4,290,538, Cl. 222-25.000.

Legrand, Marie G. J. Machine for the cutting of rocks in underground works. 4,290,652, Cl. 299-45.000.

Leigh, Steven; and Ayres, Peter J., to Phares Pharmaceutical Research N.V. Pharmaceutical compositions containing urea. 4,291,062, Cl. 424-322.000.

Leininger, James C.: *See—*
Wishman, Marvin; Taylor, Peter A.; and Leininger, James C., 4,291,093, Cl. 428-379.000.

Lenkner, William A.: *See—*
Collins, Edward J.; and Lenkner, William A., 4,290,748, Cl. 431-359.000.

Leonard, David P.: *See—*
Wright, Howard J.; Leonard, David P.; and Etzell, Roger A., 4,290,932, Cl. 260-29.6WB.

Leonard, John J., to Atlantic Richfield Company. Preparation of polyisocyanates from polycarbamates. 4,290,968, Cl. 260-453.00P.

Leonard, Robert E., to Kerr-McGee Refining Corporation. Supercritical process for producing deasphalted demetallized and deresined oils. 4,290,880, Cl. 208-309.000.

Lessmann, Gerald G.; Simpson, Ronald P.; Reichenecker, William J.; and O'Brokta, Ronald D., to Westinghouse Electric Corp. Method of welding utilizing both consumable and non-consumable electrodes. 4,291,220, Cl. 219-137.00R.

Levine, Stephen A.; and White, William R., to Texaco Inc. Oxymolybdenum dialkyldithiophosphates and lubricants containing same. 4,290,902, Cl. 252-32.70E.

Lewis, Daniel M.: *See—*
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,290,865, Cl. 204-106.000.

LGZ Landis & Gyr Zug AG.: *See—*
Schneider, Gernot; and Steinle, Benedikt, 4,291,377, Cl. 364-483.000.

Li, George S.: *See—*
Kiikka, Oliver A.; and Li, George S., 4,291,181, Cl. 585-320.000.

Liao, John C.; Patel, Chittaranjan P.; and Ponzo, John L., to Miles Laboratories, Inc. Stabilized Romanowsky stain solution. 4,290,769, Cl. 8-602.000.

Libbey-Owens-Ford Company: *See—*
Goodman, Ronald D.; Krueger, Wallace F.; and Shaw, Anthony R., 4,290,413, Cl. 126-426.000.

Liberty Glass Company: *See—*
Brockway, M. Clifford, 4,290,793, Cl. 65-30.140.

Licentia Patent-Verwaltungs G.m.b.H.: *See—*
Dahlberg, Reinhard, 4,291,191, Cl. 136-246.000.

Lichti, Robert D.; and Hock, Frederick D., to Park Mobile, Inc., by said Frederick D. Hock. Conveyor pan immobilizing assembly. 4,290,724, Cl. 414-251.000.

Liebert, Karl-Heinz; and Tischer, Werner, to Zahnradfabrik Friedrichshafen, AG. Steering valve with spring torsion rod. 4,290,738, Cl. 418-61.00B.

Lien, Jih-Chang; and Chiu, Te-Long, to Texas Instruments Incorporated. Interlevel insulator for integrated circuit with implanted resistor element in second-level polycrystalline silicon. 4,291,328, Cl. 357-59.000.

Lienhard, Paul: *See—*
Reinehr, Dieter; and Lienhard, Paul, 4,290,964, Cl. 260-404.000.

Life Savers, Inc.: *See—*
Mackay, Donald A. M.; Witzel, Frank; and Linke, Harald A. B., 4,291,045, Cl. 424-270.000.

Ligas, Kenneth M.: *See—*
Ostenberg, John R.; and Ligas, Kenneth M., 4,290,223, Cl. 43-54.50R.

Lillibridge, Harold R.: *See—*
Sullivan, John; and Lillibridge, Harold R., 4,290,547, Cl. 229-77.000.

Lindblad, Karl-Erick. Maneuvering device for sailing boats. 4,290,760, Cl. 440-51.000.

Lindenschmidt, Gerhard: *See—*
Hambrecht, Jurgen; Lindenschmidt, Gerhard; and Regel, Walter, 4,291,134, Cl. 525-92.000.

Lindstrom, Lars G.: *See—*
Wahl, Karl I.; and Lindstrom, Lars G., 4,290,424, Cl. 128-91.00A.

Linhart, Helmut: *See—*
Zinke, Horst; Lorenz, Hans J.; and Linhart, Helmut, 4,290,941, Cl. 260-45.85B.

Linke, Harald A. B.: *See—*
Mackay, Donald A. M.; Witzel, Frank; and Linke, Harald A. B., 4,291,045, Cl. 424-270.000.

Linnik, Ivan I.: *See—*
Lukhvich, Alexandr A.; Rudnitsky, Valery A.; Linnik, Ivan I.; and Gavris, Genrikh B., 4,291,270, Cl. 324-230.000.

Lipovsky, Iosif L.: *See—*
Fedotov, Vladimir M.; Smirnov, Boris A.; Lukomsky, Genrikh I.; and Lipovsky, Iosif L., 4,290,542, Cl. 227-155.000.

Littelfuse, Inc.: *See—*
Tait, Robert J., 4,290,183, Cl. 29-564.800.

Litton Systems, Inc.: *See—*
Goldfarb, Samuel; and Reilly, Thomas, 4,290,705, Cl. 400-618.000.

Lizogub, Vadim A.; Kushnir, Alexandr P.; Figatner, Alexandr M.; and Bondar, Stepan E. Labyrinth seal. 4,290,610, Cl. 277-13.000.

Loane, Charles M., Jr., to Mobay Chemical Corporation. Raw mix flux for continuous casting of steel. 4,290,809, Cl. 75-257.000.

Locatell, Louis, Jr.: *See—*
Foley, James W.; Locatell, Louis, Jr.; and Zepp, Charles M., 4,290,951, Cl. 260-326.12R.

Locke, Kay M.: *See—*
Clemens, James T.; and Locke, Kay M., 4,291,322, Cl. 357-23.000.

Lockheed Corporation: *See—*
Steiner, William G., 4,291,404, Cl. 371-20.000.

Logan, William F., 3rd. Folding chair. 4,290,643, Cl. 297-16.000.

Lombard, Marco H., to Emerson Electric Co. Apparatus for cutting vegetation. 4,290,200, Cl. 30-276.000.

Lombardi, Michael. Claw hammer with improved fulcrum. 4,290,583, Cl. 254-26.00R.

Loock, Ehrenfried, to Olympia Werke AG. Process for the production of inks free of foreign salts. 4,290,812, Cl. 106-22.000.

Lord Corporation: *See—*
Rebman, Jack, 4,290,203, Cl. 33-169.00C.

L'Oreal: *See—*
Bouillon, Claude; and Vayssie, Charles, 4,290,974, Cl. 260-511.000.
Sebag, Henri; and Vanlerberghe, Guy, 4,290,956, Cl. 260-338.000.

Lorenz, Hans J.: *See—*
Zinke, Horst; Lorenz, Hans J.; and Linhart, Helmut, 4,290,941, Cl. 260-45.85B.

Lorusso, Simone: *See—*
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,291,049, Cl. 424-275.000.

Losert, Wolfgang: *See—*
Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Prezewowsky, Klaus; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,291,029, Cl. 424-238.000.

Lowenstein, Felice: *See—*
Wasserman, Allan, 4,290,260, Cl. 57-210.000.

Lowery, Robert L. Boot tool. 4,290,539, Cl. 223-118.000.

Lowery, Vernon: *See—*
Browning, James S.; Pfeiler, Peter F.; and Lowery, Vernon, 4,290,207, Cl. 33-295.000.

Lowther, Frank E., to Purification Sciences, Inc. Vehicle braking and kinetic energy recovery system. 4,290,268, Cl. 60-668.000.

Lu, Chin H., to Xerox Corporation. Nitrogen-containing additives for magnetic toners having hydrophobic and hydrophilic moiety. 4,291,111, Cl. 430-107.000.

Lu, Chin H., to Xerox Corporation. Modification of pigment charge characteristics. 4,291,112, Cl. 430-110.000.

Lucas Industries Limited: *See—*
Baum, Heinz W., 4,290,508, Cl. 188-73.380.
Edmonds, Richard D., 4,291,206, Cl. 200-19.00R.

Lucas, William G.: *See—*
Ports, Kenneth A.; and Lucas, William G., 4,290,831, Cl. 148-187.000.

Lucero, Rohn Lee. Training aid. 4,290,758, Cl. 434-227.000.

Ludec, Joel L., to Rhone-Poulenc Industries. Preparation of ortho-hydroxybenzyl alcohols. 4,291,178, Cl. 568-764.000.

Ludemann, Heinz; and Ziegler, Franz, to Agfa-Gevaert AG. Apparatus for stacking sections of developed photographic films or the like. 4,290,594, Cl. 271-180.000.

Ludwig, Allen C.; Dale, John M.; and Frazier, Henry F., to Southwest Research Institute. Sulfur compounds and method of making same. 4,290,816, Cl. 106-287.320.

Luhrsen, Ernst; and Schermer, Heinz, to Didier-Werke AG. Teeming pipe for use at the outlet of a melt container. 4,290,589, Cl. 266-236.000.

Luke, Michael A.: *See—*
Beall, Clifford H.; Amancharla, Amareswar; and Luke, Michael A., 4,290,484, Cl. 166-242.000.

Lukhvich, Alexandr A.; Rudnitsky, Valery A.; Linnik, Ivan I.; and Gavris, Genrikh B. Apparatus with a permanent magnet for gauging the thickness of coatings on metal products with magnetic shunt to adjust for demagnetization of the permanent magnet. 4,291,270, Cl. 324-230.000.

Lukomsky, Genrikh I.: *See—*
Fedotov, Vladimir M.; Smirnov, Boris A.; Lukomsky, Genrikh I.; and Lipovsky, Iosif L., 4,290,542, Cl. 227-155.000.

Luomaranta, Mauri, to Scandinavian Ski Shop Limited. Apparatus for testing and fitting cross-country skis. 4,290,499, Cl. 177-48.000.

Lupton, Harold W.; and Reed, David E., to Iowa State University Research Foundation, Inc. Vaccine for infectious bovine rhinotracheitis. 4,291,019, Cl. 424-89.000.

Luschen, Joseph G.; and Theeuwes, Felix, to ALZA Corporation. Dispenser for dispensing beneficial agent. 4,290,426, Cl. 128-260.000.

Luteri, George F., to Velsicol Chemical Corporation. Sucrose ester of 2-methoxy-3,6-dichlorobenzoic acid. 4,291,158, Cl. 536-115.000.

Lutich, Louis L.: *See—*
Earp, Sherald B.; Lutich, Louis L.; and Harris, Jesse W., 4,290,578, Cl. 251-63.000.

Lyons, Harold D., to Milliken Research Corporation. Breathable leather-like materials and process for making same. 4,291,078, Cl. 428-91.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Kobler, Ingo; Mamberer, Hans; and Zwosta, Helge, 4,290,362, Cl. 101-350.000.
Kobler, Ingo, 4,290,363, Cl. 101-351.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft Offenbach: *See—*
Fischer, Hermann, 4,290,360, Cl. 101-148.000.

M. B. Sturgis, Inc.: *See—*
Sturgis, Malcolm B., 4,290,440, Cl. 137-75.000.

MacBean, Donald G.: *See—*
Buchanan, John G.; and MacBean, Donald G., 4,290,209, Cl. 34-123.000.

MacCarthy, Patrick, to Bisque, Ramon E.; and Stermole, Franklin J., a part interest to each. Tape-supported yo-yo. 4,290,224, Cl. 46-61.000.

MacCarthy, Patrick. Looped-string pulley-supported yo-yo. 4,290,225, Cl. 46-61.000.

Macgilp, Neil A.; and Mann, Duncan A., to Procter & Gamble Company, The. Packaged free flowing bleach activator product. 4,290,903, Cl. 252-91.000.

Machida, Naoki, deceased: *See—*
Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and Miwa, Takayasu, heir, 4,290,954, Cl. 260-335.000.

Machulla, Jurgen: *See—*
Stocklin, Gerhard; Laufer, Peter; and Machulla, Jurgen, 4,290,965, Cl. 260-408.000.

Mack, Michael H. Iron plumbing corrosion minimizing method. 4,290,868, Cl. 204-148.000.

Mackay, Donald A. M.; Witzel, Frank; and Linke, Harald A. B., to Life Savers, Inc. Method of reducing dental caries. 4,291,045, Cl. 424-270.000.

MacMillan, Deane B.; and Donigan, Carolyn L. Feed through capacitors and method of installing. 4,291,362, Cl. 361-302.000.

Maehara, Toshifumi; and Kawase, Kazuo, to Akebono Brake Industry Co. Ltd. Master cylinder device. 4,290,265, Cl. 60-561.000.

Magers, Thomas A.; and Tabb, David L., to Miles Laboratories, Inc. Stabilization of benzidine-type indicators with various enhancers. 4,290,773, Cl. 23-230.00B.

Magolda, Ronald L.: *See—*
Nicolaou, Kyriacos C.; Barnette, William E.; and Magolda, Ronald L., 4,291,166, Cl. 549-51.000.

Magyar Vagon- es Gepgyar: *See—*
Horvath, Tibor, 4,290,622, Cl. 280-400.000.

Mahoney, Dennis M.: *See—*
Beach, William F.; and Mahoney, Dennis M., 4,291,244, Cl. 307-400.000.

Main-Tainer Corporation: *See—*
Kleinwolterink, Henry, 4,290,423, Cl. 128-80.00G.

Maitani, Yoshihisa; and Tsunefuji, Katsuhiko, to Olympus Optical Co., Ltd. Programmed shutter device. 4,290,681, Cl. 354-230.000.

Majkrzak, David S.; and Hinkel, Dwight B., to Steiger Tractor, Inc. Wheel rim mounting device for variable wheel spacing. 4,290,654, Cl. 301-9.0TV.

Majkrzak, Edward A.: *See—*
Benjamin, Milton L.; Miles, Wilbur N.; and Majkrzak, Edward A., 4,290,206, Cl. 33-185.00R.

Maki-Hoimela, Veijo: *See—*
Rysti, Alpo; Anttila, Seppo; and Maki-Hoimela, Veijo, 4,290,722, Cl. 414-48.000.

Malone, Thomas R.; Foster, Talmage D., Jr., deceased; and Foster, Sue T., executrix, to Union Carbide Corporation. Thermal stabilizer for non-clay wellbore fluids. 4,290,899, Cl. 252-8.50A.

Malone, William H.; Fischley, John; Anderson, Harry L.; and Spirko, Edward J., to Republic Steel Corporation. Blast furnace stove. 4,290,751, Cl. 432-214.000.

Maloney, Timothy, to One Design, Inc. Phase change energy storage panel for environmentally driven heating and cooling system. 4,290,416, Cl. 126-430.000.

Mamberer, Hans: *See—*
Kobler, Ingo; Mamberer, Hans; and Zwosta, Helge, 4,290,362, Cl. 101-350.000.

Manchester, Luther L., Jr.; and Reneau, Bobby J. Apparatus for connecting together flowline end portions. 4,290,632, Cl. 285-323.000.

Manders, Petrus G. J., to Ruti-Te Strake B.V. Blowing nozzle for transporting a flexible thread. 4,290,459, Cl. 139-435.000.

Mandt, Mikkel G., to Clevepak Corporation. Nitrification-denitrification system. 4,290,884, Cl. 210-195.300.

Manetta, Alberto. Stress incontinence diagnostic and treatment device. 4,290,420, Cl. 128-1.00R.

Maniscalco, Joseph P.: *See—*
Allain, Ronald J.; and Maniscalco, Joseph P., 4,291,167, Cl. 556-430.000.

Maniwa, Takeshi: *See—*
Komatsu, Kazurou; Matsumoto, Sojiro; Maniwa, Takeshi; and Shinmura, Nobuyuki, 4,290,969, Cl. 260-453.0AB.

Mann, Duncan A.: *See—*
Macgilp, Neil A.; and Mann, Duncan A., 4,290,903, Cl. 252-91.000.

Mann, Gamdur S.; Tendulkar, Dilip V.; and Parker, William J., to General Motors Corporation. Diesel engine exhaust trap particulate distribution and incineration balancing system. 4,290,263, Cl. 60-311.000.

Manning, Lindley, to Superior Concrete Accessories, Inc. Apparatus for releasable connection to an embedded member. 4,290,638, Cl. 294-89.000.

Mannuzza, Frank J.: *See—*
Girgis, Makram M.; Jackson, David E.; and Mannuzza, Frank J., 4,290,774, Cl. 23-230.00B.

Manshausen, Theodor: *See—*
Kryczun, Alfred; and Manshausen, Theodor, 4,290,801, Cl. 75-21.000.

Manson, Lewis A. Gravity measuring apparatus. 4,290,307, Cl. 73-382.00R.

Maples, Billy G. Hand-held and operated seeder apparatus. 4,290,374, Cl. 111-92.000.

Marcus, Michael A., to Eastman Kodak Company. Piezoelectric flash-ready indicator for photographic camera. 4,290,678, Cl. 354-128.000.

Maringer, Robert E., to Battelle Development Corp. Method and apparatus for making nodule filament fibers. 4,290,993, Cl. 264-164.000.

Mark, Harold W.: *See—*
McKay, Dwight L.; Bertus, Brent J.; and Mark, Harold W., 4,290,919, Cl. 252-437.000.

Mark, Victor; and Wilson, Phillip S., to General Electric Company. Plasticized polycarbonate composition. 4,290,934, Cl. 260-30.80R.

Mark, Victor, to General Electric Co. Process for preparing polycarbonate using non-cyclic polyamine catalysts. 4,291,150, Cl. 528-199.000.

Mark, Victor, to General Electric Company. Process for preparing polycarbonate using cyclic di- or triamine catalyst. 4,291,151, Cl. 528-199.000.

Mark, Victor; and Wilson, Charles A., II, to General Electric Company. Process for obtaining halogenated diphenols. 4,291,177, Cl. 568-726.000.

Marsan, Mario. Holder for portable electric cutting instrument. 4,290,464, Cl. 144-136.00C.

Marshall, Albert H.; and Towle, Herbert C., to United States of America, Navy. Burst on target simulation device for training with rockets. 4,290,757, Cl. 434-12.000.

Marshall, George E., Jr.: *See—*
Schmidt, Lewis W.; Bettencourt, Darryl G.; Dietz, Charles F.; and Marshall, George E., Jr., 4,290,352, Cl. 100-100.000.

Marshall, Michael A.: *See—*
Swales, Danvers A.; and Marshall, Michael A., 4,291,000, Cl. 423-53.000.

Marston, Robert K.: *See—*
Caples, Edgar L.; Marston, Robert K.; and Massad, Khalil E., 4,291,410, Cl. 375-1.000.

Martenas, Wayne B., to Sperry Corporation. Feed roll apparatus. 4,290,255, Cl. 56-10.200.

Martin, Gordon E.; to United States of America, Navy. Discrete amplitude shading for lobe-suppression in discrete array. 4,291,396, Cl. 367-154.000.

Martin, Lawrence L.; and Worm, Manfred, to Hoechst-Roussel Pharmaceuticals, Inc. Spiro[cyclohexane-1,1'(3'H)-isobenzofuran]s. 4,290,958, Cl. 260-346.730.

Martino, William L., Jr.; and Moench, Jerry D., to Motorola Inc. Differential capacitive buffer. 4,291,246, Cl. 307-475.000.

Maruhashi, Shigeaki; Hasegawa, Morihiro; and Yamauchi, Takashi, to Nisshin Steel Company, Ltd. Process for dephosphorization and denitrification of chromium-containing pig iron. 4,290,803, Cl. 75-52.000.

Marumoto, Katsuji; and Ohmae, Tsutomu, to Hitachi, Ltd. Control apparatus for controlling transistor chopper for use in current supply for electric motor. 4,291,259, Cl. 318-139.000.

Maruyoshi Sangyo Kabushiki Kaisha: *See—*
Yonaga, Yoshifumi, 4,291,197, Cl. 179-2.0EA.

Maryland Cup Corporation: *See—*
Shapiro, Henry, 4,290,573, Cl. 248-152.000.

Maschinenfabrik Augsburg-Nuremberg Aktiengesellchaft: *See—*
Urlaub, Alfred, 4,290,396, Cl. 123-193.0CH.

Mascia, Frank: *See—*
Wuthrich, Paul; and Mascia, Frank, 4,291,397, Cl. 368-35.000.

Mass, Ronald H., to Schlegel Corporation. Elastomeric spring expansion joint-seal strip. 4,290,249, Cl. 52-396.000.

Massachusetts Institute of Technology: *See—*
Smith, Joseph L., Jr.; and Kirtley, James L., Jr., 4,291,249, Cl. 310-214.000.
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,291,390, Cl. 365-183.000.

Massad, Khalil E.: *See—*
Caples, Edgar L.; Marston, Robert K.; and Massad, Khalil E., 4,291,410, Cl. 375-1.000.

Massana, Miguel P. Adjustable annular prosthesis for cardiac surgery. 4,290,151, Cl. 3-1.500.

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Matsumoto, Sojiro: *See—*
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Matsumura, Shunichi: *See—*
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, 4,291,152, Cl. 528-289.000.

Matsuoka, Hideoki: *See—*
Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takashi; Matsuoka, Hideoki; Nomura, Hiroyuki; and Mogi, Takaaki, 4,291,373, Cl. 364-443.000.

Matsushima, Noriaki: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; and Inouye, Naomitsu, 4,290,928, Cl. 260-28.00P.

Matsushita Electric Industrial Co., Ltd.: *See—*
Takenaga, Mutsuo; and Yamamoto, Osamu, 4,290,909, Cl. 252-301.40R.
Taki, Yasuo; Araki, Shigeru; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,290,732, Cl. 414-752.000.

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Takamura, Tooru; Terakawa, Sumio; Nakatani, Hirokuni; and Murozono, Izumi, 4,291,337, Cl. 358-213.000.

Matthias, Dan W., to Exxon Research & Engineering Co. Flexible ribbon guide means. 4,290,704, Cl. 400-248.000.

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Henderson, John G. N.; and Maturo, Robert J., 4,291,413, Cl. 455-164.000.

Maupre, Jean-Pierre; and Trouve, Jean, to Commissariat a l'Energie Atomique. Process for cleaning a cold trap. 4,290,822, Cl. 134-19.000.

Max-Plank-Gesellschaft: *See—*
Birr, Christian, 4,290,943, Cl. 260-112.50R.

Maxwell, James L.: *See—*
Zobel, Henry F.; and Maxwell, James L., 4,291,065, Cl. 426-549.000.

Maxwell, Thomas J. Nonpredictable game projectile. 4,290,606, Cl. 273-128.00R.

Mayama, Koichi; Yamaguchi, Noboru; Sugie, Mamoru; Kita, Yuzo; and Yoshizawa, Shigeru, to Hitachi, Ltd. Timing signal generating circuit. 4,291,241, Cl. 307-269.000.

Mayer, James R., to Cooper Industries, Inc. Rock drill positioning mechanism. 4,290,491, Cl. 173-43.000.

Mayer, Russel. End control, electrical, power drive unit for agricultural sprinkler irrigation systems. 4,290,559, Cl. 239-716.000.

Mayo, Carlos, to C. Mayo, Inc. Fireplace glass door with heat circulator. 4,290,409, Cl. 126-121.000.

Mazzini, Giulio, to WABCO Westinghouse. Manual and motor actuated railway car door. 4,290,368, Cl. 105-341.000.

McCaffrey, Craig R.; and Barraclough, Gary O., to Betz Laboratories, Inc. Process for removing sulfur dioxide from flue gas. 4,291,004, Cl. 423-242.000.

McCahill, David I., to Three Rivers Enterprises, Inc. Digital energy monitor. 4,291,376, Cl. 364-483.000.

McClaren, Sherwood W., III: *See—*
Ely, Richard A.; and McClaren, Sherwood W., III, 4,291,080, Cl. 428-116.000.

McConkey, Robert C.: *See—*
Noonan, John M.; and McConkey, Robert C., 4,291,153, Cl. 528-290.000.

McConnell, Edmund A.; Yearsley, Norman; and Blockley, Alec G., to Wickman Machine Tool Sales Limited. Clutch protection device. 4,290,514, Cl. 192-30.00W.

McConnell, Lloyd A., to Irrigation and Power Equipment, Inc. Parallel angularity sensor for center pivot irrigation system. 4,290,556, Cl. 239-177.000.

McCoy, Dale E.: *See—*
Chase, Kenneth P.; and McCoy, Dale E., 4,291,095, Cl. 428-391.000.

McCreight, Donald O.: *See—*
Pavlica, Stanley R.; and McCreight, Donald O., 4,290,814, Cl. 501-107.000.

McDonald, Gerald F. Travel game device. 4,290,607, Cl. 273-239.000.

McDonnell Douglas Corp.: *See—*
Kramer, Louis T., 4,290,505, Cl. 188-18.00A.

McGovern, Terrence P.; and Schreck, Carl E., to United States of America, Agriculture. Alicyclic piperidine derivatives as insect repellents. 4,291,041, Cl. 424-267.000.

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McIntire, John M.; and Blair, Richard H., to Permabond International Corp. Plastic nozzles of moldable polyethylene and polypropylene polymers having organic acids dispersed therein. 4,291,131, Cl. 525-5.000.

McIntyre, Charles A. Cowling port closure and method. 4,290,569, Cl. 244-129.400.

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McKenny, Vernon G.; and Chan, Tsiu C., to Mostek Corporation. Method of making an extremely low current load device for integrated circuit. 4,290,185, Cl. 29-571.000.

McKenzie, Kenneth B., to Port-A-Lock Incorporated. Door locking device. 4,290,635, Cl. 292-290.000.

McLandrich, Matthew N., to United States of America, Navy. Method to eliminate fiber interferometer reflections. 4,290,697, Cl. 356-350.000.

McLennan, Charles I.; Stokes, Marshall G.; and Konucik, George J., to Konucik, George Joseph. Sportsman's retriever. 4,290,159, Cl. 9-9.000.

McLeod, William D., to Fishing Innovations, Inc. Fishing apparatus. 4,290,222, Cl. 43-15.000.

McMonigle, Matthew J.; and Klingensmith, Chester H., to Aluminum Company of America. Gasket for sealing joints in carbonaceous elements in electrolysis cell. 4,290,874, Cl. 204-243.00R.

McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., to Clow Corporation. Method of making composite pipe having an integral bell end. 4,290,836, Cl. 156-171.000.

McRitchie, Allan C.: *See—*
Harris, Richard G.; McRitchie, Allan C.; and Wilson, Alexander D., 4,291,071, Cl. 427-220.000.

Mead Corporation, The: *See—*
Donahue, John W., 4,291,340, Cl. 358-296.000.

Mead Johnson & Company: *See—*
Johnson, Porter C.; and Matier, William L., 4,291,168, Cl. 556-441.000.

Mechanical Service Company: *See—*
Hudimac, George S., Jr., 4,290,700, Cl. 366-76.000.

Mechanical Technology Incorporated: *See—*
Clark, Howard L.; Dorman, Richard A.; and Back, Paul, 4,291,258, Cl. 318-124.000.

Mechanical Transplanter Company: *See—*
Boots, W. Stewart; and Altman, Jay C., 4,290,373, Cl. 111-3.000.

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Belva, George M.; and Mecklenborg, Richard A., 4,290,669, Cl. 350-174.000.

Meckler, Milton. Peltier effect absorption chiller-heat pump system. 4,290,273, Cl. 62-148.000.

Medici, Italo: *See—*
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Medovar, Boris I.; Boiko, Georgy A.; Dubinsky, Rudolf S.; and Egorov, Sergei P. Method and apparatus for electroslag casting of metals. 4,290,474, Cl. 164-470.000.

Meeh, Wilhelm, to Motoren-und-Turbinen-Union Friedrichshafen GmbH. Marine propulsion unit. 4,290,270, Cl. 60-716.000.

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Yoneta, Toshio; Shibahara, Seiji; Seki, Shigeo; and Fukatsu, Shunzo, 4,290,972, Cl. 260-465.00B.

Mein, Peter G.; and Reidies, Arno H., to Carus Corporation. Rare-earth-manganese oxidation catalysts and process of producing same. 4,290,923, Cl. 252-462.000.

Meixsel, Lawrence D.: *See—*
Goetz, Richard W.; Meixsel, Lawrence D.; and Smith, David W., 4,291,179, Cl. 568-882.000.

Melara, Francescantonio. Self-aligning twin-wheeled caster. 4,290,166, Cl. 16-47.000.

Mellin, Gerald D., to Seaman Corporation. Building membrane hold-down system. 4,290,243, Cl. 52-63.000.

Mentelos, Richard A.: *See—*
Herbert, Normand C.; Burwen, Richard S.; and Mentelos, Richard A., 4,290,431, Cl. 128-635.000.

Mepla Inc.: *See—*
Lautenschlager, Horst, 4,290,167, Cl. 16-129.000.

Merchant, Donald K., to North American Philips Controls Corp. Circuit breaker provided with collapsible telescoping linkage. 4,291,291, Cl. 335-191.000.

Merck & Co., Inc.: *See—*
Brown, Jeannette E.; Rogers, Edward F.; and Graham, Donald W., 4,290,966, Cl. 260-413.000.
Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzman, Thomas N., 4,290,947, Cl. 260-239.00A.
Kang, Kenneth S.; and Veeder, George T., 4,291,156, Cl. 536-1.000.
Woltersdorf, Otto W., Jr.; and Cragoe, Edward J., Jr., 4,291,050, Cl. 424-278.000.

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Wahlig, Helmut; Dingeldein, Elvira; and Braun, Dietrich, 4,291,013, Cl. 424-16.000.

Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Process for the manufacture of aromatic di- and/or polyisocyanates. 4,290,970, Cl. 260-453.00P.

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Apuzzo, Gennaro; and Bocchini, Gian F., 4,290,655, Cl. 308-121.000.

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Cumming, Richard J.; DeBano, John; Mertz, Harold J., Jr.; Nordeen, Donald L.; Sajewski, Vincent F.; and Zens, John F., 4,290,627, Cl. 280-729.000.

Mese, Michihiro; Kashioka, Seiji; Ejiri, Masakazu; Miyatake, Takafumi; Yamazaki, Isamu; and Hamada, Toshimitsu, to Hitachi, Ltd. System for detecting the position of an object. 4,291,334, Cl. 358-101.000.

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Braun, Werner, 4,291,217, Cl. 219-121.0PH.

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Weidenhagen, Dieter; and Schnaebele, Werner, 4,290,364, Cl. 102-384.000.

Mestroni, Giovanni; Zassinovich, Grazia; and Camus, Annamaria, to Montedison S.p.A. Process for catalytically reducing carbonyl compounds. 4,290,961, Cl. 260-397.400.

Meszaros, Zoltan: *See—*
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,291,036, Cl. 424-251.000.

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Dompas, John, 4,290,823, Cl. 148-2.000.

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Bruckner, Georg F.; Geike, Bernd; Berger, Fritz; and Schoen, Bernd-Jurgen, 4,290,147, Cl. 2-18.000.

Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Karrer, Friedrich, to Ciba-Geigy Corporation. Pesticidal esters. 4,291,056, Cl. 424-304.000.

Michishita, Kazuhiko: *See—*
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Mick, Martin B.: *See—*
Woodall, Robert M.; Damron, Eugene; and Mick, Martin B., 4,290,879, Cl. 208-232.000.

Microwave Associates, Inc.: *See—*
Buntschuh, Charles D., 4,291,415, Cl. 455-328.000.

Middel, Jan, to Hoogovens Ijmuiden, B.V. Method and apparatus for folding a cardboard sheet along a straight fold line. 4,290,764, Cl. 493-395.000.

Midland-Ross Corporation: *See—*
Isakson, Larry E., 4,290,342, Cl. 91-391.00R.

Milana, Emilio, to Centro Ricerche Fiat S.p.A. Apparatus for testing surface roughness. 4,290,698, Cl. 356-371.000.

Miles Laboratories, Inc.: *See—*
Acquati, Giancarlo; Berti, Giovanni; and Fossati, Piero, 4,291,121, Cl. 435-10.000.
Girgis, Makram M.; Jackson, David E.; and Mannuzza, Frank J., 4,290,774, Cl. 23-230.00B.
Liao, John C.; Patel, Chittaranjan P.; and Ponzo, John L., 4,290,769, Cl. 8-602.000.
Magers, Thomas A.; and Tabb, David L., 4,290,773, Cl. 23-230.00B.
Van Dyke, John W., Jr.; and Kurchacova, Elva, 4,291,039, Cl. 424-256.000.

Miles, Wilbur N.: *See—*
Benjamin, Milton L.; Miles, Wilbur N.; and Majkrzak, Edward A., 4,290,206, Cl. 33-185.00R.

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Jones, Terry L.; and Miller, Brian S., 4,291,068, Cl. 427-88.000.

Miller, Franklyn D.: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,291,124, Cl. 435-162.000.

Miller, James A.: *See—*
Felland, Richard A.; and Miller, James A., 4,291,213, Cl. 200-335.000.

Miller, Robert L.: *See—*
Burton, James M.; Miller, Robert L.; and Tieden, Jansey D., 4,291,384, Cl. 364-560.000.

Miller, Theodore E., Jr.: *See—*
Stevens, Timothy S.; and Miller, Theodore E., Jr., 4,290,775, Cl. 23-230.00R.

Milliken Research Corporation: *See—*
Burns, Alonzo M., Jr.; Silliman, Jeffrey E.; Gilbert, Woodrow P.; and Pascoe, William M., Sr., 4,290,766, Cl. 8-491.000.
Lyons, Harold D., 4,291,078, Cl. 428-91.000.

Milum, Jimmy L.: *See—*
Pittman, Robert R.; Elbrader, Clifford B.; and Milum, Jimmy L., 4,290,788, Cl. 55-138.000.

Minagawa, Kenichiro: *See—*
Tanizaki, Yoshiharu; Minagawa, Kenichiro; Akimoto, Shinichi; and Horioka, Kuninori, 4,291,101, Cl. 428-514.000.

Minami, Norio: *See—*
Nakagawa, Isao; and Minami, Norio, 4,291,335, Cl. 358-154.000.

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Minchey, Richard L.: *See—*
Gallagher, Ronald M.; Nadler, Michael E.; Highsmith, Charles E.; and Minchey, Richard L., 4,290,370, Cl. 108-53.500.

Minigrip, Inc.: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
Balchunis, Robert J.; and Bany, Stephen W., 4,291,145, Cl. 528-89.000.
Berggren, William R.; and Brownley, Shelby J., 4,291,114, Cl. 430-253.000.
Giorgini, Norman L., 4,290,691, Cl. 355-3.0FU.
Johnson, James R.; and Flanagan, William C., Jr., 4,290,847, Cl. 176-1.000.
Kalleberg, Melvin O., 4,290,174, Cl. 24-204.000.
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Sorsche, Joachim H.; Ableitner, Erich; Gobien, Ernst; and Minning, Manfred, 4,290,397, Cl. 123-195.00A.

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Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.

Misawa, Yoshihiko: *See—*
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Mischke, Robert J.: *See—*
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Misu, Hiroshi: *See—*
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Misumi, Akira: *See—*
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.

Mitchell, Robert M., to Thomas J. Lipton, Inc. Infusion package and method of making same. 4,290,521, Cl. 206-0.500.

Mitoff, Stephan P.: *See—*
DeCarlo, Vincent J.; Powers, Robert W.; and Mitoff, Stephan P., 4,291,108, Cl. 429-193.000.

Mitre Corporation, The: *See—*
Weinberg, Aaron; Ebert, Paul M.; Fee, Joseph J.; Kaminsky, Yaroslav; Keblawi, Feisal S.; and Scales, Walter C., 4,291,409, Cl. 375-1.000.

Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsubishi Petrochemical Co., Ltd.: *See—*
Fujii, Masaki; Miyabayashi, Mitsutaka; Todaka, Hironori; and Hattori, Satoru, 4,291,140, Cl. 525-321.000.
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Mitsubishi Rayon Co., Ltd.: *See—*
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Mitsui Petrochemical Industries Ltd.: *See—*
Toyota, Akinori; and Kashiwa, Norio, 4,290,915, Cl. 252-429.00B.

Mittelstadt, Robert A. Wobble plate exercise device and toy. 4,290,601, Cl. 272-146.000.

Miura, Hiroshi: *See—*
Harada, Kiyoshi; Koida, Yoshiyuki; and Miura, Hiroshi, 4,290,910, Cl. 252-312.000.

Miura, Masahiro. Installation for cultivation of crops on water. 4,290,229, Cl. 47-66.000.

Miwa, Takayasu, heir: *See—*
Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and Miwa, Takayasu, heir, 4,290,954, Cl. 260-335.000.

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Miyake, Hideo; Sakamoto, Junichi; Sawaki, Masakazu; and Hara, Mamoru, to Toyo Boseki Kabushiki Kaisha Co., Ltd. Thermosetting injection molding compound. 4,290,938, Cl. 260-40.00R.

Miyasaka, Kiyoshi: *See—*
Higuchi, Mitsuo; and Miyasaka, Kiyoshi, 4,291,326, Cl. 357-51.000.

Miyatake, Takafumi: *See—*
Mese, Michihiro; Kashioka, Seiji; Ejiri, Masakazu; Miyatake, Takafumi; Yamazaki, Isamu; and Hamada, Toshimitsu, 4,291,334, Cl. 358-101.000.

Miyauchi, Seiroku; Sagane, Yasuo; and Irie, Kazuo, to Asahi Glass Company, Limited. Metallic panel reinforcing system. 4,290,641, Cl. 296-146.000.

Miyazawa, Tatsuo: *See—*
Uesugi, Nobuo; Miyazawa, Tatsuo; Furudate, Mituaki; Sasaki, Keiichi; and Mizuguchi, Hiroji, 4,290,849, Cl. 176-19.00R.

Miyoshi, Hitoshi: *See—*
Kimura, Tsutomu; Miyoshi, Hitoshi; and Mori, Sumio, 4,291,305, Cl. 340-734.000.

Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takashi; Matsuoka, Hideoki; Nomura, Hiroyuki; and Mogi, Takaaki, to Nissan Motor Company, Limited. Navigational information announcing system for motor vehicle. 4,291,373, Cl. 364-443.000.

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Uesugi, Nobuo; Miyazawa, Tatsuo; Furudate, Mituaki; Sasaki, Keiichi; and Mizuguchi, Hiroji, 4,290,849, Cl. 176-19.00R.

Mizzi, John V., to International Business Machines Corporation. Apparatus for providing a constant density trace of ECG analog signals. 4,291,315, Cl. 346-76.00R.

Mobay Chemical Corporation: *See—*
Loane, Charles M., Jr., 4,290,809, Cl. 75-257.000.

Mobil Oil Corporation: *See—*
Chen, Albert C., 4,291,055, Cl. 424-298.000.
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Mochizuki, Yasuhiro; Okano, Sadao; and Ogawa, Takuzo, to Hitachi, Ltd. Method of selectively diffusing aluminium into a silicon semiconductor substrate. 4,290,830, Cl. 148-187.000.

MoDo-Chemetics AB: *See—*
Hedstrom, Bengt O. A.; and Svensson, Claes G. S., 4,290,269, Cl. 60-670.000.

Moench, Jerry D.: *See—*
Martino, William L., Jr.; and Moench, Jerry D., 4,291,246, Cl. 307-475.000.

Moertel, George B., to Textron Inc. Slide fastener with molded elements and method of manufacture. 4,290,175, Cl. 24-205.13D.

Mogi, Takaaki: *See—*
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Moldex, Inc.: *See—*
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Moles, Warren H.: *See—*
Rhodes, Roland N.; Schroeder, Alfred C.; and Moles, Warren H., 4,290,671, Cl. 350-317.000.

Molgaard, Aage; and Graversen, Niels P. G., to Danfoss A/S. Rotary knob for thermostatic valves of radiators. 4,290,553, Cl. 236-42.000.

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Dyett, Derek H.; Hirsh, Ivan Y.; Preston, Edward G.; and Williams, Robert E., 4,290,518, Cl. 198-450.000.

Moll, Eberhard, to Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten. Sealing construction for vacuum connection. 4,290,614, Cl. 277-205.000.

Molter, Michael: *See—*
Strecker, Helmut; Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, 4,291,012, Cl. 424-1.000.

Momiyama, Kikuo: *See—*
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Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., 4,290,358, Cl. 101-111.000.
Pabodie, Robert M., 4,290,839, Cl. 156-384.000.
Pabodie, Robert M.; and Hamisch, Paul H., Jr., 4,290,840, Cl. 156-384.000.

Monsanto Company: *See—*
Bishkin, David B., 4,291,189, Cl. 585-860.000.
Morita, Eiichi, 4,291,141, Cl. 525-351.000.
Wilkie, Arnold E., 4,290,378, Cl. 112-410.000.

Montedison S.p.A.: *See—*
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,291,049, Cl. 424-275.000.
Mestroni, Giovanni; Zassinovich, Grazia; and Camus, Annamaria, 4,290,961, Cl. 260-397.400.

Monter, James V.; Sorenson, James P.; and Theus, George J., to Babcock & Wilcox Company, The. High temperature reference electrode. 4,290,872, Cl. 204-195.00F.

Montgomery, Carl T., to Dow Chemical Co., The. Method for facilitating transportation of particulate on a conveyor belt in a cold environment. 4,290,810, Cl. 106-13.000.

Montgrain, Luc, to Alcan Research and Development Limited. Apparatus for sparging molten metal by gas injection. 4,290,590, Cl. 266-225.000.

Montreal Neurological Institute: *See—*
Thompson, Christopher J., 4,291,228, Cl. 250-363.00S.

Moran, George A.; and Williams, John B., to ACF Industries, Incorporated. Seat assembly for ball valves. 4,290,581, Cl. 251-172.000.

Morel, Henri, to ITW de France, FRX. Closure for sealing openings in panels. 4,290,536, Cl. 220-359.000.

Morgan, Gordon L.; and Wood, John C. Spray booth. 4,290,348, Cl. 98-115.0SB.

Mori, Fumio: *See—*
Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, 4,290,828, Cl. 148-11.50Q.

Mori, Kazuhiro: *See—*
Taki, Yasuo; Araki, Shigeru; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,290,732, Cl. 414-752.000.

Mori, Kunio: *See—*
Koshiishi, Hiromichi; Mori, Kunio; Sato, Hiroshi; and Sakaida, Akira, 4,290,829, Cl. 148-130.000.

Mori, Sumio: *See—*
Kimura, Tsutomu; Miyoshi, Hitoshi; and Mori, Sumio, 4,291,305, Cl. 340-734.000.

Morihara, Ko: *See—*
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,290,996, Cl. 264-564.000.

Morikawa, Masanobu: *See—*
Tanaka, Chiaki; Morikawa, Masanobu; and Kohno, Yoshio, 4,290,927, Cl. 260-3.000.

Morino, Toshiharu: *See—*
Takada, Shigetaka; and Morino, Toshiharu, 4,290,399, Cl. 123-439.000.

Morita, Eiichi, to Monsanto Company. Vulcanizable rubber compositions containing N-(sulfenyl) methacrylamides as scorch inhibitors. 4,291,141, Cl. 525-351.000.

Morita, Minoru; Sato, Shimio; Hashimoto, Takao; and Kitaoka, Yoji, to Yamagata University, The President of. Apparatus for direct liquefaction. 4,290,999, Cl. 422-194.000.

Morita, Yoichi: *See—*
Noda, Nobutaka; Hamamura, Kazuo; and Morita, Yoichi, 4,290,690, Cl. 355-3.00R.

Mortl, Michael: *See—*
Fleckenstein, Andrew; and Mortl, Michael, 4,290,451, Cl. 137-624.150.

Morton, Douglas R., Jr., to Upjohn Company, The. 9,11-Dideoxy-10-oxa-TXB intermediates. 4,291,159, Cl. 542-400.000.

Morton, John C., to Clamor Company. Hand truck stair tread engaging device. 4,290,618, Cl. 280-5.220.

Morton-Norwich Products, Inc.: *See—*
Wright, George C.; and White, Ronald E., 4,291,163, Cl. 546-164.000.

Mostek Corporation: *See—*
McKenny, Vernon G.; and Chan, Tsiu C., 4,290,185, Cl. 29-571.000.
Proebsting, Robert J., 4,291,392, Cl. 365-203.000.
Wilson, Dennis R., 4,291,393, Cl. 365-203.000.

Motoren-und-Turbinen-Union Friedrichshafen GmbH: *See—*
Meeh, Wilhelm, 4,290,270, Cl. 60-716.000.

Motorola Inc.: *See—*
Martino, William L., Jr.; and Moench, Jerry D., 4,291,246, Cl. 307-475.000.
Schriber, Gene A., 4,291,242, Cl. 307-270.000.

Mould, Henry M.; and Hirst, George E., to Perkin-Elmer Limited. Spectrophotometric system. 4,290,696, Cl. 356-300.000.

Moutonnier, Claude: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, 4,291,032, Cl. 424-248.510.

MTS Systems Corporation: *See—*
Gram, Martin M., 4,290,343, Cl. 91-461.000.

MTU Motoren-und Turbinen Union: *See—*
Betz, Wolfgang; and Rossmann, Axel, 4,290,845, Cl. 156-644.000.

Muehlbauer, Otto; Bigall, Klaus D.; and Roessler, Helmut, to Siemens Aktiengesellschaft. Digital semiconductor circuit. 4,291,221, Cl. 235-92.0CC.

Mulinos, Michael G., to Unimed, Inc. Method of lowering blood cholesterol. 4,291,030, Cl. 424-245.000.

Muller, Horst; and Vorwerk, Helmut, to Robert Bosch GmbH. Remote control for radiotelephones. 4,291,411, Cl. 455-88.000.

Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corp. Process for the acid hydrolysis of carbohydrate polymers and the continuous fermentation of the sugars obtained therefrom to provide ethanol. 4,291,124, Cl. 435-162.000.

Mundell, Robert D. Method and apparatus for installing a wheel cover. 4,291,077, Cl. 428-76.000.

Muntwyler, Rene, to Ciba-Geigy Corporation. Method of protecting organic or inorganic material from attack by microorganisms. 4,290,846, Cl. 162-161.000.

Murakami, Hiroyasu: *See—*
Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; Sakai, Shinji; Uchiyama, Takashi; and Momiyama, Kikuo, 4,290,686, Cl. 354-289.000.

Murakami, Keikichi; and Kaneko, Hideo, to Kawasaki Jukogyo Kabushiki Kaisha. Method and apparatus for probing into a refining furnace or the like for temperature measurement for sampling, or for both. 4,290,306, Cl. 73-354.000.

Murakami, Kenkichi; and Kikuzawa, Yoshiharu, to Kabushiki Kaisha Plastic Kogaku Kenkyusho. Method of molding hollow bodies. 4,290,994, Cl. 264-515.000.

Murakami, Yasushi: *See—*
Koizumi, Masuo; Sasahara, Kazuo; Murakami, Yasushi; Wada, Sakae; Nakakimura, Hiroshi; Kubodera, Noboru; and Hata, Shun-Ichi, 4,290,953, Cl. 260-333.000.

Muraki, Toshio, to Toray Industries, Incorporated. Highly rigid polyamide composition. 4,290,935, Cl. 260-32.6NA.

Muramatsu, Katsuji; and Fujita, Yoshihiro, to Fuji Photo Film Co., Ltd. Photographic camera. 4,290,680, Cl. 354-203.000.

Murata Manufacturing Co., Ltd.: *See—*
Kadota, Michio, 4,291,285, Cl. 333-150.000.
Nishiyama, Hiroshi; Nakamura, Takeshi; Kato, Suehiro; and Ando, Kenji, 4,290,876, Cl. 204-298.000.

Murayama, Noboru: *See—*
Ogawa, Mutsuo; Murayama, Noboru; Konishi, Akira; and Takeuchi, Norisada, 4,291,339, Cl. 358-260.000.

Murdoch, James C.: *See—*
Stevenson, Andrew C.; Herzog, Gordon W.; and Murdoch, James C., 4,291,263, Cl. 318-706.000.

Murozono, Izumi: *See—*
Takamura, Tooru; Terakawa, Sumio; Nakatani, Hirokuni; and Murozono, Izumi, 4,291,337, Cl. 358-213.000.

Murphy, Jimmy L.: *See—*
Trent, Jett B.; and Murphy, Jimmy L., 4,291,219, Cl. 219-121.0EY.

Muto, Naoki: *See—*
Otani, Masaru; Satoi, Shuzo; Muto, Naoki; Saito, Tetsu; Fujii, Tadashiro; Katsumata, Seiji; Hayashi, Mitsuo; and Ono, Masaru, 4,291,021, Cl. 424-121.000.

Muzechuk, Richard A.: *See—*
Sullivan, Leo S., Jr.; and Muzechuk, Richard A., 4,290,626, Cl. 280-692.000.

Myhre, Kjell E. Transducer diaphragm elements and methods and apparatus for making same. 4,291,218, Cl. 219-121.0EC.

Nadenoff, Glenn L. Chain saw guard. 4,290,202, Cl. 30-382.000.

Nadler, Michael E.: *See—*
Gallagher, Ronald M.; Nadler, Michael E.; Highsmith, Charles E.; and Minchey, Richard L., 4,290,370, Cl. 108-53.500.

Nagakura, Masahiko: *See—*
Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and Miwa, Takayasu, heir, 4,290,954, Cl. 260-335.000.

Nagano, Masashi; and Someya, Itsuo, to Shimano Industrial Company Limited. Center-pull type calliper brake for a bicycle. 4,290,506, Cl. 188-24.190.

Nagata Seisakusho Co., Ltd.: *See—*
Takakuwa, Takeshi, 4,290,886, Cl. 210-219.000.

Nagy, Gabor: *See—*
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,291,036, Cl. 424-251.000.

Nakae, Isoji, to Kishu Neji Co., Ltd. Self-locking nut-type or bolt-type fastening device. 4,290,469, Cl. 411-185.000.

Nakagami, Jozi: *See—*
Tachi, Yasuhide; Michishita, Kazuhiko; Nakagami, Jozi; Sawada, Jiro; Washitake, Mitsunori; and Kamano, Yoshiaki, 4,290,962, Cl. 260-397.450.

Nakagawa, Isao; and Minami, Norio, to Hitachi, Ltd. Vertical synchronizing signal detector. 4,291,335, Cl. 358-154.000.

Nakajima, Koichi; and Tsuchiya, Hidetaka, to Citizen Watch Co., Ltd. Plastic watch case. 4,291,402, Cl. 368-276.000.

Nakajima, Yoshinori, to Ricoh Company, Ltd. Servo positioning apparatus. 4,291,262, Cl. 318-603.000.

Nakakimura, Hiroshi: *See—*
Koizumi, Masuo; Sasahara, Kazuo; Murakami, Yasushi; Wada, Sakae; Nakakimura, Hiroshi; Kubodera, Noboru; and Hata, Shun-Ichi, 4,290,953, Cl. 260-333.000.

Nakamura, Kohji: *See—*
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,290,996, Cl. 264-564.000.

Nakamura, Takeshi: *See—*
Nishiyama, Hiroshi; Nakamura, Takeshi; Kato, Suehiro; and Ando, Kenji, 4,290,876, Cl. 204-298.000.

Nakanisi, Takatosi; Tanaka, Atsushi; and Udagawa, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Vertical type vapor-phase growth apparatus. 4,290,385, Cl. 118-730.000.

Nakano, Masao; Nakano, Tomio; Takemae, Yoshihiro; and Kabashima, Katsuhiko, to Fujitsu Limited. Semiconductor memory device having flip-flop circuits. 4,291,394, Cl. 365-206.000.

Nakano, Tomio: *See—*
Nakano, Masao; Nakano, Tomio; Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,291,394, Cl. 365-206.000.

Nakata, Kouji: *See—*
Senda, Jihei; Inoue, Yoshihiro; Uenishi, Toshiaki; Harada, Hidefumi; Nakata, Kouji; and Akagi, Akio, 4,291,010, Cl. 423-594.000.

Nakatani, Hirokuni: *See—*
Takamura, Tooru; Terakawa, Sumio; Nakatani, Hirokuni; and Murozono, Izumi, 4,291,337, Cl. 358-213.000.

Nakate, Yasushi; Iwai, Hiroshi; and Nanishi, Kiyoshi, to Kansai Paint Co., Ltd. One-pack high solid coating composition. 4,291,137, Cl. 525-162.000.

Nakayama, Akira: *See—*
Ohkoshi, Akio; Ishii, Eiji; Nakayama, Akira; Kato, Shoji; and Tanaka, Yoshiyuki, 4,291,253, Cl. 313-348.000.

Nakmizo, Nobuhiro: *See—*
Hirata, Tadashi; Ogasa, Takehiro; Saito, Hiromitsu; and Nakmizo, Nobuhiro, 4,291,164, Cl. 546-183.000.

Nalco Chemical Company: *See—*
Allain, Ronald J.; and Maniscalco, Joseph P., 4,291,167, Cl. 556-430.000.

Nanishi, Kiyoshi: *See—*
Nakate, Yasushi; Iwai, Hiroshi; and Nanishi, Kiyoshi, 4,291,137, Cl. 525-162.000.

Nathan, Bernard D.; and Witter, Donald R., to General Electric Company. Transverse magnetic printing head. 4,291,314, Cl. 346-74.500.

National Distillers and Chemical Corp.: *See—*
Goetz, Richard W.; Meixsel, Lawrence D.; and Smith, David W., 4,291,179, Cl. 568-882.000.
Muller, Werner C.; and Miller, Franklyn D., 4,291,124, Cl. 435-162.000.

National Petro Chemicals Corp.: *See—*
Katzen, Stanley J.; and Rekers, Louis J., 4,290,914, Cl. 252-428.000.

National Semiconductor Corporation: *See—*
Carinalli, Charles P., 4,291,319, Cl. 357-13.000.
Klein, Thomas; Varadi, Andrew G.; and Boettcher, Charles E., 4,290,186, Cl. 29-576.00B.

National-Standard Company: *See—*
Bryant, Emerson C., 4,290,472, Cl. 156-416.000.

Natmar, Inc.: *See*—
Clay, Bobby J., 4,290,357, Cl. 101-111.000.

Naumann, Rolf: *See*—
Schroeder, Gerhard; Buxbaum, Gunter; Hund, Franz; Schopper, Heinrich-Christian; and Naumann, Rolf, 4,290,799, Cl. 75-0.50A.

NCR Corporation: *See*—
Armstrong, Rolfe D., 4,291,407, Cl. 371-49.000.
Nelson, Hilding E., 4,291,366, Cl. 363-17.000.

Neeff, Rutger; Kuth, Robert; Kuhnel, Werner; and Gohrbandt, Wilhelm, to Bayer Aktiengesellschaft. Process for dyeing and printing cellulose fibres. 4,290,768, Cl. 8-532.000.

Neiman, Richard A.: *See*—
Bakermans, Johannes C. W.; and Neiman, Richard A., 4,290,179, Cl. 29-33.00M.

Nelson, Edward I., to Burroughs Corporation. Molded plastic photo-optical keyboard. 4,291,225, Cl. 250-229.000.

Nelson, Hilding E., to NCR Corporation. Switching regulated power supply. 4,291,366, Cl. 363-17.000.

Neturen Company Ltd.: *See*—
Fukuhara, Tetsukazu, 4,290,841, Cl. 156-464.000.

Neutrogena Corporation: *See*—
Poper, Maxwell H.; and Jungermann, Eric, 4,290,904, Cl. 252-118.000.

Newall, Christopher E.: *See*—
Cherry, Peter C.; Newall, Christopher E.; Watson, Nigel S.; Gregory, Gordon I.; and Ward, Peter, 4,290,949, Cl. 260-245.300.

Newton, Emerson H., to Wing Industries, Inc. Total energy exchange apparatus. 4,290,789, Cl. 55-269.000.

Newton, Robert E.: *See*—
Dechene, Ronald L.; Grimaldi, Frank G.; and Newton, Robert E., 4,291,273, Cl. 324-343.000.

NGK Insulators, Ltd.: *See*—
Suzuki, Kazuo, 4,290,743, Cl. 425-461.000.

NHK Spring Co., Ltd.: *See*—
Kawakubo, Mitsushige; Sakai, Yoshihiro; and Ohno, Akira, 4,290,288, Cl. 72-7.000.

Nichols, Donald A.: *See*—
Arnold, Donald S.; Fairchild, James L.; Nichols, Donald A.; and Coe, Merlin D., 4,291,002, Cl. 423-189.000.

Nicholson, Terence P. Gaskets. 4,290,616, Cl. 277-235.00B.

Nicksic, Edward E. Locking device for spoked wheel vehicles. 4,290,284, Cl. 70-233.000.

Nicolaou, Kyriacos C.; Barnette, William E.; and Magolda, Ronald L., to Research Corporation. Pharmaceutically active 6,9-thiaprostacyclin analogs and derivatives thereof. 4,291,166, Cl. 549-51.000.

Nigol, Olaf; Houston, Herbert J.; and Gretzinger, Adolf, to Slater Steel Industries Limited. Negative corona shielding of line and station hardware. 4,291,194, Cl. 174-40.00R.

Nihon Tokushu Noyasu Seizo K.K.: *See*—
Kishino, Shigeo; Saito, Junichi; Kume, Toyohiko; and Isono, Kunihiro, 4,290,978, Cl. 260-973.000.

Nimmo, George R.: *See*—
King, Gordon A.; Nimmo, George R.; and Bial, Wolfgang, 4,291,302, Cl. 340-642.000.

Ninova, Maya H.: *See*—
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Ninova, Maya H.; and Parushev, Stoyan P., 4,290,862, Cl. 204-59.00R.

Nippon Aspherical Lens Co., Ltd.: *See*—
Tanaka, Mitsuaki; and Suzuki, Masaharu, 4,291,098, Cl. 428-412.000.

Nippon Fine Chemical Co., Ltd.: *See*—
Tanaka, Mitsuaki; and Suzuki, Masaharu, 4,291,098, Cl. 428-412.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ida, Masaru, 4,291,276, Cl. 330-85.000.
Kimura, Shigenobu, 4,291,414, Cl. 455-164.000.

Nippon Kogaku K.K.: *See*—
Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,291,224, Cl. 250-204.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Matsudo, Kazuo; Adaniya, Takeshi; Ohmura, Masaru; Shoji, Masahiro; and Watanabe, Tsutomu, 4,290,860, Cl. 204-27.000.

Nippon Oil and Fats Co., Ltd.: *See*—
Tanizaki, Yoshiharu; Minagawa, Kenichiro; Akimoto, Shinichi; and Horioka, Kuninori, 4,291,101, Cl. 428-514.000.

Nippon Sanso K. K.: *See*—
Suwa, Toshio; Konagaya, Yoshiaki; and Ishii, Hiroshi, 4,290,555, Cl. 239-8.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Ueda, Takeo; and Asano, Shuichi, 4,290,629, Cl. 280-806.000.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,290,301, Cl. 73-35.000.

Nippon Steel Corporation: *See*—
Koshiishi, Hiromichi; Mori, Kunio; Sato, Hiroshi; and Sakaida, Akira, 4,290,829, Cl. 148-130.000.

Nippon Tsusho Company Limited: *See*—
Suginaka, Mutsuo, 4,290,761, Cl. 474-190.000.

Nippondenso Co., Ltd.: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.
Iyoda, Michio; and Abe, Shigeya, 4,290,406, Cl. 123-645.000.
Kitano, Takio, 4,291,237, Cl. 307-10.0AT.

Nishida, Minoru: *See*—
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.

Nishihara, Motohisa: *See*—
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.

Nishimura, Sadanori, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for control of oil pressure operated type transmission for vehicle. 4,290,325, Cl. 74-869.000.

Nishimura, Sadanori; and Yamada, Yoji, to Honda Giken Kogyo Kabushiki Kaisha. Operation oil supply apparatus in oil pressure operated type transmission for vehicle. 4,290,513, Cl. 192-3.220.

Nishiyama, Hiroshi; Nakamura, Takeshi; Kato, Suehiro; and Ando, Kenji, to Murata Manufacturing Co., Ltd. Sputtering apparatus. 4,290,876, Cl. 204-298.000.

Nishizawa, Eiji: *See*—
Ijichi, Sadayoshi; and Nishizawa, Eiji, 4,291,290, Cl. 334-1.000.

Nissan Chemical Industries, Ltd.: *See*—
Akabayashi, Hiroshi; Ohyama, Eiji; Shoji, Susumu; Adachi, Masami; Uemura, Koretoshi; and Ogawa, Yoshihisa, 4,291,127, Cl. 560-76.000.

Nissan Motor Company, Limited: *See*—
Hata, Yoshitaka; and Okamura, Kenji, 4,290,404, Cl. 123-571.000.
Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takashi; Matsuoka, Hideoki; Nomura, Hiroyuki; and Mogi, Takaaki, 4,291,373, Cl. 364-443.000.
Okuyama, Hiroo, 4,290,628, Cl. 280-803.000.
Ookubo, Takashi; and Sasabe, Yukiyoshi, 4,290,318, Cl. 74-477.000.
Takahashi, Koichi; and Higuchi, Megumu, 4,290,452, Cl. 137-625.230.

Nissen, Peter: *See*—
Appel, Eggert; Nissen, Peter; Geisler, Gottfried; and Kiene, Wilfried, 4,290,313, Cl. 73-861.170.

Nisshin Steel Company, Ltd.: *See*—
Maruhashi, Shigeaki; Hasegawa, Morihiro; and Yamauchi, Takashi, 4,290,803, Cl. 75-52.000.

Nittetsu Bolten Kabushiki Kaisha: *See*—
Kuwata, Takeo; Shimada, Shoji; and Usa, Mikio, 4,290,337, Cl. 411-2.000.

Nixon, John M. Motor velocity control servo amplifier. 4,291,260, Cl. 318-331.000.

Noar, Raymond; Zedekar, Stanley L.; Albertson, Michael D.; Pointer, Carl W.; Gall, Chester E.; and Fuller, Alfred B., to Rockwell International Corporation. Free-rotor gas-bearing gyroscope having electromagnetic rotor restraint and acceleration output signal. 4,290,316, Cl. 74-5.460.

Noble, Henry J., III: *See*—
Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, 4,290,245, Cl. 52-157.000.

Noda, Nobutaka; Hamamura, Kazuo; and Morita, Yoichi, to Kabushiki-Kaisha K I P. Device for controlling potential of latent image for use in electrophotographic apparatus. 4,290,690, Cl. 355-3.00R.

Noguchi, Takanobu: *See*—
Yasui, Seimei; Sagou, Masakazu; Noguchi, Takanobu; Toyoshima, Yoshiki; and Saito, Junzo, 4,291,148, Cl. 528-142.000.

Nogueira, Eduardo D.; Infanzon, Luis Alonso S.; and Tezanos, Enrique H. Process for electrolysis of brine by mercury cathodes. 4,290,863, Cl. 204-99.000.

Nolken, Ernst, to Hoechst Aktiengesellschaft. Aqueous vinyl plastics dispersion containing water soluble salt of polybasic phosphonic acid derivative. 4,290,930, Cl. 260-29.6MP.

Nolken, Ernst; and Oesterlin, Hans G., to Hoechst Aktiengesellschaft. Aqueous plastics dispersion on the basis of vinyl ester polymers, process for the manufacture thereof, and coating material made therefrom. 4,290,931, Cl. 260-29.6RW.

Nomura, Hiroyuki: *See*—
Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takashi; Matsuoka, Hideoki; Nomura, Hiroyuki; and Mogi, Takaaki, 4,291,373, Cl. 364-443.000.

Noonan, John M.; and McConkey, Robert C., to Eastman Kodak Company. Water-dispersible polyester adhesives for photographic materials. 4,291,153, Cl. 528-290.000.

Nopper, Herbert; and Knoch, Wolfgang, to Casimir Kast GmbH & Co. KG. Method for the manufacture of cellulosic fibrous material which can be pressed into moulded parts. 4,290,988, Cl. 264-112.000.

Nordeen, Donald L.: *See*—
Cumming, Richard J.; DeBano, John; Mertz, Harold J., Jr.; Nordeen, Donald L.; Sajewski, Vincent F.; and Zens, John F., 4,290,627, Cl. 280-729.000.

North American Philips Controls Corp.: *See*—
Merchant, Donald K., 4,291,291, Cl. 335-191.000.

Northern Engineering Industries Ltd.: *See*—
Cromer, Charles F.; Yoon, Kue H.; Hess, Robert L.; Kelsey, Thomas; and Caithness, Michael G., 4,291,208, Cl. 200-148.00A.

Northern Instruments Corporation: *See*—
Boerwinkle, Fred P.; and Kubik, Donald A., 4,290,912, Cl. 252-389.00R.

Northern Telecom, Inc.: *See*—
Adams, William J.; Wernet, William F.; and Haskins, Steve W., 4,291,202, Cl. 179-103.000.

Northern Telecom Limited: *See*—
Hinz, Lorne C.; and Thomas, William P., 4,291,299, Cl. 340-347.0AD.
Trumble, William P., 4,291,094, Cl. 428-380.000.

Northrop Corporation: *See*—
Olez, Nejat A., 4,291,081, Cl. 428-119.000.

Northwestern University: *See*—
Goldberg, Erwin, 4,290,944, Cl. 260-112.50R.

Nossen, Edward J., to RCA Corporation. System and method for frequency discrimination. 4,291,269, Cl. 324-79.00D.

Nossen, Edward J., to RCA Corporation. Frequency demodulation system. 4,291,275, Cl. 329-112.000.

Nougaret, Jean-Pierre, to Sandoz Ltd. Enteric coated mixture of 4-(2-hydroxy-3-isopropylamino-propoxy) indole and sodium lauryl sulphate. 4,291,016, Cl. 424-35.000.

Novametrix Medical Systems, Inc.: *See*—
Herbert, Normand C.; Burwen, Richard S.; and Mentelos, Richard A., 4,290,431, Cl. 128-635.000.

Novgorodov, Alexandr S.: *See*—
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Novikov, Albert P.: *See*—
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Nowlin, Thomas E.; and Raschke, Curt R., to Union Carbide Corporation. Electrets. 4,291,245, Cl. 307-400.000.

Nyfeler, Robert: *See*—
Sturm, Elmar; and Nyfeler, Robert, 4,291,061, Cl. 424-331.000.

Oas, David C., to Beloit Corporation. Method of producing articles from thermoplastic parisons. 4,290,995, Cl. 264-532.000.

Obergfell, Walter: *See*—
Wolber, Robert; and Obergfell, Walter, 4,291,210, Cl. 200-252.000.

O'Brokta, Ronald D.: *See*—
Lessmann, Gerald G.; Simpson, Ronald P.; Reichenecker, William J.; and O'Brokta, Ronald D., 4,291,220, Cl. 219-137.00R.

Occhialini, Carlo, to Samputensili S.p.A. Tools for bevelling and deburring gears. 4,290,718, Cl. 409-8.000.

Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E., 4,290,649, Cl. 299-2.000.

O'Connor, Dermot. Talking mailbox structure and method. 4,291,342, Cl. 360-12.000.

Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, to Asahi Glass Company, Ltd. Process for preparing electrode. 4,290,859, Cl. 204-16.000.

Oeda, Ichiro; and Sano, Isao, to Kanebo Ltd. Lipstick of the core-sheath type. 4,291,018, Cl. 424-64.000.

Oesterlin, Hans G.: *See*—
Nolken, Ernst; and Oesterlin, Hans G., 4,290,931, Cl. 260-29.6RW.

O'Farrell, Patrick H., to University of California, The Regents of the. Method of isotope enrichment. 4,290,855, Cl. 204-1.500.

Ogasa, Takehiro: *See*—
Hirata, Tadashi; Ogasa, Takehiro; Saito, Hiromitsu; and Nakmizo, Nobuhiro, 4,291,164, Cl. 546-183.000.

Ogasawara, Akira: *See*—
Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,291,224, Cl. 250-204.000.

Ogasawara, Makoto: *See*—
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, 4,291,152, Cl. 528-289.000.

Ogawa, Kazuo; and Suzuki, Eiji, to Fujitsu Limited. System for monitoring bit errors. 4,291,408, Cl. 371-49.000.

Ogawa, Masahiko: *See*—
Sakane, Toshio; Taguchi, Tetsuya; Ogawa, Masahiko; Tamura, Shuichi; and Tsunekawa, Tokuichi, 4,291,223, Cl. 250-201.000.

Ogawa, Mutsuo; Murayama, Noboru; Konishi, Akira; and Takeuchi, Norisada, to Ricoh Company, Ltd. Facsimile transceiver. 4,291,339, Cl. 358-260.000.

Ogawa, Takuzo: *See*—
Mochizuki, Yasuhiro; Okano, Sadao; and Ogawa, Takuzo, 4,290,830, Cl. 148-187.000.

Ogawa, Yoshihisa: *See*—
Akabayashi, Hiroshi; Ohyama, Eiji; Shoji, Susumu; Adachi, Masami; Uemura, Koretoshi; and Ogawa, Yoshihisa, 4,291,127, Cl. 560-76.000.

Ogi, Keisuke: *See*—
Kato, Masaaki; and Ogi, Keisuke, 4,291,332, Cl. 358-19.000.

Ohdan, Kyoji: *See*—
Umemura, Sumio; Ohdan, Kyoji; Hidaka, Mikio; and Kurafuji, Toshio, 4,290,922, Cl. 252-456.000.

Ohira, Tsunehisa, to Victor Company of Japan, Ltd. Cassette type tape recorder. 4,291,345, Cl. 360-62.000.

Ohishi, Chikashi; and Hasegawa, Akira, to Fuji Photo Film Co., Ltd. Plate making process with novel use of surfactant. 4,291,117, Cl. 430-309.000.

Ohkoshi, Akio; Ishii, Eiji; Nakayama, Akira; Kato, Shoji; and Tanaka, Yoshiyuki, to Sony Corporation; and Sumitomo Metal Mining Co., Ltd. Grid structure for color picture tube. 4,291,253, Cl. 313-348.000.

Ohmae, Tsutomu: *See*—
Marumoto, Katsuji; and Ohmae, Tsutomu, 4,291,259, Cl. 318-139.000.
Ohmura, Masaru: *See*—
Matsudo, Kazuo; Adaniya, Takeshi; Ohmura, Masaru; Shoji, Masahiro; and Watanabe, Tsutomu, 4,290,860, Cl. 204-27.000.

Ohno, Akira: *See*—
Kawakubo, Mitsushige; Sakai, Yoshihiro; and Ohno, Akira, 4,290,288, Cl. 72-7.000.

Ohwada, Masataka: *See*—
Saito, Takashi; Ohwada, Masataka; and Saito, Shozo, 4,290,906, Cl. 252-301.10W.

Ohyama, Eiji: *See*—
Akabayashi, Hiroshi; Ohyama, Eiji; Shoji, Susumu; Adachi, Masami; Uemura, Koretoshi; and Ogawa, Yoshihisa, 4,291,127, Cl. 560-76.000.

Oishi, Kazuaki, to Hitachi, Ltd. Gas-insulated switchgear apparatus. 4,291,363, Cl. 361-333.000.

Oka, Takashi: *See*—
Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takashi; Matsuoka, Hideoki; Nomura, Hiroyuki; and Mogi, Takaaki, 4,291,373, Cl. 364-443.000.

Okada, Kunihiro: *See*—
Kodama, Kazuyuki; Okada, Kunihiro; Huno, Takakazu; Endo, Takeyuki; and Shibuya, Yasutaka, 4,291,306, Cl. 340-744.000.

Okamura, Kenji: *See*—
Hata, Yoshitaka; and Okamura, Kenji, 4,290,404, Cl. 123-571.000.

Okano, Sadao: *See*—
Mochizuki, Yasuhiro; Okano, Sadao; and Ogawa, Takuzo, 4,290,830, Cl. 148-187.000.

Okubo, Kunio, to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho. Filter apparatus and filter support frames. 4,290,790, Cl. 55-379.000.

Okuyama, Hideo, to Kanto Seiki Company, Limited. Apparatus for driving a deflecting coil type meter. 4,291,268, Cl. 324-76.00R.

Okuyama, Hiroo, to Nissan Motor Co., Ltd. Passive seat belt equipment. 4,290,628, Cl. 280-803.000.

Olez, Nejat A., to Northrop Corporation. Laced composite structure. 4,291,081, Cl. 428-119.000.

Olin Corporation: *See*—
Boudakian, Max M., 4,291,165, Cl. 546-345.000.
Kadija, Igor V.; and Woodard, Kenneth E., Jr., 4,290,833, Cl. 156-94.000.

Olivieri, Roberto: *See*—
Degen, Ludwig; Branduzzi, Paolo; Olivieri, Roberto; and Cimini, Nadia, 4,291,123, Cl. 435-94.000.

Olmstead, John A.: *See*—
Kessler, Sebastian W., Jr.; and Olmstead, John A., 4,291,324, Cl. 357-36.000.

Olofsson, Mats: *See*—
Buhler, Marcel; Olofsson, Mats; and Fosseux, Pierre-Yves, 4,291,067, Cl. 426-582.000.

Olson, Richard A., to Hydril Company. Blowout preventer ram lock. 4,290,577, Cl. 251-1.00A.

Olszok, Henry: *See*—
Brause, Joachim; Gerhard, Thomas; Keller, Manfred; and Olszok, Henry, 4,290,367, Cl. 104-105.007.

Olympia Werke AG: *See*—
Fischbeck, Karl-Heinz, 4,291,103, Cl. 428-589.000.
Loock, Ehrenfried, 4,290,812, Cl. 106-22.000.

Olympus Optical Company Limited: *See*—
Kimura, Kenji, 4,291,344, Cl. 360-36.000.
Maitani, Yoshihisa; and Tsunefuji, Katsuhiko, 4,290,681, Cl. 354-230.000.

Omori, Takashi; and Sato, Takao, to Hitachi, Ltd. Method and apparatus for controlling feedwater flow to steam generating device. 4,290,850, Cl. 176-20.00R.

Omura, Takayoshi: *See*—
Matsui, Kunio; Tsuchiya, Hiroaki; Suzuki, Ryushi; and Omura, Takayoshi, 4,290,791, Cl. 55-399.000.

One Design, Inc.: *See*—
Maloney, Timothy, 4,290,416, Cl. 126-430.000.

Onishi, Kenji: *See*—
Washio, Isomi; and Onishi, Kenji, 4,290,330, Cl. 83-820.000.

Ono, Masaru: *See*—
Otani, Masaru; Satoi, Shuzo; Muto, Naoki; Saito, Tetsu; Fujii, Tadashiro; Katsumata, Seiji; Hayashi, Mitsuo; and Ono, Masaru, 4,291,021, Cl. 424-121.000.

Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and by Miwa, Takayasu, heir, to Kowa Company Limited. Tetrahydroxanthone derivatives. 4,290,954, Cl. 260-335.000.

Ookubo, Takashi; and Sasabe, Yukiyoshi, to Nissan Motor Co., Ltd. Operating mechanism of a transfer unit. 4,290,318, Cl. 74-477.000.

Ootsuka, Yoshinori: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,290,301, Cl. 73-35.000.

Opitz, Rigobert; and Flach, Juergen, to Rheinmetall GmbH. Arrangement for removal of residues and sediments from the interior surfaces of barrels of weapons. 4,290,163, Cl. 15-104.090.

Optilon W. Erich Heilmann GmbH: *See*—
Wulz, Helmut, 4,290,176, Cl. 24-205.16R.

Orelski, Paula A., to American Sterilizer Company. Biological indicator for sterilization processes. 4,291,122, Cl. 435-31.000.

Osborne, Neal F.: *See*—
Brain, Edward G.; and Osborne, Neal F., 4,290,948, Cl. 260-245.20R.

Osborne, Thomas E.; and Stockwell, Richard K., to Hewlett-Packard Company. Calculator having merged key codes. 4,291,385, Cl. 364-709.000.

Oschwald, Max: *See*—
Boller, Hans; and Oschwald, Max, 4,290,219, Cl. 42-1.00R.

Ostenberg, John R.; and Ligas, Kenneth M., to Creative Anglers. Fisherman's leader/line dispenser and decoiler. 4,290,223, Cl. 43-54.50R.

Ota, Hiroshi: *See*—
Horigome, Eiji; Ota, Hiroshi; and Azegami, Hitoshi, 4,291,100, Cl. 428-424.200.

Otani, Masaru; Satoi, Shuzo; Muto, Naoki; Saito, Tetsu; Fujii, Tadashiro; Katsumata, Seiji; Hayashi, Mitsuo; and Ono, Masaru, to Toyo Jozo Company, Ltd. Novel macrolide antibiotics and preparation thereof. 4,291,021, Cl. 424-121.000.

Otouma, Hiroshi: *See*—
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,290,859, Cl. 204-16.000.

Otto, Jack C.: *See*—
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,290,865, Cl. 204-106.000.

Otto Kuhlmann GmbH & Co. KG: *See*—
Pfeiffer, Herbert, 4,290,471, Cl. 152-362.00R.

Overeem, Jan C.: *See*—
Bosone, Enrico; Camaggi, Giovanni; de Vries, Lambertus; Garavaglia, Carlo; Garlaschelli, Luigi; Gozzo, Franco; Overeem, Jan C.; and Lorusso, Simone, 4,291,049, Cl. 424-275.000.

Owen, Harry; and Barrow, Thomas, to Pilkington Brothers Limited. Photochromic boro-silicate glass. 4,290,813, Cl. 501-13.000.

Owens-Corning Fiberglass Corporation: *See*—
Chase, Kenneth P.; and McCoy, Dale E., 4,291,095, Cl. 428-391.000.

Owens-Illinois, Inc.: *See*—
Hafferkamp, Harry C., 4,290,517, Cl. 198-427.000.
Kontz, Robert F., 4,290,745, Cl. 425-541.000.
Koschmann, John E., 4,290,986, Cl. 264-40.300.
Rupp, Thomas F.; and Wells, Lowell J., 4,290,593, Cl. 215-1.00R.

Oy Partek AB: *See*—
Sutela, Leo; and Laitinen, Heikki, 4,290,726, Cl. 414-421.000.

P C U K Produits Chimiques Ugine Kuhlmann: *See*—
Rau, Manfred C., 4,290,770, Cl. 8-662.000.

P.I.V. Antrieb Werner Reimers Kommanditgesellschaft: *See*—
Abbott, Randle L., 4,290,320, Cl. 74-689.000.

Pabodie, Robert M., to Monarch Marking Systems, Inc. Label printing and applying apparatus. 4,290,839, Cl. 156-384.000.

Pabodie, Robert M.; and Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Label printing and applying apparatus. 4,290,840, Cl. 156-384.000.

Pagani, Giorgio; Lagana, Vincenzo; and Saviano, Francesco, to Snamprogetti S.p.A. Combined process for the production of urea and ammonia. 4,291,006, Cl. 423-359.000.

Paine, Ellis H.; and Anderson, Roger E., to Moldex, Inc. Key system for shaft and gear or the like. 4,290,711, Cl. 403-358.000.

Palchik, David, to Combustion Engineering, Inc. Once through sliding pressure steam generator. 4,290,389, Cl. 122-406.00S.

Palmer, John H.: *See*—
Gillings, Christopher; and Palmer, John H., 4,291,052, Cl. 424-282.000.

Pannier, Gerard: *See*—
Aubert, Paul; Quinton, Christian; and Pannier, Gerard, 4,290,324, Cl. 74-866.000.

Papez, Stanislav, to Volkswagenwerk Aktiengesellschaft. Device for the balancing of inertia forces of reciprocating piston-crankshaft engines. 4,290,319, Cl. 74-604.000.

Para, Adolph: *See*—
Halasa, Adel F.; Hall, James E.; and Para, Adolph, 4,291,139, Cl. 525-314.000.

Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, to Dixie Electrical Manufacturing Company. Earth anchor. 4,290,245, Cl. 52-157.000.

Park Mobile, Inc.: *See*—
Lichti, Robert D.; and Hock, Frederick D. (said Frederick D. Hock assors. to), 4,290,724, Cl. 414-251.000.

Parker, William J.: *See*—
Mann, Gamdur S.; Tendulkar, Dilip V.; and Parker, William J., 4,290,263, Cl. 60-311.000.

Parushev, Stoyan P.: *See*—
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Ninova, Maya H.; and Parushev, Stoyan P., 4,290,862, Cl. 204-59.00R.

Parvin, Charles V.; and Harris, James. Knife assembly for stripping auger drum of combine header. 4,290,259, Cl. 56-364.000.

Pascoe, William M., Sr.: *See*—
Burns, Alonzo M., Jr.; Silliman, Jeffrey E.; Gilbert, Woodrow P.; and Pascoe, William M., Sr., 4,290,766, Cl. 8-491.000.

Passavant-Werke: *See*—
von Hagel, Gunter; and Berlenbach, Norbert, 4,290,898, Cl. 210-738.000.

Pate, Harold T., to Indian Head Inc. Pipe clamp device. 4,290,572, Cl. 248-74.00B.

Patel, Chittaranjan P.: *See*—
Liao, John C.; Patel, Chittaranjan P.; and Ponzo, John L., 4,290,769, Cl. 8-602.000.

Patent-und-Gesellschaft fur elektrische Gluhlampen m.b.H.: *See*—
Arlt, Joachim; and Fromm, Dietrich, 4,291,254, Cl. 315-240.000.

Paton, Samuel J.: *See*—
Crum, Glen F.; and Paton, Samuel J., 4,291,183, Cl. 585-443.000.
Crum, Glen F.; and Paton, Samuel J., 4,291,184, Cl. 585-443.000.

Patt, Kenneth W. Support and restraining device for arthographic examination of the knees. 4,291,229, Cl. 250-451.000.

Patterson, Lewis W.: *See*—
Seabourn, Ed. O.; Patterson, Lewis W.; and Stiverson, Richard G., 4,290,759, Cl. 434-370.000.

Patton, Charles C., to Sangamo-Weston, Inc. Remote receiver for load and rate control in a power transmission system. 4,291,236, Cl. 307-40.000.

Pauliukonis, Richard. O-ring solenoid valves. 4,290,579, Cl. 251-139.000.

Pav, Josef; Kayser, Franz; and Kemna, Axel, to Kleinewefers GmbH. Method and apparatus for rapidly separating the rolls of a calender. 4,290,351, Cl. 100-47.000.

Pav, Josef; and Pav, Josef, to Kleinewefers GmbH. Roll for calenders or the like. 4,290,353, Cl. 100-162.00B.

Pav, Josef: *See*—
Pav, Josef; and Pav, Josef, 4,290,353, Cl. 100-162.00B.

Pavlica, Stanley R.; and McCreight, Donald O., to Dresser Industries, Inc. High alumina brick. 4,290,814, Cl. 501-107.000.

Pawlak, Raymond M.: *See*—
Corwin, William C.; and Pawlak, Raymond M., 4,291,317, Cl. 346-140.00R.

Peavey, Hartley D. Molded guitar structure and method of making same. 4,290,336, Cl. 84-291.000.

Pedersen, John R. C. Vaporization means for liquid fuel. 4,290,401, Cl. 123-524.000.

Peelle, Thomas B.; and Kolter, Roland K., to International Telephone and Telegraph Corp. Planar alphanumeric display. 4,291,307, Cl. 340-756.000.

Pel Limited: *See*—
Glickman, Michael; and Hollington, Geoffrey A., 4,290,645, Cl. 297-239.000.

Pellico, Michael A., to Laclede Professional Products, Inc. Agar gel topical dressing. 4,291,025, Cl. 424-180.000.

Pelsy, Gilles. Driving machine including speed synchronized earth working traction wheel. 4,290,488, Cl. 172-123.000.

Pelton, John F., to Union Carbide Corporation. Apparatus for refining molten aluminum. 4,290,588, Cl. 266-225.000.

Penman, Dexter D. Floating marina. 4,290,381, Cl. 114-263.000.

Pennell, George F.; Silkensen, Ralph D.; and Wallace, Joseph E., to International Business Machines Corporation. Flux extender or guide for magnetic read head having a magnetoresistive flux sensor. 4,291,351, Cl. 360-113.000.

Pennewiss, Horst; Benda, Rainer; Jost, Heinz; and Knoell, Helmuth, to Rohm GmbH. Lubricating oil additives. 4,290,925, Cl. 252-56.00S.

Pennwalt Corporation: *See*—
Sandler, Stanley R., 4,290,765, Cl. 8-115.600.

Peppard, James P., to Sargent & Greenleaf, Inc. Double changeable key lock for safe deposit boxes and the like. 4,290,287, Cl. 70-355.000.

Pera, Vittorio, to Autovox S.p.A. Actuating device for the advancement of the tape in a cassette-type tape recording/playback apparatus. 4,291,348, Cl. 360-96.400.

Percarpio, Edward P., to Becton, Dickinson and Company. Cannula pierceable self-sealing closure. 4,290,534, Cl. 215-247.000.

Peri-Werk Artur Schworer KG: *See*—
Schworer, Artur, 4,290,576, Cl. 249-20.000.

Perkin-Elmer Corporation, The: *See*—
Ausschnitt, Christopher P.; and Huchital, David A., 4,290,384, Cl. 118-722.000.

Perkin-Elmer Limited: *See*—
Mould, Henry M.; and Hirst, George E., 4,290,696, Cl. 356-300.000.

Perkowski, Ronald: *See*—
Arthurs, John W.; and Perkowski, Ronald, 4,291,214, Cl. 219-86.100.

Perlman, Marvin: *See*—
Spaniol, John W.; Bowerman, John J.; and Perlman, Marvin, 4,291,196, Cl. 178-3.000.

Permabond International Corp.: *See*—
McIntire, John M.; and Blair, Richard H., 4,291,131, Cl. 525-5.000.

Petaja, Gary M.: *See*—
Johnson, Walter R.; and Petaja, Gary M., 4,291,201, Cl. 179-90.00K.

Peters, Margot E.: *See*—
Peters, Melville F.; and Peters, Walter T., 4,290,417, Cl. 126-434.000.

Peters, Melville F.; and Peters, Walter T., to Peters, Walter Todd; Peters, Margot E.; and Kronman, Albert F. Solar heat system using gravitational circulation of heated transfer medium. 4,290,417, Cl. 126-434.000.

Peters, Walter T.: *See*—
Peters, Melville F.; and Peters, Walter T., 4,290,417, Cl. 126-434.000.

Peters, Walter Todd: *See*—
Peters, Melville F.; and Peters, Walter T., 4,290,417, Cl. 126-434.000.

Pfeifer, Friedrich; and Behnke, Wernfried, to Vacuumschmelze GmbH. Process for producing Ni-Fe magnetic tape cores. 4,290,827, Cl. 148-108.000.

Pfeiffer, Herbert, to Otto Kuhlmann GmbH & Co. KG. Built-up core for the bead of a pneumatic tire for wheel rims with inclined shoulders. 4,290,471, Cl. 152-362.00R.

Pfeiffer, Wolfgang: *See*—
Dettmann, Heinrich; and Pfeiffer, Wolfgang, 4,291,358, Cl. 361-154.000.

Pfeiler, Peter F.: *See*—
Browning, James S.; Pfeiler, Peter F.; and Lowery, Vernon, 4,290,207, Cl. 33-295.000.

Pfender, Thomas E., to Creative Craftsmen, Inc. Spraying arrangement. 4,290,383, Cl. 118-630.000.

Pfizer Inc.: *See*—
Kraska, Allen R., 4,291,060, Cl. 424-316.000.

Pfleiderer, Hans-Jorg; and Widmann, Dietrich, to Siemens Aktiengesellschaft. MIS-field effect transistor having a short channel length and method of making the same. 4,291,321, Cl. 357-23.000.

Phares Pharmaceutical Research N.V.: *See*—
Leigh, Steven; and Ayres, Peter J., 4,291,062, Cl. 424-322.000.

Phillips, Howard M.: *See*—
Free, Dustin L.; and Phillips, Howard M., 4,290,485, Cl. 166-281.000.

Phillips Petroleum Company: *See*—
Banasiak, Dennis S., 4,291,187, Cl. 585-644.000.
Czenkusch, Edward L., 4,290,777, Cl. 44-1.0SR.
Lauffer, Donald E., 4,291,271, Cl. 324-307.000.
McKay, Dwight L.; Bertus, Brent J.; and Mark, Harold W., 4,290,919, Cl. 252-437.000.
Wishman, Marvin; Taylor, Peter A.; and Leininger, James C., 4,291,093, Cl. 428-379.000.

Pierson, James G.; and Wilmshurst, David A., to Queen's University at Kingston. Apparatus for controlling light transmission through a window. 4,290,473, Cl. 160-120.000.

Pigeon, Raymond, to Rhone-Poulenc Industries. Photopolymerizable organopolysiloxane/silane compositions. 4,290,869, Cl. 204-159.130.

Pikon, Jerzy; and Hehlmann, Jan, to Politechnika Slaska im. Wincentego Pstrowdkiego. Mass exchanger with packaging. 4,290,980, Cl. 261-94.000.

Pilkington Brothers Limited: *See*—
Owen, Harry; and Barrow, Thomas, 4,290,813, Cl. 501-13.000.

Pilny, Richard J., to Dow Chemical Company, The. Rendering porous structures impermeable by treatment with gellable amine polymers. 4,291,069, Cl. 427-140.000.

Pinard, Michel; Aminoff, Carl; Trenec, Gerard; and Laloe, Franck, to Agence National de Valorization de la Recherche. Single mode double Michelson-type laser cavity resonator. 4,291,281, Cl. 331-94.50C.

Pitney Bowes Inc.: *See*—
Dlugos, Daniel F., 4,291,374, Cl. 364-466.000.
Irvine, Robert, 4,290,593, Cl. 271-42.000.

Pittman, Robert R.; Elbrader, Clifford B.; and Milum, Jimmy L., to Emerson Electric Co. Electrostatic air cleaner and mounting means therefor. 4,290,788, Cl. 55-138.000.

Pohl, Walter J., to General Electric Company. Electronic thermostatic control for a heat/cool room air conditioning system. 4,290,481, Cl. 165-26.000.

Pointer, Carl W.: *See*—
Noar, Raymond; Zedekar, Stanley L.; Albertson, Michael D.; Pointer, Carl W.; Gall, Chester E.; and Fuller, Alfred B., 4,290,316, Cl. 74-5.460.

Polaroid Corporation: *See*—
Bagdis, Judy, 4,290,683, Cl. 354-234.000.
Cincotta, Louis; and Foley, James W., 4,290,955, Cl. 260-336.000.
Cournoyer, Richard L.; and Foley, James W., 4,290,950, Cl. 260-326.12R.
Foley, James W.; Locatell, Louis, Jr.; and Zepp, Charles M., 4,290,951, Cl. 260-326.12R.
Svatek, Thomas A., 4,290,692, Cl. 355-69.000.

Politechnika Slaska im. Wincentego Pstrowdkiego: *See*—
Pikon, Jerzy; and Hehlmann, Jan, 4,290,980, Cl. 261-94.000.

Polozov, Boris V.: *See*—
Syrov, Anatoly A.; Ivanchev, Sergei S.; Primachenko, Oleg N.; Demidova, Valentina A.; Polozov, Boris V.; Fionov, Vladimir I.; and Barantsevich, Evgeny N., 4,290,945, Cl. 260-192.000.

Pomerantz, Allen J., to General Motors Corporation. Closed loop fuel control system for an internal combustion engine. 4,290,400, Cl. 123-440.000.

Ponzo, John L.: *See*—
Liao, John C.; Patel, Chittaranjan P.; and Ponzo, John L., 4,290,769, Cl. 8-602.000.

Poper, Maxwell H.; and Jungermann, Eric, to Neutrogena Corporation. Transparent soap. 4,290,904, Cl. 252-118.000.

Port-A-Lock Incorporated: *See*—
McKenzie, Kenneth B., 4,290,635, Cl. 292-290.000.

Porter, Kenneth, to Imperial Chemical Industries Limited. Machine for producing stitch bonded fabric. 4,290,278, Cl. 66-84.00A.

Portmann, Hubert, to Ebauches SA. Device for charging an accumulator from an electrical energy source more particularly for an electronic watch. 4,291,266, Cl. 320-2.000.

Ports, Kenneth A.; and Lucas, William G., to Harris Corporation. Method of fabricating surface contacts for buried layer into dielectric isolated islands. 4,290,831, Cl. 148-187.000.

Possati, Mario, to Finike Italiana Marposs, S.p.A. Plug gauge for checking internal geometric dimensions. 4,290,204, Cl. 33-178.00E.

Poulos, Andrew C.; and Thibodeau, Michael J., to American Cyanamid Company. Settling out suspended solids in phosphoric acid product solutions. 4,291,005, Cl. 423-321.00R.

Pourmand, Bahram: *See*—
Waddill, John W.; and Pourmand, Bahram, 4,291,403, Cl. 371-5.000.

Power, Joseph K.: *See*—
Hopkins, Harry C.; Goethert, Bernhard H.; and Power, Joseph K., 4,290,500, Cl. 180-117.000.

Powers, Robert W.: *See*—
DeCarlo, Vincent J.; Powers, Robert W.; and Mitoff, Stephan P., 4,291,108, Cl. 429-193.000.

Pozin, Mikhail A.; and Serkh, Mikhail B. Apparatus for continuous temperature measurement of the dew point of flue gases. 4,290,299, Cl. 73-17.00A.

PPG Industries Canada Ltd.: *See*—
Thompson, Robert E., 4,290,650, Cl. 299-4.000.

PPG Industries, Inc.: *See*—
Reese, Thomas J.; and Fisher, Joseph J., 4,290,796, Cl. 65-287.000.

Pratt, Allan F.: *See*—
Spiller, Basil H. R.; and Pratt, Allan F., 4,291,309, Cl. 343-7.500.

Preston, Edward G.: *See*—
Dyett, Derek H.; Hirsh, Ivan Y.; Preston, Edward G.; and Williams, Robert E., 4,290,518, Cl. 198-450.000.

Prezewowsky, Klaus: *See*—
Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Prezewowsky, Klaus; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,291,029, Cl. 424-238.000.

Price, Garey W. Static electricity grounding comb. 4,290,438, Cl. 132-11.00R.

Price, Larry V.: *See*—
Scott, Douglas R.; and Price, Larry V., 4,290,441, Cl. 137-84.000.

Price, Samuel T.; and Hoffsommer, Kay P., to Enterprise Machine and Development Corp. Air jet with a baffle including an arcuate yarn engaging surface. 4,290,177, Cl. 28-254.000.

Prikkel, John, III. Damper control mechanism. 4,290,552, Cl. 236-1.00G.

Primachenko, Oleg N.: *See*—
Syrov, Anatoly A.; Ivanchev, Sergei S.; Primachenko, Oleg N.; Demidova, Valentina A.; Polozov, Boris V.; Fionov, Vladimir I.; and Barantsevich, Evgeny N., 4,290,945, Cl. 260-192.000.

Procter & Gamble Company, The: *See*—
Harris, Richard G.; McRitchie, Allan C.; and Wilson, Alexander D., 4,291,071, Cl. 427-220.000.
Macgilp, Neil A.; and Mann, Duncan A., 4,290,903, Cl. 252-91.000.

Produits Chimiques Ugine Kuhlmann: *See*—
Strassel, Albert, 4,291,099, Cl. 428-421.000.

Proebsting, Robert J., to Mostek Corporation. Timing of active pullup for dynamic semiconductor memory. 4,291,392, Cl. 365-203.000.

Propst, Robert L.; and Raftery, William B., to Herman Miller, Inc. Stacking pallet. 4,290,369, Cl. 108-53.300.

Provine, Daniel J., to Westinghouse Electric Corp. Non-linear raster generator. 4,291,308, Cl. 343-5.0SC.

Puleo, Salvatore J. Bracket for artificial Christmas tree branches. 4,291,075, Cl. 428-8.000.

Pullman Incorporated: *See*—
Coccia, Larry A., 4,290,587, Cl. 266-191.000.

Purcell, Robert J.: *See*—
Brewer, Thomas D.; Purcell, Robert J.; and Sturges, James R., 4,290,236, Cl. 51-5.00A.

Purex Corporation: *See*—
Barrett, John H.; and Flynn, Brian P., 4,291,072, Cl. 427-243.000.

Purification Sciences, Inc.: *See*—
Lowther, Frank E., 4,290,268, Cl. 60-668.000.

Pyreflex Corporation: *See*—
Berg, Charles A., 4,290,475, Cl. 164-513.000.

Qader, Shaik A.: *See*—
Frosch, Robert A.; and Qader, Shaik A., 4,290,779, Cl. 48-89.000.

Quant, Tony, to Canadian General Electric Company Limited. Remote control wiring system. 4,291,360, Cl. 361-189.000.

Quargentan, Ernesto: *See*—
Disco, Paulus J.; Quargentan, Ernesto; and Santalucia, Pietro, 4,290,275, Cl. 62-238.600.

Queen's University at Kingston: *See*—
Pierson, James G.; and Wilmshurst, David A., 4,290,473, Cl. 160-120.000.

Quine, John P., to General Electric Company. Planar microwave integrated circuit power combiner. 4,291,278, Cl. 330-286.000.

Quinn, Thomas M.: *See*—
Densmore, Wayne; and Quinn, Thomas M., 4,291,199, Cl. 179-18.0AB.

Quinton, Christian: *See*—
Aubert, Paul; Quinton, Christian; and Pannier, Gerard, 4,290,324, Cl. 74-866.000.

R. F. B. Engineering Inc.: *See*—
Ferreira, Roberto J., 4,290,720, Cl. 409-233.000.

Rabedeaux, Richard W. Multi systems solar collector. 4,290,419, Cl. 126-450.000.

Rae, Andrew E. Combination lock. 4,290,286, Cl. 70-285.000.

Raftery, William B.: *See*—
Propst, Robert L.; and Raftery, William B., 4,290,369, Cl. 108-53.300.

Ragle, Herbert U.; and DeMoss, Dean, to Burroughs Corporation. Diverter means for flexible disk pack and associated method. 4,291,349, Cl. 360-98.000.

Rainbolt, Michael A., to Rainbolt Research, Inc. Electric motor. 4,291,248, Cl. 310-14.000.

Rainbolt Research, Inc.: *See*—
Rainbolt, Michael A., 4,291,248, Cl. 310-14.000.

Ralston, Richard W.: *See*—
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,291,390, Cl. 365-183.000.

Rao, Basrur R.; Ross, Gerald F.; and Cronson, Harry M., to Sperry Corporation. Shielded surface wave transmission line. 4,291,289, Cl. 333-240.000.

Rapstein, Kirby T.: *See*—
Repsher, Wendy J.; and Rapstein, Kirby T., 4,291,001, Cl. 423-179.500.

Raschke, Curt R.: *See*—
Nowlin, Thomas E.; and Raschke, Curt R., 4,291,245, Cl. 307-400.000.

Ratcliffe, Ronald W.: *See*—
Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzman, Thomas N., 4,290,947, Cl. 260-239.00A.

Rau, Manfred C., to P C U K Produits Chimiques Ugine Kuhlmann. Process for the coloration of hydrophobic fibers. 4,290,770, Cl. 8-662.000.

Rawicki, Bogdan J. Apparatus and method for extracting dust from air. 4,290,784, Cl. 55-95.000.

Rawson, Darwin B. Oar lock seat. 4,290,156, Cl. 9-1.100.

Ray, Ranjan, to Allied Chemical Corporation. Metallic glass powders from glassy alloys. 4,290,808, Cl. 75-251.000.

Raychem Corporation: *See*—
Ellis, Roger H.; and Clarke, Raymond, 4,290,668, Cl. 350-96.200.

RCA Corporation: *See*—
Binge, Derek S., 4,290,168, Cl. 16-175.000.
Bohringer, Walter, 4,291,257, Cl. 315-408.000.
Henderson, John G. N.; and Maturo, Robert J., 4,291,413, Cl. 455-164.000.
Kessler, Sebastian W., Jr.; and Olmstead, John A., 4,291,324, Cl. 357-36.000.
Nossen, Edward J., 4,291,269, Cl. 324-79.00D.
Nossen, Edward J., 4,291,275, Cl. 329-112.000.
Rhodes, Roland N.; Schroeder, Alfred C.; and Moles, Warren H., 4,290,671, Cl. 350-317.000.
Shanley, Robert L., II, 4,291,336, Cl. 358-160.000.
Weimer, Paul K., 4,291,239, Cl. 307-221.00D.

Reavill, Joseph A.; and Arachi, John M., to General Dynamics, Pomona Division. Method for vacuum lamination of flex circuits. 4,290,838, Cl. 156-286.000.

Rebman, Jack, to Lord Corporation. Insertion compliance device. 4,290,203, Cl. 33-169.00C.

Reed, David E.: *See*—
Lupton, Harold W.; and Reed, David E., 4,291,019, Cl. 424-89.000.

Reel-O-Matic Systems, Incorporated: *See*—
Brooks, Dannie L.; and Fields, Ronald S., 4,290,563, Cl. 242-78.600.

Reese, Thomas J.; and Fisher, Joseph J., to PPG Industries, Inc. Mold alignment means for glass sheet shaping apparatus. 4,290,796, Cl. 65-287.000.

Regalbuto, John A., to Jet Research Center, Inc. Methods and apparatus for severing conduits. 4,290,486, Cl. 166-297.000.

Regel, Walter: *See*—
Hambrecht, Jurgen; Lindenschmidt, Gerhard; and Regel, Walter, 4,291,134, Cl. 525-92.000.

Regie Nationale des Usines Renault: *See*—
Aubert, Paul; Quinton, Christian; and Pannier, Gerard, 4,290,324, Cl. 74-866.000.

Reichenecker, William J.: *See*—
Lessmann, Gerald G.; Simpson, Ronald P.; Reichenecker, William J.; and O'Brokta, Ronald D., 4,291,220, Cl. 219-137.00R.

Reidies, Arno H.: *See*—
Mein, Peter G.; and Reidies, Arno H., 4,290,923, Cl. 252-462.000.

Reilly, Thomas: *See*—
Goldfarb, Samuel; and Reilly, Thomas, 4,290,705, Cl. 400-618.000.

Reina, Erminia, to Alucaps Italiana S.p.A. Sealing bung for bottle closures. 4,290,535, Cl. 215-270.000.

Reinehr, Dieter; and Lienhard, Paul, to Ciba-Geigy Corporation. Undecanoic acids and esters thereof. 4,290,964, Cl. 260-404.000.

Reinhold, Detlef: *See*—
Eckstein, Wolfgang; Schirk, Karl-Heinz; and Reinhold, Detlef, 4,290,792, Cl. 55-480.000.

Reinke, William L.; and Stearley, John W., to Eaton Corporation. Removable push-to-unlock actuator for locking pivoted-subactuator self-enclosed electric switch. 4,291,207, Cl. 200-42.00R.

Rekers, John W.: *See*—
Wilson, R. Marshall; and Rekers, John W., 4,291,051, Cl. 424-278.000.

Rekers, Louis J.: *See*—
Katzen, Stanley J.; and Rekers, Louis J., 4,290,914, Cl. 252-428.000.

Reneau, Bobby J.: *See*—
Manchester, Luther L., Jr.; and Reneau, Bobby J., 4,290,632, Cl. 285-323.000.

Renholmens Mekaniska Verkstad AB: *See*—
Johansson, Jan, 4,290,723, Cl. 414-83.000.

Repsher, Wendy J.; and Rapstein, Kirby T., to Dow Chemical Company, The. Recovery of lithium from brine. 4,291,001, Cl. 423-179.500.

Republic Steel Corporation: *See*—
Malone, William H.; Fischley, John; Anderson, Harry L.; and Spirko, Edward J., 4,290,751, Cl. 432-214.000.

Research Corporation: *See*—
Nicolaou, Kyriacos C.; Barnette, William E.; and Magolda, Ronald L., 4,291,166, Cl. 549-51.000.
Wilson, R. Marshall; and Rekers, John W., 4,291,051, Cl. 424-278.000.

Research Foundation of the City University of New York, The: *See*—
Alfano, Robert R.; and Green, Bruce H., 4,291,282, Cl. 331-94.50S.

Retzlaff, Wilfred F., to L. D. Schreiber Cheese Co., Inc. Method for making large sized blocks of cheese. 4,291,064, Cl. 426-397.000.

Reuland, Joachim, to Hauni-Werke Korber & Co. KG. Method and apparatus for producing an elongated filler from fibers, especially tobacco fibers. 4,290,436, Cl. 131-108.000.

Reynolds, Derek P., to Glaxo Group Limited. Cycloaliphatic compounds, analgesic compositions thereof and method of use thereof as analgesics. 4,291,059, Cl. 424-311.000.

Reynolds, Lawrence E. Support assembly. 4,290,532, Cl. 211-200.000.

Reynolds, Robert L.: *See*—
Hozman, Nelson D.; Reynolds, Robert L.; and Kirn, Thomas G., 4,290,676, Cl. 354-121.000.

Rez, Betty: *See*—
Juett, George C.; and Rez, Donald H., 4,290,408, Cl. 126-25.00R.

Rez, Donald H.: *See*—
Juett, George C.; and Rez, Donald H., 4,290,408, Cl. 126-25.00R.

Rheinmetall GmbH: *See*—
Opitz, Rigobert; and Flach, Juergen, 4,290,163, Cl. 15-104.090.

Rhodes, Roland N.; Schroeder, Alfred C.; and Moles, Warren H., to RCA Corporation. Color encoding filter. 4,290,671, Cl. 350-317.000.

Rhodes, Ronald B., to Salgar Supplies Ltd. Conveyor belt cleaning device. 4,290,520, Cl. 198-499.000.

Rhone Poulenc Industries: *See*—
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, 4,291,032, Cl. 424-248.510.
Ludec, Joel L., 4,291,178, Cl. 568-764.000.
Pigeon, Raymond, 4,290,869, Cl. 204-159.130.

Richards, Elmer A.: *See*—
Bogema, Edward J.; and Richards, Elmer A., 4,290,515, Cl. 192-53.00C.

Richards, Francis D.: *See*—
Chulay, Steven J.; and Richards, Francis D., 4,290,550, Cl. 233-26.000.

Richards, Janice M. B.: *See*—
Richards, Robert A., 4,290,198, Cl. 30-164.500.

Richards, Robert A., to Richards, Janice M. B., a part interest. Ice breaker. 4,290,198, Cl. 30-164.500.

Richardson-Merrell Inc.: *See*—
Harrison, Boyd L.; and Dolfini, Joseph E., 4,291,160, Cl. 544-17.000.

Ricketts, Thomas E., to Occidental Oil Shale, Inc. Method for explosively expanding a pillar for forming an in situ oil shale retort. 4,290,649, Cl. 299-2.000.

Ricoh Co., Ltd.: *See*—
Ikeda, Kunio; and Haga, Hirosi, 4,290,857, Cl. 204-9.000.
Kakeno, Sadao; Hayashi, Taisen; Komai, Hiromichi; and Yamazaki, Hiroshi, 4,291,316, Cl. 346-140.00R.
Nakajima, Yoshinori, 4,291,262, Cl. 318-603.000.
Ogawa, Mutsuo; Murayama, Noboru; Konishi, Akira; and Takeuchi, Norisada, 4,291,339, Cl. 358-260.000.

Riddle, Herbert S., Jr. Frequency-ratio apparatus. 4,291,343, Cl. 360-30.000.

Ridgway, John A., to Standard Oil Company (Indiana). Treatment of proteinaceous materials with anhydrous ammonia gas. 4,291,063, Cl. 426-319.000.

Rieger, Wolfhart: *See*—
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,290,477, Cl. 164-430.000.

Riew, Changkiu K.: *See*—
Bertsch, Robert J.; and Riew, Changkiu K., 4,290,939, Cl. 260-40.00R.

Riker, Alton L. Hand tool. 4,290,327, Cl. 81-3.00R.

Rippere, Ralph E. Methods and articles for making electrical circuit connections employing composition material. 4,290,195, Cl. 29-837.000.

Rittman, Alan H.: *See*—
Fletcher, Robert L.; VanLandingham, Richard D.; Brown, Sheldon H.; and Rittman, Alan H., 4,291,353, Cl. 360-128.000.

Rizza, Michael C.: *See*—
Brown, Delmont D.; and Rizza, Michael C., 4,290,713, Cl. 404-69.000.

Robert Bosch GmbH: *See*—
Domke, Klaus; and Saur, Walter, 4,290,253, Cl. 53-410.000.
Muller, Horst; and Vorwerk, Helmut, 4,291,411, Cl. 455-88.000.

Roberts, Fred A. Surgical gown. 4,290,148, Cl. 2-51.000.

Roberts, Robert C.: *See*—
Ball, Russell M.; and Roberts, Robert C., 4,290,851, Cl. 176-24.000.

Roberts, Timothy P.: *See*—
Wehrli, Hans J.; and Roberts, Timothy P., 4,290,694, Cl. 356-2.000.

Robertshaw Controls Company: *See*—
Bauer, Werner R., 4,290,453, Cl. 137-625.430.
Scott, Douglas R.; and Price, Larry V., 4,290,441, Cl. 137-84.000.

Robinson, Charles E. Automatic equalizer for abrasive belt. 4,290,240, Cl. 51-135.0BT.

Rockwell International Corporation: *See*—
Caples, Edgar L.; Marston, Robert K.; and Massad, Khalil E., 4,291,410, Cl. 375-1.000.
Noar, Raymond; Zedekar, Stanley L.; Albertson, Michael D.; Pointer, Carl W.; Gall, Chester E.; and Fuller, Alfred B., 4,290,316, Cl. 74-5.460.
Waddill, John W.; and Pourmand, Bahram, 4,291,403, Cl. 371-5.000.
Wen, Cheng P.; Kuvas, Reidar L.; and Immorlica, Anthony A., Jr., 4,291,320, Cl. 357-13.000.

Rockwell-Rimoldi, S.p.A.: *See*—
Brusasca, Gianfranco; and Garzulano, Gianfranco, 4,290,376, Cl. 112-121.260.

Roessler, Helmut: *See*—
Muehlbauer, Otto; Bigall, Klaus D.; and Roessler, Helmut, 4,291,221, Cl. 235-92.0CC.

Rogers, Edward F.: *See*—
Brown, Jeannette E.; Rogers, Edward F.; and Graham, Donald W., 4,290,966, Cl. 260-413.000.

Rohm GmbH: *See*—
Pennewiss, Horst; Benda, Rainer; Jost, Heinz; and Knoell, Helmuth, 4,290,925, Cl. 252-56.00S.

Rohm and Haas Company: *See*—
Warburton, Charles E., Jr., 4,291,087, Cl. 428-288.000.

Rohner, Michel, to Singer Company, The. Resolvability test and projection size clipping for polygon face display. 4,291,380, Cl. 364-522.000.

Rohr Industries, Inc.: *See*—
Hom, Felix, 4,291,079, Cl. 428-116.000.

Rohte, Oskar: *See*—
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,291,037, Cl. 424-253.000.

Roman, Walter C., to Ultimate Resources, Inc. Windrowing type composting apparatus. 4,290,703, Cl. 366-345.000.

Rosemount Inc.: *See*—
Geronime, Robert L., 4,290,314, Cl. 73-861.520.

Rosenberg, Avner. Sprinklers. 4,290,557, Cl. 239-222.210.

Rosenbloom, Percy, Jr.; and Rosenbloom, Percy, III, to Technical Materials, Inc. Portable collapsible container. 4,290,468, Cl. 150-49.000.

Rosenbloom, Percy, III: *See*—
Rosenbloom, Percy, Jr.; and Rosenbloom, Percy, III, 4,290,468, Cl. 150-49.000.

Rosler, Helmut, to Siemens Aktiengesellschaft. Two output clock for integrated semiconductor digital circuits. 4,291,240, Cl. 307-262.000.

Ross, Gerald F.: *See*—
Rao, Basrur R.; Ross, Gerald F.; and Cronson, Harry M., 4,291,289, Cl. 333-240.000.

Ross, Karl-Heinz; Dudeck, Christian; Himmele, Walter; Lebkuecher, Rolf; and Sauer, Wolfgang, to BASF Aktiengesellschaft. Preparation of 2,5-dimethyl-4-hydroxy-2,3-dihydrofuran-3-one. 4,290,960, Cl. 260-348.570.

Rossi, Anthony T., to Tropicana Products, Inc. Apparatus for dispensing and submersing batch materials in a molten glass furnace. 4,290,797, Cl. 65-335.000.

Rossmann, Axel: *See*—
Betz, Wolfgang; and Rossmann, Axel, 4,290,845, Cl. 156-644.000.

Roswog, Edward J.: *See*—
Charlebois, Thomas F.; and Roswog, Edward J., 4,290,309, Cl. 73-621.000.

Rotolante, Ralph A.; and Koehler, Toivo, to Carson Alexiou Corporation. Focal plane photo-detector mosaic array fabrication. 4,290,844, Cl. 156-630.000.

Rousemount Inc.: *See*—
Anderson, Loren A., 4,290,297, Cl. 73-1.00R.

Roussel Uclaf: *See*—
Barnes, Alan C.; and Kay, David P., 4,291,033, Cl. 424-250.000.
Farcilli, Andre; Medici, Italo; Fournex, Robert; and Barzaghi, Fernando, 4,291,038, Cl. 424-256.000.

Royle, Rae A., to Texaco Inc. Demulsifier for inclusion in injected acidization systems for petroleum formation stimulation. 4,290,901, Cl. 252-8.55C.

Rubin, Charles P.: *See*—
Smolik, John V.; Swanson, Ronald V.; Rubin, Charles P.; Blaschke, James C.; and Wagner, Roger J., 4,290,570, Cl. 244-158.00R.

Rudel, Reinhard. Joint for an observation device. 4,290,666, Cl. 350-85.000.

Rudnitsky, Valery A.: *See*—
Lukhvich, Alexandr A.; Rudnitsky, Valery A.; Linnik, Ivan I.; and Gavris, Genrikh B., 4,291,270, Cl. 324-230.000.

Rueggeberg, Werner, to Armstrong Cork Company. Corona discharge electrode system. 4,291,226, Cl. 250-324.000.

Ruger, William B., to Sturm, Ruger & Co., Inc. Lightweight stock and frame construction for a firearm. 4,290,220, Cl. 42-75.00D.

Ruhe, Anthony; and Adams, Peter J., to Foster Wheeler Limited. Vapor generator. 4,290,388, Cl. 122-235.00A.

Rupp, Thomas F.; and Wells, Lowell J., to Owens-Illinois, Inc. Ceramic decorated glassware. 4,290,533, Cl. 215-1.00R.

Russell, George F. Solar energy collector sun-tracking apparatus and method. 4,290,411, Cl. 126-425.000.

Rust-Oleum Corporation: *See*—
Brown, Kenneth H.; and Wolma, Kenneth M., 4,290,811, Cl. 106-1.170.

Ruti Machinery Works Ltd.: *See*—
Steiner, Alois, 4,290,458, Cl. 139-28.000.

Rüti-Te Strake B.V.: *See*—
Manders, Petrus G. J., 4,290,459, Cl. 139-435.000.

Rysti, Alpo; Anttila, Seppo; and Maki-Hoimela, Veijo, to Rysti, Alpo. Method for using timber sorting compartments and a sorting compartment for said method. 4,290,722, Cl. 414-48.000.

S. J. Electro Systems, Inc.: *See*—
Johnston, Stephen P., 4,291,261, Cl. 318-482.000.

S/V Tool Company, Inc.: *See*—
Fee, Robert W.; TenEyck, Richard E.; and Smith, Lloyd T., 4,290,465, Cl. 145-61.00R.

Saga Petroleum A.S. & Co.: *See*—
Seabourn, Ed. O.; Patterson, Lewis W.; and Stiverson, Richard G., 4,290,759, Cl. 434-370.000.

Sagane, Yasuo: *See*—
Miyauchi, Seiroku; Sagane, Yasuo; and Irie, Kazuo, 4,290,641, Cl. 296-146.000.

Sagemuller, Albert: *See*—
Kockerols, Erhard; and Sagemuller, Albert, 4,290,153, Cl. 4-491.000.

Sagou, Masakazu: *See*—
Yasui, Seimei; Sagou, Masakazu; Noguchi, Takanobu; Toyoshima, Yoshiki; and Saito, Junzo, 4,291,148, Cl. 528-142.000.

Sahara, Masayoshi: *See*—
Kobori, Toshio; and Sahara, Masayoshi, 4,290,674, Cl. 354-38.000.

Saint Gobain Industries: *See*—
Grassin, Jerome; Thouvenin, Maurice; and Epie, Jean-Claude, 4,290,544, Cl. 228-7.000.

Saito, Hiromitsu: *See*—
Hirata, Tadashi; Ogasa, Takehiro; Saito, Hiromitsu; and Nakmizo, Nobuhiro, 4,291,164, Cl. 546-183.000.

Saito, Junichi: *See*—
Kishino, Shigeo; Saito, Junichi; Kume, Toyohiko; and Isono, Kunihiro, 4,290,978, Cl. 260-973.000.

Saito, Junzo: *See*—
Yasui, Seimei; Sagou, Masakazu; Noguchi, Takanobu; Toyoshima, Yoshiki; and Saito, Junzo, 4,291,148, Cl. 528-142.000.

Saito, Kenzo, to Sony Corporation. Tape cassette brake assembly. 4,290,567, Cl. 242-198.000.

Saito, Shozo: *See*—
Saito, Takashi; Ohwada, Masataka; and Saito, Shozo, 4,290,906, Cl. 252-301.10W.

Saito, Syuichiro; Uchiyama, Takashi; and Yoshida, Syozo, to Canon Kabushiki Kaisha. Electromagnetically operated shutter. 4,290,682, Cl. 354-234.000.

Saito, Takashi; Ohwada, Masataka; and Saito, Shozo, to Hitachi, Ltd. Apparatus for cutting channel box for fuel assembly and method therefor. 4,290,906, Cl. 252-301.10W.

Saito, Tetsu: *See*—
Otani, Masaru; Satoi, Shuzo; Muto, Naoki; Saito, Tetsu; Fujii, Tadashiro; Katsumata, Seiji; Hayashi, Mitsuo; and Ono, Masaru, 4,291,021, Cl. 424-121.000.

Sajewski, Vincent F.: *See*—
Cumming, Richard J.; DeBano, John; Mertz, Harold J., Jr.; Nordeen, Donald L.; Sajewski, Vincent F.; and Zens, John F., 4,290,627, Cl. 280-729.000.

Sakai, Shinji: *See*—
Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; Sakai, Shinji; Uchiyama, Takashi; and Momiyama, Kikuo, 4,290,686, Cl. 354-289.000.

Sakai, Yoshihiro: *See*—
Kawakubo, Mitsushige; Sakai, Yoshihiro; and Ohno, Akira, 4,290,288, Cl. 72-7.000.

Sakaida, Akira: *See*—
Koshiishi, Hiromichi; Mori, Kunio; Sato, Hiroshi; and Sakaida, Akira, 4,290,829, Cl. 148-130.000.

Sakamoto, Junichi: *See*—
Miyake, Hideo; Sakamoto, Junichi; Sawaki, Masakazu; and Hara, Mamoru, 4,290,938, Cl. 260-40.00R.

Sakamoto, Keiji: *See*—
Kawada, Shigeki; Ishida, Hiroshi; and Sakamoto, Keiji, 4,291,265, Cl. 318-782.000.

Sakane, Toshio; Taguchi, Tetsuya; Ogawa, Masahiko; Tamura, Shuichi; and Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Distance detecting device. 4,291,223, Cl. 250-201.000.

Sakano, Kenji; Yamashita, Masahiro; Yamashita, Kenji; and Aketa, Masahiro, to Kubota Ltd. Balancing device for an engine. 4,290,395, Cl. 123-192.00B.

Sakashita, Masao, to Kabushiki Kaisha Kawai Gakki Seisakusho. Expression means of electronic musical instrument. 4,290,333, Cl. 84-1.240.

Salemi, Nicholas A.: *See*—
Seidling, Eugene H.; and Salemi, Nicholas A., 4,291,209, Cl. 200-153.00G.

Salgar Supplies Ltd.: *See*—
Rhodes, Ronald B., 4,290,520, Cl. 198-499.000.

Salomon, Georges P. J., to Etablissements Francois Salomon et Fils. Ski-boot enabling its deliberate release from the ski by means of the ski-stick. 4,290,213, Cl. 36-117.000.

Salzman, Thomas N.: *See*—
Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzman, Thomas N., 4,290,947, Cl. 260-239.00A.

Sama, Nicholas. Classifying device for aggregates immersed in a fluid. 4,290,883, Cl. 210-169.000.

Samputensili S.p.A.: *See*—
Occhialini, Carlo, 4,290,718, Cl. 409-8.000.

Sandler, Stanley R., to Pennwalt Corporation. Polyoxyalkylene polycarboxylate esters and a method of treating polyester fabric. 4,290,765, Cl. 8-115.600.

Sandoz Ltd.: *See*—
Nougaret, Jean-Pierre, 4,291,016, Cl. 424-35.000.
Sandrin, Edmond; and Bauer, Wilfried, 4,291,022, Cl. 424-177.000.

Sandrin, Edmond; and Bauer, Wilfried, to Sandoz Ltd. Organic compounds. 4,291,022, Cl. 424-177.000.

Sangamo-Weston, Inc.: *See*—
Patton, Charles C., 4,291,236, Cl. 307-40.000.

Sankyo Electric Company Limited: *See—*
Hiraga, Masaharu; and Kimura, Seishi, 4,290,345, Cl. 92-79.000.
Sano, Isao: *See—*
Oeda, Ichiro; and Sano, Isao, 4,291,018, Cl. 424-64.000.
Sansregret, Joseph L., to Exxon Research & Engineering Co. Amorphous silicon MIS device. 4,291,318, Cl. 357-2.000.
Santalucia, Pietro: *See—*
Disco, Paulus J.; Quargentan, Ernesto; and Santalucia, Pietro, 4,290,275, Cl. 62-238.600.
Sargent & Greenleaf, Inc.: *See—*
Peppard, James P., 4,290,287, Cl. 70-355.000.
Sarosi, Lajos: *See—*
Torok, Gabor; Sarosi, Lajos; Grof, Ferenc; Becsei, Tamas; and Barta, Peter, 4,290,894, Cl. 210-661.000.
Sasabe, Yukiyoshi: *See—*
Ookubo, Takashi; and Sasabe, Yukiyoshi, 4,290,318, Cl. 74-477.000.
Sasahara, Kazuo: *See—*
Koizumi, Masuo; Sasahara, Kazuo; Murakami, Yasushi; Wada, Sakae; Nakakimura, Hiroshi; Kubodera, Noboru; and Hata, Shun-Ichi, 4,290,953, Cl. 260-333.000.
Sasaki, Ichiro: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Sasaki, Ichiro; Itatani, Hiroshi; and Kashima, Mikito, 4,290,936, Cl. 260-33.40P.
Sasaki, Isao: *See—*
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,291,097, Cl. 428-412.000.
Sasaki, Jun: *See—*
Minamizono, Junji; Yoneyama, Masakazu; and Sasaki, Jun, 4,291,113, Cl. 430-202.000.
Sasaki, Keiichi: *See—*
Uesugi, Nobuo; Miyazawa, Tatsuo; Furudate, Mituaki; Sasaki, Keiichi; and Mizuguchi, Hiroji, 4,290,849, Cl. 176-19.00R.
Sasaki, Shigeo; and Yamamoto, Osamu, to Hitachi Maxell, Ltd. Hub for use in a magnetic recording tape cassette. 4,290,562, Cl. 242-74.000.
Sasaki, Tohru; Terasaki, Syuuzi; and Susa, Tomoo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Piezoelectric and pyroelectric film and method for preparing the film. 4,290,983, Cl. 264-22.000.
Sasaki, Yoshikazu; Inoue, Hiroshi; Sasaki, Ichiro; Itatani, Hiroshi; and Kashima, Mikito, to UBE Industries, Ltd. Process for preparing polyimide solution. 4,290,936, Cl. 260-33.40P.
Sato, Hideo; and Yagi, Toshio, to Mitsubishi Petrochemical Co., Ltd. Production of modified polypropylenes. 4,291,138, Cl. 525-247.000.
Sato, Hideo: *See—*
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.
Sato, Hiroshi: *See—*
Koshiishi, Hiromichi; Mori, Kunio; Sato, Hiroshi; and Sakaida, Akira, 4,290,829, Cl. 148-130.000.
Sato, Shimio: *See—*
Morita, Minoru; Sato, Shimio; Hashimoto, Takao; and Kitaoka, Yoji, 4,290,999, Cl. 422-194.000.
Sato, Shitomi, to Kubota, Ltd. Furnace door having sealing structure for sealing between furnace door and furnace frame. 4,290,372, Cl. 110-173.00R.
Sato, Takao: *See—*
Omori, Takashi; and Sato, Takao, 4,290,850, Cl. 176-20.00R.
Satoi, Shuzo: *See—*
Otani, Masaru; Satoi, Shuzo; Muto, Naoki; Saito, Tetsu; Fujii, Tadashiro; Katsumata, Seiji; Hayashi, Mitsuo; and Ono, Masaru, 4,291,021, Cl. 424-121.000.
Satzinger, Roland, to Gebhardt Satzinger Metallwarenfabrik. Reel for the unreeling of tapes or the like. 4,290,561, Cl. 242-55.000.
Sauer, Wolfgang: *See—*
Ross, Karl-Heinz; Dudeck, Christian; Himmele, Walter; Lebkuecher, Rolf; and Sauer, Wolfgang, 4,290,950, Cl. 260-348.570.
Saunders, Frank L., to Dow Chemical Company, The. Process of making thermoset foams of acrylic polymers. 4,291,130, Cl. 521-136.000.
Saunders, Ian J.: *See—*
Dearnaley, Geoffrey; Steeples, Kenneth; and Saunders, Ian J., 4,290,825, Cl. 148-33.400.
Saur, Walter: *See—*
Domke, Klaus; and Saur, Walter, 4,290,253, Cl. 53-410.000.
Saurer-Diederichs: *See—*
Deborde, Albert H., 4,290,460, Cl. 139-435.000.
Saviano, Francesco: *See—*
Pagani, Giorgio; Lagana, Vincenzo; and Saviano, Francesco, 4,291,006, Cl. 423-359.000.
Sawada, Daisaku: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.
Sawada, Jiro: *See—*
Tachi, Yasuhide; Michishita, Kazuhiko; Nakagami, Jozi; Sawada, Jiro; Washitake, Mitsunori; and Kamano, Yoshiaki, 4,290,962, Cl. 260-397.450.
Sawaki, Masakazu: *See—*
Miyake, Hideo; Sakamoto, Junichi; Sawaki, Masakazu; and Hara, Mamoru, 4,290,938, Cl. 260-40.00R.
Sayo, Kosaku: *See—*
Kanamaru, Hisanobu; Tatsumi, Hideo; Tohkairin, Akira; and Sayo, Kosaku, 4,290,295, Cl. 72-356.000.
Scales, Walter C.: *See—*
Weinberg, Aaron; Ebert, Paul M.; Fee, Joseph J.; Kaminsky, Yaroslav; Keblawi, Feisal S.; and Scales, Walter C., 4,291,409, Cl. 375-1.000.
Scandinavian Ski Shop Limited: *See—*
Luomaranta, Mauri, 4,290,499, Cl. 177-48.000.
Schaafsma, Sijbrandus E.; Hofman, Johannes H. A.; and Claassens, Johannes E. L., to Stamicarbon, B.V. Preparation of delta-keto-esters. 4,291,170, Cl. 560-126.000.
Schad, Robert D., to Husky Injection Molding Systems Inc. Injection-molding machine with reciprocating plasticizing screw. 4,290,701, Cl. 366-77.000.
Schajer, Gary S.: *See—*
Barry, Thomas I.; Schajer, Gary S.; and Stackpool, Francis M., 4,291,107, Cl. 429-104.000.
Scharer, Hans R.; Antrim, Richard D.; and Strang, John R., to USM Corporation. Adjustable pelletizing apparatus. 4,290,742, Cl. 425-313.000.
Scheibengraber, Karl J. Rotary engine. 4,290,341, Cl. 91-339.000.
Schenck, Hans-Uwe: *See—*
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,291,147, Cl. 528-119.000.
Schering Aktiengesellschaft: *See—*
Schulze, Paul-Eberhard; and Kerb, Ulrich, 4,290,963, Cl. 260-397.450.
Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Prezewowsky, Klaus; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,291,029, Cl. 424-238.000.
Schermer, Heinz: *See—*
Luhrsen, Ernst; and Schermer, Heinz, 4,290,589, Cl. 266-236.000.
Schickel, Eberhard: *See—*
Strecker, Helmut; Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, 4,291,012, Cl. 424-1.000.
Schirk, Karl-Heinz: *See—*
Eckstein, Wolfgang; Schirk, Karl-Heinz; and Reinhold, Detlef, 4,290,792, Cl. 55-480.000.
Schiweck, Hubert: *See—*
Huber, Herbert; and Schiweck, Hubert, 4,290,818, Cl. 127-52.000.
Schleffendorf, John J. Physical exercise apparatus. 4,290,597, Cl. 272-117.000.
Schlegel Corporation: *See—*
Mass, Ronald H., 4,290,249, Cl. 52-396.000.
Schlegel, Earl S.: *See—*
Hanes, Maurice H.; and Schlegel, Earl S., 4,291,329, Cl. 357-64.000.
Schlossfabrik Schulte & Co.: *See—*
Tremp, Walter, 4,290,571, Cl. 248-59.000.
Schlumberger Technology Corporation: *See—*
Bonnet, Jean L., 4,291,267, Cl. 324-54.000.
Schmidt, Carolyn E.: *See—*
Jayant, Nuggehally S.; Schmidt, Carolyn E.; and Steele, Raymond, 4,291,405, Cl. 371-31.000.
Schmidt, John, to Minigrip, Inc. Reclosable film plastic bags and method of making same. 4,290,467, Cl. 150-3.000.
Schmidt, Lewis W.; Bettencourt, Darryl G.; Dietz, Charles F.; and Marshall, George E., Jr., to Blackwelders. Refuse bin lid unit. 4,290,352, Cl. 100-100.000.
Schmitt, Harold W., to Environmental Systems Corporation. Method and apparatus for measurement of transmittance and scatter of light in water. 4,290,695, Cl. 356-73.000.
Schnaebele, Werner: *See—*
Weidenhagen, Dieter; and Schnaebele, Werner, 4,290,364, Cl. 102-384.000.
Schneider, Gernot; and Steinle, Benedikt, to LGZ Landis & Gyr Zug AG. Apparatus for measuring electrical power. 4,291,377, Cl. 364-483.000.
Schneider, Rainer; and Abeler, Gerd, to Ciba-Geigy Corporation. Heat-stabilized chlorine-containing thermoplastic. 4,290,942, Cl. 260-45.85H.
Schoeffling, Thomas I., Jr. Sound shielding and pick-up device. 4,290,332, Cl. 84-1.140.
Schoen, Bernd-Jurgen: *See—*
Bruckner, Georg F.; Geike, Bernd; Berger, Fritz; and Schoen, Bernd-Jurgen, 4,290,147, Cl. 2-18.000.
Schoeps, Bernard; and Foret, Michel, to Laminoirs de Strasbourg. Process for producing a sheet or strip which is lightly galvanized on one or both sides and products obtained by said process. 4,291,074, Cl. 427-367.000.
Schopper, Heinrich-Christian: *See—*
Schroeder, Gerhard; Buxbaum, Gunter; Hund, Franz; Schopper, Heinrich-Christian; and Naumann, Rolf, 4,290,799, Cl. 75-0.50A.
Schott, Lawrence A.; and Schott, Roger A. Lubricating apparatus and system. 4,290,462, Cl. 141-98.000.
Schott, Roger A.: *See—*
Schott, Lawrence A.; and Schott, Roger A., 4,290,462, Cl. 141-98.000.
Schramm, Arno. Exchanger element for bottoms in material exchanger columns. 4,290,981, Cl. 261-114.0VT.
Schreck, Carl E.: *See—*
McGovern, Terrence P.; and Schreck, Carl E., 4,291,041, Cl. 424-267.000.
Schriber, Gene A., to Motorola, Inc. Driver circuit for use in an output buffer. 4,291,242, Cl. 307-270.000.
Schroeder, Alfred C.: *See—*
Rhodes, Roland N.; Schroeder, Alfred C.; and Moles, Warren H., 4,290,671, Cl. 350-317.000.

Schroeder Brothers Corporation: *See—*
Barthe, Henry P.; and Cobb, William R., 4,290,490, Cl. 173-23.000.
Schroeder, Gerhard; Buxbaum, Gunter; Hund, Franz; Schopper, Heinrich-Christian; and Naumann, Rolf, to Bayer Aktiengesellschaft. Ferromagnetic metal pigment essentially consisting of iron and a process for its production. 4,290,799, Cl. 75-0.50A.
Schuff, Richard W., to Ecotech Corporation. Apparatus for removing particulate matter from a gas stream. 4,290,786, Cl. 55-107.000.
Schulze, Paul-Eberhard; and Kerb, Ulrich, to Schering Aktiengesellschaft. Process for preparing $\Delta^{9(11)}$ and/or Δ^{16}-unsaturated sternoids. 4,290,963, Cl. 260-397.450.
Schupp, Eberhard: *See—*
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,291,147, Cl. 528-119.000.
Schwabe, William E.: *See—*
Elsner, Emil; Kasper, Rudolf; and Schwabe, William E., 4,291,190, Cl. 13-18.00R.
Schwerdtfeger, Joachim: *See—*
Sensis, Siegfried; Schwerdtfeger, Joachim; Walden, Klaus; and Ameling, Dieter, 4,290,800, Cl. 75-12.000.
Schworer, Artur, to Peri-Werk Artur Schworer KG. Climbing scaffolding. 4,290,576, Cl. 249-20.000.
Scientific Process & Research, Inc.: *See—*
Klein, Reuben; and Klein, Imrich, 4,290,702, Cl. 366-77.000.
Scott, Donald N.: *See—*
Stemler, Gary E.; and Scott, Donald N., 4,291,193, Cl. 174-11.00R.
Scott, Douglas R.; and Price, Larry V., to RobertShaw Controls Company. Control device and method of making the same. 4,290,441, Cl. 137-84.000.
Scott, Edward S. Dental post and method of installing. 4,290,755, Cl. 433-173.000.
Scott, Peter A. J., to Associated Engineering Limited. Positive clearance radial face seals. 4,290,613, Cl. 277-96.100.
Scott & Williams, Incorporated: *See—*
Valliere, Robert, 4,290,277, Cl. 66-24.000.
Scribner, Albert W. Control system for pneumatic punch press feeders. 4,290,541, Cl. 226-150.000.
Sea Solar Power: *See—*
Anderson, J. Hilbert, 4,290,631, Cl. 285-137.00A.
Seabourn, Ed. O.; Patterson, Lewis W.; and Stiverson, Richard G., to Saga Petroleum A.S. & Co. Apparatus for teaching pressure control in oil and gas drilling operations. 4,290,759, Cl. 434-370.000.
Seaman Corporation: *See—*
Mellin, Gerald D., 4,290,243, Cl. 52-63.000.
Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal. Tensio-active polypod compounds, process for preparing them and compositions containing them. 4,290,956, Cl. 260-338.000.
Sedy, Josef, to Crane Packing Co. High pressure upstream pumping seal combination. 4,290,611, Cl. 277-27.000.
Sefton, Verner B.: *See—*
Bolton, Gerald L.; Sefton, Verner B.; and Zubryckyj, Nicolaus, 4,290,866, Cl. 204-119.000.
Segal, Leon, to Allied Chemical Corporation. Warp-free multi-layer stampable thermoplastic sheets. 4,291,084, Cl. 428-212.000.
Seidling, Eugene H.; and Salemi, Nicholas A., to Westinghouse Electric Corp. Circuit breaker having improved movable contact-drive mechanism interconnection. 4,291,209, Cl. 200-153.00G.
Seifers, Monte G. Engine disabling. 4,291,296, Cl. 340-64.000.
Seifert, Lester H. Single cable control system for lawn mower. 4,290,256, Cl. 56-11.300.
Seiler, Alfred J. Pump/exchanger device. 4,290,446, Cl. 137-557.000.
Seki, Shigeo: *See—*
Yoneta, Toshio; Shibahara, Seiji; Seki, Shigeo; and Fukatsu, Shunzo, 4,290,972, Cl. 260-465.00B.
Selbeck, Harald: *See—*
Hucks, Uwe; Wulff, Claus; Tresper, Erhard; Vernaleken, Hugo; and Selbeck, Harald, 4,290,977, Cl. 260-973.000.
Seldin, Emanuel J.; and Weng, Tu-Lung, to Union Carbide Corporation. High taper angle connecting pin for graphite electrode joints. 4,290,709, Cl. 403-296.000.
Selines, Ronald J., to Union Carbide Corporation. Method for deep drawing. 4,290,293, Cl. 72-342.000.
Sellers, Wm. Ralph. Dental twist-lock pin and drill. 4,290,756, Cl. 433-225.000.
Senco Products, Inc.: *See—*
Smith, James E.; and Baker, Gordon P., 4,290,493, Cl. 173-124.000.
Senda, Jihei; Inoue, Yoshihiro; Uenishi, Toshiaki; Harada, Hidefumi; Nakata, Kouji; and Akagi, Akio, to Titan Kogyo Kabushiki Kaisha. Heat stable yellow iron oxides. 4,291,010, Cl. 423-594.000.
Sensis, Siegfried; Schwerdtfeger, Joachim; Walden, Klaus; and Ameling, Dieter, to Hamburger Stahlwerke GmbH. Process for feeding iron sponge into an electric arc furnace. 4,290,800, Cl. 75-12.000.
Sera, Hidefumi: *See—*
Kobayashi, Tomoyuki; Usami, Toshimasa; Misu, Hiroshi; and Sera, Hidefumi, 4,291,120, Cl. 430-531.000.
Serkh, Mikhail B.: *See—*
Pozin, Mikhail A.; and Serkh, Mikhail B., 4,290,299, Cl. 73-17.00A.
Severson, Asbjorn M., to Honeywell Inc. System for in situ meter testing. 4,290,298, Cl. 73-3.000.
Shaffer, Detmer B., to Sparkle Wash, Inc. Mobile cleaning unit. 4,290,442, Cl. 137-112.000.
Shanley, Robert L., II, to RCA Corporation. Composite keying signal generator for a television receiver. 4,291,336, Cl. 358-160.000.
Shapiro, Henry, to Maryland Cup Corporation. Two-piece paper cup for holding ice cream cones and the like. 4,290,573, Cl. 248-152.000.
Sharp, John. Solar heating collectors. 4,290,414, Cl. 126-429.000.
Sharp Kabushiki Kaisha: *See—*
Imai, Shigeki; and Fukuda, Hiroaki, 4,291,399, Cl. 368-82.000.
Sharp, Shelby P.; and Yarborough, Lyman, to Standard Oil Company (Indiana). Method and composition for removing elemental sulfur from high temperature, high pressure wells and flow lines. 4,290,900, Cl. 252-8.55B.
Shatz, Kenneth J.: *See—*
Cardone, Joseph T.; and Shatz, Kenneth J., 4,291,232, Cl. 290-1.00R.
Shavelzon, Lev A.: *See—*
Krasnov, Valery A.; Klovsky, Yakov A.; Dubov, Igor V.; Shtern, Arkady V.; Vyatkin, Viktor L.; and Shavelzon, Lev A., 4,290,665, Cl. 339-276.00T.
Shaw, Anthony R.: *See—*
Goodman, Ronald D.; Krueger, Wallace F.; and Shaw, Anthony R., 4,290,413, Cl. 126-426.000.
Shaw, David G., to General Electric Company. Non-halogenated impregnant for capacitors comprising an aromatic carboxylic acid ester and an alkene. 4,290,926, Cl. 252-579.000.
Shell Oil Company: *See—*
Dautzenberg, Frits M.; and Wagstaff, Nigel, 4,291,182, Cl. 585-415.000.
Wagstaff, Nigel, 4,291,188, Cl. 585-752.000.
Sherritt Gordon Mines Limited: *See—*
Adamovic, Emilija, 4,291,089, Cl. 428-325.000.
Bolton, Gerald L.; Sefton, Verner B.; and Zubryckyj, Nicolaus, 4,290,866, Cl. 204-119.000.
Clegg, Maurice A., 4,290,826, Cl. 148-101.000.
Shetler, Earl B. Back flow valve. 4,290,454, Cl. 137-853.000.
Shibahara, Seiji: *See—*
Yoneta, Toshio; Shibahara, Seiji; Seki, Shigeo; and Fukatsu, Shunzo, 4,290,972, Cl. 260-465.00B.
Shibuya, Yasutaka: *See—*
Kodama, Kazuyuki; Okada, Kunihiro; Huno, Takakazu; Endo, Takeyuki; and Shibuya, Yasutaka, 4,291,306, Cl. 340-744.000.
Shigematu, Takashi: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.
Shimada, Keizo: *See—*
Tamura, Yorikazu; Aoki, Akihiro; and Shimada, Keizo, 4,291,142, Cl. 525-420.000.
Shimada, Shoji: *See—*
Kuwata, Takeo; Shimada, Shoji; and Usa, Mikio, 4,290,337, Cl. 411-2.000.
Shimamura, Juky, to Asahi Communications Inc. Torque transmission system for motor driven toy. 4,290,227, Cl. 46-206.000.
Shimano Industrial Company Limited: *See—*
Nagano, Masashi; and Someya, Itsuo, 4,290,506, Cl. 188-24.190.
Shimizu, Toshio: *See—*
Takahashi, Yasunobu; Fujimoto, Einosuke; Shimizu, Toshio; and Kato, Takeo, 4,290,946, Cl. 260-239.00B.
Shin-Etsu Chemical Co., Ltd.: *See—*
Takago, Toshio, 4,291,144, Cl. 528-26.000.
Shinmura, Nobuyuki: *See—*
Komatsu, Kazurou; Matsumoto, Sojiro; Maniwa, Takeshi; and Shinmura, Nobuyuki, 4,290,969, Cl. 260-453.0AB.
Shirakawa, Takashi, to Alps Electric Co., Ltd. Trimmer capacitor. 4,291,361, Cl. 361-293.000.
Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, to Nippon Kogaku K.K. Light image space frequency component extracting device. 4,291,224, Cl. 250-204.000.
Shiratsuchi, Masami: *See—*
Onogi, Kazuhiro; Kunieda, Hisashi; Kawamura, Kiyoshi; Shiratsuchi, Masami; Nagakura, Masahiko; Machida, Naoki, deceased; and Miwa, Takayasu, heir, 4,290,954, Cl. 260-335.000.
Shoji, Masahiro: *See—*
Matsudo, Kazuo; Adaniya, Takeshi; Ohmura, Masaru; Shoji, Masahiro; and Watanabe, Tsutomu, 4,290,860, Cl. 204-27.000.
Shoji, Susumu: *See—*
Akabayashi, Hiroshi; Ohyama, Eiji; Shoji, Susumu; Adachi, Masami; Uemura, Koretoshi; and Ogawa, Yoshihisa, 4,291,127, Cl. 560-76.000.
Shook, Jackson A., to Evans Products Company. Freight car door locking mechanism. 4,290,232, Cl. 49-277.000.
Showa Denko Kabushiki Kaisha: *See—*
Yamada, Tsuyoshi, 4,290,776, Cl. 23-230.00R.
Shtern, Arkady V.: *See—*
Krasnov, Valery A.; Klovsky, Yakov A.; Dubov, Igor V.; Shtern, Arkady V.; Vyatkin, Viktor L.; and Shavelzon, Lev A., 4,290,665, Cl. 339-276.00T.
Shurboff, John D.: *See—*
McGregor, Charles W.; Karkoski, Joseph; and Shurboff, John D., 4,290,929, Cl. 260-29.20N.
Shuster, Nicholas; Babinsky, Andrew D.; and Kidon, William E., to Diamond Shamrock Corporation. Chromic acid production process using a three-compartment cell. 4,290,864, Cl. 204-103.000.
Sides, Daniel H.; and Beisch, Hanspeter E., to Black & Decker Inc. Idling and air replenishing system for a reciprocating hammer mechanism. 4,290,492, Cl. 173-118.000.
Siebeck, Helmut, to H. Berthold, AG. Process for running width adjustment. 4,291,381, Cl. 365-523.000.
Siegmund, Walter P., to American Optical Corporation. Fiberscope. 4,290,421, Cl. 128-6.000.
Siemens Aktiengesellschaft: *See—*
Haas, Roman, 4,291,367, Cl. 363-21.000.

Muehlbauer, Otto; Bigall, Klaus D.; and Roessler, Helmut, 4,291,221, Cl. 235-92.0CC.
Pfleiderer, Hans-Jorg; and Widmann, Dietrich, 4,291,321, Cl. 357-23.000.
Rosler, Helmut, 4,291,240, Cl. 307-262.000.
Stein, Karl-Ulrich, 4,290,187, Cl. 29-576.00B.
Stein, Karl-Ulrich, 4,290,693, Cl. 356-1.000.
Walter, Karl-Heinz, 4,291,304, Cl. 340-715.000.

Siemon, Edward C., to Borg-Warner Corporation. Power factor control system for inverter-driven a-c induction motor. 4,291,264, Cl. 318-729.000.

Sietam S.A.: *See—*
Charpentier, Jean, 4,290,439, Cl. 134-107.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
Bertolini, Alfio, 4,291,035, Cl. 424-251.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-oxa-11-deoxy-19-oxo-PGE$_1$ compounds. 4,291,172, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-oxa-11-deoxy-9-deoxy-9-methylene-19-oxo-PFG$_1$ compounds. 4,291,173, Cl. 562-503.000.

Silbernagle, Richard A.: *See—*
Swisher, George W., Jr.; Steele, Thomas L.; and Silbernagle, Richard A., 4,290,820, Cl. 134-6.000.

Silkensen, Ralph D.: *See—*
Pennell, George F.; Silkensen, Ralph D.; and Wallace, Joseph E., 4,291,351, Cl. 360-113.000.

Silliman, Jeffrey E.: *See—*
Burns, Alonzo M., Jr.; Silliman, Jeffrey E.; Gilbert, Woodrow P.; and Pascoe, William M., Sr., 4,290,766, Cl. 8-491.000.

Simpson, Ronald P.: *See—*
Lessmann, Gerald G.; Simpson, Ronald P.; Reichenecker, William J.; and O'Brokta, Ronald D., 4,291,220, Cl. 219-137.00R.

Singer Company, The: *See—*
Belva, George M.; and Mecklenborg, Richard A., 4,290,669, Cl. 350-174.000.
Haas, Robert V., 4,290,657, Cl. 312-21.000.
Rohner, Michel, 4,291,380, Cl. 364-522.000.

Sinka, Joseph V.: *See—*
Villa, Jose L.; Sinka, Joseph V.; and Fleming, Joseph P., 4,290,817, Cl. 106-315.000.

Sisson, Kimberley R. Automatic count and identification carrier for refundable cans. 4,290,525, Cl. 206-427.000.

Sitek, George J.: *See—*
Bredeweg, Roger L.; and Sitek, George J., 4,290,196, Cl. 73-1.00G.

Sivyer Steel Corporation: *See—*
Whitney, Richard P., 4,290,545, Cl. 228-139.000.

Siwula, John T. Attachable microprocessors. 4,290,708, Cl. 403-24.000.

Skahill, Fred J., to United States of America, Army. Cam actuated ammunition prestripping mechanism. 4,290,339, Cl. 89-33.0CA.

Skala, Karel, to BBC Brown, Boveri & Co., Ltd. Steam power plant and control element for the plant. 4,291,378, Cl. 364-494.000.

Slater Steel Industries Limited: *See—*
Nigol, Olaf; Houston, Herbert J.; and Gretzinger, Adolf, 4,291,194, Cl. 174-40.00R.

Smirnov, Boris A.: *See—*
Fedotov, Vladimir M.; Smirnov, Boris A.; Lukomsky, Genrikh I.; and Lipovsky, Iosif L., 4,290,542, Cl. 227-155.000.

Smith, David W.: *See—*
Goetz, Richard W.; Meixsel, Lawrence D.; and Smith, David W., 4,291,179, Cl. 568-882.000.

Smith, James E.; and Baker, Gordon P., to Senco Products, Inc. Configured impact member for driven flywheel impact device. 4,290,493, Cl. 173-124.000.

Smith, Joseph L., Jr.; and Kirtley, James L., Jr., to Massachusetts Institute of Technology. Rotating electric machine with fluid supported parts. 4,291,249, Cl. 310-214.000.

Smith, Leonard R. Yarn tension device. 4,290,565, Cl. 242-152.100.

Smith, Lloyd T.: *See—*
Fee, Robert W.; TenEyck, Richard E.; and Smith, Lloyd T., 4,290,465, Cl. 145-61.00R.

Smith, Nicholas K., to Bell Telephone Laboratories, Incorporated. Voice and data switching arrangement. 4,291,200, Cl. 179-18.0BD.

Smith, Robert L. Change-a-bowl pipe. 4,290,437, Cl. 131-196.000.

Smith, Robert W.; Hemmat, Naim S.; Bedell, John R.; Kavesh, Sheldon; and Draizen, Seymour, to Allied Chemical Corporation. Nozzle geometry for planar flow casting of metal ribbon. 4,290,476, Cl. 164-423.000.

Smith, Sylvester J. Hand tool for holding electrical outlet boxes during installation to a stud or other structural member. 4,290,591, Cl. 269-6.000.

Smith, Thomas M. Radiant heating. 4,290,746, Cl. 431-328.000.

Smolik, John V.; Swanson, Ronald V.; Rubin, Charles P.; Blaschke, James C.; and Wagner, Roger J., to Hughes Aircraft Company. Three point attachment for an ejectable spacecraft. 4,290,570, Cl. 244-158.00R.

Smythe, Daniel L., Jr.: *See—*
Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., 4,291,390, Cl. 365-183.000.

Snamprogetti S.p.A: *See—*
Pagani, Giorgio; Lagana, Vincenzo; and Saviano, Francesco, 4,291,006, Cl. 423-359.000.

Snamprogetti, S.p.A.: *See—*
Degen, Ludwig; Branduzzi, Paolo; Olivieri, Roberto; and Cimini, Nadia, 4,291,123, Cl. 435-94.000.

Snap-on Tools Corporation: *See—*
Green, Talmage O., 4,290,329, Cl. 81-477.000.

Snipes, Wallace: *See—*
Keith, Alec D.; and Snipes, Wallace, 4,291,014, Cl. 424-28.000.
Keith, Alec D.; and Snipes, Wallace, 4,291,015, Cl. 424-28.000.

Snitzer, Morton; and Fehrenbacher, Gary L., to Indiana Wood Specialty, Inc. Table and method of assembly. 4,290,371, Cl. 108-159.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Buhler, Marcel; Olofsson, Mats; and Fosseux, Pierre-Yves, 4,291,067, Cl. 426-582.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, 4,291,003, Cl. 423-228.000.

Soehngen, John W.; and Chen, John C., to Celanese Corporation. Process for preparing microporous hollow fibers. 4,290,987, Cl. 264-41.000.

Someya, Itsuo: *See—*
Nagano, Masashi; and Someya, Itsuo, 4,290,506, Cl. 188-24.190.

Sondermeyer, Jack C. High frequency roll-off circuit. 4,290,335, Cl. 84-1.270.

Sonntag, Michael: *See—*
Hohlein, Peter; and Sonntag, Michael, 4,291,135, Cl. 525-101.000.

Sony Corporation: *See—*
Hirai, Jun, 4,291,330, Cl. 358-8.000.
Kamon, Yoshiyuki; and Kishikami, Jun, 4,291,205, Cl. 179-181.00R.
Ohkoshi, Akio; Ishii, Eiji; Nakayama, Akira; Kato, Shoji; and Tanaka, Yoshiyuki, 4,291,253, Cl. 313-348.000.
Saito, Kenzo, 4,290,567, Cl. 242-198.000.

Sorenson, James P.: *See—*
Monter, James V.; Sorenson, James P.; and Theus, George J., 4,290,872, Cl. 204-195.00F.

Sorsche, Joachim H.; Ableitner, Erich; Gobien, Ernst; and Minning, Manfred, to Daimler-Benz Aktiengesellschaft. Mounting or attaching arrangement for driven or non-driven assemblies associated with an internal combustion engine. 4,290,397, Cl. 123-195.00A.

Southwest Research Institute: *See—*
Ludwig, Allen C.; Dale, John M.; and Frazier, Henry F., 4,290,816, Cl. 106-287.320.

Soutsos, Michael D. Method for forming lubricating films. 4,291,073, Cl. 427-314.000.

Spaniol, John W.; Bowerman, John J.; and Perlman, Marvin, to Frederick Electronics Corp. Circuit for handling conversation data in a distributed processing telex exchange. 4,291,196, Cl. 178-3.000.

Sparkle Wash, Inc.: *See—*
Shaffer, Detmer B., 4,290,442, Cl. 137-112.000.

Sperry Corporation: *See—*
Bass, David S., 4,291,386, Cl. 364-717.000.
Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., 4,291,091, Cl. 428-336.000.
Martenas, Wayne B., 4,290,255, Cl. 56-10.200.
Rao, Basrur R.; Ross, Gerald F.; and Cronson, Harry M., 4,291,289, Cl. 333-240.000.

Spicer, Larry D.: *See—*
Tobkes, Martin; Dann, Murray; Klothen, Irving; Spicer, Larry D.; and Williams, David R., 4,291,026, Cl. 424-181.000.

Spiller, Basil H. R.; and Pratt, Allan F., to Decca Limited. FM/CW Radar. 4,291,309, Cl. 343-7.500.

Spirko, Edward J.: *See—*
Malone, William H.; Fischley, John; Anderson, Harry L.; and Spirko, Edward J., 4,290,751, Cl. 432-214.000.

SRI International: *See—*
Henry, David W.; and Tong, George L., 4,291,157, Cl. 536-17.00A.

Stackpool, Francis M.: *See—*
Barry, Thomas I.; Schajer, Gary S.; and Stackpool, Francis M., 4,291,107, Cl. 429-104.000.

Staerzl, Richard E.: *See—*
Frank, Roy W.; and Staerzl, Richard E., 4,290,394, Cl. 123-73.00A.

Stalcup, Robert K.: *See—*
Jameikis, Saulius M.; Stalcup, Robert K.; Arnold, Joe F.; and Hon, Robert K., 4,290,237, Cl. 51-34.00A.

Stall, Alan D., to Du Pont de Nemours, E. I., and Company. Breathable fabric and sack made therefrom. 4,291,082, Cl. 428-138.000.

Stallard, Wayne R.: *See—*
Eckels, George H.; Groft, Donald H.; and Stallard, Wayne R., 4,290,584, Cl. 254-380.000.

Stamicarbon, B.V.: *See—*
Schaafsma, Sijbrandus E.; Hofman, Johannes H. A.; and Claassens, Johannes E. L., 4,291,170, Cl. 560-126.000.

Standard Oil Company: *See—*
Kiikka, Oliver A., 4,291,180, Cl. 585-320.000.
Kiikka, Oliver A.; and Li, George S., 4,291,181, Cl. 585-320.000.
Suresh, Dev D.; Brazdil, James F.; and Grasselli, Robert K., 4,290,920, Cl. 252-439.000.

Standard Oil Company (Indiana): *See—*
Beynet, Pierre A.; and Williams, Emil K., 4,290,715, Cl. 405-169.000.
Keske, Robert G.; and Stephens, James R., 4,291,149, Cl. 528-188.000.
Ridgway, John A., 4,291,063, Cl. 426-319.000.
Sharp, Shelby P.; and Yarborough, Lyman, 4,290,900, Cl. 252-8.55B.

Standard Oil Company (Ohio): *See—*
Adams, Harry A.; and Fitzgibbons, William O., 4,290,783, Cl. 55-89.000.

Stauffer, Allen R. Flexible flying disc toy. 4,290,226, Cl. 46-74.00D.

Stearley, John W.: *See—*
Reinke, William L.; and Stearley, John W., 4,291,207, Cl. 200-42.00R.

Steele, Raymond: *See—*
Jayant, Nuggehally S.; Schmidt, Carolyn E.; and Steele, Raymond, 4,291,405, Cl. 371-31.000.

Steele, Richard J. Security device. 4,290,636, Cl. 292-338.000.

Steele, Thomas L.: *See—*
Swisher, George W., Jr.; Steele, Thomas L.; and Silbernagle, Richard A., 4,290,820, Cl. 134-6.000.

Steeples, Kenneth: *See—*
Dearnaley, Geoffrey; Steeples, Kenneth; and Saunders, Ian J., 4,290,825, Cl. 148-33.400.

Steiger Tractor, Inc.: *See—*
Majkrzak, David S.; and Hinkel, Dwight B., 4,290,654, Cl. 301-9.0TV.

Stein, Barry F.: *See—*
Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., 4,291,091, Cl. 428-336.000.

Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Method of making charge-coupled arrangement in the two-phase technique. 4,290,187, Cl. 29-576.00B.

Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Arrangement for measuring the range or speed of an object. 4,290,693, Cl. 356-1.000.

Steiner, Alois, to Ruti Machinery Works Ltd. Multiple longitudinal traversing shed weaving apparatus. 4,290,458, Cl. 139-28.000.

Steiner, William G., to Lockheed Corporation. Automatic circuit tester with improved voltage regulator. 4,291,404, Cl. 371-20.000.

Steinle, Benedikt: *See—*
Schneider, Gernot; and Steinle, Benedikt, 4,291,377, Cl. 364-483.000.

Steinrucke, Walter: *See—*
Krauss, Ralf, 4,290,412, Cl. 126-419.000.

Stekly, Zdenek J. J. Magnetic separating apparatus with means for balancing magnetic forces. 4,290,528, Cl. 209-223.00R.

Stelco Inc.: *See—*
Eckels, George H.; Groft, Donald H.; and Stallard, Wayne R., 4,290,584, Cl. 254-380.000.

Stemler, Gary E.; and Scott, Donald N., to United States of America, Energy. Self-monitoring high voltage transmission line suspension insulator. 4,291,193, Cl. 174-11.00R.

Stepe, Visvaldis A., to Caterpillar Tractor Co. Earthworking implement side plate wear member. 4,290,214, Cl. 37-141.00T.

Stephens, James R.: *See—*
Keske, Robert G.; and Stephens, James R., 4,291,149, Cl. 528-188.000.

Stephenson, Rebecca A. G.: *See—*
Du Bois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., 4,290,957, Cl. 260-345.200.

Stermole, Franklin J.: *See—*
MacCarthy, Patrick, 4,290,224, Cl. 46-61.000.

Stern, Ernest R.; Ralston, Richard W.; Smythe, Daniel L., Jr.; and Burke, Barry E., to Massachusetts Institute of Technology. Analog solid state memory. 4,291,390, Cl. 365-183.000.

Stevens, Benjamin A. Beverage can crusher. 4,290,354, Cl. 100-218.000.

Stevens, Bert E.: *See—*
Andros, Frank E.; Kerjilian, Ghazaros K.; Stevens, Bert E.; and Tomek, Reinhold E., 4,291,364, Cl. 361-384.000.

Stevens, Martin L.: *See—*
United States of America, National Aeronautics and Space Administration; and Stevens, Martin L., 4,290,612, Cl. 277-81.00R.

Stevens, Timothy S.; and Miller, Theodore E., Jr., to Dow Chemical Co., The. Analytical method for determining acid/salt and base/salt species concentration in solution. 4,290,775, Cl. 23-230.00R.

Stevenson, Andrew C.; Herzog, Gordon W.; and Murdoch, James C., to Canadian General Electric Company Limited. Amortisseur winding protection system. 4,291,263, Cl. 318-706.000.

Stiftelsen Blekinge Produkter: *See—*
Matsson, Karl J., 4,290,212, Cl. 36-33.000.

Stiverson, Richard G.: *See—*
Seabourn, Ed. O.; Patterson, Lewis W.; and Stiverson, Richard G., 4,290,759, Cl. 434-370.000.

Stocklin, Gerhard; Laufer, Peter; and Machulla, Jurgen, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Method of making I^{123} labeled fatty acids. 4,290,965, Cl. 260-408.000.

Stockwell, Richard K.: *See—*
Osborne, Thomas E.; and Stockwell, Richard K., 4,291,385, Cl. 364-709.000.

Stokes, Marshall G.: *See—*
McLennan, Charles I.; Stokes, Marshall G.; and Konucik, George J., 4,290,159, Cl. 9-9.000.

Storandt, Ralf, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Release setting indicating device for a ski safety binding. 4,290,624, Cl. 280-634.000.

Storcel, Joseph A., to Bunker Ramo Corporation. Connector assembly with visual, tactile and audible indication. 4,290,662, Cl. 339-89.00M.

Strang, John R.: *See—*
Scharer, Hans R.; Antrim, Richard D.; and Strang, John R., 4,290,742, Cl. 425-313.000.

Strange, Booth B., to Western Geophysical Co. of America. Marine oil leak containment and recovery apparatus. 4,290,714, Cl. 405-60.000.

Strassel, Albert, to Produits Chimiques Ugine Kuhlmann. Polyvinylidene fluoride-polyurethane laminates and method. 4,291,099, Cl. 428-421.000.

Strecker, Helmut; Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, to Hoechst Aktiengesellschaft. Technetium-labelled diagnostic agent for the examination of the RES. 4,291,012, Cl. 424-1.000.

Strobel, Manfred; and Thiersch, Friedrich, both of, to Carl Still, Firma. Method of operating horizontal coke oven batteries. 4,290,854, Cl. 201-26.000.

Struger, Odo J.: *See—*
Ecker, Donald R., Jr.; Dummermuth, Ernst; and Struger, Odo J., 4,291,388, Cl. 364-900.000.

Studtmann, George H.: *See—*
Yarema, Raymond J.; and Studtmann, George H., 4,291,368, Cl. 363-41.000.

Sturges, James R.: *See—*
Brewer, Thomas D.; Purcell, Robert J.; and Sturges, James R., 4,290,236, Cl. 51-5.00A.

Sturgis, Malcolm B., to M. B. Sturgis, Inc. Quick disconnect coupling with a heat-sensitive cutoff feature. 4,290,440, Cl. 137-75.000.

Sturm, Elmar; and Nyfeler, Robert, to Ciba-Geigy Corporation. 1H-inden-1-one derivatives, processes for producing them, their use in microbicidal compositions, and for combating microorganisms. 4,291,061, Cl. 424-331.000.

Sturm, Ruger & Co., Inc.: *See—*
Ruger, William B., 4,290,220, Cl. 42-75.00D.

Styner & Bienz AG: *See—*
Diemi, Werner, 4,290,294, Cl. 72-348.000.

Suchy, Milos, to Hoffmann-La Roche Inc. Naphthalenecarboxylic acid esters. 4,291,058, Cl. 424-308.000.

Sudan, Ravindra N., to Cornell Research Foundation, Inc. Ion-ring ignitor for inertial fusion. 4,290,848, Cl. 176-5.000.

Suenaga, Masaki: *See—*
Bussiere, Jean F.; Welch, David O.; and Suenaga, Masaki, 4,291,105, Cl. 428-616.000.

Sueoka, Tetsuro; and Ishibashi, Satoshi, to Kabushiki Kaisha Meidensha. Dual gate controlled thyristor with highly doped cathode base grid covered with high resistivity base layer. 4,291,325, Cl. 357-38.000.

Sugai, Shinzo: *See—*
Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, 4,290,828, Cl. 148-11.50Q.

Sugie, Mamoru: *See—*
Mayama, Koichi; Yamaguchi, Noboru; Sugie, Mamoru; Kita, Yuzo; and Yoshizawa, Shigeru, 4,291,241, Cl. 307-269.000.

Sugier, Andre; and Freund, Edouard, to Institut Francais du Petrole. Process for manufacturing alcohols and more particularly saturated linear primary alcohols from synthesis gas. 4,291,126, Cl. 518-713.000.

Suginaka, Mutsuo, to Nippon Tsusho Company Limited. Lagging body for belt conveyor pulley. 4,290,761, Cl. 474-190.000.

Sugiura, Eiichi. Aeration apparatus. 4,290,979, Cl. 261-4.000.

Sulberg, Carl: *See—*
Ibach, Adolf; and Konen, Heinz, 4,290,326, Cl. 76-101.00R.

Sulko, James C., to Syncroflo, Inc. Water pressure booster system. 4,290,735, Cl. 417-2.000.

Sulkowski, Alfred. Environmental control system. 4,290,480, Cl. 165-21.000.

Sullivan, John; and Lillibridge, Harold R., to Champion International Corporation. Reclosable envelope and method of manufacture. 4,290,547, Cl. 229-77.000.

Sullivan, Leo S., Jr.; and Muzechuk, Richard A., to General Motors Corporation. Dual function strut bearing. 4,290,626, Cl. 280-692.000.

Sullivan, William P. Lock for household refrigerators. 4,290,633, Cl. 292-114.000.

Sulzer Brothers Limited: *See—*
Juzi, Heinz, 4,290,390, Cl. 122-406.00S.

Sumitomo Chemical Company, Limited: *See—*
Yasui, Seimei; Sagou, Masakazu; Noguchi, Takanobu; Toyoshima, Yoshiki; and Saito, Junzo, 4,291,148, Cl. 528-142.000.

Sumitomo Durez Company, Ltd.: *See—*
Funabiki, Kyohei; Matsushima, Noriaki; and Inouye, Naomitsu, 4,290,928, Cl. 260-28.00P.

Sumitomo Electric Industries, Ltd.: *See—*
Asai, Tsuyoshi; Fujimori, Naoji; and Yamamoto, Takaharu, 4,290,807, Cl. 75-233.000.

Sumitomo Metal Industries, Ltd.: *See—*
Hirata, Takeyuki; Hiroki, Nobuyoshi; and Masuda, Seiichi, 4,290,802, Cl. 75-52.000.

Sumitomo Metal Mining Co., Ltd.: *See—*
Ohkoshi, Akio; Ishii, Eiji; Nakayama, Akira; Kato, Shoji; and Tanaka, Yoshiyuki, 4,291,253, Cl. 313-348.000.

Suovaniemi, Osmo A., to Kommandittiyhtio Finnpipette Osma A. Suovaniemi. Apparatus for automatic measurement of the results of agglutination tests. 4,290,997, Cl. 422-73.000.

Superior Concrete Accessories, Inc.: *See—*
Manning, Lindley, 4,290,638, Cl. 294-89.000.

Suresh, Dev D.; Brazdil, James F.; and Grasselli, Robert K., to Standard Oil Co., The. Sb-containing catalysts by Sb-oxide impregnation. 4,290,920, Cl. 252-439.000.

Susa, Tomoo: *See—*
Sasaki, Tohru; Terasaki, Syuuzi; and Susa, Tomoo, 4,290,983, Cl. 264-22.000.

Sutela, Leo; and Laitinen, Heikki, to Oy Partek AB. Equipment for loading of an exchange platform or container. 4,290,726, Cl. 414-421.000.

Suwa, Toshio; Konagaya, Yoshiaki; and Ishii, Hiroshi, to Nippon Sanso K. K. Method for supplying powder to be used in home spray coating operation. 4,290,555, Cl. 239-8.000.

Suzuki, Eiji: *See—*
Ogawa, Kazuo; and Suzuki, Eiji, 4,291,408, Cl. 371-49.000.

Suzuki, Hiroshi: *See—*
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Tago, Makoto, 4,290,806, Cl. 75-153.000.
Suzuki, Kazuo, to NGK Insulators, Ltd. Die for extruding a honeycomb structural body and a method for manufacturing the same. 4,290,743, Cl. 425-461.000.
Suzuki, Kenji: *See—*
Ito, Senji; and Suzuki, Kenji, 4,291,085, Cl. 428-215.000.
Suzuki, Masaharu: *See—*
Tanaka, Mitsuaki; and Suzuki, Masaharu, 4,291,098, Cl. 428-412.000.
Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; Sakai, Shinji; Uchiyama, Takashi; and Momiyama, Kikuo, to Canon Kabushiki Kaisha. Liquid crystal display device for camera. 4,290,686, Cl. 354-289.000.
Suzuki, Ryushi: *See—*
Matsui, Kunio; Tsuchiya, Hiroaki; Suzuki, Ryushi; and Omura, Takayoshi, 4,290,791, Cl. 55-399.000.
Suzuki, Seiko: *See—*
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.
Suzuki, Yasoji; and Kamimaru, Nobuyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Phase detector circuit using logic gates. 4,291,274, Cl. 328-133.000.
Svatek, Thomas A., to Polaroid Corporation. Photographic strobe apparatus. 4,290,692, Cl. 355-69.000.
Svensson, Claes G. S.: *See—*
Hedstrom, Bengt O. A.; and Svensson, Claes G. S., 4,290,269, Cl. 60-670.000.
Swales, Danvers A.; and Marshall, Michael A., to British Chrome & Chemicals Limited. Process for the production of chromium trioxide. 4,291,000, Cl. 423-53.000.
Swanson, Ronald V.: *See—*
Smolik, John V.; Swanson, Ronald V.; Rubin, Charles P.; Blaschke, James C.; and Wagner, Roger J., 4,290,570, Cl. 244-158.00R.
Swanson, Wesley S., to Eaton Corporation. Fluid mixing valve. 4,290,450, Cl. 137-606.000.
Swartwout, Everett W. Integral clip and hanger. 4,290,575, Cl. 248-316.00D.
Swedish Industrial Corporation of Canada Ltd.: *See—*
Finkel, Henry, 4,290,217, Cl. 40-389.000.
Swihart, Terence J., to Dow Corning Corporation. Dewatering fine coal slurries using two types of organopolysiloxanes. 4,290,897, Cl. 210-710.000.
Swisher, George W., Jr.; Steele, Thomas L.; and Silbernagle, Richard A., to CMI Corporation. Method and apparatus for collecting particulate material on a roadway. 4,290,820, Cl. 134-6.000.
Swiss Aluminium Ltd.: *See—*
Huber, Ernst; Rieger, Wolfhart; and Bolliger, Martin, 4,290,477, Cl. 164-430.000.
Wagner, Alfred; and Ames, Adolf, 4,290,290, Cl. 72-256.000.
Sybron Corporation: *See—*
Gardner, George A., 4,291,280, Cl. 331-65.000.
Syncroflo, Inc.: *See—*
Sulko, James C., 4,290,735, Cl. 417-2.000.
Syrov, Anatoly A.; Ivanchev, Sergei S.; Primachenko, Oleg N.; Demidova, Valentina A.; Polozov, Boris V.; Fionov, Vladimir I.; and Barantsevich, Evgeny N. α,α-azo-bis-isobutyric acid α,α-bis alkyl ester derivatives and method for preparing same. 4,290,945, Cl. 260-192.000.
Szentmiklosi, Peter: *See—*
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,291,036, Cl. 424-251.000.
Tabah, Victo V. Machine for making pure peanut butter. 4,290,560, Cl. 241-65.000.
Tabb, David L.: *See—*
Magers, Thomas A.; and Tabb, David L., 4,290,773, Cl. 23-230.00B.
Tabor, Edward; and Gerety, Robert J., to United States of America, Health & Human Services. Inactivation of non-A, non-B hepatitis agent. 4,291,020, Cl. 424-89.000.
Tachi, Yasuhide; Michishita, Kazuhiko; Nakagami, Jozi; Sawada, Jiro; Washitake, Mitsunori; and Kamano, Yoshiaki, to Taisho Pharmaceutical Co., Ltd. Novel hydrocortisone derivative. 4,290,962, Cl. 260-397.450.
Tadataka, Yako: *See—*
Kenji, Fujisawa; Kazuo, Katsube; Tadataka, Yako; Koich, Uemura; Yuichi, Harada; and Yasumasa, Sakai, 4,291,090, Cl. 428-327.000.
Tago, Makoto: *See—*
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Tago, Makoto, 4,290,806, Cl. 75-153.000.
Taguchi, Sadanori: *See—*
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.
Taguchi, Tetsuya: *See—*
Sakane, Toshio; Taguchi, Tetsuya; Ogawa, Masahiko; Tamura, Shuichi; and Tsunekawa, Tokuichi, 4,291,223, Cl. 250-201.000.
Taiheiyo Engineering Inc.: *See—*
Takahashi, Ken; and Ito, Tsunetoshi, 4,290,648, Cl. 299-1.000.
Taisho Pharmaceutical Co., Ltd.: *See—*
Tachi, Yasuhide; Michishita, Kazuhiko; Nakagami, Jozi; Sawada, Jiro; Washitake, Mitsunori; and Kamano, Yoshiaki, 4,290,962, Cl. 260-397.450.
Tait, Robert J., to Littelfuse, Inc. Apparatus for making plug-in fuse assemblies. 4,290,183, Cl. 29-564.800.
Takada, Shigetaka; and Morino, Toshiharu, to Aisan Industry Co., Ltd. Floatless variable venturi type carburetor. 4,290,399, Cl. 123-439.000.
Takago, Toshio, to Shin-Etsu Chemical Co., Ltd. Epoxy-based curable compositions. 4,291,144, Cl. 528-26.000.
Takahashi, Hidehiko. Apparatus for developing photographed film. 4,290,687, Cl. 354-320.000.
Takahashi, Ken; and Ito, Tsunetoshi, to Taiheiyo Engineering Inc. Mining apparatus. 4,290,648, Cl. 299-1.000.
Takahashi, Kihei, to Yoshida Kogyo K. K. Apparatus for interengaging opposed rows of slide fastener coupling elements. 4,290,194, Cl. 29-766.000.
Takahashi, Koichi; and Higuchi, Megumu, to Nissan Motor Company, Limited. Rotary-motion valve and power-assisted steering system incorporating the valve. 4,290,452, Cl. 137-625.230.
Takahashi, Minoru: *See—*
Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, 4,291,293, Cl. 338-4.000.
Takahashi, Yasunobu; Fujimoto, Einosuke; Shimizu, Toshio; and Kato, Takeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Preparation of hexamethyleneimine. 4,290,946, Cl. 260-239.00B.
Takakuwa, Takeshi, to Nagata Seisakusho Co., Ltd. Flotator. 4,290,886, Cl. 210-219.000.
Takamura, Tooru; Terakawa, Sumio; Nakatani, Hirokuni; and Murozono, Izumi, to Matsushita Electronics Corporation. Electric charge transfer apparatus. 4,291,337, Cl. 358-213.000.
Takara Company: *See—*
Yoshiyuki, Hidetoshi, 4,290,659, Cl. 312-224.000.
Takasaki, Takao. Spectacle holder. 4,290,522, Cl. 206-5.000.
Takaya, Takao; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. 3-Phosphonocephalosporanic acid derivatives, and pharmaceutical composition comprising the same. 4,291,031, Cl. 424-246.000.
Takayasu, Kiyosumi. Process for welding of noble metal foil. 4,291,216, Cl. 219-118.000.
Takemae, Yoshihiro: *See—*
Nakano, Masao; Nakano, Tomio; Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,291,394, Cl. 365-206.000.
Takenaga, Mutsuo; and Yamamoto, Osamu, to Matsushita Electric Industrial Co., Ltd. Process for producing a lithium borate thermoluminescent and fluorescent substance. 4,290,909, Cl. 252-301.40R.
Takenoya, Hideaki: *See—*
Tonomura, Yoshinobu; Fujimura, Toshio; Hara, Masanori; and Takenoya, Hideaki, 4,290,375, Cl. 112-121.120.
Takeshima, Masaki: *See—*
Horiuchi, Susumu; Taniguchi, Takashi; Takeshima, Masaki; Hirano, Mikio; and Yusa, Hideo, 4,290,908, Cl. 252-301.10W.
Takeuchi, Norisada: *See—*
Ogawa, Mutsuo; Murayama, Noboru; Konishi, Akira; and Takeuchi, Norisada, 4,291,339, Cl. 358-260.000.
Taki, Yasuo; Araki, Shigeru; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, to Matsushita Electric Industrial Co. Ltd. Apparatus for carrying and placing components. 4,290,732, Cl. 414-752.000.
Tamura, Shuichi: *See—*
Sakane, Toshio; Taguchi, Tetsuya; Ogawa, Masahiko; Tamura, Shuichi; and Tsunekawa, Tokuichi, 4,291,223, Cl. 250-201.000.
Tamura, Yorikazu; Aoki, Akihiro; and Shimada, Keizo, to Teijin, Limited. Crosslinked aromatic polyamide film and process for producing the same. 4,291,142, Cl. 525-420.000.
Tanabe Seiyaku Co., Ltd.: *See—*
Harada, Kiyoshi; Koida, Yoshiyuki; and Miura, Hiroshi, 4,290,910, Cl. 252-312.000.
Tanaka, Atsushi: *See—*
Nakanisi, Takatosi; Tanaka, Atsushi; and Udagawa, Takashi, 4,290,385, Cl. 118-730.000.
Tanaka, Chiaki; Morikawa, Masanobu; and Kohno, Yoshio, to Toray Industries, Inc. Vulcanizable polyblend. 4,290,927, Cl. 260-3.000.
Tanaka, Ko, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust silencer, especially for small vehicles. 4,290,501, Cl. 181-228.000.
Tanaka, Mitsuaki; and Suzuki, Masaharu, to Nippon Fine Chemical Co., Ltd.; and Nippon Aspherical Lens Co., Ltd. Organoalkoxysilane coating compositions for plastic articles. 4,291,098, Cl. 428-412.000.
Tanaka, Souhei: *See—*
Taki, Yasuo; Araki, Shigeru; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,290,732, Cl. 414-752.000.
Tanaka, Yoshiyuki: *See—*
Ohkoshi, Akio; Ishii, Eiji; Nakayama, Akira; Kato, Shoji; and Tanaka, Yoshiyuki, 4,291,253, Cl. 313-348.000.
Tandon, Amar N.; and Bhasin, Ram B. Signal lanterns for optional colored light emittance. 4,291,365, Cl. 362-281.000.
Taniguchi, Takashi: *See—*
Horiuchi, Susumu; Taniguchi, Takashi; Takeshima, Masaki; Hirano, Mikio; and Yusa, Hideo, 4,290,908, Cl. 252-301.10W.
Tanizaki, Yoshiharu; Minagawa, Kenichiro; Akimoto, Shinichi; and Horioka, Kuninori, to Nippon Oil and Fats Co., Ltd. Wood fibrous material and a method for improving the qualities thereof. 4,291,101, Cl. 428-514.000.
Tatsumi, Hideo: *See—*
Kanamaru, Hisanobu; Tatsumi, Hideo; Tohkairin, Akira; and Sayo, Kosaku, 4,290,295, Cl. 72-356.000.

Tatsumi, Tadao. Building for cold districts. 4,290,415, Cl. 126-429.000.
Tauscher, Manfred: *See—*
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,291,037, Cl. 424-253.000.
Taylor, Geoffrey W.: *See—*
Chatterjee, Pallab K.; and Taylor, Geoffrey W., 4,291,391, Cl. 365-184.000.
Taylor, John A., to Extracorporeal Medical Specialties, Inc. Non-uniform cross-sectional area hollow fibers. 4,291,096, Cl. 428-398.000.
Taylor, John R.: *See—*
Fowler, Eliot P.; and Taylor, John R., 4,290,663, Cl. 339-143.00R.
Taylor, Peter A.: *See—*
Wishman, Marvin; Taylor, Peter A.; and Leininger, James C., 4,291,093, Cl. 428-379.000.
TDK Electronics Co., Ltd.: *See—*
Horigome, Eiji; Ota, Hiroshi; and Azegami, Hitoshi, 4,291,100, Cl. 428-424.200.
Technical Materials, Inc.: *See—*
Rosenbloom, Percy, Jr.; and Rosenbloom, Percy, III, 4,290,468, Cl. 150-49.000.
Technical Services, Societe Anonyme: *See—*
t'Kint de Roodenbeke, Amaury H., 4,290,230, Cl. 49-49.000.
Tedeschi, Rinaldo R.; and Full, Gary G., to United Technologies Corporation. Spark plug load testing for an internal combustion engine. 4,291,383, Cl. 364-551.000.
Tedeschi, Rinaldo R.: *See—*
Full, Gary G.; and Tedeschi, Rinaldo R., 4,291,382, Cl. 364-551.000.
Teijin Limited: *See—*
Inata, Hiroo; Matsumura, Shunichi; and Ogasawara, Makoto, 4,291,152, Cl. 528-289.000.
Tamura, Yorikazu; Aoki, Akihiro; and Shimada, Keizo, 4,291,142, Cl. 525-420.000.
Tendulkar, Dilip V.: *See—*
Mann, Gamdur S.; Tendulkar, Dilip V.; and Parker, William J., 4,290,263, Cl. 60-311.000.
TenEyck, Richard E.: *See—*
Fee, Robert W.; TenEyck, Richard E.; and Smith, Lloyd T., 4,290,465, Cl. 145-61.00R.
Terakawa, Sumio: *See—*
Takamura, Tooru; Terakawa, Sumio; Nakatani, Hirokuni; and Murozono, Izumi, 4,291,337, Cl. 358-213.000.
Terasaki, Syuuzi: *See—*
Sasaki, Tohru; Terasaki, Syuuzi; and Susa, Tomoo, 4,290,983, Cl. 264-22.000.
Texaco Inc.: *See—*
Herbstman, Sheldon; and Dorn, Peter, 4,290,778, Cl. 44-71.000.
Levine, Stephen A.; and White, William R., 4,290,902, Cl. 252-32.70E.
Royle, Rae A., 4,290,901, Cl. 252-8.55C.
Texas Instruments Incorporated: *See—*
Beecroft, Harold J.; and Davis, Max G., Jr., 4,291,346, Cl. 360-75.000.
Chatterjee, Pallab K.; and Taylor, Geoffrey W., 4,291,391, Cl. 365-184.000.
Fletcher, Robert L.; VanLandingham, Richard D.; Brown, Sheldon H.; and Rittman, Alan H., 4,291,353, Cl. 360-128.000.
Korenstein, Ralph; and Castro, Carlos A., 4,290,843, Cl. 156-628.000.
Kuo, Chang-Kiang, 4,290,184, Cl. 29-571.000.
Lien, Jih-Chang; and Chiu, Te-Long, 4,291,328, Cl. 357-59.000.
Textron Inc.: *See—*
Moertel, George B., 4,290,175, Cl. 24-205.13D.
Tezanos, Enrique H.: *See—*
Nogueira, Eduardo D.; Infanzon, Luis Alonso S.; and Tezanos, Enrique H., 4,290,863, Cl. 204-99.000.
Theeuwes, Felix: *See—*
Luschen, Joseph G.; and Theeuwes, Felix, 4,290,426, Cl. 128-260.000.
Thermatime A.G.: *See—*
Waggott, David, 4,290,435, Cl. 128-800.000.
Theus, George J.: *See—*
Monter, James V.; Sorenson, James P.; and Theus, George J., 4,290,872, Cl. 204-195.00F.
Thibodeau, Michael J.: *See—*
Poulos, Andrew C.; and Thibodeau, Michael J., 4,291,005, Cl. 423-321.00R.
Thiersch, Friedrich, both of: *See—*
Strobel, Manfred; and Thiersch, Friedrich, both of, 4,290,854, Cl. 201-26.000.
Thim, Stig. Method of manufacturing concrete sleeper blocks and a matrix array for carrying out the method. 4,290,991, Cl. 264-157.000.
Thomas J. Lipton, Inc.: *See—*
Anema, Pieter J.; Haisman, Derek R.; and Adams, Rose M., 4,291,066, Cl. 426-578.000.
Mitchell, Robert M., 4,290,521, Cl. 206-0.500.
Thomas, Larry A., to United States of America, Navy. Automatic exposure control for pulsed active TV systems. 4,291,338, Cl. 358-228.000.
Thomas, William P.: *See—*
Hinz, Lorne C.; and Thomas, William P., 4,291,299, Cl. 340-347.0AD.
Thompson, Christopher J., to Montreal Neurological Institute. Detector shape and arrangement for positron annihilation imaging device. 4,291,228, Cl. 250-363.00S.
Thompson, Robert E., to PPG Industries Canada Ltd. Subterranean cavity chimney development for connecting solution mined cavities. 4,290,650, Cl. 299-4.000.
Thomson-CSF: *See—*
Castera, Jean P., 4,291,283, Cl. 331-96.000.
Thouvenin, Maurice: *See—*
Grassin, Jerome; Thouvenin, Maurice; and Epie, Jean-Claude, 4,290,544, Cl. 228-7.000.
Three Rivers Enterprises, Inc.: *See—*
McCahill, David I., 4,291,376, Cl. 364-483.000.
Thunker, Norbert, to Heidelberger Druckmaschinen AG. Rotatable advance or forward gripper drum. 4,290,595, Cl. 271-277.000.
Thyssen Industrie AG: *See—*
Kockerols, Erhard; and Sagemuller, Albert, 4,290,153, Cl. 4-491.000.
Tibbetts, Charles C. Method of image reproduction and materials therefor. 4,291,116, Cl. 430-308.000.
Tieden, Jansey D.: *See—*
Burton, James M.; Miller, Robert L.; and Tieden, Jansey D., 4,291,384, Cl. 364-560.000.
Timex Corporation: *See—*
Hochstrate, Paul E., 4,291,369, Cl. 363-60.000.
Wuthrich, Paul; and Mascia, Frank, 4,291,397, Cl. 368-35.000.
Tipton, Larry J., to ACF Industries, Inc. Carburetor with sonic fuel atomizer. 4,290,405, Cl. 123-590.000.
Tischer, Werner: *See—*
Liebert, Karl-Heinz; and Tischer, Werner, 4,290,738, Cl. 418-61.00B.
Titan Kogyo Kabushiki Kaisha: *See—*
Senda, Jihei; Inoue, Yoshihiro; Uenishi, Toshiaki; Harada, Hidefumi; Nakata, Kouji; and Akagi, Akio, 4,291,010, Cl. 423-594.000.
t'Kint de Roodenbeke, Amaury H., to Technical Services, Societe Anonyme. Gate for supermarkets and similar establishments. 4,290,230, Cl. 49-49.000.
Tobkes, Martin; Dann, Murray; Klothen, Irving; Spicer, Larry D.; and Williams, David R., to American Cyanamid Company. Antibiotic BM123ν pamoate complexes. 4,291,026, Cl. 424-181.000.
Todaka, Hironori: *See—*
Fujii, Masaki; Miyabayashi, Mitsutaka; Todaka, Hironori; and Hattori, Satoru, 4,291,140, Cl. 525-321.000.
Tohkairin, Akira: *See—*
Kanamaru, Hisanobu; Tatsumi, Hideo; Tohkairin, Akira; and Sayo, Kosaku, 4,290,295, Cl. 72-356.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kato, Masaaki; and Ogi, Keisuke, 4,291,332, Cl. 358-19.000.
Nakanisi, Takatosi; Tanaka, Atsushi; and Udagawa, Takashi, 4,290,385, Cl. 118-730.000.
Suzuki, Yasoji; and Kamimaru, Nobuyuki, 4,291,274, Cl. 328-133.000.
Uesugi, Nobuo; Miyazawa, Tatsuo; Furudate, Mituaki; Sasaki, Keiichi; and Mizuguchi, Hiroji, 4,290,849, Cl. 176-19.00R.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, 4,290,828, Cl. 148-11.50Q.
Tomas, Carlos: *See—*
DeGeorge, Bernard J.; Hermanson, Dean E.; and Tomas, Carlos, 4,290,463, Cl. 141-387.000.
Tomek, Reinhold E.: *See—*
Andros, Frank E.; Kerjilian, Ghazaros K.; Stevens, Bert E.; and Tomek, Reinhold E., 4,291,364, Cl. 361-384.000.
Tomy Kogyo Co., Inc.: *See—*
Matsumoto, Takao, 4,290,605, Cl. 273-110.000.
Tong, George L.: *See—*
Henry, David W.; and Tong, George L., 4,291,157, Cl. 536-17.00A.
Tonomura, Yoshinobu; Fujimura, Toshio; Hara, Masanori; and Takenoya, Hideaki, to Janome Sewing Machine Co., Ltd. Apparatus for writing and using embroidery information on magnetic tape. 4,290,375, Cl. 112-121.120.
Topor, Michael G.; Wicklund, Peter A.; and Ivers, John T., to Frito-Lay, Inc. Method and apparatus for extruding a plurality of ribbons. 4,290,989, Cl. 264-142.000.
Toray Industries, Incorporated: *See—*
Muraki, Toshio, 4,290,935, Cl. 260-32.6NA.
Tanaka, Chiaki; Morikawa, Masanobu; and Kohno, Yoshio, 4,290,927, Cl. 260-3.000.
Torok, Gabor; Sarosi, Lajos; Grof, Ferenc; Becsei, Tamas; and Barta, Peter, to Egyesult Muszaki Tomito es Gepszakmai Ipari Szovetkezet. Process and apparatus for cleaning contaminated water. 4,290,894, Cl. 210-661.000.
Toth, Dolan H., to Control Data Corporation. Memory system using faulty bubble memory devices. 4,291,389, Cl. 365-15.000.
Towae, Friedrich: *See—*
Merger, Franz; and Towae, Friedrich, 4,290,970, Cl. 260-453.00P.
Towle, Herbert C.: *See—*
Marshall, Albert H.; and Towle, Herbert C., 4,290,757, Cl. 434-12.000.
Toyo Boseki Kabushiki Kaisha Co., Ltd.: *See—*
Miyake, Hideo; Sakamoto, Junichi; Sawaki, Masakazu; and Hara, Mamoru, 4,290,938, Cl. 260-40.00R.
Toyo Jozo Company, Ltd.: *See—*
Otani, Masaru; Satoi, Shuzo; Muto, Naoki; Saito, Tetsu; Fujii, Tadashiro; Katsumata, Seiji; Hayashi, Mitsuo; and Ono, Masaru, 4,291,021, Cl. 424-121.000.
Toyo Seikan Kaisha Limited: *See—*
Ito, Senji; and Suzuki, Kenji, 4,291,085, Cl. 428-215.000.

Toyoshima, Yoshiki: *See—*
Yasui, Seimei; Sagou, Masakazu; Noguchi, Takanobu; Toyoshima, Yoshiki; and Saito, Junzo, 4,291,148, Cl. 528-142.000.

Toyota, Akinori; and Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Solid titanium catalyst composition for production of an olefin polymer or copolymer. 4,290,915, Cl. 252-429.00B.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.

Tracy, Paul D.: *See—*
Davis, Robert W.; and Tracy, Paul D., 4,290,664, Cl. 339-156.00R.

Trainer, Lawrence E. Coal stove. 4,290,410, Cl. 126-146.000.

Trasavage, Robert: *See—*
Boduch, Paul; and Trasavage, Robert, 4,291,118, Cl. 430-313.000.

Tremp, Walter, to Schlossfabrik Schulte & Co. Hanger device, particularly for pipelines in buildings. 4,290,571, Cl. 248-59.000.

Trenec, Gerard: *See—*
Pinard, Michel; Aminoff, Carl; Trenec, Gerard; and Laloe, Franck, 4,291,281, Cl. 331-94.50C.

Trent, Jett B.; and Murphy, Jimmy L., to United States of America, Energy. Apparatus for maintaining alignment of a shrinking weld joint in an electron-beam welding operation. 4,291,219, Cl. 219-121.0EY.

Tresper, Erhard: *See—*
Hucks, Uwe; Wulff, Claus; Tresper, Erhard; Vernaleken, Hugo; and Selbeck, Harald, 4,290,977, Cl. 260-973.000.

Triestram, Douglas E.: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,290,836, Cl. 156-171.000.

Triplett, William C.; and Brauer, Walter H. Ablatible drill. 4,290,498, Cl. 175-379.000.

Tropicana Products, Inc.: *See—*
Rossi, Anthony T., 4,290,797, Cl. 65-335.000.

Trouve, Jean: *See—*
Maupre, Jean-Pierre; and Trouve, Jean, 4,290,822, Cl. 134-19.000.

Trumble, William P., to Northern Telecom Limited. Pulp insulation repair. 4,291,094, Cl. 428-380.000.

Tsang, Won-Tien, to Bell Telephone Laboratories, Incorporated. MOS Devices. 4,291,327, Cl. 357-52.000.

Tsuchiya, Hidetaka: *See—*
Nakajima, Koichi; and Tsuchiya, Hidetaka, 4,291,402, Cl. 368-276.000.

Tsuchiya, Hiroaki: *See—*
Matsui, Kunio; Tsuchiya, Hiroaki; Suzuki, Ryushi; and Omura, Takayoshi, 4,290,791, Cl. 55-399.000.

Tsukahara, Hirokazu; Fuchigami, Mitsuru; and Kagota, Nobuhiro, to Mitsubishi Paper Mills, Ltd. Desensitizer for no-carbon copy paper. 4,291,102, Cl. 428-537.000.

Tsunefuji, Katsuhiko: *See—*
Maitani, Yoshihisa; and Tsunefuji, Katsuhiko, 4,290,681, Cl. 354-230.000.

Tsunekawa, Tokuichi: *See—*
Sakane, Toshio; Taguchi, Tetsuya; Ogawa, Masahiko; Tamura, Shuichi; and Tsunekawa, Tokuichi, 4,291,223, Cl. 250-201.000.

Tu, Hosheng, to UOP Inc. Transalkylation process. 4,291,186, Cl. 585-475.000.

Tucker, Robert S. Stave assemblies, staves, and tubs constructed therewith. 4,290,241, Cl. 52-36.000.

Turcotte, Joseph G. Cytotoxic liponucleotide analogs. 4,291,024, Cl. 424-180.000.

Turner, Larry G., to Bristol Corporation. Valve plate. 4,290,445, Cl. 137-359.000.

Tuthill, Richard S.: *See—*
Coburn, Robert E.; Gabriel, Ronald M.; and Tuthill, Richard S., 4,290,558, Cl. 239-400.000.

Tuttle, Lawrence L.: *See—*
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,290,865, Cl. 204-106.000.

Twite, Terrance M.; and Huston, Wilmer S. Electrical power generating system. 4,290,266, Cl. 60-641.200.

UBE Industries, Ltd.: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Sasaki, Ichiro; Itatani, Hiroshi; and Kashima, Mikito, 4,290,936, Cl. 260-33.40P.
Umemura, Sumio; Ohdan, Kyoji; Hidaka, Mikio; and Kurafuji, Toshio, 4,290,922, Cl. 252-456.000.

Uchiyama, Takashi: *See—*
Saito, Syuichiro; Uchiyama, Takashi; and Yoshida, Syozo, 4,290,682, Cl. 354-234.000.
Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; Sakai, Shinji; Uchiyama, Takashi; and Momiyama, Kikuo, 4,290,686, Cl. 354-289.000.

Udagawa, Takashi: *See—*
Nakanisi, Takatosi; Tanaka, Atsushi; and Udagawa, Takashi, 4,290,385, Cl. 118-730.000.

Ueda, Takeo; and Asano, Shuichi, to Nippon Seiko Kabushiki Kaisha. Seat belt emergency locking device. 4,290,629, Cl. 280-806.000.

Uema, Kenyu: *See—*
Kawashima, Kenichi; Yasuda, Hiroshi; and Uema, Kenyu, 4,291,231, Cl. 250-492.00A.

Uemura, Koretoshi: *See—*
Akabayashi, Hiroshi; Ohyama, Eiji; Shoji, Susumu; Adachi, Masami; Uemura, Koretoshi; and Ogawa, Yoshihisa, 4,291,127, Cl. 560-76.000.

Uenishi, Toshiaki: *See—*
Senda, Jihei; Inoue, Yoshihiro; Uenishi, Toshiaki; Harada, Hidefumi; Nakata, Kouji; and Akagi, Akio, 4,291,010, Cl. 423-594.000.

Uesugi, Nobuo; Miyazawa, Tatsuo; Furudate, Mituaki; Sasaki, Keiichi; and Mizuguchi, Hiroji, to Tokyo Shibaura Denki Kabushiki Kaisha. Nuclear reactor. 4,290,849, Cl. 176-19.00R.

Ultimate Resources, Inc.: *See—*
Roman, Walter C., 4,290,703, Cl. 366-345.000.

Ultra Electronic Controls Limited: *See—*
Duckworth, Roger G., 4,290,875, Cl. 204-298.000.

Umehara, Akira: *See—*
Kondoh, Syunichi; Matsufuji, Akihiro; and Umehara, Akira, 4,290,870, Cl. 204-159.150.

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Umemura, Tetsuya: *See—*
Inoue, Sadao; Umemura, Tetsuya; Suzuki, Hiroshi; and Tago, Makoto, 4,290,806, Cl. 75-153.000.

Unarco Industries, Inc.: *See—*
Gallagher, Ronald M.; Nadler, Michael E.; Highsmith, Charles E.; and Minchey, Richard L., 4,290,370, Cl. 108-53.500.

Unger, William O. Horse boot. 4,290,487, Cl. 168-18.000.

Unican Security Systems, Ltd.: *See—*
Fish, Aaron M.; and Dausseing, Jean-Paul, 4,290,279, Cl. 70-38.00A.

Unimed, Inc.: *See—*
Mulinos, Michael G., 4,291,030, Cl. 424-245.000.

Union Carbide Corporation: *See—*
Beach, William F.; and Mahoney, Dennis M., 4,291,244, Cl. 307-400.000.
Brookstein, David S.; and Colcord, Alton R., 4,290,170, Cl. 19-236.000.
Keogh, Michael J., 4,291,136, Cl. 525-102.000.
Malone, Thomas R.; Foster, Talmage D., Jr., deceased; and Foster, Sue T., executrix, 4,290,899, Cl. 252-8.50A.
Nowlin, Thomas E.; and Raschke, Curt R., 4,291,245, Cl. 307-400.000.
Pelton, John F., 4,290,588, Cl. 266-225.000.
Seldin, Emanuel J.; and Weng, Tu-Lung, 4,290,709, Cl. 403-296.000.
Selines, Ronald J., 4,290,293, Cl. 72-342.000.
Wheeler, Thomas N., 4,291,057, Cl. 424-304.000.

United Kingdom Atomic Energy Authority: *See—*
Brown, Stuart R.; Feest, Eric A.; and Leach, Fred, 4,291,070, Cl. 427-213.000.
Dearnaley, Geoffrey; Steeples, Kenneth; and Saunders, Ian J., 4,290,825, Cl. 148-33.400.
Fowler, Eliot P.; and Taylor, John R., 4,290,663, Cl. 339-143.00R.

United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Daniels, Stephen, 4,290,432, Cl. 128-660.000.

United States of America
Agriculture: *See—*
McGovern, Terrence P.; and Schreck, Carl E., 4,291,041, Cl. 424-267.000.
Air Force: *See—*
Harris, Clarence J., 4,290,302, Cl. 73-86.000.
Vollmoeller, Philip K., 4,290,568, Cl. 244-122.00A.
Army: *See—*
Holmes, Allen B., 4,291,395, Cl. 367-83.000.
Jones, Terry L.; and Miller, Brian S., 4,291,068, Cl. 427-88.000.
Skahill, Fred J., 4,290,339, Cl. 89-33.0CA.
Energy: *See—*
Blanz, John H., 4,290,494, Cl. 173-149.000.
Brewer, Given A., 4,290,311, Cl. 73-730.000.
Bussiere, Jean F.; Welch, David O.; and Suenaga, Masaki, 4,291,105, Cl. 428-616.000.
Caldwell, John T.; Fehlau, Paul E.; and France, Stephen W., 4,291,227, Cl. 250-328.000.
Campbell, David O.; and Buxton, Samuel R., 4,290,967, Cl. 260-429.00R.
Engelhaupt, Darell E., 4,290,858, Cl. 204-12.000.
Stemler, Gary E.; and Scott, Donald N., 4,291,193, Cl. 174-11.00R.
Trent, Jett B.; and Murphy, Jimmy L., 4,291,219, Cl. 219-121.0EY.
Health & Human Services: *See—*
Tabor, Edward; and Gerety, Robert J., 4,291,020, Cl. 424-89.000.
Interior: *See—*
Blickensderfer, Robert, 4,290,877, Cl. 204-298.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Stevens, Martin L. Surface conforming thermal/pressure seal. 4,290,612, Cl. 277-81.00R.
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Chase, Wendell D., 4,291,294, Cl. 340-26.000.
Frosch, Robert A.; and Qader, Shaik A., 4,290,779, Cl. 48-89.000.
Navy: *See—*
Baum, Kurt; and Guest, Allen M., 4,291,171, Cl. 560-156.000.
Daugherty, Thomas L., 4,290,656, Cl. 308-121.000.
Kaloi, Cyril M., 4,291,311, Cl. 343-700.0MS.
Kaloi, Cyril M., 4,291,312, Cl. 343-700.0MS.

Marshall, Albert H.; and Towle, Herbert C., 4,290,757, Cl. 434-12.000.
Martin, Gordon E., 4,291,396, Cl. 367-154.000.
McLandrich, Matthew N., 4,290,697, Cl. 356-350.000.
Thomas, Larry A., 4,291,338, Cl. 358-228.000.

U.S. Philips Corporation: *See—*
Bijma, Jan; Joeres, Helmut; and Johanns, Johannes H. M., 4,291,251, Cl. 313-413.000.
Disco, Paulus J.; Quargentan, Ernesto; and Santalucia, Pietro, 4,290,275, Cl. 62-238.600.

United States Steel Corporation: *See—*
Capriotti, Alfred J., 4,290,289, Cl. 72-31.000.

United Technologies Corporation: *See—*
Coburn, Robert E.; Gabriel, Ronald M.; and Tuthill, Richard S., 4,290,558, Cl. 239-400.000.
Full, Gary G.; and Tedeschi, Rinaldo R., 4,291,382, Cl. 364-551.000.
Jameikis, Saulius M.; Stalcup, Robert K.; Arnold, Joe F.; and Hon, Robert K., 4,290,237, Cl. 51-34.00A.
Tedeschi, Rinaldo R.; and Full, Gary G., 4,291,383, Cl. 364-551.000.
Wynosky, Thomas A.; Campbell, Charles A.; and Mischke, Robert J., 4,290,262, Cl. 60-262.000.

University of California, The Regents of the: *See—*
O'Farrell, Patrick H., 4,290,855, Cl. 204-1.500.

Untz, Robert W.: *See—*
Kizer, Richard W.; Anderson, Arlynn W.; and Untz, Robert W., 4,290,990, Cl. 264-156.000.

UOP Inc.: *See—*
Antos, George J., 4,290,921, Cl. 252-441.000.
Carlson, David H. J., 4,290,916, Cl. 252-430.000.
Carlson, David H. J., 4,290,917, Cl. 252-430.000.
Frame, Robert R., 4,290,913, Cl. 252-428.000.
Homeier, Edwin H., 4,291,143, Cl. 526-123.000.
Tu, Hosheng, 4,291,186, Cl. 585-475.000.

Upjohn Company, The: *See—*
Morton, Douglas R., Jr., 4,291,159, Cl. 542-400.000.
Sih, John C., 4,291,172, Cl. 562-503.000.
Sih, John C., 4,291,173, Cl. 562-503.000.

Urlaub, Alfred, to Maschinenfabrik Augsburg-Nuremberg Aktiengesellchaft. Heat conducting shield for cylinder heads of internal combustion engines. 4,290,396, Cl. 123-193.0CH.

Uroshevich, Miroslav, to Alpha Solarco Inc. Solar collectors. 4,290,418, Cl. 126-439.000.

Usa, Mikio: *See—*
Kuwata, Takeo; Shimada, Shoji; and Usa, Mikio, 4,290,337, Cl. 411-2.000.

Usami, Toshimasa: *See—*
Kobayashi, Tomoyuki; Usami, Toshimasa; Misu, Hiroshi; and Sera, Hidefumi, 4,291,120, Cl. 430-531.000.

USM Corporation: *See—*
Scharer, Hans R.; Antrim, Richard D.; and Strang, John R., 4,290,742, Cl. 425-313.000.

Utagawa, Ken: *See—*
Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,291,224, Cl. 250-204.000.

Vacumet Finishing Inc.: *See—*
Wallace, James J., 4,290,523, Cl. 206-0.820.

Vacuumschmelze GmbH: *See—*
Pfeifer, Friedrich; and Behnke, Wernfried, 4,290,827, Cl. 148-108.000.

Vakil, Himanshu B., to General Electric Company. Means and method for independently controlling vapor compression cycle device evaporator superheat and thermal transfer capacity. 4,290,272, Cl. 62-114.000.

Valeriote, Michael A.; Kellman, Louis C.; and Brandigampola, Don E. Antenna coupler. 4,291,284, Cl. 333-17.00M.

Valliere, Robert, to Scott & Williams, Incorporated. Air-controlled needle latch closing for knitting machine. 4,290,277, Cl. 66-24.000.

Van Breen, Abraham J., to Dysan Corporation. Rigid disc handling device and method. 4,290,734, Cl. 414-786.000.

van den Berg, Johan H., to Archambel, S.A. Adaptor for connecting a wiper blade to a wiper arm. 4,290,164, Cl. 15-250.320.

Van Dyke, John W., Jr.; and Kurchacova, Elva, to Miles Laboratories, Inc. Tetrahydro β-carbolines having anti-hypertensive activity. 4,291,039, Cl. 424-256.000.

VanLandingham, Richard D.: *See—*
Fletcher, Robert L.; VanLandingham, Richard D.; Brown, Sheldon H.; and Rittman, Alan H., 4,291,353, Cl. 360-128.000.

Vanlerberghe, Guy: *See—*
Sebag, Henri; and Vanlerberghe, Guy, 4,290,956, Cl. 260-338.000.

Varadi, Andrew G.: *See—*
Klein, Thomas; Varadi, Andrew G.; and Boettcher, Charles E., 4,290,186, Cl. 29-576.00B.

Varian Associates, Inc.: *See—*
Abbott, Seth R., 4,290,892, Cl. 210-656.000.
Anderson, Weston A., 4,290,310, Cl. 73-626.000.

Vassar, Clyde W.: *See—*
Kemerer, William J.; and Vassar, Clyde W., 4,290,248, Cl. 52-309.160.

Vayssie, Charles: *See—*
Bouillon, Claude; and Vayssie, Charles, 4,290,974, Cl. 260-511.000.

Veeder, George T.: *See—*
Kang, Kenneth S.; and Veeder, George T., 4,291,156, Cl. 536-1.000.

Velsicol Chemical Corporation: *See—*
Luteri, George F., 4,291,158, Cl. 536-115.000.

Veprintsev, Vladimir I.: *See—*
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

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Storandt, Ralf, 4,290,624, Cl. 280-634.000.

Vereschagin, Leonid F.: *See—*
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Vermont American Corp.: *See—*
Clark, Clyde C., 4,290,328, Cl. 81-62.000.

Vernaleken, Hugo: *See—*
Hucks, Uwe; Wulff, Claus; Tresper, Erhard; Vernaleken, Hugo; and Selbeck, Harald, 4,290,977, Cl. 260-973.000.

Victor Company of Japan, Ltd.: *See—*
Ohira, Tsunehisa, 4,291,345, Cl. 360-62.000.

Videau, Daniel: *See—*
Gorgerino, Mario; and Videau, Daniel, 4,290,805, Cl. 75-130.00R.

Vignon, Louis, to Heberlein Hispano SA. Apparatus for forming a fiber strand into cycloidal loops. 4,290,169, Cl. 19-159.00R.

Villa, Jose L.; Sinka, Joseph V.; and Fleming, Joseph P., to Diamond Shamrock Corporation. Glucoheptonate composition. 4,290,817, Cl. 106-315.000.

Villa, Oscar; and Falcon, Jorge A. Convertible container-holder that becomes the neck of a folding receptacle. 4,290,466, Cl. 150-1.000.

Virag, Sandor: *See—*
Knoll, Jozsef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,291,036, Cl. 424-251.000.

Vita Vet Research Group Inc.: *See—*
Jewett, Warren R., 4,290,434, Cl. 128-680.000.

Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Ninova, Maya H.; and Parushev, Stoyan P., to Edinen Centar P Chimia. Method for the preparation of narwedine-type enones. 4,290,862, Cl. 204-59.00R.

Vockenhuber, Peter, to Bolex International SA. Camera. 4,290,679, Cl. 354-196.000.

Voest-Alpine Aktiengesellschaft: *See—*
Kagerhuber, Franz; and Holleis, Gunter, 4,290,478, Cl. 164-448.000.

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Papez, Stanislav, 4,290,319, Cl. 74-604.000.

Vollmoeller, Philip K., to United States of America, Air Force. Aircraft ejection seat safetying device. 4,290,568, Cl. 244-122.00A.

von Hagel, Gunter; and Berlenbach, Norbert, to Passavant-Werke. Method and apparatus for mechanically and chemically treating liquids. 4,290,898, Cl. 210-738.000.

Vorwerk, Helmut: *See—*
Muller, Horst; and Vorwerk, Helmut, 4,291,411, Cl. 455-88.000.

Vorys, Nichols. Follicular phase estrogen or progestin with physiologic estrogen/progestin luteal phase replacement drug delivery system. 4,291,028, Cl. 424-238.000.

Vought Corporation: *See—*
Ely, Richard A.; and McClaren, Sherwood W., III, 4,291,080, Cl. 428-116.000.

Vrabel, Edward A.: *See—*
Bennett, Moreland P.; and Vrabel, Edward A., 4,291,215, Cl. 219-118.000.

Vulcan Materials Company: *See—*
Franks, John A., Jr., 4,291,009, Cl. 423-593.000.

Vyatkin, Viktor L.: *See—*
Krasnov, Valery A.; Klovsky, Yakov A.; Dubov, Igor V.; Shtern, Arkady V.; Vyatkin, Viktor L.; and Shavelzon, Lev A., 4,290,665, Cl. 339-276.00T.

W. R. Grace & Co.: *See—*
Boduch, Paul; and Trasavage, Robert, 4,291,118, Cl. 430-313.000.

WABCO Westinghouse: *See—*
Mazzini, Giulio, 4,290,368, Cl. 105-341.000.

Wada, Sakae: *See—*
Koizumi, Masuo; Sasahara, Kazuo; Murakami, Yasushi; Wada, Sakae; Nakakimura, Hiroshi; Kubodera, Noboru; and Hata, Shun-Ichi, 4,290,953, Cl. 260-333.000.

Waddill, John W.; and Pourmand, Bahram, to Rockwell International Corporation. Digital implementation of parity monitor and alarm. 4,291,403, Cl. 371-5.000.

Waggonfabrik Uerdingen A.G.: *See—*
Brause, Joachim; Gerhard, Thomas; Keller, Manfred; and Olszok, Henry, 4,290,367, Cl. 104-105.000.

Waggott, David, to Thermatime A.G. Internally cooled electrode for hyperthermal treatment and method of use. 4,290,435, Cl. 128-800.000.

Wagner, Alfred; and Ames, Adolf, to Swiss Aluminium Ltd. Process for extruding a composite section, a die for this purpose, and the resultant composite section. 4,290,290, Cl. 72-256.000.

Wagner, Gary L., to Ford Aerospace & Communications Corporation. High bandwidth transversal filter. 4,291,286, Cl. 333-166.000.

Wagner, Roger J.: *See—*
Smolik, John V.; Swanson, Ronald V.; Rubin, Charles P.; Blaschke, James C.; and Wagner, Roger J., 4,290,570, Cl. 244-158.00R.

Wagstaff, Nigel, to Shell Oil Company. Process for the preparation of methane and/or ethane. 4,291,188, Cl. 585-752.000.

Wagstaff, Nigel: *See—*
Dautzenberg, Frits M.; and Wagstaff, Nigel, 4,291,182, Cl. 585-415.000.

Wahl, Karl I.; and Lindstrom, Lars G., to Landstingens Inkopscentral, Ekonomisk Forening. Plaster cutting wire, plaster cast or dressing comprising such wire and method of manufacturing such a plaster cast or dressing. 4,290,424, Cl. 128-91.00A.

Wahlig, Helmut; Dingeldein, Elvira; and Braun, Dietrich, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Medicinally useful, shaped mass of collagen resorbable in the body. 4,291,013, Cl. 424-16.000.

Walde, Robert A.: *See—*
Cebalo, Tony; and Walde, Robert A., 4,290,798, Cl. 71-90.000.

Walden, Klaus: *See—*
Sensis, Siegfried; Schwerdtfeger, Joachim; Walden, Klaus; and Ameling, Dieter, 4,290,800, Cl. 75-12.000.

Wallace, James J., to Vacumet Finishing Inc. Coin holder. 4,290,523, Cl. 206-0.820.

Wallace, Joseph E.: *See—*
Pennell, George F.; Silkensen, Ralph D.; and Wallace, Joseph E., 4,291,351, Cl. 360-113.000.

Waller, Arthur, to Bull Dog Lock Co. Metal fastening plate. 4,290,710, Cl. 403-306.000.

Walter, Karl-Heinz, to Siemens Aktiengesellschaft. Electro-optical display device. 4,291,304, Cl. 340-715.000.

Wandl, Rudolf H., to Kurt Vogelsang GmbH. Agitator for cylindrical containes filled with paint or the like. 4,290,706, Cl. 401-4.000.

Wanek, Donald J.: *See—*
King, Francis K.; and Wanek, Donald J., 4,291,350, Cl. 360-104.000.

Wang, Chia-Gee. Methods and apparatus for separating gases with ventilated blades. 4,290,781, Cl. 55-17.000.

Warburton, Charles E., Jr., to Rohm and Haas Company. Non-woven fabrics bonded by radiation-curable, hazard-free binders. 4,291,087, Cl. 428-288.000.

Ward, Peter: *See—*
Cherry, Peter C.; Newall, Christopher E.; Watson, Nigel S.; Gregory, Gordon I.; and Ward, Peter, 4,290,949, Cl. 260-245.300.

Ward, Terence J., to John Wyeth & Brother Limited. Antidepressant piperidine derivatives. 4,291,042, Cl. 424-267.000.

Warner, Frederick L.: *See—*
Fowler, William H.; and Warner, Frederick L., 4,290,361, Cl. 101-182.000.

Warner Lambert Company: *See—*
Werbel, Leslie M., 4,291,034, Cl. 424-250.000.

Warnock, Richard B.; and Briggs, John A., to Fernseh Inc. Noise filter. 4,291,333, Cl. 358-36.000.

Warren, Richard J., to Chrysler Corporation. Wear resistant coated article. 4,290,510, Cl. 188-218.0XL.

Washio, Isomi; and Onishi, Kenji, to Amada Company, Ltd. Bandsaw blade guiding apparatus. 4,290,330, Cl. 83-820.000.

Washitake, Mitsunori: *See—*
Tachi, Yasuhide; Michishita, Kazuhiko; Nakagami, Jozi; Sawada, Jiro; Washitake, Mitsunori; and Kamano, Yoshiaki, 4,290,962, Cl. 260-397.450.

Wasserman, Allan, to Lowenstein, Felice; and Wasserman, Ronnee M., part interest to each. High denier non-plied frieze yarn and method of making the same. 4,290,260, Cl. 57-210.000.

Wasserman, Ronnee M.: *See—*
Wasserman, Allan, 4,290,260, Cl. 57-210.000.

Watanabe, Nobuyoshi: *See—*
Honda, Shoichi; and Watanabe, Nobuyoshi, 4,290,455, Cl. 137-855.000.

Watanabe, Tsutomu: *See—*
Matsudo, Kazuo; Adaniya, Takeshi; Ohmura, Masaru; Shoji, Masahiro; and Watanabe, Tsutomu, 4,290,860, Cl. 204-27.000.

Watson, Nigel S.: *See—*
Cherry, Peter C.; Newall, Christopher E.; Watson, Nigel S.; Gregory, Gordon I.; and Ward, Peter, 4,290,949, Cl. 260-245.300.

Waukesha-Pearce Industries, Inc.: *See—*
Granger, Donald W., 4,290,271, Cl. 62-53.000.

Weaver, James A., to General Foods Corporation. Attachment for fork lift. 4,290,730, Cl. 414-607.000.

Weaver, Ron L. Chlorine gas generator apparatus. 4,290,873, Cl. 204-228.000.

Wedding, Brent M., to Corning Glass Works. Method of making colored photochromic glasses. 4,290,794, Cl. 65-30.110.

Weger, Kenneth F., Jr.: *See—*
Knaack, Howard L.; and Weger, Kenneth F., Jr., 4,290,281, Cl. 70-54.000.

Wehrli, Hans J.; and Roberts, Timothy P., to Kern Instruments, Inc. Photogrammetric plotting apparatus. 4,290,694, Cl. 356-2.000.

Weidenhagen, Dieter; and Schnaebele, Werner, to Messerschmitt-Bolkow-Blohm G.m.b.H. Guided bomb for use in low level flying. 4,290,364, Cl. 102-384.000.

Weimer, Paul K., to RCA Corporation. Architecture line-transfer CCD imagers. 4,291,239, Cl. 307-221.00D.

Weinberg, Aaron; Ebert, Paul M.; Fee, Joseph J.; Kaminsky, Yaroslav; Keblawi, Feisal S.; and Scales, Walter C., to Mitre Corporation, The. Spread spectrum communications method and apparatus. 4,291,409, Cl. 375-1.000.

Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of ethylene copolymer and propylene copolymer. 4,291,092, Cl. 428-349.000.

Welch, David O.: *See—*
Bussiere, Jean F.; Welch, David O.; and Suenaga, Masaki, 4,291,105, Cl. 428-616.000.

Wells, Lowell J.: *See—*
Rupp, Thomas F.; and Wells, Lowell J., 4,290,533, Cl. 215-1.00R.

Wen, Cheng P.; Kuvas, Reidar L.; and Immorlica, Anthony A., Jr., to Rockwell International Corporation. Heterojunction IMPATT diode. 4,291,320, Cl. 357-13.000.

Weng, Tu-Lung: *See—*
Seldin, Emanuel J.; and Weng, Tu-Lung, 4,290,709, Cl. 403-296.000.

Werbel, Leslie M., to Warner Lambert Company. 7-Chloro-3-substituted aryl-3,4-dihydro-1,9(2H,10H) and 10 hydroxy acridinedioneimines having antimalarial activity. 4,291,034, Cl. 424-250.000.

Werner, Heinz: *See—*
Hensel, Wolfgang; Berghof, Hans-Joachim; and Werner, Heinz, 4,290,647, Cl. 297-362.000.

Wernet, William F.: *See—*
Adams, William J.; Wernet, William F.; and Haskins, Steve W., 4,291,202, Cl. 179-103.000.

Wessel, James K.: *See—*
Gordon, David J.; and Wessel, James K., 4,290,896, Cl. 210-710.000.

West, Jeffery L.; and Berry, Randy, to Foster-Miller Associates, Inc. Torque limiter. 4,290,516, Cl. 192-56.00L.

Western Electric Co., Inc.: *See—*
Lawrence, Hopeton S., 4,290,182, Cl. 29-527.400.

Western Geophysical Co. of America: *See—*
Strange, Booth B., 4,290,714, Cl. 405-60.000.

Westinghouse Electric Corp.: *See—*
Bhalla, Ranbir S., 4,291,250, Cl. 313-220.000.
Buchanan, James E.; and Field, Marshall L., Jr., 4,291,387, Cl. 364-757.000.
Buck, Daniel C., 4,291,279, Cl. 330-287.000.
Charles, Larry L., 4,291,370, Cl. 364-200.000.
Cromer, Charles F.; Yoon, Kue H.; Hess, Robert L.; Kelsey, Thomas; and Caithness, Michael G., 4,291,208, Cl. 200-148.00A.
Hanes, Maurice H.; and Schlegel, Earl S., 4,291,329, Cl. 357-64.000.
Harman, Douglas G.; Lambert, Ralph E.; and Gruber, George W., 4,290,303, Cl. 73-105.000.
Kirschbaum, Herbert S., 4,291,233, Cl. 290-1.00C.
Lessmann, Gerald G.; Simpson, Ronald P.; Reichenecker, William J.; and O'Brokta, Ronald D., 4,291,220, Cl. 219-137.00R.
Provine, Daniel J., 4,291,308, Cl. 343-5.0SC.
Seidling, Eugene H.; and Salemi, Nicholas A., 4,291,209, Cl. 200-153.00G.
Wolf, Thomas G., 4,291,375, Cl. 364-483.000.

Wetterskog, Herman E.: *See—*
Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., 4,291,091, Cl. 428-336.000.

Wheeler, Thomas N., to Union Carbide Corporation. Biocidal esters of halo-4-alkenoic acids. 4,291,057, Cl. 424-304.000.

Whirlpool Corporation: *See—*
Braga, Albert T.; Cartier, Roger J.; Getz, Edward H.; and Hafstrom, Warren R., 4,291,238, Cl. 307-141.400.

White, Ronald E.: *See—*
Wright, George C.; and White, Ronald E., 4,291,163, Cl. 546-164.000.

White, Roy L.; Leevers, David F. A.; and Kitchin, Peter W., to Dresser Europe S.A. Fuel-dispensing system with self-checking means. 4,290,538, Cl. 222-25.000.

White, William R.: *See—*
Levine, Stephen A.; and White, William R., 4,290,902, Cl. 252-32.70E.

Whitefield, Rodney J., to International Business Machines Corporation. Plural line acousto-optically modulated laser scanning system. 4,290,672, Cl. 350-358.000.

Whiteley, Desmond, to Fletcher, John, a part interest. Cementitious products. 4,290,750, Cl. 432-106.000.

Whitesides, Michael: *See—*
Hoefer, Peter S.; and Whitesides, Michael, 4,290,871, Cl. 204-180.00G.

Whitmore, Keith E., to Eastman Kodak Company. Additive color imaging using a silverless recording element. 4,291,109, Cl. 430-42.000.

Whitney, Richard P., to Sivyer Steel Corporation. Method of attaching a protective cap to a shredder component. 4,290,545, Cl. 228-139.000.

Whitney, William P., II: *See—*
Kane, William T.; and Whitney, William P., II, 4,290,586, Cl. 266-80.000.

Wicklund, Peter A.: *See—*
Topor, Michael G.; Wicklund, Peter A.; and Ivers, John T., 4,290,989, Cl. 264-142.000.

Wickman Machine Tool Sales Limited: *See—*
McConnell, Edmund A.; Yearsley, Norman; and Blockley, Alec G., 4,290,514, Cl. 192-30.00W.

Widmann, Dietrich: *See—*
Pfleiderer, Hans-Jorg; and Widmann, Dietrich, 4,291,321, Cl. 357-23.000.

Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Prezewowsky, Klaus; Casals-Stenzel, Jorge; and Losert, Wolfgang, to Schering, Aktiengesellschaft. 6β,7β;15,16-Dimethylene-1,4-androstadien-3-ones, their preparation and use as medicinal agents. 4,291,029, Cl. 424-238.000.

Wilcox, Fred F. Clamping device. 4,290,171, Cl. 24-18.000.

Wildenradt, Carl H. Single cylinder deadbolt lock mechanism. 4,290,282, Cl. 70-129.000.

Wilkie, Arnold E., to Monsanto Company. Twisted singles carpet yarn. 4,290,378, Cl. 112-410.000.

Willame, Jean: *See—*
Cappelletto, Renzo; and Willame, Jean, 4,291,379, Cl. 364-506.000.

Williams, Arthur R.; and Williams, Gareth T., to Dunlop Limited. Porous tire tread and method of bonding discrete particles to form same. 4,290,470, Cl. 152-209.00R.

Williams, David R.: *See—*
Tobkes, Martin; Dann, Murray; Klothen, Irving; Spicer, Larry D.; and Williams, David R., 4,291,026, Cl. 424-181.000.

Williams, Emil K.: *See—*
Beynet, Pierre A.; and Williams, Emil K., 4,290,715, Cl. 405-169.000.

Williams, Gareth T.: *See—*
Williams, Arthur R.; and Williams, Gareth T., 4,290,470, Cl. 152-209.00R.

Williams, John B.: *See—*
Moran, George A.; and Williams, John B., 4,290,581, Cl. 251-172.000.

Williams, Robert E.: *See—*
Dyett, Derek H.; Hirsh, Ivan Y.; Preston, Edward G.; and Williams, Robert E., 4,290,518, Cl. 198-450.000.

Wilmshurst, David A.: *See—*
Pierson, James G.; and Wilmshurst, David A., 4,290,473, Cl. 160-120.000.

Wilson, Alexander D.: *See—*
Harris, Richard G.; McRitchie, Allan C.; and Wilson, Alexander D., 4,291,071, Cl. 427-220.000.

Wilson, Charles A., II: *See—*
Mark, Victor; and Wilson, Charles A., II, 4,291,177, Cl. 568-726.000.

Wilson, Denney R. Variable lock differential. 4,290,321, Cl. 74-711.000.

Wilson, Dennis R., to Mostek Corporation. Active refresh circuit for dynamic MOS circuits. 4,291,393, Cl. 365-203.000.

Wilson, Phillip S.: *See—*
Mark, Victor; and Wilson, Phillip S., 4,290,934, Cl. 260-30.80R.

Wilson, R. Marshall; and Rekers, John W., to Research Corporation. 1,5-Dimethyl-6,7-dioxabicyclo[3.2.1]-octane and use to control pine beetles. 4,291,051, Cl. 424-278.000.

Wilson, Walter M.: *See—*
Eccleston, Thomas F.; and Wilson, Walter M., 4,291,192, Cl. 174-11.0BH.

Wing Industries, Inc.: *See—*
Newton, Emerson H., 4,290,789, Cl. 55-269.000.

Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, to Ciba-Geigy Corporation. Pyrrole stabilizers for chlorine-containing thermoplastics. 4,290,940, Cl. 260-45.80N.

Wise, Donald E. Convertible flat/drop trailer. 4,290,642, Cl. 296-182.000.

Wishman, Marvin; Taylor, Peter A.; and Leininger, James C., to Phillips Petroleum Co. Stabilized polyolefin substrate overcoated with an ethoxylated lubricant and a phosphate ester. 4,291,093, Cl. 428-379.000.

Wissner, Allan; and Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Hydroxymethyl-15-hydroxy-prosten-1-ol derivatives. 4,291,174, Cl. 568-330.000.

Wissner, Allan; and Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Hydroxymethyl-11-deoxy-15-hydroxy-prosten-1-ol-derivatives. 4,291,175, Cl. 568-330.000.

Witchger, William J. Electric coil lead attachment means and method. 4,291,292, Cl. 336-192.000.

Witt, Henry J.: *See—*
Cook, Richard B.; and Witt, Henry J., 4,290,911, Cl. 252-316.000.

Witter, Donald R.: *See—*
Nathan, Bernard D.; and Witter, Donald R., 4,291,314, Cl. 346-74.500.

Witzel, Frank: *See—*
Mackay, Donald A. M.; Witzel, Frank; and Linke, Harald A. B., 4,291,045, Cl. 424-270.000.

Wojcik, Bruce C.: *See—*
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,290,865, Cl. 204-106.000.

Wolber, Robert; and Obergfell, Walter, to Gebruder Junghans GmbH. Slide switch. 4,291,210, Cl. 200-252.000.

Wolf, Thomas G., to Westinghouse Electric Corp. Portable programmer-reader unit for programmable time registering electric energy meters. 4,291,375, Cl. 364-483.000.

Wolff, Gerard: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, 4,291,032, Cl. 424-248.510.

Wolff, Per L., to Koninklijke Emballage Industrie Van Leer B.V. Foam products from furfuryl alcohol-amino-formaldehyde. 4,291,088, Cl. 428-313.000.

Wolma, Kenneth M.: *See—*
Brown, Kenneth H.; and Wolma, Kenneth M., 4,290,811, Cl. 106-1.170.

Woltersdorf, Otto W., Jr.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. 6,7-Disubstituted-2 or 2,2-substituted-5-substituted-1-indanones. 4,291,050, Cl. 424-278.000.

Wood, John C.: *See—*
Morgan, Gordon L.; and Wood, John C., 4,290,348, Cl. 98-115.0SB.

Woodall, Robert M.; Damron, Eugene; and Mick, Martin B., to Exxon Production Research Company. Removal of carbonyl sulfide from liquid hydrocarbon streams. 4,290,879, Cl. 208-232.000.

Woodard, Kenneth E., Jr.: *See—*
Kadija, Igor V.; and Woodard, Kenneth E., Jr., 4,290,833, Cl. 156-94.000.

Wooster, Kirk A. Apparatus for storing and displaying record albums. 4,290,530, Cl. 211-40.000.

Worm, Manfred: *See—*
Martin, Lawrence L.; and Worm, Manfred, 4,290,958, Cl. 260-346.730.

Worthington, Florence, administratrix: *See—*
Worthington, Ronald L., deceased; and Worthington, Florence, administratrix, 4,290,719, Cl. 409-180.000.

Worthington, Ronald L., deceased; and by Worthington, Florence, administratrix. Cutting guide. 4,290,719, Cl. 409-180.000.

Wright, George C.; and White, Ronald E., to Morton-Norwich Products, Inc. Decahydroquinoline-2-carboxylic acid compounds. 4,291,163, Cl. 546-164.000.

Wright, Howard J.; Leonard, David P.; and Etzell, Roger A., to Cook Paint and Varnish Company. Acrylic resin-acrylic microgel compositions. 4,290,932, Cl. 260-29.6WB.

Wright, Winston F. Sluice construction. 4,290,527, Cl. 209-12.000.

Wulff, Claus: *See—*
Hucks, Uwe; Wulff, Claus; Tresper, Erhard; Vernaleken, Hugo; and Selbeck, Harald, 4,290,977, Cl. 260-973.000.

Wulfing, Johann A.: *See—*
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,291,037, Cl. 424-253.000.

Wulz, Helmut, to Optilon W. Erich Heilmann GmbH. Slide fastener and method of making same. 4,290,176, Cl. 24-205.16R.

Wuthrich, Paul; and Mascia, Frank, to Timex Corporation. Manual date advance mechanism for a watch. 4,291,397, Cl. 368-35.000.

Wynosky, Thomas A.; Campbell, Charles A.; and Mischke, Robert J., to United Technologies Corporation. Two-dimensional plug nozzle. 4,290,262, Cl. 60-262.000.

Xerox Corporation: *See—*
Lee, Lieng-Huang, 4,291,110, Cl. 430-59.000.
Lu, Chin H., 4,291,111, Cl. 430-107.000.
Lu, Chin H., 4,291,112, Cl. 430-110.000.

Yagi, Toshio: *See—*
Sato, Hideo; and Yagi, Toshio, 4,291,138, Cl. 525-247.000.

Yajima, Tatsuo, to Konishiroku Photo Industry Co., Ltd. Composite recording apparatus for recording information from different information sources. 4,291,341, Cl. 358-300.000.

Yamada, Kazuji; Suzuki, Seiko; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Kanzawa, Ryosaku; Takahashi, Minoru; and Minorikawa, Hitoshi, to Hitachi, Ltd. Semiconductor absolute pressure transducer assembly and method. 4,291,293, Cl. 338-4.000.

Yamada, Tsuyoshi, to Showa Denko Kabushiki Kaisha. Method for analyzing acidic substances by high speed liquid chromatography. 4,290,776, Cl. 23-230.00R.

Yamada, Yoji: *See—*
Nishimura, Sadanori; and Yamada, Yoji, 4,290,513, Cl. 192-3.220.

Yamagata University, The President of: *See—*
Morita, Minoru; Sato, Shimio; Hashimoto, Takao; and Kitaoka, Yoji, 4,290,999, Cl. 422-194.000.

Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for internal combustion engine. 4,290,301, Cl. 73-35.000.

Yamaguchi, Hiroaki: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,290,398, Cl. 123-425.000.

Yamaguchi, Noboru: *See—*
Mayama, Koichi; Yamaguchi, Noboru; Sugie, Mamoru; Kita, Yuzo; and Yoshizawa, Shigeru, 4,291,241, Cl. 307-269.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Tanaka, Ko, 4,290,501, Cl. 181-228.000.

Yamaki, Kiyoshi: *See—*
Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takashi; Matsuoka, Hideoki; Nomura, Hiroyuki; and Mogi, Takaaki, 4,291,373, Cl. 364-443.000.

Yamamoto Bojin Megane Co., Ltd.: *See—*
Yamamoto, Tamenobu, 4,290,673, Cl. 351-62.000.

Yamamoto, Osamu: *See—*
Sasaki, Shigeo; and Yamamoto, Osamu, 4,290,562, Cl. 242-74.000.
Takenaga, Mutsuo; and Yamamoto, Osamu, 4,290,909, Cl. 252-301.40R.

Yamamoto, Shigehiko: *See—*
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.

Yamamoto, Takaharu: *See—*
Asai, Tsuyoshi; Fujimori, Naoji; and Yamamoto, Takaharu, 4,290,807, Cl. 75-233.000.

Yamamoto, Tamenobu, to Yamamoto Bojin Megane Co., Ltd. Ski goggles. 4,290,673, Cl. 351-62.000.

Yamashita, Kenji: *See—*
Sakano, Kenji; Yamashita, Masahiro; Yamashita, Kenji; and Aketa, Masahiro, 4,290,395, Cl. 123-192.00B.

Yamashita, Masahiro: *See—*
Sakano, Kenji; Yamashita, Masahiro; Yamashita, Kenji; and Aketa, Masahiro, 4,290,395, Cl. 123-192.00B.

Yamauchi, Takashi: *See—*
Maruhashi, Shigeaki; Hasegawa, Morihiro; and Yamauchi, Takashi, 4,290,803, Cl. 75-52.000.

Yamazaki, Hiroshi: *See*—
Kakeno, Sadao; Hayashi, Taisen; Komai, Hiromichi; and Yamazaki, Hiroshi, 4,291,316, Cl. 346-140.00R.

Yamazaki, Isamu: *See*—
Mese, Michihiro; Kashioka, Seiji; Ejiri, Masakazu; Miyatake, Takafumi; Yamazaki, Isamu; and Hamada, Toshimitsu, 4,291,334, Cl. 358-101.000.

Yannoni, Costantino S.: *See*—
Hofer, Donald C.; Kendrick, Raymond D.; and Yannoni, Costantino S., 4,291,272, Cl. 324-313.000.

Yanshin, Ivan S.: *See*—
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Yanshina, Elena S.: *See*—
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Yanshina, Klavdia M.: *See*—
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Yanshina, Zinaida P.: *See*—
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Yarborough, Lyman: *See*—
Sharp, Shelby P.; and Yarborough, Lyman, 4,290,900, Cl. 252-8.55B.

Yarema, Raymond J.; and Studtmann, George H., to Borg-Warner Corporation. Pulse-width modulated inverter system and method. 4,291,368, Cl. 363-41.000.

Yasuda, Hiroshi: *See*—
Kawashima, Kenichi; Yasuda, Hiroshi; and Uema, Kenyu, 4,291,231, Cl. 250-492.00A.

Yasui, Seimei; Sagou, Masakazu; Noguchi, Takanobu; Toyoshima, Yoshiki; and Saito, Junzo, to Sumitomo Chemical Company, Limited. Process for preparation of a phenolic-polybutadiene-HCHO resin composition useful for laminated sheet. 4,291,148, Cl. 528-142.000.

Yasumasa, Sakai: *See*—
Kenji, Fujisawa; Kazuo, Katsube; Tadataka, Yako; Koich, Uemura; Yuichi, Harada; and Yasumasa, Sakai, 4,291,090, Cl. 428-327.000.

Yates, Douglas A.; Hatch, Arthur E.; and Goldsmith, Jeff M., to Mobil Tyco Solar Energy Corporation. Method for crystal growth control. 4,290,835, Cl. 156-601.000.

Yearsley, Norman: *See*—
McConnell, Edmund A.; Yearsley, Norman; and Blockley, Alec G., 4,290,514, Cl. 192-30.00W.

Yeda Research & Development Co. Ltd.: *See*—
Hare, P. Edgar; and Gil-Av, E., 4,290,893, Cl. 210-656.000.

Yissum Research & Development Co. of Hebrew Univ. of Jeru.: *See*—
Baniel, Avraham M., 4,291,007, Cl. 423-390.000.

Yonaga, Yoshifumi, to Maruyoshi Sangyo Kabushiki Kaisha. Remote telephone system. 4,291,197, Cl. 179-2.0EA.

Yoneda, Yushin. Manufacture of rotatable ignition files or flint wheels. 4,290,292, Cl. 72-330.000.

Yoneta, Toshio; Shibahara, Seiji; Seki, Shigeo; and Fukatsu, Shunzo, to Meiji Seika Kaisha, Ltd. Process for the production of 4-aminobutyric acid or its derivatives. 4,290,972, Cl. 260-465.00B.

Yoneyama, Masakazu: *See*—
Minamizono, Junji; Yoneyama, Masakazu; and Sasaki, Jun, 4,291,113, Cl. 430-202.000.

Yoon, Kue H.: *See*—
Cromer, Charles F.; Yoon, Kue H.; Hess, Robert L.; Kelsey, Thomas; and Caithness, Michael G., 4,291,208, Cl. 200-148.00A.

Yoshida, Edward M., to Boeing Company, The. Motor quick-change chuck system for tool having cylindrically shaped adapter portion wherein relative longitudinal movement between chuck and tool being driven is eliminated. 4,290,617, Cl. 279-75.000.

Yoshida Kogyo K. K.: *See*—
Takahashi, Kihei, 4,290,194, Cl. 29-766.000.

Yoshida, Satoshi: *See*—
Kido, Keishiro; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,291,119, Cl. 430-348.000.

Yoshida, Syozo: *See*—
Saito, Syuichiro; Uchiyama, Takashi; and Yoshida, Syozo, 4,290,682, Cl. 354-234.000.

Yoshiyuki, Hidetoshi, to Takara Company. Cabinet system. 4,290,659, Cl. 312-224.000.

Yoshizawa, Shigeru: *See*—
Mayama, Koichi; Yamaguchi, Noboru; Sugie, Mamoru; Kita, Yuzo; and Yoshizawa, Shigeru, 4,291,241, Cl. 307-269.000.

Young, Frederick A.; and Griffin, Edward L., to Hughes Aircraft Company. Evanescent mode filter. 4,291,287, Cl. 333-210.000.

Young, Frederick A.; Griffin, Edward L.; and Hendrick, Louis W., to Hughes Aircraft Company. Folded end-coupled general response filter. 4,291,288, Cl. 333-212.000.

Youngstown Sheet and Tube Company: *See*—
DeGeorge, Bernard J.; Hermanson, Dean E.; and Tomas, Carlos, 4,290,463, Cl. 141-387.000.

Yuichi, Harada: *See*—
Kenji, Fujisawa; Kazuo, Katsube; Tadataka, Yako; Koich, Uemura; Yuichi, Harada; and Yasumasa, Sakai, 4,291,090, Cl. 428-327.000.

Yuito, Isamu: *See*—
Aida, Toshiyuki; Yamamoto, Shigehiko; Taguchi, Sadanori; Yuito, Isamu; Honda, Yukio; Kawabe, Ushio; Misumi, Akira; Kawamura, Takao; Fukushima, Hiroshi; and Degawa, Yoshio, 4,291,252, Cl. 313-346.00R.

Yun, Sun Y. Padlock. 4,290,280, Cl. 70-38.00A.

Yusa, Hideo: *See*—
Horiuchi, Susumu; Hirano, Mikio; Yusa, Hideo; Chino, Koichi; and Hayashi, Tatsuo, 4,290,907, Cl. 252-301.10W.
Horiuchi, Susumu; Taniguchi, Takashi; Takeshima, Masaki; Hirano, Mikio; and Yusa, Hideo, 4,290,908, Cl. 252-301.10W.

Zagorova, Maria S.: *See*—
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Ninova, Maya H.; and Parushev, Stoyan P., 4,290,862, Cl. 204-59.00R.

Zahnradfabrik Friedrichshafen, AG.: *See*—
Liebert, Karl-Heinz; and Tischer, Werner, 4,290,738, Cl. 418-61.00B.

Zaroor, Shlomo. Hand-utensil particularly useful for removing the peel of citrus fruit. 4,290,197, Cl. 30-123.700.

Zassinovich, Grazia: *See*—
Mestroni, Giovanni; Zassinovich, Grazia; and Camus, Annamaria, 4,290,961, Cl. 260-397.400.

Zedekar, Stanley L.: *See*—
Noar, Raymond; Zedekar, Stanley L.; Albertson, Michael D.; Pointer, Carl W.; Gall, Chester E.; and Fuller, Alfred B., 4,290,316, Cl. 74-5.460.

Zeigler, Theodore R. Collapsible self-supporting structures and panels and hub therefor. 4,290,244, Cl. 52-80.000.

Zens, John F.: *See*—
Cumming, Richard J.; DeBano, John; Mertz, Harold J., Jr.; Nordeen, Donald L.; Sajewski, Vincent F.; and Zens, John F., 4,290,627, Cl. 280-729.000.

Zepp, Charles M.: *See*—
Foley, James W.; Locatell, Louis, Jr.; and Zepp, Charles M., 4,290,951, Cl. 260-326.12R.

Ziegler, Franz: *See*—
Ludemann, Heinz; and Ziegler, Franz, 4,290,594, Cl. 271-180.000.

Zimmer, Ernst, to Industriewerke Karlsruhe Augsburg AG Zweigniederlassung Keller & Knappich. Tool positioner. 4,290,239, Cl. 51-126.000.

Zindler, Hugh A. Clutch and brake mechanism. 4,290,512, Cl. 192-1.000.

Ziniades, Emmanuel J. Method and apparatus for providing optimum fuel-to-air ratio for internal combustion engine. 4,290,403, Cl. 123-568.000.

Zinke, Horst; Lorenz, Hans J.; and Linhart, Helmut, to Ciba-Geigy Corporation. Stabilization systems from triarylphosphites and phenols. 4,290,941, Cl. 260-45.85B.

Zobel, Henry F.; and Maxwell, James L., to CPC International Inc. Staling resistant baked food product. 4,291,065, Cl. 426-549.000.

Zubkov, Vladimir M.: *See*—
Kolchin, Anatoly V.; Veprintsev, Vladimir I.; Klyachko, Lev I.; Novgorodov, Alexandr S.; Zubkov, Vladimir M.; Vereschagin, Leonid F.; Khvostantsev, Lev G.; Novikov, Albert P.; Yanshina, Klavdia M.; Yanshina, Elena S.; Yanshin, Ivan S.; and Yanshina, Zinaida P., 4,290,741, Cl. 425-77.000.

Zubryckyj, Nicolaus: *See*—
Bolton, Gerald L.; Sefton, Verner B.; and Zubryckyj, Nicolaus, 4,290,866, Cl. 204-119.000.

Zwosta, Helge: *See*—
Kobler, Ingo; Mamberer, Hans; and Zwosta, Helge, 4,290,362, Cl. 101-350.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF SEPTEMBER, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Belgium Tool & Die Company: *See*—
Stroobants, Alphonse; and Cvacho, Daniel S., Re. 30,746, Cl. 82-56.000.

Chambless, Leo B., to General Electric Company. Reverse cycle heat pump circuit. Re. 30,745, Cl. 62-324.100.

Cvacho, Daniel S.: *See*—
Stroobants, Alphonse; and Cvacho, Daniel S., Re. 30,746, Cl. 82-56.000.

Dierichs, Wolfgang: *See*—
Muszik, Janos A.; and Dierichs, Wolfgang, Re. 30,747, Cl. 260-22.00R.

General Electric Company: *See*—
Chambless, Leo B., Re. 30,745, Cl. 62-324.100.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Muszik, Janos A.; and Dierichs, Wolfgang, Re. 30,747, Cl. 260-22.00R.

Muszik, Janos A.; and Dierichs, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Adhesive applicator crayons. Re. 30,747, Cl. 260-22.00R.

Sears, Barry D. Phosphatidyl quaternary ammonium compounds. Re. 30,748, Cl. 260-403.000.

Stroobants, Alphonse; and Cvacho, Daniel S., to Belgium Tool & Die Company. Can cutting apparatus and method. Re. 30,746, Cl. 82-56.000.

LIST OF DESIGN PATENTEES

Anderson, Edward C. Toy whirler or similar article. 260,911, 9-22-81, Cl. D21-92.000.

Answerex, Inc.: *See*—
McCain, Lawrence G., 260,882, Cl. D14-12.000.

Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., to Appel, Mel. Toy safe. 260,912, 9-22-81, Cl. D21-122.000.

Asher, James C.: *See*—
McKinsey, Kevin P.; and Asher, James C., 260,881, Cl. D14-11.000.

Atari, Inc.: *See*—
McKinsey, Kevin P.; and Asher, James C., 260,881, Cl. D14-11.000.

Avramovich, Radosav, to Daniel Woodhead, Inc. Electrical connector housing. 260,879, 9-22-81, Cl. D13-28.000.

B. F. Goodrich Company, The: *See*—
Wright, David A.; and Strauts, Maija V., 260,872, Cl. D12-146.000.

Ball Corporation: *See*—
Friebel, Virgil R., 260,845, Cl. D32-40.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Schneider, Louis; and Muth, Hans A., 260,821, Cl. D3-71.000.

Bell & Howell Company: *See*—
Overman, John W., 260,903, Cl. D16-27.000.

Bentley, William F.: *See*—
Luedtke, Arthur; and Bentley, William F., 260,895, Cl. D14-86.000.

Biederman, Irving. Pneumatic orbital polisher. 260,847, 9-22-81, Cl. D8-62.000.

Binney & Smith: *See*—
Lieberman, Sheldon, 260,840, Cl. D7-22.000.

Bofors America, Inc.: *See*—
Spoor, Martin, 260,880, Cl. D13-99.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Kao, Tonis, 260,900, Cl. D32-22.000.
Reichl, Ernst, 260,933, Cl. D24-62.000.

Boukma, John, to Howard Miller Clock Company. Grandfather clock with mirrored movement. 260,859, 9-22-81, Cl. D10-16.000.

Broyhill Furniture Industries, Inc.: *See*—
Smith, Melbourne F., Jr., 260,835, Cl. D6-172.000.

Burnham, Geoffrey: *See*—
Laird, Richard A.; and Burnham, Geoffrey, 260,843, Cl. D7-77.000.

Burr, John F.: *See*—
Dolinar, Kevin D.; and Burr, John F., 260,878, Cl. D13-13.000.

Cargile, W. Allen. Automobile. 260,871, 9-22-81, Cl. D12-85.000.

Casey, Eugene J., Jr.: *See*—
Chieda, Robert; Johnson, Robert W.; Smith, Douglas W.; and Casey, Eugene J., Jr., 260,898, Cl. D15-12.000.

Chapman, Anthony C. B., to Lotus Cars Limited. Model racing car. 260,913, 9-22-81, Cl. D21-137.000.

Chaskin, Harold. Flag. 260,868, 9-22-81, Cl. D11-180.000.

Chaskin, Harold. Flag. 260,869, 9-22-81, Cl. D11-180.000.

Chaskin, Harold. Flag. 260,870, 9-22-81, Cl. D11-180.000.

Chieda, Robert; Johnson, Robert W.; Smith, Douglas W.; and Casey, Eugene J., Jr., to Toro Company, The. Snow thrower housing. 260,898, 9-22-81, Cl. D15-12.000.

Chodorow, Ingram S.; and Hall, Richard, to Technalytics, Inc. Nasogastric tube stabilizer. 260,932, 9-22-81, Cl. D24-53.000.

Clarence Controls Inc.: *See*—
Pershyn, Robert S., 260,876, Cl. D13-4.000.
Scott, Brent E.; and Pershyn, Robert S., 260,877, Cl. D13-4.000.

Computer Roomers: *See*—
Verdesca, Sandra R.; and Verdesca, Joseph T., 260,832, Cl. D6-132.000.

Consolidation Coal Company: *See*—
Dolinar, Kevin D.; and Burr, John F., 260,878, Cl. D13-13.000.

Conti, Rino, to Dart Industries Inc. Cover for a food container. 260,844, 9-22-81, Cl. D7-131.000.

Cope, James R. Fishing lure. 260,923, 9-22-81, Cl. D22-28.000.

Cordray, Paul; and Seidler, Migdonio. Toilet tissue holder. 260,828, 9-22-81, Cl. D6-97.000.

Courreges, Andre. Combined bottle and cap. 260,858, 9-22-81, Cl. D9-386.000.

Covey, Laird F.: *See*—
West, Robert F.; and Covey, Laird F., 260,849, Cl. D8-94.000.

Creamer, Joan K., to Dart Industries Inc. Key rack or the like. 260,829, 9-22-81, Cl. D6-114.000.

CTM Computertechnik Muller GmbH: *See*—
Esslinger, Hartmut; Haug, Andreas; and Spreng, Georg, 260,887, Cl. D14-106.000.

Daniel Woodhead, Inc.: *See*—
Avramovich, Radosav, 260,879, Cl. D13-28.000.

Dart Industries Inc.: *See*—
Conti, Rino, 260,844, Cl. D7-131.000.
Creamer, Joan K., 260,829, Cl. D6-114.000.
Trombly, Edgar F., 260,842, Cl. D7-64.000.

Day, Maxwell W. Tent. 260,922, 9-22-81, Cl. D21-253.000.

DeLuca, James M. Racket ball holder. 260,919, 9-22-81, Cl. D21-206.000.

de Polo, Lydia; and Dunbar, Jack G., to General Mills, Inc. Desk or similar article. 260,833, 9-22-81, Cl. D6-161.000.

de Polo, Lydia; and Dunbar, Jack G., to General Mills, Inc. Table or similar article. 260,836, 9-22-81, Cl. D6-177.000.

Dolinar, Kevin D.; and Burr, John F., to Consolidation Coal Company. Junction box. 260,878, 9-22-81, Cl. D13-13.000.

Dolly Toy Company, The: *See*—
Holtvoigt, John H., 260,940, Cl. D26-97.000.

Doman, Theodore L. Parking guide. 260,860, 9-22-81, Cl. D10-110.000.

Drackett Company, The: *See*—
Dusek, Russell L., 260,926, Cl. D23-150.000.
Pardo, John, 260,857, Cl. D9-376.000.

Dresser Industries, Inc.: *See*—
Todd, John A., 260,897, Cl. D15-9.200.

Dunbar, Jack G.: *See*—
de Polo, Lydia; and Dunbar, Jack G., 260,833, Cl. D6-161.000.
de Polo, Lydia; and Dunbar, Jack G., 260,836, Cl. D6-177.000.

Durand, Jean-Jacques. Tumbler or similar article. 260,839, 9-22-81, Cl. D7-14.000.

Dusek, Russell L., to Drackett Company, The. Dispenser for air treating material. 260,926, 9-22-81, Cl. D23-150.000.

Ellermeier, Konrad, to U.S. Philips Corporation. Television camera. 260,894, 9-22-81, Cl. D14-78.000.

Esslinger, Hartmut; Haug, Andreas; and Spreng, Georg, to CTM Computertechnik Muller GmbH. Display screen-terminal. 260,887, 9-22-81, Cl. D14-106.000.

Evans, Homer E. Figurine or similar article. 260,867, 9-22-81, Cl. D11-160.000.

FIG. 1 is a perspective view of a game board, , showing my new design in a playing position: *See*—
Richards, M. David; and FIG. 1 is a perspective view of a game board, , showing my new design in a playing position, 260,909, Cl. D21-15.000.

Figur, Bernd, to Rowenta-Werke, GmbH. Lighter. 260,941, 9-22-81, Cl. D27-36.000.

Figur, Bernd: *See*—
Stutzer, Franz A.; and Figur, Bernd, 260,943, Cl. D27-42.000.

Fink, David, to Windsor Industries, Inc. Portable radio. 260,891, 9-22-81, Cl. D14-70.000.
FMC Corporation: *See—*
Joseph, George L.; and Travinski, George A., 260,899, Cl. D15-28.000.
Friebel, Virgil R., to Ball Corporation. Record brush or similar article. 260,845, 9-22-81, Cl. D32-40.000.
General Mills, Inc.: *See—*
de Polo, Lydia; and Dunbar, Jack G., 260,833, Cl. D6-161.000.
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Gillette Company, The: *See—*
Gray, Michael J., 260,944, Cl. D28-46.000.
Gilmore, Nancy K. Bologna cutter. 260,841, 9-22-81, Cl. D7-43.000.
Giulie, James E.; and Giulie, Joe D. Desk tray. 260,907, 9-22-81, Cl. D19-92.000.
Giulie, Joe D.: *See—*
Giulie, James E.; and Giulie, Joe D., 260,907, Cl. D19-92.000.
Glenn, Edward C. Dowell pin positioner. 260,927, 9-22-81, Cl. D24-10.000.
Gray, Michael J., to Gillette Company, The. Razor. 260,944, 9-22-81, Cl. D28-46.000.
Green, Stephanie J. Artificial Christmas garniture. 260,863, 9 22-81, Cl. D11-121.000.
Greenblatt, Gordon M. Medical flexible tube support. 260,850, 9-22-81, Cl. D8-356.000.
Grusing, Dale E. Combined desk tray, calendar pad holder and desk set. 260,906, 9-22-81, Cl. D19-77.000.
Gueret, Jean-Louis H., to L'Institut Jeanne Piaubert. Body massager. 260,928, 9-22-81, Cl. D24-36.000.
Hall, Richard: *See—*
Chodorow, Ingram S.; and Hall, Richard, 260,932, Cl. D24-53.000.
Haller, John L. Rectangular slide spa. 260,929, 9-22-81, Cl. D24-38.000.
Han, Sang W. Barrel-shaped pendant. 260,861, 9-22-81, Cl. D11-79.000.
Haug, Andreas: *See—*
Esslinger, Hartmut; Haug, Andreas; and Spreng, Georg, 260,887, Cl. D14-106.000.
Hemeyer, Arley C., to Unique Products. Set of vice blocks. 260,848, 9-22-81, Cl. D8-71.000.
Hetrick, Vernon L., to Meyer, Products, Inc. Auxiliary light for vehicle having attached plow blade. 260,937, 9-22-81, Cl. D26-35.000.
Hobson, Haydn H. Corner guard. 260,855, 9-22-81, Cl. D8-403.000.
Holtvoigt, John H., to Dolly Toy Company, The. Decorative lamp. 260,940, 9-22-81, Cl. D26-97.000.
Hotchkiss, John E. Tool holder. 260,831, 9-22-81, Cl. D6-130.000.
Howard Miller Clock Company: *See—*
Boukma, John, 260,859, Cl. D10-16.000.
Hurray, Michael E. Sink. 260,924, 9-22-81, Cl. D23-58.000.
Husted, Martin D., to MSI Data Corporation. Variable keyboard for computer terminal, or the like. 260,883, 9-22-81, Cl. D14-115.000.
Ikeda, Matafumi, to Sharp Corporation. Combined electronic calculating machine and timepiece. 260,904, 9-22-81, Cl. D18-7.000.
Jack Daniel Distillery, Lem Motlow, Prop., Inc.: *See—*
Redmond, Jobie G., 260,825, Cl. D6-60.000.
Johnson, Craig A. Foot control for an electric golf car or the like. 260,873, 9-22-81, Cl. D12-174.000.
Johnson, Robert W.: *See—*
Chieda, Robert; Johnson, Robert W.; Smith, Douglas W.; and Casey, Eugene J., Jr., 260,898, Cl. D15-12.000.
Jones, Georgia A. Stuffed toy. 260,914, 9-22-81, Cl. D21-148.000.
Jones, William C. Spirometric computer. 260,885, 9-22-81, Cl. D14-106.000.
Joseph, George L.; and Travinski, George A., to FMC Corporation. Vehicle track shoe. 260,899, 9-22-81, Cl. D15-28.000.
Kao, Tonis, to Bosch-Siemens Hausgerate GmbH. Vacuum cleaner. 260,900, 9-22-81, Cl. D32-22.000.
Kato, Seiichi. Blind. 260,838, 9-22-81, Cl. D6-205.000.
Kato, Yuji, to Tomy Kogyo Co., Inc. Pinball game housing for preschool age children. 260,820, 9-22-81, Cl. D2-7.000.
Ketcham & McDougall, Inc.: *See—*
Macowski, William, 260,908, Cl. D19-95.000.
Kjell Folke Ohlson: *See—*
Strand, Hans E., 260,936, Cl. D26-28.000.
Klaber, Michael C. Foldable pen. 260,905, 9-22-81, Cl. D19-41.000.
Kurozumi, Shigeru, to Sharp Corporation. Electrostatic copying machine. 260,902, 9-22-81, Cl. D16-27.000.
Laird, Richard A.; and Burnham, Geoffrey. Insulated holder for beverage cans or the like. 260,843, 9-22-81, Cl. D7-77.000.
Langan, Allen W.: *See—*
Schwartz, Edwin L.; and Langan, Allen W., 260,896, Cl. D15-9.000.
Levin, Gary M. Railroad restaurant. 260,934, 9-22-81, Cl. D25-11.000.
Lieberman, Sheldon, to Binney & Smith. Display plate having a removable template. 260,840, 9-22-81, Cl. D7-22.000.
L'Institut Jeanne Piaubert: *See—*
Gueret, Jean-Louis H., 260,928, Cl. D24-36.000.
Linzer, Jesse O. Jewel setting crown or the like. 260,862, 9-22-81, Cl. D11-92.000.
Litton Business Systems, Inc.: *See—*
Platner, Warren, 260,834, Cl. D6-161.000.
Loeschen, Lester L. Shelf bracket. 260,852, 9-22-81, Cl. D8-381.000.
Lotus Cars Limited: *See—*
Chapman, Anthony C. B., 260,913, Cl. D21-137.000.
Luedtke, Arthur; and Bentley, William F., to United States of America, America as represented by Field Operations Bureau Office, FCC. Directional annular slot antenna. 260,895, 9-22-81, Cl. D14-86.000.
Macowski, William, to Ketcham & McDougall, Inc. Combined desk pad and pen assemblies. 260,908, 9-22-81, Cl. D19-95.000.
Marchessault, Fernand. Curling broom. 260,920, 9-22-81, Cl. D21-211.000.
Marlin Fiberglass, Inc.: *See—*
Reineman, Richard G., 260,931, Cl. D24-38.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Nakajima, Iwao; Ohta, Kikuo; and Mishiro, Benito, 260,890, Cl. D14-68.000.
McCain, Lawrence G., to Answerex, Inc. Microphone. 260,882, 9-22-81, Cl. D14-12.000.
McKinsey, Kevin P.; and Asher, James C., to Atari, Inc. Memory module housing. 260,881, 9-22-81, Cl. D14-11.000.
McLean, James D.; and Snider, David E. Touch-pad for a telephone. 260,889, 9-22-81, Cl. D14-66.000.
Means, Paul B., III: *See—*
Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 260,912, Cl. D21-122.000.
Meis, William J. Chain anchor for a concrete floor or the like. 260,853, 9-22-81, Cl. D8-385.000.
Mena, Pedro B. Racquet swing weight device. 260,921, 9-22-81, Cl. D21-212.000.
Metz, Thomas V.; and Sirois, W. James, to Pacific Fireplace Furnishings, Inc. Casting for fireplace heat exchanger. 260,925, 9-22-81, Cl. D23-127.000.
Meyer, Products, Inc.: *See—*
Hetrick, Vernon L., 260,937, Cl. D26-35.000.
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Pratt, Thomas, deceased, 260,935, Cl. D25-91.000.
Moseley, Harold L. Game board. 260,910, 9-22-81, Cl. D21-15.000.
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Taylor, Terrance N., 260,886, Cl. D14-100.000.
MSI Data Corporation: *See—*
Husted, Martin D., 260,883, Cl. D14-115.000.
Muth, Hans A.: *See—*
Schneider, Louis; and Muth, Hans A., 260,821, Cl. D3-71.000.
Nakajima, Iwao; Ohta, Kikuo; and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 260,890, 9-22-81, Cl. D14-68.000.
Nusinow, Bernard. Chair cover. 260,824, 9-22-81, Cl. D6-48.000.
Ohta, Kikuo: *See—*
Nakajima, Iwao; Ohta, Kikuo; and Mishiro, Benito, 260,890, Cl. D14-68.000.
Omni-Dynamics, Inc.: *See—*
Tully, John W., 260,875, Cl. D13-01.000.
Orenstein, Henry. Ornamental design for a duck. 260,915, 9-22-81, Cl. D21-160.000.
Orenstein, Henry. Doll. 260,916, 9-22-81, Cl. D21-171.000.
Orenstein, Henry. Doll. 260,917, 9-22-81, Cl. D21-177.000.
Orenstein, Henry. Doll. 260,918, 9-22-81, Cl. D21-177.000.
Overman, John W., to Bell & Howell Company. Microfilm camera. 260,903, 9-22-81, Cl. D16-27.000.
Pacific Fireplace Furnishings, Inc.: *See—*
Metz, Thomas V.; and Sirois, W. James, 260,925, Cl. D23-127.000.
Pardo, John, to Drackett Company, The. Bottle. 260,857, 9-22-81, Cl. D9-376.000.
Parker, Pamela J. Wastebasket hanger. 260,851, 9-22-81, Cl. D8-376.000.
Perry, Richard C. Trophy. 260,864, 9-22-81, Cl. D11-157.000.
Pershyn, Robert S., to Clarence Controls Inc. Current-to-voltage transformer. 260,876, 9-22-81, Cl. D13-4.000.
Pershyn, Robert S.: *See—*
Scott, Brent E.; and Pershyn, Robert S., 260,877, Cl. D13-4.000.
Platner, Warren, to Litton Business Systems, Inc. Desk. 260,834, 9-22-81, Cl. D6-161.000.
Pratt, Gladys E., executrix: *See—*
Pratt, Thomas, deceased, 260,935, Cl. D25-91.000.
Pratt, Thomas, deceased (by Pratt, Gladys E., executrix), to Mono Concrete Limited. Paving block. 260,935, 9-22-81, Cl. D25-91.000.
Redmond, Jobie G., to Jack Daniel Distillery, Lem Motlow, Prop., Inc. Sofa. 260,825, 9-22-81, Cl. D6-60.000.
Reichl, Ernst, to Bosch-Siemens Hausgerate GmbH. Inhalator. 260,933, 9-22-81, Cl. D24-62.000.
Reina, David W.: *See—*
Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 260,912, Cl. D21-122.000.
Reineman, Richard G., to Marlin Fiberglass, Inc. Hydrotherapy spa. 260,931, 9-22-81, Cl. D24-38.000.
Reppert, Merlyn R. Combined wheel center and hub. 260,874, 9-22-81, Cl. D12-209.000.
Richards, M. David. Novelty trophy and base therefor. 260,866, 9-22-81, Cl. D11-160.000.
Richards, M. David; and FIG. 1 is a perspective view of a game board, , showing my new design in a playing position. Game board. 260,909, 9-22-81, Cl. D21-15.000.
Rite Autotronics Corporation: *See—*
Schwartz, Edwin L.; and Langan, Allen W., 260,896, Cl. D15-9.000.
Rowenta-Werke, GmbH: *See—*
Figur, Bernd, 260,941, Cl. D27-36.000.
Stuetzer, Franz A., 260,942, Cl. D27-42.000.
Stutzer, Franz A.; and Figur, Bernd, 260,943, Cl. D27-42.000.

Sakamoto, Junichi, to Sharp Corporation. Teller's machine. 260,884, 9-22-81, Cl. D14-105.000.
Sapronetti, Giuseppe. Combined hair brush and hand shield therefor. 260,822, 9-22-81, Cl. D4-35.000.
Schneider, Louis; and Muth, Hans A., to Bayerische Motoren Werke Aktiengesellschaft. Luggage bag. 260,821, 9-22-81, Cl. D3-71.000.
Schwartz, Edwin L.; and Langan, Allen W., to Rite Autotronics Corporation. Air compressor. 260,896, 9-22-81, Cl. D15-9.000.
Scott, Brent E.; and Pershyn, Robert S., to Clarence Controls Inc. Precision current transformer. 260,877, 9-22-81, Cl. D13-4.000.
Seidler, Migdonio: *See—*
Cordray, Paul; and Seidler, Migdonio, 260,828, Cl. D6-97.000.
Sergeant, Jean-Francois. Connecting coupling for joining structural members. 260,854, 9-22-81, Cl. D8-395.000.
Sharp Corporation: *See—*
Ikeda, Matafumi, 260,904, Cl. D18-7.000.
Kurozumi, Shigeru, 260,902, Cl. D16-27.000.
Sakamoto, Junichi, 260,884, Cl. D14-105.000.
Sillerud, Arlen R. Bottle. 260,856, 9-22-81, Cl. D9-372.000.
Singer Company, The: *See—*
Vermillion, Don W., 260,901, Cl. D32-32.000.
Sirois, W. James: *See—*
Metz, Thomas V.; and Sirois, W. James, 260,925, Cl. D23-127.000.
Smith, Douglas W.: *See—*
Chieda, Robert; Johnson, Robert W.; Smith, Douglas W.; and Casey, Eugene J., Jr., 260,898, Cl. D15-12.000.
Smith, Kerry L. Soft sculpture. 260,865, 9-22-81, Cl. D11-157.000.
Smith, Melbourne F., Jr., to Broyhill Furniture Industries, Inc. Hutch. 260,835, 9-22-81, Cl. D6-172.000.
Snider, David E.: *See—*
McLean, James D.; and Snider, David E., 260,889, Cl. D14-66.000.
Sommer, Peter A. Combined crib, dressing table and storage unit. 260,827, 9-22-81, Cl. D6-80.000.
Spoor, Martin, to Bofors America, Inc. Weighing transducer. 260,880, 9-22-81, Cl. D13-99.000.
Spreng, Georg: *See—*
Esslinger, Hartmut; Haug, Andreas; and Spreng, Georg, 260,887, Cl. D14-106.000.
Stanley Works, The: *See—*
West, Robert F.; and Covey, Laird F., 260,849, Cl. D8-94.000.
Steinberger, Ned, to Thonet Industries, Inc. Arm chair. 260,826, 9-22-81, Cl. D6-73.000.
Strand, Hans E., to Kjell Folke Ohlson. Combination truck tail light and license plate holder. 260,936, 9-22-81, Cl. D26-28.000.
Strauts, Maija V.: *See—*
Wright, David A.; and Strauts, Maija V., 260,872, Cl. D12-146.000.
Stuetzer, Franz A., to Rowenta-Werke, GmbH. Lighter. 260,942, 9-22-81, Cl. D27-42.000.
Stulik, Edward L., Jr., to Wichinsky, Michael. Game chair. 260,823, 9-22-81, Cl. D6-42.000.
Stutzer, Franz A.; and Figur, Bernd, to Rowenta-Werke, GmbH. Lighter. 260,943, 9-22-81, Cl. D27-42.000.
Summers, John E.; and Tanida, Hiroshi. Plasma cutting-welding torch head. 260,846, 9-22-81, Cl. D8-30.000.
Tanida, Hiroshi: *See—*
Summers, John E.; and Tanida, Hiroshi, 260,846, Cl. D8-30.000.
Taylor, Terrance N., to Motorola, Inc. Vehicular two-way data terminal or similar article. 260,886, 9-22-81, Cl. D14-100.000.
Taylor Woodcraft: *See—*
Tome, Philip L., 260,837, Cl. D6-179.000.
Technalytics, Inc.: *See—*
Chodorow, Ingram S.; and Hall, Richard, 260,932, Cl. D24-53.000.
Thomas, Wesley L. Telephone. 260,888, 9-22-81, Cl. D14-53.000.
Thonet Industries, Inc.: *See—*
Steinberger, Ned, 260,826, Cl. D6-73.000.
Todd, John A., to Dresser Industries, Inc. Multi-product fuel dispenser. 260,897, 9-22-81, Cl. D15-9.200.
Tome, Philip L., to Taylor Woodcraft. Serving table. 260,837, 9-22-81, Cl. D6-179.000.
Tomy Kogyo Co., Inc.: *See—*
Kato, Yuji, 260,820, Cl. D2-7.000.
Toro Company, The: *See—*
Chieda, Robert; Johnson, Robert W.; Smith, Douglas W.; and Casey, Eugene J., Jr., 260,898, Cl. D15-12.000.
Travinski, George A.: *See—*
Joseph, George L.; and Travinski, George A., 260,899, Cl. D15-28.000.
Trombly, Edgar F., to Dart Industries Inc. Pitcher. 260,842, 9-22-81, Cl. D7-64.000.
Trouba, E. Donald. Sports equipment storage rack. 260,830, 9-22-81, Cl. D6-125.000.
Tully, John W., to Omni-Dynamics, Inc. Power supply module. 260,875, 9-22-81, Cl. D13-01.000.
Unique Products: *See—*
Hemeyer, Arley C., 260,848, Cl. D8-71.000.
United States of America
America as represented by Field Operations Bureau Office, FCC: *See—*
Luedtke, Arthur; and Bentley, William F., 260,895, Cl. D14-86.000.
U.S. Philips Corporation: *See—*
Ellermeier, Konrad, 260,894, Cl. D14-78.000.
Verdesca, Joseph T.: *See—*
Verdesca, Sandra R.; and Verdesca, Joseph T., 260,832, Cl. D6-132.000.
Verdesca, Sandra R.; and Verdesca, Joseph T., to Computer Roomers. Tray. 260,832, 9-22-81, Cl. D6-132.000.
Vermillion, Don W., to Singer Company, The. Vacuum cleaner access plate. 260,901, 9-22-81, Cl. D32-32.000.
Verrillo, Emilio J. Projection television cabinet or similar article. 260,893, 9-22-81, Cl. D14-77.000.
Watkins, Jonathan, to Watkins Manufacturing Co. Cover for a hydrotherapy pool or the like. 260,930, 9-22-81, Cl. D24-38.000.
Watkins Manufacturing Co.: *See—*
Watkins, Jonathan, 260,930, Cl. D24-38.000.
West, Robert F.; and Covey, Laird F., to Stanley Works, The. Handle for abrading tool. 260,849, 9-22-81, Cl. D8-94.000.
Wichinsky, Michael: *See—*
Stulik, Edward L., Jr., 260,823, Cl. D6-42.000.
Wilcox, James J.: *See—*
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Windsor Industries, Inc.: *See—*
Fink, David, 260,891, Cl. D14-70.000.
Wright, David A.; and Strauts, Maija V., to B. F. Goodrich Company, The. Tire. 260,872, 9-22-81, Cl. D12-146.000.
Yeung, Wing H. Combined clock, Radio and lamp. 260,892, 9-22-81, Cl. D14-73.000.
Zurcher, Frederic. Luminaire. 260,938, 9-22-81, Cl. D26-91.000.
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Driscoll Strawberry Associates, Inc.: *See—*
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Jackson & Perkins Co.: *See—*
Warriner, William A., 4,767, Cl. 20.000.
Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 4,768, 9-22-81, Cl. 48.000.
Warriner, William A., to Jackson & Perkins Co. Rose plant—73-3521. 4,767, 9-22-81, Cl. 20.000.

CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 22, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

18 4,290,147
51 4,290,148
414 4,290,149
421 4,290,150

CLASS 3

1.5 4,290,151

CLASS 4

191 4,290,152
491 4,290,153
538 4,290,154

CLASS 5

465 4,290,155

CLASS 8

115.6 4,290,765
491 4,290,766
496 4,290,767
532 4,290,768
602 4,290,769
662 4,290,770

CLASS 9

1.1 4,290,156
2 C 4,290,157
8 P 4,290,158
9 4,290,159

CLASS 13

18 R 4,291,190

CLASS 15

29 4,290,160
53 AB 4,290,161
104.09 4,290,163
104.3 SN 4,290,162
250.32 4,290,164
330 4,290,165

CLASS 16

47 4,290,166
129 4,290,167
175 4,290,168

CLASS 19

159 R 4,290,169
236 4,290,170

CLASS 23

230 B 4,290,771
4,290,772
4,290,773
4,290,774
230 R 4,290,775
4,290,776

CLASS 24

18 4,290,171
117 4,290,172
118 4,290,173
204 4,290,174
205.13 D 4,290,175
205.16 R 4,290,176

CLASS 28

254 4,290,177

CLASS 29

33 M 4,290,178
4,290,179
240 4,290,180
458 4,290,181
527.4 4,290,182
564.8 4,290,183
571 4,290,184
4,290,185
576 B 4,290,186
4,290,187
591 4,290,188
596 4,290,189
4,290,190
597 4,290,191
623.5 4,290,192
764 4,290,193
766 4,290,194
837 4,290,195

CLASS 30

123.7 4,290,197
164.5 4,290,198
180 4,290,199
276 4,290,200
294 4,290,201
382 4,290,202

CLASS 33

169 C 4,290,203
178 E 4,290,204
180 R 4,290,205
185 R 4,290,206
295 4,290,207

CLASS 34

9 4,290,208
123 4,290,209
156 4,290,210

CLASS 36

3 B 4,290,211
33 4,290,212
117 4,290,213
122 4,290,196

CLASS 37

141 T 4,290,214

CLASS 40

1.5 4,290,215
152.1 4,290,216
389 4,290,217
553 4,290,218

CLASS 42

1 R 4,290,219
75 D 4,290,220

CLASS 43

4 4,290,221
15 4,290,222
54.5 R 4,290,223

CLASS 44

1 SR 4,290,777
71 4,290,778

CLASS 46

61 4,290,224
4,290,225
74 D 4,290,226
206 4,290,227
262 4,290,228

CLASS 47

66 4,290,229

CLASS 48

89 4,290,779
210 4,290,780

CLASS 49

49 4,290,230
173 4,290,231
277 4,290,232
383 4,290,233
415 4,290,234
502 4,290,235

CLASS 51

5 A 4,290,236
34 A 4,290,237
58 4,290,238
126 4,290,239
135 BT 4,290,240

CLASS 52

2 4,290,242
36 4,290,241
63 4,290,243
80 4,290,244
157 4,290,245
169.1 4,290,246
173 R 4,290,247
309.16 4,290,248
396 4,290,249
404 4,290,250
656 4,290,251
742 4,290,252

CLASS 53

410 4,290,253
413 4,290,254

CLASS 55

17 4,290,781
60 4,290,782
89 4,290,783
95 4,290,784
96 4,290,785
107 4,290,786
120 4,290,787
138 4,290,788
269 4,290,789
379 4,290,790
399 4,290,791
480 4,290,792

CLASS 56

10.2 4,290,255
11.3 4,290,256
12.7 4,290,257
295 4,290,258
364 4,290,259

CLASS 57

210 4,290,260
223 4,290,261

CLASS 60

262 4,290,262
311 4,290,263
518 4,290,264
561 4,290,265
641.2 4,290,266
648 4,290,267
868 4,290,268
670 4,290,269
716 4,290,270

CLASS 62

53 4,290,271
114 4,290,272
148 4,290,273
157 4,290,274
238.6 4,290,275
299 4,290,276
324.1 Re.30,745

CLASS 65

30.11 4,290,794
30.14 4,290,793
260 4,290,795
287 4,290,796
335 4,290,797

CLASS 66

24 4,290,277
84 A 4,290,278

CLASS 70

38 A 4,290,279
4,290,280
54 4,290,281
129 4,290,282
167 4,290,283
233 4,290,284
276 4,290,285
285 4,290,286
355 4,290,287

CLASS 71

90 4,290,798

CLASS 72

7 4,290,288
31 4,290,289
256 4,290,290
316 4,290,291
330 4,290,292
342 4,290,293
348 4,290,294
356 4,290,295

CLASS 73

1 G 4,290,296
1 R 4,290,297
3 4,290,298
17 A 4,290,299
32 R 4,290,300
35 4,290,301
86 4,290,302
105 4,290,303
155 4,290,305
354 4,290,306
382 R 4,290,307
602 4,290,308
621 4,290,309
626 4,290,310
730 4,290,311
861.12 4,290,312
861.17 4,290,313
861.52 4,290,314
861.61 4,290,315
862.25 4,290,304

CLASS 74

5.46 4,290,316
89.2 4,290,317
477 4,290,318
604 4,290,319
689 4,290,320
711 4,290,321
752 A 4,290,322
860 4,290,323
866 4,290,324
869 4,290,325

CLASS 75

0.5 A 4,290,799
12 4,290,800
21 4,290,801
52 4,290,802
4,290,803
67 R 4,290,804
130 R 4,290,805
153 4,290,806
233 4,290,807
251 4,290,808
257 4,290,809

CLASS 76

101 R 4,290,326

CLASS 81

3 R 4,290,327
62 4,290,328
477 4,290,329

CLASS 82

56 Re.30,746

CLASS 83

820 4,290,330

CLASS 84

1.14 4,290,331
4,290,332
1.24 4,290,333
1.26 4,290,334
1.27 4,290,335
291 4,290,336

CLASS 89

33 CA 4,290,339

CLASS 91

31 4,290,340
339 4,290,341
391 R 4,290,342
461 4,290,343
467 4,290,344

CLASS 92

79 4,290,345
90 4,290,346
102 4,290,347

CLASS 98

115 SB 4,290,348

CLASS 99

388 4,290,349
494 4,290,350

CLASS 100

47 4,290,351
100 4,290,352
162 B 4,290,353
218 4,290,354

CLASS 101

69 4,290,355
93.34 4,290,356
111 4,290,357
4,290,358
148 4,290,359
4,290,360
182 4,290,361
350 4,290,362
351 4,290,363

CLASS 102

202.3 4,290,366
384 4,290,364
449 4,290,365

CLASS 104

105 4,290,367

CLASS 105

341 4,290,368

CLASS 106

1.17 4,290,811
13 4,290,810
22 4,290,812
203 4,290,815
287.32 4,290,816
315 4,290,817

CLASS 108

53.3 4,290,369
53.5 4,290,370
159 4,290,371

CLASS 110

173 R 4,290,372

CLASS 111

3 4,290,373
92 4,290,374

CLASS 112

121.12 4,290,375
121.26 4,290,376
158 E 4,290,377
410 4,290,378

CLASS 114

26 4,290,379
210 4,290,380
263 4,290,381
266 4,290,382

CLASS 118

630 4,290,383
722 4,290,384
730 4,290,385

CLASS 119

95 4,290,386

CLASS 122

4 D 4,290,387
235 A 4,290,388
406 S 4,290,389
4,290,390
511 4,290,391

CLASS 123

1 A 4,290,392
41.12 4,290,393
73 A 4,290,394
192 B 4,290,395
193 CH 4,290,396
195 A 4,290,397
425 4,290,398
439 4,290,399
440 4,290,400
524 4,290,401
527 4,290,402
568 4,290,403
571 4,290,404
590 4,290,405
645 4,290,406

CLASS 124

41 A 4,290,407

CLASS 126

25 R 4,290,408
121 4,290,409
146 4,290,410
419 4,290,412
425 4,290,411
426 4,290,413
429 4,290,414
4,290,415
430 4,290,416
434 4,290,417
439 4,290,418
450 4,290,419

CLASS 127

52 4,290,818

CLASS 128

1 R 4,290,420
6 4,290,421
23 4,290,422
80 G 4,290,423
91 A 4,290,424
133 4,290,425
260 4,290,426
304 4,290,427
349 B 4,290,428
419 PT 4,290,429
4,290,430
635 4,290,431
660 4,290,432
665 4,290,433
680 4,290,434
800 4,290,435

CLASS 131

108 4,290,436
196 4,290,437

CLASS 132

11 R 4,290,438

CLASS 134

3 4,290,819
6 4,290,820
8 4,290,821
19 4,290,822
107 4,290,439

CLASS 136

246 4,291,191

CLASS 137

75 4,290,440
84 4,290,441
112 4,290,442
147 4,290,443
255 4,290,444
359 4,290,445
557 4,290,446
596.13 4,290,448
4,290,449
596.2 4,290,447
606 4,290,450
624.15 4,290,451
625.23 4,290,452
625.43 4,290,453
651 4,290,454
855 4,290,455

CLASS 138

109 4,290,456
149 4,290,457

CLASS 139

28 4,290,458
435 4,290,459
4,290,460
450 4,290,461

CLASS 141

98 4,290,462
387 4,290,463

CLASS 144

136 C 4,290,464

CLASS 145

61 R 4,290,465

CLASS 148

2 4,290,823
11.5 Q 4,290,828
23 4,290,824
33.4 4,290,825
101 4,290,826
108 4,290,827
130 4,290,829
187 4,290,830
4,290,831

CLASS 150

1 4,290,466
3 4,290,467
49 4,290,468

CLASS 152

209 R 4,290,470
362 R 4,290,471

CLASS 156

72 4,290,832
94 4,290,833
157 4,290,834
171 4,290,836
256 4,290,837

286 4,290,838
384 4,290,839
4,290,840
416 4,290,472
464 4,290,841
577 4,290,842
601 4,290,835
628 4,290,843
630 4,290,844
644 4,290,845

CLASS 160

120 4,290,473

CLASS 162

161 4,290,846

CLASS 164

423 4,290,476
430 4,290,477
448 4,290,478
4,290,479
470 4,290,474
513 4,290,475

CLASS 165

21 4,290,480
26 4,290,481

CLASS 166

70 4,290,482
237 4,290,483
242 4,290,484
281 4,290,485
297 4,290,486

CLASS 168

18 4,290,487

CLASS 172

123 4,290,488

CLASS 173

17 4,290,489
23 4,290,490
43 4,290,491
118 4,290,492
124 4,290,493
149 4,290,494

CLASS 174

11 BH 4,291,192
11 R 4,291,193
40 R 4,291,194
48 4,291,195

CLASS 175

85 4,290,495
321 4,290,496
371 4,290,497
379 4,290,498

CLASS 176

1 4,290,847
5 4,290,848
19 R 4,290,849
20 R 4,290,850
24 4,290,851
58 PB 4,290,852
87 4,290,853

CLASS 177

48 4,290,499

CLASS 178

3 4,291,196

CLASS 179

2 DP 4,291,198
2 EA 4,291,197
18 AB 4,291,199
18 BD 4,291,200
90 K 4,291,201
103 4,291,202
107 E 4,291,203
175.3 F 4,291,204
181 R 4,291,205

CLASS 180

117 4,290,500

CLASS 181

228 4,290,501

CLASS 182

33 4,290,502
47 4,290,503
187 4,290,504

CLASS 188

18 A 4,290,505
24.15 4,290,507
24.19 4,290,506
73.38 4,290,508
181 A 4,290,509
218 XL 4,290,510
322.17 4,290,511

CLASS 192

1 4,290,512
3.22 4,290,513
30 W 4,290,514
53 C 4,290,515
56 L 4,290,516

CLASS 198

427 4,290,517
450 4,290,518
483 4,290,519
499 4,290,520

CLASS 200

19 R 4,291,206
42 R 4,291,207
148 A 4,291,208
153 G 4,291,209
252 4,291,210
311 4,291,211
331 4,291,212
335 4,291,213

CLASS 201

26 4,290,854

CLASS 204

1.5 4,290,855
4 4,290,856
9 4,290,857
12 4,290,858
16 4,290,859
27 4,290,860
56 R 4,290,861
59 R 4,290,862
99 4,290,863
103 4,290,864
106 4,290,865
119 4,290,866
129.35 4,290,867
148 4,290,868
159.13 4,290,869
159.15 4,290,870
180 G 4,290,871
195 F 4,290,872
228 4,290,873
243 R 4,290,874
298 4,290,875
4,290,876
4,290,877

CLASS 206

0.5 4,290,521
0.82 4,290,523
5 4,290,522
232 4,290,524
427 4,290,525
624 4,290,526

CLASS 208

120 4,290,878
232 4,290,879
309 4,290,880
310 R 4,290,881

CLASS 209

12 4,290,527
223 R 4,290,528

CLASS 210

169 4,290,883
195.3 4,290,884
197 4,290,885
219 4,290,886
242.1 4,290,887
356 4,290,888
484 4,290,889
608 4,290,890
611 4,290,891
634 4,290,892
656 4,290,893
661 4,290,894
669 4,290,895
710 4,290,896
4,290,897
738 4,290,898

CLASS 211

13 4,290,529
40 4,290,530
71 4,290,531
200 4,290,532

CLASS 215

1 R 4,290,533
247 4,290,534
270 4,290,535

CLASS 219

86.1 4,291,214
118 4,291,215
4,291,216
121 EC 4,291,218
121 EY 4,291,219
121 PH 4,291,217
137 R 4,291,220

CLASS 220

359 4,290,536

CLASS 222

25 4,290,537
4,290,538

CLASS 223

118 4,290,539

CLASS 224

314 4,290,540

CLASS 226

150 4,290,541

CLASS 227

155 4,290,542

CLASS 228

2.5 4,290,543
7 4,290,544
139 4,290,545

CLASS 229

43 4,290,546
77 4,290,547

CLASS 232

24 4,290,548
35 4,290,549

CLASS 233

26 4,290,550

CLASS 235

92 CC 4,291,221
380 4,291,222

CLASS 236

1 G 4,290,552
9 R 4,290,551
42 4,290,553
89 4,290,554

CLASS 239

8 4,290,555
177 4,290,556
222.21 4,290,557
400 4,290,558
716 4,290,559

CLASS 241

65 4,290,560

CLASS 242

55 4,290,561
74 4,290,562
78.6 4,290,563
107 4,290,564
152.1 4,290,565
159 4,290,566
198 4,290,567

CLASS 244

122 A 4,290,568
129.4 4,290,569
158 R 4,290,570

CLASS 248

59 4,290,571
74 B 4,290,572
152 4,290,573
177 4,290,574
316 D 4,290,575

CLASS 249

20 4,290,576

CLASS 250

201 4,291,223
204 4,291,224
229 4,291,225
324 4,291,226
328 4,291,227
363 S 4,291,228
451 4,291,229
458 4,291,230
492 A 4,291,231

CLASS 251

1 A 4,290,577
83 4,290,578
139 4,290,579
169 4,290,580
172 4,290,581

CLASS 252

8.5 A 4,290,899
8.55 B 4,290,900
8.55 C 4,290,901
32.7 E 4,290,902
56 S 4,290,925
91 4,290,903
118 4,290,904
299.63 4,290,905
301.1 W 4,290,906
4,290,907
4,290,908
301.4 R 4,290,909
312 4,290,910
316 4,290,911
389 R 4,290,912
428 4,290,913
4,290,914
429 B 4,290,915
430 4,290,916
4,290,917
431 R 4,290,918
437 4,290,919
439 4,290,920
441 4,290,921
456 4,290,922
462 4,290,923
469 4,290,924
579 4,290,926

CLASS 254

15 4,290,582
26 R 4,290,583
380 4,290,584

CLASS 256

13.1 4,290,585

CLASS 260

3 4,290,927
22 R Re.30,747
28 P 4,290,928
29.2 N 4,290,929
29.6 MM 4,290,933
29.6 MP 4,290,930
29.6 RW 4,290,931
29.6 WB 4,290,932
30.8 R 4,290,934
32.6 NA 4,290,935
33.4 P 4,290,936
40 R 4,290,937
4,290,938
4,290,939
45.8 N 4,290,940
45.85 B 4,290,941
45.85 H 4,290,942
112.5 R 4,290,943
4,290,944
192 4,290,945
239 A 4,290,947
239 B 4,290,946
245.2 R 4,290,948
245.3 4,290,949
326.12 R 4,290,950
4,290,951
326.47 4,290,952
333 4,290,953
335 4,290,954
336 4,290,955
338 4,290,956
345.2 4,290,957
346.73 4,290,958
348.24 4,290,959
348.57 4,290,960
397.4 4,290,961
397.45 4,290,962
4,290,963
403 Re.30,748
404 4,290,964
408 4,290,965
413 4,290,966
429 R 4,290,967
453 AB 4,290,969
453 P 4,290,968
4,290,970
453.5 4,290,971
465 B 4,290,972
505 R 4,290,973
511 4,290,974
513.6 4,290,975
973 4,290,976
4,290,977
4,290,978

CLASS 261

4 4,290,979
94 4,290,980
114 VT 4,290,981
124 4,290,982

CLASS 264

22 4,290,983
30 4,290,984
31 4,290,985
40.3 4,290,986
41 4,290,987
112 4,290,988
142 4,290,989
156 4,290,990
157 4,290,991
163 4,290,992
164 4,290,993
515 4,290,994
532 4,290,995
564 4,290,996

CLASS 266

80 4,290,586
191 4,290,587
225 4,290,588
4,290,590
236 4,290,589

CLASS 269

6 4,290,591

CLASS 270

40 4,290,592

CLASS 271

42 4,290,593
180 4,290,594
277 4,290,595
292 4,290,596

CLASS 272

117 4,290,597
4,290,598
130 4,290,599
137 4,290,600
146 4,290,601

CLASS 273

29 R 4,290,602
34 A 4,290,603
73 G 4,290,604
110 4,290,605
128 R 4,290,606
239 4,290,607
256 4,290,608

CLASS 277

3 4,290,609
13 4,290,610
27 4,290,611
81 R 4,290,612
96.1 4,290,613
205 4,290,614
221 4,290,615
235 B 4,290,616

CLASS 279

75 4,290,617

CLASS 280

5.22 4,290,618
154.5 R 4,290,619
209 4,290,620
216 4,290,621
400 4,290,622
4,290,623
634 4,290,624
654 4,290,625
692 4,290,626
729 4,290,627
803 4,290,628
806 4,290,629

CLASS 283

8 R 4,290,630

CLASS 285

137 A 4,290,631
323 4,290,632

CLASS 290

1 C 4,291,233
1 R 4,291,232
53 4,291,234
55 4,291,235

CLASS 292

114 4,290,633
201 4,290,634
290 4,290,635
338 4,290,636

CLASS 294

83 A 4,290,637
89 4,290,638

CLASS 296

1 S 4,290,639
95 R 4,290,640
146 4,290,641
182 4,290,642

CLASS 297

16 4,290,643
195 4,290,644
239 4,290,645
327 4,290,646
362 4,290,647

CLASS 299

1 4,290,648
2 4,290,649
4 4,290,650
7 4,290,651
45 4,290,652
87 4,290,653

CLASS 301

9 TV 4,290,654

CLASS 307

10 AT 4,291,237
40 4,291,236
141.4 4,291,238
221 D 4,291,239
262 4,291,240
269 4,291,241
270 4,291,242
304 4,291,243
400 4,291,244
4,291,245
475 4,291,246
481 4,291,247

CLASS 308

121 4,290,655
4,290,656

CLASS 310

14 4,291,248
214 4,291,249

CLASS 312

21 4,290,657
108 4,290,658
224 4,290,659
253 4,290,660

CLASS 313

220 4,291,250
346 R 4,291,252
348 4,291,253
413 4,291,251

CLASS 315

240 4,291,254
340 4,291,255
368 4,291,256
408 4,291,257

CLASS 318

124 4,291,258
139 4,291,259
331 4,291,260
482 4,291,261
603 4,291,262
706 4,291,263
729 4,291,264
782 4,291,265

CLASS 320

2 4,291,266

CLASS 324

54 4,291,267
76 R 4,291,268
79 D 4,291,269
230 4,291,270
307 4,291,271
313 4,291,272
343 4,291,273

CLASS 328

133 4,291,274

CLASS 329

112 4,291,275

CLASS 330

85 4,291,276
149 4,291,277
286 4,291,278
287 4,291,279

CLASS 331

65 4,291,280
94.5 C 4,291,281
94.5 S 4,291,282
96 4,291,283

CLASS 333

17 M 4,291,284
150 4,291,285
166 4,291,286
210 4,291,287
212 4,291,288
240 4,291,289

CLASS 334

1 4,291,290

CLASS 335

191 4,291,291

CLASS 336

192 4,291,292

CLASS 338

4 4,291,293

CLASS 339

18 R 4,290,661
89 M 4,290,662
143 R 4,290,663
156 R 4,290,664
276 T 4,290,665

CLASS 340

26 4,291,294
53 4,291,295
64 4,291,296

347 AD 4,291,297
4,291,298
4,291,299
4,291,300
568 4,291,301
642 4,291,302
711 4,291,303
715 4,291,304
734 4,291,305
744 4,291,306
756 4,291,307

CLASS 343

5 SC 4,291,308
7.5 4,291,309
16 R 4,291,310
700 MS 4,291,311
4,291,312

CLASS 346

68 4,291,313
74.5 4,291,314
76 R 4,291,315
140 R 4,291,316
4,291,317

CLASS 350

85 4,290,666
96.18 4,290,667
96.20 4,290,668
174 4,290,669
274 4,290,670
317 4,290,671
358 4,290,672

CLASS 351

62 4,290,673

CLASS 354

38 4,290,674
112 4,290,675
121 4,290,676
127 4,290,677
128 4,290,678
196 4,290,679
203 4,290,680
230 4,290,681
234 4,290,682
4,290,683
266 4,290,685
286 4,290,684
289 4,290,686
320 4,290,687

CLASS 355

1 4,290,688
4,290,689
3 FU 4,290,691
3 R 4,290,690
69 4,290,692

CLASS 356

1 4,290,693
2 4,290,694
73 4,290,695
300 4,290,696
350 4,290,697
371 4,290,698
420 4,290,699

CLASS 357

2 4,291,318
13 4,291,319
4,291,320
23 4,291,321
4,291,322
30 4,291,323
36 4,291,324
38 4,291,325
51 4,291,326
52 4,291,327
59 4,291,328
64 4,291,329

CLASS 358

8 4,291,330
13 4,291,331
19 4,291,332
36 4,291,333
101 4,291,334
154 4,291,335
160 4,291,336
213 4,291,337
228 4,291,338
260 4,291,339
296 4,291,340
300 4,291,341

CLASS 360

12 4,291,342
30 4,291,343
36 4,291,344
62 4,291,345
75 4,291,346
93 4,291,347
96.4 4,291,348
98 4,291,349
104 4,291,350
113 4,291,351
121 4,291,352
128 4,291,353
129 4,291,354

CLASS 361

31 4,291,355
87 4,291,356
101 4,291,357
154 4,291,358
173 4,291,359
189 4,291,360
293 4,291,361
302 4,291,362
333 4,291,363
384 4,291,364

CLASS 362

281 4,291,365

CLASS 363

17 4,291,366
21 4,291,367
41 4,291,368
60 4,291,369

CLASS 364

200 4,291,370
4,291,371
4,291,372
443 4,291,373
466 4,291,374
483 4,291,375
4,291,376
4,291,377
494 4,291,378
506 4,291,379
522 4,291,380
551 4,291,382
4,291,383
560 4,291,384
709 4,291,385
717 4,291,386
757 4,291,387
900 4,291,388

CLASS 365

15 4,291,389
183 4,291,390
194 4,291,391
203 4,291,392
4,291,393
206 4,291,394
523 4,291,381

CLASS 366

76 4,290,700
77 4,290,701
4,290,702
345 4,290,703

CLASS 367

83 4,291,395
154 4,291,396

CLASS 368

35 4,291,397
37 4,291,398
82 4,291,399
84 4,291,400
236 4,291,401
276 4,291,402

CLASS 371

5 4,291,403
20 4,291,404
31 4,291,405
44 4,291,406
49 4,291,407
4,291,408

CLASS 375

1 4,291,409
4,291,410

CLASS 400

248 4,290,704
618 4,290,705

CLASS 401

4 4,290,706
110 4,290,707

CLASS 403

24 4,290,708
296 4,290,709
306 4,290,710
358 4,290,711

CLASS 404

10 4,290,712
69 4,290,713

CLASS 405

60 4,290,714
169 4,290,715
203 4,290,716

CLASS 408

241 G 4,290,717

CLASS 409

8 4,290,718
180 4,290,719
233 4,290,720
234 4,290,721

CLASS 411

2 4,290,337
21 4,290,338
185 4,290,469

CLASS 414

48 4,290,722
83 4,290,723
251 4,290,724
329 4,290,725
421 4,290,726
476 4,290,733
508 4,290,727
537 4,290,728
607 4,290,729
4,290,730
678 4,290,731
752 4,290,732
786 4,290,734

CLASS 417

2 4,290,735
87 4,290,736
403 4,290,737

CLASS 418

61 B 4,290,738
189 4,290,739

CLASS 422

73 4,290,997
193 4,290,998
194 4,290,999

CLASS 423

53 4,291,000
179.5 4,291,001
189 4,291,002
228 4,291,003
242 4,291,004
321 R 4,291,005
359 4,291,006
390 4,291,007
461 4,291,008
593 4,291,009
594 4,291,010
625 4,291,011

CLASS 424

1 4,291,012
16 4,291,013
28 4,291,014
4,291,015
35 4,291,016
52 4,291,017
64 4,291,018
89 4,291,019
4,291,020
121 4,291,021
177 4,291,022
180 4,291,023
4,291,024
4,291,025
181 4,291,026
197 4,291,027
238 4,291,028
4,291,029
245 4,291,030
246 4,291,031
248.51 4,291,032
250 4,291,033
4,291,034
251 4,291,035
4,291,036
253 4,291,037
256 4,291,038
4,291,039
263 4,291,040
267 4,291,041
4,291,042
269 4,291,043
4,291,044
270 4,291,045
272 4,291,046
273 R 4,291,047
274 4,291,048
275 4,291,049
278 4,291,050
4,291,051
282 4,291,052
283 4,291,053
298 4,291,054
4,291,055
304 4,291,056
4,291,057
308 4,291,058
311 4,291,059
316 4,291,060
322 4,291,062
331 4,291,061

CLASS 425

62 4,290,740
77 4,290,741
313 4,290,742
461 4,290,743
541 4,290,745
543 4,290,744

CLASS 426

319 4,291,063
397 4,291,064
549 4,291,065
578 4,291,066
582 4,291,067

CLASS 427

88 4,291,068
140 4,291,069
213 4,291,070
220 4,291,071
243 4,291,072
314 4,291,073
367 4,291,074

CLASS 428

8 4,291,075
31 4,291,076
76 4,291,077
91 4,291,078
116 4,291,079
4,291,080
119 4,291,081
138 4,291,082
163 4,291,083
212 4,291,084
215 4,291,085
242 4,291,086
288 4,291,087
313 4,291,088
325 4,291,089
327 4,291,090
336 4,291,091
349 4,291,092
379 4,291,093
380 4,291,094
391 4,291,095
398 4,291,096
412 4,291,097
4,291,098
421 4,291,099
424.2 4,291,100
514 4,291,101
537 4,291,102
589 4,291,103
594 4,291,104
616 4,291,105

CLASS 429

1 4,291,106
104 4,291,107
193 4,291,108

CLASS 430

42 4,291,109
59 4,291,110
107 4,291,111
110 4,291,112
202 4,291,113
253 4,291,114
271 4,291,115
308 4,291,116
309 4,291,117
313 4,291,118
348 4,291,119
531 4,291,120

CLASS 431

328 4,290,746
359 4,290,747
4,290,748

CLASS 432

13 4,290,749
106 4,290,750
214 4,290,751
235 4,290,752
261 4,290,753

CLASS 433

56 4,290,754
173 4,290,755
225 4,290,756

CLASS 434

12 4,290,757
227 4,290,758
370 4,290,759

CLASS 435

10 4,291,121
31 4,291,122
94 4,291,123
162 4,291,124
240 4,291,125

CLASS 440

51 4,290,760

CLASS 455

88 4,291,411
154 4,291,412
164 4,291,413
4,291,414
328 4,291,415

CLASS 474

138 4,291,416
190 4,290,761
210 4,290,762

CLASS 493

341 4,290,763
395 4,290,764

CLASS 501

13 4,290,813
107 4,290,814

CLASS 518

713 4,291,126

CLASS 521

54 4,291,128
103 4,291,129
136 4,291,130

CLASS 525

5 4,291,131
53 4,291,132
74 4,291,133
92 4,291,134
101 4,291,135
102 4,291,136
162 4,291,137
247 4,291,138
314 4,291,139
321 4,291,140
351 4,291,141
420 4,291,142

CLASS 526

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26 4,291,144
89 4,291,145
119 4,291,146
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142 4,291,148
188 4,291,149
199 4,291,150
4,291,151
289 4,291,152
290 4,291,153
335 4,291,154
358 4,291,155

CLASS 536

1 4,291,156
17 A 4,291,157
115 4,291,158

CLASS 542

400 4,291,159

CLASS 544

164 4,291,163
183 4,291,164
345 4,291,165

CLASS 549

51 4,291,166

CLASS 556

430 4,291,167
441 4,291,168

CLASS 560

45 4,291,169
76 4,291,127
126 4,291,170
156 4,291,171

CLASS 562

503 4,291,172
4,291,173

CLASS 568

330 4,291,174
4,291,175
381 4,291,176
726 4,291,177
764 4,291,178
882 4,291,179

CLASS 585

320 4,291,180
4,291,181
415 4,291,182
443 4,291,183
4,291,184
467 4,291,185
475 4,291,186
644 4,291,187
752 4,291,188
860 4,291,189

CLASSIFICATION OF DESIGNS

D2—	7	260,820		43	260,841		121	260,863		66	260,889		92	260,907		36	260,928
D3—	71	260,821		54	260,842		157	260,864		68	260,890		95	260,908		38	260,929
D4—	35	260,822		77	260,843			260,865		70	260,891	D21—	15	260,909			260,930
D6—	42	260,823		131	260,844		160	260,866		73	260,892			260,910			260,931
	48	260,824	D8—	30	260,846			260,867		77	260,893		92	260,911		53	260,932
	60	260,825		52	260,847		180	260,868		78	260,894		122	260,912		62	260,933
	73	260,826		71	260,848			260,869		86	260,895		137	260,913	D25—	11	260,934
	80	260,827		94	260,849			260,870		100	260,886		148	260,914		91	260,935
	97	260,828		356	260,850	D12—	85	260,871		105	260,884		160	260,915	D26—	28	260,936
	114	260,829		376	260,851		146	260,872		106	260,885		171	260,916		35	260,937
	125	260,830		381	260,852		174	260,873			260,887		177	260,917		91	260,938
	130	260,831		385	260,853		209	260,874		115	260,883			260,918		93	260,939
	132	260,832		395	260,854	D13—	4	260,876	D15—	9	260,896		206	260,919		97	260,940
	161	260,833		403	260,855			260,877		9.2	260,897		211	260,920	D27—	36	260,941
		260,834	D9—	372	260,856		01	260,875		12	260,898		212	260,921		42	260,942
	172	260,835		376	260,857		13	260,878		28	260,899		253	260,922			260,943
	177	260,836		386	260,858		28	260,879	D16—	27	260,902	D22—	28	260,923	D28—	46	260,944
	179	260,837	D10—	16	260,859		99	260,880			260,903	D23—	58	260,924	D32—	22	260,900
	205	260,838		110	260,860	D14—	11	260,881	D18—	7	260,904		127	260,925		32	260,901
D7—	14	260,839	D11—	79	260,861		12	260,882	D19—	41	260,905		150	260,926		40	260,845
	22	260,840		92	260,862		53	260,888		77	260,906	D24—	10	260,927			

CLASSIFICATION OF PLANTS

P—	20	4,767		48	4,768												

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PATENTS

6 :	4,290,381		4,290,580		4,291,372		4,290,549		4,290,921		4,290,762
	4,291,204		4,290,604		4,291,380		4,290,689		4,290,923		4,290,879
	4,291,352		4,290,615		4,291,385		4,290,757		4,290,944	23 :	4,290,475
	4,291,416		4,290,618		4,291,396		4,290,797		4,290,990		4,290,911
9 :	4,291,397		4,290,661		4,291,407		4,290,831		4,291,065	24 :	4,290,244
01 :	4,290,245		4,290,668	08 :	4,290,223		4,290,882		4,291,106		4,290,656
04 :	4,290,160		4,290,670		4,290,224		4,290,883		4,291,143		4,290,809
	4,290,195		4,290,672		4,290,225		4,290,889		4,291,149		4,290,837
	4,290,284		4,290,697		4,290,491		4,291,005		4,291,158		4,290,893
	4,290,407		4,290,720		4,290,493		4,291,014		4,291,167		4,291,019
	4,290,434		4,290,724		4,290,556		4,291,015		4,291,186		4,291,020
	4,290,606		4,290,734		4,290,574		4,291,225		4,291,236		4,291,041
	4,290,758		4,290,779		4,290,596		4,291,277		4,291,317		4,291,133
	4,290,786		4,290,838		4,290,649	13 :	4,290,155		4,291,368		4,291,230
	4,290,873		4,290,855		4,290,749		4,290,170	18 :	4,290,181		4,291,279
05 :	4,290,409		4,290,868		4,290,785		4,290,251		4,290,190		4,291,291
	4,290,788		4,290,871		4,291,298		4,290,379		4,290,321		4,291,308
06 :	4,290,154		4,290,878	09 :	4,290,262		4,290,530		4,290,371		4,291,338
	4,290,158		4,290,885		4,290,384		4,290,602		4,290,383		4,291,370
	4,290,161		4,290,888		4,290,389		4,290,735		4,290,569		4,291,387
	4,290,178		4,290,892		4,290,421		4,291,404		4,290,769		4,291,395
	4,290,186		4,290,904		4,290,425	15 :	4,290,507		4,290,773		4,291,409
	4,290,192		4,290,957		4,290,480	16 :	4,290,725		4,290,798	25 :	Re.30,748
	4,290,205		4,290,975		4,290,521		4,291,393		4,290,929		4,290,198
	4,290,207		4,291,017		4,290,541	17 :	4,290,148		4,290,934		4,290,216
	4,290,211		4,291,025		4,290,558		4,290,183		4,290,937		4,290,311
	4,290,228		4,291,072		4,290,593		4,290,214		4,290,984		4,290,349
	4,290,261		4,291,073		4,290,711		4,290,218		4,291,039		4,290,392
	4,290,273		4,291,079		4,290,742		4,290,232		4,291,063		4,290,410
	4,290,282		4,291,081		4,290,976		4,290,236		4,291,150		4,290,494
	4,290,308		4,291,104		4,291,060		4,290,249		4,291,151		4,290,516
	4,290,310		4,291,116		4,291,129		4,290,259		4,291,168		4,290,528
	4,290,316		4,291,154		4,291,211		4,290,281		4,291,177		4,290,540
	4,290,334		4,291,156		4,291,369		4,290,329		4,291,292		4,290,575
	4,290,352		4,291,171		4,291,374		4,290,346		4,291,336		4,290,608
	4,290,382		4,291,196		4,291,382		4,290,450	19 :	4,290,171		4,290,683
	4,290,386		4,291,201		4,291,383		4,290,545		4,290,252		4,290,692
	4,290,408		4,291,218	10 :	4,291,054		4,290,573		4,290,328		4,290,699
	4,290,426		4,291,232		4,291,115		4,290,597		4,290,339		4,290,789
	4,290,427		4,291,243	11 :	4,290,612		4,290,611		4,290,419		4,290,804
	4,290,430		4,291,286	12 :	4,290,237		4,290,623		4,290,423		4,290,835
	4,290,435		4,291,287		4,290,243		4,290,658		4,290,884		4,290,844
	4,290,438		4,291,288		4,290,247		4,290,662		4,291,213		4,290,950
	4,290,489		4,291,294		4,290,257		4,290,710	20 :	4,290,465		4,290,951
	4,290,502		4,291,310		4,290,303		4,290,774		4,290,584		4,290,955
	4,290,503		4,291,311		4,290,327		4,290,782		4,290,730		4,290,995
	4,290,505		4,291,312		4,290,373		4,290,811	21 :	4,290,287		4,291,118
	4,290,523		4,291,319		4,290,378		4,290,836		4,290,481		4,291,249
	4,290,546		4,291,320		4,290,468		4,290,867		4,290,598		4,291,273
	4,290,547		4,291,324		4,290,524		4,290,890		4,290,660		4,291,289
	4,290,550		4,291,349		4,290,529		4,290,913	22 :	4,290,271		4,291,343
	4,290,560		4,291,350		4,290,532		4,290,916		4,290,299		4,291,371
	4,290,570		4,291,354		4,290,539		4,290,917		4,290,305		4,291,390

	4,291,415	4,290,182	4,290,705	4,290,713	4,290,490	4,290,578
26 :	4,290,202	4,290,201	4,290,708	4,290,745	4,290,492	4,290,581
	4,290,222	4,290,234	4,290,744	4,290,747	4,290,496	4,290,603
	4,290,231	4,290,242	4,290,778	4,290,748	4,290,509	4,290,632
	4,290,233	4,290,332	4,290,781	4,290,751	4,290,563	4,290,636
	4,290,238	4,290,374	4,290,794	4,290,783	4,290,587	4,290,640
	4,290,263	4,290,387	4,290,848	4,290,793	4,290,631	4,290,714
	4,290,276	4,290,417	4,290,902	4,290,839	4,290,700	4,290,729
	4,290,291	4,290,476	4,290,926	4,290,840	4,290,704	4,290,731
	4,290,296	4,290,534	4,291,011	4,290,851	4,290,752	4,290,756
	4,290,342	4,290,583	4,291,026	4,290,864	4,290,765	4,290,763
	4,290,400	4,290,643	4,291,045	4,290,872	4,290,780	4,290,816
	4,290,445	4,290,657	4,291,048	4,290,914	4,290,787	4,290,821
	4,290,454	4,290,659	4,291,092	4,290,920	4,290,796	4,290,824
	4,290,462	4,290,671	4,291,105	4,290,939	4,290,814	4,290,842
	4,290,472	4,290,702	4,291,108	4,290,986	4,290,874	4,290,843
	4,290,510	4,290,746	4,291,109	4,290,993	4,290,952	4,290,901
	4,290,515	4,290,808	4,291,110	4,291,009	4,290,968	4,290,989
	4,290,525	4,290,817	4,291,111	4,291,028	4,291,050	4,291,001
	4,290,620	4,290,834	4,291,112	4,291,051	4,291,077	4,291,080
	4,290,627	4,290,947	4,291,124	4,291,095	4,291,087	4,291,128
	4,290,639	4,290,958	4,291,125	4,291,139	4,291,091	4,291,183
	4,290,775	4,290,959	4,291,153	4,291,141	4,291,096	4,291,184
	4,290,861	4,290,966	4,291,163	4,291,160	4,291,122	4,291,189
	4,290,896	4,290,987	4,291,165	4,291,179	4,291,166	4,291,242
	4,290,897	4,291,004	4,291,169	4,291,180	4,291,192	4,291,246
	4,291,034	4,291,030	4,291,174	4,291,181	4,291,208	4,291,260
	4,291,069	4,291,040	4,291,175	4,291,340	4,291,209	4,291,328
	4,291,130	4,291,055	4,291,256	4,291,388	4,291,220	4,291,346
	4,291,159	4,291,075	4,291,258	40 : Re.30,745	4,291,226	4,291,353
	4,291,172	4,291,084	4,291,264	4,290,482	4,291,233	4,291,391
	4,291,173	4,291,136	4,291,272	4,290,484	4,291,300	4,291,392
	4,291,214	4,291,185	4,291,278	4,290,485	4,291,322	4,291,403
	4,291,238	4,291,198	4,291,280	4,290,715	4,291,329	4,291,410
	4,291,307	4,291,199	4,291,282	4,290,755	4,291,347	49 : 4,290,559
	4,291,342	4,291,200	4,291,303	4,290,777	4,291,375	4,290,865
	4,291,362	4,291,239	4,291,315	4,290,810	4,291,376	4,291,333
27 :	4,290,174	4,291,244	4,291,351	4,290,820	44 : 4,290,260	51 : Re.30,746
	4,290,254	4,291,245	4,291,364	4,290,880	4,291,024	4,290,159
	4,290,266	4,291,247	4,291,386	4,290,900	4,291,203	4,290,226
	4,290,297	4,291,250	4,291,406	4,290,919	45 : 4,290,274	4,290,241
	4,290,298	4,291,269	37 : 4,290,437	4,290,924	4,290,633	4,290,416
	4,290,314	4,291,275	4,290,554	4,291,002	4,290,766	4,290,543
	4,290,343	4,291,318	4,290,565	4,291,187	4,291,078	4,290,891
	4,290,422	4,291,323	4,290,727	4,291,235	4,291,093	4,291,068
	4,290,601	4,291,327	4,290,815	4,291,271	46 : 4,290,733	4,291,295
	4,290,664	4,291,405	4,291,086	41 : 4,290,172	47 : 4,290,250	4,291,314
	4,290,691	4,291,413	4,291,157	4,290,380	4,290,370	4,291,355
	4,290,832	35 : 4,290,221	4,291,215	4,290,487	4,290,441	53 : 4,290,246
	4,290,847	4,291,227	4,291,357	4,290,591	4,290,695	4,290,369
	4,290,912	4,291,248	38 : 4,290,654	4,290,642	4,290,833	4,290,411
	4,291,114	36 : 4,290,152	39 : 4,290,206	4,290,877	4,290,967	4,290,617
	4,291,145	4,290,162	4,290,357	4,291,212	4,291,008	4,290,719
	4,291,261	4,290,268	4,290,358	42 : 4,290,149	4,291,023	4,290,819
	4,291,366	4,290,272	4,290,413	4,290,175	4,291,027	4,291,193
	4,291,389	4,290,293	4,290,418	4,290,177	4,291,131	4,291,384
28 :	4,290,335	4,290,300	4,290,442	4,290,179	4,291,202	54 : 4,290,653
	4,290,336	4,290,359	4,290,448	4,290,189	4,291,219	4,290,899
29 :	4,290,347	4,290,433	4,290,449	4,290,193	4,291,255	4,291,057
	4,290,405	4,290,500	4,290,464	4,290,203	4,291,296	55 : 4,290,240
	4,290,440	4,290,568	4,290,517	4,290,235	48 : 4,290,184	4,290,256
	4,290,582	4,290,586	4,290,519	4,290,248	4,290,185	4,290,309
	4,290,858	4,290,588	4,290,531	4,290,255	4,290,200	4,290,322
	4,290,932	4,290,599	4,290,533	4,290,289	4,290,304	4,290,341
	4,291,229	4,290,621	4,290,548	4,290,302	4,290,307	4,290,394
30 :	4,290,156	4,290,669	4,290,552	4,290,354	4,290,457	4,290,447
	4,291,234	4,290,675	4,290,572	4,290,361	4,290,463	4,290,451
32 :	4,290,527	4,290,676	4,290,579	4,290,366	4,290,486	4,290,512
	4,290,638	4,290,677	4,290,626	4,290,391	4,290,495	4,290,933
33 :	4,290,220	4,290,678	4,290,651	4,290,420	4,290,498	4,291,064
	4,290,277	4,290,684	4,290,703	4,290,444	4,290,504	4,291,207
	4,290,431	4,290,688	4,290,709	4,290,453	4,290,577	56 : 4,290,712
34 :	4,290,168	4,290,694				

DESIGN PATENTS

4 :	260,850	260,881	260,872	260,923	260,917	260,846
	260,851	260,882	09 : 260,834	24 : 260,897	260,918	39 : 260,837
5 :	260,924	260,883	260,898	260,914	260,932	260,937
9 :	260,849	260,888	12 : 260,847	25 : 260,844	36 : 260,833	260,940
04 :	260,867	260,889	260,927	260,880	260,836	41 : 260,925
	260,903	260,896	13 : 260,895	260,944	260,857	42 : 260,826
06 :	260,822	260,899	15 : 260,861	26 : 260,842	260,868	260,840
	260,823	260,905	17 : 260,824	260,859	260,869	260,878
	260,831	260,907	260,879	260,860	260,870	260,893
	260,855	260,909	260,885	27 : 260,856	260,876	44 : 260,829
	260,862	260,919	260,886	29 : 260,828	260,877	45 : 260,841
	260,863	260,921	18 : 260,852	31 : 260,830	260,891	260,901
	260,864	260,929	19 : 260,853	34 : 260,908	260,926	47 : 260,871
	260,865	260,930	260,873	260,912	260,934	48 : 260,832
	260,866	260,931	260,911	260,915	37 : 260,825	260,906
	260,874	260,845	20 : 260,848	260,916	260,835	260,910
	260,875	08 :				

PLANT PATENTS

06 :	4,767	4,768				

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September 29, 1981 Volume 1010 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Board of Appeals Decisions Rendered in the Month of Aug. 1981

Affirmed	179
Affirmed in Part	20
Reversed	63
Total	262

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,989,840, Re. S.N. 272,145, Filed June 10, 1981, Cl. 424/300, CONTROL OF ANIMAL PARASITES WITH RING-SUBSTITUTED N-(2,2-DIFLUOROALKANOYL)-O-PHENYLENEDIAMINES, George Oliver Plunkett O'Doherty, Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.*, Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 125

3,991,282, Re. S.N. 263,208, Filed May 13, 1981, Cl. 179/99, MULTI STATION TELEPHONE SWITCHING SYSTEM, Thomas E. Feil, Owner of Record: *Interconnect Planning Corp., New York, N.Y.*, Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 234

4,154,795, Re. S.N. 263,092, Filed May 12, 1981, Cl. 422/99, MICROTEST PLATES, Anthony C. Thorne, Owner of Record: *Dynotoch Holdings Ltd., St. Peters Port, Guernsey, Channel Island England*, Attorney or Agent: James E. Nolan, et al., Ex. Gp.: 177

4,165,288, Re. S.N. 262,812, Filed May 12, 1981, Cl. 210/23H, PROCESS OF TREATING WASTE WATER FROM A TEXTILE VAT DYEING OPERATION TO PRODUCE A CONCENTRATE FOR REUSE, Richard K. Teed, et al., Owner of Record: *Riegel Textile Corp., New York, N.Y.*, Attorney or Agent: Samuel G. Layton, Jr., et al., Ex. Gp.: 176

4,214,054, Re. S.N. 271,067, Filed June 8, 1981, Cl. 521/95, EXPANDED OLEFIN POLYMER, Seizaburo Watanabe, et al., Owner of Record: *Asahi-Dow Ltd., Tokyo, Japan*, Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 144

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

No Publications This Issue.

Vacancy Announcement
Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of $50,113 per annum, which is the current statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

Qualifications: Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;
2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Crystal Plaza 2, Room 9C05
2011 Jefferson Davis Hwy.
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

MARGARET M. LAURENCE,
July 27, 1981. *Assistant Commissioner for Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Sept. 29, 1981

Re. 30,627	4,243,079	4,257,987	4,269,748
3,856,802	4,243,187	4,258,089	4,269,775
4,012,725	4,244,047	4,258,154	4,269,861
4,016,906	4,244,182	4,259,004	4,269,889
4,017,540	4,244,870	4,259,308	4,270,771
4,067,891	4,244,910	4,260,102	4,271,143
4,079,083	4,244,912	4,260,459	4,271,224
4,092,261	4,244,965	4,260,868	4,271,362
4,122,109	4,245,539	4,261,799	4,271,583
4,123,463	4,245,828	4,261,887	4,271,665
4,128,725	4,246,488	4,262,115	4,271,789
4,131,738	4,247,198	4,262,185	4,272,055
4,136,250	4,247,462	4,262,656	4,272,180
4,167,511	4,247,758	4,262,820	4,273,621
4,174,651	4,249,065	4,263,196	4,273,636
4,185,626	4,249,324	4,263,842	4,273,778
4,197,046	4,250,569	4,263,931	4,274,681
4,197,942	4,251,585	4,264,169	4,274,845
4,199,082	4,251,761	4,264,188	4,275,206
4,207,071	4,252,410	4,264,285	4,275,437
4,208,187	4,252,415	4,264,368	4,275,495
4,212,811	4,252,528	4,264,626	4,275,646
4,214,805	4,252,754	4,265,322	4,276,130
4,224,338	4,253,160	4,265,329	4,276,218
4,224,640	4,253,361	4,265,382	4,276,435
4,226,941	4,253,523	4,265,531	4,276,467
4,228,368	4,253,894	4,265,783	4,276,636
4,231,753	4,253,944	4,265,895	4,276,688
4,231,768	4,254,220	4,266,127	4,276,749
4,232,008	4,254,267	4,266,172	4,276,768
4,232,035	4,254,365	4,266,416	4,276,867
4,234,702	4,255,041	4,266,561	4,276,921
4,234,957	4,255,211	4,266,965	4,277,499
4,235,255	4,255,381	4,267,234	4,277,547
4,236,892	4,255,476	4,268,027	4,277,836
4,237,111	4,255,740	4,268,340	4,278,054
4,237,274	4,255,862	4,268,383	4,278,233
4,237,955	4,255,939	4,268,499	4,278,358
4,238,334	4,256,164	4,268,549	4,278,583
4,238,414	4,256,300	4,268,594	4,279,103
4,238,559	4,256,622	4,268,683	4,280,241
4,240,673	4,256,859	4,269,173	4,280,257
4,240,720	4,256,894	4,269,397	4,280,469
4,242,458	4,257,237	4,269,714	4,281,278

Disclaimer

3,999,386.—*Stanley W. Crull* and *Donald J. Mac Intosh*, Ames, Iowa. OVERSPEED PROTECTION CONTROL FOR AN ENGINE. Patent dated Dec. 28, 1976. Disclaimer filed June 22, 1981, by the assignee, *Sundstrand Corp.*

Hereby enters this disclaimer to claim 3 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 25, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-11-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-03-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-07-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-31-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	11-01-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,139,622 to 3,142,840, inclusive

Plant Patents ..... Numbers 2,416 to 2,430, inclusive

REISSUES

SEPTEMBER 29, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,749

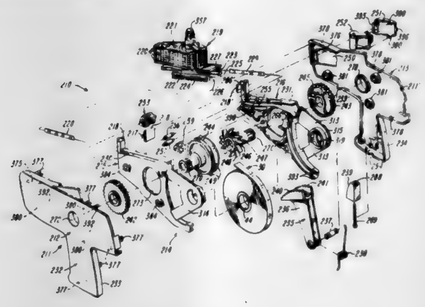
LABEL PRINTING AND APPLYING APPARATUS

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Original No. 3,968,745, dated Jul. 13, 1976, Ser. No. 312,454, Dec. 6, 1972. Continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. Application for reissue Dec. 17, 1979, Ser. No. 104,344

Int. Cl.[3] **B41J** *1/20, 1/24*

U.S. Cl. 101—111 **30 Claims**



29. Printing apparatus, comprising: a print head including a body having a generally arcuate concave mounting surface, a post and a support, a plurality of wheels cradled in and rotatably supported at their outer peripheries on the generally arcuate mounting surface, a printing band in driven contact with each respective wheel and in supported contact with the support, a central hole in each wheel, the post being received in at least some of the holes, the holes being aligned to define a continuous opening through the wheels, and a selector slidably mounted around the post and shiftable into the hole of any wheel for selectively setting the selected printing band, the selector including a driving member selectably engageable with each wheel, and means located in the continuous opening defined by the wheel holes for detenting the selector in a selected position when the driving member is engaged with a selected wheel.

Re. 30,750

CARDIAC RESUSCITATOR AND MONITORING APPARATUS

Archibald W. Diack; Warren S. Welborn, both of Portland, and Robert G. Rullman, Beaverton, all of Oreg., assignors to Cardiac Resuscitator Corporation, Lake Oswego, Oreg.

Original No. 4,088,138, dated May 9, 1978, Ser. No. 645,074, Dec. 29, 1975. Continuation of Ser. No. 429,745, Jan. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 253,507, May 15, 1972, abandoned. Application for reissue May 7, 1980, Ser. No. 148,159

Int. Cl.[3] **A61N** *1/36*

U.S. Cl. 128—419 D **41 Claims**

22. A cardiac resuscitator apparatus comprising:

(a) an oro-pharyngeal airway for insertion into the pharynx of a patient, said airway having contact means mounted thereon for making electrical contact with tissue within the patient;

(b) second electrode means for external placement on the patient in the chest-abdominal region for making electrical contact with the patient in said region;

(c) circuit means for generating an electrical pacing pulse, said circuit means having first and second terminals between which said pacing pulse is supplied; and

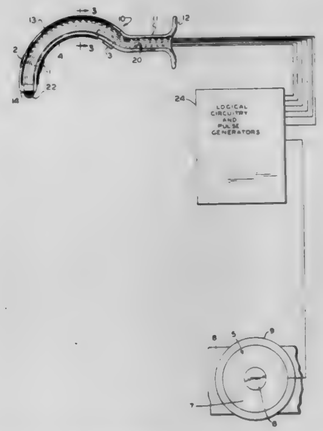
(d) conductor means respectively coupling said first and second terminals to said contact means and said second electrode means for delivering said pacing pulse to the patient through a current pathway in the trunk of the patient between said contact means mounted on said airway and said second electrode means for pacing the patient's heart.

38. A life sign monitoring system comprising:

(a) a tube adapted to be passed at least into the pharynx of a patient;

(b) contact means mounted on said tube;

(c) first means connected to said contact means for responding to electrical activity associated with the patient's heart;



(d) second means for sensing bodily movement of said patient, said second means comprising a sensor applied elsewhere to the body of the patient and responsive to chest expansion of the patient with respiration, said sensor comprising a strain gauge mounted upon means extending at least part way around the patient's chest comprising hinged tongs adapted to carry said strain gauge wherein said strain gauge is pressure-responsive and is disposed between said tongs and the patient's body; and

(e) logical means responsive to said first and said second means for indicating the presence of substantial electrical activity and whether bodily movement substantially accompanies said electrical activity.

Re. 30,751

TIDY BOX MADE ENTIRELY OF POLYPROPYLENE

Renato Castelli, Gent, Belgium, assignor to Samsonite Corporation, Denver, Colo.

Original No. 4,166,547, dated Sep. 4, 1979, Ser. No. 943,362, Sep. 18, 1978. Application for reissue Aug. 11, 1980, Ser. No. 177,718

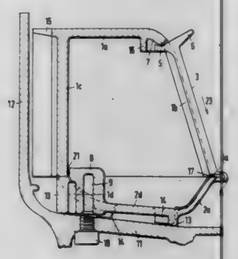
Claims priority, application Belgium, Sep. 30, 1977, 188333; Jun. 6, 1978, 188346

Int. Cl.[3] **B65D** *43/14, 51/04, 1/24*

U.S. Cl. 220—339 **10 Claims**

1. A tidy box made entirely of polypropylene suitable for keeping small items, for example office requisites such as pencils, pens, rubbers, and pocket calculators, small samples and small toilet and dress requisites, said box consisting only of two parts fitted together after moulding, one part, a lower part, forming the base of the box together with a lid having a catch

or fastening lug on one side and a pull handle on the other side, the lid and the base being integrally connected by a polypropylene hinge so that the whole of said lower part constitutes only a single element, and the other part, an upper part, forms



side portions, a top, back and front portion, the latter forming a fixed frame for the lid without any bottom cross-member, and the top having a notch and retaining edge, the whole of said upper part again constituting only a single element.

Re. 30,752

OXIME CARBONATES

Masumi Itoh, Takatsuki; Takashi Kamiya, Suita, and Daijiro Hagiwara, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Original No. 4,014,915, dated Mar. 29, 1977, Ser. No. 607,758, Aug. 26, 1975. Application for reissue Feb. 21, 1979, Ser. No. 13,324

Claims priority, application United Kingdom, Apr. 22, 1975, 16707/75

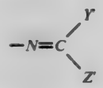
Int. Cl.[3] **C07C** *69/96*

U.S. Cl. 260—463 **25 Claims**

25. Carbonic acid esters of the formula:

$$R'_1OCOOR'_2$$

wherein R'_1 is lower alkyl which may have substituents selected from the group consisting of halogen, lower alkoxy and aryloxy, or ar(lower) alkyl, the aryl moiety of said ar(lower)alkyl may have substituents selected from the group consisting of lower alkoxy, halogen, nitro and cyano, R'_2 is a group represented by the formula:



wherein Y' is selected from the group consisting of cyano, nitro, carbamoyl, lower alkanoyl, or aryl, and said aryl may have substituents selected from the group consisting of halogen, lower alkoxy, nitro, cyano and halo (lower) alkyl, and Z' is aryl which may have substituents selected from the group consisting of halogen, lower alkoxy, nitro, cyano and halo (lower) alkyl; provided that when R'_1 is lower alkyl, Y' is aryl or cyano, and Z' is aryl, the number of carbon atoms of lower alkyl for R'_1 is 4 or 5.

Re. 30,753

PROCESS FOR THE LARGE SCALE PRODUCTION OF HUMAN GROWTH HORMONE BY SERIAL SECONDARY SUSPENSION CULTURE

Mandayam J. Narasimhan, Bangalore, India, and John A. Anderson, Menlo Park, Calif., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Original No. 4,124,448, dated Nov. 7, 1978, Ser. No. 675,643, Apr. 9, 1976. Application for reissue Jan. 7, 1980, Ser. No. 109,908

Int. Cl.[3] **C12P** *21/00;* **C12N** *5/02*

U.S. Cl. 435—68 **13 Claims**

1. A nutrient culture medium composition adapted to the production of growth hormone from pituitary cells by serial subculturing, said composition consisting essentially of effective amounts of an amino acid-rich nutrient medium supplemented by the addition of minor amounts of liver extract, insulin, and anti-biotic and anti-fungal agents.

Re. 30,754

PROCESS FOR THE PREPARATION OF GRAFT COPOLYMERS

Clarence F. Hammer, Wilmington, Del., and Harold K. Sinclair, Louisville, Ky., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,972,961, dated Aug. 3, 1976, Ser. No. 523,468, Nov. 13, 1974. Application for reissue Dec. 15, 1978, Ser. No. 969,934

Int. Cl.[3] **C08L** *51/08*

U.S. Cl. 525—379 **56 Claims**

68. Process for the preparation of graft copolymers which comprises heating for about 15 seconds to 60 minutes, with mixing, (1) a trunk copolymer of at least two monomers at least one of said monomers providing amine-reactive sites taken from the group consisting of an anhydride, a vicinal pair of carboxylic groups, and a carboxylic group adjacent to an alkoxycarbonyl group, where the alkoxy group contains up to 20 carbon atoms, and at least one of said monomers contains no amine-reactive sites, and (2) at least one side chain polymer ranging in length from about 25 to 1,000 chain atoms having per chain one active amine site taken from the group consisting of primary and secondary amines, the remainder of said side chain polymer being selected from the group consisting of polymeric organic oxides containing 2 to 16 carbon atoms, copolymers of organic oxides containing 2 to 16 carbon atoms, polymers of styrene, polymers of substituted styrenes, copolymers of styrene and substituted styrene, polymers of acrylates, polymers of methacrylates, copolymers of acrylates and methacrylates, and polymers of lactones.

69. A thermoplastic graft copolymer consisting essentially of a trunk copolymer derived from at least two monomers, at least one of said monomers providing amine-reactive sites selected from the group consisting of an anhydride group, a vicinal pair of carboxylic groups, and a carboxylic group adjacent to an alkoxycarbonyl group, where the alkoxy group contains up to 20 carbon atoms, and at least one of said monomers contains no amine-reactive sites; and at least one type side chain polymer linked to said reactive sites through amide or imide linkages, said side chain polymer being derived from a short chain polymer having about 5 to 50 repeating units and containing one active amine site selected from the group consisting of primary and secondary amines, the remainder of the side chain polymer being selected from the group consisting of polymeric organic oxides containing 2 to 16 carbon atoms, copolymers of organic oxides containing 2 to 16 carbon atoms, polymers of styrene, polymers of substituted styrenes, copolymers of styrene and substituted styrene, polymers of acrylates, polymers of methacrylates, copolymers of acrylates and methacrylates, and polymers of lactones.

Re. 30,755

PROCESS FOR THE PREPARATION OF ALKALI-METAL SALTS OF CARBOXYALKOXY SUCCINATES

Kenneth L. Lindsay, and Paul Kobetz, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Original No. 3,862,219, dated Jan. 21, 1975, Ser. No. 191,124, Oct. 20, 1971. Application for reissue Mar. 10, 1980, Ser. No. 128,830

Int. Cl.[3] **C07C** *59/22*

U.S. Cl. 562—583 **11 Claims**

1. A process for producing a high purtiy alkali metal carboxyalkoxy succinate from a zinc or alkaline earth metal carboxyalkoxy succinate contaminated with zinc or alkaline earth metal salt of at least one of maleic acid, fumaric acid and hydroxy organic acid which comprises,

selectively reacting the zinc or alkaline earth metal carboxyalkoxy succinate with a stoichiometric deficiency ratio of alkali metal carbonate for complete reaction of all zinc or alkaline earth metal salt present to form a solution of alkali metal carboxyalkoxy succinate containing a carbonate of the zinc or alkaline earth metal, and

recovering the soluble alkali metal carboxyalkoxy succinate solution from the zinc or alkaline earth metal salt residue of maleic acid, fumaric acid or hydroxy organic acid remaining after the selective reaction of the carboxyalkoxy succinate.

Re. 30,756

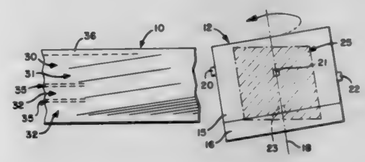
METHOD AND APPARATUS FOR VIDEO SIGNAL RECORDING

Alexander R. Maxey, Redwood City, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Original No. 4,179,717, dated Dec. 18, 1979, Ser. No. 945,421, Sep. 25, 1978. Continuation-in-part of Ser. No. 874,118, Feb. 1, 1978. Application for reissue May 2, 1980, Ser. No. 145,911

Int. Cl.[3] **G11B** *21/04*

U.S. Cl. 360—84 **5 Claims**



1. The method of signal recording comprising, moving a recording medium along a predetermined path, rotating [a plurality of] *at least three* circularly and axially spaced transducer heads, guiding the tape at an angle to the axis of rotation *around said heads so as to be in contact therewith by an angle greater than the circumferential spacing between heads and less than 180°* and to such an angular extent that the heads scan sequentially in helical fashion along separate parallel longitudinal paths of equal width on the record medium, setting the rate of rotation such that a plurality of scans of equal length occur on the separate paths at predetermined spacing, and diverting the signal equally and in predetermined sequence to different ones of said heads.

PLANT PATENTS

GRANTED SEPTEMBER 29, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,769

MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Mar. 28, 1980, Ser. No. 134,941
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of dwarf, hardy, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a delicate apricot color near 609/3 and rose 520/3 and flower resembling the variety Helen Traubel a hybrid tea variety, (U.S. Plant Pat. No. 1,080, expired), in form and color, and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings or by budding, with a goodly amount of medium size semi-glossy foliage and an abundance of flowers borne singly on erect stems.

4,770

MUSCADINE GRAPE

Byard O. Fry, 612 Terrace St., Griffin, Ga. 30223

Filed Jul. 1, 1976, Ser. No. 701,793
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—47 **1 Claim**

1. The new and distinct hybrid plant variety of the muscadine as described and illustrated which is primarily distinguished as to novelty by the unique combination of a very vigorous vine, large fruit of a dark red color, said fruit occurring in large clusters of from about 10 to 20 berries, an individual berry diameter of about 0.8 inches, an individual berry sugar content of from about 19.5 to about 22.5 percent, and producing a crop yield of from about four (4) to about five (5) tons per acre.

4,771

MUSCADINE GRAPE

Byard O. Fry, 612 Terrace St., Griffin, Ga. 30223

Filed May 9, 1977, Ser. No. 795,116
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—47 **1 Claim**

1. The new and distinct hybrid plant variety of muscadine as described and illustrated which is primarily distinguished as to novelty by the unique combination of very large fruit having a diameter of about 1-3/16 inches, said fruit occurring in medium clusters of from 4 to 8 berries, an individual berry sugar content of from about 18.5 to 21.3 percent and producing a crop yield of from about 3½ to about 4½ tons per acre.

PATENTS

GRANTED SEP. 29, 1981

ERRATA

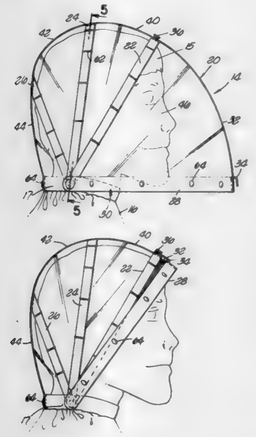
For CLASS	See PATENT NO.
411-016	4,291,608
411-282	4,291,737
369-203	4,291,886
501-004	4,292,080
501-096	4,292,081
501-100	4,292,082
501-104	4,292,083
501-107	4,292,084
250-359	4,292,536
250-361	4,292,537
250-367	4,292,538
250-374	4,292,539

PATENTS

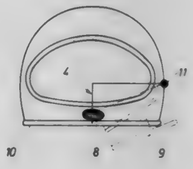
GRANTED SEPTEMBER 29, 1981

GENERAL AND MECHANICAL

4,291,417
PROTECTIVE HEAD COVERING
Alice L. Pagano, 816 S. Verdugo Rd., #1, Glendale, Calif. 91205
Continuation-in-part of Ser. No. 940,792, Sep. 7, 1978, abandoned. This application Oct. 12, 1979, Ser. No. 84,326
Int. Cl.³ A42B *1/04, 1/18, 1/20*
U.S. Cl. 2—202 **2 Claims**



integrally formed substantially rigid guard portion extending fully across the chin of the wearer and a visor for covering the field of view arranged above the chin guard portion, the hood comprising at least two swiveling parts connected by means of a hinge arrangement, the parts having at least one plane of separation through the chin guard portion, the parts being interlocked by means on the abutting surfaces of the parts and



wherein the hood is separably divided at least on one side of a vertex plane and approximately at the height of the auditory canal by a transverse plane extending at a right angle to the vertex plane and between the vertex plane and the approximate auditory canal height, the approximate quarter hood sector obtained thereby swiveling about a hinge located at the approximate auditory canal height.

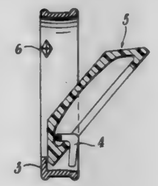
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1. A protective covering assembly for protecting the head of a bearer and for attachment to a garment, comprising:
(a) a protective covering for the head of the bearer, including,
(1) a flexible protective shield,
(2) a collapsible frame attached to said shield for supporting said shield about the head of the bearer, said frame including a plurality of support ribs for said shield attached to one another and a front base portion for the assembly attached to said ribs, and
(3) first covering attaching means attached to said shield for attaching said covering to the garment; and
(b) second covering attaching means for attaching said covering to the garment, including,
(1) a collar for the garment attached to the garment for attaching said covering to the garment, said collar comprising another base portion for the assembly, and
(2) means for attachment to said collar and for mating with said first covering attaching means to attach said covering to the garment;
(c) said base portions being adapted to together encircle the bearer about the head region, said front portion to pass to the front of the bearer and said another portion to pass to the rear of the bearer, and being adapted for rotatable attachment to each other to permit said front portion to move before the face of the bearer with respect to said collar.

4,291,418
CRASH-HELMET
Kurt Zeisler, Buchenstrasse 4, 8351 Schwanenkirchen, Fed. Rep. of Germany
Filed Sep. 14, 1979, Ser. No. 75,735
Claims priority, application Fed. Rep. of Germany, May 9, 1977, 2720785
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—410 **6 Claims**

1. A crash helmet in the from of a substantially rigid one-piece bell-shaped hood having a head portion which extends to at least the height of the auditory canal, the hood having an

4,291,419
IMPLANTABLE CARDIAC VALVE PROSTHESIS
Francesco Intonti, Localita Castelli, 00060 Formellò (Prov. Rome), and Antonio Intonti, No. 5, Viale Liegi, 00198 Rome, both of Italy
Filed Feb. 13, 1980, Ser. No. 121,285
Claims priority, application Italy, Jun. 13, 1979, 49402 A/79
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **2 Claims**



1. An implantable cardiac valve prosthesis, comprising:
(a) an annular element;
(b) a hollow occluder having a truncated cone shape and an articulated joint means for connecting said occluder to said annular element in which said articulated joint means comprises a filiform bracket secured at both ends to an inner wall of said annular element and to a radiused protuberance projecting from said inner wall in parallel to said bracket, said occluder further comprising a folded portion toward its interior into which folded portion said filiform bracket is inserted, said protuberance determining an aperture angle of said occluder which is 45° or less; and
(c) two stop elements provided on said inner wall symmetrically opposite to said protuberance.

4,291,420
ARTIFICIAL HEART VALVE

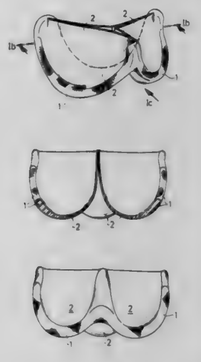
Helmut Reul, Duren, Fed. Rep. of Germany, assignor to Medac Gesellschaft fur Klinische Spezialpraparate mbH, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 33,942, Apr. 27, 1979, abandoned, which is a continuation of Ser. No. 655,373, Feb. 5, 1976, abandoned, which is a continuation of Ser. No. 463,135, Apr. 22, 1974, abandoned. This application Jun. 13, 1980, Ser. No. 159,386

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1973, 2355959

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **9 Claims**



1. An artificial, triple-lobed, semilunar valve for replacing the aortic or pulmonary valve in the heart, the valve comprising:

a flexible, non-annular, triple-lobed suture ring having substantially no resiliency which corresponds in shape to the natural aortic root, said suture ring including three, U-shaped legs, each forming a lobe of said ring, said U-shaped legs being joined to one another at the top portions thereof and being unconnected to one another at the bottom portions thereof to thereby permit free movement of said bottom portions with respect to one another in the radial direction, said suture ring being radially expandable with the dilation of said aortic root; and

three, flexible pockets mounted within said suture ring and disposed symmetrically at intervals of 120° to each other about the inside of said ring wherein when fluid flows in one direction through the suture ring the pockets bend outwards to the vessel wall and lie free-floating in the fluid thereby permitting said fluid to flow therethrough and wherein when said fluid begins to flow in the opposite direction through said suture ring, said pockets make surface-to-surface contact with one another thereby occluding the aperture within said suture ring and inhibiting fluid flow therethrough.

4,291,421
HAND AND FOREARM PROSTHESES

Peyton L. Massey, Los Angeles, Calif., and Lester T. Stormon, 1708 Magnolia Ave., Manhattan Beach, Calif. 90266, assignors to Lester T. Stormon, Manhattan Beach, Calif.

Filed Oct. 1, 1979, Ser. No. 80,410

Int. Cl.³ A61F *1/06*

U.S. Cl. 3—12.6 **8 Claims**

1. A prostheses for replacing the human hand partially and entirely, and including;

a palm section simulating the metacarpal bones, to be secured to the forearm of a person in a disposition duplicating a missing portion of a natural hand,

a thumb and at least one other finger simulating the proximal and extending phalanges thereof and pivotally carried in opposition to each other on axes disposed transversely of the palm section,

the carpals and metacarpal bones of the thumb and palm section being simulated by ribs extending longitudinally of and projecting downwardly and upwardly from a planar frame member disposed in a transverse medial plane, the metacarpal and phalange bones of the thumb being simulated by a lever member pivotal to a downwardly projecting rib simulating the correspondng carpal bone of the palm section, the phalange bones of the at least one other finger being simulated by a lever member pivoted to an upwardly projecting rib simulating the corresponding metacarpal bone of the palm section, the thumb and at least one other finger being first class levers yieldingly urged against a common stop on the palm section by a spring extending between and operating on the levers at the ends thereof remote from the opposed portions thereof simulating the terminal phalanges,

spring means yieldingly urging the thumb and other finger into stopped open positions for the reception of an object to be grasped therebetween,



wherein a shaft is rotatable on a said transverse axis and operably connects a multiplicity of said at least one other fingers, the at least one other finger being sectional with its terminal phalange hinged to the distal end of its proximal phalange and yieldingly urged by spring means to an inner limit from an outer restricted limit,

and operating means comprised of pull members extending from each of the fingers and through a pull point therebetween and to an anchor point on the uuper arm of the person above the elbow,

and wherein said pull members extend to a spring biased coupler that connects to said anchor point for yielding to actuation pressure increasingly applied as angularity between the forearm and upper arm is increased,

whereby a forward motion of the person's arm increases the angularity between the forearm and upper arm and draws upon the said members to pull the thumb and other finger together and into engagement with said object to be grasped thereby.

4,291,422
HYDRAULIC TOILET SEAT

John J. Shoemaker, 1372 Willivee Dr., Decatur, Ga. 30033, and Kenneth R. Stark, 10230 Fitzgerald Rd., Jonesboro, Ga. 30236

Filed May 28, 1980, Ser. No. 153,892

Int. Cl.³ A47K *17/02*

U.S. Cl. 4—251 **13 Claims**

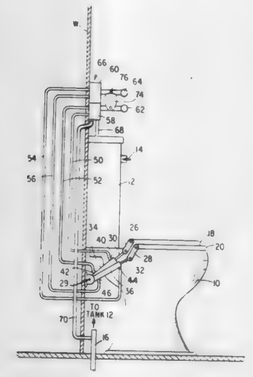
1. In a toilet bowl of the type having a seat member adapted for pivotal movement about a horizontal axis between a generally vertical position and a generally horizontal position, improved apparatus for positively controlling the movement of said seat member comprising:

a supply of water under pressure;

a hydraulic cylinder including a piston having a piston rod

disposed for bi-directional movement along the longitudinal axis of said cylinder, said cylinder further including first and second water inlet/outlet ports each disposed near a respective distal end of said cylinder;

valve means selectively operable for supplying water from said water supply to said first inlet/outlet port while receiving water exhausted from said second inlet/outlet port for causing movement of said piston rod in a first direction and for supplying water from said water supply to said



second inlet/outlet port while receiving water exhausted from said first inlet/outlet port for causing movement of said piston rod in a second direction; and

crank means operatively connecting said piston rod to said seat member for causing said seat member to assume said generally vertical position in response to movement of said piston rod in said first direction and for causing said seat member to assume said generally horizontal position in response to movement of said piston rod in said second direction.

4,291,423
HEAT RECLAMATION FOR SHOWER BATHS, SINKS, AND OTHER FLUID RECEIVING VESSELS

Mahlon T. Wilson, 5 Erie La., Los Alamos, N. Mex. 87544

Filed Mar. 31, 1980, Ser. No. 135,362

Int. Cl.³ A47K *3/22*

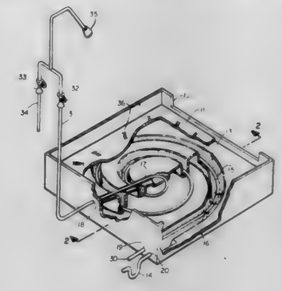
U.S. Cl. 4—598 **9 Claims**

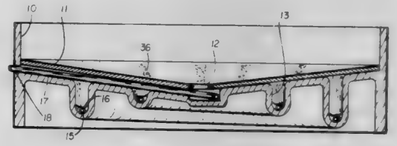
1. A fluid receiving vessel incorporating an energy exchange device for reclaiming heat energy comprising:

(a) a pan for collecting the received fluid and depositing it on a particular region of

(b) a contoured floor for directing the flow of the received fluid along a particular channel containing

(c) tubing positioned within said channel whereby the fluid flowing within said channel is in contact with the exterior surface of said tubing, the said tubing conveying fluid at a temperature different from the received fluid such that there will exist a transfer of heat energy between the fluid flowing within the said channel and the fluid flowing within said tubing, thereby heating or cooling the fluid flowing within the said tubing and reducing the amount of





heating or cooling otherwise required in the process utilizing the fluid flowing within the said tubing.

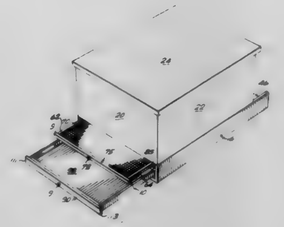
4,291,424
BEEHIVE

Jason Angelis, 5190 NW. 4 St., Miami, Fla. 33126

Filed Mar. 19, 1980, Ser. No. 131,750

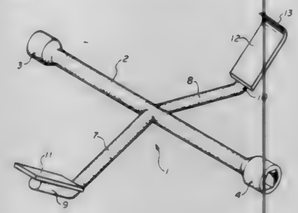
Int. Cl.³ A01K *47/06*

U.S. Cl. 6—4 R **5 Claims**



1. A beehive comprising an upper closed dome structure having a downwardly facing opening; a lower portion including spaced side walls, a front wall and a rear wall and said lower portion being sized to close the opening of said dome structure and to matingly support said upper portion; said lower portion further comprising, a first screen structure of a first predetermined common size spanning the walls and separating the lower portion into an upper chamber and a lower chamber, said first screen structure being in a fixed position; a second screen structure of a second predetermined common mesh greater than the mesh of said first screen structure, said second screen structure comprising a first drawer sized for slidable drawer-type engagement in the lower portion, said lower portion including runners for said second screen structure, said front wall having a beehive entrance mouth in open communication with the upper chamber, said lower chamber beneath said first screen structure including a second drawer with a floor spaced vertically beneath said first screen structure for collecting pollen thereon and said lower portion including access means to gain access to the lower chamber for removal of collected pollen on the floor.

4,291,425
SOCKET WRENCH
John D. Sweitzer, 9323 Sweet Brush, Houston, Tex. 77064
Filed Mar. 10, 1980, Ser. No. 128,947
Int. Cl.³ B25F *1/00*; B25G *1/00*
U.S. Cl. 7—100 **6 Claims**



1. A cross or X-type socket wrench comprising
a longitudinally extending shaft having socket wrenches in the opposite ends thereof,
a pair of shafts, each extending at a right angle from and rigidly secured in a fixed position, on said socket shaft at a point intermediate said socket wrenches, and
said pair of shafts each having a pedal step secured at the outer end portion thereof and on the same side thereof whereby stepping on one pedal step will rotate said socket shaft in one direction and stepping on the other pedal step will rotate the same in the opposite direction.

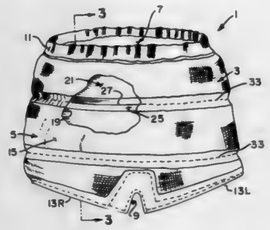
4,291,426
COMBINATION SOCKET WRENCH AND GAUGE
Walter S. Bishop, Jr., 7300 Wild Onion, Austin, Tex. 78744
Filed May 9, 1980, Ser. No. 148,515
Int. Cl.³ B25F *1/00*
U.S. Cl. 7—100 **5 Claims**



1. A combined spark plug wrench and gauge apparatus comprising
a generally tubular body;
means at one end of said body defining a polygonal socket cavity for engaging and rotating the body of a spark plug; and
a plurality of plate-like members fixedly attached to and protruding axially from the other end of said body, said members having predetermined different thicknesses for checking and setting the gap between electrodes of the spark plug.

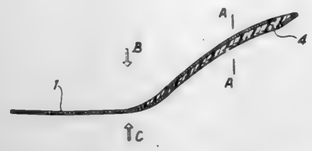
4,291,427
FLOATATION GARMENT
Richard L. Rhea, P.O. Box 27468, St. Louis, Mo. 63141
Filed Oct. 10, 1978, Ser. No. 949,758
Int. Cl.³ B63C *9/08*
U.S. Cl. 9—335 **6 Claims**

3. Buoyant swimming trunks intended to be worn on the lower body of the wearer, said trunks comprising a fabric garment having a front section, a back section, and a crotch section interconnecting the bottoms of the front and back sections so as to define two leg openings, the upper ends of said sections defining a waist opening, said front and back sections each being comprised of an outer fabric panel and an inner fabric panel defining front and rear pockets, a front floatation pad enclosed within said front pocket, a back floatation pad enclosed within said rear pocket, each of said pads being of a



suitable floatation material and being of generally uniform thickness, each of said pads having at least one line of reduced thickness extending therealong so as to permit the ready bending and flexing of said bathing trunks along said lines of reduced thickness, at least one of said outer and inner panels of said front and back sections being sewn to its respective floatation pad along said lines of reduced thickness.

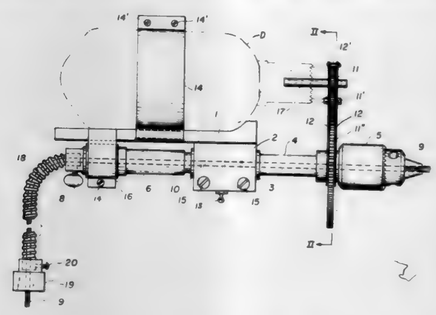
4,291,428
PROCESS FOR THE MANUFACTURE OF MOULDED INSOLES
Onorio Anzani, 10 stesso, Parabiago - Frazione San Lorenzo, Italy
Filed Jan. 3, 1980, Ser. No. 109,272
Claims priority, application Italy, Jan. 11, 1979, 19211 A/79; Aug. 6, 1979, 24945 A/79
Int. Cl.³ A43D *0/0*; A43B *13/38*
U.S. Cl. 12—146 B **2 Claims**



1. A process for manufacturing footwear insoles, formed of a flexible, porous and stickable sheet and plastic material, comprising the steps of: shearing the sheet to form a peripheral cut of the insole and an internal cut at a zone underlying the heel to thereby provide a tongue at said zone; placing the so formed insole between a die and dolly provided with a plurality of spaced rods for engaging upper and lower surfaces of said insole; stabilizing the insole and tongue in the die by urging communication of said insole and tongue with said rods, conforming the insole to the die and raising the tongue up to the dolly, and injecting the plastic material between the insole portion and the tongue to conform to a predefined contour.

4,291,429
DRILL ATTACHMENT
Robert Servadio, 3721 Parkview Ave., Pittsburgh, Pa. 15213
Filed Oct. 3, 1979, Ser. No. 81,577
Int. Cl.³ B08B *9/02*
U.S. Cl. 15—104.3 SN **2 Claims**

1. In combination with an electric hand drill having a housing with a chuck at the forward end of said housing, an attachment comprising a frame located directly at a side of said housing, a clamp attached to said frame and surrounding said housing for attaching said frame to said housing, means rotatably supporting a hollow shaft from said frame with said hollow shaft extending parallel to the axis of said drill, said supporting means including means rotatably supporting a rearward portion of said hollow shaft, a chuck mounted on the forward end of said hollow shaft adjacent to said drill chuck, a gear having a shaft mounted in said drill chuck, a gear support means mounted between said gear and said hollow shaft, reduction gear means mounted on said gear support means be-



tween said gear and said hollow shaft chuck to drive said hollow shaft chuck at a considerably reduced speed and in the same direction as said gear shaft, a snake extending through said hollow shaft so that a forward portion of said snake is clamped by said hollow shaft chuck, and a flexible conduit attached to the means supporting the rearward portion of said hollow shaft, whereby said snake is fed through said flexible conduit and hollow shaft and rotated at a slow speed to enable unclogging of a drain.

4,291,430
JANITOR'S RAKE FOR REMOVING STAPLES IMBEDDED IN CARPET
Ronald Hightower, 89 Whiteford Ave., Atlanta, Ga. 30307
Filed May 21, 1980, Ser. No. 151,540
Int. Cl.³ A47L *13/00*
U.S. Cl. 15—142 **9 Claims**



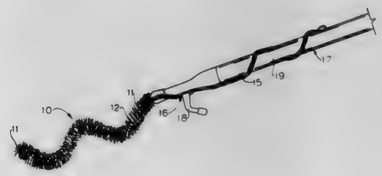
1. A device for dislodging a standard staple whose side portions are imbedded in carpet, the standard staple having two side portions 0.25 inch in outside length, a mid portion 0.5 inch in outside length, a diagonal length of 0.559017 inch and a diameter of 0.019 inch, the device comprising:
(A) a toothed member comprising
(1) a teeth supporter and
(2) a plurality of rigid teeth extending from the teeth supporter such that
(a) two of the teeth are spaced apart at their bottoms by a distance
(1) greater than 0.5 inch and
(2) less than 0.559017 inch and
(b) at least one tooth other than said two teeth is positioned between said two teeth such that each tooth between said two teeth is farther from each said two teeth than 0.019 inch, and
(B) means for moving the bottoms of said teeth across the carpet,
the device being so arranged and constructed that as the bottoms of the teeth are so moved
(1) the device will withstand enough force pressing the teeth downward to prevent the bottom of at least one said tooth between said two teeth from slipping over the midportion, and
(2) the device will withstand enough force pressing the teeth against the mid portion to dislodge the staple.

4,291,431
TUFTED ANGULAR BRUSH CONSTURCTION
John C. Lewis, Jr., Salisbury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.
Division of Ser. No. 924,643, Jul. 14, 1978, Pat. No. 4,189,189.
This application Jul. 20, 1979, Ser. No. 59,479
Int. Cl.³ A46B *3/00*, *9/02*
U.S. Cl. 15—159 R **3 Claims**



1. A tufted, flared brush construction comprising:
a semi-rigid thermoplastic sheet substrate having a convex configuration;
a plurality of mutually spaced synthetic filament tufts, each of said tufts mounted on said substrate at an end fused integrally thereto, each of said tufts extending outwardly at an angle different from the angle of each adjacent tuft and substantially perpendicular to the surface of said substrate mounting said tuft;
handle means for supporting said tufted construction.

4,291,432
ANCHOR CHAIN CLEANING BRUSH
Arthur R. Cogswell, 4100 Five Oaks Dr., TH-36, Durham, N.C. 27707
Filed Apr. 17, 1980, Ser. No. 140,993
Int. Cl.³ A46B *3/18*
U.S. Cl. 15—160 **4 Claims**



1. An integral cleaning brush for cleaning a strand of anchor chain, anchor rope, or the like, comprising:
(a) a relatively stiff, resilient, twisted wire armature having a forward helical brush retaining portion and a trailing helical extension portion;
(b) brush material forming bristles associated with said armature brush retaining portion in a twisted-in-wire configuration; and
(c) a loop configuration formed of and as part of said helical

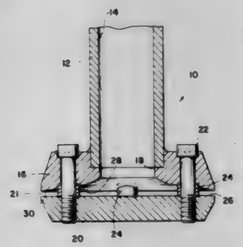
extension portion and proximate the trailing end of said brush material, said loop configuration being adapted to pass over the hook of a boat hook when said helical extension portion is wound on the staff thereof such that said staff may serve as a handle for said brush retaining portion enabling said anchor strand to be cleaned by reciprocal motion of said brush material over the length thereof.

4,291,433

APPARATUS FOR STEAM CLEANING LINERS IN OIL WELL BORES AND THE LIKE

William D. Newsom, and James R. Carnahan, both of Bakersfield, Calif., assignors to K. R. Evans & Associates, Bakersfield, Calif., a part interest

Division of Ser. No. 473,697, May 28, 1974, Pat. No. 4,037,660. This application Jan. 3, 1977, Ser. No. 756,331
Int. Cl.³ A47L *5/14*
U.S. Cl. 15—405 **2 Claims**



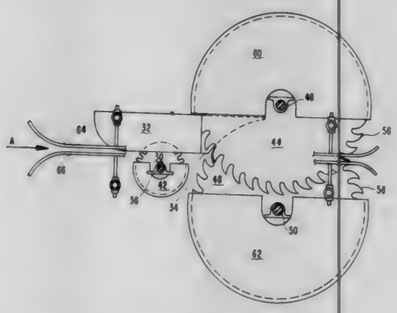
1. A head for ejecting fluid therefrom and comprising a sleeve having a fluid passageway extending longitudinally therethrough, a circumferential flange provided at one end of the sleeve, a plate secured to the circumferential flange and spaced therefrom to provide a hiatus around the outer periphery thereof, the inwardly directed faces of the plate and flange defining a substantially continuous 360° fluid passageway having at least one flat face and having a substantially constant cross-sectional flow area throughout the extent thereof, said hiatus being in communication with the fluid passageway for receiving the fluid therefrom and ejecting the fluid radially outwardly from the head.

4,291,434

TENDON PULLING

Tom Batts, Rose Hill, N.C., assignor to Swift & Company, Chicago, Ill.

Filed Mar. 28, 1977, Ser. No. 782,171
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—11.3 **9 Claims**



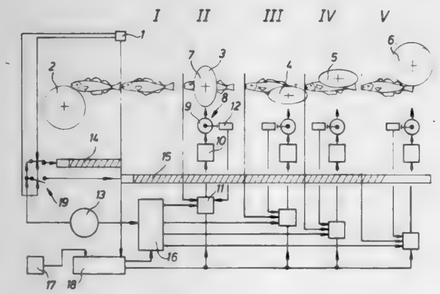
1. An improved method for pulling tendons from the legs of poultry carcasses, said method comprising: carrying poultry carcasses by the feet thereof along a straight path; breaking the lower legs of said carcasses while being carried at a given level without appreciably tearing the skin or separating the feet therefrom; thereafter applying oppositely directed shearing forces to said lower legs slightly spaced both above and below said level while said carcasses are so carried; and continuing said shearing forces sufficently to tear the skin at each lower leg to sever each foot and to pull tendons from each upper leg of said carcasses.

4,291,435

METHOD OF PROCESSING FISH

Franz Hartmann, Oldesloe, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lübeck, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,693
Int. Cl.³ A22C *25/14*
U.S. Cl. 17—45 **6 Claims**



1. A method of processing fish in a fish processing machine, by controlling setting members and control paths of tools and guides arranged sequentially along the conveying path of the fish in said machine, a quantity to be measured or magnitude value corresponding to the size of a fish being determined by measuring each fish at a single measuring location lying in the region of the fish conveying path and upstream of the first tool to be controlled, an application value for each setting member being derived from a fish value proportional to the measured value of the fish to be processed, and from a position value corresponding to the distance between the tool to be actuated and the measuring location, and a displacement value proportional to the measured value being stored before being used for controlling the respective setting member, the method comprising the steps of

(a) using position values of each tool, measured by way of travel units of the fish along its conveying path and stored in permanent storage means, and fixedly programmed proportionality factors for the fish value and for the displacement value;

(b) measuring the measured value in travel units of the fish and storing it in erasable storage means;

(c) effecting a starting pulse to be received by control device means and measuring device means when one of the ends of said fish passes by said measuring location;

(d) said control device means thereupon effecting the computing of said displacement value and said application value for each tool and their storage as well as the comparison of a sum of counting pulses with said stored application values, said sum of counting pulses increasing in the control device means; and

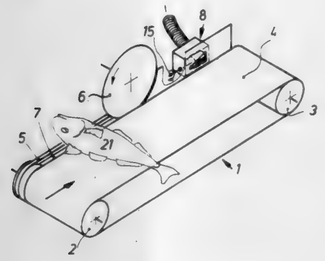
(e) said control device means causing the delivery of an application value to the setting member of the respective tool when the sum of counting pulses equals said application value.

4,291,436

APPARATUS FOR EXTRACTING THE ENTRAILS AND/OR CLEANING THE BELLY CAVITY OF FISH

Hermann Wulff, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lübeck, Fed. Rep. of Germany

Filed Dec. 7, 1979, Ser. No. 101,091
Int. Cl.³ A22C *25/14*
U.S. Cl. 17—59 **11 Claims**



1. An apparatus for extracting the entrails and/or cleaning the belly cavities of decapitated fish, said apparatus comprising

a conveyor for advancing the fish essentially transversely to their longitudinal axes and with their decapitation faces lying in a decapitation plane essentially perpendicular to the conveying plane,

a suction device having a suction opening lying essentially in said decapitation plane, and

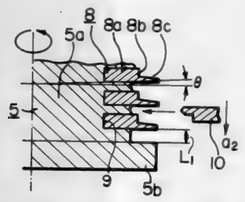
means arranged behind said suction opening in said suction device for physically gripping those parts of the belly contents of the fish which have been sucked into said suction opening and for extracting the same from the belly cavity.

4,291,437

COMBING ROLLER UTILIZED FOR AN OPEN-END SPINNING MACHINE

Toshio Yoshizawa, Chiryu; Yoshiaki Yoshida, Oobu, and Katsuaki Sugiura, Okazaki, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 26, 1979, Ser. No. 107,073
Claims priority, application Japan, Dec. 26, 1978, 53-179652
Int. Cl.³ D01G *15/14, 15/84*
U.S. Cl. 19—112 **3 Claims**



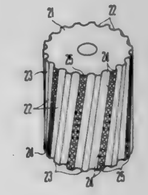
1. An improvement of a combing roller utilized for an open-end spinning machine, wherein a metallic wire is mounted on a body of said combing roller, said body comprises a main cylindrical body and a pair of flanges coaxially formed at both ends of said main body, a base portion of said metallic wire is pressed into a right hand or left hand helical groove, and the working direction of said metallic wire coincides with the rotational direction of said combing roller, said improvement comprising a first free cylindrical space formed on said main body at a first position between one of said flanges located at a side corresponding to the direction of progress of either an imaginary right hand screw imaginarily engaged with said right hand helical groove or an imaginary left hand screw imaginarily engaged with said left hand groove when said imaginary screw is turned in the counter-clockwise direction and a tooth point of the end portion of said metallic wire, a second free cylindrical space formed on said main body at a second position between the other flange and a tooth point of the other end portion of said metallic wire, the axial size of said first cylindrical space being smaller than that of said second cylindrical space.

4,291,438

FIBER FEEDING ROLLER OF OPEN-END SPINNING APPARATUS

Kazuo Seiki, and Noriaki Miyamoto, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Feb. 7, 1980, Ser. No. 119,593
Claims priority, application Japan, Feb. 17, 1979, 54-19617
Int. Cl.³ D01G *19/10*
U.S. Cl. 19—112 **5 Claims**



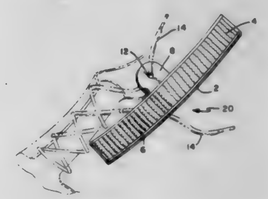
1. A fiber feeding roller in a fiber-bundle supply mechanism in which said feeding roller is so adapted as to coact with a pressing member to supply a bundle of fibers to fiber separating mechanism in an open-end spinning apparatus, the outer circumferential surface of body of said feeding roller being formed with a plurality of rows of projections having flat surface thereon and extending in axial direction of said feeding roller body and a plurality of rows of projections having knurled surface formed thereon are arranged between said projections with flat surface.

4,291,439

KNOT SECURING DEVICE

Alfred A. Riti, 61 Bronx River Rd., Yonkers, N.Y. 10701

Filed Jun. 18, 1979, Ser. No. 49,936
Int. Cl.³ F16G *11/00, 11/10*
U.S. Cl. 24—119 **4 Claims**



1. A device for securing bow-knots comprising,

a strap of flexible material,

said strap having on one side thereof regions of hook and loop elements,

a first of said regions extending from one end of said strap toward the middle thereof, comprising a field of hook elements,

a second said regions, extending from the other end of said strap toward the middle thereof, comprising a field of loop elements, said first and second regions being adopted to be brought into fastening contact with each other by folding

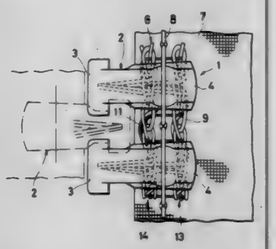
said strap about the middle thereof and an anchoring element provided at about the middle of said strap and fixed thereto, said anchoring element extending outwardly in the plane of said strap and having a perforation therein to receive a lace.

4,291,440

MOLDED COUPLING ELEMENT ASSEMBLY

Hiroshi Yoshida, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,329
Claims priority, application Japan, Jun. 5, 1978, 53-67434
Int. Cl.³ A44B *19/40*
U.S. Cl. 24—205.16 R **19 Claims**



1. A coupling element assembly for slide fasteners comprising:

a row of laterally spaced coupling elements each having a head portion and a pair of leg portions extending from said head portion; and

a pair of warp-knit elongate webs each including at least one first thread forming a wale of chain stitches and a second thread disposed in and extending longitudinally along said wale of chain stitches, each of said warp-knit elongate webs extending transversely of said spaced coupling elements and having a longitudinal portion embedded in respective leg portions of said coupling elements to interconnect the coupling elements,

each of said warp-knit elongate webs including a pair of first threads forming a pair of laterally spaced wales of chain stitches,

a third thread interlaced with the first threads in said warp-knit elongate webs and having a plurality of parallel portions spaced longitudinally on said first threads and extending transversely of said wales, and said parallel spaced portions extending substantially the full length of said coupling elements.

4,291,441

APPARATUS FOR OPENING TEXTILE FABRICS IN ROPE FORM

Mariano Bassani, Via Trento Trieste 7, Arcore (Milan), Italy

Filed May 2, 1980, Ser. No. 146,916
Claims priority, application Italy, May 4, 1979, 67933 A/79
Int. Cl.³ D06C *3/06*
U.S. Cl. 26—75 **6 Claims**

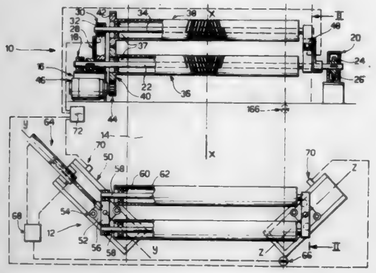
1. Apparatus for opening a textile which is gathered together in rope form, including a spreading device comprising:

two spreading cylinders with helically-ridged surfaces located in the path of advancement of said textile through said apparatus such that the textile passes circumferentially over a portion of each said surface in succession; drive means for rotating each said cylinder about its longitudinal axis in the opposite circumferential direction to the direction of advance of said textile over the respective said surface, said two cylinders being rotated in opposite senses, in use; and

displacing means for displacing a displaceable one of said cylinders in a direction perpendicular to its axis to vary the frictional force between said textile and the surfaces of the cylinders, in use, wherein:

a pivotable one of said two spreading cylinders is pivotable, in opposite senses, from a normal working position, in which said longitudinal axes of said cylinders are parallel to each other, into two respective extreme positions in which the axis of said pivotable cylinder is inclined to the axis of the other of said cylinders;

pivoting means are provided for pivoting said pivotable cylinder between said normal working position and each of said two extreme positions; and



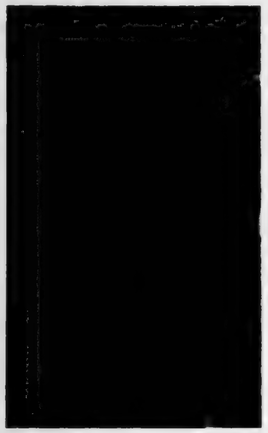
sensor means are located downstream of said spreading device for sensing a displacement of said textile from said direction of advance, said sensor means being operative on sensing a displacement of the textile to activate said pivoting means to pivot said pivotable cylinder from said normal working position to one of said extreme positions so as to reduce the frictional force between the textile and the ends of the cylinders towards which the textile is displaced.

4,291,442

PROCESS FOR FIBRILLATING POLYESTER

Francis W. Marco, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 947,368, Oct. 2, 1978. This application Jun. 30, 1980, Ser. No. 164,385
Int. Cl.³ D06C *27/00*
U.S. Cl. 28—159 **18 Claims**



1. A process for improving the hand and comfort of a textile fabric comprising a plurality of yarns each said yarn comprising a multiplicity of texturized polyester filaments comprising the steps of:

treating said textile fabric with an alkaline aqueous solution having a pH of at least about 9.5, the temperature of said solution being between about 30 and 70; and

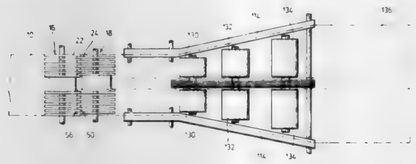
breaking on an average basis at least about 5 of said filaments per square centimeter of fabric while said fabric is wet with said aqueous alkaline solution.

4,291,443

FORMING EXPANDED MESH SHEET FROM DEFORMABLE STRIP

Gordon H. Laurie, Mississauga; Theodore J. Seymour, Oakville; Randall T. Sakauye, Mississauga, and John V. Marlow, Oakville, all of Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Dec. 18, 1978, Ser. No. 970,298
Claims priority, application Canada, Oct. 31, 1978, 315190
Int. Cl.³ B21D *31/04*
U.S. Cl. 29—6.1 **6 Claims**



1. A method of forming expanded mesh sheet from a deformable strip comprising the steps of concurrently slitting and preforming at least a portion of said strip contained within imperforate border portions to provide one or more longitudinally extending strand-like components, said components comprising elongated slit segments deformed out of the plane of the strip and unslit segments retained in the plane of the strip, said elongated slit segments being severed from laterally adjacent segments and said border portions and being substantially convexly shaped from the plane of the strip whereby slit segments in laterally adjacent components extend from opposite sides of the plane of the strip, and said unslit segments retained in the plane of the strip together define continuous bands extending laterally at least the width of said one or more strand-like components across the said portion of the strip; slitting the strip at alternate bands to extend the slit segments in a staggered relation and to define nodes therebetween; and laterally expanding the slit preformed portion of the strip wherein the nodes remain substantially in the plane of the strip to form said mesh sheet by drawing opposite longitudinal edges of the strip apart whereby the elongated segments form a network of substantially flattened mesh joined by said nodes wherein unslit portions of the bands provide bonds between adjacent components.

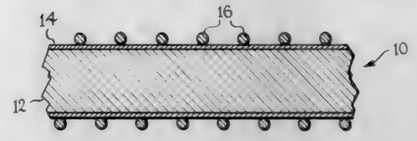
4,291,444

PROCESS OF MANUFACTURING A TUNGSTEN LAMP FILAMENT

Lewis V. McCarty, Cleveland Heights, and John W. Pugh, Gates Mills, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,545
Int. Cl.³ B21F *3/04, 45/00*
U.S. Cl. 29—25.14 **5 Claims**

1. An improved process of manufacturing a tungsten lamp filament which includes coiling and heat treating said filament to at least 1600° C. on a molybdenum wire mandrel until significant stress relaxation has taken place, wherein the improvement comprises coating the bare metal surface of said wire mandrel with a chemical vapor deposit of a refractory metal selected from tungsten and tantalum prior to said coiling and



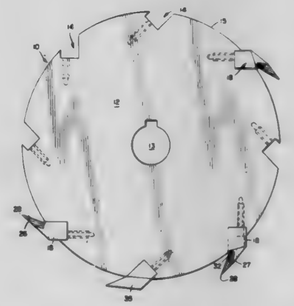
heat treating steps to thereby prevent molybdenum contamination of said tungsten filament.

4,291,445

ROTARY CUTTING BLADE ASSEMBLY

Morris V. Johnson, Lima, Ohio, assignor to National-Standard Company, Niles, Mich.

Filed Mar. 6, 1980, Ser. No. 127,644
Int. Cl.³ B23D *71/00*; B27G *13/00*; B26D *1/12*
U.S. Cl. 29—78 **7 Claims**



1. A cutting blade assembly for mounting to a rotating arbor for slicing material from a workpiece, including in combination:

wheel means having a plurality of pockets equally spaced about the outer annular surface thereof, said wheel means including a bore therein for mounting to the rotating arbor,

a plurality of cutting blade members each comprised of a base portion and a blade projection portion, said blade projection portion extending forwardly and outwardly from said base portion, said blade projection portion including a primary cutting edge extending radially along the leading surface of said blade projection portion to provide a guillotine-like cutting edge, and a secondary cutting edge extending rearwardly from the outward corner of said primary cutting edge with said base portion being adapted to be fixedly mounted in said pocket in said wheel means to complete the blade assembly.

4,291,446

CONTROLLED DEFLECTION ROLL

Ignazio Marchioro, Schio, Italy, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Oct. 22, 1979, Ser. No. 87,092
Claims priority, application Switzerland, Oct. 31, 1978, 11193/78
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—116 AD **9 Claims**

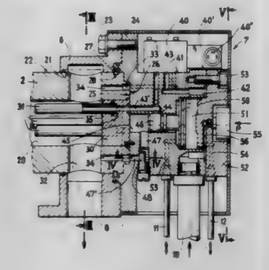
9. A controlled deflection roll comprising:

a stationary roll support;

a roll shell rotatable about said stationary roll support;

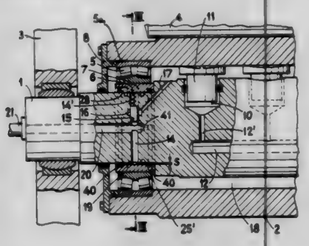
means for mounting said roll shell to be rotatable about said stationary roll support;

a plurality of pressure elements upon which there is supported said rotatable roll shell;
said roll support having individual flow channels through which there is infed pressurized fluid medium at different pressures;
said roll support having an end region;
supply head means detachably secured to said end region of said roll support;
said detachable supply head means containing therein:



individual pressure regulators operatively associated with the individual flow channels in the roll support;
a common distributor channel means for the pressurized fluid medium infed to the pressure regulators;
a plurality of connection bores;
infeed line means for the pressurized fluid medium with which there is connectable said common distributor channel means; and
said connection bores leading from the individual pressure regulators to the related flow channels in the roll support.

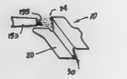
4,291,447
CONTROLLED DEFLECTION ROLL
Ignazio Marchioro, I-Schio, Italy, assignor to Escher Wyss Limited, Zürich, Switzerland
Filed Nov. 5, 1979, Ser. No. 91,512
Claims priority, application Switzerland, Nov. 15, 1978, 11724/78
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—116 AD **9 Claims**

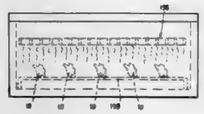


1. A controlled deflection roll comprising:
a stationary roll support;
a rotatable roll shell;
bearing means for rotatably mounting said roll shell at its ends for rotation about said stationary roll support;
at least one pressure element arranged between said stationary roll support and said roll shell for rotatably supporting said roll shell at said stationary roll support;
said pressure element exerting a support force at the roll shell in a force direction which substantially passes through a pressure plane extending through the lengthwise axis of the roll shell;
said bearing means for rotatably mounting the roll shell at the stationary roll support containing play in the pressure plane in a direction opposite to said force direction;
said play enabling movement of the bearing means in relation to the stationary roll support out of a work position in the direction of the direction exerted by said pressure element;
a yieldable force applying element for retaining with a predetermined force said bearing means at the stationary roll support in the work position; and
a control device arranged between said stationary roll support and said roll shell which, upon displacement of said bearing means out of the work position at the stationary roll support, limits the support force of the pressure element which is exerted against the force of the force applying element.

4,291,448
METHOD OF RESTORING THE SHROUDS OF TURBINE BLADES
Salvatore J. Cretella, North Haven; Matthew Bernardo, West Haven, and Ralph T. DeMusis, Madison, all of Conn., assignors to Turbine Components Corporation, Branford, Conn.
Continuation-in-part of Ser. No. 859,438, Dec. 12, 1977, Pat. No. 4,155,152. This application Apr. 12, 1979, Ser. No. 29,571
Int. Cl.³ B23P *15/02, 7/00*
U.S. Cl. 29—156.8 B **17 Claims**

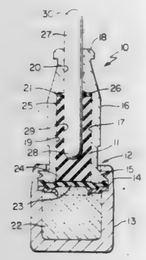


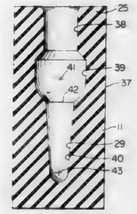




1. The method of repairing worn turbine blades which are originally cast to a predetermined geometry, and formed of a metal selected from the group consisting of nickel-based and cobalt-based alloys, comprising the steps of grinding down to an accurately predetermined dimension, with respect to a predetermined but no longer existing original finished geometry of the shroud thereof, any of the worn, undersized edges of the Z-notch portion of the mounting shroud at one end of the blade, masking the shroud on both sides of said edge after the grinding thereof, subjecting said ground-down edge to a plasma stream comprising essentially a metal selected from the group consisting of nickel-based and cobalt-based alloys, said plasma stream having essentially the same composition as that of the turbine blade being repaired and being applied to an extent which is just sufficient to build up said edge substantially to its original overall finished dimension, such that the added alloy and the metal of the blade become essentially homogeneous and of similar composition, and thereafter sintering said blade at elevated temperatures for a predetermined length of time to season the repair.

4,291,449
METHOD OF MAKING A STEM SEAT FOR A PISTON AND CYLINDER TYPE THERMAL DEVICE
Warren G. Williamson, Louisville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 58,084, Jul. 16, 1979, Pat. No. 4,235,109, which is a continuation-in-part of Ser. No. 918,069, Jun. 22, 1978, Pat. No. 4,179,928. This application Feb. 1, 1980, Ser. No. 117,650
The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.
Int. Cl.³ G01K *5/32*; B23P *15/00*
U.S. Cl. 29—157.1 R **24 Claims**

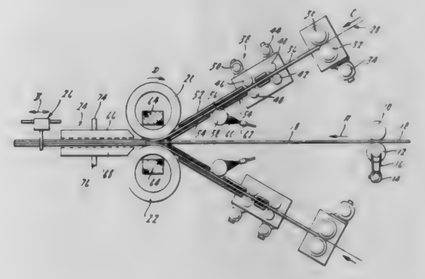




1. In a method of making a piston and cylinder type thermal device having a resilient stem seat provided with an opening in one end thereof and receiving an actuating stem in said opening that is adapted to reciprocate in said opening in response to the thermal expansion and contraction of a charge of material in said device and operatively acting on said stem seat adjacent the other end thereof, said opening having three portions thereof disposed in serially aligned and interconnected relation, said stem having three portions thereof respectively disposed in said three portions of said opening, said portions of said opening and said stem each having a main diameter, said main diameters of said portions of said stem being substantially the same size, the improvement comprising the steps of forming one of said portions of said opening to be adjacent said other end of said stem seat and to be substantially smaller in said diameter thereof than said diameter of the portion of said stem that is to be received in said one portion when said stem seat is in the unassembled condition thereof, forming another of said portions of said opening to be adjacent said one end of said stem seat and to be substantially smaller in said diameter thereof than said diameter of the portion of said stem that is to be received in said other portion when said stem seat is in the unassembled condition thereof, and forming the remaining portion of said opening to comprise an intermediate portion of said opening that joins with said one portion and said other portion and has its said diameter substantially the same size as said diameter of the portion of said stem that is to be received in said intermediate portion when said stem seat is in the unassembled condition thereof.

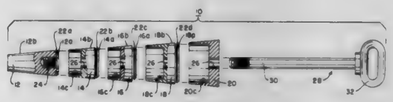
4,291,450
METHOD AND APPARATUS FOR MANUFACTURING FINNED HEAT EXCHANGERS
Eugene E. Rhodes, Belleville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 5, 1979, Ser. No. 82,248
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 R **2 Claims**

1. In a method for series manufacture of:
heat exchange elements of the type which comprise a metallic, relatively thin walled basic profile provided with a longitudinally extending surface engaging member which is in the form of a metallic strip corrugated transversely of the longitudinal axis thereof which is in intimate heat conducting contact with said basic profile wherein the following steps are carried out prior to the actual manufacture of the heat exchange elements or in conjunction with the manufacture thereof: (a) forming desired lengths of said basic profile, (b) advancing said lengths of basic profile in a series from one end thereof, (c) advancing concurrently therewith said metallic strip corrugated transversely of its longitudinal axis, (d) guiding said corrugated strip successively into abutment with said basic profile, (e) impinging a stream of a gaseous medium against said corrugated strip in order to exert a holding force so that the crests of the corrugations of said corrugated strip are held in firm abutment with said basic profile, (f) establishing a permanent metallic bond between



said basic profile and said crests of said corrugations of said corrugated strip, and (g) cutting said basic profile with said corrugated strip permanently fixed along the length thereof into desired lengths;
the improvement comprising:
supplying the heat necessary for establishing a permanent metallic bond between said basic profile and said crests of said corrugations at the position where said corrugated strip is guided into abutment with said basic profile, and developing said supplied heat by means of an induction heating coil positioned at a position where said corrugated metallic strip has been fed into abutment with said basic profile.

4,291,451
O-RING TOOL
Brian S. O'Neill, 12-I Community Dr., and Clay E. Tully, 216 Community Dr., both of Shillington, Pa. 19607
Filed Aug. 13, 1979, Ser. No. 65,879
Int. Cl.³ B23P *19/02, 19/08*
U.S. Cl. 29—235 **4 Claims**



1. A tool for mounting elastic rings comprising:
a plurality of generally frustoconical sections, each section having a base portion and a top portion opposite the base portion;
means adjacent the base of each section for securing the section on a member adapted to receive an elastic O-ring;
interfitting means for joining the sections together;
retainer means for releasably holding the section in assembled relationship;
wherein at least one of the sections includes a longitudinal passageway extending therethrough and the retainer means comprises an elongate member extending through the passageway; and means for holding the section on the elongate member.

4,291,452

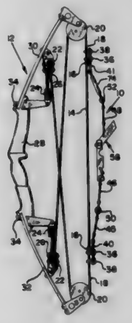
TENSION RELIEVING AND BOWSTRING REPLACING DEVICE FOR COMPOUND BOW

Archie E. Whitman, Sr., Seal Rock, and Donald D. W. Lathrops, Springfield, both of Oreg., assignors to Whitlath Co., Newport, Oreg.

Continuation-in-part of Ser. No. 73,714, Sep. 10, 1979, abandoned. This application Mar. 28, 1980, Ser. No. 135,170

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—235 **10 Claims**



1. For use with a compound bow of the type having the bowstring normally stretched between two oppositely biased tensioned cables, opposite ends of said bowstring being releasably coupled to said cables by bowstring fasteners fixed to said cables, a device to aid in replacement of the bowstring and permit storage of said compound bow with said bowstring removed, said device comprising:

(a) a pair of connectors each defining socket means for engaging a respective one of said bowstring fasteners;

(b) slotted cable retainer means associated with each of said connectors, for retaining the respective one of said connectors in engagement with the respective one of said bowstring fasteners;

(c) elongate linking means disposed between said pair of connectors for linking said connectors to each other;

(d) a lever-operated tensioner included in said elongate linking means, said lever-operated tensioner having an extended position and a contracted position, the length of said linking means being such that when said lever-operated tensioner is in its extended position said connectors may be separated farther from one another than the maximum distance between the farthest separated portions of said bowstring fasteners when said bowstring is connected therebetween and that when said lever-operated tensioner is in said contracted position said connectors are closer to one another than said maximum distance, permitting removal and replacement of said bowstring.

4,291,453

APPARATUS FOR AND METHOD OF SEVERING A FLEXIBLE REINFORCED ELASTOMERIC CONDUIT SUPPORTED ON A PLURALITY OF ELONGATED END-TO-END RIGID MANDRELS

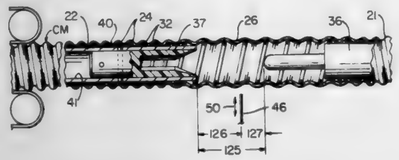
Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 9, 1979, Ser. No. 83,065

Int. Cl.³ B29C *17/14;* **B29D** *23/05;* **B26D** *3/16;* **B23P** *17/00*

U.S. Cl. 29—417 **20 Claims**

1. In a machine system for producing a continuous flexible reinforced elastomeric conduit comprising; a plurality of elongated rigid mandrels having connecting means at opposite ends thereof for connecting said mandrels in aligned end-to-end relation; said conduit being supported by associated ones of said mandrels in connected relation during continuous production and movement of said conduit in a rectilinear path; and an apparatus for severing said conduit adjacent each connecting means of each mandrel; the improvement wherein said severing apparatus comprises; a carriage supported for movement along said rectilinear path, said carriage having means supporting the connected mandrels and conduit disposed therearound during said movement on said carriage, a cutter carried on said carriage for movement therewith along said rectilinear path, a support structure supporting said cutter on said carriage for movement in a cutting path transverse said rectilinear path, means on said carriage for detecting said connecting means, pulling means operatively connected to and controlled by said



detecting means for pulling the connecting means of an adjoining pair of mandrels apart over said carriage to provide a controlled axial distance between connecting means of said adjoining pair of mandrels, said axial distance being surrounded by a corresponding length of said conduit and having portions of said axial length on opposite sides of said cutting path, and an actuator for moving said cutter along its support structure and cutting path for cutting through said corresponding length of conduit, said severing apparatus serving to cut through the conduit at each end of each mandrel so that each mandrel has a length of conduit therearound which is approximately equal to the length of the mandrel.

4,291,454
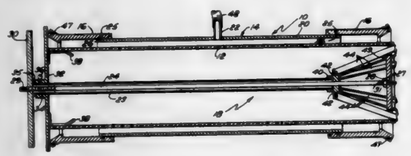
RUBBER BOOT EXPANDER

John Sawaryn, Norwich, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 4, 1979, Ser. No. 71,886

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—426.6 **5 Claims**



1. A rubber boot expanding mechanism comprising:

a metallic cylinder with an evacuating pipe;

adjusting means for providing a hermetically sealed extension to said metallic cylinder, said adjusting means comprises two pieces, each piece having a cylindrical portion adapted to connect to either end of said metallic cylinder, said adjusting means further includes two O-rings with each of said O-rings providing a hermetic seal between said adjusting means pieces and said metallic cylinder;

a boot spreader adapted to be located axially inside the hollow portion of said metallic cylinder and said adjusting means, said boot spreader having expanding means for expanding radially an end of said rubber boot;

sealing means for providing a hermetic seal between a radially expanded end of the rubber boot and said end that spreads outward of said adjusting means, said sealing means includes a plurality of C clamps; and

a yoke connected to said boot spreader, said yoke adapted to hold the end of the rubber boot that is opposite to the expanded end.

4,291,455

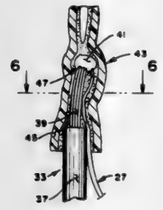
METHOD OF MAKING AN EXTENDED LIFE, MOISTURE RESISTANT ELECTRIC MOTOR AND METHOD OF MAKING SAME

William J. Schnyder, Kirkwood, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 23, 1979, Ser. No. 59,589

Int. Cl.³ H02K *15/12*

U.S. Cl. 29—596 **7 Claims**



1. A method of manufacturing a moisture resistant electric motor, said motor having a stator assembly including a core made of a stack of laminations of suitable magnetic material, each lamination having a central opening and a plurality of notches extending radially outwardly from the central opening, said central opening constituting a bore of the core and said notches constituting a plurality of slots extending longitudinally through the core, said stator assembly further including a plurality of coils of magnet wire adapted to be inserted in said slots thereby to constitute the windings of the motor, said windings being adapted to be electrically connected to one another and to power leads for energization of the motor with the connections of these coils and power leads being referred to as junctions, wherein the method of this invention consists of the steps of:

forming said coils of magnet wire having electrical insulating material thereon of non-moisture absorbent synthetic resin material;

inserting insulators of electrical insulating material in each of said stator slots, said insulators being formed from non-moisture absorbent synthetic resin material;

inserting portions of one or more coils of said magnet wire in each of said slots with said insulators electrically insulating said coils of magnet wire from said core laminations forming said slots;

inserting a wedge constructed from a non-moisture absorbent synthetic resin material into the open ends of each of said slots after insertion of said coils so as to close the slots and to protect and electrically insulate the coils therein;

connecting a plurality of power leads to specified coils of said motor windings by making an electrical junction of the magnet wires of said specified coils and the conductors of said power leads and connecting said coils together as required so as to constitute the poles of the motor;

applying a connection insulator to each of said junctions, each of said connection insulators having a heat-shrinkable outer shell with an inner coating of mastic-like material which adheres the connection insulator to its respective junction prior to being heat shrunk-in-place thereon;

dipping said stator assembly in a liquid electrical insulation material so as to coat all surfaces of said stator assembly with said electrical insulation material and so as to permit the flow of said liquid insulation material into said connection insulators; and

baking said stator assembly in an elevated temperature environment for a time sufficient to cure said electrical insulation material and for heat-shrinking said connection insulators in place on their respective junctions whereby excess liquid electrical insulation material is forced out of said connection insulators and said mastic-like coating is caused to flow within said outer shell so that said cured electrical insulation material and said mastic-like coating effectively seal moisture from said junctions.

4,291,456

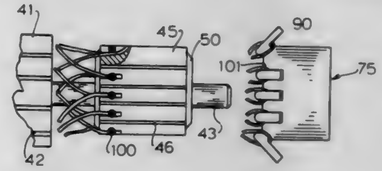
METHOD OF WINDING A COMMUTATOR

Kenneth E. Peck, Jr., 20 Oakwood Dr., Pittsboro, N.C. 27312, and Donald L. Jordan, Rte. 4, Box 576, Chapel Hill, N.C. 27514

Filed Mar. 10, 1980, Ser. No. 128,738

Int. Cl.³ H02K *15/09;* **H01R** *43/08*

U.S. Cl. 29—597 **5 Claims**



1. In a method of automatically winding armatures wherein armatures are wound and commutator connections are formed at a winding station utilizing an automatic tang-type winding machine adapted to loop the coil ends around tangs associated with the commutator bars, the steps of:

(a) forming the commutator with electrically isolated bars and an associated set of winding tangs formed in a manner enabling the same to be removed after winding and without impairing the commutator connections;

(b) winding the armature with an automatic tang-type winding machine and in the course of winding looping selected coil end wires on selected tangs according to the tang-type winding method;

(c) electrically connecting the said coil end wires to the corresponding commutator bars;

(d) severing those portions of the coil end wires on the tangs from the corresponding electrical connections on the commutator bars; and

(e) removing the tangs from the commutator thereby leaving a lead loop-type connected commutator.

4,291,457

METHOD OF MAKING SELF-SUPPORTING ROTOR COIL DC-MACHINE

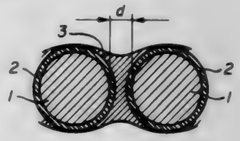
Marc Heyraud, Recorne 24b, 2300 La Chaux-de-Fonds, Switzerland

Filed Aug. 2, 1979, Ser. No. 63,094

Claims priority, application Switzerland, Aug. 9, 1978, 8460/78

Int. Cl.³ H02K *15/02*

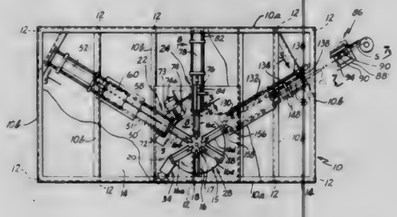
U.S. Cl. 29—598 **5 Claims**



1. A method of making a cylindrical, ironless, self-supporting rotor coil, wherein the wire used for winding the coil comprises an outer layer of a material capable of being softened and subsequently solidified, said outer layer surrounding an insulating layer of the wire, comprising the step of subjecting said wire to a softening treatment of said outer layer during the winding process, a winding pitch being made substantially equal to $D_{is}/\cos\beta$, where D_{is} represents the outer diameter of

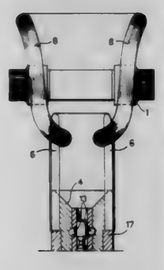
the said insulating layer of the wire and β the angle formed between the wire placed on the coil and a generatrix of the cylindrical rotor surface.

4,291,458
APPARATUS AND METHOD FOR INSTALLING WICKING IN CANDLES
Robert W. Flinn, Blytheville, Ark., assignor to American Greetings Corporation, Cleveland, Ohio
Filed Jul. 31, 1978, Ser. No. 929,671
Int. Cl.[3] B29C *27/30*
U.S. Cl. 29—650 **18 Claims**



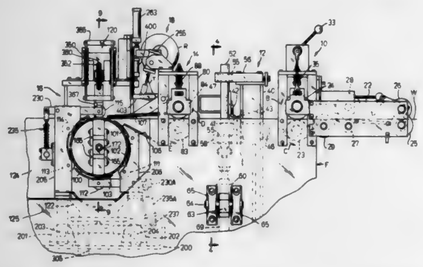
1. An apparatus for automatically installing wicking in a candle body, comprising, a movable support for a candle body, a bore forming station for forming a generally axial opening in an associated candle body when mounted on said support, a clean-out station including a reciprocable heated member for cleaning out the opening formed in the candle body, a feed station for moving a generally rigidified strand of wicking through the formed opening in the candle body, said clean-out station being disposed intermediate said forming station and said feed station for cleaning out the opening formed in the candle body prior to movement of the latter to said feed station, said feed station including cutting means for sequentially severing a measured amount of wicking supplied at said feed station, and means for automatically moving said candle body support from said forming station to and from said cleaning station and thence to said feed station.

4,291,459
DEVICE FOR INSERTING PRE-WOUND COILS INTO STATOR SLOTS
Giorgio Barrera, Leumann, Italy, assignor to Officine Meccaniche Pavesi & C. S.p.A., Turin, Italy
Filed Jul. 16, 1980, Ser. No. 169,339
Claims priority, application Italy, Feb. 11, 1980, 67200 A/80
Int. Cl.[3] H02K *15/06*
U.S. Cl. 29—734 **8 Claims**



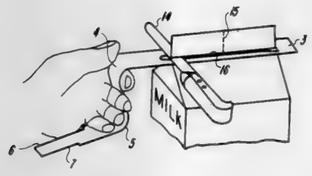
1. In a device for the insertion of pre-wound coils into the slots of a stator of a rotary electric machine, of the type comprising:
a cylindrical finger holder having on its periphery an annular series of longitudinal grooves, and
an annular series of fingers around said finger holder, each finger being received in one of said grooves and extending beyond one end of said finger holder to receive thereon said pre-wound coils,
the improvement wherein:
the other end of said cylindrical finger holder opposite to said one end from which said fingers project, has an end portion extending axially beyond said fingers,
angular orientation reference means are provided on said other end portion of said finger holder for cooperating with the slots of a stator whereby to obtain the correct angular orientation of said annular series of fingers with respect to said stator slots when said other end portion of said finger holder is inserted into a stator, and
means are provided for effecting axial displacement of said finger holder, with the said other end portion as the leading end, after said other end portion has been introduced into a stator, whereby to cause said fingers to be drawn through said stator by said finger holder to draw pre-wound coils carried on said fingers into said stator slots.

4,291,460
APPARATUS FOR PROVIDING TAPED COILS OF SHEET MATERIAL
Herbert M Stoehr, 21860 MacGregor Dr., New Berlin, Wis. 53151
Division of Ser. No. 930,888, Aug. 4, 1978, Pat. No. 4,235,384.
This application Jul. 9, 1980, Ser. No. 167,349
Int. Cl.[3] B65B *63/04*
U.S. Cl. 29—820 **6 Claims**



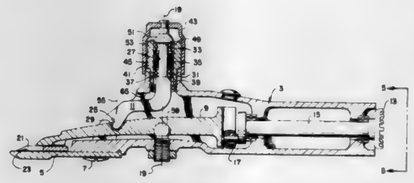
1. Apparatus for forming a taped coil from a web of sheet material comprising:
a web feed mechanism;
a web shear mechanism through which said web is fed;
a coil taping mechanism;
a coiling mechanism into which said web is fed after passing through said web shear mechanism, said coiling mechanism including a rotatable expandable and contractable mandrel, said mandrel being expanded at the commencement of and during winding and being contractable after winding is completed, web guide means for receiving the incoming leading edge of said web and including adjustably positionable hold-down plates adjacent said mandrel and adjustably positonable guide plates disposed around said mandrel to initiate coil winding, adjustably positionable cage rollers disposed around said mandrel to engage a coil being wound to ensure tightness, mandrel support means located below said mandrel for supporting said mandrel, and ejector means for axially moving a coil off said mandrel;
and control means to effect operation of said mechanisms whereby coil winding is initiated and when a predetermined length of web is wound into coil, the web feed mechanism is momentarily stopped, the web shear mechanism operates to sever said web, the coil is taped, the web guide means, the cage rollers and the mandrel support means are moved out of interfering relationship with said coil, said mandrel is stopped and contracted, and the ejector means operates to move the taped coil off said mandrel.

4,291,461
KNIFE GUIDE DEVICE FOR OPENING OF MILK AND SOFT DRINK PAPER CARTONS
Val Hansen, P.O. Box 18364, Denver, Colo. 80218
Filed Aug. 24, 1979, Ser. No. 69,608
Int. Cl.[3] B67B *7/00*
U.S. Cl. 30—2 **5 Claims**



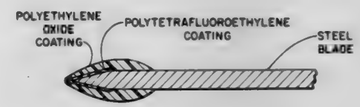
1. A guide adapted for use with a knife, said guide and knife adapted to cut open a portion of a flange of a paper carton containing consumable fluids, said paper carton flange adapted to open and form a portion of a pouring spout comprising in combination:
first guide means for marking off one of two predetermined distances along said flange, said first guide means further providing an edge along which said knife can make a first cut through said flange;
second guide means for forming a surface along which said knife is directed, said second guide means rigidly connected to said first guide means, said second guide means adapted to direct said knife in making a second cut through a portion of said flange, said second cut being perpendicular to and intersecting said first cut; and
retaining means for retaining said second guide means in a fixed position while said second cut is made, said retaining means integrally connected to said second guide means.

4,291,462
SHEARING DEVICE
E. E. Corder, Lakewood, Colo., assignor to A.S.M., Inc., Denver, Colo.
Filed Apr. 14, 1980, Ser. No. 140,172
Int. Cl.[3] B26B *19/00*
U.S. Cl. 30—221 **7 Claims**



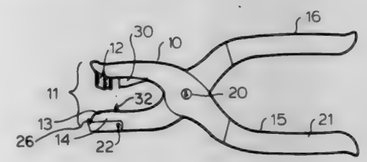
1. An animal shearing device comprising:
a hollow handpiece,
a comb member having a substantially planar surface,
means for rigidly mounting said comb member to said handpiece,
a rigid, elongated arm having first and second ends,
a cutter member,
means for mounting said cutter member to said elongated arm adjacent said first end thereof,
means for mounting said elongated arm substantially midway between said first and second ends and within said hollow handpiece for pivotal movement about first and second intersecting and perpendicular pivotal axes with said cutter member in sliding engagement with the planar face of said comb member whereby pivotal movement of said elongated arm about aid first pivotal axis reciprocally moves said cutter member along an arcuate path across the planar face of said comb member, said first pivotal axis being perpendicular to said planar face of said comb and said second axis being parallel to said planar face of said comb member, and,
means for selectively adjusting the pressure with which the cutter member engages the planar face of said comb member, said adjusting means including a tensioning arm with first and second ends and means for mounting said tensioning arm for pivotal movement about an axis colinear with said first pivotal axis with said first end of said tensioning arm abutting said elongated arm at a predetermined, fixed location between said first pivotal axis and said first end of said elongated arm, said tensioning arm mounting means further including means for selectively, bodily moving said tensioning arm between at least first and second positions with said first end of said tensioning arm being closer to said planar face of said comb member in said first position than in said second position to selectively increase and decrease the pressure with which the cutter member engages the planar surface of said comb member and means for limiting the pivotal movement of said tensioning arm at said first and second positions to about said first pivotal axis.

4,291,463
WATER-SOLUBLE SHAVING AID FOR RAZOR BLADES
Peter S. Williams, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Dec. 31, 1979, Ser. No. 108,743
Int. Cl.[3] B26B *21/00*
U.S. Cl. 30—346.53 **7 Claims**



1. A razor blade having an adherent solid, water-soluble coating comprising polyethylene oxide.

4,291,464
LID PIERCING DEVICE
Ernest R. Garrett, P.O. Box 3308, Granada Hills, Calif. 91344
Filed Jun. 25, 1979, Ser. No. 51,703
Int. Cl.[3] B26F *1/00*
U.S. Cl. 30—363 **4 Claims**



1. A punch assembly for piercing a thin disc-like frangible member including a hollow upstanding rim edge defining an edge groove comprising:
a male die including at least one punch;
a female die including at least one opening mating with said punch;
means securing said male and female dies for closing move-

ment about a pivot point and defining a jaw-like opening; and

a guide secured to one of said dies extending into the region between said dies and positioned within said jaw-like opening between said punch and said pivot and adapted to extend into the edge groove of the hollow edge rim of a thin disc-like frangible member to be pierced;

stop means secured to the opposite one of said dies from said guide and extending into said jaw-like opening;

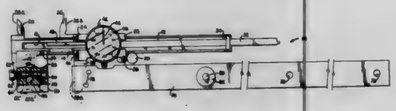
said guide and stop means cooperating to limit the insertion of the frangible member into the punch assembly to position said thin disc-like frangible member for piercing by said die punch assembly.

4,291,465

CALIPER RULE DEVICE HAVING EXTENDED MEASUREMENT RANGE

Arley C. Hemeyer, 8201 W. 78th Pl., Overland Park, Kans. 66204

Filed Feb. 7, 1980, Ser. No. 119,459
Int. Cl.³ G01B 5/02
U.S. Cl. 33—143 M **7 Claims**



1. In a caliper rule device having a rule member carrying a first measurement element, a slide member carrying a second measuring element, means coupling said slide member with said rule member for sliding movement to move said measuring elements toward and away from one another, and a scale providing an indication of the distance between the measuring elements, the improvement comprising:

a first pin element mounted to one of said rule and slide members;

an elongate bar mounted to the other of said rule and slide members, said bar having a length dimension oriented generally parallel to the direction of movement of the slide member;

a second pin element;

means for mounting said second pin element to said bar at a plurality of locations which are spaced along the length of said bar in a manner effecting a predetermined relationship between the indication provided by the scale and the distance between said pin elements at each location of the second pin element, whereby the pin elements may be applied to an object to be measured and reference may be made to the scale for an indication of the dimension of the object corresponding to the distance between said pin elements;

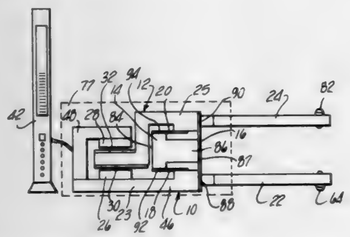
said pin elements having outwardly facing surfaces facing generally away from one another and inwardly facing surfaces facing generally toward one another, and including means for mounting said first pin element to said one member at a pair of spaced apart positions which are located such that the distance between said outwardly facing surfaces has a predetermined relationship to the indication provided by the scale when said first pin element is in one of said pair of positions, and the distance between said inwardly facing surfaces has a predetermined relationship to the indication provided by the scale when said first pin element is in the other of said positions.

4,291,466

TRANSDUCER FOR MEASURING WORKPIECES

Seymour Bell, Southfield, and Richard O. Juengel, Romeo, both of Mich., assignors to The Valeron Corporation, Troy, Mich.

Filed Sep. 14, 1979, Ser. No. 75,573
Int. Cl.³ G01B 7/12
U.S. Cl. 33—148 H **8 Claims**



1. A caliper-type transducer for measuring dimensions of a workpiece comprising:

first and second rigid arms, each having a caliper end and a transducer end;

pivot means comprising a pivot block and spring means connected to said pivot block for frictionlessly interconnecting said first and second arms mediate their ends to limit the relative movement of said arms to complemental displacement toward and away from each other within a measurement plane;

said spring means further including at least one transverse spring means interconnecting said arms to a portion of the pivot block, said transverse spring means being compliant only to movement of said arms within the measurement plane in the direction parallel to the arms; and at least one parallel spring means interconnecting said arms to another portion of the pivot block wherein said parallel spring means is compliant only to movement of said arms within the measurement plane in the direction perpendicular to the arms;

the transducer end of the first arm carrying first and second opposing transducing elements spaced apart in said measurement plane;

the transducer end of the second arm being disposed mediate the transducing elements to complementally vary an electrical characteristic thereof with displacement therebetween; and

sensing means electrically connected to the transducing elements for producing a signal related to the differential change in electrical characteristics of said elements caused by displacement of said arms.

4,291,467

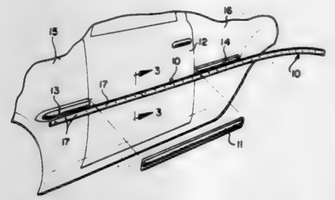
GUIDE RULE FOR AUTOMOBILE MOULDING OR THE LIKE

William L. Shultz, Jr., 732 N. Third Ave., Villa Park, Ill. 60181

Continuation of Ser. No. 950,151, Oct. 10, 1978, abandoned.
This application Dec. 7, 1979, Ser. No. 101,278
Int. Cl.³ G01B 3/14, 3/10
U.S. Cl. 33—177 **5 Claims**

1. A guide rule for aligning a protective side moulding, or the like, along a metallic surface such as a side panel of a vehicle, or the like, in a substantially rectilinear orientation thereby to facilitate the securing of the moulding thereto, said guide rule comprising; an elongate strip of flexible magnetic material, and an elongate strip of spring steel material fixedly secured to said flexible strip in surface-to-surface engagement along substantially the entire length of said elongate strip of magnetic material so that relative lateral and longitudinal movement between said elongate strip of magnetic material and said strip of spring steel material is precluded, said metal strip having at least one edge which extends beyond the adjacent side edge of said flexible strip for the entire length of said metallic strip said flexible magnetic strip providing means for securely attaching the guide rule to the side panel, and said metallic strip edge providing a continous rigid, rectilinear support surface for the side moulding, with the construction of said metallic strip from flexible spring steel and the fixed securement of said spring steel strip to said strip of flexible magnetic material providing means which force the guide rule into a substantially rectilinear orientation when the elongate strip of flexible magnetic material is in surface-to-surface contact with a metallic surface.

2. A guide rule for aligning a protective side moulding, or the like, along a metallic surface such as a side panel of a vehicle, or the like, in a substantially rectilinear orientation thereby to facilitate the securing of the moulding thereto, said guide rule comprising; an elongate strip of flexible magnetic material, and an elongate strip of spring steel material fixedly secured to said flexible strip in surface-to-surface engagement along substantially the entire length of said elongate strip of magnetic material so that relative lateral and longitudinal movement between said elongate strip of magnetic material and said strip of spring steel material is precluded, said metal strip having at least one rectilinear edge, which edge extends at least to the corresponding edge of the flexible magnetic strip, said flexible strip and said metallic strip include a plurality of aligned and equally spaced apertures along the length of said strips for providing means for locating the position of holes to be drilled into the side panel adapted to receive securing means which secure the side moulding to the side panel said flexible magnetic strip providing means for securely attaching the guide rule to the side panel, and said metallic strip edge providing a continuous rigid, rectilinear support surface for the side moulding, with the construction of said metallic strip from flexible spring steel and the fixed securement of said spring steel strip to said strip of flexible magnetic material providing means which force the guide rule into a substantially rectilinear orientation when the elongate strip of flexible magnetic material is in surface-to-surface contact with a metallic surface.



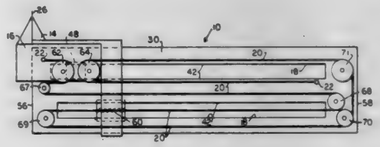
3. A guide rule for aligning a protective side moulding, or the like, along a metallic surface such as a side panel of a vehicle, or the like, in a substantially rectilinear orientation thereby to facilitate the securing of the moulding thereto, said guide rule comprising a continuous elongate strip of flexible magnetic material, and an elongate strip of spring steel material fixedly secured to said flexible strip in surface-to-surface engagement along substantially the entire length of said elongate strip of magnetic material so that relative lateral and longitudinal movement between said elongate strip of magnetic material and said strip of spring steel material is precluded, said elongate strip of flexible magnetic material extending across the width of said strip of spring steel material, but not beyond the edges of said spring steel strip, said spring steel strip having at least one rectilinear edge, which edge extends at least to the corresponding edge of the flexible magnetic strip, said flexible magnetic strip providing means for securely attaching the guide rule to the side panel, and said metallic strip edge providing a continuous rigid, rectilinear support surface for the side moulding, with the construction of said metallic strip from flexible spring steel and the fixed securement of said spring steel strip to said strip of flexible magnetic material providing means which force the guide rule into a substantially rectilinear orientation when the elongate strip of flexible magnetic material is in surface-to-surface contact with a metallic surface.

4,291,468

MECHANICAL POINT LOCATOR

Earl C. Follett, Walnut Creek, Calif., assignor to Measurematic Development Company, San Francisco, Calif.

Filed Mar. 10, 1980, Ser. No. 128,575
Int. Cl.³ B25H 7/00
U.S. Cl. 33—192 **18 Claims**



1. A mechanical point locator and distance divider for locating a second distance which is a fixed integral fraction of a first distance, comprising:

a base having a starting end and a finishing end;

a leading indicator and a trailing indicator, both slidably mounted for movement along the length of the base, the leading indicator being toward the finishing end;

trailing indicator pulley means secured to the trailing indicator;

said starting end of the base having first pulley means secured thereto and said finishing end of the base having second pulley means;

first cord means for moving the trailing indicator said fixed integral fraction of the distance moved by the leading indicator, in the same direction as the leading indicator as it is advanced toward the finishing end of the base, said first cord means being fixed to the leading indicator and then passing around the trailing indicator pulley means, and further being associated with the trailing indicator and the finishing end of the base such that the cord means forms an integral number of generally parallel runs, the integral number being the reciprocal of said integral fraction, whereby the trailing indicator moves at said integral fraction of the rate of the leading indicator; and

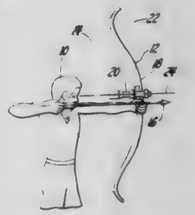
return means for returning the trailing indicator toward the starting end at said integral fraction of the rate of the leading indicator as the leading indicator is moved toward the starting end.

4,291,469

ARCHERY BOW MOUNT FOR TELESCOPIC SIGHT

Norman J. Weast, 20821 Grand River, Detroit, Mich. 48219

Filed May 15, 1979, Ser. No. 39,110
Int. Cl.³ F41G 1/00
U.S. Cl. 33—265 **3 Claims**



1. Means for mounting an elongated telescopic sight on the side of an archery bow comprising:

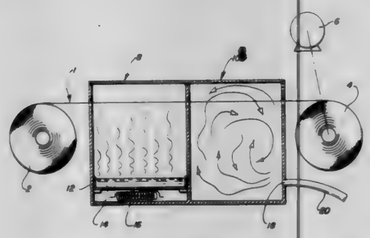
a telescopic sight;

a base plate;

a plurality of first fastening means for fastening the base plate

to the side of the midsection of an archery bow having a longitudinal axis;
first ring means fastened to said base plate for receiving an elongated telescopic sight;
said base plate being on one side of the first ring means and said telescopic sight being positioned on the opposite side of the first ring means; and
second ring means spaced from the first ring means generally along the axis of the telescopic sight and directly cooperating with the first ring means to support the telescopic sight such that the longitudinal axis of the sight is generally at right angles to the longitudinal axis of a bow, means on said plate for tilting said plate about an axis normal to a side of a bow when installed thereon.

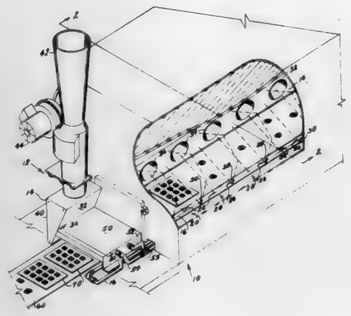
4,291,470
METHOD FOR PRESHRINKING SEMIPERMEABLE MEMBRANES
Ferris E. Newman, Burlington, Vt., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed May 25, 1979, Ser. No. 42,367
Int. Cl.³ F26B *1/00*
U.S. Cl. 34—12 **10 Claims**



1. A method of treating cellulose semi-permeable membranes, of the type used in coil dialyzers, so as to minimize shrinkage of the membrane during sterilization of the dialyzer, the method including the steps of:
providing a supply of cellulose semi-permeable membrane material;
transporting said material from said supply through a humidity chamber maintained at a very high relative humidity, at a temperature and for a time effective to permit said material to relax; and
passing said material into a drying chamber in which warm air is circulated for permitting the membrane material to shrink.

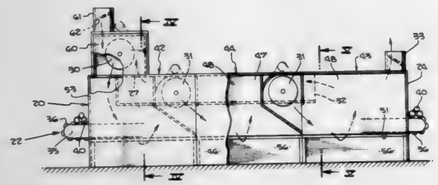
4,291,471
EXHAUST SYSTEM AND METHOD FOR VENTING A TUNNEL KILN
Terry R. Bloom, Middlebury, Ind., assignor to CTS Corporation, Elkhart, Ind.
Filed Mar. 20, 1980, Ser. No. 132,093
Int. Cl.³ F26B *21/00*
U.S. Cl. 34—12 **10 Claims**

1. A lateral exhaust manifold system for purging contaminated atmosphere from a kiln, comprising a longitudinal duct disposed on one side of a kiln and having a plurality of spaced apart apertures, a plurality of cones each having a large diameter end circumposing a respective aperture, an exhaust means connected to said duct, a longitudinal input tube disposed opposite and laterally across said kiln from said longitudinal duct and having spaced apart jets disposed oppositely from said apertures means for forcibly emitting a medium under pressure from said jets whereby said medium moves laterally and turbulently across said kiln which is maintained under slight superatmospheric pressure, said contaminated air being vented together with contaminants through said cones spaced along the length of said kiln and said longitudinal duct by the exhaust means, and a gaseous barrier disposed at the entrance



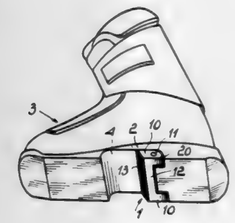
and exit of said kiln to prevent external atmosphere from entering said kiln.

4,291,472
DRYING APPARATUS FOR AQUEOUS COATED ARTICLES AND METHOD
Philip J. Lewis, Corona, Calif., assignor to Brogdex Company, Pomona, Calif.
Filed Sep. 8, 1978, Ser. No. 940,754
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—31 **8 Claims**



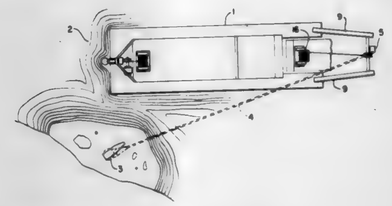
1. In a method of drying aqueous coatings on articles such as fruit and the like, the steps of:
providing a substantially closed chamber having a conveyor path of selected width along which one or more layers of articles are advanced with aggregate area of openings through said conveyor path and article layer being in the order of 10% to 25% of the total area of said path in said chamber;
transversely directing heated air into the bottom of said chamber at a selected flow rate below said path to pass the heated air through said openings to chamber space above said path;
removing air in a transverse direction from the chamber space above said path at a flow rate substantially the same as the flow rate of air directed into said chamber below said path, while maintaining a selected pressure in said chamber below said path;
whereby passage of heated air through said openings and about said articles over the total area of said path in said layer is substantially uniform;
intermixing part of the air removed from the chamber space above said path with fresh air to provide desired humidity and temperature of the air mixture;
and directing the intermixed air into said closed chamber below said path.

4,291,473
SKI BOOT DEVICE FOR FACILITATING WALKING
Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.p.A., Montebelluna, Italy
Filed Nov. 2, 1979, Ser. No. 90,817
Claims priority, application Italy, Nov. 15, 1978, 23292/78[U]; Jun. 13, 1979, 21828/79[U]
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—132 **11 Claims**



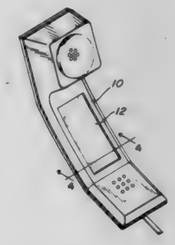
3. A ski boot device for facilitating walking, comprising a profiled member for connection to a sole of a ski boot between a front portion of said sole and a heel portion of said sole, wherein said profiled member comprises a substantially cylindrical element housed in a seat provided in said sole between said front portion and said heel portion and rotatable about a pin substantially perpendicular to a base of said seat, said cylindrical element having a geometric axis and a lower face substantially perpendicular to said geometric axis and an upper face inclined with respect to said geometric axis, said cylindrical element being selectively positionable in a first position in which said lower face is in line with said sole, and in a second position in which at least a part of said cylindrical element projects beyond said sole.

4,291,474
DREDGE SWELL COMPENSATOR APPARATUS
Frederick J. Schmidt, 5208 N. Marietta Dr., Mobile, Ala. 36618
Filed Sep. 10, 1979, Ser. No. 74,379
Int. Cl.³ E02F *3/88, 3/90*
U.S. Cl. 37—67 **6 Claims**



1. A waterborne dredge compensating system for maintaining a uniform grade comprising:
a. a shore mounted laster for projecting a horizontal beam of radiant energy, said horizontal beam establishing a reference plane of known elevation;
b. a photo receiver having a plurality of vertically arranged photo sensitive arrays, said photo receiver being mounted on a waterborne dredge and being so oriented that said horizontal beam of radiant energy impinges on said photo receiver;
c. a dredge ladder having one end mounted on said waterborne dredge such that said ladder is vertically moveable and having a dredge cutter mounted on its other end;
d. a hydraulic system, activated by output signals from said photo receiver, mounted on said waterborne dredge;
e. a winch mounted on said dredge;
f. an A-frame, mounted on said waterborne dredge, supporting a block and tackle assembly, said block and tackle assembly including a first pulley block having a flat horizontal upper plate; and
g. a vertical support rod, said vertical support rod having its bottom end secured to said flat horizontal upper plate of said first pulley block and wherein said photo receiver is secured to the top end of said vertical support rod, whereby said photo receiver moves up and down when said first pulley block moves up and down, respectively.

4,291,475
LABELLING DEVICE
Hans L. Schoemer, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 4,251, Jan. 18, 1979, abandoned, which is a continuation of Ser. No. 799,053, May 20, 1977, abandoned.
This application May 8, 1980, Ser. No. 147,796
Int. Cl.³ G09F *3/20*
U.S. Cl. 40—338 **3 Claims**

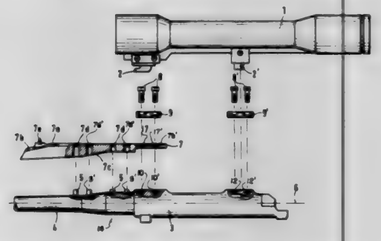


1. A device for providing an alterable directory of telephone numbers for a telephone set having a handset, said device disposed on the underside of the handset of the telephone set, said directory device comprising:
said handset including a recessed area on the underside surface thereof, said recessed area having at least a pair of slots each including a circular post and spatially disposed on opposite sides of the recessed area;
a directory label insertable into the recessed area of the handset for providing an alterable directory of at least two telephone numbers thereupon; and
a flexible, transparent shield, having a thickness of at most 0.01 1 inches, insertable into the recessed area for covering and retaining the directory label, said shield having at least a pair of tangs, each tang having a notch with a pair of lips, the lips of each notch defining a narrow opening to the respective notch which is wider therewithin, said shield fixedly retained in the recessed area of the handset by the notches of the tangs which each insert into corresponding slots where the respective notch engages the post therewithin, the lips of each notch partially wrapping around the corresponding post for retaining the transparent shield and directory label within the recessed area.

4,291,476
SIGHT RAIL FOR SHOULDER FIREARMS
Otto Repa, Oberndorf, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany
Filed Mar. 29, 1979, Ser. No. 25,272
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 7810514[U]
Int. Cl.³ F41G *1/38*
U.S. Cl. 42—1 ST **5 Claims**

1. A device for securing a sighting telescope to a shoulder firearm, which firearm includes a receiver having a barrel secured thereto, and with a plurality of upright internally threaded, hollow, tubular mounting bolts disposed along the length of the receiver and barrel at spaced locations, compris-

ing, a sight rail having an underside conformable to the receiver and the barrel and disposed to overlie at least a portion of each and having a top surface with at least one sighting



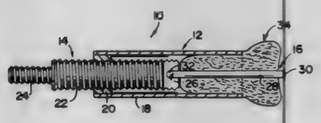
telescope and sight mount dovetailed recess defined thereon, and a plurality of bores opening downwardly in said sight rail into which the mounting bolts extend.

4,291,477

GUN BARREL CLEANING DEVICE

Guy L. Carlton, 1294 Bellaire Ct., Naples, Fla. 33940

Filed May 7, 1979, Ser. No. 36,357
Int. Cl.³ F41C *31/00*
U.S. Cl. 42—1 BC **7 Claims**



1. A gun barrel cleaning device for use with a cleaning rod comprising a compression sleeve having a coupling insert formed in one end thereof, a coupling member at least partially disposed within said compression sleeve to operatively engage said coupling insert, said coupling insert comprises an internally threaded coupling insert and said coupling member comprises an enlarged externally threaded portion to operatively engage said internally threaded coupling insert, said coupling member having a first and second attachment element formed on opposite ends thereof, said first attachment element to affix the gun barrel cleaning device to a cleaning rod and said second attachment element to affix a retaining member to retain a spongeous cleaning element to said gun barrel cleaning device wherein said coupling member and said retaining member are adjustable longitudinally relative to said compression sleeve to selectively compress the spongeous cleaning element between one end of said compression sleeve and said retaining member.

4,291,478

INFRARED AIMING LIGHT MOUNTING BRACKET FOR WEAPON

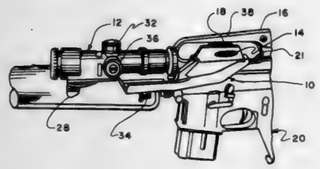
Lewis E. Lough, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 26, 1979, Ser. No. 97,614
Int. Cl.³ F41G *1/36*
U.S. Cl. 42—1 A **4 Claims**

1. An infrared aiming light mounting bracket for conveniently mounting and dismounting an infrared aiming light to a weapon wherein the weapon operator may selectively activate said infrared aiming light while continuously bracing the weapon handle, said infrared aiming light mounting bracket comprising:

a weapon end of said mounting bracket having a three point-mounting arrangement therein in which said weapon end is comprised of a bracket shoe having a front pad and a rear pad and relief areas between said front and rear pads wherein said bracket shoe is compatible with the foot of a weapon handle and a tapered thumb screw locking pin and a thumb wheel that is threadably connected to said tapered thumb screw locking pin to extend and lock said tapered thumb screw locking pin firmly into a hole in the upper half of the weapon handle wherein the tapered portion of said tapered thumb screw locking pin forms one point of said three point-mounting arrangement and wedges said mounting bracket firmly against the weapon handle at said front and rear pads wherein said front and rear pads form the other two points of said three point-mounting arrangement;

an aiming light end of said mounting bracket comprised of an aiming light shoe compatible with an IR aiming light



foot, and a screw threadable means that is screw threadably connected into said IR aiming light foot to firmly set said IR aiming light into said aiming light end of the mounting bracket; and

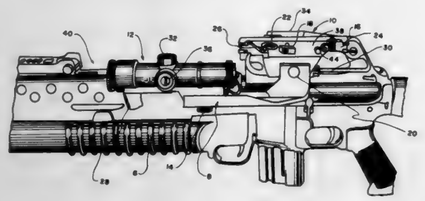
an angular offset portion of said mounting bracket that extends forward and downward from said weapon end to said aiming light end of the mounting bracket wherein said IR aiming light has a dead man switch placed in the proximity of the weapon handle bracing hand of the weapon operator so that the thumb of the bracing hand of said weapon operator may selectively activate said IR aiming light by use of said thumb against said dead man switch while continuously bracing said weapon at said weapon handle.

4,291,479

DAY-NIGHT SIGHT MOUNTING BRACKET FOR WEAPON

Lewis E. Lough, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 26, 1979, Ser. No. 97,615
Int. Cl.³ F41G *1/36*
U.S. Cl. 42—1 A **3 Claims**



1. A day-night sight mounting bracket for a grenade launcher type weapon in which said weapon may be used for both daytime operation and nighttime operation wherein an infrared aiming light used for nighttime operation is positioned so that weapon operator may selectively activate said infrared aiming light while continuously bracing the weapon handle, said day-night sight mounting bracket comprising:

a locking bracket that is compatibly fit and rigidly mounted into the weapon handle of said weapon in a three point-

mounting arrangement and having an elevation-range index plate mounted on the front portion thereof and a pivot point threaded hole in the rear portion thereof wherein said locking bracket is comprised of a locking bracket shoe having a front pad and a rear pad with a relief area therebetween which is fit into a foot of said weapon handle and a tapered thumb screw locking pin that is screw threadably connected to a thumb wheel to extend and lock said tapered thumb screw locking pin firmly into a hole in the upper half of the weapon handle in which the tapered portion of said tapered thumb screw locking pin forms one point of said three point-mounting arrangement and wedges the mounting bracket firmly against the weapon handle of said front and rear pads wherein said front and rear pads form the other two points of said three point-mounting arrangement;

a pivot plate pivotably connected at a common pivot point with the pivot point threaded hole in said locking bracket wherein said pivot plate is comprised of flip-out peep-hole and sighting-post day-night sights and an open sighting window on the front section thereof for directly viewing selected elevation and ranges from said elevation-range index plate on said locking bracket as said pivot plate is pivoted about said locking bracket and a smooth bore pivot pin hole in the rear portion thereof and an outer raised area pivot plate foot with a threaded screw hole therein; and

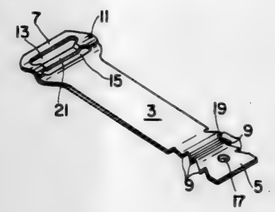
an infrared aiming light adapter bracket comprised of a pivot plate end of said adapter bracket having a pivot plate shoe with a threaded hole through the base thereof in which said pivot plate shoe is compatible with the outer raised area pivot plate foot wherein a captivating thumb screw having a smooth stem within said pivot plate shoe and threads on the end of said stem that are threadably connected within said threaded screw hole in said raised area pivot plate foot and an aiming light end of said infrared aiming light adapter bracket having an aiming light shoe that is compatible with an infrared aiming light foot mounted thereon wherein a captivating lever screw assembly screw threadably connects said infrared aiming light foot into said infrared aiming light shoe of said adapter bracket and an angular offset forward and downward portion of said infrared aiming light adapter bracket extends from said pivot plate end to said aiming light end wherein a dead man switch on said infrared aiming light is in the proximity to the weapon handle bracing hand of the weapon operator so that the thumb of the bracing hand may selectively activate said infrared aiming light by use of said thumb against said dead man switch while continuously bracing said weapon at said weapon handle.

4,291,480

INTERACTING LEAF SPRINGS

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Continuation-in-part of Ser. No. 3,664, Jan. 15, 1979, Pat. No. 4,258,495. This application Oct. 12, 1979, Ser. No. 84,623
Int. Cl.³ F41C *25/02*; F16F *1/22*
U.S. Cl. 42—50 **19 Claims**



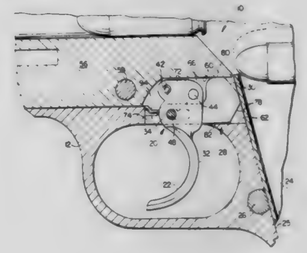
18. In a cartridge magazine in combination: a casing for storing cartridges, said casing including a floor and an exit port; a follower slideable in said casing and adapted for urging said cartridges toward said port; an interacting spring assembly engaging said follower and said floor and comprising; a stack of resilient leaves, each leaf in said stack including: engagement means comprising a plurality of slots extending transversely across a longitudinal axis of said leaf; lever means; fulcrum means; activation means; and detent means.

4,291,481

FIREARM MAGAZINE SAFETY MECHANISM

Robert L. Hillberg, Cheshire, Conn., assignor to Wildey Firearms Company, Inc., Cold Spring, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,906
Int. Cl.³ F41C *17/08*
U.S. Cl. 42—70 A **16 Claims**



1. In a firearm having a frame including a magazine well, a magazine releasably retained in the well, a firing mechanism movable between cocked and released positions, a trigger mechanism for releasing the firing mechanism from a cocked position and including a trigger, means supporting the trigger for movement between forward and rearward positions respectively corresponding to cocked and released positions of the firing mechanism, and means for disabling the trigger mechanism to prevent it from releasing the firing mechanism from a cocked position when the magazine is removed from the well, the improvement comprising said trigger having an opening therethrough, said disabling means including a disabling member supported for movement within said opening and relative to said trigger and said frame between safety and off positions, said means for supporting said trigger comprising means for retaining said disabling member, said disabling member in its safety position preventing operation of said trigger mechanism to release said firing mechanism, said disabling member in its off position permitting operation of said trigger mechanism to release said firing mechanism, said disabling member being movable to its off position in response to insertion of a magazine into said magazine well.

4,291,482

STABILIZING ATTACHMENT FOR HAND GUN

Joseph R. Bresan, 207 Baywood Dr., Fishing Creek, Cape May, N.J. 08204

Filed Nov. 23, 1979, Ser. No. 96,634
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—72 **11 Claims**

1. On a firearm, as held in the firing position with a butt having two lateral sides with handgrips comprising the combined grips shaped to fit the hand for holding and aiming the firearm, a stabilizing attachment comprising:

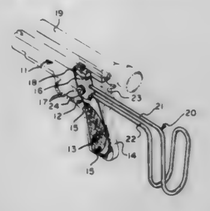
(a) a vertical extension of one of the grips, extending from the top of the grip,

(b) at least two horizontal apertures extending front to back through the vertical extension,

(c) two horizontal members slidably fitting in the apertures of sufficient length to reach from the vertical extension to the forearm of the person holding the firearm,

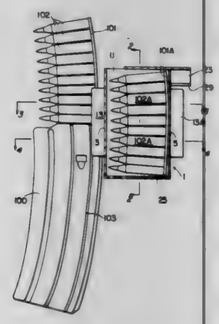
(d) an upright "U" shaped support means rigidly connected

to the rear extremity of the two horizontal members of a shape to cup and support the forearm from below, and



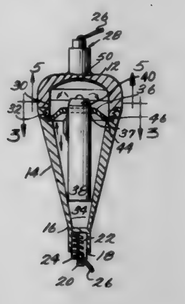
(e) a securing means for hand releasably securing and holding the horizontal members in the apertures both as to longitudinal sliding and rotational movement.

4,291,483
CARTRIDGE RECEPTACLE
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731
Filed Jan. 2, 1980, Ser. No. 109,129
Int. Cl.[3] F42B *39/06*
U.S. Cl. 42—87 **9 Claims**



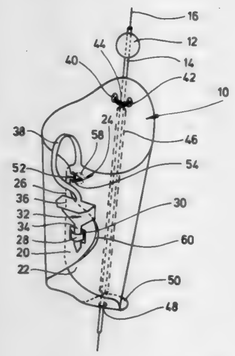
1. A receptacle adapted for containing at least one clip of cartridges, said receptacle including: magazine engagement means; and external clip support means.

4,291,484
ILLUMINATED FISHING FLOAT
Earlwood Young, 8617 Trevarthon Rd., Orlando, Fla. 32807
Filed Sep. 6, 1978, Ser. No. 940,149
Int. Cl.[3] A01K *93/00*
U.S. Cl. 43—17.5 **7 Claims**



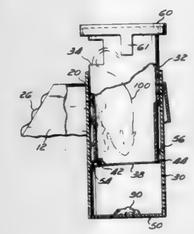
1. In a fishing float of the type comprising:
a body adapted for partial submersion in water, said body including a frustro-conical lower shell having a vertex at one end, an upper shell, and means for effecting a removable watertight mating between said upper shell and the end of said lower shell opposite said vertex, said mating forming a watertight cavity in the interior of said body, each of said upper and lower shells including light-passing portions;
said float further comprising support means, adapted for receiving a pen-light, for removably fixing said pen-light in said cavity whereby a beam of light produced by said pen-light is directed towards said upper shell to illuminate said upper shell light-passing portion and a reflector disposed in said upper shell to direct light through said lower shell light-passing portion, the improvement wherein:
said support means comprises a support member having a central aperture for receiving said pen-light, a peripheral portion at least partially formed of a resilient material for engaging said body and at least one transparent portion disposed to pass reflected light to said lower shell light-passing portion; and
said means for effecting a removable watertight mating comprises respective corresponding threaded portions on said upper and lower shells, said threaded portions cooperating to engage said support member resilient peripheral portion between said upper and lower shells to effect a watertight seal between said upper and lower shells.

4,291,485
AUTOMATICALLY RELEASING MOUNTING SYSTEM FOR A WEIGHT MEMBER
Josef Koller, Au am Aigen 3, D 8077 Reichertshofen, Fed. Rep. of Germany
Filed Feb. 21, 1979, Ser. No. 13,612
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1977, 7719362[U]
Int. Cl.[3] A01K *91/00*
U.S. Cl. 43—43.12 **9 Claims**



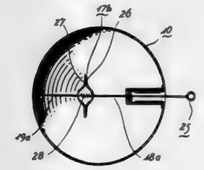
1. A receptacle adapted to receive a weight member to provide for a releasable connection between the weight member and the free end portion of a fishing-line, comprising wall portions cooperating to define a variable outlet opening, comprising pivotal joint means allowing for pivotal relative movement of the wall portions and comprising latch means spaced from the pivot axis defined by the pivotal joint means and adapted to releasably connect the wall portions and to disengage upon hitting the water surface, characterized in that the wall of the receptacle is formed by a resiliently flexible sheet, having free end portions interconnected at the upper ends thereof by the pivotal joint means, in that the latch means associated to the lower ends of the free end portions include a latch-catch formed on one of the free end portions, an opening formed on the other of the free end portions and adapted to receive the latch-catch and a latch member adapted to be inserted into the latch-catch and having a projecting wing portion, and in that the circumferential distance defined by the latch-catch and the opening is smaller than the effective circumferential extension of the receptacle's transverse cross section taken in a transverse plane including the pivot axis.

4,291,486
RODENT TRAP
Donald C. Lindley, Long Beach, Calif., assignor to Farnam Companies, Inc., Phoenix, Ariz.
Filed Nov. 30, 1979, Ser. No. 98,728
Int. Cl.[3] A01M *23/16*
U.S. Cl. 43—61 **8 Claims**



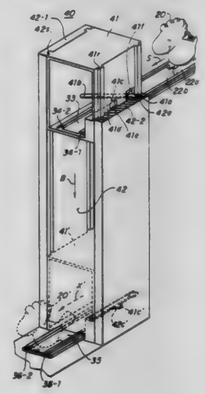
1. A rodent trap comprising:
a pair of telescoping members, each having an open end and a closed end, said open end of one of said members positioned within the open end of the other of said members;
an opening formed in one of said members to permit ingress of a rodent into the region defined between the closed ends of said pair of members;
trigger means mounted to one of said members for releasably supporting the open end of one of said members at a distance spaced from the closed end of the other of said members; and
an end cap positioned on the closed end of said one of said members, said end cap sized to cover the open end of said other of said members, said end cap including a pliable gel positioned on one of its surfaces to sealingly engage said open end of said other member for sealing closed said opening and forming a substantially air-tight air lock in said region when said open end of said one of said members is released to collapse said telescoping members together in response to actuation of said trigger means.

4,291,487
INFLATABLE ARTICLE WITH EXTERNAL MEANS TO CONTROL INTERNAL MOVEMENT
Sidney H. Magid, 4th Fl., No. 10, Alley 5, La. 12, Jen Ai Rd., Sec. 4, Taipei, Taiwan
Continuation-in-part of Ser. No. 907,049, May 18, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 4,549
Int. Cl.[3] A63H *3/06*
U.S. Cl. 46—88 **14 Claims**



1. An inflatable article including
a thin outer wall made of, at least in part, a flexible, gas impervious, resilient material forming a closed surface, said wall having a valve member attached thereto for inflating said closed surface;
at least one hollow protrusion attached to said wall and having a sealed end and an open end;
at least one movable internal object contained within said closed surface;
a non-elastic connection member attached on one side to the sealed end of said hollow protrusion and attached on the other side to said movable object;
connecting means within said closed surface for connecting said movable object to an inner surface of said wall, said non-elastic connection member and said connecting means serving to suspend said movable object within said closed surface; and
external controlling means connected to the sealed end of said hollow protrusion for imparting and controlling movement to said internal object through said non-elastic connection member, said controlling means extending from said protrusion externally of said closed surface whereby said movable internal object will be moved when the user pulls the said external controlling means with said article in restrained condition.

4,291,488
HOPPITY TOY SYSTEMS
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed May 12, 1980, Ser. No. 148,951
Int. Cl.[3] A63H *13/00*
U.S. Cl. 46—116 **6 Claims**

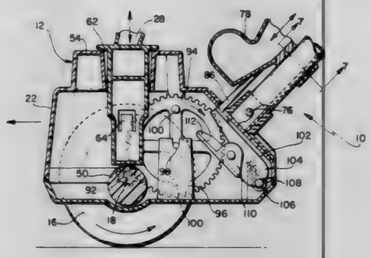


1. A hoppity toy system comprising a hoppity toy figure; and means for channelling the motion of said toy in a prescribed way, said figure having feet guided by the channelling means which includes side walls having a height at least equal to but less than three times the height of said feet, and a separation about eight times the height of said feet; wherein the channelling means guides the hoppity toy figure into an auxiliary device, in the form of an elevator including a control lever operated by said hoppity toy figure; said control lever having three distinctive positions.

4,291,489
PUSH TOY
Thomas C. McCarthy, Jr., North Providence, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Jun. 23, 1980, Ser. No. 162,381
Int. Cl.[3] A63H *11/10*
U.S. Cl. 46—205 **6 Claims**

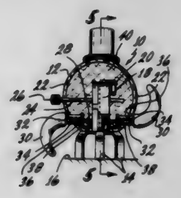
1. A push toy comprising a housing, a generally upright push rod connected thereto, said housing including an axle for supporting wheel means in turn adapted to rotate in contact with a supporting surface as said toy is moved thereacross by

said push rod, a first action element supported by said housing and adapted for reciprocal movement with respect thereto, a second action element supported by said push rod and adapted for reciprocal movement with respect thereto, first activation means associated with said axle for generally continuous moving said first element during movement of said toy and second activation means associated with said axle for intermittently moving said second element during movement of said toy, said



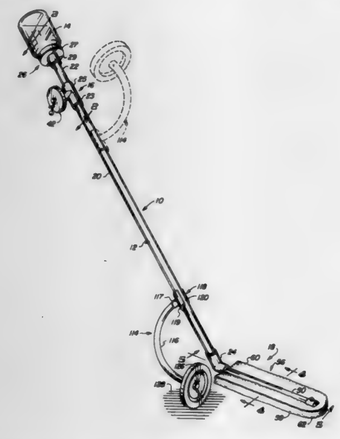
second element slidably mounted on said push rod and including a pin downwardly extending therefrom, said second activation means including spring means having a hammer and adapted for loading by rotation of said wheel means during a portion of a single revolution thereof and release during another portion thereof such that said hammer strikes said pin upon its release so as to abruptly propel said second element up said push rod whereupon it falls back to its original position by gravity.

4,291,490
MOVING TOYS
Masaki Ikeda, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 14, 1979, Ser. No. 75,809
Claims priority, application Japan, Sep. 20, 1978, 53-129058[U]
Int. Cl.³ A63H *17/00, 11/00, 23/10, 3/12*
U.S. Cl. 46—251 **10 Claims**



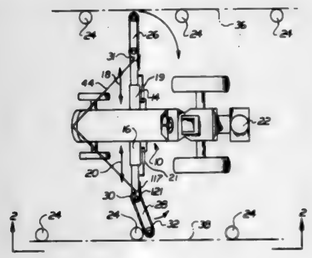
1. A structure having a body having resilient legs which are adapted to support said body on a surface and means for imparting motion to said body so as to move said body with respect to said surface when it is supported on said surface in which the improvement comprises:
said means for imparting motion including a shaft rotatably mounted on said body so as to be adapted to be rotated about an axis, a motor for rotating said shaft connected to said shaft, at least two members, each of which serves as an inertia mass and a mounting means securing each of said members to said shaft so that said members extend outwardly from said axis of said shaft,
said mounting means permitting the relative positions of both of said members with respect to the axis of said shaft to be independently adjusted so as to vary the forces created during operation of said motor so as to rotate said shaft and said members,
flexible coupling means for use in attaching said body of said structure to a corresponding body of another corresponding structure.

4,291,491
LIQUID HERBICIDE APPLICATOR
Mitchell E. Maddock, P.O. Box 24AA, Florence, Ariz. 85232
Continuation-in-part of Ser. No. 72,147, Sep. 4, 1979. This application Nov. 16, 1979, Ser. No. 94,715
Int. Cl.³ A01M *21/00*
U.S. Cl. 47—1.5 **5 Claims**



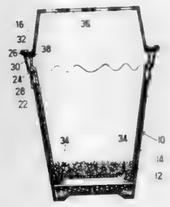
1. An applicator for manual application of liquid herbicide to undesired vegetation growing at ground level, said applicator comprising:
(a) a tubular handle of elongated configuration for manual holding at a downwardly and forwardly extending angle which defines an application position;
(b) a vented liquid herbicide supply container means on the end of said tubular handle which is upwardly disposed when said tubular handle is in the application position for supplying liquid herbicide to the bore of said tubular handle;
(c) shutoff valve means in said tubular handle and operable to meter the flow of liquid herbicide from said supply container means to the bore of said tubular handle;
(d) an elongated applicator head extending angularly and forwardly from the other end of said tubular handle so as to lie in a substantially horizontal plane when said tubular handle is in the application position, said applicator head including,
I. an elongated tubular support conduit one end of which is mounted on the other end of said tubular handle and having at least one elongated slot formed longitudinally in the side thereof,
II. an elongated planar wicking element clampingly mounted in the slot of said tubular support conduit so that an elongated liquid absorbing portion thereof is disposed in the bore of said tubular support conduit and at least one elongated liquid wiping portion extends laterally from said tubular support conduit and is coextensive therewith,
III. an elongated liquid dispenser tube in the bore of said tubular support conduit and lying along the liquid absorbing portion of said wicking element, said liquid dispenser tube having one end in communication with the bore of said tubular handle for receiving liquid herbicide therefrom and being longitudinally perforated for evenly distributing the received liquid herbicide along the length of the liquid absorbing portion of said wicking element; and
(e) whereby said wicking element absorbingly receives the liquid herbicide from said liquid dispenser tube for wiping application thereof on undesired vegetation when said tubular handle is held in the application position and moved so as to swing said applicator head back and forth in a substantially horizontal plane.

4,291,492
TREE SLASHING APPARATUS
Ellis W. Reynolds, and Edward R. Joyce, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.
Filed Nov. 19, 1979, Ser. No. 95,316
Int. Cl.³ A01G *23/10*
U.S. Cl. 47—12 **6 Claims**



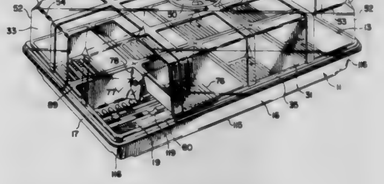
1. A tree slashing and treating apparatus carried by a wheeled vehicle and adapted to move continuously between parallel rows of trees and comprising a pair of oppositely laterally extending telescoping arms secured at their respective proximal extremities to said vehicle, means coacting with each of said telescoping arms for extending and retracting said arms, each of said arms having pivotally secured at its distal extremity chain saw tree slashing means for slashing a tree to remove a strip of bark and exposed an under bark portion of the tree, said chain saw means including an endless saw chain and spaced sprockets mounted respectively on vertical shafts and disposed for movement of the chain around said sprockets in a horizontal plane, means coacting between each of said arms and the respective chain saw means pivotally mounted thereon for restoring said chain saw means from a tree-deflected position to a normal tree-intercepting position after said vehicle has passed a deflecting tree, actuator means and liquid delivery means, respectively carried by each said chain saw tree slashing means said actuator means being vertically displaced from said tree slashing means and adapted to contact the trunk of the tree for causing a liquid treating agent to be applied through said liquid delivery means to said exposed under bark portion.

4,291,493
APPARATUS FOR SPROUTING SEEDS
Eugene Monson, 234 Randolph Dr., Apt. 203D, Madison, Wis. 53717
Filed Jan. 7, 1980, Ser. No. 110,206
Int. Cl.³ A01C *1/00*
U.S. Cl. 47—14 **8 Claims**



1. An apparatus for sprouting seeds comprising:
an outer container (12) of a generally tubular shape provided with an interior nesting stop (24) and also provided with a bottom at one end thereof;
an inner container (14) of a generally tubular shape provided with an interior (30) and an exterior (28) nesting stop and also provided with a bottom at one end thereof, the bottom of the inner container (14) being perforated with a plurality of openings (34), the inner container (14) being received within the outer container (12) with the exterior nesting stop (28) of the inner container (14) engaging the interior nesting stop (24) of the outer container (12) so that the bottom of the inner container (14) is spaced above the bottom of the outer container (12) so that water may drain from the inner container (14) to the outer container (12);
a cup-shaped dome member (16) provided with a rim (38) around the edge thereof and arranged so as to be positioned over the other end of the inner container (14) with the rim (38) engaging the interior nesting stop (30) of the inner container (14) to form an enclosure in the inner container (14) suitable for the sprouting of seeds; and
the exterior nesting stop (28) on the inner container provided with a shape so as to allow air flow between the inner and outer containers (14, 12).

4,291,494
INDOOR GREENHOUSE
David J. Knablein, 5264 W. 51st St., Fairview, Pa. 16415, and Chandler D. Rees, 714 Indiana Dr., Erie, Pa. 16505
Filed Aug. 1, 1979, Ser. No. 62,709
Int. Cl.³ A01G *9/24*
U.S. Cl. 47—17 **1 Claim**



1. A greenhouse in combination having
a base (11),
a cover (12), and
trays (13),
said base (11) comprising,
base sides (15, 16) base ends (17, 18), a base bottom (19) and a base flange (60),
said base sides being integrally connected to said base bottom at a curve on a first base radius (115); said base sides and said base ends being integrally connected to each other at a curve on a second base radius (116),
said base ends being integrally connected to said base bottom at a curve on a third base radius (117),
said base sides and said base ends extending upwardly and outwardly from said base bottom (19),
said base bottom (19) being corrugated comprising,
transverse valleys (23),
longitudinal base valleys (20),
longitudinal base crests (21),
and base corner crests (24) said longitudinal base crests (21) having a flat upper surface (22),
each said transverse valley (23) being centered on each said crest (21),
said corner crest (24) having a flat L-shaped upper surface (25),
said upper flat surface (22) of said longitudinal crests and said longitudinal valleys being integrally connected on a fourth radius (118),

said flat upper surface (22) of said longitudinal crests and said transverse valleys being integrally connected at a fifth radius (119),
said base flange (60) having upper horizontal base flange member (61),
vertical base flange member (62), and
lower horizontal base flange member (63),
said vetical base flange member (62) extending downwardly and outwardly and integrally connected to said upper and lower horizontal base flange members,
said upper horizontal base flange member being integrally connected to said base sides and to said base ends,
said cover (12) being transparent comprising,
a top (30),
cover sides (31, 32),
cover ends (33, 34),
vent (39),
longitudinal cover ribs (40),
lateral cover ribs (41),
and cover flange (35),
said cover sides and said cover ends being integrally connected together at vertical cover corners (52),
said cover sides, and said top being integrally connected together at horizontal cover corners (53),
said top and said cover ends being integrally connected together at lateral cover corners (54),
said vertical cover corner (52),
said horizontal cover corners (53) and said lateral cover corners (54) being integrally connected to triangular cover corner member (51),
said cover flange (35) having upper horizontal cover flange member (36),
vertical cover flange member (37),
lower horizontal cover flange member (38),
said vertical cover flange member extending downwardly and outwardly and integrally connected to said upper and lower horizontal cover flange members,
said upper horizontal cover flange member being integrally connected to said cover sides and to said cover ends,
said longitudinal cover ribs (40) being integrally connected to said cover ends (33, 34),
said upper horizontal flange member (36), and
to said top (30),
said lateral cover ribs (41) being integrally connected to said cover sides (31, 32), to said top (30) and to upper horizontal flange member (36),
said vent (39) being circular and having outer vent rib (43), circular planar vent member (44), planar vent member air flow apertures (45),
vent regulator insert channel (48), and vent regulator (42),
said vent regulator being circular and having planar vent regulator member (50), vent regulator plug (49), vent regulator apertures (46), vent regulator air flow control tab (47),
said vent regulator plug (49) being integrally connected to said planar vent regulator member (50),
said vent regulator plug (49) extending downwardly from said planar vent regulator member (50),
said vent regulator plug (49) being rotatably inserted into said vent regulator insert channel (48),
said trays (13) comprising,
tray sides (71, 72),
tray ends (73, 74), a tray bottom (75) and tray flange (79),
said tray sides being integrally connected to said tray bottom at a curve on a first tray radius (76),
said tray ends being integrally connected to said tray bottom at a curve on a second tray radius (77),
said tray sides and said tray ends being integrally connected at each other at a curve on a third tray radius (78),
said tray sides and said tray ends extending upwardly and outwardly from said tray bottom,
said tray flange being integrally connected to said tray sides and to said tray ends,
said tray bottom (75) having apertures (80) and being corrugated comprising,
longitudinal tray valleys (81), longitudinal tray crests (82),
said longitudinal crests (82) having a flat upper surface (83),
said first tray radius (76), said second tray radius (77) and said third tray radius (78) being integrally connected to triangular tray corner member (84),
said tray flange (79) extending between and sealingly engaging said upper horizontal cover flange member (36) and said upper horizontal base flange member (61),
said lower horizontal cover flange member (38) and
said lower horizontal base flange member (63) being sealingly engaged,
said tray flange being rounded along horizontal tray flange corner (88) where said tray flange sealingly engages said upper horizontal base flange member (61) at second base radius (116),
and said upper horizontal cover flange member (36) at vertical cover corners (52),
said trays (13) being flexibly connected together by tray flange connectors (89),
said tray flange connectors (89) being integrally connected to said tray flanges (79).

4,291,495

APPARATUS AND METHOD FOR DRIVING STAKES

Michael R. Crippen, 1717 223rd SE., Issaquah, Wash. 98027

Filed Apr. 7, 1980, Ser. No. 137,727
Int. Cl.³ A01G *13/10*
U.S. Cl. 47—23 **22 Claims**



1. A removable device for driving a stake through a meshed structure surrounding a seedling or the like, comprising:
means removably threaded through certain mesh openings of the meshed structure for laterally supporting and guiding a stake; and
means for driving the stake through said support and guide means so that a portion of the stake is embedded in the ground and so that, when the said support and guide means are removed, the stake passes through the certain mesh opening and supports the meshed structure.

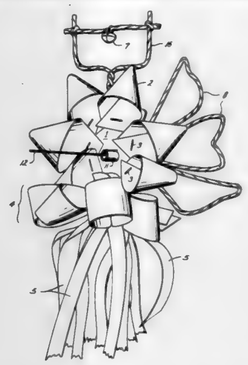
4,291,496

FLOWER HOLDER

Bobbie J. Click, 9900 Memorial Dr., Apt. 232, Houston, Tex. 77024

Filed Feb. 11, 1980, Ser. No. 120,565
Int. Cl.³ A01G *5/00*
U.S. Cl. 47—55 **3 Claims**

1. In a flower holder for use on bouquet backings, a length of light wire bent doubled to form a winged vertical support on the back of a stiff backing member, the said wire being bent so that the respective ends thereof extend outwardly from the said backing and extend axially through the backing member, a moistener cup mounted horizontally and axially on said



backing member, one of the ends of said wire forming the vertical support being rearwardly bent and terminating in said cup and the other end extending longitudinally and axially through the said cup and extending outwardly therefrom to support the stem of a flower to be mounted on said backing.

4,291,497

METHOD OF INTRODUCING CHEMICAL AGENTS INTO PLANTS

Mikhail K. Manankov, Simferopolsky raion, selo Molodezhnoe, ulitsa Polevaya 6,, Krymskaya oblast, U.S.S.R.

Filed Nov. 5, 1979, Ser. No. 91,582
Claims priority, application U.S.S.R., Feb. 26, 1979, 2723951
Int. Cl.³ A01G *1/00*; C05C *9/00*
U.S. Cl. 47—58 **23 Claims**

1. A method of introducing a biologically active chemical agent into plants whereby rapid penetration of said chemical agent into said plants occurs and the activity of said chemical agent is substantially enhanced comprising applying to a plant an effective amount of a composition in the form of a powder or an aqueous solution containing said chemical agent in admixture with a penetrating enhancing agent selected from the group consisting of water soluble low molecular weight polyhydric alcohols and water soluble low-molecular weight carbohydrates.

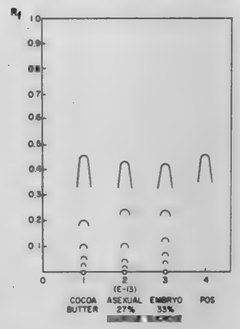
4,291,498

METHOD FOR PRODUCTION OF MATURE ASEXUAL CACAO EMBRYOS, AND PRODUCT THEREOF

Jules Janick; Paul M. Hasegawa, both of West Lafayette, Ind., and Valerie C. Pence, Gainesville, Fla., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Mar. 20, 1980, Ser. No. 131,883
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **12 Claims**

1. A non-agricultural method for the production of cacao embryos comprising the steps of:
(A) treatment of immature zygotic cacao embryos in a basal medium in the presence of a growth enhancer to initiate asexual embryos;
(B) proliferating said embryos by low sugar amendment of said basal media after removal of said growth enhancer;
(C) growing said embryos in said media under aerated conditions to optimum size under said low sugar conditions;



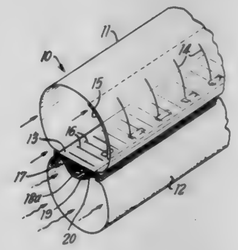
(D) continuing the growth of said embryos in said media under aerated conditions and by a high sugar amendment to the said basal media; and
(E) harvesting the embryos so produced.

4,291,499

PROPAGATION OF PLANTS

John R. Prewer, 82 Thomas More House, London, England (EC2Y 8AB)

Filed Aug. 14, 1979, Ser. No. 66,317
Int. Cl.³ A01G *31/00*; A01C *1/04*
U.S. Cl. 47—59 **21 Claims**



1. A propagator for the cultivation of plants in a controlled environment comprising upper and lower elongate containers having a common perforated wall, a plurality of plant seeds supported in spaced relation by or adjacent the common wall, means for injecting liquid in the form of vapor or droplets into an end of each of the elongate containers and means for maintaining a pressure in the elongate containers greater than atmospheric pressure.

4,291,500

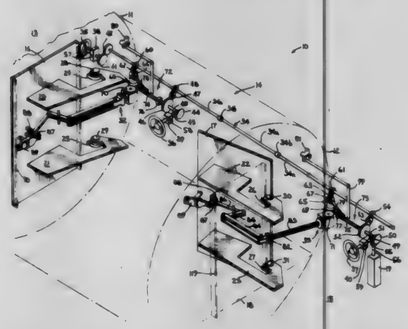
APPARATUS FOR OPENING AND CLOSING AIR LOCK DOORS

George M. Reckin, Delafield; Richard A. Lofy, Elm Grove, and Robert S. Dean, Wauwatosa, all of Wis., assignors to Lakeside Bridge & Steel Co., Milwaukee, Wis.

Filed Aug. 30, 1979, Ser. No. 71,233
Int. Cl.³ E06B *7/00*
U.S. Cl. 49—68 **20 Claims**

1. A door control system for opening an outer door of an air lock for entry into the lock chamber from the outside and for opening an inner door for leaving the lock chamber to enter a pressurized region, the door control system comprising:
first door-actuating means for operating the outer door between a locked, closed position and an open position;

means for connecting the first door-actuating means to the outer door;
second door-actuating means for operating the inner door between a locked, closed position and an open position;
means for connecting the second door-actuating means to the inner door;
a drive shaft;
first clutch means for coupling and decoupling the drive shaft to the first door-actuating means;
second clutch means for coupling and decoupling the drive shaft to the second door-actuating means;
first clutch-actuating means for engaging and disengaging the first clutch means;
a first lead screw assembly including a first lead screw coupled to the drive shaft to be rotatably driven thereby, and



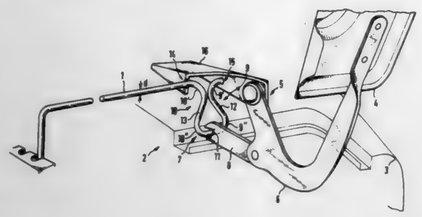
also including a first lead screw nut that advances along the first lead screw to operate the first clutch-actuating means;
second clutch-actuating means for enagaging and disengaging the second clutch means;
a second lead screw assembly including a second lead screw coupled to the drive shaft to be rotatably driven thereby, and further including a second lead screw nut that advances along the second lead screw to operate the second clutch-actuating means; and
means coupled to the drive shaft for imparting rotation to the drive shaft and the lead screws coupled thereto,
wherein the lead screw nut assemblies alternately operate their associated clutch-actuating means to alternately operate the doors.

4,291,501
DEVICE FOR COUNTERBALANCING A SWIVELABLE BODY PART ON A MOTOR VEHICLE

Klaus Steinberg, Prile, and Gerhard Hoffmann, Neukeferloh, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,586
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808063
Int. Cl.³ E05F *1/10*
U.S. Cl. 49—386 **5 Claims**

1. A device for counterbalancing a swivelable body part on a motor vehicle, such as a trunk lid on an automobile, comprising hinge means for the swivelable body part and a torsion bar, said torsion bar being bent to form a crank in the vicinity of a movable hinge part of said hinge means, intermediate lever means articulated on the movable hinge part and engaging the crank, said crank including a crank pin between two legs, the legs comprising first arcuate segments connected with the torsion bar and second arcuate segments connected with the

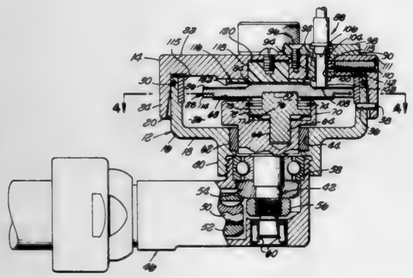


crank pin, and wherein said first and second arcuate segments each extend through an arc of more than 90 degrees.

4,291,502
GRINDING OR POLISHING TOOL

Emerson A. Grimsby, Brea, and Stanley W. Levasheff, Huntington Beach, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,520
Int. Cl.³ B24B *7/00*
U.S. Cl. 51—120 **6 Claims**



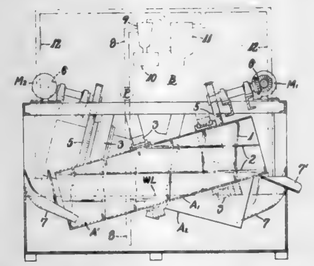
1. A tool for grinding or polishing a surface of a workpiece such as the mating end of an optical fiber ferrule comprising:
a housing having a chamber therein;
a planar grinding wheel rotatable in said chamber;
means for rotating said wheel, said rotating means causing said wheel to rotate and simultaneously move transversely in the plane in which it lies;
said wheel embodying a grinding and polishing surface, and a raised, flat bearing surface;
said housing embodying a wall facing said bearing surface;
said wall embodying a flat reference surface constantly engageable by said bearing surface during rotation of said wheel in said chamber;
a bore extending through said wall outside of said reference surface and the path of movement of said bearing surface adapted to receive the workpiece and position said surface thereof in engagement with said grinding or polishing surface of said wheel; and
means biasing said bearing surface into engagement with said reference surface.

4,291,503
WORKPIECE TREATING BARREL

Yasunaga Higashi, 171-1 Ozuku-cho, Kashihara, Nara, Japan

Filed Sep. 5, 1979, Ser. No. 72,700
Int. Cl.³ B24B *31/02*
U.S. Cl. 51—164.1 **7 Claims**

1. A barrel apparatus for use in treating workpieces comprising a pair of rotary barrels of same structure and length rotatably mounted in a frame and disposed in such a manner that the axial lines of both barrels intersect with each other about their respective midpoints in the form of the letter X when viewed from the lateral side and lie parallel to each other when viewed from the top, each of said barrels having a first spiral flight provided on the inner peripheral wall of the barrel and at least one ancillary flight provided on the inner peripheral wall

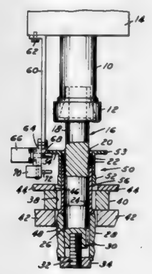


longitudinal of the barrel and intersecting said spiral flight, all of said flights extending from one end of the barrel to the other and each ancillary flight being lower in height than the first spiral flight, both of said barrels having means for simultaneously driving and rotating them fixed to the frame and being provided with chute means connecting the outlet upper end of each barrel with the inlet lower end of each other barrel.

4,291,504
METHOD AND APPARATUS FOR IN-PROCESS GAGING OF TOOL ELEMENTS

Paul Fitzpatrick, Fenton, and Richard J. Gavasso, West Olive, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Mar. 3, 1980, Ser. No. 126,922
Int. Cl.³ B24B *49/06, 1/00*
U.S. Cl. 51—165.88 **12 Claims**

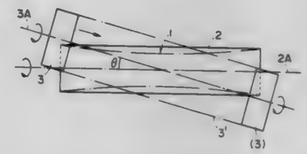


1. An apparatus for gaging the cross-sectional diameter of an adjustable abrading tool in an abrading machine to a pre-determined diameter by gaging the diameter of a workpiece bore being machined and controlling the operation thereof comprising
(a) a gage means slideable mounted on said abrading tool shaft means,
(b) means for selectively engaging said gage means at predetermined intervals into a workpiece bore,
(c) means for disengaging said gage means from said bore, and
(d) means for selectively stopping said abrading machine when said gage means fails to enter said bore.

4,291,505
PROCESS FOR PRODUCING NEGATIVE-CROWNED ROLLER

Shinnosuke Taniishi, Kawasaki, and Tsukasa Kuge, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,081
Claims priority, application Japan, Oct. 2, 1978, 53-121335
Int. Cl.³ B24B *1/00, 5/16*
U.S. Cl. 51—289 R **9 Claims**

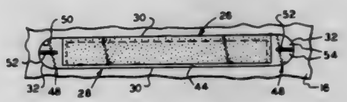


1. A process for producing a negative-crowned roller, which comprises:
maintaining a grinding tool in contact with a cylindrical-form material to be ground;
maintaining said material in rotation; and
linearly displacing said grinding tool relative to said material to be ground along a direction inclined with respect to the rotary axis of said material to be ground to produce the negative crowned roller surface thereon.

4,291,506
HONE STONE WITH COMPRESSIBLE ENDS

Carl H. Kramm, Pinckney, Mich., assignor to RLK Research, Inc., Howell, Mich.

Filed Feb. 1, 1979, Ser. No. 8,420
Int. Cl.³ B24B *33/02*
U.S. Cl. 51—338 **2 Claims**



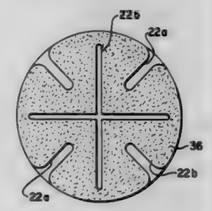
1. A hone stone assembly for use with honing heads having stone receiving openings defined by side surfaces and end surfaces and an internal stone assembly support and expander comprising, in combination, a synthetic plastic relatively rigid body having a longitudinal axis, a bottom surface, first and second lateral sides, a top surface and first and second end regions having convex cylindrical segment end surfaces, a cavity defined in said body intersecting said top surface, an abrasive stone mounted within said cavity having a working face disposed adjacent said top surface, and a slot defined in each of said end regions extending in the direction of said body axis intersecting said top and bottom surfaces and the associated end surfaces defining a pair of stiffly resilient cantilevered bifurcated portions in each end region extending in the direction of said body axis whereby said slot permits said bifurcated portions of said end region on opposite sides of said slot to deflect toward each other upon insertion of said body in a honing head opening having a lateral dimension adjacent the opening end surfaces slightly less than the width of the slotted end region to provide a firm frictional engagement between the hone stone assembly and the honing head.

4,291,507
HIGH SPEED GRINDING WHEEL FOR GLASS
John J. Littlehorn, Jr., 4530 South Broadway, Englewood, Colo. 80110
Filed Nov. 28, 1979, Ser. No. 98,185
Int. Cl.³ B24D 9/02
U.S. Cl. 51—374 1 Claim



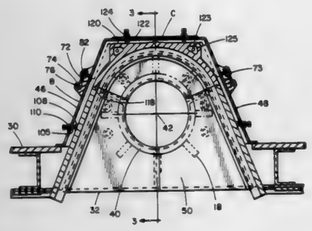
1. A high speed grinding wheel having a narrow continuous abrasive belt for grinding glass and like brittle materials, comprising a narrow, flat, disc-shaped body of flexible, resilient material having a hardness factor of between about 30 and about 100 durometer, said body defining parallel, spaced, opposed, circular faces joined at their circumferences by a narrow, cylindrical, peripheral surface, a plurality of relatively short, thin, radial slits equidistantly defined in said body around the circumference thereof and opening into said peripheral surface thereof and into one of said faces, said slits being spaced apart a distance approximately equal to the radial depth thereof and having a depth equal to about one-sixth of the radius of the wheel, the other of said faces being unbroken by said slits, said abrasive belt being snugly supported on and completely surrounding said peripheral cylindrical surface during grinding use thereof.

4,291,508
LENS SURFACING PAD
Louis Prunier, Charlton, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Nov. 30, 1979, Ser. No. 99,227
Int. Cl.³ B24D 10/02
U.S. Cl. 51—395 9 Claims



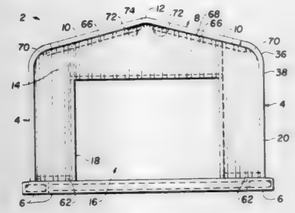
1. A lens surfacing pad comprising:
a unitary cutaway main surfacing pad component having multiple interconnected pad sections with channelling therebetween for the distribution of abrasive slurries over the component during use of said pad; and
a permanent thin and flexible supporting film to which said component is affixed for rendering said pad freely conformable to a lens surfacing tool of a surfacing machine without appreciable disruption of relative orientation of said pad sections, said film being continuous across said channels and securable to said surfacing tool.

4,291,509
GUARD HOUSING AND LINER FOR BLADED CENTRIFUGAL BLASTING WHEELS
Harold F. Schulte, Mishawaka; Raymond M. Leliaert, and Robert D. Rohr, both of South Bend, all of Ind., assignors to Wheelabrator-Frye Inc., Hampton, N.H.
Filed Oct. 22, 1979, Ser. No. 87,060
Int. Cl.³ B24C 9/00
U.S. Cl. 51—432 12 Claims



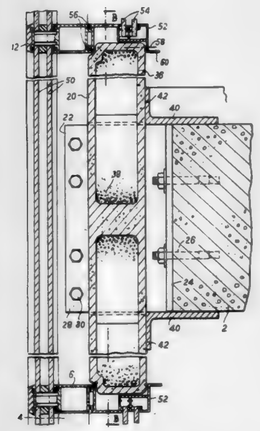
1. A guard housing and lining for a bladed wheel whereby particulate material is thrown by centrifugal force from the ends of the blades onto a surface below the wheel including a base on which the wheel is mounted with an opening through the base in alignment with the blades of the wheel for projection of particulate material therethrough onto the surface to be treated, said wheel being supported for rotational movement on a hub extending axially into engagement with one side of the wheel and means for feeding particulate material from a feed spout communicating with an axial opening at the other side of the wheel, said guard housing and lining comprising a trapezoidal section open at the bottom and at the top with a larger opening at the bottom in which the trapezoidal section is formed of vertically disposed front and back walls and inclined end walls spaced one from the other by an amount greater than the respective width and length of the bladed wheel, means mounting the trapezoidal section of the housing onto the base with the open botton in registry with the opening through the base plate, a cover having laterally spaced apart front and back side walls and inclined end walls spaced one from the other by an amount corresponding to the spaced relation of the side and end walls of the trapezoidal section at their right ends so that the cover fits onto the open top of the trapezoidal section, and a top wall enclosing the upper end of the cover, a pivotal connection between at least one of the end walls of the cover and the corresponding end wall of the trapezoidal section to enable the cover to be rocked between open and closed positions and including means for disengagement of the pivotal connection to enable removal of the cover from the trapezoidal section, and plates of lining material supported by the guard housing for lining the interior surface thereof, in which the lining is formed of sections consisting of a lower side wall lining formed of a pair of lower side wall sections for each side wall and means for securing the lower side wall sections to the adjacent side wall of the trapezoidal section of the guard housing, a pair of end wall sections spanning the space between the ends of the side wall sections and means for blocking movement of the end wall sections from their assembled relation, a top section which spans the space between the upper ends of the end wall sections, and an upper side wall section for each side wall filling the space between the upper edges of the lower side wall sections and the top section, and means operatively engaging the top wall section to hold down the top wall section when the cover is in closed position.

4,291,510
PREFABRICATED BUILDING CONSTRUCTION
Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001
Filed Dec. 15, 1977, Ser. No. 860,797
Int. Cl.³ E04B 7/00
U.S. Cl. 52—90 13 Claims



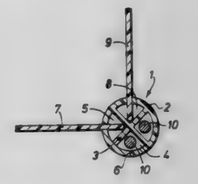
1. A building including a plurality of drainage openings in the curved portions of the member to facilitate the drainage of water from the roof.

4,291,511
STRUCTURAL ASSEMBLIES
Richard L. Stoakes, "Clouds", Northdown Rd., Woldingham, Surrey, England
Filed Jun. 25, 1979, Ser. No. 51,353
Claims priority, application United Kingdom, Jun. 27, 1978, 28049/78
Int. Cl.³ E04B 1/76, 2/42
U.S. Cl. 52—235 10 Claims



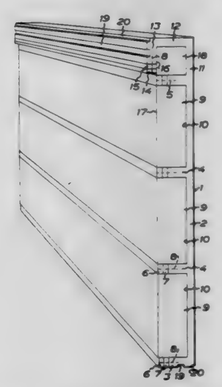
1. A structural assembly comprising a supporting structure and a curtain wall framework, said structure comprising at least one horizontally extending load-bearing member, said curtain wall framework comprising a plurality of upwardly extending, laterally spaced mullion members, tie-back elements fixed to said mullion members and to said at least one load-bearing member to secure the framework to the supporting structure inner faces of said mullion members being located by said tie-back elements in a position outwardly spaced from said at least one load-bearing member, whereby regions of said inner faces are located opposite and adjacent said at least one load-bearing member, a plurality of fire-resistant members interposed in the space between the framework and said at least one member and supported through said at least one member, said fire-resistant members overlying said inner faces of the mullion members and forming a substantially continuous barrier between said framework and said at least one member, said barrier at least partly filling the space between said framework and said at least one member.

4,291,512
JOINTS
Jeffrey Walton, New North Rd., Huddersfield, Yorkshire, England
Filed May 22, 1979, Ser. No. 41,861
Claims priority, application United Kingdom, May 26, 1978, 23134/78
Int. Cl.³ E04B 1/00
U.S. Cl. 52—282 10 Claims



1. A jointing member of hollow cylindrical form having at least one internal compartment extending lengthwise of the member part of the surface of the member forming an outer wall of the internal compartment, said outer wall being slit longitudinally of the member to divide the wall into two lips whose edges are in contact, the lips being of a resilient material and thereby deformable to allow entry into the compartment of the edge of a sheet of material which is then retained in position by said resilient lips.

4,291,513
WALL CONSTRUCTION UNIT FOR BUILDINGS
Sven J. Ankarswed, Vesteras, Sweden, assignor to Ankarswedshus AB Vasteras, Sweden
Filed Jan. 15, 1980, Ser. No. 112,264
Claims priority, application Sweden, Jan. 22, 1979, 7900560
Int. Cl.³ E04B 1/04, 2/00
U.S. Cl. 52—284 4 Claims



1. Wall construction unit for buildings, said unit (1) comprising a reinforced concrete layer (2) constituting the outside of the building, from which layer longitudinal, substantially parallel, first, second and intermediate flanges (3, 5 and 4, respectively) of reinforced concrete, spaced apart at predetermined intervals, extend inwardly at right angles to the concrete layer, joists (6) with intermediate insulation (7) being joined by casting by means of clamp-irons (8) to the free edge of said flanges, insulation material (9) being provided in the space defined by

two adjacent flanges (3, 4, 5) with associated joists (6) and intermediate insulation (7) and by the inner side (10) of the concrete layer (2), wherein the wall construction unit also includes a prolonged portion (11) of the reinforced concrete layer (2) extending from the second flange (5), an intermediate portion (12) which extends from the end of the prolonged portion at right angles thereto and which is parallel with said flanges (3, 4, 5), and a terminating flange (13), with associated joist (14) and intermediate insulation (15), which extends at right angles from the end of the intermediate portion in inward direction, the side (16) of the terminating flange facing the prolonged portion being aligned with the outside (17) of the insulation material (9), and insulation (18) being provided in the space of substantially square cross-section which is defined by the second flange (5), the prolonged portion (11), the intermediate portion (12) and the terminating flange (13).

4,291,514

HIGH TEMPERATURE ENCLOSURES

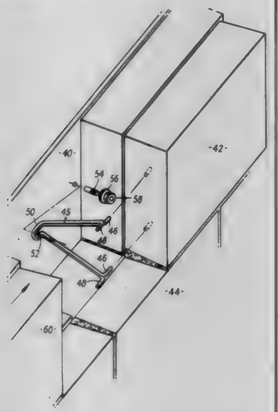
Barrie J. Harvey, Tyldsley, England, assignor to M. H. Detrick Co., Limited, London, England

Division of Ser. No. 826,863, Aug. 22, 1977, Pat. No. 4,151,693. This application Mar. 30, 1979, Ser. No. 25,747

Claims priority, application United Kingdom, Mar. 7, 1975, 9680/75

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—509 **10 Claims**



1. A high temperature enclosure comprising a metal supporting structure having secured thereon an internal lining of refractory/insulating modules arranged in side to side relation with a resilient packing strip of refractory material arranged under compression between the sides of adjoining modules wherein each module comprises a rectangular block which is moulded in one piece from ceramic fibre by a vacuum forming operation and has a resilient packing strip secured along two adjacent sides thereof and wherein the said blocks are secured in position on said structure by fastening members each having a body portion disposed between the sides of adjoining blocks, laterally and oppositely directed sharp projections which are pressed into and pierce the said sides, and a laterally directed foot which is secured to the said structure.

4,291,515

STRUCTURAL ELEMENTS

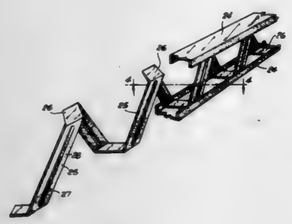
Claude G. Harding, Newcastle, Australia, assignor to John Lysaght International Holdings S.A., Panama

Filed Oct. 24, 1979, Ser. No. 87,898

Claims priority, application Australia, Nov. 7, 1978, PD6674

Int. Cl.³ E04C *2/42*

U.S. Cl. 52—694 **18 Claims**



1. A structural element comprising two coplanar chords having mutually facing flat surfaces and a web in the form of a zigzag strip having inclined straights alternating with flat crests by which the web is secured to said flat surfaces and between both of the chords, characterised in that:

(a) each of said crests is parallelogrammatic and the larger angle of the two supplementary angles at the respective ends of any one side of the crest is between 120° and 150°; and,

(b) the major cross-sectional dimension of each of said straights extends in a plane having at least a component parallel to the plane of said chords.

4,291,516

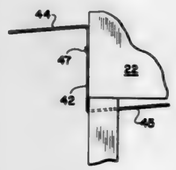
PACKAGE REST FOR WRAPPING STATION

Norbert C. Warner, Greenville, and Fritz F. Treiber, Centerville, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Jan. 28, 1980, Ser. No. 116,180

Int. Cl.³ B65B *67/10, 11/02*

U.S. Cl. 53—219 **7 Claims**



1. For use with a wrapping device including a stand for supporting a roll of wrapping material and means guiding the material from the roll to a wrapping station,

a package rest member comprising a central section,

first and second shelves extending from said central section in generally transverse relation to said central section and in spaced relation to one another,

one of said shelves being substantially greater in area than the other shelf,

and reversible mounting means on said rest member permitting selective mounting thereof to the stand with either one of said shelves in operative position at the wrapping station and the other shelf located below the wrapping station.

4,291,517

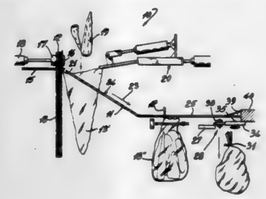
METHOD AND APPARATUS FOR BAG FILLING, TIEING AND TRANSFER

Arnold Lipes, 6521 Merton Rd., Coté St. Luc, Quebec, Canada

Filed Dec. 14, 1979, Ser. No. 103,737

Int. Cl.³ B65B *43/46, 51/08*

U.S. Cl. 53—468 **10 Claims**



1. A method of filling and transferring an open mouth bag, said bag having an extended tab above a mouth opening, holes in said tab for supporting said bag on holding pins, said method comprising:

(i) holding said tab of a first bag to be opened from a plurality of juxtaposed bags,

(ii) opening said mouth opening at a filling location,

(iii) filling said bag with a product,

(iv) releasing said tab to cause displacement of said first bag to a further location remote of said filling location while supporting said bag by said tab held by holding pins,

(v) sealing said bag below said mouth opening to close said opening, and

(vi) detaching said tab from said holding pins.

4,291,518

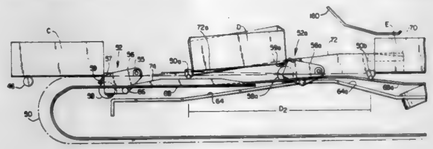
PACKING CASE TAB SLITTER

Lloyd D. Johnson, Portland, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Sep. 12, 1979, Ser. No. 75,324

Int. Cl.³ B65B *61/06, 7/20*

U.S. Cl. 53—491 **21 Claims**



1. Apparatus for severing the connecting tabs at diagonally opposite corners of an upwardly open packing case, said case having a rectangular shape and being of flexible carboard construction with a bottom, opposed side walls connected to front and rear end walls, and having side, front and rear top flaps folded downwardly alongside these side, front and rear walls respectively and held in place by said tabs, said apparatus comprising:

(a) case conveying means for moving the case in a horizontal downstream direction so that one connecting tab is at the forward end of the case and the opposite tab is at the trailing end of the case,

(b) case canting means including means movable with the case conveying means, and engageable with the forward end of the case to raise at least that forward corner of the case which has said forward connecting tab,

(c) case guiding means for engaging the opposite side walls of the case at least when it is being so canted on the conveying means,

(d) a fixed knife associated with said case guiding means at one side of the conveying means for severing said trailing connecting tab,

(e) said case canting means also operable to lower the forward end of said raised case, and

(f) a fixed knife associated with the case guiding means at the opposite side of the conveying means to sever the leading connecting tab of the case as the case is lowered.

4,291,519

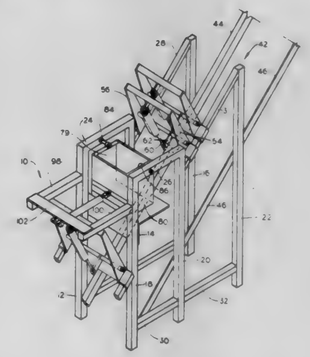
BOTTLE CARTON FILLING MACHINE

Daniel Johnson, 9877 Myron St., Pico Rivera, Calif. 90660

Filed May 30, 1980, Ser. No. 154,941

Int. Cl.³ B65B *35/36, 5/06, 5/08, 5/10*

U.S. Cl. 53—534 **5 Claims**



1. Apparatus for filling cases with bottles including:

a case filling station;

a first conveyor means for sequentially providing empty cases to the apparatus;

a second conveyor means for sequentially removing filled cases from the apparatus, said first conveyor means being disposed on an elevation to said apparatus higher than said second conveyor means;

a third conveyor means for sequentially providing bottles to be placed in the cases to the apparatus at said case filling station;

means disposed in said apparatus for positioning said case at predetermined positions on said ramp at said case filling station; and,

means positioned at said case filling station for placing said bottles in said cases, said means for placing said bottles in said case including an angularly rotatable U-shaped member positioned over said platform for receiving a predetermined number of bottles in the open end of said U-shaped member and means for angularly rotating said U-shaped member when the predetermined number of bottles are placed therein to slide the bottles from said platform into an awaiting case at one of its predetermined positions.

4,291,520

VERTICAL FORM, FILL AND SEAL PACKAGING MACHINE WITH IMPROVED END SEALING AND STRIPPING MEANS

Clarence F. Prince, Springfield, and Roger L. Putnam, Jr., East Longmeadow, both of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

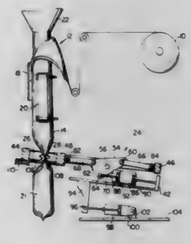
Filed Dec. 26, 1979, Ser. No. 107,136

Int. Cl.³ B65B *9/10, 51/30*

U.S. Cl. 53—551 **10 Claims**

1. In a vertical form, fill and seal packaging machine comprising a source of flexible packaging material in the form of an elongated thin flat strip of material of uniform width and comprising successive flat package blanks as integral longitudinally contiguous sections thereof, a tube former adapted to receive said strip material and progressively form the same in passage

therethrough to a depending and upwardly open tubular configuration, opposite longitudinal edge portions of the material being progressively juxtaposed in passage through said former so as to extend vertically and in parallel relationship, product dispensing means above said tube former for the gravity discharge of measured quantities of product through the former and into the interior of said depending tube of packaging material through its said upwardly open end, side sealing means disposed beneath said tube former for sealing said juxtaposed vertically extending longitudinal edge portions of the tube, vacuum belt tube feed means beneath the tube former operable intermittently to draw the packaging material through the former and thus successively to present integral tubular package blanks therebeneath for filling, sealing and package formation; the improvement comprising a package end sealer and stripping apparatus having a mounting frame and front and rear sealing jaws relatively movable generally horizontally between an open position and a vertically fixed closed position, operating mechanism on said frame for effecting generally horizontal jaw movement between said open and closed positions and an intermediate partially closed position where the jaws oppositely engage and compress but do not fully close and seal a tube of packaging material therebetween, stripper



means mounted on and movable with said jaws to oppositely engage and substantially fully close the tube of packaging material when the jaws are in their intermediate position, and means associated with said frame for moving the same together with said operating mechanism, sealing jaws, and stripper means with the latter in said intermediate position, said means serving to effect a generally vertically downward movement of said jaws and stripper means relative to said tube of packaging material whereby to clear the tube internally and to flatten the same for efficient end sealing by said front and rear jaws in subsequent fully closed and vertically fixed position of the jaws and with the feed means inoperative, said mounting frame for said sealing jaws and operating mechanism being supported for pivotal movement causing said front and rear jaws to traverse a shallow arc lying generally in a vertical plane approximately at the center of said depending tube of packaging material, and said means for moving the mounting frame being operable in one and an opposite direction to pivot the frame causing the sealing jaws to move generally vertically along said shallow arc between upper and lower positions, said lower position being the sealing position of the jaws and said upper position representing the start position for the stripping action of the stripper means on the jaws at the intermediate jaw position.

4,291,521

HUSK SEPARATOR FOR CORN HARVESTER

Hinrich Haake, Ahrensburg, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG-Zweigniederlassung FAHR, Gottmadingen, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,181

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748950

Int. Cl.³ A01D *14/02*

U.S. Cl. 56—13.5 **10 Claims**

1. An apparatus for harvesting corn comprising:

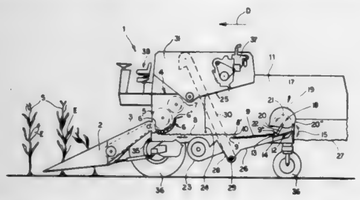
a chassis adapted to travel along the ground;

means on the front of said chassis for picking ears off cornstalks;

means on said chassis for reducing said ears to fragments including pieces of corn cob, corn kernels, and pieces of corn husks and for displacing said fragments backwardly;

a first comb on said chassis having generally horizontal first tines positioned to support said fragments;

a second comb on said chassis having a central shaft and a plurality of generally radially extending second tines dis-



placeable on rotation of said shaft between and past said first tines;

means on said chassis for rotating said second comb and thereby orbiting said second tines between and past said first tines to separate the husk pieces from the cob pieces and kernels and displace the separated husk pieces away from said first comb; and

means on said chassis for stripping husk pieces off said second comb.

4,291,522

MOWER MOUNTED ON VEHICLE

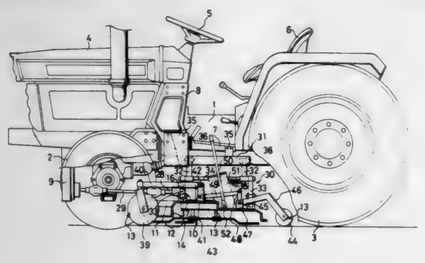
Masami Kawasaki, and Hirofumi Sadakane, both of Sakai, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Mar. 26, 1980, Ser. No. 134,322

Claims priority, application Japan, Apr. 10, 1979, 54-47997[U]; Aug. 20, 1979, 54-115125[U]

Int. Cl.³ A01D *35/12*

U.S. Cl. 56—15.8 **7 Claims**



1. A mower mounted on a vehicle and including a mower frame attached to the bottom of the body of the vehicle, cutting blades rotatably supported by the mower frame and a drive assembly for rotating the cutting blades, pivotal arms supported on the mower frame and pivotally movable upward or downward, gauge members supported by the free ends of the pivotal arms, a single operating member operatively connected to the pivotal arms for pivotally moving the arms, and locking means for engageably or disengageably holding the operating member; the said pivotal arms comprise front and rear pivotal arms, and the front pivotal arms in a pair are pivoted to the opposed ends of the mower frame respectively, the gauge members being supported by the front ends of the front pivotal arms and the rear ends of the rear pivotal arms respectively, the operating member being operatively connected to the pivotal arms at the other ends thereof and the pivotal arms being upwardly or downwardly movable by the

single operating member; the cutting blades being upwardly or downwardly movable to an adjusted position by the pivotal arms moved by the operating member with the gauge members in engagement with the ground, the cutting blades being retainable in the adjusted position by the locking means; at least one of the gauge members being supported by the rear pivotal arm and each of the gauge members supported by the front pivotal arms being supported by the corresponding pivotal arm with a vertical rod and being idly turnable about the vertical rod, and the mower further comprises auxiliary links extending in parallel to the front pivotal arms further connecting the gauge members to the mower frame, the front pivotal arms and the auxiliary links constituting parallel links to permit the vertical rod to retain its axis in the same vertical position when the cutting blades are moved upward or downward with the mower frame by the movement of the operating member.

4,291,523

ROW CROP APPARATUS

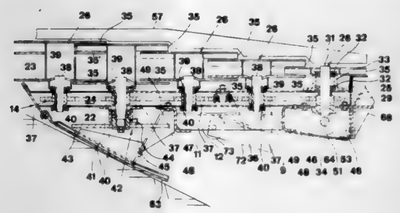
Antoon S. P. Cools, St. Kruis-Brugge, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed May 2, 1980, Ser. No. 146,940

Claims priority, application United Kingdom, May 4, 1979, 15557/79

Int. Cl.³ A01D *45/00, 69/12*

U.S. Cl. 56—94 **2 Claims**



1. A row crop apparatus for a harvesting machine comprising:

a frame including a pair of spaced apart beams;

a stalkway defined by a pair of adjacent drive modules, each drive module including an enclosed casing housing, a drive mechanism and being of a construction sufficient for retaining a lubricant, each drive module being supported by said pair of spaced apart beams;

means for detachably securing each drive module to each of said pair of beams;

means cooperatively locating each module on each beam;

a plurality of intermeshed crop conveyors rotatably connected to said drive mechanism of each module, the conveyors of one module extending into the stalkway in rotatable intermeshed relationship with the conveyors of the adjacent module; and

means connected to one of said beams for rotatably driving the conveyors.

4,291,524

METHOD OF DEFOLIATING

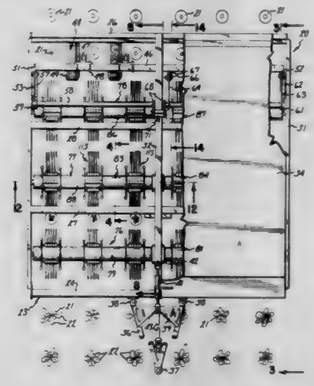
Donald C. Gates, Fargo, N. Dak., assignor to Alloway Manufacturing Inc., Fargo, N. Dak.

Division of Ser. No. 52,756, Jun. 28, 1979. This application Jun. 16, 1980, Ser. No. 159,622

Int. Cl.³ A01D *23/02*

U.S. Cl. 56—121.43 **3 Claims**

1. A method of removing foliage from a root crop, as sugar beets, with a machine having a cover means for preventing foliage from passing therethrough and first, second, and third flexible flails disposed for rotation about separate axes extending transverse to the direction of movement of the machine and being located along a line extended in the direction of movement of the machine said method comprising: rotating a plurality of first flexible flails in a first direction at approximately 400 revolutions per minute such that the lower-most portion thereof of the first and second flexible flails moves in the direction of movement of the machine to remove part of the foliage from a root crop, rotating a plurality of second flexible flails also in said first direction at approximately 400 revolutions per minute such that the lower-most portion thereof of the second flexible flails moves in the direction of movement of the machine to remove additional foliage from the root crop, rotating



a plurality of third flexible flails in a second direction opposite the first direction of movement of the first and second flexible flails at approximately 400 revolutions per minute to remove further foliage from the root crop; and

sequencing the passage of said first, second and third flexible flails such that said first and second flexible flails are disposed forwardly of said third flexible flails during said method whereby the first and second flexible flails pass over the crop before the third flexible flails.

4,291,525

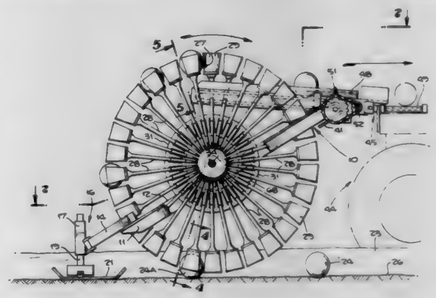
ROTARY CROP HARVESTER WITH RAPIDLY REPLACEABLE PARTS

Donald E. Benkert, 1234 Blair Ave., South Pasadena, Calif. 91030

Filed Jul. 21, 1980, Ser. No. 170,937

Int. Cl.³ A01D *45/00*

U.S. Cl. 56—327 R **12 Claims**



1. In a rotary armed harvester for grasping produce having a mobile frame carrying a powered rotary wheel with a plurality of radially arrayed pairs of opposed pick-up arms each with an actuating roller adapted to contact one of a pair of mirror imaged cams, each arm being biased toward its opposing arm and alternatively forced away from its opposing arm by displacement of its attached actuating roller by one of said cams, the combination comprising means securing each of said cams

to said frame, pivot brackets and chordal pivots on the powered wheel for the pick-up arms, means securing each bracket to the wheel, a spring on each arm adapted to bias a pick-up arm toward the opposing arm of a pair, said spring being spaced radially from the chordal pivot in the pivot bracket, removable securing means for each of said springs, and removable securing means for each of said actuating rollers operable when said rollers are out of contact with said cam.

4,291,526

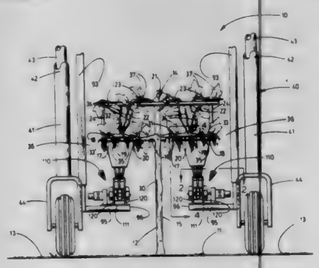
METHOD AND APPARATUS FOR HARVESTING FRUIT FROM A ROW CROP TRAINED ON TRELLIS WIRES OR THE LIKE

Kazuo Hiyama, and Howard K. Hiyama, both of Fowler, Calif., assignors to Hiyama Farms, Inc., Fowler, Calif.

Continuation-in-part of Ser. No. 844,147, Oct. 21, 1977, Pat. No. 4,255,922. This application Sep. 28, 1979, Ser. No. 80,007

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **5 Claims**



1. An apparatus for harvesting crops from plants grown in a row and supported on a trellis wire or the like, the apparatus comprising a vehicle adapted for earth traversing movement along such a row of plants; a striking member having opposite first and second end portions; means mounting the striking member on the vehicle for reciprocal movement in opposite striking and return directions substantially about an axis between said first and second end portions of the striking member with said first end portion of the striking member disposed for engagement with the trellis wire during earth traversing movement of the vehicle along the row of plants; a cam assembly mounted on the vehicle on the opposite side of said axis from the first end portion of the striking member in position to be engaged by the second end portion of the striking member and operable by contact therewith to impart said reciprocal movement to the striking member; means for urging the second end portion of the striking member into engagement with the cam assembly with a force such as to maintain contact between the second end portion of the striking member and the cam assembly during said reciprocal movement until the striking member encounters a resistance force greater than that encountered by contact with the trellis wire and then to be overcome by the striking member encountering the resistance force to draw the second end portion of the striking member from the cam assembly; and means for operating the cam assembly to impart said reciprocal movement to the striking member whereby a repeated striking force is applied to the trellis wire by the striking member during movement of the vehicle along the row to dislodge the crops from the plants while minimizing damage resulting from contact of the striking member with objects affording greater resistance than the trellis wire.

4,291,527

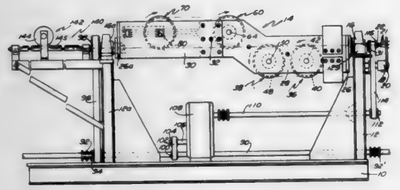
CABLE STRAND TENSION CONTROLLING APPARATUS

Joseph R. Allard, Warwick, R.I., assignor to The Entwistle Company, Hudson, Mass.

Filed Aug. 15, 1980, Ser. No. 178,289

Int. Cl.³ D07B *3/00*

U.S. Cl. 57—58.84 **8 Claims**



1. A cable strand apparatus in a wire strand cabling system, comprising in combination:
- a pair of axially spaced capstan means about both of which the entering strand is trained;
- an accumulator means about which the cable is trained after leaving the capstan means;
- a housing rotatably mounting said pair of capstan means and said accumulator means; and
- a means for rotating said housing.

4,291,528

MOUNTING OF FIBER SUPPLY CHANNEL DEFINING MEANS IN SPINNING UNITS OF AN OPEN END SPINNING MACHINE

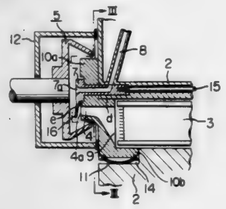
Noriaki Miyamoto; Masao Shiraki, both of Kariya, and Kinpei Mitsuya, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 20, 1979, Ser. No. 96,170

Claims priority, application Japan, Nov. 24, 1978, 53-162231[U]

Int. Cl.³ D01H *7/892*

U.S. Cl. 57—58.95 **7 Claims**



1. A spinning unit in an open end spinning machine, said unit comprising:
- a carding roller housing;
- a carding roller positioned within said housing for opening a sliver into individual fibers;
- a spinning rotor for receiving said individual fibers and for spinning them into yarn;
- said housing having therein a fiber supply channel having first and second mouths opening toward said carding roller and said spinning rotor, respectively, for enabling said individual fibers to be transported from said carding roller to said spinning rotor;
- said housing including a first portion having at least a part defining a fiber separating edge at said first mouth;

- said housing including a second portion substantially enclosing said carding roller;
- said first and second housing portions being separable from each other;
- coupling means for separably connecting said first housing portion to said second housing portion, said coupling means comprising a surface portion of said second housing portion engageable with said first housing portion, and biasing means disposed between and acting on said first and second housing portions for biasing said first housing portion against said surface portion of said second housing portion, thereby detachably and resiliently mounting said first housing portion on said second housing portion.

4,291,529

FALSE TWIST MACHINE

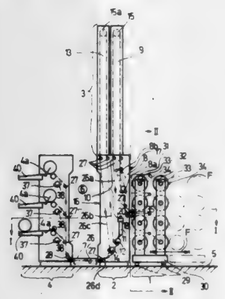
Hans Schellenberg, Winterthur; Eduard Schenkel; Andreas Schwander, both of Seuzach, and Dieter Thalmann, Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 935,110, Aug. 21, 1978, Pat. No. 4,201,036. This application Jan. 4, 1980, Ser. No. 109,663

Claims priority, application Switzerland, Mar. 1, 1978, 2195/78

Int. Cl.³ D02G *1/02*; D01H *13/28*

U.S. Cl. 57—291 **3 Claims**



1. In a false twist machine for threads, a texturizing station having an operating side comprising
- a first supply device for taking in a thread;
- a first heat treatment zone located above said supply device to receive a thread therefrom;
- a cooling zone below said heat treatment zone for the thread;
- a false twist device below said cooling zone for imparting a false twist to the thread;
- a second supply device for taking up the thread below said false twist device;
- a second heat treatment zone adjacent said first heat treatment zone to receive the thread from said second supply device; and
- a third supply device below said second supply device for taking up the thread from said second heat treatment zone wherein said first supply device, said false twist device, said second and said third supply devices are mutually offset from the top down and toward said operating side.

4,291,530

GAS TURBINE ENGINE COWLING

John R. Ballard, Chesham, England, assignor to Rolls-Royce Limited, London, England

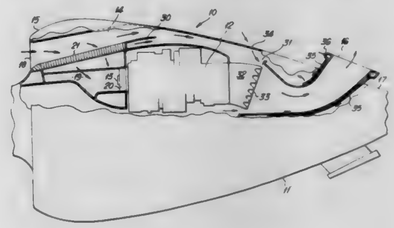
Filed Jan. 29, 1980, Ser. No. 116,653

Claims priority, application United Kingdom, Mar. 16, 1979, 09332/79

Int. Cl.³ F02C *7/052*

U.S. Cl. 60—39.09 P **8 Claims**

1. A gas turbine engine cowling suitable for a helicopter comprising a casing, a gas turbine engine enclosed within said casing, primary duct means adapted for the passage of air through said cowling, secondary duct means interconnecting said primary duct means and the air intake of said engine, a vortex tube separator panel interposed between said primary duct means and the intake of said engine and located at the



junction of said primary and secondary duct means so as to constitute a portion of the wall of said primary duct means, and air flow inducing means powered in operation by said engine and adapted to induce an airflow through said primary duct means.

4,291,531

GAS TURBINE ENGINE

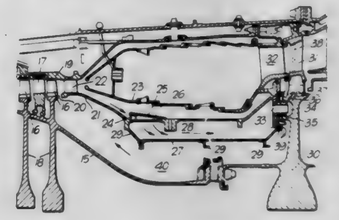
David A. Campbell, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 27, 1979, Ser. No. 24,361

Claims priority, application United Kingdom, Apr. 6, 1978, 13422

Int. Cl.³ F02C *3/06, 7/18*

U.S. Cl. 60—39.51 R **9 Claims**



1. A gas turbine engine comprising:
- a compressor, combustion system, and turbine in flow series, adjacent static structure defining a compressor discharge duct positioned directly between a downstream extremity of said compressor and an upstream extremity of said combustion system, said compressor discharge duct having at least a portion thereof spaced from said compressor to define a gap therebetween, a shaft drivingly interconnecting said compressor and said turbine, said combustion system having an initial diffusing section serving to diffuse air compressed by said compressor, duct means having an inlet arranged at a location at least part way along said diffusing section and an outlet to said turbine, said duct means conveying cooling air from the main flow of the engine and discharging a first part of said cooling air through said outlet to said turbine without cooling intervening structure of a combustion chamber, and at least one aperture from said duct means to discharge a second part of said cooling air around the outside of said shaft for forward flow along said shaft to cool the same and then be discharged through said gap directly into the compressor discharge duct and the main flow of air therein from said compressor for recirculation by the compressor air.

4,291,532

FUEL SUPPLY SYSTEM

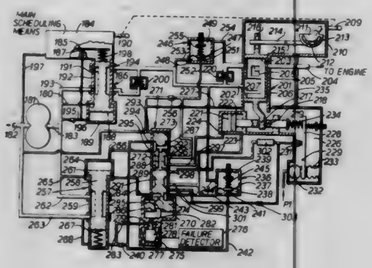
Keith Robinson, Churchdown, England, assignor to Dowty Fuel Systems Limited, Cheltenham, England

Filed Jun. 5, 1979, Ser. No. 45,851

Claims priority, application United Kingdom, Mar. 23, 1979, 10666/79

Int. Cl.³ F02C *9/08*

U.S. Cl. 60—223 **11 Claims**



1. In a liquid fuel supply system including:
(a) a source of fuel under pressure,
(b) a fuel outlet,
(c) flow adjusting means for adjusting fuel flow from the source to the outlet,
(d) a main fuel flow scheduling means normally controlling said flow adjusting means,
(e) an auxiliary fuel flow scheduling means, comprising:
(i) a metering valve having overlapping metering ports through which fuel flows to the outlet, the area of overlap being adjustable by a length movement and a width movement,
(ii) pressure drop responsive means responding to pressure drop at the metering valve to adjust said area of overlap by one of said movements to tend to maintain a constant pressure drop across the metering valve,
(f) a power demand adjuster connected to adjust the main scheduling means and also connected to adjust the said area of overlap of the metering valve ports by the other of said movements,
(g) a failure detector responsive to failure of the main scheduling means to cause the auxiliary scheduling means to begin to control the flow adjusting means by connecting the pressure drop responsive means in substitution for the main flow scheduling means to adjust the flow adjusting means in the sense to maintain a constant pressure drop at the said metering valve ports;
the improvement in which said overlapping ports are disposed in the path of fuel flow from said source of fuel to said outlet both when said main scheduling means controls said flow adjusting means and when said auxiliary scheduling means controls said flow adjusting means.

4,291,533

SUPERSONIC RAMJET MISSILE

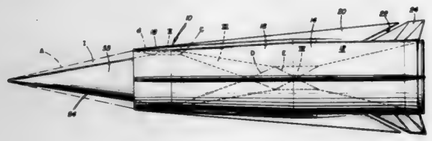
Gordon L. Dugger, and Frederick S. Billig, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1965, Ser. No. 517,801

Int. Cl.³ F02K *3/00*

U.S. Cl. 60—240 **10 Claims**

1. In a supersonic combustion ramjet missile,
a body,
an innerbody having a portion within the body and a portion projecting forwardly therefrom,
said innerbody being spaced from said body to define an inlet for compressing an air flow from a hypersonic flight Mach number to a supersonic flight Mach number,
said body having therein a combustion chamber, an exhaust nozzle and a fuel tank,
nozzles in the wall of the combustion chamber for discharging fuel from the tank into said chamber,
means in the body and providing fuel flow rate adjustment as a function of Mach number and altitude to control the fuel-air equivalents ratio to effect desired missile operation,
said means including sensors communicating with the combustion chamber, a distribution valve, a fuel pump and a turbine meter connected between the tank and the valve,



a turbine driving the fuel pump, a sensor control unit connected to the valve, one of said sensors being connected to said unit and another to said valve, a computer for controlling said turbine, said turbine meter and said sensor control unit, and means for supplying control signals to the computer representative of pitot and static pressures impinging on the forward end of the innerbody,
said innerbody being shiftable axially within said body in response to Mach number changes, whereby shock waves will be maintained at optimum positions between the body and the innerbody.

4,291,534

SERVO BOOSTER ASSEMBLY

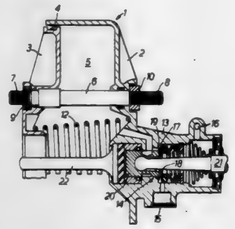
David Jones, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 18, 1979, Ser. No. 85,985

Claims priority, application United Kingdom, Nov. 2, 1978, 42909/78

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547 R **4 Claims**



1. A brake servo-booster assembly for attachment to a mounting means of a vehicle, comprising a housing having first and second housing parts having inner surfaces defining a chamber there between, control valve means for communicating the chamber alternately with vacuum and ambient air, an input member operatively connected to said first housing part, and movable to operate said control valve means, said first housing part being movable relative to the said second housing part between an inoperative position and an operative, brake-applying position in response to operation of said control valve means and being connected to an output member, said first housing part having an outer surface on the side thereof remote from said chamber which is at all times exposed to ambient air, and wherein said second housing part has connecting means for rigidly attaching said second part to said mounting means, said connecting means including tie means comprising at least one force-transmitting tie bar which extends between said

housing parts, said first housing part being slidably and sealingly mounted on said at least one tie bar, one end of said at least one tie bar having means for connection to a master cylinder housing, the other end of said at least one tie bar having means for connection to said mounting means.

4,291,535

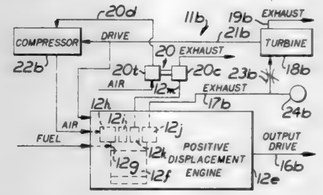
METHOD AND APPARATUS AVOIDING BLOWDOWN LOSSES IN COMPOUND ENGINES

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 11, 1978, Ser. No. 941,485

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—602 **9 Claims**



1. A compound engine comprising:
a first engine stage of the positive displacement internal combustion form having an air intake and at least one combustion chamber in which fuel is burned and having exhaust means for releasing pressurized exhaust gas from said combustion chamber and having output means for transmitting power to a rotary load,
a second engine stage of the form driven by expansion of pressurized gas received at a gas inlet,
exhaust gas conduit means connecting said first and second engine stages and forming an exhaust gas flow passage for transmitting said exhaust gas from said exhaust means of said first engine stage through said inlet of said second engine stage to operate said second engine stage by expansion of said exhaust gas therein,
drive-transmitting means coupled to said second engine stage for obtaining supplemental output power from said second engine stage, and
flow-regulating means for maintaining the pressure in said exhaust gas flow passage at a level substantially similar to the pressure which exists in said combustion chamber of said first engine stage at the time that said exhaust means thereof opens, wherein said flow-regulating means is adjustable to provide for variation of the size of said exhaust gas flow passage.

9. A method for increasing the output power produced by a compound engine which includes an internal combustion engine of the positive displacement form in which pressurized exhaust gases are released from at least one combustion chamber, wherein said internal combustion engine has at least a pair of exhaust means for releasing said exhaust gases from said combustion chamber, comprising the steps:
utilizing said pressurized exhaust gases to produce additional power by transmitting said gases to a gas expansion engine, including transmitting said pressurized exhaust gases from said combustion chamber to said gas expansion engine through a first of said exhaust means while maintaining the second of said exhaust means closed, preventing expansion of said exhaust gases between said combustion chambers and said gas-expansion engine,
subsequently closing said first exhaust means and opening said second exhaust means to release remaining exhaust gases from said combustion chamber, and
recovering energy from the exhaust gas released through said second exhaust means and utilizing said recovered energy to precompress the air supplied to the intake manifold of said positive displacement engine.

4,291,536

APPARATUS ENABLING THE STORAGE OF RADIOACTIVE WASTES AND THE RECOVERY OF THE EXTRANEOUS HEAT EMITTED THEREBY, AND A STORAGE ELEMENT FOR INCORPORATION IN SUCH APPARATUS

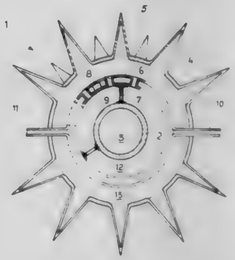
Edmond Girard, Boulogne, France, assignor to Messier S.A., Paris, France

Filed Apr. 3, 1978, Ser. No. 892,682

Claims priority, application France, Apr. 22, 1977, 77 12146

Int. Cl.³ F01K *15/00*

U.S. Cl. 60—644 **11 Claims**



1. A storage element for use in the recovery of heat originating from the cooling of radioactive wastes including a first element for the storage of radioactive waste, comprising a first closed shell of spherical shape including the wastes and disposed within a second closed shell of generally spherical shape and bristling with externally projecting radial points or spines, the volume betwen the two shells being filed with a non-contaminatable fluid, promoting the transfer of heat originating from the cooling of the wastes from the first towards the second shell, of which the points or spines serve as radiators in relation to the external medium, and a second element for the recovery of heat originating from cooling of the wastes in said first element further comprising a third spherical shell enclosing said first shell and enclosed by said second shell penetrated by radial passages and within the thickness of which is provided an array of channels isolated from said radial passages and capable of being placed in communication via two conduits integral with said third shell and passing through said second shell with a circuit of a cold generating fluid circuit in such a manner that the circulation within said third shell of the cold generating fluid permits a recovery and an evacuation of heat to the exterior of the storage element with a view to utilisation thereof, the possible excess of heat emitted by the wastes being dissipated towards the external medium by said second shell and its points or spines.

4,291,537

THERMAL ENERGY STORAGE FOR COVERING PEAK LOADS

George Oplatka, Zürich, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed May 3, 1979, Ser. No. 35,598

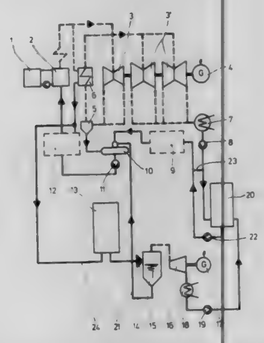
Claims priority, application Switzerland, May 9, 1978, 5041/78; Feb. 1, 1979, 963/79

Int. Cl.³ F01K *3/00*

U.S. Cl. 60—652 **6 Claims**

1. A method of evening load fluctuations in an electrical supply network, comprising the steps of:
connecting a thermal store to a main circuit of a thermal power station;
supplying condensate from a reheater of the main circuit to the thermal store;
throttling the working medium of the thermal store to vaporize a portion of the working medium;

supplying the vaporized portion of the working medium from the thermal store to a turbine;
returning a portion of the throttled working medium in liquid form directly to a feedwater tank of the main circuit;
expanding the vaporized portion of the working medium and the steam of the main circuit;



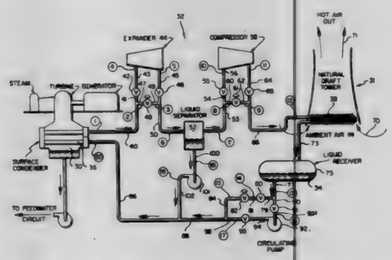
precipitating the expanded steam in a condensor and supplying it to a condensate vessel; and
interrupting a flow of working medium from the condensate vessel to a low-pressure feed-heater during the supply of the vaporized portion of the working medium from the thermal store to the turbine.

4,291,538

POWER PRODUCING DRY COOLING APPARATUS AND METHOD

Matloob Husain, Wheaton; Ban-Yen Lai, Willowbrook, and James B. Maher, Oak Brook, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jan. 4, 1980, Ser. No. 109,562
Int. Cl.³ F01K *9/00, 23/04*
U.S. Cl. 60—661 **27 Claims**



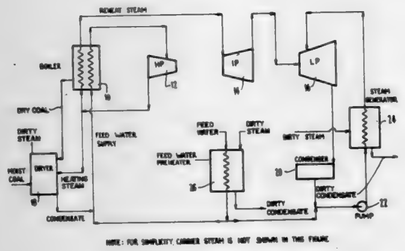
1. Apparatus for removal of heat from exhaust or spent steam from a steam driven electric generating power plant in which the steam must be condensed in a hot-well before the water can be reconverted to steam, comprising:
(a) a closed loop containing a refrigerant fluid,
(b) a condenser having a refrigerant inlet and outlet in the closed loop and positioned to effect spent steam condensation in the hot-well by indirect heat exchange with refrigerant fluid flowing through the condenser,
(c) a heat exchanger having a refrigerant inlet and outlet in the closed loop and adapted to be located in a cooling tower to effect indirect heat exchange between refrigerant fluid flowing through the heat exchanger and atmospheric temperature air flowing through the cooling tower to cool the refrigerant fluid,
(d) an expander positioned in the loop between the outlet of the steam condenser and the inlet of a compressor,
(e) a compressor positioned in the loop between the expander outlet and the heat exchanger inlet,
(f) a separator in the loop at the outlet of the expander separating refrigerant liquid from refrigerant vapor,
(g) an expander by-pass conduit communicating with the loop on the upstream and downstream sides of the expander,
(h) a compressor by-pass conduit communicating with the loop on the upstream and downstream sides of the compressor,
(i) a liquid pump and an expansion valve positioned parallel to one another in the loop between the outlet of the heat exchanger and the inlet of the condenser,
(j) a liquid refrigerant conduit communicating with the separator and with the loop downstream of the liquid pump and the expansion valve but ahead of the condenser inlet,
(k) means to close the expander by-pass conduit, open the compressor by-pass conduit, activate the expander and the liquid pump, inactivate the compressor and close the expansion valve, when the temperature of the atmospheric air flowing through the cooling tower is at least low enough to condense refrigerant vapor in the cooling tower heat exchanger at a pressure lower than the pressure of the refrigerant vapor exiting the condenser, to thereby extract energy by means of the expander for use in producing power or work,
(l) means to close the expander by-pass conduit, close the compressor by-pass conduit, activate the expander and the compressor, open the expansion valve or activate the liquid pump, when the temperature of the atmospheric air flowing through the cooling tower is in the middle of the ambient temperature range to effect efficient heat exchange and condensation of the refrigerant in the cooling tower heat exchanger, and
(m) means to open the expander by-pass conduit, close the compressor by-pass conduit, activate the compressor and open the expansion valve, and inactivate the expander and the liquid pump, when the temperature of the atmospheric air flowing through the cooling tower is close to being too high to effect efficient heat exchange and condensation of the refrigerant in the cooling tower heat exchanger without compressing the refrigerant.

4,291,539

POWER GENERATION SYSTEM

Owen E. Potter, Camberwell, Australia, assignor to Monash University, Victoria, Australia

Filed Dec. 29, 1978, Ser. No. 974,244
Claims priority, application Australia, Feb. 10, 1978, PD3342
Int. Cl.³ F01K *21/00*
U.S. Cl. 60—670 **11 Claims**



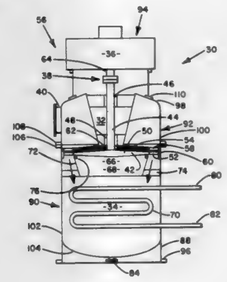
1. An electrical power generation system comprising means for burning solid carbonaceous fuel to generate heat energy which is used to convert water to steam, at least one turbine means driven by the said steam for producing electrical energy, and solid carbonaceous fuel drying means, in which moist fuel is indirectly heated by steam in the drying means and dried fuel is passed to the burning means; characterized in the moist fuel is heated in the drying means in the absence of introduced air or other gases, whereby water vapour substantially free from air or other gases is driven off from the fuel for further use.

4,291,540

POWER GENERATION UNIT

J. Rodger Shields, Pittsburgh, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,517
Int. Cl.³ F01B *31/16*
U.S. Cl. 60—694 **1 Claim**



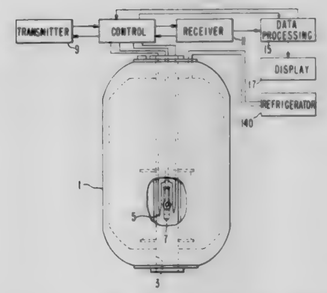
1. A power generation unit comprising:
a turbine for extracting energy from a vaporous power fluid and including an inlet scroll for directing the power fluid generally downward through the turbine, a generally vertical, rotatable turbine shaft, a turbine wheel supported by the turbine shaft for rotation therewith and having a hub and a plurality of blades extending outward therefrom wherein the flow of the power fluid past the turbine wheels causes rotation thereof, and a vapor discharge port;
an electric generator for generating an electric current and including a generally vertical, rotatable power shaft aligned with the turbine shaft;
a shaft coupling connecting the turbine shaft and the power shaft to transmit rotary motion from the turbine shaft to the power shaft to generate an electric current;
a condenser located directly below the turbine, and including a condenser heat exchanger for condensing the vaporous power fluid and a vapor inlet port;
a baffle having a first end located directly below the turbine wheel, extending downward and inward therefrom, toward and into the condenser, and defining an annular chamber below the turbine wheel for receiving the power fluid flowing therepast, guiding the fluid away from the hub of the turbine wheel, and conducting the fluid downward through the discharge port of the turbine, through the inlet port of the condenser, and into the condenser, wherein
the horizontal cross sectional area of the annular chamber increases in the downward direction to allow the power fluid to expand as it flows therethrough;
a casing enclosing the turbine, the electric generator, the condenser, and the baffle, and including
a top section housing the electric generator,
a middle section having a top portion, a cylindrical side portion, and an annular flange located at the bottom of the middle section,
a lower section including a cylindrical side portion having a radius substantially equal to the radius of the side portion of the middle section, a rounded bottom portion, and an annular flange located at the top of the lower section secured to the annular flange of the middle section to join the lower and middle sections together, and
a ring joining the top section to the middle section; and
bracket means extending between the baffle and the casing to support the baffle therewithin; and wherein
the discharge port of the turbine is defined by a horizontal cross sectional area of the casing below the turbine wheel, is completely open, and is substantially directly below and at least substantially coextensive with the horizontal cross section of the vapor flow path as the vapor flows past the turbine wheel, and
the inlet port of the condenser is defined by a horizontal cross sectional area of the casing above the condenser heat exchanger, is completely open, and is substantially coextensive with the vapor discharge port of the turbine.

4,291,541

CRYOSTAT WITH EXTERNAL REFRIGERATOR FOR SUPER-CONDUCTING NMR SPECTROMETER

George D. Kneip, Jr., Menlo Park, and Marvin H. Anderson, Mountain View, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 879,289, Feb. 21, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,451
Int. Cl.³ F17C *1/00*
U.S. Cl. 62—45 **2 Claims**



1. In a cryostat wherein a first liquified gas is contained in a central vessel and said central vessel is surrounded by shielding means maintained at the temperature of another liquified gas of higher boiling point, said cryostat further comprising a containment vessel at ambient temperature, said containment vessel comprising a wall portion having an interior surface spaced from the outer surface of said shielding means, the improvement comprising:
a radiation shield disposed between the interior surface of said containment vessel and the outer surface of said shielding means;
mechanical refrigerating means for maintaining said radiation shield at a temperature substantially intermediate said shielding means and ambient temperature during operation.

4,291,542

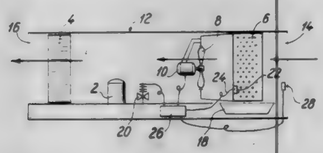
AIR DRYING APPARATUS OF THE CONDENSATION TYPE

Poul E. Sminge, Randers, and Svend I. Thoegersen, Baelum, both of Denmark, assignors to A/S Dantherm, Skive, Denmark

Continuation of Ser. No. 870,377, Jan. 18, 1978, abandoned. This application May 14, 1980, Ser. No. 149,629
Claims priority, application United Kingdom, Jan. 19, 1977, 2112/77
Int. Cl.³ F25D *21/06;* F25B *41/00*
U.S. Cl. 62—156 **11 Claims**

1. An air drying apparatus, comprising a cooler element and

a fan for creating an air flow against or through the cooler element, means for normally cooling the cooler element, means for temporarily heating the cooler element to cause defrosting thereof, and control means for controlling the operation of said heating means, characterized in that temperature sensing means are mounted in direct heat connection with said cooler element, said sensing means being operatively connected with the fan and said control means so as to cause a reduction of the fan effect in response to the cooler temperature rising above a



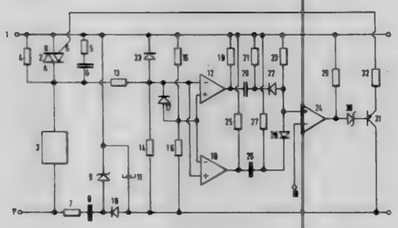
predetermined operational value or, respectively, so as to cause actuation of said heating means for defrosting the cooler in response to the cooler temperature falling to a predetermined minimum, and wherein an air temperature sensor is so provided and operatively connected with said temperature sensing means that the cooler element temperature level or levels, by which the sensing means perform their said control operations, are generally increased in automatic repsonse to increase of the temperature of the air as blown against the cooler element.

4,291,543

TEMPERATURE REGULATOR FOR HOUSEHOLD APPLIANCES

Luigi Alluto, Moncalieri, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed Jan. 14, 1980, Ser. No. 111,823
Claims priority, application Italy, Jan. 23, 1979, 67141A/79
Int. Cl.³ G05D *23/32;* H03K *5/153*
U.S. Cl. 62—158 **21 Claims**



1. A temperature regulator for use with an electrical household appliance, comprising:

a temperature sensor for sensing the temperature of a portion of said electrical household appliance and generating an electrical quantity related thereto;

a signal translating circuit for processing said electrical quantity and producing a control signal as a function thereof;

temperature adjusting means for adjusting said temperature;

a regulating element which receives said control signal and controls the operation of said temperature adjusting means as a function thereof;

said signal translating circuit comprising a detector circuit for detecting zero crossings of a voltage applied to said regulating element, said detector circuit comprising two voltage comparator circuits each having two input terminals and an output terminal, the input terminals of one said comparator being connected anti-parallel with the input terminals of the other said comparator such that the output terminals of said comparators provide two push-pull signals which vary sharply in amplitude at said zero crossings, said two push-pull signals being fed separately to further circuits of said signal translating circuit; and

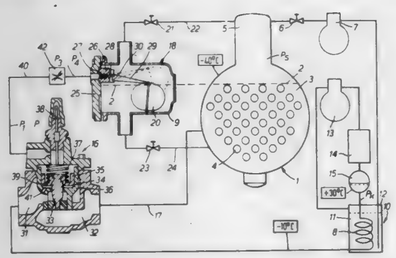
delay means for preventing said control signal from activating said regulating element for a predetermined length of time, when said appliance is turned on, so as to allow the remainder of said temperature regulator to reach approximately its normal running condition before allowing said control signal to activate said regulating device.

4,291,544

CONTROL APPARATUS FOR THE LOW PRESSURE EVAPORATOR OF A REFRIGERATION PLANT

Kurt A. Larsen, Nordborg, Denmark, assignor to Danfoss A/S, Denmark

Continuation of Ser. No. 949,223, Oct. 6, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,973
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2745988
Int. Cl.³ F25B *41/04*
U.S. Cl. 62—221 **5 Claims**



1. Control apparatus for a refrigerator plant evaporator, comprising, a float type pilot valve connectable to said evaporator and having a float chamber which assumes the same liquid level as said evaporator, said pilot valve having a nozzle and closure member for adjusting the flow through said nozzle, said pilot valve having a float for controlling said closure member, a main valve connectable to said evaporator for supplying liquid refrigerant thereto, said main valve having a closure member and a differential pressure actuated servo-means for controlling said main valve closure member, pilot conduit means extending from said main valve to said nozzle of said pilot valve, first throttle means for controlling a liquid flow for operating said servo-means, said first throttle means having the inlet thereof on the supply side of said main valve and the outlet thereof in fluid communication with said pilot conduit means, and second throttling means in said pilot conduit means downstream from said first throttling means and in series relationship to said nozzle of said pilot valve for introducing a desired throttling resistance downstream of said first throttling resistance to produce a desired fluid expansion to obtain a fluid mixture having a correspondingly desired liquid/vapor ratio making said mixture optimally suitable for control by said pilot valve.

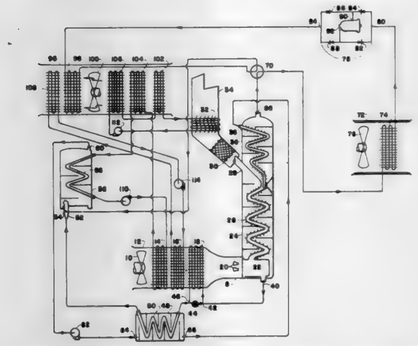
4,291,545

ABSORPTION HEAT PUMP

James R. Worsham, III, 115 Village Rd., Lynchburg, Va. 24502

Filed Jan. 10, 1980, Ser. No. 110,964
Int. Cl.³ F25B *27/02, 15/00*
U.S. Cl. 62—238.3 **6 Claims**

1. In a heat pump system for transferring heat from one site to another employing a confined volatile solute and solvent therefor, comprising a generator which causes heat to be applied to a solution comprised of said volatile solute in said solvent, thereby causing said volatile solute to separate in gaseous form from said solution which consequently emerges in hot condition containing little of said solute, a furnace which receives ambient air and combusts a fuel to form a heated air stream which is passed in heat exchange relationship through said generator and then through a flue, a condenser wherein said volatile solute is transformed from a gaseous form to a liquid form, an evaporator in which said volatile solute transforms from a liquid form to a gaseous form, and an absorber



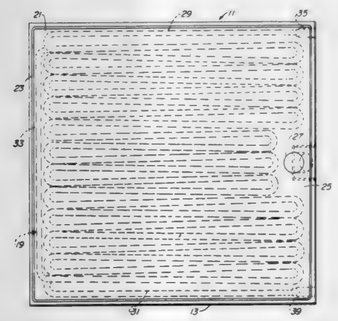
which causes said volatile solute to dissolve in said solvent with attendant generation of heat, said generator condenser, evaporator and absorber being arranged in sequential communication, the improvement comprising conduit means which obtains heat from said generator, absorber or condenser and delivers said heat to the ambient air received by said furnace, whereby the efficiency of operation of said heat pump system is improved.

4,291,546

COLD PLATE HEAT EXCHANGER

Joseph J. Rodth, Pleasant Valley, Conn., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jun. 11, 1979, Ser. No. 47,645
Int. Cl.³ B67D *5/62;* F26B *39/02*
U.S. Cl. 62—398 **13 Claims**



1. A cold plate heat exchanger for use in a beverage dispenser comprising:

a generally planar heat conducting surface having a layer of ice on one side thereof to extract heat from the beverage components;

a first tubular member to convey a liquid and positioned along the other side of said heat conducting surface, said first tubular member having first and second ends and coiled in a serpentine shape with the central axis thereof lying substantially in a plane generally parallel to said heat conducting surface to provide a large area of said first tubular member adjacent said heat conducting surface;

an outlet fitting located on said first end of said first tubular member to connect the heat exchanger for conveying the cooled liquid to a dispensing location;

a second tubular member to convey the liquid and positioned along said first tubular member on the side away from said heat conducting surface, said second tubular member having first and second ends and coiled in a serpentine shape with the central axis thereof lying substantially in a plane generally parallel to said heat conducting surface to provide a relatively large area of said second tubular member adjacent said first tubular member;

an inlet fitting located on said first end of said second tubular member, said first end of said second tubular member being adjacent said second end of said first tubular member; and

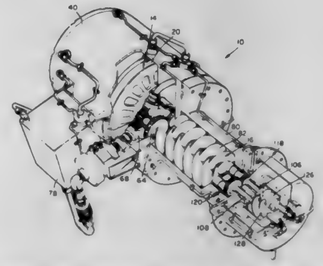
a third tubular member interconnecting said second end of said first tubular member and said second end of said second tubular member.

4,291,547

SCREW COMPRESSOR-EXPANDER CRYOGENIC SYSTEM

Bruno S. Leo, Santa Monica, Calif., assignor to Hughes Aircraft Company, Del.

Continuation-in-part of Ser. No. 894,677, Apr. 10, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,764
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—402 **30 Claims**



1. A closed cycle cryogenic refrigeration system comprising:

a screw compressor having a housing having inlet and outlet ends, an inlet and an outlet adjacent the ends of said housing;

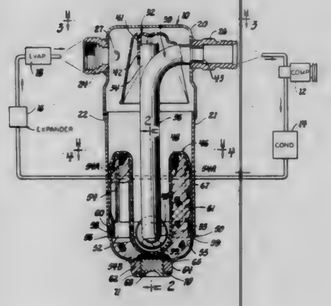
first and second rotors rotatably mounted within said housing, said first and second rotors respectively having intermeshing lobes and recesses configured and fitted so that compression without oil occurs in oil-free gas passing through said compressor;

an expander having an expander housing having inlet and outlet ends, an inlet adjacent one end of said expander housing and an outlet adjacent the other end of said expander housing;

first and second expander rotors rotatably mounted within said expander housing, said first and second rotors respectively having intermeshing lobes and recesses configured and fitted so that oil-free gas expansion with work output takes place upon rotation of said expander rotors in said expander housing; and

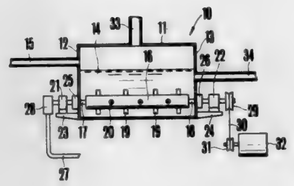
means interconnecting said inlet and outlet on said compressor housing and said inlet and said outlet on said expander housing for providing a closed cycle for the circulation of oil-free refrigerant gas therein, for rejecting heat, and for receiving heat for producing cryogenic refrigeration upon rotation of said rotors.

4,291,548
LIQUID ACCUMULATOR
J. D. Livesay, Tipp City, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 156,320, Jul. 7, 1980. This application Sep. 22, 1980, Ser. No. 189,135
Int. Cl.³ F25B *43/00*
U.S. Cl. 62—503 **2 Claims**



1. In a liquid accumulator for air conditioning systems and the like wherein the accumulator is of the type having a permanently assembled casing enclosing both liquid separator means and desiccant container means and wherein the liquid separator means includes a generally U-shaped tube having a bight portion with a bleed opening therethrough located in a bottom end of the casing and wherein the liquid separator means operates to separate liquid including refrigerant, oil and water from vaporous refrigerant flow received from the system and deposit same in the bottom of the casing and wherein desiccant in the desiccant container means adsorbs the deposited water while the deposited liquid refrigerant and oil is permitted to be returned through the bleed opening in the bight portion and thence through the tube in vaporous form back to the system: the improvement in a serviceable desiccant container arrangement comprising in combination, a porous desiccant container bag with closed ends that is foldable once on itself and is then insertable crease first in the bottom of the casing prior to insertion of the bight portion of the tube therein and permanent closure of the casing, the two folds of said bag having an outer side shaped to conform with the interior side of the casing and an inner side facing toward and spaced from that of the other fold so as to receive the bight portion of the tube therebetween, said bag at the crease therein having an opening aligned with an opening in the bottom of the casing, fitting means on both said bag and the casing extending about their respective opening for cooperating with each other to sealingly attach said bag to the casing so as to retain said bag in the bottom of the casing when the latter is inverted and also seal off the interior of said bag from the interior of the casing, and closure means for closing the opening in the casing after desiccant has been loaded therethrough into said bag whereby said bag may be gravity filled both for the first time and later in service through said opening in the casing after said casing has been permanently closed and inverted while said bag while so inverted is retained by said fitting means and whereby saturated desiccant may be drained from said bag through the opening in the casing when the casing is in its normal upright position prior to refilling.

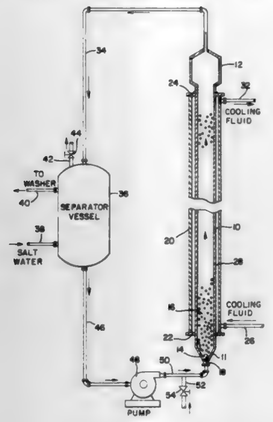
4,291,549
METHOD OF DISPERSING A LIQUID INTO ANOTHER LIQUID
Kensuke Fujimura; Naomichi Yamamoto; Masahiro Ogawa, and Nobuyoshi Tanigawa, all of Ube, Japan, assignors to Ube Industries, Ltd., Japan
Filed Dec. 19, 1979, Ser. No. 105,014
Claims priority, application Japan, Feb. 7, 1979, 54-12277
Int. Cl.³ B01D *9/04*
U.S. Cl. 62—534 **3 Claims**



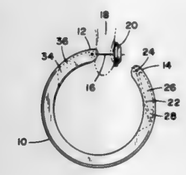
1. A method of dispersing a first liquid into a second liquid, comprising the steps of:
(a) providing a vessel containing said second liquid;
(b) providing first liquid injecting means in said second liquid having a hollow drum with a plurality of nozzles extending therefrom, each nozzle having an orifice of predetermined dimensioning at the end thereof spaced from an outer surface of the hollow drum by a predetermined spacing;
(c) feeding said first liquid into the hollow drum and out through the orifice of each of the nozzles into said second liquid; and
(d) rotating the hollow drum at a predetermined speed as said first liquid is fed into the hollow drum, such that the dimensioning of each orifice, the spacing of each orifice from the outer surface of the hollow drum and the predetermined speed of rotating of the hollow drum coact to forcibly break up the first liquid into droplets of small diameter which do not reunite with each other after leaving each orifice, without clogging of said each orifice.

4,291,550
FLUIDIZED BED CRYSTALLIZATION APPARATUS AND METHOD
Gerald E. Engdahl, Wheaton, and James B. Maher, Oak Brook, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Feb. 14, 1980, Ser. No. 121,495
Int. Cl.³ B01D *9/04*
U.S. Cl. 62—544 **3 Claims**

1. A method of crystallizing or freezing out a component of a mixture composed of a liquid and a dissolved or suspended solid material, or both, which comprises:
passing the mixture upwardly through a column containing a mass of insoluble metal balls having a specific gravity greater than that of the mixture;
by heat exchange to a cold fluid, indirectly cooling the mixture to a temperature at which the component crystallizes or freezes out of solution, as it flows upwardly in the column;
said component being the liquid or dissolved solid material; and
said flow of the mixture through the column being at a sufficient velocity to fluidize the insoluble metal balls into turbulent action to scour the column inside surface and thereby prevent build up thereon of the crystallized or frozen out component.



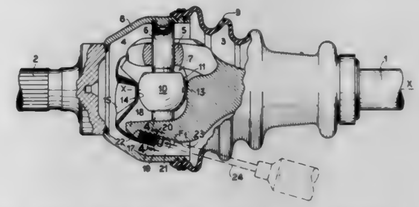
4,291,551
COMBINATION EARRING AND FINGER RING
Harriet B. Levine, 7530 Stonecrest, Dallas, Tex. 75240
Filed Oct. 6, 1980, Ser. No. 194,628
Int. Cl.³ A44C *7/00, 9/00*
U.S. Cl. 63—12 **8 Claims**



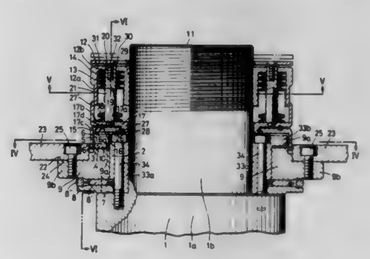
1. A combination finger ring and earring comprising:
(a) an arcuate section of a ring body having first and second ends.
(b) an earring stem for a pierced ear attached to said first ring end,
(c) an earring fastener removably attached to and mating with said stem when said stem is inserted through a pierced ear for use as an earring, and
(d) an extension pivotally attached to said second end for rotation toward said ring body adjacent to said second end when said earring is used and for rotation toward said ring body adjacent to said first end to form a circle when said finger ring is used.

4,291,552
AXIAL RETAINING DEVICE IN PARTICULAR FOR A HOMOKINETIC TRIPOD JOINT
Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France
Filed Aug. 15, 1978, Ser. No. 933,743
Claims priority, application France, Sep. 5, 1977, 77 26874; Jul. 26, 1978, 78 22122
Int. Cl.³ F16D *3/30*
U.S. Cl. 64—21 **22 Claims**

1. In a device for retaining a first element inside a second element which is substantially in the shape of a tulip and has a plurality of branches, said device comprising a resilient fastener having a plurality of radially extending branches some of which branches of the fastener have ends engaged in cavities in the branches of the second element so as to retain the fastener on the second element with the first element interposed between the fastener and the second element; the improvement comprising a free radially outer end portion of at least one of the branches of the fastener, a first abutment means movably combined with said radially outer end portion, a second abutment means on an associated branch of said branches of the second element, the first abutment means being cooperative with the second abutment means to hold the fastener on the second element in cooperation with the retaining actions of said ends engaged in said cavities, and means for adjusting the position of the first abutment means relative to said end portion whereby to adjust the position of retention of the fastener relative to the second element.



4,291,553
TORQUE LIMITER
Heizaburo Kato, and Yoshio Ogawa, both of Tokyo, Japan, assignors to Kabushikikaisha Sankyo Seisakujo, Tokyo, Japan
Filed Oct. 29, 1979, Ser. No. 88,919
Claims priority, application Japan, Feb. 16, 1979, 54-16221
Int. Cl.³ F16D *7/00*
U.S. Cl. 64—29 **4 Claims**



1. A torque limiter characterized in that a drive-transmitting body made fast on a driving member has on the outer periphery thereof several radial grooves which, in turn, hold torque-transmitting rollers of a size adapted to fit in the grooves, the upper and lower peripheral surfaces of said rollers being kept in pressure contact with the under end surface of a torque-transmitting-roller-supporting ring above said drive-transmitting body and with arcuate recesses formed on the upper surface of a driven member which is revolvably supported on the upper end surface of the lower portion of said driving member through a thrust bearing ring, a torque-spring-supporting sleeve is threadedly engaged with the outer periphery of the upper mounting portion of said driving member, and, between the top walls of open-bottom cylindrical hollows of said torque-spring-supporting sleeve and a bearing ring revolvably supported by a group of bearing balls, there are disposed a plurality of torque springs, each around one of support rods

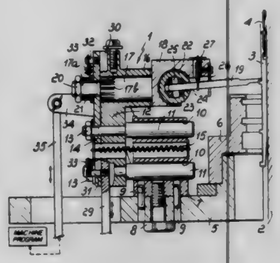
threadedly engaged at the lower end portions with said bearing ring and loosely fitted at the upper end portions in said sleeve.

4,291,554

DEVICE FOR CHANGING THE NUMBER OF THE NEEDLES AT WORK IN A CIRCULAR KNITTING MACHINE FOR STOCKINGS AND LIKE ARTICLES

Francesco Lonati, Brescia, Italy, assignor to Lonati S.p.A., Brescia, Italy

Filed Mar. 27, 1979, Ser. No. 24,291
Claims priority, application Italy, Apr. 3, 1978, 21923 A/78
Int. Cl.³ D04B *9/20*
U.S. Cl. 66—53 **3 Claims**



1. A device for changing the number of needles at work in a circular knitting machine of the type having at least one needle cylinder and means for reciprocating said at least one needle cylinder, the device comprising a picker for needle raising and lowering during reciprocation of said at least one needle cylinder, a supporting body for said picker, a shaft having a longitudinal axis extending substantially radially with respect to said at least one needle cylinder and rotatably housed in said supporting body about said longitudinal axis, a block secured to one end of said shaft, a pair of coaxial cylinders rotatably housed within said block, said cylinders including an inner cylinder and a hollow outer cylinder and having a common axis perpendicular to an intersecting said longitudinal axis of said shaft, said outer hollow cylinder having an elongate peripheral rectilinear opening for passage and movement of said picker, and said inner cylinder defining a diametrical seat having an axis perpendicular to said common axis of said inner and outer cylinder and to said picker and intersecting said longitudinal axis of said shaft and said common axis of said inner and outer cylinder, a pivot pin in said diametrical seat penetrating one end of said picker, and means for rotating said shaft about said longitudinal axis through substantially 180° to cause said picker to assume respectively a position for operating as a needle raising picker and a position for operating as a needle lowering picker.

4,291,555

MACHINES FOR THE WET TREATMENT OF FABRICS IN ROPE FORM

Bernard Barriquand, Roanne, France, assignor to Barriquand, Roanne, France

Filed Oct. 24, 1979, Ser. No. 88,067
Claims priority, application France, Oct. 27, 1978, 78 30557
Int. Cl.³ D06B *3/20, 3/24, 23/08*
U.S. Cl. 68—13 R **39 Claims**

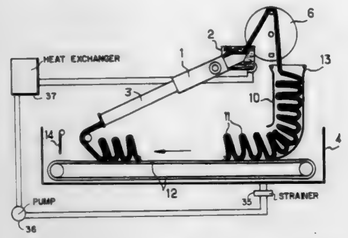
10. A processing machine notably for the dyeing of fabrics in rope form, equipped with a dyeing system and including respective means for circulating a dye bath, means for storage and means for folding, the machine comprising in combination.

at least one storage compartment having an exit;

at least one dyeing system arranged above and slightly beyond said exit of said at least one storage compartment, said dyeing system having an exit and defining an upward path for the fabric;

mechanical means for returning the fabric to said at least one storage compartment via a downward return path after passage of the fabric into and out from said at least one dyeing system arranged in said upward path of the fabric, said mechanical means being mounted in the vicinity of said exit of said at least one dyeing system;

at least one receiving and guiding device for the fabric being returned to said at least one storage compartment mounted in said return path of the fabric to said at least



one storage compartment and positioned beyond said mechanical means; and

wherein said at least one fabric storage compartment is provided with means for moving the fabric relative to said at least one compartment; and

further comprising temperature-regulating means for said dye bath; and

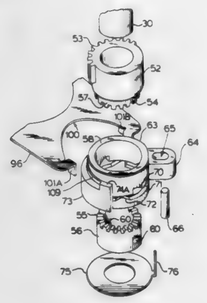
means for purifying said dye bath before its recycling in the machine.

4,291,556

AUTOMATIC WASHER TRANSMISSION SHIFT MECHANISM

Anthony Mason, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 4, 1979, Ser. No. 35,935
Int. Cl.³ D06F *23/04, 37/40*
U.S. Cl. 68—23.7 **9 Claims**



1. In an automatic laundry appliance having a reversible rotary drive means, eccentric means providing an eccentric motion for translating rotary motion of said drive means into oscillatory motion, and a clutch means for transmitting and oscillatory motion to an agitation means extending into a wash tub, a shifter means for said clutch comprising:

means operable to cause engagement and disengagement of said clutch means; and

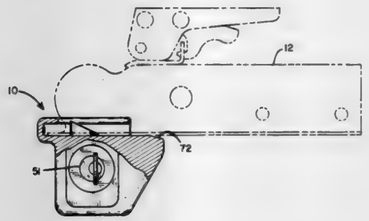
control means mounted on and driven by said eccentric means for eccentric motion therewith, said control means responsive to a change in direction of rotation of said reversible rotary drive means to operate said means operable to cause engagement and disengagement of said clutch means when a change in direction of rotation of said rotary drive means occurs.

4,291,557

TRAILER HITCH LOCK

Marshall Bulle, 918 Third St., Farmington, Minn. 55024, and Dale A. Johnson, 6336 19th Ave. S.,, Richfield, Minn. 55423

Filed Apr. 28, 1980, Ser. No. 144,773
Int. Cl.³ B60D *1/12*
U.S. Cl. 70—58 **4 Claims**



1. An anti-theft device for a trailer having a ball hitch of the type comprising a generally spherical socket member having an opening for receiving a ball member and a flange extending outwardly and surrounding said opening, said device comprising:

(a) a body member having a generally planar surface and surrounded on three sides by a U-shaped recess adapted to slidingly engage said flange on said socket member, a first bore extending normal to said planar surface and a predetermined distance into said body member, and a transversely extending second bore intersecting with said first bore;

(b) a spring loaded bolt member having a ramp surface formed on an end segment thereof disposed in said first bore with said ramp surface extending above said planar surface and into said opening of said socket member when said U-shaped recess engages said flange and when said spring is extended and retractable within said bore and below said planar surface when said spring is compressed;

(c) a floating stop member disposed in said first bore for allowing depression of said ramp surface below said planar surface when in a first orientation and for preventing said depression when in a second orientation; and

(d) a key operated cam element disposed in said second bore, said cam element cooperating with said floating stop member to move said stop member to said first orientation.

4,291,558

PROCESS OF ROLLING IRON-SILICON STRIP MATERIAL

Pat A. Santoli, Natrona Heights., and Howard E. Baybrook, New Kensington, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,323
Int. Cl.³ B21B *3/02*
U.S. Cl. 72—38 **7 Claims**

1. An improved method of reducing hot rolled band to final gage iron-silicon alloy steel strip material to retain the magnetic qualities of the final gage strip material in the annealed condition, comprising the steps of passing the material in an intermediate and in a final cold rolling operation to accomplish progressive gage reduction prior to final annealing of the material,

wherein the improvement comprises:

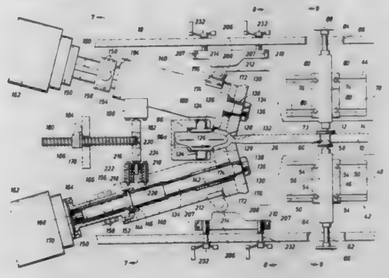
heating the material between the intermediate and the final cold rolling operations in a non-oxidizing atmosphere to a temperature and for a time of at least that necessary to recover the cold worked structure in the material and to relieve residual stresses in the material and less than that at which grains of the material begin to recrystallize.

4,291,559

SHEAVE MAKING APPARATUS AND METHOD

Charles F. Martin, P.O. Box 197, Porter, Tex. 77365

Filed Jul. 30, 1979, Ser. No. 61,923
Int. Cl.³ B21H *1/04*
U.S. Cl. 72—84 **34 Claims**



1. Apparatus for forming an external annular radial groove in the periphery of a circular workpiece comprising:

support means for supporting said workpiece for rotation about its own axis;

at least one groove-forming tool having a working surface for extending radially into the periphery of said workpiece;

tool guide means adjacent said support means and carrying said tool for movement past said workpiece in a path such that the outer extremity of said working surface passes generally tangentially to the locus of the bottom of a groove to be formed by said tool in said workpiece;

tool drive means associated with said tool guide means for moving said tool in said path;

a pair of drive rollers mounted on said support means for rotation about respective axes disposed angularly with respect to the axis of said workpiece and having respective opposed generally radially outwardly facing drive surfaces disposed for engagement with respective axially opposite sides of said workpiece distal the axis of said workpiece, and means for rotating said rollers about their respective axes to thereby rotate said workpiece about its axis;

radial drive means for moving said drive rollers generally radially outwardly with respect to said workpiece and toward said working surface of said tool;

and a pair of floating rollers each mounted coaxially with and radially outwardly of a respective one of said drive rollers, said floating rollers defining opposed forming surfaces for contacting and forming external areas of said workpiece.

4,291,560

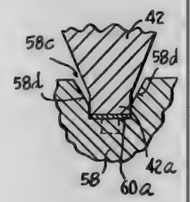
HIGH-PRODUCTION METHOD FOR MAKING GROOVED RESISTANCE RIBBON FOR ELECTRICAL HEATING COILS

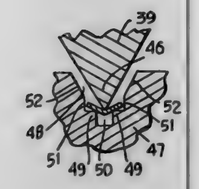
Laurence G. Horwitt, 226 Fountain St., New Haven, Conn. 06515

Division of Ser. No. 908,098, May 22, 1978, Pat. No. 4,184,351.
This application Apr. 18, 1979, Ser. No. 31,002
Int. Cl.³ B21D *17/04*
U.S. Cl. 72—186 **9 Claims**

1. A high-production method of producing successive grooved strips of predetermined length, of electrical resistance ribbon for use in making heating coils of cigar lighters, ignitor plugs and the like, which includes the steps of feeding a flat ribbon of resistance wire having a fixed, predetermined uni-

form width with opposite longitudinal edges, from a continuous supply spool of the same, to and between a pair of cooperable male and female die rolls, said female die roll having a circumferential groove including a pair of oppositely-facing guide walls and having circumferentially-extending peripheral portions characterized by a V-shaped cross-sectional surface, positively engaging said ribbon along said opposite longitudinal edges and closely positioning the ribbon between said facing guide walls of the groove whereby central portions of the ribbon are centralized against the female roll, supporting





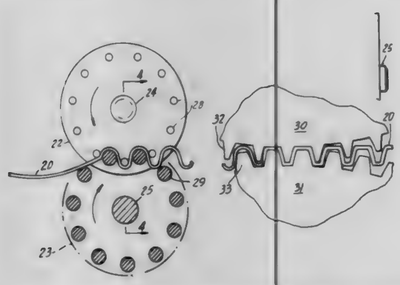
one flat side of the ribbon by said female roll along spaced-apart areas adjacent the longitudinal edges of the ribbon, and imparting a force by the male die roll to the opposite flat side of the ribbon at locations intermediate said spaced-apart areas of support for the ribbon while simultaneously turning said die rolls in opposite directions through a predetermined angle, such that there is formed in the ribbon at carefully controlled points therealong a predetermined transverse, essentially V-shaped cross-sectional configuration extending for a predetermined length thereof which is short of said predetermined length of the strip.

4,291,561

METHOD AND APPARATUS FOR FORMING CLIPS

Maynard J. G. Tipper, P.O. Box 23861, Oakland, Calif. 94623

Filed Feb. 7, 1980, Ser. No. 119,400
Int. Cl.³ B21D *53/36*
U.S. Cl. 72—187 **8 Claims**



1. The method of making connected flat clips for tying the necks of bags and the like comprising the steps of:

providing an elongated ribbon of generally flat metallic material,

bending said ribbon at spaced points along its length alternately in opposite directions to form a continuous length of generally sinusidal shaped similar connected elements, and

thereafter deforming the crests of the sinuoidal elements of said continuous length to generally trapezoidal shaped elements, whereby

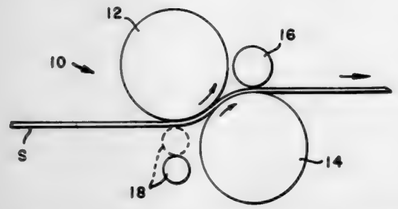
each of said trapezoidal elements may subsequently be separated from said length to provide a tie adapted to surround the neck of a bag or the like.

4,291,562

THREE ROLL TENSION STAND

Howard S. Orr, 2080 Outlook Dr., Pittsburgh, Pa. 15241

Filed Sep. 20, 1979, Ser. No. 77,310
Int. Cl.³ B21B *1/28, 39/08*
U.S. Cl. 72—205 **14 Claims**



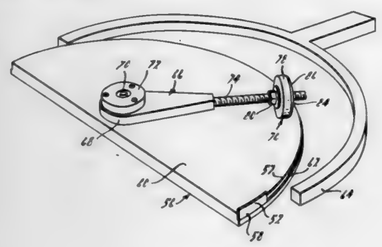
1. The method of reducing a metal workpiece at elevated temperatures to produce a strip like product which comprises feeding said workpiece to a first roll and wrapping it around a substantial arc thereof, positioning a second roll with respect to said first roll to provide a roll pass therewith at the exit end of said wrap around said first roll, positioning a third roll with respect to said second roll to provide a second roll pass to give the desired thickness of said strip like product, said workpiece engaging the surface of said second roll between said roll passes, the arc of wrap around each of said first and second rolls being less than 90°, rotating said second roll at a peripheral speed substantially greater than that of said first roll, and rotating said third roll at a peripheral speed at least as great as that of said second roll.

4,291,563

METHOD OF MAKING L-SEAL FOR GAS TURBINE REGENERATOR

John J. Lewakowski, and Theodore M. Ciagala, both of Warren, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 25, 1978, Ser. No. 954,509
Int. Cl.³ B21D *11/10*
U.S. Cl. 72—216 **2 Claims**



1. A method of forming a flat strip of material into a curved seal of L-shaped cross section suitable for use in a gas turbine regenerator comprising the steps of:

A. placing said strip flat against a substantially semicircular die and bending said strip to said desired curved configuration;

B. rigidly clamping a flat longitudinal portion of said strip against said die while leaving an adjacent portion of said strip standing free;

C. engaging a curved roller rotatably mounted adjacent a surface of said die proximate said free standing portion about an axis normal to the axis of said semicircular die with said free standing portion; and

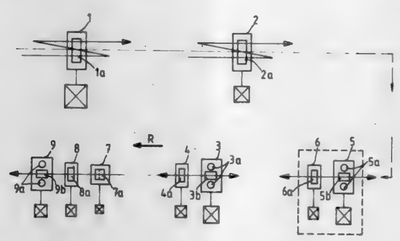
D. incrementally moving said roller radially and rotatively with respect to said die axis against said free standing portion to effect incremental forming of said free standing portion to make a curved concave leg portion defining an oblique angle with said clamped longitudinal portion.

4,291,564

METHOD OF AND APPARATUS FOR ROLLING SHEET STEEL PROFILES OF DIFFERENT CROSS-SECTIONAL SHAPE IN UNIVERSAL BEAM ROLLING MILL TRAINS

Heinz Muckli, Ratingen, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,381
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855287
Int. Cl.³ B21B *1/12*
U.S. Cl. 72—234 **11 Claims**



1. An improvement in a method of rolling steel sheet profiles of different cross-sectional shape in universal beam rolling mill trains wherein starting material is rolled in a two-high reversing ingot rolling mill, in a two-high reversing preliminary rolling mill, and in at least one universal rolling mill having an associated flange edging mill, rolling taking place in each instance by means of reversing operation and in plural sequences of passes, the material then being rolled to the final finishing profile in a following finishing rolling mill, the improvement comprising the following steps taking place continuously an unidirectionally:

initially preliminary bending the material profile to a starting shape with interlock joints and inner profiles;

shaping the interlock joints and the inner profiles suitably for the final profile; and

subsequently performing a final finishing pass in which the cross-section of the sheet profile is dimensioned and shaped to its final profile.

4,291,565

WIRE DRAWING DEVICE

Albert A. Saunders, Bellefonte, Pa., assignor to ASA Enterprises, Inc., Wis.

Filed Aug. 22, 1979, Ser. No. 68,788
Int. Cl.³ B21C *1/30*
U.S. Cl. 72—290 **11 Claims**

1. A device for drawing and feeding drawn wire intermittently to a wire consuming machine, said device comprising:

a support member for being fixedly mounted and having a bore,

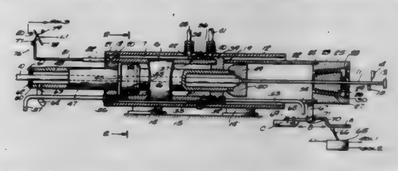
wire feeder means including a cylinder having axially spaced apart first and second pistons thereon, said pistons being jointly axially reciprocable in sliding sealing fashion in said bore, and a wire gripper supported from said first piston at a fixed distance therefrom, said feeder means being advanceable toward and retractable away from said consuming machine,

annular means surrounding said cylinder within said bore for defining isolated first and second air volumes, respectively, between said annular means and said first and second pistons, each of said volumes having a port communicating with it for admitting and exhausting air, respectively, on each side of said annular means,

wire drawing means including a third piston reciprocable under the influence of hydraulic fluid inside of said cylinder means and a piston rod on which said third piston is fixed, said rod extending axially through said cylinder in sliding sealing fashion and having an axial hole coextensive with its length to provide a path for undrawn wire stock, said hole being aligned with the part of the gripper which grips the wire during drawing, said cylinder having port means for admitting and exhausting hydraulic fluid, respectively, on each side of said third piston,

retaining means for a wire drawing die fixed at the end of said piston rod adjacent said first piston, a die in said means being operative to draw wire when being advanced in a direction away from said gripper and to engage with and feed wire when being retracted in a direction toward said gripper and consuming machine,

air control means having input means for pressurized air,



conduits for coupling said air control means to the respective ports communicating with the first and second air volumes in the cylinder of said feeder means,

said air control means responding to said feeder means being retracted away from said consuming means by supplying air pressure through one conduit to said first volume between said first piston and annular means and permitting air exhaust from said second volume through the other conduit when said feeder means is retracted to initiate advancement thereof and responsive to said feeder means being advanced by supplying air pressure through said other conduit to said second volume between said second piston and annular means and permitting air exhaust through said one conduit from said first volume when said feeder means is advanced to initiate retraction thereof,

said air control means being responsive to said feeder means being intermediate of retracted and advanced positions by discontinuing supplying air pressure to said first and second volumes when said feeder means has advanced and retracted a predetermined distance and to block exhaust of air from respectively alternate volumes for said air in said alternate volumes to undergo compression for decelerating said feeder means in a shock free manner at the end of its advancement and retraction strokes,

hydraulic fluid control means having input means for pressurized hydraulic fluid,

conduits for coupling said hydraulic fluid control means to the respective ports of said cylinder,

said hydraulic fluid control means responding to said feeder means having advanced by said predetermined distance by supplying fluid pressure to one side of said third piston to aid in advancing said piston and to produce a reverse reactive force on said feeder means while said feeder

means is being advanced by said air pressure to thereby cooperate with said feeder means in advancing drawn wire,

said hydraulic fluid control means responding to said feeder means having been advanced to a limit and subsequently retracted by applying fluid pressure to the other side of said third piston for said fluid pressure to move said third piston in said cylinder in the retraction direction of said feeder means and thereby draw said die over said undrawn wire stock while said drawn wire is held by said gripper.

4,291,566

METHOD OF AND APPARATUS FOR FORGING METAL

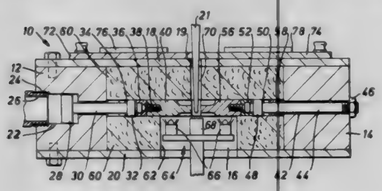
Raymond Dinsdale, Colne, England, assignor to Rolls-Royce Limited, London, England

Filed Sep. 10, 1979, Ser. No. 73,875

Claims priority, application United Kingdom, Sep. 16, 1978, 37111/78

Int. Cl.³ B21K *3/04*

U.S. Cl. 72—342 **10 Claims**



1. A method of heating only an extremity of a blade for a gas turbine engine made from a titanium material and then reforming the extremity including the steps of:

heating cooperating movable dies of a forge to a forging temperature for the titanium material of the blade;

then inserting the extremity of the blade through a close fitting heat shield to a position where only the extremity of the blade to be reformed is between the heated dies with the remainder of the blade being external of the heat shield;

applying a first pressure by the heated cooperating dies on the extremity of the blade to clamp the same therebetween and maintaining the clamping pressure of the dies on the extremity of the blade until heat is transferred from the dies only to the extremity of the blade and raises the temperature of the extremity of the blade to the forging temperature of the titanium material; and

after forging temperature for the titanium material of the blade has been reached in the extremity of the blade, then increasing pressure of the cooperating dies on the extremity of the blade to a forging pressure sufficient to achieve displacement of material at the extremity of the blade.

4,291,567

EASILY OPENABLE CONTAINER CLOSURE HAVING A SHELL AND A SEALING MEMBER, APPARATUS FOR PRODUCING THE SAME

Kashiwa Murayama, Fujisawa, Japan, assignor to Japan Crown Cork Co., Ltd., Tokyo, Japan

Division of Ser. No. 66,465, Aug. 13, 1979, Pat. No. 4,284,023, which is a division of Ser. No. 16,606, Mar. 1, 1979, Pat. No. 4,197,956. This application Aug. 25, 1980, Ser. No. 181,221

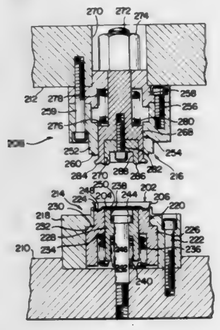
Int. Cl.³ B21D *22/00*

U.S. Cl. 72—347 **1 Claim**

1. A press-forming device for inclining a cylindrical skirt of a shell inwardly toward its free end and forming a curl at the free end, said shell including a circular top and the skirt, said device comprising a pair of support plates capable of relatively moving toward and away from each other, a first press tool assembly mounted on one of said support plates, and a second press tool assembly mounted on the other support plate, said first and second tool assemblies acting cooperatively and pressing said shell between them when said pair of support plates relatively more toward each other,

said first press tool assembly including a first tool fixed to one of said pair of the support plates and having an annular engaging surface facing inwardly in the radial direction and adapted to be engaged with at least a part of the outside surface of the skirt of the shell during press-forming, and a second tool having an engaging surface adapted to be engaged with at least a part of the outside surface of the top portion of the shell at a position inwardly of the annular engaging surface of the first tool in the radial direction during press-forming, said second tool being mounted on said one support plate of said pair slidably over a predetermined range in the direction of the relative movement of said pair of support plates and being elastically urged toward the other of said pair of supporting plates,

said second press tool assembly including a third tool fixed to said other support plate of said pair and having an annular engaging recess defined by an annular inside



surface facing outwardly in the radial direction, an annular outside surface facing inwardly in the radial direction and an annular bottom surface for forming a curl at the free end of the skirt upon engagement therewith during press-forming, and a fourth tool having an engaging surface adapted to be engaged with at least a part of the top of the shell during press-forming, said fourth tool being mounted on said other support plate of said pair slidably over a predetermined range in the direction of the relative movement of said pair of support plates and being elastically urged toward said one support plate of said pair,

said annular inside surface of said annular engaging recess of the third tool being positioned inwardly of the annular engaging surface of the first tool by a predetermined dimension larger than the thickness of the skirt of the shell, and the outer peripheral edge of said engaging surface of the fourth tool and its side surface following said peripheral edge being positioned substantially at the same position in the radial direction as the annular inside surface of the annular engaging recess of the third tool, or inwardly thereof.

4,291,568

METHOD OF FORMING SOCKET WRENCHES

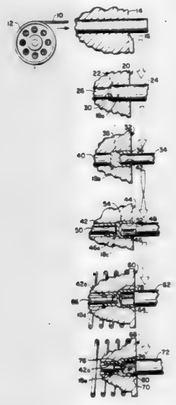
Vincent A. Stifano, Jr., Wethersfield, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Aug. 27, 1979, Ser. No. 70,060

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—356 **13 Claims**

1. A method of cold forming socket wrenches comprising the steps of providing a generally cylindrical solid metal workpiece, aligning the workpiece with an internal cavity of a die, driving the workpiece into the die cavity with a power operated punch and simultaneously forming a first recess in one end of the workpiece in aligned relation with its longitudinal axis by cold flowing its metal material between the punch and die, transferring the workpiece from the first die and longitudinally reversing the workpiece end to end into alignment with an internal cavity of a second die, driving the workpiece into the cavity of the second die with a second power operated punch and simultaneously forming a second recess in the opposite end



of the workpiece in coaxial alignment with its first recess by cold flow of the workpiece metal material about the second punch and the second die, and reducing the outside diameter of one end of the workpiece by driving it into a tapered die cavity and extruding the metal material of the workpiece between a third punch, received within the recess in said one end of the workpiece, and internal walls of the tapered die which are located in spaced surrounding relation to the third punch received within the recess in said one end of the workpiece.

4,291,569

HYDRAULIC PRESS

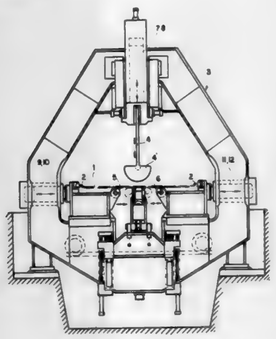
Hans-Joachin Breiding, Krefeld-Fischeln, and Manfred Bachen, Krefeld, both of Fed. Rep. of Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,267

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911901

Int. Cl.³ B21D *5/00*

U.S. Cl. 72—403 **8 Claims**



1. A hydraulic press assembly for forming U-shaped profiles in the production of pipe sections, comprising:

a supporting frame;

vertically reciprocatable press means carried by said frame for bending a rectangular plate during a first phase of a deformation process;

first horizontally reciprocatable press means on said frame;

second horizontally reciprocatable press means mounted on said frame and operating in a common plane with said first horizontally reciprocatable press means for coacting therewith in bending a plate during a second phase of a deformation process;

aligning means on said frame for centering a plate with respect to said press means prior to said first phase;

hydraulic drive means on said frame for actuating said press means, said drive means including a plurality of hydraulic cylinders for operating each horizontally reciprocatable press means;

electronic control means operatively connected to said drive means for sequencing the actuation of said press means; and

synchronization means on said frame for centering a plate with respect to said press means during said first and second phases, said synchronization means including position monitors engageable with a plate for detecting the position and orientation thereof, said control means being operatively connected to said synchronization means for selectively adjusting, via said drive means, the pressurization of said cylinders in response to signals from said monitors.

4,291,570

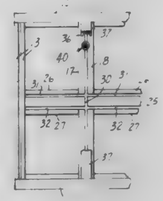
STRAIGHTENING APPARATUS FOR VEHICLE BODIES

Walter D. Whitney, 1420 Industrial Way, San Carlos, Calif. 94070

Filed Apr. 30, 1979, Ser. No. 34,442

Int. Cl.³ B21D *11/22*

U.S. Cl. 72—447 **5 Claims**



1. Apparatus for straightening vehicle bodies and frames comprising:

a generally rectangular vehicle support,

said support including a pair of relatively heavy longitudinally extending strength members and a pair of transversely extending strength members,

the members of each of said pairs being spaced apart horizontally to define a slot therebetween with said slots in communication with each other at the intersection of said longitudinal and transverse pairs to define a passageway having two runs in intersecting and communicating relationship, and

a hanger extending vertically within said passageway and adapted to slide at its upper end on said strength members to any point in said passageway.

4,291,571

FORGING PRESS

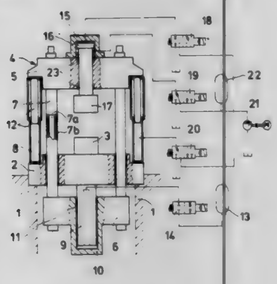
Paul O. Claussen, Willich, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,339

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852303

Int. Cl.³ B21J *9/12*

U.S. Cl. 72—453.18 **5 Claims**



1. A forging press having

a fixed cross head,

a die carrier on the fixed cross head, for a lower die,

a movable press frame comprising a top cross head above and a bottom cross head below the fixed cross head, and tie beams connecting the top and bottom cross heads,

vertically extending guides through the fixed cross head for guiding the tie beams so that the top cross head of the press frame is moved towards and away from the fixed cross head when the press frame is moved,

a first piston/cylinder unit arranged between the fixed cross head and the bottom cross head,

a source of low pressure fluid connected to the first piston/-cylinder unit via a closable valve, for moving the press frame relative to the fixed cross head,

a second piston/cylinder unit associated with the top cross head,

means for retracting the piston of said second unit,

a die carrier for an upper die on one end of the piston of said second unit,

means for operating said second unit to carry out a forging operation,

retraction piston/cylinder units arranged between the top cross head and the fixed cross head, and

a source of high pressure fluid connected to the retraction piston/cylinder units,

said retraction units being arranged to operate in opposition to said first unit, when the valve of the fluid source for said first unit is closed, to hold the frame stationary while a forging operation is being carried out.

4,291,572

METHOD AND SYSTEM FOR CONTROLLING THE TEMPERATURE OF A HEAT MEASURING SENSOR ESPECIALLY IN MOTOR VEHICLES

Helmut Maurer, Schwieberdingen; Gerhard Dillman, Markgröningen; Franz Rieger, Aalen-Wasseralfingen, and Ernst Linder, Mühlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 924,407, Jul. 13, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,922

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2731541

Int. Cl.³ G01N *27/12*

U.S. Cl. 73—23 **10 Claims**

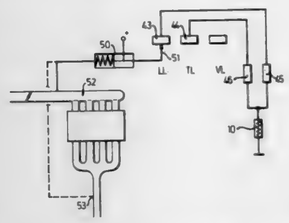
1. A temperature control for a measuring sensor located in the exhaust gas line of an internal combustion engine of an automotive vehicle comprising:

a measuring means,

a heating element for controlling the temperature of said measuring means;

a plurality of control mechanisms including said measuring means for measuring a control quantity and being selectively coupled in series with said heating element for determining at least three ranges including a variable heating performance at least at idling range and at partial-load range;

means selecting one of said plurality of said control mechanisms including said measuring means, said selecting means selecting a selected characteristic operating quantity of said engine load including air flow rate measurement connecting one of said selected control mechanisms to said heating element for controlling the variable heat output of said heating element according to the measured quantity in at least two of said ranges, said automotive vehicle including a throttle valve rotatably fixed to move in an arc by a vehicle operator;



means responsive to the position of said throttle valve to provide a stepped signal output; and

means for receiving said stepped signal output to vary the heat output of said heating element.

4,291,573

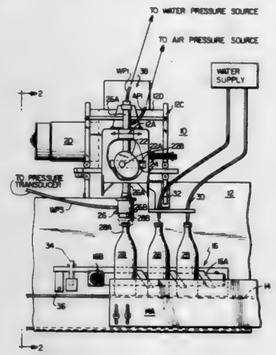
REJECT SYSTEM FOR IN-LINE PRESSURE TESTING SYSTEMS

Simon J. Richter, Marietta, Ga., and Michael Sanscharowskiy, Horseheads, N.Y., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 28, 1978, Ser. No. 973,918

Int. Cl.³ G01M *3/32*

U.S. Cl. 73—37 **23 Claims**



1. Means for testing the integrity of each of a series of liquid filled—liquid tight containers being conveyed in a uniformly spaced and timed sequence past a testing station comprising:

a machine frame defining a test location;

conveyor means on said machine frame for conveying said containers in a uniformly spaced sequence past said test location in continuous motion;

a source of fluid pressure;

hydrostatic pressure head means sealably engaging said containers and applying pressure from said fluid pressure source to the interior of each of said containers during translation thereof through said test location for a corresponding test interval;

pressure sensing transducer means connected with said pressure head means providing an output signal of a magnitude corresponding to said pressure applied to said container during each said test interval;

threshold detecting means responsive to said output signal for providing a control signal output in response to a predetermined threshold value of said output signal;

enabling means responsive to said control signal output for assuming at least first and second states in response to the occurrence and non-occurrence, respectively, of said control signal;

a source of operating power;

interrogate timing means interconnected with said source of operating power and said enabling means for cyclically applying operating power to said enabling means in coordination with the application of pressure to each of said containers at said test location and commencing at a given time in each said test interval and continuing for a predetermined interrogation duration;

reject cycle timing means responsive to one of said states of said enabling means and said interrogate timing means for enabling a reject cycle for a predetermined enabling duration occurring at a time subsequent to a corresponding test interval;

reject apparatus control means responsive to said reject cycle timing means for initiating and terminating said reject cycle over a reject cycle duration at least as great as and concurrently initiated with the enabling duration of said reject cycle timing means; and

reject apparatus means actuated by said reject apparatus control means and located downstream of said test station for clearing said conveyor of a said container or any part thereof which occasioned the last prior enablement of said reject cycle timing means.

4,291,574

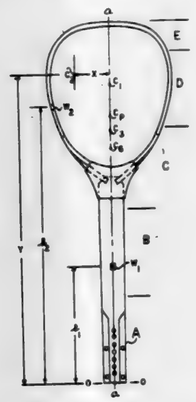
TENNIS RACKET

Jack L. Frolow, 2 Willow Dr., Apt. 3B, Ocean, N.J. 07712

Division of Ser. No. 646,848, Jan. 5, 1976, Pat. No. 4,165,071. This application Mar. 26, 1979, Ser. No. 23,761

Int. Cl.³ G01M *1/12*; A13B *49/04*

U.S. Cl. 73—65 **22 Claims**



1. A method of rating a racket having a predetermined striking power, said racket having at least a head portion and a grip portion; a first axis through the center of said head portion and through the center of said grip portion; a second axis perpendicular to said first axis being located near the end of said grip portion; said racket having a moment of inertia about said second axis, said moment of inertia having a numerical value I_s, said numerical value I_s being determined by said predetermined striking power; said racket having a weight W; said racket having a center of gravity located at a distance Cg from said second axis; said racket having a center of percussion located at a distance Cp from said second axis, said center of percussion being taken about said second axis; said numerical value I_s being directly proportional to the product of said distance Cp, said distance Cg, and said weight W given by the formula $I_s=(Cp)(Cg)(W)$; said method comprising measuring said distance Cg; measuring said distance Cp; measuring said weight W; adjusting the distribution of said weight W along the length of said racket, thereby adjusting said distance Cp and said distance Cg, and adjusting the said weight W to obtain said numerical value I_s and thereby obtain said predetermined striking power.

4,291,575

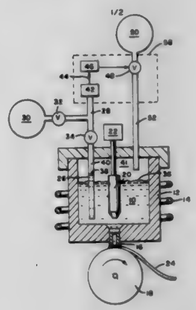
LIQUID LEVEL MONITOR

Anthony P. Frissora, Mendham, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 27, 1979, Ser. No. 52,367

Int. Cl.³ G01F *23/14*

U.S. Cl. 73—302 **12 Claims**



1. A method for monitoring the level of a liquid in a reservoir utilizing apparatus that includes an open-ended tube having one end in pneumatic communication with a differential pressure transducer, comprising:

(a) immersing the open end of said tube in said liquid;

(b) adjusting a reference quantity of inert gas within said tube after immersion of said open end and then isolating said gas within said tube to produce a static-tube configuration thereof; and

(c) determining the level of said liquid by comparing the output of said transducer with a reference value, as said output varies with variations in said level.

4,291,576

ELECTRICAL TEMPERATURE SENSING MEANS HAVING MOISTURE TIGHT SEALS

Kenneth E. Deane, Beech Grove, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jan. 21, 1980, Ser. No. 113,587

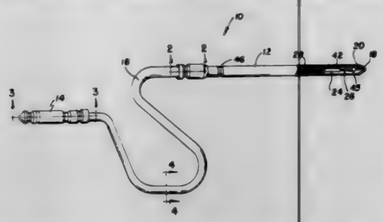
Int. Cl.³ G01K *1/08*

U.S. Cl. 73—352 **7 Claims**

1. In a temperature sensing means wherein a sensing element is carried by a probe and is electrically connected to an electrical plug through electrical connectors carried within a flexible cable,

(a) first and second moisture sealing joints formed between said cable and said probe and said cable and said electrical plug, respectively,

(b) an electrically insulative medium extending from an



outer surface of and molded into a space in said plug to prevent short circuiting of electrical conductors carried therein, and

(c) a ring carried within said space of said plug providing a moisture seal with said electrically insulative medium.

4,291,577

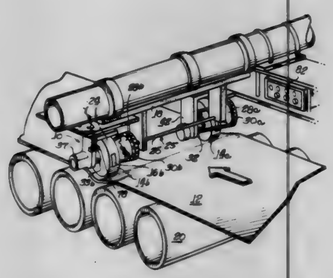
ON LINE ULTRASONIC VELOCITY GAUGE

Gary A. Baum, and Charles C. Habeger, both of Appleton, Wis., assignors to The Institute of Paper Chemistry, Appleton, Wis.

Filed Dec. 3, 1979, Ser. No. 99,410

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—597 **21 Claims**



1. A device for measuring ultrasound velocities through a moving web comprising:

a first rotating wheel having a peripheral surface for continuous surface contact with a moving web;

an ultrasound transmitting means for converting an electrical signal to ultrasonic waves which propagate through the web and located in said first wheel in position to contact the web;

a firing means for sending an electrical signal to said transmitting means when said transmitting means contacts the web;

a second rotating wheel spaced apart from said first wheel having a peripheral surface for continuous surface contact with the web;

a receiving means for converting ultrasonic waves to an electrical signal and located in said second wheel to contact the web on each revolution to receive ultrasonic waves from said transmitting means and produce therefrom an electrical signal;

filtering means receiving said electrical signal;

amplifying means receiving the filtered electrical signal and disposed in said second wheel;

and a time metering means to measure the time of travel of the ultrasonic waves between said first wheel and said second wheel.

4,291,578

APPARATUS FOR ULTRASONIC SCANNING OF OBJECTS

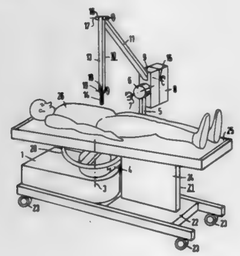
Walter Hetz, and Walter Derndinger, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,700

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826277

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—633 **19 Claims**



1. Apparatus for ultrasonic scanning of objects, in particular, the human body, comprising a floor stand having a central vertical axis, an ultrasonic scan head, an articulated arm assembly carrying the scan head, an object support for supporting an object to be scanned, the scan head being operative to effect scanning along certain scanning path configurations based on alignment of the articulated arm assembly with the central vertical axis, an extension arm (**4**) supporting the articulated arm assembly (**10**) and being coupled to the floor stand (**1**), said extension arm being rotatable about said vertical central axis (**3**) which passes through said floor stand, and said object support (**25**) being arranged above the floor stand (**1**) and above the extension arm (**4**) such that the extension arm is capable of being swung horizontally beneath said support with the central vertical axis being in alignment with the object support and defining an isocenter for the certain scanning path configurations of the scan head, the extension arm (**4**) comprising a rotary-parallel motion converter said motion converter comprising a parallelogram arm (**32**).

4,291,579

INSPECTION DEVICE

Dietgar Figlhuber; Johannes Gallwas, both of Erlangen; Robert Weber, Uttenreuth, and Jakob Weber, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

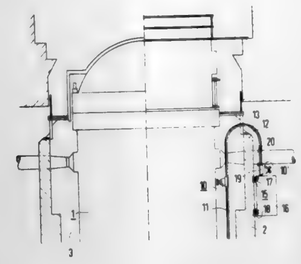
Filed Jul. 18, 1979, Ser. No. 58,423

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834108

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—636 **8 Claims**

1. Inspection device for testing vessels surrounded by a wall having an inner and an outer surface comprising a movable testing device and a track for guiding said testing device, said guiding track extending from a portion disposed in the vicinity of the vessel between the wall and the vessel, through a U-



shaped portion passing over the wall and ending at a rest position for said testing device on the outer surface of the wall.

4,291,580

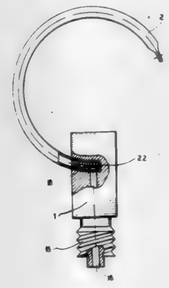
MANOMETER BODY

Yanko P. Kyuchukov, and Bojidar M. Srebrov, both of Varna, Bulgaria, assignors to ZM "Cherno More", Varna, Bulgaria

Filed Mar. 23, 1978, Ser. No. 889,394

Int. Cl.³ G01L *7/04*

U.S. Cl. 73—741 **1 Claim**



1. A manometer body adapted to receive an arcuate Bourdon tube and capable of being soldered thereto, comprising an elongated prismatic solid member formed at one axial end with a threaded fitting provided with a passage for connecting said body to a source of fluid whose pressure is to be measured, said member being formed within said body with an arcuate bore of generally elliptical cross section having the curvature of said Bourdon tube and communicating with said passage within said member and opening at a face of said member, said member being formed in one piece with an arcuate core of generally elliptical cross section and of the same curvature as said bore and said tube and extending within said bore to said face and ending at the plane thereof whereby said core has all around clearance of uniform crosssection from the remainder of said member in the region of said face, said core being provided with an arcuate hole of the same curvature as that of said core and said bore communicating with said passage, said hole having a generally elliptical cross section.

4,291,581

MONITORING EARTH/ROCK MOVEMENTS

Charles H. Jacoby, 959 E. Driftwood Dr., Tempe, Ariz. 85283

Filed May 1, 1980, Ser. No. 145,429

Int. Cl.³ G01N *33/24*

U.S. Cl. 73—784 **10 Claims**

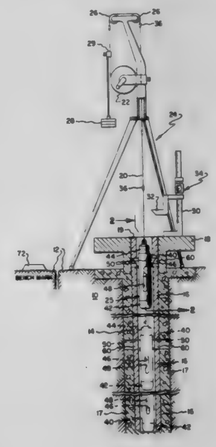
1. The method for monitoring from the earth's surface subterranean strata in situ conditions, to detect interim relative movements thereof, including the steps of:

forming a bore hole from the surface into said strata;

installing in said bore hole a casing system based on the mouth of said bore hole comprising a plurality of separate casing members disposed in said bore hole in longitudinally spaced apart relation so as to provide open window spaces therebetween;

bonding independently of one another said casing members to their corresponding strata sections;

then passing from time to time a torpedo by means of a calibrated line through said bore hole, said torpedo having pawl means automatically extendible outside of the out-



side profile thereof whenever said torpedo is lowered to such locations as to permit said pawl means to extend into intercepting relation with the window spaces between said casing members;

intermediately thereof retracting said torpedo lowering line after each pawl means extending operation, thus bringing said pawl means into firm contact holding relation with the leading end of the preceding casing member, and

concurrently reading the surveyed positions of the monitored strata sections directly from said torpedo suspension line, whereby the positions to which said separate casing members and their corresponding strata sections may have shifted in the meantime relative to one another may be monitored.

4,291,582

MASS RATE OF FLOW METER WITH PHASE SHIFT COMPENSATION

Colby E. Buzzell, Wilmington, and Malcolm H. Allen, Jr., Melrose, both of Mass., assignors to General Electric Company, Wilmington, Mass.

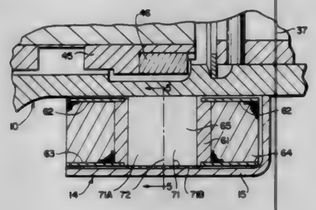
Filed Oct. 12, 1979, Ser. No. 84,398

Int. Cl.³ G01F *1/80*

U.S. Cl. 73—861.35 **12 Claims**

1. In a mass rate of flow meter including a housing means for defining a passage for a fluid, swirl generator means, unrestrained rotor means and restrained turbine means axially displaced along a first longitudinal axis extending (through) along the housing means, first sensing means including magnetic means at a predetermined point on the rotor means and magnetic flux sensing means located on said housing for producing a first pulse when said magnetic means comes into flux exchange relationship with said magnetic flux sensing means and second sensing means for detecting the passage of another predetermined point on the rotor means past a predetermined point on the turbine means, including a further magnetic means

and a further magnetic flux sensing means for producing a second pulse when the magnetic means in said second sensing means comes into flux exchange relationship with said further flux sensing means, the interval between said first and second pulses being a measure of the mass rate of fluid flow, the improvement comprising means for compensating for any phase shift in said second pulse due to eddy currents in said housing



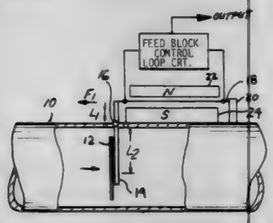
when the magnetic means in said sensing means comes into flux exchange relationship with said further magnetic flux sensing means including, means for shifting the phase of said first pulse by an amount equal to any eddy current induced phase shift in said second pulse including an electrically shorted turn associated with the magnetic flux sensing means in said first sensing means.

4,291,583

DRAG FLOW METER

James W. Bulke, West Bloomfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 1, 1979, Ser. No. 80,862
Int. Cl.³ G01F *1/28*
U.S. Cl. 73—861.75 **2 Claims**



1. A fluid flow meter for generating a linearly varying output signal having a linear variation with respect to the flow of the fluid, said meter comprising:

a conduit having a passage through which a fluid flows;

drag body means having an arm extending through the wall of said conduit and pivotally connected thereto, a drag body connected at one end of said arm and positioned transverse to the direction of the flow of the fluid, said arm pivoting in response to the flow of the fluid against said drag body;

a vibrating wire sensor having a tension wire operatively connected to the other end of said arm and responsive to the pivotal motion of said arm for varying both the longitudinal tension in said wire and the frequency of vibration of said wire;

said wire and said drag body means being fabricated from materials having matching coefficients of expansion; and

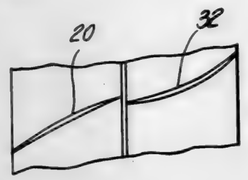
electrical signal generating means responsive to the frequency of vibration of said wire sensor and operable for generating an electrical signal varying linearly with respect to the flow of fluid against said drag body.

4,291,584

STALLED TURBINE FLOW METER

Eric G. Anderson, Rochester, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 22, 1979, Ser. No. 86,912
Int. Cl.³ G01F *1/28*
U.S. Cl. 73—861.72 **1 Claim**



1. A stalled turbine flow meter comprising:

a housing having an internal bore defining a fluid flow passage;

a turbine rotor;

means mounting said turbine rotor within said housing, said turbine rotor including at least one turbine blade configured to receive a portion of fluid flowing through said passage and to impose an angular momentum change on fluid flowing through said passage and over said at least one turbine blade developing a reaction force thereon;

bias means allowing predetermined angular displacement of said turbine rotor in response to development of said reaction force for biasing said turbine rotor against said angular displacement in response to development of said reaction force;

means varying the proportion of fluid flow directed over said at least one turbine blade with changing rates of fluid flow in said flow passage, including at least one shielding stator blade fixedly mounted within said fluid flow passage and disposed angularly offset from said at least one turbine rotor blade positioned such that said turbine rotor blade is advanced into alignment with said stator blade with increasing fluid flow and causing a lesser rate of increase in said reaction force resulting from increases in fluid flow; and

means producing an output signal corresponding to said reaction force on said turbine rotor and said signal varying in a linear relationship with fluid flow.

4,291,585

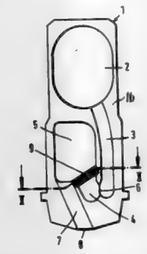
DEVICE FOR SAMPLING MOLTEN STEEL

Gustav Kolb, Garbeck, and Friedrich Bardenheuer, Krefeld, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf and Gustav Kolb, Garbeck, both of, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,450
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840745
The portion of the term of this patent subsequent to Apr. 16, 1996, has been disclaimed.
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—863.23 **3 Claims**

1. Device for sampling molten metal including a body containing a mold cavity and duct means leading from an opening in the body to the mold cavity, the duct means including a first duct connected to the mold cavity, a mixing chamber connected to the first duct and a second duct extending between

said opening and the mixing chamber, the improvement comprising a ceramic sieve in the first duct for preventing slag



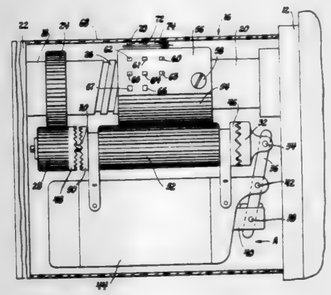
particles from passing through while retaining small slag droplets by adhesion.

4,291,586

SHIFT CONTROL MECHANISM FOR A COUNTERSHAFT TRANSMISSION

Earl H. Buetemeister, Alexandria, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1980, Ser. No. 122,471
Int. Cl.³ B60K *20/10, 20/12*; F16H *1/18, 1/20*
U.S. Cl. 74—335 **3 Claims**



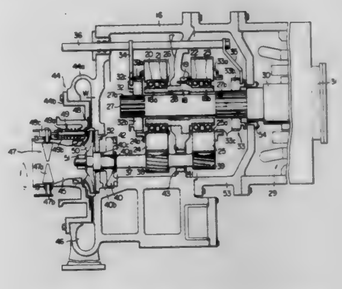
1. A control mechanism for a countershaft transmission shift control wherein the basic shift pattern is in the form of an "H" or a modified "H", said control mechanism comprising; a source of rotary input motion including an input shaft having an input gear member and a screw threaded portion; an output member including a nut threaded portion threadably drivingly connected to said screw threaded portion and an output gear member; first and second transfer gear means meshing with said input and output gear members respectively; and control means including a pair of selectively operated solenoid controlled jaw clutch assemblies for respectively connecting said first and second transfer gear means for unitary rotation and holding said second transfer gear means stationary, said output member moving linearly along the threaded connection to form the cross member of the shift control "H" pattern when said second transfer gear means is held stationary and said output member being rotated in unison with said input member to form the upstanding legs of the shift control "H" pattern when the first and second transfer gear means are rotated in unison.

4,291,587

MULTISTAGE SPEED CHANGE GEAR SYSTEM

Keiji Tachibana, Tokyo; Masatosi Terasaki; Yoshihiko Nakayama, both of Shimoinayoshi, and Junichi Kaneko, Amimachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,362
Claims priority, application Japan, Jul. 17, 1978, 53/86100
Int. Cl.³ F16H *3/08*
U.S. Cl. 74—363 **16 Claims**



1. A multistage change gear system comprising:

a gear box;

at least one support means fixedly supported by said gear box, said support means including a cylindrical portion;

a bearing mounted on an inner side of said cylindrical portion of said support means;

roller bearings mounted on an outer side of said cylindrical portion of said support means, said roller bearings being at least two in number;

a first shaft rotatably journalled by said gear box through further bearings;

a second shaft rotatably journalled by said bearing mounted on the inner side of said cylindrical portion of said support means;

first gears connected to said first shaft, said first gears being at least two in number;

second gears rotatably supported by said roller bearings mounted on the outer side of said cylindrical portion of said support means, said second gears being at least two in number and adapted to mesh with said first gears; and

clutch means operative to selectively bring one of said second gears into and out of engagement with said second shaft.

4,291,588

TRANSMISSION

Orien N. Justice, Dallas, Tex., assignor to CamAct Pump Corp., Dallas, Tex.

Division of Ser. No. 747,884, Dec. 6, 1976, Pat. No. 4,145,166.
This application Jan. 23, 1979, Ser. No. 5,845
Int. Cl.³ F16H *1/20*
U.S. Cl. 74—421 R **3 Claims**

1. A transmission comprising:

a housing;

input and output shafts mounted for rotation in said housing axially thereof, said shafts being axially aligned with each other and rotatively interconnected at their abutting ends, said shaft ends being mutually supportive against displacement of both relative axial position and shaft alignment to thereby reduce stress and vibration;

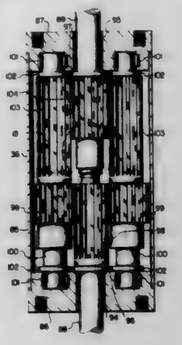
said input and output shafts each having a pinion mounted thereon for rotation therewith;

a pair of idler shafts mounted for rotation in said housing on opposite sides of said input and output shafts;

each of aid idler shafts carrying a pair of gears, each of said gears being meshed with a pinion;

and an electrical conduit protective tube running lengthwise through said housing for protecting an electrical conduit

delivering power from a source located away from one end of said transmission to an electric motor connected to



the other end of said transmission, said tubing being angularly offset from said idler shafts.

4,291,589

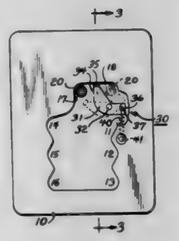
SHIFTING LEVER BRAKES OFF RESTRICTION LATCH

Edward Highland, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Nov. 19, 1979, Ser. No. 95,162

Int. Cl.³ G05G *5/06*; F16D *67/00*

U.S. Cl. 74—526 **2 Claims**



1. A safety device for use with the transmission gear shift levers of a vehicle to prevent inadvertent placement of a transmission gear shift lever into one of the positions in the gear shift pattern comprising

latching means comprising a bell crank having a first arm thereof forming a barrier member and a second arm thereof forming a biasing member, said bell crank being pivotably supported about an axis disposed substantially perpendicular to the plane of said gear shift pattern at the juncture of said first and second arms adjacent to the gear shift pattern of a vehicle,

said first arm barrier member having a latch portion extending co-planar to said second arm biasing member for being urged to a position to physically isolate one position of the transmission gear shift pattern and prevent movement by the transmission shift lever into said position,

said first arm barrier member of said bell crank latching means further includes a manually operable release means extending upwardly from and substantially perpendicular to said latch portion to selectively move said latch portion of said first arm barrier member from said isolation position to an open position to permit the transmission gear shift lever to enter or leave said isolated position, and

spring means secured to a free end of said second arm biasing member to bias said latch portion of said first arm barrier member into a position physically isolating the one position of the transmission gear shift pattern.

4,291,590

MECHANISM FOR MOUNTING SIDE MIRRORS TO THE MASTER CYLINDER FOR MOTOR BICYCLES

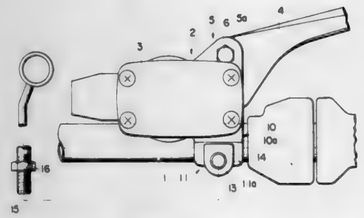
Yoshinobu Mizusaki, Ueda, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Jul. 20, 1979, Ser. No. 59,566

Claims priority, application Japan, Jul. 28, 1978, 53-103980[U]

Int. Cl.³ B60R *1/12*

U.S. Cl. 74—551.8 **2 Claims**



1. A side mirror-mounting mechanism for mounting a brake master cylinder and a side mirror to a motorcycle handle bar wherein said master cylinder comprises a body having a handle mounting portion adapted to mount on said handle bar and embrace the same between an upper arm and a lower arm defining a semi-circular handle bar gripping surface therebetween, said mechanism comprising a handle mounting member which comprises an upper arm and a lower arm defining a semi-circular handle bar gripping surface therebetween and adapted to mate with said first-mentioned arms while embracing said handle bar therebetween, and means integral with said handle mounting member for mounting said mirror thereto at least partially sideward of above said handle bar. pg,8

4,291,591

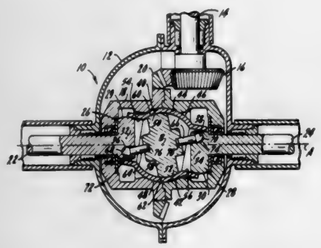
DOUBLE-SHUTTLE MOTION TRANSMITTING APPARATUS

Louis Ross, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 21, 1979, Ser. No. 22,680

Int. Cl.³ F16H *35/04, 21/14*

U.S. Cl. 74—650 **10 Claims**



1. Motion transmitting apparatus comprising first and second shaft members rotatable on a first axis, a case member having a second axis perpendicular to said first axis, and first and second shuttle members journalled in said case member for opposite oscillation about and reciprocation on said second axis, said first and second shaft members respectively defining first and second discs at their inner ends, said discs being eccentric to said first axis, and said first and second shuttle members engaging said discs for establishing driving relationships therewith.

4,291,592

LOAD SPLITTING HYDROMECHANICAL TRANSMISSION

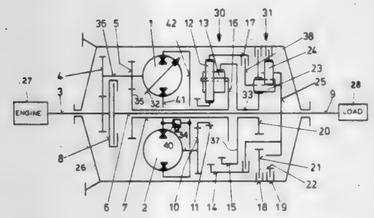
Michael Meyerle, Meckenbeuren-Lochbrücke, and Friedrich Ehrlinger, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 6, 1978, Ser. No. 967,006

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758659

Int. Cl.³ F16H *47/04*

U.S. Cl. 74—687 **7 Claims**



1. A hydromechanical drive comprising:

an input shaft drivable by a prime mover;

an output shaft connectable to a load;

a hydrostatic transmission having an input side connected to said input shaft and an output side and comprising a pair of hydraulically interconnected hydraulic machines one of which is of variable volume to vary the transmission ratio between said input and output sides;

a gear-type summing transmission having one input element connected to said output side of said hydrostatic transmission, another input element connected mechanically to said input shaft, and a pair of output elements;

an output transmission having at least one output element mechanically connected to said output shaft and a pair of input elements; and

control means connected to said output transmission and the elements thereof and connectable to said output elements of said summing transmission for operating said output element of said output transmission through one of said input elements of said output transmission and one of said output elements of said summing transmission in a first position and for operating said output element of said output transmission through the other of said input elements of said output transmission and the other of said output elements of said summing transmission in a second position.

4,291,593

TORQUE REDUCTION UNIT HAVING SMALL BEVEL GEARS, PARTICULARLY FOR THE OPERATION OF ROLLING SHUTTERS

Vincenzo Santambrogio, Cernusco sul Naviglio, Italy, assignor to IMBAC S.p.A., Milan, Italy

Filed Feb. 21, 1979, Ser. No. 13,480

Claims priority, application Italy, Dec. 20, 1978, 31057 A/78

Int. Cl.³ F16H *1/30, 1/20*; E06B *9/20*

U.S. Cl. 74—799 **2 Claims**

1. A compact torque reduction unit for rolling shutters or blinds comprising:

a stationary box;

a first crown gear fixed to said stationary box;

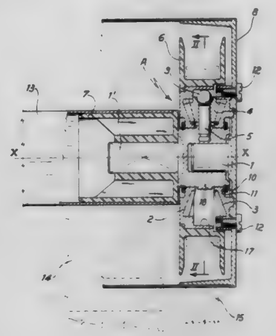
A pulley rotatable about an axis, said pulley including a radially outer circumferential surface adapted to guide a drive element;

a second crown gear fixed to said pulley;

at least three bevel gears engaged between said crown gears;

a central hub rotatable about said axis and fixed to a drum of said shutters or blinds;

a radial pin for each of said bevel gears, connected between said hub and a respective bevel gear; and



ball bearing means seated in a radially outer portion of each of said bevel gears and engageable with an axially extending bearing surface of said pulley,

whereby radial forces imparted upon said unit by said drive element are transmitted to said drum and said stationary box via said ball bearing.

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METHOD OF VEHICLE ENGINE CONTROL

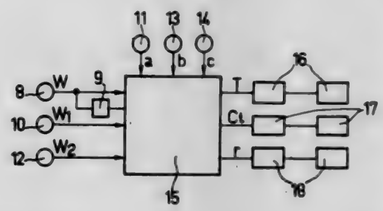
Patrice Baudoin, Bougival, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 31, 1978, Ser. No. 891,995

Claims priority, application France, Mar. 31, 1977, 77 09799

Int. Cl.³ B60K *41/14, 41/22, 41/24*

U.S. Cl. 74—857 **10 Claims**



1. A method of regulation of a motor-drive unit for a motor vehicle which comprises a heat-engine and a transmission having a continuously variable transmission ratio, said method comprising:

during steady operation (a) controlling the heat-engine fuel feed as a function of the two variables which consist of (i) the displacement of the accelerator pedal of the vehicle and (ii) the speed of rotation of the heat-engine, to cause the power delivered by the heat-engine to be as near as possible to the power required which corresponds with the displacement of the accelerator pedal, and (b) controlling the transmission ratio to cause the speed of rotation of the heat-engine to tend to approach an ideal speed which depends upon said required power and is predetermined for operation of the motor- drive unit, which is optimalised in accordance with a chosen criterion; and

during transient operation (a) modifying the power delivered by the heat-engine as a function of the displacement of the accelerator pedal to be as near as possible to said required power, and (b) thereafter controlling the transmission ratio without changing the modified power so that said speed of rotation tends to approach said ideal speed.

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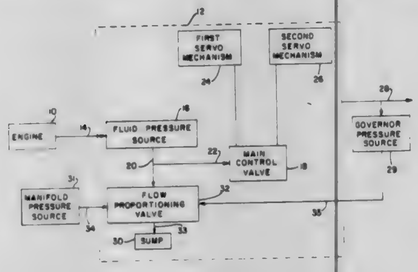
GAS SAVING TRANSMISSION

Svetozar Jelaca, Los Angeles, Calif., assignor to George Luburich, Arlington Heights, Ill., a part interest

Continuation-in-part of Ser. No. 894,484, Apr. 10, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,887

Int. Cl.³ B60K *41/16*

U.S. Cl. 74—863 **8 Claims**



1. A control system for a transmission having an input shaft, an output shaft, a fluid pressure source driven by said input shaft, and a plurality of fluid pressure responsive servo members for determining the drive condition of the transmission, said control system including flow proportioning valve means disposed between said fluid pressure source and said servo members and in communication with a manifold pressure source and a sump, operative to vary the fluid flow from said fluid pressure source between said servo members and said sump in relation to said manifold pressure, said flow from said pressure source to said servo members increasing as manifold vacuum pressure decreases, and means for providing a governor pressure which varies directly with the rotational speed of said output shaft and means connecting said governor pressure to said flow proportioning valve means whereby, when said output shaft has reached a predetermined rotational speed, said governor pressure overrides the effect of said manifold vacuum pressure to allow substantially all of said fluid pressure to be directed from said fluid pressure source to said servo members.

4,291,596

FLOW REGULATOR VALVE IN HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

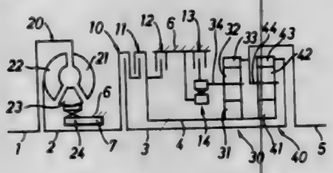
Shiro Sakakibara, Toyokawa, Japan, assignor to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

Filed Jan. 5, 1979, Ser. No. 1,273

Claims priority, application Japan, Jan. 10, 1978, 53-1375

Int. Cl.³ B60K *41/06, 41/10*

U.S. Cl. 74—867 **4 Claims**



1. In a hydraulic control system for an automatic transmission having an input shaft adapted to be driven by an engine, an output shaft adapted to drive the vehicle, a change-speed gearing including low and high range frictional engagement mechanisms for respectively completing low and high speed ratio power trains between said input and output shafts, said hydraulic control system comprising a fluid reservoir, a source of line pressure, a first fluid passage in communication with said pressure source, a second fluid passage in communication with said low range frictional engagement mechanism, a third fluid passage in communication with said high range frictional engagement mechanism, a throttle valve connected to said pressure source for producing throttle pressure in accordance with depression of an accelerator pedal, a governor valve connected to said pressure source and driven by said output shaft for producing governor pressure in accordance with rotational speed of said output shaft, and a shift valve responsive to the governor pressure and the throttle pressure for respectively connecting said second and third fluid passages to said first fluid passage and said reservoir when the governor pressure is lower than the throttle pressure and for respectively connecting said second and third fluid passages to said reservoir and said first fluid passage when the governor pressure increases higher than the throttle pressure,

the improvement comprising a flow regulator valve disposed within said second fluid passage and responsive to the governor pressure via a fourth fluid passage connected between said governor valve and said regulator valve to control the flow of fluid from said pressure source to said low range frictional engagement mechanism in accordance with the governor pressure.

4,291,597

CORK EXTRACTOR

Herbert Allen, Houston, Tex., assignor to Hallen Company, Houston, Tex.

Continuation-in-part of Ser. No. 925,365, Jul. 17, 1978. This application Mar. 5, 1979, Ser. No. 17,598

Int. Cl.³ B67B *7/00*

U.S. Cl. 81—3.48 **7 Claims**



1. Cork extracting apparatus including a helical corkscrew comprising a central body and an outer layer of friction reducing polymeric material on at least a portion of the downwardly facing surfaces of said central body.

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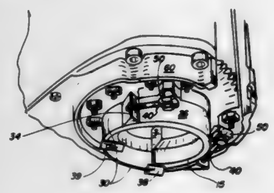
BRAKE APPARATUS FOR POWER WRENCH

Gary D. Cherry, Houma, La., assignor to Sladco, Inc., Eunice, La.

Filed Aug. 20, 1979, Ser. No. 67,887

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—57.15 **8 Claims**



1. A power tong brake apparatus comprising:

a. a power tong having a tong housing and at least an inner jaw carrier;

b. a brake body, said brake body being of rounded construction and having a throat portion which allows the entry of drill pipe, to be assembled or disassembled by the power tong, to be placed at the inner portion of said brake body, said brake body comprising:

i. a generally circular flange having a plurality of attachment openings spaced about the periphery thereof, said flange being fittable against the jaw carrier portion of said power tong and being attached thereto during operation;

ii. a cylindrical exposed brake drum projecting externally of said housing and providing a curved outwardly facing braking surface;

iii. a generally circular transitional section connecting said mounting flange and said brake drum;

c. a plurality of threaded bolts inserted respectively through said plurality of openings in said mounting flange and connecting by threading into the lower end of said jaw carrier;

d. a brake shoe attached during operation to said power tong housing adjacent said brake surface, said brake shoe surrounding said body and providing a frictional lining surface facing inwardly which registers with and frictionally contacts during operation at least a portion of said brake body at said braking surface;

e. tensioner means associated with said brake shoe and said power tong housing for adjusting clearance between said brake shoe and said brake body.

4,291,599

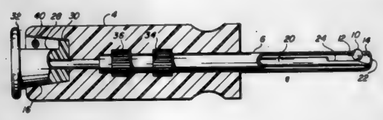
KEY FOR DRIVING TAMPER-PROOF BOLT

John R. Heckrotte, Sr., Phoenix, Ariz., assignor to Morlock Corporation, Phoenix, Ariz.

Filed Dec. 10, 1979, Ser. No. 101,821

Int. Cl.³ B25B *15/00*

U.S. Cl. 81—444 **6 Claims**



1. An improved key for driving tamper-proof bolts, the key including a tubular sleeve having a transverse aperture at a first end thereof, a plunger rod axially slidable within said tubular sleeve, said plunger rod having a camming surface at a first end thereof and having a longitudinal axis, ball means captively held by said tubular sleeve adjacent the transverse aperture, said ball means being cammed into the aperture in said tubular sleeve by the camming surface upon axial movement of said plunger rod, the improvement comprising:

a. a key handle molded onto a second end of said tubular sleeve opposite the first end, the key handle having molded therein a chamber providing access to the second end of said tubular sleeve;

b. a plunger handle molded onto a second end of said plunger rod opposite the camming surface, said plunger handle being axially slidable within the chamber of said key handle for axially sliding said plunger rod within said tubular sleeve, said plunger handle having molded thereon a flattened surface parallel to the longitudinal axis of said plunger rod, said plunger handle also having molded thereon a flange adjacent an edge of the flattened surface nearest the first end of said plunger rod, the flange projecting away from said plunger rod beyond the flattened surface; and

c. retaining means inserted into said key handle and extending transversely through the chamber parallel to the flattened surface of said plunger handle, said retaining means being disposed adjacent the flattened surface of said plunger handle for preventing said plunger handle from rotating within the chamber of said key handle and for retaining the flange of said plunger handle within the chamber of said key handle.

4,291,600

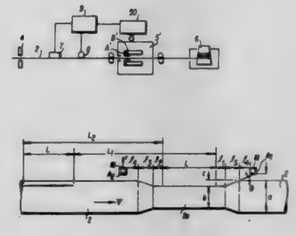
PROCESS AND APPARATUS FOR CUTTING CIRCUMFERENTIAL SURFACE TO REMOVE ROD SURFACE FLAWS

Yosiyuki Kawaguchi, Ashiya; Takashi Nishida, Nishinomiya; Nobuaki Marukawa, Toyonaka; Tadakazu Tanaka, Kobe, and Yoshinari Kontani, Shinminato, all of Japan, assignors to Kobe Steel, Limited, Kobe and Nippon Koshuha Steel Co., Ltd., Tokyo, both of, Japan

Filed Feb. 6, 1979, Ser. No. 9,914

Int. Cl.³ B23B *1/00, 5/12*

U.S. Cl. 82—1 C **5 Claims**



the material to be machined, the flaw position signal and a predetermined cut-in angle set value signal for said cutting means that is set in advance

means for operating the speed of advancing and retracting of said cutting means on the basis of said travelling speed signal and said predetermined cut-in angle set value signal of said cutting means; and

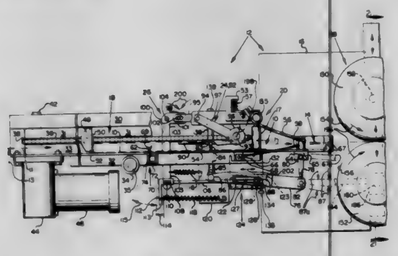
control means for driving said cutting means on the basis of the results of said operations.

4,291,601

SHAKE RESAW FEED SYSTEM

William J. Guynup, 3106 NW. Harrison, Corvallis, Oreg. 97330

Filed Sep. 10, 1979, Ser. No. 74,056
Int. Cl.³ B27M *3/02*
U.S. Cl. 83—415 **20 Claims**



1. A shake resaw feed system for use with a band saw for sawing tapered shake shingles from slabs, said system comprising:

conveyor means for conveying a slab lengthwise toward and through the blade of said saw; and

guide means for positioning said slab for cutting said slab lengthwise along a cutting line between its broad faces;

said guide means including wall means extending lengthwise along the conveyor means and said wall means being immobile relative to the conveyor means in a lengthwise direction,

a portion of the wall means being laterally movable for progressively shifting said slab laterally of said conveyor means so that the blade begins cutting at an end face of said slab at a lateral position near one of said broad faces and finishes cutting at the opposite end face at a lateral position near the opposite broad face.

4,291,602

PANEL CUTTING DEVICE

John Fast, and Harvey Williams, both of Winnipeg, Canada, assignors to Educase Incorporated, Winnipeg, Canada

Filed Feb. 25, 1980, Ser. No. 123,987
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—745 **10 Claims**



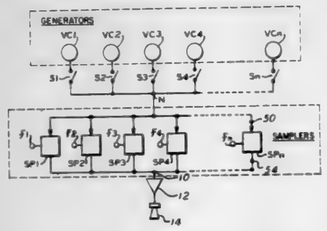
1. A panel cutter assembly for use with a power saw comprising in combination a longitudinally extending guide member, means to detachably clamp said guide member to the panel being cut, a panel cutting saw component, means detachably engaging and guiding said saw component for longitudinal movement along said guide member and means extending from one side of said guide member engaging the line to be cut on said panel, said means detachably engaging and guiding said saw component including a longitudinally extending slot formed in the upper surface of said guide member and means extending from said panel cutting saw component slidably engaging said slot, said slot being in the form of a mortise slot having a relatively narrow upper portion opening onto the upper surface of said guide member and a pair of horizontally situated wing slots extending one upon each side of the base of said upper portion and communicating therewith to present an inverted T formation when viewed in end elevation.

4,291,603

ELECTRONIC ORGAN

Bernard R. Katz, 21 Woodside Dr., Rockaway, N.J. 07886

Filed Nov. 29, 1978, Ser. No. 964,704
Int. Cl.³ G10H *1/00*; H04M *1/00*
U.S. Cl. 84—1.01 **25 Claims**



1. A tone generating system of an electronic organ for producing a plurality of notes each having a frequency corresponding to a different note on a musical scale, comprising:

a plurality of voice signal generators, each producing a supersonic signal having a different waveshape;

a manually operable main selection means for combining selected ones of said plurality of voice signal generators to produce a main signal;

a plurality of key signal generators producing a plurality of key signals, each of said plurality of notes corresponding to and having a predetermined frequency relation with a different one of said plurality of key signals, the interfrequency spacing between adjacent ones of said plurality of notes being less than one octave, said plurality of notes having frequencies spanning more than an octave;

a plurality of main sampling means each operable to repetitively sample said main signal in response to a corresponding one of said plurality of key signal generators, said plurality of main sampling means operable to produce a plurality of main sampled signals, different ones of said plurality of main sampling means being operable to produce octavely related notes, said plurality of main sampling means comprises a plurality of switch devices having commonly coupled input terminals;

main output means for combining audio frequency components contained in said plurality of main sampled signals; and

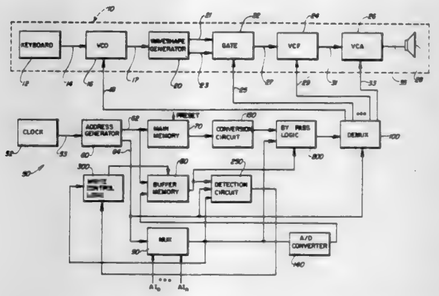
manually playable main keyboard means for actuating said tone generating system, said main keyboard means operable to provide to said main output means any combination of said plurality of main sampled signals to produce said plurality of notes, said plurality of switch devices having output terminals coupled to said main keyboard means, said main keyboard means being operable upon said switch devices to produce the effect of coupling selected ones of said output terminals together and to said main output means.

4,291,604

MEMORY OVERRIDE SYSTEM FOR PROGRAMMED ELECTRONIC SYNTHESIZER

James L. Scott, Jacksonville, and David A. Luce, Clarence Center, both of N.Y., assignors to Norlin Industries, Inc., Deerfield, Ill.

Filed Aug. 1, 1979, Ser. No. 62,562
Int. Cl.³ G10H *1/12, 1/46*
U.S. Cl. 84—1.19 **19 Claims**



1. In a programmable electronic musical instrument having a plurality of parameter circuits each normally controlled in response to a stored parameter signal for producing a programmed timbre of sound, a memory override system comprising:

a plurality of manually adjustable input signal sources each developing an input signal capable of controlling only a respective one of said parameter circuits; and

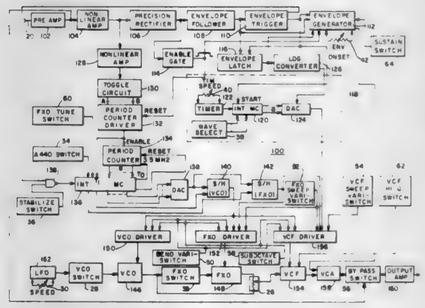
control means responsive to manual adjustment of each of said input signal sources for causing the input signal associated with an adjusted signal source to control its respective parameter circuit in lieu of the corresponding stored parameter signal, the remaining parameter circuits being controlled in response to their respective stored parameter signals.

4,291,605

MUSIC SYNTHESIZER

Donald L. Tavel, 233 W. Westfield Blvd., Indianapolis, Ind. 46208, and Michael L. Beigel, Warwick, N.Y., assignors to Donald L. Tavel, Indianapolis, Ind.

Filed Jun. 7, 1979, Ser. No. 46,437
Int. Cl.³ G10H *1/057*
U.S. Cl. 84—1.26 **13 Claims**



1. In a music synthesizer having means for receiving an input signal defining a musical sound, said sound having an amplitude which initially increases to a maximum value and thereafter decreases, said synthesizer further having means for processing said input signal to provide an envelope signal of the amplitude of said input signal, the improvement comprising:

means for storing a value manifesting the maximum attained amplitude of said envelope signal; and

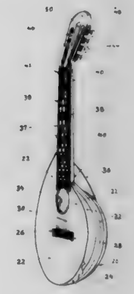
means responsive to said stored value for providing a synthesized output signal having an amplitude related to said stored value.

4,291,606

MUSICAL STRING INSTRUMENT

Raymond Lepage, 2580 Sheppard St., Montreal, Canada (H2K 3L2)

Continuation-in-part of Ser. No. 29,444, Apr. 12, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,079
Int. Cl.³ G10D *3/00*
U.S. Cl. 84—291 **7 Claims**



1. A musical string instrument comprising a body shell of generally ovoid shape and formed of a plurality of ribs of varying shapes depending on which side of said shell they are located; a flat sound board of generally oval shape secured to the top of said shell and provided with a sound hole; a tail block secured to the remote end of said shell, the corresponding ends of all said ribs being secured to said tail block; a plurality of braces secured to the underside of said sound board and radiating from said tail block; at least one transverse brace secured across the widest portion of said shell; further comprising a neck wide enough to accommodate eight strings, a fretted finger board secured to the top surface of said neck, said finger board being provided with positive note identification means; a peghead secured to said neck; two slots being provided in said peghead, each said slot having rollers for four strings; tuning pegs to operate said rollers in a known manner; a spine securing said neck to said body shell wherein said spine extends from said neck downwardly and curvedly to the central bottom portion of said body shell; said sound board being further provided with a bridge having a saddle for said strings.

4,291,607

FLOATING BRIDGE FOR STRING INSTRUMENTS

Clayton O. Kauffman, Santa Ana, Calif., assignor to James Ketchum, Anaheim, Calif.

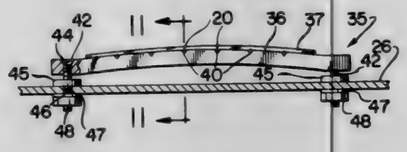
Filed Jun. 6, 1980, Ser. No. 157,236
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—299 **8 Claims**

1. A floating-bridge device for string instruments and combined therewith to generate a high volume of responsive resonated sound from the hollow body of the instrument, said device comprising:

a bridge block attached to the strings under tension defined by an elongated member having a longitudinal channel formed therein, and a plurality of transversely disposed grooves adapted to correspond to and receive said strings therein;

a clamping means secured to said bridge block, whereby said strings are clamped therebetween;

wherein said clamping means comprises at least one clamping bar to fit within said channel of said bridge block, said clamping bar being secured thereto to clamp said strings between said clamping bar and said block, whereby said floating-bridge device transmits the vibration from said strings to said soundboard, without interference from the longitudinal tension of said strings;



means for mounting said bridge block to the flexible soundboard of said hollow body of said instrument, wherein vertical tension of the strings is prevented, said mounting means comprising:

at least one vertical post member, one end of which is attached to said soundboard and the opposite end is connected to said bridge block; and

means thereon for adjusting said bridge block in a vertical direction, whereby said bridge block engages said strings.

4,291,608

EXPANSION DOWEL

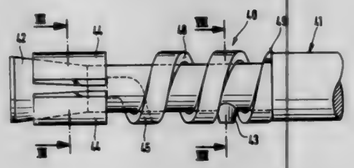
Gusztav Lang, Munich; Friedrich Storck, Hersbruck, and Hans-Dieter Seghezzi, Vaduz, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Dec. 26, 1978, Ser. No. 973,029

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758374

Int. Cl.³ F16B *13/06*

U.S. Cl. 411—16 **4 Claims**



1. Expansion dowel to be inserted into a borehole or the like with the dowel having a leading end which is first inserted into a borehole and a trailing end, comprising an axially elongated dowel body having a leading end and a trailing end, said dowel body including an axially extending spreading member located at the leading end thereof and said spreading member having a dimension in the direction transverse to the axial direction which decreases in the direction from the leading end toward the trailing end, an expansion member extending laterally around said dowel body from said spreading member toward the trailing end thereof, said expansion member being radially expandable when said separating member is pulled axially through said expansion member, wherein the improvement comprises that said expansion member has a control cam surface extending helically around at least an angular portion of the circumference of said dowel body and said control cam surface faces toward the trailing end of said dowel body, a stop formed on and extending outwardly from the circumferential surface of said dowel body spaced axially from said spreading member, said stop disposed in contact with said control cam surface and said dowel body being turnable about its axis so that said stop rides along said control cam surface and provides relative movement between said spreading member and said expansion member pulling said spreading member onto said expansion member and causing said expansion member to expand radially outwardly, said expansion member comprises a plural-part sleeve-like section extending from said spreading member toward the trailing end of said dowel body, and a helically extending strip wound about said dowel body and extending from the end of said sleeve-like section which is more remote from said spreading member toward the trailing end of said dowel body.

4,291,609

APPARATUS FOR ASSEMBLING A PROJECTILE AND A BOOSTER CHARGE CASE TO A SHOT

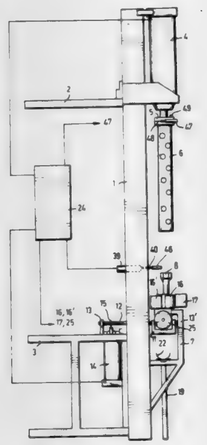
Antero Iivarinen, 74520 Ohenmäki, Finland

Filed Sep. 28, 1979, Ser. No. 79,738

Claims priority, application Finland, Apr. 7, 1977, 771117; Oct. 6, 1978, 783050

Int. Cl.³ C06B *21/00*; F42C *33/02*

U.S. Cl. 86—1 R **8 Claims**



1. Apparatus for assembling a projectile of artillery calibre and a booster charge to a shot, comprising, a frame structure and mounted thereon,

means for receiving and holding a projectile,

means for receiving a booster charge case and bringing it onto the projectile to a fastening position,

means for fastening the booster charge case to the projectile,

pneumatically and/or hydralically operated drive means being provided for actuating said means for receiving and holding the projectile, said means for receiving a booster charge case and bringing it onto the projectile, and said means for fastening the booster charge case to the projectile, said drive means being controlled by a control unit in accordance with a preset programme, the projectile receiving means and the means for fastening the booster charge case to the projectile further being formed as one unit mounted in the frame pivotably between a vertical and an essentially horizontal position.

4,291,610

SILENCER FOR FIREARMS

Shimon Waiser, P.O. Box 360 Midwood Station, Brooklyn, N.Y. 11230

Continuation-in-part of Ser. No. 857,464, Dec. 5, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 24,474

Int. Cl.³ F41L *21/18*

U.S. Cl. 89—14 D **7 Claims**

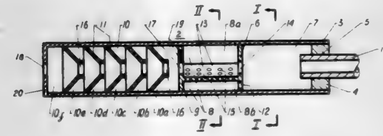
1. A silencer for mounting on the barrel of a hand weapon comprising:

a casing having its rear part in communication with the barrel of the hand weapon,

said casing having an apertured front end wall with said aperture therein for the exit of the projectile and discharged gases,

at least three chambers axially aligned in said casing, the first chamber of said chambers following the barrel of the hand weapon for expanding of the discharged gases,

the second chamber of said chambers being to decrease discharged gases energy and movement and being separated from the first and the third chambers by partitions having openings for the passage of the projectile and for forming the main stream of discharged gases following the projectile,



at least one additional trough shaped partition inside of said second chamber said trough shaped partition extending across the interior circumference of said casing and said trough shaped partition having openings therein,

said trough shaped partition dividing said second chamber into sub-chambers at least one of which is for forming auxiliary streams of discharged gases and guiding said auxiliary streams of discharged gases through said openings into the main stream of discharged gases,

said openings in said trough shaped partition inside of said second chamber having axes directed to said main stream of discharged gases,

the third chamber of said chambers comprising additional partitions for dispersing sound waves and supplementary decreasing the discharged gases energy and movement.

4,291,611

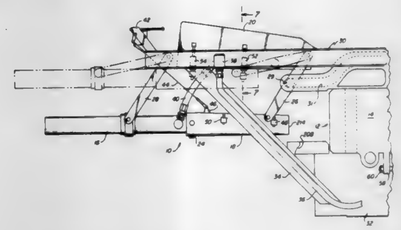
AUTOMATIC LOADING DEVICE

Warren W. Wells, Radcliffe, Ky.; Robert E. Strohman, East Moline, Ill., and Harold H. Wiese, Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 18, 1979, Ser. No. 86,235

Int. Cl.³ F41F *9/10*

U.S. Cl. 89—47 **8 Claims**



1. An automatic loading device for loading ammunition rounds into a gun tube chamber, said device comprising a magazine, a tray-rammer assembly responsive to gun recoil and counter recoil forces for removing a round from said magazine and placing it in said gun tube chamber, said assembly including a loading tray and a rammer mechanism, said rammer mechanism moving said round from said tray into said chamber, said loading tray being moved to a round receiving position under said magazine upon gun recoil and moved to a round chambering position upon gun counter recoil, said gun tube being supported by a gun carriage and said tray being suspended by links from said gun carriage, a cam follower mounted on said links and a cam track mounted on and moving with said gun tube, said cam follower being positioned in said cam track whereby recoil of said gun tube moves said tray into said round receiving position and counter recoil of said gun tube moves said tray into said round chambering position.

4,291,612

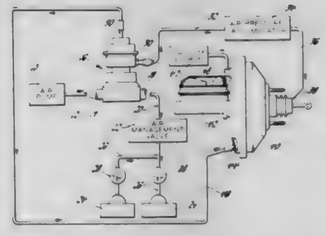
POWER BRAKE SYSTEM DIFFERENTIAL AIR PRESSURE CONTROL VALVE ASSEMBLY

Edward G. Day, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 25, 1979, Ser. No. 51,817

Int. Cl.³ F01B *21/02*

U.S. Cl. 91—6 **2 Claims**



1. In a power brake system having a brake booster operable by differential air pressure provided by a source of vacuum and a source of compressed air pressure, a differential air pressure control valve assembly maintaining a substantially constant available differential of air pressure between the vacuum and the compressed air pressures available to the brake booster for booster power operation, said control valve assembly comprising:

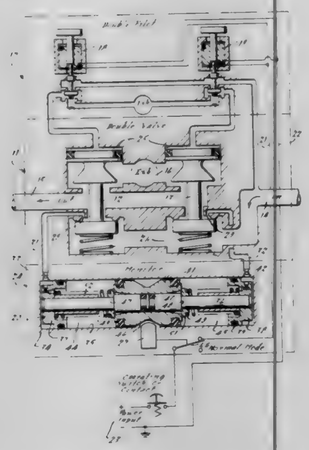
a housing having first, second and third chambers respectively having therein compressed air pressure from said source, compressed air pressure for booster operation and vacuum for booster operation; a movable power wall defining a common wall between said second and third chambers, valve port means connecting said first and second chambers, and valve means responsive to movements of said movable power wall in response to changing pressure differentials thereacross for controlling the compressed air pressure in said second chamber to maintain a substantially constant pressure differential across said power wall and thus establish a substantially constant available differential of air pressure to the brake booster for booster power operation, said valve means accomplishing said controlling by selectively holding compressed air pressure in said second chamber when the pressure differential across said power wall is at the desired substantially constant pressure differential, and either admitting compressed air from said first chamber through said valve port means to said second chamber when the pressure differential across the said power wall is less than the desired substantially constant pressure differential, or discharging compressed air from said second chamber to atmosphere when the pressure differential across said power wall is greater than the desired substantially constant pressure differential, so as to reestablish and maintain said desired substantially constant pressure differential.

4,291,613

MONITOR FOR DOUBLE SAFETY VALVES

Edward B. Porter, Pontiac, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.

Filed Feb. 23, 1979, Ser. No. 14,642
Int. Cl.³ F01B *31/12, 25/26*
U.S. Cl. 92—131 **7 Claims**



1. In combination, an elongated housing defining a bore, said housing having sensing inlet ports in communication with said bore at axial spaced locations, a double ended spool slidably mounted in said housing, said spool being relatively short and forming with said bore opposite sensing chambers, each of said sensing inlet ports being in communication with a respective of said sensing chambers, a shaft extending axially through said bore from one end to the other and passing through said spool, end plugs within said bore supporting the opposite ends of said shaft, restricted passages in said end plugs leading from the sensing inlet ports in said housing to said sensing chambers, a pair of helical coil compression springs disposed between said end plugs and said spool, and means capturing the inner ends of said springs whereby said spool when moved in either direction to compress one of said springs will not be followed by the end of the other spring.

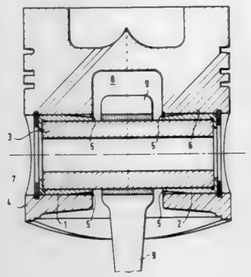
4,291,614

PISTON AND PROCESS FOR ITS MANUFACTURE

Egon Mölle, Oberasbach, and Fritz Rösch, Schwabach, both of Fed. Rep. of Germany, assignors to Alcan Aluminiumwerk Nürnberg GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,360
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828402
Int. Cl.³ F16J *1/18*
U.S. Cl. 92—187 **10 Claims**

1. A piston, in particular for internal combustion engines, having a piston pin bore receiving an essentially rigid, cylindrical piston pin which serves to secure a piston rod, wherein between the pin and the bore, at or near the two ends of the pin, cylindrical bushings are provided which float rotatably in the piston pin bore, and means are provided for preventing axial displacement of the bushings beyond the ends of the pin, characterized in that the bushings are disposed floatingly on



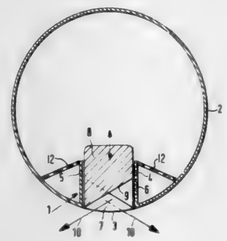
the piston pin and the external diameter of the bushings diminishes towards the axis of the piston.

4,291,615

LINEAR AIR OUTLET

Frank Sodec, Wuerselen-Broichweiden, Fed. Rep. of Germany, assignor to Firma H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Sep. 27, 1979, Ser. No. 79,540
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 7828982[U]
Int. Cl.³ F24F *13/06*
U.S. Cl. 98—40 C **7 Claims**



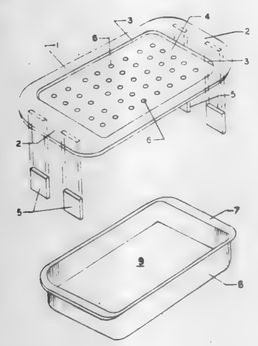
1. A linear air outlet device, comprising art duct means (2), two longitudinal wall members (4, 5) operatively arranged in parallel to each other to form an open guide channel, perforated sections (6) and non-perforated sections in each of said longitudinal wall members spaced along the length thereof in such a manner that non-perforated sections register with perforated sections, means operatively locating said parallel wall members relative to said duct means so that said perforated sections are exposed to air flowing in said duct means, whereby air may pass through said perforated sections into said open guide channel, a longitudinal channel closure member (8) having a prism cross-section slidably inserted in said open guide channel for displacement perpendicularly to the longitudinal axis of said open guide channel, said channel closure member (8) having air deflection surface means (9) slanting alternately in opposite directions so that the deflection surface means face a respective perforated section in said wall members, said channel closure member further having parallel surface means slidably fitting into said guide channel between said parallel wall members of said guide channel, said parallel surface means of said closure member performing a dual function by cooperating in the guiding of the sliding movement of said closure member inside said guide channel and by exposing a variable portion of said perforated sections to the passage of air therethrough, said slanting surface means guiding said air substantially in opposite directions out of said open guide channel.

4,291,616

ROASTER TRAY

Alexander P. Taylor, 3108 Fairview Ave., Parkersburg, W. Va. 26101

Filed May 14, 1979, Ser. No. 38,803
Int. Cl.³ A47J *27/00*
U.S. Cl. 99—446 **1 Claim**



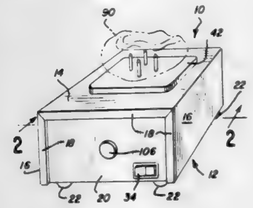
1. A utensil adapted for use in both the cooking and serving of meats or other foods comprising a lower supporting vessel and an upper tray which is adapted to sit on top of said vessel, said tray including a perforated food surface equal in area to the vessel on which it rests, the tray further including protruding side and end portions which extend over and overlap upper edges of said vessel, said tray including sidewalls between said perforated surface and said portions so as to form a food holding cavity, the tray end portions further including downwardly extending support protrusions which extend down and closely adjacent the outside of the vessel walls when food is being cooked and which function as support legs therefor when removed from the vessel, the protrusions extending well within the confines of said tray portions and closely adjacent said vessel outside walls so as to prevent lateral movement of the tray when positioned on top of said vessel.

4,291,617

PRESSURIZED INJECTION STEAMER

Dye O. Miller, South Barrington; August J. Antunes, Elmhurst, and Jerome Antunes, Clarendon Hills, all of Ill., assignors to A. J. Antunes & Co., Addison, Ill.

Continuation-in-part of Ser. No. 899,164, Apr. 24, 1978. This application Aug. 28, 1979, Ser. No. 70,484
Int. Cl.³ A23L *3/16;* **A47J** *27/04*
U.S. Cl. 99—483 **2 Claims**



1. An injection steamer for heating food items or the like, comprising:

a steam generating chamber comprising a lower housing portion and an upper cover plate;

means for heating an area of said steam generating chamber;

water inlet means mounted in a steam chamber above the heated area for introducing water from a source thereof, said water inlet being manufactured of a material having a low heat transfer coefficient;

means for removably mounting the upper cover plate to said steam generating chamber lower housing portion;

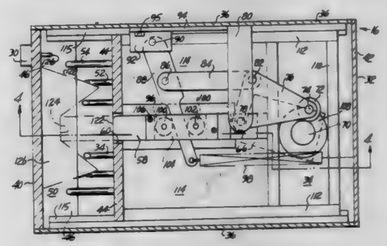
a plurality of injector needles mounted in fluid communication with said steam chamber for supplying said pressurized steam to the interior of a food item, a baffle plate mounted between said water inlet means and said injection needles, said means for removably mounting said cover plate to the steam generating housing lower portion comprises a bayonet mount wherein said bayonet mount is operable by relative rotation of said cover plate to said lower housing portion, and interlock means to prevent steam generation when said cover plate is not securely locked to the lower housing portion, said interlock comprises cam actuated switch means connected to said water inlet tube to prevent the introduction of water into said steam chamber, said switch means actuated by rotation of said cover plate relative to said lower housing portion wherein said switch means is mounted below said bayonet mount to be actuated by engagement thereof upon complete securement of said cover plate to said lower housing portion to permit steam generation.

4,291,618

METHOD AND APPARATUS FOR FOLDING AND CRUSHING EMPTY CYLINDRICAL CANS

Warren R. Heiser, 934 N. Mildred St., Dearborn, Mich. 48128, and Eugene A. Acey, Davisburg, Mich., assignors to Warren R. Heiser, Dearborn, Mich.

Filed Oct. 5, 1979, Ser. No. 82,142
Int. Cl.³ B30B *1/04, 9/32*
U.S. Cl. 100—35 **23 Claims**

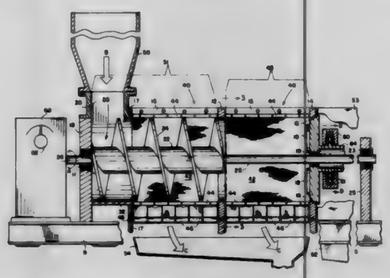


1. A method for serially folding and flattening empty cylindrical cans each having a cylindrical sidewall and two circular end faces, said method comprising the steps of supporting one of said cans in a folding station between a flat stationary anvil and a flat reciprocable platen with the longitudinal axis of said can parallel to said anvil and said reciprocable platen, advancing a reciprocable creasing element through an aperture in said platen into the center of the cylindrical sidewall of said can and simultaneously advancing said platen towards said can until said creasing element has pressed the center portions of the opposite sides of said cylindrical sidewall into contact, rapidly retracting said creasing element from said can while continuing to advance said platen until the can circular end faces are substantially coplanar, and retracting said platen.

4,291,619
SCREW PRESS WITH CONTROLLABLE REAR DOOR

Arthur J. Hunt, and Arthur J. Hunt, Jr., both of 332 N. Halifax Dr., Orlando, Fla. 32704

Filed Oct. 17, 1979, Ser. No. 85,492
Int. Cl.[3] B30B 9/12
U.S. Cl. 100—43 4 Claims



1. In a screw press for extracting liquids from materials such as fruits, vegetables, or the like having a frame, a cylindrical feed chamber and pressing chamber, said pressing chamber having screen walls for passing extracted liquids therethrough, a rotating drive shaft extending through and concentric with said chambers, and a helical feed and compression screw concentric with said shaft and disposed ahead of said compression chamber for compressing said materials against said screen walls of said chamber, the improvement comprising:

a circular door disposed at the outlet end of said cylindrical pressing chamber for closing said chamber prior to a pressing operation, said circular door slidably engaged with said drive shaft;

controllable pressure-producing means externally connected to said circular door for maintaining said door in a closed condition until outward pressure from inside said pressing chamber exceeds a preselected external pressure from said pressure-producing means;

cutter bars attached to the inside surface of said circular door;

electrically operated clutch means connected to the outside surface of said door and to said rotating drive shaft, said clutch means being disengaged when said door is in its closed position; and

clutch operating means responsive to opening said door for engaging said clutch means to cause said shaft to rotate said door wherein said cutter bars rotate to pare away a cake of dried materials forced out of said pressing chamber when said door is opened.

4,291,620
ERROR DETECTION IN A DIGITAL PRINTER EMPLOYING TYPE WHEELS

Hitoshi Yamasaki, Nara, and Yasutaka Iwawaki, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1979, Ser. No. 78,727
Claims priority, application Japan, Sep. 27, 1978, 53-119810
Int. Cl.[3] B41J 1/44
U.S. Cl. 101—99 7 Claims

1. A printer comprising:

at least one print wheel on which a plurality of types are mounted;

a wheel shaft for rotatably supporting said print wheel;

drive means for rotating said wheel shaft;

timing signal generation means for developing timing signals in response to rotation of said wheel shaft, said timing signals comprising:

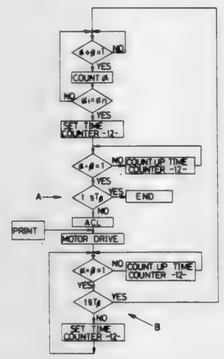
type selection controlling signals having time interval corresponding to a space provided between two adjacent types mounted on said print wheel; and

a wheel round detection signal for indicating a complete one round of said wheel shaft; and

a print control system comprising:

first detection means for detecting occurrence of said wheel round detection signal to develop a first control signal;

first counter means for counting said type selection con-



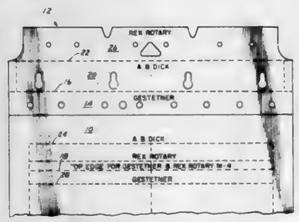
trolling signals, the count operation being initiated upon generation of said first control signal, and said first counter means developing a second control signal when said type selection controlling signals are counted by a predetermined number; and

second detection means for determining whether said wheel round detection signal is developed next after development of said second control signal.

4,291,621
ADAPTABLE STENCIL FOR DIFFERENT MIMEOGRAPH MACHINES

Charles F. Thomas, 2000 Skyrock Rd., Loveland, Colo. 80537

Filed Sep. 25, 1978, Ser. No. 945,482
Int. Cl.[3] B41F 15/00; B41L 13/00
U.S. Cl. 101—114 4 Claims



1. A mimeograph stencil having an elongated heading portion secured to a stencil body portion at one end of a lengthwise extent of said stencil body portion, said heading portion providing a means for holding the stencil in one of a plurality of different brands of duplicating machines,

said heading portion comprising:

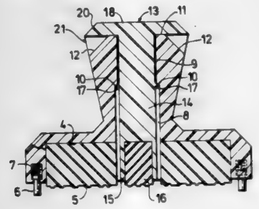
a plurality of separate and lengthwise spaced lines of laterally aligned holding pin holes, each line comprising a different series of laterally spaced pin holes sized and positioned so as to hold said heading portion in a different one of said duplicating machines, each of said spaced lines formed in adjacent, separate lengthwise spaced areas of said elongated heading,

tear line means for removing a part of said heading portion from the remainder of said heading portion secured to said stencil body, said tear line means comprising a single perforated tear line extending laterally across said heading portion and between each of said adjacent, separate lengthwise spaced areas, permitting one or more of said spaced, pin hole lines to be tearingly removed from said stencil, and a series of stencil cutting guide lines positioned on said stencil body portion for defining boundaries within which the written matter should be imprinted on the stencil body, said heading portion and stencil body having markings which designate a respective certain one of said series of stencil cutting guide lines to be utilized for a given respective line of holding pin holes whereby said stencil cutting guide lines coordinate each particular line of holding pin holes with one of said series of stencil cutting guide lines for a particular duplicating machine so as to provide correct positioning of written matter on print paper for that particular duplicating machine.

4,291,622
HAND STAMP HAVING AN ADJUSTABLE STAMP PRINT

Algot E. Bengtsson, c/o Boras Stampelfabrik AB Box 17, 501 02 Boras 1,, Sweden

Continuation of Ser. No. 958,474, Nov. 7, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,637
Claims priority, application Sweden, Nov. 11, 1977, 7712758
Int. Cl.[3] B41K 1/08
U.S. Cl. 101—368 3 Claims



1. A date indicating hand stamp, for ink printing, comprising:

(i) a stamp body having therein one single opening of rectangular section, said opening extending from a first face to a second face;

(ii) a plurality of stamping units each including a stem portion adapted to pass into said opening and to extend from said first face to said second face, each of said stamping units having one surface thereof in contact with a corresponding surface of a neighbouring stamping unit, a head on each of said stems to abut on said first face in a fully inserted condition of the stem, and a printing member on each of said stems and having a printing face which in said fully inserted condition is in a common plane with said second face,

(iii) cooperating formations respectively on said stamp body and on each of said stems serving as latching means to retain said stamping units releasably in said fully inserted condition,

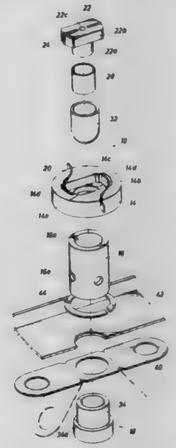
(iv) said stamp body being bevelled adjacent said first face such that, with said stamping units in said fully inserted condition, recessing is defined between the bevelled portion of the body and the head of the stamping units to receive the fingers to facilitate removal of the stamping units from the stamp body,

(v) said stamp body further having side portions projecting from said first face shaped to align with an outer surface of the heads of the stamping units.

4,291,623
BINARY ELECTROEXPLOSIVE DEVICE AND METHOD OF ASSEMBLY THEREOF

Ralph L. Robinson, Kingwood, and David D. Parrish, Spring, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,505
Int. Cl.[3] E21B 43/263; F42C 19/12
U.S. Cl. 102—310 39 Claims



1. Electroexplosive apparatus comprising:

(a) first explosive means including first explosive material and electrical firing means, including electrical lead means, for igniting said first explosive means in response to an electrical signal received by said firing means;

(b) second explosive means, including second explosive material;

(c) housing means for holding said second explosive means;

(d) socket means for selectively receiving said first explosive means, said socket means being so positioned relative to said second explosive means when said second explosive means is held by said housing means that said first explosive means is automatically positioned to permit initiation of said second explosive means by said first explosive means when said first explosive means is so received by said socket means;

(e) electrical conductor means, as part of said socket means, for receiving such electrical signal; and

(f) whereby, when said first explosive means is so received by said socket means, said firing means is automatically electrically connected to said conductor means by said lead means so that said signal may be received by said firing means by means of said conductor means.

4,291,624
EXPLOSIVE CHARGES

Udo Sabranski, Willich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 876,837, Feb. 10, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 60,888
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706060
Int. Cl.[3] F42B 1/02
U.S. Cl. 102—307 6 Claims

1. An explosive charge comprising:

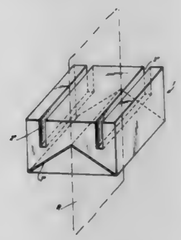
a casing,

a detonator mounted on top of the casing,

explosive material disposed within the casing and forming a hollow charge,

air cavity means being equidistantly positioned with respect to a reference line which is being selected from the group

of reference lines consisting of an axis of rotation or a line forming the intersection of two planes of symmetry, so that the shock wave produced by detonation is formed in a predetermined direction,



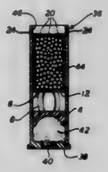
said air cavity means being quadrilateral in cross-section with respect to a plane containing said reference line and said air cavity means.

4,291,625

SHOT GUN SHELL CONSTRUCTION

George A. Stagg, Jr., 35 Kime Ave., Wayne, N.J. 07470

Filed Mar. 2, 1979, Ser. No. 16,842
Int. Cl.³ F42B 7/00, 9/16
U.S. Cl. 102—449 9 Claims



1. A shot gun shell assembly which comprises:
a shot shell casing having a closed primer and an open shot loading end, and
a wad for insertion in said open end comprising a generally cylindrical shot cup defining a side wall and a base plate attached at one end thereof, said side wall longitudinally slotted to define a plurality of curved petals, said petals are connected at the free ends thereof to a pivotal closure structure which is adapted to retain all of the shot pellets within said shot cup when said wad is fully loaded therewith and inserted within said shot shell casing,
said closure structure comprising wedge-shaped flaps hingably attached to each of said petals at said free ends, said flaps having a wedge-shaped cross section defined by a first broader portion proximal to said free end, and a second narrower portion distal thereto, said broader portion terminating in a peripheral edge and an adjacent camming surface, said camming surface adapted to cooperate with the inner surface of said shot shell casing to urge said flap into a plane transverse to the axis of said wad, to retain said shot pellets within said shot cup.

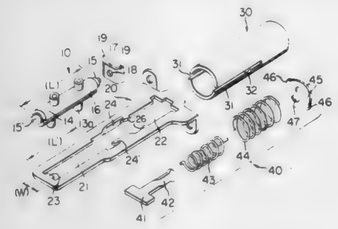
4,291,626

ASSEMBLY OF PIEZOELECTRIC ELEMENT UNIT AND SHEET METAL MOUNT FOR IGNITION DEVICE

Kazumi Nakahara, Nagoya, Japan, assignor to NGK Spark Plug Co. Ltd., Nagoya, Japan

Filed Apr. 4, 1979, Ser. No. 26,890
Claims priority, application Japan, Apr. 7, 1978, 53-46404[U]
Int. Cl.³ F42C 11/02
U.S. Cl. 102—200 3 Claims

1. A piezoelectric element unit and a sheet metal mount comprising: a cylindrical piezoelectric unit having first and second opposite grooves each axially extending on the circumferential surface thereof; said first and second grooves having a width only a little larger than the thickness of said sheet metal; an elongated window having opposite side edges in said



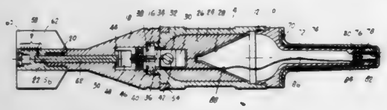
sheet metal mount; said window having engagement means in said opposite side edges of the mount window for engaging said axial grooves of the unit; and means in said elongated window for permitting preliminary positioning of said unit therein and for axially sliding said unit into engagement with said engagement means.

4,291,627

ELECTRICAL FUZE WITH A PLURALITY OF MODES OF OPERATION

Richard T. Ziemba, Burlington, Vt.; Joseph A. Kinzel, Liverpool, and Myron D. Egtvedt, Skaneateles, both of N.Y., assignors to General Electric Company, Burlington, Vt.

Filed Nov. 27, 1979, Ser. No. 97,763
Int. Cl.³ F42C 11/00
U.S. Cl. 102—265 8 Claims



1. A fuze for a round of ammunition including
a source of electricity (92);
an electrical detonator (42), and
first means for providing two alternative circuits for coupling said source of electricity to said electrical detonator to provide detonation thereof, comprising
a plate (74) which serves both as a full frontal area impact switch and an electrostatic sensor to provide detonation signals.

4,291,628

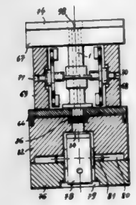
SAFETY MECHANISM FOR FUSES

Jean Rosselet, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Jun. 5, 1979, Ser. No. 45,628
Claims priority, application Switzerland, Jun. 12, 1978, 6357/78
Int. Cl.³ F42C 9/02
U.S. Cl. 102—276 10 Claims

1. A safety mechanism for fuses for projectiles, bombs, mines and other explosive devices, said mechanism delaying the arming of the fuse and comprising a central shaft, said central shaft having an axis, a motor spring acting on said central shaft for rotating said shaft about said axis, escapement means mounted on said shaft and a balance acted upon by said escapement means, said escapement means forming a mechanical connection between said shaft and said balance in the form of a dead-beat escapement, said balance, having a balance axis,

said axis extending perpendicularly to said shaft axis but intersecting therewith, said balance being capable of effecting sustained oscillations around said balance axis, said escapement means comprising a toothed escapement wheel fixedly mounted on said central shaft, said wheel having an odd number of teeth, said balance comprising two lateral cheeks, said cheeks being disposed one on each side of said central shaft, connecting means connecting said cheeks to one another, each said cheek comprising a cylindrical sector, each said sector having a geometric axis, each said axis being coincident with



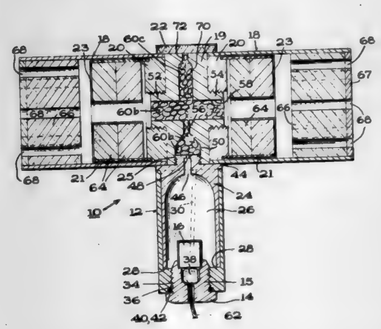
said balance axis, each said sector defining an inner locking cylindrical surface and an exit lip, said surface and said lip constituting the active surface of said sector, said active surface being acted upon by said teeth of said escapement wheel, whereby successive locking and impulsing of said teeth of said escapement wheel act alternately on said active surfaces of said cylindrical sectors of said balance, thereby causing said balance to oscillate in two opposed directions, each said oscillation of said balance causing angular rotation of said central shaft, a predetermined angular rotation of said shaft causing arming of said fuse.

4,291,629

COMBINED T-SHAPE SMOKE PROJECTILE AND LAUNCHING ASSEMBLY

Osman F. Kezer, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 895,177, Apr. 10, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 91,863
Int. Cl.³ F42B 13/44
U.S. Cl. 102—334 9 Claims



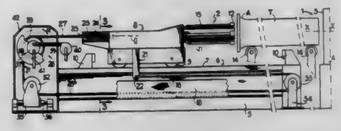
1. A multi-canister type projectile and related propelling charge housing assembly of T-shape configuration for providing a smoke screen from the projectile upon deployment exteriorly from a combat vehicle, said assembly comprising in combination:
(a) a propellant charge housing of cylindrical sleeve form having one open end and an opposite end wall with a central threaded aperture;
(b) an igniter assembly and means for removably mounting same in and closing off the end of said housing end wall opposite its open sleeve end portion;
(c) a projectile-propelling charge disposed within said housing and in operative ignitable contact with said igniter assembly;
(d) an open-skirted piston disposed for complemental slidable movement within the open-ended sleeve of said housing with said piston having a step-down center bore passageway in a threaded portion at an end opposite the open skirted portion;
(e) a pair of ignitable smoke-generating canister sub-assemblies mounted in axial alignment, and connectable with said piston, each sub-assembly comprising predetermined amounts of smoke and gas-generating compounds;
(f) mounting means for interjoining said canisters sub-assemblies in said axial alignment, said mounting means having in one side thereof a threaded portion for complemental attachment with said threaded portion of said piston so as to form a T-shape projectile whereby an axis through said aligned canisters is transverse to an axis through the center of said piston; and
(g) said mounting means having intercommunicating axial and radial passageways, ignition pellet means disposed within said axial passageway, and said radial passageway being in operative communication with the center bore of said piston, whereby ignition of said igniter assembly will effect both deployment of said projectile and ignition of said gas and smoke-generating compounds via said ignition pellet means.

4,291,630

MACHINE FOR EXTRACTING CENTRIFUGED PIPE

Pierre H. Fort, Nancy, France, assignor to Pont-a-Mousson S.A., Nancy, France

Filed Jun. 21, 1979, Ser. No. 50,858
Claims priority, application France, Jun. 23, 1978, 78 18812
Int. Cl.³ B61K 5/00; B61B 9/00, 12/10
U.S. Cl. 104—173 R 11 Claims



1. A machine for extracting centrifuged pipe comprising a rolling track oriented substantially horizontally and supporting an extracting carriage, a flexible element for traction of the carriage in two directions including an upper part for movement of the carriage in the reverse direction attached to the rear of the carriage and being positioned in a horizontal plane passing through the axis along which the carriage moves and a lower part for moving the carriage in the forward direction attached to a projection from the lower portion of the carriage, and means for simultaneously driving at the same speed the two parts of the flexible element in both directions, said upper part includes two strands which are symmetric about a vertical plane of symmetry through the carriage and which pass around a balanced wheel provided at the rear of the carriage.

4,291,631

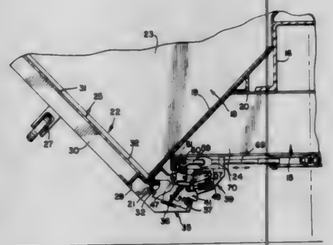
RAILWAY CAR SIDE DISCHARGE DOOR LOCKING ARRANGEMENT

Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 26, 1979, Ser. No. 33,586
Int. Cl.³ B65G 67/00; B61D 7/00, 19/00
U.S. Cl. 105—252 13 Claims

1. In a railway hopper car including an underframe,

a car body supported on said underframe including a hopper structure,
a sloping wall on said hopper structure, said hopper structure including a discharge opening, a door hingedly connected to said body for relative swinging movement between open and closed positions, relative to said opening the improvement of a door locking mechanism comprising;
a keeper member on said door, a rotatable latch member supported on said hopper structure, said latch member having a keeper engaging portion in a rotated locked position being engaged by said keeper member,
a locking member pivotally connected to said hopper structure adjacent to said latch members,
said locking member having a first stop, a second stop on said latch member engageable with said first stop to



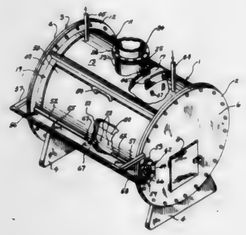
maintain said latch member in said rotated locked position relative to said keeper member,
means for pivoting said locking member between engaged and disengaged position comprising,
a linkage arrangement supported on said underframe including a link pivotally connected to said locking member,
actuating means connected to said link for moving the same in one direction to pivot said locking member,
said means including a cam follower connected to said underframe,
ground supported cam means below said cam follower engaged by said cam during movement of said car for moving said link in said one direction thereby disengaging said locking member, and
including means biasing said latch member to pivot to said locked position.

4,291,632
BOTTOM STRUCTURE FOR CONTAINERS, LOAD-CARRYING PLATFORMS OR THE LIKE
Bernd Barty, Frösön, Sweden, assignor to AB Nordplat, Ostersund, Sweden
Filed Mar. 19, 1980, Ser. No. 131,859
Claims priority, application Sweden, Mar. 8, 1979, 7902782
Int. Cl.³ B65D *19/02, 19/06*
U.S. Cl. 108—51.1 **3 Claims**



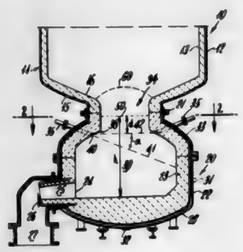
1. A bottom structure for load-carrying platforms, comprising a subjacent frame structure having longitudinal side beams and transverse beams extending therebetween having pockets for lifting forks, and a flooring of sheet material made of plywood resting on the frame structure, downwardly convex curved sheet-metal plates between said transverse beams secured at their edges to the upper portions of said transverse beams and said longitudinal side beams included in the frame structure, and a load-distributing rigid filling which supports the flooring between said beams filling the spaces above said plates up to the level of the upper sides of said transverse beams and the underside of said flooring.

4,291,633
INCINERATOR
Gordon H. Hoskinson, 186 Mayfair Rd., Floral Park, N.Y. 11001
Filed Oct. 4, 1979, Ser. No. 81,686
Int. Cl.³ B09B *3/00*
U.S. Cl. 110—235 **12 Claims**



1. An incinerator, comprising a housing defining a combustion chamber and composed of a pair of end plates and a generally cylindrical shell extending between the end plates, the upper portion of the shell having a feed opening extending the entire length of the shell between said end plates, a feed door to enclose the opening, hinge means for hinging the lower portion of the door to the shell whereby the door can be moved between a closed and open position, a stack connected to the upper portion of the shell to discharge waste gases of combustion, air inlet means located in the lower portion of the shell for introducing air into the combustion chamber, said hinge means being located between the upper and lower extremities of the feed opening, and a curved shield attached to the lower portion of the door to close off the space between the lower portion of the door and the shell when the door is in the open position.

4,291,634
SOLID REFUSE DISPOSAL APPARATUS
Victor E. Bergsten, East Amherst; Edward P. Eardley, Getzville, and Thomas G. Halvorson, Lockport, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed May 29, 1980, Ser. No. 154,519
Int. Cl.³ F23G *7/00*; C21B *7/00*; F27B *1/10*
U.S. Cl. 110—235 **6 Claims**



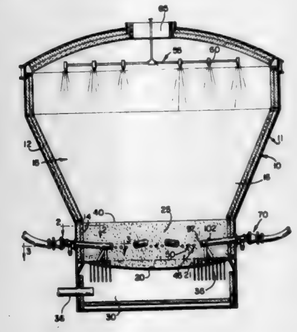
1. In apparatus for disposing of pelletized refuse by conversion to useful gaseous product and inert solid residue, including a vertical shaft with an upper end for pelletized refuse providing a drying zone in the top section and a thermal decomposition zone in the intermediate section thereof to form a pelletized refuse bed, a hearth beneath said shaft and in flow communication with the lower end of said shaft, means for feeding oxygen-containing gas into said hearth as a combustion zone,

and a tap hole communicating with said hearth for discharging molten residue therefrom, the improvement comprising:
(a) a hearth volume V (ft^3) which is greater than that defined by the following equation:

$$V = 7.28 \times 10^2 G_r D_s^2 / P_g$$

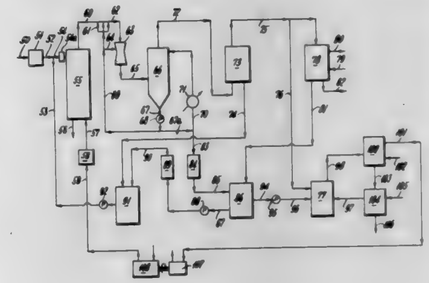
where
G_r = pelletized refuse maximum feed rate (lb. refuse/ft^2 shaft minimum cross-sectional area/second),
D_s = shaft minimum equivalent diameter (ft) and
P_g = furnace pressure (psia).
(b) an opening connection between the shaft and the hearth having minimum cross-sectional area between 0.044 and 1.0 times the shaft minimum cross-sectional area,
(c) a multiplicity of tuyeres as the means for feeding oxygen-containing gas into the hearth, each positioned at circumferentially spaced locations in the upper part of the hearth adjacent to the shaft-hearth connection (b) which are less than 35% of the vertical distance from the shaft-hearth connection (b) mid-point to the hearth floor, with
(d) said tuyeres inclined downwardly and away from the shaft-hearth connection (b) and directed so that said oxygen-containing gas does not impinge directly against said pelletized refuse bed.

4,291,635
APPARATUS FOR FEEDING FLUIDIZED BED INCINERATOR, AND METHOD OF AUTOGENIC OPERATION OF SAME
James F. Nelson, Houston, Tex., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Aug. 20, 1979, Ser. No. 67,604
Int. Cl.³ F23G *5/00*
U.S. Cl. 110—245 **13 Claims**



1. In a fluidized bed incinerator for combusting readily friable agglomerates, said incinerator being of the type having a gas impervious reactor housing, a generally horizontally disposed air distribution plate mounted in and dividing said housing into a windbox below the plate and a reaction chamber above the plate, a bed of inert particulate solids supported on the air distribution plate, air passage means in said plate for directing air flow upwardly through said plate, and for preventing the downward flow of said particulate solids through said plate, said means comprising a plurality of openings distributed across the plate, air pressurizing means for providing pressurized air in said windbox, and to fluidize the bed, and a feed means extending horizontally into the bed for introducing feed directly into an interior portion of the bed, the improvement comprising:
the combination of said feed means and supplemental air means in which said feed means includes a generally horizontally disposed first tube and means for passing said agglomerates through said tube in a high velocity air stream, said supplemental air means comprising a second tube disposed in surrounding relation to the first tube to the point of discharge within the bed and means for passing a high velocity air stream through said second tube to introduce a high velocity air-feed stream at the point of discharge into the bed.

4,291,636
SOLID REFUSE DISPOSAL PROCESS
Victor E. Bergsten, East Amherst; Edward P. Eardley, Getzville, and Theodore F. Fisher, Tonawanda, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed May 29, 1980, Ser. No. 154,520
Int. Cl.³ F23G *7/00*; C10J *3/02*
U.S. Cl. 110—346 **12 Claims**



1. In a process for disposal of solid refuse feed by conversion to useful gaseous product and inert solid residue in a vertical column with an upper end for fresh solid refuse feed as a drying zone and a lower end providing a thermal decomposition zone for the refuse, and a hearth beneath said column as a combustion-melting zone, in which air is separated to produce at least 40% oxygen by volume and fed to said combustion-melting zone, molten residue is discharged from said combustion-melting zone, fine particulate-containing overhead gas is discharged from the column upper end, and said overhead gas is cleaned by cooling and scrubbing with recycle condensate from a scrubbing-separation zone to provide product gas and bottom condensate, the improvement comprising:
(a) a maintaining said vertical column and said hearth at pressure between 30 and 250 psia;
(b) dividing the bottom condensate from said scrubbing-separation zone into three parts;
(c) mixing a first part of said bottom condensate as a portion of said recycle condensate with said overhead gas for cooling and partial scrubbing thereof in said scrubbing-separation zone to form partially scrubbed overhead gas;
(d) cooling a second part of said bottom condensate externally supplied refrigerant and contacting the so-cooled second part with the partially scrubbed overhead gas from (c) in said scrubbing-separation zone as another portion of said recycle condensate;
(e) filtering the third part of said bottom condensate in a first filter section to remove solid particulate material therefrom to form liquid waste having an organic portion;
(f) flowing a minor portion of said liquid waste through a second filter section previously loaded with solid particulate from the bottom condensate third part and removing the solid particulate from said second filter section to form a slurry recycle;
(g) mixing said slurry recycle with fresh solid refuse to form said refuse feed;
(h) flowing the remaining major portion of said liquid waste to an incineration zone;
(i) diverting a minor part of said product gas while discharging the product remainder from said process, and passing the so-diverted product gas to said incineration zone;
(j) providing air and passing same to said incineration zone;

(k) completely oxidizing the organic portion of the liquid waste remainder in said incineration zone and forming hot discharge gas therein;

(l) flowing said hot discharge gas to a steam boiler zone along with feed water for heat exchanging therein, and generating steam from said feed water while partially cooling the incinerator discharge gas; and

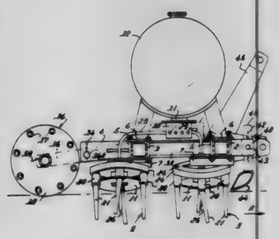
(m) discharging said steam from said steam boiler zone and recovering energy therefrom as part of the refuse disposal process energy requirement.

4,291,637

FREELY ROTATABLE SOIL CULTIVATING IMPLEMENTS WITH LIQUID DISPENSING

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 689,547, May 24, 1976, abandoned.
This application Nov. 21, 1977, Ser. No. 853,745
Claims priority, application Netherlands, May 27, 1975, 7506200
Int. Cl.³ A01C *23/02*
U.S. Cl. 111—7 **7 Claims**



1. A soil cultivating implement comprising a frame and at least one transverse row of tined soil working members rotatably mounted on upwardly extending shafts that are connected to said frame, the axes of rotation of the soil working members being defined by said shafts and inclined to the vertical, said axes being substantially aligned with one another in a transverse plane, at least one of said soil working members comprising a support and two downwardly extending tines diametrically mounted on said support with respect to the respective axis of rotation, said support together with said tines being freely rotatable about the corresponding shaft, said shaft being fixed to the frame and being non-rotatable relative to said tines during operation, the interior of said shaft comprising a cavity in communication with a fluid container supported on said implement, said cavity leading to a channelled feed member that comprises a downwardly extending extension of said shaft, the lower end of said feed member co-extending with said tines and said tines being rotatable around the feed member during operation responsive to contact with the ground, said lower end having an outlet port that communicates with an interior channel of said feed member, said outlet port being directed rearwardly with respect to the normal direction of travel, said feed member being detachable from the lower end of said shaft.

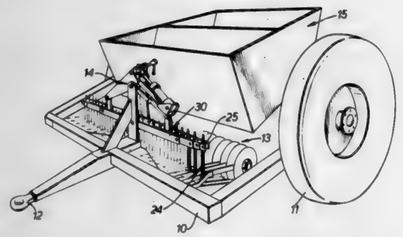
4,291,638

AGRICULTURAL IMPLEMENTS

Peter J. Renwick, Andover, England, assignor to Craven Tasker (Andover) Limited, Hampshire, England

Filed Aug. 28, 1979, Ser. No. 70,652
Claims priority, application United Kingdom, Aug. 30, 1978, 35112/78
Int. Cl.³ A01C *5/00*
U.S. Cl. 111—61 **19 Claims**

1. An agricultural ground treating device arranged to be towed over the ground, comprising a chassis and a plurality of ground engaging implements movably mounted on the chassis, and loading means operative between the chassis and the implements to cause the implements all to engage the ground with a substantially equal force, in which said loading means comprises a pivoted beam arrangement having a number of first balance beams equal to half the number of said implements each end of each of said first balance beams being pivotally connected to a respective one of a pair of said implements, a number equal to half the number of first balance beams of second balance beams each end of each of said second balance beams being pivotally connected to the mid point of a respective first balance beam, a pair of third balance beams each end of each of said third balance beams being pivotally connected to the mid point of a respective second balance beam, and a final balance beam each end of said final balance beam being pivotally connected to the mid point of a respective one of said third balance beams, the final balance beam being movably mounted on the chassis, and fluid pressure operated means operative on the final balance beam to urge the beam arrangement and the implements connected to it towards the ground.

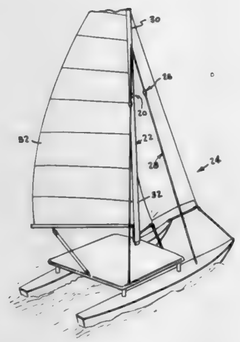


4,291,639

ELECTRICAL ISOLATION SYSTEM FOR THE MAST AND SHROUDS OF A SAILBOAT

Glenn A. Burdick, 701 County Rd. 80 West, P.O. Box 221, Tarpon Springs, Fla. 33589

Filed Jan. 8, 1979, Ser. No. 1,948
Int. Cl.³ B63B *35/00*; B63H *9/00*
U.S. Cl. 114—39 **11 Claims**



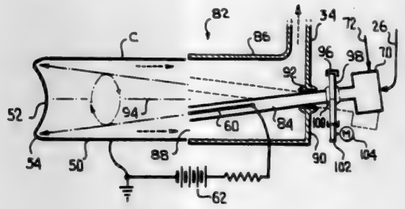
1. An electrical isolation system for use on sailboats having metal masts and shrouds for preventing accidental shocking or electrocution of persons who contact the lower portion of the masts and shrouds when an upper portion of the mast or a shroud come into contact with an electrical high voltage distribution or transmission line comprising a mast insulating member extending between an upper portion and a lower portion of said mast and a shroud insulating member extending between an upper and a lower portion of each shroud stay.

4,291,640

POWDER COATING APPARATUS FOR TWO-PIECE CANS

Robert D. Payne, Countryside, and Thomas F. Jordan, Oak Park, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Sep. 9, 1977, Ser. No. 831,977
Int. Cl.³ C23C *13/08*; B05B *7/00, 1/28*
U.S. Cl. 118—50.1 **9 Claims**



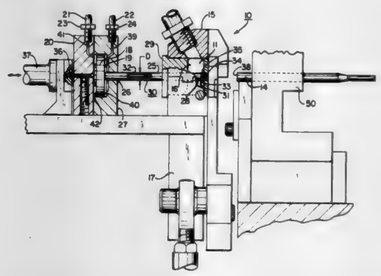
1. Apparatus for internally powder coating a closed end tubular member having an internal corner defined by an intersection of a body with an end and an axis, said apparatus comprising an elongated supply tube for supplying powder in a controlled stream and at an angle to the axis of the tubular member in the area of internal corner of the tubular member, means for effecting relative rotation of said supply tube and the tubular member generally about an axis of the tubular member to deposit powder to the corner and end of the tubular member in an annular pattern, supply means connected to said supply tube for delivering a powder stream to said supply tube, and fixed recovery means for withdrawing powder from the tubular member along the interior surface of the body of the tubular member to effect coating of the interior surface of the body by returning powder, said recovery means including a recovery tube having an open end of an internal diameter substantially corresponding to the internal diameter of the intended tubular member, said recovery tube having a wall and said supply tube extending through said wall, said supply tube terminating within said recovery tube and being small in cross section as compared to the open end of said recovery tube, and a suction source connected to said recovery tube.

4,291,641

LIQUID DISPENSING APPARATUS

Herman P. Nowak, Danvers, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Dec. 21, 1979, Ser. No. 106,194
Int. Cl.³ B05C *7/00*
U.S. Cl. 118—408 **6 Claims**



1. Apparatus for dispensing a metered quantity of a viscous liquid comprising:

a reservoir having coaxial apertures on opposing faces;

a housing having a chamber;

a hollow piston being disposed within said chamber;

a rod being slidingly disposed within said piston to form a cavity between an end of said piston and an end of said rod for containing a metered quantity of said liquid;

means attached to said housing for reciprocally moving said piston relative to said rod in opposite directions to open said cavity to receive said liquid, and to close said cavity to dispense said liquid; and

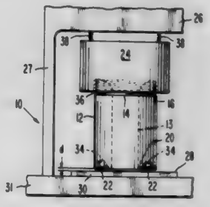
means attached to said rod for sliding said piston and rod in and out of said apertures in said reservoir.

4,291,642

NOZZLE FOR DISPENSING VISCOUS FLUID

Ronald F. Kolc, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,013
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—415 **6 Claims**



1. A nozzle adapted to uniformly dispense a thick film viscous fluid onto a substrate, said nozzle comprising:

a hollow tubular member having a fluid receiving port at one end thereof and a fluid dispensing orifice at the other end thereof, said fluid dispensing orifice having a preselected shape and size so that when said fluid is dispensed therethrough said fluid flows in said preselected shape onto said substrate;

a fixedly mounted base for supporting said substrate;

means for resiliently mounting said tubular member to said base and for urging said tubular member toward said substrate; and

means cooperatively connected to said tubular member for preventing said orifice from moving closer to said substrate than a predetermined spacial distance, said means for preventing avoiding sliding contact with said substrate.

4,291,643

DEVELOPING APPARATUS IN A MAGNIFICATION-VARIABLE COPIER

Yuochi Kobayashi, Yokohama, and Shinichi Kamiyama, Kawasaki, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 970,982
Claims priority, application Japan, Dec. 19, 1977, 52-152582
Int. Cl.³ B05C *11/00*; G03G *15/10*
U.S. Cl. 118—669 **6 Claims**

1. An apparatus for the development of an electrostatic latent image in a magnification-variable copier, comprising:

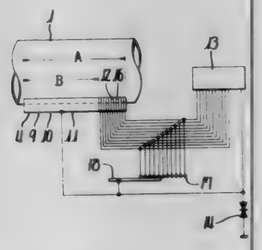
a photosensitive surface movable along a predetermined path;

latent image forming means for forming an electrostatic latent image to be transferred to a copying medium on said photosensitive surface;

developing electrode means located in an opposed relationship to said photosensitive surface for developing said electrostatic latent image formed on said photosensitive surface, said developing electrode means having a length sufficient to develop a full size copy, said developing electrode means including a plurality of electrode segments, each of said plurality of electrode segments being

electrically insulated from each other, said plurality of electrode segments being serially arranged in a row, said row being parallel to the direction of width of said photosensitive surface and perpendicular to a direction of travel of a copying medium passing through said copier, said plurality of electrode segments being divided into a first electrode portion consisting of one electrode segment and a second electrode portion consisting of at least one electrode segment, said first electrode portion having a length sufficient for the development of a reduced size copy, said second electrode portion having a length sufficient for the development of the excess copy area between the full size copy and the reduced size copy;

biasing potential supply means for supplying first and second biasing potentials, said first biasing potential being the potential necessary for the development of said electro-



static latent image, said second biasing potential being a potential greater than the surface potential of said photosensitive surface such that development of said electrostatic latent image is prevented, said biasing potential supply means being coupled to supply said first biasing potential to said first electrode portion; and

biasing switching means coupled between said biasing potential supply means and said second electrode portion for selectively coupling one of said first or second biasing potentials to said second electrode portion;

whereby said biasing switching means couples said first biasing potential to said second electrode portion when a full size copy is to be made on said copying medium by said copier and couples said second biasing potential to said second electrode portion where a reduced size copy is to be made on said copying medium by said copier.

4,291,644

APPARATUS FOR FABRICATING COMPOSITE METAL WIRE

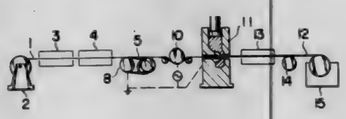
Kazumichi Kawai; Yasuo Kaneko; Keizo Abe; Hideo Matsuo; Yoshinori Kishi; Yasuhiko Miyake, and Yoshihiro Matsuyama, all of Hitachi, Japan, assignors to Hitachi Cable Ltd., Tokyo, Japan

Continuation of Ser. No. 937,830, Aug. 29, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,281

Claims priority, application Japan, Aug. 31, 1977, 52-104447; Sep. 6, 1977, 52-106922

Int. Cl.³ B05C *3/02*

U.S. Cl. 118—704 **14 Claims**



1. Apparatus for fabricating a composite metal wire comprising an extruder for extruding a cladding of soft metal around a core of hard metal; a core feed unit located upstream of said extruder for feeding said core to said extruder; a haul-off unit located downstream of said extruder for receiving said composite wire from said extruder; drive means for forcedly driving said core feed unit and said haul-off unit so as to maintain said core under constant low tension of not more than 50% of the breaking tension of said core; and a dancer roll assembly located between said core feed unit and said haul-off unit, said dancer roll assembly comprising a fixed pulley and a movable pulley, said pulleys having their axes in a horizontal plane and said dancer roll assembly serving to compensate for error in the feed rate between said core feed unit and said haul-off unit, thereby substantially eliminating breaking, peeling, and sparking of said core.

4,291,645

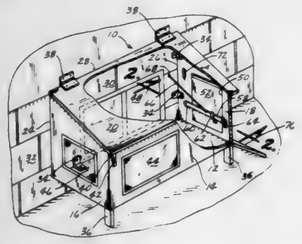
PET SHELTER

Wayne L. Cruchelow, and Marilyn Cruchelow, both of 1315-39th St., Des Moines, Iowa 50311

Filed Jun. 9, 1980, Ser. No. 157,563

Int. Cl.³ A01K *1/03*

U.S. Cl. 119—19 **5 Claims**



1. A pet shelter adapted to be mounted over an opening in a house wall, said wall having an interior surface and an exterior surface, said opening having an openable window therein, a small hole in said house wall providing communication between said interior and exterior surfaces thereof, said shelter comprising:

a housing having a top wall, a front wall, and opposite side walls, said top wall, said floor and said side walls each having rear edges adapted to abut against said exterior surface of said house wall in surrounding relation to said opening therein;

one of said lateral side walls having a door opening therein; a door within said door opening;

hinge means connecting said door to said one lateral side wall for hinged swinging movement both inwardly and outwardly with respect to said one lateral side wall;

a lock bar pivotally mounted to said one lateral side wall for pivotal movement about a horizontal axis from a first position to a second position wherein said lock bar extends transversely across said door opening;

first bracket means on said door for retentively receiving said lock bar in said second position whereby said lock bar operates with said first bracket to hold said door against swinging movement when said lock bar is in its said second position;

an elongated flexible control member having one end thereof connected to said lock bar at a point spaced from said pivotal axis thereof, said control member being adapted to extend through said small hole in said house wall so that the other end of said control member is on the interior surface of said house wall whereby said control member may be grasped and manipulated to cause movement of said lock bar between said first and second positions.

4,291,646

WHIRLPOOL THERAPY FACILITY AND METHOD OF TREATMENT

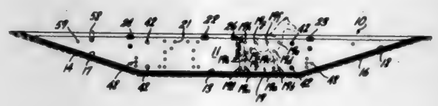
Angelo Leonaggeo, Jr., Seven High St., Bedford Hills, N.Y. 10507

Continuation of Ser. No. 849,256, Nov. 7, 1977, Pat. No. 4,183,329. This application Aug. 29, 1979, Ser. No. 70,880

The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.

Int. Cl.³ A01K *15/02;* **A61D** *11/00*

U.S. Cl. 119—29 **3 Claims**



1. A whirlpool therapy facility for applying water turbulence massage to selected portions of the body of a horse, comprising:

a channel shaped tub for containing a pool of water and having a substantially flat horizontal bottom positioned between a pair of opposed upstanding wall members;

a plurality of output nozzles carried by each of the wall members and opening into the pool, the nozzles being arranged in an inverted substantially U-shaped pattern on each of the wall members and arranged to correspond approximately to the relative positions of the legs and torso of a horse standing on the bottom, including at least one separate nozzle on each wall positioned to direct a water turbulence massage at each of the following areas of the horse: the shank, the knee, the forearm and elbow area, the chest, the shoulder, the haunch, the thigh, and with respect to the rear leg, the stifle, the gaskin, the hock, and the fetlock and pastern portions;

means for injecting water into the pool under pressure through selected ones of said nozzles, thereby to provide turbulence in the pool for massaging portions of the body of a horse situated in the tub between the wall members; and

means for treating the water contained by the tub to extract debris and other foreign matters therefrom, in which said water treatment means comprises:

a plurality of suction type skimmers carried by the wall members at the surface of the water;

at least one drain carried by the bottom of the tub;

a pump in fluid flow communication with the drain and said skimmers to extract water from the tub;

a plurality of filtering elements through which water is forced by said pump; and

a plurality of outlet openings carried by the wall members by which water enters the tub after passage through said filtering elements.

4,291,647

DEVICE FOR DISTRIBUTING LIQUID IN GIVEN DOSES FOR A MACHINE FEEDING AS DESIRED YOUNG SUCKLING MAMMALS

Michel A. J. Legrain, Foulbec, 27210 Beuzeville, France

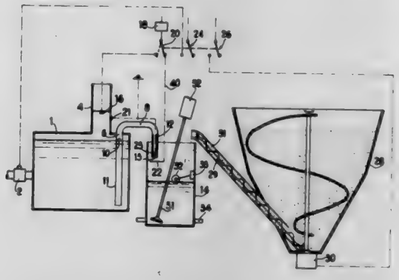
Filed Mar. 12, 1980, Ser. No. 129,770

Claims priority, application France, Mar. 14, 1979, 79 06463

Int. Cl.³ A01K *5/00, 9/00*

U.S. Cl. 119—51.11 **12 Claims**

1. A device for distributing a liquid in given doses for the mixture thereof, in a collecting recipient, with at least one other powdered ingredient such as powdered milk, for feeding young suckling mammals, said device comprising a source of liquid, a reservoir, a valve connecting the reservoir to the source, a calibrated tube upwardly extending the reservoir, means for checking the level of the liquid contained in the tube, a syphon having a short branch which extends into the reservoir and a long branch which extends into the collecting recipient, means for detecting the flow of liquid through the syphon and mounted in the collecting recipient and means connecting the liquid flow detecting means and the means checking the



level of the liquid in the tube to the valve for opening the valve automatically when, in the absence of flow through the syphon, the liquid in the tube descends to a level lower than a set level.

4,291,648

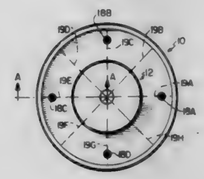
LIVESTOCK FEEDER

Gregory A. Garvin, Rte. 1, Box 106-A, Broad Run, Va. 22014

Filed Apr. 23, 1979, Ser. No. 32,492

Int. Cl.³ A01K *5/01*

U.S. Cl. 119—61 **8 Claims**



1. A feeder-watering trough comprising:

a unitary trough having an upwardly projecting centrally disposed portion, a bottom member and an outer retaining wall, said bottom member connecting said centrally disposed portion and said outer retaining wall together to form a continuous area in which feed or water may be positioned, said upwardly projecting central portion including a substantially centrally disposed opening on an underside portion of said trough;

a base member; and

at least one central support removably attached within said substantially centrally disposed opening of said unitary trough at an uppermost end thereof and being in adjustable engagement with said base member at a lower end thereof, said central support being designed to adjustably support said trough above ground level;

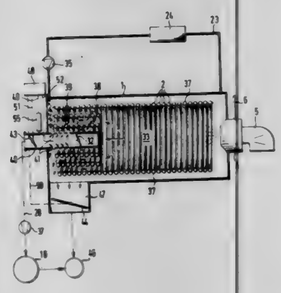
said upwardly projecting centrally disposed portion including an unobstructed inclined upper surface which ensures the even distribution of feed into said continuous area formed between said centrally disposed portion and said outer retaining wall and wherein said central support is positioned within said substantially centrally disposed opening of said unitary trough to provide an unobstructed area beneath said trough;

said outer retaining wall including an inwardly curved lip to prevent the discharge of feed or water over the top of said outer retaining wall.

4,291,649
PROCESS AND APPARATUS FOR DUCTING FLUE GAS WITHIN A BOILER

Wilfried Böder, Barsinghausen, Fed. Rep. of Germany, assignor to PPT Pyrolyse-und Prozessanlagentechnik GmbH & Co., Hanover, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,629
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826048; Aug. 18, 1978, 2836251
Int. Cl.[3] F22B 7/00
U.S. Cl. 122—136 R
29 Claims



1. A process for ducting flue gases produced in the firing space of a boiler, said boiler being of the type in which the flue gases within the boilder give up heat by being passed through heat absorbers, themselves cooled by heat transport fluid, and run ultimately to an off-gas stack, said process comprising the steps of:

dividing at least a portion of the flue gases coming from the firing space into at least two part-currents,

cooling the separate part-currents to different degrees by having them give up heat to the transport fluid,

mixing at least a portion of the part-currents together again to form a mixed gas current whose temperature, following mixing, is controlled by selecting the proportions of the part-currents in said mixed gas current;

running at least part of the mixed gas current to an external flue gas user.

the undivided portion of the flue gases and the portion of the mixed gas current not going to the user being run as far as through the last heat absorber to the off-gas stack.

8. Apparatus for ducting or routing flue gases produced in the firing space of a boiler, said boiler being of the type in which the flue gases within the boiler give up heat by being passed through heat absorbers cooled by a heat transport fluid, said flue gases being ultimately provided to an off-gas stack, said apparatus comprising:

means for dividing at least a portion of the flue gases from said firing space into at least two part-currents;

means including at least one heat absorber for cooling the separate part-currents to different degrees;

means for mixing at least a portion of the part-currents together again to form a mixed gas current, said mixing means including means for controlling the temperature of said mixed gas current by selecting the proportions of the separate part-currents included therein;

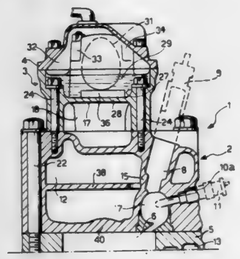
means for providing at least a portion of said mixed gas current to an external glue gas user; and

means for running the undivided portion of the flue gases and the portion of the mixed gas current not going to the user as far as through the last of said heat absorbers to said off-gas stack.

4,291,650
CYLINDER HEAD FOR COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINE

Antonio Formia, Turin, and Giorgio Filtri, Moncalieri, both of Italy, assignors to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Jan. 3, 1980, Ser. No. 109,426
Claims priority, application Italy, May 23, 1979, 68096 A/79
Int. Cl.[3] F01P 3/02; F02F 1/26
U.S. Cl. 123—41.82 A
2 Claims



1. A cylinder head for a compression ignition internal combustion engine, wherein:

(a) the cylinder head comprises a cast iron lower part which is to be fixed onto the cylinder block of said engine and which is formed to define walls delimiting both a cooling chamber through which engine coolant can flow, and a plurality of cavities providing for each of the cylinders of the engine a precombustion chamber, a seat for a fuel injector, and induction and discharge ducts,

(b) the cylinder head further comprises an aluminium intermediate part mounted on said cast iron lower part, and an upper cap element of aluminium surmounting said intermediate part, the upper surface of the aluminium intermediate part being shaped to define a bath for lubricating oil and being provided with support means for rotatably supporting the camshaft of said engine,

(c) said cast iron lower part and said aluminium intermediate part define between them a breather cavity which communicates with the outside and which when the cylinder head is mounted on said engine block is arranged to communicate with the space underlying the piston within each cylinder of the engine, so as to enable exhaust of air in said space as each piston travels towards its bottom dead centre position,

(d) said aluminium intermediate part is formed to define a number of vertically-extending apertures which communicate at their lower ends with said breather cavity and which at their upper ends open out into the upper surface of the said intermediate part at a level above the bottom of said bath, said apertures serving to limit the level of lubricating oil within the bath, and

(e) said cast iron lower part is formed to define bolt holes for the location of fixing bolts for securing the cast iron lower part to said engine block, said bolt holes lying within the external periphery of said intermediate part in alignment with respective ones of said apertures whereby access to said fixing bolts is possible without the need to remove the aluminium intermediate part from the cast iron lower part.

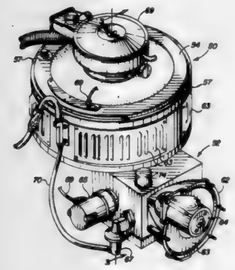
4,291,651
INTERNAL COMBUSTION ENGINE

Tony R. Villella, 2030 N. Black Canyon Hwy., Phoenix, Ariz. 85009

Filed Oct. 6, 1978, Ser. No. 949,372
Int. Cl.[3] F02B 57/06
U.S. Cl. 123—44 R
21 Claims

1. In an internal combustion engine including a stationary crankshaft having an axially offset portion between its ends; a rotating crankcase journalled about said crankshaft and enclosing said offset portion of the crankshaft; a plurality of cylinders mounted on said crankcase in angularly spaced relation; a piston received in each of said cylinders; and a connecting rod for each piston having one end pivotally connected to its piston by a wrist pin and the other end pivotally connected to said offset portion of the crankshaft, the improvements consisting of:

(a) a closed pressurized lubricating system for the journalled relation of said crankcase to said crankshaft; the pivotal mounting of said wrist pins in said cylinders, and the journalled relation of said connecting rods to said offset portion of said crankshaft;



(b) a fuel inlet portion in each of said cylinders and a stationary valve plate operatively associated with each of said fuel inlet portions;

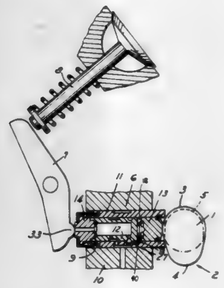
(c) a spark plug for each cylinder and a retainer for each of said spark plugs, said retainer taking the form of a snap ring which, in addition to maintaining its spark plug in assembled relation on its cylinder, dissipates heat from that spark plug; and

(d) a plurality of exhaust ports in each cylinder, together with a valve associated with each of said exhaust ports, one of said exhaust ports being a primary port which communicates with an environmental exhaust system and receives the initial gases of combustion.

4,291,652
HYDRAULIC TAPPET

Peter R. Trzoska, Cologne, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 26, 1979, Ser. No. 78,880
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1978, 2843918
Int. Cl.[3] F01L 1/14, 1/24
U.S. Cl. 123—90.57
6 Claims



1. A hydraulic tappet for a valve train of an internal combustion engine comprising;

a tappet piston defining a reservoir chamber;

a tappet cylinder slideably receiving said tappet piston;

a second lower piston slideably disposed in said cylinder and spaced apart from said tappet piston to define a pressure chamber therebetween;

the tappet cylinder being tubular in shape and defining a sidewall of said pressure chamber:

a camshaft having a cam surface thereon with a base circle portion and transitional and elevational portions;

a track surface laterally spaced and recessed on each side of said base circle portion and level with said transitional and elevational portions;

said track surface engaging an end of said cylinder and said cam surface engaging an end of said second piston;

a passageway fluidly connecting said reservoir with said pressure chamber when said cylinder is in a first position with respect to said tappet piston;

said passageway includes an annular recessed groove circumscribing the outer surface of a sidewall of said tappet piston having a port extending therethrough between said groove and reservoir chamber, a longitudinal groove recessed in an inner sidewall of said tubular cylinder, said longitudinal groove located on said cylinder to be constantly in fluid communication with said annular groove in said tappet piston and in fluid communication with said pressure chamber when said cylinder is in a first axial position with respect to said tappet piston;

a shoulder defining the bottom end of said longitudinal groove integral with said cylinder with said shoulder located above the bottom end of said tappet piston to cut off fluid communication between said longitudinal groove and said pressure chamber when said cylinder is in a second axial position with respect to said tappet piston;

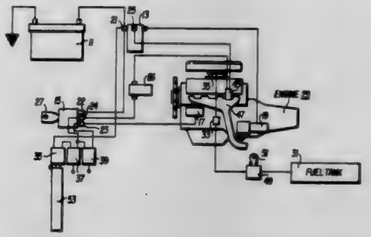
a Belleville spring mounted within said pressure chamber biasing said tappet piston and lower piston apart from each other;

said reservoir chamber connectable to a pressurized fluid supply in said internal combustion engine through a passageway extending through said tubular cylinder such that when said reservoir is fluidly connected to said pressure chamber, fluid passes between the said two chambers to separate the two pistons a predetermined distance.

4,291,653
DOOR CAR STARTER

Cleveland T. Tucker, Rte. 2, Box 49B, Dinwiddie, Va. 23841

Filed Jul. 19, 1977, Ser. No. 816,973
Int. Cl.[3] F02N 17/00
U.S. Cl. 123—179 BG
9 Claims



1. An automatic starting system for an internal-combustion engine powered vehicle having an operator's cab comprising:

a starting means for starting said engine;

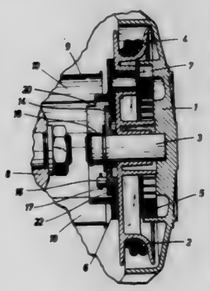
a battery for energizing said starting means;

one or more vehicle closure means providing access to the operator's cab;

a closure sensor means for monitoring at least one of said closure means and for allowing energy to flow from said battery to the starting means and said engine in response to one of said closure means being opened;

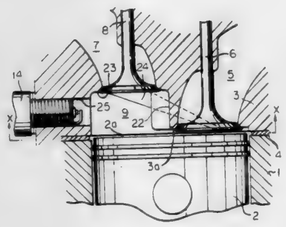
a closure sensor control means for selectively activating and deactivating the closure sensor means;
an internal-combustion engine sensor which automatically interrupts the flow of energy to said starting means in response to said engine starting.

4,291,654
PULLBACK STARTER FOR INTERNAL COMBUSTION ENGINES
Alfred Obermayer, Lambach, Austria, assignor to Bombardier-Rotax Gesellschaft m.b.H., Gunskirchen, Austria
Filed Nov. 5, 1979, Ser. No. 91,511
Claims priority, application Austria, Dec. 4, 1978, 8625/78
Int. Cl.³ F02N *1/00*
U.S. Cl. 123—185 BA **5 Claims**



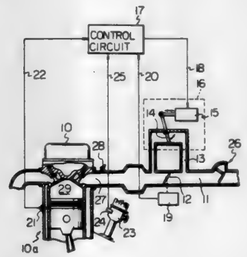
1. A pullback starter for an internal combustion engine having an input shaft, which is non-rotatably connected to a driven clutch member, said starter comprising
a frame,
an axle fixed in said frame,
a rope drum rotatably mounted on said axle,
a rope which is wound on said drum and adapted to be pulled from said drum so as to rotate the latter in a predetermined sense,
a pullback spring tending to rotate said drum opposite to said predetermined sense,
a one-way coupling element which is pivoted to said drum on a pivotal axis that is parallel to the axis of said axle, said coupling element carrying a first stop and being pivotally movable about said pivotal axis from an inner position to an outer position for one-way coupling engagement with said clutch member, and back to said inner position,
a locking member which is movable relative to said axle and mounted in said coupling element for rotation relative thereto about an axis of rotation to a locking position, said locking member carrying a second stop which cooperates with said first stop to prevent an outward movement of said coupling element from said inner position to said outer position, and to a non-locking position of said locking member, in which said second stop is arranged to permit said movement and said locking member engages said coupling element in the sense of said outward movement, and
a constraining spring, which extends around and is rotatable about said axle and torsionally prestressed to be normally in frictional contact with said axle and has at one end a spring arm, which protrudes laterally from said axle and engages said locking member, said constraining spring tending to move said locking member relative to said axle by means of said spring arm in the sense of said outward movement.

4,291,655
COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE
Yoshio Yamakawa, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aishi, Japan
Division of Ser. No. 778,230, Mar. 16, 1979, Pat. No. 4,166,436.
This application Jun. 21, 1979, Ser. No. 50,559
Claims priority, application Japan, Nov. 15, 1976, 51-136243
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—306 **4 Claims**



1. An internal combustion engine comprising:
a cylinder block,
a cylinder head mounted on said cylinder block,
a piston reciprocally movable in said cylinder block, said cylinder head and said piston defining a combustion chamber having a fixed volume therebetween when said piston reaches the top dead center position,
an intake valve in said cylinder head for leading a combustible mixture into said combustion chamber,
an exhaust valve in said cylinder head for discharging the exhaust gas to the atmosphere, said combustion chamber comprising a first region which forms a substantial combustion chamber and has a circumferential wall and a bottom wall, said combustion chamber further comprising a second region for creating a squish flow of a combustible mixture and a third region communicating said first region with said second region and guiding said squish flow towards the circumferential direction of said piston for causing a direct impingement of said squish flow upon the bottom wall of said first region and for creating a turbulence and a strong swirl motion of the combustible mixture in said first region,
said piston has a substantially flat top surface and said cylinder head has an inner wall having a flat surface portion, said first region being defined by a recess formed on the inner wall of said cylinder head, said second region being defined by the flat top surface of said piston and by the flat surface portion of said cylinder head, said third region being defined by at least one gradually inclined groove formed on the flat surface portion of the inner wall of said cylinder head;
said recess has a circumferential cylindrical wall and a bottom wall and is formed on the periphery of the inner wall of said cylinder head, said groove extending along the periphery of the flat surface portion of the inner wall of said cylinder head and opening into said recess tangentially to the circumferential cylindrical wall of said recess, said groove having a bottom surface upwardly inclined towards and terminating at the bottom wall of said recess, the bottom surface of said groove being directly connected to the bottom wall of said recess and being substantially uniformly inclined throughout its extent;
wherein said intake valve is disposed in the flat portion of the cylinder head, while said exhaust valve is disposed in the bottom wall of said recess; and
a spark plug having a spark gap in said combustion chamber.

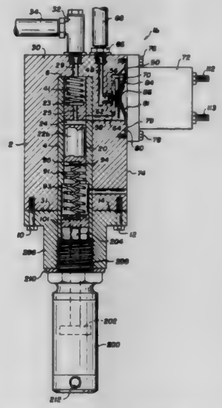
4,291,656
METHOD OF CONTROLLING THE ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE
Hideo Miyagi, Toyota, and Jiro Nakano, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jul. 6, 1979, Ser. No. 55,365
Claims priority, application Japan, Jul. 14, 1978, 53-85239
Int. Cl.³ F02D *11/10*; B60K *31/00*
U.S. Cl. 123—320 **6 Claims**



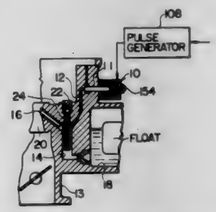
1. A method of controlling the rotational speed of an internal combustion engine having an intake passage, a throttle valve disposed in said intake passage, and a bypass passage which communicates said intake passage at a position located upstream of said throttle valve with said intake passage at a position located downstream of said throttle valve, said method comprising the steps of:
(a) providing a reference speed signal;
(b) providing a rotational speed signal having a value corresponding to the actual rotational speed of said engine;
(c) comparing said rotational speed signal and said reference speed signal;
(d) increasing the flow of air through said bypass passage and decreasing said reference speed signal by a predetermined value for use in providing a next reference speed signal when said rotational speed signal is equal to or less than said reference speed signal, and decreasing the flow of air through said bypass passage when said rotational speed signal is greater than said reference speed signal;
(e) repeating the steps (a), (b), (c) and (d) recited above at predetermined time intervals, whereby the difference between a respective rotational speed signal and a respective reference speed signal can be reduced.

4,291,657
DIESEL ENGINE SPEED GOVERNOR
Ernest R. Codrington, 1580 Cornell Ave., Coquitlam, British Columbia, Canada (V3J 3A1)
Filed Nov. 17, 1978, Ser. No. 961,523
Int. Cl.³ F02D *1/04*; G05D *11/00*
U.S. Cl. 123—387 **6 Claims**

1. A fast idle speed governor for a diesel engine having a fuel pump mechanically driven by the engine and a common rail fuel injection system, the governor comprising:
a valve body having a fuel inlet and a fuel outlet;
a bore within the body communicating adjacent a first end of the bore with the fuel inlet;
a valve piston slidable within the bore under the influence of pressure of fuel entering the inlet;
a passageway in the piston able to move, with sliding of the valve piston, between a first position that allows fuel to flow from the fuel inlet, through the passageway to the fuel outlet to a position where no fuel flows;
a control valve within the valve body movable between a closed position where fuel cannot flow through the governor to an open position where fuel can flow;
means to open and close the control valve;
variable control means biasing the valve piston to define the first position for the valve piston and thus to set the fast idel of a diesel engine at a predetermined speed;
a fluid cylinder connected to the body near a second end of the bore opposite the first end, the cylinder being axial with the bore and having an internal piston anda piston rod connected to the internal piston extending towards the bore, the variable control means for biasing the valve piston being between the rod and the valve piston so that the flow of fuel from the outlet increases when the rod moves towards the valve piston and the flow of fuel decreases when the rod moves away from the valve piston, said control means for biasing the valve piston comprising axial first and second coil springs, the second spring being shorter than the first spring, the first spring being compressed betwen the rod and the valve piston when the internal piston is in a position distal the valve piston, the second spring being compressible between the rod and the valve piston when the internal piston is in a position proximate the valve piston increasing the pressure of fuel from the fuel inlet required to decrease the flow of fuel from the inlet to the outlet.



4,291,658
AUTOMOTIVE ENGINE CARBURETOR
Kenji Masaki, Yokohama, and Koyo Nakamura, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Division of Ser. No. 854,230, Nov. 23, 1977, abandoned, which is a continuation of Ser. No. 654,742, Feb. 23, 1976, abandoned.
This application Oct. 26, 1978, Ser. No. 954,766
Claims priority, application Japan, Feb. 5, 1975, 50-15129
Int. Cl.³ F02M *7/00, 23/00*
U.S. Cl. 123—440 **4 Claims**



1. An automotive engine carburetor for use with an electronic closed loop air-fuel ratio control system to supply adequate air-fuel mixture to an internal combustion engine for effectively reducing noxious components in exhaust gases from the engine by a three-way catalytic converter, comprising:
an intake passage provided with a venturi;

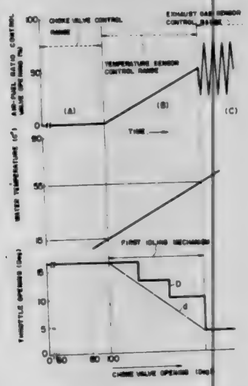
a float bowl for containing fuel therein;
a fuel passage extending between said venturi and said float bowl;
an air bleed passage connected to said fuel passage for delivering air thereto;
an auxiliary air passage connected to said fuel passage for delivering air thereto; and
an electromagnetic valve assembly of on/off type serving as an actuator operatively connected to said air bleed passage for controlling the rate of air flow in response to an electrical pulsating signal applied thereto from said electronic closed loop air-fuel ratio control system to supply an adequate air-fuel mixture to said internal combustion engine, said valve assembly having a member movable reciprocally in response to said pulsating signal between a first position in which the amount of air passing through said air bleed passage is at a maximum and a second position in which said amount of air is at a minimum, and means for providing adjustment of the distance of the valve member between said first and second positions.

4,291,659

AIR-FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Mikio Suzuki, and Toshifumi Nishimura, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 14, 1979, Ser. No. 103,718
Claims priority, application Japan, Dec. 28, 1978, 53-161960
Int. Cl.³ F02M *7/12, 1/10;* F02B *75/10*
U.S. Cl. 123—440 **9 Claims**



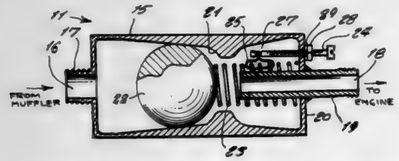
1. An air-fuel ratio control system for an internal combustion engine of an automotive vehicle, comprising:
an intake passage leading to the engine;
an exhaust passage communicating with the engine;
a choke valve provided in position in said intake passage;
a throttle valve provided in said intake passage;
venturi means positioned between said choke valve and said throttle valve in said intake passage for sucking the fuel including air bubbles;
means provided in said exhaust passage for detecting the air-fuel ratio;
means for detecting the engine temperature;
control means for receiving the output signals from said air-fuel ratio detecting means and said engine temperature detecting means to control on the basis thereof the air flow which will be mixed with the fuel, in such a way that the actual fuel-ratio is controlled at the three stages, that is, (A) when the engine temperature is lower than a first predetermined value, the air-fuel ratio is controlled only by said choke valve, (B) when the engine is at a temperature of said first predetermined value to a second predetermined value, said air-fuel ratio control means is actuated according to the output signals of said engine temperature detecting means so as to control the air-fuel ratio, and (C) when the engine temperature is higher than said second predetermined value, said air-fuel ratio control means is actuated according to the output signals from said air-fuel ratio detecting means so as to control air-fuel ratio.

4,291,660

RECYCLING EXHAUST FUMES VALVE

Isaac Molyneaux, 90-41 Corona Ave., Elmhurst, N.Y. 11737

Filed Feb. 28, 1980, Ser. No. 125,321
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **1 Claim**



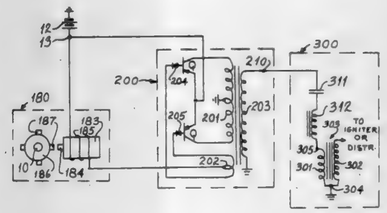
1. An accessory mounted on an internal combustion engine for recycling exhaust fumes thereof, comprising in combination, a valve unit mounted along a pipe connected between an exhaust pipe of the engine and an intake manifold of the engine, said valve comprising a cylindrical casing having a first inlet end in fluid communication with the exhaust pipe, and a second outlet end having a pipe extending in said casing toward said first end in fluid communication with the intake manifold; said cylindrical casing having a conical valve seat formed therein between said second outlet end and said first inlet end; a spherical ball positioned within said cylindrical casing between said first inlet end and said valve seat for movement therebetween, said valve seat being formed by said cylindrical casing and including a constricted portion extending from near said first inlet end toward said second outlet end and terminating in an annular flange portion near said second outlet end; a compression spring mounted about said pipe having a first end adjacent said second outlet end of said casing and a second end extending beyond said annular flange, said second end of said spring abutting against said spherical ball to urge said ball toward said first inlet end, said spherical ball being closed in said conical seat when the gas pressure from said first inlet end is greater than the force exerted by said compression spring; and a means for varying the compression force of said spring, said means comprising a threaded bolt extending through said second outlet end of said cylindrical casing, said threaded bolt having a first end outside of said casing and a second end in said casing in close proximity to said spring, said second end of said threaded bolt having a groove formed therein, said means further comprising a ring through which a plurality of turns of said spring pass, said ring having an eyelet formed remote from said plurality of turns positioned in said groove of second end of said threaded bolt, whereby the force of said compression spring on said ball may be varied by turning said threaded bolt and therefore varying the location of said plurality of turns.

4,291,661

INDUCTIVE-CAPACITIVE MODULATED IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 812,912, Jul. 5, 1977, Pat. No. 4,176,647, Ser. No. 868,118, Jan. 9, 1978, Pat. No. 4,168,692, Ser. No. 878,792, Feb. 17, 1978, Pat. No. 4,169,445, Ser. No. 913,437, Jun. 7, 1978, abandoned, Ser. No. 923,828, Jun. 12, 1978, Pat. No. 4,216,412, Ser. No. 960,871, Nov. 15, 1978, Pat. No. 4,206,736, Ser. No. 35,013, May 1, 1979, abandoned, and Ser. No. 44,301, May 31, 1979, Pat. No. 4,258,296. This application Aug. 13, 1979, Ser. No. 65,891
Int. Cl.³ F02P *15/10*
U.S. Cl. 123—606 **5 Claims**



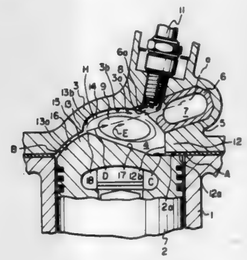
1. An ignition system for an engine which develops motive power by burning fuel, said system including an ignition transformer and an alternating current energy source, comprising the combination of:
a magnetically generating pulse timer having a sensing inductor coupled to said energy source; and
an inductive-capacitive circuit connected to and intermittently powered by said energy source, said circuit including a capacitor and a primary winding of said ignition transformer series connected to said capacitor, said circuit being passive and devoid of switches and arc-gap devices, said energy source including active electronic power generating means for producing oscillations, and a coupling transformer having a first winding connected to said active means, a second winding coupled to said sensing inductor and a third winding coupled to said circuit.

4,291,662

COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN AUXILIARY COMBUSTION CHAMBER

Norihiko Nakamura, Mishima; Kiyoshi Nakanishi, and Takashi Kato, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 30, 1979, Ser. No. 43,794
Claims priority, application Japan, Jul. 20, 1978, 53/87665
Int. Cl.³ F02B *23/08*
U.S. Cl. 123—661 **10 Claims**



1. An internal combustion engine, comprising:
a cylinder block having a cylinder bore therein;
a cylinder head mounted on said cylinder block having an auxiliary combustion chamber formed therein;
a first raised portion formed on the periphery of an inner wall of said cylinder head so as to project downwardly, having on its lower end a flat bottom face;
a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face so as to create a first squish area therebetween at the end of the compression stroke for spouting out a first squish flow along the top face of said piston;
a main combustion chamber, defined by the inner wall of said cylinder head and the top face of said piston;
a constricted connecting passage connecting said main and auxiliary combustion chambers;
an intake valve movably mounted on said cylinder head for leading a combustible mixture into said main combustion chamber;
an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;
a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said main combustion chamber, said rear face being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said main combustion chamber in the direction opposite to the spouting direction of said first squish flow and at said connecting passage, said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said main combustion chamber;
a spark plug arranged in said connecting passage; and
a third raised portion formed on the inner wall of said cylinder head above said second raised portion and having a bottom wall which cooperates with said rear face of said second raised portion for creating said second squish area therebetween, said auxiliary combustion chamber and said connecting passage being located such that a burning jet formed in said auxiliary combustion chamber is injected into said main combustion chamber substantially directly linearly at said second squish area.

4,291,663

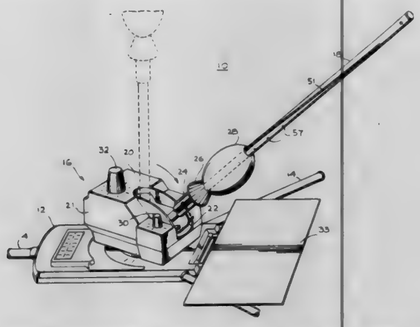
BALL THROWING MACHINE

Gordon H. Buck, Torrance; Otto L. Gabler, Lawndale; Eugene J. Kilroy, Palos Verdes Estates, and Richard Leoncavallo, Anaheim, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 4, 1980, Ser. No. 118,140
Int. Cl.³ F41B *7/00*
U.S. Cl. 124—26 **10 Claims**

1. A ball throwing machine comprising a base; a rod mounted to be supported by the base; means for selecting a direction in which the rod projects with respect to the base, including means for pre-setting an angle of projection from the vertical, means for holding the rod in the vertical position, means for releasing the rod to free fall from the vertical, means

for stopping the fall of the rod when it reaches the pre-set angle of projection; and means for propelling a ball along a path



initially defined by the axis of the rod after the rod has reached the stopping means.

4,291,664
PROJECTILE SHOOTING GUIDE FOR BOWS
Jim Z. Nishioka, 1268 Hemlock, N. W., Salem, Oreg. 97304
Filed Apr. 30, 1979, Ser. No. 34,287
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—41 A **11 Claims**



10. For use with a bow of the type having a bowstring and tensioning means connected to the bowstring, a combination comprising

(a) a projectile; and

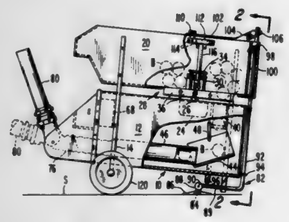
(b) a projectile shooting guide comprising support means for use on a bow,

(c) an elongated guide member for support on a bow by said support means and having a forward portion and a rearward portion,

(d) said guide member when supported on a bow by said support means extending toward a bowstring on a bow and positioned longitudinally in a direction of shooting motion of a bowstring for guiding said projectile to be shot by a bowstring;

(e) said projectile including multiple nocking means for each respectively receiving a bowstring.

4,291,665
PROPULSION DEVICE FOR SPHERICAL OBJECTS HAVING AN OSCILLATING SUPPORT FRAME PROVIDING A PROGRAMMED DISCHARGE OF SAID OBJECTS
C. Malcolm Bash, Roosevelt, and Joseph Pasquito, Lawrenceville, both of N.J., assignors to Prince Manufacturing Co., Inc., Princeton, N.J.
Filed Oct. 26, 1979, Ser. No. 88,434
Int. Cl.³ F41F *1/04;* **A63B** *69/38*
U.S. Cl. 124—56 **10 Claims**



9. In a propulsion device for spherical objects, of the type including a frame structure having a propulsion chamber and a hopper, a discharge barrel mounted on the frame structure, a rotary distributor within the hopper for feeding spherical objects to the propulsion chamber, and means in the propulsion chamber for propelling said objects from the barrel, an improvement for imparting oscillating motion to the barrel comprising:

(a) means below the propulsion chamber for gripping a surface in which the propulsion device is supported; and

(b) a motion translating mechanical driving linkage extending between the distributor and the gripping means, adapted for bodily imparting oscillating movement to the propulsion chamber, hopper, and barrel in response to rotation of the distributor, comprising a pivot shaft mounted on the frame structure, a link mechanically connected between the distributor and the rockshaft, said link being oscillated as a mechanical response to each rotation of the distributor for rocking the shaft first in one and then in the opposite direction, and a crank connected at one end to the shaft to rock therewith and anchored at its other end to the surface-gripping means for imparting a predetermined quantum of cyclic oscillatory motion bodily to the frame structure and the barrel mounted thereon as a mechanical response to each cycle of rotation of the distributor.

4,291,666
DRESSING TOOL FOR GRINDING WHEELS
Edward D. Garner, 4200 N. 48th St., Lincoln, Nebr. 68504
Filed Nov. 21, 1979, Ser. No. 96,485
Int. Cl.³ B24B *53/08*
U.S. Cl. 125—11 TP **9 Claims**

1. A grinding wheel dresser, comprising:

a fixed first member,

a second member slidably mounted on said first member for lateral reciprocation relative thereto,

a third member adapted to hold a dressing tool and slidably mounted on said second member for vertical reciprocation relative thereto and lateral reciprocation therewith,

said third member adapted to selectively move laterally with said second member without vertical reciprocation and to move vertically relative thereto simultaneously with the lateral reciprocation thereof,

a template with a predetermined profile,

means for mounting said template in a predetermined spaced relationship from said first member,

an elongated tracing rod having a first end and a second end,

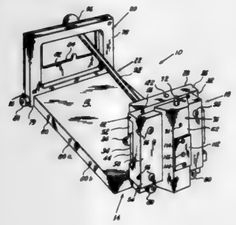
means extending said first end through said first and second members free of engagement therewith and into said third member,

means for engaging said first end with said third member against independent movement relative thereto,

a fulcrum support on said rod,

means securing said fulcrum support against vertical and horizontal movement but retaining capability for said fulcrum support to turn in place,

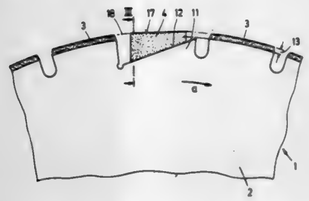
said rod arranged for slidable movement relative to said fulcrum support,



said second end of said rod disposed and adapted for manual movement in contact with said template profile whereby said first end acts against said third member and effects action against said second member to reproduce the template profile by a dressing tool secured to said third member, and

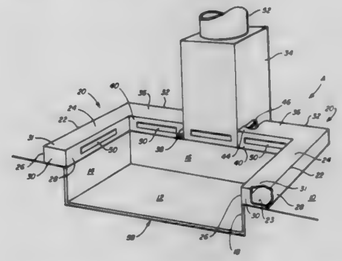
the sliding capability of said rod relative to said fulcrum support serving to maintain all lines of movement of said first end correspondingly planar with lines of movement of said second and third members as the orientation of the axis of said rod changes.

4,291,667
CUTTING WHEEL
Rolf Eichenlaub, Quellenweg 26, D-5900 Siegen-Volnsberg, and Boris Z. Novakovic, Am Homberg 28, D-5902 Netphen 2-Frohnhausen, both of Fed. Rep. of Germany
Filed Dec. 11, 1979, Ser. No. 102,414
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853650
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—15 **10 Claims**



1. Cutting wheel for natural and artificial rock material, especially road surfaces of asphalt or concrete, comprising a carrier disk, cutting segments on the circumference of said carrier disk, and at least two extra segments spaced apart along the circumference of the carrier disk and made of a material harder than that of the normal cutting segments, each said extra segment being constructed with a beveled, lower narrow side by which it is attached to a base formed on the circumference of the carrier disk and having a corresponding counter bevel ascending in the direction of rotation of the carrier disk, the beveled narrow side of the extra segments projecting from both side faces of the base.

4,291,668
GRIDDLE VENTILATING SYSTEM
Erwin W. Moeller, 1839 Robertson Ave., Galesburg, Ill. 61401
Filed Mar. 5, 1979, Ser. No. 17,415
Int. Cl.³ F24C *3/00, 15/20;* **F24F** *9/00*
U.S. Cl. 126—41 R **9 Claims**



1. A vent apparatus for ventilating an indoor grill or griddle mounted in a table or surface, comprising:

(a) a plurality of hollow, walled inlet arm members mounted on the surface adjacent the grill about a portion of the periphery thereof;

(b) said inlet arm members each having an elongate collection slot formed in a wall thereof adjacent the grill to receive and conduct smoke and vapors away from the grill;

(c) a receiving chamber mounted with the surface and in communication with said inlet arm members for receiving smoke and vapors therefrom;

(d) fan means for drawing smoke and vapors away from the grill into said inlet arm members and said receiving chamber; and

(e) outlet means for transporting the smoke and vapors upwardly away from said receiving chamber to ventilate the grill.

4,291,669
EFFICIENT FUEL BURNING STOVE OR FURNACE WITH THERMAL ENERGY SLOW PROPAGATION FLUE STRUCTURE
Robert H. Herne, Jr., 121 Woodbridge Rd., York, Me. 03909
Filed Jun. 25, 1979, Ser. No. 51,683
Int. Cl.³ F24C *15/28*
U.S. Cl. 126—83 **16 Claims**

1. A new and improved stove or furnace for combusting and extracting heat from wood and carbonaceous fuels comprising:

firebox means for primary combustion of said fuels;

a flue structure coupled to said firebox comprising a plurality of flue gas decelerating chambers for slowing propagation of flue gas, heat exchange to the environment, and further combustion of fuel constituents, said chambers coupled in series through restricting and accelerating passageways for maintaining draft between chambers;

tubular conduit means extending from the firebox through said flue structure and formed with orifices for injecting burning flue gas from the firebox primary combustion into said series coupled chambers to enhance secondary burning in said chambers;

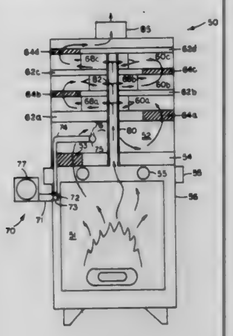
and outlet means for venting the output of said series alternating accelerating and decelerating flue gas structure.

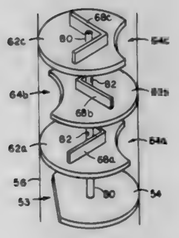
16. A new and improved method for combusting and extracting heat from wood and carbonaceous fuels comprising:

igniting and burning said fuel in a primary combustion;

alternately accelerating and drafting, and decelerating and spreading, the flue gas from said primary burning step, maintaining draft during the accelerating steps and slowing propagation, exchanging heat to the environment, and further combusting or pyrolizing the constituents of the flue gas during the decelerating step;

and injecting a jet of burning flue gas directly from the primary combustion through a separate pathway into the decelerating and spreading flue gas during the decelerating and spreading steps to enhance further combustion of the flue gas constituents during deceleration and spreading.





4,291,670

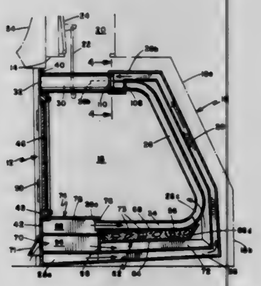
GAS FIRED FIREPLACE INSERT WITH HEAT EXTRACTOR

Everett C. Hvatt, 3157 Peg Leg Mine Rd., Jamul, Calif. 92035,

Filed Jul. 8, 1980, Ser. No. 166,765

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—121 **3 Claims**



1. A gas fired heat extractor insert for the cavity of a fireplace, comprising:

a plurality of substantially parallel C-shaped heat exchanger tubes having open lower and upper ends;

a substantially C-shaped heat exchanger duct surrounding the tubes and having an open lower end adjacent the lower ends of the tubes and an open upper end adjacent the upper ends of the tubes, the duct extending substantially across the width of the tubes;

a glass door fireplace closure for sealing the frontal opening of the cavity and attached to the ends of the tubes and the duct;

first manifold means for coupling the lower ends of the tubes to a first air inlet extending through the fireplace closure;

conduit means for coupling the lower end of the duct to a second air inlet extending through the fireplace closure;

second manifold means for coupling the upper ends of the tubes and the duct to a plurality of air outlets extending through the fireplace closure, including a plurality of outlet pipes extending between the outlets in the fireplace closure and the upper ends of the tubes and the duct, the pipes being spaced apart to permit hot exhaust gases to rise upwardly therebetween into a flue of the fireplace; and

nozzle means mounted beneath the tubes and above the duct for discharging a combustible gas from a source connectable thereto so that the gas can be burned with air drawn through a third air inlet extending through the fireplace closure.

4,291,671

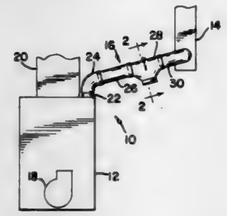
APPARATUS FOR FUEL ECONOMY

Dennis R. Senne, 5167 W. 167th St., Oak Forest, Ill. 60452

Continuation-in-part of Ser. No. 909,839, May 26, 1978, abandoned. This application Oct. 25, 1979, Ser. No. 88,166

Int. Cl.³ F23L *3/00*

U.S. Cl. 126—292 **1 Claim**



1. Apparatus for improving the efficiency of combustion in a heat-exchanger automatic gas-fired furnace system, comprising:

(1) an exhaust conduit for venting the effluent products of combustion gases from said system,

(2) means for imposing a dwell in the flow of said effluent gases, without restricting the latter, including:

(3) a fixed baffle in said conduit to deflect the flow of some or all of said gases,

(a) said baffle including means for reducing its effective area so as to deflect less of the exhaust gases passing thereby

(4) an enlarged chamber in stream with said exhaust conduit, hermetically closed to the ambient atmosphere, enclosing said baffle into which effluent gases are deflected,

(a) said enlarged chamber comprising a Tee union in said exhaust conduit having a through-flow for effluent gases between inlet and outlet ports at opposite ends of said Tee, the depending leg of the Tee being hermetically sealed against the ingress and engress of gases, said baffle being fixedly mounted normal to said through-flow of effluent gases to deflect the gases into the leg of the Tee in their passage to the outlet port, said baffle being centered with respect to the central axis of the depending leg of the Tee,

(5) said chamber and baffle being constructed and arranged to provide an unrestricted area of flow around said baffle substantially equal to or greater than said exhaust conduit, so as to retard, without restricting, the flow of the products of combustion therethrough,

(6) whereby said dwell augments the combustion cycle by enhancing the temperature and time parameters of the latter to decrease the CO, the excess air, and the H_2O condensate, and to increase the CO_2, in the products of combustion ultimately discharged through the exhaust conduit, thus, further to augment the heat in said furnace system without the input of additional fuel.

4,291,672

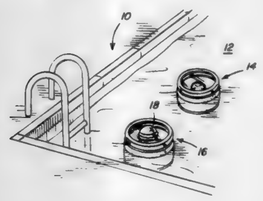
FLOATABLE SOLAR HEAT MODULES

Jay W. Ricks, 4121 Cambridge Dr., Bakersfield, Calif. 93306

Filed Jun. 16, 1980, Ser. No. 160,010

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—415 **5 Claims**



1. A floatable solar heating module for use in heating bodies of water comprising; a heat conducting plate for transferring heat to the water, a solid heat storage means in contact with said plate and a transparent plate spaced from said heat storage means to transmit solar radiation to said heat storage means, said heat storage means being enclosed within a storage container, said container supporting said transparent plate above said heat storage means, said container being in contact with a heat conducting panel, said heat conducting panel being spaced from said heat conducting plate and receiving solar radiation through said transparent plate, said heat storage means positioned so as to receive conduction heat from said heat conducting panel and conduct a portion of said heat to said heat conducting plate, said module including a float positioned so as to surround said container.

4,291,673

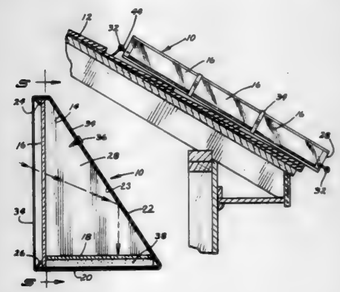
PASSIVE SOLAR ROOF ICE MELTER

Roger T. Deutz, 4844 Vincent Ave., South, Minneapolis, Minn. 55410

Filed Aug. 9, 1979, Ser. No. 65,127

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **6 Claims**



1. A passive solar roof ice melter for use on a sloping enclosure roof, said melter including:

A. an elongated frame including:

i. An elongated flat bottom wall partially bounded by parallel, spaced apart front and rear edges, and

ii. a flat reflecting wall made of material which reflects solar energy, said flat reflecting wall being coextensive with the length of the bottom wall and extending upwardly from the entire rear edge of the bottom wall at an acute angle with respect to said bottom wall;

B. a first plate translucent to passage of solar energy and other radiant heat transferring energy, said plate being coextensive with the length of the frame walls and extending from the entire front edge of the bottom wall to the entire top edge of the reflecting wall, said first plate being in perpendicular relationship to said bottom wall;

C. means to close the ends of the triangles formed by end edges of said bottom and reflecting frame walls and said plate; and

D. means to position said melter to rest above the sloping enclosure roof with a first end edge portion of said flat and reflecting frame walls and said first plate adjacent to and overlying a bottom edge of said roof, and with a second end edge portion of those walls and that plate lying generally up the roof from the edge thereof.

4,291,674

PROCESSES AND DEVICES FOR CLIMATIZING GREENHOUSES

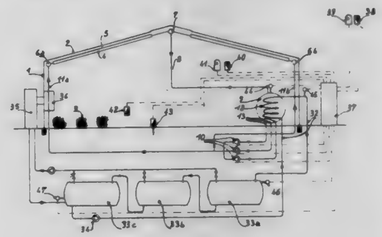
Paul Y. Comte, Antibes, and Rene J. Repetti, Mougins, both of France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, France

Filed Feb. 21, 1979, Ser. No. 13,688

Claims priority, application France, Feb. 17, 1978, 78 04999

Int. Cl.³ F24J *3/02;* **A01G** *1/00*

U.S. Cl. 126—419 **17 Claims**



1. Device for climatising greenhouses and other shelters for growing plants which comprises a transparent covering, solar collectors consisting of two transparent plates which define between them a space in which a heat-carrying liquid circulates and a closed circuit including the said collectors, which collectors are placed under said transparent covering, the heat-carrying liquid being composed of a suspension in water of a product which is heavier than water, which partly absorbs the visible spectrum, and means for varying the concentration of the said suspension as a function of the outside luminosity so that the said collectors constitute an artificial shade having a variable and controllable opacity.

4,291,675

SOLAR ENERGY COLLECTOR

Muhammed A. Rahman, 1121 Arlington Blvd., T-221, Arlington, Va. 22209

Continuation-in-part of Ser. No. 867,972, Feb. 6, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 102,027

Int. Cl.³ F24J *3/02;* **A23C** *3/04*

U.S. Cl. 126—432 **9 Claims**

1. A solar energy collector comprising:

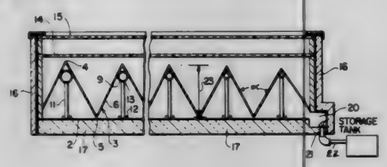
base means;

solar energy absorbing means positioned in a plane spaced from said base means, said solar energy absorbing means having an accordian-like shape comprising a plurality of alternating angularly disposed lower valleys and upper ridges interconnected by generally planar surfaces, said

lower valleys being positioned spaced from but immediately adjacent to said base;

fluid supply means positioned between said solar energy absorbing means and said base means immediately adjacent said upper ridges and being adapted for supplying a fluid adjacent said upper ridges; and

trough means adapted for receiving a flow of fluid collected on said base;



whereby fluid supplied adjacent said upper ridges will then flow down said planar surfaces thereby transferring heat absorbed by said solar energy absorbing element to the fluid, until dropping off said lower valleys onto said base, the close positioning of said lower valleys to said base providing means for maintaining fluid contact between said lower valleys and the fluid flowing on said base thereby further improving the heat transfer efficiency.

4,291,676

SOLAR COLLECTOR, COMPRISING AN EVAPORATION/CONDENSATION SYSTEM

George A. A. Asselman, and Adrianus J. Van Mensvoort, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,416

Claims priority, application Netherlands, Jun. 30, 1978, 7807174

Int. Cl.³ F24J *3/02*; F28D *15/00*

U.S. Cl. 126—433 **1 Claim**





1. A solar collector, which comprises a sealed tube having an evaporation zone receiving solar energy during operation and a condensation zone arranged during operation at a level higher than that of the evaporation zone; an evaporable heat transport medium contained in said tube, said heat transport medium during operation being evaporated in the evaporation zone and being condensed in the condensation zone, the resulting condensate returning to the lower end of the evaporation zone under the influence of gravity; a plurality of pieces of a liquid-absorbing material arranged within the evaporation zone of the tube in contact with the inner surface thereof and extending in a row longitudinally of said tube, adjacent liquid-absorbing material pieces being spaced from each other, said spaced liquid-absorbing material pieces each respectively retaining a portion of the returning condensate and thereby interrupting the return of all the condensate to the lower end of the evaporation zone whereby, upon start of operation, evaporation of the heat transport medium occurs also along the length of the evaporation zone rather than solely at the lower end of said evaporation zone; and a shaft for mounting said pieces to maintain the same in contact with the inner surface of the evaporation zone of the tube in which the shaft is freely rotatable about the tube axis.

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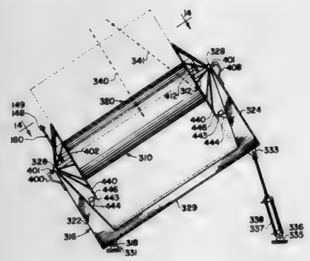
SOLAR ENERGY COLLECTOR

Robert J. Monk, 175 Shadybrook, Cedar Hill, Tex. 75104

Continuation-in-part of Ser. No. 864,617, Dec. 27, 1977, Pat. No. 4,161,942. This application Sep. 22, 1978, Ser. No. 944,865

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **17 Claims**



1. Solar energy collection device for concentrating light and infrared energy rays onto a small surface area whereby energy resulting from said energy rays striking said small surface area is utilized by various means to accomplish useful work comprising: a plurality of symetrically arranged supports, said supports forming a parabola shaped frame; support means rotatably supporting said parabola shaped frame and maintaining the direction of an axial plane of said parabola shaped frame in alignment with the direction of light and infrared energy rays arriving from the sun; means adjustably supporting said supports to said support means; said means adjustably supporting said supports comprising a plurality of threaded shaft secured at spaced intervals about said supports and means to move said threaded shaft relative to said support means; a plurality of flexible strips of film, said strips having an upper reflective surface with said upper reflective surface bearing against the supports, said strips being positioned across said supports from the outer support of said parabola shaped frame to the opposite side of the support through the center of said parabola shaped frame, means to tension said strips over said support, said reflective film further arranged to form a parabola shaped mirror surface to reflect said light and infrared energy rays to the focus of said reflective film strips; and a collector assembly secured at the focus of said parabola shaped mirror and adapted to receive said light and infrared energy rays.

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SOLAR FURNACE APPARATUS

Benjamin W. Strickland, Box 30, Joliet, Mont. 59041

Filed Aug. 7, 1979, Ser. No. 64,493

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **4 Claims**

1. A solar furnace apparatus including a reflector portion, a collector portion and a fluid transfer portion, said reflector portion including a generally dish-shaped reflective member, said reflective member having a conic section configuration with a large open face and a highly reflective internal surface, said collector portion being disposed along the axis of and at the focal point of said reflective member, said collector portion including a chamber formed of a plurality of concave longitudinal conductive metal sections joined at their edges, the cross section of said longitudinal sections forming a generally star-shaped configuration, said concave longitudinal sections being disposed substantially parallel to the longitudinal axis of said reflective member, end sections affixed to the free edges of said concave longitudinal sections and therewith forming an enclosed chamber, a central conduit means extending from one of said end sections to a point adjacent the other end section but spaced therefrom, a plurality of discrete longitudinal baffle means disposed within said chamber around said central conduit means, inlet and outlet means communicating with said chamber, the distance across the cross section of said collector portion being less than the length of said concave longitudinal



sections thereof, mounting means for the securing of said collector portion adjacent the apex of said reflective member, said fluid transfer portion including conduit means connected to said inlet and outlet means of said collector portion and means associated with said conduit means for circulating fluid to a heat storage or heat dissipating means.

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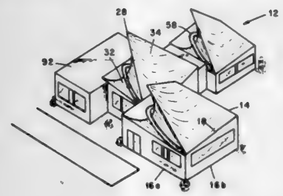
STRUCTURAL SOLAR COLLECTOR

Joseph A. Kersavage, 4022 Sequoyah Ave., Knoxville, Tenn. 37919

Filed Mar. 3, 1980, Ser. No. 126,880

Int. Cl.³ F24J *3/02*; G02B *5/08*

U.S. Cl. 126—438 **5 Claims**



1. An apparatus for concentrating and collecting radiant energy from an energy source comprising a reflector member and curved elongated absorbing member, said reflecting member comprising a hyperbolic paraboloid structure having a reflective concave surface directed toward said energy source for reflecting said radiant energy to a curved, elongated focus, said elongated collecting member extending along said focus.

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DOUBLE-WALLED GLASS SOLAR ENERGY COLLECTOR

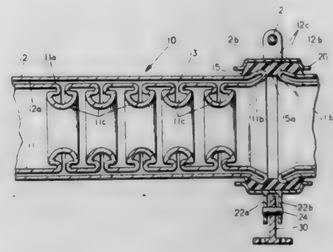
Rodney V. White, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 26, 1979, Ser. No. 107,218

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—443 **10 Claims**

1. A solar energy collector comprising, in combination, a transparent outer glass tube, an inner glass tube concentrically inserted in said outer tube with an annular space defined between the outer wall of the inner tube and the inner wall of the outer tube, means for sealing the axial ends of said tubes together to permit evacuating the said annular space, means for flowing a heat transfer fluid thru the inner glass tube, a solar energy absorbent coating on the outer wall of said inner glass tube, thereby trapping solar energy incident on said outer tube within said heat transfer fluid and said inner glass tube, said inner glass tube having at least one axial portion of its length deformed inwardly to form a bellows-shaped expansion section to absorb differences in expansion of said inner and outer tubes, said bellows-shaped section having the same outer diameter as said inner tube and the outer diameter of the inner tube being at least 85% of the inner diameter of the outer tube.



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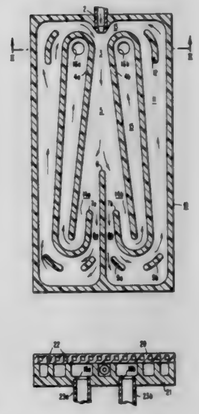
FLAT PLATE HEAT EXCHANGERS

Robert T. Berringer, 571 Ascot Pl., Land O Lakes, Fla. 33539

Filed Feb. 19, 1980, Ser. No. 122,489

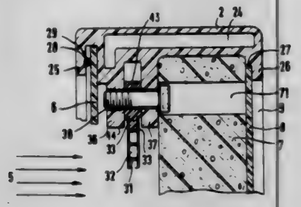
Int. Cl.³ F24J *3/02*; F28D *7/00*

U.S. Cl. 126—445 **1 Claim**



1. A flat plate solar energy collector comprising a bottom plate of rigid plastic foam material, said bottom plate having four side walls and multiple flow guides within said side walls, an inlet nozzle on a first of said side walls, a straight flow guide opposite said nozzle and extending from a second side wall whereby fluid from the inlet nozzle is split into two flow channels, the area between said nozzle and said straight flow guide comprising a diffuser means, means comprising two elongated curved discontinuous flow guides to further split said two flow channels into four flow channels, two exit ports in said bottom plate with each exit port lying within the confines of one of said two elongated curved discontinuous flow guides, said exit ports being located near the nozzle side of the solar collector, plural relatively short flow guide means for directing fluid from said second side wall back to said first side wall to be combined with flow from said nozzle, wherein all of said flow guides are formed as a unitary structure with said plastic bottom plate, a transparent plastic top plate secured over said bottom plate to admit sunlight to fluid in the collector.

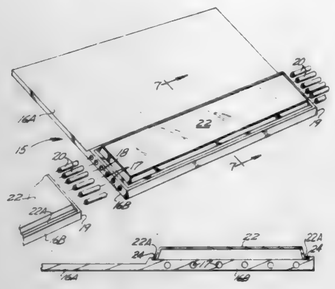
4,291,682
SOLAR COLLECTOR
Uriel Baratz, Katznelson 2, Tivon, Israel
Filed May 21, 1979, Ser. No. 40,879
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822970
Int. Cl.³ F24J 3/02
U.S. Cl. 126—448 **4 Claims**



1. A solar-heat collector, comprising:
a frame made of lightweight plastic,
a blackened heat exchanger made of lightweight plastic, through which a heat-conducting medium flows, secured in said frame, the heat exchanger comprising a double-walled, multi-bridged plastic plate with a series of parallel channels and separating walls extending from one medium-carrying member of the frame to the other,
a feed manifold and a discharge manifold for the heat-conducting medium, both in said frame and secured to opposite ends of the heat exchanger, each manifold having two projecting walls between which the heat exchanger is clamped,
feed and discharge pipe connections for the heat-conducting medium, respectively attached to said feed and discharge manifolds,
a light-transmitting covering in front of the heat exchanger,
heat insulation behind the heat exchanger,
the frame having joining sides that extend between and join the two manifolds together,
the heat exchanger, parallel with its channels and separating walls, being provided with a pair of projecting borders at each side, guidingly received in the joining sides of the frame by an interconnecting lug extending between and outwardly from each pair of borders, and
fastening means securing said borders to said joining sides via said lug.

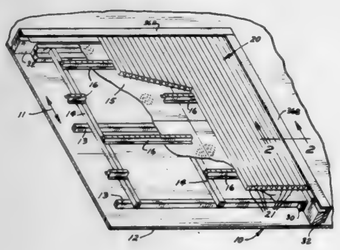
4,291,683
SOLAR PANEL
Bruce R. Bayles, 1921 Riverview St., Eugene, Oreg. 97403
Continuation-in-part of Ser. No. 833,017, Sep. 14, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,099
Int. Cl.³ F24J 3/02; E04D 1/00
U.S. Cl. 126—448 **4 Claims**

1. A solar panel for securement to a roof surface in rows for converting solar radiation to thermal energy, said panel comprising in combination,
a planar base constructed of monolithic elastomeric material having a first portion adapted to be secured to and overlie an underlying supporting surface and be overlapped by a like solar panel, a base second portion integral with and of greater thickness than said first portion and adapted to partially overlie the first portion of an adjacent panel, said second base portion defining multiple conduit passageways open at their ends and extending lengthwise of said second base portion, communicating means at the panel extremities and communicating the passageways of the solar panel with those of an adjacent solar panel, said communicating means including surfaces for the insertion of nipples to join adjacent panels and
a transparent cover on said second portion of said base and defining an air space, said cover constituting a barrier to minimize convection losses from said second portion wherein said transparent cover has marginal areas inset



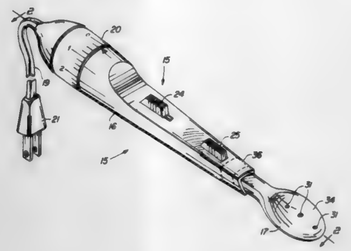
within said second portion of the panel base and is not overlapped by said second base portion.

4,291,684
GLAZING FOR SOLAR HEAT COLLECTORS WITH PROVISIONS FOR THERMAL EXPANSION OF THE GLAZING
Frank D. Werner; Lowell A. Kleven, and Richard C. Greig, all of Jackson, Wyo., assignors to Park Energy Company, Jackson, Wyo.
Filed Jul. 20, 1979, Ser. No. 59,262
Int. Cl.³ F24J 3/02
U.S. Cl. 126—450 **14 Claims**



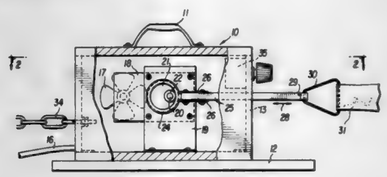
1. In a solar heat collector assembly having a peripheral frame, radiant energy collector means mounted in said frame, and a radiant energy transparent cover having first and second spaced ends and overlying said collector means, the improvement comprising means to permit expansion and contraction in end to end dimension of said cover member comprising means to retain said cover member from end to end sliding movement relative to said frame at location spaced from one of said first and second ends of said cover member to permit substantially unrestrained thermally induced variation along the major parts of the end to end dimension of the cover, means mounted on the frame and spaced from the one end to slidably support said cover member for substantially unrestrained sliding movement relative to said frame, and sealing means extending between at least the one end of said cover and said frame to form a weather seal between said cover member and said frame to permit shifting of the one end of said cover member relative to the frame while the sealing means remain sealed.

4,291,685
THERAPEUTIC HEAT AND COSMETIC APPLICATOR
Dennis L. Taelman, 6200 S. 30th St., Phoenix, Ariz. 85040
Filed Jun. 15, 1979, Ser. No. 49,041
Int. Cl.³ A61H 1/00, 23/02
U.S. Cl. 128—24.1 **4 Claims**



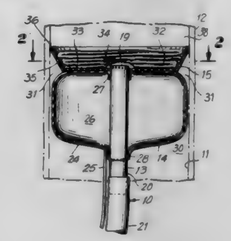
1. A therapeutic hand-held electrical applicator for facial treatment comprising:
a hollow elongated tubular handle,
a hollow heat applying element mounted at one end of said handle,
an electrical means comprising a rheostat mounted within said handle and a heating means mounted within said element,
said rheostat selectively controlling the electric current flowing through said heating means for heating said element,
a material dispensing means mounted within said handle,
at least one opening in said element,
conduit means connecting said material dispensing means with said opening, and
control means on the exterior of said handle for selectively controlling said electrical means and said material dispensing means,
said control means comprising a sleeve mounted for rotatable movement around the outer periphery of said handle for controlling said rheostat and a switch for selectively actuating said material dispensing means,
a vibrator means mounted within said handle for vibrating said heat applying element,
said vibrator means comprising a piezoelectric transducer having a sleeve mounted around the outer periphery of said handle adjacent said heat applying element; and
said control means actuating said vibrator means.

4,291,686
BACK AND SPINE EXERCISER
David J. Miyashiro, 733 Mililani St., Hilo, Hi. 96720
Filed Jan. 14, 1980, Ser. No. 111,697
Int. Cl.³ A61H 7/00
U.S. Cl. 128—52 **6 Claims**



1. A method of exercising the back and spine of a person, comprising the application to the spine of a gentle, slow cyclical action of alternate periods of tension and relaxation of the tension, by applying a harness to the head and chin of the user, and applying symmetrical and cyclic reciprocating motion of small amplitude having a 360° substantially sinusoidal waveform when plotted against time, and of slow period to said harness substantially along a line parallel to the axis of the spine.

4,291,687
INFLATABLE PACKING FOR SURGICAL USE HAVING AUXILIARY INTESTINAL SUPPORTING MEMBER
Manfred Sinnreich, 160 Ft. Hill Rd., Scarsdale, N.Y. 10583
Continuation of Ser. No. 82,793, Mar. 2, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,947
Int. Cl.³ A61F 5/46; A61M 27/00
U.S. Cl. 128—129 **1 Claim**

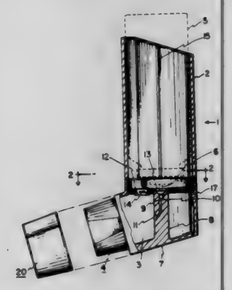


1. In an inflatable surgical packing for use in supporting the intestines of a patient following a hysterectomy or exenteration procedure, said packing having an inflatable element having an inner end surface, said inflatable element adapted to conform and substantially fill a surgical cavity formed by said procedure, said inflatable element having a principal axis and drainage means substantially aligned with said axis and projecting therethrough, the improvement comprising: an arcuate cupped support element lying generally transversely with respect to said axis and secured at a central area thereof to said inner end surface to surround said drainage means; said support element including a generally planar circular centrally disposed portion having a centrally positioned opening, said opening having an edge surrounding an open end of said drainage means, said portion being supported directly by said inflatable element, and a frusto-conical peripheral portion flaring in a direction away from said open end of said drainage means and having a free edge, said edge, when unstressed, extending outwardly of the maximum lateral excursion of said inflatable element, said open end of said drainage means being located within said frusto-conical peripheral portion whereby upon the filling of said cavity by said inflatable element and the forming of an arcuate interstice at an inner peripheral end thereof with said cavity, said support element may overlie said interstice to be spread thereover by contact with otherwise unsupported intestinal tissue to overlie said interstice and prevent the pinching of such tissue.

4,291,688
INHALATION DEVICE
Frederic E. Kistler, Horw, Switzerland, assignor to Schering Corp., Kenilworth, N.J.
Filed Dec. 17, 1979, Ser. No. 104,610
Claims priority, application European Pat. Off., Jan. 11, 1979, 79810001.2; Oct. 25, 1979, 79810138.2
Int. Cl.³ A61M 15/00
U.S. Cl. 128—200.23 **15 Claims**

1. An inhalation device of the type adapted to receive and locate an aerosol container designed to administer a multiplicity of metered doses, said aerosol container having a composition under pressure therein and having metering valve means including a valve stem and associated metering means, the valve stem having an axial discharge tube extending therethrough for discharge of a metered dose upon actuation of said metering valve means by depression of said valve stem, said inhalation device comprising a body having a skirt adapted to

receive and locate said aerosol container in a first end thereof and a head-piece connected to a second end of said skirt, a mouth-piece extending from said head-piece and in communication therewith, and an audible signal generating means, said head-piece having actuating means for said metering valve means and a discharge passageway leading to a discharge orifice directed towards said mouth-piece, said actuating means being engageable with the valve stem upon locating of the container within the skirt and operable to actuate the metering valve means whereby a metered dose is discharged through the valve stem discharge tube and the discharge passageway and discharge orifice into the mouth-piece, an air-passageway extending through at least part of said body from a location at least upstream of said actuating means to said mouth-piece and providing a path for air to flow from the ambient into the mouth-piece upon inhalation through the mouth piece, wherein said audible signal generating means is located in said air-passageway within the body upstream of said discharge orifice and surrounds the actuating means for the metering valve means, and is actuatable upon inhalation through said mouth-piece when said inhalation device is in engagement with said container.

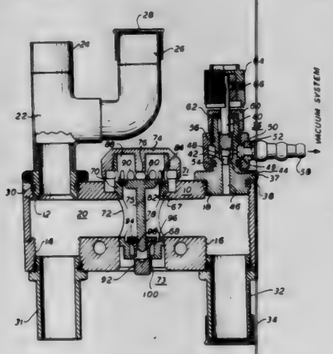


4,291,689

EVACUATION MANIFOLD FOR MEDICAL ANESTHESIA CIRCUITS

Wayne W. Hay, Madison, Wis., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 19, 1979, Ser. No. 86,962
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—200.24 **4 Claims**



1. An anesthetic gas evacuation manifold, said manifold having an inlet for receiving exhaust anesthetic gases and an outlet for discharging said gases to a vacuum collection system, said manifold having a positive pressure relief valve and a negative pressure pressure relief valve, said positive pressure relief valve having a first valve seat and a first normally closed movable valve member, said first movable member adapted to move from said first valve seat when a predetermined positive pressure occurs within said manifold, said negative pressure relief valve having a second valve seat and a second normally closed movable valve member, said second movable valve member adapted to move from said second valve seat when a predetermined negative pressure occurs within said manifold and means external of said manifold to simultaneously manually move said first and second movable valve members, respectively, from said first and second valve seats.

4,291,690

MEANS FOR PERFORMING AN EMERGENCY CRICOTHYROTOMY

John W. Jessen, 421 Keeney, Evanston, Ill. 60202

Filed Mar. 21, 1979, Ser. No. 22,424
Int. Cl.³ A61B *17/32*; A61M *16/00*
U.S. Cl. 128—200.26 **9 Claims**



1. An emergency cricothyrotomy trocar assembly enclosed within a functional capsular package, said assembly comprising stylet means having a short fluted shaft terminating in a lancet having at least one elongated cutting knife edge, a straight and unobstructed tube means surrounding said shaft and forming a cannula removably mounted on and deployed by said stylet cutting and penetrating the skin of a throat and a cricothyroid membranne while passing into a trachea, the flutes forming an immediate air passage during insertion while the stylet is still in the cannula, and means on said stylet and cannula for flaring the intratracheal end of the cannula to provide a self-retention means for securing the cannula within the trachea after said stylet is completely withdrawn from said cannula.

4,291,691

COMBINED RESPIRATOR AND CATHETER SUCTION ADAPTER

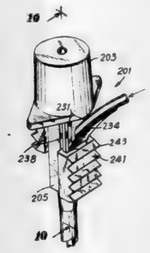
Luis A. Cabal, Pasadena, Calif., and Carmelo P. Dali, Chesire, Conn., assignors to Novametrix Medical Systems, Inc., Wallingford, Conn.

Filed Oct. 30, 1978, Ser. No. 955,514
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—204.18 **18 Claims**

1. An adapter for removably connecting a tube to a respirator comprising:

a substantially straight elongated body having first and second open ends, means on said first end adapted to be connected to said respirator, means on aid second end adapted to be connected to said tube, said body having a sole, substantially straight hollow, unobstructed axial bore extending between said ends, an access opening, and an inclined bore communicating between said access opening and said axial bore whereby a catheter can be inserted through said access opening into said axial bore, and

access closure means comprising a member adapted to be gripped by one or more fingers of a user, movably mounted on the periphery of said body for limited movement between a position covering said access opening and a position proximately adjacent to yet exposing said access opening, said body further including means disposed between said ends for positively preventing inadvertent movement of said closure means further away from said covering position than said proximately adjacent position when said access closure means is moved to said exposing position.

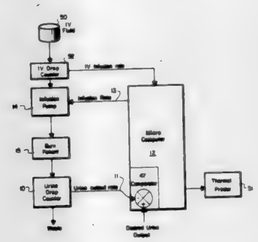


4,291,692

CLOSED-LOOP INFUSION SYSTEM, BOTH METHOD AND APPARATUS, BASED ON REAL TIME URINE MEASUREMENT

Robert J. Bowman, and Dwayne R. Westenskow, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Oct. 9, 1979, Ser. No. 83,027
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 E **22 Claims**



1. A closed loop system for controlled infusion of fluids, medication and diagnostic substances based on real time measurement of urine output of a patient, comprising:

(a) a urine drop counter including

(i) a drop chamber,

(ii) means for successively sensing occurrences of drops of urine within said drop chamber,

(iii) inlet means having an opening size and configuration adapted to form drops of substantially uniform volume,

(iv) means to compensate for drop volume variation with variation in urine flow rate; and

(v) outlet means adapted for conducting urine from said chamber to a collection site;

(b) a small diameter tube connected at one end to said inlet means and adapted in length and configuration for connection at the other end to a bladder catheter to be associated with the patient, the catheter/tube combination including means to prevent rate of urine flow within said tube from exceeding rate of urine production by a patient's renal system;

(c) comparator means coupled to said drop sensing means to provide monitoring of real time flow rate of said urine based on frequency of drop occurrence and to compare said real time flow rate with a predetermined flow rate selected for the patient, said comparator means including means to provide an error signal output corresponding to a variance detected between the real time and predetermined flow rates;

(d) regulated infusion means adapted for automatically introducing said fluids, medications and diagnostic substances within said patient at variable infusion rates; and

(e) computer means coupled to (i) the error signal output of the comparator means and (ii) the regulated infusion means, for processing said error signal and for providing an appropriate correction signal to said infusion means for adjusting infusion rates to thereby increase or decrease patient fluid levels or concentrations of medication or diagnostic substances until a null reading is obtained at the comparator based on changes in urine output.

4,291,693

FLUID METERING DEVICE

Robert J. Todd, and Terry M. Wonder, both of Salt Lake City, Utah, assignors to Sorenson Research Company, Inc., Salt Lake City, Utah

Filed Nov. 13, 1979, Ser. No. 93,422
Int. Cl.³ A61M *5/16*
U.S. Cl. 128—214 C **22 Claims**



1. A fluid metering device comprising:

a drip chamber;

a primary fluid channel in fluid communication with a fluid source;

a secondary fluid channel vented into said drip chamber and connected at one end thereof to said primary fluid channel so as to be in fluid communication therewith; and

a drip generator, said drip generator comprising (1) a fixed resistor means in fluid communication with said primary fluid channel, said fixed resistor means being situated so as to cause the fluid flowing therethrough to flow essentially upwardly through said resistor means, and (2) a drip forming means in series with said fixed resistor means, whereby the level of fluid in said secondary fluid channel will vary in proportion to the rate of fluid flow through said drip generator.

4,291,694

APPARATUS AND METHOD FOR PERFORMING A THORACIC OPERATION

S. Chai, 187 Bolivar La., Portola Valley, Calif. 94025

Filed Oct. 29, 1979, Ser. No. 89,221
Int. Cl.³ D61M *5/00*
U.S. Cl. 128—214.4 **12 Claims**

1. In a kit of instruments adapted for use in performing a percutaneous thoracic operation on a patient, a hollow needle

having one end adapted to be inserted into said patient through the chest wall, between a pair of ribs, and into the pleural cavity; and a hollow tube having a distal portion and a proximal portion, said proximal portion having at least one aperture therein and being adapted to be inserted through said hollow needle into said pleural cavity, said distal portion having at least one aperture therein and being adapted to be connected to



means for evacuating fluid from said pleural cavity of said patient through said hollow tube, said distal portion of said hollow needle being adapted to receive a section of said distal portion of said hollow tube, and a first means carried on an interior surface of said distal portion of said hollow needle and a second means carried on an exterior surface of said section of said hollow tube being adapted to lock said hollow needle and said hollow tube together.

4,291,695

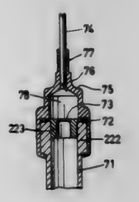
DISPOSABLE INJECTION SYRINGE

Hendrik M. Bekkering, Oist, and Ernst M. Schmidt, Eindhoven, both of Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Continuation of Ser. No. 929,167, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 783,943, Apr. 1, 1977, abandoned. This application May 2, 1980, Ser. No. 146,152

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—218 NV **5 Claims**



1. A disposable syringe comprising:

a cylindrical body having a constant internal diameter throughout its length, connecting means on the outer portion of the cylindrical body adjacent the forward end thereof;

a needle hub assembly affixed to the forward end of the cylindrical body, said needle hub assembly including a hub portion having locking means coacting with the connecting means on the forward end of the cylindrical body to retain the needle hub assembly on the forward end of the cylindrical body, said hub portion including a needle mounting portion extending forwardly from the forward end of the cylindrical body, the inner diameter of the needle mounting portion adjacent the forward end opening of the cylindrical body having a diameter at least as large as that of the inner diameter of the cylindrical body to form a hub chamber, said needle mounting portion having a forward section adapted to receive an injection needle;

a rupturable sealing member closing off the forward end of the cylindrical body; plunger means sealingly and slidably positioned in the cylindrical body adjacent the rearward end thereof to form a medicament chamber between the plunger means and the sealing member; and

a finger grip affixed to the rearward end of the cylindrical body, the sealing member being sufficiently flexible whereby the pressure developed by forward movement of the plunger means will rupture said sealing member and commence the flow of the medicament into the hub chamber and out of the needle and wherein continued forward movement of the plunger means will result in travel thereof into the hub chamber to fully inject the major portion of the medicament carried by the medicament chamber.

4,291,696

COMPACT TAMPON-APPLICATOR ASSEMBLY WITH RIBBED INNER TUBE

David F. Ring, Morganville, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Sep. 27, 1979, Ser. No. 79,612

Int. Cl.³ A61F *15/00*

U.S. Cl. 128—263 **4 Claims**



1. In a tampon applicator assembly having a proximal end, a distal end, and comprising a generally cylindrical outer tube; a generally cylindrical inner tube having an outside diameter less than the inside diameter of said outer tube, said inner tube being snugly nested, coaxially within said outer tube;

a tampon enclosed coaxially within said inner tube;

a gripping portion affixed to the distal end of said inner tube and extending out of the distal end of said outer tube for gripping said inner tube and reciprocating said tube almost completely out of said distal end of said outer tube;

and at least one restraining element in the distal half of the outer tube for restraining said tampon from reciprocating with said inner tube so that the tampon will remain enclosed by said outer tube when said inner tube is reciprocated;

the improvement wherein said inner tube is provided with a plurality of radially spaced ribs extending longitudinally along the inside surface thereof, said ribs terminating at the proximal ends thereof in bearing surfaces; whereby when said inner tube is reciprocated, said tampon will be transferred from said outer tube and when said reciprocated inner tube is then urged towards the proximal end of the assembly, the bearing surfaces of said ribs will bear against the distal end of said tampon and expel said tampon.

4,291,697

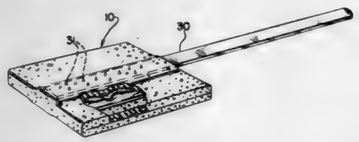
CLEANING AND APPLICATION DEVICE FOR MEDICAL PURPOSES

Stephen Georgevich, 4741 Royce Rd., Irvine, Calif. 92715

Filed Apr. 18, 1980, Ser. No. 141,416

Int. Cl.³ A61M *35/00*

U.S. Cl. 128—269 **13 Claims**



1. A sterilizable, cleaning device for medical purposes, comprising:

(a) a sponge element;

(b) a pouch disposed within the sponge, the pouch containing cleaning or antiseptic liquids, the sponge being edge sealed along at least one side to completely encapsulate the pouch therein, the pouch comprising:

i. a rupturable film selected from the class consisting of plastic, plastic laminate, and a laminate of aluminum and plastic,

ii. the pouch bearing one or more weakening lines thereon adapted to be ruptured under pressure; and

(c) a handle defining two ends and a medial area, a portion of the medial area being sealed within the sponge, and adjacent the pouch, whereby pressure on the sponge and handle ruptures the weakening lines, thereby releasing the liquid from the pouch, a portion of liquid being absorbed by the sponge, the remaining liquid passing outwardly through the sponge and along its surface, and pressure on the sponge while scrubbing forces absorbed liquid to the sponge surface to provide a continuing supply of liquid on the sponge surface for application thereof.

4,291,698

BUTTON FOR SURGICAL APPLICATIONS

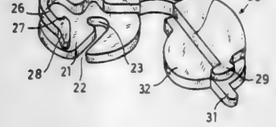
Heinz Fuchs, deceased, late of Melsungen, Fed. Rep. of Germany (by Hedwig Fuchs, heir); Hans-Friedrich Müller, Hamburg, and Hildegard Hecht, Spangenberg, both of Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Nov. 28, 1979, Ser. No. 98,184

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853289

Int. Cl.³ A61B *17/04*

U.S. Cl. 128—335 **10 Claims**



1. A button for surgical applications comprising a disk having a parallel-walled housing, a slot which extends to a thread passage for guiding a thread therethrough within the circumference of the disk, the thread passage and the slot being in one housing wall, the other housing wall being recessed past the passage, said passage being closeable by a clamping means for clamping the thread firmly in the passage, with the clamping means including a disk segment rotatably joined to and movable parallel with the disk over the slot and thread passage to a latched position where its inner marginal part is past the thread passage, and in the latched position the disk segment inner marginal part protrudes into a cavity past an edge of the disk recessed housing wall and a disk segment recessed edge behind the inner marginal part is adjacent said edge of the disk recessed housing wall.

4,291,699

METHOD OF AND APPARATUS FOR AUTOMATICALLY DETECTING AND TREATING VENTRICULAR FIBRILLATION

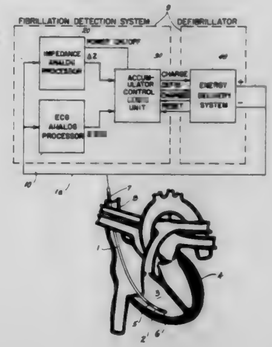
Leslie A. Geddes; Joe D. Bourland, both of West Lafayette, Ind., and Reese S. Terry, Freeport, Tex., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 21, 1978, Ser. No. 944,369

Int. Cl.³ A61N *1/36*

U.S. Cl. 178—419 D **23 Claims**

1. An automatic cardiac ventricular defibrillator comprising: means for sensing electrical and mechanical activity of a cardiac ventricle in the form of ECG analog signals and the impedance of the ventricle, an ECG analog processor for producing an ECG analog processor signal of a fibrillatory condition, means for communicating the sensed electrical activity to said ECG analog processor, accumulator-control-logic means for counting fibrillatory signals, means for communicating an ECG analog processor signal of a fibrillatory condition from said ECG analog processor to said accumulator-control-logic means, an impedance analog processor operatively connected to said sensing means and responsive to said accumulator-control-logic means and for developing a signal of a non-fibrillatory condition which effects a decrementing count, means for communicating an activation switching action to said impedance analog processor responsively to a predetermined number of counted fibrillatory signals to selectively activate said impedance analog processor, means for communicating impedance measurement of the ventricle to said impedance analog processor, means for communicating an impedance analog processor derived signal of a non-fibrillatory condition to said accumulator-control-logic means while the impedance analog processor is activated, said accumulator-control-logic means being thereafter simultaneously responsive to both ECG analog processor and impedance analog processor signals, and an energy delivery system responsive to said accumulator-control-logic means to effect a defibrillating electrical shock to the heart appropriate to the correction of a fibrillatory heart condition.



4,291,700

Patent Not Issued For This Number

4,291,701

PRESSURE TRANSDUCING AND METHODS AND APPARATUS FOR FILLING A CAVITY

Ronald Bowman, Laguna Beach, Calif., assignor to Bell & Howell Company, Chicago, Ill.

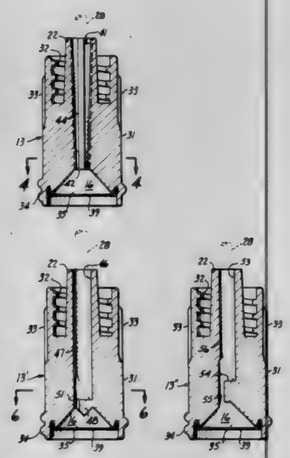
Filed Jul. 11, 1978, Ser. No. 923,600

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—675 **28 Claims**

1. A method of filling a cavity and a port extending for a distance from said cavity with a liquid through a hypodermic

needle longer than said distance, while permitting gas and excess liquid to escape, comprising in combination the steps of:
- providing said port with a straight passage leading to said cavity;
- partially inserting said needle into said straight passage of said port;
- stopping said partially inserted needle by engagement inside said port short of said cavity while providing an overflow and gas escape path throughout said straight passage along the outside of said stopped partially inserted needle;
- injecting liquid through said needle into said cavity while preserving said overflow and gas escape path; and
- withdrawing said needle from said port while continuing to



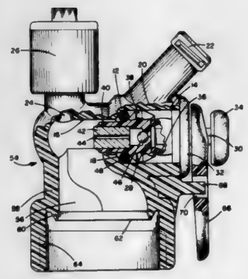
inject liquid through said needle until said port is filled with said liquid.

7. An apparatus having a port and a cavity for receiving a liquid from a hypodermic needle through said port, comprising in combination:
- a straight passage in said port leading to said cavity for receiving part of said needle;
- means in said port for engaging said needle inside said port and stopping said needle short of said cavity; and
- means in said port for providing an overflow and gas escape path throughout said straight passage.

13. A dome for a pressure transducer having a port, a cavity for receiving a liquid from a hypodermic needle through said port, and an opening for a transduction of pressure variations relative to said cavity, comprising in combination:
- an isolation membrane closing said opening for said liquid;
- a straight passage in said port leading to said cavity for receiving part of said needle;
- means in said port for engaging said needle inside said port and stopping said needle short of said cavity; and
- means in said port for providing an overflow and gas escape path throughout said straight passage.

4,291,702
CATHETER FLUSHING APPARATUS
James E. Cole, and Peter Thornton, both of Ventura, Calif., assignors to Gould Inc., Rolling Meadows, Ill.
Filed Jun. 25, 1979, Ser. No. 52,019
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—675 **8 Claims**

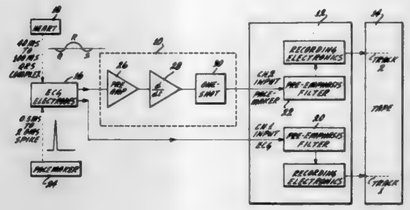
1. An improved flow control apparatus for use in liquid flow systems for pressure monitoring of hemodynamics, such systems including a catheter which is continuously flushed in use, said apparatus comprising:
- a housing having at least one passage therein, said passage having an inlet and an outlet;
- a valve seat defined in said passage;
- a valve plunger movably mounted in said passage;
- resilient means biasing said plunger into contact with said seat;
- capillary means extending at least partially through said plunger for providing a low flow path from said inlet to



said outlet when said valve plunger is in contact with said valve seat;
- means for selectively moving said valve plunger out of contact with said valve seat to provide a high flow path around said plunger from said inlet to said outlet, said moving means including an actuator member attached to said plunger and slidably mounted in and extending through a hole extending from said passage to the exterior of said housing so that said plunger may be moved selectively out of contact with said seat by manipulation of said actuator member from externally of said housing; and
- a flexible sealing element connected about said actuator member and to said housing about said hole to prevent liquid from leaking out of said passage through said hole.

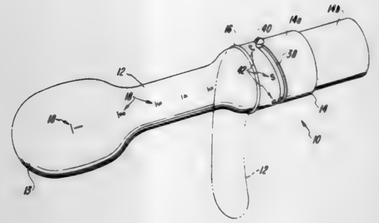
4,291,703
PACEMAKER MONITORING RECORDER
George J. Kelen, Staten Island, N.Y., assignor to Del Mar Avionics, Irvine, Calif.
Division of Ser. No. 956,878, Nov. 1, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 106,692
Int. Cl.[3] A61B 5/04
U.S. Cl. 128—711 **5 Claims**

1. In a magnetic tape recorder for recording signals indicative of the operation of a pacemaker and of the response of a patient to the pacemaker as revealed by the time relationship between a pacemaker spike signal generated by the pacemaker and an ECG generated by the patient equipped with the pacemaker, said magnetic tape recorder having at least two channels for recording separate tracks on a magnetic tape, each channel including a pre-emphasis filter, at least a pair of ECG electrodes to be connected to the patient for receiving said pacemaker spike signal and said ECG signal;
- first means for sensing the occurrence of a pacemaker spike signal, said pacemaker spike signal having a frequency spectrum higher than the frequency spectrum required to pass the ECG signal, and for producing in response to the



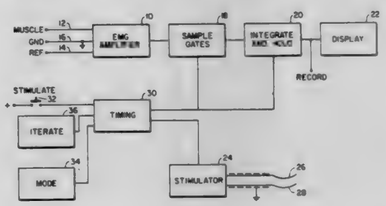
pacemaker spike signal a synthesized signal whose frequency spectrum lies within the frequency spectrum required to pass the ECG signal; and
- second means for separating and recording the synthesized signal and the ECG signal through respective ones of said channels on separate tracks on magnetic tape, whereby the synthesized signal is recorded by a recorder normally used for recording ECG signals.

4,291,704
SPIROMETER DEVICE
Thomas L. Petty, and Balinderjeet S. Baidwan, both of Denver, Colo., assignors to Dale E. Braddy, Oak Row Village, Ill.
Filed Dec. 13, 1979, Ser. No. 103,237
Int. Cl.[3] A61B 5/08
U.S. Cl. 128—728 **4 Claims**



1. A spirometer device comprising, in combination:
- an inflatable elastomeric vessel having one open end and calibration indicia for indicating the volume of air contained in the vessel, and
- a main body releasably attached to said vessel at said open end in fluid communication with the interior of said vessel, said main body having two relatively rotatable sections of generally hollow tubular construction, one of said sections having a partition with a hole therethrough wherein said partition extends generally transversely of said tubular main body, the other of said sections having a flexible sealing membrane with an opening therethrough positioned adjacent and parallel to said partition on the vessel side of said partition, so that said membrane can be rotated relative to said partition to selectively align the misalign said hole and said opening, whereby when said hole and opening are aligned, air can be directed through said main body into said vessel, and, when the hole and opening are misaligned, air can be sealed in said vessel, said main body further including an air actuated, audible sound generating element secured therein in alignment with at least a portion of said hole in the partition so that air escaping from said vessel through said hole can be directed through said element to produce an audible sound.

4,291,705
NEUROMUSCULAR BLOCK MONITOR
John W. Severinghaus, Ross, and Edwin M. Severinghaus, Corte Madera, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed Sep. 10, 1979, Ser. No. 73,889
Int. Cl.[3] A61B 5/05
U.S. Cl. 128—733 **9 Claims**



1. Apparatus for monitoring the neuromuscular transmission of a motor nerve and the muscle associated with the nerve in a patient, the apparatus comprising
- stimulator means for generating a plurality of electrical stimulus signals which are spaced apart by predetermined periods of time and for applying such stimulus signals to the motor nerve to supramaximally stimulate it,
- amplifier and detector means connected to the stimulator means, and including a pair of sensing electrodes adapted to be attached to the patient, for sensing the electromyogram (EMG) produced by the associated muscle as a result of the stimulating electrical signals and for amplifying the EMG,
- electronic integrator means connected to the amplifier and detector means for receiving each amplified EMG in response to each stimulus signal and for integrating it with respect to time over periods which fall between stimulus signals,
- control standard means connected to the integrator means for storing a representation of a first integrated EMG,
- comparator means connected to the integrator means for generating an output signal which is representative of the ratio of a select, integrated EMG and the first, integrated EMG, and
- means for displaying the output signal of the comparator means.

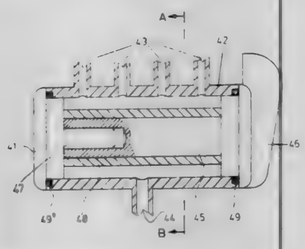
4,291,706
VALVE FOR CLOSING A PLURALITY OF CONTAINER OUTLETS SIMULTANEOUSLY
Karl-Friedrich Voges, Melsungen, and Gerd Herlitze, Baunatal, both of Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland
Filed Sep. 12, 1979, Ser. No. 75,131
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 7828577[U]
Int. Cl.[3] F16K 11/02
U.S. Cl. 128—762 **3 Claims**

1. A urine measuring apparatus containing a valve for simultaneously closing the outlets of a plurality of urine-receiving chambers in communication with the valve to stop flow of urine from the chambers,
- said valve including a housing having a plurality of aligned and spaced apart inlet openings corresponding in number to the number of chamber outlets to be sealed, and at least one outlet from the housing;
- a sealing element adjustably positioned in the valve housing for simultaneously sealing all of the valve housing inlets so

as to seal off liquid communication between the chambers themselves, and between the chambers and the chambers exteriors,

the sealing element including a body eccentrically positioned and eccentrically pivotable in the valve housing, said valve housing being large enough to accommodate eccentric rotation of the sealing element, and

means connected to the sealing element for actuation of the sealing element exterior of the valve housing.

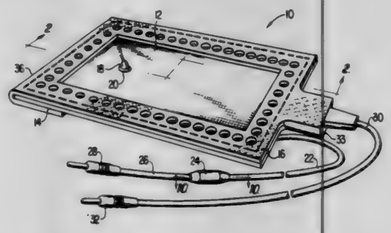


4,291,707

IMPLANTABLE CARDIAC DEFIBRILLATING ELECTRODE

Marlin S. Heilman, Gibsonia, and Alois A. Langer, Pittsburgh, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Filed Apr. 30, 1979, Ser. No. 34,730
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **21 Claims**



1. An implantable cardioverting electrode assembly for placement proximate the heart and for connection to a suitable cardioverting system, the assembly comprising:

a flexible electrically conductive planar electrode means for placement proximate the heart, said electrode means having an electrically conductive margin defining the outer perimeter of said electrode means and at least one exposed conducting area surrounded by said margin,

an electrical insulating element covering the surface of said planar electrode facing away from the heart,

electrical conductor means arranged to electrically connect said electrode means and said cardioverting system, and

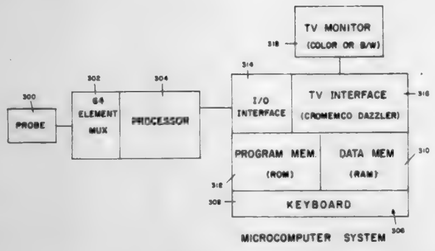
a layer of electrical insulation material arranged on a conductive surface of said margin of said electrode means, which conductive surface is proximate the heart, said layer having at least one open central area to permit the central portion of said electrode means to be exposed and substantially covering the margin of said electrode means, said insulation material having a plurality of small apertures therein located about said margin of said electrode means for also exposing the electrode surface therethrough, whereby said plurality of small apertures substantially eliminates edge effect current concentrations.

4,291,708

APPARATUS AND METHOD FOR DETECTION OF TUMORS IN TISSUE

Ephraim H. Frei, and Bruce D. Sollish, both of Rehovot, Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Nov. 2, 1978, Ser. No. 956,926
Claims priority, application Israel, Nov. 2, 1977, 53286
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—734 **16 Claims**



1. Apparatus for detecting tumors in living human breast tissue comprising:

means for determining the dielectric constants of a plurality of localized regions of living human breast tissue including a bridge means having means for automatically nulling said brigde means while in operation; and

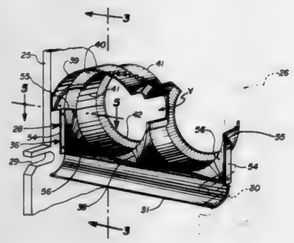
means for measuring variations in said dielectric constants over a plurality of said regions and for indicating the possible presence of a tumor as a result of said measurement.

4,291,709

INFEED GEOMETRY

Steven J. Weber, New Holland, and E. W. Rowland-Hill, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Jul. 2, 1980, Ser. No. 165,173
Int. Cl.³ A01F *7/06*
U.S. Cl. 130—27 T **3 Claims**



1. In a rotary combine having at least one elongate generally cylindrical threshing chamber therein with a first end and an opposing second end defining a working surface at least partially corresponding to the interior surface thereof, at least one elongate generally cylindrical threshing rotor mounted within the chamber for rotation relative thereto about the longitudinal axis thereof, the rotor having an infeed auger adjacent infeed means at the first end of the threshing chamber, the diameters of the threshing chamber and the rotor being of such a relationship so as to form a cavity therebetween into which crop material may be fed for threshing and grain separation, a crop thinning chamber between the infeed means and the threshing chamber, the improvement comprising:

(a) the auger being generally tapered so that the surface of rotation defines a frustrum with the base being oriented toward the infeed means and,

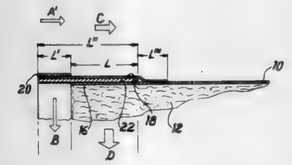
(b) the crop thinning chamber defining a series of steps including a first step having an arcuate constant diameter segment, a second step having an arcuate decreasing diameter segment, said first and second steps being diametrically opposite a plurality of angled infeed ramps, a third step having a tubular constant diameter segment and a fourth step having a tubular decreasing diameter segment.

4,291,710

CIGARETTES HAVING AN INDIVIDUAL LIGHTING STRUCTURE

Francesco De Capitani, Corso Magenta 83, Milan, Italy

Division of Ser. No. 760,768, Jan. 10, 1977, Pat. No. 4,178,945.
This application Jul. 6, 1979, Ser. No. 55,634
Claims priority, application Italy, Jan. 26, 1976, 19580 A/76
Int. Cl.³ A24D *1/08*
U.S. Cl. 131—351 **7 Claims**



1. In a tobacco article, such as a cigarette, a small cigar and the like, having on an outer end thereof an individual lighting means, the improvement wherein said lighting means comprises:

an inner tubular member having a first length portion surrounding said outer end of said tobacco article;

a tubular supporting member having a first length portion at least partially covering the outer surface of said inner tubular member and a second length portion in direct contact with and adhesively applied to said tobacco article;

an outer tubular member applied to the outer surface of said tubular supporting member at the fore end of said inner tubular member, said outer tubular member having an axial length less than the axial length of said inner tubular member;

said tubular supporting member supporting said inner tubular member and said outer tubular member; and

said outer tubular member being formed of a first material that can be ignited by rubbing and that allows for quick spreading of flame, and said inner tubular member being formed of a second material that can be easily ignited by said first material and that can be charred and converted into embers surrounding and capable of igniting said outer end of said tobacco article.

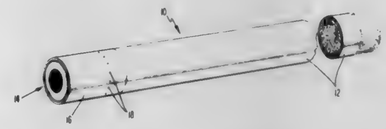
4,291,711

TOBACCO SMOKE FILTER PROVIDING TOBACCO FLAVOR ENRICHMENT, AND METHOD FOR PRODUCING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Filed Mar. 27, 1979, Ser. No. 24,251
Int. Cl.³ A24D *3/02, 3/06*
U.S. Cl. 131—336 **14 Claims**

1. A smoke filter means including a filter element comprising a self-sustaining dimensionally stable axially elongated reconstituted tobacco member comprising a coherent sheet of reconstituted tobacco compacted and bonded together into a rod-like body, said reconstituted tobacco sheet being uniformly embossed with a series of parallel grooves extending longitudinally with respect to said reconstituted tobacco member so as to provide said reconstituted tobacco member with flow passages having a high surface area for contact with smoke passing therethrough and thereby enabling said smoke to become tobacco flavor-enriched by extracting tobacco flavor from the reconstituted tobacco, said reconstituted tobacco member



being circumferentially enveloped by a hollow annular-shaped axially elongated member of fibrous filtering material having a draw resistance greater than that of said reconstituted tobacco member, whereby smoke passing through said filter element will be directed primarily through said reconstituted tobacco member.

4,291,712

CIGARETTE FILTER AND FILTER CIGARETTE

Hendrikus J. Koster, Koude kerk a/d Rijn; Johannes T. J. Bik; Johannes G. Clardey, both of Rijswijk, and Dirk Smorenberg, Berkel Roodenrijs, all of Netherlands, assignors to Sigarettenfabriek Ed. Laurens B.V., The Hague, Netherlands

Filed Nov. 9, 1978, Ser. No. 959,173
Claims priority, application Netherlands, Nov. 11, 1977, 7712441
Int. Cl.³ A24D *3/02, 3/04*; A24C *5/52*
U.S. Cl. 131—339 **8 Claims**



4. A cigarette filter comprising a body of fibrous material enclosed in a wrapping material, said fibrous material having one or more axial channels therethrough with a hardened inner channel wall resulting from the melting of the filter material by producing the filter by laser means.

4,291,713

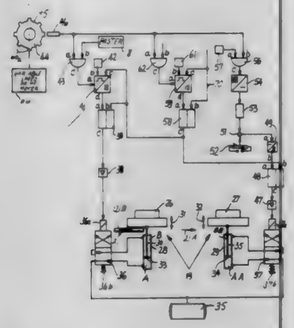
DEVICE FOR HEATING THE SEAMS OF WRAPPERS FOR ROD-LIKE FILLERS IN CIGARETTE MAKING MACHINES OR THE LIKE

Willi Frank, Hohnsdorf, Fed. Rep. of Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Fed. Rep. of Germany

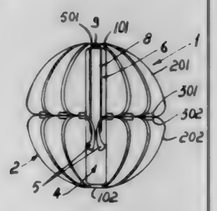
Filed Jan. 18, 1978, Ser. No. 870,605
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703288
Int. Cl.³ A24C *5/24*
U.S. Cl. 131—68 **5 Claims**

1. In a machine for the making of wrapped rod-like fillers of tobacco and/or filter material wherein a web of wrapping material is draped around the filler so that the marginal portions of the web overlap each other, the combination of means for transporting the filler and the web at a variable speed lengthwise in a predetermined direction along a predetermined path; paster means operable to apply adhesive to at least one marginal portion of the web in a first portion of said path; means for folding the marginal portions of the web over each other in a second portion of said path downstream of said first portion, as considered in said direction, to thus convert the web into a tubular wrapper which surrounds the filler and

wherein the marginal portions and the adhesive form a seam extending lengthwise of the resulting wrapper; adjustable means for heating the adhesive of said seam in a third portion of said path downstream of said second portion, including first and second seam heating elements located one behind the other, as considered in said direction, said elements being movable into and from engagement with successive increments of the seam in said third portion of said path; means for adjusting said heating means stepwise as a function of changes in the speed of said filler so that the seam is subjected to a less pronounced heating action at a lower speed and to a more pronounced heating action at a higher speed of the filler, including discrete first and second moving means for said first and second seam heating elements, means for monitoring the speed of the filter, first operating means for operating said first moving means during and subsequent to acceleration of the filler to a predetermined speed so as to move said first element into engagement with the seam, and second operating means for operating said second moving means on acceleration of said filler to said predetermined speed so as to move said second element into engagement with the seam; and variable-speed prime mover means, said second operating means including means for monitoring the speed of said prime mover means and for initiating the operation of said second moving means when said variable-speed prime mover means completes the acceleration of the filler to said predetermined speed.



4,291,714
HAIR CURLER
Rodolfo Mariani, 27, Corso Saffi, Faenza, Italy
Filed Feb. 1, 1980, Ser. No. 117,713
Int. Cl.³ A45D *2/00*
U.S. Cl. 132—40 **7 Claims**



1. A hair curler for the curling treatment of a hair lock, comprising:
(a) an axial core having clamping means at one of its ends for clamping said hair lock at its base portion;
(b) hair lock engaging and guide means arranged for rotation around said axial core;
(c) a cage-like element at least partly surrounding said axial core, thus defining an annular chamber for receiving said hair lock curled around said axial core, following rotation of said hair lock engaging and guide means;
(d) said cage-like element comprising two hollow hemispheres each having a polar cap and being rotatably connected to one another to define a substantially spherical cage, said axial core being contained within said cage and rotatably joining by its ends said polar caps of said hemispheres, each of said hemispheres having a side opening having two edges extending along meridional lines and angularly spaced from one another, so that the edges of the opening in one hemisphere can be aligned, by relative rotation of said hemispheres, with the edges of the opening in said other hemisphere, thus defining a crescent shaped opening, the opening of the hemisphere opposite the end of said axial core carrying said clamping means being closed by resilient closure members which can be opened towards the interior of said cage, said opening with said closure members defining said hair lock engaging and guide means.

4,291,715
FOOT SUPPORT CRUTCH
Woodrow S. Monte, 19 Hollywood Dr., Bricktown, N.J. 08723
Filed Feb. 4, 1980, Ser. No. 118,487
Int. Cl.³ A61H *3/02*
U.S. Cl. 135—68 **11 Claims**

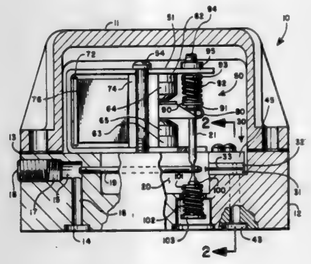


1. A lower leg or foot crutch comprising a ground contact member adapted for receiving downwardly applied forces and for transmitting any said applied forces to the ground at a point effectively in line with said applied forces,
an intermediate support device having an upper end and a lower end, said lower end connected to said ground contact member and adapted for transmitting forces to said ground contact member through said connection,
an upper body stabilizing member having uper and lower ends, said upper end adapted for positioning against a users body, and said lower end connected to said intermediate support device at a position between said lower and upper ends of said intermediate support device, and
a leg support member for engaging the leg of a user below the knee thereof, and for accepting downwardly applied forces from said user, said leg support member attached exclusively to said upper end of said intermediate support device for transmitting any said accepted forces directly to said intermedite support device.

4,291,716
PILOT STAGE VALVE
Dwayne R. Elmberg, Golden Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 13, 1977, Ser. No. 796,650
Int. Cl.³ G05D *16/20*
U.S. Cl. 137—83 **7 Claims**

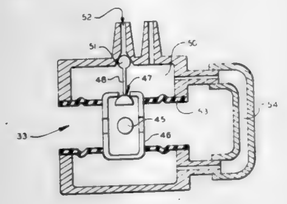
1. A pilot stage valve for connecting fluid from an inlet port to first and second outlet ports comprising:
control means for moving an actuating means in response to an input signal;

a jet pipe connected to said inlet port and attached to said actuating means for issuing a jet of fluid; and,
receiver means for receiving said jet of fluid, said receiver means comprising a sandwich construction of
a first receiver plate having a first opening for communicating said jet of fluid to said first outlet port,
a second receiver plate having a second opening for communicating said jet of fluid to said second outlet port, and,



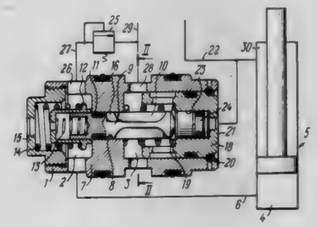
a splitter plate between said first and second receiver plates,
said splitter plate having an extension therefrom and attached to said jet pipe for preventing lateral movement of said jet pipe with respect to said receiver means;
wherein said first and second openings receive a differential amount of fluid dependent upon the position of said jet pipe with respect to said splitter plate.

4,291,717
PROPORTIONAL STROKE AUTOMATIC TEMPERATURE CONTROL SYSTEM
John W. Orcutt, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 830,530, Sep. 6, 1977, Pat. No. 4,206,645, which is a division of Ser. No. 501,711, Aug. 29, 1974, Pat. No. 4,063,682, which is a continuation of Ser. No. 422,954, Dec. 7, 1973, abandoned. This application Jul. 19, 1979, Ser. No. 58,888
Int. Cl.³ F15B *5/00*
U.S. Cl. 137—86 **2 Claims**



1. A vacuum valve for regulating vacuum communication from one point to another comprising an upper chamber having a lower end closed by a first flexible diaphragm and a lower chamber having an upper end closed by a second flexible diaphragm, the lower and upper ends spaced from and aligned with one another, a movable valve body including portions respectively attached to each of said diaphragms of the upper and lower chamber and passing through each of said first and second diaphragms, the valve body having an opening between said upper chamber and said upper and lower ends, said valve body opening defining a first valve seat outside said upper chamber a port formed in the upper chamber, a second valve seat within said upper chamber formed in the port, a valve member having first and second sealing ends, the valve member extending through said opening, said sealing ends respectively disposed adjacent the first and second valve seats, the first sealing end adapted to move into and out sealing engagement with the first valve seat and the second sealing end adapted to move into and out of sealing engagement with the second valve seat, the first sealing end operatively connected to the valve body and adapted to selectively transfer motion from the valve body to move the valve member and second sealing end away from the second valve seat, and a balance chamber means fluidly connecting the upper and lower chambers so that each flexible diaphragm receives the same negative pressure from said port thereupon, said diaphragms movable in response to the force differential caused by said pressure acting on said respective diaphramgs in said upper and lower and chambers to control the communication between said port and a second port in said upper chamber.

4,291,718
PRESSURE VALVE
Sergei A. Sanin, Oktyabrsky prospekt, 405, korpus 3, kv. 107; Jury F. Ponomarenko, poselok VUGI, 10, kv. 33, both of Ljubertsy Moskovskoi oblasti; Vladislav D. Firstov, ulitsa Shvernika, 22, kv. 25; Vladimir N. Khorin, Fakultetsky pereulok, 3, kv. 206, both of Moscow; Arnold M. Ragutsky, ulitsa Sakko i Vantseti, 5, kv. 4, Malakhovka Moskovskoi oblasti; Boris N. Kostjunin, Teply Stan, 1 mikrorаion, korpus 7, kv. 398, Moscow, and Petr M. Bronfen, ulitsa Nurkena Aelirova, 37, korpus 2, kv. 20., Karaganda, all of U.S.S.R.
Filed Feb. 26, 1979, Ser. No. 15,172
Int. Cl.³ F15B *11/18*; G05D *11/00*
U.S. Cl. 137—87 **5 Claims**



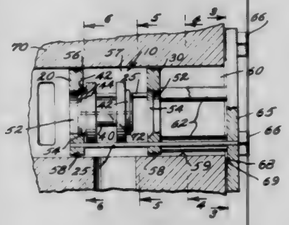
1. A pressure valve actuated by pressurized fluid supplied from a pressurized fluid source, comprising:
a housing having a high-pressure space and a low-pressure space separated by a partition in said housing;
openings in said housing for supplying said pressurized fluid into said spaces from said fluid source;
an axial bore in said partition, and a cylindrical valve member reciprocatingly supported in said axial bore;
axial passages in the body of said valve member for alternatingly establishing communication between said spaces upon displacement of said valve member;
a pressure-relief piston accommodated in said low-pressure space and biased away from said partition, said pressure-relief piston being movable in said low-pressure space under the action of said pressurized fluid supplied to initiate the pressure-relieving of said high-pressure space and acting upon the end face of said pressure-relief piston, remote from said valve member;
an axial bore in said pressure-relief piston;
an auxiliary piston accommodated in said axial bore of said pressure-relief piston and cooperating with said valve member for transmitting thereto the displacement of said pressure-relief piston under the action of the fluid pressure supplied to effect the pressure-relieving of said high-pressure space;
throttling passages in the body of said valve member adjacent to said low-pressure space and communicating with said axial passages of said valve member, said throttling passages of said valve member offering a flow passage area which is substantially smaller than that offered by said axial passages, said throttling passages being arranged

to provide a first stage during the operation of pressure-relieving of said high-pressure space, said high-pressure space and said low-pressure space communicating via said throttling passages of said valve member until said pressure-relief piston abuts said partition and said pressurized fluid drives said auxiliary piston during a second stage to communicate said low pressure space with said high pressure space via said axial passages.

4,291,719
VALVE SUB-ASSEMBLY

Wallace K. Lehmann, Hampton, Md., assignor to The C. M. Kemp Mfg. Co., Glen Burnie, Md.

Filed Apr. 7, 1980, Ser. No. 138,081
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—112 **2 Claims**



1. A valve sub-assembly adapted for insertion inside a channel in a casting or the like which comprises:
- a pair of wafers and tie means securing said wafers face-to-face spaced apart, each wafer having at the periphery thereof sealing means for preventing fluid flow around said wafer, each wafer having a valve seat and a valve port opening centrally of each said wafer;
- a shuttle having valve face means thereon at each end thereof caged inside said tie means and guided thereon, said shuttle being adapted for movement between wafers from the valve seat of one wafer to the other in response to fluid pressure changes; and,
- a face plate secured to one wafer spaced apart therefrom a predetermined distance said face plate including means for creating a sealing attachment to a channel opening in which the valve sub-assembly is inserted,

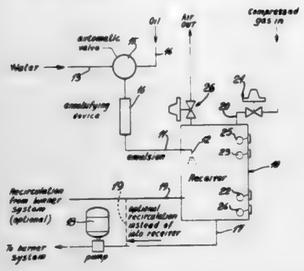
said tie means being rods extending from one wafer through the other wafer to said face plate serving to secure wafers and face plate together.

4,291,720
PRESSURE CONTROLLED RECEIVER FOR STORING EMULSION

Roy E. Folland, Clarenceville, Canada, assignor to Folland Corporation, Dade County, Fla.

Filed Apr. 2, 1979, Ser. No. 25,865
Int. Cl.³ B65D *83/14*
U.S. Cl. 137—209 **1 Claim**

1. A pressure controlled emulsion storage receiver for use in an emulsifying system, said receiver comprising an inlet for receiving an emulsion, an outlet for delivering pressurized emulsion from said receiver, a compressed gas inlet for feeding into said receiver pressurized gas from a source, level control means to maintain a level of emulsion between predetermined limits in said receiver, and means to maintain a predetermined gas pressure in the area of said receiver above the emulsion therein whereby said emulsion is maintained at a substantially constant pressure which is the same as the gas pressure in said receiver to prevent said emulsion from vaporizing, said level control means comprising a low and a high level sensor of the float control type in said receiver to sense a predetermined low and high level of emulsion in said receiver, and an overriding float control for each of said low and high level sensors whereby to cut-off delivery of emulsion at said inlet in the

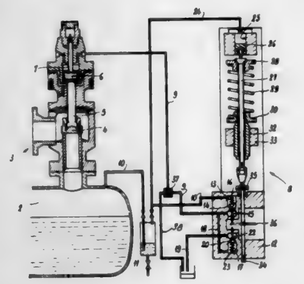


event the emulsion level within said receiver goes beyond said predetermined low and high levels of emulsion.

4,291,721
APPARATUS FOR PRESSURE DETECTION AND CONTROL OF A SAFETY VALVE

Francois Gemignani, 14, Lotissement du Pati, Martigues, (Bouches-du-Rhone), France

Filed Mar. 20, 1979, Ser. No. 22,159
Claims priority, application France, Mar. 21, 1978, 78 08835
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—492 **5 Claims**

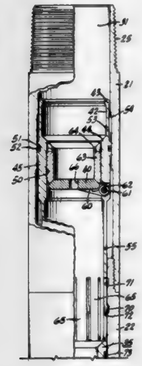


1. A device for the detection and control of fluid pressure in a vessel provided with a venting port, comprising:
- a normally closed safety valve in said venting port provided with a valve member connected to a main piston, the latter being slidable in a main cylinder in response to pressure differentials between said vessel and said main cylinder;
- a first control chamber with opposite ends connected to said vessel and to said main cylinder;
- a first control valve in said first chamber having a first valve body reciprocable between an open position and a closed position for alternately unblocking and blocking communication between said vessel and said main cylinder;
- a second control chamber with opposite ends connected to the atmosphere and to said main cylinder;
- a second control valve in said second chamber having a second valve body reciprocable codirectionally with said first valve body between a closed position and an open position for alternately blocking and unblocking communication between said main cylinder and the atmosphere, said first and second valve bodies having stems aligned with each other in the direction of reciprocation;
- a first spring and a second spring respectively urging said first and second valve bodies into their closed positions;
- a control cylinder connected to said vessel for pressurization thereby;
- a control piston in said control cylinder provided with elastic biasing means tending to maintain same in a normal position, said control piston being shiftable into an alternate position via an intermediate position by fluid pressure from said vessel overcoming the force of said biasing means;
- a control rod operatively connected with said control piston and shiftable thereby along a line paralleling said direction of reciprocation; and
- a force-transmitting element on said control rod interposed between the stems of said first and second valve bodies for:
  - (a) in said normal position of said control piston, keeping said first valve body in the open position thereof against the force of said first spring whereby fluid pressure from said vessel reaches said main cylinder and holds said valve member against a seat;
  - (b) in said intermediate position of said control piston, allowing said first spring to move said first valve body into the closed position thereof while leaving said second valve body in its closed position whereby said venting port remains closed by said valve member;
  - (c) in said alternate position of said control piston, holding said second valve body in the open position thereof against the force of said second spring whereby said main cylinder communicates with the atmosphere, enabling fluid pressure from said vessel to unseat said valve member whereby said fluid pressure is diminished by the opening of said venting port to progressively lower values allowing said control piston to return to said normal position by way of said intermediate position, said valve member remaining unseated until said normal position is restored.

4,291,722
DRILL STRING SAFETY AND KILL VALVE

Ronald K. Churchman, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 5, 1979, Ser. No. 91,086
Int. Cl.³ E21B *41/00*
U.S. Cl. 137—496 **17 Claims**

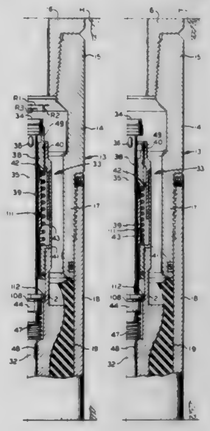


1. A valve for a flow conductor comprising: a valve body connectible in said flow conductor to form an integral flow section thereof; a first valve assembly in said body having means to shut off flow through said body in a first direction when operating in a closed mode, and means to permit flow through said body in a second opposite direction when operating in, said closed mode first valve assembly permitting flow in either direction when operating in an open mode, a second valve assembly in said body having restriction means adapted to permit limited flow through said body in said first direction when said first valve assembly is in said open mode, and full flow through said body in said second direction when said first valve assembly is in said open mode; and valve operator means between said first and said second valve assemblies to close said first valve assembly responsive to closure of said second valve assembly when said second valve assembly is biased toward to said first direction in response to flow in said first direction through said body above said limited flow.

4,291,723
FLUID PRESSURE ACTUATED BY-PASS AND RELIEF VALVE

Herbert W. Beimgraben, and Paul H. Reinhardt, both of Houston, Tex., assignors to Baker International Corporation, Orange, Calif.

Continuation-in-part of Ser. No. 23,202, Mar. 23, 1979. This application Sep. 10, 1979, Ser. No. 73,811
Int. Cl.³ E21B *3/12, 41/00*
U.S. Cl. 137—508 **7 Claims**



6. A fluid pressure actuated by-pass and relief valve connected between a source of fluid under pressure and a fluid flow path comprising: a hollow mandrel having an inlet opening formed in one end thereof exposed to the source of fluid under pressure and an outlet opening formed at the other end thereof; a sleeve slidably received on said mandrel; a normally open by-pass valve actuated by said sleeve and connected between said mandrel outlet opening and the fluid flow path; and a relief port connected to said fluid flow path, wherein, at a first predetermined value of fluid pressure, the force generated by the fluid under pressure acting on a surface of said sleeve slidingly moves said sleeve relative to said mandrel to actuate said by-pass valve to the closed position to block the fluid flow path; and wherein, at a higher second predetermined value of fluid pressure, the force generated by the fluid acting on said surface slidingly moves said sleeve relative to said mandrel to connect said relief port to said inlet opening and establish fluid flow between the source of fluid under pressure and the fluid flow path.

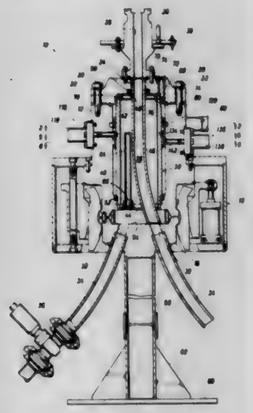
4,291,724
FLOWLINE SWITCHING APPARATUS

Henry W. Miller, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 24, 1980, Ser. No. 162,575
Int. Cl.³ B65G *11/00*; E21B *23/12, 33/05*; F16K *11/00*
U.S. Cl. 137—555 **11 Claims**

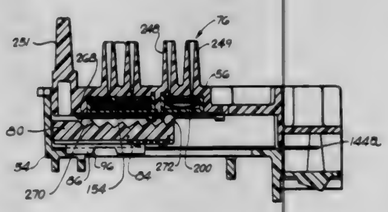
1. A flowline switching apparatus comprising
- a tubular housing,
- a first end closure secured to one end of said tubular housing having a port extending therethrough,
- a second end closure secured to the other end of said tubular

housing having a plurality of ports extending therethrough,
a drum within said housing and mounted for rotation therein,
a passage extending through said drum adapted to register with the port in said first end closure and to register in sequence with the ports in said second end closure,
means for rotating said drum,



means for locking said drum in positions of alignment between said passage and each of said ports in said second end closure,
means for indicating the port in the second end closure with which said passage is aligned, and
means for balancing the fluid pressures on interior and exterior of said drum and to minimize the axial loads on said drum responsive to pressures to which the drum is exposed.

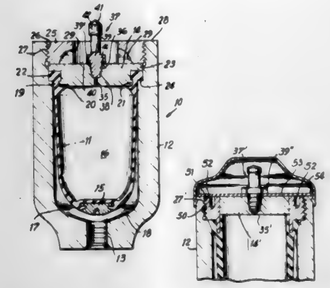
4,291,725
FLUID CONTROL SWITCHES
Andrew F. Raab, Morton Grove, and Raymond T. Halsted, Wheeling, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.
Division of Ser. No. 893,831, Apr. 6, 1978. This application Sep. 6, 1979, Ser. No. 73,011
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—625.25 **1 Claim**



1. A vacuum valve, comprising
a valve body having a flat wall with a vacuum supply port and a vacuum utilization port therein,
means for connecting a source of vacuum to said vacuum supply port,
means for connecting a utilization device to said vacuum utilization port,
a valve plate movable along said wall,
and means guiding said valve plate for movement along a predetermined path along said wall between first and second positions,
said valve plate having a soft resilient sealing member thereon slidably engaging said wall,
said sealing member having a first sealing enclosure dam in slidable sealing engagement with said wall and enclosing said vacuum supply port throughout the range of movement of said valve plate,
said first sealing enclosure dam being in the form of a first perimeter ridge having a closed perimeter and forming a first closed space between said valve plate and said wall,
said space having a first portion opposite said vacuum supply port throughout the range of movement of said valve plate,
said first portion having a width greater than the range of movement of said valve plate,
said vacuum utilization port being outside said first sealing enclosure dam and being open to the atmosphere when said valve member is in said first position,
said first sealing enclosure dam being movable with said valve plate to enclose said vacuum utilization port as well as said vacuum supply port to establish communication between said ports when said valve plate is in said second position,
said space within said first sealing enclosure dam having a second portion with a reduced width relative to the width of said first portion,
said second portion being in communication with said vacuum utilization port when said valve plate is in said second position,
said valve plate having an intermediate transitional position between said first and second positions,
said first perimeter ridge having a ridge portion which moves over and past said vacuum utilization port when said valve plate is moved between said second position and said intermediate position,
said sealing member having a second sealing enclosure dam in the form of a second closed perimeter ridge in slidable sealing engagement with said wall and enclosing said vacuum utilization port when said valve plate is in said intermediate position,
said ridge portion being a common portion of said second perimeter ridge as well as said first perimeter ridge,
whereby said second sealing enclosure dam prevents any leakage between the atmosphere and said vacuum supply port when said ridge portion is moved over and past said vacuum utilization port so that leakage between the atmosphere and said vacuum supply port is prevented throughout the range of movement of said valve plate.

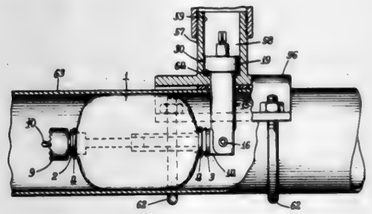
4,291,726
ACCUMULATOR DEVICE HAVING SAFETY CHARGING PORT
Abdul Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Incorporated, Chatsworth, Calif.
Filed Nov. 13, 1979, Ser. No. 93,042
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **2 Claims**

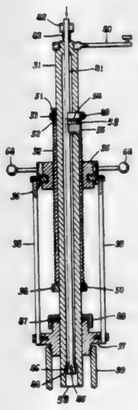
1. A hydraulic accumulator device comprising, in combination, a pressure vessel having an oil port at one end and having an open mouth portion at the other end, an internal retainer thread portion formed in surrounding relation of said open mouth portion, a cap member seated in sealing relation of said open mouth portion, said cap member including a threaded gas charging port, a gas charging valve assembly threadedly engaged in said gas charging port, a bladder assembly mounted in said vessel and dividing the same into two chambers in communication, respectively, with said oil and said gas ports, an annular retainer nut member having an external threaded portion threadedly engaged with said retainer thread and including stop portions overlapping said cap member and clamping said cap member against movement axially outwardly of said mouth portion, socket means on said retainer nut member accessible through said open mouth portion, driver tool means adapted to be engaged with said socket means for providing a driving connection between said retainer nut member and said tool means to permit threading and unthreading of said nut from said retainer thread, and blocking means secured to said cap assembly by said gas charging valve assembly interposed

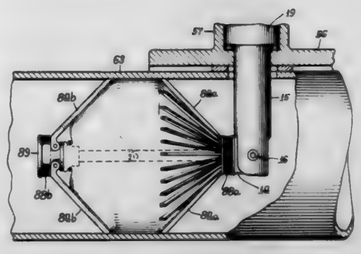


between said tool means and said socket means for blocking access of said tool means to said socket means while said gas charging valve assembly is positioned in said gas port, whereby said valve assembly must be removed as a condition precedent to engagement of said tool and socket.

4,291,727
PIPELINE FLOW RESTRICTOR AND PROCESS
Gene G. Yie, Chicago, and Thomas M. Bevan, Homewood, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.
Filed Feb. 28, 1979, Ser. No. 16,025
Int. Cl.³ F16L *55/12*; B23B *45/12*
U.S. Cl. 138—93 **9 Claims**

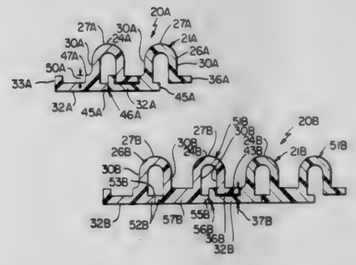






1. A flow restrictor cartridge for insertion through a hole in a pipeline side wall in combination with an insertion assembly wherein said flow restrictor cartridge comprises a substantially circular rear end plug, a cylindrical expandable flexible sleeve having an opening in the central portion of one end attached in substantially fluid-tight relation to the periphery of said rear end plug, said rear end plug having a through flow passage having one end in communication with the interior portion of said flexible sleeve and the other end adapted for communication with supply means providing fluid for inflating said flexible sleeve, the side of said rear end plug exterior to said flexible sleeve having attachment means for engagement with mating attachment means of said insertion assembly, said flow restrictor cartridge having a deflated length less than the inside diameter of the pipe in which it is to be used; and said insertion assembly comprising a cartridge elbow and a cartridge adapter cylinder; said cartridge elbow having a mating attachment means at one end mated with said cartridge rear end plug attachment means and a pivot means at the other end; said cartridge adapter cylinder having pivot receiving means at one end and a flanged adapter head at the other end, the pivot means of the cartridge elbow and the pivot receiving means of the cartridge adapter cylinder engaging; a spring means engaged with said pivot means and said pivot receiving means to provide rotation of the cartridge elbow from a position having its axis parallel to that of the cartridge adapter cylinder to a position extending perpendicular to the axis of the cartridge adapter; and a tube extending through the central portion of the cartridge adapter cylinder in communication, when the cartridge elbow and adapter cylinder are perpendicular, with a passage through the cartridge elbow in communication with said rear plug through flow passage.

4,291,728
HOSE CONSTRUCTION
Liggett A. Cothran, Clyde, N.C., assignor to Dayco Corporation, Dayton, Ohio
Filed Apr. 4, 1980, Ser. No. 137,164
Int. Cl.³ F16L *11/04*
U.S. Cl. 138—122 **20 Claims**



1. In a convoluted hose construction comprising an elongated elastomeric strip having first and second connecting means defining opposite side edge portions thereof, said strip being helically wound with said first and second connecting

means connected together to define said hose construction having alternating crests and troughs, said strip having a free unobstructed outwardly convex U-shaped portion of a single uniform wall thickness continuously throughout which is the only part of said strip defining said crests, said outwardly convex U-shaped portion being defined by a bight and a pair of parallel legs extending from opposite ends of said bight, said hose construction being easily flexed from a rectilinear configuration upon applying a flexing force thereagainst due to said free U-shaped portion and uniform wall thickness, said strip comprising a first lateral extension extending perpendicularly outwardly from one of said parallel legs and away from both of said legs, the improvement in which, said first lateral extension has an outer end portion provided with an integral projection disposed parallel to said parallel legs, said first extension together with said integral projection and a portion of one of said parallel legs defining a wide base shallow channel which has an open end opening in a direction opposite from the direction of opening of said outwardly convex U-shaped portion and comprising said first connecting means, and a second lateral extension of rectangular cross-sectional configuration extending perpendicularly outwardly from the outer edge of said other of said parallel legs so that said U-shaped portion is disposed roughly in the central part of said strip, said second lateral extension being disposed and fixed within said channel and comprising said second connecting means, said lateral extensions being substantially of said uniform thickness and upon disposing said strip in said helical pattern said extensions cooperate to define said first and second connecting means having a radial thickness comprised of substantially twice said uniform thickness thereby assuring minimum material usage and thus minimum cost.

4,291,729

MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING APPARATUS

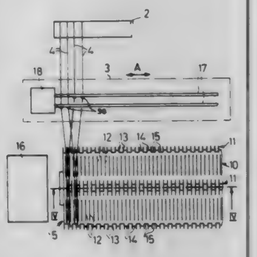
Alois Steiner, Rieden, Switzerland, assignor to Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Nov. 23, 1979, Ser. No. 96,777

Claims priority, application Switzerland, Dec. 7, 1978, 12512/78

Int. Cl.³ D03D *41/00*

U.S. Cl. 139—28 **7 Claims**



1. A multiple longitudinal traversing shed weaving loom comprising:

a rotatable weaving rotor over which pass warp threads moving in a predetermined direction of travel;

shed-retaining elements for holding the warp threads over a predetermined path in selective upper and lower shed positions for insertion of weft threads;

control means arranged forwardly of the weaving rotor with respect to the direction of travel of the warp threads;

said control means serving for the lateral deflection and allocation of each warp thread to a shed-retaining element which determines the upper shed position or the lower shed position;

said control means comprising displaceable elements extending in the direction of insertion of the weft threads; and

said control means further including an actuation mechanism with which there are operatively connected said displaceable elements for displacing the latter in said direction of insertion of said weft threads.

4,291,730

DOUBLE-LIFT OPEN-SHED JACQUARD MACHINE

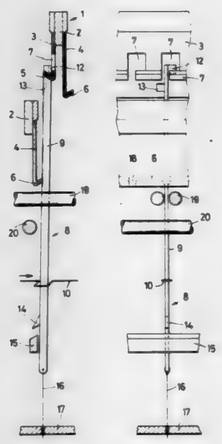
Hubert Kremer, Grefrath; Heinz Königs, and Otto Gutmann, both of Krefeld, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Sangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Oct. 26, 1979, Ser. No. 88,382

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846793

Int. Cl.³ D03C *3/06*

U.S. Cl. 139—65 **12 Claims**



1. In a double-lift open-shed Jacquard machine with two lifting bars which are movable in opposite directions to each other and which pass each other, and with lifters controllable by main needles, the latter being arranged transverse to the knives of the lifting bars, which lifters have two main projections associated with the movable knives and one holding-up projection associated with a fixed upper-shed knife, the improvement wherein

the movable knives are made of a knife carrier part and hook plates fastened thereto, the hook plates having control hooks, the latter being formed bent off in the direction towards the main projections of the lifters and being arranged spaced apart from each other,

said hook plates and said control hooks thereof being formed so to permit in a control direction of the main needles a passage of the lifters up into a plane between said control hooks of a movable knife, and

the lifters have each a shank of a flat rectangular cross-section, the greater tilting moment of which is in the control direction of the main needle,

at least one of said control hooks and the main projections are beveled such that an overlapping thereof increases during a driving of said lifters.

4,291,731

MECHANISM FOR LAUNCHING GRIPPERS IN GRIPPER LOOMS

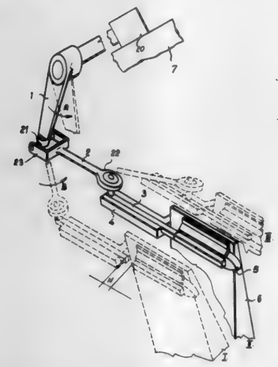
Miloslav Prohazka, Nachod, and Karel Kaulich, Cerveny Kostelec, both of Czechoslovakia, assignors to ELITEX, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Jun. 6, 1979, Ser. No. 45,935

Claims priority, application Czechoslovakia, Jun. 6, 1978, 3663-78

Int. Cl.³ D03D *47/42, 49/24*

U.S. Cl. 139—438 **4 Claims**



1. Mechanism for launching a gripper in a gripper loom having a beat-up mechanism including a slay, comprising a gripper launching power source fixedly positioned on the loom, a gripper, a guideway for the gripper on the slay, an impact element on the slay, the gripper launching arm connected to and driven by the launching power source, and a connection between the gripper launching arm and the impact element, the connection being formed by a connecting rod having on both its ends couplings with at least two degrees of freedom.

4,291,732

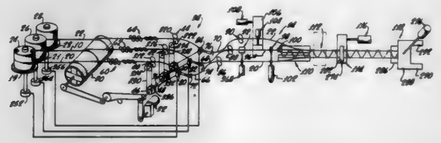
METHOD AND APPARATUS FOR MANUFACTURE OF WIRE TRUSS AND SINUOUS STRUT THEREFOR

Richard F. Artzer, Riverside, Calif., assignor to Covington Brothers, Inc., Fullerton, Calif.

Filed Feb. 26, 1979, Ser. No. 14,988

Int. Cl.³ B21F *1/04*

U.S. Cl. 140—112 **48 Claims**



1. The method of making a wire truss comprising

clamping a first wire at a rearward area thereof that is rearwardly spaced from a previously bent forward area thereof,

moving blocking dies into engagement with said previously bent area to resist forward and transverse motion of said wire at said previously bent area,

transversely displacing an intermediate area of said wire between said forward and rear areas, said step of transversely displacing an intermediate area comprising pivoting a displacement die guide toward said blocking dies, engaging said intermediate area with a displacement die, and driving said displacement die along said guide,

moving said rearward and forward areas toward each other as said intermediate area is displaced, whereby said wire is bent at each of said areas,

withdrawing said blocking dies,

advancing said wire,

clamping said wire at a second rearward area displaced from said first mentioned rearward area,

moving blocking dies into engagement with said first mentioned rearward area, after it has been bent, to resist forward and transverse motion thereof,

transversely displacing a second intermediate area of said wire between said first mentioned and second rearward areas, moving one of said rearward areas toward the other as said second intermediate area is displaced, whereby said wire is bent at said second intermediate area, at said second rearward area, and is further bent at said first mentioned rearward area,

assembling first and second lateral wires to said first wire in contact therewith at points near said bent areas, and attaching said wires to each other at points of contact therebetween.

4,291,733

DEVICE FOR HANDLING CONTAINERS

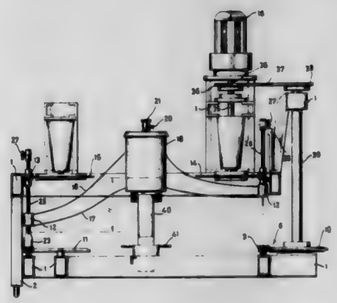
Pieter A. Polderman, Ah Heemstede, Netherlands, assignor to Stork Repak B.V., Utrecht, Netherlands

Filed Jun. 11, 1979, Ser. No. 47,321

Claims priority, application Netherlands, Jun. 9, 1978, 7806303; Nov. 10, 1978, 7811174

Int. Cl.³ B65B *43/42*

U.S. Cl. 141—152 **14 Claims**



1. A device for handling and filling containers comprising

(a) a conveyor for containers, a portion of the path of said conveyor having the shape of an almost closed loop;

(b) a common provision;

(c) a plurality of active members movably mounted above the almost closed loop conveyor path and being connected to the common provision;

(d) drive means for the conveyor and for moving the active members;

wherein the improvement comprises:

(e) an endless drawing member mounted above and traveling in a path lying parallel to the almost closed loop conveyor path, the endless drawing member being directly connected to each of the active members;

(f) a shaft extending from the drive means, the drive means being mounted above the conveyor path;

(g) means for connecting the shaft to the endless drawing member; and

(h) means for connecting the shaft to the conveyor, such that the endless drawing member and the conveyor are driven by the shaft;

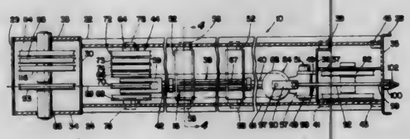
the almost closed loop portion of the conveyor path having a polygonal shape.

4,291,734

TREE PROCESSING APPARATUS

Howard A. Hammond, Grayslake, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 17, 1980, Ser. No. 112,751
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—2 Z **16 Claims**



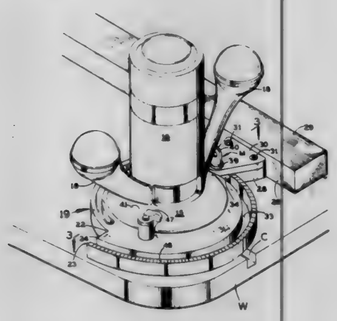
1. Apparatus for processing trees comprising an elongated boom; a processing head movable along said boom and operable to delimb trees positioned adjacent said boom and in parallel relation thereto; a hydraulic cylinder mounted on said boom, said cylinder having a first end member attached to said boom and a second end member movable relatively toward and away from said first end member; a first sheave mounted for rotation on said second end member; a second sheave mounted for rotation on said boom and spaced from said first sheave in a direction extending toward said first end member; a third sheave mounted for rotation in a stationary position relative to said boom between said first and second sheaves; a fourth sheave mounted for rotation on said second end member; a fifth sheave mounted for rotation on said boom and spaced from said fourth sheave in a direction extending toward said first end member; and a first cable attached to one end to a first end of said processing head, reeved respectively over said second, first, third fourth and fifth sheaves and attached at the other end to said first end of said processing head.

4,291,735

ROUTER GUIDE

Howard Silken, 9676 Bridle Path Ct., Davie, Fla. 33328

Filed Mar. 10, 1980, Ser. No. 129,175
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—136 C **14 Claims**



1. An adjustable guide for a router having a motor-driven bit, said guide comprising:

a guide plate having a central opening for passing the router bit and an eccentric peripheral edge which progresses along a uniform spiral path from a point of minimum radius from the center of the guide plate to a point of maximum radius therefrom;

a slide extending beyond said peripheral edge of the guide plate at a particular location therealong and having an exposed straight edge;

coupling means acting between said slide and said guide plate for maintaining said straight edge of the slide perpendicular to a radius from the center of the guide plate to said slide at all positions of the latter along the eccentric peripheral edge of the guide plate;

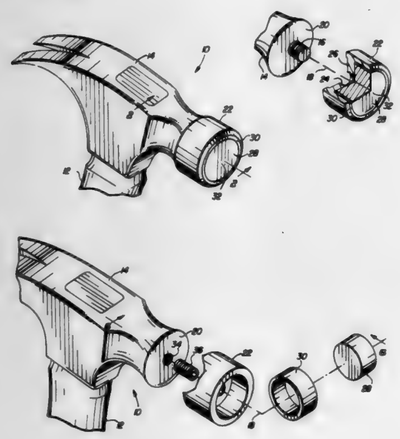
and means for releasably clamping said slide and said guide plate together at any selected position of the slide along the eccentric peripheral edge of the guide plate.

4,291,736

MAGNETIC HAMMER

Alan D. Robertson; Blythe J. Robertson, both of 2808 Tradewinds Trail, Orlando, Fla. 32805, and Gerald Olson, Pearland, Tex., assignors to Alan D. Robertson and Blythe J. Robertson, both of Orlando, Fla.

Filed Jul. 19, 1979, Ser. No. 58,857
Int. Cl.³ B25C *1/00*; B25D *1/00*
U.S. Cl. 145—30 A **11 Claims**



1. A magnetic hammer comprising:

a. a handle;

b. a hammer body attached to the handle and including a flat face;

c. a cylindrical magnet insert having first and second ends and first and second magnetic poles aligned with the axis of said magnet insert;

d. a cylindrical retainer having a first end, a second end and a threaded aperture in the second end, and including a cylindrical chamber sized to receive and retain said magnet insert, the longitudinal axis of said magnet insert being aligned with the longitudinal axis of said cylindrical retainer, and the first end of said magnet insert forming the hammering face of said hammer; and

e. means for securing the cylindrical retainer to the hammer face comprising a threaded shaft solid throughout its entirety extending outwardly from the center of and perpendicular to said flat face for mating with the threaded aperture in the second end of said cylindrical retainer for securing the second end of said cylindrical retainer to the flat face of said hammer body.

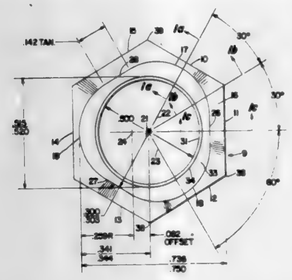
4,291,737

PREVAILING TORQUE LOCK NUT AND METHOD OF FORMING SAME

John C. McMurray, Painesville, and Arthur G. Kudelko, Mentor, both of Ohio, assignors to Russell, Burdsall and Ward Corporation, Mentor, Ohio

Filed Mar. 5, 1979, Ser. No. 17,611
Int. Cl.³ F16B *39/284*
U.S. Cl. 411—282 **12 Claims**

1. A prevailing torque hexagonal lock nut comprising a body having a load face at one end and a substantially cone portion at its other end with a hexagonal portion therebetween, said body also having a central threaded passage extending along a central axis open at one end through said load face and open at its other end through said cone portion, said hexagonal portion providing flats and corners parallel to said central axis adapted to receive a wrench for turning said nut, the end of said cone portion having a substantially circular periphery and three similar threaded locking sections of reduced radial distance substantially symmetrically positioned around said threaded passage, each locking section having a center of minimum radial distance and extending with gradually increasing radial distance to a maximum radial distance at locking section ends adjacent to the ends of the other locking sections, said minimum radial distance being less than the radius of a mating threaded fastener and said maximum radial distance being greater than the radius of said mating threaded fastener, engaged portions of said locking sections being radially deflected to a substantially circular shape when said nut is threaded onto said mating threaded fastener to provide three areas of frictional locking therewith, said cone providing a maximum stiffness resisting radial deflection at said centers of each of said locking sections and lower stiffness at the ends thereof whereby deflection of said locking sections to said circular shape causes a pressure of engagement along each of said areas which is sufficiently uniform to provide locking torque without excessive wear of the engaging threads or material permanent deformation of said cone.

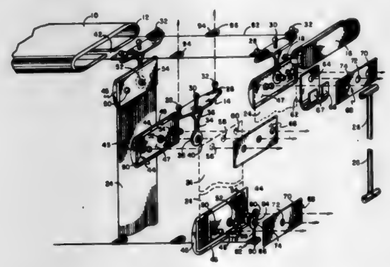


4,291,738

UNIVERSAL SUPPORT FOR VERTICAL BLINDS AND THE LIKE

John Grenga, and Samuel Frydman, both of 30 Carter Dr., Framingham, Mass. 01701

Filed Feb. 5, 1979, Ser. No. 9,069
Int. Cl.³ E06B *9/262, 9/32*
U.S. Cl. 160—176 R **7 Claims**



1. An improved structure for the support and operation of hanging elements and the like such as vertical blinds having a plurality of louvers rotateably and slideably affixed to an elongated support member affixed to the top of the area where said hanging elements are hung wherein the improvement comprises:

said elongated support member being a track having a channel defined therein, said track being of a width substantially equal to the width of said hanging elements, said track further having an elongated opening defined in said channel extending its full length in a central part of the bottom thereof;

a plurality of carriers adapted for suspension of said hanging elements to said track, said carriers being further adapted to be slideably supported within said channel, each of said carriers having:

a horizontally disposed planar support member with top and bottom sides; first and second operation projections, each positioned on opposite ends of the top of said support member, said first and second projections each having a protuberance at the ends thereof;

a vertically disposed shaft affixed to the bottom of said support member in a central position, said shaft having a wider portion at its top forming a truncated cone at its junction with said support member, said wider portion adapted to travel in said elongated opening of said channel so that only a small portion of said vertical shaft contacts the sides of said opening;

a ring member affixed at the bottom of said vertical shaft;

a first link means for interconnecting each of said first operation projections on said carriers to first operation projections on another of said carriers at equidistant predetermined spacings;

a second link means for interconnecting each of said second operation projections on said carriers to second operation projections on another of said carriers at equidistant predetermined spacings;

said first and second link means being contained within said channel and each including spacer cables with tab means spaced equidistant from one another thereon at the desired position of each carrier, said tab means having an aperture defined therein adapted to pass over the protuberance at the end of each first and second operation projections and be retained on such projections;

a substantially rectangular planar first plate member having a first lateral retention projection, second central retention projection, and third lateral retention projections disposed along one face protruding therefrom, the second central projection being inserted through the aperture of said ring member;

a lip positioned along the top of said first plate member having a groove defined therein located substantially above said central projection, said groove adapted to receive said shaft;

said hanging element having three apertures defined at its top into which are inserted said first plate member's first lateral retention projection, second central retention projection and said third lateral retention projection;

a substantially rectangular planar second plate member having three apertures defined therein into which are inserted said first lateral projection, second central projection and third lateral projection of said first plate member after said projections have engaged the top of the hanging elements, said first plate and said second plate adapted to hold said hanging element securely therebetween;

at least one control rod clip affixed between one pair of said first and second plates, said control rod clip having an aperture defined therein for receipt of said first plate's second central retention projection and further including a curved portion adapted to extend out from the bottom between said first and second plates, said extending portion having a slot defined therein; and

at least one control rod having a T-shaped end the horizontal top of which is held in the curved portion of said control rod clip and having its vertical shaft member held in said clip's slot wherein rotation of said control rod clip rotates the carrier to which said control rod clip is attached and moves said first and second link means to cause similar

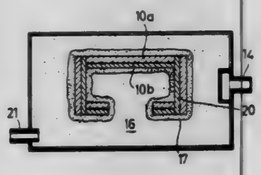
rotation of the other carriers, and the movement of the control rod in a direction horizontal to said track causes like horizontal movement of said carriers within said track.

4,291,739

METHOD OF MANUFACTURING A HOLLOW CASTING MOLD

Eduard Baur, Post Hommerich, 5256 Waldbruch, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,555
Int. Cl.³ B22C 9/04
U.S. Cl. 164—5 **12 Claims**



1. A method of manufacturing of a casting mold, comprising the steps of forming a casting mold body of a flowable binder-free backfilling mass; stabilizing the casting mold body by negative pressure; providing in said body a lost form of synthetic plastic material; withdrawing a portion of the binder-free backfilling mass, after pouring of molten metal and during beginning of hardening of the cast part.

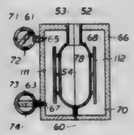
4. A lost form for a casting mold of a negative-pressure stabilized flowable binder-free backfilling mass, comprising plate elements of synthetic plastic material having faces which face toward one another; and an intermediate web-like element provided on said faces.

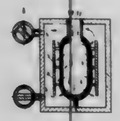
4,291,740

APPARATUS AND METHOD FOR HEATLESS PRODUCTION OF HOLLOW ITEMS, FOR INSTANCE, FOUNDRY SHELL CORES

Anatol Michelson, 3235 Pine Valley Dr., Sarasota, Fla. 33579

Filed May 28, 1980, Ser. No. 154,006
Int. Cl.³ B22C 13/08
U.S. Cl. 164—7.1 **21 Claims**





1. An apparatus for heatless production of hollow items, such as foundry shell cores, from binder coated granular minerals, comprising:

(a) A separable-part pattern box assembly having an investment aperature in the upper end rotatingly mounted on a support frame, and selectively positionable in a material receiving position, a material discharging position, and an item transfer position;

(b) Granular material supply means pivotally disposed above the pattern box assembly and adapted to reciprocate in horizontal and vertical planes;

(c) Granular material storage means, pivotally connected above said material supply means and having freedom of movement at least in horizontal plane;

(d) Sealing means pivotally mounted on said granular material supply means, having an actuator and an elastic element selectively positionable over the investment aperture of pattern box and away from it;

(e) Trimming means with a cutting element pivotally mounted over the pattern box, and adapted to reciprocate in both horizontal and vertical planes;

(f) Mechanical elevator system for conveying solvent containing unhardened material discharged from underneath the pattern box to the material supply means above said box, and;

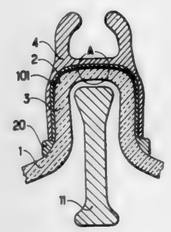
(g) Transfer means adapted for engaging produced item by contacting internal surfaces of the cavity and of the investment aperture of said item upon separation of the parts of said pattern box assembly in the item transfer position.

4,291,741

METHOD OF FIXING A METAL STRENGTH MEMBER ON A NON-METAL PART

Michel Willem, Vichy, France, assignor to Ceraver, Paris, France

Filed Oct. 12, 1979, Ser. No. 84,205
Claims priority, application France, Oct. 13, 1978, 78 29245
Int. Cl.³ B22D 19/00
U.S. Cl. 164—9 **7 Claims**



1. A method of fixing a metal strength member on a non-metal part by moulding the metal of the strength member in the molten state on the head of the non-metal part, over a metal sleeve initially closely applied on at least part of said head, the improvement comprising the step of:

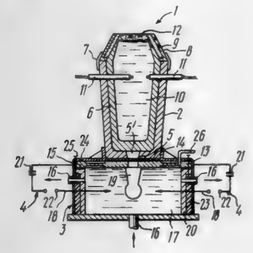
inserting a fibre glass layer throughout at least tha zone of the head which corresponds to the area where the molten metal is moulded, between said metal sleeve and said head, with said layer bearing an inert non-adhering inorganic substance, so that said layer is compressed between the head and the metal sleeve when the metal sleeve is applied against said head during moulding of said metal strength member.

4,291,742

METHOD AND APPARATUS FOR OBTAINING AN INGOT

Vladimir A. Korytov, ulitsa Nikolaevskaya, 9, kv. 64; Pavel P. Maljushevsky, prospekt Oktyabrsky, 17a, kv. 41; Grigory A. Guly, ulitsa Inzhenernaya, 13, kv. 5; Alexandr S. Shkatov, ulitsa Olshanskogo, 14, kv. 6, all of Nikolaev; Vladimir T. Sladkoshteev, ulitsa Dzerzhinskogo, 34, kv. 11, Kharkov; Ruslan V. Patanin, ulitsa Gagarina, 80, kv. 128, Kharkov; Vasily I. Dorokhov, ulitsa Dzerzhinskogo, 34, kv. 6, Kharkov; Georgy A. Klemeshov, ulitsa Pushkinskaya, 40, kv. 11, Kharkov, and Grigory E. Arkulis, ulitsa Oktyabrskaya, 8, kv. 23, Magnitogorsk, all of U.S.S.R.

Filed Nov. 9, 1977, Ser. No. 849,992
Int. Cl.³ B22D 27/02
U.S. Cl. 164—501 **12 Claims**



1. An improved method for obtaining an ingot formed in a mould comprising: imparting a single source of elastic oscillations on metal melt undergoing crystallization, said elastic oscillations being within the range of the natural or resonant frequencies of said ingot and being in the form of pulses generated by a high-voltage spark discharge across a liquid having a resistivity above 0.5 Ohm.m., and thereafter inducing said elastic pulse oscillations simultaneously with the filling of said mould with molten metal and imparting same to the melt undergoing crystallization, until the beginning of the process of volumetric crystallization of the melt, and the pulse repetition rate and pulse energy being such as to prevent transcrystallization of said metal; whereby heavy weight ingots can be produced free of dendrites or metal crystals and of a more fine-grained uniform structure.

3. An apparatus for obtaining an ingot comprising: a mould adapted to contain molten metal; a source of elastic oscillations transmitted to the molten metal and comprising at least one substantially closed discharge chamber filled with a liquid having a resistivity above 0.5 Ohm.m, said chamber being provided with a plurality of electrodes, and a pulse current oscillator connected to the positive and negative electrodes for pulse shaping by a high-voltage spark discharge in said liquid, said discharge chamber being mounted in mutual cooperative association with said mould such that high-voltage discharges occurring in said discharge chamber induce elastic oscillations in the molten metal contained in said mould.

4,291,743

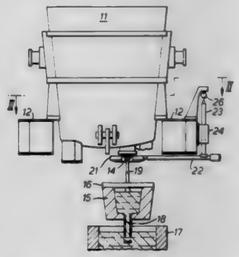
METHOD AND APPARATUS FOR POURING MOLTEN METAL

Sebastian Aftalion, Glasgow, Scotland, assignor to British Steel Corporation, London, England

Continuation of Ser. No. 941,664, Sep. 12, 1978, abandoned. This application Mar. 28, 1980, Ser. No. 134,962
Claims priority, application United Kingdom, Sep. 13, 1977, 38174/77
Int. Cl.³ B22D 11/10, 23/00
U.S. Cl. 164—66.1 **18 Claims**

1. Apparatus for protecting an exposed metal stream from the surrounding atmosphere when the metal stream is being poured from a nozzle controlled by a stopper rod or a slide gate valve into a receiver, comprising means for providing inert gas, said means being in the form of a metallic walled distributor dimensioned and apertured to project said gas inwardly around the nozzle exit at such a rate as to provide a zone of the said gas surrounding the nozzle exit and moving downwardly around the stream, the width of the zone of gas inwardly directed around the nozzle exit being (a) at least one-third of the length of the poured metal stream between the nozzle exit and the receiver and (b) at least about 600 mm.

17. A method of protecting a metal stream from the surrounding atmosphere when the metal stream is being poured



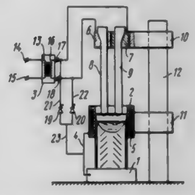
from the nozzle into a receiver, comprising positioning a source of inert gas having an annular gas duct to encircle the exit of the nozzle, said annular gas duct being so dimensioned and apertured to project an inert gas both inwardly and downwardly to provide a non-laminar, low turbulence zone of inert gas surrounding the nozzle exit and extending from the nozzle exit downwardly around the metal stream for the entire length of the stream as far as the receiver, said zone of inert gas possessing a flow regime having a Reynolds number between about 5,000 and 50,000.

4,291,744

APPARATUS FOR ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES

Boris I. Medovar, ulitsa A. Barbjusa, 22-26, kv. 109; Viktor L. Artamonov, ulitsa Shumskogo, 8a, kv.90; Pavel I. Kirsanov, ulitsa Belorusskaya, 15b, kv. 10; Alexandr M. Marchenko, ulitsa Stroitelei, 17, kv. 18; Alexei G. Bogachenko, ulitsa Sapernoe pole, 26a, kv. 30; Leonid V. Pavlov, prospekt Komarova, 28, kv. 6, all of Kiev; Jury M. Kamensky, ulitsa Novatorov, 42/5, kv. 143, Moscow; Ruslanbek B. Gutnov, ulitsa Chelyabinskaya, 23, korpus 2, kv. 199, Moscow, and Pavel M. Platonov, 9 Parkovaya ulitsa, 78/2, kv. 78, Moscow, all of U.S.S.R.

Filed Feb. 14, 1979, Ser. No. 12,076
Int. Cl.³ B22D 27/02; H05B 7/18
U.S. Cl. 164—509 **4 Claims**



1. An apparatus for the electroslag remelting of at least two consumable electrodes comprising:

a.c. power source means provided with at least two power terminals for providing a.c. power;

a bottom plate electrically connected to said a.c. power source means;

a mould electrically connected to said bottom plate; and

direct connection means directly connecting said at least

two power terminals to each of said bottom plate and said mould, said direct connection means comprising rectifiers, one rectifier being provided for each of said at least two power terminals, each of said rectifiers having a conductive state for electrically connecting a corresponding one of said at least two power terminals to each of said bottom plate and said mould to establish direct electrical connection therebetween,

said rectifiers having a conductive direction leading from said bottom plate and said mould, on the one hand, to said at least two power terminals, on the other hand, so as to provide for a flow of only direct current through the bottom plate and the mould to the corresponding one of said at least two power terminals of said a.c. power source means;

each of said at least two consumable electrodes being connected to a different respective one of said at least two power terminals of said a.c. power source means, said a.c. power generated by said a.c. power source means being characterized by at least two a.c. power cycles, so that each given one of said at least two a.c. power cycles is applied to a respective corresponding one of said at least two consumable electrodes;

each of said at least two rectifiers being exclusively actuated to said conductive state during a corresponding respective one of said at least two a.c. power cycles;

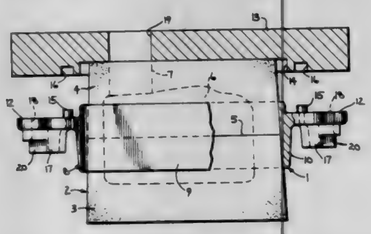
whereby said mould suffers no harmful effects due to spark discharge.

4,291,745

FOUNDRY MOLD JACKET

Willard R. Scheiderer, Wausaukee, Wis., assignor to Grede Foundries, Inc., Milwaukee, Wis.

Filed Dec. 14, 1979, Ser. No. 103,453
Int. Cl.³ B22C *21/00*
U.S. Cl. 164—394 **7 Claims**



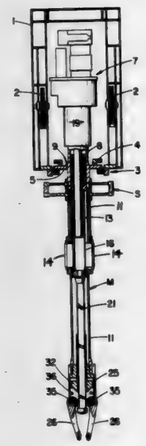
1. A foundry mold jacket, comprising a body portion having a central opening adapted to receive a sand mold having mating upper and lower halves joined along a horizontal parting line, said body portion having a substantial depth and adapted to straddle the parting line of the mold, a pair of extensions extending laterally from opposite sides of the body portion, said extensions extending vertically on either side of a horizontal plane passing through the vertical mid-point of said body portion, first locating means on the upper surface of each extension and adapted to position a separate weight on the upper surface of the body portion, and second means on each extension aligning a lifting means with said extension and adapted to receive a lifting member capable of lifting said jacket.

4,291,746

APPARATUS FOR STRIPPING INGOTS FROM MOLDS

Earl H. Sigman, Alliance, Ohio, assignor to AMCA International Corporation, Alliance, Ohio

Filed Jan. 15, 1979, Ser. No. 3,307
Int. Cl.³ B22D *29/08*
U.S. Cl. 164—407 **5 Claims**



1. In an ingot stripping and handling mechanism comprising a frame, a first tubular element depending from said frame, a second tubular element telescopically mounted over part of said first tubular element downwardly of said frame, said first and second tubular elements being coaxially aligned and axially movable relative to each other, means depending from said second tubular element for engaging ingots and ingot molds and for removing ingots from ingot molds, and means disposed within said frame and extending coaxially with said first and said second tubular elements for driving said first named means, the improvement which comprises:

a shock absorber comprising a first resilient metallic disc, a second resilient metallic disc, each of said discs being mounted on said mechanism in parallel spaced relationship to each other downwardly of said frame, each of said discs having a center opening including an inner periphery and an outer periphery radially spaced from said inner periphery, each of said discs being attached to each other by an annular element disposed between each of said discs adjacent to each of said outer peripheries, the inner periphery of said first disc engaging the outer surface of said first tubular element and the inner periphery of said second disc engaging the outer surface of said second tubular element.

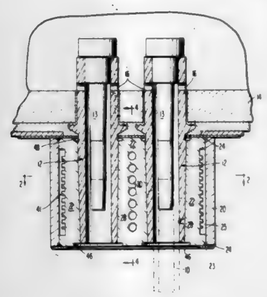
4,291,747

COOLER FOR TWIN STRAND CONTINUOUS CASTING

Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

Filed Oct. 31, 1979, Ser. No. 89,856
Int. Cl.³ B22D *11/10, 11/00*
U.S. Cl. 164—420 **25 Claims**

1. Twin strand continuous vertical casting apparatus comprising in combination; a jacket, a cooling member having a body of heating conducting material located in the jacket and having internal walls defining a pair of vertical laterally spaced die passages extending generally along parallel axes for receiving bar-forming dies in intimate contacting relationship, a pair of bar-forming dies respectively received in said die passages in intimate relationship with the internal walls defining said passages, a first inlet port through the jacket for introducing a coolant into the jacket to contact the body, a first outlet port through the jacket for discharging coolant from the jacket, a coolant flow passage extending through the body between said pair of vertical die passages for circulating coolant through the body, said body of the cooling member having an outer surface including annular ridges extending about and along the body in



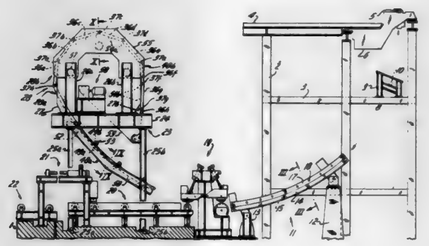
helical fashion while being spaced from the jacket to define a plurality of coolant flow channels between the body and the jacket and said coolant flow passage communicating with said coolant flow channels defined by said annular ridges.

4,291,748

DUMMY BAR FOR A CONTINUOUS CASTING MACHINE

Carl Langner, Monsey, N.Y., assignor to Concast Incorporated, Montvale, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,059
Int. Cl.³ B22D *11/08*
U.S. Cl. 164—426 **20 Claims**



1. A continuous casting installation comprising:

(a) a mold having an open-ended casting passage;

(b) an arcuate cooling zone downstream of said mold having a predetermined casting radius;

(c) a device downstream of said mold for withdrawing a continuously cast strand from said mold;

(d) a dummy bar for initiating the withdrawal of the strand from said mold, said dummy bar having a length at least equal to the distance from said mold to said device, and said dummy bar including a rigid portion and a flexible portion, said rigid portion being arcuate and having a radius equal to said casting radius and a length which is a substantial fraction of said distance, and said rigid portion having an end which closes the outlet end of said casting passage at the beginning of a casting operation and is provided with coupling means for establishing a connection with the strand, said flexible portion being capable of bending to a radius substantially smaller than said casting radius; and

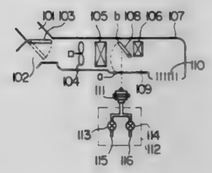
(e) storage means for said dummy bar, said storage means comprising a first section for said rigid portion and a second section for said flexible portion, said first section including arcuate first support means having a radius equal to said casting radius and said second section including arcuate second support means having a radius substantially smaller than said casting radius.

4,291,749

METHOD AND APPARATUS FOR CONTROLLING COMPARTMENT TEMPERATURE OF A VEHICLE

Fumio Ootsuka, Kariya; Morimasa Ninomiya, Chiryu; Norio Maehara, and Akiro Yoshimi, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 29, 1979, Ser. No. 98,598
Claims priority, application Japan, Dec. 27, 1978, 53/162691
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—27 **3 Claims**



1. An apparatus for controlling the temperature of the compartment of an automobile having cooler means for supplying the cooled air, heater means for supplying the heated air and adjuster means for adjusting the rate of supply of said cooled and heated air to said compartment, said apparatus comprising:

means for establishing a desired compartment temperature;

means for sensing an actual compartment temperature;

means for controlling said adjuster means in rsponse to said desired and actual compartment temperature so that said actual compartment temperature approaches said desired compartment temperature;

means for sensing another actual temperature at a predetermined compartment portion where the heat of the sun is radiated;

means for sensing the intensity of the sun light incident to said compartment;

means for comparing said sensed intensity with a reference intensity; and

means for compensating, when the output of said comparing means indicates that said sensed intensity is higher than said reference intensity, the operation of said controlling means in accordance with said another actual temperature.

4,291,750

SELECTIVE EXTRACTION HEAT STORAGE UNIT

Arthur J. Clyne, Alma; John E. Knarr, Lansing, and Stanley Miller, Alma, all of Mich., assignors to Energy Recycling Company, Lansing, Mich.

Continuation of Ser. No. 23,216, Mar. 23, 1979, abandoned. This application Jul. 29, 1980, Ser. No. 173,256
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—34 **13 Claims**

10. A heat storage assembly comprising:

a heat storage unit including at least one container having fusible substance therein and including a circulation system for allowing circulation of a heat transfer fluid from an external source heat through said unit, in contact with said containers;

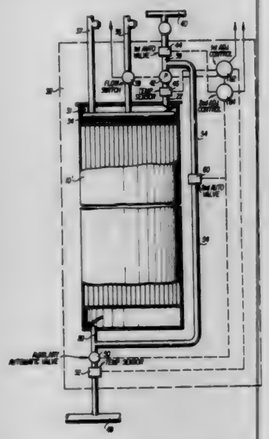
a separate heat exchanger in said unit for contacting heat transfer fluid flowing through said unit, said separate heat exchanger comprising inlet and outlet tubes for allowing a separate fluid into and out of said separate heat exchanger;

an inlet pipe coupled to said unit for providing transfer fluid to said unit from said external source;

an exhaust pipe coupled to said unit for transporting heat transfer fluid away from said unit;

a bypass pipe mounted in parallel fluid flow relationship with said unit, said bypass pipe including a first valve therein for opening and closing said bypass pipe;

a second valve means for isolating the heat transfer fluid in said unit from said external source; and



a pump means for circulating heat transfer fluid through said bypass pipe and said unit to provide increased interchange of heat between said separate heat exchanger and said heat transfer fluid in said unit.

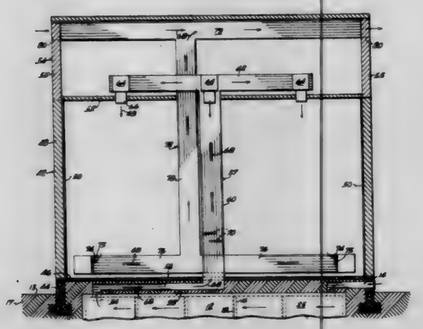
4,291,751

THERMAL INVERTER

Bernard A. Wolf, 6514 Central Ave., St. Petersburg, Fla. 33707

Filed Aug. 16, 1979, Ser. No. 66,921
Int. Cl.³ F25D *23/12*; F23L *17/02*
U.S. Cl. 165—45 **4 Claims**





1. A thermal inverter arrangement for year around regulating air temperatures of a building's interior by utilizing earth temperatures at predetermined depths below the earth's surface whereat a selected temperature range exits substantially year around, the thermal inverter arrangement comprising:

a plenum chamber adapted for being disposed underground;

said plenum chamber having an air inlet and an air outlet;

said plenum chamber having a plurality of metal screens disposed in traversing relationship to said plenum chamber between said air inlet and said air outlet;

a plurality of metal poles being mounted to each of the screens and positioned to extend downward from said screen to said predetermined depths;

said plenum chamber being constructed below the foundation of the house;

an exhaust duct mounted in the upper portions of the building having a pair of opposed ends disposed in fluid communication with the outside region with respect to the building;

a main duct having one end thereof opening into the interior of the building and the other end joining said exhaust pipe; whereby a draft is created through the main duct by natural air currents flowing through the exhaust duct;

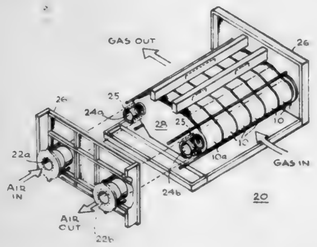
said plenum chamber defining an interior cavity having a volume at least equal to one-fourth of the volume of the interior of the building to be cooled; whereby the air flowing through the plenum chamber, by thermal heat transfer between the air flow and the predetermined depths of the earth through said screens and poles, assumes desired temperatures.

4,291,752

HEAT EXCHANGER CORE ATTACHMENT AND SEALING APPARATUS AND METHOD

David G. Bridgnell, 26963 Bolan La., Rolling Hills, Calif. 90274

Filed Oct. 26, 1978, Ser. No. 955,118
Int. Cl.³ F28F *5/00*
U.S. Cl. 165—81 **13 Claims**



1. Heat exchanger coupling apparatus comprising:

first and second air passage defining members of thin sheet material, the members being adjacent one another but displaced therefrom and subject to disparate dimensional changes resulting from thermal growth;

a sealing member comprising a U-shaped circumferential metal bladder extending between said first and second members; and

means affixing the opposed ends of the sealing member in sealing relationship to respective adjacent edges of said first and second members.

4,291,753

SCRAPER ASSEMBLY FOR USE WITH A FLUIDIZED BED CONDENSER

Richard L. Fisher; David J. Wright, and Randall Scheel, all of Albany, Oreg., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 7, 1979, Ser. No. 9,940
Int. Cl.³ F28G *3/10*
U.S. Cl. 165—94 **12 Claims**

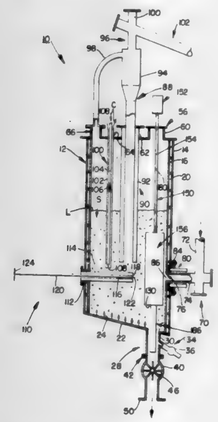
1. A fluidized bed condenser for condensing zirconium tetrachloride or hafnium tetrachloride to a free flowing solid comprising:

a vertically oriented water cooled vessel;

inlet means defined in a wall of said water cooled vessel for conducting fluid zirconium tetrachloride or hafnium tetrachloride into said water cooled vessel;

a fluidized bed in said water cooled vessel for condensing zirconium tetrachloride or hafnium tetrachloride vapor to a free flowing solid;

a heater surrounding said inlet means for maintaining zirconium tetrachloride or hafnium tetrachloride in a vapor state as those products enter said water cooled vessel, said



heater producing enough heat to maintain said zirconium tetrachloride or hafnium tetrachloride in a vapor state until such vapor enters said fluidized bed;

an unheated scraper means mounted on said vessel and located within said vessel only immediately adjacent said wall located inlet means, said scraper means being cooled by particles in said fluidized bed and including at least one arm and means connected to said arm for moving that arm, said arm dislodging solid zirconium tetrachloride or hafnium tetrachloride from adjacent and within said inlet to prevent solid build up in said inlet means; and

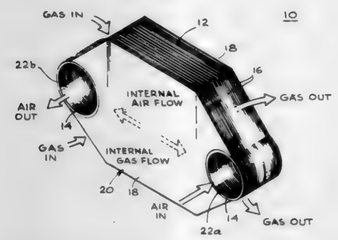
outlet means for conducting solids out of said vertical vessel, said solids being removed by gravity flow.

4,291,754

THERMAL MANAGEMENT OF HEAT EXCHANGER STRUCTURE

Calvin J. Morse, and Gabor Kossuth, both of Torrance, Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 26, 1978, Ser. No. 955,114
Int. Cl.³ F28D *7/02*; F28F *3/08*
U.S. Cl. 165—165 **18 Claims**



1. In a heat exchanger core of the plate and fin type having integral manifolds and heat exchange portions, apparatus defining passages for directing portions of the heat exchanging fluids to selected portions of the heat exchanger about the periphery thereof comprising:

a plurality of air passages extending along a selected portion of the heat exchanger manifolds in heat conducting relationship therewith;

means for connecting said passages between inlet and outlet manifolds in heat exchanging relation with hot gas passages in the heat exchanger; and

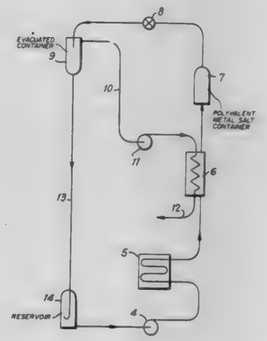
means for connecting said passages with the interior of their associated manifolds at selected positions about the periphery of the manifolds for directing a portion of the compressed air conducted by the manifolds through said passages.

4,291,755

METHOD AND APPARATUS FOR ACCUMULATING, STORING AND RELEASING THERMAL ENERGY

Wallace L. Minto, Sarasota, Fla., assignor to Sun Power Systems Inc., Sarasota, Fla.

Filed Oct. 10, 1978, Ser. No. 949,593
Int. Cl.³ F28D *13/00*
U.S. Cl. 165—3 **14 Claims**



1. The method of handling thermal energy comprising the steps of treating an energy storage medium including an at least partially hydrated heat storage water soluble polyvalent metal salt material having relatively hydrated and dehydrated states with thermal energy derived from a source thereof to extract and remove water from and convert said storage material to a water impoverished state, thereafter adding water to said water impoverished material to effect at least the partial rehydration thereof with the evolution of heat and applying said evolved heat to a heat consuming process.

4,291,756

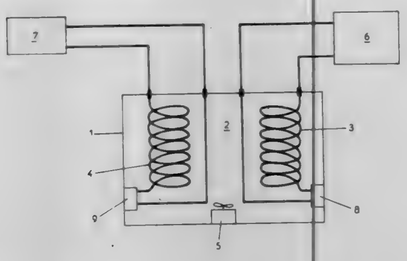
HEAT ACCUMULATOR

Armand Bracht, 31, rue du Rhin, Kingersheim (Haut-Rhin), France

Filed Jul. 17, 1979, Ser. No. 58,199
Claims priority, application France, Jul. 21, 1978, 78 22761
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—104.17 **7 Claims**

1. A heat accumulator comprising in combination a reservoir, a flowable storage mass within said reservoir, thermal insulation means enclosing said reservoir, heat-transfer means for introducing heat into said mass, heat recovery means for recovering heat from said mass, a stirrer to stir said mass, and

an electrical stirrer motor immersed in said mass for drawing said stirrer, said mass being a meltable organic compound



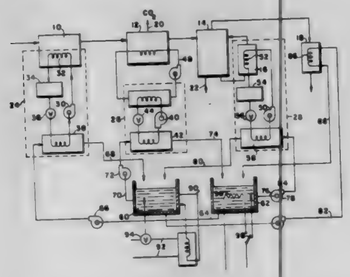
which is solid at room temperature and being electrically insulative and lubricative.

4,291,757

MULTIPLE HEAT PUMP AND HEAT BALANCING SYSTEM FOR MULTI-STAGE MATERIAL PROCESSING

George H. Redden, Staunton, Va., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 28, 1980, Ser. No. 153,991
Int. Cl.[3] F28D *7/00*
U.S. Cl. 165—104.31 7 Claims



6. In an arrangement for providing heating and cooling in various stages of an ethyl alcohol plant including at least the main stages of cooking, cooling-fermentation, and distillation, a heating and cooling and heat balance system comprising:

first, second, and third heat pumps, each including a condensing section and an evaporating section;

a first, normally cooler fluid tank, and a second, normally warmer fluid tank;

means connecting the condensing sections of said first and third heat pumps in heat exchange relation with said cooking and distillation stages, respectively;

means connecting the evaporator section of said second heat pump in heat exchange relation with the cooling-fermentation stage;

means connecting said evaporator section of said first heat pump to receive fluid from said second tank and to return it to said first tank;

means connecting said condensing section of said second heat pump to receive fluid from said first tank and return it to said second tank;

means connecting said evaporator section of said third heat pump to receive fluid from said second tank and to return it to said first tank;

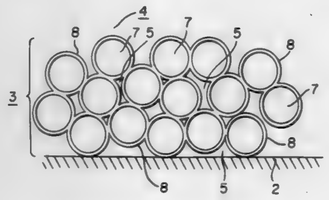
means to reject heat selectively from the fluid of said first tank, and to add heat selectively to said fluid of said second tank.

4,291,758

PREPARATION OF BOILING HEAT TRANSFER SURFACE

Masao Fujii; Yoshifusa Ogawa, and Yoshiyuki Morihiro, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,438
Claims priority, application Japan, Oct. 31, 1978, 53-135979
Int. Cl.[3] F28F *13/18*
U.S. Cl. 165—133 3 Claims



1. A boiling heat transfer surface for contacting with a liquid coolant, comprising a porous layer on a substrate, said porous layer formed of:

a layer of metallic particles having grain sizes of between 60 mesh pass and 250 mesh non-pass, said layer being at least one particle thick and defining interstices between said particles; and

a metallic film plated on said particles and fixing said particles to one another and to said substrate, said metallic film having a substantially uniform thickness on each said particle greater than 10μ but not sufficiently great to fill said interstices,

whereby said interstices form at least some of the pores of said porous layer.

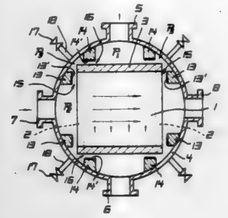
4,291,759

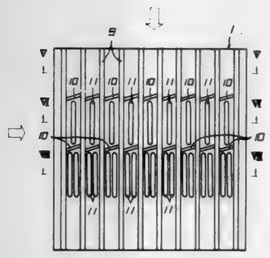
CROSS-CURRENT TYPE PLATE HEAT EXCHANGER

Hiroyuki Sumitomo, Osaka, Japan, assignor to Hisaka Works, Limited, Osaka, Japan

Filed Aug. 28, 1979, Ser. No. 70,631
Int. Cl.[3] F28F *3/00*
U.S. Cl. 165—146 2 Claims

1. A cross-current type plate heat exchanger comprising a casing, a plurality of vertically disposed heat transfer plates arranged side by side within said casing to define fluid passageways through which two fluids to be heat exchanged flow in a cross-current manner, wherein each heat transfer plate includes a plurality of juxtaposed vertical grooves extending from the top to the bottom of the heat transfer surface of said heat transfer plate, a plurality of substantially horizontal projections positioned between the vertical grooves for dividing said heat transfer area into a plurality of sections, and vertically extending short projections which are lower than the vertical grooves positioned between the substantially horizontal projections wherein the number of said short projections provided





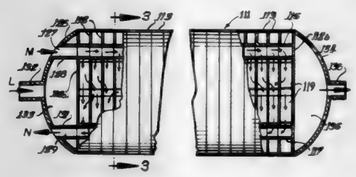
in the vertically separated sections is progressively increased as the heat transfer area extends from top to bottom.

4,291,760

TWO FLUID HEAT EXCHANGER

Charles S. Argyle, Willowdale; Robert C. Bamsey, Kitchener, and Gregory S. T. Millard, Brampton, all of Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 918,197, Jun. 22, 1978, abandoned, which is a division of Ser. No. 716,628, Aug. 23, 1976, abandoned. This application Oct. 15, 1979, Ser. No. 85,093
Int. Cl.[3] F28F *3/00*
U.S. Cl. 165—166 10 Claims



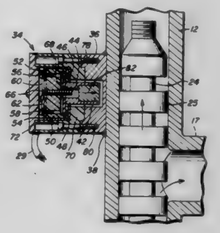
1. A two fluid heat exchanger comprising a series of flanged plates, each plate having a peripheral flange, a first fluid inlet opening, a first fluid outlet opening, and one or more elongated second fluid passage openings each defined by a flange, all of the flanges on each plate extending from one surface thereof and adapted to engage the unflanged surface of the next adjacent plate, said series of plates adapted to be stacked and suitably joined together to form the heat exchanger, a pair of end plates on the opposite ends of the stack, means to allow separate flow of said first and second fluids to said plates, and separate means communicating with said first fluid inlet and outlet openings and the space between said plates, said first fluid passing through said first fluid inlet opening in each of said plates and between said plates to the first fluid outlet openings.

4,291,761

MAGNETIC SENSING DEVICE

Willie L. Watson, Fredericksburg, Ohio, assignor to Multi Products Co., Millersburg, Ohio

Filed Apr. 18, 1980, Ser. No. 142,374
Int. Cl.[3] H01H *36/00*
U.S. Cl. 166—66 10 Claims



1. A magnetic proximity sensing device comprising; a movable magnet for sensing the proximity of an iron-containing object crossing the magnetic field of the magnet, a housing to secure said magnet and being movable therewith, said housing including an electrically conductive portion, said device including a means spaced from said electrically conductive portion capable of forming a complete electrical circuit when in contact with said electrical conductive portion, said magnet housing being movable so that said electrically conductive portion can engage said means to form said electrical circuit, and an adjustment means adjacent said magnet capable of maintaining said magnet housing at a location whereby said electrically conductive portion is out of contact with said means to complete said electrical circuit when said iron-containing object is not in the magnetic field of said magnet, said adjustment means being a magnetic set screw positioned adjacent said magnet, the position of said set screw relative to said magnet being able to be adjusted by turning said screw and thereby magnetically attracting said magnet.

4,291,762

APPARATUS FOR RAPIDLY ATTACHING AN INSIDE BLOWOUT PREVENTER SUB TO A DRILL PIPE

Howard S. Gudgel, Tulsa, Okla., assignor to Drill Tech Equipment, Inc., Tulsa, Okla.

Filed Jan. 18, 1980, Ser. No. 113,385
Int. Cl.[3] E21B *19/16*
U.S. Cl. 166—85 6 Claims

1. An inside blowout preventer for a drill pipe, the drill pipe having an enlarged external diameter internally threaded upset end portion, comprising:

a blowout sub having a lower and threadably engageable with the drill pipe upset end;

a horseshoe member dimensioned to slidably engage a drill pipe below the upset end and slid on the pipe and be restrained by the upset end;

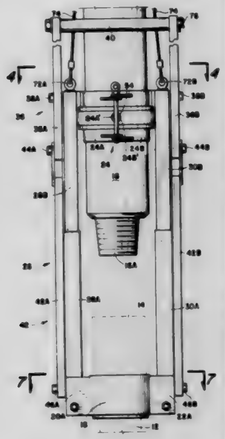
a collar attached to said blowout sub;

telescoping frame attached at its upper end to said collar and at the lower end to said horseshoe assembly;

an arm pivotally attached at an intermediate point to said collar, the arm having a hand engaging means at one end; and

a linkage pivotally attached at its first end to the other end of said arm, the second end of the linkage being pivotally attached to said horseshoe member, whereby said blowout sub is positioned above a drill pipe upset end, said horseshoe member may be engaged with the drill pipe and the pivotation of said handle move said collar downwardly towards said horseshoe member to engage the lower

threaded end of said blowout sub with the drill pipe upset end and the entire assembly rotated relative to the drill



pipe to thread said blowout sub into the drill pipe upset end.

4,291,763

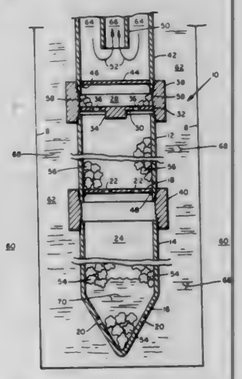
DISPENSER FOR OIL WELL TREATING CHEMICALS

Mortimer Singer, 2320 Plaza del Grande, Las Vegas, Nev. 89102

Filed Nov. 5, 1979, Ser. No. 91,468

Int. Cl.³ E21B *21/00, 43/12*

U.S. Cl. 166—110 **10 Claims**



1. In an oil well, including at least a conventional string of tubing, a string of sucker rods, a sucker rod pump including a traveling valve; and a standing valve; an apparatus for dispensing well treating chemicals over a selected period of time, while said sucker rod pump is pumping fluid from said well, said apparatus comprising;

(a) a closed cylindrical container having at least one chamber of selected diameter and of selected length; and means to removably rigidly attach said container to the bottom of said string of tubing, below the inlet of said sucker rod pump;

(b) at least one opening of selected size in the bottom end of said container;

(c) said container is at least partially filled with at least one piece of solid well treating chemical of selected chemical composition and attached to the the bottom of said tubing string; and

(d) means to reciprocate said container vertically through a selected distance, while said container is immersed in the well fluid standing in the bottom of said well;

whereby when said dispense is submerged in the well fluids in the bottom of said well; and when said sucker rod pump is operated, the bottom end of said tubing string and said dispenser will be vertically reciprocted through a selected distance; and well liquids will be alternately forced into, and withdrawn from, said container through said bottom opening, carrying said chemical into solution in the water standing in the bottom of said well.

4,291,764

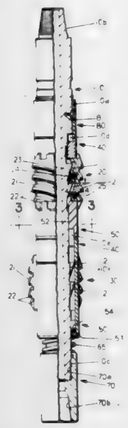
WELL CASING SCRAPING APPARATUS

Davy G. Pampell, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jan. 7, 1980, Ser. No. 110,078

Int. Cl.³ E21B *37/02*

U.S. Cl. 166—173 **13 Claims**



1. A well casing scraping apparatus, comprising: a generally cylindrical mandrel having means on one end thereof for connection to a conduit; at least one peripheral ramp surface formed on said mandrel; annular scraping means defined by a plurality of arcuate segments around said ramp surface portion of said mandrel, each segment having scraping teeth on its outer periphery and an internal arcuate ramp surface conforming to the adjacent portion of said peripheral ramp surface, whereby the engagement of said internal and peripheral ramp surfaces determines the minimum effective scraping diameter of the scraping means, each of said arcuate segments including an arcuate base portion overlying an arcuate portion of said ramp surface and a radially projecting integral body portion carrying said scraping teeth, said body portion being of shorter arcuate extent than said base portion whereby the edges of said base portion project arcuately beyond said body portion; a retaining sleeve mounted on said mandrel adjacent said scraping means, means on said retaining sleeve surrounding portions of said scraping means and limiting both radial and axial movements of said segments relative to said mandrel including axial projections of arcuate cross-section extending between said segment body portions and overlying the arcuately projecting edges of said segment base portions; resilient means intermediate said mandrel and each said segment to bias the segments radially outwardly to the extent permitted by said retaining sleeve; and means for adjusting the axial position of said retaining sleeve relative to said mandrel, thereby adjusting the minimum effective scraping diameter of said scraping means.

4,291,765

WATER FLOODING PROCESS USING MULTIPLE FLUIDS

Ralph E. Gilchrist, Corpus Christi; George W. Hover, Houston, and Robert M. Barber, Spring, all of Tex., assignors to Mitchell Energy Corporation, Houston, Tex.

Filed Aug. 2, 1979, Ser. No. 62,921

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—273 **16 Claims**

1. A method of recovering oil from an oil containing subterranean formation comprising:

injecting a first non-caustic treatment fluid consisting essentially of water and a polymeric viscosifier in an amount of 10 to 30% pore volume of the formation and driven by water into the formation, thereafter,

injecting a second treatment fluid containing a polymer and a caustic in an amount to 10 to 30% pore volume of the formation and driven by water into the formation, and

recovering an oil fraction from said subterranean formation.

4,291,766

PROCESS FOR CONSOLIDATING WATER-WET SANDS WITH AN EPOXY RESIN-FORMING SOLUTION

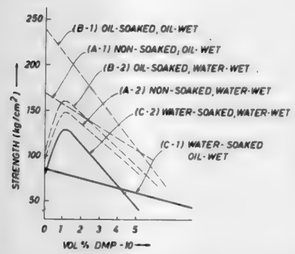
David R. Davies; Jacobus J. M. Zuiderwijk, and Adrianus M. P. M. Hagelaars, all of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 79,140, Sep. 26, 1979, abandoned. This application Jun. 2, 1980, Ser. No. 155,825

Claims priority, application United Kingdom, Apr. 9, 1979, 12475/79; Canada, Mar. 21, 1980, 348115

Int. Cl.³ E21B *33/138, 43/04*

U.S. Cl. 166—276 **11 Claims**



1. A well treating process for consolidating a mass of contiguous particles within a subterranean location in or near the borehole of a well comprising:

compounding a resin-forming solution which consists essentially of (a) at least one polymerizable epoxy compound having an average of at least one epoxy group per molecule and at least one amino curing agent which contains at least three amino hydrogen atoms per molecule and is capable of curing the epxoy compound, (b) a volume ratio between the curing agent and epoxy compound of from about 0.2 to 0.6 and (c) a liquid oil solvent which contains aromatic and nonaromatic hydrocarbons in a volume ratio such that the solution remains ungelled while a partially cured epoxy resin is formed, precipitate from the solution, and substantially completely cured, within said subterranean location;

injecting at least one pretreatment fluid into the mass of particles to be consolidated to the extent required to wet those particles with an aqueous solution which is no more saline than the water then in said mass and contains not more than about 1.5% by weight dissolved salt;

dissolving in said resin-forming solution and/or pretreatment fluid an amount of at least one dimethylaminomethyl-substituted phenol to provide a proportion of about 0.2 to 10% by volume of that phenol within the fluid in which it is dissolved; and,

injecting said resin-forming solution into the mass of particles to be consolidated in a rate and volume such that the solution enters the mass before a significant proportion of partially cured resin has precipitated and is kept within said mass at least substantially throughout the precipitating and curing of that resin.

4,291,767

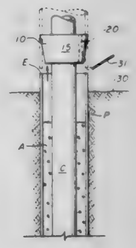
METHOD FOR STABILIZING AND HANGING SURFACE CASING

Emmitt D. Hall, Jr., P.O. Box 822, Atlanta, Tex. 75551

Filed Feb. 6, 1980, Ser. No. 118,922

Int. Cl.³ E21B *33/14, 41/00*

U.S. Cl. 166—290 **7 Claims**



1. A method of stabilizing surface casing in the earth's surface for well operations comprising the steps of:

a. positioning conductor pipe in the earth's surface;

b. lowering surface casing through the conductor pipe;

c. positioning cement between the conductor pipe and the surface casing;

d. elevating the surface pipe before the cement hardens;

e. positioning stabilizer and hanger means with a downwardly tapered annular outer surface and a serrated inner annular surface around the surface casing whereby the serrated inner surface engages the surface casing; and

f. lowering the surface casing and stabilizer and hanger means thereon into the conductor pipe whereby the tapered outer surface and the weight of the surface pipe flare the upper end of the conductor pipe to form a bowl for receiving, seating and supporting the stabilizer and hanger means to thereby secure the surface casing to the conductor pipe and hence the surrounding earth's surface to stabilize the surface casing for well operations.

4,291,768

PACKING ASSEMBLY FOR WELLHEADS

Robert J. Diehl, Wallis, Tex., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Jan. 14, 1980, Ser. No. 111,760

Int. Cl.³ E21B *33/02*

U.S. Cl. 166—315 **8 Claims**

1. In a wellhead assembly, the combination of:

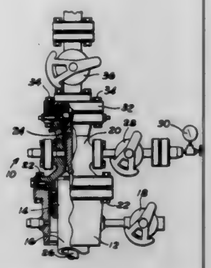
a tubing head having an inner peripheral surface including an inner annular supporting shoulder;

a tubing hanger supported on said supporting shoulder and having an outer peripheral surface spaced from the inner peripheral surface of said tubing head to define an annular space therebetween;

holddown means to seat said tubing hanger tightly on said annular shoulder of said tubing head; and

a packing assembly mounted within said annular space comprising a plurality of lower packing rings, an upper annular piston member mounted over the packing rings for downward movement to compress the packing rings, and cooperating retaining means on said piston member and the outer periphery of said tubing hanger to lock said

piston member to said tubing hanger after the piston member moves downwardly a predetermined amount and

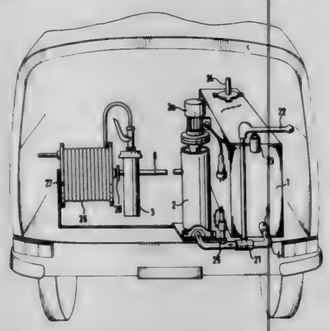


compresses the packing rings thereby to retain the packing rings in a compressed relation on the tubing hanger.

4,291,769
FOAM FIRE EXTINGUISHING UNIT FOR RESCUE VEHICLE

Erich Müller, Saumweg 15, D-7918 Illertissen, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,266
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846150
Int. Cl.³ A62C *27/06*
U.S. Cl. 169—13 **1 Claim**

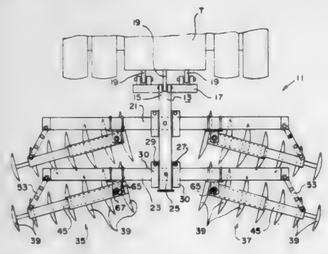


1. A quick-use foam fire extinguishing unit, comprising:
a container;
a premanufactured mixture of water and a conventional watery film-forming foam medium in said container;
a tubelike filling pipe mounted on an upper wall of said container for facilitating a filling of said container with said mixture;
an outlet adjacent a bottom wall of said container;
a pump having an inlet at the bottom end thereof and an outlet spaced upwardly from said inlet;
a first outlet pipe connected to and extending between said outlet in said container and said inlet to said pump;
a valve in said first outlet pipe between said container outlet and said inlet to said pump;
a hand operated lever operatively connected to said valve for facilitating an opening and closing of said valve, said lever extending upwardly from the valve to a position above the top of the container with a horizontal portion extending along the top of the container;
A switch mounted adjacent the top of said container adjacent said hand operated lever, said switch being actuated in response to a movement of said lever to a position corresponding to said valve being opened, wherein the horizontal portion directly abuts the switch for operation thereof;
a motor operatively connected to said pump and electrically connected to said switch, said motor being actuated in response to said switch being actuated to thereby effect a driving of said pump;
a hose reel having an inlet at the center thereof;
a second outlet pipe connected to and extending between said pump outlet and said inlet on said hose reel;
an elongated hose on said hose reel connected in fluid communication with said inlet on said hose reel;
a hand held jet pipe connected to a free end of said hose and being movable independently of said hand operated lever; and
a connection branch in said first outlet pipe located between said valve and said inlet to said pump and being adapted for connection to a water supply hose for cleaning said pump, said second outlet pipe and said hose following a use thereof with said mixture.

4,291,770
LEVEE DISC APPARATUS

Louis C. Engler, Wilburn Rte., Box 382, Heber Springs, Ark. 72543

Filed Jan. 16, 1980, Ser. No. 112,555
Int. Cl.³ A01B *21/08*
U.S. Cl. 172—185 **3 Claims**

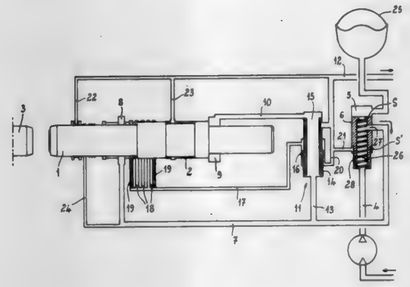


1. A disc apparatus for being pulled by a tractor and for forming levees, said apparatus comprising:
(a) a longitudinal frame member having a forward end for being attached to said tractor;
(b) a first cross frame member pivotally attached to said longitudinal frame member substantially transverse thereof;
(c) a first disc blade gang including a first disc blade set attached to said first cross frame member on a first side of said longitudinal frame member and a second disc blade set attached to said first cross frame member on a second side of said longitudinal frame member;
(d) a second cross frame member pivotally attached to said longitudinal frame member substantially transverse thereof and rearward of said first cross frame member;
(e) a second disc blade gang including a first disc blade set attached to said second cross frame member on a first side of said longitudinal frame member and a second disc blade set attached to said second cross frame member on a second side of said longitudinal frame member; each of said disc blade sets including a plurality of disc blade members with each blade member having a different outside diameter and with the outside diameter of each blade member increasing at a substantially uniform rate from said blade member farthest from said longitudinal frame member to said blade member closest to said longitudinal frame member; and
(f) stop means for limiting pivotal movement of said first and second cross frame members on said longitudinal frame member to a range of substantially 15°.

4,291,771
ROTARY PERCUSSION HYDRAULIC DRILLING MACHINE

Raymond J. Perraud, Villeurbanne, France, assignor to Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A. Societe Anonyme, Meyzieu, France

Filed Mar. 23, 1979, Ser. No. 23,325
Claims priority, application France, Jun. 20, 1978, 78 18936
Int. Cl.³ E21C *3/20*
U.S. Cl. 173—106 **1 Claim**



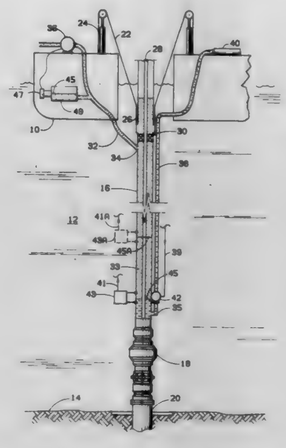
1. In a hydraulic drilling machine comprising a percussion-controlling striker piston mounted to slide inside a cylinder and drive a tool, said cylinder defining, around the piston, a first annular chamber connected by a "high pressure" pipe to a one-way valve in the form of a sleeve subject to a spring force and slidably mounted inside a chamber which is connected to an acumulator comprising a diaphragm and leading to which is a hydraulic fluid inlet pipe and a second annular chamber connected to a control valve with a slide having differential sections connecting said second chamber alternately to the "high pressure" pipe and a return pipe, the control of the control valve being ensured by a pipe connected to the cylinder, the improvement wherein the sleeve constituting the one-way valve has a lateral connection allowing direct passage of the hydraulic fluid to the return pipe, when said valve is in a position preventing the passage of fluid to the "high pressure" pipe, a hydraulic rotary motor for rotating said tool being located in the inlet pipe.

4,291,772
DRILLING FLUID BYPASS FOR MARINE RISER

Pierre A. Beynet, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 25, 1980, Ser. No. 133,703
Int. Cl.³ E21B *7/12, 17/01, 21/08*
U.S. Cl. 175—5 **18 Claims**

17. A method of drilling a subsea well from a vessel floating on a body of water in which a drilling fluid is circulated down a drill pipe to a drill bit and returned up the annulus between a drill string and the borehole wall, the improvement which comprises:
providing a riser pipe from said wellhead to said vessel;
maintaining a lightweight fluid other than air in said riser on top of the drilling fluid in said annulus;
said lightweight fluid having a density less than said drilling fluid; and
connecting the annulus below said lightweight fluid to a return conduit extending to said vessel.

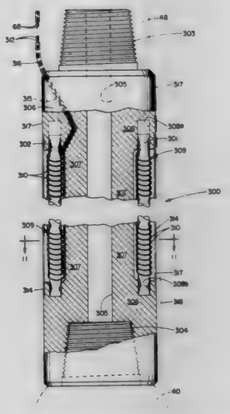


18. A method as defined in claim 17 in which said lightweight fluid is sea water.

4,291,773
STRICTIVE MATERIAL DEFLECTABLE COLLAR FOR USE IN BOREHOLE ANGLE CONTROL

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Continuation-in-part of Ser. No. 928,703, Jul. 27, 1978, Pat. No. 4,211,292. This application Dec. 10, 1979, Ser. No. 101,854
Int. Cl.³ E21B *7/04*
U.S. Cl. 175—61 **24 Claims**



1. A deflectable collar adapted to be connected to a drill string in drilling apparatus, comprising:
at least one strictive material element operatively connected to said deflectable collar to deflect said collar under the influence of energizing force applied to said strictive material element, said strictive material element having the characteristic of changing in length in at least one dimension under the influence of an energizing force applied to said element; and
means operatively associated with said strictive material element for applying an energizing force to said strictive

material element of sufficient strength to change the length of said strictive material element.

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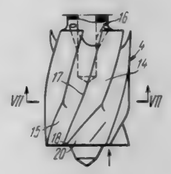
ROCK-BREAKING IMPLEMENT FOR PERCUSSIVE MACHINES

Boris V. Sudnishnikov, Krasny prospekt, 56, kv. 59; Veniamin V. Kamensky, ulitsa Derzhavina, 19, kv. 78; Eduard P. Varnello, ulitsa Dzerzhinskogo, 3, kv. 19, and Sergei K. Tupitsyn, ulitsa Zorge, 123, kv. 31, all of Novosibirsk, U.S.S.R.

Filed May 30, 1979, Ser. No. 43,834

Int. Cl.³ E21C *13/08*

U.S. Cl. 175—417 **13 Claims**



1. A rock-breaking implement, preferably for a self-propelled percussive machine for driving boreholes, comprising a body whereof at least a part facing a borehole face is cylindrical in shape:

rock-breaking wedges on said body arranged in such a manner that blades of the wedges extend radially at an end face of said body facing the borehole face;

grooves in said body which open outside to the periphery of said body to remove broken rock, said grooves extending along helical lines and intersecting one another in such a manner that portions of said body located between said intersecting grooves define said rock-breaking wedges;

edges of said rock-breaking wedges, which extend on the periphery of said body within the cylindrical part thereof defining a continuous circle when projected to a plane of transverse section of said body and forming walls of the borehole.

4,291,775

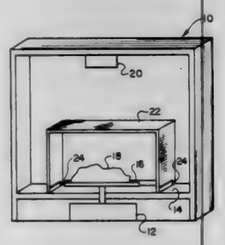
METHOD AND APPARATUS FOR IMPROVING WEIGHING ACCURACY

Michael J. Collins, Matthews, N.C., assignor to CEM Corporation, Indian Trail, N.C.

Filed Nov. 1, 1979, Ser. No. 90,286

Int. Cl.³ G01G *21/28*

U.S. Cl. 177—1 **9 Claims**



1. A method for improving analytical balance accuracy in weighing heated materials comprising placing a material to be weighed on the balance plate of an analytical balance, covering and enclosing said balance plate without contacting the same with a preformed air barrier transparent to microwave radiation heating said material with microwave radiation while on said balance to remove volatiles, collecting and/or absorbing said volatiles on said barrier and sensing the weight of said heated material while at a temperature above ambient temperature.

4,291,776

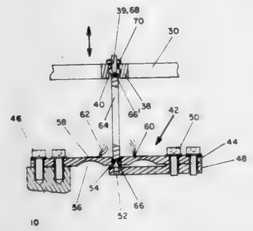
SCALE WITH CANTILEVER BEAM STRAIN MEASUREMENT

Walter Kupper, Madison, N.J., and Diethelm Utzinger, Zurich, Switzerland, assignors to Mettler Instrumente AG, Greifensee-Zürich, Switzerland

Filed May 17, 1979, Ser. No. 39,953

Int. Cl.³ G01G *3/08, 3/14*

U.S. Cl. 177—229 **10 Claims**



1. In a scale having load supporting means including a load receiving member for receiving a load to be weighed, and means for supporting said load receiving member;

improved measuring apparatus comprising, in combination,

a cantilever beam having an upper surface facing said load receiving member, a longitudinal axis, an anchored end, a free end portion, and a bore intersecting said longitudinal axis;

sensing means positioned on said upper surface for sensing strains set up in said cantilever beam; and

means for transmitting force from said load receiving member to said cantilever beam, said force transmitting means comprising a first force transmitting member releaseably coupled to said cantilever beam from beneath and having a portion aligned with said bore, and a second force transmitting member passing with clearance through said bore for transmitting force from said load receiving member to said first force transmitting member.

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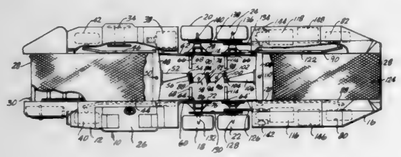
SHUTTLE CAR

Boyd R. Yale, Keen Mountain, Va., assignor to Island Creek Coal Co., Lexington, Ky.

Filed Aug. 23, 1979, Ser. No. 68,976

Int. Cl.³ B60P *1/38*; B62D *53/00, 61/10*

U.S. Cl. 180—24.06 **9 Claims**



9. An articulated mine-haulage vehicle comprising:

(a) a body member comprising a first elongated body section having first side walls, a second intermediate body section having second side walls, and a third elongated body section having third side walls, said first elongated body section providing at a first end thereof, a first pair of steering wheels, and connected at the first side walls at an end opposed to the first end thereof by a first hinge tube in articulating relation to the second side walls of a first end of the second intermediate body section to form a first point of transverse articulation, said intermediate body section connected at the second side walls at a second end opposed to the first end thereof by a second hinge tube in articulating relation to the third side walls at a first end of the third elongated body section to form a second point of transverse articulation spaced from the first point of transverse articulation, the third elongated body section providing at a second end opposed to the first end thereof a second pair of steering wheels, said body member including conveying means for loading, carrying, and discharging mined materials;

(b) a first pair of driven wheels having a common axis of rotation coupled to the second side walls of said second intermediate body section, the axis of rotation of the first pair of driven wheels being spaced above and adjacent the first point of transverse articulation and between the first and second points of transverse articulation;

(c) a second pair of driven wheels having a common axis of rotation coupled to the third side walls of said third elongated body section, the axis of rotation of the second pair of driven wheels being spaced above and adjacent the second point of transverse articulation and between said second point of transverse articulation and said second pair of steering wheels; and

(d) means to drive said first and second pair of driven wheels.

4,291,778

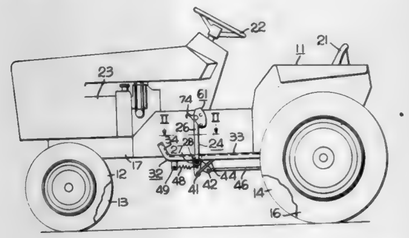
FOOT PEDAL ARRANGEMENT FOR A MOTOR VEHICLE

John J. Slazas, Cedarburg, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 957,715, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 754,342, Dec. 27, 1976, abandoned. This application Feb. 22, 1980, Ser. No. 123,737

Int. Cl.³ G05G *1/16, 5/06*

U.S. Cl. 180—271 **6 Claims**



1. In a tractor having a main frame and an operator's station, the combination comprising:

a floor secured to and disposed at one lateral side of said main frame, said floor having a horizontal portion and an upwardly inclined portion at the forward end of said horizontal portion, said inclined portion terminating at its front end in a downwardly and forwardly inclined lip, the edge of which extends in a transverse direction,

a brake lever pivotally mounted on said tractor for swinging movement about a first transverse axis between a raised brake released position and a lowered brake applied position including an upstanding portion and an arm extending transversely from the upper end of said upstanding portion,

means resiliently biasing said lever toward its brake released position,

a foot pedal mounted on said arm for limited pivotal movement about a second transverse axis including a hook on said pedal substantially as wide as the axial width of said foot pedal adapted to engage said lip when said lever is pivoted to its brake applied position and said pedal is pivoted in one direction about said second axis, whereby a parking brake function is achieved, said lip on said floor being of greater transverse dimension than the width of said hook, said foot pedal including wall means defining a cylindrical opening through which said arm extends and an axial groove in said cylindrical opening, and

a resilient member in said groove in resilient engagement with said arm releasably holding said foot pedal in selected positions of pivotal adjustment on said arm.

4,291,779

WHEEL-MOUNTED HYDRAULIC DRIVE SYSTEM

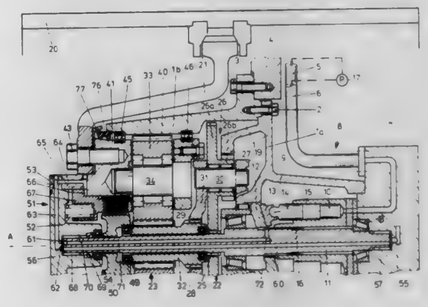
Egon Mann, and Helmut Eymüller, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,173

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 2831458

Int. Cl.³ B60K *7/00*

U.S. Cl. 180—305 **10 Claims**



1. A wheel-mounted drive system comprising:

a hollow nonrotatable housing adapted to be mounted directly and substantially immovably on a vehicle frame;

a hydraulic motor mounted in said housing and having a motor output centered on an axis;

a transmission mounted in said housing and having

a transmission input sun gear connected to said motor output and centered on said axis,

a ring gear centered on said axis and fixed on said housing,

planet gears meshing with said ring and sun gears, and

a planet carrier carrying said planet gears and constituting a transmission output centered on said axis and

connectable directly to a drive wheel; and

a bearing rotatably mounting said transmission output directly on said housing and having an inner race directly engaging said output, an outer race directly engaging said housing, and roller elements between said races.

4,291,780

APPARATUS FOR WIRES IN THE GROUND

Earl Fulkerson, 4917 3A Street E, Gulf Lake Estates, Bradenton, Fla. 33507

Continuation-in-part of Ser. No. 11,875, Feb. 13, 1979, Pat. No. 4,244,437. This application Jan. 15, 1980, Ser. No. 112,394

Int. Cl.³ G01V *1/147, 1/047*

U.S. Cl. 181—121 **2 Claims**

1. An anvil useful for generating waves in the ground, comprising:

a body having a ground-engaging surface on the lower side thereof and impact receiving surface means on the upper side thereof, said impact-receiving surfaces including a pair of opposed impact-receiving surfaces each disposed in planes 90° apart and including a third impact-receiving surface being disposed parallel to the lower surface of said

body and at a generally 45° relationship with respect to said opposed impact-receiving surfaces.

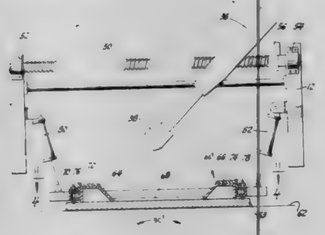
2. Apparatus for generating waves in the ground, comprising:

a frame;

an elongated, linear rigid boom movably mounted on the frame;

a hammer mounted on the boom for movement therealong;

an anvil mounted on the ground beneath the frame in a position thereto to be struck by the hammer, said anvil having a ground-engaging surface on the lower side thereof and impact-receiving surface means on the upper side thereof, said impact-receiving surface means including a pair of opposed impact receiving surfaces, disposed in planes about 90° apart;



cable means mounted on the boom and connected to the hammer for dropping it from an elevated position to strike the anvil;

positioning means mounted on the frame and connected to the boom for positioning it in a first position with respect to the frame to guide the hammer for a downward motion in a first direction toward the anvil, said positioning means being operative to move the boom with respect to the frame to a second position thereto to guide the hammer for a downward motion in a second direction toward the anvil whereby the hammer is operative to generate a wave in the ground by a downward motion in either said first direction or said second direction without repositioning the frame or the anvil with respect to the ground; and

hydraulic means carried on the frame and connected to the anvil for applying a portion of the weight of the frame and the boom on the anvil to position it on the ground.

4,291,781

SPEAKER DIAPHRAGM AND METHOD OF PREPARATION OF THE SAME

Hirotoshi Niguchi, Kashihara, and Mitsuru Ieki, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 16, 1979, Ser. No. 85,204

Claims priority, application Japan, Oct. 17, 1978, 53/128168; Feb. 9, 1979, 54/14742; Mar. 13, 1979, 54/28992; Mar. 20, 1979, 54/32693

Int. Cl.³ G10K *13/00*

U.S. Cl. 181—169 **9 Claims**

1. A diaphragm for a speaker, comprising a sheet, papermade of polyethylene short fibres being present in an amount of 70% by weight or more, said polyethylene short fibers having a degree of beating of 250 ml (Canadian Freeness), a melt index of not more than 2 g/min. and being not more than 1 millimeter in length and other short fibres between 3 and 10 millimeters in length which have a modulus of elasticity of at least 1.1×10^{10} dyne/cm^2, said polyethylene short fibers being melted to bond with said other short fibres in said sheet; and said diaphragm having a cone or dome shape imparted by pressing while hot.

4,291,782

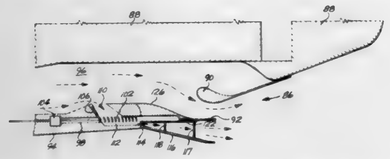
SIMPLIFIED METHOD AND APPARATUS FOR HOT-SHIELD JET NOISE SUPPRESSION

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 30, 1979, Ser. No. 89,693

Int. Cl.³ F02K *1/00*

U.S. Cl. 181—215 **13 Claims**



9. Means for suppressing the noise of a jet engine having an exhaust duct through which passes a hot exhaust flow, comprising,

means forming a shield duct open to the atmosphere at an exit end thereof at least part way around the circumference of said exhaust duct,

means upstream of the exit of said shield duct for reducing the pressure of a fluid flow passing therethrough, and

means for permitting at least some of said exhaust flow to enter said shield duct means, whereby said flow passes through said pressure reducing means and is then expelled to the atmosphere to form a noise suppressing fluid shield layer.

4,291,783

ACOUSTICAL PANEL FOR SUSPENDED CEILINGS

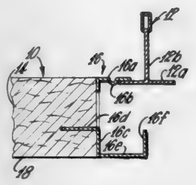
David A. Harris, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 973,309, Dec. 26, 1978, abandoned.

This application Apr. 21, 1980, Ser. No. 141,871

Int. Cl.³ E04B *1/82*

U.S. Cl. 181—295 **3 Claims**



1. An acoustical ceiling panel suitable for mounting on a suspended grid of inverted T-bars and comprising a generally rectangular fibrous glass board, a generally channel-shaped metal frame surrounding the board, and a decorative covering adhesively secured to a lower surface of the board and to a lower surface of the frame, the frame on each edge of the board including a body portion engaging the adjacent edge of the board and having a plurality of tabs projecting into the board entirely above the lower surface thereof, the tabs being spaced from each other longitudinally of the body portion and having been sheared and bent out from the remainder of the body portion and forming the main support for the board, an outwardly extending upper flange portion adapted to overlap a head portion of one of the inverted T-bars of the grid, an outwardly extending lower flange portion having its lower surface flush with the lower surface of the board whereby backings for the decorative covering provided by the board and by the frame are coplanar, and an upturned free end portion on the lower flange portion, the upturned free end portion being substantially aligned with the trunk portion of the respective one of the inverted T-bars when the panel is properly positioned with respect thereto.

4,291,784

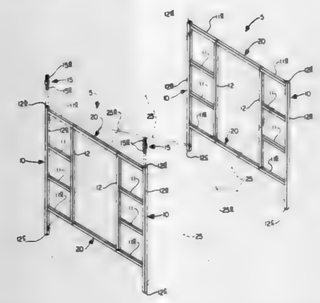
COMPACT, QUICK ASSEMBLY SCAFFOLD

Owen L. Moses, 315 Oregon Trail, Monroe, La. 71202

Filed Mar. 14, 1980, Ser. No. 130,546

Int. Cl.³ E04G *1/14*

U.S. Cl. 182—178 **1 Claim**



1. A ladder unit for use in constructing a scaffold comprising:

a. an outside vertical member having a top and a bottom end, said top end and said bottom end being rectangular in cross-section and hollow for receipt of a pin means therein for joining one of said ladder units vertically to another of said ladder units;

b. an inside vertical member;

c. pin means comprising a rigid elongated structure having two end portions adapted to be slidably and snugly received in said hollow top or bottom end of said outside vertical member, said end portions being rigidly connected to a center portion which is sufficiently large enough to prevent said center portion from sliding into said hollow ends of said outside vertical member;

d. a series of horizontal two-ended step means rigidly connected at one end to said outside vertical member and at the other end to said inside vertical member, the steps located at said top end and said bottom end of said outside vertical member being rectangular in cross-section and hollow at said end which is connected to said inside vertical member for receipt of horizontal joining means for joining two of said ladder units side by side; and

e. horizontal joining means comprising a rigid elongated structure having two end portions adapted to be slidably and snugly received in said hollow ends of said step means at the top or bottom end of said outside vertical member, said two end portions being rigidly connected to an elongated center portion which is sufficiently large enough to prevent said center portion from sliding into said hollow ends of said outside vertical member and sufficiently long enough to achieve the desired horizontal spacing between two connected side-by-side ladder units.

4,291,785

OIL METERING APPARATUS FOR AIR LINE LUBRICATORS

Edward A. Matysak, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

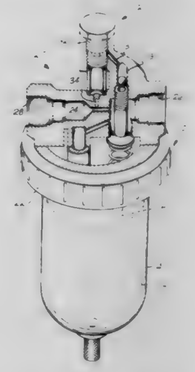
Filed Aug. 10, 1979, Ser. No. 65,409

Int. Cl.³ F16N *7/34*

U.S. Cl. 184—55 A **5 Claims**

1. In a compressed air line lubricator for supplying lubricant to pneumatically operated machines and tools including a bowl for retaining a supply of lubricant, a main body attached to the top of said bowl, an air passage through said main body and a siphon tube for passing lubricant from said bowl to said main body, the improvement comprising

means for passing a precise quantity of lubricant from said main body to said air line including a metering body removably secured in said main body, said metering body having a cylindrical bore of predetermined diameter therethrough; a metering pin, having a cylindrical body of a predetermined diameter less than the diameter of said bore and a head of a diameter greater than the diameter of said bore; a cylindrical washer having an opening therein



of a diameter greater than the diameter of said pin body and less than the diameter of said pin head, said washer being located between and separating said pin head and said metering body when said pin is inserted in said bore; and means for retaining said pin in said bore while permitting said pin limited motion with respect to said metering body responsive to pressure changes within said main body; whereby precise amounts of lubricant are dispensed between the pin body and the bore and movement of the pin within the bore prevents clogging.

4,291,786

BALANCING PIECE FOR VENTILATED BRAKE DISCS

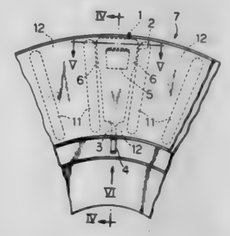
Sadayoshi Ito, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 24, 1979, Ser. No. 88,066

Claims priority, application Japan, Jun. 9, 1979, 54-78843[U]

Int. Cl.³ F16D *65/10*

U.S. Cl. 188—218 A **5 Claims**



1. In a ventilated brake disc including therein a number of radially disposed cooling vents each having a width continuously increasing toward an outer edge of said disc and being provided with rounded portions at corners, a balancing piece fixedly received within said vents for improving rotational balance of said disc, comprising as integral parts thereof:

(a) a wide portion both edges of which are put into contact with said rounded portions at said both ends of said vent when said balancing piece is inserted into the vent in

parallel to said width of the vent through an open end of the vent at said outer edge of said disc to a predetermined depth;

(b) at least one tab portion formed adjacent to said wide portion and protruding at an acute angle relative to a surface of a wide end portion of said balancing piece, top edge of said at least one tab portion being forcibly in abutment with an internal surface of said vent when said balancing piece is inserted in position thereby preventing said wide portion from shifting away from said rounded portions; and

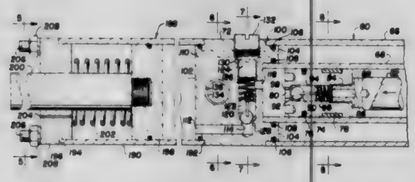
(c) a locking portion which is projected through an open end of said vent on the disc center side when said balancing piece is inserted to said predetermined depth, said projected locking portion being put into engagement with an edge of said internal surface of said vent at said open end on said disc center side thereby restraining said balancing piece from moving radially outwardly toward said outer edge of the disc.

4,291,787

EXERCISING DEVICE WITH DOUBLE ACTING HYDRAULIC CYLINDER

Jerry D. Brentham, P.O. Box 599, Belton, Tex. 76513

Filed Feb. 16, 1979, Ser. No. 12,874
Int. Cl.³ A63B *21/00*; F16F *9/18*
U.S. Cl. 188—318 **7 Claims**



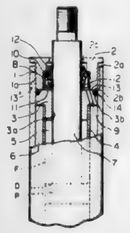
1. A double acting hydraulic cylinder, comprising: an inner tube disposed within an outer tube; head and base members closing the ends of said tubes, each head and base member having a passageway for placing fluid disposed within the inner and outer tubes in fluid communication; a piston slideably mounted within the inner tube for acting on the fluid disposed therein, said piston having a passageway extending therethrough for placing the fluid on one side of the piston into fluid communication with the fluid on the other side; a piston rod for moving the piston mounted with the piston and extending through the head member and for displacing fluid in the inner tube; first valve means mounted with said base member for preventing fluid communication through the base member passageway when said piston moves toward the base member; second valve means mounted with said piston for preventing fluid communication through the piston passageway when said piston moves toward the head member, the valves and piston rod coacting so that upon movement of said piston fluid in said inner tube always flows through the head member passageway from the inner to the outer tube; and means to adjust flow of fluid through the passageway in the head member for controlling the quantity of fluid flow from the inner tube into the outer tube to adjust the magnitude of force necessary to move the piston in either direction.

4,291,788

CYLINDER HEAD

Tetuo Kato, Musashino, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 896,150, Apr. 13, 1978. This application Feb. 11, 1980, Ser. No. 120,646
Claims priority, application Japan, Apr. 19, 1977, 52-49184
Int. Cl.³ F15B *15/22*; F16F *5/00, 9/00*
U.S. Cl. 188—322.17 **4 Claims**



1. A dual tube type device such as a hydraulic shock absorber or the like, said device comprising; an outer tube having a closed lower end and an open end; an inner tube coaxial with the outer tube and having an open upper end and further having a piston slidable therein with damping force generating means therein and a piston rod on said piston extending out of the open ends of said tubes; a rod guide closing the upper end of the inner tube and having said piston rod extending therethrough in sliding engagement therewith; a closure member threadedly engaged with the upper end of the outer tube and through which the piston rod extends in sliding sealing engagement therewith and, in the fully threadedly engaged position, engaging said rod guide for holding it in said inner tube; pressurized fluid contained in the device; and an escape passage means for releasing the pressurized fluid during removal of said closure member from the device, said means including an escape passage one end of which is permanently open to the outside of said device and seal means provided between said closure member and the remainer of said device adjacent the other end of said escape passage and engaged by the inner end of said closure member for sealing the escape passage means from a space within the device when said closure member is fully threadedly engaged with said outer tube in a normally fully assembled position and said escape passage being open to the space within the device only when said closure member has been displaced in a direction outward toward the open end of the outer tube during removal of said closure member from said device.

4,291,789

HYDRAULIC SLACK ADJUSTING APPARATUS

Thomas M. Bogenschutz, Clayton, and Glen O. Bohusch, Watertown, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 19, 1979, Ser. No. 95,884
Int. Cl.³ F16D *65/74*
U.S. Cl. 188—351 **7 Claims**

1. A hydraulic slack adjusting apparatus for controlling the slack fluid in a hydraulic circuit having a predetermined maximum slack, said apparatus comprising:

(a) a cylinder having first and second variable volume pressure chambers, the maximum volume of said second chamber defining the predetermined maximum slack fluid in the hydraulic circuit;

(b) first and second ports respectively operatively associated with the first and second chambers for permitting fluid to enter and leave the respective chambers;

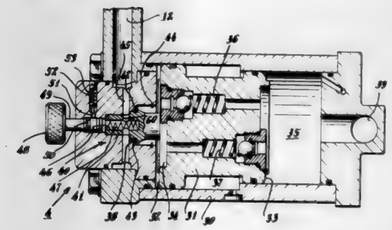
(c) a reciprocating piston movably mounted within the cylinder and dividing the cylinder into the first and second chambers;

(d) a normally closed slack makeup valve for opening and establishing fluid communication between the first and second chambers when fluid pressure in the first chamber exceeds fluid pressure in the second chamber by a first predetermined pressure differential so that additional fluid can flow from the first port through the second port in order to add fluid when the slack fluid is less than the predetermined amount;

(e) a normally closed slack take-in valve for opening and establishing fluid communication between the first and second chambers when fluid pressure in the second chamber exceeds fluid pressure in the first chamber by a second predetermined pressure differential so that fluid can be withdrawn from the hydraulic circuit in order to increase the maximum slack therein; and

(f) a hydraulic slack limiting valve for selectively preventing or permitting the withdrawal of more than said predetermined maximum amount of slack fluid including

a stationary valve seat disposed between the first port and the first chamber, and



a movable valve element having a sealing surface for engaging said stationary valve seat in a fluid tight seal to prevent fluid from flowing between the first chamber and the first port when the movable valve element is seated on said stationary valve seat, said movable valve element being spring biased away from said stationary valve seat, toward said piston and extending into said first chamber in the path of said piston in order to allow fluid in the first chamber to freely pass through the first port, whereby said movable valve element is acted upon and moved by said piston as said piston moves adjacent said first port and sealingly engages said stationary valve seat before said slack take-in valve can open thereby preventing more than the predetermined amount of slack fluid from being withdrawn from the circuit, and

means for acting upon said movable valve element to hold said sealing surface thereof disengaged from said stationary valve seat irrespective of the position of said piston, thereby permitting more than the predetermined amount of fluid to be withdrawn from the hydraulic circuit when the take-in valve opens.

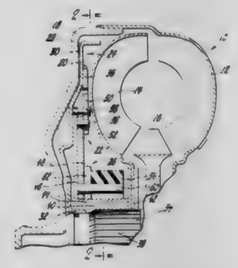
4,291,790

TORQUE CONVERTER CLUTCH AND VIBRATION DAMPER

Vincent M. Staub, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1980, Ser. No. 131,924
Int. Cl.³ F16H *45/02*; F16D *3/14*
U.S. Cl. 192—3.28 **4 Claims**

1. A torque converter clutch and torsional vibration damper comprising: a clutch pressure plate adapted to frictionally engage the input member of a torque converter; an output hub adapted to be drivingly connected to the output shaft of a torque converter and including a plurality of circumferentially spaced radial slots; an internally toothed gear member secured to said clutch pressure plate; a plurality of circumferentially spaced pinion gears rotatably mounted on said output hub and meshing with said internally toothed gear member; a plurality of circumferentially spaced link members connected between each respective pinion gear and radial slot, said connection at said pinion gear being pivotal and displaced radially from the center of said pinion gear toward the center of said output hub when the clutch is not transmitting torque; and an elastomeric belt operatively connected to said link members adjacent said



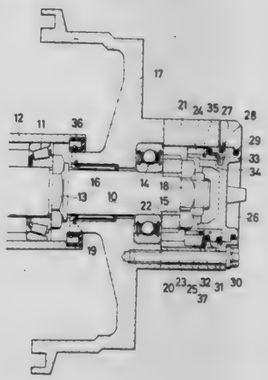
radial slot connections, said elastomeric belt exerting an increasing force on said pinion gears through said link members as torque transmission through said torque converter clutch increases and said elastomeric belt being operable to permit relative angular displacement between said clutch pressure plate and said output hub.

4,291,791

FREE WHEEL HUB MECHANISM

Hiromi Goto, Chiryu, and Kenji Ojima, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 1, 1979, Ser. No. 90,142
Claims priority, application Japan, Nov. 13, 1978, 53-139960
Int. Cl.³ F16D *11/00*
U.S. Cl. 192—67 R **1 Claim**



1. A free wheel hub mechanism for a wheel comprising:

a housing member;

an axle shaft disposed within said housing member;

a body member secured to said wheel;

an interengaging member connected to said axle shaft so as to be rotatable therewith;

clutch means slidably mounted within said body member for engaging with and disengaging from said interengaging member;

a manual lever connected to said body member having a cam face formed thereon;

a cam follower engaged with said cam face of said manual lever at a first end thereof and engaged with said clutch means at a second end thereof;

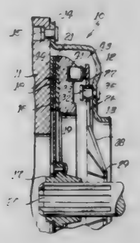
means interposed between said cam follower and said clutch means for urging said clutch means so as to disengage from the intergaging member;
a taper bearing interposed between said axle shaft and said housing member;
a nut fixed to said axle shaft for pre-loading said taper bearing whereby a tightening force is applied to said taper bearing by said nut;
a brake drum connected to said body member;
thrust bearing means interposed between said brake drum and said axle shaft for rotatably supporting said brake drum; and
a second nut fixed to said axle shaft for maintaining said thrust bearing means and said interengaging member on said axle shaft.

4,291,792

CLUTCH ASSEMBLY WITH MODULATED CUSHION FULCRUM

Alvaro Henao, Rochester, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,998
Int. Cl.³ F16D *13/44*
U.S. Cl. 192—89 B **8 Claims**



1. In a vehicle clutch having a cover secured to a flywheel, a clutch disc, an axially reciprocable pressure plate and a diaphragm pivotally mounted in the cover, the pressure plate adapted to engage the clutch disc with the flywheel and having a fulcrum surface engageable by the diaphragm spring to engage the clutch, the improvement comprising at least three circumferentially equally spaced fulcrum members comprising plugs having reduced outer ends defining shoulders on the plugs, said pressure plate having holes drilled in the fulcrum surface to receive the fulcrum members, and cushioning means in each hole urging the members beyond the fulcrum surface to initially engage the diaphragm spring as the clutch is engaged, said cushioning means having an elastic force lower than the engaging force of said diaphragm spring, said fulcrum members having a limited extent of travel from a first position wherein the reduced outer ends of said members project beyond the fulcrum surface to a second position wherein the outer ends are in alignment with said fulcrum surface.

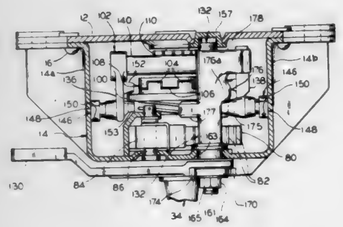
4,291,793

HAND BRAKE MECHANISM ADAPTED FOR USE ON A RAILWAY CAR

Wayne G. Klasing, New Lenox, Ill., assignor to Klasing Industries, Inc., Joliet, Ill.

Filed Oct. 15, 1979, Ser. No. 84,914
Int. Cl.³ F16D *13/60*; G05G *1/08*
U.S. Cl. 192—95 **8 Claims**

1. In a hand brake mechanism adapted for use on a railway car and including a handwheel operatively connected to rotatable shaft means, a pinion mounted on said shaft means for rotation relative thereto and for being operatively connected in a power train to the car brakes, a drive member connected to said shaft means for rotation therewith, a clutch collar mounted on said shaft means and having drive member-engagement means and pinion-engagement means, said collar being shiftable on said shaft means between a drive position wherein it drivingly interconnects said drive member and said pinion for application of the car brakes, and a brake-release position wherein the connection is broken and the pinion is freely rotatable on the shaft means, a shift lever mounted for pivotal movement and having collar-engaging members alternately engageable with opposite sides of said collar for shifting the collar between said positions, lug means on said shift lever and spaced apart from the pivotal axis of the lever, a cam shaft mounted for rotation in opposite directions about its axis, and a release cam on said shaft arranged to alternately forcibly engage with and disengage from said shift lever upon rotation of the cam shaft in opposite directions about its axis for shifting said collar to said brake-release position upon said engagement



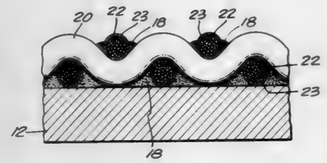
and for enabling the collar to be shifted to said drive position upon said disengagement, the improvement which comprises:
a reaction member on said cam shaft and having a cam surface and a stop surface extending obliquely from the cam surface,
said cam surface forcibly engaging said lug means upon rotation of the cam shaft in a direction to disengage said release cam from said shift lever, thereby to shift said collar to said drive position,
and said stop surface being adapted to abut on said lug means when said collar is disposed in said drive position upon completion of the latter rotation of the cam shaft, thereby to positively and mechanically lock the collar in its drive position.

4,291,794

POWER TRANSMISSION AND ENERGY ABSORBING SYSTEMS

Dieter W. Bauer, La Habra Heights, Calif., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,290
Int. Cl.³ F16D *13/64, 13/72*; B29C *25/00*
U.S. Cl. 192—107 M **16 Claims**



1. A friction power absorption or power transmission assembly of the type having means for changing the relative position between a friction material and an opposing surface material from a position of complete engagement to a position of complete disengagement, said assembly comprising:
(a) a first member;
(b) a second opposing member;
(c) a carbon composite membrane affixed to one of said first and second members, said membrane comprising:

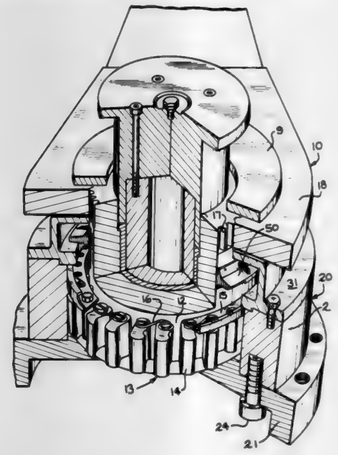
(1) a carbon fibrous substrate having an open porosity; and
(2) a coating of pyrolytic carbon extending substantially over each of said fibers of said substrate;
(d) means for introducing a liquid cooling medium between said first and second members.

4,291,795

COUPLING LUBRICATION SYSTEM

Loris J. Charchian, 2540 Somerset Blvd., Troy, Mich. 48084; Donald O. Emmons, 24323 Pinecrest, Novi, Mich. 48050, and Thaddeus F. Zlotek, 23601 Hoover Rd., Warren, Mich. 48089

Filed Feb. 22, 1979, Ser. No. 13,959
Int. Cl.³ F16D *13/74*
U.S. Cl. 192—113 B **14 Claims**



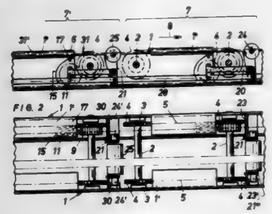
1. A coupling comprising a first member adapted to be fixed against rotation, a rotatable member having an annular lubricant sump and unidirectional drive means adapted for engagement with said first member and said rotatable member, said first member having a ring extending into said sump, said ring having a radially outer surface and at least one lubrication passageway extending from said radially outer surface.

4,291,796

RETARDING CONVEYOR FOR CARGO

Elfriede Gebhardt, H. Thomastrasse 10, 6920 Sinsheim, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,923
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2953483
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—460 **1 Claim**



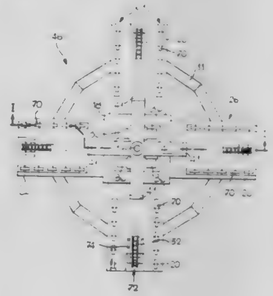
1. In a retarding conveyor for cargo, such as pallets, comprising a conveying means which can be driven in sections and carries the cargo, respective sections of said conveying means being driven by intermediate roller means driven by rotating drive means, the intermediate roller means being adjustable into a driving position or an idling position by feelers extending into the path of motion of the cargo, the improvement comprising respective sections of the conveying means comprising at least two parallel, uninterrupted traction means in the form of chains which are deflected at the ends of the section by reversing sprocket wheels joined together for rotation by a shaft which is rotatably supported in a conveyor frame, support means being provided on said conveyor for supporting said chains to carry the cargo, the drive means being in the form of a chain and at least one of the reversing sprocket wheels being driven by said intermediate roller means which comprises an additional sprocket wheel continuously engaging the chain of the drive means and a gear wheel connected to said additional sprocket wheel and engaging in the driving position a driving gear wheel connected for rotation with a reversing sprocket wheel, said gear wheel being out of mesh with the driving gear wheel in the idling position, wherein said conveyor frame includes a laterally inwardly open, U-shaped frame member provided between the reversing sprocket wheels of a section, wherein said support means is a profile of a synthetic resin which is arranged on the top web of this frame member for supporting the traction means, and wherein the respective feelers comprise a pivotably supported roller which is arranged between two neighboring sections of the conveying means, the roller of the respective feelers is rotatably mounted about a rigid axle that is arranged at levers pivotable about pins, which latter are fixedly attached to the frame of the conveyor, the rigid axle extensions projecting laterally through the levers for engaging said abutment means affixed to the frame when the roller is in its enforced idling position whereby said pivotably supported roller can support cargo in its enforced idling position.

4,291,797

PALLET CHANGER FOR A MANUFACTURE PLANT

Norbert Ewertowski, Dietzenbach-Steinberg, Fed. Rep. of Germany, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Continuation of Ser. No. 867,968, Jan. 9, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,330
Claims priority, application Switzerland, Jan. 17, 1977, 511/77
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—472 **16 Claims**

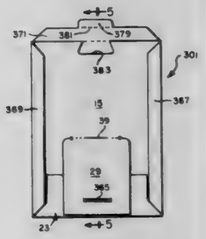


1. A transfer apparatus, comprising:
support hub means having at least four non-rotating members;
rotating part means being rotatably mounted and extending radially outward from said support hub means;
said rotating part means comprising means for supporting pallets and having pallet guide means;
means for feeding pallets along said pallet supporting means;
address reading means mounted on each of said at least four

members, said address reading means being mounted adjacent to the ends of said pallet supporting means nearest the support hub means; and

marking means attached to said pallets for activating said address reading means once said pallets are on said pallet supporting means such that pallets are fed to predetermined locations.

4,291,798
DISPLAY DEVICE
Felix Transport, 98 Riverside Dr., New York, N.Y. 10024
Filed Mar. 31, 1980, Ser. No. 135,539
Int. Cl.³ B65D *5/52*
U.S. Cl. 206—45.24 **15 Claims**



1. A display device having a collapsible easel support for supporting a display device on a surface at a predetermined angle comprising:

a back panel having a bottom edge;

a stay flap;

a support panel having top and bottom edges;

a stay panel including:

a glue panel having top and bottom edges;

a stay leaf having top and bottom edges;

a hinge connecting the bottom edge of said stay leaf to the top edge of said glue panel;

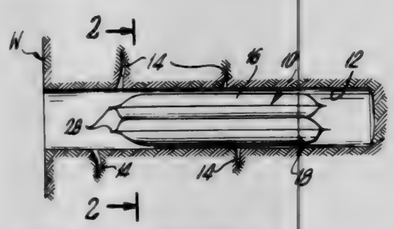
a first hinge hinging said stay flap to said bottom edge of said back panel;

a second hinge hinging the bottom edge of said support panel to the top edge of said stay leaf;

a third hinge hinging the top edge of said support panel to the interior of said back panel;

a fourth hinge hinging the bottom edge of said glue panel to said stay flap.

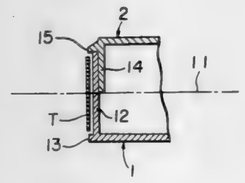
4,291,799
PARALLEL TUBE RESIN CAPSULES
Arnold B. Bower, Jr., Bristol, Va., assignor to General Electric Company, Worthington, Ohio
Filed Oct. 23, 1979, Ser. No. 87,471
Int. Cl.³ B65D *25/08, 30/22, 81/32*
U.S. Cl. 206—219 **7 Claims**



1. A resin bolting package comprising:

two elongated tubular containers formed from a frangible material, and disposed in side by side relation along the longitudinal axes of said elongated tubular containers and joined therebetween such that said package has a configuration which is generally a figure 8 shape in cross-section, with one of said tubular containers being filled with a polyester resin, and with the other said tubular container being filled with a hardener, such that said resin bolting package may be placed in a pre-drilled hole whereby when a bolt is thereafter inserted in said hole, said frangible tubular containers are ruptured with the contents therein mixing and forming a cured two-part plastic producing system for securing the bolt.

4,291,800
TAPE CASSETTE
Masatoshi Okamura, and Haruo Shiba, both of Saku, Japan, assignors to TDK Electronics, Tokyo, Japan
Filed Sep. 26, 1979, Ser. No. 79,193
Claims priority, application Japan, Nov. 24, 1978, 53-160730
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **5 Claims**



1. A guide member of a tape cassette assembly having an upper casing and a lower casing wherein a magnetic tape is guided outside the casings from the front parts to pass in front of a hollow channel-like guide rib, said guide member comprising:

at least one guide rib vertically extending from the lower casing to the upper casing forming a supporting surface for the entire width of the magnetic tape; and

at least one guide rib vertically extending from the upper casing along the rear surface of the guide rib of the lower casing for supporting the guide rib of the lower casing such that the tape cassette is free from snagging the magnetic tape when the upper casing is assembled on the lower casing.

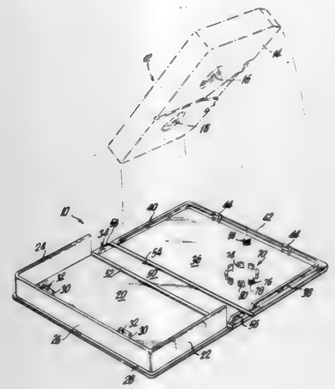
4,291,801
VIDEO CASSETTE STORAGE CONTAINER
Robert A. Basili, Waldwick, and William B. Wilson, Middlesex, both of N.J., assignors to Plastic Reel Corporation of America, Wood Ridge, N.J.
Filed Oct. 3, 1980, Ser. No. 193,792
Int. Cl.³ B65D *85/67*
U.S. Cl. 206—387 **7 Claims**

1. A universal storage container capable of accommodating various sizes of video cassettes, each cassette including access holes, with the spacing between said access holes being non-uniform, said container comprising:

a generally rectangular housing having top, bottom, and side wall panels; and

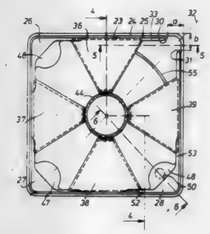
a single circular array of elongated, flexible retaining sectors extending from said top or bottom panel, said sectors being uniformly spaced from a center point and defining an imaginary circle which is of slightly greater diameter than the diameter of an access hole in the video cassette, each said sector being disposed in spaced relationship within said housing so as to be generally aligned with an access hole in a video cassette, whereby when a video cassette is mounted within said housing, with said retaining sectors being received within a single access hole

therein, said flexible retaining sectors are biased radially inwardly to create an interference fit with the periphery of



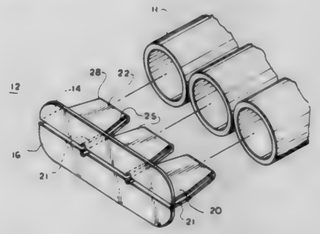
said single access hole for maintaining said cassette fixedly secured within the housing.

4,291,802
LIGHT-TIGHT CASSETTE
Edward Buelens, Kontich, Belgium, assignor to AGFA-GEVAERT N.V., Mortsel, Belgium
Filed Mar. 13, 1980, Ser. No. 129,983
Claims priority, application United Kingdom, Mar. 15, 1979, 09182/79
Int. Cl.³ G03B *17/26;* **B65H** *19/02*
U.S. Cl. 206—409 **10 Claims**



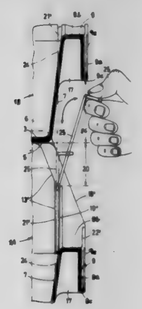
1. A light-tight cassette for holding and dispensing a roll of light-sensitive material, said cassette being in the form of a rectanguloid casing comprising a four-sided shell with end closure walls having central hub portions for rotatably supporting said roll within the casing, the shell having a peripheral exit slot through which light-sensitive material can be drawn from said roll and at least one of said end walls being formed by a separate end cap which has spaced inner and outer peripheral wall portions defining a peripheral groove for receiving the end margins of the shell to hold the cap in place thereon and at corner sections thereof has axially projecting guide tongues which when the cap is in place fit inside corner regions of the corresponding end of the shell and constitute extensions of the inner face of the inner wall of such peripheral groove, characterised in that each of said guide tongues has a three-dimensional configuration defining an outwardly facing surface which is outwardly convexly curved both in radial planes passing through the axis of its hub portion and in transverse planes normal to said axis whereby said guide tongues provide a self-centering effect when the cap and shell are pushed together in abaxial and/or relatively angularly skewed relationship.

4,291,803
PROTECTIVE END CAP
Raul Perales, Exton, Pa., assignor to Windsor Communications Group, Inc., West Chester, Pa.
Filed Sep. 23, 1980, Ser. No. 190,087
Int. Cl.³ B65D *85/20*
U.S. Cl. 206—443 **9 Claims**



1. A package assembly including a plurality of transversely spaced longitudinally extending, parallel substantially coextensiveopen ended elongated tubular articles and an end member located at each end of and engaging said tubular articles and characterized in that at least one of said end members is formed of a unitary blank and comprises a plurality of transversal spaced longitudinally extending tongues projecting into respective articles and engaging the inside faces thereof and each including superimposed first and second panels integrally joined along a fold line at their outer edges and a pair of oppositely directed wing panels joined at their inner edges along fold lines to the inner edges of said first and second wing panels respectively, said wing panels engaging and substantially closing the corresponding ends of said articles.

4,291,804
STACKABLE TRANSPORT AND/OR STORAGE CONTAINER WITH ACCESS OPENING
Karl A. Weidt, Siegen, Fed. Rep. of Germany, assignor to Fritz Schafer Gesellschaft Mit Beschrankter Haftung, Salchendorf bei Neunkirchen, Fed. Rep. of Germany and Fabriken fur Lager- und Betriebseinrichtungen, Neunkirchen, both of, Fed. Rep. of Germany
Filed Apr. 18, 1980, Ser. No. 141,485
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915812
Int. Cl.³ B65D *21/02, 25/04*
U.S. Cl. 206—509 **10 Claims**



1. A stackable container comprising:

a bottom wall, two parallel sidewalls and a rear wall of sheet material defining a substantially prismatic box of rectangular horizontal outline having a U-shaped top ledge

provided with an upstanding marginal ridge outwardly offset from the side rear edges of said bottom wall; and

a pair of hollow upright corner profiles integral with said sidewalls at a front end of said box, said corner profiles having confronting surfaces approaching each other more closely than said sidewalls and merging into a front wall substantially lower than said sidewalls and said rear wall, said front wall rising with a forward slope from said bottom wall and forming at an upper edge thereof a forwardly bend handgrip, said upper edge and said confronting surfaces defining a lower boundary and two lateral boundaries of a rectangular opening giving access to the interior of said box, said confronting surfaces being provided above said handgrip with vertical formations defining a pair of guide grooves which rise substantially from the level of said upper edge over part of the height of said rectangular opening; and

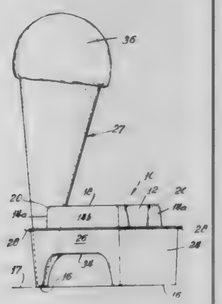
a closure plate receivable in said guide grooves to obstruct said rectangular opening, said guide grooves lying in a vertical plane located far enough forwardly of the foot of said front wall to facilitate the insertion of said closure plate from above even in the presence of an identical box seated on said top ledge and embraced by said marginal ridge.

4,291,805

ICE CREAM CONE TRAY

Leonard Seeley, Palatine, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.

Filed Jul. 28, 1980, Ser. No. 173,143
Int. Cl.³ B65D *1/34, 85/78;* A47G *19/00;* B65D *1/36*
U.S. Cl. 206—563 **9 Claims**



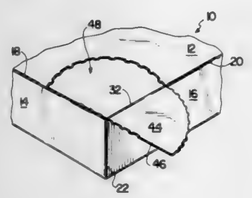
1. A unitary thermoformed plastic ice cream cone tray capable of securely and releasably holding at least three ice cream cones, said tray comprising at least three generally vertical but tray-inwardly inclined interior wall segments, a hemi-conical recess in each said interior wall segments, a generally vertical but tray-outwardly inclined sidewall opposite and in spaced relation to each said interior wall segment and means for joining the bottom edges of the respective opposed sidewalls and interior wall segments whereby each said recess and opposed sidewall together define a socket adapted to receive an ice cream cone, the inclinations of said sidewall forming each socket being such that the axis of said socket is inclined tray-inwardly and said tray further including a second set of interior wall segments each connecting adjoining first-mentioned interior wall segments to provide a continuous inner wall.

4,291,806

CARTON WITH VENTING ARRANGEMENT

John J. Austin, LeGrange, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 21, 1980, Ser. No. 113,758
Int. Cl.³ B43M *7/00;* B65D *3/26, 5/54*
U.S. Cl. 206—620 **11 Claims**



1. In a carton including a top panel and first and second adjacent side panels hingedly coupled along fold lines, the improvement comprising:

venting means formed in said panels for opening the carton to facilitate the escape of gas from the interior of the carton, comprising

a first perforated line extending along a portion of a fold line hingedly coupling two of said panels,

a second perforated line formed in one of said two panels and extending at one end from one end of said first perforated line,

a first fold line joining the other two ends of said first and second perforated lines, and

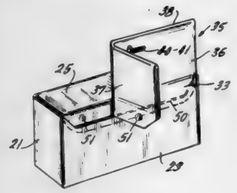
a vent flap defined in said one panel by said first and second perforated lines and said first fold line, which vent flap may be pivoted about said first fold line out of a plane containing said one panel after separation of said vent flap from the remainder of said one panel upon tearing of said first and second perforated lines.

4,291,807

FOLDING BOX

Vincent Giordano, Wantagh, N.Y., and Charles Senor, Fairview, N.J., assignors to International Folding Paper Box Co., Inc., Ridgefield, N.J.

Filed Nov. 7, 1979, Ser. No. 92,186
Int. Cl.³ B65D *5/18, 5/54*
U.S. Cl. 206—626 **6 Claims**



1. A folding carton having a front wall, a bottom wall, a back wall, a cover hingedly secured to said front wall;

said cover having a tuck-in flap extending from the end of the cover opposite the hinged securement of the cover to said front wall;

said tuck-in flap being adapted to lie in face to face relation with a portion of the interior of said back wall when said cover is closed; said portion of said interior of said back wall being opposite said hinged securement of said tuck-in flap and comprising that part of said back wall engaged by said tuck-in flap;

a panel extending from said back wall beyond said portion of said back wall engaged by said tuck-in flap;

a tear line in said back wall extending below said panel;

said tuck-in flap having a first section in surface to surface engagement with the portion of the back wall between the tear line and said panel;

said tuck-in flap also extending below said tear line and having a second section in surface to surface engagement with said back wall;

releasable securing means between said first mentioned section of said tuck-in flap and the portion of the back wall between said tear line and said panel;

said panel and the portion of the back wall between said tear line and said panel being removable;

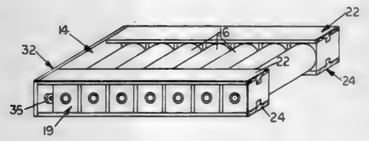
said second section of said tuck-in flap being engageable with said back wall after removal of said panel and the portion of the back wall between the tear line and panel.

4,291,808

ROLLER CONVEYOR-CLASSIFIER

Carl A. Roloff, West Bend, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 79,264, Sep. 27, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,853
Int. Cl.³ B07B *13/05*
U.S. Cl. 209—668 **1 Claim**



1. A roller conveyor or conveyor-classifier assembly comprising:

(a) a plurality of first subassemblies each comprising a roller (**16**), a bearing support block (**18**) for each end of each roller, a bearing (**21**) supported by each of said bearing support blocks (**18**), each roller (**16**), being rotatably supported contiguous its opposite ends by the bearings of its corresponding oppositely disposed bearing support blocks;

(b) a support frame (**25**) for said plurality of first assemblies, said support frame comprising an upper and lower rail member (**22A, 24A**) each defining a track (**22B, 24B**) projecting therefrom upwardly and downwardly, respectively, toward each other and in spaced relation from each other in a common plane perpendicular to the rail members (**22A, 24A**);

(c) each of said support blocks (**18**) being of upper case "H" configuration in transverse cross section to define an upper and lower groove (**18U, 18L**) having walls engaging with said upwardly and downwardly projecting tracks (**22B, 24B**) when said support blocks (**18**) are inserted between said upper and lower rail members (**22A, 24A**);

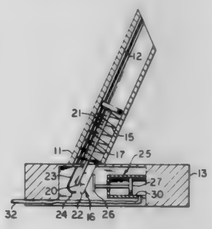
(d) shim means (**36**) between adjacent support blocks (**18**), said shim means being of substantially lower case "h" configuration in transverse cross section with the lower portion (**36A, 36B**) of said "h" configuration being adapted to interlockingly straddle the upwardly projecting track (**24B**) of the lower of said rails (**24A**) upon rotating a lower and forward leg portion (**36C**) of said "h" configuration inwardly of support frame parameter and over said lower track (**24B**) and into engagement with said lower rail (**24A**), whereby said shim means (**36**) may be inserted into and removed from shimming relation between contiguous bearing support blocks (**18**) when said roller conveyor assembly is in assembled condition.

4,291,809

PENCIL HOLDER

Edwin J. Lyon, 787 Gascogne, St. Louis, Mo. 63141

Filed Jan. 11, 1980, Ser. No. 111,269
Int. Cl.³ A47F *7/00;* B43M *17/00;* F41B *7/08;* F41C *19/14*
U.S. Cl. 211—69.5 **10 Claims**



1. A pencil holder, comprising:

(a) a body having a socket,

(b) a pencil selectively received in the body socket,

(c) resiliently compressible means engaging the pencil within the body socket,

(d) locking means engaging the compressible means for selectively retaining the compressible means compressed upon insertion of the pencil in the body socket, and

(e) trigger means connected to and actuating the locking means for releasing the compressible means to launch the pencil from the body socket.

4,291,810

PACKAGE CLIP

Irving Rubenstein, P.O. Box #4012, North Hollywood, Calif. 91607

Filed Dec. 7, 1979, Ser. No. 101,087
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—89 **6 Claims**

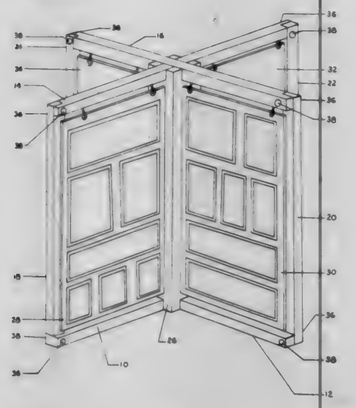


1. An article retaining assembly comprising:

a hollow support member having a front opening and a mounting bracket located adjacent the front opening; and

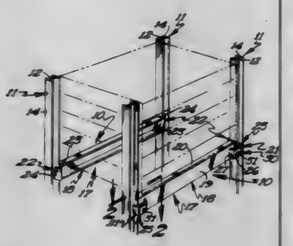
a generally V-shaped clip having a front leg pivotally secured to the mounting bracket and a resilient back leg curved away from said front leg and passing through the opening, said back leg compressed against a surface at the rear of the support member, whereby the compressed back leg will cause the front leg to pivot and force the free end of the front leg against the front of the support member.

4,291,811
DISPLAY STAND
William A. Shaver, 3822 Palm Tree Blvd., Cape Coral, Fla. 33904
Filed May 7, 1979, Ser. No. 36,520
Int. Cl.[3] A47F 5/00
U.S. Cl. 211—205 6 Claims



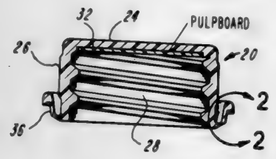
1. A display stand, comprising:
(a) an x-shaped base; (b) an x-shaped top; (c) a rectangular solid central vertical support member having cross-configured slots in each end, one end of which cooperates with the center of said x-shaped base and the other end of which cooperates with the center of said x-shaped top; and
(d) four display panels suspended from said x-shaped top.

4,291,812
PALLET STORAGE RACK ATTACHMENT
O. Burton Harmes, and Duane F. McGregor, both of Algona, Iowa, assignors to Algona Food Engineering Company, Algona, Iowa
Filed Sep. 24, 1979, Ser. No. 78,243
Int. Cl.[3] A47F 5/00
U.S. Cl. 211—207 2 Claims



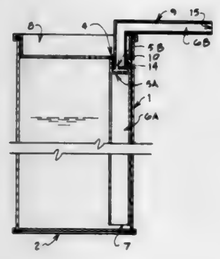
1. A support device for use in supporting pallets on vertical H-beams, each beam including a central web having flanges integral with each end thereof,
said support device including an elongate straight support member having a pair of openings therein, each opening being located adjacent but spaced from one end of said support member,
clamping means on each end of said support member to releasably engage the adjacent vertical H-beam, each of said clamping means including a J-shaped clamping member rigidly affixed to one end of said support member for encompassing and engaging an edge portion of the adjacent flange of the associated vertical H-beam,
a pair of clamping elements each engaging the other edge portion of the flange of the adjacent vertical H-beam, each clamping element having an opening therein diposed in registering relation with an opening in the support member,
and nut and bolt assembly adjustably and releasably clamping a portion of each of said clamping elements against the flange of the adjacent H-beam and against said horizontal support member to releasably and adjustably support the end of the horizontal support member on the associated vertical H-beam.

4,291,813
CONTAINERS AND CLOSURES
David O. Allen, Wilmington, and Harry A. E. Wombold, Dayton, both of Ohio, assignors to Buckeye Molding Company, New Vienna, Ohio
Continuation-in-part of Ser. No. 878,416, Feb. 17, 1978, abandoned. This application Dec. 4, 1979, Ser. No. 100,099
Int. Cl.[3] B65D 41/34, 41/36, 41/38
U.S. Cl. 215—252 23 Claims



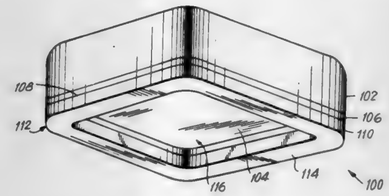
1. In a closure and container combination:
a closure and a container having cooperating screw threads; and a circumferentially extending band integrally joined by a relatively thin connecting portion to one of said closure and container for pivotal movement about said connecting portion, said band having a first position and, when pivoted from said first position, a second, reversed position so that when said closure and container are assembled, said band in said second position secures said one of said closure and container to the other of said closure and container.

4,291,814
CONTAINER WITH DRINKING TUBE
John L. Conn, P.O. Box 4501-Sta. B, Spartanburg, S.C. 29303
Filed Oct. 22, 1979, Ser. No. 87,320
Int. Cl.[3] A47G 19/22; B67D 5/08
U.S. Cl. 220—90.4 2 Claims



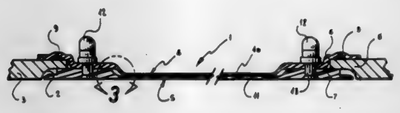
1. The construction of a container with drinking tube comprising:
a cylindrical shaped hollow container body for holding a fluid and having a bottom wall and a top wall, an interior tube extending vertically downwardly from said top wall into said body and having an opened bottom adjacent to and spaced from said bottom wall, said interior tube having an opened top, said interior tube internally threaded adjacent said opened top and adapted to receive a corresponding externally threaded end of an exterior tube, a transverse wall in said interior tube below and adjacent from where said interior tube is threaded thereby separating said interior tube into an upper part and a lower part, porthole means through said transverse wall off center from the central, longitudinal axis of said interior tube providing the only fluid passage between said upper part and said lower part, said top wall having a rectangularly shaped groove extending across the central portion of said top wall, said opened top of said interior tube located within said groove, said groove adapted to receive a portion of the exterior tube.

4,291,815
CERAMIC LID ASSEMBLY FOR HERMETIC SEALING OF A SEMICONDUCTOR CHIP
Richard Gordon, Scarsdale, and John G. Ciallella, White Plains, both of N.Y., assignors to Consolidated Refining Co., Inc., Mamaroneck, N.Y.
Filed Feb. 19, 1980, Ser. No. 122,527
Int. Cl.[3] B65D 7/28, 6/40, 39/00
U.S. Cl. 220—200 10 Claims



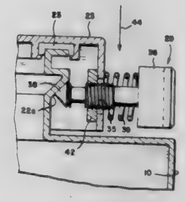
1. A lid assembly for hermetic sealing of a package containing a semiconductor chip comprising: a lid of dielectric material including an integral heat fusible metallic layer deposited on said lid in a peripheral region defining a hermetic sealing area.

4,291,816
FUEL TANK ACCESS DOOR FOR AIRCRAFT
Paul Lamoureux, Montreal, Canada, assignor to Canadair Limited, Montreal, Canada
Filed Jul. 9, 1980, Ser. No. 167,348
Int. Cl.[3] B65D 45/00
U.S. Cl. 220—243 10 Claims



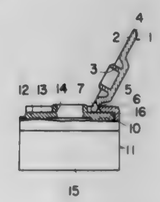
1. A fluid tight closure for an access aperture in a fuel tank or the like enclosure and comprising a non-conductive inner door panel, an outer door panel, and fasteners operatively securing said door panels in fluid tight closing position relative to the access aperture, said door panels being of bendable material and having each a rim portion operatively overlapping an edge portion of said access aperture, with said rim portions operatively clamping said edge portion upon engagement with an inner and an outer faces thereof respectively, and sealing means sealingly interposed peripherally of said edge portion intermediate the latter and at least one of said rim portions upon operative fastening of the inner and outer door panels in said fluid tight closing position.

4,291,817
WEATHERPROOF PANEL ENCLOSURE
Erlys C. Spitzer, and Frank Spitzer, both of 9782 S. Crestview Cir., Villa Park, Calif. 92667
Filed Jun. 9, 1980, Ser. No. 157,862
Int. Cl.[3] B65D 45/00
U.S. Cl. 220—327 7 Claims



1. A weatherproof panel enclosure including:
(a) a box having an opening, the periphery of the opening being defined by an integral flange having an outward sloping portion;
(b) a cover having a peripheral lip dimensioned to overlap said integral flange when the cover is closed over the opening;
(c) a gasket in the under top portion of said cover adjacent to the inside of said lip extending about the perimeter of the cover dimensioned to engage the top of said integral flange when the cover is in closed position to thereby provide a sealing relationship;
(d) hinge means secured to a lip portion extending along one side of the cover and a corresponding one side of the box between the flange and the side of the box itself so that said cover can be swung away from the opening through an angle greater than 90°; and
(e) securing means passing through a lip portion along the opposite side of the cover for engaging the sloping portion of the flange overlapped by the latter mentioned lip portion, the engaged portion of the flange sloping up and away from the opening towards the overlapping lip, said securing means being threadedly held in said lip portion so that inward threading of the securing means cams the cover down to compress said gasket against the top of the flange so that the cover can be tightly cammed into weathertight engagement with the box when in closed position.

4,291,818
LID STRUCTURES
Takamitsu Nozawa, and Takaharu Tazaki, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan
Filed Apr. 22, 1980, Ser. No. 142,710
Claims priority, application Japan, May 18, 1979, 54/61116; May 23, 1979, 54/63495
Int. Cl.[3] B65D 43/24
U.S. Cl. 220—335 8 Claims



1. In a lid made of a synthetic resin comprising a lid base (11) having a cylindrical connector (15) threadedly connected, or fitted over the neck of a container body (17) in intimate contact therewith, and a lid body (1) disposed in the top wall (12) of

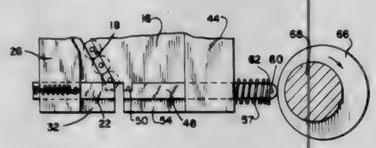
said lid base (11) and swingable like a cover for a book to open or close an opening (14) provided in said top wall (12), the improvement in which said lid body (1) comprises a lid plate (2) adapted for resting on said top wall (12), a generally flat rear end portion of said lid plate reduced in thickness to define a hinge (5), a hinge base (6) contiguous to said hinge, a connector (10) depending integrally from the underside of said hinge base (6), and a leg (7) of desired length extending rearwardly from the rear end of said lid plate (2), said leg being discontinuous in the area of said hinge (5), while said lid base (11) comprises said top wall (12) having an upper surface (13) which is flat at least in the rear half thereof facing said leg (7), and a connector (16) formed opposite to said connector (10) for firmly engaging and holding said connector (10).

4,291,819

HIGH SPEED DISPENSER FOR ELECTRICAL COMPONENTS

Martin G. Heller, 68 Harvey Dr., Short Hills, N.J. 07078; Joel Rudder, Rockaway, and Stanley J. Arasim, Jr., West Milford, both of N.J., assignors to Martin G. Heller, Short Hills, N.J.

Filed Apr. 7, 1980, Ser. No. 138,177
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—298 **10 Claims**



1. A high speed dispenser adapted for loose electrical components characterized in that each component has like-sized tubular bodies in both diameter and length and from the ends of each body extend wire-like conductors which are substantially central of each body, said dispenser including:

(a) a chute having opposed wall portions with parallel inner faces defining a spaced apart guide for the bodies of said electrical components;

(b) a track path provided in each wall portion of the chute, said track disposed to receive and freely guide and confine a wire end of a component as the tracks receive and deliver the loose components by gravity to a lower end of the chute;

(c) a pair of rear support and bearing blocks including means to support the chute in a desired orientation;

(d) a pair of reciprocative rear plungers slidably carried in said blocks;

(e) biasing means for moving each plunger forwardly to a determined at-rest position and with the upper surface of each plunger in way of the discharge end on the track so as to receive and engage in a supporting manner the wire ends of the lowermost component;

(f) spacer means for positioning the rear bearing blocks, the chute and rear plungers at a determined apart distance;

(g) a pair of front support and bearing blocks including means for securing and supporting said chute;

(h) a pair of reciprocative front plungers slidably carried in said front blocks;

(i) biasing means for urging the front plungers in a direction away from the rear plungers;

(j) a notch of determined width and depth formed in one end of each of the facing opposed plunger pairs so as to provide a spaced pair of said notches substantially in alignment when the plungers are in an oriented position disposed at and just below the top surface of said plungers to provide a receiving notch for each of said wire ends on the lowermost electrical component;

(k) cam means and motive means adapted to engage and move the forward plungers in a rapidly reciprocated motion, said cam means providing a rearward displacement of the front plungers to bring the notches in way of the wire ends of the lowermost component to allow the wire ends of said component to drop into said notches as and when the rear plungers are moved rearwardly by and with the displacing movement of the front plungers, said rear plungers are moved from a wire end supporting condition, and

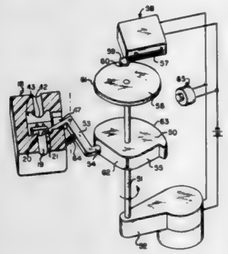
(l) forward and downward guide means disposed so as to engage the wire ends of the lowermost component as it is carried in said notch, said guide means disposed to insure that the wire ends of the lowermost component drop from the dispenser through the space between the rear and front plungers when and while the front plungers are in and at their forwardmost position.

4,291,820

LIQUID METERING DISPENSER

Jack D. Marrington, Capalaba, Australia, assignor to J. D. Engineering Services Pty. Ltd., Australia

Continuation-in-part of Ser. No. 685,922, May 12, 1976, Pat. No. 4,153,187. This application Jan. 16, 1979, Ser. No. 3,894
Claims priority, application Australia, May 16, 1975, 1636/75; Oct. 30, 1975, 3780/75; Feb. 13, 1976, 4847/76
Int. Cl.³ G01F *11/42*
U.S. Cl. 222—70 **5 Claims**



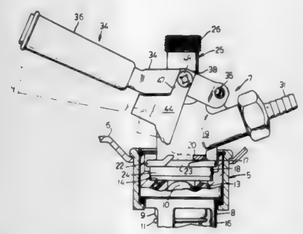
1. A liquid dispenser comprising a metering chamber and a piston assembly selectively movable therein to vary the volume of said chamber, said piston assembly including a hollow piston rod providing a flow through passage communicating with said metering chamber, a supply chamber adapted for liquid communication with said metering chamber via said hollow piston rod, the upper regions of said supply and metering chambers being in air communication, a hollow valve body intermediate said supply and metering chambers including a first valve seat communicating with said supply chamber, a second valve seat communicating with said metering chamber and a liquid dispensing outlet; a valve member positioned within said valve body and actuable exteriorly thereof; control means for actuating said valve member including a valve lever and timing means operatively connected to said valve lever for controlling the operating cycle of said valve member, whereby during one operating cycle said valve member is actuated initially by said valve lever into a first position so as to close said first valve seat and permit communication between said second valve seat and said dispensing outlet and is maintained in said first position for a period of time sufficient to permit the emptying of said metering chamber through said dispensing outlet, said valve lever thereupon actuating said valve member into a second position so as to close said dispensing outlet and permit communication between said supply and metering chambers via said first and second valve seats and is maintained in said second position for a period of time sufficient to refill said metering chamber from said supply chamber.

4,291,821

KEG TAPPING SYSTEM UNIT AND VALVE INTERLOCK

James E. Nezworski, Milwaukee, Wis., assignor to The Perlick Company, Inc., Milwaukee, Wis.

Filed Oct. 4, 1979, Ser. No. 81,670
Int. Cl.³ F16K *35/00*; F16L *37/24*
U.S. Cl. 222—153 **4 Claims**



1. A tavern unit for a keg tapping system, to which a pressure gas duct and a beverage duct are normally connected and which is detachably connectable to a keg unit that is installed in a keg and has an upwardly opening well into which opposite lugs project radially, said tavern unit having a body with a base portion which is rotatably receivable in said well and which cooperates with said lugs to provide a bayonet connection between said units, said tavern unit also having a lever projecting substantially radially from its body, above said base portion, whereby the tavern unit can be bodily rotated for engagement and disengagement of said bayonet connection, said lever also comprising a valve actuator that is swingable relative to the body downward to a valve open position providing for communication between the interior of said keg and said ducts and upward to a valve closed position that permits separation of the units without loss of gas or beverage, said tavern unit being characterized by: abutment means rigidly fixed to said lever for up and down motion therewith and projecting downwardly from said lever, towards said base portion, said abutment means being arranged for cooperation with one of said lugs on a keg unit and having

(1) a downwardly facing abutment at its bottom which is engageable with a top surface on one of said lugs when said bayonet connection is not fully engaged, to prevent the lever from swinging down to its valve open position, and

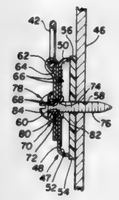
(2) a circumferentially facing abutment which is engageable with an opposing circumferentially facing surface on one of said lugs when said lever is in its lowered valve open position and which thus cooperates with said lug to then prevent rotation of the tavern unit to a position in which said bayonet connection is disengaged.

4,291,822

GUITAR STRAP

Lawrence Simonds, c/o Simtron Industries Incorporated, 139 E. Merrick Rd., Freeport, N.Y. 11520

Filed Jun. 2, 1980, Ser. No. 155,605
Int. Cl.³ G10D *3/00*; G10G *5/00*
U.S. Cl. 224—257 **3 Claims**



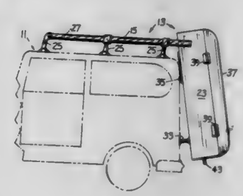
1. A guitar strap loop attached in swiveling relation to a guitar body comprising an attachment member having a central operative surface maintained at a clearance position from said guitar body by a peripheral lip extending transversely from said central operative surface into contact with said guitar body, a cylindrically shaped threaded screw with an enlarged diameter head disposed through said operative surface into threaded engagement with said guitar body, a guitar strap loop disposed on said screw having an operative interposed position between said head of said screw and said attachment member central surface, a hollow rivet disposed in encircling relation about said screw having an outwardly flared pair of ends adjacent said screw head and in said clearance beneath said attachment member central surface for maintaining said guitar strap loop in disposed relation on said screw while permitting said guitar strap loop to swivel about said hollow rivet, and a plastic disk disposed on said screw positioned adjacent said guitar body and sized to extend beneath said attachment member peripheral lip, whereby threaded adjustment of said screw contributes to the firmness of the attachment of said guitar strap loop to said guitar body without adverse effect on the swiveling movement thereof.

4,291,823

TRACK-MOUNTED PULL-DOWN LUGGAGE-CARRIER FOR AUTOMOBILES

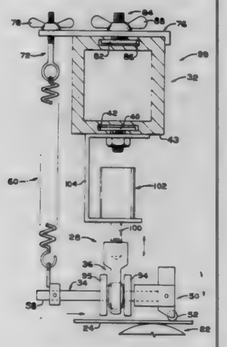
James D. Freeman, 19 Hedge Dr., Springfield, Ill. 62702, and Robert L. Freeman, 262 Stutely, Springfield, Ill. 62704

Filed Nov. 16, 1979, Ser. No. 94,971
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—310 **11 Claims**



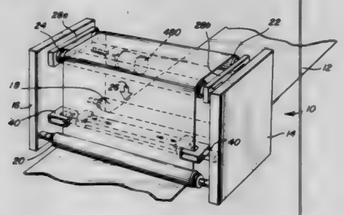
1. A top-mounted pull-down luggage carrier for automotive vehicles, comprising: a pair of tracks adapted for parallel longitudinally disposed attachment to the top surface of a vehicle, a carrier body having a pair of low-friction means fixed thereto adjacent the front portion thereof and guidedly engaged with said tracks, cam-like means interacting between the under surface of said carrier body and adjacent top rear surfaces of said vehicle to protect said adjacent top rear vehicle surfaces as said carrier rests thereupon and/or is moved rearwardly and downwardly thereover while being continuously attached to and partially supported by said tracks, said cam-like means having a upwardly convex surface which is shaped first to lift said carrier body slightly as it moves upwardly and forwardly over said cam-like means and secondly to drop forwardly beyond a vertically disposed abutment for arresting rearward movement of said carrier body unless slightly lifted to clear said abutment.

4,291,824
SELF-ALIGNING METHOD FOR SCORING FRACTURABLE MATERIAL
Robert P. DeTorre, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation of Ser. No. 872,417, Jan. 26, 1978, abandment, which is a division of Ser. No. 725,222, Sep. 22, 1976, Pat. No. 4,096,773.
This application Nov. 13, 1979, Ser. No. 93,778
Int. Cl.³ C03B *33/02*
U.S. Cl. 225—2 **4 Claims**



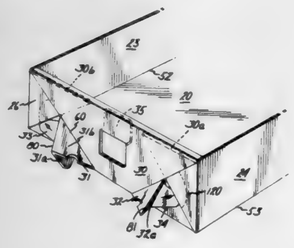
1. A method of scoring a sheet of fracturable material, comprising the steps of:
providing an elongated member having scoring means;
universally pivoting the elongated member;
displacing the sheet and scoring means relative to one another; while
biasing the scoring means against the sheet to score the sheet and maintain the scoring means in an upright position.

4,291,825
WEB GUIDING SYSTEM
Richard Glanz, Crystal Lake, Ill., assignor to Baldwin-Korthe Web Controls, Inc., Addison, Ill.
Filed Apr. 19, 1979, Ser. No. 31,393
Int. Cl.³ B65H *25/26*; G01N *21/86*; G01V *9/04*
U.S. Cl. 226—18 **45 Claims**



30. A web control assembly for a web comprising an entrance roller,
a tilt frame having a pair of tilt rollers mounted thereon,
an exit roller,
said web being disposed under the entrance roller, over the tilt rollers and under the exit roller,
a motor means connected to the tilt frame operable to move the frame to cant the tilt rollers with respect to the longitudinal line of travel of the web,
a web edge scanner adjacent at least one edge of the web, said scanner including
a source of radiation in the infrared range,
focus means for guiding said radiation into a channel having a width encompassing the range of normal web edge deviation from a desired path along said longitudinal line of travel, and
signal means spaced from said focus means for receiving said radiation and producing a continuous output signal corresponding to the magnitude of said radiation passing the edge of the web, and
means intermediate the motor means and the scanner for directing the motor means to cant and straighten the tilt frame.

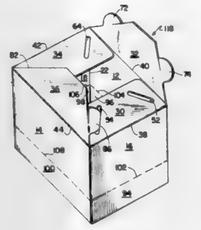
4,291,826
STORAGE CONTAINER
John L. Swanson, 2100 Sargent Ave., St. Paul, Minn. 55105
Filed Jul. 20, 1979, Ser. No. 59,482
Int. Cl.³ B65D *5/26*
U.S. Cl. 229—31 FS **8 Claims**



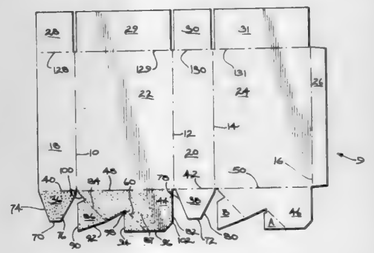
1. A container folded from a single blank of corrugated fiberboard comprising:
(a) a bottom;
(b) a side;
(c) an end;
(d) a webbed corner continuous with said bottom, side and end and folded diagonally to overlie said end when said bottom, side and end are mutually orthogonal;
(e) a flap continuous with said end and folded outward and downward to overlie a portion of said corner when folded; and
(f) a lock tab continuous with said flap and including a tongue for insertion between said end and a portion of said folded corner not underlying said flap, said lock tab comprising a perforation score extending in the direction of the length of said container, and a pair of converging crease scores mutually intersecting with said perforation score, said perforation and crease scores being constructed and arranged to permit folding of said lock tab in opposite directions to enable said tongue to lie flat against said end during sliding and insertion beneath said portion of said folded end.

4,291,827
CARTON WITH SELF-LOCKING END CLOSURE AND BLANK FOR FORMING SAME
Terence J. Mulroy, Sioux City, Iowa, assignor to Champion International Corporation, Stamford, Conn.
Filed Mar. 3, 1980, Ser. No. 126,376
Int. Cl.³ B65D *5/10*
U.S. Cl. 229—39 R **11 Claims**

1. A carton with a self-locking end closure, comprising:
four wall panels coupled at adjacent side edges thereof; and
self-locking end closure means comprising first, second, third and fourth end closure flaps each hingedly coupled to one of said wall panels at adjacent end edges thereof along fold lines, said end closure flaps having outer edges opposite said fold lines, each flap of one pair of opposed flaps having two elongated slots therein oriented at acute angles relative to the fold line between the respective panel and flap, each flap of the other pair of opposed flaps having angular side edges oriented at acute angles relative to the fold line between the respective panel and flap and a pair of tabs extending from said angular side edges, said tabs being spaced inwardly from the outer edges of said other pair of opposed flaps.



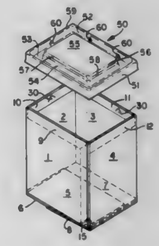
4,291,828
COMBINATION COLLAPSABLE SELF-ERECTING SELF-LOCKING CARTON
Paul R. Nigro, Norridge, Ill., assignor to Royal Continental Box Company, Cicero, Ill.
Filed Apr. 14, 1980, Ser. No. 139,835
Int. Cl.³ B65D *5/36*
U.S. Cl. 229—41 B **20 Claims**



1. A folding carton formed from a blank of cardboard, comprising:
(a) four sidewalls hingedly connected by their edges to form a generally rectangular tubular enclosure;
(b) bottom wall means formed by two similarly-shaped bottom sections, each section being formed from two elements fixedly joined together and hingedly connected to the lower edges of two adjacent sidewalls, each of said sections being scored along a line permitting folding thereof to correspond with the folding of the associated sidewalls, pressure on opposite corners of the folded carton forcing the sidewalls to open outwardly with the bottom sections gradually assuming a position generally transverse to said sidewalls; and
(c) scored flap means joined to said bottom sections for interengaging and latching together said bottom sections, said scored flap means deploying with said bottom sections to overleaf and hold said bottom sections in said substantially transverse position, said scored flap means bending inwardly towards the interior of said carton while said bottom sections deploy outwardly from the interior of said carton thereby freeing said bottom sections to overleaf one another, deployment of said bottom sections freeing scored flap means to return to a position generally transverse to said sidewalls whereby said bottom sections are locked in place to form a substantially rigid, collapse-resistant structure,
said bottom wall means remaining locked in a deployed position until said scored flap means are folded inwardly towards said sidewalls thereby freeing said bottom wall means to be collapsed

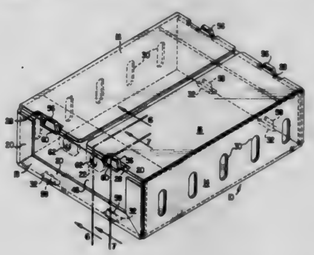
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4,291,829
ICE CREAM CONTAINER, BLANK THEREFOR, PARTIALLY ERECTED TUBE, AND PACKAGE COMPRISING SAME, SAID CONTAINER PLUS PLASTIC COVER AND PLASTIC COVER ITSELF
Thomas VanderLugt, Jr., Kalamazoo, Mich., assignor to Brown Company, Kalamazoo, Mich.
Filed Aug. 30, 1979, Ser. No. 71,242
Int. Cl.³ B65D *43/04, 43/10, 3/12*
U.S. Cl. 229—43 **33 Claims**



1. An integral blank cut and scored to provide a tubular container comprising substantially rectangular rear, side, and front wall members, a glue flap articulated along a score to one of said container wall members and adapted to be adhered to an adjacent container wall member, bottom-forming flaps articulated to each of said wall members along scores at one end of said blank, and edge-reinforcing flaps articulated to each of said container rear, side, and front wall members at the other end of said blank having areas of low resistance comprising cuts or cut-out areas defined therein and being adapted to be folded over and adhesively secured to the inside of said adjacent wall members to which said edge reinforcing flaps are articulated, thereby to form a folded-over, reinforced portion of double thickness at that end of said blank and in a tubular container erected from said blank, with said areas of low resistance comprising cuts or cut-out areas being present in the inner exposed surface of folded-over edge-reinforced portions of the walls of said container erected from said blank.

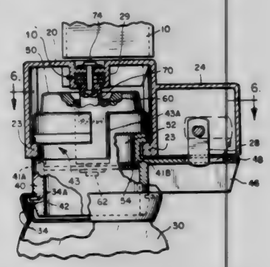
4,291,830
CONTAINER WITH LOCKING LID
James R. Sorensen, San Mateo County, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Dec. 26, 1979, Ser. No. 106,741
Int. Cl.³ B65D *5/32*
U.S. Cl. 229—45 R **7 Claims**



1. In a container having a body and a lid, said body defined at least in part by a wall, the improvement comprising:

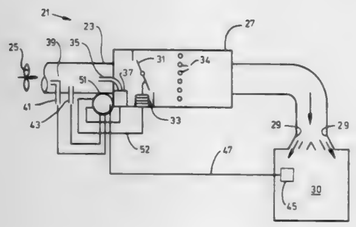
a locking slot extending into said wall from an edge of said wall, said wall having inner and outer wall portions confining said slot;
a locking flap carried by said lid and having a locking relief therein, said flap extendable into said slot when said lid is closed to position said locking relief between said inner and outer wall portions; and
a locking tab carried by said outer wall portion and extendable into said slot to engage said locking relief when said lid is closed to lock said lid to said body.

4,291,831
SECURITY HOUSING
Ronald A. Domkowski, Arlington Heights, Ill., assignor to Honor Gard, Inc., Chicago, Ill.
Filed Jun. 29, 1979, Ser. No. 53,638
Int. Cl.³ G07B 15/00
U.S. Cl. 232—15 **5 Claims**



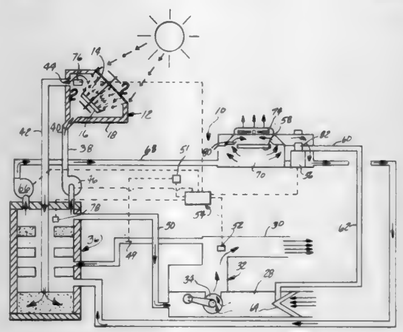
1. In a security system for releasably mounting a coin-collecting container in a coin processing machine, the improvement comprising:
a mounting member removably attached to said container including a coin-receiving aperture for directing the coins into said container;
rotatable closure means movable on said member between an opened position, allowing the coins to pass through said aperture, and a closed position blocking the passage of coins through said aperture;
locking means on said member for selectively locking said closure means in said opened or closed positions and for driving said closure means therebetween;
a housing adapted for connection to said coin processing machine and further adapted to releasably connect said mounting member and the associated container to said machine, said housing including means for receiving coins processed by said machine and directing the coins into said container through the aperture in said mounting member;
key means provided on said housing and engagable with said locking means on said member, as said member is inserted in and rotated with respect to said housing, to drive said closure means of said member between said opened and closed positions, so that rotation of said member within said housing a selected degree moves said closure means from a closed position to an opened position and thereby permits coins to be deposited in said container through said member;
said key means being further engagable with said locking means to rotate said closure member into said closed position as said member is rotated in a counter-direction with respect to said housing, so that the removal of said member from said housing closes said closure member and retains the coins within said container associated with said member; and
high-strength insert means integrally joined within said housing member and firmly connecting said key means in a non-rotatable position is said housing, said insert means including outer detents on its periphery for engagement with said housing, to prevent rotation of said insert, and further including inner detent means projecting inwardly and engaged with said key means to positively prevent relative rotation of said key means with respect to said housing.

4,291,832
SYSTEM POWERED RESET VELOCITY CONTROLLER
Le Roy D. Ginn; Le Royce S. Ginn, both of San Leandro; John C. Morris, Castro Valley, and Dalny Travaglio, Kensington, all of Calif., assignors to Universal Pneumatic Controls, Inc., San Leandro, Calif.
Filed May 7, 1979, Ser. No. 36,823
Int. Cl.³ F24F 7/06
U.S. Cl. 236—49 **8 Claims**



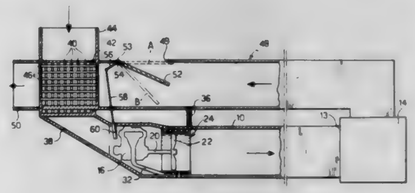
1. A controller for a variable air flow volume conditioned air distribution system of the kind having an air flow duct for supplying conditioned air to a room and a valve in the duct for regulating the volume of air flowing through the duct,
said controller comprising,
movable control element means for regulating the valve in the duct and the volume of air flowing in the duct in response to the positioning of the control element means,
velocity sensing means for sensing the air flow velocity in the duct and connected to the control element means for applying a flow velocity force to the control element means in response to the sensed air flow velocity,
velocity spring means connected to the control element means for applying a spring force to the control element means in opposition to the flow velocity force of the air flow velocity sensing means to determine the air flow velocity set point of the controller,
room temperature sensing means for sensing the room temperature and for producing a temperature force in response to the sensed temperature and operatively associated with the velocity spring means, and
bias adjustment means operatively associated with the velocity spring means for varying the rate of the velocity spring from a low spring rate for control at a low maximum permitted flow velocity in the duct to a higher spring rate for control at a higher maximum permitted flow velocity in the duct and vice versa and wherein the spring is a leaf spring and the bias adjustment means include a movable end support for one end of the leaf spring for increasing and for decreasing the effective length and the rate of the spring with changes in the location of the end support and including a first point of engagement between the room temperature sensing means and the velocity spring and a second point of engagement between the movable control element means and the velocity spring means and wherein the first and second points of engagement are so located with respect to the end support as to produce an increasing mechanical advantage through the leverage provided by the spring for the temperature force over the flow velocity force as the effective length of the spring is decreased.

4,291,833
HEATING SYSTEM WITH FOCUSED SOLAR PANELS AND HEAT PUMP ASSIST
Anthonino A. Franchina, Sterling Heights, Mich., assignor to Karl Wojcik, Warren, Mich., a part interest
Filed Oct. 15, 1979, Ser. No. 84,880
Int. Cl.³ G05D 23/00
U.S. Cl. 237—2 B **6 Claims**



1. A stationary solar heater for utilizing sunlight to heat a solar energy collector of the type wherein a fluid is circulated past the collector to absorb heat therefrom and translated to a device for utilizing the heat contained within the fluid, the improvement comprising:
a plurality of lenses interposed between the collector and the sun; said lenses concentrating the solar energy on the collector;
the collector having a length substantially longer than the length of the plurality of lenses, and wherein the plurality of lenses and the collector are aligned so that in the morning the entire amount of solar energy striking the lenses is concentrated directly on a first portion of said collector, at noon the entire amount of solar energy striking the lenses is concentrated directly on a second or central portion of the collector, and in the afternoon the entire amount of solar energy striking the lenses is concentrated directly on a third portion of the collector; said solar heater further comprising a heating system device for a building comprising:
a conditioned air duct for passing conditioned air;
an air return for passing return air;
an air circulator having an inlet communicating with said air return, an outlet communicating with said conditioned air duct, and a first fan for moving air from said inlet to said outlet wherein the air pressure in said outlet is above the air pressure in said inlet;
means for utilizing heat from the solar collector to warm air passing through said air circulator;
a heat pump comprising a condenser disposed within said air return, said condenser heating air passing thereby from said air return, said heat pump having an evaporator located externally of said building for drawing heat from air passing thereby;
a first temperature sensor in the conditioned air duct for turning on the heat pump at a preset temperature;
a fan for passing air by said evaporator;
a conduit communicating the means for utilizing heat from the solar collector with a first chamber surrounding the evaporator so that solar warmed air may be drawn from the means for utilizing heat to increase the ambient temperature of the air surrounding the evaporator, a conduit communicating the first chamber with the means for utilizing heat to return air from the first chamber to the means for utilizing heat when said air has given up its heat;
a fan means within the conduit for translating solar warmed air to the first chamber and from the first chamber to the means for utilizing heat;
said means for utilizing heat from the solar collector to warm air passing through said air circulator comprising:
a heat storage chamber;
a first conduit interconnecting the storage chamber and a solar collector inlet;
a second conduit interconnecting a solar collector outlet and the heat storage chamber;
a second fan in the first conduit for translating air from the heat storage chamber to the solar collector and from the solar collector through the second conduit to the heat storage chamber translating solar warmed air to the heat storage chamber;
a third conduit interconnecting the heat storage chamber and the conditioned air duct, a fourth conduit interconnecting the heat storage chamber and the air return duct wherein air flows from the solar collector outlet to the heat storage and from the heat storage chamber to the inlet warming air passing through the air circulator.

4,291,834
SYSTEM FOR HEATING AIR
Mario Palazzetti, Avigliana; Giorgio Becchi, Turin, and Guiseppe Cane, Sangano all of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy
Filed Oct. 3, 1979, Ser. No. 81,585
Claims priority, application Italy, Oct. 5, 1978, 69306 A/78
Int. Cl.³ F24D 5/00
U.S. Cl. 237—12.1 **6 Claims**



1. In a system for heating air, comprising:
an air conveyor duct, having an inlet mouth open to the atmosphere at one end thereof and an outlet at the other end thereof;
means for heating air within said duct; and
means for causing axial flow of air through said duct whereby to draw external air in to said duct through said inlet mouth and convey said air through said duct to said outlet of the said duct;
the improvement wherein said means for heating air within said duct comprise an air-cooled internal combustion engine mounted within said duct and connected to said means for causing axial flow of air within said duct whereby to drive said air flow causing means,
said means for heating air within said duct further comprise heat exchanger means through which the exhaust gases produced by said internal combustion engine pass as heating fluid for the air to be heated, said heat exchanger being housed within said duct, downstream of said internal combustion engine with respect to the direction of flow of said air to be heated,
a utilizer having an inlet connected to the outlet and said air conveyor duct and an outlet,
a return duct connected to the outlet of the utilizer to receive used air therefrom;
means for conveying said exhaust gases from said internal combustion engine into said return air duct after said exhaust gases have passed through said heat exchanger whereby to mix said exhaust gases with the used air coming from said utilizer,
a second heat exchanger for pre-heating the air drawn into

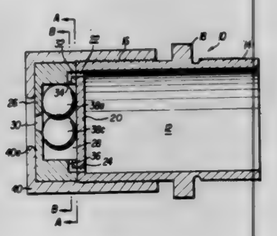
said air conveyor duct, said second heat exchanger being located upstream of said internal combustion engine, and means for directing said used air and exhaust gases as heating fluid through said second heat exchanger.

4,291,835

MIST PRODUCING NOZZLE

Samuel Kaufman, 6210 Park Heights Ave., Baltimore, Md. 21215

Filed Dec. 7, 1979, Ser. No. 101,254
Int. Cl.³ B05B *1/34*
U.S. Cl. 239—11 **16 Claims**



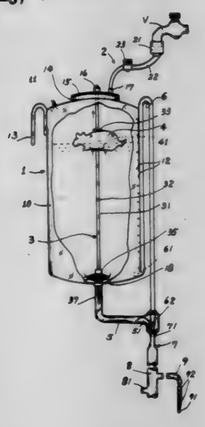
1. In a nozzle for atomizing a liquid, the nozzle having a single orifice outlet and a liquid inlet, the improvement comprising a plurality of balls rotatably retained in a chamber upstream of said orifice outlet so as to be in constant rolling contact with each other in a path of travel around said orifice outlet such that they contact the incoming liquid and atomize it upstream of said orifice outlet by breaking it up into very small droplets.

4,291,836

INTERMITTENT WATER-SUPPLY SYSTEM

Wu Chen-Hsiung, No. 3, Alley 5, La. 10, Tung-Ho East St., Sec. 2, Taipei, Taiwan

Filed Oct. 23, 1979, Ser. No. 87,346
Int. Cl.³ F04F *10/00*
U.S. Cl. 239—37 **10 Claims**



1. Apparatus for intermittently supplying a predetermined quantity of water at regular, predetermined intervals comprising:

(a) a water tank for accumulating and storing water including an air vent in the top of said tank and an outlet in the bottom of said tank, said outlet comprising outlet valve means slidably mounted on a guide rod such that said outlet may be alternatively opened and sealed;

(b) water feeding means and inlet valve means for filling said water tank at a constant, predetermined rate of flow;

(c) float-actuated valve means within said water tank comprising a stem slidably mounted in a substantially vertical position within said water tank and drilled with a plurality of pin holes at varying heights so as to accommodate a readily-removable insert pin, said stem being threadably formed on its lower end so as to engage said outlet valve means, and a hollow float having a vertical hole partitioned from said hollow portion slidably mounted through said hole on said stem;

(d) a down pipe connected to said water tank outlet and terminating in a tapered tube;

(e) a siphon tube comprising an inlet stem inside said water tank terminating in an open end just above the bottom of said tank and an outlet stem outside said water tank terminating in a tapered tube which extends together with the tapered tube of said down pipe into a venturi outlet, wherein the U-shaped portion of said siphon tube passes over the top of the wall of said water tank; and,

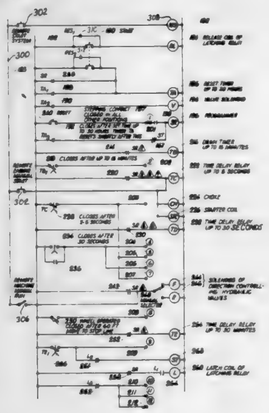
(f) an ejector tube extending downwardly from said venturi outlet.

4,291,837

AUTOMATIC MULTIPLE MOVE IRRIGATION LINE

Lyndle G. Gheen, 1173 Clinton Dr., Eugene, Oreg. 97401

Continuation of Ser. No. 941,194, Sep. 11, 1978, which is a continuation of Ser. No. 757,033, Jan. 5, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 92,950
Int. Cl.³ A01G *27/00*
U.S. Cl. 239—70 **11 Claims**



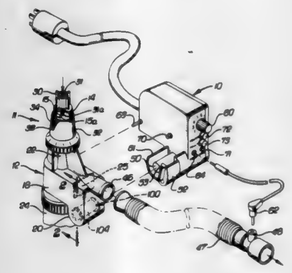
1. In an automatic multiple move irrigation line,
an irrigation pipe,
wheel means supporting the pipe,
a prime mover,
motor means drivable by the prime mover for driving the wheel means,
starting means for starting the prime mover,
solenoid means for actuating the starting means,
means for supplying water under pressure to the pipe, timing circuit means for periodically actuating the solenoid means.
water control means responsive to the timing circuit means for shutting off the water supplying means before each actuation of the starting means, drain means resonsive to said circuit means for draining the pipe before each actuation of said starting means,
means for stopping the prime mover at the end of each predetermined move of the line,
the water control means being responsive to the timing circuit means for actuating the water supplying means to the line only after the prime mover is stopped each time to sprinkle,
and means responsive to a predetermined number of cycles of moves and sprinklings for actuating the water control means and prevent further actuation of the solenoid means.

4,291,838

NEBULIZER AND ASSOCIATED HEATER

Andrew S. Williams, Brea, Calif., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 107,062
Int. Cl.³ B05B *1/24*
U.S. Cl. 239—138 **13 Claims**



1. A nebulizer system for producing a heated aerosol spray for delivery to a patient comprising:
an integral nebulizer having a nebulizer chamber, aerosol means for producing a liquid aerosol spray in the nebulizer chamber, means for supplying liquid to the aerosol means, a heating chamber located downstream of the nebulization chamber and in flow communication therewith, said heating chamber including an integral liquid collection well for collecting precepitation from the aerosol, a heat exchange sleeve extending into said collection well, the interior of the sleeve being isolated from the heating chamber, and an outlet port connected to the heating chamber for directing the aerosol out of the heating chamber; and
a heater detachably connected to the nebulizer, said heating including a heating element extending into and contacting the sleeve for heating the aerosol as it passes through the heating chamber without direct contact between the heater and the aerosol, heating being transferred from the heating element to liquid in the collection well via the sleeve, said aerosol in turn being heated by said liquid.

4,291,839

VEHICLE RUST-INHIBITING SPRAY GUN WITH LIGHTING MEANS

Dennis A. Brett, 9890 College Ave., Indianapolis, Ind. 46280

Filed Nov. 5, 1979, Ser. No. 91,467
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—289 **9 Claims**

1. A hand-held, rust-inhibiting spray gun, comprising in combination:

(a) a grippable portion;

(b) a triggering means for applying rust-inhibiting sealant to the under and hidden surfaces of a vehicle; and

(c) a lighting means removably mounted thereto and directed to illuminate the surface receiving the rust-inhibiting application, said lighting means includes an illuminating device, said device comprising:

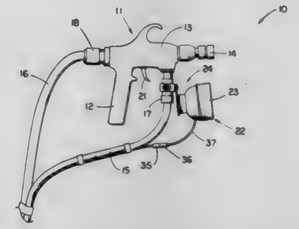
(1) a cup-shaped housing;

(2) a socket position within said housing for receiving a lighting bulb therein;

(3) electrical means for illuminating said bulb;

(4) magnetic means secured to the back of said housing for removably attaching said housing to the spray gun;

(5) a lens cover removably attached to said housing; and



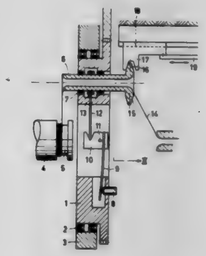
(6) an inner reflective surface for directing the light beam to illuminate the surface receiving the rust-inhibiting application.

4,291,840

DEVICE FOR THE WINDING OF COILS

Wilhelmus L. L. Lenders, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,846
Claims priority, application Netherlands, Oct. 2, 1978, 7809906
Int. Cl.³ H01F *11/04*
U.S. Cl. 242—7.14 **8 Claims**



1. Apparatus for winding a coil of wire onto a rigidly arranged coil core, which comprises a winding member rotatable about an axis; a wire guide journalled in the winding member and traversable in the direction of the axis of rotation; a structural member displaceable in the direction of the axis of rotation; and an element connected to the wire guide and cooperating over part of its circle of revolution with a surface of the structural member.

4,291,841

METHODS OF AND APPARATUS FOR TAKING UP LIGHTGUIDE FIBER

Philip W. Dalrymple; Michael J. Hyle, both of Doraville; Daryl L. Myers, Lawrenceville, and James G. Wright, Jr., Roswell, all of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,808
Int. Cl.³ B65H *54/02, 67/04*
U.S. Cl. 242—18 A **23 Claims**

1. A method of taking up lightguide fiber said method comprising the steps of:
supporting each of a first and second plurality of spools for rotation about an axis, said axes of rotation of said spools of each plurality being parallel;
mounting each plurality of spools for revolution about an

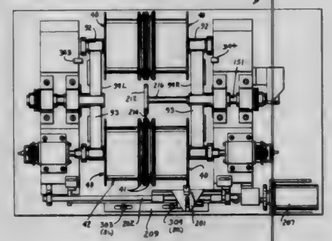
axis which is parallel to the axes of rotation of spools of said plurality, said axes of rotation of said spools of each plurality being spaced equal distances from the axis of revolution of said each plurality;

holding one of said spools of said first plurality in a first takeup position in coaxial alignment with one of said spools of said second plurality in a second takeup position;

rotating said spools in said takeup positions;

taking up a length of the lightguide fiber adjacent one flange of the one spool of said first plurality in said first takeup position; then

distributing a predetermined length of the fiber in a plurality of convolutions across the spool in the first takeup position; then



causing a length of the fiber to be taken up adjacent to one flange of the spool in the second takeup position, said one flange of the spool in the second takeup position being adjacent the one flange of the one spool in the first takeup position; then

distributing a predetermined length of the fiber in a plurality of convolutions across the spool in the second takeup position;

severing the lightguide fiber which extends between the spools in the first and the second takeup positions; and

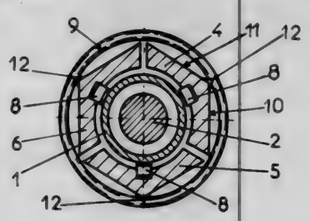
causing revolution of the first plurality of spools to move said one spool on which has been distributed said predetermined length of fiber in a plurality of convolutions out of the first takeup position.

4,291,842

SPINDLE FOR WINDING TEXTILE YARNS

Bernard Isoard, Ecully, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Oct. 15, 1979, Ser. No. 84,828
Claims priority, application France, Oct. 13, 1978, 78 29476
Int. Cl.³ B65H *54/54*
U.S. Cl. 242—46.5 **4 Claims**



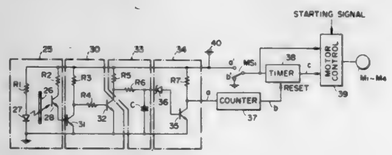
1. A winding spindle adapted to support and drive in rotation therewith at least one winding support on which a textile yarn is to be wound, comprising at least one rotary spindle body and at least one gripping means for gripping the winding support mounted on the spindle body, wherein the gripping means comprises at least two flyweights regularly distributed around the spindle body, radially mobile and able to come in contact at least with the inside surface of the winding support and to develop, under the effect of centrifugal force, a radial thrust assuring its gripping; wherein the outside surface of each flyweight presents flat parts, the intersection of two successive flat parts constituting an edge extending roughly along a generatrix of the inside of the support, and wherein the outside surface of the flyweights includes at least one pointed projection, each pointed projection being located on said edge, the height of said pointed projections being on the order of tenths of a millimeter, and the profile of said projections being trapezoidal or triangular in the longitudinal direction, said pointed projection being able to penetrate into the wall of the support when the spindle is rotating, thereby improving the holding of the support in the radial rotation and in the axial directions, and allowing the winding support to be easily disengaged from the gripping means and spindle body when the latter is at rest.

4,291,843

WEB WINDING APPARATUS

Hitoshi Yanagawa, Tokyo; Motofumi Konishi, Yokohama; Yoshio Ando, Chigasaki, and Kazuo Kashiwagi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,594
Claims priority, application Japan, Jul. 13, 1978, 53-85745
Int. Cl.³ B65H *25/32*
U.S. Cl. 242—57 **12 Claims**



1. A web feeding apparatus comprising:

a drive source;

a take-up reel driven from said drive source;

means for feeding a web to said take-up reel along a predetermined path;

means for winding the web around said take-up reel;

pulse generating means for generating a pulse for each predetermined amount of angular rotation of said take-up reel;

timer means operable in response to arrival of the web at a predetermined position in said path;

signal generating means for intermittently generating signals at an interval when the interval of the pulses generated by said pulse generating means becomes longer than a predetermined pulse interval;

counting means for counting the signals generated from said signal generating means, said counting means putting out a signal for resetting said timer means when the number of the counted signals reaches a predetermined value; and

means for stopping said feeding means when said timer means, before the number of the counted signals reaches a predetermined value, operates for a set time period.

4,291,844

SHAFTLESS REWIND CHUCK

Michael Blickley, Manville, and Nicholas G. Naccara, Hewitt, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

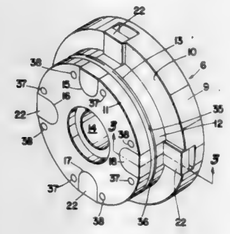
Filed Apr. 28, 1980, Ser. No. 144,443
Int. Cl.³ B65H *75/24*
U.S. Cl. 242—68.2 **11 Claims**

1. A chuck for engaging and holding the open end of a hollow tube on which a web of material is spirally wound, comprising:

(a) a cylindrical hub extending coaxially from a cylindrical flange which has a larger inside diameter than the hub;

(b) a plurality of slots arcuately spaced in the hub and flange, the slots being radially oriented relative to the longitudinal axis of the hub, each of the slots having a pair of surfaces wherein the included angle between a pair of intersecting planes containing at least portions of said surfaces is substantially 90°;

(c) a sear disposed in each of the spots and shaped to rock therein in a radial plane relative to the longitudinal axis of the hub, each sear comprising a pair of legs which are angularly disposed to each other and joined for unitary movement, the first of the pair of legs resting in a portion of the slot mainly in the hub and the second of the pair of legs resting in a portion of the slot mainly in the flange, each slot and sear therein being shaped so that, firstly, the



first leg is free of contact with a hollow tube surrounding the hub, when the tube is free of engagement with the second leg, and, secondly, the first leg correspondingly moves into tighter engagement with the inner periphery of a hollow tube surrounding the hub, as the tube engages and moves the second leg in the direction of the flange sufficient to rock the sear and, each of the sears having a pair of matingly configured surfaces wherein the included angle between a pair of intersecting planes containing at least portions of said surfaces of the sear is less than 90°, so that said surfaces of the sears will alternately engage matingly configured surfaces of the slots; and

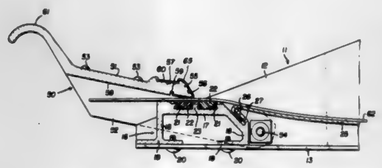
(d) means for retaining the sears in the slots during rotation of the chuck.

4,291,845

COIL CRADLE

Eugene H. Van Cleave, Orchard Lake, Mich., assignor to Van Mark Products Corporation, Farmington Hills, Mich.

Filed Mar. 27, 1980, Ser. No. 134,510
Int. Cl.³ B21C *47/16*
U.S. Cl. 242—78.7 **9 Claims**



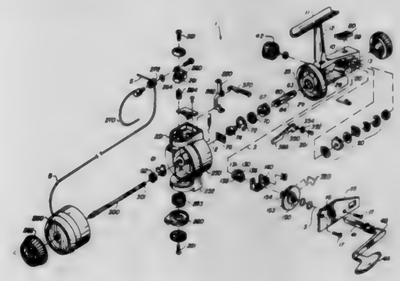
1. A coil cradle for a coil of sheet material comprising an open-topped tray having side walls, a pair of support rollers bridging the side walls adjacent one end of the tray and spaced from one another to support a sheet material coil superimposed thereon, a support element bridging the side walls adjacent the other end of the tray and having an upper support surface for sheet material from the coil, a tray bottom of normally planar sheet material, the tray bottom having one edge fixedly secured to the tray beneath the rolls and the remainder of the bottom projecting toward the support element, and retaining means securing the tray bottom free edge to the support at a distance from the one secured bottom edge which is less than the unconfined planar length of the bottom, so that the bottom assumes a curved configuration for guiding the sheet material from the coil to the support element.

4,291,846

ROTOR BRAKE FOR FISHING REEL

Robert L. Carpenter, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sep. 17, 1979, Ser. No. 76,348
Int. Cl.³ A01K *89/02, 89/00*
U.S. Cl. 242—84.2 G **21 Claims**



1. In an open face spinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting, the reel having a housing with a front forward spool end face, a back end and a central passageway extending from the face to the back end defining a central axis, a pinion assembly mounted in the housing, a central shaft rotatably mounted in the housing and coaxial with the central axis, a spool mounted on the shaft for holding the fishing line, a handle and gear train assembly mounted in the housing, a rotor having a bail for winding the fishing line about the spool in the retrieving position coaxial with the central axis and mounted adjacent the face and rotatable by cooperative movement of the gear train and pinion assemblies, a movable bail mounted on the rotor having an open casting position and a closed retrieving position, improvement being an internally mounted mechanism for preventing inadvertent or undesirable rotation of the rotor when the bail is in a casting position comprising:

(a) a brake drum mounted on the forward face of the housing coaxial with the central axis;

(b) the rotor comprising:

(1) a central desk having a front opening cylinder extending toward the front end of the reel and a back opening cylinder extending toward the back of the reel having an internal bowl, the front and back cylinders having an external surface,

(2) pivot means secured to the external surface of the cylinders,

(3) the rotor mounted such that the bowl surrounds the brake drum;

(c) a U-shaped bail with two ends;

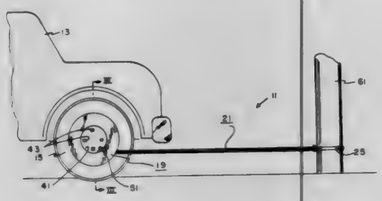
(d) first and second bail arms, each of the bail ends mounted in a bail arm, the bail arms mounted to the pivot means;

(e) elongated trip lever means slidably mounted on the deck having a cam follower and a trip end, the lever means being substantially perpendicular to the central axis;

(f) means for biasably urging the cam follower toward the central axis; and,

(g) brake means mounted in the trip lever means and pressing against the brake drum for limiting the free rotation of the rotor when the bail is in the casting position.

4,291,847
WINCH MEANS
James C. Gilbert, 8355 Greenbrook, Southaven, Miss. 38671
Filed Aug. 1, 1980, Ser. No. 174,361
Int. Cl.[3] B65H *17/46*
U.S. Cl. 242—95 3 Claims



1. A winch means for attachment to a drive wheel of a vehicle and for use in drawing said vehicle to a desired location, said winch means comprising:

(a) mounting means for being fixedly attached to said drive wheel, said mounting means including a plurality of bolt members fixedly attached to said drive wheel and including a plurality of nut members for being screwed onto said bolt members;

(b) spool means for being selectively attached to said drive wheel by said mounting means for rotation with said drive wheel, said spool means including a first and second flange members and a hub member extending between said first and second flange members, said first flange member of said spool means having a plurality of apertures therethrough for allowing said bolt members of said mounting means to extend therethrough and for allowing said spool means to be attached to said drive means with said bolt members of said mounting means passing through said apertures in said first flange member and with said first flange member sandwiched between said drive wheel and said nut members of said mounting means; and

(c) cable means having a first end for being attached to said spool means and having a second end for being selectively anchored to said desired location, rotation of the drive wheel causing said cable means to wind about said spool means and causing said vehicle to be drawn to said desired location, said spool means being capable of being disengaged from said mounting means after said cable means is fully wound onto said spool means.

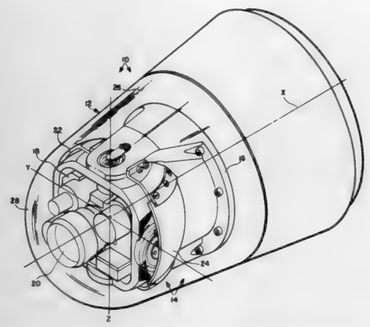
4,291,848
MISSILE SEEKER OPTICAL SYSTEM
Keith E. Clark, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 13, 1974, Ser. No. 506,499
Int. Cl.[3] F41G *7/26*
U.S. Cl. 244—3.16 6 Claims

1. In a guided missile seeker system including; a dome window, a gimbal mechanism fixed within said dome window, an objective lens mounted on said gimbal mechanism for movement in three degrees of freedom through an angle greater than 90°, and detector means receiving radient energy passing through said dome window and said objective lens, the improvement comprising:

said dome window being formed by a spherical portion and a conical portion;

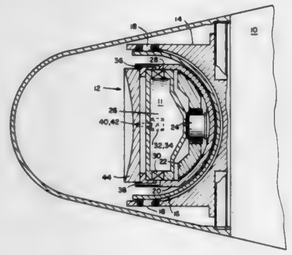
said conical portion having inner and outer surfaces tangent to inner and outer surfaces respectively of said spherical portion at the point of attachment thereof and said surfaces of said conical portion being tapered from said point of attachment rearwardly to a thinner aft end; and

corrector lenses fastened to said gimbal mechanism and covering the area scanned by said objective lens when the



objective lens is looking throughout the conical portion of the dome.

4,291,849
REACTION-JET TORQUER
Aubrey Rodgers, Huntsville, and Escar L. Bailey, Athens, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 4, 1979, Ser. No. 35,955
Int. Cl.[3] F41G *7/20*
U.S. Cl. 244—3.22 2 Claims



1. In a missile disposed for flight to a target, apparatus for controlling flight of said missile to said target comprising:

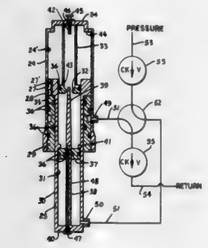
a. a gyro assembly including a frame secured to said missile, an outer gimbal secured to said frame, an inner gimbal secured to said outer gimbal, and, a rotor mounted in said inner gimbal;

b. reaction-jet torquer means carried in said inner gimbal for torquing said rotor to line of sight with said target, said reaction jet torquer means including a source of pressurized gas carried in said inner gimbal, four sonic nozzles spaced about said inner gimbal 90° apart, four miniature electrically actuated solenoid valves disposed about said inner gimbal 90° apart, each said valve disposed in communication with said source of gas and one of said nozzles;

c. a sensor carried by said inner gimbal for receiving signals from said target and for transmitting signals for activation of said reaction-jet torquer means, and;

d. control means for guiding said missile to the target response to torquing of said rotor.

4,291,850
CONTRACTABLE SHOCK ABSORBER STRUT
Wilbert Sharples, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.
Filed Mar. 19, 1979, Ser. No. 22,211
Int. Cl.[3] B64C *25/10, 25/58*
U.S. Cl. 244—102 SS 7 Claims



1. A contractable single acting shock absorber strut comprising:

an outer cylinder closed at one end and open at the other end;

a centrally open bearing defining the open end of said cylinder;

a strut piston mounted for reciprocation in said cylinder and extendable therefrom through said centrally open bearing, said strut piston being closed at its extendable end and open at its other end whereby shock absorber fluid is free to pass between the interiors of said cylinder and said strut piston;

a contracting piston slideably mounted in said cylinder externally of said strut piston;

a floating piston slideably mounted in the extendable end of said strut piston;

a first constantly open fluid port in said cylinder between said contracting piston and said centrally open bearing;

a second constantly open fluid port in said strut piston between said floating piston and the extendable end of said strut piston;

a source of hydraulic fluid pressure;

a return to said source;

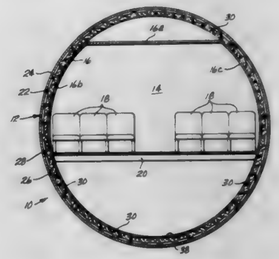
a first fluid duct between each of said first and second fluid ports and said hydraulic fluid source;

a second fluid duct between each of said first and second fluid ports and said return; and

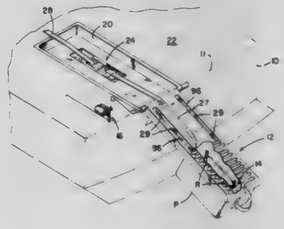
a control valve for said fluid ducts operable to selectively connect either one of said fluid ports to receive hydraulic fluid from said source and simultaneously connect the other of said fluid ports to said return whereby said floating piston may be hydraulically locked in a fixed position while said strut piston is free to reciprocate in said cylinder and may be selectively unlocked while said strut piston is fully contracted into said cylinder.

4,291,851
THERMAL INSULATION FOR AIRCRAFT FUSELAGE
William R. Johnson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Division of Ser. No. 970,773, Dec. 18, 1978, Pat. No. 4,235,398.
This application Mar. 24, 1980, Ser. No. 132,717
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.[3] B32B *3/30*
U.S. Cl. 244—119 5 Claims

1. An insulation panel for an aircraft fuselage having a wall portion including a continuous and substantially uninterrupted inwardly-facing surface; said insulation panel comprising: a self-supporting foam panel of insulating material including an inside face, an outside face, and a plurality of standoffs projecting outwardly from said outside face for contacting said continuous and substantially uninterrupted inwardly-facing surface of said wall portion of said fuselage and providing a space between said insulation panel and said wall portion.



4,291,852
PARACHUTE RELEASE FOR CARGO AIRCRAFT
Gerald C. Simmons, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jul. 2, 1979, Ser. No. 54,102
Int. Cl.[3] B64D *17/62, 17/78*
U.S. Cl. 244—147 10 Claims

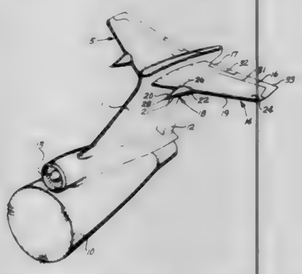


1. Apparatus for releasing parachutes from an aircraft comprising: arm means mounted adjacent an opening in the aircraft for movement between an inboard, face up stowed position and an outboard, face down deployed position; holder means, removably mounted on said arm means, for releasably holding a parachute; means for actuating said holder means and means for controlling said actuating means to selectively release said parachute after said arm is deployed, whereby said holder means may be attached to said parachute at a location remote from said opening and then both may be attached to said arm means while in its inboard, stowed position.

4,291,853
AIRPLANE ALL-MOVING AIRFOIL WITH MOMENT REDUCING APEX
Armand Sigalla, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Continuation of Ser. No. 973,165, Dec. 26, 1978, abandoned.
This application May 5, 1980, Ser. No. 146,386
Int. Cl.[3] B64C *5/02, 21/00*
U.S. Cl. 244—87 22 Claims

1. An all-moving horizontal stabilizer for an aircraft, said stabilizer being rotatable with respect to a fixed portion of the aircraft to which the stabilizer is attached, said stabilizer being rotatable about a control axis extending generally spanwise of the stabilizer from said fixed portion of the aircraft, said stabilizer having a leading edge and a moment reducing apex, said apex projecting forwardly from said leading edge to a tip lying generally in the body plane of said stabilizer, said apex being spaced along said leading edge outwardly from said fixed

portion of the aircraft to avoid substantial adverse interference effects, said apex having oppositely swept inboard and outboard leading edges mutually converging forwardly toward said tip and spaced apart at said leading edge of said stabilizer by a minor fraction of the spanwise length of said leading edge,



said apex having upper and lower apex surfaces which mutually converge spanwise of the stabilizer to said inboard and outboard leading edges of said apex, whereby said apex forms counterrotating airflow vortices to reduce the moment of force required to rotate said stabilizer about said control axis.

4,291,854

RAIL SYSTEM HAVING WHEEL-ENGAGED HYDRAULIC PISTON-AND-CYLINDER ASSEMBLY, AND SUCH AN ASSEMBLY

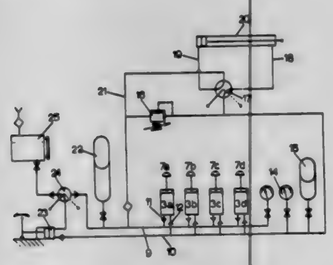
Cornelis P. Pelt, and Hendrikus De Jong, both of Castricum, Netherlands, assignors to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Nov. 5, 1979, Ser. No. 91,342

Claims priority, application Netherlands, Nov. 15, 1978, 7811280

Int. Cl.³ B61L *1/00, 11/06*

U.S. Cl. 246—271 **8 Claims**



1. A rail system for vehicle transport having
(a) a rail track of spaced apart parallel rails,
(b) a set of points,
(c) hydraulically operated means for switching said set of points,
(d) a hydraulic piston-and-cylinder assembly located next to one of said rails of said rail track and having an element projecting into the path of the rail wheels of a rail vehicle passing on said track to be engaged thereby so that the said assembly is actuated by passage of a rail vehicle to provide pressurised fluid, and
(e) a pressure line connecting said piston-and-cylinder assembly to said points switching means whereby said pressurised fluid from the assembly is usable to operate the points switching means.

4,291,855

PIPE CLAMP

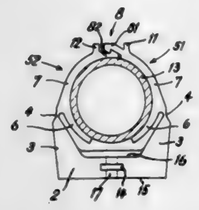
Willi Schenkel, Zurich, and Hans Seger, Schwerzenbach, both of Switzerland, assignors to Egli, Fischer & Co. AG, Zurich, Switzerland

Filed Mar. 14, 1977, Ser. No. 777,526

Claims priority, application Switzerland, Mar. 15, 1976, 3168/76

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74 A **9 Claims**



1. A pipe clamp for clamping a pipe comprising:
an essentially rigid attachment component including a pair of essentially rigid protruding arms with end portions terminating at respective hinge means;
a pair of clamp segments capable of being releasably interconnected with one another carried by said protruding arms;
each clamp segment having upper, lower and intermediate sections;
hinge means positioned between said end portion of each protruding arm and said intermediate section of said clamp segment for pivoting said clamp segment with respect to said protruding arm when said lower section of said clamp segment is engaged by said pipe being clamped;
said upper section of each clamp segment which faces away from the attachment component having its end provided with a locking part cooperating with the locking part at the end of the other clamp segment;
said cooperating locking parts providing locking means for releasably interconnecting said clamp segments,
said locking means being automatically actuatable by the insertion of said pipe into said clamp segments whereby said inserted pipe is engaged in secured relationship within said clamp segments.

4,291,856

ASSEMBLY OF A SEAT FRAME, SLIDE RAILS AND A LOCKING DEVICE

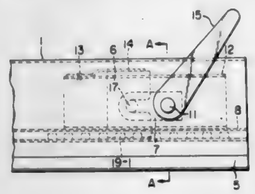
Muneharu Urai, Tokyo, Japan, assignor to Tachikawa Spring Co. Ltd., Tokyo, Japan

Filed Oct. 5, 1979, Ser. No. 82,328

Claims priority, application Japan, Oct. 9, 1978, 53-123564

Int. Cl.³ A47C *29/00*

U.S. Cl. 248—429 **8 Claims**



1. An assembly of a seat frame, slide rails and a locking device, which comprises a rectangular side frame for mounting a cushion material thereon, said rectangular side frame being opened at its lower face, a rectangular upper rail secured within the lower portion of said side frame, said side rail being partly open at its lower face said upper rail having therein sliders with inwardly open grooves, a rectangular reinforcing casing arranged in said side frame above said sliders, said reinforcing casing having slots at its upper and lower faces, a pair of C-shaped lower rails arranged in back-to-back relation with each other and fixed to a chassis of an automobile, said lower rails being slidably engaging with said grooves of said sliders for allowing the longitudinal movement of said upper rail and side frame, said lower rails also having upper tooth engaging portion thereon, a stopper inserted into said slots of said reinforcing casing and having teeth engageable with said tooth engaging portion at its lower end, said stopper with teeth and said reinforcing casing with slots constituting said locking device which is concealed within the inner space of said seat frame, said concealed locking device being engageable with said tooth engaging portion formed in said pair of C-shaped lower rails, said stopper being movable vertically by the action of a handle, thereby enabling the longitudinal movement of said side frame and the engagement between said teeth and tooth engaging portion at any position to hold the seat at the selected position.

4,291,857

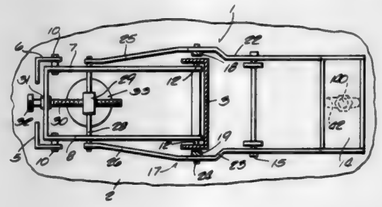
VEHICLE SEAT SUSPENSION

David S. Totten, Greendale, and Thomas J. Worringer, Wauwatosa, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 9, 1979, Ser. No. 92,673

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—559 **10 Claims**



1. A vehicle seat suspension system on a vehicle supporting a seat comprising, a vehicle chassis, a seat adapted for carrying an operator and movably mounted relative to said vehicle chassis permitting essentially vertical movement, resilient means and damping means connected between said seat and said vehicle chassis for resisting relative movement between said seat and said chassis from a neutral position, a lever having a weighted end pivotally connected to said seat and pivotally mounted on said vehicle chassis and extending generally transverse from the direction of movement of said seat producing inertia forces operating with forces of said resilient means and said damping means for absorbing vibrations with a minimum of transmissibility across the seat suspension at predetermined frequencies of vibration, a variable leverage means for varying the leverage of said weighted lever, a seat load adjusting means operating said variable leverage means and adjustably positioning said resilient means and said damping means to thereby compensate for varying seat loads.

4,291,858

CLIP APPARATUS FOR CONCRETE FOUNDATION FORMS

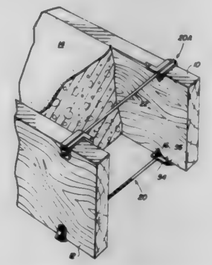
Kenneth L. NeSmith, 12936 E. Galveston, Chandler, Ariz. 85224

Filed May 27, 1980, Ser. No. 153,071

Int. Cl.³ E04G *17/00*

U.S. Cl. 249—216 **16 Claims**

1. Form clip apparatus for securing together in a spaced apart relationship a pair of concrete forms comprising, in combination:
base element means having a single structural member;
first outer end means secured to the base element means and extending substantially perpendicularly thereto;
second outer end means secured to the base element means remote from the first outer end means and extending substantially perpendicularly to the base element means;
first inner support means secured to the base element means and spaced apart from the first outer end means, the first outer end means and the first inner support means adapted



for receiving and supporting a portion of a first concrete form therebetween;
a second inner support means secured to the base element means and spaced apart from the second outer end means for receiving a portion of a second concrete form therebetween for holding the first and second concrete forms in a spaced apart relationship; and
alignment tab means secured to the base element means adjacent the first and second inner support means for aligning the first and second concrete forms in a predetermined relationship.

4,291,859

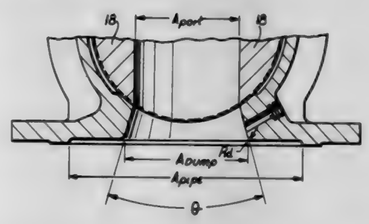
PLUG-TYPE VALVE

Javed Qasim, Diamond Bar; Samuel C. Walker, Fullerton, and Paul A. Longwell, Encinitas, all of Calif., assignors to Aerojet-General Corporation, La Jolla, Calif.

Filed Dec. 10, 1979, Ser. No. 101,625

Int. Cl.³ F16K *5/00*

U.S. Cl. 251—123 **5 Claims**



1. In an improved plug valve apparatus of the type having an inlet, an outlet, and a plug mechanism connected between the inlet and the outlet for selective control of fluid flow between upstream and downstream pipes of cross-sectional area, A_{pipe}, and to which the valve is adapted for connection, the inlet and the outlet each defining a diffuser of equivalent conical angle ϕ and of substantially diverging cross-section with the smallest cross-sectional area thereof, A_{port}, located at the diffuser port adjacent the plug mechanism and the largest cross-sectional area thereof, A_{dump}, located at the diffuser port adapted for connection to a pipe by a transition region between A_{dump} and A_{pipe}, having a transition radius R_d, the improvement comprising:

said valve apparatus in which said transition radius R_d is in the range of 6% to 15% of the diameter of a circle equivalent in area to A_{port}, in which each said diffuser equivalent conical angle ϕ is in the range of 15° to 30°; in which the ratio of A_{dump} to A_{pipe} is in the range of 0.55 to 0.70; and in which the ratio of A_{port} to A_{pipe} is in the range of 0.50 to 0.60.

4,291,860

SOLENOID VALVES, PARTICULARLY FOR CARBURETORS

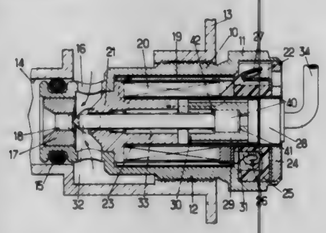
Philippe Bauer, Marly le Roy, France, assignor to Societe Industrielle de Brevets et d'Etudes, Paris, France

Filed Jun. 7, 1979, Ser. No. 46,266

Claims priority, application France, Jun. 28, 1978, 78 19339; Oct. 12, 1978, 78 29156

Int. Cl.³ F16K *31/06*

U.S. Cl. 251—129 **9 Claims**



1. In a solenoid valve comprising:
housing means having a fluid flow opening,
a movable assembly having a first end position and a second end position,
a return spring operatively associated with said movable assembly for biasing it toward said first end position,
an electromagnetic coil carried by said housing and operatively associated with said movable assembly for bringing said movable assembly to said second end position when energized,
said movable assembly comprising an armature and a needle, abutment of said armature with the housing means determining one of said end positions in which said needle defines with said opening a passage of minimum non zero cross sectional area,
the improvement wherein said armature includes a radial bearing surface, and means for continuously biasing said needle into engagement with said bearing surface to prevent relative axial movement of said armature and needle.

4,291,861

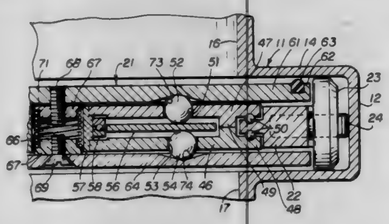
GATE VALVE WITH SLIDEABLE CLOSURE EXPANDABLE UPON OSCILLATION

Carl R. Faria, San Leandro, Calif., assignor to Thermionics Laboratory, Inc., Hayward, Calif.

Filed Aug. 4, 1980, Ser. No. 175,129

Int. Cl.³ F16K *25/00*

U.S. Cl. 251—158 **13 Claims**



1. A gate valve comprising an elongated casing having sides, top, bottom, and first and second ends, first and second ports in said sides adjacent said first end positioned in line, a closure within said body moveable between said first and second ends, and actuating means for moving said closure, said closure comprising a body, a cage in said body having an upper section and a lower section and mounted in said body for arcuate movement relative to said body, rotary elements caged in said upper section extending partially out of said upper section, a gate plate adjacent said upper section formed with depressions positioned to receive said rotary elements, resilient means biasing said gate plate toward said upper section, and cage moving means for imparting arcuate movement to said cage relative to said body and thereby to roll said rotary elements out of said depressions to force said gate plate away from said upper section and into sealing engagement with said first port.

4,291,862

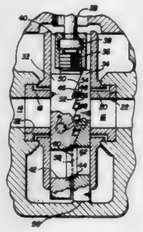
EXPANDING GATE VALVE

Patricio D. Alvarez, Rosenberg; James M. Fowler, Marble Falls, and George A. Moran, Houston, all of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,682

Int. Cl.³ F16K *25/00*

U.S. Cl. 257—167 **8 Claims**



1. A gate valve structure comprising:
a valve body having a valve chamber therein and inlet and outlet flow passages communicating with the valve chamber;
an expanding valve assembly mounted within the valve chamber for reciprocal movement between open and closed positions relative to said flow passages, said expanding valve assembly including a gate and a segment expanding away from each other at the fully closed position, a stem connected to said gate for movement of said gate between the open and closed positions;
said gate and segment having ports therein adjacent one end thereof alignable with said flow passages in the open position of said valve assembly;
said segment and gate having a plurality of contiguous interfitting teeth formed therein between the other end thereof and said ports thereof, said teeth providing a plurality of cam surfaces to effect expansion of the valve assembly upon relative longitudinal movement in one direction between the gate and segment, said segment being carried by said gate and engaging a stop at the fully closed position thereof to permit subsequent relative longitudinal movement of the gate and lateral expansion of the valve assembly at said fully closed position.

4,291,863

ANTIFRICTION DEVICE FOR A VALVE CONTROL SHAFT

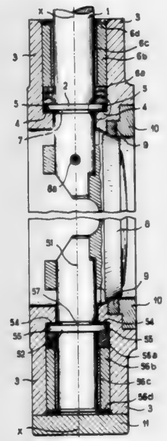
Jean Gachot, 26 bis, avenue de Paris, 95230 Soisy Sous Montmorency, France

Filed Oct. 9, 1979, Ser. No. 82,478

Claims priority, application France, Oct. 17, 1978, 78 29546

Int. Cl.³ F16K *1/22, 41/04*

U.S. Cl. 251—214 **6 Claims**



1. An antifriction device for a valve which serves to regulate the flow of a fluid and especially to withstand high pressures and temperatures, comprising a hollow body to which the fluid inlet and outlet pipes are connected and in which is rotatably mounted a closure member connected to a control shaft having a part extending externally of said body through a packing gland seal, the shaft being provided at the level of the packing gland seal with an annular flange applied with interposition of a washer of creep-deformable material against an annular shoulder of the valve body which surrounds the control shaft, wherein a groove is formed in the periphery of said shaft opposite to said washer, said groove being adapted to receive the washer material after creep deformation of the same in response to high temperature or high pressure to which the valve is subjected, said groove limiting the amount of said creep-deformation.

4,291,864

DRUM WINCHES

Darcie F. Reynolds, 5 Duke St., Forestville, New South Wales 2087, Australia

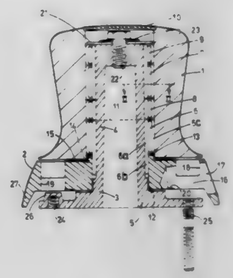
Filed Jul. 24, 1979, Ser. No. 60,005

Claims priority, application Australia, Jul. 26, 1978, PD5237

Int. Cl.³ B66D *1/30*

U.S. Cl. 254—375 **15 Claims**

1. A winch for a yacht comprising:
(a) a supporting shaft structure,
(b) roller clutch means mounted on the shaft structure,
(c) a drum mounted over the roller clutch means and rotatable thereon in a first direction about the shaft structure but restrained by the clutch means against rotation in the opposite rotary direction,
(d) seal means for sealing the roller clutch means from the exterior of the winch, and
(e) the roller clutch means being dimensioned to have a yieldable interference fit between an exterior case member of the roller clutch means and a central bore in said drum, with lubricant disposed between said exterior case member and said central bore, whereby if the load applied to the drum in said opposite rotary direction exceeds a predetermined value, creepage at the interference fit will occur,



said predetermined value being less than that which would damage the roller clutch means.

4,291,865

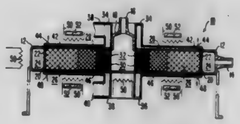
RADIAL COLD TRAP

Brian R. Grundy, Greensburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 22, 1980, Ser. No. 142,785

Int. Cl.³ C21B *3/04*

U.S. Cl. 266—227 **8 Claims**



1. A liquid metal cold trap for removing impurities from a liquid metal stream comprising:
a housing; and
a plurality of concentrically arranged annular mesh bands disposed within said housing with each of said mesh bands having its radial centerline in substantially the same plane whereby said liquid metal stream flows successively substantially radially through each of said mesh bands thereby trapping said impurities in said mesh bands.

4,291,866

SUPPORT FOR WINDSHIELD REPAIR APPARATUS

Paul S. Petersen, Minnetonka, Minn., assignor to Novus Inc., Minneapolis, Minn.

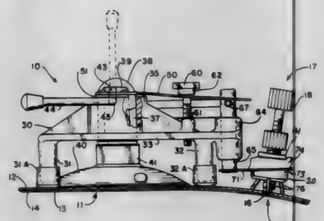
Filed Nov. 13, 1979, Ser. No. 93,197

Int. Cl.³ B25B *3/00, 11/00*

U.S. Cl. 269—1 **19 Claims**

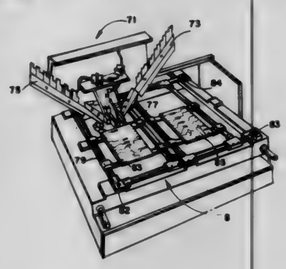
1. A support assembly for supporting an apparatus on a surface such as a windshield comprising a first support member, means for supporting said first member on said surface, a second support member, said second support member including means to engage the surface and independently position and support said second support member on said surface in fixed position relative to the surface, means to mount said second support member to said first support member to permit the second member to rest on the same surface as the first member and including means permitting tilting of said second member relative to the first member whereby said second member can swivel to permit the means to engage the surface

to seek a support plane independent of the first support means, said second member including means to mechanically engage



the surface, and bias means acting between the first and second members to urge the second member against the surface.

4,291,867
AUTOMATIC INSERTION UNIVERSAL WORK HOLDING SYSTEM
Ernest E. Williams, Fullerton, and William M. Brennan, Chino, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jun. 25, 1979, Ser. No. 51,774
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—43 **26 Claims**



1. A work holding system for adjustably holding printed circuit boards for automatic machine component insertion comprising, in combination:

a U-shaped frame having opposed framing members connected by a base framing member to leave an open mouth between the opposed framing members opposite to the base framing member;

an adjustably positionable framing member entending between, and slidable along, the opposed framing members toward and away from said base framing member;

means for locking the adjustably positionable member to the frame;

linear scales carried by each of said members with said scales having a common datum;

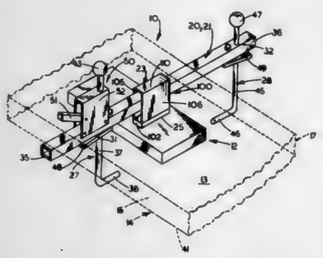
indexing means carried by said frame to index it to said machine for inserting components;

a plurality of adjustable board holders slidably carried by the base framing member and the adjustably positionable framing member;

means for locking said board holders to their respective framing members in positions to receive said circuit boards for attaching same to said frame; and,

indexing means carried by at least one of said receiving board holders for indexing said boards for component insertion by said machines.

4,291,868
CLAMPING APPARATUS FOR WORK TABLE
Barry R. Giles, 1209 Burnside West, Victoria, B. C., Canada (V8Z 1N7)
Filed Dec. 10, 1979, Ser. No. 101,809
Int. Cl.³ B25B *1/06*
U.S. Cl. 269—93 **11 Claims**



1. A clamping apparatus for clamping an item onto a work table, the apparatus including:

(a) a main support member being a generally straight bar, and a jaw member movable longitudinally of the bar and having a clamping surface adapted to contact the item,

(b) first and second engaging members extending from positions spaced along the support member, each engaging member having adjacent an outer end thereof holding means to cooperate with the work table,

(c) lever actuated jacking means having a reciprocable jacking member adapted to engage the first engaging member to move the first engaging member relative to the support member to clamp the item between the clamping surface and the work table, the jacking member also being disengagable from the engaging member to permit quick adjustment of the engaging member relative to the support member to accommodate quickly items of widely differing sizes.

4,291,869
WORKBENCH
Ronald P. Hickman, Waltham Abbey, England, assignor to Tekron Licensing B.V., De Leersum, Netherlands
Division of Ser. No. 781,841, Mar. 28, 1977, Pat. No. 4,159,821, which is a division of Ser. No. 642,742, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 511,017, Oct. 1, 1974, abandoned, which is a continuation of Ser. No. 277,118, Aug. 1, 1972, abandoned. This application Mar. 12, 1979, Ser. No. 19,753
Claims priority, application United Kingdom, Aug. 2, 1971, 36269/71; Nov. 22, 1971, 54165/71
The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.
Int. Cl.³ A47B *3/08*; B25B *1/10, 1/24*
U.S. Cl. 269—139 **10 Claims**

1. A portable combined workbench and sawhorse, comprising:

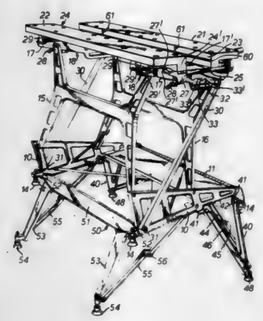
a worktop, including a unitary vise structure having a fixed jaw and a movable jaw, the upper surfaces of said jaws lying in substantially the same plane and defining the working surface of said worktop;

a collapsible supporting structure for the worktop, including means providing a first, lower position of the worktop facilitating a sawhorse mode of operation and a second, higher position of the worktop facilitating a workbench mode of operation;

clamping means operatively coupled between the fixed jaw and the movable jaw for moving the movable jaw relative to the fixed jaw in said plane to securely hold a workpiece therebetween;

each of said jaws having a plurality of apertures formed through the upper surface thereof;

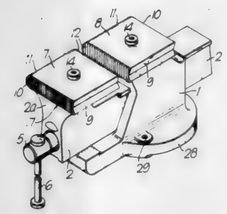
a plurality of abutment members adapted to be positioned within selected ones of the apertures in the respective jaws, each abutment member including means defining at least one abutment face which is rotatable relative to the upper surface of the jaw;



the clamping means further including means for moving said movable jaw into a substantially non-parallel relationship with respect to said fixed jaw to facilitate the gripping between the abutment members of the respective jaws of an irregularly-shaped workpiece; and

means for constraining said movable jaw against any substantial movement out of said plane during gripping of a workpiece, while permitting said movable jaw to be moved relative to said fixed jaw as aforesaid.

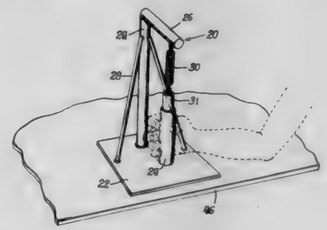
4,291,870
VICES
Laurence Warde, Rosevilla, Station Rd., Ballinasloe, County Galway, Ireland
Filed Nov. 28, 1979, Ser. No. 97,988
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—279 **10 Claims**



1. In a vice having a pair of gripping elements, the opposing gripping surfaces of which may be brought into engagement with a workpiece located between said gripping elements, thereby to clamp the workpiece in position,

the improvement wherein at least one of said gripping elements has a gripping surface in which are provided screw threaded housings, and comprising screw threaded shanks which can be screwed home in said screw threaded housings to lie beneath the plane of said gripping surface, and which can be screwed outwardly relative to said at least one gripping element to protrude from the plane of said gripping surface, thereby to provide supports for a further gripping surface which can be suspended from the supports.

4,291,871
EXERCISING AND METHOD FOR EXERCISING FINGER, HAND AND ARM MUSCLES
Wilmot T. Lippert, 1075 E. North St., Galesburg, Ill. 61401
Filed Jul. 28, 1980, Ser. No. 173,024
Int. Cl.³ A63B *23/00, 21/30*
U.S. Cl. 272—68 **5 Claims**



1. A finger, hand and arm muscle exerciser comprising:

a base having a horizontal bottom surface for support on a table or desk top or the like in use;

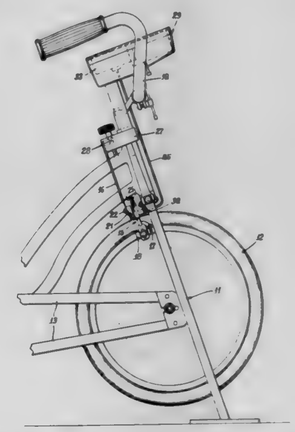
a stanchion including a post extending upwardly from the base;

a coil spring suspended at the top end from the stanchion at a location spaced above the base about a vertical axis intersecting the base inside the horizontal margins thereof to provide stability therefor when pulled downwardly;

an elongated hand grip suspended vertically from the bottom end of the spring and terminating above the base to enable downward displacement by a pull on said spring;

whereby the exerciser may be operated by grasping the hand grip and applying squeezing forces to the hand grip by the user's individual fingers in sequence while simultaneously pulling the hand grip downwardly during said sequence against the bias of the spring.

4,291,872
ERGOMETRIC EXERCISER WITH FLUID-ACTUATED INDICATOR
Frank P. Brilando, Niles, and Eugene J. Szymski, Skokie, both of Ill., assignors to Excelsior Fitness Equipment Co., Northbrook, Ill.
Filed Apr. 20, 1979, Ser. No. 32,242
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—73 **8 Claims**



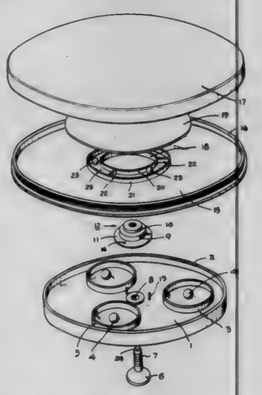
1. A bicycle-type ergometric exerciser, comprising support

means, a wheel rotatably mounted on said support means, pedal means actuated by an operator to rotate said wheel, a frame mounted on said support means for movement relative thereto, adjustable brake means mounted on said frame for frictionally engaging said wheel and moving said frame in response to rotation of said wheel in accordance with the work rate input by an operator in actuating said pedal means, gauge means for indicating said work rate input, and hydraulic transducer means transmitting the movement of said frame to said gauge means.

4,291,873
EXERCISE DEVICE

Jin W. Lee, 249-1, Dongbinggo-dong, Yongsan-ku, Seoul, and Jin S. Kim, 27-49, Sujin-dong, Songnam-shi, Kyongki-do, both of D.P.R. of Korea

Filed Oct. 23, 1979, Ser. No. 87,588
Claims priority, application D.P.R. of Korea, Dec. 22, 1978, 78-6449[U]; Jan. 12, 1979, 79-119[U]; Jan. 12, 1979, 79-120[U]
Int. Cl.[3] A63B *23/04*; A63G *1/12*
U.S. Cl. 272—146 **12 Claims**



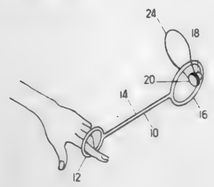
1. An exercise device comprising:
a base plate;
a turning disc mounted above said base plate for rotary and orbital movement with respect to said base plate;
bearing means interposed between said base plate and said turning disc;
said turning disc having therethrough a central opening;
means supported by said base plate for cooperation with the edge of said opening in said turning disc for limiting the range of said orbital movement of said turning disc with respect to said base plate;
means associated with said limiting means for selectively adjusting the range of said orbital movement of said turning disc; and
said turning disc further including means for supporting the weight of the user who imparts a force to said weight supporting means which reacts with said orbital movement limiting means and said bearing means to impart a rotary and orbital movement to said turning disc relative to said base plate.

4,291,874
FINGER TWIRLED TOY WITH BALANCING MASS

Mark Peterson, 20 S. Pontiac Dr., Janesville, Wis. 53545

Filed Oct. 25, 1979, Ser. No. 88,163
Int. Cl.[3] A63B *71/00*
U.S. Cl. 273—1 GF **14 Claims**

1. A toy adapted to be twirled on a finger of a user, comprising:
(a) a primary manipulating ring adapted to encircle the finger of the user of the toy in freely slidable relation,
(b) a connector extending from the primary manipulating ring for a selected distance and rigidly connected thereto,
(c) a substantially ring-shaped primary pedestal holder rigidly connected to the connector at a point remote from the primary manipulating ring,
(d) a substantially spherical pedestal rigidly attached to the primary pedestal holder so as to substantially face the primary manipulating ring,

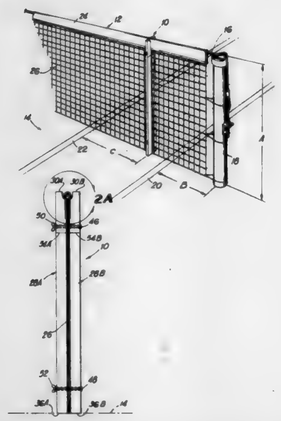


(e) a balancing mass adapted to balance on the pedestal in removable relation, and
(f) a retaining loop of flexible material fastened to the balancing mass and looped through the primary pedestal holder, whereby the retaining loop may slide about the primary pedestal holder while the balancing mass is prevented from falling free from the toy when it is not balanced on the pedestal.

4,291,875
SPLIT-SINGLES STICK FOR TENNIS COURTS

Allan J. Smith, Jr., 1621 Old Springhouse La., Dunwoody, Ga. 30338

Filed Jul. 10, 1979, Ser. No. 56,322
Int. Cl.[3] A63B *71/02*
U.S. Cl. 273—29 B **3 Claims**

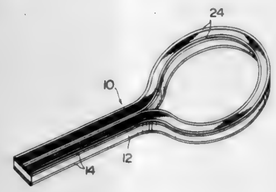


1. A device to lift a tennis net to its regulation height above the ground for singles tennis play on a doubles court, the net being of the type having a top cable, a band surrounding the cable and netting vertically depending from the bottom of the band, comprising: a pair of rigid halves, each of said halves having a face; means on each of said faces for receiving said net therebetween; a flat lower surface on each of said halves which abuts the ground; and means for releasably securing together on opposite sides of said net said halves in an assembled condition so that said faces are in opposed relationship so as to maintain said net in a vertical plane with said net being compressed between said faces, wherein each of said receiving means includes each of said halves having a flat upper surface, said halves having oppositely directed, longitudinally extending arcuate grooves formed at the juncture of said upper surfaces and said opposed faces and having longitudinally extending L-shaped slots through said opposed faces beneath said grooves, said grooves defining a cavity to receive therein said cable and said slots defining a channel to receive therein said band.

4,291,876
FRP RACKET FRAME

Shigeji Hasegawa, Chiba, Japan, assignor to Hasegawa Chemical Industry Co., Ltd., Chiba, Japan

Filed Feb. 13, 1980, Ser. No. 121,053
Claims priority, application Japan, Feb. 22, 1979, 54-20074
Int. Cl.[3] A63B *49/02*
U.S. Cl. 273—73 F **1 Claim**

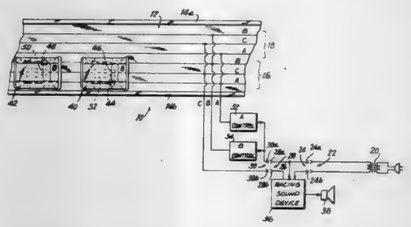


1. In a racket frame comprising a frame core including a handle portion, a throat portion and a head loop portion, and FRP sheets adhered to the ball-striking faces of the frame core, the improved racket frame wherein:
each of said FRP sheets is made by slicing a curved laminated body formed into the same configuration as that of the ball-striking face of the frame core by molding a straight laminated body consisting of a plurality of FRP plate elements and protective plates arranged in side-by-side relation,
each of the FRP plate elements is formed by long, continuous reinforcing rovings extending from one end of the plate element to the other end of the plate element and, while under uniform tension, being uniformly impregnated with a thermosetting resin,
said protective plates are arranged at the innermost and outermost sides of the curved laminated body, and
said FRP sheets are adhered to the ball-striking faces of the frame core at least in a region of said handle portion, said throat portion, and a part of said head loop portion.

4,291,877
TOY VEHICLE ENGINE SOUND DEVICE

Burt W. Ensmann, Flushing; Fredric M. Kuriloff, New York, and William Rosenhagen, Ossining, all of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,718
Int. Cl.[3] A63F *9/14*; A63H *5/00*
U.S. Cl. 273—86 B **13 Claims**

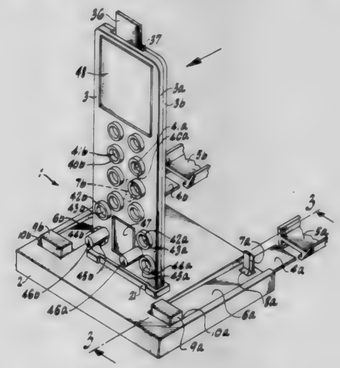


1. An electric toy vehicle system of the type in which at least one controller controls electric power to at least one toy vehicle, comprising:
means for sensing current in said electric power; and
means for producing an acoustic output having a characteristic which is varied in response to said means for sensing current;
said means for sensing current including a resistor in series with said electric power, said resistor being operative to develop a voltage thereacross in response to said current; and
wherein said electric current is alternating current, said voltage is an alternating voltage, and said means for sensing current further includes means for detecting said alternating voltage.

4,291,878
STARTING GATE FOR A MULTIPLE-TRACK TOY VEHICLE RACING SET

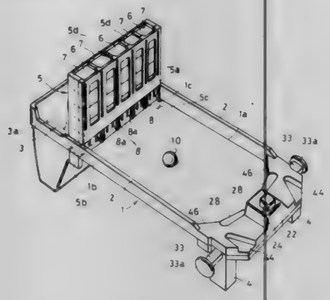
Dietmar Nagel, 147 South Rd., Chester, N.J. 07930, and Melvin Kennedy, 2 Fifth Ave., New York, N.Y. 10011

Filed Aug. 17, 1979, Ser. No. 67,229
Int. Cl.[3] A63F *9/14*
U.S. Cl. 273—86 R **15 Claims**



1. A starting gate for use in connection with a multiple track toy vehicle racing arrangement for releasing self-propelled toy vehicles onto the tracks, comprising a base bounding a cavity and and having plurality of bays each for one of the vehicles and each aligned with one of the tracks; a plurality of starting elements each mounted in said cavity for independent displacement between an extended and a retracted position and each having a blocking portion retaining the respective vehicle in the respective bay in said extended position and releasing said respective vehicle for travel from said respective bay onto the respective track in said retracted position of said starting element, and an actuating portion displacing said starting element at least into said retracted position upon actuation; means for biasing said starting elements toward said extended position including a leaf spring mounted on said base within said cavity and acting on the respective starting element, first indicating means for indicating a countdown sequence preceeding the start; and second indicating means for indicating a premature displacement of a respective starting element into said retracted position prior to the termination of said countdown sequence.

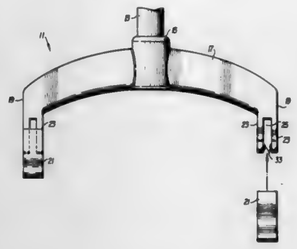
4,291,879
BALL HITTING GAME
Nobuo Nagato, Tokyo, Japan, assignor to Ohkuma Seisakusho Co., Ltd., Japan
Filed May 15, 1980, Ser. No. 150,008
Claims priority, application Japan, Aug. 11, 1979, 54-110936[U]
Int. Cl.³ A63D *3/02*
U.S. Cl. 273—119 R **12 Claims**



1. A toy for playing a ball-hitting game comprising,
a body member having a ball-rolling face on which a ball may be rolled;
ball container means disposed on one end of said ball-rolling face to store said ball therein;
ball discharge means for discharging said ball stored in said ball container means onto said ball-rolling face;
ball-hitting means for hitting said ball discharged onto said ball-rolling face by said ball discharge means;
magazine means disposed on the other end of said ball-rolling face to store therein a plurality of target blocks in a stacked relation;
target block discharge means disposed on the lower portion of said magazine means for discharging target blocks stored in said magazine means one by one from said magazine means through an impinging force of said ball rolling on said ball-rolling face; and
pocket means arranged adjacently to said magazine means to receive each of said target blocks discharged by said target block discharge means;
wherein the ball-rolling face of said body member is sloped so that the ball on said ball-rolling face is ordinarily rolled from said magazine means toward said ball container means.

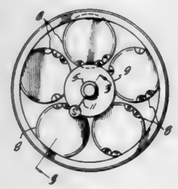
4,291,880
SHUFFLEBOARD CUE WITH REPLACEABLE RUNNER
Earl G. Caunter, Kimbolton, Ohio, assignor to Allen R. Shuffleboard Company, Seminole, Fla.
Filed Dec. 15, 1978, Ser. No. 970,030
Int. Cl.³ A63B *71/00*
U.S. Cl. 273—129 L **9 Claims**

1. A shuffleboard cue head for propelling a disk along a shuffleboard court comprising:
a forked frame adapted for mounting to a handle, said frame including forwardly extending arms having first coupling means at the ends thereof for pivotally coupling detachable contact elements to the ends of said arms;
detachable contact elements mounted on said arms, said detachable contact elements including second coupling means for engaging said first coupling means of said arms to thereby pivotally mount said detachable contact elements to said arms, said first and second coupling means allowing said contact elements to be easily snapped onto and off of said arms;
one of said first and second coupling means including a pair of laterally spaced cantilevered resilient members and the other including a web for insertion between said cantilevered resilient members, one of said first and second coupling means including protrusions which engage recesses in the other of said coupling means, and one of said coupling means including a shoulder and the other including



a shoulder follower for guiding the cantilevered resilient members and the web into relative positions when they are urged toward one another for bringing the protrusions and recesses into engagement;
whereby said contact elements can be quickly attached and detached to and from said arms.

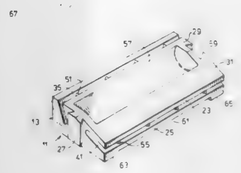
4,291,881
KALEIDOSCOPIC GAME DEVICE
Reuben B. Klamer, 969 Hilgard Ave., Los Angeles, Calif. 90024
Filed Nov. 5, 1979, Ser. No. 91,052
Int. Cl.³ A63F *5/04*
U.S. Cl. 273—142 H **5 Claims**



1. A kaleidoscopic game device for the generation of randomly selected data, said device comprising a circular housing; a base wheel rotatable within said housing upon needle means attached to said housing; a recessed portion in said housing, said recessed portion located annularly about the interior periphery of said housing above said base wheel; a plurality of wheels having data thereon, said wheels having a diameter less than the radius of said base wheel, one edge of each said wheel resting in said recessed portion of said housing and the opposite edge of each said wheel resting on said base wheel such that each said wheel is freely confined and rotatable upon movement of said base wheel; and indicator means for selecting said data.

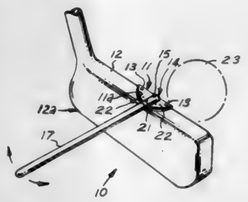
4,291,882
BINGO CARD HOLDER
Samie J. Del Monte, 84 Sunset St., Buffalo, N.Y. 14207
Filed Aug. 25, 1980, Ser. No. 180,837
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—148 A **12 Claims**

1. A holder for a plurality of bingo cards to be played simultaneously by a single player which comprises a body having at least a pair of holding means, each of which is capable of supporting a bingo card, with such cards being holdable so that



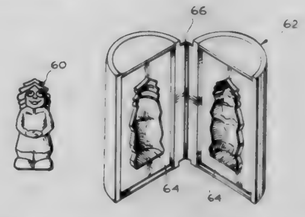
one is substantially horizontal and another is substantially vertical.

4,291,883
ADJUSTABLE PUTTER BLADE SIGHT
Isaac W. Smart, and Ethel D. Smart, both of Cass City, Mich.
Filed Jun. 9, 1980, Ser. No. 157,664
Int. Cl.³ A63B *53/00*
U.S. Cl. 273—163 R **2 Claims**



1. An adjustable putter blade sight, comprising, in combination, a mounting plate, secured to the top surface of the blade of a golf club, a cylindrical member pivotally secured, at one end, to said mounting plate, a spring and a ball secured in said cylindrical member, providing detent means for rendering said cylindrical member stationary at various degrees on said mounting plate, and a sight rod, removably received in said cylindrical member; said mounting plate being secured to the top surface of said blade of said gold club by suitable screw fasteners, one at each end, adjacent to the striking face of said blade of said golf club, and one end of said cylindrical member is secured, by a transverse pivot pin, to said mounting plate, adjacent to said striking face of said blade of said golf club, and said transverse pivot pin is fixedly secured in said top surface of said mounting plate; and said ball and spring being freely received in a transverse opening through said cylindrical member, spaced apart from said transverse pivot pin, and said spring urges against a plug fixedly secured in one end of the opening receiving said ball and spring, and the opposite end of said spring urges said ball into any one of a plurality of radially spaced-apart recesses included in the top surface of said mounting plate, the recesses providing the means of adjusting said cylindrical member to any desired angle with respect to said striking face of said blade of said golf club.

4,291,884
BOARD GAME APPARATUS AND METHOD OF PLAYING
Sidney Bass, Los Angeles, and Gary W. Pimentel, Fountain Valley, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 13, 1979, Ser. No. 103,140
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—249 **5 Claims**



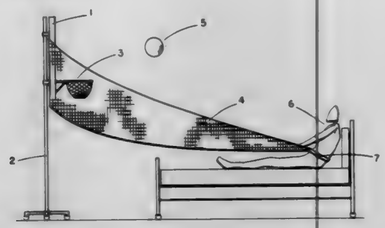
2. A game comprising a plurality of playing pieces which include material which may be molded, deformed, and remolded during the game;
a game path having a plurality of positions to which the playing pieces are moved, certain of said positions requiring variation in the play of the game depending on the physical characteristics of the playing pieces landing thereon;
means for determining the number of positions over which a playing piece is to be moved;
means for changing the physical characteristics of playing pieces landing on certain of the positions; and means for measuring the physical characteristics of the playing pieces so that the play of the game is affected by the measured change of the pieces.

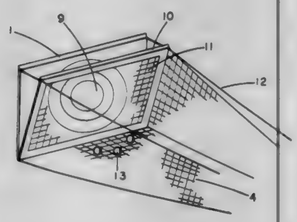
4. A method of playing a game comprising the steps of molding playing pieces of different colored deformable materials, moving such playing pieces in accordance with game instructions along a game path defined by a number of positions some of which are colored, distorting the shape of playing pieces which land on positions along the game path colored to match those of an opposing playing piece, and measuring the size of a playing piece to determine its movement.

4,291,885
BALL RECOVERY SYSTEM
Robert S. Cohen, 15021 Lemay St., Van Nuys, Calif. 91405
Filed Sep. 4, 1979, Ser. No. 72,192
Int. Cl.³ F41J *1/00*; A63B *63/08, 69/00*
U.S. Cl. 273—347 **8 Claims**

1. A recreational device, comprising:
(a) A backboard;
(b) A frame connected to the said backboard on the lower edge with a hinge device and resting flush with the said backboard;
(c) A screen connected within said frame;
(d) A flexible line connected to the top of said frame;

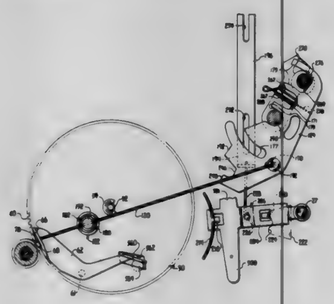
(e) An open top trough recovery device connected to said backboard;





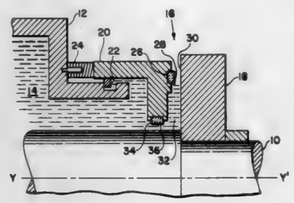
(f) A strap connected to said recovery device;
(g) A set of adhesive coated balls.

4,291,886
AUTOMATIC RECORD CHANGER
James T. Dennis, P.O. Box 15100, Oklahoma City, Okla. 73115, and George Kolomayets, Chicago, Ill., assignors to James T. Dennis, Oklahoma City, Okla.
Continuation of Ser. No. 813,225, Jul. 5, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,254
Int. Cl.[3] G11B *17/08*
U.S. Cl. 369—203 **87 Claims**



1. In an automatic record player, the combination of, a main cycling gear, means for rotating said gear one revolution during an automatic cycle, a tone arm mounted for rotation about a fixed point which is spaced from said gear, an elongated link member, means interconnecting one end of said link member with said tone arm at a point offset from said mixed point, said link member having an elongated slot therein, and a pin secured to said gear at a point offset from the center thereof and positioned in said slot, said pin having a cross section such that as said gear rotates said pin becomes wedged against the sides of said slot and connects said gear to said link member as said gear continues to rotate, whereby said tone arm is thereafter driven by said link and rotated about said fixed point.

4,291,887
MODIFIED FACE SEAL FOR POSITIVE FILM STIFFNESS
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Izhak Etsion, Haifa, Israel, and Abraham Lipshitz, University Heights, Ohio
Filed Nov. 7, 1979, Ser. No. 92,145
Int. Cl.[3] F16J *15/34, 15/40*
U.S. Cl. 277—27 **4 Claims**

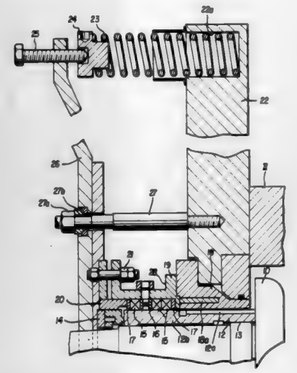


1. In apparatus for sealing a rotatable shaft extending into a container of fluid of the type having a seat member mounted on said shaft for rotation therewith and an annular seal ring member extending around said shaft in spaced relationship thereto for reciprocating movement toward and away from said seat along the axis of rotation of said shaft with means for biasing said ring member into engagement with said seat wherein said ring member has a substantially circular face directed toward said seat and a substantially cylindrical face spaced from said shaft, the improvement comprising
a circular member rigidly mounted on said ring member in said circular face and having a planar surface extending therefrom toward said seat for sealing engagement therewith by action of said biassing means when said shaft is stationary thereby forming a face seal, said planar surface being moved out of engagement with said seat by a hydrostatic opening force when said shaft is rotating resulting from a flow of said fluid between said shaft and said cylindrical face to said seat, and
a tubular member rigidly mounted on said ring member in said cylindrical face and having a curved surface extending therefrom toward said shaft to form a circumferential clearance seal in series with said face seal to restrict said flow of said fluid to said seat thereby controlling said hydrostatic opening force, the radial width of said planar surface on said circular member being substantially equal to the axial width of said curved surface on said tubular member to provide a predetermined axial stiffness of said face seal so that the spacing between said planar surface and said seat when said shaft is rotating is substantially the same as the spacing between said curved surface and said shaft.

4,291,888
ROTOR SHAFT SEALING MECHANISM IN SYNTHETIC RESIN KNEADING MACHINES OR EXTRUDERS
Takehiko Tanaka, Nishinomiya, and Masahide Kanzawa, Kobe, both of Japan, assignors to Kobe Steel, Limited, Kobe, Japan
Filed Jan. 24, 1980, Ser. No. 115,049
Int. Cl.[3] F16J *9/04, 15/38*
U.S. Cl. 277—65 **3 Claims**

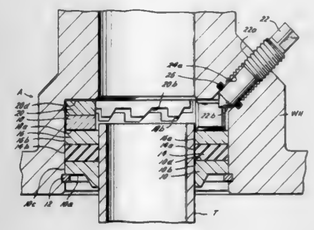
1. A rotor shaft sealing mechanism for a synthetic resin kneading machine, comprising:
a rotor shaft having an end;
a reverse screw means mounted on said rotor shaft end, said reverse screw means including a reverse screw portion of a predetermined length and a second portion;
a housing means;
a supporting means securing said housing means around said reverse screw portion;

a gland packing mounted on said second portion of said reverse screw means;
a holder means contacting said gland packing and maintaining said gland packing on said second portion;
a retaining means;



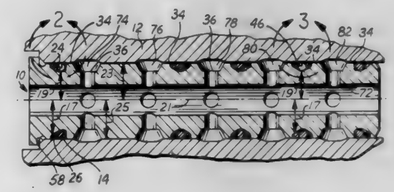
a seal means disposed between said reverse screw means and said retaining means; and
resilient means extending between said supporting means and said retaining means for resiliently connecting said supporting and retaining means, whereby said retaining means resiliently contacts said seal means.

4,291,889
SEAL FOR WELLHEADS
Phillip Hardcastle, Houston, Tex., assignor to Cactus Pipe & Supply Co., Inc., Houston, Tex.
Filed Aug. 18, 1980, Ser. No. 179,021
Int. Cl.[3] F16J *15/18*
U.S. Cl. 277—116.4 **2 Claims**



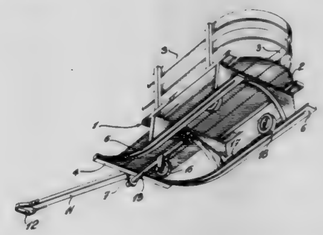
1. An annular seal assembly adapted for use in wellheads to seal between a well conduit and the wellhead, including:
a resilient seal ring adapted to be placed between the outer surface of the well conduit and the inner surface of the wellhead for sealing deformation therebetween to block passage of well fluids;
a follower ring disposed adjacent said resilient seal ring for controlling deformation of said seal ring to effect the desired seal in response to the application of a longitudinal oriented force to said follower;
means operably connected with said packing follower for urging in a longitudinal oriented direction on said packing follower to deform said seal ring, said means for urging including a pair of cooperating actuating rings having means for converting relative rotational movement therebetween to longitudinal expansion of said actuating rings for providing the longitudinal oriented force; and
said actuating rings forming a gapped opening with one of said rings forming a first side of said gapped opening and the other of said actuating rings forming a second side of said gapped opening to produce relative rotational movement between said actuating rings by expanding said gapped opening.

4,291,890
VALVE SEAL WITH O-RING AND BACKUP RING
James V. Walker, Redondo Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Oct. 15, 1979, Ser. No. 85,107
Int. Cl.[3] F16J *15/18*
U.S. Cl. 277—165 **12 Claims**



1. An improved seal to close the annular space between an inside cylindrical sleeve and a surrounding valve comprising:
a circumferential groove on said sleeve facing outward toward said valve, said groove having two edges perpendicular to said axis of said sleeve, said groove having a flat bottom surface parallel to the axis of the sleeve at its deepest portion and said groove having at least one enlarged conical surface extending from the flat bottom of said groove to an edge of said groove, said conical surface defining a transitional surface between the bottom of said groove and the edge of said groove;
a solid toroidal shaped elastomeric ring mounted on said flat surface of said circumferential groove on said inside cylindrical sleeve, said ring having an inside diameter which requires mounting of said O-ring on the flat bottom surface of said groove, the cross section of said O-ring of sufficient size to be compressed between the flat bottom surface of the groove and the opposing side of the valve;
a solid toroidal shaped backup ring mounted on said conical surface of said circumferential groove on said inside cylindrical sleeve, said ring having an internal diameter permitting mounting said ring on said conical surface of said groove, said backup ring having a cross-sectional area sufficient to prevent the O-ring from being extruded into said annular space when pressure is applied to the seal.

4,291,891
CONVERTIBLE SLED
Claude Blanchette, 6550 Sherbrooke West, Apt. 1808, Montreal, Canada (H4B 1N6)
Filed May 2, 1980, Ser. No. 131,203
Int. Cl.[3] B62B *13/18*
U.S. Cl. 280—9 **5 Claims**



1. A convertible sled comprising an elongated seat; two

longitudinally spaced-apart supports rigidly secured to the underside of said seat; a pair of laterally spaced-apart runners rigidly secured in turn to the lower portions of said supports; a plate extending vertically and downwardly from the front of said seat; a first rod extending through and journalled in a hole provided therefor in said plate at its front end and also extending through and journalled in another hole provided therefor in the frontmost support at its rear end; a second and a third rod each rotatably secured at either end to the lower portion of said supports on either side of said sled adjacent said runners, said three rods extending longitudinally of said seat; further comprising a front wheel carried by the said first rod and a pair of rear wheels carried by the corresponding second and third rod respectively; each wheel rotatable about its axis, the latter being transverse to the long axis of the associated rod, a linkage means operatively connecting said first rod to said second and third rods whereby rotation of said first rod causes rotation of said second and third rods through an equal angle; an operating lever integrally attached to the frontmost portion of said first rod; whereby said operating lever can be moved from a first operative position wherein said three wheels are vertically oriented and in contact with the surface over which the sled is travelling, extending slightly below the plane defined by said runners, and a second inoperative position wherein said three wheels are horizontally oriented and retracted upwardly from the plane defined by said runners.

4,291,892

SNOW VEHICLE

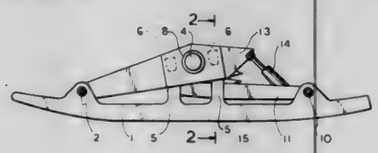
Gert Berthold; Dieter Dreyhaupt; Helmfried Dunse; Erich Henker, and Bernd Viehweg, all of Karl Marx Stadt, German Democratic Rep., assignors to VEB Wissenschaftlich-Technisches Zentrum Automobilbau, Karl Marx Stadt, German Democratic Rep.

Filed Aug. 22, 1979, Ser. No. 68,715

Claims priority, application German Democratic Rep., Sep. 28, 1978, 208102

Int. Cl.³ B62M *27/00*

U.S. Cl. 280—28 **6 Claims**



1. In a snow vehicle, an undercarriage comprising, in combination, a pair of elongated runners each having a leading end portion, a trailing end portion, and a mid-portion therebetween and having an upright part; an arm on each runner and having one end section pivoted to the leading end portion of the runner on a transverse pivot axis, another end section above said mid-portion and having a pocket into which said upright part extends with clearance, an intermediate section between said end sections, and a mounting part depending from said intermediate section; a link member having spaced ends pivoted to said mounting part and to the trailing end section of the runner, respectively; and resiliently yieldable biasing means interposed between and coacting with said link member and said other end section of the arm, respectively.

4,291,893

COUPLING GUARD

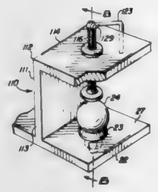
Robert N. Hansen, Avondale, Ariz., assignor to William M. Campbell; Norma J. Campbell; Wesley Bogdan; Robert Clements; William Krone; Keith Krone; Thomas Kovacic; Arlon Stickel and Walter C. Aurea, all of Phoenix, Ariz.

Division of Ser. No. 912,401, Jun. 5, 1978, Pat. No. 4,208,065.

This application Jan. 25, 1980, Ser. No. 115,365

Int. Cl.³ B60D *1/06*

U.S. Cl. 280—507 **5 Claims**



1. A guard for use in combination with a coupling for detachably securing a towed vehicle to a towing vehicle, said coupling including,

an upstanding ball element having a depending attachment shank received through a bore in a mounting member extending rearwardly from said towing vehicle, and

an inverted socket element carried at the free end of a tongue extending forwardly from said towed vehicle,

said socket element being detachably engaged downwardly over said ball element,

and for selectively limiting the upward movement of said socket element relative said ball element, said guard comprising:

a. a base securable to said mounting member and including,

i. a first section upstanding from said mounting member, and

ii. a second section extending from said first section over said ball element and spaced from said ball element to receive said socket element therebetween; and

b. retention means including

i. an aperture extending through said second section and having camming means therein; and

ii. a shaft extending through said aperture and having an upper end and a lower end and having complementary camming means operatively engaged with said camming means

thereby rotation of said shaft in one direction extends the lower end thereof toward said ball element and rotation of said shaft in a counter direction retracts the lower end thereof from said ball element.

4,291,894

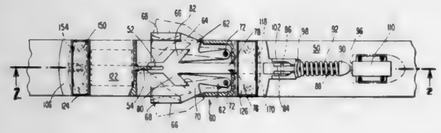
ELECTRICAL SKI BOOT RELEASE

Nicholas F. D'Antonio, 7695 Admiral Dr., Liverpool, N.Y. 13088, and Richard L. Bates, 125 Hillside Way, Camillus, N.Y. 13031

Filed May 7, 1974, Ser. No. 467,821

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—612 **48 Claims**



1. A system for operating ski binding means releasably mounting a ski boot on a ski, said system comprising:

(a) at least one sensing means for sensing at least one type of force between the ski and ski boot in magnitude to the magnitude of at least one of the forces being sensed;

(b) second means electrically connected to said sensing means, said second means receiving and responding to the magnitude and duration of said first electrical signal to produce at least one second electrical signal, said second electrical signal being a function of the magnitude of said forces and of at least one non-instantaneous time characteristic thereof;

(c) third means electrically connected to said second means, said third means being responsive to the signals produced by said second means to produce an actuating signal when said second electrical signal exceeds at least one predetermined value; and

(d) actuating means electrically connected to said third means, said actuating means receiving and responding to said actuating signal to release the ski binding means to allow the ski boot to be separated from the ski.

4,291,895

TORSION-BAR WHEEL SUPPORT FOR TRAILER

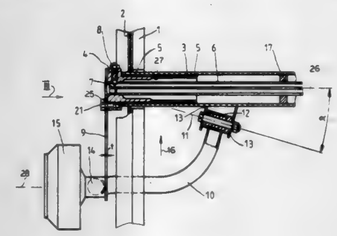
Rudolf Wöhrle, Ichenhausen, and Robert Köhler, Kemnat, both of Fed. Rep. of Germany, assignors to Alois Kober KG, Kötz, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,224

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851829

Int. Cl.³ B60G *11/18*

U.S. Cl. 280—723 **10 Claims**



1. An assembly for movably supporting a nondriven wheel on a frame of a trailer-type vehicle adapted to travel along the ground in a normal horizontal transport direction, said assembly comprising:

a torsion bar extending horizontally substantially perpendicular to said direction and having an inner bar end anchored to said frame and an outer bar end limitedly elastically pivotal about the bar axis relative to said inner bar end;

an arm extending generally perpendicular to said bar axis and generally in said direction and having an inner arm end fixed to said outer bar end and an outer arm end, said arm being substantially inflexible angularly of said bar axis between said arm ends so that same cannot move angularly relative to each other and being relatively flexible parallel to said bar axis between said arm ends so that same can move relative to each other parallel to said bar axis;

a substantially rigid and inflexible wheel-support strut having an outer strut end connected to said outer arm end and an inner strut end;

bearing means on said frame mounting said strut at said inner strut end for pivoting of said strut about a strut axis skew to said bar axis and passing through said inner strut end, whereby as said strut pivots about said strut axis said bar twists about said bar axis, said outer strut end moves parallel to said axis, and said arm deforms between said outer strut and bar ends with relative displacement parallel to said bar axis of said arm ends; and

means at said outer strut and arm ends for mounting a wheel for rotation about a wheel axis substantially parallel to said bar axis.

4,291,896

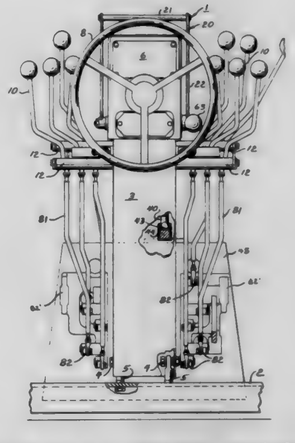
ADJUSTABLE STEERING WHEEL AND CONTROL LEVER CONSOLE

Otto E. Koch, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Nov. 2, 1979, Ser. No. 90,567

Int. Cl.³ B62D *1/18*

U.S. Cl. 280—775 **16 Claims**



1. A steering unit and control lever console for a vehicle comprising

tower means for supporting a vehicle steering wheel unit and at least one vehicle control lever,

bearing means pivotally mounting said tower means in an upward position on a vehicle for movement about a transverse axis to adjust the position of said tower means,

steering wheel housing means selectively retaining the vehicle steering wheel in a fixed position on said tower means,

steering wheel housing means selectively retaining the vehicle steering wheel in a fixed position on said tower means,

said steering wheel housing means including adjustment means to permit selective pivotal movement of said steering wheel housing means relative to said tower means for adjustment of the position of the vehicle steering wheel,

locking means for locking said tower means against pivotal movement upon movement of the tower means to an adjusted position,

release means for disengaging said locking means and pivotally moving said tower means to an adjusted position,

said release means including handle means pivotally mounted on a rotatable shaft and being manually movable in a selected direction for rotating said shaft and moving said tower means to an adjusted position,

said release means further including yoke means operatively coupled to said locking means to disengage said locking means upon rotation of said rotatable shaft by said handle means, and

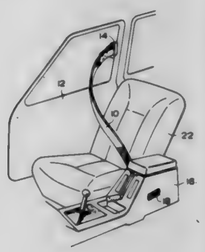
said yoke means being coupled for rocking movement on said shaft to permit said disengagement of said locking means in either selected direction of movement of said handle means.

4,291,897

UNLOCKING DEVICE FOR SEATBELT SYSTEM

Yoriteru Minami, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 15, 1980, Ser. No. 112,176
Claims priority, application Japan, Mar. 9, 1979, 54-30876[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **9 Claims**



1. An unlocking device for a seatbelt system, wherein one end of an occupant restraining webbing is secured to a door of a vehicle so as to fasten the webbing to or unfasten from an occupant in response to opening or closing action of the door, comprising;

(a) a retractor housed in a console box having a webbing takeup shaft for winding said occupant restraining webbing and a ratchet wheel solidly secured to said webbing takeup shaft;

(b) an emergency lock mechanism having a pawl being adapted to be meshed with said ratchet wheel to prevent the webbing windoff rotation of said takeup shaft;

(c) an unlocking knob installed in an opening formed in said console box; and

(d) an unlocking lever pivotally mounted on a frame of said retractor, said unlocking lever rotatably supporting said unlocking knob at one end thereof and rotating along with the unlocking knob to unlock said emergency lock mechanism at the other end thereof when said unlocking knob is turned through more than a predetermined angle in the unlocking direction, whereby as the occupant turns said unlocking knob through more than a predetermined angle in the unlocking direction, said unlocking lever is turned together with said unlocking knob and the other end of said unlocking lever is brought into contact with said pawl to tilt said pawl, so that said pawl is separated from said ratchet wheel and the webbing can be wound off from said takeup shaft of said ratchet wheel.

4,291,898

RESTRAINT BELT POSITIONER

Bernard J. Finn, Troy, and Brian T. Haddlesey, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 17, 1980, Ser. No. 131,063
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **4 Claims**

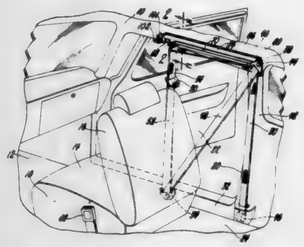
1. In combination with a vehicle body having a door opening defined in part by a roof rail, a seat located laterally adjacent the door opening and having a seat back forwardly pivotal to permit access to the vehicle body compartment rearwardly of the seat back, a restraint belt system comprising:

a restraint belt having one end mounted on the vehicle body generally above and rearward the door opening and another end mounted generally adjacent the occupant hip;

a retracting mechanism provided at one of the belt ends normally maintaining the shoulder belt in a stored position extending across the door opening and partially obstructing access to the compartment behind the seat back and permitting winding and unwinding movement of the shoulder belt to and from an occupant restraining position;

a track extending along the roof rail generally forwardly from the one end of the restraint belt;

a carriage slidably movable along the track and having a belt loop slidably encircling the restraint belt and hand grip means by which the carriage may be manually gripped for foward sliding movement along the track to unwind the restraint belt from the retracting mechanism and dispose



the restraint belt along the roof rail and more generally forward of the door opening to facilitate access to the compartment rearwardly of the seat back;

latch means adapted to latch the carriage at the forward position against rearward movement by the belt winding effort of the retracting mechanism; and

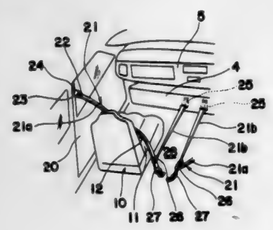
means for selectively releasing the latch means to permit rearward movement of the carriage by the winding effort of retracting mechanism to reestablish the restraint belt in the stored position.

4,291,899

VEHICLE OCCUPANT RESTRAINING SAFETY APPARATUS

Hisao Muramoto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Nov. 26, 1979, Ser. No. 97,548
Claims priority, application Japan, Nov. 29, 1978, 53-148034
Int. Cl.³ B60R *21/04, 21/10*
U.S. Cl. 280—806 **5 Claims**



1. A vehicle occupant restraining safety apparatus for use in a vehicle having at least one seat assembly installed inside the body of the vehicle, which comprises, in combination:

an elongated and bendable knee protector mounted inside the vehicle body and frontwardly of the seat assembly in face-to-face relationship to the position of the knees of an occupant who may sit on the seat assembly, said knee protector being supported at its opposite end portions on the vehicle body and having an elongated base member and a cushioning means covering at least the surface area of the base member which faces toward the position of the knees of the occupant;

a safety seat belt having first and second opposite ends, said first and second ends of the seat belt being respectively connected to the knee protector and the vehicle body, the point of connection of the first end of the seat belt to the knee protector being located on one of the opposite sides of the seat assembly and frontwardly of the seat assembly and the point of connection of the second end of the seat belt to the vehicle body being located on the other of said opposite sides of the seat assembly and upwardly and rearwards of the seat assembly;

a guide eye member rigidly connected to the vehicle body at a position on said one of said opposite sides of the seat assembly and downwardly and rearwards of the seat assembly, said seat belt extending loosely through said guide eye member such that a first portion of the seat belt adjacent the first end thereof extends on said one of the opposite sides of the seat assembly between the guide eye member and the knee protector and a second portion of the seat belt adjacent the second end extends diagonally across the back of the seat assembly and frontwardly of the occupant; and

an automatic self-locking retractor connected between one of said first and second ends of the seat belt and the structure to which said one end is connected.

4,291,900

INDEXED BOOK

C. T. Feng, No. 238, Lane 179, Sec. 2, Nei Hu Rd., Hei Hu District, Taipei, Taiwan

Filed Nov. 14, 1979, Ser. No. 93,982
Int. Cl.³ B42D *1/00*; B42F *21/12*
U.S. Cl. 281—15 R **1 Claim**



1. A book having contents arranged in alphabetical order, characterized by that each leaf has two discrete specific zones on the opening margin of one side revealing the first letter of the indexed terms alphabetically arranged in this page, and the second and third letter of the last indexed term in this page; each of said leaves of said book being so structured and said portions being so positioned that both said zones can be seen easily without opening said book.

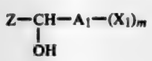
4,291,901

PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

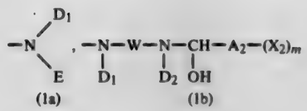
Filed Nov. 16, 1979, Ser. No. 95,119
Claims priority, application Switzerland, Nov. 23, 1978, 12026/78; Oct. 26, 1979, 9628/79
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 282—27.5 **20 Claims**

1. A pressure-sensitive or heat-sensitive recording material which comprises sheet material coated with a color former and the same or different sheet material coated with a color developer containing at least one compound of the formula



(1)

wherein Z is the radical of a reactive organic methylene or methyl compound or a radical of the formula



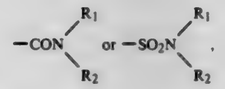
(1a) (1b)

or

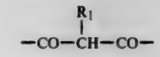


(1c)

wherein each of A_1 and A_2 independently is carbon or unsubstituted or substituted alkylene, arylene or aralkylene, each of X_1 and X_2 is halogen, cyano or nitro, each of D_1, D_2 and E independently is unsubstituted or substituted alkyl, aralkyl, aryl, alkanoyl, alkylsulfonyl, aroyl, arylsulfonyl, cyanoamidino, or is the group



wherein each of R^1 and R^2 independently is hydrogen or unsubstituted or substituted alkyl, aryl or aralkyl, whilst D_1 and D_2 are also hydrogen, or each of the pairs of substituents (R_1 and R_2) and (D_1 and E) together with the nitrogen atom to which said pair is attached is a 5- or 6-membered heterocyclic radical, W is —CO—, —SO_2—, —COCO—,



or unsubstituted or substituted alkylene or phenylene, G is unsubstituted or substituted alkyl, aralkyl or aryl, or is a 5- or 6-membered heterocylic radical, and m is 1 to 6.

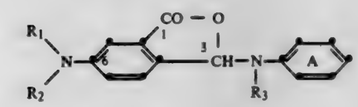
4,291,902

RECORDING MATERIAL EMPLOYING SUBSTITUTED 3,6-DIAMINOPHTHALIDES AS COLOR FORMERS

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 942,840, Sep. 15, 1978, Pat. No. 4,191,690.
This application Sep. 17, 1979, Ser. No. 76,108
Claims priority, application Switzerland, Feb. 10, 1978, 1513/78
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 282—27.5 **6 Claims**

1. A pressure-sensitive or heat-sensitive recording material containing a support coated with the color forming 3,6-diaminophthalide of the formula



(1)

wherein R_1 represents hydrogen, alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cycloalkyl, benzyl, or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, R_2 represents alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cycloalkyl, benzyl, or benzyl which is substituted by halogen, lower alkyl or lower alkoxy and R_3 represents alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cycloalkyl,

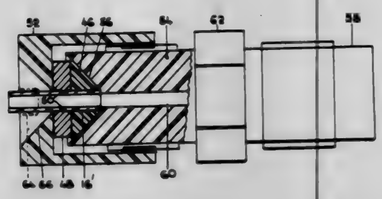
phenyl, benzyl, or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, or R_1 and R_2, together with the nitrogen atom to which they are attached, represent a 5- or 6-membered heterocyclic radical and the ring A is unsubstituted or substituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxycarbonyl, aryl, aryloxy, di-(lower alkyl)amino, acyl or acylamino, each acyl containing 1 to 9 carbon atoms, arylamino, diarylamino, N-lower alkyl-N-arylamino, di-(lower alkyl)aminosulfonyl, di-(lower alkyl)aminocarbonyl, arylaminosulfonyl or arylaminocarbonyl, or contains a fused, unsubstituted or substituted benzene or heterocyclic ring.

4,291,903

CONNECTOR FOR TUBING

Robert E. Fields, 51 Norfolk St., Cambridge, England (CB1 2LE)

Division of Ser. No. 800,670, May 26, 1977, Pat. No. 4,165,893.
This application Apr. 10, 1979, Ser. No. 28,768
Claims priority, application United Kingdom, Jun. 4, 1976, 23116/76
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—39 **1 Claim**



1. A connector for a tube comprising, in combination:

a first member having an interior wall defining a central aperture through which a tube can be pushed in one direction;

an annular, radially inwardly directed barb-like projection integrally joined to said interior wall defining said aperture which is adapted to bite into the wall of a tube inserted into said aperture to prevent the latter from being pulled therethrough in the opposite direction;

a frusto-conical sealing member having a frusto-conical sealing surface free end face and formed from resiliently deformable plastics material through which the captive protruding end of a tube can pass to terminate flush with the free end face thereof, said first member and said sealing member being in abutment so as to form a subassembly;

a sleeve within one end of which said subassembly is at least partially fitted said one end having a frusto-conical surface engaging the frusto-conical sealing surface of the sealing member;

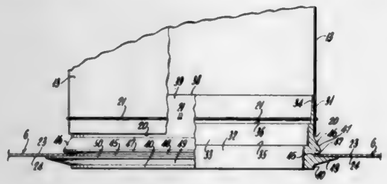
a further member having means which acts on said first member and said sleeve for securing said subassembly within said sleeve and for forming a sealed connection between said sleeve, tube and frusto-conical sealing member, said further member having an end with a bore through which a tube may protrude, a screwdriver slot formed in said one end thereof, and a second slot formed in said one end thereof which intersects said screwdriver slot to allow a tube protruding through said end of said further member to be pushed to one side into said second slot to admit the blade of a screwdriver or the like, for turning said further member.

4,291,904

FILTER HOLDER

Niels A. Iversen, Hadsund; Jorgen Pedersen, Mariager, and Hans Lolk, Randers, all of Denmark, assignors to Arkay Packaging Corporation, New York, N.Y.

Continuation of Ser. No. 953,894, Oct. 23, 1978, abandoned.
This application Feb. 15, 1980, Ser. No. 121,882
Claims priority, application Denmark, Oct. 24, 1977, 4717/77
Int. Cl.³ F16L *5/02*; B01D *46/02*
U.S. Cl. 285—162 **3 Claims**



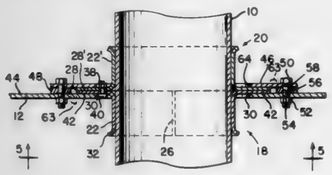
1. An improved holder for use in conjunction with a filter bag, said holder providing for the removable mounting of said bag to a circular opening of a partition plate having plane-parallel opposed surfaces at the mounting opening, said holder being a single ring of flexible material with a skirt portion at one end adapted for circumferential assembly to an open end of the filter bag, said holder having a radially outward circumferential groove near its other end for engaged retention at the mounting opening of the partition plate, said groove having first and second plane parallel opposed sidewall regions and a cylindrical shaped bottom surface between said first and second sidewall regions, wherein the improvement comprises said skirt portion having an outer surface of substantially constant diameter for telescoped reception of the open end of the filter bag along said outer surface for secured assembly thereto, and in which the bottom surface of the groove is of substantially the same diameter as the outer surface of said skirt portion, there being a first retaining rib formation located between said skirt portion and said groove which is formed with said first sidewall region and a second mounting flange rib formation located between said groove and the end of the holder distal to the skirt portion, said second mounting flange rib being formed with the second sidewall region of said groove wherein said second mounting flange rib is a ring-shaped plane radial protrusion having a flat upper surface which is an extension of said second sidewall region, said flat upper surface being adapted to contact one of said plane-parallel opposed surfaces of said partition plate to seal the holder to said plate.

4,291,905

DUCT SEAL

Jesse C. E. Schrock, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1978, Ser. No. 972,535
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—192 **10 Claims**



1. Apparatus for use with a partition subjectable to a transient pressure differential between opposite faces thereof to support an elongated member in position extending through an opening in the partition with its length generally perpendicular to the faces thereof, said apparatus comprising:

sleeve means for supporting said elongated member, said sleeve means having an interior contour conformable to the external contour of said member, and a flange projectable transversely from the exterior of said sleeve means a distance sufficient to overlap the edge of the opening on one face of said partition, said sleeve means being contactable with said elongated member with sufficient contact pressure to maintain an overpressure seal between said elongated member and said sleeve means, and

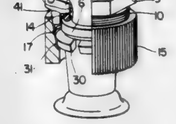
a mounting assembly mountable by the partition adjacent to the opening for supporting said sleeve means such that said flange overlaps the edge of the opening to maintain an overpressure seal between said flange and said partition, said mounting assembly including means for confining and guiding said flange such that said sleeve means may shift conjointly with said elongated member about its longitudinal axis rotatively and orbitally, and permit said elongated member to shift lengthwise with respect to said sleeve means in a direction transverse to the faces of said partition, whereby said overpressure seals allow some leakage of gas from one side of said partition to the other side to slowly equalize pressures on opposite sides of said partition but will prevent an instantaneous pressure equalization.

4,291,906

DEVICE FOR LOCKING AND SEALING STANDARD CONE-SOCKET JOINTS FOR LABORATORY APPARATUS

Martin H. Donbavand, Kantstrasse 133, D-1000 Berlin 12, Fed. Rep. of Germany

Filed Oct. 26, 1979, Ser. No. 86,357
Int. Cl.³ F16L *49/00*
U.S. Cl. 285—332 **6 Claims**



1. In the combination of a cone and socket joint between items of laboratory glassware, which joint comprises a cone portion having a tapered outer wall surface, said cone portion being joined to an adjacent piece of tubing with an annular shoulder formed between said cone portion and said tubing, said cone being fitted within a socket having a tapered inner wall complementary to the taper of the cone and having an external strengthening lip adjacent the mouth of the socket, a line of junction between said cone and socket forming adjacent to said shoulder at the mouth of said socket, with a coupling which coupling comprises: an elastomeric sealing ring for positioning about the annular shoulder; a first annular member for positioning about the cone portion of the joint immediately behind the shoulder and having a male threaded end; a seat in the first annular member engageable with the elastomeric sealing ring to exert an axial load thereon; and a second annular member for positioning about the socket portion of the joint and having a female threaded end which may be screwed onto the male threaded end of the first annular member to hold the cone portion and the socket portion of the joint together and to compress the elastomeric sealing ring into said line of junction between the cone portion and socket portion of the joint to seal said line of junction, said first annular member being constructed and arranged to be held stationary when said second annular member is screwed thereon whereby said sealing ring is subject only to load parallel to its axis of cylindrical symmetry and not to a torsional deforming pressure, the improvement wherein the second annular member has an inwardly directed flange formed with a female frustoconical surface and spaced axially from the female thread, and wherein a radially expansible split ring is positioned within the interior of the second annular member between the female frustoconical surface and the external strengthening lip, said radially expansible split ring having a male frustoconical surface complementary to said female surface of said second annular member, said radially expansible split ring having a radial gap, said gap having a size sufficient to permit the ring to be tightly moved into position behind said external strengthening lip, whereby, when said first and second annular members are screwed together, the axis of the assembled coupling is aligned with the axis of the cone and socket joint and the radially expansible split ring is urged radially inwards behind the socket portion of the joint.

4,291,907

DROP LATCH

Dale F. Berger, 14235 Julie Dr., Humble, Tex. 77338

Filed Apr. 2, 1979, Ser. No. 26,287
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—188 **7 Claims**



1. A drop latch assembly, comprising in combination:

a housing;

a vertical bolt located within said housing and guided for movement therein between first and second positions, said bolt normally being located in the first position;

a lever extending through a passage in said housing to engage said bolt, said lever being selectively operable to elevate said bolt to the second position;

at least one arm joined transversely to said bolt within said housing, said arm having a depending striker mounted normal thereto;

said housing having therein a slot corresponding to each striker, said slot being aligned with said striker when said bolt is in said first position;

key driven lock means including a horizontal jam unit disposed in said housing for horizontal movement into the path of said bolt to block said path for releasably locking said bolt in the first position;

a latch plate having a horizontal latch loop corresponding to each slot in said housing, said latch loop being adapted to enter said housing slot and engage said striker such that said latch plate and housing are lockingly interconnected; and

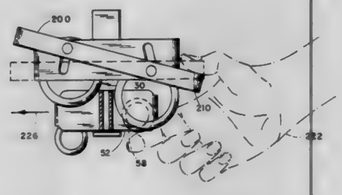
the contacting surfaces of the striker of said bolt and the latch loop of said latch plate being configured such that said bolt is momentarily cammed out of the first position before the striker seats within the latch loop.

4,291,908

SAFETY GATE LATCH SYSTEM

Marvin W. Gittins, Sr., 3601 Twin City Dr., Council Bluffs, Iowa 51501

Filed Jul. 24, 1980, Ser. No. 171,898
Int. Cl.³ E05C *19/04*
U.S. Cl. 292—299 **2 Claims**



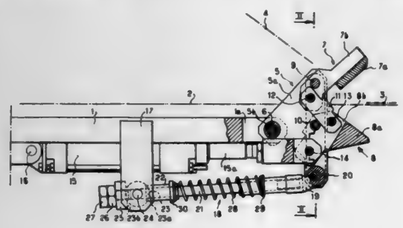
1. A safety gate latch system (10) comprising: an upper gate latch assembly (20) comprising a gate tongue (30) adapted to be attached to the free end of a gate latching portion (31), said tongue (30) swinging in a circular arc (50) in a horizontal plane and extending substantially radially with respect to said arc, an upper gate tongue securing assembly (60) comprising a first upper ring (64), said tongue (30) being disposed on a certain side (65) of said first upper ring (64) when said gate latch is in a gate-closed position, said first upper ring (64) having first and second opposite sides (66,68) lying in substantially vertical parallel planes each substantially tangent to said swinging arc, an upper ring-receiving frame means (80) having portions (82,84) disposed one on each of said sides of said first upper ring (64) for maintaining said sides (68) of said first upper ring (64) in said planes (90), said upper ring-receiving frame (80) having an upper ring-receiving recess means (96) therein moveably receiving said first upper ring (64), when said gate latch system (10) is in a latching position said first upper ring (64) having a lower outer surface portion (102) inclined with respect to the vertical and normally projecting downwardly from said upper ring-receiving frame means (80) in the path of the swinging of said tongue (30) whereby said first upper ring (64) is caused to move upwardly by the passing of said tongue under the center of said first upper ring (64), a first upper ring retainer (82) attached to said upper ring-receiving frame means (80) and extending approximately horizontally through the center opening (94) of said first upper ring (64) in a position such that when an upper portion of said first upper ring (64) engages said first upper ring retainer (82) the lower side of said first ring will be disposed below the upper surface (33) of the latching portion (31) of said tongue (30), a first upper ring-hold means (86) fixed to said upper ring-receiving frame means (80) and disposed on an opposite side of said first upper ring (64) from said certain side (65), said first upper ring holding means (86) having a lower surface disposed in a position for engaging said outer surface portion (102) of said first upper ring (64) at a time when said first upper ring (64 is in a gate-locking position, and said first upper ring retainer (82) engaging a wall of said central opening (96) of said first upper ring (64) when said latch is in a gate-latching position whereby when said gate latch is in a gate-holding position said tongue (30) is prevented from moving horizontally in a direction generally toward said first upper ring (64) to prevent said gate from accidentally opening in the respective direction, a second and similar gate latch assembly (50) for safety having like parts and comprising a lower ring-receiving frame means (52) fixed to said gate tongue (30), said lower ring-receiving frame means (52) having a lower ring-receiving recess means (56), a primary lower safety ring (58) mounted in said lower ring-receiving frame means (52) similarly to the way said first ring (64) is mounted in said upper frame (80), a post-tongue (72) for attachment to a gate post (110) and extending when said system is in a gate-latched position across the pathway of said primary lower safety ring (58), said second gate latch assembly having a primary lower safety ring retainer (74) and a primary lower safety ring-holding means (76) having the same relationships to said lower frame means (52) and to said primary lower ring (58) as said first upper ring retainer (82) and said first upper ring-holding means (86) have to said upper frame (80) and to said first upper ring (64), a second upper ring (150) substantially similar to said frist upper ring (64), said second upper ring (150) being disposing in said first recess means (96) of said upper frame means (80) and arranged substantially parallel to and spaced from said first upper ring (64) and horizontally spaced from said first upper ring (64) whereby in gate-closed position said gate tongue is in a space (170) between said first and second upper rings (64,150), a second upper upper ring retainer (154) attached to said upper ring-receiving frame means (80) and having a similar relationship to said second upper ring (150) and to said upper ring-receiving frame means (80) to that which said first upper ring retainer (82) has to said first upper ring (64) and to said first upper frame means (80), a secondary lower safety ring (160) substantially similar to said primary lower safety ring (58), said secondary lower safety ring (160) being disposed in said lower second ring-receiving recess means (56) and being arranged substantially parallel to and spaced from said primary lower safety ring (58) whereby in a gate-closed position said post-tongue (72) is disposed between said primary and secondary lower safety rings (50,160), a secondary lower ring retainer (200) attached to said lower ring-receiving frame means (52) and having a similar relationship to said secondary lower ring (160) and to said lower frame means (52) to that which said primary lower ring retainer (74) has to said primary lower ring (58) and to said lower frame means (52), a ring-releasing assembly means (200) having finger-engageable portions (210) on each side of said space (170) between said first and second upper rings (64,150), said finger-engageable portions (210) being operatively correlated with said first and second upper ring retainers (82,154) so that when one of said finger-engageable portions (210) is moved then that certain one of said first and second upper ring retainers (82,154) which is located on the opposite side of said space (170) between said first and second rings (64,150) of said one of said finger-engageable portions from said moved finger-engageable portion (210) will be raised so as to permit said tongue (30) to pass by under said certain one of said ring retainers (82,154) for gate opening when simultaneously the lower safety ring (58,160) on the same side of said space (170) as said moved finger-engageable portion (210) is raised to release said post tongue 72.

4,291,909

CLAMPING JAWS ASSEMBLY

Alain Coatantiec, Bruz, France, assignor to Société Anonyme Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed May 1, 1980, Ser. No. 145,484
Claims priority, application France, May 22, 1979, 79 13910
Int. Cl.³ B25J *15/00*; B66C *1/42*
U.S. Cl. 294—88 **5 Claims**



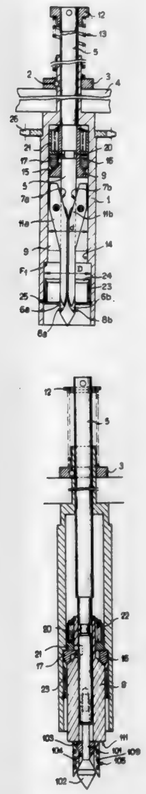
1. In a clamp assembly
an elongate arm,
a clamp body pivoted to the arm at one end of the latter, said body carrying two pivotal jaws and
rod means pivotally interconnecting the jaws and serving to limit opening movement of the jaws,
double-acting actuator means interconnecting one of the jaws and the arm, and
a telescopic, spring-loaded, device interconnecting the said clamp body and the arm,
said actuator means and the telescopic, spring-loaded, device being operative to control opening and closing of the jaws and to pivot the body as a whole.

4,291,910

DISAPPEARING GRASPING HEAD

Jacques Maupate, Givry, France, assignor to Societe Generale Pour l'Emballage, France

Filed Dec. 21, 1979, Ser. No. 106,038
Claims priority, application France, Dec. 22, 1978, 78 36190
Int. Cl.³ B66C *1/54*
U.S. Cl. 294—95 **32 Claims**



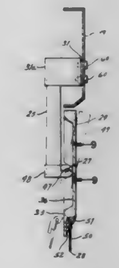
1. A device for grasping hollow bodies comprising:
a housing,
a mechanism capable of movement into said housing and out of said housing, said mechanism further comprising means for contacting said hollow body and grasping means capable of acting on an interior wall of said hollow body,
means for limiting the extent of the outward movement of said mechanism,
means which actuate the grasping means to secure said mechanism to said hollow body and to prevent said mechanism from returning into said housing when said mechanism contacts said hollow body on an outward movement before reaching the full extent of such movement as determined by said limiting means, and
means which return said mechanism into said housing if said mechanism is moved outward beyond the point at which said grasping means can be actuated when said mechanism contacts said hollow body.

4,291,911

AIR DAM APPARATUS FOR A MOTOR VEHICLE

William W. Gallmeyer, 513 Krause St., Ann Arbor, Mich. 48103

Filed Feb. 6, 1980, Ser. No. 119,168
Int. Cl.³ B62D *37/00*
U.S. Cl. 296—78 R **12 Claims**



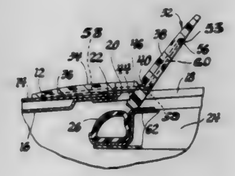
1. Air dam apparatus for a motor vehicle having a frontal clearance area defined by space beneath said vehicle extending to ground level, said apparatus comprising a door-like air deflection panel member dimensioned for substantially blocking said frontal area by deflection of air therefrom upon forward movement of said vehicle, strut means adapted for being attached to said vehicle for extending below said vehicle at the front thereof, pivot means hingedly securing said panel member to said strut means with said panel extending transversely across said frontal clearance area and for permitting the lower edge of said panel to be closely proximate ground level, said pivot means defining a transverse pivot axis about which said panel may rock, said pivot axis being vertically positioned with respect to said panel for providing substantial balancing of aerodynamic forces upon said panel above and below said pivot axis during forward movement of said vehicle, means resiliently urging said panel with respect to said pivot axis toward a position for blocking said frontal area but permitting rocking about said pivot axis in response to an obstruction contacting said panel below said pivot axis, said pivot axis being positioned relative to the body of said panel member so as to provide an upper portion of said panel member above said pivot axis and a lower portion of said panel member below said pivot axis, and upper portion advancing forward of said pivot axis and said lower portion retreating behind said pivot axis upon rocking of said panel member in response to said panel member being contacted by an obstacle, first and second wing members for deflecting air outwardly on opposite sides of said vehicle, and wing securement means adapted for being attached to said vehicle for mounting said wing panels on respective opposite sides of said panel member, said wing members each comprising an auxiliary panel positioned in front of a respective one of said wheels and extending from said vehicle to closely proximate ground level, said panel member and auxiliary panels together presenting, when said panel is in said blocking position, a substantially continuous air dam surface across the front of said vehicle therebelow, said wing members each being detachably interengaged with said vehicle for being pulled out of engagement upon extraordinary force downwardly away from said vehicle.

4,291,912

WIND DEFLECTOR FOR SUN ROOF

Robert M. Fox, Dryden; Robert D. Mogk, Holly, and Edward T. Priebe, Mount Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 28, 1980, Ser. No. 144,400
Int. Cl.³ B60J 7/22
U.S. Cl. 296—217 **2 Claims**



1. A wind deflector for a vehicle body having a roof panel defining a roof opening, a closure panel adapted to close the roof opening, and means for moving the closure panel between a rearward and lowered open position and a forward and raised closed position, said wind deflector comprising:

a deflector mounting body adapted for overlying attachment on the roof panel forward of the roof opening and extending rearwardly above the roof opening, a deflecting vane adapted to overlie the roof opening, hinge means joining the mounting body and the deflecting vane and defining a hinge axis extending transversely of the vehicle body above the roof opening to permit movement of the deflecting vane between a stowed position in parallel overlying relationship with the closure panel and an angularly raised position adapted to dispose the deflecting vane in wind-deflecting attitude above the roof opening, spring means situated wholly above the roof panel and acting between the mounting body and the deflecting vane and adapted to urge the deflecting vane to the angularly raised wind-deflecting attitude, and an operating leg portion associated with the deflecting vane and extending forwardly across the hinge axis so that the operating leg portion extend downwardly into the roof opening for engagement by the closure panel when the deflecting vane is disposed in the angularly raised position by the spring means, whereby the wind deflecting vane is automatically lowered against the bias of the spring to the normal stowed position by engagement of the closure panel with the operating leg portion upon closing movement of the closure panel and raised to the deflecting attitude by the spring means upon opening movement of the closure panel moving the closure panel out of engagement with the operating leg portion.

4,291,913

MANUALLY-OPERATED RECLINING CHAIRS

Jerome R. Kowalski, Amsterdam, N.Y., assignor to Mohasco, Corp., Amsterdam, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,810
Int. Cl.³ A47C 1/023, 1/037
U.S. Cl. 297—89 **22 Claims**

1. In a reclining chair of the type having

(A) a stationary base for supporting the chair on a floor;

(B) body-supporting means including a seat located generally above the base, and a backrest located rearwardly of the seat;

(C) an armrest located at a side of the seat;

(D) a recliner system at the armrest, and kinematically interconnecting the body-supporting means to the base for reciprocal movement of the body-supporting means relative to the base in forward and rearward directions along a path which extends between

an end-limiting upright chair position in which the body-supporting means is oriented at a predetermined orientation relative to the base, and

an end-limiting fully-reclined chair position in which the body-supporting means is oriented at a different reclined orientation relative to the base;

the improvement which comprises:

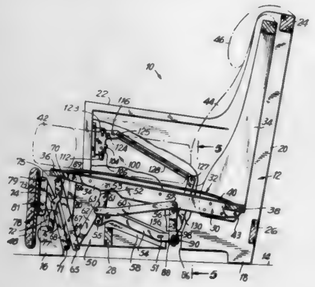
(a) manually-actuatable means for driving the recliner system and for moving the body-supporting means along the path only in the forward direction from the upright chair position towards an intermediate chair position which is intermediate the end-limiting chair positions,

(b) said manually-actuatable means including an actuator member mounted on the armrest within hand-reach of a seated user, for displacement along a working stroke from a first position which corresponds to the upright chair position, to a second position which corresponds to the intermediate chair position,

(c) said manually-actuatable means being in force-transmitting relationship with, and affirmatively forwardly driving, the recliner system throughout the displacement of the actuator member as it is being displaced from its first position towards its second position, and for thereby forwardly moving the body-supporting means downstream of the path towards the intermediate chair position,

(d) said manually-actuatable means being in impositive engagement, and out of force-transmitting relationship with, the recliner system when the actuator member reaches the second position, to thereby disengage the manually-actuatable means from the recliner system and permit the body-supporting means to be moved forwardly further downstream of the path to the fully-reclined position in response to the body weight of the seated user acting on the recliner system, and

(e) said actuator member being returnable from its second position to its first position upon disengagement of the manually-actuatable means from the recliner system when the actuator member reaches its second position.



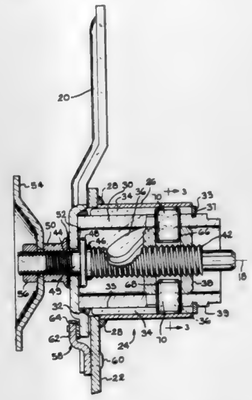
4,291,914

ADJUSTABLE SEAT HINGE

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed Jan. 10, 1980, Ser. No. 110,814
Int. Cl.³ A47C 1/024
U.S. Cl. 297—361 **13 Claims**

1. An adjustable hinge comprising a pair of elements, means pivotally connecting said elements for relative pivoting to a plurality of adjusted positions, said pivotal connecting means comprising a first member connected to one of said elements and a second member connected to the other of said elements, said first and second members being substantially coaxial and relatively rotatable about a pivot axis, means forming cam opening means in said one member defining a first path spaced from said pivot axis, means forming control opening means in said second member defining a second path spaced from said pivot axis different from said first path, a slider member mounted for movement axially of said first and second members, said slider member having projecting means extending into said cam opening means and into said control opening means, said projecting means being movable through said cam and control opening means in response to movement of said slider member axially of said first and second members to cause relative rotation between said first and second members to pivot said elements to said adjusted positions.

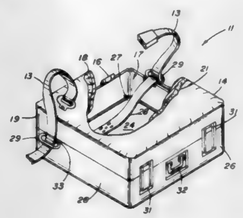


4,291,915

COMBINED SUITCASE AND CHILD'S SAFETY SEAT

Jeanette Cox, 5548 Poplar Blvd., North Highlands, Calif. 95660

Filed Apr. 26, 1979, Ser. No. 33,445
Int. Cl.³ B60R 21/10; A47C 7/62; A45F 4/00
U.S. Cl. 297—193 **7 Claims**



1. A combined suitcase and child's safety seat for use with a conventional vehicle seat belt comprising:

a. a receptacle having a bottom and a vertically spaced top substantially parallel to said bottom, vertical side walls and end walls being interposed between and interconnecting the periphery of said bottom and said top, said side walls and end walls being disjoined through a plane substantially parallel to said top and spaced substantially equidistant from said top and said bottom to form an upper portion and a lower portion, said upper and lower portions being hingeably connected on one side so as to permit opening and closure of said receptacle, and latching means to secure together said upper and lower portions of said receptacle;

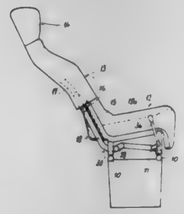
b. a safety strap comprising an elongated, flexible strip including a loop at each end thereof, said strip being extended and inserted between said upper and lower portions of said receptacle prior to closure, said strip being of sufficient length so that said loops are located outside the opposite end walls of said receptacle to receive the respective free ends of the seat belt when said receptacle is closed, said loops securing said receptacle to said seat belt as said seat belt is extended over the child's lap and buckled.

4,291,916

SEAT FOR BUS, TRAIN OR AIRPLANE

Max M. F. Chardon, Saint-Prim, France

Continuation of Ser. No. 28,816, Apr. 10, 1979, abandoned. This application Aug. 20, 1980, Ser. No. 179,827
Claims priority, application France, Nov. 13, 1978, 78 32693
Int. Cl.³ A47C 1/025
U.S. Cl. 297—367 **7 Claims**



1. A seat comprising:

a seat frame having a rearward and upward extension having an upper end defining a horizontal pivot axis;

a generally horizontal seat part supported on said seat frame and lying wholly below said axis and a rear edge;

a back frame pivoted on said seat frame at said axis and having a downward extension projecting downwardly below said axis and having a lower end underneath said seat part;

an upright back part having an upright lower back cushion supported on said extension of said seat frame below said axis and an upright upper back cushion supported on said back frame above said axis, said cushions defining a front surface lying at its rearmost point behind said pivot axis; and

means underneath said seat part and engaged between said lower end of said back frame and said seat frame for locking said back part with said upper cushion in any of a plurality of angularly offset positions about said axis relative to said seat part and said lower cushion.

4,291,917

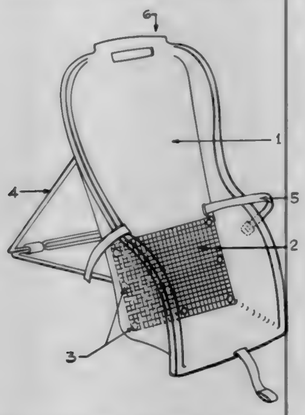
LOW PRESSURE INFANT SEAT FOR NORMALLY SEATING INFANTS WITH MENINGOMYELOCELE OR OTHER SENSITIVE BACK DEFORMITIES

Gail B. Hawks, 4615A Walden Pond Dr., Raleigh, N.C. 27604

Filed Sep. 19, 1979, Ser. No. 77,117
Int. Cl.³ A47D 13/02
U.S. Cl. 297—452 **4 Claims**

1. A low pressure infant seat for normally seating infants with meningocele/meningomyelocele or other sensitive back deformities comprising a device molded so as to form a seat having a seat portion with a back portion extending from the rear of the seat portion beyond the head area for the purpose of support, said device having an open area provided in the lower portion of the back of the said device beginning at the base of the back portion in the vicinity of the juncture of said back portion with the rear of the said seat portion and extending up the back portion a sufficient distance to prevent a pressure to the meningocele/meningomyelocele or the surrounding area; a detachable mesh insert applied over the said open area in the said lower portion of the back of the said device; means which allow for attaching and detaching the said mesh insert to the said device, said means so positioned so that no pressure points are formed at or near the spinal area at the upper edge of the said mesh; an adjustable bracing device attached to the back of

the said device; safety straps for maintaining an infant in position in the device; wherein said device has side portions extending forwardly, wherein said detachable mesh insert includes a generally rectangular portion of resilient material stretched across the said open area, wherein said means which allow for attaching and detaching said mesh insert are detachable fasteners connected to the back portion and mesh insert and are positioned around the open area, wherein said bracing device extends from four points on the dorsal side of the said device to allow for adjustment of position of said device, and wherein said safety straps are attached laterally and proximate to the said device.

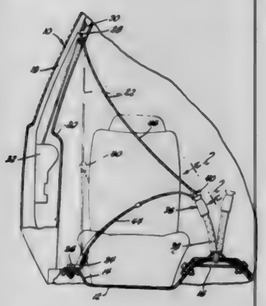


4,291,918

BUCKLE ASSEMBLY FOR CONTINUOUS LOOP OCCUPANT RESTRAINT BELT SYSTEM

Bernard J. Finn, Troy; Brian T. Haddlesey, Sterling Heights, and Kenneth H. Reid, Mt. Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 19, 1979, Ser. No. 77,009
Int. Cl.³ B60R *21/00*; A62B *35/00*
U.S. Cl. 297—483 **2 Claims**



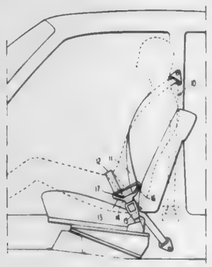
1. In combination, a single loop continuous restraint belt, a latch plate slidably movable along the restraint belt to divide the restraint belt into variable length shoulder belt and lap belt portions, a buckle having a frame and means adapted for latching engagement with the latch plate to establish the lap and shoulder belt portions in their respective restraining positions across a seated occupant, a cinching member pivotally mounted on the latch plate and having the restraint belt passing therearound so that sliding movement of the belt through the latch plate in either direction induces pivotal movement of the cinching member in a corresponding direction of rotation, and a lip member integral with the frame of the buckle and projecting into proximity with the restraint belt generally along one side of the cinching member and adapted to provide an abutment surface against which the cinching member clamps the restraint belt upon attempted sliding movement of the restraint belt through the latch plate in the one direction which pivots the cinching member toward the lip member whereby the restraint belt is permitted to travel in only the other direction when the latch plate is engaged within the buckle.

4,291,919

DEFLECTION FITTING FOR SAFETY BELTS FOR VEHICLES

Walter Schmid, Sindelfingen; Werner Breitschwerdt, Stuttgart, and Guntram Huber, Aidlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 93,032
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849905
Int. Cl.³ B60R *21/10*
U.S. Cl. 297—483 **24 Claims**



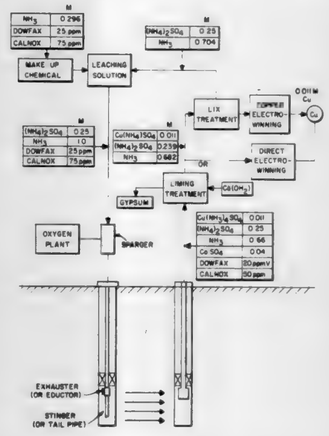
1. A deflection fitting for a safety belt for vehicles, the safety belt including a chest belt and a lower belt, the deflection fitting comprising a first belt guidance means for guiding a belt band section of one of the chest and the lower belt, a second belt guidance means for guiding a belt band section of the other of the chest and the lower belt, and a lock tongue means spaced from the first and second belt guidance means, the lock tongue means being adapted to be inserted into and locked in a belt lock means, characterized in that each of the belt guidance means are formed as an elongated slot, the second belt guidance means is independent of and spaced from the first belt guidance means, the first and second belt guidance means are arranged laterally of and at a transverse distance from a longitudinal center axis of the locked tongue means extending in an insertion direction thereof into the belt lock means, the first belt guidance means extends on one side of the longitudinal center axis of the lock tongue means and the second belt guidance means on the other side thereof, and in that each of the first and second belt guidance means are inclined with respect to and spaced from the center longitudinal axis of the lock tongue means and are inclined with respect to one another in such a manner that the chest belt and the lower belt assume a most favorable position on a user of the safety belt when the lock tongue means is locked in the belt lock means.

4,291,920

IN SITU EXPLOITATION OF DEEP SET PORPHYRY ORES

Peter J. Lingane, Ponca City, Okla.; Michael J. Redman, Belmont, Mass.; Won C. Park, Irvine; Robert A. Hard, Laguna Beach, both of Calif., and Walter W. Harvey, Arlington, Mass., assignors to Kennecott Corporation, Stamford, Conn.

Filed Apr. 30, 1980, Ser. No. 145,379
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—4 **6 Claims**



1. A process for the in situ exploitation of a deep set, porphyry ore deposit of the type characterized by a multiplicity of naturally occurring microscopic fracture openings and containing a metal value selected from the group of sulfidic copper, nickel, cobalt, molybdenum, uranium and mixtures thereof and metals by ion exchange, said process comprising the steps of:

A. providing an injection well and a plurality of production wells spaced apart from the injection well, said wells being in communication with said prophyry ore deposit, the volume between the injection well and the production wells defining leaching interval;

B. stimulating the permeability of the leaching interval by contacting the leaching interval through said injection well with a first aqueous solution comprising ammonia, a calcium sulfate scale inhibitor and an effective amount of nitrate or chloride salt of a cation selected from the group consisting of Na^+, K^+, NH^+_4 and mixtures thereof to replace exchangeable calcium ions, to induce clay concentration, and to solubilize calcium ions;

C. priming the leaching interval by displacing the calcium ion containing solution in the leaching interval with a second aqueous solution containing an ammonium salt, a calcium sulfate scale inhibitor, and oxygen containing gas, the ammonium ion content of the second solution being effective to suppress the uptake on the ion exchange minerals of copper and/or nickel released on oxidation of the sulfidic copper and/or nickel minerals by oxygen;

D. recovering copper and/or nickel by injecting a two-phase lixiviant into the leaching interval, said lixiviant comprising a multiplicity of entrained oxygen containing gas bubbles and an aqueous solution containing scale inhibitor having a pH less than 10.2, containing ammonium ions and containing no greater than about 1.0 mole/-liter ammonia, collecting a copper and/or nickel bearing ammoniacal leach liquor from a production well, winning copper and/or nickel from the recovered leach liquor, adding oxygen and make up chemicals to the copper and/or nickel depleted liquor, and recirculating the resulting lixiviant; and

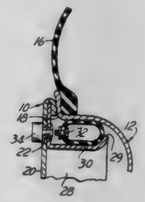
E. displacing the solutions in the leaching interval by injecting a filler solution into the leaching interval and collecting a copper and/or nickel bearing ammoniacal liquor from a production well.

4,291,921

HUB CAP FOR VEHICLE WHEELS

Hurst E. Wulf, 625 Middlesex Blvd., Grosse Pointe Park, Mich. 48230

Filed Jul. 2, 1979, Ser. No. 53,902
Int. Cl.³ B60B *7/06*
U.S. Cl. 301—37 AT **17 Claims**



8. A pneumatic tube assembly unit for use with vehicle hub caps having a disk with an inwardly disposed circular array of resilient members for gripping the vehicle wheel, such unit comprising an inflatable tube for flexing the resilient members, valve means on the inflatable tube for controlling the pressure therein, a non-flexible ring around the inner periphery of the inflatable tube and means holding the non-flexible ring on the inflatable tube.

15. A hub cap for a vehicle wheel having an inwardly disposed annular surface, such hub cap comprising a disc having therein an access opening, means for locking said disc to said vehicle wheel comprising an outstanding circular collar on the inner surface of the disc, an inflatable tube portion supported on the outstanding circular collar, a valve stem assembly on the inflatable tube portion aligned with the access opening in the disc for pressurizing the inflatable tube portion so as to bring it into a holding engagement with the inwardly disposed annular surface on the vehicle wheel, and means for lockably closing said access opening whereby deflation of said tube portion is required to remove said hub cap from said vehicle wheel.

4,291,922

ANTI-SKID MECHANISM FOR WHEELED VEHICLE

Ewald Dolibois, deceased, late of Farmington Hills, Mich., and Rose V. Dolibois, administratrix, 28369 Bay Tree Dr., Farmington Hills, Mich. 48018, assignors to Rose Dolibois, Farmington Hills, Mich.

Filed Dec. 20, 1979, Ser. No. 105,720
Int. Cl.³ B60B *15/00*
U.S. Cl. 301—46 **6 Claims**

1. An anti-skid device for a wheeled vehicle comprising the combination of:

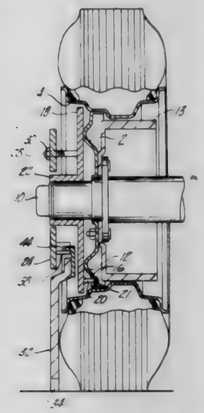
A. a flanged disk adapted to be mounted on the outer side of the wheel of at least two wheels of said vehicle;

B. an annular plate slideably mounted on the flange of said flanged disk, said plate being mounted for limited angular and limited axial movement relative to said flanged disk;

C. a plurality of radially moveable arcuate ground-engageable shoes independently and slideably mounted between the planar surfaces of said flanged disk and said plate and wherein said shoes have at least two spaced parallel tracks formed thereon, said tracks being parallel to a radius extending through a centrally located cam follower on said shoes and said flanged disk has abutment means arranged for engagement with said tracks;

D. cam means on said plate operatively engageable with said

centrally located cam follower on said shoes for imparting radial movement to said shoes upon rotation of said plate relative to said flanged disk; and



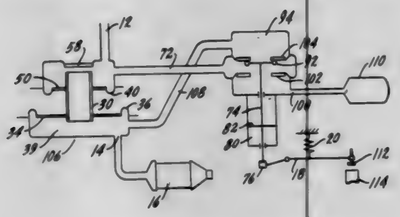
E. abutment means for moving said plate towards said flanged disk and for clamping said shoes therebetween thereby preventing rotational movement of said shoes relative to said flanged disk and said plate.

4,291,923

EMPTY AND LOAD BRAKE DEVICE

Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Mar. 3, 1980, Ser. No. 126,843
Int. Cl.³ B60T 8/20
U.S. Cl. 303—23 R **17 Claims**



1. An empty and load device for a railroad vehicle air brake system for controlling brake application pressure comprising,

housing means having an inlet connected to a pressure source and an outlet connected to an air brake cylinder, a first passage between said inlet and outlet, valve means controlling communication through said first passage, pressure proportional piston means controlling opening and closing of said valve means,

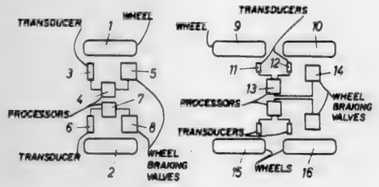
a second passage between said inlet and outlet, second valve means controlling communication through said second passage, and a load sensing arm movably attached to said housing means for controlling operation of said second valve means.

4,291,924

ANTI-SKID CONTROL SYSTEM FOR MOTOR VEHICLES

Heinz Leiber, Leimen, and Jürgen Gerstenmaier, Neckargemünd, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,753
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811999
Int. Cl.³ B60T 8/02
U.S. Cl. 303—111 **9 Claims**



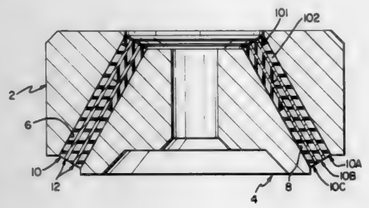
1. An anti-skid system for wheeled vehicles, especially motor vehicles, with at least two wheel speed transducers and a single processing channel for the signals from said at least two transducers, and including switching means connected to the at least two transducers and the processing channel, for providing alternate periodic connection of single ones of said at least two transducers to said processing channel, wherein the processing channel generates a brake command signal, and further including circuit means connected to the switching means for altering the rhythm of connection of said transducers, and wherein the improvement comprises: said at least two transducers being disposed to sense the speed of at least two wheels which are mounted on the same side of the vehicle, and a common brake pressure device which is connected to the processing channel to receive the brake command signal and is further connected to the at least two wheels such that the common brake pressure device jointly engages the at least two wheels.

4,291,925

LAMINATED BEARINGS WITH DUAL STOCK LAYERS

Robert R. Peterson, Hudson, and Daniel S. Ventura, Malden, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Jul. 26, 1979, Ser. No. 61,009
Int. Cl.³ F16C 27/08
U.S. Cl. 308—26 **6 Claims**



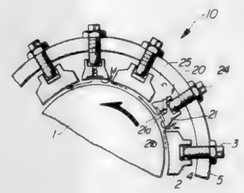
1. In a laminated bearing comprising a plurality of alternating and bonded together layers of elastomeric and substantially non-extensible material with the layers disposed about a common axis so as to permit the bearing to support compressional loads applied generally normal to said layers and torsional loads applied about said axis, each layer having with respect to said axis a radially inner circumference and a radially outer circumference, the improvement wherein at least one of said elastomeric layers consists of a first portion thereof positioned at said outer circumference having a pre-selected first nominal modulus of elasticity which exhibits relatively small changes in modulus over a relatively wide range of strain magnitudes and a second portion positioned at said inner circumference having a pre-selected second nominal modulus of elasticity which exhibits substantially larger changes of modulus over at least a portion of said range of strain magnitudes, whereby compression-induced shear strain distribution within said at least one layer is improved by said positioning of said portions, and wherein said two portions are effectively proportioned in size relative to each other within said at least one layer so as to achieve a pre-selected composite modulus of elasticity for said layer which is different from the modulus of elasticity of any other elastomeric layer and calculated to improve the uniformity from layer to layer of the bearing's torsional shear strain distribution over a range of torsional load input conditions.

4,291,926

GUIDE BEARING DEVICE

Shunzo Tomioka; Kinpei Okano; Masanori Matsuo, and Yosio Furukawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1979, Ser. No. 77,836
Claims priority, application Japan, Sep. 22, 1978, 53-115926
Int. Cl.³ F16C 17/03, 33/02
U.S. Cl. 308—73 **6 Claims**



1. A guide bearing device comprising;

a plurality of first segmental pads disposed circumferentially equidistantly around a rotary shaft;

means for supporting each of said first segmental pads for pivotal movement; and

a housing mounting therein said first segmental pads and said supporting means and containing lubricating oil; wherein the improvement comprises a plurality of second segmental pads each interposed between the first respective segmental pads and formed with an oil passage, said oil passage being connected to a pressurized oil supply source and feeding the lubricating oil to a sliding surface of each of said first segmental pads wherein each of said segmental pads is pivotally mounted within said housing.

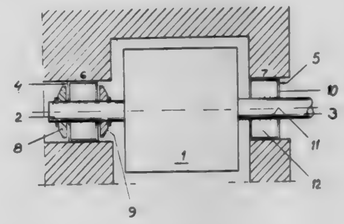
4,291,927

INTEGRAL FOAMED PLASTIC SLIDING BEARINGS

Stig Persson, Katrineholm, Sweden, assignor to SKF Industries, Inc., King of Prussia, Pa.

Continuation-in-part of Ser. No. 811,966, Jun. 30, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 16,977
Claims priority, application Sweden, Oct. 18, 1976, 7611518
Int. Cl.³ F16C 33/66
U.S. Cl. 308—121 **3 Claims**

1. A linear sliding bearing supporting a carriage for longitudinal movement relative to a guide with a groove, said sliding bearing comprising a pair of elongated rod members, each rod member made of a foamed plastic material consisting of at least one homogeneous liquid impermeable hard and rigid peripheral surface shell portion of generally L-shaped configuration and a porous core portion filled with a lubricant confronting and engaging the sidewall and bottom of the groove of said guide, said elongated rod members mounted so that the hard rigid peripheral surface portion engages the carriage and provides a physical support for maintaining the carriage in a predetermined spaced relation to the guide.

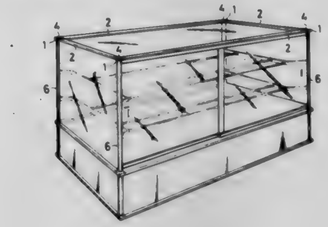


4,291,928

SHOWCASE

Kesaomi Kiyosawa, No. 22-1, 2-chome, Minamiaoyama, Minato-ku, Tokyo, Japan

Filed Dec. 6, 1979, Ser. No. 100,927
Claims priority, application Japan, Jul. 23, 1979, 54-100585[U]
Int. Cl.³ A47B 43/00; F16B 12/00
U.S. Cl. 312—257 R **5 Claims**



1. A showcase comprising:

a plurality of longitudinally-extending shelf pillars (7), each shelf pillar having a plurality of longitudinally spaced shelf receiving openings (14) formed therein;

a plurality of longitudinally-extending corner sashes (6), each corner sash having a central passageway (8) defined therein for receiving a shelf pillar and a longitudinally-extending slot (11) providing access to the openings in the shelf pillar, the corner sash having longitudinally-extending transversely spaced apart arms defining grooves for receiving plates forming sides of the showcase;

a plurality of horizontal tubes (2) positioned to interconnect upper ends of adjacent pairs of corner sashes;

means for interconnecting end portions of said hollow tubes with said corner sashes comprising:

a bolt (4),

coupling means (1) having a base portion (3) and protruding portions engageable with end portions of respective ones of said horizontal tubes, said base portion having a through bore (5) formed therein for passage of a shaft of said bolt, and

connecting means (12) positioned in an upper portion of a shelf pillar received in a corner sash and having a threaded portion for engaging an end of the shaft of said bolt (4) to thereby connect said coupling means to said connecting means; and

shelf support means for supporting a shelf (20) and having protruding portions (16) insertable into selected ones of the openings (14) formed in two adjacent shelf pillars to

thereby adjust the vertical position of the shelf with respect to the shelf pillars.

4,291,929

GUIDING RECIPROCABLE DRAWERS OF PIECES OF FURNITURE OR THE LIKE

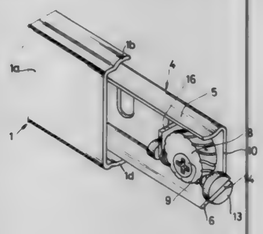
Karl-Volker Faust, Bielefeld, Fed. Rep. of Germany, assignor to Paul Hettich & Co., Kirchlengern, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,419

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851305

Int. Cl.[3] A47B *88/00*; F16C *21/00*

U.S. Cl. 312—341 R **15 Claims**



1. A device for guiding a reciprocable member along an elongated path to and from an end position with respect to a second member, particularly for guiding a drawer with respect to a stationary constituent of a piece of furniture, comprising a pair of rails extending in substantial parallelism with each other and said path at the opposite sides of the reciprocable member and having end portions adjustably mounted in said second member, said end portions being accessible upon movement of said reciprocable member from said end position; first and second eccentric worm wheels rotatably mounted in said second member at the opposite sides of said reciprocable member and engaging with the end portions of the respective rails; first and second worms rotatably mounted in the end portions of the respective rails and meshing with the corresponding worm wheels so that rotation of each worm entails an angular displacement of the respective worm wheel and a corresponding adjustment of the respective rail relative to said second member, said worm wheels being rotatable about axes which are substantially normal to said path and said worms being substantially parallel to the respective rails and being accessible for rotation upon movement of said reciprocable member from said end position; and means for transmitting the adjustments of said rails to said reciprocable member.

4,291,930

GROUND LUG FOR ELECTRICAL CONNECTOR

Eleanor A. Landgreen, Whittier, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 12, 1979, Ser. No. 74,728

Int. Cl.[3] H01R *4/66*

U.S. Cl. 339—14 P **9 Claims**

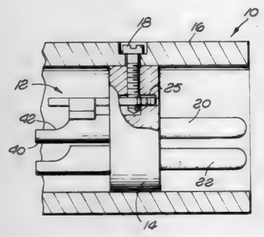
1. An electrical connector comprising:

an insulator containing at least one contact and a grounding lug;

a conductive shell surrounding said insulator;

said grounding lug comprising an electrically conductive body having an integral extension arm outside of said insulator resiliently biased against only one side of said contact to provide electrical connection therebetween;

said grounding lug body having a forward opening therein located within said insulator; and



fastener means extending through said shell into said opening to electrically connect said grounding lug to said shell.

4,291,931

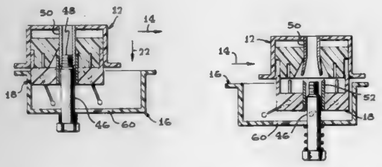
SHEAR PLANE SEPARABLE CONNECTOR

Lawrence J. Stupay, Thousand Oaks, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 12, 1979, Ser. No. 11,384

Int. Cl.[3] H01R *13/62*

U.S. Cl. 339—45 R **10 Claims**



1. In a connection arrangement which includes a first connector movable from an initial position together with a vehicle means along a first direction, and which can be demated from a second connector by movement of the second connector in a demating second direction wherein the second direction is largely perpendicular to said first direction, the improvement of means for demating said connectors comprising:

means confining said second connector to movement along path portions wherein the path portions are angled by less than 90° from an imaginary line parallel to said first direction, during movement of said second connector in either of two opposite directions away from a predetermined deadcenter position;

stop means limiting movement of said second connector to an extreme position spaced away from said deadcenter position in a direction opposite to said first direction; and

spring means which urges said second connector in said demating second direction during initial movement of said second connector from said extreme position to said deadcenter position so that said spring means opposes such initial movement, and which urges said second connector in said demating second direction during subsequent movement beyond said deadcenter position and away from said extreme position to aid in such subsequent movement.

4,291,932

ELECTRICAL CONNECTOR RECEPTACLE ASSEMBLY

Larry R. Cox, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1980, Ser. No. 133,753

Int. Cl.[3] H01R *13/52*

U.S. Cl. 339—60 R **7 Claims**

1. A electrical connector receptacle assembly adapted to

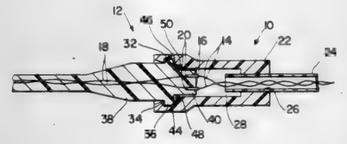
receive an electrical plug housing in a waterproof fashion wherein said plug housing has a longitudinal axis and includes at least one electrical contact, an axially protruding portion, a shoulder portion adjacent said protruding portion and a body portion adjacent said shoulder portion, said shoulder portion defining an engaging surface and a contacting surface located in axially spaced planes generally perpendicular to said longitudinal axis, said contacting surface being generally adjacent said protruding portion and said engaging surface being generally adjacent said body portion, said receptacle assembly comprising:

a receptacle housing means having a central cavity means for receiving at least a portion of said protruding portion;

at least one electrical conductor with an electrical conductor end thereon, and

a feed-thru tube means for containing in a nonrestrictive manner said at least one electrical conductor to allow axial movement thereof,

said receptacle housing means having a longitudinal axis and a first end defining an opening to said central cavity means for removable insertion of a portion of said plug housing,



said receptacle housing means having a second end which sealingly engages the outer periphery of said feed-thru tube means,

said first end including in sequential order, an entrance surface, a retaining surface which is adapted to abut said engaging surface of said plug shoulder portion, an annular recess, and an abutment surface for abutting the contacting surface of said plug shoulder portion, said retaining surface and said abutment surface being located in axially spaced apart planes generally perpendicular to said longitudinal axis,

said receptacle housing means, further including a seal located generally adjacent said abutment surface,

whereby when said electrical conductor end is first connected to said electrical contact and then said plug housing is inserted into said receptacle housing means, said contacting surface forms a fluid-tight engagement with said seal and said engaging surface engages said retaining surface thereby resisting disengagement of said plug housing and said receptacle housing means.

4,291,933

ELECTRICAL CONNECTOR HAVING IMPROVED NON-DECOUPLING MECHANISM

Aristotelis Kakaris, Chicago, Ill., assignor to Akzona Incorporated, Asheville, N.C.

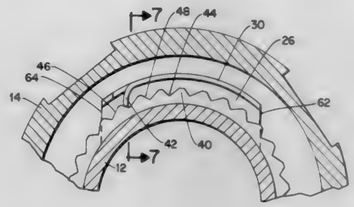
Filed Feb. 11, 1980, Ser. No. 120,457

Int. Cl.[3] H01R *13/62*

U.S. Cl. 339—89 R **5 Claims**

1. An electrical connector comprising:

a cylindrical shell receiving an insert, said insert receiving at least one electrical contact, said shell including a plurality of ratchet teeth projecting from the outer surface of said shell; a coupling nut adapted to engage said cylindrical shell and a corresponding member matable with said cylindrical shell; a spring sector; a curved slot in the inside of said coupling nut for retaining said spring sector, said spring sector including a curved portion having opposing ends adapted to abut against the walls of said curved slot, and further including a spring finger bent inwardly from said curved portion, said finger including a free end, said free end engaging said ratchet teeth as said coupling nut is rotated, said spring finger providing less torque as said free end is pulled across said ratchet teeth than when said free end is pushed across said ratchet teeth, whereby said



coupling nut will more easily rotate in one direction than the other.

4,291,934

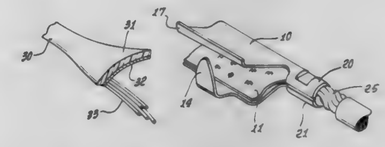
CRIMP TYPE CABLE SHIELD BONDING DEVICE

August Kund, Glendale, Calif., assignor to Communications Technology Corp., Los Angeles, Calif.

Filed Feb. 28, 1980, Ser. No. 125,586

Int. Cl.[3] H01R *11/20*

U.S. Cl. 339—95 R **7 Claims**



1. In a crimp type cable shield bonding device for electrical connection to the shield of a sheathed and shielded cable having an outer insulating sheath and an underlying conducting shield which enclose a bundle of conductors, the combination of:

a U-shaped clip having opposed wings and including integral fastener means for holding said wings together, and terminal means having opposed arms for receiving and clamping a conductor therebetween; and

a spring plate separate from said clip and overlying one of said wings and having a section bowed outward toward the other of said wings;

with said clip and plate adapted for receiving said sheath and shield between said plate and said other wing, with said plate being compressed when said wings are brought together with said sheath and shield therebetween, so that said compressed spring plate exerts contact pressure on said shield, and with said fastener means holding said wings together and holding said plate between said wings.

4,291,935

SELF-STRIPPING CONTACT ELEMENT FOR A CONNECTOR

Jean-Marie Badoz, and Daniel Merceron, both of Suresnes, France, assignors to Socapex and Souriau & Compagnie, both of Boulogne, France

Filed Mar. 27, 1979, Ser. No. 24,363

Claims priority, application France, Mar. 31, 1978, 78 09569

Int. Cl.[3] H01K *11/20*

U.S. Cl. 339—97 R **4 Claims**

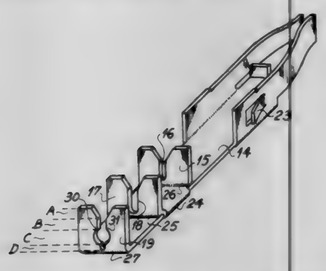
1. A contact element for connectors, for connecting wires covered by an insulating coating comprising:

a front portion for ensuring contact with a complementary contact element belonging to another circuit;

a rear portion for ensuring connection with one of said wires;

said rear portion having a plurality of open slots of different

widths for self stripping and connecting to said one of said wires by introduction of said one of said wires into said slots, said rear portion comprising successive first, second, and third parallel walls respectively having first, second, and third ones of said plurality of slots for respectively providing electrical connection, mechanical stability to axial stresses, and mechanical stability to radial stresses,



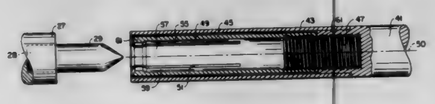
said third slot having a top part for receiving said one wire and a wire holding part, said third slot having, for shaping said one of said wires, a shaping part having a width smaller than the diameter of said one of said wires, opening at opposite ends thereof into said holding part and said top portion, respectively, wherein the portions of the two sides of said third wall on opposite sides of the shaping part of said third slot partly overlap one another.

4,291,936

COAXIAL CONNECTOR WITH IMPROVED FEMALE CONDUCTOR STRUCTURE

William W. Oldfield, Redwood City, and Larry J. Bier, San Jose,both of Calif., assignors to Wiltron Company, Mountain View, Calif.

Continuation-in-part of Ser. No. 904,031, May 8, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,831
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 R **14 Claims**



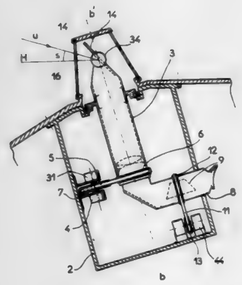
1. A precision connector for mechanically and electrically joining two ends of a coaxial circuit configuration, each characterized by an inner conductor positioned within an outer conductive shield surrounding the inner conductor, comprising:
- a male connector portion attached to one of said coaxial circuit ends, said male portion comprising:
  - an electrically conductive pin attached at one end to an end of the inner conductor, said pin having a diameter significantly less than a diameter of said inner conductor end and having its other end formed into a point-like shape, and
  - an outer conductor connector portion attached to the outer conductor of said one coaxial circuit end, said outer connector portion surrounding said inner conductor pin without making electrical contact therewith, and
- a female connector portion attached to the other of said coaxial circuit ends, said female portion comprising:
  - a tube-like electrically conductive member removably attached at one end to the inner conductor and another end remaining free to receive said pin therein when the male and female connector portions are joined, said member having a plurality of slots extending along its length a distance from its free end toward said one end, thereby to form a plurality of fingers having a radial spring characteristic, an opening of said member at said free end being slightly less in diameter than the diameter of said pin, thereby firmly contacting and gripping said pin when inserted in said free end opening, said tube-like member having beveled edges at its said another end in a manner that its leading edges are sloped from the outside surface to the inside surface in a direction toward said one end, and all edges of said fingers are rounded, thereby making insertion, rotation and removal of the pin therein with reduced wear,
  - a cylindrically shaped electrically conductive sleeve attached at one end to said inner conductor independent of the attachment of said one end of the tube-like member thereto and held free at its other end, said sleeve being characterized by having an outer diameter substantially equal to that of the inner conductor of the male connector portion and an inner diameter greater than an outer diameter of said tube-like member and a non-perforated outside surface, whereby no outside inner conductor surface irregularities exist when the male and female connector portions are connected together, and
  - an outer conductor connector portion attached to the outer conductor of said another coaxial circuit end, said outer connector portion surrounding said sleeve and having a mating configuration with the outer conductor connector portion of said male connector.

4,291,937

OPTICAL PANORAMIC SURVEY

Jean-Jacques Baudot, Ville d'Avray, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Apr. 27, 1979, Ser. No. 34,020
Claims priority, application France, May 3, 1978, 78 13166
Int. Cl.³ G02B *23/02*
U.S. Cl. 350—23 **2 Claims**



1. An optical device of the periscope type carried on a vehicle, comprising:
- a sighting tube, having an optical axis, rotatably mounted in and having one end projecting from the vehicle;
- a driving member fixed to the vehicle for rotating the tube about said optical axis;
- a reflector placed at said one end of the tube and rotatable about a reflector axis disposed orthogonally with respect to said optical axis;
- a central unit for providing electrical voltages representative, respectively, of the pitch angle and roll angle of the vehicle;
- a first resolver having an input winding, a rotor and first and second primary windings connected to receive said voltages, respectively, from said central unit;
- means for driving said rotor of said first resolver in synchronism with said sighting tube;
- a second resolver for supplying an output voltage representative of a predetermined site angle;
- a third resolver having a rotor and first and second primary windings which are respectively connected to the secondary winding of said first resolver and to said central unit to receive one of said voltages, said third resolver providing an output voltage;
- a feedback loop for nulling the difference between the output voltage of said third resolver and the output voltage of said second resolver; and
- means for transmitting the displacement of the rotor of the third resolver to the axis of said reflector with a 2:1 ratio.

4,291,938

APPARATUS FOR DARK FIELD ILLUMINATION

Dietmar Wagner, Sindelfingen, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1979, Ser. No. 99,052
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1978, 2852203
Int. Cl.³ G02B *21/06*
U.S. Cl. 350—91 **15 Claims**



1. Dark field illumination apparatus comprising:
- an optical assembly defining a focal plane on one side thereof and having an object plane on the other side thereof;
- means dividing the portion of said focal plane which is within the numerical aperture of said optical assembly into an annular region coaxial with the optical axis of said optical assembly and a central aperture region surrounded by said annular region;
- a plurality of light conducting fibers each having one end face disposed within said annular region and directed toward said optical assembly; and
- means for illuminating the other end faces of said light conductors, said object plane being dark field illuminated thereby when viewed through said central aperture region of said focal plane.

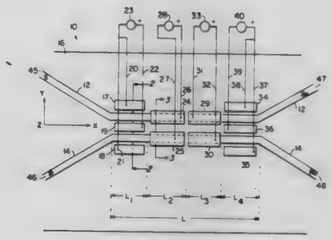
4,291,939

POLARIZATION-INDEPENDENT OPTICAL SWITCHES/MODULATORS

Thomas G. Giallorenzi, Springfield, and Richard A. Steinberg, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 24, 1978, Ser. No. 889,666
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.14 **16 Claims**

1. In an optical channel waveguide switch/modulator of the type having a two-channel region wherein phase shift of a propagating wave is effected by electrically modulating the modal propagation constant of at least one of said two channels, an improved electrode arrangement which provides polarization-independent operation comprising:
- a first configuration of electrodes disposed in proximity to the channels to permit the application of an electric field



that is primarily horizontally directed in at least one channel; and
- a second configuration of electrodes disposed in proximity to the channels to permit the application of an electric field that is primarily vertically directed in at least one channel.

4,291,940

LOW LOSS ACCESS COUPLER FOR MULTIMODE OPTICAL FIBER DISTRIBUTION SYSTEMS

Brian S. Kawasaki, Carleton Place; Kenneth O. Hill, Kanata, and Derwyn C. Johnson, Ottawa, all of Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Jun. 13, 1977, Ser. No. 805,865
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.15 **9 Claims**



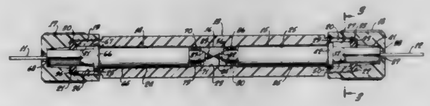
1. An access coupler comprising:
- a first multimode optic fiber having a biconical taper section and a second multimode optic fiber having a biconical taper section, the taper sections fused together and twisted around one another along a predetermined length of said taper sections to provide optical coupling between the fibers.

4,291,941

OPTICAL FIBER CONNECTOR

Erich G. Melzer, Redlands, Calif., assignor to The Deutsch Company Electronic Components Division, Los Angeles, Calif.

Filed Feb. 4, 1980, Ser. No. 118,468
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.18 **14 Claims**



1. An optical fiber connector comprising
- a tubular receptacle having first and second opposite end portions, and a central portion intermediate said end portions,
- a lens member received in said central portion of said receptacle,
  - said lens member having first and second opposite ends, said first and second opposite ends of said lens member

including first and second lens cavities, respectively, said cavities being opposite from each other,

said first and second ends having first and second tapered surface means, respectively,

a friction member at either end of said lens member for retaining said lens member in said central portion of said receptacle,

a first optical fiber termination element received in said first end portion of said receptacle,

a second optical fiber termination element received in said second end portion of said receptacle,

said first termination element having tapered surface means engaging said first tapered surface means of said lens member, said second termination element having tapered surface means engaging said second tapered surface means of said lens member,

a first optical fiber carried by said first termination element,

a second optical fiber carried by said second termination element,

said first and second termination elements including means for gripping said first and second fibers, respectively, so that the ends of said fibers are pressed axially into said first and second lens cavities, respectively,

a first retention means engaging said first termination element and said first end portion of said receptacle for retaining said first termination element in said receptacle,

a second retention means engaging said second termination element and said second end portion of said receptacle for retaining said second termination element in said receptacle,

said first and second termination elements being entirely received within said tubular receptacle and said first and second retention means,

a first seal within said first retention means, said first seal engaging said first retention member, said first end portion of said receptacle and said first termination element for preventing entry of foreign matter into said first end portion of said receptacle,

and a second seal within said second retention means, said second seal engaging said second retention member, said second end portion of said receptacle and said second termination element for precluding entry of foreign matter into said second end portion of said receptacle.

4,291,942

OPTO-ELECTRONIC COUPLING HEAD

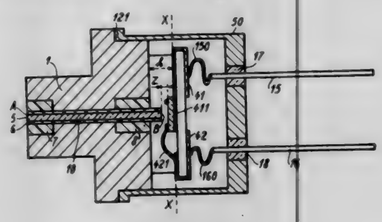
Raymond Henry, and Jacques Simon, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 5, 1980, Ser. No. 118,853

Claims priority, application France, Feb. 8, 1979, 79 03226

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.20 **4 Claims**



1. An opto-electronic coupling head comprising:

an opto-electronic component including electrical connections;

a support device for said opto-electronic component;

an optical fiber-holder which accommodates an optical fiber section;

an encasing device comprising a base formed by said fiber-holder and a cover, wherein the end of said fiber-holder situated on the same side as said component includes a system of wedges integral with said fiber-holder, said wedges defining by their coplanar faces a bearing plane for said support device of said component with said support device being fixed to said bearing plane in such a manner that the optimum optical converting efficiency of said opto-electronic component is attained, and wherein said cover has electrical through-leads; and

contact springs attached to said through-leads and bearing against said electrical connectors at a point along the extent of each of said connectors determined by the fixed location of said component on said wedged determined bearing plane, thus permitting the adjustment of the position of said opto-electronic component with respect to the optical fiber separately from the finishing of the tightness of said head.

4,291,943

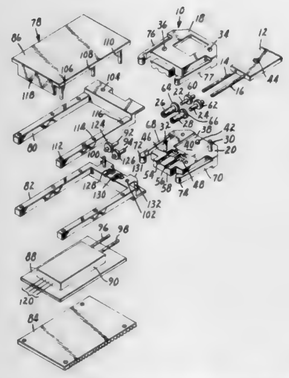
CONNECTOR FOR OPTICAL FIBER CABLES

Paul H. Binek, St. Paul; Thomas M. Cherney, Roseville; John M. Magnusson, Richfield, and Bryon J. Cronk, Hugo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 822,269, Aug. 5, 1977, abandoned. This application Feb. 21, 1980, Ser. No. 123,495

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.22 **17 Claims**



1. A connector for use with a flat cable containing a plurality of optical fibers supported in a flexible matrix and disposed parallel to each other, comprising

(a) a substantially flat housing member having

(i) internal support means defining a passageway corresponding in shape and size to a said cable for receiving and anchoring thereat an end of a said cable such that fibers of a cable received into the housing member may protrude beyond said support means, and

(ii) including means for securing said flexible matrix for anchoring said cable to said housing member while yet avoiding strain on the fibers such that repeated insertions and withdrawals of the connector is facilitated without weakening the fibers, and channel means in general alignment with said support means for receiving the fibers of a said cable with the ends of the fibers terminating proximate an opening through a front portion of the housing member to enable the fiber ends to be optically coupled to fibers within a mated connector abutting said front portion,

(b) a plurality of fiber retaining members adapted to be positioned within said channel means in the housing member, in axial alignment with the fibers, each of said retaining members having a smooth substantially cylindrical periphery and circular bore extending therethrough along the cylindrical axis and through which an end of an optical fiber of said cable may be inserted and anchored substantially coplanar with one end of the bore, the ends of the fiber and of the

retaining member being substantially normal to the axis of the bore,

(c) an alignment means having bores extending therethrough of substantially the same size and shape as the cylindrical periphery of the retaining members for receiving each of said fiber retaining members into one end thereof and for receiving into the other end thereof fiber retaining members of a mated connector enabling the respective received members to be substantially butted together to optically couple fibers enclosed therein while maintaining the thus coupled fibers in axial alignment, and

(d) engagement means positioned proximate side portions of the housing member having members adapted to be coupled to corresponding members of a said mated connector to cause said retaining members to be aligned with and received into the alignment means and to be maintained in said abutting relationship within the alignment means.

4,291,944

AUXILIARY CYLINDER FOR CAMERA

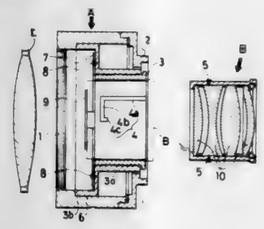
Hidetuka Nomura, Tokyo, Japan, assignor to Hideji Sato, Tokyo, Japan

Filed Jan. 2, 1979, Ser. No. 760

Claims priority, application Japan, Apr. 28, 1978, 53-58444[U]

Int. Cl.³ G02B *7/02*

U.S. Cl. 350—257 **7 Claims**



1. An auxiliary lens holding cylinder, comprising:

a main cylinder having a main photography lens holder on one end and a camera mounting fixture on the other end;

a main photography lens in said main photography lens holder and which is capable of being used by itself for one of a variety of types of photography; and

a sub-cylinder having a built-in lens for changing the type of photography which can be carried out by said main photography lens to another of a variety of types of photography and which is coaxially removably mounted in said main cylinder and extending into said main cylinder from the other end of said main cylinder, whereby when said auxiliary lens holding cylinder is mounted on a camera, said sub-cylinder is between the camera and said main photography lens.

4,291,945

PENTAGONAL ROOF PRISM FOR VIEWFINDER

Yoshisada Hayamizu, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

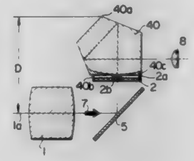
Filed Mar. 26, 1980, Ser. No. 134,203

Claims priority, application Japan, Jun. 12, 1979, 54/73841

Int. Cl.³ G02B *5/04*

U.S. Cl. 350—286 **5 Claims**

1. A pentagonal roof prism for a viewfinder, comprising a pentagonal prism having an apex and a planar surface located opposite said apex, said prism having a region formed therein adjacent said planar surface, said region having a non-uniform index of refraction, said region having a shape which cooperates with said non-uniform index of refraction to cause light passing into said prism through said planar surface to be refracted in the same manner as if said prism had a uniform index of refraction and said surface had a predetermined curvature.



4,291,946

MIRROR ARRANGEMENTS TO PROVIDE SIDE AND REAR VISION FOR TRACTOR WITH IMPLEMENTS

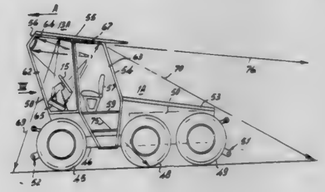
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,733

Claims priority, application Netherlands, Mar. 17, 1978, 7802911; Mar. 17, 1978, 7802912

Int. Cl.³ B60R *1/04, 1/10*

U.S. Cl. 350—302 **31 Claims**



1. A vehicle such as an agricultural tractor which comprises: coupling means at the vehicle's rear for attachment of implements; a cab, an operator's seat and controls in said cab, said comprising front, side and rear walls and a roof, said side and rear walls including transparent windows and said front wall including a windshield; a first mirror in said cab disposed in front of said operator's seat; and a second mirror in said cab disposed substantially parallel to said roof and located at least in part above the space between said operator's seat and said windshield; said first and second mirrors disposed relative to each other and an operator of the vehicle in said operator's seat whereby at least part of an implement attached to said coupling means and surface of the ground at one lateral side of the tractor are visible to an operator viewing said first mirror from said operator's seat through images reflected from said second mirror to said first mirror.

4,291,947

PROCESS FOR MAKING A LIQUID CRYSTAL CELL

Werner Cirkler, Ismaning, and Hans Krüeger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 17, 1979, Ser. No. 40,040

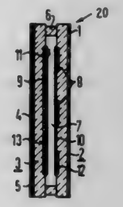
Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823630

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—336 **7 Claims**

1. A process for the manufacture of a liquid crystal cell wherein each of the carrier plates supports an electrode formed of a conductive coating received in a recess with the thickness of the electrode equal to the depth of the recess so that the electrode is flush with the adjacent insulating layer, said process comprising providing a carrier plate, coating a surface of the carrier plate with a photo resist, exposing and

developing the photo resist to remove portions of the photo resist to form a mask which exposes portions of the surface of the carrier plate in a pattern of the electrodes to be applied thereon, deep etching the exposed portions of the surface of the carrier plate to form recesses of a given depth, subsequently applying a layer of electrically conductive material in each etched recess and on the mask to a thickness equal to the



depth of the recesses, then removing the remaining mask with the conductive layer disposed thereon so that the conductive layer is disposed in each recess extends flush with the surface of the carrier plate, then applying an additional layer of insulating material on the conductive layer and surface of the carrier plate and subsequently rubbing the insulating material to provide an orientation layer.

4,291,948

LIQUID CRYSTAL DISPLAY INCORPORATING POSITIVE AND NEGATIVE SMECTIC MATERIAL

William A. Crossland, Harlow; Joseph H. Morrissy, Dunmow, and David Coates, Bishop's Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,869

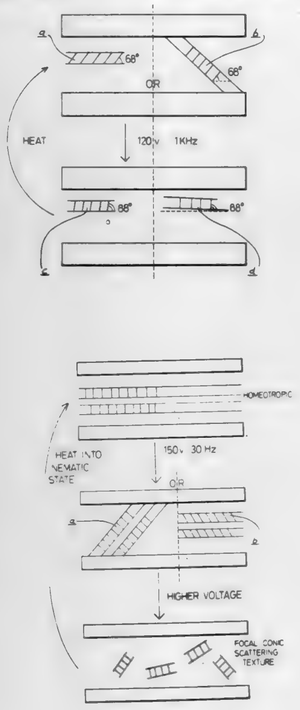
Claims priority, application United Kingdom, Nov. 10, 1977, 46819/77; Nov. 10, 1977, 46820/77; Nov. 10, 1977, 46821/77

Int. Cl.³ G02F *1/13*; C09K *3/34*

U.S. Cl. 350—340 **14 Claims**

1. An internally electroded liquid crystal display cell comprising a layer of smectic material that exhibits positive dielectric anisotropy sandwiched between two electroded plates having electrodes that overlap at least in part, at least one of which plates is transparent, wherein at least one surface of the plates is such that when the layer is taken into a smectic phase from a less ordered non-smectic phase by cooling in the absence of an applied electric field the layer is caused to assume parallel homogeneous alignment having a non-zero tilt angle, said surface provided by an oblique evaporation performed under conditions which promote parallel homogeneous alignment with a non-zero tilt angle wherein said surface is further treated with a homeotropic alignment inducing surfactant to increase said tilt angle.

8. An internally electroded liquid crystal display cell comprising a layer of smectic material that exhibits negative dielectric anisotropy sandwiched between two electroded plates having electrodes that overlap at least in part at least one of which plates is transparent, and wherein at least one surface of the plates is such that, when the layer is taken into a smectic phase from a less-ordered non-smectic phase by cooling it in the absence of an applied electric field, the layer is caused to assume substantially homeotropic alignment with too large a



tilt angle for the formation of focal conic domains observable by optical microscopy in polarized light.

4,291,949

POSITIVE-TYPE DISPLAY DEVICE USING GUEST-HOST TYPE MIXTURE OF LIQUID CRYSTALS AND DYES

Masanobu Wada, No. 8-22 Kamisugi 5-chome, Sendai-shi, Miyagi-ken, Japan; Tatsuo Uchida, Sendai, and Toru Teshima, Yokohama, both of Japan, assignors to Masanobu Wada, Sendai and Stanley Electric Co., Tokyo, both of, Japan

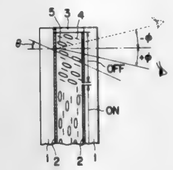
Filed Jun. 20, 1979, Ser. No. 50,299

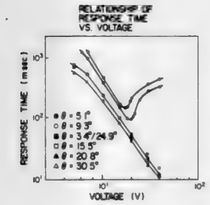
Claims priority, application Japan, Dec. 27, 1978, 53-160147

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—349 **2 Claims**

1. A positive-type display device comprising:
two substrates disposed in substantially parallel relationship to each other with a spacer provided between the ends of said two substrates to form a closed space;
an electrode film within said closed space adherently attached to the surface of each of said two substrates;
an alignment film formed on at least one of said electrode films; and
a mixture consisting essentially of at least one nematic liquid crystal having a negative dielectric anisotropy and at least one pleochroic dye, said mixture retained within said closed space,
wherein the surfaces of said electrode film and said alignment film in contact with said mixture have been treated to orient the longitudinal axes of the molecules contained in said mixture at an angle greater than 10° up to 30° relative to normal of the plane of said substrate when said





molecules are in their quiescent state with no applied voltage.

4,291,950

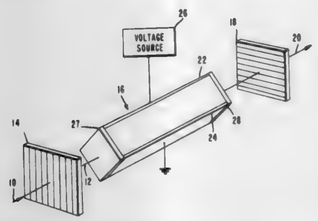
ELECTRO-OPTIC DEVICES USING STARK-INDUCED BIREFRINGENCE AND DICHROISM

David M. Pepper, Los Angeles, and Marvin B. Klein, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 8, 1980, Ser. No. 138,463

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—389 **7 Claims**



1. An optical device comprising:
first and second polarizers spaced from one another along a predetermined path and having their respective pass directions for linearly polarized light oriented perpendicular to one another;
a Stark cell disposed along said path between said first and second polarizers and having a pair of spaced electrodes disposed in respective planes parallel to said path and perpendicular to a predetermined direction other than parallel or perpendicular to the pass direction of said first polarizer;
means for directing a beam of light including a predetermined frequency through said first polarizer and said Stark cell along said path;
a gaseous medium contained within said Stark cell, said medium exhibiting a dichroic absorption resonance in the vicinity of said predetermined frequency for light polarizations parallel and perpendicular to said predetermined direction and further exhibiting birefringence at frequencies slightly above and slightly below the frequency of said absorption resonance for said parallel and perpendicular light polarizations; and
means for applying a voltage between said Stark cell electrodes to controllably vary the frequency of said absorption resonance.

4,291,951

COMPACT TYPE RETROFOCUS LENS

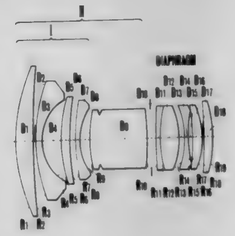
Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,538

Claims priority, application Japan, Dec. 15, 1978, 53-156101

Int. Cl.³ G02B *13/04*

U.S. Cl. 350—458 **2 Claims**



1. A compact type retrofocus lens comprising:
a first positive meniscus lens having a convex surface at the object side;
a second negative meniscus lens having a convex surface at the object side;
a third positive lens;
a fourth negative lens;
a fifth bi-convex lens the radius of curvature of whose lens surface at the object side is smaller;
a diaphragm;
a sixth combined positive lens which has a convex surface with convergent effect at the object side and the radius of curvature of whose lens surface at the image side is smaller;
a seventh bi-concave lens the radius of curvature of whose lens surface at the object side is smaller;
an eighth positive meniscus lens having a concave surface at the object side; and
ninth positive meniscus lens having a concave surface at the object side;
in sequence from the object side, whereby the sign of the radius of curvature of the image side lens surface of the third is same as that of the object side lens surface and the following relations are established:

(1) $FI<0,\ 0.5F \leqq |FI| \leqq 0.75F$

(2) $FII<0,\ 2.5F \leqq |FII| \leqq 4.5F$

(3) $0.32 \leqq (D_9+D_{11}+D_{12})/L \leqq 0.44$

(4) $0<|1/R_{13}|-|1/R_{14}| \leqq 0.18/F$

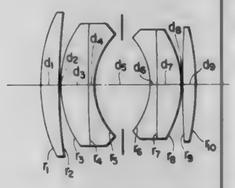
(5) $0.02F \leqq D_{13} \leqq 0.1F$

(6) $0.015/F \leqq (N_7-N_6)/R_{12} \leqq 0.135/F$

wherein:
F: Focal length of the whole system
FI: Compound focal length of the first lens to the fourth lens
FII: Compound focal length of the first lens to the fifth lens
L: Total lens length from the object side surface of the first lens to the image side surface of the ninth lens

D_9: Thickness of the fifth lens along the optical axis
$D_{11}+D_{12}$: Thickness of the sixth combined lens along the optical axis
N_6, N_7: Refractive index (d line) of the negative lens and the positive lens in the sixth lens
D_{13}: Distance between the surface of the sixth and the seventh lens.

4,291,952
GAUSS TYPE LENS SYSTEM
Hiroshi Takase, Hachiouji, and Toru Fujii, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 16, 1980, Ser. No. 112,607
Claims priority, application Japan, Jan. 26, 1979, 54-7840
Int. Cl.³ G01B *9/42*
U.S. Cl. 350—471 **7 Claims**



1. A Gauss type lens system comprising a first, second, third and fourth lens components, said first lens component being a positive meniscus lens, said second lens component being a cemented doublet consisting of a positive lens and negative lens, said third lens component being a cemented doublet consisting of a negative lens and positive lens, said fourth lens component being a biconvex lens, said Gauss type lens system satisfying the following conditions:

(1) $(\nu_1+\nu_5+\nu_6)/3<39$, ν_3, $\nu_4<30$
(2) $1.7<n_1$, n_5, n_6
(3) $0.07<n_3-n_2<0.21$
(4) $0.13\ f<d_3+d_4<0.17\ f$
(5) $0.9<f_1/f_6<1.3$
(6) $0.58\ f<r_1<0.72\ f$

wherein reference symbols ν_1, ν_3, ν_4, ν_5 and ν_6 respectively represent Abbe's numbers of the first lens component, lens on the image side in the second lens component, respective lenses constituting the third lens component, and fourth lens component, reference symbols n_1, n_2, n_3, n_5 and n_6 respectively represent refractive indices of the first lens component, respective lenses constituting the second lens component, lens on the image side in the third lens component, and fourth lens component, reference symbols d_3 and d_4 respectively represent thicknesses of respective lenses constituting the second lens component, reference symbol r_1 represents the radius of curvature of the lens surface on the object side of the first lens component, reference symbols f_1 and f_6 respectively represent focal lengths of the first and fourth lens components and reference symbol f represents the focal length of the lens system as a whole.

4,291,953
OCULAR MEMBRANE AND METHOD FOR PREPARATION THEREOF
William S. Covington, West Cornwall, Conn., assignor to Permavision, Paramus, N.J.
Division of Ser. No. 848,518, Nov. 4, 1977, Pat. No. 4,182,723. This application Aug. 31, 1979, Ser. No. 71,171
Int. Cl.³ G03C *21/46*
U.S. Cl. 351—160 H **3 Claims**

1. An ocular membrane formed from a composition comprising a copolymer of a polysiloxane cross-linked by addition polymerization and a compound selected from the group consisting of:

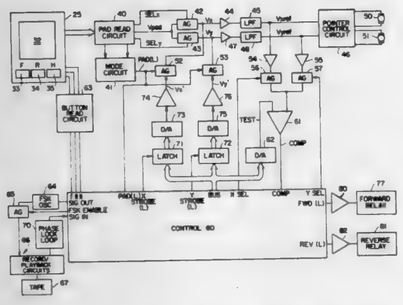
(a) esters of glycidyl alcohol with acrylic acid or methacrylic acid; and
(b) maleic anhydride, nadic anhydride or hexahydrophthalic anhydride;

the amount of each such compound in said copolymer being



effective to impart wettability to the surface of articles formed from said copolymer but less than that which would destroy the hydrophobic properties of said copolymer, and said composition having sufficient light transmission for use as an ocular membrane, said ocular membrane having an average extrapupillary thickness of less than 0.10 mm.

4,291,954
AUDIOVISUAL SYSTEM WITH IMPROVED MOVING LIGHT POINTER
Stewart W. Wilson, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 24, 1980, Ser. No. 114,997
Int. Cl.³ G03B *21/00, 31/00*
U.S. Cl. 353—42 **19 Claims**

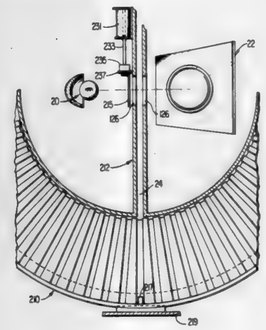


1. Apparatus for use with a photographic image projector of the type that can be automatically controlled to project images recorded on photographic media, said apparatus controlling the position of a pointer image that is suspended with respect to the projected image and said apparatus comprising:

A. positioning control means for generating first positioning control signals in a first form,
B. positioning means for positioning the pointer image with respect to the projected image in response to positioning control signals in the first form,
C. first signal conversion means for converting the positioning signals from said positioning control means to signals in a second form adapted for being recorded,
D. mode selection means connected to said positioning control means and said positioning means for coupling the first positioning control signals to said positioning means during first mode of operation,
E. second signal conversion means connected to said mode selection means for generating second positioning control signals in the first form in response to signals in the second form, said mode selection means alternatively coupling the second positioning control signals to said positioning means during a second mode of operation, and
F. latch means connected to said first and second signal conversion means for storing successive first position control signals in said second form during said first mode and for providing the last stored of said first position

control signals to said second conversion means after said first mode of operation in order to maintain the last pointer range position from said first mode, said latch means otherwise operating during said second mode to store and input said second signal conversion means with previously recorded signals of the second form.

4,291,955
GRAVITY-FEED ROTARY TRAY SLIDE PROJECTOR
Fernando Alvarez-Sabater, P.O. Box 3628, Caracas 101A, Caracas, Venezuela
Continuation-in-part of Ser. No. 52,952, Jun. 27, 1979, Pat. No. 4,232,953. This application Jun. 26, 1980, Ser. No. 163,350
Int. Cl.³ G09F *11/30*; G03B *23/02*
U.S. Cl. 353—111 **3 Claims**



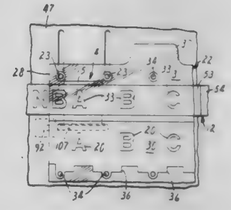
1. A combined slide projector and rotary slide tray,

said slide tray having slots for receiving slides opening inwardly, the slots having partially open outer edges, adjacent slots being at least partially separated from each other by separators having at least partially inwardly recessed outer edges;

said slide projector comprising a housing, central hub means positioned in said housing for rotatably supporting said slide tray, means for rotating said slide tray with respect to said central hub means, a substantially vertical slide passage defined in said hub means having an upper entrance end and a lower exit end alignable with said slots of said slide tray, a projection aperture formed in said slide passage, means including lamp means and projecting optics means for projecting a slide aligned with said projection aperture, shutter means for blocking said projection aperture, and control means for controlling movement of said shutter means comprising sensing means supported by said housing in alignment with said slide passage with switch means positioned to protrude into said slots and into the recessed portions of said outer edges, said switch means being closable by insertion of a properly oriented slide into a slot aligned with said slide passage exit, said control means further comprising means responsive to closing of said switch means for moving said shutter means from a projection aperture blocking position to an unblocking position;

the relationship between said slide tray and said slide projector being such that a slide is movable by gravity during rotation of said slide tray from a slot in said slide tray into said entrance end of said slide passage, is movable by gravity through said slide passage into a position resting on a slide previously introduced into said slide passage and in alignment with said projection aperture, and is movable by gravity out of the exit end of said slide passage into a slot in said slide tray.

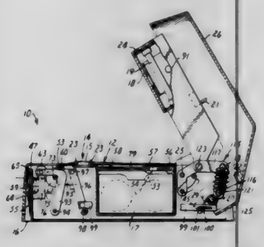
4,291,956
GRAPHIC FORMING DEVICE WITH PREVIEW FEATURE
Peter J. Vogelgesang, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 17, 1979, Ser. No. 104,574
Int. Cl.³ G03B *17/06*
U.S. Cl. 354—14 **1 Claim**



1. In a device useful for forming graphics such as letters, symbols or pictures along a strip of radiation sensitive material, said device comprising:

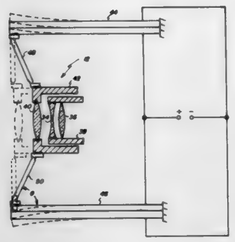
means for defining an exposure station;
means adapted for positioning a predetermined portion of a said strip at said exposure station; and
means adapted to be actuated at said exposure station for momentarily irradiating the predetermined portion of a said strip at said exposure station in a sharply defined graphic pattern, including:
a template comprising a thin radiation transparent member with a radiation blocking coating having sharply defined open areas corresponding in shape to graphics to be formed to provide radiation transmissive windows through said template;
means for mounting said template to register one of the windows at said exposure station; and
radiation means for briefly irradiating the portion of the strip at said exposure station through the aligned window, comprising a flash lamp; means mounting said flash lamp for movement between a normal position spaced from said exposure station to afford visible inspection of said template and said radiation sensitive material portion at said exposure station, and an expose position with said flash lamp closely adjacent the exposure station; and means for operating said flash lamp upon movement of the flash lamp to its expose position, the improvement wherein:
said coating on said template has a viewing opening adjacent each of said windows;
for each of said windows said template has a positive image of that window within said viewing opening, which image is positioned with a predetermined relationship with respect to that window;
said template has locating orifices at a predetermined location with respect to said windows;
said means for mounting said template comprises locating members adapted to enter said locating orifices and means mounting said locating members for movement between an exposure position with the window associated with the locating orifices located at said exposure station, and a preview position with the positive image corresponding to the window associated with the locating orifices positioned at the exposure station at the position in which the window is located when the locating members are in their exposure position; and
said device includes means coupled between said means mounting said flash lamp for movement and said means for mounting said template for positioning said locating members in said preview position when said flash lamp is in its normal position, and for positioning said locating members in said exposure position when said flash lamp is in its expose position.

4,291,957
GRAPHIC FORMING DEVICE WITH TOGGLE CLAMPED LAMP ARM
Elmont E. Hollingsworth, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 17, 1979, Ser. No. 104,651
Int. Cl.³ B41B *19/00*
U.S. Cl. 354—14 **2 Claims**



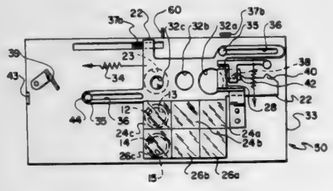
1. In a device useful for forming a series of graphics such as letters, symbols or pictures along a strip of radiation sensitive material, said device comprising:
a frame;
means on said frame for defining an exposure station;
means mounted on said frame adapted for moving a said strip through said exposure station to position a predetermined portion of the strip at said exposure station; and
means adapted to be actuated at said exposure station for momentarily irradiating a portion of the strip at said exposure station in a sharply defined graphic pattern, including:
a template comprising a thin radiation transparent member with a radiation blocking coating having sharply defined open areas corresponding in shape to graphics to be formed to provide radiation transmissive windows through said template;
means on said frame for mounting said template to register the windows at said exposure station;
pressing means for releasably clamping said template at said exposure station in intimate contact with the portion of the strip at the exposure station; and
radiation means for briefly irradiating the portion of the strip at said exposure station through the aligned window, comprising flash lamp, an arm supporting said flash lamp at one end and having a second end mounted on said frame for pivotal movement to move said lamp between a normal position spaced from said exposure station to afford visible inspection of said template and the portion of the strip at said exposure station, and an expose position with said lamp closely adjacent the exposure station, and means for operating said flash lamp upon movement of the lamp to its expose position and activation of said pressing means, the improvement wherein:
said means for defining an exposure station comprises a resilient pad supported on said frame;
said arm includes a transparent plate having one surface adapted to engage radiation sensitive material at said exposure station on its side opposite said resilient pad and supports said lamp adjacent the surface of said plate opposite said one surface; and
said pressing means comprises a toggle linkage including first and second bars having adjacent ends pivotably joined together to form a knee and opposite second ends, the second end of said first bar being pivotably attached to said frame and the second end of said second bar being pivotably attached to said arm; and an activating lever pivotably mounted at one end on said frame and having a portion adapted to engage said knee and straighten said toggle linkage upon pivotal movement of said actuating lever from a raised to a lowered position to move said arm to said expose position and press said plate toward said pad.

4,291,958
CAMERA WITH ELECTRONIC FLASH AND PIEZOELECTRIC LENS MOTOR
Lee F. Frank, and James K. Lee, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 3, 1980, Ser. No. 193,771
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **10 Claims**



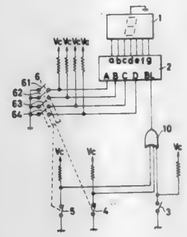
1. In a photographic camera of the type having a moderately high voltage power supply for powering electronic flash apparatus, and an adjustable focus lens including a lens element movable to adjust the focus, automatic focusing apparatus comprising: means for sensing a scene to be photographed and producing a focus signal representative of the proper focus adjustment for the scene; piezoelectric motor means coupled to said movable lens element for moving said lens element in response to a moderately high voltage; and control circuit means electrically connected to said moderately high voltage power supply and responsive to said focus signal for applying a metered amount of power from said power supply to said piezoelectric motor means to move said lens element to said proper focus adjustment.

4,291,959
PHOTOGRAPHIC APPARATUS
Donald O. Easterly, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 21, 1980, Ser. No. 209,349
Int. Cl.³ G03B *7/085, 7/087, 7/18, 15/05*
U.S. Cl. 354—31 **5 Claims**



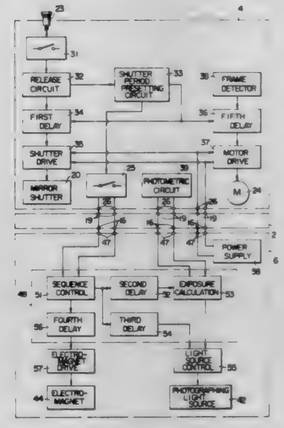
1. In a photographic apparatus including:
adjustable diaphram means providing a plurality of different-size exposure apertures;
a first light sensor for sensing the ambient light reflected from a photographic subject, and for providing an output indicative of such ambient light;
means responsive to the output from the first light sensor for adjusting the diaphragm means; and
an electronic flash unit including a flash producing means for emitting a predetermined amount of flash light toward the photographic subject, a second light sensor for sensing flash light reflected by the subject as a result of flash light transmitted thereto by the electronic flash unit and for providing an output indicative of such flash light, and a quench circuit for terminating the generation of flash light by the flash producing means in response to the output from the second light sensor, the improvement comprising:
adjustable light control means coupled to the diaphragm means for changing the amounts of incident ambient light transmitted to the first sensor in a first sequence as a function of the diaphragm setting and for changing the amounts of flashlight transmitted to the second light sensor in a second sequence as a function of the diaphragm setting so as to vary the ratio of ambient exposure light to flash exposure light in accordance with the selected exposure aperture.

4,291,960
DISPLAY DEVICE
Tadashi Ito, Kanagawa; Hiroyasu Murakami, Tokyo; Masayuki Suzuki; Masayoshi Yamamichi, both of Kawasaki; Nobuaki Sakurada, Kanagawa, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 825,081, Aug. 16, 1977, abandoned.
This application Mar. 6, 1979, Ser. No. 17,923
Claims priority, application Japan, Sep. 3, 1976, 51-105458
Int. Cl.³ G03B *17/20*
U.S. Cl. 354—53 **15 Claims**



1. A display system including:
(a) a display information signal forming circuit for producing a signal corresponding to display information,
(b) a display circuit for displaying the display information in response to said signal from display information signal forming circuit,
(c) manually operated display control switch means for controlling the operation of said display circuit and for setting said display circuit into either a display state and a non-display state,
(d) display control means for controlling a display by said display circuit independently of said display control switch means, said means being arranged to produce a display signal automatically when a display operation is necessary; and
(e) warning information signal forming circuit for forming warning information, said display circuit being set into said display state in response to display signal independently of said display control switch means for displaying the warning information instead of said display information.

4,291,961
APPARATUS FOR ENDOSCOPIC PHOTOGRAPHY
Syuichi Takayama, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Japan
Filed Mar. 25, 1980, Ser. No. 133,668
Claims priority, application Japan, Apr. 16, 1979, 54-46975
Int. Cl.³ A61B *1/04, 3/14*
U.S. Cl. 354—62 **9 Claims**



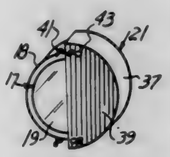
1. An apparatus for endoscopic photography, comprising:
a light source unit that includes light source means for introducing into the endoscope both diagnostic light, to enable the operator to examine the object that is to be examined, and photographing light, for making a photograph of the object; said light source unit further including means for interrupting the introduction of said diagnostic light into the endoscope;
first delay circuit means for initiating the opening of a shutter of a camera responsive to the depression of a shutter release button of the camera after the introduction of said diagnostic light from said light source unit into the endoscope is interrupted;
an exposure calculating circuit for determining a proper exposure;
second delay circuit means for causing said exposure calculation circuit to initiate its operation a first predetermined time after the shutter is opened;
third delay circuit means for allowing the introduction of said photographing light from said light source unit into the endoscope a second predetermined time after the initiation of operation of said exposure calculation circuit; and
fourth delay circuit means for reinitiating the introduction of said diagnostic light from said light source unit into the endoscope after completion of the exposure of a film disposed within the camera and after the shutter has been fully closed.

4,291,962
LENS MASK FOR CAMERAS AND PHOTOGRAPHIC METHOD
Thomas Jackson, 14580 Woodmont, Detroit, Mich. 48227
Filed Jun. 27, 1980, Ser. No. 163,785
Int. Cl.³ G03B *15/00*
U.S. Cl. 354—122 **3 Claims**

1. In the combination with a camera having a housing enclosing and mounting a film unit, a viewing window and a lens assembly including a normally closed shutter and a lens;
a lens mask removably and adjustably mounted upon said lens assembly, including an upright opaque end face overlying and blocking one-half of the lens upon one side of a vertical plane through its optical axis;

whereby the image of a first object sighted through one side half of the viewing window will pass through the unmasked part of said lens and expose one-half of said film unit;

said lens assembly including a tube on said housing enclosing said lens;



said lens mask including a semi-cylindrical body mounted upon said tube, said end face being mounted upon one end of said body and semi-circular in shape; and

laterally spaced pairs of vertically spaced headed pins on and extending forwardly of said housing

there being a pair of bayonet slots formed adjacent to the top and bottom of said end face cooperatively receiving one pair of said pins.

4,291,963

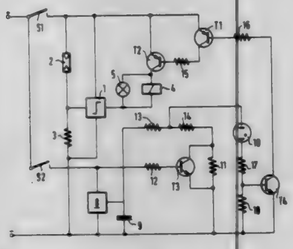
ELECTRONIC FLASHER

Hermann Körber, Bünde, Fed. Rep. of Germany, assignor to Balda-Werke, Bünde, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,687

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—128 **4 Claims**



1. In a flash device for a camera of the type including a two-way switching means movable between a first open circuit position and a second closed circuit position, an electromagnet operatively connected to said switching means, said electromagnet being magnetically active when said two-way switching means is in said second closed circuit position, said two-way switching means and said electromagnet being cooperable for thereby forming a relay, a conventional high-voltage flasher having a charging circuit of the type including a high-voltage capacitor, said relay being operatively connected to said charging circuit and controlling current feed to said high-voltage capacitor therein as a function of the level of charge thereof, and a charge indicating means operatively connected to said high-voltage capacitor and said electromagnet for controlling said electromagnet as a corresponding function of voltage present thereon, said charge indicating means providing an operator of said device with a positive indication that said device is ready to flash, the improvement comprising a means connected to said charge indicating means and said high-voltage capacitor in said charging circuit of said device for producing a hysteresis in said connection therebetween, whereby a positive indication produced in said charge indicating means is extinguished at a lower voltage on said high-voltage capacitor than is initially required to produce said positive indication on said charge indicating means.

4,291,964

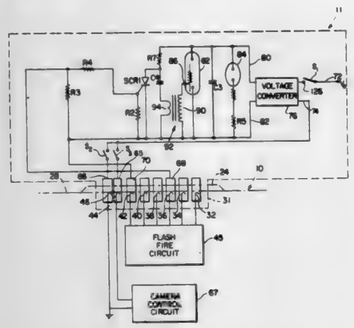
STROBE SWITCH WITH CAMERA CONTROL FEATURE

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 28, 1980, Ser. No. 116,268

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—145 **6 Claims**



1. An electronic flash apparaus for use with a camera of the type having means for fixedly and electrically connecting to a source of artificial illumination and means for automatically controlling an exposure cycle in an ambient mode absent the connection of the source of artificial illumination and in a flash mode responsive to the electrical connection of the source of artificial illumination to the camera electrical connecting means in a manner operating to electrically short at least two spaced apart mode select terminals on the camera connecting means thereby enabling the automatic exposure control means to provide a flash fire signal to the source of artificial illumination by way of the electrical connecting means at the appropriate instant during an exposure interval, said electronic flash apparatus comprising:

a housing;

circuit means responsive to the flash fire signal from the camera for providing a flash of artificial illumination; and

switch means connectable to a source of electrical energy for controlling the application of electrical energy to said circuit means, said switch means further including means connectable to the spaced apart mode select terminals of the camera connecting means for electrically shorting the mode select terminals to switch the camera to its flash mode of operation in response to the closure of said switch means to energize said circuit means, said switching means also including at least three switch contacts simultaneously switchable from an open circuit condition to a short circuit condition, two of said switch contacts serving to control the application of electrical energy to said circuit means in a manner whereby open circuiting said two switch contacts operates to electrically isolate said circuit means from the camera and the other of said switch contacts in cooperation with one of said two switch contacts serving to control the electrical short circuiting of the camera mode select terminals.

4,291,965

APPARATUS FOR AUTOMATICALLY SELECTING A PRESELECTED FOCAL POSITION FOR A LENS SYSTEM

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

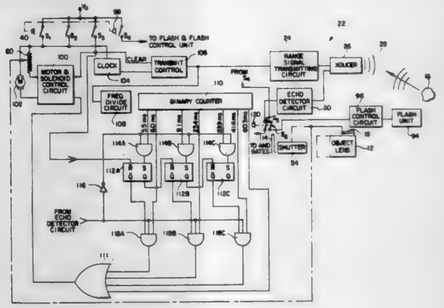
Filed Oct. 6, 1980, Ser. No. 194,572

Int. Cl.³ G03B *3/10, 15/03*

U.S. Cl. 354—195 **8 Claims**

1. In an apparatus for automatically focusing image forming rays at a focal plane having ranging means for deriving a signal indicative of the range of a subject from the apparatus, a variable focusing objective lens assembly having at least one lens element displaceable to different focal positions so that at each focal position the image carrying light rays from a subject at corresponding different distance ranges from the apparatus are focused at the focal plane, means for mounting the lens assembly for movement of its lens element to the different focal positions, and positioning means responsive to the ranging means for positioning the lens element to a focal position corresponding to the subject range, the improvement comprising:

manually actuatable means for disabling the ranging means and for signalling the positioning means to automatically move a lens element to a preselected one of the focal positions.



4,291,966

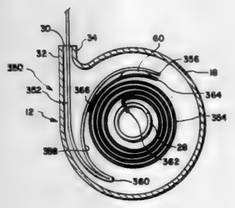
PHOTOGRAPHIC FILM ASSEMBLAGE

Leonard V. Bendoni, Framingham, and Lawrence E. Green, Burlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 3, 1980, Ser. No. 136,801

Int. Cl.³ G03B *17/26*

U.S. Cl. 354—275 **9 Claims**



1. A photographic film assemblage for use with commercially available still picture cameras of the type having means for operably locating a single reel cassette of film of the non-self-developing type which is adapted to have sequentially photographically recorded thereon a plurality of discrete subject images when utilized in such cameras, and which cassette includes a generally cylindrical housing of a given diameter and a given length with an elongate light sealed opening extending therethrough and a spool mounted within the cylindrical housing for rotation about an axis extending lengthwise of the cylindrical housing and including a central portion around which an elongate strip of non-self-developing type film is coiled with one end thereof extending through the light sealed opening, said photographic film assemblage comprising:

a generally cylindrical housing of substantially said given length and diameter, said housing including means for defining an elongate light sealed opening extending lengthwise thereof;

support means located within said cylindrical housing for rotation about an axis extending lengthwise of said cylindrical housing;

an elongate composite film structure coiled within said cylindrical housing, said structure including a first sheet having a first end extending through said elongate light sealed opening and a second end located within said cylindrical housing and including therebetween a given length of unexposed self-developing type film sufficient to accommodate the sequential recording thereon of a plurality of discrete subject images, and a second sheet having a first end secured to said support means, a second end located in superposed relation to said second end of said first sheet, and an intermediate portion secured to said first sheet at a location spaced from but closely adjacent to said second end of said first sheet; and

a container of processing liquid secured to one of said second ends and facing the other of said second ends such that its contents may be spread between said first and second sheets, subsequent to the exposure of said first sheet, to initiate the formation of a visible image within said composite film structure.

4,291,967

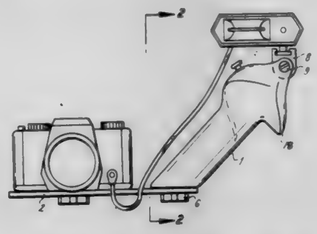
POSITIVE LOCKING ADJUSTABLE MOUNT FOR CAMERA AND FLASH

Andrew H. Jackson, Jr., 808 Birch St., Collinsville, Ill. 62234

Filed Sep. 26, 1980, Ser. No. 190,922

Int. Cl.³ G03B *15/02, 17/56*

U.S. Cl. 354—293 **10 Claims**



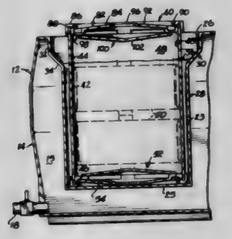
1. A photographic apparatus for holding a camera and a flash unit comprising in combination, a flashshoe having a positive locking positioning means, a baseplate having a positive locking positioning means, and a handgrip having a base on one end in a plane at about a forty-five degree (45°) angle to the longitudinal axis of the handgrip and having in said base of positive locking means permitting adjustable engagement with the positive locking positioning means in the baseplate at incremental angles about an axis perpendicular to said baseplate, and having at its opposite end a mating means for permitting rotational mounting of the flashshoe rotational means and mating positive locking positional means permitting adjustable engagement with the positive locking positioning means in the flashshoe, and further having a contoured lip on the same end as the means for engaging said flashshoe, said lip located on the side of the handgrip permitting it to rest upon the thumb-index finger arch of the user's hand holding the handgrip, such that said handgrip can be securely attached to the baseplate at about 45° angle to the plane in which the baseplate lies and at any one of a number of positions about an axis perpendicular to the baseplate to permit comfortable holding of a camera and the flashshoe can be incrementally positioned and positively locked to securely hold a flash unit relative to the baseplate mounted camera for either horizontal or vertical format photography.

4,291,968

DAYLIGHT DEVELOPING APPARATUS FOR PHOTOGRAPHIC FILM

Gerald Work, E. 1701 20th, Spokane, Wash. 99203

Filed Nov. 26, 1979, Ser. No. 97,374
Int. Cl.³ G03D *3/00*
U.S. Cl. 354—313 **3 Claims**



1. A daylight developing apparatus for developing photographic film without a darkroom, comprising:

a developing tank for receiving photographic treating liquid at a desired liquid level and for receiving a light impermeable photographic film carrier therein having photographic film therein to permit the film carrier to be lowered into the tank to immerse the photographic film in the photographic treating liquid below the desired liquid level without the photographic film being subjected to room light;

said carrier comprising a light impermeable upright side wall extending between an upper end and a lower end forming an interior cavity therein to receive the photographic film;

said carrier comprising a lower end enclosure means mounted to the lower end of the upright side wall;

said lower end enclosure means having liquid passage means formed to permit the photographic treating liquid to (1) flow into the cavity through the liquid passage means when the lower end is lowered into the tank with the liquid level in the cavity corresponding to the desired liquid level in the tank, and (2) flow out of the cavity when the lower end is raised from the tank;

said lower end enclosure means having a lower end light baffle means associated with the passage means forming a lower end light trap for preventing the entrance of light into the cavity through the lower end wall means while permitting the flow of liquid into and out of the cavity through the liquid passage means;

an upper end enclosure wall means mounted to the upper end of the upright side wall enclosing the cavity at the upper end;

said upper end enclosure wall means having a fluid passage means formed therein to permit air to flow out of the cavity when the lower end is lowered into the tank and to permit air to flow into the cavity when the lower end is raised from the tank;

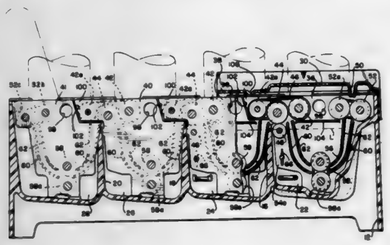
said upper end enclosure wall means having a light baffle means associated with the fluid passage means forming an upper end light trap for preventing the passage of light into the cavity while permitting the flow of air into and out of the cavity through the fluid passage means; said developing tank having an upright tank wall forming a recess for receiving the photographic treating liquid and film carrier in which the upright tank wall includes a lower wall section having a reduced cross-sectional area and an upper wall section having an enlarged cross-sectional area to form a liquid surge reservoir with an inclined wall section that extends inward and downward to the lower wall portion to guide the film carrier downward into the recess from the upper wall section to the lower wall section and to enable surges of treating liquid from the recess in the lower wall section to flow upward and expand gradually outward along the inclined wall portion to the liquid surge reservoir should the carrier be lowered into the recess too rapidly to thereby prevent the treating liquid from squirting from or overflowing from the recess.

4,291,969

PHOTOGRAPHIC DEVELOPER-PRINTER ASSEMBLY, AND A CONVEYING ROLLER UNIT THEREFOR

Gary E. Raymond, 755 Rainbow Dr., Hollywood, Fla. 33021

Filed Oct. 9, 1979, Ser. No. 82,652
Int. Cl.³ G03D *3/08*
U.S. Cl. 354—322 **13 Claims**



1. A photographic developer-printer assembly, comprising:

first means defining a reservoir;

partitions subdividing said reservoir into a plurality of tanks;

conveying roller assemblies replaceably disposed in said reservoir;

second means coupled to said first means, and engaged with said roller assemblies, for rotatably driving said roller assemblies; and

guide means disposed adjacent to said roller assemblies, for directing photographic papers, which are to be developed and printed, to said roller assemblies successively; wherein

said roller assemblies comprise a pair of spaced apart rollers, an intermediate roller interposed between said pair of rollers, and band means replaceably looped about said pair of rollers and atop said intermediate roller; and

said band means comprises a multitude of substantially parallel strands, closely spaced apart, lying normal to said rollers' axes of rotation, for constraining photographic papers which are directed to, and conveyed between said roller assemblies, firmly to said intermediate rollers; and further including

means engaged with said intermediate rollers for cleansing the latter of any substances borne on the surface thereof; wherein

said partitions subdivide said reservoir into a first developing-fluid tank, a second fixing-fluid tank, and a final water tank; further including

a pair of exit rollers, rotatably supported in said final tank and coupled to said second means to be driven thereby, for nipping photographic papers and removing the latter from said final tank; and

chamber means supported on said first means, adjacent to said exit rollers, in which to collect papers exiting from said final tank; and wherein

said chamber means comprises rack means on which slidably to receive papers exiting said final tank and moving into said chamber means for collection therein; and

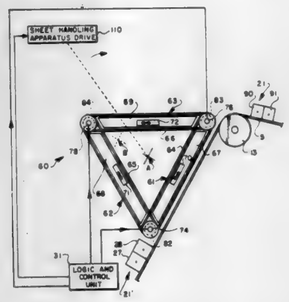
said rack means comprises means for inhibiting surface tension attraction of papers slidably received thereon.

4,291,970

APPARATUS FOR PRODUCING DUPLEX COPIES

Alphonse B. DiFrancesco, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,572
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **9 Claims**



1. In apparatus for producing images on first and second sides of a copy sheet and including a movable image transfer member upon which first and second unfixed transferable images may be formed, copy sheet handling means comprising:

a vacuum member movable in opposite directions, and

means for moving said vacuum member between

(a) a first position overlying said image transfer member and at which said vacuum member is moved in synchronism with the image transfer member in one direction to separate by vacuum attraction a copy sheet to one side of which a first transferable image has been transferred from said transfer member, and

(b) a second position, spaced from the first position, and to which the vacuum member is moved after separation of the copy sheet from said transfer member, said vacuum member being moved in the opposite direction in synchronism with the image transfer member when in said second position to bring the second side of the copy sheet into transferable relationship with the second transferable image on the transfer member.

4,291,971

ELECTROGRAPHIC PHOTOCOMPOSING MACHINE

Igor V. Anfilov, ulitsa Udaltsova, 12, kv. 136, Moscow; Geny S. Ershov, prospekt Energetikov, 46, korpus 1, kv. 72; Eduard A. Kaidoshko, prospekt Lunacharskogo, 68, korpus 2, kv. 82, both of Leningrad; Jury B. Remizov, ulitsa Zelenogradskaya, 21, korpus 2, kv. 193; Anatoly L. Rozhenko, ulitsa Lavochkina, 6, korpus 2, kv. 215, both of Moscow; Gennady P. Suvorov, prospekt K.Marxa, 70, kv. 81, Leningrad, and Boris G. Scherbatenko, Leninsky prospekt, 92, kv. 121, Moscow, all of U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 72,556
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **1 Claim**

1. An electrographic photocomposing machine comprising:

a rotary type carrier with negative images of characters;

a flashtube of said rotary type carrier, generating a beam and having a control unit;

a photographic unit arranged downstream of said rotary type carrier along the beam from said flashtube and having a drive;

a line forming mechanism arranged downstream of said photographic unit along the beam from said flashtube;

an electrophotographic section arranged downstream of said line forming mechanism along the beam from said flashtube;

a cylindrical intermediate image carrier optically associated with said line forming mechanism and having a drive;

a photoconductive layer of said intermediate image carrier;

a dielectric layer of said intermediate image carrier, applied on said photoconductive layer and transparent in the sensitive area of said photoconductive layer;

a computer unit electrically associated with said drive of said line forming mechanism, with said control unit of said flashtube, and with said drive of said intermediate image carrier;

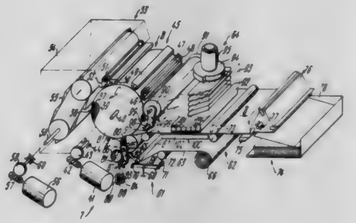
a charging device of said electrophotographic section, arranged in proximity to said intermediate image carrier;

a first charger of said charging device, arranged in direct proximity to said intermediate image carrier;

a first lamp of said charging device, for exposure of said intermediate image carrier, illuminating a portion of said intermediate image carrier in the area of action of said first charger;

a second charger of said charging device, arranged at a distance from said first charger in the direction of rotation of said intermediate image carrier, in direct proximity thereto;

a third charger of said charging device, arranged at a distance from said second charger in the direction of rotation of said intermediate image carrier, in direct proximity thereto, the luminous flux which carries the image of said characters from said type carrier projecting said characters on the portion of said intermediate image carrier between said second and third chargers;



a second lamp for exposure of said intermediate image carrier, arranged downstream of said third charger in the direction of rotation of said intermediate image carrier;

a latent image developing device of said electrophotographic section contiguous with the surface of said intermediate image carrier and arranged in the direction of its rotation downstream of said charging device;

a powder image transferring device of said electrophotographic section, provided with a paper feed system including a paper web with a powder image applied on its first side, wherein said powder image transferring device ensures mechanical contact between said paper web and said intermediate image carrier and is arranged downstream of said latent image developing device in the direction of rotation of said intermediate image carrier;

a device for cleaning said intermediate image carrier of said electrophotographic section, arranged downstream of said powder image transferring device in the direction of rotation of said intermediate image carrier;

a unit of said electrophotographic section for fixing the powder image on the paper; and

heaters of said unit of said electrophotographic section for fusing the powder image into the paper, arranged near said paper web on its first side, downstream of said powder image transferring device in the direction of motion of said paper web.

4,291,972

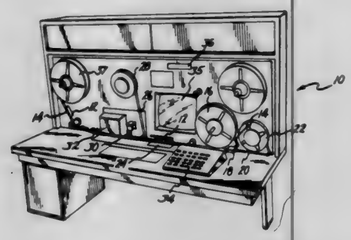
PHOTOGRAPHIC REPRINT SYSTEM WITH LARGE PRINT QUANTITY VERIFICATION

Ronald C. Laska, Minnetonka, and Janis Pone, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 23,521, Mar. 23, 1979, abandoned. This application Jan. 7, 1980, Ser. No. 109,821

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—40 **20 Claims**



1. A photographic printer for printing photographic prints from photographic film frames, the photographic printer comprising:

means for storing print quantity information indicative of desired print quantity for each of a plurality of film frames;

means for sequentially advancing the film frames to a print gate at which photographic prints are printed;

means for sequentially supplying signals based upon the stored print quantity information, which are indicative of the desired print quantity to be used in controlling the quantity of prints made from a film frame;

means for interrupting operation of the printer prior to printing the film frame if the desired print quantity exceeds a predetermined number; and

operator-controlled means for providing signals to reinitiate operation of the printer to print from the film frame either the desired print quantity or a print quantity different from the desired print quantity, including zero.

4,291,973

SCANNING SYSTEM

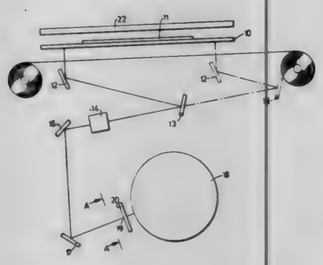
Edric R. Brooke, Bishops Stortford, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1979, Ser. No. 105,369

Claims priority, application United Kingdom, Dec. 21, 1978, 49533/78

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—71 **7 Claims**



1. An optical scanning system for a copier comprising

at least one stationary illumination source for illuminating a document lying in an object plane,

at least one scanning mirror adapted for movement in a plane parallel to said object plane,

at least one flexible belt adapted for movement in a plane parallel to and located between said object plane and said scanning mirror plane, said flexible belt having at least one elongated window extending across its width, the movement of said mirror and said web being synchronized so that light incrementally reflected from said document is transmitted through said window to said mirror thereby effecting line by line scanning of said document, and

projection means for projecting images reflected by said scanning mirror onto a moving imaging plane.

4,291,974

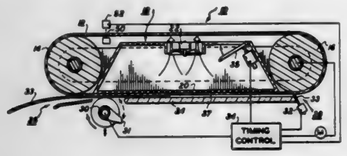
DUAL MODE DOCUMENT BELT SYSTEM

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1980, Ser. No. 111,063

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—76 **7 Claims**



1. In a document handling system for a copier for documents to be copied at an exposure station of a copier in a first copying mode in which the documents are transported to the exposure station by a moving endless vacuum belt transport with a substantial area of vacuum apertures in said vacuum belt providing vacuum attraction of said documents, and in a second copying mode in which documents are manually placed at the exposure station and said vacuum belt is stationarily placed thereover; and wherein said document belt has a light reflective surface to provide an optical background for the documents to be copied at said exposure station in both said copying modes, the improvement comprising:

providing at least one completely unapertured area of said belt which is larger than the area of said exposure station, said unapertured area being spaced between apertured areas of said belt circumferentially along said surface of said belt in the direction of motion of said belt, and wherein said light reflective surface of said belt throughout said unapertured area is a single optically uniform surface; and

belt registration means for automatically positioning and stopping said belt in a first stopping position in which said unapertured area thereof is fully overlying said exposure station when said document handling system is in said second, manual document placement, mode of operation so that none of said vacuum apertures are exposed for copying in said exposure station.

4,291,975

APPARATUS FOR DETERMINING THE COLOR CHARACTERISTICS OF A GEM

Paul M. Reccah, Chicago, Ill., assignor to Scientific Gem Identification, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 81,363, Oct. 3, 1979, abandoned, which is a continuation of Ser. No. 916,120, Jun. 16, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,777

Int. Cl.³ G01N *21/27*

U.S. Cl. 356—30 **27 Claims**

1. Apparatus for measuring the spectral transmission characteristics of a gem, comprising:

a source of polychromatic light;

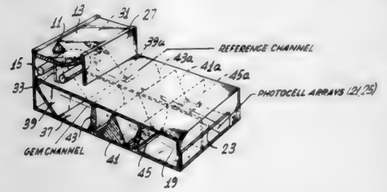
means for supporting the gem in a position to receive a portion of the light from said light source, said light being transmitted by the gem in accordance with the spectral transmission characteristics of the gem;

first and second, corresponding arrays of phototransducers;

optical means for defining a gem channel optical path and a reference channel optical path, said optical means including

first means for collecting light transmitted by the gem to form a gem channel beam of light for transmission along the gem channel optical path to said first array of phototransducers,

second means, operable simultaneously with said first means, for collecting a portion of the light from said light source to form a reference channel beam of light



for transmission along the reference channel optical path to said second array of phototransducers, and

means for separating each of the gem channel and reference channel beams of light into a plurality of separate wavelength bands, and for directing the light in each wavelength band at a separate phototransducer in the corresponding array of phototransducers, whereby a plurality of corresponding light intensity measurements are produced by each array; and

means for comparing each light intensity measurement from said first array with the corresponding light intensity measurement from said second array, to produce a plurality of normalized measurements representative of the spectral transmission characteristics of the gem.

4,291,976

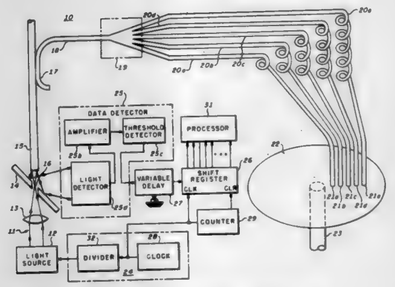
DIGITAL FIBER OPTIC POSITION SENSOR

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,614

Int. Cl.³ G01D *5/34*

U.S. Cl. 356—150 **7 Claims**



1. An optical digital position sensor comprising:

main optical transmission means for propagating incident and reflected optical signals having a first terminal adapted to receive and to transmit optical signals;

branch optical transmission means coupled to receive said incident optical signals from said main optical transmission means for propagating said received optical signals and reflected optical signals thereof to provide differential optical signal round trip time delays between said first terminal and end terminals of said branch optical transmission means; and

code means having areas with a first reflection coefficient and areas with a second reflection coefficient, said areas illuminated by optical signals received from said main optical transmission means and emitted from said end terminals, each area thereafter returning an optical signal in accordance with the reflection coefficient positioned thereat to said branch optical transmission means wherefrom said reflected signals are coupled to said main optical transmission means to propagate to said first terminal thereby establishing a time sequence of optical signals thereat coded in accordance with said first and second reflection coefficients illuminated by said optical signals emitted from said end terminals.

4,291,977

ADJUSTMENT DEVICE FOR ALIGNING A GROUP OF CYCLICALLY SWITCHED LIGHT TRANSMITTERS OR RECEIVERS WITH A SINGLE LIGHT RECEIVER OR TRANSMITTER

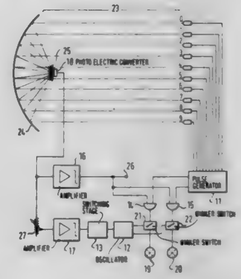
Jürgen Erdmann, and Walter von Stein, both of Waldkirch, Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 41,993

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978, 2824311

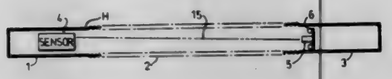
Int. Cl.³ G01B *11/26*

U.S. Cl. 356—152 **13 Claims**



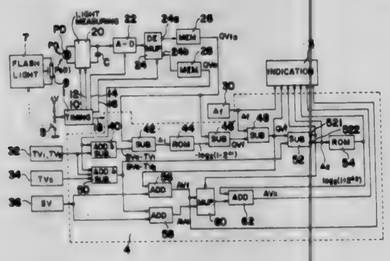
9. An adjustment device for aligning a transmitter with a receiver, the adjustment device comprising means for passing output signals from said receiver and signals representative of the operation of said transmitter to coincidence circuit means adapted to produce an output indicative of coincidence between the operation of said transmitter and the generation of output signals at said receiver, adjustment indicating means adapted to receive said output from said coincidence means to produce an adjustment indicating signal, a first threshold circuit having a first threshold value adapted to pass only signals lying above said first threshold value from said receiver to said adjustment indicating means, means for passing said output signals to a second threshold circuit having a second threshold value greater than said first threshold value and adapted to produce, via associated circuit means, periodic variation of the signal from said adjustment indicating means when said output signals lie below said second threshold.

4,291,978
APPARATUS FOR AUTOMATICALLY DETERMINING THE POSITION AT WHICH A BEAM OF LIGHT IMPINGES ON A TARGET
Harold O. Seigel, Don Mills, Canada, assignor to Scintrex Limited, Don Mills, Canada
Filed Dec. 5, 1979, Ser. No. 100,478
Int. Cl.³ G01B *11/26*; E21B *25/16*
U.S. Cl. 356—152 **14 Claims**



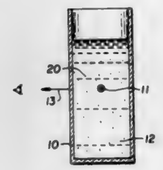
1. Apparatus for determining the position at which a beam of light impinges on a target comprising a light source providing a collimated beam of light; a rotatable target spaced apart from said light source and having a surface on which said collimated beam of light impinges, a part of said surface comprising photoelectric material extending outwardly from the axis of rotation of said target towards the periphery of said target, said photoelectric material being so shaped that the angle it subtends at said axis of rotation at any distance therefrom is a function of said distance; means for rotating said target; means including gravity responsive means for providing a first electrical signal having a waveform that establishes a reference direction for any point on said surface of said target; means for deriving from said photoelectric material a second electrical signal during rotation of said target, said second electrical signal containing information with respect to the spacing between said axis of rotation and the position at which said beam of light impinges on said target as well as the angular orientation of said position with respect to said reference direction; and signal processing means for translating said first and second electrical signals to provide an output signal that determines the position at which said beam of light impinges on said target.

4,291,979
DEVICE FOR MEASURING LIGHT UNDER AMBIENT LIGHT AND/OR FLASH LIGHT AND A METHOD THEREFOR
Yoshio Yuasa, Kawachinagano; Norio Ishikawa, Osaka, and Nobuyuki Taniguchi, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan
Continuation-in-part of Ser. No. 56,191, Jul. 9, 1979, abandoned. This application Nov. 16, 1979, Ser. No. 94,922
Claims priority, application Japan, Jul. 10, 1978, 53-84278
Int. Cl.³ G01J *1/42, 1/46*; G03B *7/08*
U.S. Cl. 356—218 **44 Claims**



1. Light measuring means for use in flash photgraphy, which measures a preliminary flash light to obtain camera exposure information for photography under a primary flash light, comprising:
means for receiving light;
means for producing an output in response to said light receiving means;
first means for integrating the output of said producing means during a first predetermined period of time including at least the duration time of the preliminary flashing to obtain a first signal;
means for obtaining a second signal including light intensity information without the influence of the preliminary flash light, by utilizing the output of the producing means; and
means for processing at least said first and second signals to obtain camera exposure information for photography under the primary flash light;
wherein said producing means comprises means for transmitting said output to said integrating means in a form including influences of both the preliminary flash light and the ambient light intensities; and
wherein said processing means comprises means for calculating the total amount of only the preliminary flash light received.

4,291,980
STYRENE-DIVINYLBENZENE COPOLYMER AND METHOD OF MANUFACTURE
James A. Patterson, Los Altos, Calif., assignor to Amco Standards International, Mountain View, Calif.
Filed Aug. 14, 1978, Ser. No. 933,140
Int. Cl.³ G01J *1/02*
U.S. Cl. 356—243 **6 Claims**



1. A suspension for measuring the turbidity of water comprising a suspension of substantially spherical particles in substantially turbidity-free water, said particles comprising substantially pure styrene-divinylbenzene copolymer wherein said spherical particles are substantially between 0.2 μm to 1.0 μm in diameter and which exhibit substantially pure particle light scatter when suspended is substantially turbidity-free water.

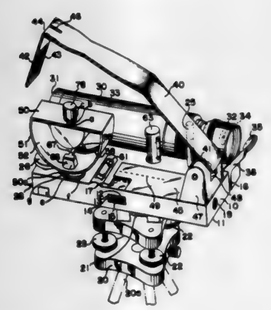
4,291,981
REFERENCE SCATTER FOR USE IN THE CORRECTION OF SCATTERING PHOTOMETERS
Masaaki Ohnishi, Settsu, and Akio Saito, Kyoto, both of Japan, assignors to Kabushiki Kaisha Kyoto Daiichi Kagaku, Kyoto, Japan
Filed Mar. 23, 1979, Ser. No. 23,407
Claims priority, application Japan, Apr. 5, 1978, 53-40685
Int. Cl.³ G01N *21/15*
U.S. Cl. 356—244 **11 Claims**

1. A reference scatterer for use in the correction of scattering photometers comprising: a reference glass scatterer main body containing microcrystals for phase splitting incident light; a transparent vessel; a cap for said transparent vessel having means for coupling said reference glass scatter main body to said transparent vessel with a clearance between said body and said vessel; said body placed within said vessel with a clearance therebetween, and a liquid which fills the clearance



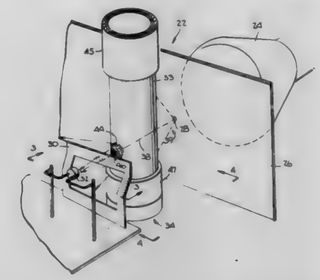
and is prevented from leaking out of the transparent vessel by said cap.

4,291,982
MULTI-PURPOSE SURVEYING INSTRUMENT
Hsü S. Chin, No. 84, Lane 27, Yi Chiao St., Jia Yi, Taiwan
Filed Apr. 19, 1979, Ser. No. 31,474
Int. Cl.³ G01C *9/18*
U.S. Cl. 356—249 **8 Claims**



1. A multi-purpose surveying instrument for use in engineering surveying in general architecture, civil engineering and the like comprising a horizontal base, and an adjusting base that is provided underneath said horizontal base for adjusting the level or inclination of said horizontal base, said horizontal base having thereon a plurality of instruments including a telescope, a sight pole, a plane mirror, a vertical scale, a horizontal scale, and a plurality of level tubes disposed vertically and horizontally; the horizontal base having a flat and level bottom surface on which a cylindrical recess is provided with its axis vertical to said bottom surface, the horizontal scale being placed in said cylindrical recess with an axle, the telescope being fixed horizontally on the upper surface of the horizontal base, the sight pole having one end pivotally connected to the the horizontal base, the plane mirror being bonded horizontally to the upper surface of the horizontal base, the vertical scale being mounted on the horizontal base with a swivel axis perpendicular to the bottom surface of the horizontal base, said vertical scale being capable of rotating about said swivel axis.

4,291,983
PHOTOMETRIC APPARATUS AND METHOD
Thomas L. Kraft; Howard A. Vick, and James W. Meador, all of Houston, Tex., assignors to American Home Products Corporation, New York, N.Y.
Filed May 22, 1979, Ser. No. 41,475
Int. Cl.³ G01N *21/51, 15/06*
U.S. Cl. 356—338 **11 Claims**



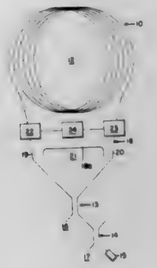
1. Nephelometer apparatus for analyzing a fluid sample of particulate material disposed in a container comprising:
light source means for projecting light about an optical axis, the projected light diverging from the optical axis;
photoelectric means spaced from the light source means and disposed on or adjacent said optical axis for receiving light from the light source means, the electrical characteristic of the photoelectric means being dependent upon the intensity of light received by the photoelectric means;
means for positioning the container at a predetermined location intersecting the diverging projected light and spaced apart from the light source means and the photoelectric means;
first baffle means opaque to the light from the light source means disposed adjacent one of the opposite sides of the positioning means and intersecting said optical axis and extending therefrom for preventing light in a first predetermined region extending about the optical axis and including any direct image of the light source means from reaching the photoelectric means while permitting light emerging from the container in the positioning means in a second predetermined region extending beyond said first predetermined region to reach the photoelectric means;
the light source means being operative to project light diverging sufficiently from the optical axis to illuminate particulate material positioned in said container to redirect said illuminating light directly into said second predetermined region to reach said photoelectric means; and
indicator means coupled to said photoelectric means for proportionally indicating the intensity of the light receiving by the photoelectric means in accordance with the electrical characteristics of the photoelectric means.

4,291,984
OPTICAL AMPLIFICATION FOR THE FIBER INTERFEROMETER GYRO
Donald J. Albares, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 19, 1979, Ser. No. 95,868
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—350 **3 Claims**

1. In a pulsed fiber interferometer gyro having a single external laser projecting clockwise and counterclockwise pulsed energy bidirectionally through a single mode fiber coiled about an identical area a plurality of times and a length of single mode optical fibers reaching between a pair of beam-splitter/couplers coupled to the coiled single mode fiber for

encompassing a negligible area as compared to the identical area, an improvement therefor is provided comprising:

a first and a second means optically coupled to the coiled single mode fiber each between one of the beamsplitter/-couplers and the coiled single mode fiber for amplifying the bidirectionally projected clockwise and counterclockwise pulsed energy to provide for greater interferometer



sensitivity by increasing the strength of the projected bidirectional energy to allow the single mode fiber to be of greater length and

means coupled to the first and second amplifying means for pulse actuating the first and second amplifying means when clockwise and counterclockwise pulses of energy arrive thereat.

4,291,985

DUAL BEAM PHOTOMETER WITH ROTATING FILTER PLATE

Masatoshi Tsujimura, Fujimi, Japan, assignor to Nippon Denshoku Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1980, Ser. No. 118,307

Claims priority, application Japan, Apr. 17, 1979, 54-47542

Int. Cl.³ G01N *21/27*; G01J *3/50*

U.S. Cl. 356—408 **6 Claims**



1. A photometer comprising

a light source,

a rotating plate provided with a plurality of filter means having different wave lengths,

a reference plate and a sample means, said rotating plate disposed between said light source and said reference plate and sample means, and

a half-mirror and a reflection plate located between said light source and said rotating plate, said half-mirror and reflection plate being disposed so as to form a first light passage adapted to extend to the reference plate, and a second light passage adapted to extend to the sample means, whereby alternate radiation through one of said filter means against the reference plate and the sample means is made by the rotation of said rotary plate.

4,291,986

OPTICAL RATE ASSAY APPARATUS

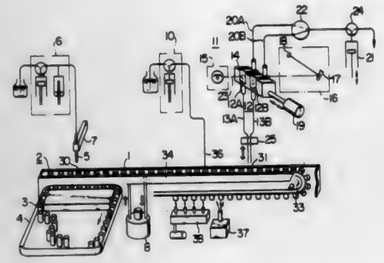
Takehide Satou, Katsuta; Kasumi Yoshida, Mito; Hisayuki Sagusa, Katsuta; Osamu Ohno, Katsuta, and Tetuaki Abe, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 62,115

Claims priority, application Japan, Dec. 14, 1978, 53-153657

Int. Cl.³ G01N *21/85*

U.S. Cl. 356—410 **10 Claims**



1. An apparatus for an optical rate assay comprising:

a train of vessels each containing a sample solution whose optical characteristic is to be measured;

a plurality of flow cells;

optical unit means for observing changes in light absorbance of a sample solution in one of said flow cells placed in an optical path;

means for maintaining said respective flow cells at a predetermined temperature while the respective flow cell is placed not only in said optical path but also out of said optical path;

means for selectively introducing, during a period when a sample solution introduced from a specified one of said vessels into a specified one of said flow cells is held in said specified flow cell, a sample solution in a next one of said vessels into a different one of said flow cells;

means for placing said different one of said flow cells at a location out of said optical path when the sample solution is introduced into said different one of said flow cells, and for bringing said different flow cell into said optical path after the sample solution contained in said different flow cell has reached a predetermined temperature by replacing said specified flow cell by said different flow cell;

optical unit means for observing changes in absorbance of said sample solution in said different flow cell by irradiating said sample solution in said different flow cell with light, after changes in absorbance of said sample solution in said specified flow cell has been observed; and

means for displaying results of observation corresponding to the respective absorbance changes of said sample solutions in said respective flow cells.

4,291,987

HOLE SEEKING APPARATUS

Erwin Sick, Icking, and Siegfried Mankel, Geretsried, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH, Optik-Elektronik, Fed. Rep. of Germany

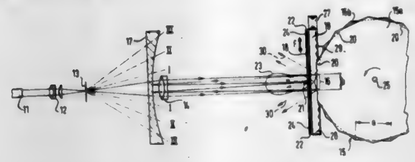
Filed Jan. 23, 1980, Ser. No. 114,591

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1979, 2904435

Int. Cl.³ G01N *21/89*; G02B *27/17*

U.S. Cl. 356—431 **8 Claims**

1. Hole seeking apparatus for detecting holes in material webs using optical beam scanning apparatus for cyclically scanning a light bead across a material web from one margin to the other, and a light receiving device disposed behind the web for detecting light transmitted through holes therein, said optical beam scanning apparatus comprising a light source, preferably in the form of a laser, a microobjective, a slot aperture on which light from said light source is concentrated by said laser, first and second substantially identically constructed mirror wheels rotatable about a common axis and having multiple facets, said first and second mirror wheels lying coaxially adjacent one another and being displaced by a half pitch of one facet relative to one another, an objective for directing light from said slot aperture towards said axis of rotation onto said facets to form a patch of light thereon and a strip-like concave mirror with its focus coincident with said patch of light to direct light reflected from said first and second mirror



wheels onto said material web to form said light bead, with the width of said patch of light in the peripheral direction of the first and second mirror wheels being less than one half the peripheral length of a said facet and such that edges between the facets of the first and second mirror wheels first enter the patch of light when the light bead on the web is at a distance from the margin of the web such that light scattered from a said edge within the scattering lobe of the edge can no longer be reflected from said concave mirror past a margin of the material web.

4,291,988

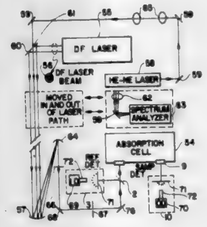
AUTOMATED PATH DIFFERENCING SYSTEM

Richard G. Dixon, Jr., Las Cruces, N. Mex., and Wendell R. Watkins, El Paso, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 907,653, May 22, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,206

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—437 **7 Claims**



1. In a system for measuring absorption coefficients of atmospheric constituents, apparatus comprising:

an absorption cell having first, second and third spherically concave mirrors positioned such that reflections from said first mirror are reflected at one point by said second mirror to be reflected thereon at another point by said third mirror, said first and third mirrors being positioned at the far end of said cell and said second mirror being positioned at the near end of said cell, said cell including first and second windows spaced along said near end;

first means at said near end for supplying a cylindrical hollow center input beam of coherent optical energy through said first window towards said first mirror;

second means providing a reference beam of coherent optical energy through said first window;

adjustable means at said near end for adjustably aligning said reference beam to pass through said hollow center of said input beam, said adjustable means including an apertured mirror, said hollow center of said input beam being aligned with the aperture in said mirror and said reference beam passing through said aperture;

means adjacent said near end first window for detecting the alignment of said reference beam through said hollow center of said input beam;

a third window at said far end for observing reflection images on said second mirror;

means at said far end for adjusting the positioning of said first and third mirrors, the positioning of said third mirror providing rapid changes in the path length in the absorption cell between short and long multipaths;

output means adjacent said near end second window for detecting and measuring the reflected images from said third mirror passing through said second window; and

means at said near end for remotely controlling the positioning of said first and third mirrors at said far end.

4,291,989

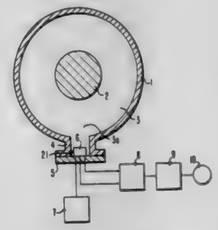
ABNORMALITY SENSING DEVICE FOR GAS-INSULATED ELECTRIC APPARATUS

Yoshiaki Ida; Shiro Fukuda, and Osayoshi Imamura, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,328

Int. Cl.³ G01N *21/17*

U.S. Cl. 356—440 **2 Claims**



1. An abnormality sensing device for gas-insulated equipment of the type including electrical apparatus disposed within a hermetically sealed, insulated-gas-containing container, said abnormality sensing device comprising:

a light emitting element and a light receiving element disposed within said container opposite each other, said light receiving element positioned so as to receive the light emitted by said light emitting element; and

means for comparing the quantity of light emitted by said light emitting element with the quantity of light received by said light receiving element to sense a change in the quantity of light received by said light receiving element.

4,291,990

APPARATUS FOR MEASURING THE DISTRIBUTION OF IRREGULARITIES ON A MIRROR SURFACE

Shinichiro Takasu, Tokyo, Japan, assignor to VLSI Technology Research Association, Japan

Filed Jan. 22, 1979, Ser. No. 5,199

Claims priority, application Japan, Jan. 27, 1978, 53-8086

Int. Cl.³ G01N *21/55*; G01B *11/30, 9/02*; G01N *21/00*

U.S. Cl. 356—445 **14 Claims**

1. An apparatus for measuring the distribution of extensive and local irregularities on a mirror surface comprising:

light generating means for irradiating a coherent light flux onto said mirror surface;

light dividing means, positioned between said light generating means and said mirror surface, for dividing the light flux irradiated from said light generating means into a plurality of first light fluxes, arranged in a prescribed lattice form to cover said mirror surface, for measuring

extensive irregularities on said mirror surface and a plurality of second light fluxes, surrounding each of the first light fluxes but not overlapping or coinciding with each other, for measuring the distribution of local irregularities on the surface; and

means for receiving light fluxes reflected from the mirror



surface and for permitting the inspection of the pattern of reflections, whereby the distribution of extensive irregularities on the mirror surface are determined through the inspection of the pattern of reflections of the first light fluxes and the distribution of local irregularities on the mirror surface are determined through the inspection of the pattern of reflections from the second light fluxes.

4,291,991

APPARATUS FOR THE PREPARATION OF A REACTION MIXTURE FROM FLUID COMPONENTS

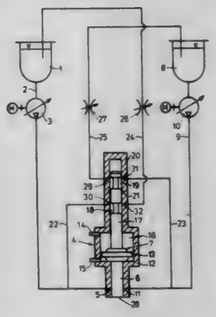
Klaus Schulte, and Heinrich Ersfeld, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,748

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837424

Int. Cl.³ B01F *15/00*; G05D *16/00*

U.S. Cl. 366—159 **6 Claims**



1. Apparatus for the preparation of a reaction mixture, from fluid components, comprising storage tanks, feed pipes leading from said storage tanks to a mixing head via metering pumps and opening into a mixing chamber via injection apertures, said mixing chamber formed by the bore of a housing, a control piston displaceable within said bore and being capable of blocking flow through said apertures, return lines branching off upstream of said apertures and leading up to said storage tanks, and a shut-off means for stopping the flow of said material through at least one of said return lines, the activation of said shut-off means being dependent upon the position of said control piston within said bore.

4,291,992

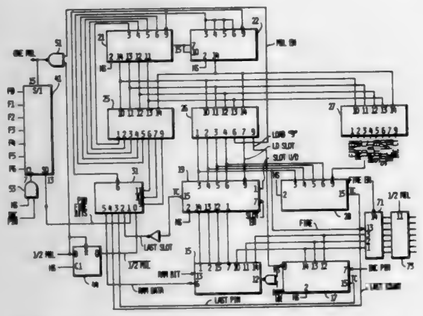
PRINTER PIN CONTROL CIRCUITRY

Charles W. Barr, Nashua; Michael I. Lerer, Bedford; Royden C. Sanders, Jr., Wilton, and Russell J. Vassar, Jr., Nashua, all of N.H., assignors to R. C. Sanders Technology Systems, Inc., Amherst, N.H.

Filed May 22, 1979, Ser. No. 41,415

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **7 Claims**



1. In a printer system employing a multiple pin print head in which pin firings are initiated by the generation of data words at a clock rate substantially faster than possible repetitive firings of a single pin, each such word comprising a plurality of data bits each corresponding to a respective pin, the occurrence of a fire bit at any data bit position in the data word being a signal to initiate an operation of the respective pin; apparatus for effecting high speed actuation and damping of the pins in response to such data words, said apparatus comprising:

for each pin, a high speed driver circuit;

means for generating, for each pin, a firing signal which comprises a long pulse of predetermined duration, initiated by a respective fire bit, followed by a series of short pulses;

means for applying each firing signal to the respective driver circuit; and

means for reducing the number of short pulses in the series when a successive fire bit for the same pin is received in a predetermined interval following the long pulse, the extent of shortening being a predetermined progressive function of the actual timing of said successive fire bit.

4,291,993

DEVICE FOR INSTALLING AND SECURING A PRINTING DISC

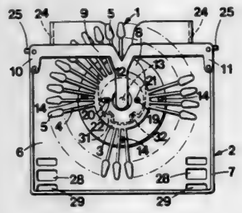
Gustave Gagnebin, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Dec. 3, 1979, Ser. No. 99,721

Claims priority, application Switzerland, Dec. 20, 1978, 12926/78

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **8 Claims**



1. A device for installing and securing a printing disc having

radial arms on a driving plate secured to a selecting shaft of a typewriter having a carriage with a card press with folded over borders, the driving plate having angular locating means adapted to cooperate with the hub of the printing disc; comprising a support for the printing disc, retaining members in the form of projections on the support adapted to extend between the radial arms for retaining the disc in a single relative position, and guide and abutment means for defining an engagement position of the support in the typewriter in which the hub of the printing disc is substantially opposite the driving plate, the printing disc being adapted to cooperate with the driving plate after a displacement of the support in the direction of the selecting shaft, said support having an elastic member biasing the disc against the retaining members, the disc being spaced apart from the retaining members when it is engaged on the driving plate, the support being constituted by a support plate having projections forming said retaining members and a central opening opposite the hub of said disc, said guiding and abutment means being constituted by slots in the upper ends of the folded over borders of said card press, these borders forming two lateral guides for the support and each slot forming an abutment, bosses secured to said support engageable with said abutments, the support being adapted to be introduced transversely to the selecting shaft between the two borders, then pivoted in the direction of the selecting shaft around an axis passing through the two bosses.

4,291,994

TEAR RESISTANT RIBBON FOR NON-IMPACT PRINTING

Thor L. Smith, Los Altos Hill, and William J. Weiche, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,375

Int. Cl.³ B41J *31/02*

U.S. Cl. 400—241.1 **6 Claims**

1. A ribbon for non-impact printing comprising a transfer layer and a substrate which is a mixture of resin comprising from about 90% to about 50% by weight of polycarbonate and from about 10% to about 50% by weight of a block copolymer of bis-phenol A and dimethyl siloxane and based upon the total weight of the resin mixture from about 15% to about 40% by weight of electrically conductive carbon black.

4,291,995

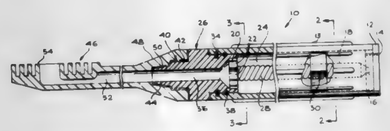
TOOTHBRUSH WITH RE-FILLABLE PASTE RESERVOIR

Joseph K. Dikoff, St. Croix, V.I., assignor to Elizabeth A. Tasis, Ft. Lauderdale, Fla.

Filed Jan. 8, 1980, Ser. No. 110,401

Int. Cl.³ A46B *11/02*

U.S. Cl. 401—175 **9 Claims**



1. A paste-dispensing toothbrush with a refillable reservoir, including:

a brush head, said brush head having a first connector portion and a bristle portion, said first connector portion having female threads of a first size and including a channel intercoupling said bristle portion with said connector portion;

a reservoir of variable volume, said reservoir including a hollow, cylindrical body portion having inner and outer walls and having an end-cap at one extremity thereof, said inner wall having a shape other than a circular shape;

a spout portion rotatably and coaxially connected to said body portion at the remaining extremity of said body portion, said spout portion having a second connector portion at the end thereof opposite that connected to said body portion, said second connector portion including a first section of a first diameter and a second section of a second diameter, both said first and second sections carrying male threads, said male threads on said first section being sized and shaped to cooperate with said female threads in said first connector portion of said brush head; said first diameter being larger than said second diameter and said second section being more remote from said end cap than said first section, said second diameter being sized to cause an interference fit of said second section with the inner wall of the nozzle of a toothpaste tube;

said spout portion having a coaxial channel therethrough aligned with said channel in said brush head when said brush head is in position on said spout portion;

an aperture plate, having apertures therethrough, supported fixedly and coaxially in said spout portion and transverse to and spanning the channel through said spout portion;

a threaded rod fixedly supported at its one end in said aperture plate and rotatably supported at its other end in said end cap in coaxial relationship with said body portion; and,

a piston having a peripheral shape corresponding to the shape of the inner wall of said body portion and dimensioned to fit slidably within said body portion in transverse relationship to said body portion and coaxial therewith, said piston having a central opening therein sized and threaded to operatively engage said threaded rod, whereby, upon relative rotation between said spout portion and said body portion said piston moves axially along said threaded rod.

4,291,996

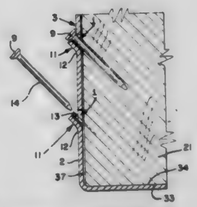
POSITIVE NAIL ANGLING DEVICE FOR METAL CONNECTORS

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed Jul. 1, 1980, Ser. No. 165,202

Int. Cl.³ F16B *9/00*

U.S. Cl. 403—14 **4 Claims**



1. A positive nail-angling device for positioning a nail with respect to the face of a metal connector and a structural wood member only at a preselected angle which is substantially less than 90° comprising:

a. said metal connector is a metal hanger having parallel side members and a seat for holding a held wood member in relation to an attachment member;

b. said positive nail angling device is formed in one or more of said sides of said metal hanger;

c. a slot-like opening formed in a face of said connector having a length greater than its width wherein said width is selected to register with the sides of said nails;

d. a tab-like member formed from the displaced face material from said slot-opening and bent along a bend line which constitutes one end of said slot-like opening;

e. said tab-like member is formed with a nail receiving surface for positively receiving a side of said nail in generally parallel, face-to-face relationship; and

f. the length of said slot-like opening is selected to receive

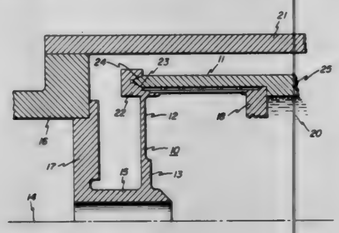
said nail only at a pre-selected angle in relation to the face of said metal connector so that one side of the shank of said nail is in touching or close fitting relation to one end of said slot-like opening and the opposite side of said nail shank is in touching or close fitting relation to said nail receiving surface of said tab-like member.

4,291,997

FLEXIBLE SUPPORT FOR SUPERCONDUCTING MACHINE ROTOR

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 17, 1978, Ser. No. 878,791
Int. Cl.[2] H02K 9/00
U.S. Cl. 403—24 **10 Claims**



1. In a superconducting electrical machine including a rotor containing a torque tube therein, a support for said torque tube, said support comprising:

a cylindrical torsion shaft having its cylindrical surface centered about an axis and adapted to rotate thereabout; and

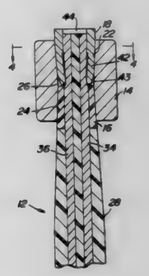
an axially flexible, radially stiff diaphragm affixed radially about said torsion shaft, said diaphragm being interfitted so as to be attached at its distal boundary to said torque tube and being free to exhibit axial movement thereat.

4,291,998

REPLACEMENT HANDLE FOR A TOOL

Gerard R. Santos, Levittown, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jun. 5, 1980, Ser. No. 156,764
Int. Cl.[3] B25G 3/24
U.S. Cl. 403—263 **10 Claims**



1. A handle for a tool having an opening therein with top and bottom inwardly extending tapered portions from both ends so that the narrower part is located close to the center of the tool,

said handle comprising:

(a) a plastic strip;

(b) said plastic strip including a top tapered portion adjacent one end having a tapered direction corresponding to the taper direction of the top tapered portion in said tool;

(c) said top tapered section of said strip being spaced from the top tapered portion of said tool;

(d) an adapter element disposed to slide over the top of said handle around said top section of said strip,

(e) said adapter element including a tapered area to receive the bottom tapered portion of said tool;

(f) a metal insert having an opening therein dimensioned to fit over said top section of said strip in the space between the top tapered section of said strip and the top tapered portion of said tool; and

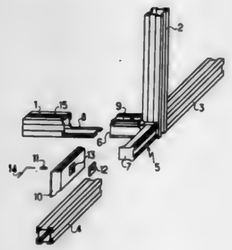
(g) said metal insert including bottom sections disposed to bend inwardly when said metallic insert is forced downwardly into said space to secure said tool to said handle.

4,291,999

DEVICE FOR THE ASSEMBLING OF A PLURALITY OF CONVERGING TUBULAR BARS

Pierre Vandelanoite, 5/6 Rue Mercier, Lys-les-Lannoy, France (59390)

Filed Sep. 21, 1979, Ser. No. 77,829
Claims priority, application France, Sep. 22, 1978, 78 27721
Int. Cl.[3] F16B 7/04
U.S. Cl. 403—297 **6 Claims**



1. In a device for the uncoupling connection of a plurality of convergent tubes by means of a star-shaped central core with branches which fit into ends of the tubes, each of the branches having means for clamping by expansion in said tubes, the ends of the tubes being shaped to fit against each other in such manner as to completely cover the central core, access being however provided to act on the clamping means of each branch, the improvement comprising in combination

two means for locking said tubes around all possible axes of oscillation, whatever the intensity of the clamping, comprising

said means for clamping by expansion comprising two parts comprising a first part constituting said branches being and integral one-piece part of the central core and the other part being a separate movable part for each branch juxtaposed with said first part, and screw clamping means for moving said two parts apart from each other, each of said two parts having two exterior lateral oblique bearing surfaces together forming four cornermost regions thereof,

said ends of the tubes having four interior lateral oblique bearing surfaces forming four interior cornermost regions thereof complementary to and together forming inclined corners cooperating with said oblique bearing surfaces of said two parts with lateral pressure in four different directions substantially perpendicular to the oblique bearing surfaces and diagonally to the cross-section of the tubes when said screw clamping means is actuated to move said two parts apart, and

said two parts having aligned free ends formed with cooperating corresponding inclined planes constituting means for moving said two parts away from each other if said movable part begins to displace longitudinally in a direction of

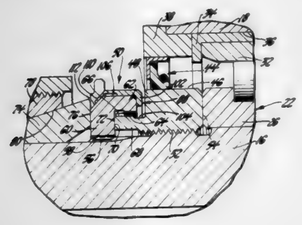
removal of the tubes during commencement of uncoupling, said inclined planes are inclined in a direction toward said first part.

4,292,000

THRUST NUT LOCK RETAINER

Bryce R. Baldwin; Laurence M. Brady, and Warren N. Holcomb, all of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 16, 1979, Ser. No. 95,091
Int. Cl.[3] B25G 3/00; F16D 1/00; F16G 11/00
U.S. Cl. 403—320 **2 Claims**



1. A propeller shaft nut lock assembly for maintaining a propeller shaft bearing assembly in place within a bearing housing comprising: an externally threaded surface on a propeller shaft located outboard of the bearing assembly, a thrust nut threaded on said shaft to axially hold the bearing assembly in place within the bearing housing, said thrust nut including an undercut locking groove therein and an outboard extension with a splined surface, said shaft having a splined surface, a cup lock slidably positioned over said outboard extension and including an eccentric flange thereon initially radially positioned out of said lock groove and including a centering peripheral flange thereon initially located eccentrically with respect to the outer surface of said shaft, a thrust nut lock ring slidably mounted on said shaft engaging the centering peripheral flange to center it with respect to the shaft and to shift said eccentric flange into interlocked engagement with said groove, said thrust nut lock ring further having splined surfaces thereon engaging the two aforementioned splined surfaces, and coacting means to indicate axial seated engagement of said thrust nut lock ring against said thrust nut and radial shift of the eccentric flange into its interlocked engagement with the locking groove when said thrust nut is properly positioned with respect to the bearing assembly.

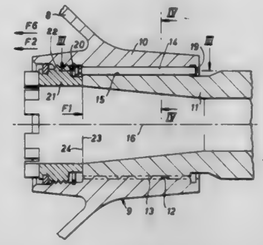
4,292,001

SHAFT COUPLING

Leonard S. Snell, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Sep. 4, 1979, Ser. No. 72,099
Claims priority, application United Kingdom, Sep. 19, 1978, 37310/78
Int. Cl.[3] F16B 7/18; F16D 3/18
U.S. Cl. 403—359 **10 Claims**

1. Shaft coupling comprising two relatively inner and outer members having a common axis, means defining first surfaces provided on the respective members in circumferentially confronting relationship, means defining second surfaces provided on the respective members in circumferentially confronting relationship, the first and second surfaces extending at different helix angles relative to said axis, urging means for urging the members relatively axially, said first and second surfaces cooperating, by virtue of the action of the urging means, to lock the members against relative axial movement and to impart to the members opposing circumferential forces urging the members into engagement at said first and second surfaces respectively.

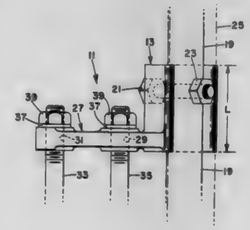


4,292,002

SHAFT LEVER COUPLING MEANS

Gary L. Stecklein, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 11, 1979, Ser. No. 102,381
Int. Cl.[3] B25G 3/00; F16D 1/00; F16B 9/02
U.S. Cl. 403—376 **2 Claims**



1. A shaft-lever attachment means, comprising a first section having a generally V-shaped cross-sectional configuration of length L to receive a portion of said shaft lengthwise within the interior walls of said first section; a securing means to apply a compressive load between the first section and said shaft; a second section extending generally perpendicular from said first section having at least one hole within said second section, said hole being generally parallel to the elongation of said first section, whereby at least one lever can be partially passed through said hole of said second section and secured therein such that rotation of said shaft will translate to rotation of said lever and axial displacement of said shaft can be translated to axial displacement of said lever.

4,292,003

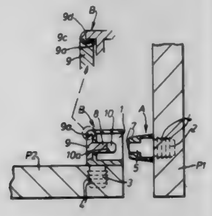
CONNECTORS FOR FURNITURE

Alan R. Pond, London, England, assignor to Underman Greeman Berger Limited, London, England

Filed Apr. 26, 1979, Ser. No. 33,522
Claims priority, application United Kingdom, Apr. 28, 1978, 17062/78
Int. Cl.[3] B25G 3/00
U.S. Cl. 403—407 **2 Claims**

1. A connector for connecting two elements together in non-parallel relation, the connector comprising two elongated body members, means at one face of each body member to engage a respective one of said elements, a generally coaxially elongated cavity in another face of one of said body members non-parallel with said firstmentioned face thereof and dimensioned non-rotatably to receive the other body member

whereby said one face of the latter is exposed from the cavity, a stud having a head engageable with the bottom of the cavity to limit displacement of the stud into the cavity while permitting rotation of the stud about its axis, the stud having a T-shaped end portion within the cavity, the surfaces of the limbs of the T presented toward the head being cam surfaces oppositely angularly inclined with respect to a plane to which the axis of the stud is perpendicular, and a bore in said other body member perpendicular to said one face thereof, two shoulders integral with said other body member flanking the end portion of the bore remote from said one face of the other body member to give said end portion the form of an elongated slot, the ends of the shoulders inward of the bore comprising respective



abutment surfaces generally in a common plane to which the axis of the bore is perpendicular and cam surfaces oppositely inclined with respect to said common plane to extend from circumferentially opposite ends of the respective abutment surfaces away from said one surface of said other body member, the slot being dimensioned for passage therethrough of the limbs of the stud when the latter is suitably angularly oriented and the length of the stud between its head and limbs being such in relation to the dimensions of the shoulders that rotation of the stud will cause a camming action between the limbs of the stud and the cam surfaces of the shoulders which will draw said other body member into the cavity until the limbs of the stud ride onto said abutment surfaces releasably to hold said body members together.

4,292,004

PLATFORM LEG PLUG

Lloyd C. Knox, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 828,065, Aug. 26, 1977, Pat. No. 4,215,951. This application Jun. 11, 1979, Ser. No. 47,198

Int. Cl.³ E02B *17/04*

U.S. Cl. 405—203 **14 Claims**

1. A removable plug for temporarily sealing the interior of an annular member to prevent the flow of fluid therethrough, said removable plug comprising:

plug body means disposed within said annular member, the plug body means including:

annular seal cup mandrel means having annular recess means about the interior thereof;

seal cup means located on the annular seal cup mandrel means for sealingly engaging the interior of said annular member to prevent the flow of said fluid therethrough;

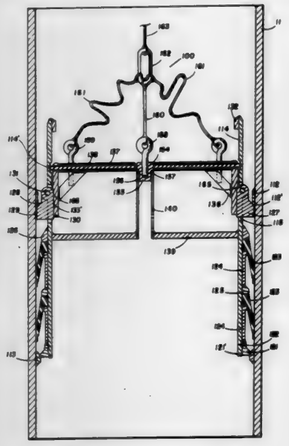
plug means having a centrally located sleeve therein, the plug means being secured to the interior of the annular seal cup mandrel means;

pressure equalization plug means releasably retained in the centrally located sleeve in the plug means in the plug body means for allowing the flow of said fluid through said removable plug before the removal of said removable plug from said annular member;

locking dog means pivotally mounted on the annular seal cup mandrel means for retaining said removable plug from axial movement in at least one direction in said annular member;

dog locking sleeve means slidably abutting the locking dog means; and

dog locking sleeve pin means having one end engaging the annular recess means about the interior of the annular seal



cup mandrel means and having the other end abutting the pressure equalization plug means releasably secured in the centrally located sleeve in the plug means in the annular seal cup mandrel means.

4,292,005

PIER CONSTRUCTION

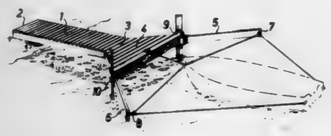
Lennart Boksjö, Utsiktsvägen 2 A, 436 00 Askim, Sweden

Filed Apr. 10, 1979, Ser. No. 28,916

Claims priority, application Sweden, Apr. 11, 1978, 7804019

Int. Cl.³ E02B *3/20*

U.S. Cl. 405—219 **3 Claims**



1. A pier for mooring of boats, formed of two sections, wherein: there is provided a rectangular inner section serving as a land-connection via a first short side and an outer section connected to said inner section at a second side oppositely disposed to said first short side of the inner section, said outer section being formed as a parallel trapezium which is supported by poles driven into a sea bed being affixed to said outer section; non-parallel sides of said outer section forming an angle of between 70°–120°; the non-parallel sides are formed with extensions, said extensions having respective ends provided with means for affixing a boat there at and partly for attachment of lines running from the ends to either end of the boat being affixed.

4,292,006

MANUFACTURE OF CERAMIC WARE

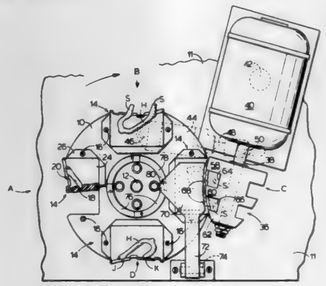
Graham Davies, Stoke-on-Trent, England, assignor to Service (Engineers) Limited, Stoke-on-Trent, England

Filed May 25, 1979, Ser. No. 42,638

Claims priority, application United Kingdom, May 25, 1978, 22276/78

Int. Cl.³ B23C *3/00*

U.S. Cl. 409—131 **9 Claims**



1. A method of removing from a cup handle surplus clay in such a manner as to provide an attaching surface having a high degree of conformity to its intended shape comprising rotatably mounting a cutter blade on supporting portions of a carrier which are spaced apart to leave the blade unconfined along that part of its length which effects the cutting, contouring the unconfined part of said blade so that when rotated it defines by its arcuate path a shape to which it is desired the attaching surface of the handle to conform, mounting the handle in a holder from which the surplus clay projects,

mounting the blade carrier so that its axis of rotation lies in a plane substantially parallel to the plane of said handle, rotating said carrier, causing relative lateral movement of approach between the handle and the rotational axis of the rotating cutter in such a manner as to remove the surplus clay progressively in small pieces in a plurality of separate cuts as said axis approaches the handle, and allowing said small pieces to escape between said carrier and the unconfined part of said blade.

4,292,007

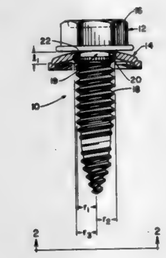
FASTENER AND WASHER ASSEMBLY

David P. Wagner, Geneva, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 7, 1979, Ser. No. 92,150

Int. Cl.³ F16B *39/26*

U.S. Cl. 411—156 **4 Claims**



1. A preassembled fastener and washer assembly comprising a threaded fastener including an enlarged head, said fastener having a shank with a helical thread which has a predetermined maximum thread crest diameter, the upper extremity of the fastener threads being spaced a predetermined distance from the lower extremity of the head thereby defining an unthreaded portion, said unthreaded portion including an annular ledge; a domed washer having an inner and an outer periphery which define a predetermined axial length, said length being such that when the washer's inner periphery is in abutment with the lower extremity of the fastener head, the outer periphery of the washer extends beyond the unthreaded portion such that the domed washer encloses at least one convolution of a fully formed thread, said washer having a fastener receiving hole therein which has a diameter greater than the thread crest diameter but less than the diameter of the annular ledge whereby said washer is held captive on the fastener by said annular ledge, the inner periphery of said hole being reduced in thickness from that of the standard washer thickness in order to increase the flexibility of the inner periphery so that it may be sprung over the annular ledge to form the assembly.

4,292,008

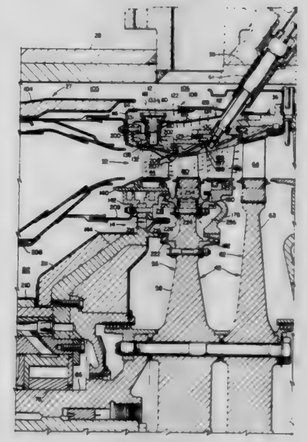
GAS TURBINE COOLING SYSTEMS

William C. Grosjean, Poway, and John J. Hensley, Delmar, both of Calif., assignors to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 831,961, Sep. 9, 1977, Pat. No. 4,173,120. This application May 3, 1979, Ser. No. 35,632

Int. Cl.³ F01D *5/18*

U.S. Cl. 415—115 **3 Claims**



1. A gas turbine comprising: a nozzle case through which heated gases are adapted to flow; a housing surrounding said case in spaced relation thereto; first and second stage, flow directing nozzles integrated into nozzle segments which are supported from said case, said case having a lip supporting the upstream ends of the second stage nozzle segments therefrom; means for directing a first stream of air from the space between said housing and said case into the nozzles in the first of said stages; means for directing a second stream of air from said space into impinging relationship with said case and then into nozzles in the second of said stages; and means for so discharging a part of said second stream of air from the interiors of the second stage nozzles into said nozzle case at the leading sides of said nozzles as to cause said air to first impingement cool said nozzle segment supporting lip and to then form a buffer for keeping heated gases flowing through said case from entering the space between said nozzles and said case.

4,292,009

HINGELESS ROTOR SYSTEM

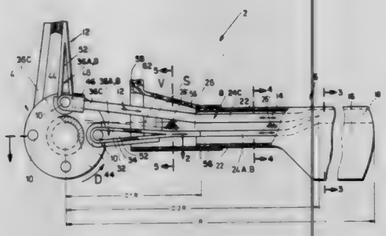
Emil Weiland, Hohenbrunn, and Klaus Brunsch, Weidach, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,740

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758086

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—134 A **19 Claims**



1. A hingeless rotor system, especially for helicopters, comprising rotor mast means including an axis of rotation, rotor blade means having a radially inner end and a radially outer tip, and securing means connecting said radially inner end of said rotor blade means to said rotor mast means, said securing means comprising an integral carrier spar means of fiber compound material extending from said rotor mast means completely into said rotor blade means proper, said fiber compound material including fibers extending unidirectionally in the longitudinal direction of said rotor blade means, said integral carrier spar means including a substantially rigid connecting member (12) adjacent to said rotor mast means (4) for connection to said rotor mast means and an intermediate member (14) between said connecting member (12) and said radially inner end of said rotor blade means, said intermediate member (14) being resistant to tensile loads and comprising at least three spar sections (24A, 24B, 24C) and shear resistant web means (26, 28) operatively interconnecting said spar sections (24A, 24B, 24C) so that the spar sections are circumferentially spaced from each other by said web means, said shear resistant web means being dimensioned in the vertical direction (a) and in the horizontal direction (b) so that said intermediate member (14) is flexible relative to torsion and bending loads to form fictive hinge means, said web means (26, 28) forming a central member (30) having an outwardly open cross-section in which the web means are interconnected along a connecting line and the outer free edges of the web means are connected to the spar sections.

4,292,010

CAMBERED BLADE OR VANE FOR A GAS TURBINE ENGINE

Geoffrey W. Meetham, Allestree, and John R. Marjoram, Coxbench, both of England, assignors to Rolls-Royce Limited, London, England

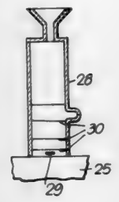
Filed Aug. 22, 1979, Ser. No. 68,723

Claims priority, application United Kingdom, Sep. 16, 1978, 37112/78

Int. Cl.³ F01D *5/14*

U.S. Cl. 416—241 R **11 Claims**

1. A blade or vane for a gas turbine engine, the blade or vane having a cambered aerofoil portion comprising a plurality of single crystals of an alloy, each crystal extending longitudinally of the aerofoil and having a predetermined three-dimensional orientation different from that of the other crystals such



that each such crystal has an optimum value of a chosen property in directions longitudinal and transverse of the aerofoil.

4,292,011

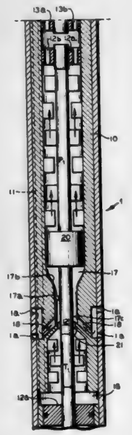
TURBO PUMP GAS COMPRESSOR

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Aug. 20, 1979, Ser. No. 68,138

Int. Cl.³ F04B *23/04*

U.S. Cl. 417—53 **5 Claims**



1. An apparatus for pumping an oil well having wide variations of density in fluids to be pumped due to gas content, comprising, in combination: a source of pressurized power fluid; means for conducting said power fluid to the bottom portion of the well; a first turbo driven pump disposed in the bottom portion of the well and having the turbine thereof driven by said power fluid; a second turbo driven pump disposed axially adjacent said first pump and having its turbine driven by said power fluid; first conduit means for conducting well fluids to an inlet of said first pump; means disposed in said first conduit means for intermingling of the spent power fluid emerging from the turbine of said first pump with the well fluid in said first conduit, thereby producing an initial pressurizing of the fluid to the inlet of said first pump; means disposed in said first conduit between said intermingling means and the inlet of said first pump for increasing the pressurization of the intermingled fluids; second conduit means connecting an outlet of said first pump to an inlet of said second pump; and third conduit means for connecting an outlet of said second pump to the well head, whereby said first pump can be designed to efficiently pump low density fluid at relatively high shaft speeds and said second pump can be designed to efficiently pump the discharge of said first pump at shaft speeds substantially lower than the shaft speed of said first pump.

4. A method for pumping an oil well having wide variations of density in fluids to be pumped due to gas content comprising the steps of: (a) disposing two turbo driven pumping units in the bottom portion of the well in axially stacked relationship; (b) driving the turbine portion of each of said turbo driven pumping units by pressurized fluid supplied from the well head; (c) supplying well fluids to the inlet end of one pumping unit; (d) intermingling the fluid leaving the turbine of said one pumping unit and said well fluid supplied to the inlet end of said one pumping unit for initially pressurizing the intermingled fluids; (e) further pressurizing the intermingled fluids prior to supplying them to the inlet end of said one pumping unit; and (f) supplying fluids discharged from the outlet of said one pumping unit to the inlet end of the other pumping unit, whereby said one pumping unit operates at substantially higher shaft speeds than the other pumping unit due to the substantial difference of density of fluid supplied to the respective inlets of the two pumping units.

4,292,012

LIQUID FUEL INJECTION PUMPING APPARATUS

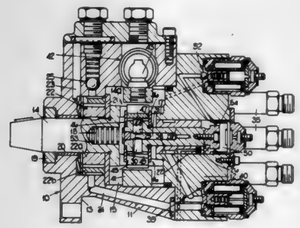
Collin P. Brotherston, Rainham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 12, 1979, Ser. No. 84,192

Claims priority, application United Kingdom, Nov. 25, 1978, 46082/78

Int. Cl.³ F04B *19/00, 29/00*

U.S. Cl. 417—462 **24 Claims**



1. A liquid fuel injection pumping apparatus for supplying fuel to internal combustion engines and of the kind comprising a body part, a rotary distributor member mounted in the body part and arranged in use to be driven in timed relationship with an engine with which the apparatus is associated, a transverse bore formed in the distributor member, a plunger in said bore, a cam follower positioned at the outer end of said plunger for engagement with a cam surface formed on a cam ring surrounding the distributor member, stop means for limiting the outward movement of the plunger, passage means for conveying fuel to and from said bore during rotation of the distributor member characterised in that said distributor member is axially movable within the body part, the apparatus including means for varying the axial setting of the distributor member within the body part, and said stop means comprises complementary inclined surfaces on the follower and a part respectively, said part being rotatable with the distributor member but axially fixed within the body part whereby as the distributor member is moved axially within the body part the amount by which the plunger can move outwardly whilst fuel is supplied to the bore will vary.

4,292,013

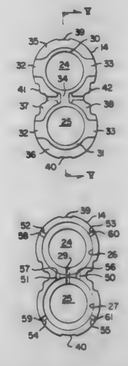
ROTARY IMPELLER OR MOTOR WITH PRESSURE BALANCED END PLATES

Carl M. Singer, New Castle, Pa., and Edward J. Ratkay, Canfield, Ohio, assignors to Commercial Shearing, Inc., Youngstown, Ohio

Filed Mar. 28, 1979, Ser. No. 24,612

Int. Cl.³ F03C *2/08;* F04C *2/18, 15/00*

U.S. Cl. 418—132 **12 Claims**



1. A pressure plate for corresponding ends of a pair of cooperating impellers in a rotary pump or motor comprising a metal body having an inlet and an outlet, said plate having a first face adapted to abut the impeller ends, a pair of openings to receive impeller shafts and a second face generally parallel to said first face, radial resilient sealing means on said second face spaced circumferentially around said openings to restrict flow across said rear face and forming chambers of similar size therebetween, one at the inlet side, one at the outlet side and at least one at each opposite end of said thrust plate intermediate the inlet and outlet sides and a plurality of chambers formed in said first face defined by radial lands corresponding generally to the sealing means on said second face and forming chambers corresponding to the chambers on the second face to restrict flow across said first face in generally the same areas as the seal means on the second face, whereby said plate is generally balanced in use in a pump.

4,292,014

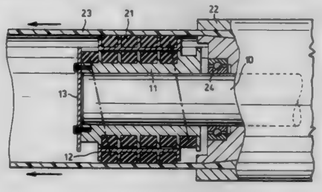
FEED MECHANISM COMPRISING AN ENDLESS MEMBER CONFIGURED AS A DOUBLE HELIX

Manfred A. A. Lupke, 35 Ironshield Crescent, and Gerd P. H. Lupke, 46 Stornoway Crescent, both of Thornhill, Ontario, Canada

Filed Sep. 12, 1980, Ser. No. 186,628

Int. Cl.³ B29F *3/00;* F16J *15/16*

U.S. Cl. 425—72 R **26 Claims**



9. In combination with an extrusion head for extruding a tube of plastic material, the extrusion head having an annular die opening defining a predetermined axis, means for supporting the tube of plastic material as it is extruded from the die comprising:

a rotary shaft extending from said extrusion head and journalled therein for rotation about said axis,

first and second cylindrical guide members mounted coaxially on said shaft for rotation therewith, the first and second guide members having respective external helical grooves thereon defining first and second feed channels, said helical grooves being of the same pitch and opposite hand,

an endless flexible bearing member carried by said guide members and constrained thereby, the bearing member having a first portion extending helically along said first feed channel and a second portion extending helically along said second feed channel, the bearing member slidingly engaging the guide members along said channels,

the bearing member protruding from said second feed channel for frictional engagement with the tube of plastic material as it is extruded,

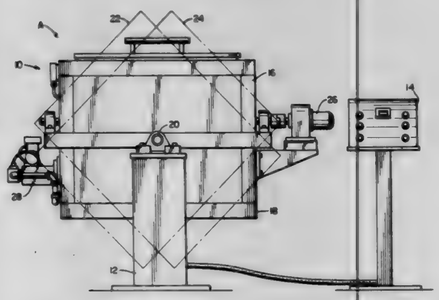
whereby the bearing member is continuously advanced along said second feed channel and returned along said first feed channel without rotation in response to rotation of the shaft, thereby providing a continuously advancing support surface for the plastic tube.

4,292,015

APPARATUS FOR ROTATIONAL MOLDING

Michael Hritz, 7463 Julia Dr., North Royalton, Ohio 44133

Filed Mar. 12, 1979, Ser. No. 19,836
Int. Cl.³ B29C *5/04*
U.S. Cl. 425—73 **14 Claims**



1. An apparatus for the rotational molding of materials, said apparatus comprising:

an outer housing constructed from heat insulating material, said housing including a first portion and a second portion in cooperation with each other to define a selectively disassociable arrangement;

a first frame substantially contained in said housing and mounted on bearing members exterior of said housing for selective rocking through a predetermined arc about a first axis;

a second frame substantially contained in said housing and mounted to said first frame for rotation about a second axis transverse to said first axis;

at least one mold mounted in said apparatus;

means for mounting said mold in said apparatus;

means for rocking said first frame in selective reciprocating arcuate cycles;

means for rotatably driving said second frame at predetermined speeds independently operable from said means for rocking said first frame; and

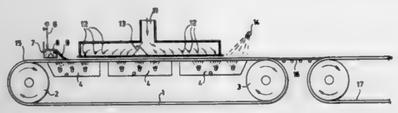
a source of heat communicating with the interior of said housing whereby material in said mold is rotationally molded to form a thin-walled product.

4,292,016

APPARATUS FOR SOLIDIFYING MOLTEN MATERIAL

Herbert J. Elliott, 63 Poulton Estate, Bradford-on-Avon, England

Division of Ser. No. 685,849, May 13, 1976, Pat. No. 4,088,727.
This application Mar. 13, 1978, Ser. No. 886,230
Claims priority, application Canada, Jun. 19, 1975, 229688
Int. Cl.³ B29C *23/00*
U.S. Cl. 425—101 **6 Claims**



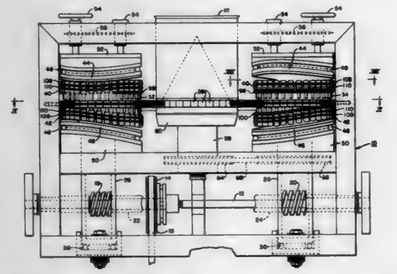
1. Apparatus for solidifying molten material comprising an endless belt having a molten material receiving solidification surface and mounted for travel along an endless path, and provided with a belt portion constituting a uniformly extending solid planar substrate arranged along a common uniformly extending portion of the endless path for travel without disturbance of the uniformly extending disposition of the solid planar substrate and without deviation from the uniformly extending portion of such path, said common portion of the endless path including an upstream molten material receiving station, and intermediate stream initial solidified protective stabilizing skin forming station and a downstream final solidification station, feed means spaced from said solidification surface at the receiving station for feeding molten material to such surface, treating agent distribution hood means spaced from said solidification surface and defining a covering zone over such surface which provides an isolated area for the molten material at the initial skin forming station for mildly and gently physically selectively supplying the surface of the molten material thereat with skin promoting treating agent and for correspondingly selectively distributing such treating agent onto the surface thereof, without substantial disturbance and rippling of the molten surface of the molten material by the treating agent, and fluid coolant nozzle means spaced from said solidification surface at the final solidification station for directing fluid coolant against the formed skin of the molten material thereat to cool and solidify such material.

4,292,017

APPARATUS FOR COMPRESSING TABLETS

Wallace A. Doepel, 226 Bellino Dr., Pacific Palisades, Calif. 90272

Filed Jul. 9, 1980, Ser. No. 167,267
Int. Cl.³ B30B *11/08, 15/00*
U.S. Cl. 425—107 **18 Claims**



1. Apparatus for compressing materials into tablets comprising a first turntable having means on its periphery for receiving tablet dies, a second turntable having means on its periphery for receiving tablet dies, means associated with said first turntable for filling dies spaced around its periphery with materials

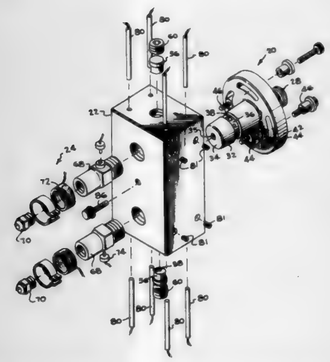
to be compressed, means for transferring dies which have been filled with product material from said first to said second turntable, and punches associated with said second turntable for compressing the material in the dies transferred from the first turntable to the second turntable.

4,292,018

DOUBLE NOZZLE BLOCK

Paul E. Beale, Columbus, Miss., assignor to Beatrice Foods Co., Chicago, Ill.

Filed May 21, 1980, Ser. No. 152,082
Int. Cl.³ B29F *1/03, 1/08*
U.S. Cl. 425—144 **9 Claims**



1. A double nozzle injector system for injecting hot molten plastic material comprising:

an elongated spindle coupling having inner and outer ends and including:

an external conical sealing surface extending outwardly from said inner end;

connector means on one end connectable to a pressurized source of molten plastic material; a main outflow passageway extending diametrically transversely through the spindle conduit at a location spaced outwardly of said inner end thereof;

an axial supply passageway extending between said outer end and said main outflow passageway;

an annular peripheral flushing groove extending inwardly about the surface of said spindle coupling and intercepting said main outflow passageway at opposite ends thereof; and a plurality of radial flush passageways extending between said flushing groove and said main outflow passageway with said radial flush passageways being substantially smaller than said main outflow passageway so that their flow capacity is a small percentage of the flow capacity of said main outflow passageway;

a manifold block having inner and outer face surfaces and including:

an internal conical sealing surface extending inwardly from said outer face surface and matingly engageable with said external conical sealing surface of said spindle coupling; first and second nozzle supply runners each having one end termination at said internal conical sealing surface and communicating with said flushing groove and said main outflow passageway;

first and second nozzles respectively communicating with said first and second runners for receiving molten plastic material therefrom;

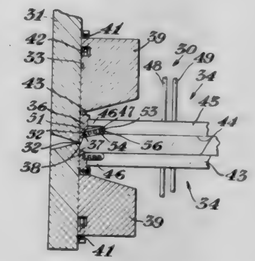
whereby molten plastic material flows through said axial supply passagewwy and outwardly through said main outflow passageway to said first and second runners and said first and second nozzles with a small percentage portion of the flow being outwardly through the radial flush passageways to the annular peripheral flushing groove and then into said first and second runners.

4,292,019

EXTRUDED PLASTIC FOAM SHAPING APPARATUS

Robert A. Hay, Midland, and Oswald Bergman, Freeland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 7, 1980, Ser. No. 110,049
Int. Cl.³ B29D *27/00*
U.S. Cl. 425—325 **5 Claims**



1. A shaping apparatus adapted to be disposed adjacent a slot extrusion die for shaping freshly extruded synthetic resinous thermoplastic foam into a generally planar configuration, the apparatus comprising a pair of generally like opposed shaping elements of generally planar configuration, the apparatus having an inlet end and a discharge end, each of the shaping elements comprising a first forming plate adapted to be disposed adjacent the die face, the first forming plate having an edge extending generally parallel to a plane containing the axis of extrusion and the major axis of a die slot the first forming plate having an edge remotely disposed from the discharge end and generally facing the discharge end, a second forming plate having a first edge and a second edge, the second forming plate being generally parallel to the first forming plate and to edge to edge engagement therewith, a third forming plate having first and second edges and being in generally edge to edge engagement with the second forming plate and generally parallel thereto, the plates in edge to edge engagement having a convex semi-cylindrical edge in engagement with a mating concave semi-cylindrical edge, whereby when third plates or first plates of opposed shaping elements are moved closer together or moved away from each other, the second plate effectively maintains engagement with the edges of the first and third plates and moves to adjustably position the first and third plates towards or away from each other.

4,292,020

METHOD AND APPARATUS FOR ABATEMENT OF GASOLINE VAPOR EMISSIONS

John H. Hirt, Fullerton, Calif., assignor to Hirt Combustion Engineers, Montebello, Calif.

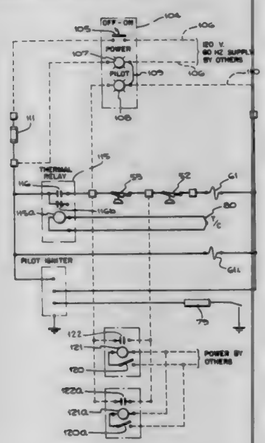
Filed May 31, 1979, Ser. No. 44,037
Int. Cl.³ F23D *13/20*
U.S. Cl. 431—5 **4 Claims**

1. In a method of installing a gasoline vapor control system for a gasoline service station having gasoline storage tanks in fluid communication with gasoline dispensing pumps having dispensing nozzles cooperable with a fill pipe on a vehicle tank, said fluid communication including a flow path for liquid gasoline and a flow path to return gasoline vapors from the fill pipe to the storage tanks, a vent means in communication with said storage tanks whereby gasoline vapors are collected in said vapor flow path, said storage tanks, and said vent means, and a vapor disposal means remote from said pumps and storage tanks and connected with said vent means, said disposal means including a burner means, a pilot means, and ignition

means for said pilot means, a means for moving vapors to each of said burner means and pilot means, a pressure air source in communication with said moving means and valve means associated therewith, said pilot means and disposal burner means being operable only in the presence of a supply of pressure air to move said vapors in said system to the burners, and pressure sensing switch means in communication with said vent means, the steps of:

providing a single vapor burning means;

providing two pressure sensing switch means to comprise said pressure sensing means;



setting a first one of the two pressure sensing switch means at a pressure dependent upon pressure at any location in said vapor control system to just below atmospheric pressure regardless of pressure variations in said system,

and actuating the disposal means to maintain said below atmospheric pressure as said pressure in said system approaches atmospheric pressure;

said first one of said pressure sensing switch means having a dead band whereby the selection of said just below atmospheric pressure and the pressure sensing switch means dead band provides both high and low response of the switch means for maintaining the selected just below pressure in the system.

4,292,021

GAS LIGHTER

Yoshihisa Miyagawa, Sagamiharashi, Japan, assignor to Iwatani Sangyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 6, 1980, Ser. No. 119,097

Claims priority, application Japan, Nov. 2, 1979, 54-153030[U]

Int. Cl.³ F21K *5/00*

U.S. Cl. 431—13 **3 Claims**

1. A gas lighter adapted for use in a kitchen, said gas lighter comprising:

a handle portion;

a nozzle portion having an ignition point at its terminating end;

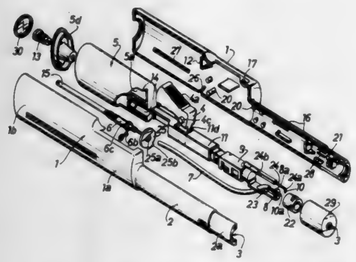
said handle portion including a fuel container, a trigger workable by a finger touch and a fuel control knob;

said nozzle portion being prolonged sufficiently to keep the operator's hand at a safe distance from the gas flames;

said nozzle portion including a piezoelectric switch electrically connected to said ignition point, and located at an effectively shortened distance therefrom;

a fuel supplying pipe connecting said fuel container to said ignition point with a valve interlocated therebetween;

said trigger being rotatably carried on said handle portion, and being in engagement with a spring-loaded lever slidable along the length of said nozzle portion, wherein said lever is connected to said valve at one end to secure their associated movement while being in engagement with said switch at the other end;



said lever being normally biased under spring load to the inoperative state of the gas lighter, and

said fuel control knob being located in a range reached by a finger of the hand to grasp said handle portion with.

4,292,022

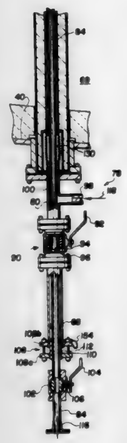
PRESSURIZED FLUIDIZED BED COMBUSTOR AND COAL GUN CONSTRUCTION THEREFOR

William S. Hosek, Mt. Tabor, N.J., assignor to Curtiss Wright Corporation, N.J.

Filed Aug. 1, 1979, Ser. No. 62,745

Int. Cl.³ F23D *19/00*

U.S. Cl. 431—170 **8 Claims**



1. A fluidized bed combustor comprising a housing defining an interior chamber having a top portion for the discharge of combustion gases and having a bottom with an outlet for cooling fluid, a distributor plate extending across a lower portion of said chamber having a plurality of tuyeres for the discharge of fluidizing air therethrough, means defining a windbox below said plate communicating with said tuyeres, means defining a heat exchanger inlet plenum below said windbox having a plurality of tubes extending therethrough for the passage of air to said windbox, means defining a lower section below said heat exchanger inlet plenum with a connection to an air supply for supplying air through the tubes to said windbox, heat exchanger tube means adapted to extend above said distributor plate and being mounted in said windbox and said heat exchanger inlet plenum and said lower section and having a

passage from said heat exchanger inlet plenum upwardly through said heat exchanger tubes above the distributor plate and then downwardly back to the distributor plate for discharge below said lower section to the outlet for the cooling fluid, means for circulating a cooling fluid into said heat exchanger inlet plenum around said tubes extending therethrough and into said heat exchanger tubes for flow upwardly therethrough and then downwardly for discharge after they are heated to outlet for the cooling fluid, means defining a fluidized bed area above the distributor plate in the vicinity of the upper portions of said heat exchanger tubes, and a coal supply gun including an outer guide pipe extending substantially vertically through the bottom of said housing through said lower section, said heat exchanger inlet plenum and said distributor plate terminating in said chamber above said distributor plate, said chamber having a space over said distributor plate defining a fluidized bed, a coal supply pipe disposed within said outer guide pipe and terminating in a top end extending substantially to the top of said outer guide pipe having an opposite coal supply pipe bottom end extending out of the bottom end of said outer guide pipe, means for directing air into the space between said coal supply pipe and said outer guide pipe for discharge in the fluidized bed, an outer guide pipe shut-off valve provided in said outer guide pipe at a location thereof which extends out of the combustor housing, said shut-off valve including a valve member therein which is movable to open and close the valve having a passage therethrough which aligns with the interior of said outer guide pipe when the valve is open and which extends transversely thereto when the valve is closed, said coal supply pipe extending through the passage of said movable valve member when the passage is aligned with the interior of said outer guide pipe, and a shut-off valve in said coal supply pipe in the position thereof extending out of said outer guide pipe and exteriorly of said housing chamber and being closeable to close off said coal supply pipe, said coal supply pipe being withdrawable from said outer guide pipe to a location below said outer guide pipe shut-off valve, said outer guide pipe shut-off valve being closeable to close off said outer guide pipe and permit further withdrawal of said coal supply pipe from the bottom of said combustor.

4,292,023

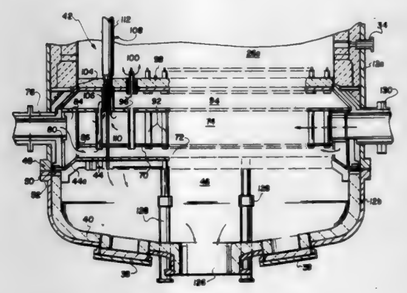
FLUIDIZED BED COMBUSTOR AND REMOVABLE WINDBOX AND TUBE ASSEMBLY THEREFOR

Angelo DeFeo, Totowa, and William S. Hosek, Mt. Tabor, both of N.J., assignors to Curtiss-Wright Corporation, N.J.

Filed Aug. 1, 1979, Ser. No. 62,746

Int. Cl.³ F23D *19/00*

U.S. Cl. 431—170 **18 Claims**



13. A fluidized bed combustor, comprising a housing having a chamber therein and a top with a discharge for gases and a bottom with a discharge for heated fluid, an assembly in the lower portion of said chamber including a heat exchange inlet plenum and a windbox and a distributor plate wall, a portion of said chamber above said distributor plate wall defining a fluidized bed, support means supporting said assembly in said chamber at a spaced location above the bottom thereof, the space in said chamber between said bottom and said assembly defining a fluid discharge plenum opening to said discharge, means for directing fluidized air into said assembly and through said heat exchanger plenum and into said windbox, nozzle means in said distributor plate for discharging fluidized air from said windbox into said fluidizing bed, means for directing coal into said fluidizing bed for ignition with said fluidizing air, and heat exchanger tube means mounted on said assembly and extending into said fluidizing bed having a cooling fluid inlet for the inflow of bed cooling air to said tube assembly, said support means including an annular first support flange extending around the periphery of said chamber, said assembly including a lower plate having a second support flange portion engaged on said first support flange, insulation means disposed between said first support flange elements and said second support flange portion, said insulation means comprising a plurality of stacked rings of insulation and a plurality of rings of wire screening interposed between at least some of said stacked rings of insulation and thread means sewn to said rings to hold them together.

4,292,024

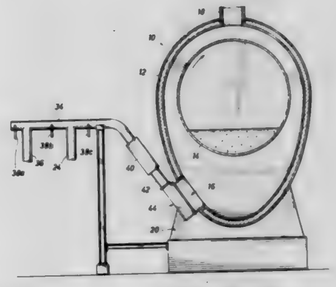
METHOD OF AND APPARATUS FOR BURNING WET LEAN GAS

David F. Pobst, Houston, Tex., assignor to Sid Richardson Carbon & Gasoline Company, Forth Worth, Tex.

Filed Dec. 18, 1979, Ser. No. 104,961

Int. Cl.³ F27B *15/00, 7/08*

U.S. Cl. 432—13 **10 Claims**



1. The method of burning a very lean gas including the steps of

mixing the lean gas with an oxidant gas,

flowing all of the mixed gases through a plurality of slots defined between a plurality of parallel positioned elongate members to establish a plurality of plane parallel jets issuing from the slots, and

igniting the mixed gases flowing from said slots.

4,292,025

ORTHODONTIC DEVICE FOR ROTATING A TOOTH

Rolf Förster, Pforzheim, Fed. Rep. of Germany, assignor to Bernhard Förster GmbH, Pforzheim, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,388

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 791639[U]

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—18 **9 Claims**

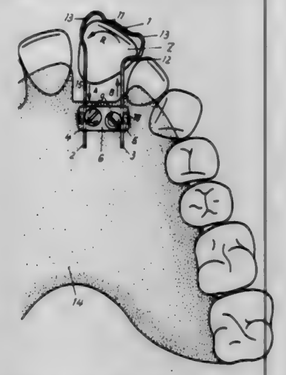
1. An orthodontic device for rotating a tooth comprising:

a base plate having an aperture, a body secured to said base plate and received in the aperture thereof, said body having two juxteposed, spaced apart through holes,

cylindrical roller means rotatably mounted in said body, and positioned perpendicularly to and between said holes, and

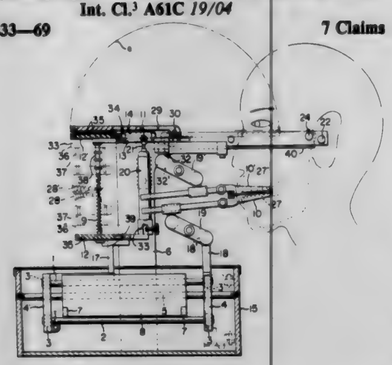
an integrally formed wire loop which is adapted to be dis-

posed around a tooth to be rotated, and which has two wire end portions extending through said body, respectively traversing and being guided in said holes,
said roller means having outer edge portions biting into the sides of said wire end portions in said holes,



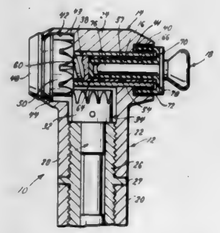
said holes being laterally open toward said roller means to expose said wire end portions to said outer edge portions,
said roller means being rotatable to move said wire end portions in said holes by means of said outer edge portions so as to effect rotation of the tooth.

4,292,026
ARTICULATOR
Seizo Yokota, 2nd Floor, Konoike Bldg., 14-45, Daimyo 1-chome, Chuo-ku, City of Fukuoka, Fukuoka Prefecture, Japan
Filed Jan. 17, 1980, Ser. No. 113,130
Claims priority, application Japan, Mar. 27, 1979, 54-37489
Int. Cl.³ A61C *19/04*
U.S. Cl. 433—69 **7 Claims**



1. An articulator for reproducing the occlusion of a mandible and a maxillary of a patient, said articulator comprising:
a fixed frame;
a material holding means on said frame for holding a solid machinable material;
a maxillary cast holding means removably mounted in a fixed position on said frame;
a first bite fork adjustably mounted on said frame for holding and positioning the maxillary relative to said fixed frame;
a second bite fork for holding the mandible, said second bite fork being opposed to said first bite fork;
a link means on which said second bite fork is adjustably mounted for transmitting the movement of said mandible;
a mandibular cast holding means on said link means and opposed to said maxillary cast holding means for holding a mandibular cast opposed to a maxillary cast on said maxillary cast holding means;
machining means mounted on said link means for movement with said mandibular cast holding means; and
a fixed beam attached to said frame on which a part of said link means is pivotally mounted and supporting part of the weight of said link means and spring means connected between said frame and said link means for supporting the remainder of the weight of said link means.

4,292,027
SEALING DENTAL COLLET
George E. Richmond, Ladue, Mo., assignor to Young Dental Manufacturing Co., Hazelwood, Mo.
Filed Jul. 23, 1979, Ser. No. 59,525
Int. Cl.³ A61C *1/14*
U.S. Cl. 433—127 **11 Claims**



1. A dental handpiece assembly for rotating a dental tool comprising:
(a) a head for receiving the tool, the head having a recess at the end of the head from which the tool extends, said recess has a side surface; and
(b) a tool engaging member rotatable received within the head for engaging the tool for rotational drive relative to the head; and
(c) a flexible skirt extending outwardly from connection with the tool engaging member and having its end within said head recess so that rotation of the skirt moves the skirt outwardly by centrifugal force to engage the surface of the recess to form a seal between the recess and the skirt.

4,292,028
COSMETIC BREATH FRESHENER AND PALATE COOLANT COMPOSITION AND METHOD OF USE
Arthur Barr, 2942 Shore Dr., Merrick, N.Y. 11566
Filed Jul. 13, 1979, Ser. No. 57,449
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—180 **2 Claims**

1. A method of adhesively securing a denture in the mouth of a user while releasing a flavoring material and providing a cooling effect, said method comprising forming a paste composition consisting of microencapsulated droplets of liquid flavoring material in a paste carrier, said microencapsulated droplets being constituted of a coating which is substantially non-soluble in water but is soluble in the saliva of the mouth, said paste carrier being adhesive, applying a quantity of the composition to a denture and introducing the denture into the mouth of a user such that the composition adhesively secures the denture in place in the mouth whereafter the flavoring material is slowly released in situ in the mouth at a sustained rate, the composition of the liquid flavoring material and its encapsulation in the carrier being such as to provide a cooling effect in the mouth of the user as the droplets of material are slowly dissolved and thereby opposing warming effect normally produced by the denture in the mouth, said microencapsulated droplets being present in an amount of 6% by weight and consisting of the following in percent by weight;

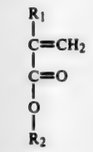
Liquid flavoring material	91%
Gelatin	4.25%
Gum arabic	4.25%
Glutaraldehyde	.25%
Sodium silicate	.25%

said paste carrier consisting of the following in percent by weight;

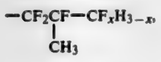
Karaya gum	51%
Petrolatum	30%
Propylparaben	0.1%
Mineral oil	12.4%
Titanium dioxide	0.4%

4,292,029
HYDROPHOBIC COMPOSITE RESTORATIVE MATERIALS AND THEIR USE IN TOOTH TREATMENT
Robert G. Craig, Ann Arbor, Mich., and William H. Douglas, Cardiff, England, assignors to University of Michigan, Ann Arbor, Mich.
Continuation-in-part of Ser. No. 905,936, May 15, 1978, abandoned. This application Sep. 5, 1979, Ser. No. 72,676
Int. Cl.³ A61K *5/06*
U.S. Cl. 433—228 **10 Claims**

1. In a process for treating a tooth, the steps comprising applying a polymerizable dental composition to a surface of the tooth, said composition comprising a mixture of from about 10 to about 90% by weight of a finely divided, inert organic filler and from about 90 to about 10% by weight of at least one polymerizable fluorine-containing prepolymer selected from the group consisting of perfluoroalkyl acrylates, aromatic diacrylates containing ring substituted fluorine, fluorinated acrylates of the formula

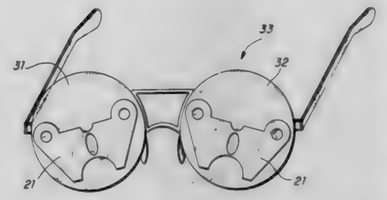


where R_1 is a C_1-C_4 alkyl group, R_2 is a fluorinated group selected from $-(CF_2)_n-CH_3$, $-(CF_2)_3$, $-\phi F_{1-6}$, and



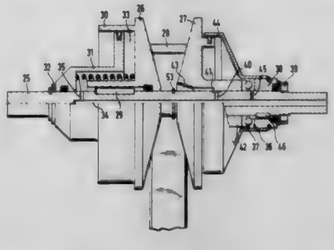
where ϕ is phenyl, n is an integer from 1 to about 8 and x is an integer from 1 to 3, and fluorinated analogues of aliphatic diacrylates and mixtures thereof; and polymerizing said composition on the tooth surface, said composition, when polymerized, (1) being hydrophobic such that the sum of the free surface energy changes as a result of saliva wetting the tooth surface and said polymerized composition is positive and (2) exhibiting an advancing contact angle in relation to water of at least 130°.

4,292,030
TEACHING DEVICE FOR PROGRESSIVE POWER LENSES
Alban J. Lobdell, Plantation, and Wiktor J. Rupo, Hollywood, both of Fla., assignors to Itek Corporation, Lexington, Mass.
Filed Jan. 16, 1980, Ser. No. 112,588
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—262 **11 Claims**



1. A teaching device for use with progressively variable focal power lenses, said lenses being characterized by having at least a reading portion (**13**), a distance portion (**12**) and a progressive power portion (**14**), said teaching device comprising teaching means (**21**) adapted to be applied to one of the surfaces of said lens, and including identifying means (**22**, **23** or **24**) for identifying the location of at least a part of one of said portions for assisting a user of such a lens in adapting to its use.

4,292,031
INFINITELY VARIABLE CONE-PULLEY TRANSMISSION
Manfred Rattunde, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers Kommanditgesellschaft, Bad Homburg, Fed. Rep. of Germany
Filed Oct. 9, 1979, Ser. No. 82,605
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846580
Int. Cl.³ F16H *11/02*
U.S. Cl. 474—18 **11 Claims**



1. In an infinitely variable cone pulley transmission which includes a drive input shaft, a drive output shaft, a first pair of cone pulley sheaves arranged on the input shaft, a second pair of cone pulley sheaves arranged on the output shaft, transmission means circulating between the two pairs of pulley sheaves, with one pulley sheaves of each pair being mounted to be axially displaceable relative to, and rotatable with, its associated shaft, first and second pistons each fastened to a respective one of the input and output shafts, means including the one sheave of each pair defining two pressure cylinders each axially movable on its respective shaft, enclosing a respective piston, and defining with its respective piston a transmission ratio control chamber, a source of hydraulic pressure medium, a control slide valve presenting four control edges connected between the source and the control chambers for distributing pressure medium to the control chambers, a setting lever connected between the slide valve and the one sheave of one of the

pairs, a torque sensor mounted on one of the shafts to sense the torque on that shaft for generating a pressure application force dependent on the load on the transmission, the torque sensor being connected to receive pressure medium at the pressure prevailing in one of the control chambers, and including a flow control valve for permitting pressure medium to flow from the sensor, the flow control valve being composed of two valve parts which are movable relative to one another to generate, in the sensor, a torque-dependent hydraulic pressure such that the sensor exclusively determines the requisite load-dependent, hydraulic pressure-application force, the improvement wherein:

said other sheave on said one of said shafts is mounted for limited axial displacement and rotation relative to its associated shaft;

said torque sensor comprises a torque-responsive presser device composed of a first part, means supporting said first part against axial and rotational movement relative to said one of said shafts, a second part rigidly secured to said other sheave on said one of said shafts, and rolling bodies interposed between said parts, said parts presenting mutually opposing, axially oblique faces against which said rolling bodies bear for axially displacing said other sheave and said second part relative to said one of said shafts and said first part by a distance dependent on the torque between said parts; and

said other sheave is operatively associated with said flow control valve for causing movement of said other sheave relative to its associated shaft to control the relative movement between said valve parts.

4,292,032

PRODUCTION OF TOBACCO-SMOKE FILTERS

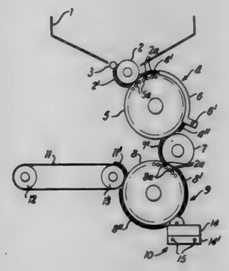
John A. Luke, Romsey, England, assignor to British-American Tobacco Company Limited, London, England

Filed Oct. 4, 1979, Ser. No. 81,864

Claims priority, application United Kingdom, Oct. 19, 1978, 41133/78

Int. Cl.³ A24C *5/50*

U.S. Cl. 493—43 **20 Claims**



1. A method for producing rod-shaped tobacco-smoke filter components each having at least one annular tobacco-smoke barrier, wherein rod-shaped bodies of smoke-filtration material formed with at least one annular groove open at the periphery are rotated about their longitudinal axes while being conveyed in a direction transverse to their said axes along an arcuate path past at least one deposition member for a settable liquid barrier material supplied to that member, the said member being located to extend into the grooves during the conveyance of the bodies along the path, the material being transferred from surface to surface of the member and grooves during the relative movement between them and the barriers being produced by the material when set.

4,292,033

METHOD OF PROVIDING NET BAGS WITH WICKETING FLAPS

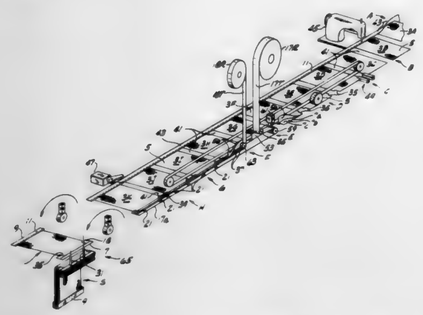
Eugene H. Wolske, Minnetonka, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Division of Ser. No. 860,290, Dec. 14, 1977, Pat. No. 4,207,983.

This application Jan. 21, 1980, Ser. No. 113,825

Int. Cl.³ B31B *1/90, 1/98*

U.S. Cl. 493—221 **13 Claims**



1. The method of providing net bags with flap means, each bag having opposed walls and being open at one end constituting its mouth end, each wall thereby having a mouth edge, the flap means being provided at the mouth end of the bag, comprising:

feeding forward a series of said bags one after another in a predetermined path with the bags extending transversely of said path and spaced longitudinally along said path with spaces between successive bags and with the mouth ends of the bags generally aligned;

securing a tape to one wall of the bags as they are fed forward with the tape extending longitudinally of said path and transversely of the bags at the mouth ends of the bags, the tape extending from bag-to-bag across the spaces between successive bags and overlapping the mouth end of said one wall of the bags, the tape projecting beyond the mouth edge of said one wall of the bags to a free edge spaced outwardly of the mouth edge of the bags; and

severing the tape between the leading bag of the series and the next bag thereby to separate the leading bag from the next bag, with the leading bag having the separated portion of the tape secured to said one wall thereof as a flap projecting beyond the mouth edge of said one wall of the bag, the portion of the flap projecting beyond the mouth edge being adapted to receive means for holding a plurality of the bags in stacked assembly, the flap of each bag being adapted to be torn off said holding means.

4,292,034

PARTITION FOLDING AND INSERTING MACHINE

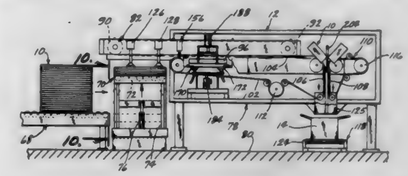
Keith A. Probyn; Richard W. Nolen; Charles W. Erickson; Gerald G. Dawson, all of Mapleton; Ralph Goldstein, and Max Bender, both of Carol Stream, all of Ill., assignors to Northern Petrochemical Co., Omaha, Nebr.

Filed Nov. 28, 1979, Ser. No. 98,236

Int. Cl.³ B31B *11/26*

U.S. Cl. 493—92 **10 Claims**

8. An apparatus for folding and inserting a partition into a box, the partition comprising a single sheet folded upon itself to form top and bottom blank portions having rearward and forward ends and opposite side edges, a partition blank support means for supporting a plurality of flat partition blanks stacked thereon, means for vertically moving said blank support means whereby the position of the uppermost blank may be selectively positioned, a partition folding and inserting machine including a feed end and a discharge end, said blank support means being positioned adjacent the feed end of said machine, a vacuum pick-up means at the feed end of said machine positioned above said blank support means for picking up the uppermost blank from the stacked blanks, a conveyor means on said machine for feeding the blank into said machine, a tab breaking means on said machine for breaking said blank inwardly from its side edges towards the center portion thereof, intermediate the forward and rearward ends thereof, a cell opening means on said machine for engagement with the blank at the opposite sides thereof for folding the side edges thereof downwardly with respect to the center portion thereof to create elongated first and second cells, a side plow means on said machine for forming said first and second cells into a rectangular configuration as said conveyor means moves the blank therethrough, a partition tucker assembly for folding said blank upon itself whereby each of said first and second cells are separated to form a pair of cells, the cells at one side of said folded blank being spaced from the cells at the other side of



said folded blank by a pair of cells, and means for inserting said folded blank into a box to define six container cells.

4,292,035

FABRIC SOFTENING COMPOSITIONS

Charles F. Battrell, Ft. Mitchell, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 960,147, Nov. 13, 1978, abandoned. This application Nov. 20, 1978, Ser. No. 962,452

Int. Cl.[3] B08B *3/00;* C11D *1/18*

U.S. Cl. 8—137 23 Claims

1. A fabric softening composition in solid form comprising:

(a) from about 10% to about 80% by weight of an impalpable smectite clay having an ion exchange capacity of at least 50 meq/100 grams;

(b) from about 1% to about 50% by weight of said clay of a compound selected from the group consisting of organic primary, secondary, and tertiary amines and their water soluble or water dispersible salts and organic quaternary ammonium, phosphonium and sulfonium compounds wherein said compounds have at least one hydrocarbon group having from 8 to 22 carbon atoms; and

(c) an anionic surfactant present in the amount of at least 30% molar equivalence to component (b);

wherein components (a) and (b) are combined to form a complex prior to the addition of the anionic surfactant.

4,292,036

PROCESS FOR IMPARTING FLAME RETARDANCE TO TEXTILE MATERIALS

Edward N. Walsh, New City, N.Y., and Thomas A. Hardy, Fairfield, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 5, 1980, Ser. No. 146,582

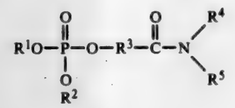
Int. Cl.[3] C07F *9/11, 9/40;* D06M *1/00, 13/34*

U.S. Cl. 8—182 7 Claims

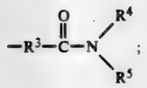
1. A process for imparting flame retardance to a textile material comprising the steps of

(a) impregnating said textile material with a flame-retardant composition comprising

(1) at least one compound represented by the formula



wherein R^1 and R^2 are each independently selected from the group consisting of aryl, arylalkyl, alkylaryl, alkenyl and alkyl having from 1 to about 6 carbon atoms and



R^3 represents an alkylene group having from 1 to about 5 carbon atoms, and R^4 and R^5 are each independently selected from the group consisting of hydrogen,

$-CH_3$, $-CH_2OH$, $-C_2H_4OH$ and 

wherein R^6 represents an alkyl group having from 1 to about 5 carbon atoms, provided that not all of said R^4's and R^5's are $-CH_3$ at the same time;

(b) an aminoplast; and

(c) an acid catalyst; and

(2) heating said impregnated textile material sufficiently to cure said flame-retardant composition.

4,292,037

PROCESS FOR DYEING CELLULOSE-CONTAINING FIBRE MATERIALS

Pierre Galafassi, Rixheim; Jean-Marie Adam, St. Louis, both of France; Peter Loew, Münchenstein, and Hans Scheidegger, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 29, 1980, Ser. No. 116,379

Claims priority, application Switzerland, Feb. 2, 1979, 1043/79; Jun. 6, 1979, 5268/79

Int. Cl.[3] C09B *67/00, 44/00*

U.S. Cl. 8—554 44 Claims

1. A process for dyeing cellulosic fibers comprising the step of applying an aqueous dye liquor to the fibers in the presence of a cationic levelling agent and in the substantial absence of other electrolytes, wherein the aqueous dye liquor contains a cationic dye which is a planar molecule having at least one system of delocalized π-electrons of at least 9 conjugated doubled bonds.

4,292,038

FORMAMIDE-CONTAINING LATEX AGGLUTINATING REAGENT FOR IMMUNOASSAY

Koichi Kondo, Osaka; Isamu Yoshida, Takatsuki, and Takashi Kobayashi, Hikari, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

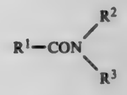
Filed Jan. 29, 1980, Ser. No. 116,465

Claims priority, application Japan, Jan. 31, 1979, 54-10552; May 31, 1979, 54-08504

Int. Cl.[3] G01N *33/54*

U.S. Cl. 23—230 B 8 Claims

1. In an immunoassay comprising incubating a test sample with particles sensitized with an antigen or antibody and observing any resulting agglutination, the improvement wherein the reaction is conducted in the presence of one or more members selected from the group consisting of a compound of the formula



wherein R^1 is a hydrogen atom, a lower alkyl group or an amino group which may be substituted with a lower alkyl group and R^2 and R^3 are each a hydrogen atom or a lower alkyl group, and a di-lower alkyl sulfoxide.

4,292,039

METHOD AND APPARATUS FOR CONTROLLING DISSOLVED SOLID CONCENTRATIONS

Clyde A. Farris, 1736 Choto Rd., and Clyde A. Farris, Jr., 11130 Crown Point Dr., both of, Knoxville, Tenn. 37922

Filed Mar. 24, 1980, Ser. No. 133,514

Int. Cl.[3] G01N *27/00, 27/26*

U.S. Cl. 23—230 A 7 Claims

5. A method for maintaining generally constant concentrations of solutions contained in a plurality of sequentially communicating liquid baths for treating a fabric web by successive immersion in said liquid baths, including a first bath containing a first solution having a first concentration of dissolved solids and a second bath containing a second solution having a second concentration of dissolved solids, comprising

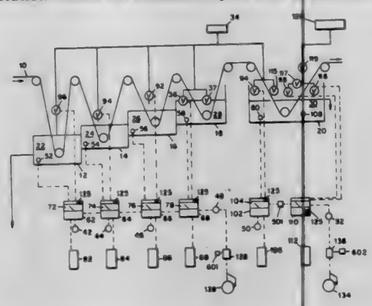
monitoring the conductivity of said first solution,

adding make-up liquid to said first solution when the conductivity of said first solution exceeds a predetermined control point for said first solution,

flowing said first solution into said second bath,

monitoring the conductivity of said second solution, adding make-up liquid to said second solution when the conductivity of said second solution exceeds a predetermined control point for said second solution, and

preventing the addition of make-up liquid to said second solution unless the conductivity of said first solution exceeds the predetermined control point for said first solution.



4,292,040

ISOLATION AND DETERMINATION OF NITROSOAMINES

Robert J. Daniels, Florissant, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 27, 1980, Ser. No. 163,746
Int. Cl.³ G01N *31/22, 31/08*
U.S. Cl. 23—230 R **4 Claims**

1. A method for quantitatively determining the nitrosoamine content of a sample containing a nitrosoamine which comprises sequentially the steps of:

(a) separating said nitrosoamine from said sample by employing chromatographic means;

(b) admixing said separated nitrosoamine with a composition comprising hydrogen bromide, sulfanilamide, hydrochloric acid, Brij 35 surfactant, said Brij 35 surfactant comprising polyoxyethylene (23) lauryl ether, and N-(1-naphthyl-)ethylenediamine hydrochloride whereby a stable colored complex is formed which is readily detectable employing spectrophotometric means.

4,292,041

SURFACTANT ASSAY

W. Wardle Fullerton, King of Prussia, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 2, 1979, Ser. No. 90,768
Int. Cl.³ G01N *31/08*
U.S. Cl. 23—230.3 **10 Claims**

1. A chromatographic method for the separation, detection and quantitation of an anionic, nonionic or cationic surfactant alone or in a surfactant-containing protein, glycoprotein, lipoprotein, polysaccharide, or lipopolysaccharide at levels below about 5 μg 1 mg comprising

extracting the surfactant or surfactant-containing protein, glycoprotein, lipoprotein, polysaccharide, or lipopolysaccharide with a solvent mixture comprising a haloalkane, a water-miscible alkanol and water,

subjecting the extract containing the surfactant to thin layer chromatography wherein the support medium is a silica or alumina gel and the developing solvent is a mixture comprising a haloalkane, a water-miscible alkanol and water,

removing the developing solvent, and

detecting the surfactant sequentially with (a) iodine vapor, (b) rhodamine 6G and (c) phosphomolybdic acid, or with radiolabeled surfactant.

4,292,042

ANALYSIS OF VINYL ACETATE

Howard J. Kimble, Scott Depot, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 14, 1980, Ser. No. 149,732
Int. Cl.³ G01N *1/22, 31/08*
U.S. Cl. 23—232 R **7 Claims**



1. A method of measuring the amount of vinyl acetate monomer in an ambient air atmosphere which comprises the series of steps of:

(A) contacting a measured volume of ambient air containing vinyl acetate monomer vapor with drying means thereby freeing said measured volume of ambient air of water vapor;

(B) contacting the said water vapor-freed measured volume of ambient air with vinyl acetate adsorbing means, said adsorbing means containing an inhibitor for vinyl acetate polymerizaton thereby separating the vinyl acetate monomer in the measured volume of ambient air from said ambient air;

(C) desorbing the adsorbed vinyl acetate monomer from said vinyl acetate adsorbing means; and

(D) measuring the amount of desorbed vinyl acetate with analytical means for assaying vinyl acetate.

4,292,043

PROCESS FOR WORKING UP EFFLUENT CONTAINING AMMONIUM SULPHATE

Gabriël Denecker, Heide-Kalmthout; Domien Sluyts, Stabroek; Roland Putseys, Heide-Kalmthout; Willy Van Herck; Ludo Claes, both of Braschaat, all of Belgium, and Georg Spott, Krefeld, Fed. Rep. of Germany, assignors to Bayer Antwerpen, Antwerp, Belgium

Filed Jan. 21, 1980, Ser. No. 113,893
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905779; Sep. 7, 1979, 2936153
Int. Cl.³ B01D *9/02*; C01C *1/24*
U.S. Cl. 23—296 **11 Claims**

1. A process for the working up of ammonium sulphate-containing effluent which is contaminated with organic compounds, comprising the steps of evaporating and crystallizing the effluent to produce water vapor which is removed, a concentrated liquid and a crystal suspension, thickening the suspension to obtain solid ammonium sulphate which is removed and liquid which is recycled to an earlier step, advancing the concentrated liquid to a crystallizer, introducing ammonia into the crystallizer to decrease the solubility of the ammonium sulphate, thickening the resulting ammoniacal crystal suspension to obtain ammonium sulphate solids which are removed and ammoniacal liquor which is advanced to a distillation step for recovery of ammonia.

4,292,044

SOLID FUEL

Ichiro Shibanai; Kouki Horikoshi, both of Tokyo, and Nobuyuki Nakamura, Kunitachi, all of Japan, assignors to Kyoshin Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 50,989, Jun. 22, 1979, abandoned. This application Apr. 4, 1980, Ser. No. 137,322
Claims priority, application Japan, Feb. 8, 1979, 54/12762
Int. Cl.³ C10L *5/00*
U.S. Cl. 44—1 R **11 Claims**

1. A solid fuel comprising a mixture of a liquid fuel and cyclodextrin or a cyclodextrin-containing decomposition product of starch, which mixture also includes a second combustible substance and a base.

11. A process for producing a solid fuel comprises the steps of:

(a) adjusting the pH of 100 liters of a 25% (W/V) starch suspension containing calcium chloride to 6.5;

(b) adding a bacterium liquefaction type amylase (10,000 units/gram) in an amount of 10 units/gram of starch;

(c) heating the mixture at 85°–95° C. for 15 minutes and at 130° C for 5 minutes;

(d) cooling the resulting liquefied starch to 60° C. and adjusting the pH to 8.5 by the addition of caustic soda;

(e) adding 30 units per gram of starch of cyclodextrin glycosyltransferase (30,000 units/gram) and 10 kg. of kerosene;

(f) agitating the mixture for 70 hours;

(g) adding 10 kg of powdered chaff; and

(h) drying the resulting mixture at 60° C. under reduced pressure with stirring.

4,292,045

MODIFICATION OF LIQUID HYDROCARBONS

Herbert Brooks, Twyford, and Frederick A. Waite, Farnham Common, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 5, 1980, Ser. No. 146,411
Claims priority, application United Kingdom, May 10, 1979, 16311/79
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—62 **9 Claims**

1. A method for dissolving, in a liquid aliphatic hydrocarbon fuel having a flash point not less than 90° F., a copolymer obtained from monomers consisting of (1) at least 75% by weight of tert-butylstyrene as one monomer, (ii) from 1% to 24% by weight of a second monomer selected from the acrylic and methacrylic esters of aliphatic monohydric alcohols containing from 1 to 4 carbon atoms, 2-ethoxyethyl methacrylate, acrylonitrile, vinyl acetate, styrene and vinyltoluene, and (iii) from 1% to 10% by weight of methacrylic acid as a third monomer, the aggregate of monomers (i), (ii) and (iii) being 100% and the copolymer having the following characteristics:

(a) it is soluble in AVTUR 50 aviation kerosene;

(b) a 0.3% by weight solution of the copolymer in AVTUR 50 aviation kerosene has a relative viscosity in the range 1.3 to 2.6 and a differential orifice flow rate in the range 3 to 7 ccs per 30 seconds,

the method consisting in the steps of (A) blending the copolymer in finely divided form with a hydroxylic liquid which is a non-solvent for the copolymer or only a weak swellant therefor but which is miscible to the extent of at least 1% by weight with the fuel; (B) mixing the blend of the copolymer and the hydroxylic liquid into the fuel so as to give a concentration of copolymer in the fuel of from 0.1% to 1% by weight; and (C) dissolving in the fuel so treated from 0.01 to 0.6 mole, based on each 100 g of copolymer present, of an amino compound selected from the group consisting of alkyl monoamines containing from 1 to 12 carbon atoms, alkanolamines containing from 4 to 10 carbon atoms, aromatic amines and heterocyclic amines.

4,292,046

DETERGENT COMPOSITIONS

Alfred B. Piotrowski, Woodbury, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,703
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—63 **3 Claims**

1. A composition consisting essentially of major amount of a liquid hydrocarbon fuel having an initial boiling point of at least about 75° F. and an end boiling point of about 750° F., and a minor detergency improving amount of the reaction product of a bis-imidazoline and a (C_{18}–C_{24}) alkylsuccinic anhydride wherein said bis-imidazoline is obtained by reacting a dimer acid and 2-(2-aminoethylamino) ethanol under suitable reaction conditions in a 1 to 2 molar ratio.

4,292,047

BENZOQUINONE AND AMINE REACTION PRODUCT FOR FUELS AND MINERAL OILS

Paul F. Vartanian, and Joseph B. Biasotti, both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,668
Int. Cl.³ C10L *1/18*; C10M *1/32*
U.S. Cl. 44—65 **4 Claims**

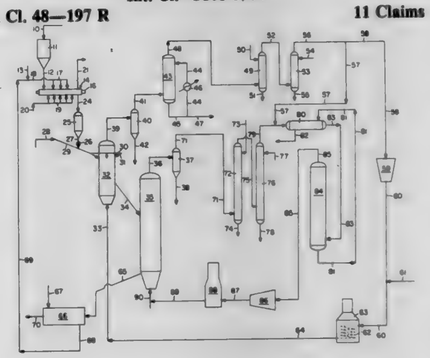
1. A motor fuel composition comprising a mixture of hydrocarbons within gasoline boiling range containing from about 0.005 to 0.20 weight percent of a reaction product prepared by reacting benzoquinone with an amine selected from the group consisting of N-oleyl-1,3-diaminopropane, N-lauryl-1,3-diaminopropane, N-soya-1,3-diaminopropane, and N-tallow-1,3-diaminopropane, said reaction product being prepared by reacting at least 1.5 moles of said amine per mole of said benzoquinone.

4,292,048

INTEGRATED CATALYTIC COAL DEVOLATILIZATION AND STEAM GASIFICATION PROCESS

Robert D. Wesselhoft, Baytown, and Daniel F. Ryan, Friendswood, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1979, Ser. No. 106,123
Int. Cl.³ C10J *3/54*
U.S. Cl. 48—197 R **11 Claims**



1. An integrated catalytic devolatilization and steam gasification process for the simultaneous production of hydrocarbon liquids and a methane-containing gas from carbonaceous feed solids which comprises:

(a) introducing said carbonaceous feed solids into a devolatilization zone;

(b) introducing a mixture of gases containing carbon monoxide and hydrogen into said devolatilization zone;

(c) contacting said carbonaceous feed solids in said devolatilization zone with said mixture of gases in the presence of a carbon-alkali metal catalyst at a temperature sufficiently high to devolatilize said carbonaceous feed solids but sufficiently low to prevent any substantial reaction of steam with said carbonaceous solids thereby producing char and a devolatilization effluent containing gaseous and vaporous constituents, wherein said carbon-alkali metal catalyst serves to catalyze the exothermic reaction of the carbon monoxide and hydrogen in said mixture of gases to form methane and wherein said temperature is sufficiently low that equilibrium in said devolatilization zone favors the formation of methane by said reaction of carbon monoxide and hydrogen and said reaction occurs to such an extent that substantially all of the heat required in said devolatilization zone is supplied by the heat given off by said reaction and by the sensible heat in the mixture of gases introduced into said devolatilization zone;

(d) treating said devolatilization zone effluent to recover

substantially tar free hydrocarbon liquids as product and a methane-rich gas;
(e) contacting at least a portion of said methane-rich gas with steam in a steam reforming zone under conditions such that at least a portion of the methane in said methane-rich gas reacts with steam to produce hydrogen and carbon monoxide;
(f) using the effluent from said steam reforming zone as the mixture of gases introduced into said devolatilization zone in step (b);
(g) passing said char produced in said devolatilization zone into a steam gasification zone;
(h) reacting said char with steam in said steam gasification zone under gasification conditions in the presence of a carbon-alkali metal catalyst and sufficient added hydrogen and carbon monoxide to provide substantially equilibrium quantities of hydrogen and carbon monoxide in said steam gasification zone at the gasification temperature and pressure;
(i) withdrawing from said steam gasification zone a raw product gas containing substantially equilibrium quantities, at the gasification temperature and pressure, of methane, carbon dioxide, steam, hydrogen, and carbon monoxide, wherein substantially none of said raw product gas is passed into said devolatilization zone; and
(j) recovering a methane-containing gas as product from said withdrawn raw product gas.

4,292,049

CERAMIC MATERIALS FOR HIGH-SPEED CUTTING

Hiroshi Tanaka, and Osamu Kato, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed May 27, 1980, Ser. No. 153,291
Claims priority, application Japan, May 25, 1979, 54-65476
Int. Cl.³ C04B *35/10*
U.S. Cl. 51—309 **4 Claims**

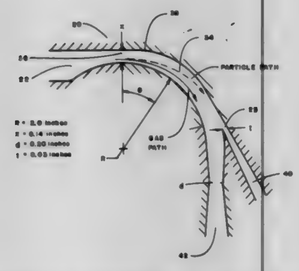
1. A ceramic material for high-speed cutting consisting essentially of Al_2O_3, ZrO_2 and at least one alkaline earth metal oxide selected from the group consisting of CaO and MgO, wherein the weight ratio of Al_2O_3/ZrO_2 is in the range of from 95/5 to 99.5/0.5, the molar ratio of $(CaO+MgO)/ZrO_2$ is in the range of from 0.05/1 to 0.2/1, and at least 50% of the ZrO_2 in the material is cubic ZrO_2, and the remainder is monoclinic ZrO_2.

4,292,050

CURVED DUCT SEPARATOR FOR REMOVING PARTICULATE MATTER FROM A CARRIER GAS

Hans D. Linhardt, Newport Beach, and John H. Beveridge, San Clemente, both of Calif., assignors to Linhardt & Associates, Inc., Newport Beach, Calif.

Filed Nov. 15, 1979, Ser. No. 94,510
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—1 **8 Claims**



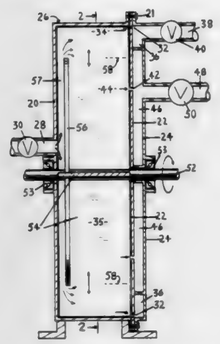
5. A process for separating solid particles including particles smaller than 1.0 micron, from a carrying gas composition, the gas composition having at least one condensable gaseous component capable of condensation under operative conditions of the process, the process comprising the steps of:
passing the gas composition through a curved duct, a centrifugal force arising in the curved duct affecting the direction of travel of the particles in a different manner than the travel of gaseous components of the carrying gas composition;
accelerating the flow of the gas composition to a high velocity the lower limit of which is substantially Mach 1.0 whereby the static temperature of the gas composition becomes lower at the high velocity than prior to said acceleration and whereby at least a portion of the condensable component condenses on the solid particles initially smaller than approximately 1.0 micron, said small particles acting as condensation sites resulting in liquid particles of a size larger than 1 micron, said liquid particles entrapping said small solid particles;
causing a shock zone to occur in the high velocity flow of the gas composition whereby a flow path of the solid particles and of the condensed liquid particles entrapping said particles initially smaller than approximately 1.0 micron is further diverted from the flow path of the gaseous components, and
collecting said solid particles and liquid particles.

4,292,051

APPARATUS AND METHOD FOR CENTRIFUGAL FLUID SEPARATOR

Wellesley R. Kime, 8745 Appian Way, Los Angeles, Calif. 90046

Continuation-in-part of Ser. No. 25,276, Mar. 29, 1979, abandoned, Ser. No. 111,135, Jan. 10, 1980, abandoned, and Ser. No. 113,860, Jan. 21, 1980, abandoned. This application Feb. 21, 1980, Ser. No. 123,229
Int. Cl.³ B01D *59/20*
U.S. Cl. 55—17 **22 Claims**



1. An apparatus for centrifugally separating fluid having heavier and lighter fractions into a first portion having an increased concentration of the heavier fraction and a second portion having an increased concentration of the lighter fraction, comprising:
A. a stationary housing having an inlet end and an outlet end, the stationary housing defining a centrifugal chamber, the inlet end of the stationary housing having fluid inlet means for passage of fluid having heavier and lighter fractions into the centrifugal chamber, the outlet end of the stationary housing having a first outlet means for discharging a first portion of the fluid having an increased concentration of the heavier fraction peripherally from the centrifugal chamber and a second outlet means for discharging a second portion of the fluid having an increased concentration of the lighter fraction more centrally from the centrifugal chamber; and
B. a rotatable member having a shaft and plurality of attached, outwardly radiating centrifugal vanes for rapidly rotating the fluid in the centrifugal chamber for providing centrifugal force for urging the heavier fraction peripherally for tending to displace the lighter fraction peripherally and urging the lighter fraction centrally for centrifugally separating the fluid into the first portion peripherally and the second portion more centrally in the centrifugal chamber.

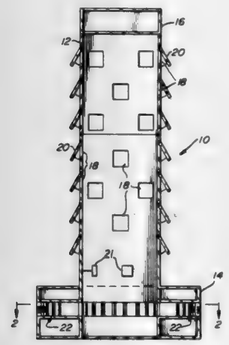
12. A method for centrifugally separating a fluid having heavier and lighter fractions into a first portion having an increased concentration of the heavier fraction and a second portion having an increased concentration of the lighter fraction, comprising the steps of:
A. admitting fluid having heavier and lighter fractions into a centrifugal chamber defined by a stationary housing having an intake end and an outlet end;
B. rapidly rotating the fluid in the centrifugal chamber by a rotating member having a shaft and a plurality of outwardly radiating vanes extending to close proximity with the stationary housing for urging the heavier fraction peripherally for tending to displace the lighter fraction peripherally for forming a first portion of fluid having an increased concentration of the heavier fraction peripherally and forming a second portion of the fluid having an increased concentration of the lighter fraction centrally;
C. discharging the first portion of fluid through a first outlet means peripherally located in the outlet end of the stationary housing;
D. discharging the second portion of the fluid via a second outlet means more centrally located in the outlet end of the centrifugal housing;

4,292,052

AIR POLLUTION CONTROL DEVICE AND METHOD

John J. Cardullo, 707 Alter St., Philadelphia, Pa. 19147

Filed May 12, 1980, Ser. No. 149,069
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—19 **7 Claims**



1. Apparatus for controlling air quality comprising:
(a) a base,
(b) an upwardly extending covered tower supported on said base having a plurality of air inlet openings, said openings being shielded from the weather by covering means,
(c) first means for monitoring the quality of air entering the tower through said air inlet openings,
(d) a plurality of air purification means located in said base to produce purified air, each of said air purification means having an air inlet in flow communication with said tower,
(e) each of said air purification means including an air outlet opening and located in said base for venting said purified air to the atmosphere,
(f) second means positioned and arranged with respect to each air purificaton means for monitoring the quality of said purified air before venting to the atmosphere through said air outlet openings,
(g) air moving means positioned and arranged with respect to each air purification means controlled by said second monitoring means and for creating a flow of air along a path from said air inlet openings downward through said tower and at least one of said air purification means and its associated air outlet opening,
(h) first gating means positioned and arranged with respect to each air purification means controlled by said second monitoring means and for controlling the flow of air into said air purification means, and
(i) second gating means positioned and arranged with respect to each air purification means controlled by said second monitoring means and for controlling the flow of air to the atmosphere through said outlet openings.

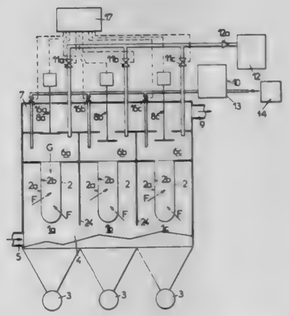
7. A method for controlling air quality comprising the steps of:
(a) creating a downward flow of air containing pollutants along a path through air inlet openings in a tower supported on a base through at least one of a plurality of air purification means in said base to the atmosphere through air outlet openings in said base positioned and arranged with respect to each air purification means;
(b) monitoring the quality of air flowing into said inlet openings by detecting the amount of pollutants contained in the air entering said tower;
(c) controlling the flow of air through at least one of said air purification means by an air inlet gating means;
(d) monitoring the quality of the air exiting said air purification means to determine the amount of pollutants remaining in the air;
(e) permitting the continued flow of purified air to the atmosphere when the amount of pollutants in the air exiting said air purification means is below a predetermined level; and
(f) terminating the flow of purified air through said outlet openings when the amount of pollutants in the air exiting said air purification means is above a predetermined level.

4,292,053

DECLOGGING PROCESS FOR FILTRATION INSTALLATION AND IMPROVED FILTRATION INSTALLATION

Jean Remillieux, Meudon-la-Foret, France, assignor to Air Industrie, Courbevoie, France

Filed Mar. 4, 1980, Ser. No. 127,070
Claims priority, application France, Mar. 5, 1979, 7905659
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—96 **14 Claims**



1. A method of declogging at least one filtration element of a filtration cell of a filtering installation for filtering a dust-laden gas, said installation comprising a plurality of filtration cells, each filtration cell comprising at least one filtering ele-

ment having an upstream face and a downstream face, said dust-laden gas passing through said filtering element from said upstream face to said downstream face whereby a layer of dust is deposited from said dust-laden gas on the upstream face of said filter element, said installation further comprising an outlet enclosure at the downstream face of said at least one filtering element and an inlet enclosure at the upstream face of said at least one filtering element, said method comprising the steps of:

isolating, from the flow of dust-laden gas, a filtration cell to be declogged, said filtration cell having at least one filtering element having a layer of dust;

admitting into the isolated cell a first flow of inert gas in a direction counter-current to the direction of flow of dust-laden gas such that the inert gas passes through said at least one filtering element in said filtration cell from the downstream face of the at least one element to its upstream face, the flow of said inert gas being such that the inert gas first fills said outlet enclosure of said isolated cell, passes through the at least one filtering element and into the area of said inlet enclosure surrounding the at least one filtering element of said isolated cell without causing the dust layer thereon to be detached;

admitting into the isolated cell a second flow of inert gas in said counter-current direction, the flow of said second flow of inert gas being such that the dust layer is detached from said at least one element.

8. Filtration apparatus comprising:

a plurality of filtration cells, each filtration cell having at least one filtering element having an upstream face and a downstream face and through which passes, in use, a dust-laden gas flow from the upstream face to the downstream face;

an inlet enclosure for all the filtration cells, said inlet enclosure having a gas inlet and enclosing the upstream face of the at least one filtering element;

an outlet enclosure for each filtration cell, said enclosure having a gas outlet and being in flow communication with the at least one filtering element;

a collecting enclosure for all the filtration cells, said collecting enclosure communicating with each outlet enclosure through closure means controllable independently for each cell, said collecting enclosure being connected to a dust-free gas-discharge means;

means for isolating, from a flow of dust-laden gas, a filtration cell to be declogged;

means for admitting to an isolated filtration cell a first flow of inert gas in a direction counter-current to the direction of flow of dust-laden gas such that the inert gas passes through the at least one filtering element in said filtration cell from the downstream face of the at least one element to its upstream face, with a flow such that the inert gas first fills said outlet enclosure of said isolated cell, passes through the at least one filtering element and into the area of said inlet enclosure surrounding the at least one filtering element of said isolated cell without causing the dust layer thereon to be detached;

means for admitting into an isolated cell a second flow of inert gas in said counter-current direction with a flow such that the dust layer is detached from said at least one element.

4,292,054

APPARATUS FOR MONITORING THE TEMPERATURE OF ADSORBERS

Rolf Noack, and Stefan Gramelt, both of Oberhausen, Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

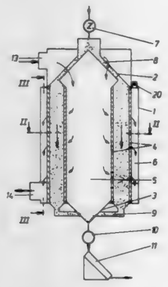
Filed Aug. 20, 1979, Ser. No. 68,057

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843627

Int. Cl.³ B01D *53/08*

U.S. Cl. 55—181 **8 Claims**

1. Apparatus for monitoring the temperature of adsorbers, comprising: a plurality of segments for holding a traveling carbonaceous fill between two perforated walls with gas flowing through the fill to be cleaned, a plurality of measuring elements arranged inside each of said segments on a gas outlet side, said measuring elements responding at a predetermined temperature, said measuring elements being distributed over height and width of an exit cross section of said adsorber, said measuring elements being electrically connected in series, said measuring elements having lead-ins connected to a power source, and indicator means connected to said lead-ins and



located outside each of said segments, a measuring element becoming actuated when the temperature exceeds a predetermined magnitude at a location in said exit cross section, said measuring element corresponding to said location in said exit cross section, actuation of said measuring element actuating thereupon said indicator means to indicate the temperature condition, whereby an intolerable temperature rise within said traveling carbonaceous fill held between said two perforated walls is prevented.

4,292,055

PURIFIER FOR GASEOUS FLUIDS

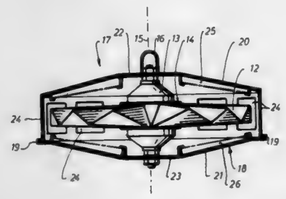
Pierre M. T. De Castella, La Vuachere, Monnaz, Switzerland (1111), and Charles L. Reinhold, 29, rue de Lancy, Carouge, Switzerland (1227)

Continuation of Ser. No. 943,563, Sep. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 924,391, Jul. 13, 1978, abandoned, which is a continuation of Ser. No. 742,763, Nov. 18, 1976, abandoned. This application Jun. 18, 1980, Ser. No. 160,726

Claims priority, application Switzerland, Nov. 25, 1975, 15239/75

Int. Cl.³ B01D *53/06*

U.S. Cl. 55—233 **27 Claims**



1. A gaseous fluid purifier, comprising a turbine which includes a motor and a rotor drivingly connected with the motor to be rotated thereby, the rotor comprising at least one rotary disc which is pleated in shape and which has a pleated surface when the rotor is rotated, the said pleated surface being rough and thereby able to retain particles from the flux of gaseous fluid which travels along the pleated surface, and the rotary disc being an adsorbent material that blocks the flux of the fluid and the particles from passing through the rotor, whereby, during the rotation thereof, the rotor performs a ventilating function and the said pleated surface thereof performs a gaseous fluid filtering function; and means for positioning said rotor is communication with a gaseous fluid so that, when rotated, it will purify the gaseous fluid.

21. A gaseous fluid purifier, comprising at least two rotatable discs having a common axis of rotation and being spaced apart from each other along their common axis, the said discs having respective peripheries and centers and at least one of the discs being of conical shape broadening toward the other disc, said discs being oriented such that the distance between them at their peripheries is less than the distance between them at their centers; a central suction opening defined in at least one of the discs; said discs defining between them at their peripheries a peripheral outlet opening; both of the discs being comprised of a material having rough surfaces, whereby the discs have rough surfaces for adsorbing impurities in gaseous fluid passing over said surfaces when the discs are rotated about said common axis as a rotor; and a stack of annular sheets provided at the peripheries of the discs, the annular sheets of which are oriented generally parallel to the disc cross sections that are transverse to the said common axis and are comprised of a material having rough surfaces, whereby the annular sheets have rough surfaces; said annular sheets being impregnated with a chemical reagent adapted to bind particles of undesired gaseous components which are contained in the gaseous fluid to be purified.

4,292,056

ENDLESS PAINT SEPARATING MEMBER FOR PAINT SPRAY BOOTHS

Ivan Bloomer, London, England, assignor to Carrier Drysys Limited, London, England

Filed Oct. 5, 1979, Ser. No. 82,187

Claims priority, application United Kingdom, Oct. 10, 1978, 39893/78

Int. Cl.³ B01D *45/08, 45/18, 46/22*

U.S. Cl. 55—243 **9 Claims**



9. A paint receiving device for removing paint from paint-laden air, said paint receiving device comprising a plurality of members interengaged with one another to define an endless and substantially continuous surface having a plurality of openings therein, and a plurality of plates supported by said members, each plate being arranged to be impinged on by the air flow through at least one of said openings for diverting the air flow such that paint carried by air is deposited on said plate.

4,292,057

TOP REMOVAL SUPPORT FOR DUST COLLECTOR BAGS

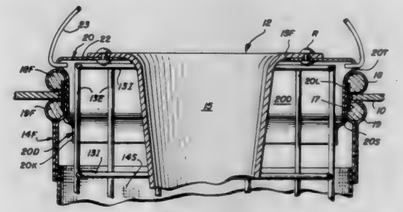
Edward A. Ulvestad, Naperville, and Charles M. Harris, Palatine, both of Ill., assignors to Flex Kleen Corp., Chicago, Ill.

Continuation of Ser. No. 617,710, Sep. 29, 1975, abandoned. This application Jul. 17, 1980, Ser. No. 169,641

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—302 **4 Claims**

1. In a reverse blow-back dust collector that includes a flat tube sheet having a plurality of closely spaced plain mounting openings, and a separate bag assembly for each mounting opening, each bag assembly including an elongated skeletal cage, an elongated bag having an open end portion to receive the cage therein, and an air nozzle to fit within the end of the cage, the improvement comprising an improved cage and nozzle mounting and support arrangement for each bag assembly comprising tube sheet sealing means including a sleeve of fabric material having a top fold region, an expansion type clamping means captively disposed within said top fold region for biasing said top fold region outwardly into direct sealing contact with the edge portion of one of said openings of said tube sheet and having upper and lower circular beads of soft resilient material in pressed engagement with said tube sheet above and below the same, and a removable top support structure projecting through said one of said openings and through



said sleeve and supporting said cage and said nozzle to extend generally below said tube sheet, said support structure including a flange portion presenting a substantially flat horizontal surface having an opening therethrough, a vertical collar portion for force fit seal reinforcing engagement with said top fold region, and a shoulder portion overlying said edge portion and said upper bead to transmit cage loads through said bead and onto the top side of said tube sheet, said nozzle being affixed to said flange portion and extending downwardly through the opening thereof.

4,292,058

SWIRL TUBE APPARATUS FOR SEPARATING GAS OR ISOTOPE MIXTURES

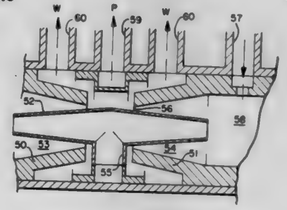
Eberhard Willeitner, Utting a. Ammersee, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg AG, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,219

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2743995

Int. Cl.³ B01D *45/12, 59/20*

U.S. Cl. 55—348 **5 Claims**



1. Swirl tube or chamber apparatus for separating an isotope or gas mixture of a process gas having heavy and light gas fractions, comprising,

a housing,

a plurality of swirl chambers disposed in said housing in an axially aligned relationship with an end of adjacent swirl chambers facing one another;

feed port means extending through said housing and comprising a plurality of ports tangentially issuing into the swirl chambers for feeding said process gas mixture thereto;

first extraction port means for extracting a heavy gas fraction from at least one end of said swirl chambers; and

second extraction port means for extracting a light gas fraction comprising common extraction means for extracting

said light gas fraction from said facing ends of adjacent swirl chambers, said common extraction means including extraction pipes projecting axially into said swirl chambers and being radially inwardly of said first extraction port means,

wherein said first and second extraction port means directly communicate with respective collection ducts formed in said housing for the withdrawal of the respective fractions extracted thereby.

4,292,059

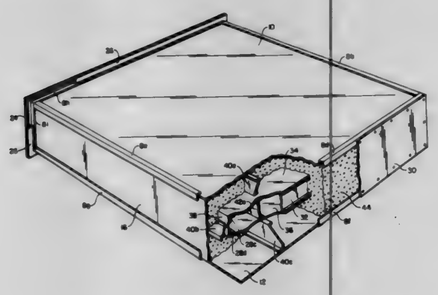
BY-PASS PROOF ADSORBER CELL

Julius L. Kovach, 2948 Brookdown Dr., Worthington, Ohio 43085

Continuation-in-part of Ser. No. 834,313, Sep. 19, 1977, abandoned. This application Jun. 9, 1980, Ser. No. 157,481

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—350 **10 Claims**



1. An adsorber module for housing particulate adsorbent material therein for adsorbing a sorbable component of a gas or vapor stream passed therethrough, comprising:

a. a rigid, rectangular, exterior frame with an upper, a lower, and two side foraminous sheets retained thereby; an exterior solid rear end plate removably attached to the rear end of said exterior frame; and an exterior solid front plate with a rectangular opening penetrating therethrough attached to the front end of said frame;

b. a rigid, rectangular, interior frame with an upper, a lower, and two side interior foraminous sheets retained thereby disposed within said exterior frame; an interior solid rear end plate attached to the rear end of said interior frame; the front end of said interior frame attached to said exterior solid front plate, the outlet chamber formed by said interior frame being coextensive in cross-sectional area with said rectangular opening in said exterior solid front plate; said interior and exterior frames, said interior and exterior rear end plates, and said interior and exterior foraminous sheets being in parallel but spaced-apart relationships to define a plenum chamber therebetween for housing said particulate adsorbent material; and

c. a plurality of rigid rib-like members disposed within said plenum chamber running from said interior rear plate to said exterior front plate to maintain and define said spaced-apart relationships and to further define sub-compartments of said plenum chamber which are in communication within said plenum chamber, at least one of said members being disposed between said exterior and said interior upper sheets and between said exterior and the interior lower sheets.

4,292,060

AIR-FILTER ASSEMBLY

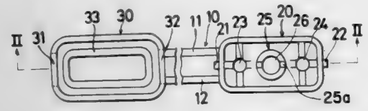
Naoji Sakakibara, Chiryu, and Nobuyuki Hashimoto, Toyota, both of Japan, assignors to Aisin Sieki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 2,176, Jan. 9, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,357

Claims priority, application Japan, Jan. 17, 1978, 53-3638

Int. Cl.³ B01D *50/00, 46/10*

U.S. Cl. 55—385 R **1 Claim**



1. An air filter assembly for connecting to a pipe member of a control valve of an exhaust emission cleaning system, comprising:

a filter case having an air filter therein and having a communicating hole connected to said pipe member;

a filter cap coupled with said filter case, wherein said filter case and said filter cap are made of elastic material and formed integrally with each other via at least one connecting member;

a projection vertically extending from the bottom of said filter case wherein said communicating hole comprises an inner, small diameter opening provided at the top of said projection, said projection including an inner conical surface portion connected to said small diameter opening, at least one longitudinal recess extending from the top of said projection towards said bottom of said filter case, and a transverse groove formed in said projection and cooperable with said pipe member so as to facilitate connection of said filter case to said pipe member;

air inlet means formed in either said filter case or said filter cap on opposite side portions of said projection;

projecting means provided on said filter case wherein said filter cap is coupled with said filter case by connection with said projecting means;

at least one connecting member, including an aperture for said projecting means, formed integrally with said filter case and said filter cap wherein said filter case is coupled to said cap by said at least one connecting member; and

a rib portion provided on said filter cap to hold said air filter, whereby said air filter can be simply and quickly assembled and replaced.

4,292,061

AIR CLEANER FOR FUEL INJECTED ENGINES

Charles M. Land, 14 Valencia, Apt. 5, San Rafael, Calif. 94901

Filed Apr. 25, 1980, Ser. No. 143,945

Int. Cl.³ B01D *46/40*

U.S. Cl. 55—493 **4 Claims**

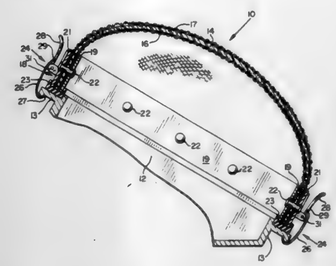
1. An air filter for a fuel injected engine having a generally rectangular opening for air intake and a filter seat flange surrounding the opening, comprising:

a rigid generally rectangular collar forming a base for the filter;

a filtering element of soft, porous foam material secured to and extending from side to side and end to end on the rigid collar, the element extending outwardly in a generally arcuate configuration between the sides of the collar, with an approximate inner side radius of between about 0.5 and about 1.0 times the inner width of the element at the collar;

an air passing structural backing for the filtering element in the same generally arcuate shape, secured to the collar and included at both the inner side and the outer side of the filtering element,

the collar comprising spaced inner and outer bands, with the filtering element and two layers of backing extending into the collar between the bands, and fasteners passing through the bands and retaining the filter element and backing together and to the collar;



a generally rectangular gasket secured to the collar in position to engage the filter seat flange; and

means for securing the collar to the filter seat flange of the engine.

4,292,062

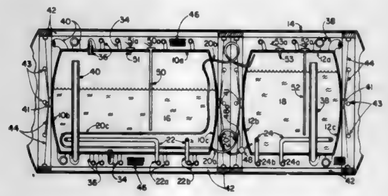
CRYOGENIC FUEL TANK

Horia A. Dinulescu, 1615 S. 4th St., #M2904, Minneapolis, Minn. 55454, and Nicholas A. Sanders, 109½ E. 2nd St., Hastings, Minn. 55033

Filed Mar. 20, 1980, Ser. No. 132,140

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—7 **34 Claims**



1. A cryogenic fuel tank for use with an engine which when operating consumes the cryogenic fuel, the fuel tank comprising:

a fluid-tight cryogenic fuel container having first and second ends and containing a quantity of cryogenic fuel,

a fluid-tight secondary cryogenic fluid container having first and second ends and containing a quantity of secondary cryogenic fluid,

a refrigeration system comprising a high temperature heat exchanger, a low temperature heat exchanger, a compressor, an expander and refrigeration working fluid,

said high temperature heat exchanger being located in said cryogenic fuel container and being part of said refrigeration system,

said low temperature heat exchanger being located in said secondary cryogenic fluid container and being part of said refrigeration system,

said refrigeration system periodically transferring heat from said secondary cryogenic fluid to said cryogenic fuel when said engine is consuming said cryogenic fuel,

a heat exchange bridge passing through said cryogenic fuel container and being connected to said secondary cryogenic fluid container,

said heat exchange bridge periodically transferring heat from said cryogenic fuel to said secondary cryogenic fluid when said engine is not consuming said cryogenic fuel,

a fluid-tight outside shell having first and second ends and enclosing said cryogenic fuel container and said secondary cryogenic fluid container,

a means of supporting said cryogenic fuel container and said secondary cryogenic fluid container within said outside shell,

a means for filling said cryogenic fuel container with said cryogenic fuel,

a means for extracting said cryogenic fuel from said cryogenic fuel container,

a means for filling said secondary cryogenic fluid container with said secondary cryogenic fluid,

a means for venting said cryogenic fuel from said cryogenic fuel container,

a means for venting said secondary cryogenic fluid from said secondary cryogenic fluid container,

a means for thermally insulating said cryogenic fuel container and said secondary cryogenic fluid container and said refrigeration system.

4,292,063

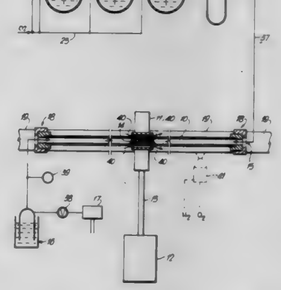
MANUFACTURE OF AN OPTICAL FIBER PREFORM WITH MICRO-WAVE PLASMA ACTIVATED DEPOSITION IN A TUBE

Koichi Abe, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 5, 1980, Ser. No. 146,522

Int. Cl.³ C03B *37/075*

U.S. Cl. 65—3.12 **16 Claims**



1. A method of manufacturing an optical fiber preform, comprising:

providing a glass tube;

positioning said tube in a microwave cavity;

feeding a carrier gas through said tube;

applying a microwave field to said cavity to produce a plasma in said tube at a position in said cavity, the power supplied being sufficient to maintain a temperature on the inner wall of said tube below about 500° C.;

feeding a reactant gas containing silica in a vaporous form through said tube;

reciprocating said tube through said cavity for a predetermined plurality of times to build up a deposit of particulate silica on the inner wall of said tube;

heating said tube to provide a temperature on the inner wall of said tube of about 1500° C. to 1700° C.; and

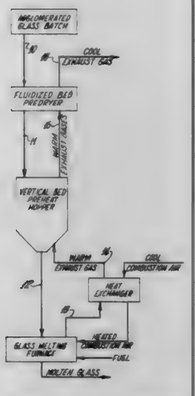
traversing the tube through said cavity to fuse said deposit to form a fused layer of silica.

4,292,064

GLASS BATCH FEEDING USING A FLUIDIZED BED FOR PREDRYING AGGLOMERATES

Mark A. Propster, Gahanna, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 31, 1980, Ser. No. 135,950
Int. Cl.³ C03B 3/00
U.S. Cl. 65—27 **7 Claims**



1. A glass manufacturing process comprising the steps of:
forming liquid-containing glass batch agglomerates;
charging the agglomerates to a predrying fluidized bed,
withdrawing the agglomerates from the fluidized bed and charging them to a preheat hopper;
withdrawing the agglomerates from the preheat hopper and feeding them to a glass melting furnace;
withdrawing flue gases from the glass melting furnace and passing them through the preheat hopper to heat the agglomerates therein; and
withdrawing the flue gases which have passed through the preheat hopper and passing them through the fluidized bed to predry the agglomerates therein.

5. An apparatus for producing molten glass comprising:
means for forming glass batch into agglomerates;
a fluidized bed predryer;
means for supplying the agglomerates to the fluidized bed predryer;
a vertical bed preheat hopper;
means for supplying the agglomerates from the predryer to the preheat hopper;
a glass melting furnace;
means for supplying the agglomerates from the preheat hopper to the glass melting furnace;
means for supplying flue gases from the glass melting furnace to the preheat hopper; and
means for supplying flue gases from the preheat hopper to the predryer.

4,292,065

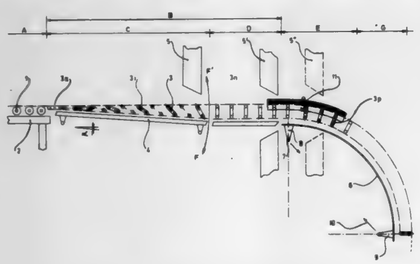
METHOD AND APPARATUS FOR SHAPING THERMOPLASTIC SHEET MATERIAL

Maurice Nedelec, Versailles; Claude Presta, Courbevoie, and Francois Vitoux, Thourotte, all of France, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Nov. 27, 1979, Ser. No. 97,683
Claims priority, application France, Nov. 27, 1978, 78 33478
Int. Cl.³ C03B 23/025
U.S. Cl. 65—104 **25 Claims**

1. Apparatus for bending to a predetermined curvature a sheet of material in the plastic state, such as a sheet of glass brought to the softening temperature, comprising:
means for conveying said sheet in a first direction;
a forming bed comprising a plurality of curved forming rods, said rods having aligned end sections forming respective longitudinal axes and a curved center section extending away from said longitudinal axis;
means for mounting at least some of said curved rods with their longitudinal axes generally transverse to said first direction and their curved sections inclined at an angle to said first direction, thereby defining a surface that is curved in the direction transverse to said first direction;
means for mounting the forming rod nearest the upstream side of said forming bed so that an envelope defined by the forming rods is tangential to the surface of said sheet as it enters said forming bed;
means for mounting said forming rods near the downstream side of said forming bed so that the envelope defined by said rods is curved in the longitudinal direction in which said sheet is moved; and
means for adjusting the position of the rods which define said curved envelope so as to alter the radius of curvature of said envelope in the longitudinal direction, whereby the radius of curvature of said sheet in the longitudinal direction is also altered.

15. A method for bending and tempering sheets of material in the plastic state, such as a sheet of glass brought to the



softening temperature, in which said sheets are heated, bent, and then tempered, said method comprising the steps of:
heating the sheet to a temperature which is at least equal to the temperature at the start of the tempering step and maintaining said sheet at said temperature for an extended period;
bending the sheet while the sheet is held at said temperature by moving said sheet through a forming bed comprising a plurality of curved forming rods, said rods having aligned end sections forming respective longitudinal axes and a curved center section, said rods being mounted with their longitudinal axes generally transverse to the direction of movement of said sheets, some of said rods being mounted with their curved sections inclined at an angle to said direction of movement of said sheets and said rods near the downstream end of said forming bed being mounted at different heights with respect to one another, whereby an envelope is defined having a transverse curvature profle and a longitudinal curvature profile that change progressively in the direction of advancement of the sheet; and
tempering the sheet immediately after bending by subjecting it to a uniform blowing action.

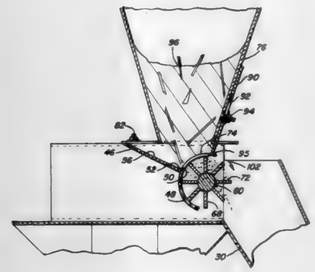
4,292,066

MATERIAL FEEDER

Melvin L. Barrett, P.O. Box 1492, Henderson, N.C. 27536

Filed Jun. 10, 1980, Ser. No. 158,350
Int. Cl.³ C03B 3/00
U.S. Cl. 65—335 **6 Claims**

1. A material feed structure including body means defining a pair of spaced opposing upstanding surfaces, ramp means defining an inclined ramp surface extending between said upstanding surfaces and including a lower marginal edge, a partial cylindrical wall extending axially between said upstanding surfaces and opening in a generally horizontal direction between and paralleling said upstanding surfaces, said partial cylindrical wall including an upper marginal portion registered with the lower marginal edge of said inclined ramp surface, a generally radially partitioned feed wheel journaled between said upstanding surfaces and having one side thereof closely embraced by said partial cylindrical wall, drive means drivingly connected to said feed wheel for driving the latter in a direction to move the upper radial partitions thereof in the general direction in which said partial cylindrical wall opens, a gravity discharge outlet spaced above said wheel and the area between said upstanding surfaces above the lower portion of



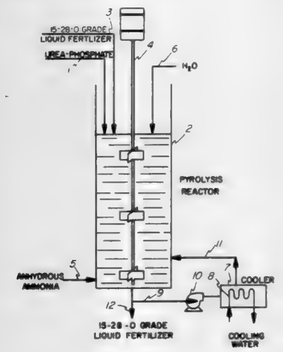
said inclined ramp surface, said gravity discharge outlet including a vertically adjustable abutment plate slidingly received and extending between said upstanding surfaces on the side of said outlet facing in the direction in which said partial cylindrical wall opens, and adjustable toward and away from the outer periphery of said wheel, means supporting said gravity discharge outlet in position relative to said upstanding surfaces, ramp and wheel for back and forth adjustable shifting of said gravity discharge outlet along a path generally paralleling the direction in which said partial cylindrical wall opens and transversely of the axis of rotation of said feed wheel.

4,292,067

PRODUCTION OF UREA-AMMONIUM POLYPHOSPHATES FROM UREA PHOSPHATE

John M. Stinson, Sheffield, and James R. Burnell, Killen, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 71,436, Aug. 31, 1979, now Defensive Publication No. T998,001. This application Feb. 12, 1980, Ser. No. 120,949
Int. Cl.³ C05C 9/00
U.S. Cl. 71—29 **18 Claims**



BATCH PRODUCTION OF UREA-AMMONIUM POLYPHOSPHATES FROM UREA-PHOSPHATE

1. A batch process for the production of high-purity urea ammonium polyphosphate liquid which process consists essentially of the steps of:
(1) combining a predetermined portion of crystalline urea phosphate in a reaction vessel together with a predetermined portion of said high-purity urea-ammonium polyphosphate liquid, said predetermined portion of said urea-ammonium polyphosphate liquid being of sufficient quantity to impart fluidity into the resulting mixture of same with said crystalline urea phosphate;
(2) subsequently introducing into said reaction vessel a predetermined quantity of anhydrous ammonia, said predetermined quantity of anhydrous ammonia being sufficient to provide heat of reaction to raise the temperature of the resulting mixture in said reaction vessel from about the ambient temperature of the materials introduced thereinto up to the range of about 220° F. to about 300° F. to effect the condensation of said urea phosphate and thereby yield a resulting melt of urea-ammonium polyphosphate, and said predetermined quantity of anhydrous ammonia limited so as to substantially eliminate loss of unreacted portions thereof from said reaction vessel;
(3) subsequently adding water to said reaction vessel in predetermined quantities sufficient to dissolve said urea-ammonium polyphosphate to effect the production of a high-purity urea-ammonium polyphosphate liquid;
(4) subsequently subjecting at least a portion of said high-purity urea-ammonium polyphosphate liquid to cooling means; and
(5) subsequently removing at least a portion of the resulting cooled high-purity urea-ammonium polyphosphate liquid from said reaction vessel as product.

4,292,068

HERBICIDAL METHOD

Samuel D. van Hoogstraten, and David H. K. Davies, both of Cambridge, England, assignors to Fisons Limited, London, England

Filed Dec. 4, 1979, Ser. No. 99,723
Claims priority, application United Kingdom, Dec. 16, 1978, 48811/78
Int. Cl.³ A01N 43/08, 43/12
U.S. Cl. 71—88 **10 Claims**

1. A method of combating rhizomatous or stoloniferous weeds, in which 2,3-dihydro-3,3-dimethylbenzofuran-5-yl ethanesulphonate is applied to a locus at which said weeds are growing or are liable to grow, in an amount sufficient to exert its herbicidal effect.

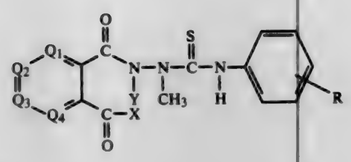
4,292,069

ARYLTHIOUREIDO PYRIDINECARBAMINO COMPOUNDS AND USE AS PLANT GROWTH REGULANTS

Jerry L. Rutter; Charles G. Gibbs, both of Shawnee Mission, and Loren W. Hedrich, Overland Park, all of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 101,654, Dec. 10, 1979. This application Jan. 23, 1981, Ser. No. 227,825
Int. Cl.³ A01N 43/40
U.S. Cl. 71—94 **42 Claims**

1. The method of regulating the growth of plants, including combating unwanted vegetation, comprises applying to the plants, either on seed, the soil or directly on the plants an effective amount of a compound having the general structural formula:



in which

Q_1, Q_2, Q_3 or Q_4 is N,

X is —OH or —O—(C_1–C_4 alkyl) and Y is H or X and Y together represent a bond between carbon and nitrogen atoms and

R is H or one or two of the following substituents: —Br, —Cl, —F, —I, —CF_3, —CH_3, —NO_2 or —C≡N or an agriculturally acceptable salt thereof.

4,292,070

N-SUBSTITUTED TETRAHYDROPHTHALIMIDE AND HERBICIDAL COMPOSITION

Osamu Wakabayashi, Kawasaki; Kuni Matsuya, Zama; Hiroki Ohta, Machida; Tetsuo Jikihara, Kawasaki, and Seiichi Suzuki, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

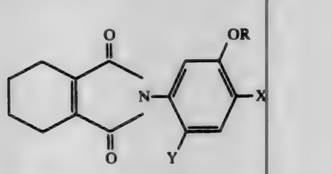
Filed Mar. 24, 1980, Ser. No. 133,270

Claims priority, application Japan, Apr. 13, 1979, 54-44948; Apr. 13, 1979, 54-44951

Int. Cl.³ A01N *43/38*; C07D *209/48*

U.S. Cl. 71—96 **14 Claims**

1. A herbicidal composition comprising N-substituted-3, 4, 5, 6,-tetrahydrophthalimides which are represented by the formula:



(I)

wherein X represents a chlorine or bromine atom: Y represents chlorine or hydrogen atom; wherein R represents a C_3–C_4 alkenyl group, a C_3–C_4 alkynyl group, or a C_5–C_6 cycloalkyl group, as an active ingredient, and a carrier, wherein said active ingredient is in a range of 0.5 to 80 weight % of the herbicidal composition.

4,292,071

ISOTHIOUREIDO ISOINDOLEDIONES AND USE AS PLANT GROWTH REGULATORS

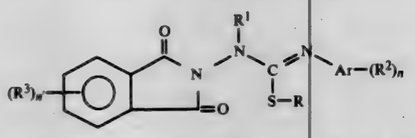
Joel L. Kirkpatrick, Washington Crossing, Pa.; Natu R. Patel, Overland Park, Kans., and Jerry L. Rutter, Mentor, Ohio, assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 35,875, May 3, 1979, abandoned. This application Apr. 10, 1980, Ser. No. 133,888

Int. Cl.³ A01N *43/38*; C07D *209/48*

U.S. Cl. 71—96 **6 Claims**

1. The method of regulating the growth of plants comprising applying to the plants, the seed or the soil an effective amount of a compound which has the structural formula:



In which R is cyano, C_1 to C_4 alkyl, C_3 to C_5 alkenyl or fluoroalkenyl, propynyl, phenylallyl or C_1 to C_3 alkyl to which is attached a phenyl, bromophenyl, chlorophenyl, methylphenyl, pyridyl, benzoyl, trimethylacetyl, phenoxy, chlorophenoxy, methylthio, fluorobenzoyl, N-phenylcarbamyl, N-ethylcarbamyl, N-trifluoromethylthiadiazolylcarbamyl, carboxy or carbethoxy substituent,

R^1 is H, acetyl, C_1 to C_3 alkyl, alkenyl or alkynyl to which may be attached phenyl, halophenyl, carbethoxy, vinyloxy or phenoxy groups, or R and R^1 together may be C_2 to C_4 alkylene;

Ar is phenyl or benzoyl;

R^2 is C_1 to C_4 alkyl, alkoxy, alkylene, alkylamino or alkylthio; phenoxy, benzyloxy, carbalkoxy, acetyl, methylenedioxy, trifluoromethyl, nitro, halo or cyano and n represents the number of points of attachment, which may be zero or an integer from 1 to 4, with the provision that at least one position ortho to the point of attachment of a phenyl ring of the Ar structure to the remainder of the molecule must be unsubstituted;

R^3 is lower alkyl or halo and n′ may be zero or an integer from 1 to 4.

4,292,072

NOVEL α-ISOCYANOCARBOXYLIC ACID COMPOUNDS AND PLANT GROWTH REGULANT COMPOSITIONS

Rolf Schröder, Wuppertal, and Klaus Lürssen, Berg. Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

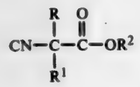
Filed Oct. 27, 1978, Ser. No. 955,435

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751783

Int. Cl.³ A01N *37/34*

U.S. Cl. 71—105 **5 Claims**

1. Plant growth regulant compositions comprising an agriculturally acceptable carrier and, in effective amounts, a salt of α-isocyanocarboxylic acid of the formula



wherein R and R^1 together represent an alkylene chain of 2 carbon atoms and R^2 is an alkali metal ion.

4,292,073

STEEL MAKING PROCESS

Katsukiyo Marukawa; Syoji Anezaki, both of Ibaraki, and Seiichi Masuda, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Inc., Osaka, Japan

Filed May 29, 1980, Ser. No. 154,216

Claims priority, application Japan, Jul. 3, 1979, 54-84522

Int. Cl.³ C21C *5/32*, *5/34*

U.S. Cl. 75—60 **3 Claims**

1. A process for making carbon steel and low-alloy steel in a basic oxygen furnace, which comprises preparing a molten suitable for producing the steel in said basic oxygen furnace, carrying out the top-blowing of oxygen gas and bottom-blowing of carbon dioxide gas and then tapping the resulting molten steel, characterized in that the top-blowing oxygen is injected through a lance onto the molten metal at an outlet velocity of Mach 0.8–2.0.

4,292,074

WEAR RESISTANT ALLOY

Yoshiro Komiyama, Okazaki; Katsumi Kondo, Toyota; Yoshio Fuwa, Toyota; Akira Matsui, Toyota; Shoji Miyazaki, Toyota, and Tokushiro Hasegawa, Ootsu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 970,968, Dec. 19, 1978, abandoned, which is a continuation of Ser. No. 835,970, Sep. 28, 1977, abandoned. This application Aug. 31, 1979, Ser. No. 71,578

Claims priority, application Japan, May 24, 1977, 52-60064

Int. Cl.³ C22C *30/00*

U.S. Cl. 75—122 **1 Claim**



1. A wear-resistant alloy consisting essentially of about 30%–60% Ni, 6%–10% Si, 0.5%–3% B, 0.5%–2% C, 2%–8% of carbide and boride forming elements selected from the group consisting of Cr, Mo, and W, and 30%–60% Fe.

4,292,075

SLOW FADE INOCCULANT AND A PROCESS FOR THE INOCCULATION OF MELTED CAST IRON

Friedrich Wolfsgruber, Tacherting; Hans W. Kasel, Saarbrücken-Bischmisheim; Manfred H. A. Odendahl, Saarbrücken-Brebach, and Wolfram W. Mörsdorf, Saarbrücken-Bischmisheim, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg and Halbergerhutte GmbH, Saarbrucken, both of, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,719

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847787; Oct. 9, 1979, 2940946

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—130 R **14 Claims**

1. An inocullant for melted cast iron comprising:

(a) a silicon-containing matrix of iron-silicon alloys and having a crystal structure,

(b) a high-melting point calcium aluminum silicate compound, present in the matrix crystal structure, and

(c) a dicalcium aluminum silicate material with up to 20% by weight of silicon carbide and up to 10% by weight of calcium carbide,

the weight ratio of the calcium-containing matrix with the high-melting point calcium aluminum silicate to the dicalcium silicate material being about 1:0.05 to about 1:0.2 and the amount of high-melting point calcium aluminum silicate in the silicon-containing matrix being 5 to 30% by weight.

4,292,076

TRANSVERSE DUCTILE FIBER REINFORCED EUTECTIC NICKEL-BASE SUPERALLOYS

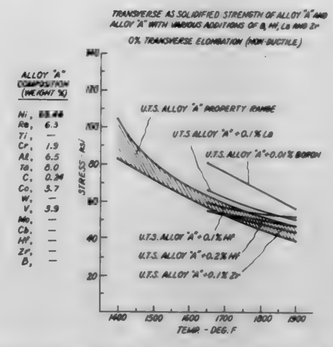
Michael F. X. Gigliotti, Scotia; Melvin R. Jackson, Niskayuna; Michael F. Henry; David A. Woodford, both of Schenectady; Sherwin S. Yang, Clifton Park, all of N.Y., and Charles A. Bruch, Cincinnati, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1979, Ser. No. 34,167

Int. Cl.³ C22C *19/03*

U.S. Cl. 75—170 **10 Claims**

6. An alloy capable of developing a unidirectionally solidified anisotropic article containing an aligned eutectic reinforcing fibrous phase having improved transverse ductility and strength properties, the alloy consisting essentially of on a weight basis, 0.001–0.02 B, 0–9% Re, 0–<0.8% Ti, 0–20% Cr,



0–10% Al, 3–15% Ta, 0.1–1% C, 0–20% Co, 0–20% W, 0–7% V, 0–10% Mo, 0–3% Cb, <0.15% Hf, 0–1.5% Zr, the balance being essentially Ni and incidental impurities.

4,292,077

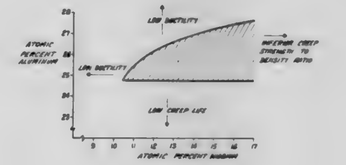
TITANIUM ALLOYS OF THE Ti_3Al TYPE

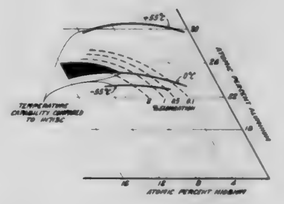
Martin J. Blackburn, Kensington, and Michael P. Smith, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 25, 1979, Ser. No. 60,264

Int. Cl.³ C22C *14/00*; C21D *1/00*

U.S. Cl. 75—175.5 **7 Claims**





1. A titanium aluminum alloy which may be cast and forged, having at least 1.5% tensile ductility at room temperature and good elevated temperature creep strength, consisting essentially by atomic percent of 25–27 Al, 12–16 Nb, balance Ti (nominally by weight, 13.5–15.3 Al, 23.4–30 Nb, balance Ti).

4,292,078

ELECTRICAL CONTACT MATERIAL

Sinya Honda, Kasuga; Takeshi Komura, Fukuoka; Naomi Sugita, Fukuoka, and Tatuya Okamoto, Fukuoka, all of Japan, assignors to Nippon Tungsten Co., Ltd., Fukuoka, Japan

Filed Nov. 5, 1979, Ser. No. 91,301
Claims priority, application Japan, Nov. 7, 1978, 53-137653
Int. Cl.³ C22C *27/04*
U.S. Cl. 75—176 **1 Claim**

1. Electrical contact material consisting essential of 10 to 20 percent by weight of nickel, 0.05 to 2.0 percent by weight of titanium diboride and the balance tungsten.

4,292,079

HIGH STRENGTH ALUMINUM ALLOY AND PROCESS

Joseph R. Pickens, College Park, Md.; Robert D. Schelleng, Suffern; Stephen J. Donachie, New Windsor, both of N.Y., and Thomas J. Nichol, Cheshire, Conn., assignors to The International Nickel Co., Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 951,590, Oct. 16, 1978. This application Oct. 4, 1979, Ser. No. 81,868
Int. Cl.³ B22F *3/00*; C22C *21/06*
U.S. Cl. 75—232 **23 Claims**

1. An oxide dispersion-strengthened mechanically alloyed aluminum-base alloy having a composition consisting essentially, by weight, of magnesium in a small but effective amount for increased strength up to about 7%, about 0.3% up to about 4% oxygen, up to about 2½% carbon, and the balance essentially aluminum, and characterized by a tensile strength (UTS) at room temperature above 66.3 ksi.

13. A process for working an oxide dispersion-strengthened mechanically alloyed aluminum-magnesium powder at elevated temperature to produce a consolidated worked product, said aluminum-magnesium power having a composition consisting essentially, by weight, of magnesium in a small but effective amount for increased strength up to about 7%, about 0.3% up to about 4% oxygen, up to about 2½% carbon, and the balance essentially aluminum, and characterized by a tensile strength (UTS) at room temperature of above 66.3 ksi and said powder having in compacted form a working temperature-strength profile which includes a critical working temperature-strength transition zone characterized by a sharp lowering of room temperature strength relative to increased working temperature, comprising:

(a) determining the working temperature-strength profile of the selected charge material, said profile being characterized by an overall decrease in strength relative to the working temperature; and

(b) working the charge material at a temperature selected with reference to the working temperature-strength profile to optimize the workability of the charge material and the strength of the worked product.

23. A process for treating a dispersion-strengthened mechanically alloyed aluminum containing, by weight, from about 2% up to about 7% Mg, up to about 2½% C, and from 0.3 up to about 4% O, by a method including steps comprising hot working said aluminum to form a consolidated product, the improvement of optimizing the strength of the consolidated product and workability during hot working by employing processing conditions in the interrelationship set forth by the following formula:

$$UTS = 0.059T_1 - 0.014T_2 - 0.034T_3 - 0.55E_R + 11.5(\text{wt. \% O}) + 20.1(\text{wt. \% C}) - 0.18\dot{\epsilon} - 3t + 214.6$$

where

UTS = Ultimate Tensile Strength in ksi (at room temperature)

T_1 = Degas Temperature

T_2 = Compaction Temperature

T_3 = Extrusion Temperature

E_R = Extrusion Ratio, which is the ratio of the cross sectional area of the extruded billet to the cross sectional of the extruded rod.

$\dot{\epsilon}$ = Strain Rate (sec^{-1})

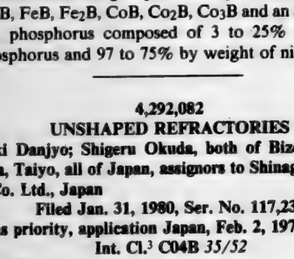
t = Time at highest degassing temperature (hours).

4,292,080

CESIUM-STUFFED CORDIERITE CERAMICS

Francis W. Martin, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 5, 1980, Ser. No. 156,666
Int. Cl.³ C03C *3/22*
U.S. Cl. 501—4 **2 Claims**



1. A ceramic body, wherein the crystal phase consists essentially of cesium-stuffed, hexagonal cordierite, demonstrating a use temperature up to about 1600° C. and nearly isotropic axial thermal expansions consisting essentially, by weight on the oxide basis, of about 11–13% MgO, 34–36% Al_2O_3, 33–42% SiO_2, and 10–22% Cs_2O.

4,292,081

BORIDE-BASED REFRACTORY BODIES

Tadahiko Watanabe, Saga, and Shinichi Kono, Ikoma, both of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,434
Claims priority, application Japan, Jun. 7, 1979, 54-72779; Aug. 23, 1979, 54-99220
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—96 **6 Claims**

1. A sintered refractory body which comprises

(a) from 99.99 to 60% by weight of at least one metal diboride selected from the group consisting of titanium diboride, chromium diboride, tantalum diboride, manganese diboride, molybdenum diboride, yttrium diboride, vanadium diboride, hafnium diboride, niobium diboride, aluminum diboride and zirconium diboride,

(b) from 0.01 to 40% by weight of at least one metal boride selected from the group consisting of MnB, Mn_3B_4, Mn_2B, Mn_4B, TiB, Ti_2B_5, Ti_2B, W_2B_5 and Mo_2B_5, and

(c) from 0.001 to 30% by weight of a binder ingredient selected from the group consisting of NiB, Ni_4B_3, Ni_2B, Ni_3B, FeB, Fe_2B, CoB, Co_2B, Co_3B and an alloy of nickel and phosphorus composed of 3 to 25% by weight of phosphorus and 97 to 75% by weight of nickel.

4,292,082

UNSHAPED REFRACTORIES

Hiroyuki Danjyo; Shigeru Okuda, both of Bizen, and Eiichi Yorita, Taiyo, all of Japan, assignors to Shinagawa Refractories Co. Ltd., Japan

Filed Jan. 31, 1980, Ser. No. 117,233
Claims priority, application Japan, Feb. 2, 1979, 54-10332
Int. Cl.³ C04B *35/52*
U.S. Cl. 501—100 **17 Claims**

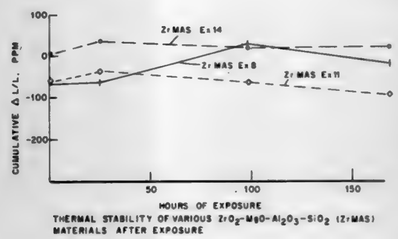
1. An unshaped refractory comprising aggregate, refractory fine powder, granules, and a binder, said granules comprising a refractory fine powder mixed with adhering carbonaceous material.

4,292,083

HIGH TEMPERATURE, LOW EXPANSION, CORROSION RESISTANT CERAMIC AND GAS TURBINE

Harry W. Rauch, Sr., Lionville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 18, 1980, Ser. No. 141,507
Int. Cl.³ C04B *35/04, 35/10, 35/14, 35/48*
U.S. Cl. 501—104 **12 Claims**



THERMAL STABILITY OF VARIOUS ZrO_2-MgO-Al_2O_3-SiO_2 (Zr-MAS) MATERIALS AFTER EXPOSURE

1. A high temperature, low expansion, corrosion resistant ceramic material consisting essentially of about 3–13 weight percent MgO, about 29–44 weight percent Al_2O_3, about 40–51 weight percent SiO_2, and about 3–17 weight percent ZrO_2.

4,292,084

VIBRATABLE PLASTIC REFRACTORY

Stephen W. Thrower; George H. Criss, both of Bethel Park, and Thomas R. Kleeb, Pittsburgh, all of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 922,627, Jul. 7, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,509
Int. Cl.³ C04B *35/10, 35/18, 35/48*
U.S. Cl. 501—107 **8 Claims**

1. A vibratable plastic refractory composition consisting essentially of about 2 to 40%, by weight, calcined kaolin and the balance at least one non-basic calcined refractory aggregate selected from the group consisting of calcined bauxite, tabular alumina, calcined alumina, calcined fireclay, crushed refractory brick bats, zircon and mullite, said composition containing P_2O_5 in an amount equivalent to that provided by about 2 to 17% phosphoric acid of 85% concentration, the composition having a −325 mesh fraction between about 30 and 45%.

4,292,085

METHOD FOR CONVERTING INTO A NON-POLLUTING PARTICULATE PRODUCT THE FERROUS SULPHATE OBTAINED IN THE PRODUCTION OF TITANIUM DIOXIDE BY THE SULPHATE PROCESS

Luigi Piccolo, Milan; Tullio Corsini, Sesto Calende; Antonio Paolinelli; Gaudenzio Ferri, both of Milan, and Angelo La Rovere, Seveso, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Sep. 14, 1979, Ser. No. 75,446
Claims priority, application Italy, Sep. 14, 1978, 27661 A/78
Int. Cl.³ C04B *11/00, 7/34*; C01F *11/46*; C01G *41/14*
U.S. Cl. 106—109 **16 Claims**

1. A process for converting into a non-polluting, free-flowing particulate neutralization product the ferrous sulphate heptahydrate obtained as a by-product of the production of titanium dioxide by the sulphate process, which comprises combining a reaction mixture by bringing said ferrous sulphate heptahydrate into contact with calcium hydroxide as a neutralizing agent in an apparatus suitable for mixing powders, in the presence of free water in an amount not exceeding 12% by weight with respect to the reaction mixture using a molar ratio between said neutralizing agent and said ferrous sulphate of at least 1:1, reacting the resulting mixture under agitation at a temperature not exceeding 60° C. and for a mixing time not exceeding five minutes, and discharging the resulting neutralization product from said apparatus, said neutralization product being a free-flowing particulate.

4,292,086

ALL WEATHER WOOD SEALER AND MARKER

Trevor P. Clark, deceased, late of North Vancouver, Calif.X, and by Constance C. Clark, executrix, 3650 Sunnycrest Dr., North Vancouver, B. C., Canada (V7R 3C6)

Continuation-in-part of Ser. No. 859,090, Jan. 10, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,888
Claims priority, application Canada, Mar. 21, 1977, 274427
Int. Cl.³ C08L *1/28, 91/06, 93/00, 93/04*
U.S. Cl. 106—172 **8 Claims**

1. An all-weather wood marking and sealing composition comprising:

(a) 40% to 90% by weight of an alcohol selected from the group consisting of methanol and ethanol;

(b) 0.2% to 4.0% by weight of a water insoluble sealing means dispersed in said alcohol, said sealing means comprising an alkyl ether of cellulose;

(c) 2% to 60% by weight of a water insoluble wood adhesive means dissolved in said alcohol, said wood adhesive means selected from the group consisting of rosin, shellac, benzoin, colophony, copal, damar and vinsol;

(d) 0.1% to 15% by weight of methyl abietate;

(e) 0.5% to 15% by weight hydrophobic silica, said hydrophobic silica having substantially 0.7 millimol of methyl groups chemically bonded to silica per 100 square meters of surface area of said hydrophobic silica;

(f) 0.2% to 30% by weight of a salt of stearic acid, said salt being selected from the group consisting of calcium stearate, aluminum stearate, magnesium stearate, and zinc stearate; and

(g) water insoluble pigment.

4,292,087

COATINGS PIGMENTED WITH NONLEAFING ALUMINUM FLAKE

Harry E. Bell, East Brunswick, N.J., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Feb. 28, 1979, Ser. No. 16,666
Int. Cl.³ C08K *3/08*; C08L *1/18, 67/00*
U.S. Cl. 106—193 M **35 Claims**

1. A pigmented coating composition comprising a vehicle comprising a film-forming binder and a substantially nonleafing aluminum flake pigment produced by reducing aluminum to flake in the presence of a milling agent comprising isostearic acid.

4,292,088

BEESWAX SUBSTITUTE

Ingeborg Scheuffgen, Neuss, and Uwe Ploog, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,266
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856277
Int. Cl.³ A61K *7/00, 7/025*; C08L *91/06, 91/08*
U.S. Cl. 106—268 **8 Claims**

1. A substitute beeswax composition comprised of:

(a) from about 3 to 15% by weight, based on the weight of the total composition, of α-branched, aliphatic monocarboxylic acids of the general formula



in which R represents a linear alkyl radical with from about 12 to 20 carbon atoms;

(b) from about 15 to 30% by weight of esters of fatty alcohols of chain lengths of C_{12}–C_{22} and fatty acids of chain lengths of C_{14}-C_{22};

(c) from about 5 to 20% by weight of triglycerides of palmitic, stearic, hydroxystearic, or behenic acid;

(d) from about 20 to 40% by weight of mono- and/or diglycerides of palmitic, stearic, hydroxystearic, or behenic acid;

(e) from about 5 to 20% by weight of fatty acids or hydroxy fatty acids of chain lengths C_{16}–C_{22}; and

(f) from 0 to about 30% by weight of microcrystalline paraffins having a melting range of from 70° to 72° C.

8. A cosmetic agent for the care and protection of the skin of warm-blooded animals comprising from 1 to 50% by weight, relative to the total agent, of a beeswax substitute composition of claim 1 and the remainder conventional cosmetic excipients.

4,292,089

PROCESS FOR CONTINUOUSLY DISSOLVING A PARTICULATE SOLID MATERIAL, NOTABLY A LIGNOCELLULOSE MATERIAL

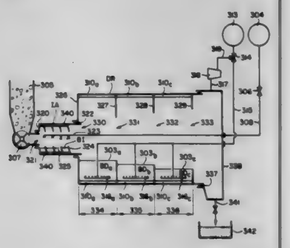
Alain Regnault, Ornex; Jean-Pierre Sachetto, St-Julien-en Genevois; Herve Tournier, Valleiry, all of France; Thomas Hamm, Le Lignon, and Jean-Michel Armanet, Onex, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Oct. 4, 1979, Ser. No. 82,221

Claims priority, application Switzerland, Oct. 4, 1978, 10298/78

Int. Cl.³ C13K *1/02*

U.S. Cl. 127—1 **7 Claims**



6. Apparatus for continuously dissolving in hydrochloric acid the cellulose contained in a fragmented lignocellulose material which leaves fine residual particles in suspension within the acid, characterised in that it comprises:

(a) an impregnating device having an auxiliary rotating horizontal drum provided with a transverse wall defining an inlet end of this drum and having an axial inlet aperture for admitting the fragmented solid material to be impregnated, liquid feed means for the continuous supply to this auxiliary drum of an adjustable quantity of hydrochloric acid for impregnating and dissolving the fragmented material, means for forming at the bottom of this auxiliary drum an impregnating bath and for causing this bath and the solid material to advance along the bottom of the drum, means for effecting cyclical immersion of the fragmented material in this impregnating bath, and an outlet end constituting a free outlet aperture enabling the continuous discharge of the impregnated fragmented material simultaneously with the acid out of this auxiliary drum; and

(b) a main horizontal rotating drum for continuously dissolving the impregnated fragmented material, said main drum having a first transverse wall defining an axial inlet end communicating with the free outlet end of the auxiliary drum, so that the impregnated fragmented material and the acid can pour together continuously into the main drum through its axial inlet aperture, the main drum communicating with the auxiliary drum and with a collector chamber provided at its outlet so as to form together a closed chamber; and wherein

(c) the said horizontal main drum is subdivided into a plurality of communicating chambers defined respectively by the said first transverse annular wall at the inlet of the main drum, by at least one intermediate transverse wall in the main drum, and by a final transverse wall defining an outlet end of the main drum;

(d) the said annular transverse walls have respective axial apertures the diameters of which increase from one wall to the next along the main drum in such a manner as to enable the acid to form in the said chambers a plurality of baths disposed in cascade, the overflow of each bath discharging into the next bath and being discharged by a last overflow out of the main drum at its outlet end;

(e) the said main drum is adapted to impart to the impregnated fragmented material immersed in said baths an adjustable mixing movement making it possible to keep the fragments of this material in intimate contact with the acid in the interior of said baths, to keep in suspension the fine residual particles resulting from the partial dissolution of the fragments, and to discharge the suspended fine particles continuously by the said overflow discharge of the acid; and

(f) the said main drum is associated with a gas feed device allowing the bubbling of an adjustable quantity of hydrogen chloride gas through said baths, in order to dissolve the cellulose under the combined effects of the gas thus caused to bubble through and of the said adjustable mixing movement.

4,292,090

REMOVAL OF TITANIUM DIOXIDE FROM A FILTER ELEMENT

Chris C. Chao, Los Angeles, Calif., assignor to Textron Inc., Providence, R.I.

Filed May 15, 1980, Ser. No. 149,823

Int. Cl.³ B08B *3/08*

U.S. Cl. 134—2 **11 Claims**

1. A method for removing titanium dioxide from contaminated workpieces, comprising:

immersing the workpiece in an aqueous alkaline solution, the solution containing sufficient calcium ions to convert the titanium dioxide to a rinsable product; and

rinsing the workpiece.

4,292,091

METHOD OF PRODUCING SEMICONDUCTOR DEVICES BY SELECTIVE LASER IRRADIATION AND OXIDATION

Ryoiku Togei, Machida, Japan, assignor to VLSI Technology Research Association, Kawasaki, Japan

Filed Feb. 25, 1980, Ser. No. 124,467

Claims priority, application Japan, Feb. 28, 1979, 54-22934

Int. Cl.³ H01L *21/26, 21/263*

U.S. Cl. 148—1.5 **22 Claims**

1. A method of producing a desired semiconductor or circuit element comprising the steps of:

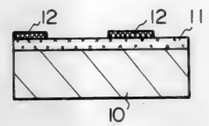
forming an amorphous silicon layer on a substrate;

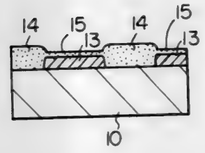
forming a patterned mask film on said amorphous silicon layer to shield a portion thereof, thereby defining shielded and exposed areas of said amorphous silicon layer;

selectively annealing said amorphous silicon layer with a laser beam to change said amorphous silicon layer into a single-crystalline silicon layer except for said shielded area of said amorphous silicon layer;

removing said patterned mask film;

oxidizing the remaining amorphous silicon layer to change it into a field isolating oxide layer; and





forming the desired semiconductor element or circuit element in said single-crystalline silicon layer.

4,292,092

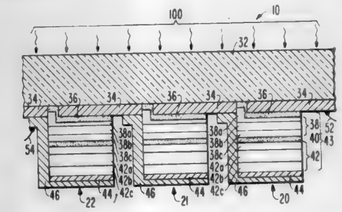
LASER PROCESSING TECHNIQUE FOR FABRICATING SERIES-CONNECTED AND TANDEM JUNCTION SERIES-CONNECTED SOLAR CELLS INTO A SOLAR BATTERY

Joseph J. Hanak, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 2, 1980, Ser. No. 156,081

Int. Cl.³ H01L *21/263;* B23P *23/04;* B23K *9/00*

U.S. Cl. 148—1.5 **19 Claims**



1. A method of fabricating a solar battery comprising:

scribing a transparent electrode on a transparent substrate with a laser of sufficient power to form a plurality of transparent electrode strips;

fabricating an active region of a semiconductor material on said substrate and said transparent electrode strips;

scribing said active region with a laser parallel and adjacent to the first scribing so as to scribe through said active region and form strips of active region but not the transparent electrode; and

interconnecting said strips of active region in series with a back electrode.

4,292,093

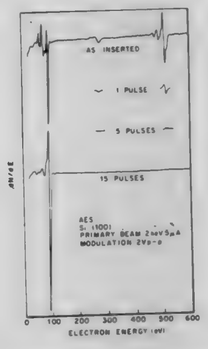
METHOD USING LASER IRRADIATION FOR THE PRODUCTION OF ATOMICALLY CLEAN CRYSTALLINE SILICON AND GERMANIUM SURFACES

Gary W. Ownby, Knoxville; Clark W. White, Oak Ridge, and David M. Zehner, Lenoir City, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1979, Ser. No. 108,199

Int. Cl.³ H01L *21/265, 21/22*

U.S. Cl. 148—4 **6 Claims**



1. A method for treating a body of crystalline silicon having a surface region which is contaminated with a macro amount of oxygen, to render said region atomically clean with respect to said oxygen, said method comprising:

in an evacuated zone, irradiating said region with a plurality of Q-switched laser pulses characterized by a peak-power density in the range of from about 70 to 190 MW/cm^2.

4,292,094

PROCESS FOR INCREASING THE CORROSION RESISTANCE OF NITRIDED STRUCTURAL PARTS MADE OF IRON MATERIAL

Helmut Kunst, Rodenbach, and Christian Scondo, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,797

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934113

Int. Cl.³ C23F *7/04*

U.S. Cl. 148—6.11 **3 Claims**

1. In a process for the treatment of nitrided structural parts of iron work pieces by an oxidation treatment subsequent to the nitriding process, the improvement comprising increasing the corrosion resistance of the nitrided parts by treating at a temperature of 250° to 450° C. in an oxidizing salt bath consisting of an alkali hydroxide with 2 to 20% of alkali nitrate for 25 to 50 minutes.

4,292,095

PROCESS FOR HYDROPHILIZATION OF METAL SURFACES AND/OR METAL OXIDE SURFACES

Hans-Juergen Schlinsog, Cremlingen, Fed. Rep. of Germany, assignor to The Continental Group, Inc., Stamford, Conn.

Filed Sep. 20, 1979, Ser. No. 77,437

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855170

Int. Cl.³ C23F *7/00, 7/06*

U.S. Cl. 148—6.14 R **11 Claims**

1. A process for forming a hollow metal article from a metal sheet which comprises the steps of sequentially effecting in the absence of any intermediate step hydrophilization of metal surfaces and/or metal oxide surfaces of the sheet by generating at least one hydroxide of the metal involved on such surfaces,

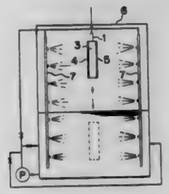
the hydroxide being of the lowest valence stage of the metal and then forming the hydrophilized sheet into the hollow article.

4,292,096

PHOSPHATING PROCESS OF METAL SURFACE

Ryoichi Murakami; Hideo Shimizu; Takashi Yoshii; Minoru Ishida, and Hiroto Yonekura, all of Ikedanakamachi, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Feb. 13, 1980, Ser. No. 121,168
Claims priority, application Japan, Feb. 13, 1979, 54-15839
Int. Cl.³ C23F *7/08*
U.S. Cl. 148—6.15 Z **3 Claims**



1. In a process for forming an electrocoated film on the surface of a metal substrate by subjecting said metal surface to phosphating and then to cationic electrocoating, the improvement wherein the phosphating consists essentially of first dipping the metal surface into an acidic phosphating solution consisting essentially of a zinc compound in a concentration of 0.5 to 1.5 g/l as a zinc ion, a phosphate in a concentration of 5 to 30 g/l as a phosphate ion and a nitrite in a concentration of 0.01 to 0.2 g/l as a nitrite ion and/or an aromatic nitro compound in a concentration of 0.05 to 2 g/l in water and a chlorate in a concentration of 0.05 to 2 g/l as a chlorate ion, at a temperature of 40° to 70° C. for not less than 15 seconds and then spraying the metal surface with said acidic phosphate solution for not less than 2 seconds.

4,292,097

HIGH TENSILE STRENGTH STEEL SHEETS HAVING HIGH PRESS-FORMABILITY AND A PROCESS FOR PRODUCING THE SAME

Yoshio Nakazato; Tomoo Tanaka; Koichi Hashiguchi, and Naohiko Soeda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 20, 1979, Ser. No. 68,018
Claims priority, application Japan, Aug. 22, 1978, 53-102054
Int. Cl.³ C21D *8/04, 7/04*
U.S. Cl. 148—12 C **4 Claims**

1. A process for producing high tensile strength steel sheets with the surface roughness being given at the cold rolling, having excellent shape-fixability and a proportional limit stress less than 20 kg/mm², in which the microstructure consists of ferrite grains dispersed with fine martensite islands, the volume fraction of martensite being in a range of 3–10%, which comprises cold rolling a hot rolled steel sheet containing 0.005–0.15% of carbon, and manganese, if necessary boron, molybdenum, chromium, silicon, nickel and copper within a range of 0.27–3% of Mneq. shown by the following formula (1)

$$Mneq. = Mn + 124B + 3Mo + 3/2Cr + \tfrac{1}{4}Si + \tfrac{1}{4}Ni + \tfrac{1}{4}Cu \quad (1)$$

so as to obtain the cold rolled steel sheet having such a surface property, that an average surface roughness Ha is 0.4–1.8 μm, PPI value is more than 80 at 0.5 μm cut off level and then heating the cold rolled steel sheet to intercritical temperature between A_1 and A_3, after which cooling the heated steel sheet so that a cooling rate, CR°C./sec, satisfies the following formula (2) in the relation to the above-described Mneq.

$$2.5 \geqq \log CR \geqq -1.11Mneq. + 2.8 \quad (2).$$

4,292,098

LIQUID PROPELLANT

Joseph E. Mastroianni, La Plata, and William F. Newton, Clinton, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1980, Ser. No. 160,350
Int. Cl.³ C06B *25/36*
U.S. Cl. 149—89 **6 Claims**

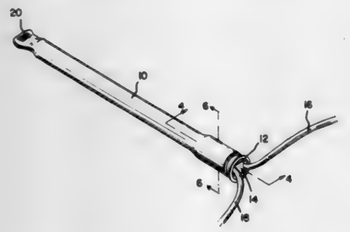
1. In a liquid monopropellant composition comprising a nitrate ester or a nitroparaffin, the improvement which comprises the inclusion from about 5 to about 25 weight percent of the total composition of a di-ester having the formula $ROOC(CH_2)_nCOOR$ wherein R is an alkyl of 3 to 5 carbon atoms and n is 5 to 7.

4,292,099

METHOD FOR ENVIRONMENTALLY SEALING A WIRE SPLICE

Leon J. Dinger, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 19,380, Mar. 12, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,620
Int. Cl.³ B21F *15/02*; H01R *43/00*
U.S. Cl. 156—49 **1 Claim**



1. A method of environmentally sealing a wire splice, comprising the steps of:

a. removing insulation from the ends of the two wires to be spliced together;

b. sliding a heat-shrinkable sleeve onto one of said two wires;

c. splicing the two wires together;

d. sliding the heat-shrinkable sleeve to and shrinking it down over the splice area;

e. bending the joined wires into a U-shape and sliding a sleeve of fusible material over the bent wires and past the shrunk sleeve;

f. sliding a heat-shrinkable end cap onto the bent wires with the fusible sleeve positioned in the open end of the end cap;

g. inserting a block of fusible material into the sleeve between the wires; and

h. heating the end cap adjacent its open end so that it shrinks down and so that at least a portion of the

sleeve and block fuse into a unitary mass with the wires embedded therein and with the end cap being bonded thereto.

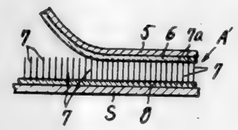
4,292,100

METHOD FOR PREPARING FLOCK TRANSFER INCLUDING DRYING RELEASE ADHESIVE PRIOR TO APPLYING FLOCK

Shigehiko Higashiguchi, 3 -4- 2 Honjo, Sumida-Ku, Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,187
Int. Cl.³ B44C *3/02*
U.S. Cl. 156—72 **3 Claims**

1. A method for preparing a releasably flocked fiber base for a transferable flocked fiber design or sticker material comprising the steps of: applying a release adhesive in a liquid state to one major surface of a release support base sheet to form a release adhesive layer, said release adhesive being capable of retaining a viscous state for a predetermined period of time even after the application and drying of the adhesive, drying



said release adhesive with the application of heat to obtain a still viscous adhesive layer, and releasably flocking a plurality of fibers at one of the ends thereof to said still-viscous adhesive layer of the base sheet in substantially upright position by electrostatic flocking means so as to embed said ends of the fibers in said still-viscous adhesive layer in a shallow depth.

4,292,101

METHOD OF FABRICATING COMPOSITE MEMBERS

James B. Reichert, 564 Midvale, Apt. 7, Los Angeles, Calif. 90024

Continuation of Ser. No. 16,965, Mar. 5, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 193,939
Int. Cl.³ B29D *27/00*
U.S. Cl. 156—156 **17 Claims**

1. A method for the fabrication of high density precision walled composite members laminated of resin impregnated fibers, and including;

the first step of preparing a mold with the contour of the part to be produced,

the second step of preforming a depressible core of cured noninterconnected cellular material containing bodies of expansible fluid therein and of the same shape as and to have a contour exactly complementary to and opposing the contour of the mold,

the third step of laying up a resin impregnated skin between the mold and the core,

the fourth step of backing up the core contour with respect to its opposition to the mold contour and depressing the core for compression of the skin,

and the fifth step of applying heat to the core and skin to expand the fluid bodies contained in the core and cause pressure of the core against the skin and curing the same between the contours of the mold and core respectively.

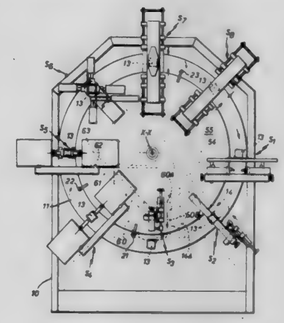
4,292,102

PROCESS AND MACHINE FOR COVERING A TUBULAR MEMBER, MORE PARTICULARLY FOR COVERING A BOX

Georgy Bidegain, Serres Castet, France, assignor to Embadac S.A., Morlaas, France

Filed Nov. 13, 1979, Ser. No. 93,600
Claims priority, application France, Nov. 10, 1978, 78 31856; May 23, 1979, 79 13077
Int. Cl.³ B29C *17/04*
U.S. Cl. 156—213 **30 Claims**

1. A machine for covering a tubular member with sheets, comprising a fixed frame, a plate mounted so as to be rotatable on the frame about a general axis, the frame having a plurality of fixed stations for the winding of an adhesive covering strip portion around the tubular member and for inserting a projection of the strip portion into an open end of the tubular member, the rotating plate having a plurality of spindles parallel to the general axis, each spindle having a mandrel of the same cross section as the tubular member mounted integrally therewith, and, mounted so as to be angularly fixed and freely movable in translation, a cap of the same cross section as the mandrel, means for controlling the rotation of the plate in order to bring the spindles successively up to the stations, means for winding the strip portion about the tubular member engaged on the mandrel, means for moving the cap in translation relative to the mandrel between a distant position and a near position in order to insert the projection of the strip portion into the open end of the tubular member, and a spindle integral with the frame and defining said general axis, said spindle having an overhanging portion supporting, at its free end, a fixed platen on which the various working stations are mounted.

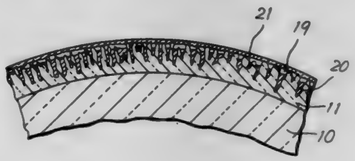


4,292,103

TRANSFER PRINTING

Shigekazu Namura, and Takao Sumi, both of Kyoto, Japan, assignors to Nissha Printing Co., Ltd., Japan

Filed Feb. 6, 1980, Ser. No. 119,029
Claims priority, application Japan, Feb. 13, 1979, 54/15918
Int. Cl.³ B41M *3/12*; B44C *1/16*; B41M *5/26*
U.S. Cl. 156—230 **16 Claims**



1. A method of coloring the surface of an object of heat-resistant material, comprising the steps of:

applying colloidal alumina, colloidal silica or a mixture thereof to the surface of said object;

drying said applied alumina, silica or mixture thereof;

sintering said alumina, silica or mixture thereof at 350° C. to 800° C. for 15 minutes to 180 minutes to form an adsorptive porous layer of activated alumina, silica or mixture thereof on the surface of said object;

applying to said adsorptive porous layer a transfer material including a carrier sheet and a design layer formed on said carrier sheet releasably therefrom and containing heat-diffusible colorants;

stripping said carrier sheet away from the remainder of said transfer material so as to leave at least said design layer adhered to said adsorptive porous layer of said object;

heating said design layer at 100° C. to 250° C. for 1 minute to 60 minutes so as to cause said colorants in said design layer to migrate into said adsorptive porous layer to be fixed therein; and

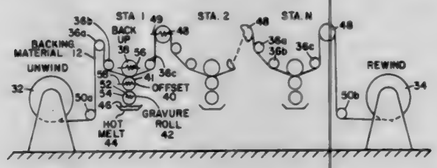
removing the remnants of said transfer material from said porous layer.

4,292,104

DECALCOMANIA MANUFACTURE

Kim P. Heimbach, Corning, N.Y., and Ronald E. Johnson, Tioga, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,910
Int. Cl.³ B05C *1/00*; B41F *9/00*; B41M *3/12*
U.S. Cl. 156—235 **13 Claims**



1. In a process for manufacturing a decalcomania or decal formed of successive layers with backing material and design, the steps comprising:

selecting a supply of meltable thermoplastic ink, maintaining the suppy of ink at an elevated temperature above its melting point, depositing the supply of melted thermoplastic ink on a gravure surface to establish a portion of the design, maintaining said gravure surface at an elevated temperature above the melting point of the ink, rollably engaging the gravure surface in tangential contact with a relatively easily releasable offset surface, transferring the portion of the design from the former to the latter, rollably engaging the offset surface in tangential contact with the backing material for transferring the portion of the design from the former to the latter, maintaining the temperature of the offset surface to a level at which the ink carried thereon becomes at least partially solidified into a cohesive film having affinity for the offset surface in preference to the gravure surface, and, at said temperature maintained at said offset surface, it exhibits at least sufficient adherence for preferentially sticking the ink to the backing material as a cohesive film during the step of contacting the offset surface with the backing material.

4,292,105

METHOD OF IMPREGNATING A FIBROUS TEXTILE MATERIAL WITH A PLASTIC RESIN

Gordon J. Taylor, Hinckley, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,012
Int. Cl.³ B29B *25/00*
U.S. Cl. 156—242 **17 Claims**

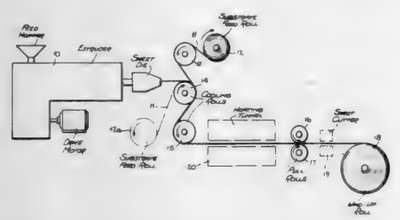
1. A method of impregnating a fibrous textile material with a plastic resin which comprises forming a dispersion of a powdered plastic resin in water; adding to the dispersion a water-soluble thickener selected from the group consisting of polyethylene oxide, ethyl methyl cellulose, hydroxyethyl cellulose, hydroxyethyl methyl cellulose, hydroxypropyl methyl cellulose, methyl cellulose, polyacrylamid, polyvinyl alcohol, polyvinyl methyl ether, starch, agar-agar, casein and gelatin, in an amount sufficient to impart to the dispersion a viscosity of at least about 300 centipoises to 5000 centipoises at 25° C.; applying the dispersion to a fibrous textile material to distribute the resin over the fibers thereof; maintaining the dispersion in contact with the fibrous textile material for a period of time sufficient to allow the fibrous textile material to absorb an amount of the dispersion sufficient to provide from about 0.15 gram of resin per gram of fiber to about 4.0 grams of resin per gram of fiber after drying; drying the fibrous textile material treated in this manner to remove the water present; and heating the dried material at a temperature sufficiently elevated to cause the resin to fuse and form a matrix for the fibers.

4,292,106

PROCESS OF PRODUCING REINFORCED LAMINATES FROM CROSSLINKABLE THERMOPLASTIC OLEFIN POLYMER MATERIAL

C. George Herschdorfer, Port Chester, N.Y., and Dennis J. Vaughan, Anderson, S.C., assignors to Clark-Schwebel Fiber Glass Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 923,654, Jul. 11, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 51,837
Int. Cl.³ B29D *7/14, 7/16, 9/04, 23/04*
U.S. Cl. 156—243 **57 Claims**



1. A process of producing reinforced laminates from crosslinkable thermoplastic olefin polymer material, comprising the steps of

heating a normally solid, high molecular weight crosslinkable thermoplastic olefin polymer selected from the group consisting of ethylene homopolymers, copolymers of ethylene and at least one acyclic mono-1 olefin hydrocarbon having 2 to 8 carbon atoms per molecule, and mixtures thereof, having a melt index of at least about 10, and a density in the range of 0.910 to 0.970 and containing an acetylenic diperoxy catalyst which reacts with and effects crosslinking of said polymer and which has a decomposition temperature between about 310° F. and about 525° F., to a molten state at a melting temperature between about 270° F. and 300° F.,

forming a continuous non-reinforced sheet from said molten polymer at a temperature below said decomposition temperature,

cooling said continuous sheet to a temperature below said melting temperature to a self-supporting, two-dimensional molecular state,

combining said sheet in said self-supporting state with a glass fibrous substrate treated with an unsaturated organosilanol coupling agent which reacts with said polymer and said glass fibrous substrate and effects bonding of said polymer to said substrate to form a laminate,

heating said laminate under pressure to a temperature between about 310° F. and about 525° F. to react said catalyst with said polymer and effect at least 80% crosslinking of said polymer to a three-dimensional molecular state, and

cooling said laminate to a temperature below said melting temperature to a self-supporting state.

4,292,107

PROCESS FOR MANUFACTURING A RADIOGRAPHIC INTENSIFYING SCREEN

Michio Tanaka, Fujisawa; Norio Miura, Isehara, and Keiji Shimiya, Hiratsuka, all of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,842
Claims priority, application Japan, Feb. 10, 1978, 53-14305
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—249 **42 Claims**

1. A process for manufacturing a radiographic intensifying screen comprising steps of

applying to a surface of a support a dispersion comprising (a) an ultraviolet radiation-curable resin composition which is composed of an unsaturated resin, a polymerizable monomer and a sensitizer, and (b) a radioluminescent phosphor dispersed in said composition (a) to form a coating on said support,

removing from said coating, ingredients, if present, other than composition (a) or phosphor (b) so that the coating consists essentially of composition (a) and phosphor (b); and then

curing the coating by exposing said coating to ultraviolet radiation to form a fluorescent layer on said support.

29. A process for manufacturing a radiographic intensifying screen comprising steps of

applying to a surface of a flat plate a dispersion comprising (a) an ultraviolet radiation-curable resin composition which is composed of an unsaturated resin, a polymerizable monomer and a sensitizer, and (b) a radioluminescent phosphor dispersed in said composition (a) to form a coating on said flat plate,

removing from said coating, ingredients, if present, other than composition (a) or phosphor (b) so that the coating consists essentially of composition (a) and phosphor (b); and then

curing said coating by exposing said coating to ultraviolet radiation to form a fluorescent layer on said flat plate,

peeling off said fluorescent layer from said flat plate, and

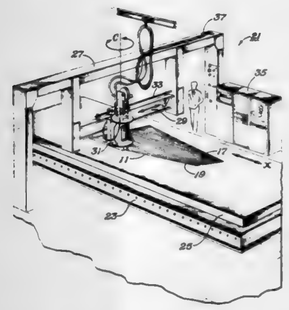
bonding said fluorescent layer to a surface of a support.

4,292,108

COMPOSITE TAPE LAYING APPARATUS INCLUDING MEANS FOR PLURAL LONGITUDINAL AND TRANSVERSE CUTS

Olin E. Weiss, Anneta North; Grant L. Davis, Fort Worth; James L. Hudson, Azle, and Harlan T. Dowell, Fort Worth, all of Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Filed Dec. 10, 1979, Ser. No. 101,524
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—259 **11 Claims**



1. An improved method for laying composite tape to form a structural member, the method comprising the steps of:

conveying the tape from a tape supply toward a work surface;

slitting the tape lengthwise to form a plurality of slits;

cutting the tape transversely by a plurality of transverse cutter to form a plurality of transverse cuts with selected slits and cuts intersecting in a predetermined pattern to sever the tape from the tape supply; and

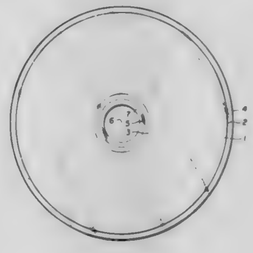
pressing the severed tape onto the work surface.

4,292,109

METHOD OF MAKING LASER DISC MEMORY STORAGE ARTICLE

Carl H. Becker, 521 Del Medio Ave., Apt. 116, Mountain View, Calif. 94040

Continuation-in-part of Ser. No. 931,515, Aug. 7, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 75,707
Int. Cl.³ C03C *17/09*; B32B *15/08*; G01D *15/34*
U.S. Cl. 156—281 **2 Claims**



1. The method of making a flexible disc for laser disc mass storage and retrieval of data comprising the steps of

establishing a first disc layer of saturated polyester plastic in a vacuum chamber

rotating said first disc layer,

vacuum depositing a thin metal film on said rotating first disc layer, and

covering said thin metal film within the vacuum chamber with saturated polyester plastic thereby vacuum encapsulating the metal thin film and establishing an optically perfect interface between the saturated polyester plastic and thin metal film.

2. The method of making a flexible disc for laser disc mass storage and retrieval of data comprising the steps of

establishing a glass disc in a vacuum chamber, vacuum depositing thin metal films on the opposed broad surfaces of said glass disc, positioning a saturated polyester plastic disc against each thin metal film in a vacuum chamber with a layer of liquid saturated polyester plastic of precise thickness there between,

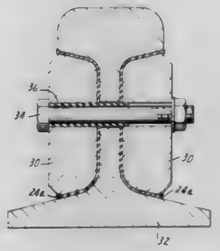
hardening the liquid saturated polyester plastic.

4,292,110

FABRIC-REINFORCED BONDING SHEET COMPRISING AN EPOXY RESIN AND DIANILINE AND USE THEREOF TO MAKE AN INSULATED RAIL JOINT

Bruce A. Marteness, Inver Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul., Minn.

Filed Jul. 23, 1979, Ser. No. 59,617
Int. Cl.³ B32B *3/26, 17/04, 27/26, 27/38*
U.S. Cl. 156—92 **13 Claims**



1. A pre-form which fits the facing surfaces of the joint bar and rails of a rail joint and comprises at least one layer of a

fabric-reinforced bonding sheet comprising at least one layer of a reinforcing fabric saturated with a resin composition comprising an intimate blend of (a) 1,2-epoxy resin having a Durrans' softening point of 50°–110° C. and (b) within 15% by weight of an equivalent amount of a dianiline having a melting point of 50°–110° C., which bonding sheet can be stored for months at ordinary room temperatures but its resin composition fully cures at any time to a strong, tough thermoset state when heated to about 140° C. for about 25 minutes.

7. A rail joint comprising a pair of rails, a pair of joint bars, means bolting the joint bars to the rails, and a fabric-reinforced cured resin composition bonding the joint bars to the rails, wherein the improvement comprises:

said cured resin composition is the cured product of a mixture of (a) 1,2-epoxy resin having a Durrans' softening point of 50°–110° C. and (b) within 15% by weight of an equivalent amount of a dianiline having a melting point of 50°–110° C.

8. Method of making an insulated rail joint using a pair of pre-forms as defined in claim 1, which method comprises the steps of:

(a) cleaning the facing surfaces of a pair of joint bars and a pair of rails which have been formed to receive bolts,

(b) heating the rails and joint bars so that the temperature of their facing surfaces is about 50°–80° C. higher than the higher of the softening point of the epoxy resin and the melting point of the dianiline,

(c) assembling the rails and joint bars with one of said pre-forms between each set of facing surfaces, and

(d) inserting bolts with insulated bushings and tightening the bolts before the resin composition of the bonding sheet begins to gel.

4,292,111

METHOD OF ADHESION OF RUBBER TO REINFORCING MATERIALS

Rao S. Bezwada, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 8,204, Jan. 31, 1979, Pat. No. 4,228,045. This application Mar. 3, 1980, Ser. No. 126,264

Int. Cl.³ C09J *5/06*; B05D *3/02*

U.S. Cl. 156—307.7 **19 Claims**

1. A method for forming a strong adhesive bond between a vulcanized natural or synthetic rubber composition and a textile fiber or metal wire embedded therein which comprises embedding a textile fiber or metal reinforcing material in a vulcanizable rubber composition consisting essentially of (A) natural or synthetic rubber, or a mixture thereof; (B) a vulcanizing agent; and (C) from about 1 to 10 parts by weight, per hundred parts by weight of rubber, of (a) glyoxal, (b) a reaction product of glyoxl and from 0.1 to 10 molar proportions of urea or (c) a reaction product of glyoxal, 0.1 to 10 molar proportions of urea and from 0.01 to 2 molar proportions of formaldehyde per molar proportion of glyoxal and vulcanizing said composition.

4,292,112

TIRE BUILDING DRUM

Yuzo Kumagai, Kodaira, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,662

Claims priority, application Japan, Feb. 1, 1979, 54/011069

Int. Cl.³ B29H *17/16*

U.S. Cl. 156—415 **2 Claims**

1. A tire building drum, comprising in combination:

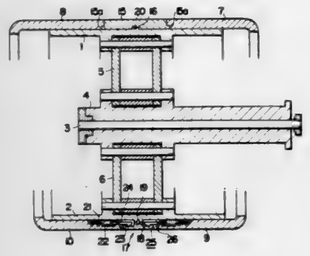
a plurality of arcuate base segments radially expansible to collectively define a cylindrical shape;

a pair of arcuate side flanges mounted on each of said arcuate base segments in opposing and spaced relation with each other to be axially slidable toward and away from each other;

an arcuate spacer section mounted on each of said arcuate base segments between said arcuate side flanges to form a cylindrical outer surface and a certain drum width of the tire building drum;

a positioning pin secured to said arcuate base segments for positioning said spacer section on said arcuate base segments;

a hook engaging said arcuate said flanges and said arcuate spacer section;



a spring resiliently urging said hook to engage said arcuate side flanges and said arcuate spacer section; and

a hook removing pin insertable into the tire building drum so as to disengage said arcuate side flanges from said arcuate spacer section.

4,292,113

METHOD AND APPARATUS FOR MANUFACTURING CORRUGATED TUBES

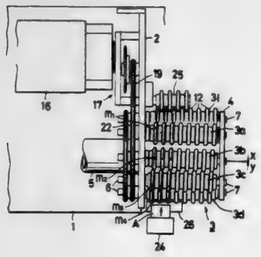
Mituto Hirata, Kamakura, Japan, assignor to Toyo Kagaku Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 20,393, Mar. 14, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,702

Claims priority, application Japan, Mar. 14, 1978, 53-28326

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—428 **6 Claims**



1. Apparatus for manufacturing a corrugated tube having axially extending spiral convolutions to form a corrugated wall configuration in longitudinal cross-section comprising:

a roller assembly composed of a plurality of rollers arranged in a circular array so as to define an imaginary cylinder about its central axis with the longitudinal axes of said rollers offset with respect to the central axis of the imaginary cylinder while the rollers are maintained in parallel to each other, each of said rollers comprising a roll mandrel and a plurality of rings fitted around the mandrel, said rings defining a plurality of axially equally spaced annular ridges around each of said rollers, the ridges of the respective rollers being arranged such that the associated ridges of each adjacent roller are successively aligned with each other along a spiral path, said rings being adjustably fastened to the mandrel by screws so as to permit adjustment of the pitch of the rings along the mandrel as required;

means for continuously feeding a flat strip of synthetic resin material in a softened state transversely onto the periphery of said roller assembly;

drive means for rotating each of said rollers at the same speed;

cooling means for introducing cooling medium into each of said rollers and discharge means for discharging the cooling medium therefrom; and

pressure roller means having annular ridges therearound adapted to mate with recesses defined by each adjacent ridge of at least one of said rollers

whereby said strip is spirally wrapped around the roller assembly while being axially advanced as the strip is fed onto the periphery of the roller assembly and the strip is formed with corrugations along said ridges as it is wrapped around.

4,292,114

APPARATUS FOR COILING WIRE

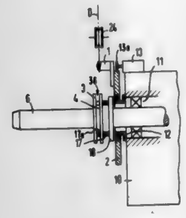
Gunther Engmann; Werner Lepach, both of Schwabach, and Heinz Speyerer, Nuremberg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Niehoff KG, Schwabach, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 62,945

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833955

Int. Cl.³ B65H *54/00, 67/04*

U.S. Cl. 156—447 **13 Claims**



1. In a single spooler for winding wire on a flanged spool having one rotatable spindle for mounting said spool and means for traversingly feeding the wire thereto, apparatus for automatically carrying the lead end of the wire to the spool and casting the wire over the flange, comprising support means mounted to orbit about said spindle, said support means having mounted thereon a clamping head operable to fixedly secure said wire thereto, and a guide member offset in the orbital path from said clamping wire for causing the wire to shift laterally, and clasping means mounted adjacent said spindle to hold said wire, said clamping head being operable on movement of said support means to lead said secured wire from said feed means into proximity with said spindle adjacent said spool whereupon said clasping means is operable to secure the same, and on further movement of said support means the guide member is operable to cast the wire over the flange of said spool onto the core thereof.

4,292,115

CARTRIDGE FILM UNLOADING AND SPLICING SYSTEM

Herman L. Jones, Marysville, and Richard F. Kent, Snohomish, both of Wash., assignors to J & H Manufacturing, Inc., Marysville, Wash.

Continuation of Ser. No. 945,251, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 676,062, Apr. 12, 1976, abandoned. This application Aug. 9, 1979, Ser. No. 65,230

Int. Cl.³ B65H *21/00*; G03B *1/20*

U.S. Cl. 156—502 **10 Claims**

1. Apparatus for use in successively withdrawing film strips from a plurality of film cartridges, wherein each film strip is respectively interwound with a backing strip positioned inside the corresponding film cartridge, said apparatus comprising:

(a) magazine means for storing the plurality of film cartridges, said magazine means including a cartridge passageway in which the plurality of film cartridges may be succesively placed on edge to form a cartridge stack;

(b) cartridge dispensing means for successively dispensing film cartridges from said magazine means, said cartridge dispensing means including

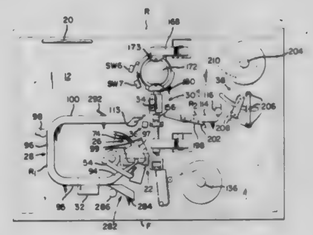
(1) a receptacle structure which receives said magazine means,

(2) a rocker arm pivotally supported within said receptacle structure and movable between first and second positions, said rocker arm having secured thereto a first pin element which blocks said cartridge passageway in said magazine means to hold the lowest film cartridge of said cartridge stack in place when said rocker arm is moved to said first position and which retracts from said cartridge passageway to permit the dispensing of the lowest film cartridge of said cartridge stack when said rocker arm is moved to said second position,

(3) biasing means to bias said rocker arm toward said first position, and

(4) probe means for engaging said rocker arm and for periodically moving said rocker arm to said second position against the bias exerted by said biasing means; and

(c) film extraction means for receiving film cartridges dispensed by said cartridge dispensing means and for withdrawing and separating the interwound film and backing strips positioned inside the film cartridges so received, said film extraction means including



(1) stripper means for intervening between the backing strip and the film strip of a received film cartridge, and

(2) finger means operating in alternating sequence with said probe means of said cartridge dispensing means to engage the backing strip in the received film cartridge when said rocker arm of said cartridge dispensing means is in said first position and to force the withdrawal of the backing strip and film strip conjointly from the received film cartridge past said stripper means such that the backing strip separates and moves away from the film strip.

3. Apparatus as set forth in claim 1, wherein said film extraction means additionally includes a first roller means for receiving and exerting a tensile force on the backing strip at a point after the backing strip is separated from the film strip such that both the backing strip and the film strip are entirely withdrawn from the received film cartridge.

4. Apparatus as set forth in claim 3, including means for transporting the film strip away from said film extraction means while said first roller means is separately removing the backing strip from the film cartridge, said means for transporting the film strip having a second roller means for engaging and curving the film strip thereabout at a point before said stripping means intervenes between the backing strip and the film strip.

5. Apparatus as set forth in claim 4 additionally including a cutter means for cutting the leading and trailing edges of the film strip withdrawn from the received film cartridge and a splicer means for splicing the trailing edge of the film strip so

cut to the leading edge of a film strip subsequently withdrawn from a succeeding film cartridge.

10. Apparatus as set forth in claim 1, wherein said finger means also includes a detent means for engaging the received film cartridge when said finger means engages the backing strip positioned therein and for discharging the received film cartridge from said film extraction means when said finger means moves out of engagement with the backing strip.

4,292,116

APPARATUS FOR MOUNTING CHIP TYPE CIRCUIT ELEMENTS ON A PRINTED CIRCUIT BOARD

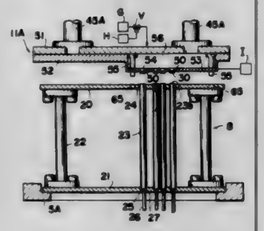
Tetsuo Takahashi; Yoshinobu Taguchi; Shuichi Tando, and Kenichi Saito, all of Tokyo, Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Apr. 10, 1979, Ser. No. 28,924

Claims priority, application Japan, Apr. 18, 1978, 53/50219[U]; Apr. 18, 1978, 53/50220[U]; Apr. 25, 1978, 53/54816[U]; Apr. 25, 1978, 53/54817[U]; Aug. 30, 1978, 53/118748[U]; Nov. 22, 1978, 53/160112[U]

Int. Cl.³ B65G *59/04*; B65H *3/44*; H01L *21/98*

U.S. Cl. 156—566 **15 Claims**



1. An apparatus for mounting chip type circuit elements on a printed circuit board, said apparatus comprising

printed circuit board support means for horizontally supporting a printed circuit board having a predetermined pattern of laminar conductors on the upper surface thereof;

a magazine guide having a plurality of through-holes therein, said through-holes being located at positions corresponding to relative positions of circuit elements to be mounted on said printed circuit board;

a plurality of hollow tubular magazines fitted in said through-holes in said magazine guide, and having top openings substantially in a common horizontal plane, each of said tubular magazines having a hollow interior adapted to hold a stack of a plurality of chip type circuit elements;

circuit element push means adjacent said magazine for incrementally pushing each circuit element stack in said tubular magazines upwardly to a position where the top circuit element in each circuit element stack is positioned at said top opening of each tubular magazine;

circuit element suction means including a flat suction plate having a plurality of suction holes at positions corresponding to relative positions of said tubular magazines fitted in said through-holes of said magazine guide for suctioning each said top circuit element positioned at said top opening in each circuit element stack of each tubular magazine and for mounting each circuit element suctioned on said flat suction plate on said printed circuit broad; and

transfer means for (a) moving said flat suction plate between said suction position and an intermediate position where each respective circuit element suctioned on said flat suction plate overlies in precise vertical alignment a corresponding respective position on the upper surface of the printed circuit board at which said circuit element is to be mounted and (b) vertically moving at least one of said suction plate and printed circuit board until said circuit elements, still suctioned in said suction plate, are brought into contact with the printed circuit board, said transfer means including a suction plate supporting head supporting the flat suction plate for movement, and means for releasing said circuit elements from said suction plate after said circuit elements are brought into contact with the printed circuit board, so that each said circuit element is suctioned on said flat suction plate and mounted precisely under a uniform pressure on said upper surface of said printed circuit board.

4,292,117

GLUE ROLLER IN A LABELING MACHINE

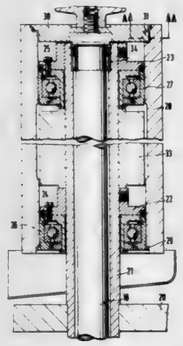
Rudolf Zodrow, Dusseldorf, and Egon Höveler, Haan, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,714

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826618

Int. Cl.³ B05C *1/08*; B65C *9/16*

U.S. Cl. 156—578 **4 Claims**



1. In a glue roller assembly for use in labeling machine having glue segments, the assembly having a stationary machine frame, a roller drive shaft mounted rotatably in the machine frame coupled with a machine drive by a transmission and a glue roller barrel which is adjustable relative to the glue segments of the labeling machine, the improvement comprising means mounting the glue roller barrel to permit radial adjustment thereof relative to the drive shaft comprising a stationary hollow shaft disposed substantially concentrically around the drive shaft and fixed to the machine frame, axially offset bearing means disposed between the barrel and the hollow shaft to permit the radial adjustment of the glue roller barrel with respect to the hollow shaft and means for coupling the drive shaft and the glue roller barrel to prevent relative movement in the circumferential direction while permitting radial adjustment.

4,292,118

IMPULSE HEAT GENERATION AND SEALER APPARATUS

Ihor Wyslotsky, 18630 Golfview La., Hazel Crest, Ill. 60429

Filed May 8, 1980, Ser. No. 147,554

Int. Cl.³ B30B *15/34*

U.S. Cl. 156—583.2 **32 Claims**

1. An improved impulse heat generation and sealer apparatus, said apparatus comprising:

an electrically conductive heat sink block having thereon a smooth face surface;

a relatively shallow groove formed in said face surface;

an electrical insulator/heat conductor film lining of said shallow groove;

a groove filler material of substantial electrical conductivity, substantial thermal shock resistance, substantial ability to expand and contract rapidly without damage, and substantial resistance to abrasion, said groove filler material disposed within and filling said shallow groove and having an outer surface which is smoothly co-extensive with said smooth face surface of said heat sink block;

a thin layer of substantially uniform thickness of release coating material disposed on said smooth outer surface of said heat sink block and across said smoothly co-extensive outer surface of said groove filler material, said release coating layer having a substantially smooth outer surface; and

electrical connector means attached to said groove filler material to provide electrical current thereto for the rapid generation of heat in said groove filler material.

4,292,119

GROWTH OF SINGLE-CRYSTAL $2PBO.FE_2O_3$

Howard L. Glass, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 15, 1980, Ser. No. 168,928

Int. Cl.³ C30B *19/04*

U.S. Cl. 156—624 **5 Claims**

1. A fluxed melt for growing single-crystal $2PbO.Fe_2O_3$, comprising:

boron oxide (B_2O_3);

lead oxide (PbO); and

iron oxide (Fe_2O_3);

wherein the mole ratio of boron oxide to lead oxide in said melt is at least about 0.06;

wherein the concentration of iron oxide in said melt is at least about 9.8 mole percent and not more than about 14.8 mole percent.

4,292,120

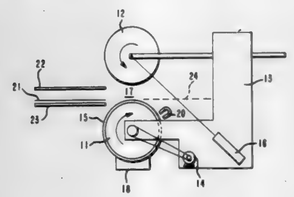
PROCESS OF FORMING A MAGNETIC TONER RESIST USING A TRANSFER FILM

George R. Nacci, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Apr. 10, 1980, Ser. No. 139,110

Int. Cl.³ C23F *1/02*; B05D *1/04*; G03G *15/00*

U.S. Cl. 156—660 **9 Claims**



1. A process comprising forming a magnetically held image of coalescible magnetic toner particles, bringing this image into contact with the water soluble polymer coated surface of a heated transfer member comprising a sheet coated with water soluble polymer under pressure to transfer said image to the surface of the transfer member, transferring the image under heat and pressure to a substrate surface to form a resist image thereon corresponding to the magnetically held image, cooling the substrate and stripping away the sheet portion of the transfer member, washing the water soluble polymer off the substrate surface.

4,292,121

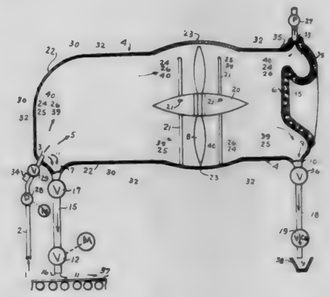
SOLID/LIQUID SEPARATION THROUGH LIQUID VAPORIZATION AND CONDENSATION, AND APPARATUS THEREFOR

Peter J. Caffes, Silver Spring, Md., assignor to The Caffes Trust, Washington, D.C.

Filed Sep. 21, 1979, Ser. No. 77,555

Int. Cl.³ B01D *1/16*

U.S. Cl. 159—3 **39 Claims**



1. A substantially-closed horizontally-disposed hollow module having a single chamber with an inlet means and an outlet means at opposite ends, with a substantially unimpaired path extending from the inlet means to the outlet means, with discharge means at the inlet end below or downstream from the inlet means, with vertically-disposed condensing means at the outlet end, with means to maintain a substantially constant temperature throughout the chamber, with vacuum means (a) to vaporize a component of influent introduced through the inlet means, (b) to maintain a substantially constant pressure throughout the chamber and (c) to produce and maintain a saturated-vapor atmosphere of the component throughout said chamber at the substantially-constant temperature, and with supplementary means, separate and distinct from the vacuum means, to assist in initiating and/or maintaining flow of the saturated vapor from the inlet means to the condensing means,

the single chamber having a substantially circular cross-section, providing a flow path for the saturated vapor which is substantially constant in cross-sectional area from the inlet means to the condensing means and having a length at least as great as its diameter.

4,292,122

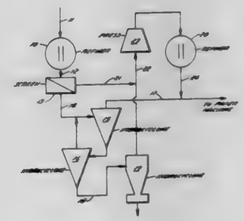
BONDING PROPERTIES OF MECHANICAL PULPS

Alkibiadis Karnis, and John R. Wood, both of Montreal, Canada, assignors to Domtar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 747,878, Dec. 6, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 890,186

Int. Cl.³ D21B *1/14*

U.S. Cl. 162—28 **4 Claims**



1. A process for producing a mechanical pulp comprising; generating a mechanical pulp from wood material, screening

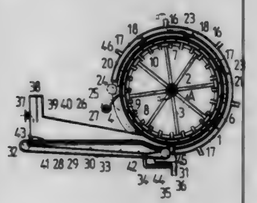
said mechanical pulp into a through fraction and a retained fraction, fractionating by hydrocyclone means substantially all of said through fraction into an underflow fraction containing between about 15 and 70% of said through fraction and having an average specific surface less than the pre-determined value between 1.2 and 4 m^2/g and an overflow fraction having an average specific surface greater than said underflow fraction, subjecting said underflow fraction to a mechanical processing thereby to form a processed fraction having an increased average specific surface value between 4 and 10 m^2/g, combining said processed fraction and overflow fraction into combined pulp having a significantly lower linting propensity than said generated mechanical pulp.

4,292,123

PROCEDURE AND APPARATUS FOR CELLULOSE WASHING

Tuomo Lintunen, and Raimo Kohonen, both of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeytiö , Helsinki, Finland

Filed May 31, 1979, Ser. No. 44,066
Claims priority, application Finland, Jun. 1, 1978, 781743
Int. Cl.³ D21C *9/02*
U.S. Cl. 162—60 **3 Claims**



1. A method for the washing of cellulose pulp in the form of a continuous web comprising passing the web through a washing zone composed of at least two mutually isolated washing zones and passing a washing liquid through the web in a direction countercurrent to that of the direction of travel of the web wherein a clean pressurized washing liquid is passed first into the last of said washing zones through which the web travels and which displaces an equal volume of suspension liquid contained in the web from said zone, said equal volume being displaced into the washing zone next prior to the next subsequent zone, which, in turn, sequentially displaces an equal volume of suspension liquid in the web into the next sequential zone and wherein the suspension liquid displaced from the web by the clean washing liquid is transferred from one washing zone to the next in sequential means by the means of a single pumping operation utilizing the initial pressure of the clean washing liquid.

4,292,124

SYSTEM AND METHOD FOR GENERATING STEADY STATE CONFINING CURRENT FOR A TOROIDAL PLASMA FUSION REACTOR

Nathaniel J. Fisch, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

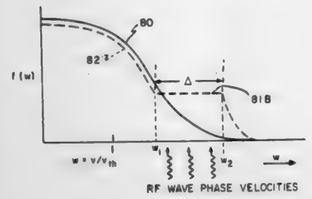
Filed Aug. 21, 1978, Ser. No. 935,222
Int. Cl.³ G21B *1/00*
U.S. Cl. 176—3 **12 Claims**

1. A system for generating steady-state confining current for a toroidal plasma, comprising:

means for preparing a dense, hot toroidal plasma having a confining magnetic field with toroidal and poloidal components;

means for injecting continuous wave RF energy into said plasma to establish a spectrum of traveling waves in said plasma, said traveling waves having momentum components substantially either all parallel or all antiparallel to said confining magnetic field, said injected RF energy being phased to couple to said traveling waves with both a phase velocity component and a wave momentum component in the direction of said traveling wave momentum components, and

said injected RF energy having a predetermined spectrum so that said traveling waves couple to plasma electrons having velocities in a range Δ, said velocities being substantially three to six times the thermal electron velocity of said plasma and said range being sufficiently broad to produce a raised plateau having width Δ of less than twice the electron thermal velocity in the plasma electron velocity distribution so that the plateau electrons provide steady state current to generate a poloidal magnetic field component sufficient for confining said plasma.

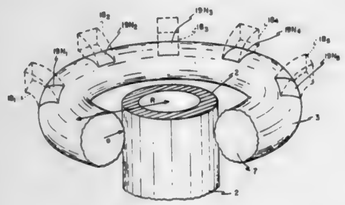


4,292,125

SYSTEM AND METHOD FOR GENERATING STEADY STATE CONFINING CURRENT FOR A TOROIDAL PLASMA FUSION REACTOR

Abraham Bers, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 21, 1978, Ser. No. 935,227
Int. Cl.³ G21B *1/00*
U.S. Cl. 176—3 **6 Claims**



1. A system for generating steady-state confining current for a toroidal plasma exceeding the power dissipated in said plasma, comprising:

means for preparing a dense, hot toroidal plasma having a confining magnetic field with toroidal and poloidal components;

means for injecting continuous wave RF energy into said plasma to establish a spectrum of traveling waves in said plasma, said traveling waves having momentum components substantially either all parallel or all anti-parallel to said confining magnetic field, said injected RF energy being phased to couple to said traveling waves with both a phase velocity component and a wave momentum component in the direction of said traveling wave momentum components, and

said injected RF energy having a predetermined spectrum so that said traveling waves couple to plasma electrons having velocities in a range Δ, said velocities being substantially three to six times the thermal electron velocity of said plasma and said range being sufficiently broad to produce a raised plateau having width Δin the plasma

electron velocity distribution so that the plateau electrons provide steady state current to generate a poloidal magnetic field component sufficient for confining said plasma,

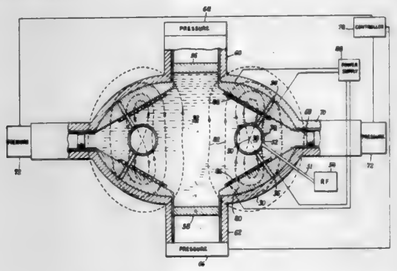
wherein said RF injection means includes means for coupling to the fast-branch whistler-Alfven wave and to the slow-branch lower-hybrid wave, the electric field of said wave RF energy at the plasma wall having a component substantially perpendicular to the magnetic field confining the plasma, and having a component substantially parallel to the magnetic field confining the plasma, said coupling means comprising an array of rectangular waveguides phased in both the toroidal and poloidal directions, and being slanted with respect to the toroidal magnetic field.

4,292,126

TOKAMAK WITH LIQUID METAL FOR INDUCING TOROIDAL ELECTRICAL FIELD

Tihiro Ohkawa, La Jolla, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 28, 1979, Ser. No. 15,963
Int. Cl.³ G21B *1/00*
U.S. Cl. 176—3 **14 Claims**



1. Tokamak apparatus comprising a vessel for defining a reservoir and confining liquid therein,

a torodial liner solid structure disposed within said vessel for defining a toroidal space within said liner and confining gas therein,

liquid metal filling said reservoir outside of and completely surrounding said liner,

gas contained in said toroidal space,

means for developing poloidal magnetic flux in said liquid metal linking said toroidal space, said flux being substantially uniformly distributed around the major axis of said toroidal space, and

means for moving said liquid metal transversely of said liner to generate substantial toroidal electric current in said gas about the major axis of said toroidal space, said means comprising at least a first and second means, said first means being positioned for substantial movement along said major axis and said second means being positioned for substantial movement along the mid-plane of said toroidal space, the movement of said liquid metal relative to said liner being substantially uniformly distributed around the major axis of said toroidal space and substantially radially inward or outward with respect to said major axis and said movement being substantially symmetrically distributed about the mid-plane of said toroidal space.

4,292,127

NUCLEAR FUEL PINS

Kenneth Hartley; Trevor L. J. Moulding, both of Seascale, and Norman Rostron, Lytham St. Annes, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 3, 1979, Ser. No. 26,803
Claims priority, application United Kingdom, Apr. 14, 1978, 14807/78
Int. Cl.³ G21G *1/02*
U.S. Cl. 176—17 **3 Claims**



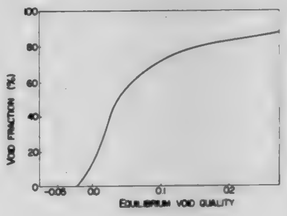
1. A nuclear fuel pin has a central region containing fissile nuclear fuel material in the form of large and small diameter microspheres in which the small diameter microspheres are capable of passing through and packing into the interstices between the large diameter microspheres, axial regions containing breeder material above and below the central region, barrier layers above and below the central region to separate the central region from the axial regions, the barrier layers comprising microspheres having a diameter intermediate the diameters of the large and small diameter microspheres to prevent intermixing of the material in the central and axial regions of the fuel pin.

4,292,128

BOILING WATER TYPE NUCLEAR REACTOR

Renzo Takeda, Hitachi; Kunitoshi Kurihara, Sagamihara, and Sadao Uchikawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 942,558
Claims priority, application Japan, Sep. 16, 1977, 52-110591
Int. Cl.³ G21C *7/00*
U.S. Cl. 176—20 R **3 Claims**

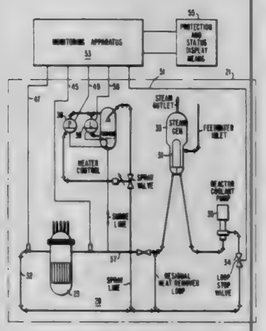


1. A method of operating a boiling water nuclear reactor having a reactor core through which a water coolant is circulated, wherein said core is operated at a void quality (weight ratio of vapor in the coolant) of the coolant at the core outlet of between 17% and 50%.

4,292,129
MONITORING OF OPERATING PROCESSES

Robert F. Barry, Sint Genesius Rode, Belgium, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 14, 1979, Ser. No. 11,986
Int. Cl.[3] G21C 7/00
U.S. Cl. 176—24 14 Claims



1. Apparatus for monitoring the operation of a nuclear reactor system having a plurality of process states which may be desirably normal or undesirably off-normal, the said reactor having a plurality of means, each responsive to a said process state, to produce a status signal indicative of the status, whether normal or off-normal, of the process state to which it is responsive, the said reactor system also including protective means, the said monitoring apparatus including a first monitoring path including a first signal-processing unit and a second monitoring path including second signal-processing unit, means connecting said status signal-producing means to said first and second signal-processing units when said first or second signal-processing unit is enabled, for transmitting for processing the status signals produced by said status signal-producing means, a signal-evaluating unit, means connecting said signal-processing units to said signal-evaluating units, said signal-evaluating unit including means for evaluating signals processed by said processing units, means connected to each of said signal-processing units, for enabling each of said signal-processing unit to transmit status signals for processing through said signal-processing units, means connected to each of said signal-processing units, for enabling each of said signal-processing units, on the transmission of status signals, to transmit its corresponding processed status signals to said evaluating unit, means for producing test signals simulating said status signals, means connected to said test-signal-producing means, for enabling said test-signal-producing means to transmit test signals to said first and second signal-processing units, on a time-sharing basis with the transmission of status signals, during the times when said signal-processing units are not enabled as aforesaid to transmit status signals, the connecting means between said first and second signal-processing units and said evaluating unit including means for transmitting indication of detected faults, if any, to said evaluating unit, means connecting said evaluating unit to said protective means, for actuating said protective means on the evaluation by said evaluating means of a manifestation of off-normal operation or of detection of faults in both said signal-processing units.

4,292,130
REMOTELY ASSEMBLABLE AND DISASSEMBLABLE FUEL ASSEMBLY FOR NUCLEAR REACTORS

Jean-Luc Viaud, PA.5, 72 Les Jardins de Bures, 91440 Bures-sur-Yvette, and Jacques Lévy, 4, rue Maria Deraisnes, 75017 Paris, both of France

Filed Mar. 7, 1979, Ser. No. 18,222
Int. Cl.[3] G21C 19/20
U.S. Cl. 176—30 7 Claims



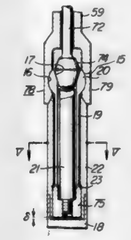
1. A remotely assemblable and disassemblable fuel assembly comprising a mechanical structure constituted by an upper plate, a lower plate and a plurality of brace rods extending between said plates, and a plurality of elongated fuel elements fixed to the brace rods by gratings, one of the ends of each brace rod being irremovably fixed in the upper plate, the other end of each brace rod being fixed to the lower plate by a system of remotely assemblable and disassemblable assemblies, wherein the said system of assemblies comprises a thread made at the end of each brace rod, a screwing member having a thread able to cooperate with the thread on the brace rod and a head having a plug hole and on its periphery at least one chamfer, the lower plate being machined to define a through bore receiving the end of each brace rod, a larger diameter portion of said bore issuing into an outer face of the lower plate and receiving the screwing member and an annular groove surrounding said larger diameter portion and issuing into said outer face, the larger diameter portion of said bore and said annular groove defining a flange integral with the lower plate therebetween, said flange being adapted to be crimped on said chamfer of the screwing member to prevent removal of the latter.

4,292,131
COUPLING MECHANISM OF CONTROL ROD FOR NUCLEAR REACTOR

Tomohiro Suzuki, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,180
Claims priority, application Japan, Jun. 20, 1977, 52/73692
Int. Cl.[3] G21C 7/14
U.S. Cl. 176—36 C 5 Claims

1. A coupling mechanism for detachably coupling a control rod of a nuclear reactor to a control rod driving apparatus, comprising:
- driving extension shaft means connected at one end thereof to said control rod driving apparatus;
- gripper means formed at the other end of said driving extension shaft means and including an engaging portion;
- control rod extension shaft means arranged coaxially with said driving extension shaft means;
- finger means mounted at one end of said control rod extension shaft means and provided with an engaging portion adapted to come into engagement with said engaging portion of said gripper means, said finger means having resilience sufficiently high to enable the engaging portion thereof to be released from engagement with said engaging portion of said gripper means by the weight of the control rod;

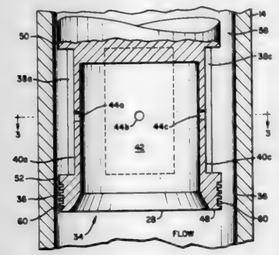


- cam shaft means adapted to be actuated by latch means for reciprocatory movement independently of said driving extension shaft means; and
- cam means supported at one end of said cam shaft means and adapted to control the engagement of the engaging portion of said finger means with the engaging portion of said gripper means.

4,292,132
HYDRAULICALLY CENTERED CONTROL ROD

Glen E. Schukei, South Windsor; Walter R. Horlacher, III, Simsbury, and William T. Sampson, Windsor Locks, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1979, Ser. No. 55
Int. Cl.[3] G21C 7/16
U.S. Cl. 176—36 S 16 Claims

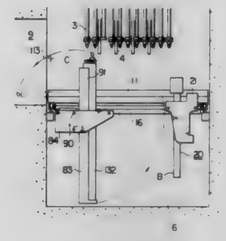


1. In a nuclear reactor core having a liquid coolant pumped upward therethrough and a cylindrical control rod vertically reciprocable therein from a unique withdrawn position at the upper end of the core, the combination comprising:
- a control rod having a generally cylindrical bearing portion at its lower tip, the bearing including a plurality of discrete pockets circumferentially spaced around the outer surface thereof;
- a cylindrical guide tube through which the rod reciprocates, the tube having an upward flow of liquid passing between said pockets and the inner wall of said guide tube;
- means for additionally introducing a portion of said pumped liquid directly into each of the pockets at substantially equal flow when the rod is in said unique position;
- whereby when the rod tip approaches any inner surface of the tube, the distribution of static pressures in the pockets will tend to keep the rod tip off the guide tube.

4,292,133
METHOD OF AND APPARATUS FOR REPLACING CONTROL ROD DRIVE

Masayoshi Sasaki; Yoshimi Ishii; Tomiharu Yoshida, all of Hitachi, and Sen Sugiyama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 23,902
Claims priority, application Japan, Mar. 24, 1978, 53-33101; May 4, 1978, 53-52754; Sep. 4, 1978, 53-107643
Int. Cl.[3] G21C 19/20, 7/08
U.S. Cl. 176—36 R 28 Claims



1. A method of replacing a control rod drive comprising the steps of:
- detaching said control rod drive from a pressure vessel disposed in a containment vessel of a nuclear reactor by means of a control rod drive attaching and detaching device capable of moving on a revolving device;
- moving a control rod drive handling device into contact with said control rod drive attaching and detaching device, said control rod drive handling device being capable of moving on said revolving device separately from and independently of said control rod drive attaching and detaching device;
- transferring said control rod drive from said control rod drive attaching and detaching device to said control rod drive handling device; and
- bringing said control rod drive, held in a vertical position in said control rod drive handling device, into a horizontal position by means of said control rod drive handling device, after said control rod drive handling device is released from said control rod drive attaching and detaching device.

4,292,134
BIOLOGICAL SHIELD FOR INSULATING PRESSURE VESSELS

Olle Eriksson, Vesteras, Sweden, assignor to Ab Asea Atom, Sweden

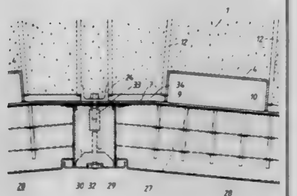
Filed Mar. 1, 1979, Ser. No. 16,634
Claims priority, application Sweden, Mar. 6, 1978, 02489/78
Int. Cl.[3] G21C 9/00
U.S. Cl. 176—38 14 Claims

1. An improved biological shield assembly for surrounding a nuclear reactor pressure vessel, and comprising:
- an open-ended hollow body of caste concrete-like material of substantially cylindrical configuration, having an inner surface surrounding and spaced from an outer surface of said nuclear reactor pressure vessel to define a gap of appreciable size therebetween;
- a metallic lining assembly positioned in said gap and having an inner surface confronting and spaced from said nuclear reactor pressure vessel;
- a plurality of separate attachment bars each extending from said metallic lining assembly into portions of said caste concrete-like material to fixedly attach said metallic lining assembly to said hollow body;
- thermal insulating means surrounding and permanently spaced an appreciable distance from said pressure vessel for thermally insulating said hollow body from heat radi-

ating radially outwardly from said nuclear reactor pressure vessel;

a plurality of separate blow-out openings each extending through said hollow body of concrete-like material and joining said gap with surrounding ambient atmosphere for rapidly dissipating steam or the like released into said gap from said nuclear reactor pressure vessel;

a plurality of dip-galvanized metallic cooling passageway means each positioned adjacent the inner surface of said



hollow body and welded to an outer surface of said metallic lining assembly for conveying heat away from said hollow body;

each of said passageway means comprising substantially vertically extending first and second sections each extending from said lining assembly toward said hollow body and a third section joining said first and second sections to form a closed passageway with said metallic lining assembly for conveying heat away from said hollow body and metallic lining assembly.

4,292,135

MULTISTAGE-EXPANSION EVAPORATOR

Dick G. Klaren, Hillegom, Netherlands, assignor to Gustav Adolf Pieper, Heemstede, Netherlands

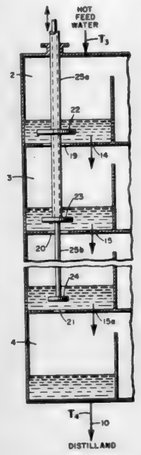
Continuation of Ser. No. 875,565, Feb. 6, 1978, abandoned, which is a continuation of Ser. No. 685,180, May 11, 1976, abandoned. This application Oct. 2, 1979, Ser. No. 81,142

Claims priority, application Netherlands, May 20, 1975, 7505869

Int. Cl.³ B01D *1/30, 3/06*

U.S. Cl. 202—173 **5 Claims**

1. A vertical multistage expansion evaporator comprising contiguous vertically arranged evaporator compartments, said contiguous compartments having a common ceiling and floor, said common ceiling and floor defining a passage means therethrough to permit communication between contiguous compartments, each compartment further comprising a vertical separating wall extending partially the distance from said floor to said ceiling to form a section of said compartment to confine liquid therein and a vapor section, said liquid through said passage means being permitted to flow into a vapor space above the liquid of the compartment next below, flow control means for said liquid positioned at each passage means and adjusting means interconnecting said flow control means and extending through all ceilings of the compartments to outside said evaporator thereby adjusting from outside the compartments simultaneously by a single adjusting operation all flow control means, said adjusting means comprising a plurality of



throughgoing coaxial shafts with flow control means connected thereto.

4,292,136

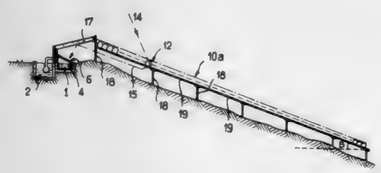
DEVICE FOR DESALTING SEA OR BRACKISH WATER BY USING SOLAR ENERGY

Philippe Clavier, Marly-le-Roi, France, assignor to Spie-Batignolles, Puteaux, France

Filed Aug. 28, 1979, Ser. No. 70,498

Int. Cl.³ B01D *1/00*

U.S. Cl. 202—234 **6 Claims**



1. A device for desalting sea or brackish water using solar energy comprising:

two adjacent canals or equivalent structures both fed by said sea or brackish water;

a greenhouse like structure placed on one of said canals to vaporize water and including a transparent pane slanted with respect to the horizontal forming a top of the structure;

a second structure for condensating the vaporized water and recovering the condensed water, said second structure being in fluid communication with said greenhouse like structure and mostly immersed in the other of said two canals, the water in the second canal acting as a cold source for condensating the vaporized water;

roof means for forming a roof positioned above said pane of said greenhouse like structure, said roof means having a reflecting lower surface slanted with respect to the horizontal; and

means for concentrating solar rays comprising a plurality of panels extending longitudinally away from said roof means, each of said panels being comprised of at least one cell having a transparent upper surface and a reflecting surface so positioned as to direct rays passing through the upper surface of the cell towards the reflecting lower surface of said roof means in such manner that the rays are reflected by said reflecting lower surface through said transparent pane into the interior of said greenhouse like structure to thereby vaporize water from said one of said canals.

4,292,137

DOOR LIFTER FOR COKE OVEN

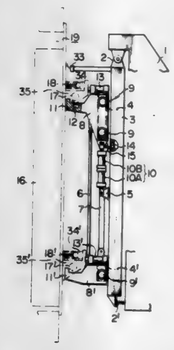
Kenji Fujita; Yuji Shibata; Hisao Mikuni, all of Yokosuka, and Tsuneo Shibuya, Okazaumachi, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,308

Claims priority, application Japan, Sep. 7, 1979, 54-114883; Sep. 22, 1979, 54-122481

Int. Cl.³ C01B *25/14*

U.S. Cl. 202—248 **6 Claims**



1. A door lifter for coke ovens comprising:

a movable frame movable toward or away from an oven door;

a frame suspended vertically from said movable frame;

means for suspending said frame from said movable frame;

a movable member with at least one hook which is movable vertically along said suspended frame; and

actuator means mounted on said suspended frame and connected to the movable member for causing the vertical movement of said movable member, said actuator means comprising two hydraulic cylinders connected in series and in back-to-back relationship with a common axis of said two hydraulic cylinders in parallel with the path for vertical movement of said movable member, each cylinder having a piston rod; and

a control system to control said two hydraulic cylinders comprising:

first means connected to one of said two hydraulic cylinders for actuating said one of said two hydraulic cylinders to lift said movable member:

means associated with said first means for actuating for sensing the engagement of said at least one hook with a lug piece of said door and thereupon stopping and locking said one hydraulic cylinder;

second means connected to the other of said two hydraulic cylinders and said means for sensing for actuating the other hydraulic cylinder upon the stopping and locking of the one hydraulic cylinder to lift said door to the stroke end of said piston rod of said other hydraulic cylinder, and thereafter to lower said door; and

means for sensing the lowering of said door and for stopping said second means and locking said other hydraulic cylinder when said door reaches a predetermined height;

all of said means of said control system being reversible.

4,292,138

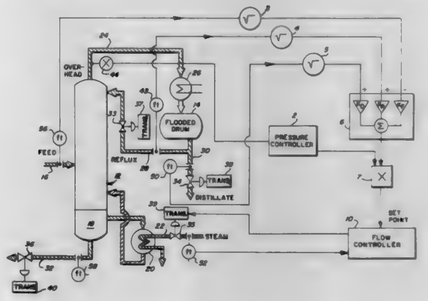
ENERGY BALANCE CONTROL FOR FRACTIONATION TOWER

Robert M. Wright, Dickinson, and Allan W. Johncock, Texas City, both of Tex., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 614,205, Sep. 17, 1975, abandoned. This application Dec. 20, 1976, Ser. No. 752,517

Int. Cl.³ B01D *3/42*

U.S. Cl. 203—2 **5 Claims**



1. A method for controlling a fractionation tower and process wherein feed and heat flow into the tower and feed is distilled and separated into distillate and bottoms, said distillate flowing from the tower through an overhead line into a condenser where it is condensed before it is drawn off as product with a portion of this product being returned to the tower as reflux, and said bottoms being allowed to at least partially collect in the tower thereby establishing a liquid level which is allowed to fluctuate within predetermined limits, which method comprises: monitoring the pressure within said tower; providing a signal thereof and transmitting said signal to a pressure controller; utilizing said pressure controller to generate a scaled ouput signal which increases when the measured pressure decreases and vice versa; simultaneously generating and using a composite signal:

$$Q_I = K_P(K_R + K_D - K_F)$$

where

Q_I is the heat required by the fractionation tower;

K_P is the pressure controller output signal;

K_R is the reflux flow rate signal;

K_D is the distillate flow rate signal;

K_F is a scaled feed flow rate signal; and; transmitting said composite signal to a second controller which controls heat input to provide an energy balanced and stable fractionation tower and process even during periods of severe and extreme operating conditions by controlling amount of reflux and heat into said tower and amount of distillate and bottom exiting said tower.

4,292,139

METHOD FOR INHIBITING DEPOSIT FORMATION IN DISTILLATION UNITS ASSOCIATED WITH SEPARATION AND PURIFICATION OF ALKYL PHOSPHOROCHLORIDOTHIOATES

Ellis B. Rifkin, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

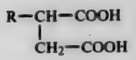
Continuation-in-part of Ser. No. 74,505, Sep. 11, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,126

Int. Cl.³ B01D *3/34;* **C07F** *9/02*

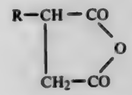
U.S. Cl. 203—6 **18 Claims**

1. A method for inhibiting or preventing the accumulation of oxygenated phosphorus compound impurities in the distillation columns and column reboiler units associated with the separation and purification of O,O-dialkyl phosphorochloridothioates from a crude feed stock containing said O,O-dialkyl phos-

phorochloridothioates admixed with said deposit-forming and fouling-causing oxygenated phosphorus compound impurities which comprises distilling said O,O-dialkyl phosphorochloridothioate containing feed stock in the presence of a minor proportion of an acylated amine prepared by mixing a substituted succinic compound selected from the class consisting of substituted succinic acids having the structural formula:



and substituted succinic anhydrides having the structural formula:



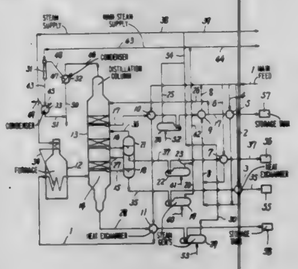
in which structural formulas R is a large, substantially aliphatic hydrocarbon radical having at least about 50 carbon atoms, with at least about one-half an equivalent amount of an ethylene amine and heating the resulting mixture to effect acylation and remove the water formed thereby.

4,292,140

PROCESS FOR RECOVERING HEAT IN DISTILLATION PROCESS

Hiroaki Kawasaki, Ichihara, and Shigeharu Akashi, Narashino, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Idemitsu Kosan Company Limited, both of Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,765
Claims priority, application Japan, Feb. 13, 1979, 54-15175
Int. Cl.³ B01D *3/14*; C10G *7/00*
U.S. Cl. 203—22 **6 Claims**



1. In a fractional distillation process for fractionating a feed in a distillation column to obtain various fractions and bottom product, the process for recovering heat in a distillation processing installation comprising the steps of

(a) branching a main flow of the feed into a plurality of flows,

(b) preheating said branched flows of the feed with sensible heats of the fractions flowing out of the distillation column in heat exchange therebetween,

(c) joining said preheated branched flows to said feed,

(d) preheating said feed having been joined with said preheated branched flows with sensible heats of at least one of the fractions and bottom product flowing out of the distillation column in heat exchange therebetween,

(e) feeding the preheated feed to the distillation column through a heating furnace thereby fractionating the same into a plurality of flows of fractions depending upon difference in boiling temperature among said fractions,

(f) generating saturated steam under pressure of higher than 15 kg/cm² G by heating boiler water with sensible heats of at least one of said fractions having higher boiling temperature among said fractions in heat exchange therebetween in at least one first steam generator,

(g) thereafter preheating at least one of said branched flows of the feed in heat exchange with the same with at least said one of said fractions having higher boiling temperature thereby cooling at least said one of said fractions to a temperature at which it may be safely stored in its storage tank,

(h) preheating the feed having been joined with the branched flows with sensible heats of another at least one of said fractions having lower boiling temperature than that of the first-mentioned at least one of said fractions, and in heat exchange therebetween,

(i) generating saturated steam under pressure of higher than 5 kg/cm² G by heating boiler water with sensible heat of said another at least one of said fractions in heat exchange therebetween in at least one second steam generator,

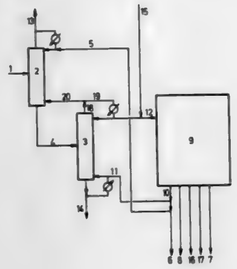
(j) and then preheating another at least one of said branched flows in heat exchange of the same with said another at least one of said fractions having lower boiling temperature thereby cooling said another at least one of said fractions to a temperature at which it may be safely stored in its storage tank.

4,292,141

ISOLATION OF BUTADIENE FROM A C4-HYDROCARBON MIXTURE

Alfred Lindner, Bobenheim-Roxheim; Klaus Volkamer, Frankenthal; Ulrich Wagner, Limburgerhof; Dieter Pommer, Weisenheim; Klaus-Juergen Schneider, Neustadt, and Harald Schwentker, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,741
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840124
Int. Cl.³ B01D *3/40*; C07C *7/08*
U.S. Cl. 203—49 **6 Claims**



1. A process for isolating butadiene, with the aid of a selective solvent, from a C_4-hydrocarbon mixture which contains butadiene, small amounts of styrene, hydrocarbons more soluble than butadiene in the selective solvent and hydrocarbons less soluble than butadiene in the selective solvent, which process comprises:

(a) subjecting the styrene-containing C_4-hydrocarbon mixture to distillation in a distillation zone upstream of an extractive distillation in a butadiene isolation plant,

(b) feeding at the same time a second stream of liquid or gaseous C_3- and/or C_4-hydrocarbons to the upstream distillation zone at or below the point where the styrene-containing C_4-hydrocarbon mixture is fed to the upstream distillation zone,

(c) removing a mixture of styrene and C_4-hydrocarbons from the C_4-hydrocarbon mixture as bottom product of the upstream distillation zone and obtaining as top product of the upstream distillation zone a styrene-free C_4-hydrocarbon mixture, and

(d) subjecting the styrene-free C_4-hydrocarbon mixture to extractive distillation with the aid of the selective solvent in the downstream butadiene isolation plant,

(e) wherein the styrene-free C_4-hydrocarbon mixture is separated into a distillate containing the hydrocarbons less soluble than butadiene, a stream containing butadiene and a stream containing the hydrocarbons more soluble than butadiene.

4,292,142

SEPARATION OF ETHYLBENZENE FROM PARA- AND META-XYLENES BY EXTRACTIVE DISTILLATION

Lloyd Berg, Bozeman, Mont., assignor to International Synthetic Rubber Co., Ltd., Southampton, England

Filed Jan. 12, 1981, Ser. No. 224,175
Int. Cl.³ F01D *3/40*
U.S. Cl. 203—51 **18 Claims**

1. A method for the separation of ethylbenzene from p-xylene and/or m-xylene which comprises distilling a mixture of ethylbenzene and p-xylene and/or m-xylene in the presence of an effective amount of an extractive agent comprising a mixture of phthalic anhydride and maleic anhydride.

4,292,143

METHOD OF MAKING SINTERED PLAQUE NICKEL ELECTRODES

Harvey N. Seiger, and Vincent J. Puglisi, both of Waterford, Conn., assignors to Yardney Electric Corporation, Pawcatuck, Conn.

Continuation of Ser. No. 967,652, Dec. 8, 1978, abandoned, which is a continuation of Ser. No. 856,381, Dec. 1, 1977. This application Mar. 3, 1980, Ser. No. 126,640
Int. Cl.³ H01M *10/44*; C25D *11/00*
U.S. Cl. 204—2.1 **11 Claims**

1. An improved single step method of making sintered plaque nickel electrodes, said method comprising the single step of uniformly electrochemically depositing nickel hydroxide from a a heated aqueous alcohol-free electrolyte at a substantially constant current and a current density not in excess of about 1 A/in² (2.2 A/cc of void volume) into the pores of a clean sintered nickel plaque cathode at acid pH in a treating zone containing an anode, the deposition being continued only until the loading level of said nickel hydroxide throughout said sintered nickel plaque electrode reaches a uniform level not in excess of about 2 gm/cc of void volume, thereby avoiding thickening and swelling of the plaque cathode in excess of about 4%, the electrochemical deposition time being defined by the equation

$$t_{(hours)} = 0.768 \frac{\text{void volume} \times \text{loading level}}{\text{current density}}$$

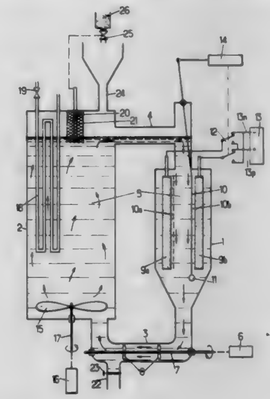
4,292,144

PROCESS AND DEVICE FOR COATING SMALL-SIZED ELEMENTS WITH A METAL DEPOSIT

Pierre J. Lepetit, Saint-Vrain, and Emile J. Genieys, Paris, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, France

Filed Jun. 26, 1980, Ser. No. 163,326
Claims priority, application France, Jun. 29, 1979, 79 17046
Int. Cl.³ C25D *5/08, 17/16*
U.S. Cl. 204—23 **9 Claims**

1. A process for coating small-sized elements with a metallic coat by electrolysis from an electrolyte, the temperature and the ion content of the metal to be deposited of which are maintained substantially constant and in which the polarity of the electrodes is periodically reversed, characterized in that it comprises maintaining these elements in suspension in the electrolyte, causing the electrolyte with the elements in suspension to flow in a closed loop and to pass between two electrodes, disposing a protecting screen in the vicinity of the positive maintained electrode and periodically moving the



protecting screen from the vicinity of the positive maintained electrode to the vicinity of the negative maintained electrode and reversing the flow of current such that the negative maintained electrode becomes the positive maintained electrode.

4,292,145

ELECTRODEPOSITION OF MOLTEN SILICON

Robert C. De Mattei, Sunnyvale; Dennis Elwell, Palo Alto, and Robert S. Feigelson, Saratoga, all of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed May 14, 1980, Ser. No. 149,567
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—60 **19 Claims**

1. A method of reducing silicon dioxide to silicon in molten form by electrodeposition comprising:

(a) dissolving silicon dioxide in a molten electrolytic salt bath,

(b) passing a direct current between an anode and a cathode in the electrolytic salt bath to reduce said dissolved silicon dioxide to a product consisting essentially of non-alloyed silicon, said bath being maintained at a sufficiently high temperature in excess of 1420° C. for said thus-formed reduced silicon to be in molten form, said electrolytic salt bath being stable at said maintained temperature, and

(c) removing said reduced silicon from said electrolytic salt bath, said silicon being essentially free from bath salt inclusions.

4,292,146

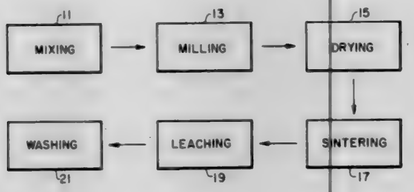
POROUS POLYFLUOROALKYLENE SHEET USEFUL FOR SEPARATING ANOLYTE FROM CATHOLYTE IN ELECTROLYTIC CELLS

Eng-Pi Chang, Grand Island; Christine A. Lazarz, and Edward H. Cook, Jr., both of Niagara Falls, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Aug. 7, 1979, Ser. No. 64,615
Int. Cl.³ C25B *1/34, 13/08*
U.S. Cl. 204—98 **16 Claims**

1. A porous polyfluoroalkylene sheet, suitable for use as a separator in an electrolytic cell, having a porosity in the range

of 70 to 90%, a thickness in the range of 0.2 to 3.5 mm. and (a) an A X-ray ratio in the range of 0.1 to 0.35 and (b) a B_1 X-ray



ratio in the range of 0.1 to 0.32 and a B_2 X-ray ratio in the range of 0.75 to 0.98.

4,292,147

ZINC CHLORIDE ELECTROLYSIS

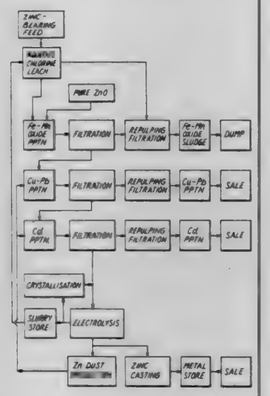
Derek J. Fray, Trumpington, and Bernard K. Thomas, Pelsall near Walsall, both of England, assignors to National Research Development Corporation, London, England

Filed Jun. 20, 1980, Ser. No. 161,644

Claims priority, application United Kingdom, Jun. 22, 1979, 21893/79

Int. Cl.³ C25C *1/16*

U.S. Cl. 204—118 **11 Claims**



1. A process for electrolysing an aqueous solution of zinc chloride having a concentration of 15–35 weight %, the solution arising from leaching a zinc-containing material using an aqueous substantially saturated chlorine solution, the electrolysis proceeding at pH 2–3.5 below 35° C. with gas agitation at a current density exceeding 1000 A/m², thereby yielding coherent zinc at the cathode.

4,292,148

POST-TREATMENT OF ETCHED ALUMINUM CAPACITOR FOIL

Walter J. Bernard, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 7, 1980, Ser. No. 175,986

Int. Cl.³ C25F *1/00*

U.S. Cl. 204—144 **4 Claims**

1. A process for removing residual chlorides from electrochemically etched aluminum foil comprising coupling the foil by spaced coupling means to an electrode inert to nitric acid and having a low hydrogen overvoltage while contacting the foil with nitric acid, said electrode being cathodic to said aluminum foil.

4,292,149

CURRENT ROPE ANODES

Michael A. Warne, Brewood, England, assignor to IMI Marston Limited, Wolverhampton, England

Filed Jan. 8, 1980, Ser. No. 110,453

Claims priority, application United Kingdom, Jan. 19, 1979, 02086/79

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—147 **15 Claims**



1. A cathodic protection anode assembly comprising a rope having two or more strands helically wound around one another, at least one anodically polarisable material in the form of an elongate member wound helically around the rope and lying in a depression between the strands and being electrically insulated from the rope, and means to connect in use, the anodically polarisable material to a source of electrical current.

4,292,150

IODINE TREATED ELASTOMERIC ARTICLE

Milton Farber, Bethany, Conn., and Nancy S. Mariotti, Buchanan, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jun. 26, 1979, Ser. No. 52,166

Int. Cl.³ C08F *2/48*

U.S. Cl. 204—159.12 **37 Claims**

1. An elastomeric article suitable for printing comprising (A) an insolubilized natural or synthetic conjugated diolefin hydrocarbon homopolymer or copolymer, (B) between about 5 and 50 phr of a photopolymerized cross-linking agent derived from a photopolymerizable ethylenically unsaturated compound and (C) between about 0.1 and 5 phr of a photoinitiator activatable by actinic radiation, said elastomeric article containing (D) a detackifying amount of iodine.

4,292,151

PROCESS FOR PREPARING A CURED COPOLYETHERESTER ELASTOMERIC COMPOSITION

Hiroo Inata; Makoto Ogasawara; Tsuto Morinaga, and Akihiro Horike, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 27, 1979, Ser. No. 15,798

Claims priority, application Japan, Mar. 1, 1978, 53/23387; Jul. 3, 1978, 53/79776

Int. Cl.³ C08L *67/02*; C08G *63/16*

U.S. Cl. 204—159.15 **10 Claims**

1. A process for preparing a cured copolyetherester elastomeric composition comprising following steps I and II:

Step I: melt-extruding an uncured linear copolyetherester elastomeric composition of [A] and [B] to follow:

[A] a linear saturated copolyetherester elastomer composed of

(A-1) a hard segment consisting of

(i) an acid component of which at least 70 mol % is an aromatic dicarboxylic acid and

(ii) a diol component having an average molecular weight of up to 350, and

(A-2) a soft segment consisting of

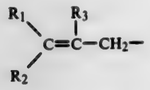
(iii) a polyalkylene glycol having an average molecular weight of from 500 to 5,000 in an amount of from 10 to 80% by weight based on the elastomer [A]; and

[B] a compound having an unsaturated aliphatic moiety other than unsaturated conjugated

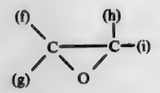
moieties, said compound [B] being copolymerized or blended with said elastomer [A], wherein said unsaturated aliphatic moiety is chemically inert at the melt-extruding temperature, the amount of said moiety being 0.001 to 0.5 equivalent per 100 grams of said elastomer [A], said compound [B] being represented by the following formula

$$\{(AQ_4)_{f1}X_1\}_{f2}Q_6\{Y_1(Q_5B)_{f3}\}_{f4} \quad (10)$$

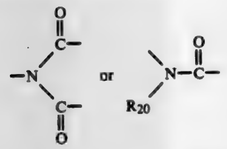
wherein A represents a group of the formula


(2)

wherein R_1, R_2 and R_3 are identical or different, and each represent a group selected from the class consisting of a hydrogen atom and alkyl group with 1 to 6 carbon atoms; B represents an epoxy group of the formula


(9)

in which bonds (f) to (i) are bonded to hydrogen atoms or alkyl groups with 1 to 6 carbon atoms, and bond (i) or bonds (i) and (g) are organic moieties including general formula (2), X_1 represents a direct bond, —O—,



in which R_{20} represents a hydrogen atom, an alkyl group containing 1 to 6 carbon atoms, or AQ_4—; Y_1 represents a direct bond, —O—, or —NH—; Q_6 represents an organic group having a valence of 2 to 4; Q_4 and Q_5 represent a direct bond or an organic group having a valence of 2 to 4; and f_1, f_2, f_3 and f_4 are positive integers.

Step II: curing the resulting extrudate by irradiation of actinic light.

4,292,152

PHOTOPOLYMERIZABLE RECORDING COMPOSITION CONTAINING ACYLPHOSPHINE OXIDE PHOTOINITIATOR

Peter Lechtken; Bernd Bronstert, both of Frankenthal; Gerhard Hoffmann, Otterstadt; Rudolf Vyvial, and John Lynch, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

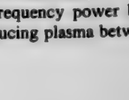
Filed Jul. 6, 1979, Ser. No. 55,361

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909992

Int. Cl.³ C08F *2/48*

U.S. Cl. 204—159.15 **6 Claims**

1. A photopolymerizable recording composition for the preparation of printing plates and relief plates, which consists mainly of a mixture, containing (a) a photoinitiator, (b) one or more monomers possessing one or more photopolymerizable olefinically unsaturated double bonds and (c) one or more organic polymeric binders, the improvement wherein the photoinitiator is an acylphosphine oxide compound of the formula


(I)

where

R^1 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 or 6 ring carbon atoms, aryl which is unsubstituted or substituted by halogen, alkyl or alkoxy, or an S-containing or N-containing five-membered or six-membered heterocyclic radical,

R^2 has the same meanings as R^1, or is alkoxy, aryloxy or aralkoxy, R^1 and R^2 being the same or different or together form a ring, and

R^3 is tertiary alkyl of 4 to 18 carbon atoms or tertiary cycloalkyl of 5 or 6 ring carbon atoms or is a cycloalkyl, aryl or 5-membered or 6-membered heterocyclic radical containing S, N or O as hetero atoms which contains substituents A and B bonded at least to the two ring carbon atoms, capable of substitution, which are adjacent to the point of attachment of the carbonyl group to the carbonyl group, A and B being identical or different and each being alkyl, alkoxy, alkoxyalkyl, alkylthio, cycloalkyl, aryl or halogen.

4,292,153

METHOD FOR PROCESSING SUBSTRATE MATERIALS BY MEANS OF PLASMA TREATMENT

Daijiro Kudo, Yokohama, and Kiyoshi Ikeda, Kitakyusyu, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 14, 1980, Ser. No. 130,537

Claims priority, application Japan, Mar. 19, 1979, 54-32019

Int. Cl.³ H01L *21/306*

U.S. Cl. 204—164 **20 Claims**

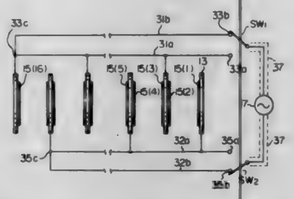
1. A method for processing substrate material by plasma treatment in a reaction chamber, comprising the steps of:

mounting said substrate materials onto a series of electrode plates arranged in parallel to each other;

connecting alternate ones of said electrode plates to alternate ones of a pair of bus lines;

applying high-frequency power between said pair of bus lines for producing plasma between said electrode plates; and

changing the feed points of said high-frequency power on said pair of bus lines so that said plasma treatment is effected substantially uniformly in the spaces between said electrode plates.



4,292,154

BUFFER COMPOSITION AND METHOD FOR THE ELECTROPHORETIC SEPARATION OF PROTEINS

Jeffrey Ambler, Tollerton, England, assignor to Gelman Sciences, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 92,250, Nov. 7, 1979, abandoned. This application Apr. 8, 1980, Ser. No. 138,384

Int. Cl.³ G01N *33/16, 27/26*

U.S. Cl. 204—180 G **11 Claims**

1. A method for electrophoretically separating proteins, said method comprising placing a sample of the proteins to be separated on a substrate, placing the substrate with said sample thereon in an electrically conductive buffer solution, and then passing an electric current through said solution thereby to cause the protein sample to separate, on said substrate, into fractions of different densities or mobilities, said buffer solution having a pH of from 8.2 to 9.0 and containing an acid having the formula R_1—CO—NH—R_2—COOH where R_1 is NH_2, an alkyl group or an aryl group and where R_2 is an alkyl group, and a water soluble salt of the acid.

4,292,155

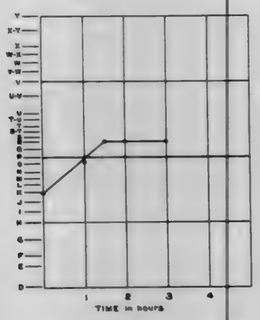
CATIONIC ELECTRODEPOSITION EMPLOYING NOVEL MERCAPTO CHAIN EXTENDED PRODUCTS

Joseph F. Bosso, Lower Burrell; Richard M. Nugent, Allison Park, and Joseph E. Plasynski, Arnold, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 90,166, Oct. 31, 1979. This application Oct. 15, 1980, Ser. No. 197,313

Int. Cl.³ C25D *13/06*

U.S. Cl. 204—181 C **15 Claims**



1. A method for coating a conductive substrate serving as a cathode which method comprises passing electric current between an anode and a cathode in electrical contact with an aqueous resinous dispersion in which the resin comprises the reaction product of:

(A) a polyepoxide having a 1,2-epoxy equivalency greater than one,

(B) a polymercapto compound, and

(C) an amine; the equivalent ratio of mercapto groups in (B) to epoxide groups in (A) being less than one; said reaction product containing cationic groups which are derived from the organic amine.

4,292,156

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

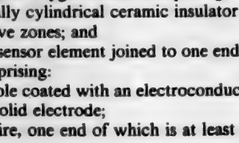
Takashi Matsumoto, and Takahiro Nawata, both of Kawasaki, Japan, assignors to VLSI Technology Research Association, Kawasaki, Japan

Filed Feb. 28, 1979, Ser. No. 15,897

Claims priority, application Japan, Feb. 28, 1978, 53-23086

Int. Cl.³ H01L *21/316, 21/318*

U.S. Cl. 204—192 EC **8 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

selectively masking a region of a silicon semiconductor substrate with an insulating layer of silicon dioxide, in which region a semiconductor circuit element is to be formed;

etching the unmasked region of said silicon semiconductor substrate to form the unetched part of said silicon semiconductor substrate into a mesa like shape;

forming an anti-oxidation masking layer over the entire surface of both of said insulating layer and said silicon semiconductor substrate;

bombarding said anti-oxidation masking layer with ions from a direction which is almost at a right angle to the surface of said silicon semiconductor substrate;

selectively etching said anti-oxidation masking layer to leave a part of said anti-oxidation masking layer on the sides of said insulating layer and on the sides of said mesa shaped part of said silicon semiconductor substrate;

oxidizing the unmasked region of said silicon semiconductor substrate to form a silicon dioxide field oxide layer;

removing said insulating layer from said region of said silicon semiconductor substrate in which said circuit element is to be formed, thereby exposing said region;

removing said anti-oxidation masking layer; and

forming said circuit element in said exposed region.

4,292,157

SOLID POLE OXYGEN SENSOR AND ITS MANUFACTURING PROCESS

Hiroshi Wakizaka, Toyota; Hiroshi Shinohara, Okazaki; Yasuhiro Otsuka, and Shinichi Matsumoto, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 7, 1979, Ser. No. 91,883

Claims priority, application Japan, May 18, 1979, 54/61250

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **14 Claims**

1. A solid pole oxygen sensor comprising:

a substantially cylindrical ceramic insulator having electroconductive zones; and

an oxygen sensor element joined to one end of the insulator and comprising:

a solid pole coated with an electroconductive paste forming a solid electrode;

a lead wire, one end of which is at least partially coated

with a sealing agent is buried in the solid pole, said lead wire being made of Pt or Pt-Rh; and

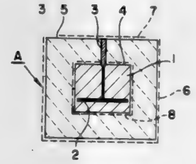
a solid electrolyte in which the solid electrode is encased, the other end of said lead wire being adjacent the periphery of the solid electrolyte.

11. A method of manufacturing a solid pole oxygen sensor, said method comprising:

burying one end of a lead wire made of Pt or Pt-Rh and coated with a sealing agent over a portion of said one end in a solid pole;

coating the surface of the solid pole with an electroconductive paste;

encasing the solid pole in a solid electrolyte;



pressure-molding the solid electrolyte with the solid pole encased therein under a pressure of 600 to 2000 Kg/cm²;

drying the solid electrolyte with the solid pole encased therein;

firing the pressure-molded solid electrolyte with the solid pole therein at about 1350°-1500° C. in a reducing atmosphere;

plating or baking Pt electrodes on the surface of the solid electrolyte to form an oxygen sensor element; and

joining the oxygen sensor element to one end of a substantially cylindrical ceramic insulator having electroconductive zones thereon to be connected to the Pt electrodes.

4,292,158

OXYGEN SENSOR OF THE POLAROGRAPHIC TYPE, PARTICULARLY FOR USE WITH INTERNAL COMBUSTION ENGINES

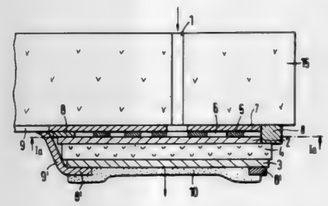
Klaus Müller, Tamm; Helmut Maurer, Schwieberdingen; Hermann Dietz, Gerlingen; Karl-Hermann Friese; Wolfgang Leibfried, both of Leonberg; Günther Stecher, Ludwigsburg, and Ernst Linder, Mühlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,303

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923483

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **18 Claims**



1. Polarographic sensor to determine the oxygen content of gases, particularly combustion gases, especially when emanating from an internal combustion engine, and operating in accordance with diffusion limiting current principle having

a solid electrolyte body (**4, 16, 46**);

an anode electrode (**3**) applied to a surface portion of said body;

a cathode electrode (**2**) applied to another surface portion of said body;

means (**9, 9'**) adapted to apply a voltage across said electrodes;

means (**15, 16, 46**) forming a wall separating the cathode from an ambient space in which the gas, the oxygen of which is to be determined, occurs, and an opening formed in said wall to conduct oxygen molecules to the cathode, comprising, in accordance with the invention,

support elements (**5**) located between the cathode and said wall and defining, therebetween, a system of intermediate distribution or dispersion spaces (**6**);

and wherein the opening in said wall comprises at least one hole (**1,31**) which has a length which is long in relation to the diameter of the hole and is in gas communication with said distribution or dispersion spaces.

4,292,159

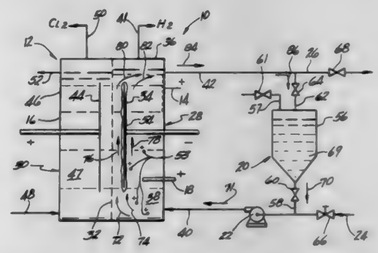
CELL HAVING IN SITU REDUCTION OF ELECTRODE OVERVOLTAGE

Han C. Kuo; Byung K. Ahn; Ronald L. Dotson, and Kenneth E. Woodard, Jr., all of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 853,360, Nov. 21, 1977, Pat. No. 4,160,704, which is a continuation-in-part of Ser. No. 792,389, Apr. 29, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 939,942

Int. Cl.³ C25B *15/08, 11/04, 9/00, 1/16*

U.S. Cl. 204—237 **1 Claim**



1. In an electrolytic cell for the electrolysis of brine to form chlorine gas and caustic soda, said cell being of the type having a cathode side which includes a hydrogen gas evolving copper cathode, a cathode chamber adapted to contain a catholyte, a catholyte liquid inlet and a catholyte liquid outlet and having an anode and an anode chamber adapted to contain a non-alkaline anolyte and said anode and having a non-adherent membrane separating said anode chamber and cathode chamber, the improvement which comprises:

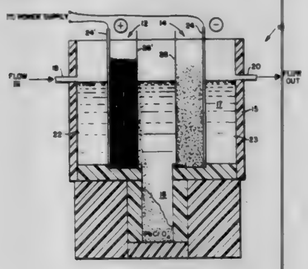
low overvoltage iron ion generator means adapted to be placed in direct fluid communication with said cathode chamber, for generating iron ions and directly introducing said generating iron ions into the catholyte so as to be plated in situ on said cathode during operation of said cell, said iron ion generator means being sufficient to generate enough iron ions that the plated surface of said cathode is at least 99% iron, and means for directly conveying catholyte liquid from said cathode chamber to said generator.

4,292,160

APPARATUS FOR ELECTROCHEMICAL REMOVAL OF HEAVY METALS SUCH AS CHROMIUM FROM DILUTE WASTEWATER STREAMS USING FLOW-THROUGH POROUS ELECTRODES

Paul J. Marcantonio, Lexington, Mass., assignor to Kennecott Corporation, Stamford, Conn.

Filed Aug. 20, 1979, Ser. No. 68,145
Int. Cl.³ C25B *1/00, 11/12, 15/08*
U.S. Cl. 204—237 **6 Claims**



1. A cell for removing chromium ions from waste streams comprising:
   a. a container for holding the waste stream to be treated:
   b. an inlet tube into said container for introducing the waste stream into said container;
   c. an outlet tube in said container for delivering a treated waste stream from said container;
   d. a packed bed of lead shot forming an anode near the inlet of said container;
   e. a cathode of conductive carbonaceous particles near the outlet of said container;
   f. means for applying positive voltage to the bed of lead shot;
   g. means for applying negative voltage to the bed of conductive carbonaceous particles; and
   h. a trap for collecting lead chromate which sloughs off the anode as chromate ions react with the lead shot when the stream to be treated is flowed through the cell and voltage is applied to the cathode and anode.

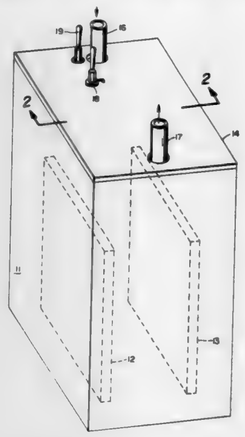
4,292,161

VERTICAL GEL SLAB ELECTROPHORESIS APPARATUS

Peter S. Hoefer, San Francisco, and Michael Whitesides, Daly City, both of Calif., assignors to Hoefer Scientific Instruments, San Francisco, Calif.

Continuation of Ser. No. 714, Jan. 3, 1979, Pat. No. 4,224,134. This application Sep. 22, 1980, Ser. No. 189,601
Int. Cl.³ G01N *27/26*
U.S. Cl. 204—299 R **6 Claims**

1. Vertical gel slab electrophoresis apparatus comprising: a sample unit comprising, a pair of spaced plates, a pair of vertical guide means each having an internal groove for accommodating opposed edges of said spaced plates each of said guide means having at least one external horizontal channel, and a plurality of screw means in said vertical guide means for pressing said plates together and against said internal grooves; means for supporting said sample unit in a vertical orientation; longitudinal resilient sealing means interposed between said sample unit and said supporting means; said supporting means including opposed means extending from said supporting means for receiving said pair of vertical guide means, a pair of cam means mounted for rotation in said extending means, said cam means having an off-center nub which mates with said horizontal channel of each vertical guide means, rotation of



said cam means pressing said sample unit against said sealing means and said supporting means.

4,292,162

BUFFER COMPOSITION AND METHOD FOR THE ELECTROPHORETIC SEPARATION OF PROTEINS

Jeffrey Ambler, Tollerton, England, assignor to Gelman Sciences, Inc., Ann Arbor, Mich.

Division of Ser. No. 138,384, Apr. 8, 1980, which is a continuation-in-part of Ser. No. 92,250, Nov. 7, 1979. This application Oct. 16, 1980, Ser. No. 197,391
Int. Cl.³ G01N *33/16, 27/26*
U.S. Cl. 204—299 R **26 Claims**

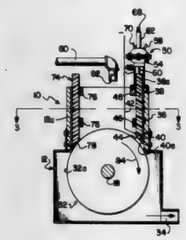
1. A composition for the preparation of a buffer solution for use in the electrophoretic separation of proteins, said composition consisting essentially of 2-amino-2-(hydroxymethyl)-1,3-propanediol, hippuric acid and a water soluble hippurate.

4,292,163

LIQUID TREATER HAVING ELECTRODE STRIPPER

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed Jan. 16, 1980, Ser. No. 112,549
Int. Cl.³ B03C *5/02*; C02F *1/46*
U.S. Cl. 204—304 **2 Claims**



1. In a device for electrically treating liquids, the combination of:
   a first generally cylindrical electrode mounted for rotation about a generally horizontal axis coinciding with the longitudinal axis of the electrode;
   means for supplying liquid onto the upper peripheral surface of said electrode during rotation thereof about said axis of rotation;

   a second, stationary electrode having a surface disposed in spaced opposition to said surface of the first electrode;
   means for holding said electrodes with their opposed surfaces spaced apart a fraction of an inch to define a restricted gap which receives the liquid and reduces the same in volume to a thin layer as it moves through said gap, thereby concentrating the effect of the electrodes;
   means for connecting said electrodes across a source of electrical potential for oppositely electrically charging the same and producing an electric field within said gap; and
   stripper means positioned to engage said surface of said one electrode at a point beyond said gap for removing adhering liquid and other materials from said surface of said one electrode following passage through said gap.

4,292,164

LIQUEFACTION OF CARBONACEOUS MATERIAL WITH HYDROGEN AND NAPHTHA-EXTRACTED RECYCLE SOLVENT WITHOUT HETEROGENEOUS CATALYST

Francis J. Derbyshire, Lawrenceville, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,817
Int. Cl.³ C01G *1/00*
U.S. Cl. 208—8 LE **12 Claims**

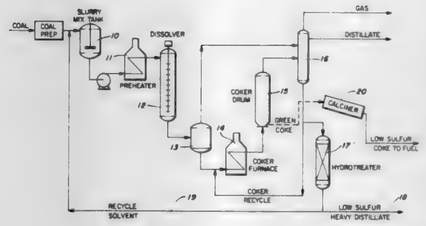
1. A process for the liquefaction of solid carbonaceous material which comprises the steps of
   (1) forming a slurry of the solid carbonaceous material in a hydrogen transfer solvent;
   (2) heating said slurry in the presence of hydrogen in the substantial absence of heterogeneous hydrogenation catalyst at a temperature and pressure sufficient to obtain a conversion of said solid carbonaceous material of at least 60% of a liquid product;
   (3) extracting the liquid product boiling above 200° C. with process derived naphtha containing less than 20 percent by weight of aromatics;
   (4) separating from the naphtha the components soluble therein as a recycle solvent; and
   (5) recycling at least a portion of said recycle solvent to step (1) as said hydrogen transfer solvent.

4,292,165

PROCESSING HIGH SULFUR COAL

Matthew C. Sooter, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 7, 1980, Ser. No. 119,322
Int. Cl.³ C10G *1/00, 1/06, 9/14*
U.S. Cl. 208—8 LE **3 Claims**



1. A process for treating high sulfur coal to produce liquids and delayed coke comprising:
   (a) subjecting particulate coal having a sulfur content of at least 2 percent by weight to a coal liquefaction step where it is maintained at a temperature of 390° to 505° C. and a pressure of 28 to 140 kg/cm² for a time of 0.2 to 2 hours;
   (b) separating gases and light ends produced in step (a) by pressure reduction and passing the remaining material from step (a) to a delayed coker after heating it in a coker furnace to 450° to 525° C.;
   (c) recovering overhead vapors from the delayed coker and passing them to a fractionator where a gas-oil fraction is obtained;
   (d) recycling a portion of the gas-oil fraction from the fractionator back to the delayed coker;
   (e) hydrotreating another portion of the gas-oil fraction from the fractionator and returning at least part of the hydrotreated portion to the coal liquefaction step as recycle solvent;
   (f) recovering solid delayed coke from said delayed coker; and
   (g) calcining said coke at a temperature of from 1450° to 1600° C. to produce a calcined coke having a reduced sulfur content.

4,292,166

CATALYTIC PROCESS FOR MANUFACTURE OF LUBRICATING OILS

Robert L. Gorring, Washington Crossing, and Rene B. La Pierre, Morrisville, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,661
Int. Cl.³ C10G *45/12, 48/18, 65/02*
U.S. Cl. 208—59 **22 Claims**

19. In a process for catalytically converting a waxy hydrocarbon oil boiling above 650° F. (343° C.) and substantially free of asphalt to a high V.I low pour point lube base stock, which process comprises catalytically dewaxing said oil, the improvement whereby an increased yield of said high V.I. low pour point lube base stock is obtained, which comprises, in combination:
   contacting said waxy hydrocarbon oil and hydrogen in a first reaction zone with a zeolite catalyst having a Constraint Index of 1 to 12 and a silica to alumina ratio above 12, said contacting being at a temperature of 400°–1000° F. (204°–537° C.), a pressure of 500–3500 psig, and a L.H.S.V. of 0.1–10 hr^{-1}, thereby dewaxing said oil;
   contacting said dewaxed oil and hydrogen in a second reaction zone with a large pore hydrocracking or a hydroconversion catalyst under conditions effective to increase the V.I. of the lube oil fraction of said dewaxed oil; and
   recovering said high V.I. low pour point lube base stock.

4,292,167

NOBLE METAL REFORMING OF NAPHTHA

John C. Bonacci, Murray Hill, and John R. Patterson, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 53,582, Jun. 28, 1979, abandoned, which is a continuation of Ser. No. 883,104, Mar. 3, 1978, abandoned, which is a continuation of Ser. No. 553,397, Feb. 27, 1975, abandoned. This application Jan. 14, 1980, Ser. No. 111,743
Int. Cl.³ C10G *35/04*
U.S. Cl. 208—66 **8 Claims**

1. In the process of increasing the octane number of naphthas by multi-stage endothermic reforming with a conventional noble metal reforming catalyst utilizing at least three reforming stages in series and including heating said naphtha intermediately between said stages; the improvement; whereby increasing the octane number of said naphtha more efficiently; improving yield and reducing catalyst aging, which comprises: cooling the effluent of said first reforming stage to a temperature in the range of between about 550° F. and 725° F., contacting said cooled effluent with a zeolite catalyst having a silica to alumina ratio of at least about 15 and selected from the group consisting of ZSM-5, ZSM-11, ZSM-35 and ZSM-38; heating the effluent after said contacting and then feeding such heated effluent to the second stage of said reforming process.

4,292,168

UPGRADING HEAVY OILS BY NON-CATALYTIC TREATMENT WITH HYDROGEN AND HYDROGEN TRANSFER SOLVENT

Francis J. Derbyshire, Lawrenceville; Thomas O. Mitchell, Trenton, and Darrell D. Whitehurst, Titusville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,949
Int. Cl.³ C10G *9/14, 47/34*
U.S. Cl. 208—107 **20 Claims**

2. A process for upgrading heavy liquid hydrocarbon oil which comprises the steps of

(1) forming a mixture of said heavy liquid hydrocarbon oil, a major fraction of which boils above 425° C., and an organic solvent containing at least 15% by weight of polycyclic hydrogen transfer solvent, said polycyclic hydrogen transfer solvent being free of carbonyl groups and having a polarographic reduction potential which is less negative than phenanthrene and equal to or more negative than azapyrene;

(2) heating said mixture with H_2 in the substantial absence of heterogeneous hydrogenation catalyst at a temperature, under pressure and for a time sufficient to obtain at least 50% conversion of the fraction boiling above 425° C. to products boiling below 425° C. and containing less than 10% by weight of tetrahydrofuran insolubles; and

(3) separating said polycyclic hydrogen transfer solvent from the product of step (2) and recycling it to step (1) without external hydrogenation.

4,292,169

HYDROCARBON CONVERSION WITH ZEOLITE CATALYST IN METALS-ABSORBING MATRIX

Elroy M. Gladrow, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 746,188, Nov. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 626,225, Oct. 28, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 1,722
Int. Cl.³ C10G *9/16, 11/05*
U.S. Cl. 208—120 **20 Claims**

1. A process for the conversion of a hydrocarbon oil which comprises: contacting said oil at hydrocarbon conversion conditions with a catalyst comprising (1) a crystalline aluminosilicate zeolite, said zeolite being present in an amount ranging from about 1 to about 40 weight percent based on the total catalyst, (2) a catalytic inorganic oxide gel, said gel being present in an amount ranging from about 45 to about 98 weight percent, and (3) a porous inorganic oxide initially having a surface area greater than about 200 square meters per gram and having at least 0.2 cubic centimeter per gram of its pore volume in pores ranging in diameter from about 90 to about 200 angstroms, said porous inorganic oxide in itself having less catalytic activity than said inorganic oxide gel component, said porous inorganic oxide being present in an amount ranging from about 1 to about 55 weight percent based on the total catalyst, and said catalyst having at least 0.4 cubic centimeter per gram of its pore volume in pores greater than 90 angstroms in diameter.

4,292,170

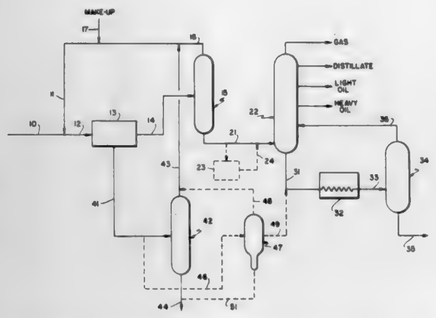
REMOVAL OF QUINOLINE INSOLUBLES FROM COAL DERIVED FRACTIONS

Andre A. Simone, Dover, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 819,772, Jul. 28, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,453
Int. Cl.³ C10G *9/14*
U.S. Cl. 208—131 **11 Claims**

1. A process for producing needle coke from a coal tar pitch, comprising:

contacting the coal tar pitch with a liquid promoter which enchances and promotes the separation of quinoline insolubles from the coal tar pitch, said liquid promoter being a hydrocarbon liquid having a 5-volume percent distillation temperature of at least about 250° F. and a 95 volume percent distillation temperature of at least about 350° F. and no greater than about 750° F., said liquid having a characterization factor of at least 9.75;



recovering by gravity settling as an overflow stream a mixture of promoter liquid and a coal tar pitch fraction having a reduced quantity of quinoline insolubles;

separating said coal tar pitch fraction from the promoter liquid; and

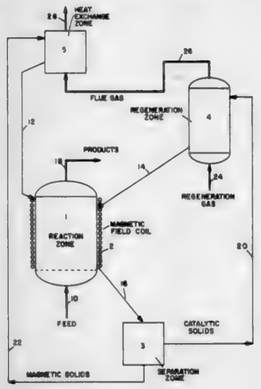
coking at least a portion of said separated coal tar pitch fraction to produce needle coke.

4,292,171

MAGNETICALLY STABILIZED, FLUIDIZED BEDS

Francis X. Mayer, and William F. Arey, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 737,228, Nov. 1, 1976, abandoned. This application Mar. 19, 1980, Ser. No. 131,853
Int. Cl.³ C10G *11/00, 15/00*
U.S. Cl. 208—164 **5 Claims**



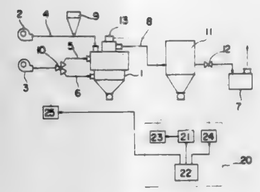
1. In a hydrocarbon conversion process wherein fluidizable particulate catalyst solids are circulated between a fluidized bed reaction zone in which said particulate catalyst solids are contacted with a hydrocarbon feedstock resulting in the deposition of coke on said catalyst solids and a fluidized bed regeneration zone in which the catalyst particles having coke deposited thereon are contacted with an oxygen-containing gas to remove said coke by combustion, the improvement which comprises (a) introducing into said reaction zone particulate solids having ferromagnetic properties so that said hydrocarbon feedstock is contacted with a particulate solids mixture containing a plurality of separate, discrete (1) magnetizable substantially non-catalytic particles, and (2) non-magnetizable catalytic particles; (b) applying a magnetic field to said reaction zone to form a magnetically stabilized fluid bed in said reaction zone; (c) withdrawing said particulate solids mixture from the reaction zone; (d) separating said magnetizable substantially non-catalytic particles from said non-magnetizable catalytic particles; and introducing said non-magnetizable catalytic particles into said regeneration zone.

4,292,172

APPARATUS FOR CLASSIFYING PARTICLES

Masuo Hosokawa, Toyonaka; Tohei Yokoyama, Kyoto, and Noriyoshi Kaya, Hirakata all of Japan, assignors to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan

Filed Apr. 15, 1980, Ser. No. 140,508
Claims priority, application Japan, May 28, 1979, 54/65808
Int. Cl.³ B07B *7/083*
U.S. Cl. 209—144 **3 Claims**



1. An apparatus for classifying particles comprising,

a housing (1) defining a classifying chamber (16),

a feed duct (4) for feeding particles to be treated and a feed duct (5) for feeding classifying gas, both connected to said housing (1),

a suction duct (8) connected to said housing (1) for transmitting gasborne fine particles resulting from a classifying operation, gas flow rate (Q) in said suction duct (8) being maintained substantially constant,

a discharge duct (17) connected to said housing (1) for discharging coarse particles resulting from the classifying operation,

a classifying rotor (14) mounted in said housing (1) and adapted to rotate at varied frequencies to select a classification standard particle size (d),

a computer (20) storing an equation,

$$N = K \cdot \frac{1}{d} \cdot \sqrt{\frac{Q}{\rho s}}$$

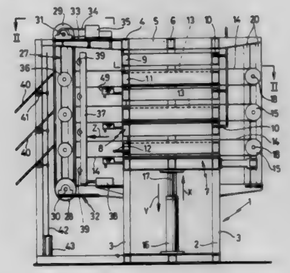
; where K is a constant, for calculating a rotational frequency (N) of said classifying rotor (14) from the classification standard particle size (d), density (ρs) of the particles to be treated, and said gas flow rate (Q) in the suction duct (8), said computer (20) including at least an input unit (22) for establishing said classification standard particle size (d), and a unit (23) for automatically adjusting speed of said classifying rotor (14) to the rotational frequency (N) derived from an input data of the classification standard particle size (d) and said equation.

4,292,173

VERTICAL FILTERING DEVICE

Alfred H. Parmentier, 69 Blvd. Machtens, B-1080 Brussels, Belgium

Continuation of Ser. No. 37,085, May 8, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,707
Claims priority, application France, May 10, 1978, 78 16002; Sep. 26, 1978, 78 27472
Int. Cl.³ B01D *25/34, 25/12*
U.S. Cl. 210—138 **8 Claims**



1. A vertical filtering device comprising:

a framework carrying a plurality of independent horizontal superimposed coaxial filtering units including each:

a frame with an inlet for a slurry to be filtered,

a plate for collecting the filtrate with an outlet for said filtrate, and

an individual endless filtration band supported by two side rollers independently from the frame and the plate of the filtering unit, said filtration band having a section extending between the plate and the frame and another section extending under the plate, the frame, the plate and the individual endless filtration band supported by the side rollers being independent from each other;

opening and closing means for allowing the independent frame, the independent plate and the independent individual endless filtration band of each filtering units and the independent filtering units themselves to be pressed against each other during each filtration step and for allowing said frame, said plate, said individual endless filtration band of each filtering unit, and said filtering units themselves to become spaced apart after each filtration step,

separate vertical guiding posts provided with slidably movable bearings in which the ends of a shaft carrying the rollers supporting each endless filtration band are inserted, stops being carried by said guiding posts for maintaining said bearings at predetermined levels in the open position of the filtering device,

vertical guiding means for the independent frames and plates of each filtering unit, said means comprising a portion having the shape of a flight of stairs, the vertical face of each stair acting as a guide for staggered projections of the frames and of the plates, whereas the horizontal faces of the stairs act as stops for limiting the downward movement of said projections of the frames and plates when the filtering device is opened,

means for simultaneously moving the individual endless filtration bands of the various filtering units, comprising a driving element operable to act simultaneously on one roller of each pair of independent side rollers supporting an endless filtration band and cause the said rollers to rotate for bringing the section of each endless filtration band supporting a filtration cake into a position where the filtration cakes are discharged from the said band, each of said discharge positions being on the same side of the filtering device, and

common controlling means including a cam programmer for

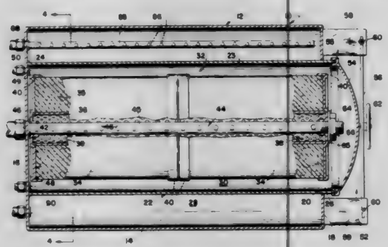
sequentially controlling the durations of the steps of closing the filtering device by pressing the filtering units against each other, of filtering a slurry in the various filtering units, of washing the filtration cakes, of dewatering these cakes, of opening the filtering device by allowing the filtering units and the parts thereof to become spaced from each other, and of moving the endless filtration bands towards the filtration cake discharge position.

4,292,174

FILTER AND COOLING APPARATUS FOR DRY-CLEANING SYSTEMS

James D. Smith, 5741 Mission Blvd., Space 33, Riverside, Calif. 92504, and Richard Paul, 5400 Montgomery St., Riverside, Calif. 92503

Filed Jun. 2, 1980, Ser. No. 155,419
Int. Cl.³ B01D *35/02, 35/18*
U.S. Cl. 210—167 **4 Claims**



1. A filter-and-cooling apparatus for liquid solvents used in a dry-cleaning process for clothes and other articles, said apparatus having a substantially closed solvent-flow system and a substantially closed water-cooling system, wherein the apparatus comprises:

a first housing having closed ends, and including an inlet port and an outlet port;

a cooling chamber adapted to receive a continuous flow of water therethrough, said chamber defining a water jacket;

a second housing positioned within said first housing and having a closed end and an open end, a filter chamber being defined therein and adapted to receive a continuous flow of solvent therethrough, said water jacket being formed about said filter chamber;

a second inlet port mounted in said closed end of said second housing;

an elongated nozzle connected to said inlet port of said first housing, whereby incoming cooling water is discharged throughout said cooling chamber, and wherein said inlet and outlet ports of said first housing are connected within said closed water-cooling system;

means for closing and sealing off said open end of said filter chamber;

means for filtering said solvent, said means being positioned within said sealed filter chamber;

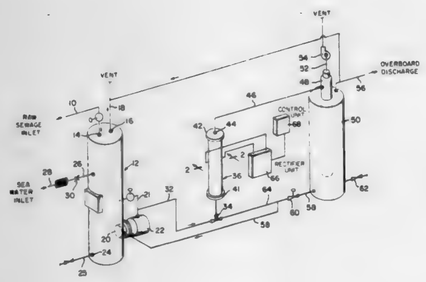
a discharge means mounted in said sealed filter chamber and adapted to support said filter means therein, wherein said discharged means and said support for said filter comprise an elongated pipe member centrally positioned within said sealed filter chamber, said pipe including a plurality of holes therein to receive said filtered solvent after passing through said filter means.

4,292,175

COMPACT ELECTROCATALYTIC SEWAGE TREATMENT UNIT FOR MARITIME USE

William A. Krause, and Leonard E. Langeland, both of Houston, Tex., assignors to Omnipure, Inc., Houston, Tex.

Filed Aug. 3, 1979, Ser. No. 63,581
Int. Cl.³ C02F *1/46, 1/76*
U.S. Cl. 210—192 **6 Claims**



1. A compact unit for treatment of waste water which uses no chemical additives and which yields a discharge effluent low in suspended solids and essentially free of pathogenic organisms, comprising:

an elongated electrocatalytic cell having an inlet and outlet containing, between the inlet and outlet, closely spaced, vertically oriented electrodes positioned parallel to one another and parallel to the flow of waste water therethrough, the electrocatalytic cell positioned for flow of waste water to be treated upwardly from the inlet thereof to the outlet,

a closed surge vessel for gravity separation of heavy solids from the waste water to be treated and for evening out the flow of waste water to be treated to the electrocatalytic cell, having an inlet opening to receive the waste water to be treated, a vent opening connected to a vent line, and a discharge outlet,

a macerator means connected to the discharge outlet of the surge vessel for receiving waste water to be treated from the surge vessel and macerating the solids contained therein and delivering the waste water to be treated containing the macerated solids to the inlet of the electrocatalytic cell,

means for adding a sufficient amount of electrolyte to the waste water to be treated before entry thereof into the electrocatalyic cell for effective operation of the cell,

means connected to the surge vessel for injecting water thereinto in amounts sufficient to maintain a relatively constant minimum flow of water to be treated through the electrocatalytic cell at all times so as to allow continuous operation of the electrocatalyic cell during times when no waste water to be treated is entering the surge vessel,

a closed effluent vessel having a stand pipe therein connected to the discharge outlet of the electrocatalytic cell, the stand pipe including a vent opening therein for venting of entrained gases in the treated waste water,

means to create a negative pressure in the stand pipe, and

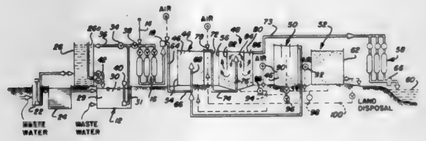
power means connected to the electrodes of the electrocatalytic cell for delivering direct current to the electrode plates within the cell, the power means charging the spaced electrode plates with an electrolyzing current for generation of chlorine, oxygen, and other disinfecting chemicals in situ.

4,292,176

USE OF ACTIVATED CARBON IN WASTE WATER TREATING PROCESS

James F. Grutsch, Hammond, and Russell C. Mallatt, Crown Point, both of Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 748,553, Dec. 8, 1976, abandoned. This application Aug. 14, 1980, Ser. No. 178,139
Int. Cl.³ C02F *3/08*
U.S. Cl. 210—616 **65 Claims**



1. In the activated sludge process wherein a first stage contaminated water is contacted with activated sludge for a period of time sufficient to biologically degrade contaminants in the water and in a second stage decontaminated water is separated from the activated sludge, a first portion of said separated sludge being recycled for recontact with the water in the first stage and a second portion of said separated sludge being treated in downstream operations, the improvement comprising pretreating the contaminated water entering the first stage so that the water contains less than about 20 ppm of hydrocarbons and less than about 20 ppm of solids;

introducing 1 to 40 ppm based on feed waste water of activated carbon having a zeta potential of at least about −10 millivolts into the water so that the carbon is present in the first and/or second stage; and

maintaining the average age of the activated sludge in the first and second stages in excess of ten days.

63. In the activated sludge process wherein a first stage contaminated water is contacted with activated sludge for a period of time sufficient to biologically degrade contaminants in the water and in a second stage decontaminated water is separated from the activated sludge, a portion of said separated sludge being recycled for recontact with water in the first stage, the improvement comprising

pretreating the waste water prior to the first stage to reduce the chemical oxygen demand of the waste water by fifty percent;

operating the first or second stages in the presence of activated carbon by the addition of 1–40 ppm activated carbon based on feed waste water; and

maintaining the average sludge age in excess of 10 days.

4,292,177

PRESSURIZABLE ROTARY FILTER

Werner Stahl, Landau; Uwe Breuer, Gröbenzell; Bernhard Richter, Puchheim; Franz Alstetter; Franz Krappmann, both of Munich, and Hans Schuster, Lohhof, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,063
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849528
Int. Cl.³ B01D *33/28*
U.S. Cl. 210—325 **17 Claims**

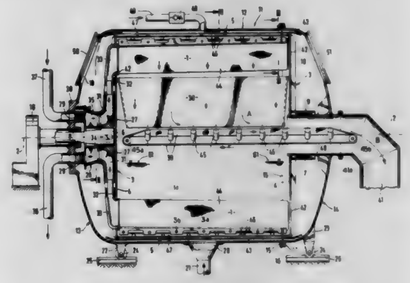
1. A rotary filter for the continuous filtration of a suspension to produce a filter cake and a filtrate, said rotary filter comprising:

a vessel adapted to receive said suspension;

a rotor mounted for rotation in said vessel and having a generally horizontal axis, said rotor being formed at one axial end with a distribution head connected to a source of elevated pressure and a source of reduced pressure and provided with respective conduits successively connected to said sources by said head upon rotation of said rotor, said rotor being further provided with cell-mounting elements along its outer periphery;

a plurality of angularly spaced filter cells suspended from said elements and extending inwardly to terminate at a distance from said axis while communicating with said conduits whereby filtrate is withdrawn from said cells to deposit said cake thereon as said cells are immersed in said suspension and said cake is dislodged from said cells by fluid pressure therein at a location in the path of said cells about said axis; and

means in said vessel disposed at least in part in a space within an orbit of inner edges of said cells for withdrawing dislodged filter cake from said vessel, said vessel comprising a first dome at said end of said rotor forming a rotatable support for said rotor and said head, a cylindrical member fixed to said first dome and surrounding said rotor, and a second dome detachably connected to said cylindrical member, said means in said vessel for withdrawing said filter cake including a conveyor discharging said cake through said second dome, said domes being provided with closable access windows alignable with said filter cells for the removal and replacement of said filter cells on said rotor, said rotor comprising a pair of end plates with openings corresponding to said filter cells and alignable with said windows, said elements being rails extending axially between said end plates, and said filter cells being operatively connected with brackets slidably engaging said rails for the axial displacement of said filter cells along



said rails, said first dome and said cylindrical member forming one part said second dome forming another part of a pressurizable enclosure constituted by said vessel, one of said parts being separable from the other, said vessel being formed with means for pressurizing the interior thereof.

14. A rotary filter for the continuous filtration of a suspension to produce a filter cake and a filtrate, said rotary filter comprising:

a vessel adapted to receive said suspension;

a rotor mounted for rotation in said vessel and having a generally horizontal axis, said rotor being formed at one axial end with a distribution head connected to a source of elevated pressure and a source of reduced pressure and provided with respective conduits successively connected to said sources by said head upon rotation of said rotor, said rotor being further provided with cell-mounting elements along its outer periphery;

a plurality of angularly spaced filter cells suspended from said elements and extending inwardly to terminate at a distance from said axis while communicating with said conduits whereby filtrate is withdrawn from said cells to deposit said cake thereon as said cells are immersed in said suspension and said cake is dislodged from said cells by fluid pressure therein at a location in the path of said cells about said axis; and

means in said vessel disposed at least in part in a space within an orbit of inner edges of said cells for withdrawing dis-

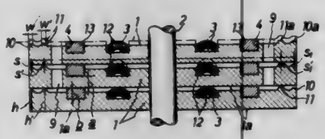
lodged filter cake from said vessel, said vessel comprising a first dome at said end of said rotor forming a rotatable support for said rotor and said head, a cylindrical member fixed to said first dome and surrounding said rotor, and a second dome detachably connected to said cylindrical member, means in said vessel for withdrawing said filter cake including a conveyor discharging said cake through said second dome, said domes being provided with closable access windows alignable with said filter cells for the removal and replacement of said filter cells on said rotor, said rotor comprising a pair of end plates with openings corresponding to said filter cells and alignable with said windows, said elements being rails extending axially between said end plates, and said filter cells being operatively connected with brackets slidably engaging said rails for the axial displacement of said filter cells along said rails, said first dome and said cylindrical member forming one part and said second dome forming another part of said vessel, one of said parts being separable from the other.

4,292,178

FILTERING APPARATUS

Takehiko Mori, and Kazuo Mori, both of No. 3-23-8, Okusawa, Setagaya-Ku, Tokyo, Japan

Filed Aug. 2, 1979, Ser. No. 62,935
Int. Cl.³ B01D *29/38, 25/34*
U.S. Cl. 210—352 **3 Claims**



3. A filtering apparatus comprising:
at least first and second discs stacked with a first surface of said first disc facing a first surface of said second disc;
at least one annular projection of said first surface of said first disc;
means for maintaining said at least one annular projection a uniform predetermined fixed distance from said first surface of said second disc whereby at least one filtering slit having a uniform predetermined fixed width is formed therebetween;
passage means for fluid communication with a location between said first and second discs radially inward of said at least one filtering slit;
said clamping means includes a piston and a cylinder, said pistion and cylinder being further operative to permit said first and second discs to move apart under urging of said resilient member for back flushing; and
said clamping means is operative to at least partially release it urging of said first and second discs and said at least one resilient member is operative to move said first and second discs apart whereby the width of said filtering slit is increased to permit back flushing of particles from said filtering apparatus.

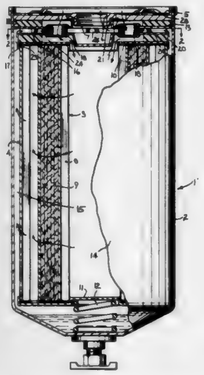
4,292,179

SPIN-ON FILTER COALESCER UNIT WITH FLOW REVERSING BAFFLE ASSEMBLY

Walter H. Stone, Madison, Wis., and William G. Nostrand, Snelling, Calif., assignors to Nelson Industries, Inc., Stoughton, Wis.

Filed May 21, 1980, Ser. No. 151,946
Int. Cl.³ B01D *33/38, 27/00*
U.S. Cl. 210—443 **10 Claims**

1. A flow reversing device for a spin-on liquid separator unit having a cylindrical container having an open end, an annular separating element disposed within the container and defining an axial passage and an outer circumferential passage, a first baffle member disposed adjacent the open end and having a centrally located outlet opening; a second baffle member spaced inwardly from said first baffle member to define a chamber between said baffle members, said chamber connecting the circumferential passage to the outlet opening, and



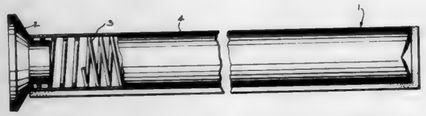
conduit means connecting said first and second baffle members and extending across said chamber, whereby liquid entering said conduit means flows into the axial passage of the separating element, said liquid then flowing radially outward through the separating element and longitudinally in the circumferential passage to said chamber for discharge through the outlet opening.

4,292,180

MILK FILTER SOCK

Kenneth R. Zylka, Grafton, and Earl R. Witte, Richfield, both of Wis., assignors to Meridian Industries Inc., Milwaukee, Wis.

Filed Mar. 31, 1980, Ser. No. 135,226
Int. Cl.³ B01D *29/30*
U.S. Cl. 210—496 **2 Claims**



1. An open-ended filter sock for filtering milk, comprising a longitudinally folded sheet of randomly oriented spun bonded synthetic fibers, said sheet having a pair of overlying sheet sections and having a weight in the range of 1.5 to 4.0 ounces per square yard, a first ultrasonic weld joining the adjacent longitudinal edges of the sheet sections, and a second ultrasonic weld joining a pair of adjacent end edges of said sheet sections to provide a tubular open-ended sock, said ultrasonic welds comprising a series of alternating depressions and projections to thereby increase the strength of the welded area.

4,292,181

USE OF LIQUID MEMBRANE SYSTEMS FOR SELECTIVE ION TRANSFER

Norman N. Li, Edison; Robert P. Cahn, Millburn, and Adam L. Shrier, Montclair, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 955,957, Oct. 30, 1978, abandoned, which is a continuation of Ser. No. 699,707, Mar. 23, 1976, abandoned, and a continuation-in-part of Ser. No. 404,716, Oct. 9, 1973, abandoned, which is a division of Ser. No. 174,990, Aug. 25, 1971, Pat. No. 3,779,907, which is a continuation-in-part of Ser. No. 28,094, Feb. 13, 1970, Pat. No. 3,617,546, and a continuation-in-part of Ser. No. 36,686, May 5, 1970, Pat. No. 3,637,488. This application Jun. 20, 1980, Ser. No. 161,602
Int. Cl.³ B01D *13/00;* **C02F** *1/28*
U.S. Cl. 210—638 **18 Claims**

1. In a liquid membrane process for removing ions from solution which comprises contacting a feed solution containing a first ion with an emulsion, said emulsion comprising an internal phase and an external phase which is immiscible with both said feed solution and internal phase, said external phase containing a complexing agent dissolved therein which forms an external phase-soluble first complex with said first ion whereby said first ion diffuses through the external phase to the internal phase, the improvement which comprises said internal phase containing a second ion therein at a concentration greater than in the feed solution which converts said first complex to a second complex with the second ion, thereby simultaneously releasing said first ion into said internal phase in a form which remains present therein in a form chemically identical to that in which it exists in the feed solution said second complex also being soluble in said external phase, whereby said second ion diffuses from said internal phase into said feed solution, said contacting occurring for a time sufficient for at least a portion of said first ion to be removed from said feed solution.

14. A process for removing cupric ion from an aqueous feed solution containing same which comprises contacting said feed solution with an emulsion having an internal aqueous phase containing hydrogen ions and an external oily phase containing a hydroxyoxime ion-exchange compound, said external phase being immiscible with both said feed solution and said internal phase, and wherein said ion exchange compound forms a complex with cupric ion at a pH of greater than about 1 to from a complex of said cupric ion and said ion-exchange compound at the interface of the feed solution and external phase to diffuse said cupric ion through the external phase to the internal phase of the emulsion wherein said cupric ion is released as cupric ion and wherein hydrogen ion in the internal phase replaces the cupric ion of the complex to form a hydrogen ion complex with the ion-exchange compound which then permits the hydrogen ion to diffuse back to the interface of the external phase and feed solution to release hydrogen ion into said feed solution and reform the cupric ion complex with the ion exchange compound, said contacting of the feed solution and emulsion being carried out while the pH of the feed solution is greater than about 1 and the pH of the internal phase is less than about 1.

4,292,182

IMPARTING ANTI-SOILING PROPERTIES TO FIBERS

Alex K. Jahn, Williamsburg, Va., assignor to Badische Corporation, Williamsburg, Va.

Continuation-in-part of Ser. No. 955,847, Oct. 30, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,424
Int. Cl.³ D06M *13/16, 13/32*
U.S. Cl. 252—8.6 **5 Claims**

1. A process for imparting anti-soiling properties to fibers, which process comprises applying to the fibers an effective amount of the neutralized phosphate ester of an aliphatic alcohol having from 12 to 22 carbon atoms in the chain, the ester having been prepared by reacting about 3 moles of alochol with one mole of phosphoric pentoxide.

4,292,183

HIGH-DENSITY FLUID COMPOSITIONS

David C. Sanders, West Lafayette, Ind., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Dec. 13, 1978, Ser. No. 969,236
Int. Cl.³ E21B *43/00;* **C09K** *3/00*
U.S. Cl. 252—8.55 R **12 Claims**

1. A clear, high-density fluid adapted for use as a well completion, packing, and perforation medium consisting of a solution of zinc bromide and calcium bromide in water having a density lying in the range of about 14.5 up to about 18.0 pounds per gallon and a measured pH lying in the range of about 3.5 up to about 6.0;

10. In a method of completion or workover of wells wherein a high-density fluid is injected into the well to exert sufficient hydrostatic pressure to control the well, the improvement comprising employing as the high-density fluid a clear solution comprising zinc bromide and calcium bromide in water having a density lying in the range of about 14.5 up to about 18.0 pounds per gallon and a measured pH lying in the range of about 3.5 up to about 6.0.

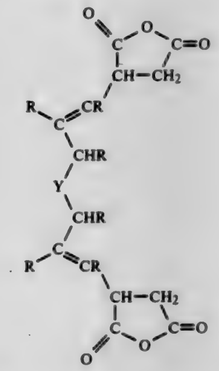
4,292,184

THIO-BIS-(HYDROCARBON-BISOXAZOLINES) AS OLEAGINOUS ADDITIVES FOR LUBRICANTS AND FUELS

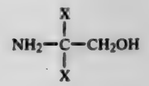
Stanley J. Brois, Spring, Tex., and Antonio Gutierrez, Mercerville, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 23,615, Mar. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 817,217, Jul. 20, 1977, Pat. No. 4,174,322, which is a division of Ser. No. 726,206, Sep. 24, 1976, Pat. No. 4,062,786. This application Mar. 27, 1980, Ser. No. 134,511
Int. Cl.³ C10M *1/38;* **C10L** *1/24;* **C07D** *263/14*
U.S. Cl. 252—46.3 **16 Claims**

1. A process comprising the step of reacting one molar proportion of an acylating reagent of the formula



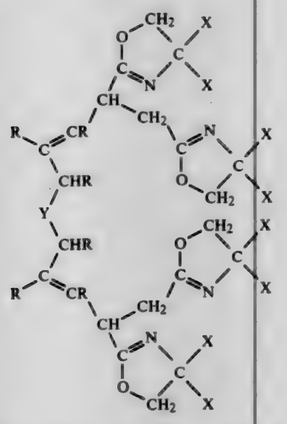
where Y is sulfur or selenium and R is hydrogen or an alkyl radical containing from 1 to 400 carbons, with from 1 to 4 molar proportions of a 2,2-disubstituted-2-amino-1-alkanol containing a total of 4 to 8 carbon atoms represented by the formula:



wherein X is an alkyl or hydroxyalkyl group, with at least one of the X substituents being a hydroxy alkyl group of the struc-

ture—$(CH_2)_nOH$, wherein n is 1 to 3, until the reaction product shows maximal absorption for oxazoline as measured by infrared analysis.

9. A compound represented by the formula:

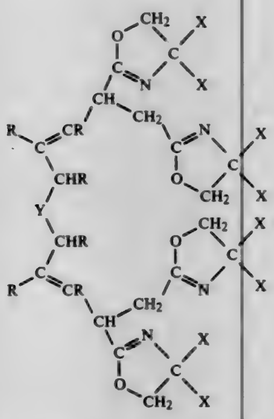


wherein R is selected from the group consisting of hydrogen and alkyl radicals containing from 1 to 400 carbons, X is selected from the group consisting of an alkyl or hydroxy alkyl group and at least one of the X substituents being a hydroxy alkyl group of the structure $—(CH_2)_nOH$ where n is 1 to 3, and Y is selected from the group consisting of —S—, —S—S—, >S=O, $>SO_2$, —Se— and —S—$(CH_2)_z$—S— wherein z is a number from 2 to 10.

11. Dithio-bis-[polyisobutenyl-bis-(5,5,-bis-methylol-2-oxazoline)].

12. Thio-bis-[polyisobutenyl-bis-(5,5,-bis-methylol-2-oxazoline)].

13. A composition comprising an oleaginous material of the class consisting of fuels and lubricants and at least a corrosion-inhibiting amount of a compound represented by the formula:



wherein R is selected from the group consisting of hydrogen and alkyl radicals containing from 1 to 400 carbons, X is selected from the group consisting of an alkyl or hydroxy alkyl group and at least one of the X substituents being a hydroxy alkyl group of the structure $—(CH_2)_nOH$ where n is 1 to 3, and Y is selected from the group consisting of —S—, —S—S—, >S=O, $>SO_2$, —Se— and —S—$(CH_2)_z$—S— wherein z is a number from 2 to 10.

4,292,185

POLYMERIC ADDITIVE FOR LUBRICANTS AND FUELS

Joseph M. Bollinger, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 31, 1979, Ser. No. 108,443

Int. Cl.³ C10M *1/38*

U.S. Cl. 252—47.5 **17 Claims**

1. A polymeric additive for lubricating oils and hydrocarbon fuels, comprising an oil-soluble, viscosity index improving, non-conjugated diene-modified mono-olefinic backbone polymer containing about 1–10 mole % diene unsaturation, said backbone polymer being functionalized with chlorosulfonyl isocyanate and post-reacted with a nitrogen compound effective for imparting dispersant activity to said backbone polymer, said nitrogen compound being an amine having at least one primary or secondary amino group.

8. A composition comprising a major amount of a lubricating oil and a minor detergent amount of a polymeric additive comprising an oil-soluble, viscosity index improving, non-conjugated diene-modified mono-olefinic backbone polymer containing about 1–10% diene unsaturation, said backbone polymer being functionalized with chlorosulfonyl isocyanate and post-reacted with a nitrogen compound effective for imparting dispersant acitivity to said backbone polymer, said nitrogen compound being an amine having at least one primary or secondary amino group.

15. A method for preparing a polymeric additive, comprising reacting an oil-soluble, viscosity index improving, non-conjugated diene-modified mono-olefinic backbone polymer containing about 1–10 mole % diene unsaturation with chlorosulfonyl isocyanate, and post-reacting the resulting functionalized backbone polymer with a nitrogen compound effective for imparting dispersant activity to the backbone polymer, said nitrogen compound being an amine having at least one primary or secondary amino group.

4,292,186

METAL COMPLEXES OF ALKYLSUCCINIC COMPOUNDS AS LUBRICANT AND FUEL ADDITIVES

Sheldon Chibnik, Cherry Hill, N.J.; Ferdinand P. Otto, deceased, late of Sun City Center, Fla., and Helen F. Otto, executrix, Fort Lauderdale, Fla., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 100,087, Dec. 4, 1979, abandoned, which is a continuation of Ser. No. 941,835, Sep. 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 922,953, Jul. 10, 1978, abandoned, which is a continuation of Ser. No. 727,197, Sep. 27, 1976, abandoned. This application Jul. 3, 1980, Ser. No. 165,875

Int. Cl.³ C10M *1/10*; C10L *1/14*

U.S. Cl. 252—49.7 **28 Claims**

1. A metal complex prepared by (1) forming a non-acidic product of reaction between 1 mole proportion of a polyalkenylsuccinic acid or anhydride and from about 1 to about 2 mole proportions of a polyhydric alcohol or aminoalcohol of the formula

$$A—(CR_2)_q—CH_2OH$$

wherein R is hydrogen, a C_1–C_{15} alkyl, hydroxyl, amino or $—CH_2OH$, A is NH_2 or $—CH_2OH$ and q is 1 to 2, wherein at least one R group is hydroxyl, amino or $—CH_2OH$, the remaining R groups being hydrogen, hydroxyl, C_1–C_{15} alkyl, $—CH_2OH$ or amino, the reaction being carried out at from about 25° C. to about 275° C., and (2) reacting said product at from about 25° C. to about 200° C. with a metal salt, the metal being selected from Groups IB, IIB, IVB, VB, VIB and VIII of the Periodic Table, the amount of salt used being at least equivalent to two of the —OH or —A functions or combinations thereof.

14. A lubricant or fuel composition comprising a major proportion of a lubricating oil, a grease thereof or a liquid hydrocarbon fuel and a detergent amount of a metal complex as defined in claim 1.

4,292,187

LUBRICATING OILS FOR THE WORKING OF METALS

Karl-Heinz Hentschel; Rolf Dhein, both of Krefeld, and Wolfgang Schüle, Ketsch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,741

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909517

Int. Cl.³ C10M *1/24, 1/06*; C09F *5/08*; C07C *69/66*

U.S. Cl. 252—49.5 **7 Claims**

1. A condensation product produced from

(A) from 5 to 25% by weight of at least one aliphatic or cycloaliphatic polyol containing from 2 to 60 carbon atoms and from 2 to 8 alcoholic hydroxyl groups per molecule,

(B) from 5 to 40% by weight of at least one aliphatic saturated or once unsaturated C_6–C_{22}-hydroxycarboxylic acid or a lactone thereof and/or an oligomeric condensation product thereof with an average degree of oligomerisation of from 2 to 50 and an average molecular weight of from 210 to 12,000, and

(C) from 35 to 90% by weight of at least one saturated or unsaturated, straight-chained or slightly branched, aliphatic or cycloaliphatic C_6–C_{24}-monocarboxylic acid,

wherein the sum of the components (A) to (C) is 100% by weight and the condensation product has

(1) an acid number of from 0.01 to 30 mg KOH/g,

(2) a hydroxyl number of from 0.01 to 60 mg KOH/g, and

(3) an iodine number of from 30 to 100.

6. A lubricant for the working of metal, comprising a condensation product according to any one of claims 1 to 5 alone or in a mixture with at least one other lubricating oil, and optionally with at least one conventional additive.

4,292,188

NON-ABRASIVE BAUXITE-BASED FIRE RETARDANT

Joseph P. Barone; Sergio A. Loynaz, both of Baltimore, and Frederick W. Bauer, Bethesda, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 1, 1979, Ser. No. 44,630

Int. Cl.³ C09K *3/28*

U.S. Cl. 252—62 **18 Claims**

1. A fire retardant composition comprising from about 60 to about 85% by weight bauxite, from about 5 to about 30% boric acid, and from about 5 to about 30% dolomite.

4,292,189

THERMAL ENERGY STORAGE COMPOSITION COMPRISING SODIUM SULFATE DECAHYDRATE; SODIUM CARBONATE DECAHYDRATE; AND SODIUM TETRABORATE DECAHYDRATE

Johnson C. Chen, Philadelphia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 30, 1979, Ser. No. 61,590

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **3 Claims**

1. A composition for storing and releasing thermal energy consisting essentially of the following ingredients expressed in percent by weight:

sodium sulfate decahydrate—about 30–50%,

sodium carbonate decahydrate—about 50–60%,

sodium borate decahydrate—about 1–10% and

a thickening agent—about 0.5 to 8%,

wherein the composition melts and freezes within the range of 21° to 24° centrigrade.

4,292,190

CORROSION INHIBITED AQUEOUS COMPOSITIONS CONTAINING TERTIARY, BICYCLIC, OR TRICYCLIC AMINES

Pauls Davis, Gibraltar; Jerrold F. Maxwell, and Joe C. Wilson, both of Woodhaven, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 89,620, Oct. 29, 1979, abandoned. This application Apr. 21, 1980, Ser. No. 142,482

Int. Cl.³ C11D *7/32*; C09K *5/00*

U.S. Cl. 252—75 **16 Claims**

1. A corrosion inhibited aqueous alkaline alcohol solution for use in contact with metals below sodium in the electromotive displacement series comprising an effective metal corrosion inhibiting amount of at least one tertiary, cyclic, bridgehead amine.

4,292,191

ACTIVATED PEROXY COMPOUND BLEACHING COMPOSITIONS AND BLEACHING DETERGENT COMPOSITIONS

Frederick W. Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 629,117, Nov. 5, 1975, Pat. No. 4,107,065. This application Jul. 31, 1978, Ser. No. 929,845

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—99 **19 Claims**

8. An activated peroxy compound particulate solid bleaching composition consisting essentially of a peroxy bleaching compound selected from the group consisting of alkali metal perborates and alkali metal percarbonates and mixtures thereof and an activator for such peroxy bleaching compound which is an alkoxybenzenesulfonyl halide wherein the alkoxy is of 1 to 20 carbon atoms and the halogen of the halide is selected from the group consisting of chlorine and bromine and wherein the weight ratio of active oxygen of the peroxy bleaching compound to the activator is in the range of 1:20 to 1:1.

4,292,192

PERSONAL WASHING DETERGENT BARS WITH AN EFFECTIVE AMOUNT OF A CITRIC ACID ESTER

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 877,534, Feb. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 826,079, Aug. 19, 1977, abandoned. This application Jun. 13, 1980, Ser. No. 159,320

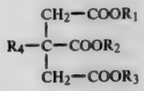
Claims priority, application United Kingdom, Aug. 20, 1976, 34788/76

Int. Cl.³ C11D *17/00, 9/26*; A61K *7/32*

U.S. Cl. 252—132 **6 Claims**

1. A detergent bar comprising:

(i) from about 0.3% to about 3% by weight of an optionally acetylated ester of citric acid of formula



wherein R_1 R_2 and R_3 are hydrogen or an alkyl group containing from 1 to 4 carbon atoms, provided at least one of R_1 R_2 and R_3 is an alkyl group, and R_4 is a hydroxyl or a $CH_3COO—$ group;

(ii) a water content of from about 5% and;

(iii) up to about 94.7% of detergent active material and other components of detergent bars.

6. A detergent bar according to claim 1 wherein the detergent active material includes water soluble salts of long chain (C_8 to C_{24}) aliphatic acids.

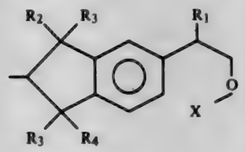
4,292,193

ISOCHROMAN MUSK COMPOUNDS AND ORGANOLEPTIC USES THEREOF

Wilhelmus J. Wiegers, Red Bank; Mark A. Sprecker, Sea Bright; Hugh Watkins, Lincroft; Manfred H. Vock, Locust, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 63,374, Aug. 3, 1979, Pat. No. 4,250,200.
This application Nov. 13, 1980, Ser. No. 206,650
Int. Cl.³ C11D *9/44, 3/50*
U.S. Cl. 252—174.11 **1 Claim**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic or nonionic detergent comprising the step of intimately admixing with a solid or liquid anionic, cationic or nonionic detergent base an aroma augmenting or enhancing quantity of at least one indane alkanol or tricyclic isochroman having the structure:



wherein X is hydrogen, methyl or —CH_2—; the dashed line is either a carbon-carbon single bond or no bond; R_1 is hydrogen or methyl; R_2, R_3, R_4 and R_5 represent hydrogen, methyl or isopropyl; with the proviso that R_2 and R_3 are methyl when R_4 is hydrogen and R_5 is isopropyl or R_4 and R_5 represent methyl when R_2 is hydrogen and R_3 is isopropyl; and with the further proviso that the dashed line is a carbon-carbon single bond when X is —CH_2— and the dashed line is no bond when X is hydrogen or CH_3.

4,292,194

LIQUID COMPOSITION FOR LIGHT AND HEAT STABILIZATION OF POLYAMIDES

Pierluigi Perazzoni, Palazzolo, and Luigi Bilancini, Cesano Maderno, both of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Jun. 15, 1979, Ser. No. 48,985
Claims priority, application Italy, Jun. 15, 1978, 24585 A/78
Int. Cl.³ C09K *15/02, 15/06*
U.S. Cl. 252—400 R **13 Claims**

1. A clear, aqueous liquid adapted to increase the light and heat stability of polyamides, which comprises: water, at least one univalent copper salt bound to at least one halogen atom and to at least one organic compound (B) miscible with or soluble in water and capable of decreasing the precipitating ability of the univalent copper salt in water, the molar ratio $\Sigma X/Cu^+$ wherein ΣX represents the sum of the halogens being less than 8 and the amount of compound (B) being sufficient to maintain the compound CuX or its complexes in solution at temperatures lower than 60° C.

4,292,195

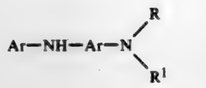
NON-FUGITIVE ANTIOXIDANTS

Roger E. Morris, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 16, 1977, Ser. No. 796,900
Int. Cl.³ C09K *15/16*
U.S. Cl. 252—401 **36 Claims**

1. A composition useful as an antioxidant which comprises the reaction product of a mixture of

(a) at least one compound selected from compounds having the formula



(I)

wherein each Ar is an aromatic group, and R and R^1 are each independently hydrogen, alkyl, substituted alkyl, oxyalkylene or —C(O)—R^2—COOH groups wherein R^2 is an alkylene or alkenylene group, with the proviso that at least one of the R and R^1 groups must be hydrogen or a group containing at least one substituent reactive with an epoxy group, and

Ar-NH-Ar-O-R^3 (II)

wherein Ar is as defined above and R^3 is hydrogen, or a substituted alkyl group containing at least one substituent reactive with an epoxy group, or —C(O)—R^2—COOH wherein R^2 is an alkylene or alkenylene group, and

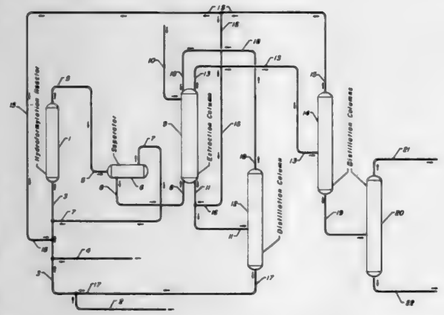
(b) at least one polyepoxide having at least 2 epoxy groups per molecule.

4,292,196

CATALYST RECOVERY

Edwin H. Homeier, Maywood; Alan R. Dodds, Elgin, and Tamotsu Imai, Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 10, 1979, Ser. No. 101,949
Int. Cl.³ B01J *31/40;* C07C *29/16, 45/50, 29/86*
U.S. Cl. 252—412 **8 Claims**



1. A process for the extraction of a Group VIII metal catalyst contained in the products of a hydroformylation reaction of an olefin, carbon monoxide and hydrogen in the presence of said catalyst, the catalyst being in the form of a metal carbonyl or organometallic complex in homogeneous admixture with said reaction products, which process comprises treating the catalyst-containing reaction products, at a temperature of from about ambient to about 100° C. and a pressure of from about 0 to about 1000 psig., with the addition of an aqueous solution of a water-soluble nitrogen-containing compound selected from the group consisting essentially of ammonia, ammonium hydroxide and amines capable of acting as a complexing agent at said temperature and pressure, wherein said added nitrogen-containing compound complexes with said catalyst and recovering a separated aqueous phase containing the extracted resultant metal-containing complex.

7. The process as set forth in claim 1 in which the metal portion of said metal carbonyl or organometallic complex is rhodium.

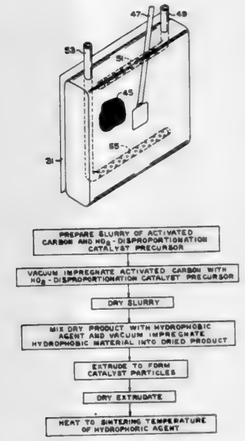
8. The process as set forth in claim 1 in which said metal carbonyl or organometallic complex is modified by the presence of an amine.

4,292,197

METHOD OF PREPARING ELECTROCATALYST FOR AN OXYGEN DEPOLARIZED CATHODE ELECTROLYTIC CELL

Ronald D. Chamberlin, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 9, 1979, Ser. No. 82,842
Int. Cl.³ B01J *23/50, 21/18;* C25B *11/14, 11/02*
U.S. Cl. 252—425.3 **6 Claims**



1. A method of preparing electroconductive, catalytic particles comprising the steps of:

(a) forming a slurry of activated carbon and a thermally decomposable silver compound;

(b) impregnating the activated carbon with the thermally decomposable silver compound;

(c) drying the slurry whereby to form dried carbon product;

(d) thereafter mixing the dried carbon product with a dispersion of a hydrophobic compound to form a second slurry;

(e) impregnating the hydrophobic compound into the carbon product;

(f) forming the second slurry into particles; and

(g) thereafter heating the particles formed from the second slurry whereby to dry the particles, sinter the hydrophobic compound, and form electroconductive, catalytic, sintered particles having silver HO_2^- disproportionation catalyst impregnated carbon and hydrophobic material.

4. The method of claim 1 comprising vacuum impregnating the activated carbon with the thermally decomposable silver compound.

5. The method of claim 1 comprising heating the dried carbon to form HO_2^- disproportionation catalyst.

4,292,198

HETEROGENEOUS CATALYST ON THE BASIS OF AN ORGANOMETALLIC COMPLEX

Leendert A. Gerritsen, Hendrik Ido Ambacht, and Joseph J. F. Scholten, Sittard, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 14, 1980, Ser. No. 139,662
Claims priority, application Netherlands, Apr. 14, 1979, 7902964
Int. Cl.³ B01J *31/06, 31/20*
U.S. Cl. 252—428 **9 Claims**

1. In a catalyst composition composed of a solid porous particulate carrier material impregnated with a solution of a catalytically active organometallic complex in an excess amount of ligand-forming compound, the improvement consisting essentially in said carrier having an organophilic surface which is completely or virtually free of alkali metal ions and acid or basic groups which would be reactive with the said organometallic complex.

4,292,199

METHOD OF PREPARING A SUPPORT MATRIX

Ronald P. Rohrbach, Forest Lake, and Mary J. Maliarik, Lake Forest, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 18, 1980, Ser. No. 178,659
Int. Cl.³ B01J *31/06;* C12N *11/08*
U.S. Cl. 252—430 **9 Claims**

1. In a method of preparing a support matrix including impregnating a porous, refractory inorganic oxide with a polyamine, contacting the impregnated oxide with an excess of a bifunctional reagent so as to cross-link the polyamine and furnish a plurality of pendant functional groups, removing unreacted but adhering bifunctional reagent, and recovering the suport matrix, the improvement comprising: impregnating the oxide with a polyamine at a pH less than about 4 and thereafter curing the impregnated oxide at a pH from about 8 to 12.

4,292,200

CATALYST COMPOSITION FOR POLYMERIZATION OF OLEFINS

Eugene Berger, and Jean-Louis Derroitte, both of Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

Division of Ser. No. 312,744, Dec. 6, 1972, Pat. No. 3,901,863.
This application Mar. 12, 1975, Ser. No. 557,643
Claims priority, application Luxembourg, Dec. 8, 1971, 64420
Int. Cl.³ C08F *1/42*
U.S. Cl. 252—431 C **17 Claims**

1. A catalyst composition for the low pressure polymerization and copolymerization of α-olefins consisting essentially of

(A) the solid reaction product of (1) at least one non-halide containing organic oxygenated compound of magnesium with at least one non-halide containing organic oxygenated transition compound of a transition metal selected from the metals of Groups IVa, Va, and VIa of the Periodic Table in which the organic radical is attached to the transition metal via oxygen, and with an organo aluminum halide having the general formula $AlR_nR'_{3-n}$ in which R is a hydrocarbon radical containing 1 to 20 carbon atoms, R' is a halide and n is any number such that $1 \leqq n \leqq 2$; and

(B) an organo-metallic compound selected from the organic derivatives of metals of Groups Ia, IIa, IIb, IIIb, and IVb of the Periodic Table.

4,292,201

PREPARATION OF VANADIUM(IV)BIS(METAPHOSPHATE) HYDROCARBON OXIDATION CATALYST CONTAINING AN ACTINIDE OR LANTHANIDE SERIES METAL

James C. Vartuli, West Chester, Pa., and Lee R. Zehner, Dublin, Ohio, assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 19, 1979, Ser. No. 105,364
Int. Cl.³ B01J *27/14, 31/02;* C07D *307/60*
U.S. Cl. 252—435 **13 Claims**

1. A method for the preparation of a cerium or thorium promoted single phase crystalline vanadium(IV)bis(metaphosphate) hydrocarbon oxidation catalyst which comprises the steps of:

forming a slurry of vanadyl sulfate, a compound selected from ceric oxide, cerous nitrate or thorium dioxide, acetic anhydride and phosphorus pentoxide with the liberation of heat;

introducing said slurry into a heating zone and maintaining said zone at a temperature of at least about 325° C. for a period sufficient for the liberation of gases and forming a cerium or thorium-vanadium-phosphorus reaction product;

cooling the reaction product and washing with water to essentially remove any soluble residue;

drying the water washed product and calcining in air to obtain a cerium or thorium containing single phase crystalline vanadium(IV)bis(metaphosphate) catalyst.

4,292,202

PREPARATION OF A VANADIUM(IV)BIS(METAPHOSPHATE) HYDROCARBON OXIDATION CATALYST CONTAINING A GROUP VIB METAL PROMOTER

James C. Vartuli, West Chester, Pa., and Lee R. Zehner, Dublin, Ohio, assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 19, 1979, Ser. No. 105,366

Int. Cl.³ B01J *27/14, 31/02;* C07D *307/60*

U.S. Cl. 252—435 **17 Claims**

1. A method for the preparation of a promoted single phase crystalline vanadium(IV)bis(metaphosphate) hydrocarbon oxidation catalyst containing a Group VIB metal of the Periodic Table which comprises the steps of:

forming a slurry of vanadyl sulfate, a Group VIB metal oxide selected from chromic oxide, molybdenum oxide or tungstic oxide, acetic anhydride and phosphorus pentoxide with the liberation of heat;

introducing said slurry into a heating zone and maintaining said zone at a temperature of at least about 325° C. for a period sufficient for the liberation of gases and forming a Group VIB metal-vanadium-phosphorus reaction product;

cooling the reaction product and washing with water to essentially remove any soluble residue;

drying the water washed product and calcining in air to obtain a Group VIB metal containing single phase crystalline vanadium(IV)bis(metaphosphate) catalyst.

4,292,203

OXIDATION CATALYSTS

Ernest C. Milberger, Solon, and Eunice K. T. Wong, Cleveland, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 784,003, Apr. 4, 1977, Pat. No. 4,155,920, and a continuation-in-part of Ser. No. 901,888, May 1, 1978, Pat. No. 4,240,931. This application Mar. 17, 1980, Ser. No. 130,958

Int. Cl.³ B01J *27/24, 29/06, 23/10, 23/14*

U.S. Cl. 252—438 **12 Claims**

1. A catalyst composition of the formula

$$A_aE_cMo_eSb_fO_x$$

wherein

A is at least one element selected from the group consisting of tantalum and zirconium;

E is a member selected from the group consisting of molybdenum, tungsten, magnesium, aluminum or nickel;

and wherein

a is a number from 0.01 to 3;

c is a number from greater then 0 to 0.2;

e and f are numbers from 1 to 9;

x is a number which satisfies the valence requirements of the other elements present;

and wherein at least some of the molybdenum in the catalyst is maintained at a valence state below +6;

said catalyst optionally containing one or more elements selected from the group consisting of lithium, silver, cerium, cadmium, cobalt, arsenic, silicon, zinc, germanium, bismuth, ruthenium, platinum and uranium.

4,292,204

REFORMING WITH MULTIMETALLIC CATALYSTS

Charles H. Mauldin, and William C. Baird, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1979, Ser. No. 53,376

Int. Cl.³ B01J *27/04, 27/08, 27/10, 23/64*

U.S. Cl. 252—439 **14 Claims**

1. A reforming catalyst which consists of from about 0.1 to about 2 percent palladium, from about 0.1 to about 2 percent rhenium, and from about 0.01 to about 0.2 percent iridium composited with an inorganic oxide support.

4,292,205

ION EXCHANGE AND IMPREGNATION OF CATALYSTS

Emmerson Bowes, Pilesgrove Township, Salem County, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,349

Int. Cl.³ B01J *29/06, 29/28*

U.S. Cl. 252—455 Z **11 Claims**

1. An improved process for the continuous or batchwise impregnation or ion exchange of a catalyst or catalyst support of the type in which a settled mass of solid catalyst carrier particles is packed in a vessel and contacted with an upflowing stream of impregnating/ion exchanging liquid solution, wherein the improvement comprises the introduction of a gas stream cocurrently with said liquid stream under conditions to establish an ebullated bed.

2. The process of claim 1 wherein the gas is selected from a group consisting of air nitrogen, carbon dioxide and mixtures thereof.

8. A process for the preparation of a magnesium impregnated ZSM-5 catalyst which process comprises contacting a settled mass of solid particles of ZSM-5 alumina extrudate packed in a vessel with an upward flow of liquid magnesium acetate solution and a cocurrent upward flow of gas under conditions to transform said settled mass of solids into an ebullated bed.

4,292,206

USE OF HOLLOW GLASS SPHERES IN CONJUNCTION WITH REHYDRATABLE ALUMINA FOR MAKING LOW DENSITY CATALYST SUPPORT BEADS

Robert E. Barnes, Jr., Sandy Hook, and Venkatrao Pai, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 22, 1980, Ser. No. 180,559

Int. Cl.³ B01J *21/04, 35/08*

U.S. Cl. 252—463 **5 Claims**

1. Spherical alumina particles having macroporous structure prepared by forming a mixture of alumina powder and hollow glass spheres with water into wet spherical beads of said mixture, drying the beads and calcining the dried beads.

4,292,207

NONACIDIC SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE IN HYDROCARBON DEHYDROGENATION

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 34,810, Apr. 30, 1979, Pat. No. 4,210,769, which is a continuation-in-part of Ser. No. 907,240, May 18, 1978, Pat. No. 4,157,989, which is a division of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Mar. 24, 1980, Ser. No. 133,232

Int. Cl.³ B01J *21/04, 23/58*

U.S. Cl. 252—466 PT **12 Claims**

1. A nonacidic catalytic composite comprising a catalytically effective amount of the pyrolyzed reaction product of a rhenium carbonyl component, wherein said rhenium carbonyl component is pyrolyzed in the presence of a reducing agent at a temperature of from about 300° F. to about 900° F., with a

porous carrier material containing a uniform dispersion of a platinum group component maintained in the elemental metallic state and an alkali or alkaline earth component.

4,292,208

DIFFUSION COATING COMBINATIONS

Alfonso L. Baldi, Wynnewood, Pa., and Victor V. Damiano, Pennsauken, N.J., assignors to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 781,134, Mar. 25, 1977, abandoned, and Ser. No. 755,738, Dec. 30, 1976, Pat. No. 4,157,705, each is a continuation-in-part of Ser. No. 576,981, May 31, 1975, Pat. No. 4,041,196, said Ser. No. 755,738, and Ser. No. 576,981, each is a continuation-in-part of Ser. No. 507,126, Sep. 18, 1974, abandoned, said Ser. No. 576,981, and Ser. No. 507,126, each is a continuation-in-part of Ser. No. 466,908, May 3, 1974, Pat. No. 3,958,047, said Ser. No. 507,126, and Ser. No. 466,908, each is a continuation-in-part of Ser. No. 328,378, Jan. 31, 1973, Pat. No. 3,867,184. This application Jan. 3, 1979, Ser. No. 687

Int. Cl.³ B01J *23/16, 23/74;* B32B *15/14*

U.S. Cl. 252—470 **3 Claims**



1. A self-supporting iron web that has a visibly active pyrophoric surface in the form of a three-dimensional micro-fissured fragmentation into cells principally ranging from about 500 Angstroms to about 5000 Angstroms in size, and produced by dissolving out from that surface a different metal introduced by low-temperature activated pack diffusion into the surface of a starting web not over 20 mils thick.

3. A self-supporting web of a stainless alloy of iron that has a metal surface in the form of a three-dimensional micro-fissured fragmentation into cells principally ranging from about 500 Angstroms to about 5000 Angstroms in size and produced by dissolving out from that surface a different metal introduced by lower-temperature activated pack diffusion into the surface of a starting web not over 20 mils thick and having catalytic activity.

4,292,209

CERAMIC COMPONENT FOR MHD ELECTRODE

David D. Marchant, and Junior L. Bates, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 2, 1979, Ser. No. 35,158

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—521 **5 Claims**

1. A ceramic component for an MHD generator electrode having the formula: $Hf_xIn_yA_zO_2$ where x=0.1 to 0.4, y=0.3 to 0.6, z=0.1 to 0.4 and A is one or more elements selected from the group consisting of yttrium, ytterbium, terbium, praseodynium and cerium.

4,292,210

1-PHENYL- AND -BENZYL-2,2-DICHLORO-CYCLOPROPANES AS SCENTS

Götz Blume, and Hans-Otto Müller, both of Holzminden, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

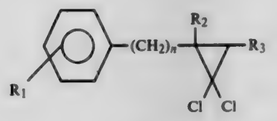
Filed Feb. 6, 1976, Ser. No. 656,059

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1975, 2507778

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **3 Claims**

1. A scented composition comprising a perfume as carrier and about 0.01 to 10 percent by weight of at least one compound of the formula



in which

R_1 denotes a hydrogen atom or a methyl, ethyl, propyl, methoxy or ethoxy group,

R_2 and R_3 independently of one another represent hydrogen atoms or methyl, ethyl or propyl groups,

n is 0 or 1 and

the total number of carbon atoms in the molecule is at most 12.

2. A scented composition according to claim 1, wherein said compound is 2,2-dichloro-1-methyl-1-phenyl-cyclopropane.

4,292,211

FRAGRANCE DISPERSANT COMPOSITION

Justin Herman, Norwalk, Conn., assignor to Shaw Mudge & Company, Stamford, Conn.

Filed Jul. 31, 1980, Ser. No. 174,003

Int. Cl.³ A61K *7/46;* C11B *9/00;* C11D *3/50, 7/32*

U.S. Cl. 252—529 **17 Claims**

1. A fragrance dispersant composition for dispersing fragrance oil in an aqueous hard surface cleanser comprising a mixture of N(2-hydroxyethyl)acetamide comprising about 50 to about 80 weight percent of the fragrance dispersant composition, about 15% or more of an anionic surfactant capable of mixing with said N(2-hydroxyethyl) acetamide to form a homogeneous solution and an effective amount of fragrance oil, said anionic surfactant being present in an amount sufficient to solubilize said fragrance oil.

12. An aqueous hard surface cleanser comprising about 1 to about 40 weight percent N(2-hydroxyethyl)acetamide, about 0.5 to about 16 weight percent of one or more anionic surfactants capable of mixing with said N(2-hydroxyethyl)acetamide to form a homogeneous solution, an effective amount of fragrance oil, water, and one or more additional cleaning components suitable for use in such a cleanser.

4,292,212

SHAMPOO CREME RINSE

Allan L. Melby, Andover, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Nov. 29, 1978, Ser. No. 964,567

Int. Cl.³ A61K *7/08;* C11D *1/88, 1/94, 3/37*

U.S. Cl. 252—547 **1 Claim**

1. A shampoo-creme rinse composition comprising about 5 to 20 weight percent of at least one amphoteric detergent, about 5 to 20 weight percent of at least one anionic detergent and from about 0.1 to 5 weight percent of 3-(trimethylamino)-2-hydroxypropyl guar chloride salt wherein the guar chloride salt is derived from particulate guar wherein 69% by weight of the particles are 45 microns or smaller and 98% by weight of the particles are 105 microns or smaller.

4,292,213

CATALYST AND SOLVENT FREE EPOXY MATERIALS

Margaret L. Elliott, and Mary J. Wright, both of 922 W. Buchanan, Phoenix, Ariz. 85007

Continuation of Ser. No. 820,168, Jul. 29, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,785
Int. Cl.³ B29H *19/00*; C08J *5/24*; C08G *30/14*
U.S. Cl. 260—2.3 12 Claims

1. A process for preparing an amine-hardened epoxy material based on epichlorohydrin/bisphenol A comprising the steps of:

mixing together by weight approximately 10% of an ester, approximately 79% of a first resin, approximately 6% of a plasticizer, and approximately 5% of a second resin to form a resin material,

mixing said resin material with a filler selected from the group of cured rubber alone and in combination with silica flour and mixtures thereof in predetermined proportions by weight, respectively, to form a resin material mixture,

if cured rubber is used as the filler the proportion is approximately 60%:40% by weight and if silica is used as the filler the proportion is approximately 27%:72%, respectively, by weight with 1% by weight of a coloring agent added,

said silica flour comprising equal parts by weight of 140 mesh, 200 mesh and 325 mesh material

mixing together by weight approximately 80% of a coreactant and approximately 20% of a phenol mixture to form a hardener material, and

mixing said resin material mixture with said hardener material in a proportion of approximately 50%:50% by weight,

said ester comprising a high boiling glycidyl ester of tertiary, saturated carbon-chain substituted, carboxylic acid, having an epoxide equivalent weight of 240 to 250,

said first resin comprising an epochlorohydrin/bisphenol A liquid resin having an epoxide equivalent weight in the range 182 to 194,

said plasticizer comprising a mixture of the monoglycidyl ether derivatives of the C_{15}-alkyl phenols obtained from cashew nut liquid, having an epoxide equivalent weight of about 490,

said second resin comprising an epichlorohydrin/bisphenol A liquid or solid resin having an epoxide equivalent weight of about 390 to 500, and

said co-reactant comprising a very low viscosity, resinous amidoamine adduct having an amine value of about 450.

4,292,214

PROCESS FOR THE PRODUCTION OF POLYURETHANE PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application Sep. 2, 1980, Ser. No. 182,997
Int. Cl.³ C08L *97/02*
U.S. Cl. 260—9 31 Claims

1. The process for the production of polyurethane products by mixing and reacting the following components:

A: 1 to 200 parts by weight of a lignin-cellulose polyepoxy resin which is produced by mixing and reacting 10 to 200 parts by weight of a polyfunctional epoxide compound and 50 parts by weight of broken-down alkali metal plant polymer;

B: 50 to 100 parts by weight of a polyisocyanate or polyisothiocyanate.

4,292,215

AMINO MOLDING COMPOUND FOR COLD MANIFOLD INJECTION MOLDING

Donald B. Gore, Swanton; Ronald S. Krigbaum, Toledo, and James O. Peterson, Sylvania, all of Ohio, assignors to Plaskon Products, Inc., Toledo, Ohio

Filed Apr. 4, 1979, Ser. No. 26,974
Int. Cl.³ C08L *1/00*
U.S. Cl. 260—17.3 10 Claims

1. In a method of forming a urea molding compound wherein a cellulosic filler is impregnated with an aqueous urea-formaldehyde prepolymer, condensate, resin or monomer, impregnated material is dried to form a corn and the corn is ground or mixed in combination with a lubricant and a catalyst system, the improvement which comprises combining urea and paraformaldehyde with the corn before or during grinding or mixing in quantities sufficient to lower the viscosity of the molding compound to a viscosity where the molding compound can be injected at an injection temperature of about 82° to 110° C. with an applied pressure of about 125 megapascals or less.

4,292,216

LIGNIN-BASED GLUE

Kurt H. Grunewald, Göteborg, and Inge G. Mansson, Kungälv, both of Sweden, assignors to Eka Aktiebolag, Surte, Sweden

Filed Dec. 11, 1979, Ser. No. 102,413
Claims priority, application Sweden, Dec. 28, 1978, 7813359
Int. Cl.³ C08H *5/02*; C08G *8/08, 12/32*
U.S. Cl. 260—17.5 6 Claims

1. Glue for joining cellulose material, comprising aqueous chlorolignin with a molecular weight higher than 1000, in mixture with synthetic glue components selected from the group consisting of malamine-formaldehyde resin and phenol-formaldehyde resin, in a weight ratio between the chlorolignin and the synthetic glue components of between 100:20 and 20:80, as well as hardener and filler.

4,292,217

CATIONIC AQUEOUS EMULSION SYSTEMS

Arthur T. Spencer, New Providence, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 31,280, Apr. 18, 1979, abandoned, which is a division of Ser. No. 902,596, May 4, 1978, Pat. No. 4,169,080. This application May 12, 1980, Ser. No. 148,085
Int. Cl.³ C08L *77/06, 91/00*
U.S. Cl. 260—18 N 6 Claims

1. A polyamide cross-linking agent adapted to provide the primary amine group in aqueous medium comprising a polyamide having a plurality of terminal primary amine groups, about one of said primary amine groups being ketimine blocked, and at least about 70% of the remaining isocyanate-reactive amino hydrogen atoms in said polyamide being reacted with one isocyanate group of an organic polyisocyanate to form a urea linkage, and the remaining isocyanate groups of said polyisocyanate being blocked with a volatile blocking agent to provide blocked isocyanate groups which are nonreactive at room temperature but which unblock at elevated temperatures.

4,292,218

LOW VISCOSITY UNSATURATED POLYESTER RESINS

Giovanni Corrado, 190, Via Gentile da Mogliano, Roma; Elvio Bertotti, 45, Corso Garibaldi, Colleferro, Roma, and Bruno Sopino, 21, Via Belvedere, Colleferro, all of Italy

Filed Dec. 27, 1979, Ser. No. 107,710
Claims priority, application Italy, Dec. 29, 1978, 31406 A/78
Int. Cl.³ C08L *91/00*; C08G *63/52*
U.S. Cl. 260—22 CB 6 Claims

1. Low viscosity unsaturated polyester resins for making buttons, in all their marketable forms which can be made from

polyester resins, by conventional processing techniques such as centrifugation and casting, essentially comprising:

(A) an alkyd prepared by esterification of

(a) a compound selected from the group consisting of maleic anhydride, maleic acid, fumaric acid and mixtures thereof alone or in association with a compound selected from the group consisting of phthalic anhydride phthalic acid adipic acid, sebacic acid, dodecanedioic acid, and mixture thereof with

(b) one or more glycols, essentially comprising dipropylene glycol, and at least

(B) one ethylenically unsaturated monomer copolymerizable with (A), selected from the group consisting of styrene, vinyl toluene and a mixture thereof, in an amount of 20–30% by weight of the total (A)+(B), said unsaturated polyester resins being characterized in that said alkyd (A) has a molecular weight/double bond factor between 300 and 390 and an amount of free functional groups constituted by hydroxyl groups+carboxyl groups, from 80 to 100, inclusive expressed as mg of KOH per g of alkyd.

4,292,219

LATEX-BASE PAINT CONTAINING 2-METHOXY-2-PHENYL PROPANE OR 8-METHOXY-P-MENTHANE

James E. Lyons; Peter Hosler, both of Wallingford, Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Division of Ser. No. 863,569, Dec. 22, 1977, which is a continuation-in-part of Ser. No. 714,206, Aug. 23, 1976, abandoned. This application Dec. 10, 1979, Ser. No. 101,656
Int. Cl.³ C08K *5/06*
U.S. Cl. 260—29.6 ME 2 Claims

1. A paint composition comprising a latex-base paint having incorporated therein from about 1 to 5 weight percent of 2-methoxy-2-phenylpropane as a paint-smoothing agent.

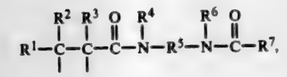
4,292,220

ADDITION POLYMER COMPRISING AIR-CURABLE ALKYL DIAMIDE

Ronald W. Novak, Chalfont, Pa., and Leslie R. Wolf, Bolingbrook, Ill., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 20, 1979, Ser. No. 106,061
Int. Cl.³ C08F *220/54, 220/60*
U.S. Cl. 260—23 AR 47 Claims

1. An air-curable polymer of ethylenically unsaturated monomers wherein the polymer comprises diamide mer units of the formula



R^1 and R^3 individually being H, lower alkyl, $-COOR^8$, $-CONH_2$, $-CH_2COOR^9$, $-CN$ or halogen;
R^2, R^4, R^6, R^8, and R^9 individually being H or lower alkyl;
R^5 being alkylene comprising two to 18 carbon atoms in a linear linkage between the two nitrogen atoms; and
R^7 being unsaturated, air-curable alkyl.

4,292,221

PREPARATION OF MODIFIED PETROLEUM RESINS

Alberto Malatesta, Brussels, Belgium, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 22,080, Mar. 19, 1979, Pat. No. 4,242,244. This application Jun. 23, 1980, Ser. No. 162,259
Claims priority, application United Kingdom, Jun. 22, 1979, 21858/79
Int. Cl.³ C09D *3/733, 11/10*
U.S. Cl. 260—23.7 C 4 Claims

1. A process for the production of a modified petroleum resin comprising heating a mixture of (A) cyclopentadiene and/or methyl cyclopentadiene and/or the dimers or codimers thereof and (B) from 1 to 15 wt.% of (A) of a saturated or ethylenically unsaturated C_7 or higher fatty acid at a temperature in the range of 270° C. to 290° C. under a sufficient pressure to maintain the mixture in the liquid phase to obtain a resin with an acid number below 20.

4,292,222

HOMOGENEOUS THERMOPLASTIC MIXTURES OF PROPYLENE-ETHYLENE COPOLYMERS AND LIQUID, SATURATED DIORGANOPOLYSILOXANES WITHIN A CERTAIN VISCOSITY RANGE

Ulrich Grigo, Krefeld; Leo Morbitzer, Cologne; Klaus-Peter Arlt, Senden/Muenster; Rüdolf Binsack, Krefeld, and Josef Merten, Korschenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,939
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1979, 2905356
Int. Cl.³ C08L *23/10, 23/04, 83/04*
U.S. Cl. 260—29.1 SB 7 Claims

1. A homogeneous thermoplastic mixture comprising

(A) from 85 to 99.5% by weight of a propylene-ethylene copolymer containing from 0.5 to 15% by weight of copolymerised ethylene units and having a melt index of from 1.0 to 30 g/min at 230° C. and under a load of 5 kg; and

(B) from 0.5 to 15% by weight of a saturated diorganopolysiloxane having a viscosity of from 30,000 to 80,000 Cst at 20° C.

4,292,223

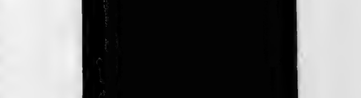
HIGHLY FILLED THERMALLY CONDUCTIVE ELASTOMERS I

Ares N. Theodore, Farmington Hills; Robert A. Pett, Franklin, and S. Burhan A. Qaderi, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1980, Ser. No. 109,445
Int. Cl.³ C08L *83/04*
U.S. Cl. 260—29.1 SB 10 Claims

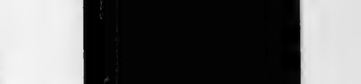
1. A dispensable precursor compoisition for highly filled, thermally conductive elastomers that is adapated to fill deep section mold cavities, which compositions consists essentially of:

I. 100 parts by weight of an olefinically unsaturated crosslinkable polysiloxane having the formula:



I

wherein at least most of the Ra's and Rb's are selected from (A) saturated hydrocarbyl or hydrocarbyloxy groups having a total of 1 to about 10 carbon atoms that are alkyl or aryl or alkyl and aryl and (B) allyl or vinyl groups, but wherein up to about 25% of the Rb's may be



I(a)

wherein at least most of the Rc's and Rd's are selected from (A) and (B) above but up to about 10% of the Rd's may contain additional siloxane units with substituents selected from (A) and (B) or still additional siloxane units; and still further wherein (1) the average number of m plus n per polymer molecule is between about 100 and 300 and (2)

there is an average total of above about 1.5 but lower than 6 crosslinking sites selected from the vinyl, allyl or vinyl and allyl groups per polymer molecule;

II. about 60–500 parts by weight of finely divided particulate comprising:

(A) silica particulate at a weight ratio to the polysiloxane of I. of between about 0.3 to 2.5:1 wherein the silica particulate comprises:

1. ground silica having an average particule diameter between about 0.1 and 15 microns; and
2. fumed silica having an average particule diameter between about 0.005 and 0.015 microns;

(B) thermally conductive powder at a weight ratio to the polysiloxane of I. of between about 0.3 to 2.5:1;

III. a viscosity modified comprising a silicone oil having a viscosity between about 5000–1,000,000 centistokes at 25° C. at a weight ratio to the particulate of II of between about 1:20–1:4 oil to particulate; and

IV. a silyl hydride functional polysiloxane oligomer containing between about 5–50 siloxane groups that crosslinks with I at a weight ratio with respect to the polysiloxane of I. of between about 1:3 to 1:20, the silyl hydride functional polysiloxane oligomer having an average of up to about 20 silyl hydride groups per polymer chain.

4,292,224

HIGHLY FILLED THERMALLY CONDUCTIVE ELASTOMERS II

Ares N. Theodore, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

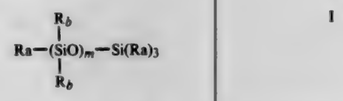
Filed Jan. 4, 1980, Ser. No. 109,440

Int. Cl.³ C08L *83/04*

U.S. Cl. 260—29.1 SB **10 Claims**

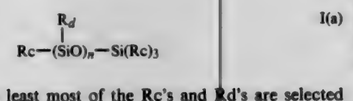
1. A dispensable precursor composition for highly filled, thermally conductive elastomers which composition consists essentially of

I. 100 parts by weight of an olefinically unsaturated polysiloxane having the formula:



I

wherein at least most of the Ra's and Rb's are selected from (A) saturated hydrocarbyl or hydrocarbyloxy groups having a total of 1 to about 10 carbon atoms that are alkyl or aryl or alkyl and aryl and (B) allyl or vinyl groups, but wherein up to about 25% of the Rb's may be



I(a)

wherein at least most of the Rc's and Rd's are selected from (A) and (B) above but up to about 10% of the Rd's may contain additional siloxane units with substituents selected from (A) and (B) or still additional siloxane units; and still further wherein (1) the average number of siloxane units per polymer molecule is between 100 and 300 and (2) there is an average of above about 1.5 but lower than 6 crosslinking sites selected from the vinyl, allyl or vinyl and allyl groups per polymer molecule;

II. about 35–550 parts by weight of finely divided particulate comprising:

(A) silica particulate at a weight ratio to the polysiloxane of I. of between about 1:4 to 3:1 wherein the silica particulate comprises:

1. ground silica having an average particle diameter between about 0.1 and 15 microns; and
2. fumed silica having an average particle diameter between about 0.005 and 0.015 microns;

(B) thermally conductive carbon powder at a weight ratio to the polysiloxane of I. of between about 1:10 to 2.5:1;

III. a viscosity modifier comprising a silicone oil having a viscosity between about 1000–1,000,000 centistokes at 25° C. at a weight ratio to the particulate of II of between about 1:20 to 1:4 oil to particulate; and

IV. a silyl hydride functional polysiloxane oligomer containing between about 5–50 siloxane groups that crosslinks with I at a weight ratio with respect to the polysiloxane of I. of between about 1:3 to 1:20, the silyl hydride functional polysiloxane oligomers having an average of up to about 20 silyl hydride groups per polymer chain.

4,292,225

HIGHLY FILLED THERMALLY CONDUCTIVE ELASTOMERS IV

Ares N. Theodore, Farmington Hills, and Marvin A. Lemieux, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

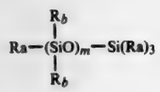
Filed Jan. 4, 1980, Ser. No. 109,439

Int. Cl.³ C08L *83/04*

U.S. Cl. 260—29.1 SB **9 Claims**

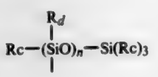
1. A thick, highly filled elastomer body made by filling a cavity with a dispensible elastomer precursor, which precursor consists essentially of:

I. 100 parts by weight of an olefinically unsaturated crosslinkable polysiloxane having the formula:



I

wherein at least most of the Ra's and Rb's are selected from (A) saturated hydrocarbyl or hydrocarbyloxy groups having 1 to about 10 carbon atoms that are alkyl or aryl or alkyl and aryl and (B) allyl or vinyl groups but wherein up to about 25% of the Rb's may be



I(a)

wherein at least most of the Rc's and Rd's are selected from (A) and (B) above but up to about 10% of the Rd's may contain additional siloxane units with substituents selected from (A) and (B) or still additional siloxane units; and still further wherein (1) the average number of siloxane units per polymer molecule is between 100 and 300 and (2) there is an average of above about 1.5 but lower than 6 crosslinking sites selected from the vinyl, allyl or vinyl and allyl groups per polymer molecule;

II. about 60–500 parts by weight of finely divided particulate comprising:

(A) silica particulate at a weight ratio to the polysiloxane of I. of between about 0.3 to 2.5:1 wherein the silica particulate comprises:

1. ground silica having an average particule diameter between about 0.1 and 15 microns; and
2. fumed silica having an average particule diameter between about 0.005 and 0.015 microns;

(B) conductive boron refractory particulate at a weight ratio to the polysiloxane of I. of between about 0.3: 1 to 2.5:1;

III. a viscosity modifier comprising a silicone oil having a viscosity between about 5000–1,000,000 centistokes at 25° C. at a weight ratio to the particulate of II of between about 1:20–1:4 oil to particulate; and

IV. a silyl hydride functional polysiloxane oligomer containing between about 5–50 siloxane groups that crosslinks with I at a weight ratio with respect to the polysiloxane of I. of between about 1:3 to 1:20, the silyl hydride functional polysiloxane oligomer having an average of up to about 20 silyl hydride groups per polymer chain.

4,292,226

PROCESS FOR THE PRODUCTION OF AQUEOUS DISPERSIONS OR SOLUTIONS OF POLYURETHANE POLYUREAS, AND DISPERSIONS OR SOLUTION OBTAINABLE BY THIS PROCESS AND THEIR USE

Wolfgang Wenzel, Bergisch-Gladbach, and Walter Meckel, Neuss, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,542

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843790

Int. Cl.³ C08L *75/12*

U.S. Cl. 260—29.2 TN **14 Claims**

1. A process for the production of stable aqueous dispersions or solutions of polyurethanepolyureas by reacting in the aqueous phase prepolymers containing at least two free isocyanate groups and chemically incorporated hydrophilic groups or external chemically non-bound emulsifiers or both with chain-extending agents characterized in that

(a) isocyanate-group-containing prepolymers modified by the incorporation of hydrophilic groups or containing external emulsifiers or both are mixed in liquid form or in solution in inert solvents in the absence of water with

(b) solid adducts, insoluble in the prepolymers or their solutions, of

(ba) amines containing at least two primary or secondary amino groups or hydrazines containing at least one hydrogen atom on both nitrogen atoms and

(bb) inorganic or organic acids to form a suspension and the suspension thus formed is subsequently mixed with water.

4,292,227

STABLE SUPERSATURATED SOLUTIONS OF SPARINGLY SOLUBLE SALTS

Alan S. Michaels, San Francisco; Michael W. Weiner, Stanford, both of Calif., and Hemant Jalan, Chicago, Ill., assignors to Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Dec. 10, 1979, Ser. No. 102,215

Int. Cl.³ B01D *11/04, 13/00*

U.S. Cl. 260—29.6 H **14 Claims**

1. A method for preparing supersaturated aqueous solutions of sparingly soluble inorganic salts of alkali metals, said method comprising:

forming a supersaturated solution of said sparingly soluble inorganic salt in an aqueous medium, wherein the saturation limit of said salt is exceeded in said aqueous medium in the presence of a polyanionic polyelectrolyte present in said solution in sufficient amount to stabilize said sparingly soluble salt in solution, said polyelectrolyte being of at least about 900 daltons and having at least five ionizable groups.

4,292,228

PHYSICAL PROPERTY IMPROVEMENT IN NITRILE RESINS BY USE OF CERTAIN PROCESSING AIDS AND FILLERS

Ralph E. Isley, Northfield, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

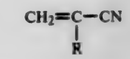
Filed Aug. 29, 1979, Ser. No. 70,591

Int. Cl.³ C08K *5/15*

U.S. Cl. 260—30.4 A **12 Claims**

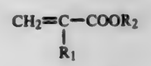
1. The composition comprising a blend of a resin, from 2 to 50 parts by weight per hundred parts by weight of resin of an polycarboxylic acid anhydride processing aid, and from 5 to 400 parts by weight per 100 parts by weight of resin of a filler selected from the group consisting of calcium carbonate, magnesium carbonate, basic lead carbonate, zinc carbonate, aluminum hydroxide (hydrated), calcium hydroxide, lead hydroxide, zinc chromate, aluminum oxide, calcium oxide, chromium oxide, iron oxide, magnesium oxide, lead oxides, titanium dioxide, zinc oxide, aluminum silicate (hydrated), magnesium aluminum silicate, potassium aluminum silicate, sodium aluminum silicate, amorphous silica, calcium meta silicate, calcium silicate, diatomaceous silica, magnesium silicate, basic lead sulfate, barium sulfate, calcium sulfate, cadmium sulfide, mercuric sulfide and lead sulfide said resin being a polymer which results from the polymerization of

(A) from 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

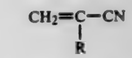
(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of an ester having the structure



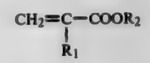
wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

in the presence of from 1 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer.

4,292,229

ADHESIVES

Dieter A. Hechenberger, Esch, and Angelika Neye, Baden, both of Fed. Rep. of Germany, assignors to Lingner + Fischer, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,764

Claims priority, application United Kingdom, Aug. 22, 1979, 29226/79

Int. Cl.³ C09J *3/00, 3/12*

U.S. Cl. 260—30.6 R **9 Claims**

1. A synthetic-rubber-based solvent adhesive for use in gluesticks characterised in that the adhesive comprises a solution of:

(a) a linear branched-chain polyurethane rubber,

(b) a carboxylated butadiene-acrylonitrile rubber, containing at least 50% butadiene by weight, and

(c) the reaction product of sorbitol and benzaldehyde in a non-aqeuous solvent system.

4,292,230

SCREEN-PRINTING COMPOSITION AND USE THEREOF

Eugene J. Kenney, Apalachin; Donald J. Lazzarini, Binghamton, and Robert J. Winters, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1978, Ser. No. 946,008

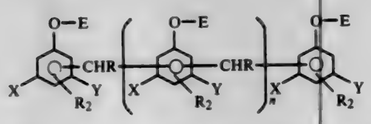
Int. Cl.³ C08K *3/36*

U.S. Cl. 260—33.2 EP **32 Claims**

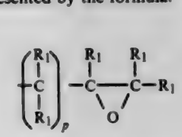
1. A screen-printing curable composition consisting essentially of:

(A) about 31 to about 55% by weight of a non-liquid epoxidized novola k represented by the formula:

(1)

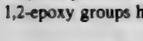


wherein n is at least about 0.2; E is hydrogen or an epoxyalkyl group, at least two E groups per polymer molecule being an epoxyalkyl group and wherein the epoxyalkyl group is represented by the formula:



p is an integer from 1-8; R is hydrogen or alkyl or alkylene or aryl or aralkyl or alkaryl or cycloalkyl or furyl group; each R_1 individually is hydrogen or alkyl group of up to 7 carbon atoms; wherein the number of carbon atoms in any epoxy-alkyl group totals no more than 10 carbon atoms; each X and Y is individually hydrogen or chlorine or alkyl or hydroxyl; each R_2 individually is hydrogen or chlorine or a hydro-carbon group;

(B) about 6 to about 12% by weight of a thermoplastic polyhydroxy ether reaction product of a polynuclear dihydric phenol and epichlorohydrin substantially free of 1,2-epoxy groups having the formula:



wherein A is the radical residuum of a polynuclear dihydric phenol, B is an hydroxyl-containing radical residuum of epichlorohydrin, and m is at least 30;

(C) about 15 to about 21% of weight of a liquid anhydride of carboxylic acid;

(D) about 4.5 to about 6% by weight of colloidal silica and wherein said colloidal silica has a surface area of about 50 to about 400 m^2/gram and the particles have a diameter of about 5 to about 20 millimicrons; and

(E) volatile diluent in an amount sufficient to provide a composition with a viscosity of about 14,000 to about 50,000 centipoises determined with a Haake Rotovisco with a shear rate of 249.6/sec. for 1.28 minutes at 25° C.; and wherein the ratio of (A):(B) is about 7:1 to aout 4:1, the above amounts being based upon the total of (A), (B), (C), (D), and (E) in said composition.

4,292,231

PRESSURE SENSITIVE ADHESION COMPOSITIONS

Hans R. L. Gabriel, Mariemont; Larry K. Post, Columbus; Billy M. Culbertson, Worthington, all of Ohio, and Curtis M. Graham, Lilburn, Ga., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 26, 1980, Ser. No. 124,675

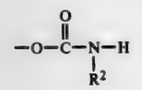
Int. Cl.³ C08F *8/42*; C08K *5/05*; C08F *226/02*; C08L *33/08*

U.S. Cl. 260—33.4 UR **10 Claims**

1. An organic solvent solution comprising;

(a) an interpolymer comprising:

1. 0.2 to 20 weight percent of a vinyl monomer, said monomer containing both a carboxylic acid and a carbamate functionality wherein said carbamate functionality has the following general formula



wherein R^2 represents hydrogen, alkyl, aryl, substituted alkyl and substituted aryl groups;

2. at least 40 weight percent of an ester of acrylic or methacrylic acid containing 7 to 20 carbon atoms;

3. optionally up to 59.8 weight percent of one or more copolymerizable monomers containing an ethylenically unsaturated linkage as the only reactive functional group, said copolymerizable monomers having no more than 25 carbon atoms; and

(b) a metal alkoxide having the formula $R_nT(OR_1)_z$ wherein T is a metal selected from the Group II, III, IV and V of the Periodic Table, R is selected from the group consisting of alkyl radicals of from 1 to 8 carbon atoms and aryl radicals of from 6 to 16 carbon atoms, R_1 is selected from the group consisting of aliphatic and substituted aliphatic radicals containing from 1 to 18 carbon atoms, n is an integer whose value is 0 or greater and z is an integer whose value is at least 2 wherein the sum of n+z is greater than 1 and equal to the valence of the metal represented by T.

4,292,232

PROCESS FOR THE MASS COLORATION OF THERMOPLASTICS WITH ANTHRAQUINONYLAMINOTRAIZINES

Joachim Dazzi, Riehen; Max Jost, Oberwil, and Arnold Wick, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,644

Claims priority, application Switzerland, Nov. 23, 1978, 12027/78

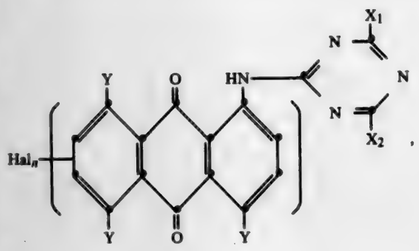
Int. Cl.³ C08L *67/00*

U.S. Cl. 260—40 P **10 Claims**

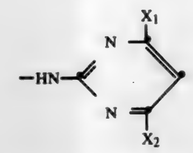
1. A process for the mass coloration of a thermoplastic in the melt in which the coloration is effected by

incorporating in said thermoplastic in the melt an effective amount of an anthraquinonylaminotriazine of the formula (1)

(1)



wherein each of X_1 and X_2 is an alkylmercapto or arylmercapto group or a group of the formula $—NR_1R_2$, in which each of R_1 and R_2 is alkyl, cycloalkyl, aralkyl or aryl, and R_2 can additionally be hydrogen, or R_1 and R_2 together with the nitrogen atom to which they are attached form a 5- or 6-membered ring or are morpholino, one Y is a hydrogen or chlorine atom, a hydroxy, arylmercapto, alkanoylamino or aroylamino group, or a group of the formula



and the other Ys are hydrogen atoms, Hal is a chlorine or bromine atom, and n is 0 or 1.

4,292,233

HIGH-IMPACT POLYBUTYLENE TEREPHTHALATE

Rudolf Binsack, Krefeld; Dieter Rempel, Leverkusen; Gert Humme, Odenthal, and Karl-Heinz Ott, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,259

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927576

Int. Cl.³ C08L *67/00*

U.S. Cl. 260—40 R **10 Claims**

1. Mixtures of

A. from 65 to 99% by weight of polybutylene terephthalate, and

B. from 1 to 35% by weight of ABS graft polymer, the above percentages being based on the sum of A+B and the graft polymer B being obtainable by grafting

I. from 10 to 40% by weight, based on B, of a mixture of

(a) from 10 to 35% by weight, based on the sum of a+b, of acrylonitrile, and

(b) from 65 to 90% by weight, based on the sum of a+b, of styrene onto

II. from 60 to 90% by weight, based on B, of cross-linked butadiene polymer containing at least 70% by weight, based on II, of butadiene residues as the graft base,

characterised in that the gel content of graft base II amounts to at least 70% (as measured in toluene), the degree of grafting G is from 0.15 to 0.55 and the average particle diameter d_{50} of the ABS graft polymer B is from 0.2 to 0.6 μm.

10. Mixtures as claimed in claim 1, characterised in that they contain 5 to 50% by weight of glass fibers, based on the sum of A+B+glass fibers.

4,292,234

SILANE REINFORCING PROMOTERS IN REINFORCEMENT OF SILICA-FILLED RUBBERS

Albert W. Borel, Jennings, La., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Mar. 30, 1979, Ser. No. 25,508

Int. Cl.³ C08K *9/06*

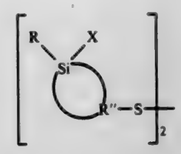
U.S. Cl. 260—42.15 **16 Claims**

1. A compound suitable for use as a coupling agent in the silica filler reinforcement of a rubber, said compound being represented by one of the formula

$$(RO)_{3-n}R_n'Si(CH_2)_xY \quad (I)$$

wherein R and R' are at least one of a linear or branched alkyl or cycloalkyl group having from 1 to 10 carbon atoms or an aromatic or substituted aromatic group having from 6 to 10 carbon atoms, x is an integer from 1 to 20 and Y is one of an azide and a thiosulfenamide, and

(II)



wherein X is at least one of a halogen and an alkoxy (—OR) group wherein R in said formulas and in said group is as previously defined herein, and R'' is a trivalent hydrocarbon radical having 2 to 10 carbon atoms.

3. A silica reinforced rubber containing a compound according to claim 1.

4,292,235

FIBER GLASS REINFORCED RESIN COMPOSITIONS

Yasuo Uemoto, Yokohama; Shigenori Togami, Kamakura, both of Japan; Tsumoru Takano, deceased, late of Kamakura, Japan (by Missyo Takano, legal representative); Ichiro Ono, Hatano, and Takashi Kayama, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,518

Claims priority, application Japan, Sep. 4, 1978, 53-107581

Int. Cl.³ C08K *7/14*

U.S. Cl. 260—42.18 **4 Claims**

1. Fiber glass reinforced resin compositions having improved water resistance which comprise an acrylic copolymer containing methyl methacrylate as the main component, fiber glass for reinforcement and a phosphorus compound having one or more pentavalent phosphorus atoms in its molecule, said phosphorus compound being present in an amount of 0.01 to 5 parts by weight based on 100 parts by weight of the acrylic copolymer.

4,292,236

COMPOSITION FOR REPAIR OF PORCELAIN FIXTURES

Robert L. Ibsen, and William R. Reed, Jr., both of Santa Maria, Calif., assignors to Den-Mat, Inc., Santa Maria, Calif.

Filed Nov. 16, 1979, Ser. No. 94,956

Int. Cl.³ C08K *3/36*; C09K *5/15*

U.S. Cl. 260—42.52 **10 Claims**

1. A composition for repairing porcelain fixtures including in combination a mixture of:

A. 10 to 50% by weight of a solids component containing, in powder form:

Ingredient	Parts by Weight
1. Powdered frit of glass or silica	10 to 50
2. Poly (ethyl methacrylate)	90 to 50
3. Silane coupling agent	1.5 to 3
4. Cure initiator	1.5 to 3
5. White pigment	1.5 to 16.5, and

B. 90 to 50% by weight of a liquid binder containing:

Ingredient	Parts by Weight
1. Aliphatic monoacrylate	40 to 60
2. Tetrahydrofurfuryl methacrylate	40 to 60
3. Butyl hydroxytoluene	0.05 to 1.5
4. 2-hydroxyethyl-p-toluene	0.1 to 10

4,292,237
POLYMERIC ULTRAVIOLET LIGHT STABILIZERS CONTAINING HINDERED ALKYL AMINES

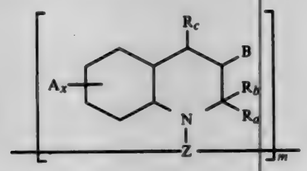
Robert W. Layer, Cuyahoga Falls, and Pyong N. Son, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 14, 1977, Ser. No. 850,994

Int. Cl.³ C07D *215/06*; C08K *5/34*; C07D *215/12, 215/14*

U.S. Cl. 260—45.8 NW **9 Claims**

1. A polymer composition comprising a polymer which is sensitive to degradation from ultraviolet light irradiation and, in an amount sufficient to enhance said polymers' resistance to such degradation, a stabilizer polymer having structural units corresponding to the following formula:



wherein R_a, R_b, and R_c are independently selected from alkyl groups containing 1 to about 12 carbon atoms, a cyclohexyl group, or cyclohexylalkyl groups containing 7 to about 14 carbon atoms; A is selected from the group consisting of alkyl groups containing 1 to about 24 carbon atoms, hydroxyalkyl groups containing 1 to about 18 carbon atoms, alkoxy groups containing 1 to about 12 carbon atoms in the group, ester groups containing a total of from 2 to about 24 carbon atoms in the group, a cyclohexyl group, cyclohexylalkyl groups containing 7 to about 14 carbon atoms in the group, hydroxy groups, amino groups and aminoalkyl groups and alkyl-substituted amino and aminoalkyl groups wherein the alkyl contains 1 to about 12 carbon atoms; Z is a segment of the polymer backbone derived from an olefinic monomer, X is 0, 1, 2 or 3; and B is hydrogen, an alkyl group containing 1 to about 12 carbon atoms, a cyclohexyl group, or a cyclohexylalkyl group of 7 to about 14 carbon atoms in the group; and m is at least 2.

4,292,238
ALKYLATION OF BENZTHIAZOLE-AZO-PHENYLAMINE DYESTUFFS

Hans-Peter Kühlthau, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

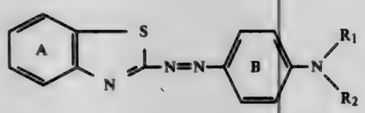
Filed May 19, 1977, Ser. No. 798,476

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623162

Int. Cl.³ C09B *43/11, 44/20*; D06P *1/41, 3/76*

U.S. Cl. 260—158 **5 Claims**

1. Process for the preparation of an alkylated dyestuff, wherein a benzthiazole dyestuff of the formula



wherein

R_1 and R_2 independently of one another denote hydrogen, alkyl, alkenyl, cycloalkyl, aryl or aralkyl, or, when joined together are pyrrolidinyl, piperidinyl, or morpholinyl;

R_1, in addition, when joined to the ortho-position of ring B, forms dihydroindolyl, tetrahydroquinolinyl, or hexahydrocarbazolyl;

rings A and B are unsubstituted or substituted with fluoro, chloro, bromo, nitro, cyano, formyl, ureido, aminocarbonyl, aminosulphonyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylcarbonyl, C_1–C_4-alkylcarbonyloxy, C_1–C_4-alkoxycarbonyloxy, C_1–C_4-alkylcarbonylamino, C_1–C_4-alkylaminocarbonyloxy, C_1–C_4-alkylsulphonylamino, C_1–C_4-alkylureido, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkylaminocarbonyl, C_1–C_4-dialkylaminocarbonyl, N-C_1–C_4-alkyl-N-phenylaminocarbonyl, C_1–C_4-alkylaminosulphonyl, C_1–C_4-dialkylaminosulphonyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkoxysulphonyl-C_1–C_4-alkylamino, C_1–C_4-alkylsulphonyl-C_1–C_4-alkylamino, phenoxy, naphthoxy, phenoxy-C_1–C_4-alkoxy, naphthoxy-C_1–C_4-alkoxy, phenylthio, naphthylthio, phenylcarbonyl, naphthylcarbonyl, phenoxycarbonyloxy, naphthoxy-carbonyloxy, phenylcarbonyloxy, naphthylcarbonyloxy, phenylcarbonylamino, naphthylcarbonylamino, phenylaminocarbonyloxy, naphthylaminocarbonyloxy, phenylsulphenylamino, naphthylsulphonylamino, phenylsulphonyl-C_1–C_4-alkylamino, naphthylsulphonyl-C_1–C_4-alkylamino, phenylureido, naphthylureido, phenoxycarbonylamino, naphthoxycarbonylamino, phenylsulphonyl, naphthylsulphonyl, phenoxycarbonyl, naphthoxycarbonyl, phenoxysulphonyl, naphthoxysulphonyl, benzoxy, phenylethyloxy, benzylthio, phenylethylthio, benzylcarbonyl, phenylethylcarbonyl, benzylsulphonyl, phenylethylsulphonyl, benzoxycarbonyl, phenylethyloxycarbonyl, cyclopentyl, cyclohexyl, cyclopentyl-C_1–C_4-alkoxy, cyclohexyl-C_1–C_4-alkoxy, a fused benzene ring, or a fused tetrahydrobenzene ring;

the process wherein said dyestuff is alkylated with an ester of the formula

R_3—SO_3R

wherein

R is alkyl and

R_3 is aryl or alkoxy;

in an organic solvent immiscible with water, the alkylation being brought to completion at 30° C. to 80° C. after addition of 5–100% by volume of the reaction volume of water and 0.05–0.5 mol, relative to the amount of dyestuff, of the alkylester employed for alkylation.

4,292,239
BENZISOTHIAZOLE AZO DYESTUFFS CONTAINING POLYETHER GROUPS

Winfried Kruckenberg, and Karl H. Schündehütte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

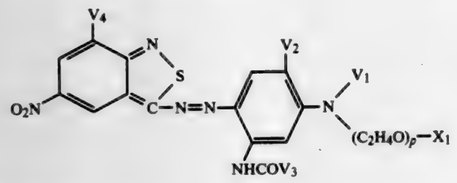
Filed Aug. 13, 1979, Ser. No. 65,777

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837960

Int. Cl.³ C09B *29/045, 29/09, 29/26*; D06P *3/52*

U.S. Cl. 260—158 **2 Claims**

1. A dyestuff of the formula



wherein

V_1 is H, methyl or ethyl,

V_2 is H, methyl, methoxy, ethoxy, or Cl,

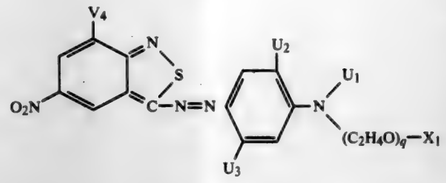
V_3 is H, methyl, ethyl, methoxymethyl or ethoxymethyl,

V_4 is H, Cl or Br,

X_1 is C_{1-4}-n-alkyl, and

p is from 3 to 6.

2. A dyestuff of the formula



wherein

U_1 is hydrogen, methoxyethyl, ethoxyethyl, methyl or ethyl,

U_2 is methyl, methoxy or hydrogen,

U_3 is methoxy, methyl or hydrogen,

X_1 is C_{1-4}-n-alkyl, and

q is 4, 5 or 6.

4,292,240
2-KETO-1,4-DIAZACYCLOALKANES

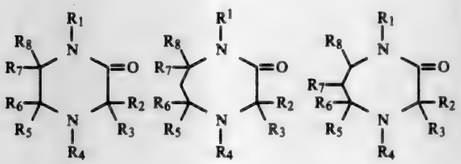
John T. Lai, Broadview Heights, and Pyong N. Son, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 835,065, Sep. 21, 1977, Pat. No. 4,190,571. This application Oct. 26, 1979, Ser. No. 88,484

Int. Cl.³ C07D *243/08*

U.S. Cl. 260—239.3 R **2 Claims**

1. A compound having one of the formulae



wherein,

R_1 and R_4 independently represent hydrogen, alkyl having from 1 to 24 carbon atoms, hydroxyalkyl having from 1 to 12 carbon atoms, haloalkyl having from 1 to 12 carbon atoms, cyanoalkyl having from 2 to 12 carbon atoms, aminoalkyl having from 1 to 12 carbon atoms, alkenyl having from 2 to 14 carbon atoms, and unsubstituted hydrocarbon aralkyl having from 7 to 14 carbon atoms;

R_4 optionally also represents oxygen, hydroxy or alkoxy;

R_2 and R_3 independently represent alkyl having from 1 to 12 carbon atoms, haloalkyl having from 1 to 12 carbon atoms, cyanoalkyl having from 2 to 12 carbon atoms, aminoalkyl having from 1 to 12 carbon atoms, cycloalkyl having from 5 to 14 carbon atoms, hydroxy-cycloalkyl having from 5 to 14 carbon atoms, alkenyl having from 2 to 14 carbon atoms, and unsubstituted hydrocarbon aralkyl having from 7 to 14 carbon atoms;

R_5, R_6, R_7, R_8 independently represent alkyl having from 1 to 12 carbon atoms, haloalkyl having from 1 to 12 carbon atoms, cyanoalkyl having from 2 to 12 carbon atoms, aminoalkyl having from 1 to 12 carbon atoms, alkenyl having from 2 to 14 carbon atoms, and unsubstituted hydrocarbon aralkyl having from 7 to 14 carbon atoms;

so that when R_2, R_3 is cyclized having from 4 to 6 unsubstituted methylene groups, and R_5, R_6 is also cyclized having from 4 to 6 unsubstituted methylene groups, each cyclized substituent is different;

R_7, R_8 additionally also represent hydrogen; and,

R_7, R_8, may when taken together with the carbon atom to which they are attached, form a polymethylene ring having from 5 to 6 carbon atoms.

4,292,241
ANTIBIOTIC PA-31088-IV AND PRODUCTION THEREOF

Kentaro Tanaka, Suita; Jun'ichi Shoji, Hirakata; Yoshimi Kawamura, Mino; Teruo Hattori, Takarazuka; Eiji Kondo, Ikeda; Kouichi Matsumoto, Toyonaka; Tadashi Yoshida, Takarazuka, and Naoki Tsuji, Ashiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jan. 25, 1980, Ser. No. 115,278

Claims priority, application Japan, Apr. 6, 1979, 54-42347

Int. Cl.³ C07D *487/04*; A61K *31/40*

U.S. Cl. 260—245.2 T **2 Claims**

1. An antibiotic PA-31088-IV, 3-[(2-acetamidoethylene)sulfonyl]-6-(2-hydroxy-1-methylethylidene)-7-oxo-1-azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid or a pharmaceutically acceptable salt thereof.

4,292,242
PRODUCTION OF AMINES

Richard M. Laine, Mountain View, Calif., assignor to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 967,028, Dec. 6, 1978, Pat. No. 4,226,845. This application Aug. 26, 1980, Ser. No. 181,419

Int. Cl.³ C07C *85/08, 85/18*; C07D *207/06, 239/02*

U.S. Cl. 260—326.8 **6 Claims**

1. In the production of an amine by the aminomethylation of an olefin wherein an olefin is reacted with ammonia, a primary amine or a secondary amine in the presence of carbon monoxide and water or hydrogen, and in the production of an amine by reaction of an aldehyde with ammonia, a primary amine or a secondary amine in the presence of carbon monoxide and water or hydrogen, and wherein a homogeneous catalyst in the form of a solution of a catalyst in a solvent is used, the improvement which comprises employing a mixed ruthenium carbonyl/iron carbonyl as a catalyst.

4,292,243
3″-PHENYLDISPIRO[1,3-DIOXOLANE-2,4′-CYCLOHEXANE-1′,1″-(3″H)-ISOBENZOFURAN]

Lawrence L. Martin, Lebanon, N.J., and Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, assignors to Hoechst Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 73,055, Sep. 6, 1979, Pat. No. 4,263,317. This application Nov. 28, 1980, Ser. No. 211,151

Int. Cl.³ C07D *323/00*

U.S. Cl. 260—340.9 R **1 Claim**

1. 3″-Phenyldispiro[1,3-dioxolane-2,4′-cyclohexane-1′,1″-(3″H)-isobenzofuran].

4,292,244
NOVEL 2,4-DISUBSTITUTED PYRAN DERIVATIVES, THEIR PREPARATION AND THEIR USE AS SCENTS

Werner Hoffmann, Neuhofen, and Frank Thoemel, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

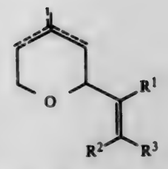
Filed May 30, 1980, Ser. No. 154,900

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2925043

Int. Cl.³ C07D *309/20, 309/24, 309/26, 309/22*

U.S. Cl. 260—345.1 **1 Claim**

1. 2,4-Disubstituted pyran derivatives of the general formula I



where R^1 and R^2 are each hydrogen or methyl and R^3 is $-CH_2OH$, $-CH_2-O-COCH_3$, $-CH_2-OCHO$, $-CH_2-O-COC_2H_5$, $-COOCH_3$, $-COOC_2H_5$, $-COOC_3H_7$, $-CH_2Cl$, $-CH_2Br$, $-CH_2I$ or $-CHO$, and which possess a double bond within the region shown by the broken line.

4,292,245

3'-PHENYLSPIRO[CYCLOHEXANE-1,1'(3'H)-ISOBENZOFURAN]-4-ONE

Lawrence L. Martin, Lebanon, N.J., and Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 73,055, Sep. 6, 1979, Pat. No. 4,263,317. This application Nov. 28, 1980, Ser. No. 211,149

Int. Cl.³ C07D *307/94*

U.S. Cl. 260—346.22 **1 Claim**

1. 3'-Phenylspiro[cyclohexane-1,1'(3'H)-isobenzofuran]-4-one.

4,292,246

PREPARATION OF TETRAHYDROFURAN-3-ALDEHYDES

Hans-Dieter Scharf, Roetgen, and Herbert Fraßenrath, Aachen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

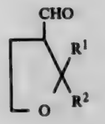
Filed Dec. 31, 1979, Ser. No. 108,308

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1979, 2901644

Int. Cl.³ C07D *307/12, 307/24, 307/94*

U.S. Cl. 260—347.4 **7 Claims**

1. A process for the preparation of a tetrahydrofuran-3-aldehyde of the formula



in which

R^1 is hydrogen, or an alkyl or phenyl radical, and

R^2 is an alkyl, (C_1-C_4-alkoxy)-carbonyl, (C_{1-4}-alkoxy)-carbonylmethylene or phenyl radical, or

R^1 and R^2 together are an alkanediyl radical,

comprising heating a 4,5-dihydro-1,3-dioxepine of the formula



at about 100° to 250° C. in the presence of a catalytic amount of o-toluic acid.

4,292,247

PROCESS FOR PRODUCING ANTHRAQUINONE INTERMEDIATES

(I)

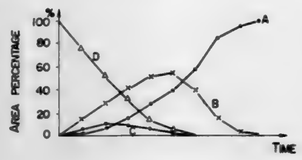
Masao Nishikuri, Hirakata; Akira Takeshita, Toyonaka, and Hirohito Kenmochi, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 21, 1978, Ser. No. 898,667

Claims priority, application Japan, Apr. 25, 1977, 52-48091; Apr. 26, 1977, 52-48839

Int. Cl.³ C07C *97/26, 97/25*

U.S. Cl. 260—381 **12 Claims**



1. A process for producing 1-amino-2-bromo-4-hydroxyanthraquinone, which comprises:

(1) dissolving 1-aminoanthraquinone in a concentrated sulfuric acid, the concentration of sulfuric acid being 90 to about 98% by weight,

(2) adding a brominating agent into the resulting solution at a temperature of 50° to 150° C.,

(3) stirring the mixture to convert 1-aminoanthraquinone into 1-amino-2, 4-dibromoanthraquinone at the same temperature as defined above,

(4) controlling the concentration of sulfuric acid in the reaction mixture to 95% by weight or more, and

(5) stirring the 1-amino-2, 4-dibromoanthraquinone-containing reaction mixture at a temperature of 100° to 140° C. in the presence of boric acid to convert 1-amino-2, 4-dibromoanthraquinone into 1-amino-2-bromo-4-hydroxyanthraquinone.

8. A process for producing 1-amino-2, 4-dibromoanthraquinone which comprises:

(1) dissolving 1-aminoanthraquinone in a concentrated sulfuric acid, the concentration of sulfuric acid being 90 to about 98% by weight,

(2) adding a brominating agent into the resulting solution at a temperature of 50° to 150° C., and

(3) stirring the mixture to convert 1-aminoanthraquinone into a 1-amino-2, 4-dibromoanthraquinone at the same temperature as defined above.

4,292,248

PREPARATION OF HYDROXYANTHRAQUINONES

William A. Michalowicz, Lock Haven, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 860,224, Dec. 13, 1977, abandoned. This application Jun. 6, 1979, Ser. No. 45,864

Int. Cl.³ C07C *50/18*

U.S. Cl. 260—383 **8 Claims**

1. A process for preparing a dihydroxyanthraquinone comprising reacting a dinitroanthraquinone with a metal salt selected from the group consisting of sodium formate and potassium formate at a molar ratio of metal salt to dinitroanthraquinone of at least 1.1 and in a reaction medium selected from the group consisting of dimethylformamide; dimethylacetamide; tetramethylurea; N-methylpyrrolidone; dimethylsulfoxide; tetramethylene sulfone; dimethylsulfone; N,N-dimethylmethylcarbamate and pyridine at a temperature of from 80° C. to 150° C. and separating the dihydroxyanthraquinone from the reaction system.

4,292,249

25-HYDROXY-24-OXOCHOLESTANE DERIVATIVES AND PREPARATION THEREOF

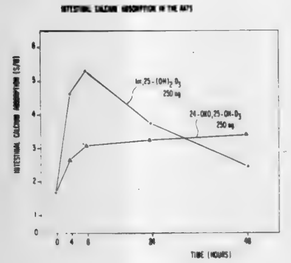
Osamu Nishikawa; Kenji Ishimaru, both of Iwakuni; Toru Takeshita, Hino, and Hideki Tsuruta, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 15, 1980, Ser. No. 121,857

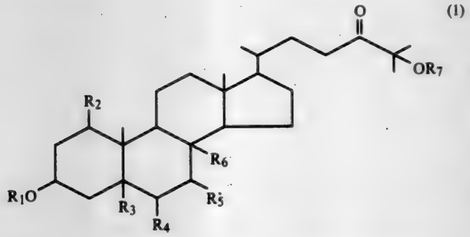
Claims priority, application Japan, Feb. 15, 1979, 54-15420; May 4, 1979, 54-54154; Jun. 14, 1979, 54-73956; Jul. 26, 1979, 54-94183; Aug. 2, 1979, 54-98106

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **16 Claims**

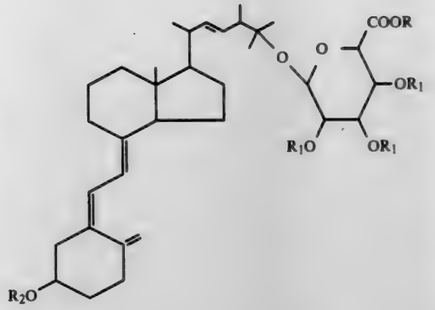


1. A 25-hydroxy-24-oxocholestane derivative of the following formula (1)



(1)

wherein R_1 is a hydrogen atom or a hydroxyl protective group; R_2 is a hydrogen atom, a hydroxy group or a protected hydroxy group; R_3 is a hydrogen atom, R_4 is a hydrogen atom, a hydroxy group or a protected hydroxy group; or R_3 and R_4, taken together may form a carbon-carbon bond; R_5 and R_6 are a hydrogen atom, or R_5 and R_6 may together form a carbon-carbon bond; R_7 is a hydrogen atom or a hydroxyl protective group.



where

R is a hydrogen or methyl, R_1 is trimethylsilyl or acetyl and R_2 is hydrogen, trimethylsilyl or acetyl.

4,292,250

VITAMIN D DERIVATIVES

Hector F. DeLuca; Heinrich K. Schnoes, and Leon W. LeVan, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 17, 1980, Ser. No. 207,169

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **3 Claims**

1. Compounds having the formula

4,292,251

11β-SUBSTITUTED STEROIDS

Gerhard A. Overbeek, Nijmegen, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

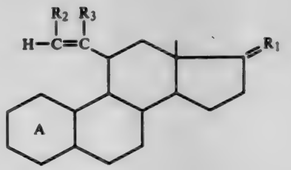
Filed Jan. 31, 1978, Ser. No. 873,784

Claims priority, application Netherlands, Feb. 10, 1977, 7701384

Int. Cl.³ C07J *1/00, 11/00*

U.S. Cl. 260—397.3 **29 Claims**

1. A compound of the formula:

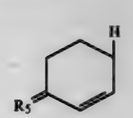


wherein:

(a) R_1 is O or (αY) (βZ), wherein Y is selected from the group consisting of H, unsaturated aliphatic hydrocarbons of two to about four carbon atoms, saturated aliphatic hydrocarbons of about one to about four carbon atoms, and Z is a free, esterified or etherified hydroxy group;

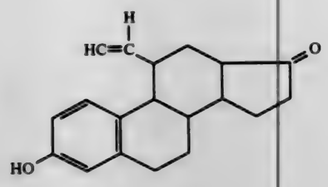
(b) R_2 is H and R_3 is H or CH_3; in the alternative, R_2 and R_3 together with their linking carbon atoms present form an acetylenic moiety of the formula HC≡C—; and

(c) ring A has the structure:

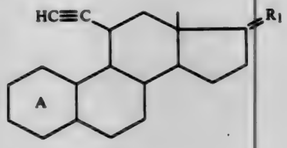


wherein R_5 is O or two hydrogens.

22. The compound



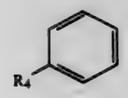
23. A compoound of the formula



wherein

(a) R_1 is O or (αY) (βZ), wherein Y is selected from the group consisting of H, unsaturated aliphatic hydrocarbons of two to about four carbon atoms, saturated aliphatic hydrocarbons of about one to about four carbon atoms, and Z is a free, esterified or etherified hydroxy group; and

(b) ring A has the structure:



wherein R_4 is a free, esterified or etherified hydroxyl group.

4,292,252

PROCESS FOR PREPARING ORGANOTIN ESTERS

John D. Collins, Albrighton, and Donald A. Wood, Warley, both of England, assignors to Tenneco Chemicals Inc., Saddle Brook, N.J.

Filed Jul. 27, 1979, Ser. No. 61,262

Claims priority, application United Kingdom, Jul. 28, 1978, 31575/78

Int. Cl.³ C07F *7/22*

U.S. Cl. 260—429.7 **23 Claims**

1. A process for preparing organotin esters of carboxylic acids, which comprises reacting a base, an organotin halide of formula $(R^1)_aSnX_{4-a}$ wherein a is an integer of 1 or 2, X is a chlorine, bromine or iodine atom, and each of R^1 is an organic group, and a carboxyl compound containing at least one carboxylic acid group and at least one carboxylic ester group of formula $(R^2YOC)_mR^3(COOH)_n$ wherein m and n are each an integer of 1 to 3, R^3 is a single bond or an (m+n) - valent organic group, and Y is an oxygen or sulphur atom, and R^2 is as defined for R^1, the reaction being carried out in the presence of water and producing an organotin ester with at least one $OOCR^3COYR^2$ group attached to a tin atom, the amount of said base being to provide 0.9–1.3 equivalents per g. atom of halogen bonded to tin in the organotin halide, and the amount of said carboxyl compound being sufficient to replace at least 90% of the halogen atom in the organotin halide, the base, organotin halide and carboxyl compound being mixed in any order; provided, however, that when base is added progressively to a batch mixture of all the required organotin halide and all the required carboxyl compound, then at least some of the base is added to the organotin halide or to the carboxyl compound before all of the organotin halide and all of the carboxyl compound are admixed to form said mixture.

4,292,253

ORGANO-METAL CATALYSTS AND PROCESSES FOR THEIR PREPARATION

Geoffrey A. Ozin; Colin G. Francis, both of 63 Gormley Ave., Toronto, Ontario, and Helmut X. Huber, Apt. 1105, 627 W. Mall, Etobicoke, Ontario, all of Canada (M4V 1Y9)

Filed Apr. 3, 1979, Ser. No. 27,572

Int. Cl.³ C07F *7/28*

U.S. Cl. 260—429.5 **16 Claims**

1. An organometallic liquid polymeric material comprising: an organic polymer which is a viscous liquid at a temperature in the range of −40° C. to +40° C. and is selected from the group consisting of polymers having carbon-carbon polymeric chains and silicone polymers, said polymer having functional groups therein and selected from aryl groups, naphthyl groups, phenanthryl groups, pyridinyl groups, olefinic unsaturation, cyclopentadienyl groups, cyclohexadienyl groups, cyclooctadienyl groups, dicyclopentadienyl groups and norbornadienyl groups;

and at least one metal chemically bonded to said polymer, in substantial quantities, in the form of small stable clusters of 2–13 metal atoms, said at least one metal being selected from the group consisting of titanium, zirconium, vanadium, niobium, tantalum, molybdenum, chromium, rhodium, palladium, platinum, tungsten, aluminum and silver;

said material and said small-cluster metal form therein being stable under inert atmosphere at a temperature within the range −40° C. to +40° C.

4,292,254

PREPARATION OF POLYISOCYANATES FROM POLYCARBAMATES

John J. Leonard, Springfield, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 17, 1980, Ser. No. 197,848

Int. Cl.³ C07C *118/00, 125/07*

U.S. Cl. 260—453 P **6 Claims**

1. In the process of producing polyisocyanates by

(a) condensing an alkyl-N-phenylcarbamate having 1 to 3 carbons in the alkyl moiety in the presence of an acid to produce condensate containing diphenylmethane dicarbamates and polymethylene polyphenyl carbamates with by-product N-benzyl compounds, rearranging said N-benzyl compounds in said condensate with acid catalyst to obtain a pyrolysis feed mixture containing diphenylmethane dicarbamates and polymethylene polyphenyl carbamates,

(b) thermally decomposing the carbamate moieties in the pyrolysis feed mixture to isocyanate moieties to produce polyisocyanates,

the improvement comprises increasing the percent isocyanate content of said polyisocyanates by prior to step (b) producing a solution by adding an organic cosolvent to the feed mixture, extracting that solution with an aqueous acid and removing the acid extract.

4,292,255

PROCESS FOR THE PREPARATION OF ORGANIC POLYISOCYANATES CONTAINING UREA GROUPS

Hans J. Hennig, Leverkusen; Peter Ziemek, and Erhard Schellmann, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 137,676, Apr. 7, 1980, which is a continuation of Ser. No. 3,576, Jan. 15, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,434

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803103

Int. Cl.³ C07C *119/042, 119/045, 119/048*

U.S. Cl. 260—453 AR **7 Claims**

1. A process for the preparation of polyisocyanates containing urea groups comprising

(a) introducing an organic polyisocyanate of the formula

$R_1(NCO)_2$

wherein

R_1 is an aliphatic hydrocarbon group having from 2 to 18 carbon atoms, an aromatic hydrocarbon group having from 6 to 15 carbon atoms, an araliphatic hydrocarbon group having from 8 to 15 carbon atoms or a cycloaliphatic hydrocarbon group having from 4 to 15 carbon atoms, at least two carbon atoms in each hydrocarbon group being situated between the two isocyanate groups, into a reaction vessel, and

(b) injecting an organic polyamine of the formula

$R_2(NH_2)_2$

wherein

R_2 is an aliphatic hydrocarbon group having from 4 to 11 carbon atoms or an aromatic hydrocarbon group having from 6 to 15 carbon atoms, into the organic polyisocyanate in the reaction vessel at a pressure of from about 2 to 1000 bar through a straight jet nozzle having an internal diameter of from about 0.01 to 5 mm

wherein

(i) the polyisocyanate/polyamine NCO/NH_2 molar ratio is at least about 4:1, and

(ii) the temperature in the reaction vessel is between about 20° C. to 180° C.

4,292,256

N-[(PHOSPHINYL)AMINO]THIO- AND N-[(PHOSPHINOTHIOYL)AMINO]THIOMETHYLCARBAMATES

Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 962,266, Nov. 20, 1978, Pat. No. 4,208,409, which is a continuation-in-part of Ser. No. 874,959, Feb. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 765,807, Feb. 4, 1977, Pat. No. 4,081,536. This application Jan. 25, 1980, Ser. No. 115,474

The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.

Int. Cl.³ C07F *9/15;* A01N *57/26;* C07D *339/06*

U.S. Cl. 260—937 **7 Claims**

1. 2-methyl-2-(methylthio)-O-[[[[(5,5-dimethyl-2-thioxo-1,3,2-dioxaphosphorinan-2-yl)(1-methylethyl)amino]methylamino]carbonyl]propanal oxime.

2. Syn and anti-O-[[[[cyclohexyl(5,5-dimethyl-2-thioxo-1,3,2-dioxaphosphorinan-2-yl)amino]thio]methylamino]carbonyl]-2-methyl-2-(methylthio)propanal oxime, m.p. 108°–115° C.

3. Methyl N-[[[[[cyclohexyl(5,5-dimethyl-2-oxo-1,3,2-phosphorinan-2-yl)amino]thio]methylamino]carbonyl]oxy]ethanimidothioate.

4. Methyl N-[[[methyl[[(1-methylethyl)2-oxo-1,3,2-dioxaphosphorinan-2-yl)amino]thio]amino]carbonyl]oxy]ethanimidothioate.

5. Methyl N-[[[[[(1,1-dimethylethyl)(5,5-dimethyl-2-oxo-1,3,2-dioxaphosphorinan-2-yl)amino]thio]methylamino]carbonyl]oxy]ethanimidothioate.

4,292,257

CARBURETOR AND VALVING THEREFOR

Lloyd L. Knowlton, P.O. Box 136, Walkerton, Ind. 46574

Filed Jan. 14, 1980, Ser. No. 112,024

Int. Cl.³ F02M *11/10*

U.S. Cl. 261—37 **12 Claims**

1. A carburetor and valving therefor comprising:

a top plate;

a base plate;

a tubular housing having apertures in opposing walls thereof;

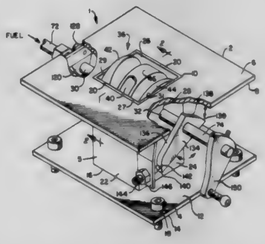
a roller valve rotatably positioned within said housing;

a bore extending through the axis of said valve, and a radially extending pre-mixing chamber intersecting said bore;

said roller valve having chordal ribs thereon;

a pair of rods extending through said apertures in said opposing walls and through said bore of said valve;

one of said rods having a small bore extending therethrough from the outer end thereof and opening into a larger bore at the inner end thereof, a rectangular cut-out in the circumference of said inner end having a flat wall surface through which extend a plurality of offset orifices into the larger bore;



the other of said rods having a reduced inner end, a rectangular slot cut in the circumference thereof and extending into a chamber within said reduced inner end, a knife-like edge on said slot, and a bore extending from the face of said reduced inner end opening into said chamber;

a fuel pressure regulator for said carburetor;

a metering valve for metering fuel to said pressure regulator, said metering valve operable by an armature of a solenoid, said solenoid operable from the ignition circuit of the engine; and

a fuel pump for providing fuel under pressure for said carburetor.

4,292,258

ALTITUDE COMPENSATING DEVICE FOR CARBURETORS

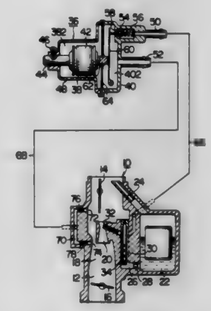
Shoichiro Sakurai, Hitachi, and Tadahiko Otani, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1980, Ser. No. 114,391

Claims priority, application Japan, Jan. 26, 1979, 54/7174

Int. Cl.³ F02M *7/24*

U.S. Cl. 261—39 A **8 Claims**

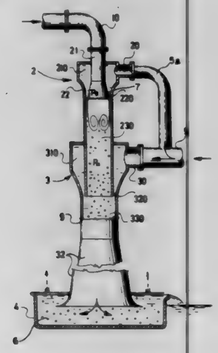


1. An altitude compensating device for carburetors comprising:

(a) a partition plate disposed between first and second cas-

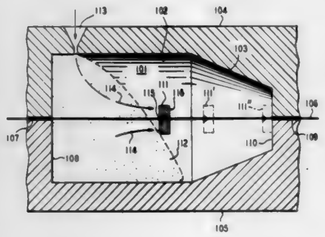
ings and for airtightly separating said casings from each other;
(b) a pressure-sensitive element disposed in a first chamber defined by said first casing and said partition plate, and an atmospheric air port formed in the wall of said first casing;
(c) an air metering valve disposed in a second chamber defined by said second casing and said partition plate and adapted to be driven by said pressure-sensitive element so as to have its metering area increased with the decrease of the atmospheric pressure;
(d) a first passage for communicating the downstream side of said air metering valve with a fuel passage through which fuel is delivered to the intake passage of said carburetor;
(e) a second passage for communicating said second chamber with a venturi portion formed between a choke valve and a throttle valve disposed in said intake passage; and
(f) a third passage adapted to supply air to said second chamber at least after the full opening of said choke valve.

4,292,259
ARRANGEMENT FOR SUCKING-OFF GASES
Zdenek Roth, Pilsen, and Josef Altmann, Domazlice, both of Czechoslovakia, assignors to SKODA, oborovy podnik, Pilsen, Czechoslovakia
Filed Jan. 28, 1980, Ser. No. 115,569
Claims priority, application Czechoslovakia, Feb. 12, 1979, 915-79
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—123 **3 Claims**



1. Arrangement for sucking-off air from an air-containing flowing fluid, comprising a first jet hydraulic pump having a first tubular body with an upper part constituting a first liquid chamber, conduit means supplying the first liquid chamber with liquid under pressure, a first air-containing fluid receiving and discharging conduit having a widened lower end disposed within the first liquid chamber with the outer edge of the widened lower end thereof spaced from the inner wall of the first liquid chamber to form a narrow annular gap therebetween acting as a nozzle to form a thorough, turbulent mixture of liquid and air-containing fluid, a second jet hydraulic pump disposed below the first jet hydraulic pump, the second jet hydraulic pump having a second tubular body with an upper part constituting a second liquid chamber, the lower end of the first tubular body extending into the second liquid chamber, the outer edge of the lower end of the first tubular body being spaced from the inner wall of the second liquid chamber to form a narrow annular gap therebetween, the second tubular body continuing downwardly below the end of the first tubular body and terminating at its lower end in a widened portion constituting a diffuser, conduit means for supplying the second liquid chamber with liquid under pressure, and an open-topped vessel within which the lower, diffuser-forming portion of the second tubular body is received, the vessel containing the mixture of air-containing fluid and the liquid forwarded thereto through the second tubular body to a level above the lower, diffuser-forming end of the second tubular body, air escaping from such mixture in the vessel to the atmosphere.

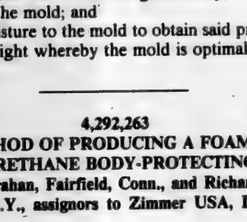
4,292,260
MOLDING OPTICAL FIBER CONNECTORS
Nim K. Cheung, Bayonne, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 22, 1980, Ser. No. 189,191
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.5 **7 Claims**



2. An improved method of molding an optical fiber connector with a body portion (601) having a predetermined shape for mating comprising the steps of
inserting an optical fiber (106) through the mold cavity (101) from a first aperture (107) to a second aperture (109), said second aperture being disposed in a planar mold surface (110) defining a surface of said body portion; and
injecting filler material (112) into said mold cavity from one or more predetermined locations (113) to form said optical fiber connector, said improvement being CHARACTERIZED BY the steps of
inserting said optical fiber through an insert (111) having an aperture that slidingly receives said optical fiber, said insert having a flat surface substantially perpendicular to the insert aperture;
positioning said insert between said predetermined locations and said planar mold surface, the flat surface of said insert oriented toward said planar mold surface; and
causing said insert to slide along said fiber under the pressure of the injected filler material until said flat insert surface abuts said planar mold surface thereby straightening the optical fiber and controlling the position and angle of said optical fiber relative to said planar mold surface.

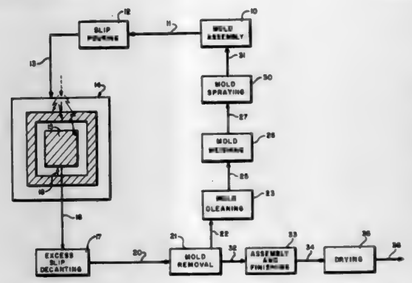
4,292,261
PRESSURE SENSITIVE CONDUCTOR AND METHOD OF MANUFACTURING THE SAME
Teizo Kotani; Kozo Arai; Shiomi Fukui, and Masaki Nagata, all of Yokohama, Japan, assignors to Japan Synthetic Rubber Company Limited, Tokyo, Japan
Filed Jun. 29, 1977, Ser. No. 811,278
Claims priority, application Japan, Jun. 30, 1976, 51-77454; May 31, 1977, 52-63518
Int. Cl.³ B29C *25/00, 17/00*
U.S. Cl. 264—24 **15 Claims**

1. In a method for the manufacture of a pressure sensitive conductor comprising an insulating elastomer having dispersed therein from about 3% to 40% by volume based on the total volume of electrically conductive magnetic particles having a particle size of from 0.01 μm to 200 μm, the said particles being concentrated and distributed in portions of the conductor in accordance with a selected pattern in which those portions having a relatively high concentration of particles are high sensitivity conductor portions and other portions are insulator portions;
the improvement comprising first forming a mixture containing said elastomer and said particles, forming said mixture into a sheet having a viscosity of from 10^4 to 10^7 poises at a strain rate of 10^{-1} sec.$^{-1}$, subjecting said sheet



to the action of shaped magnets forming a magnetic field of a selected pattern, and thereafter curing said elastomer.

4,292,262
CERAMIC MATERIAL PROCESSING
Leo W. Tobin, Jr., Morehouse La., Darien, Conn. 06820
Filed Jun. 28, 1979, Ser. No. 52,874
Int. Cl.³ B28B *1/26*
U.S. Cl. 264—26 **3 Claims**



1. A method for producing ceramic ware from slip that contains water, comprising the steps of:
a. pouring the slip into an optimally moistened porous mold having a predetermined overall weight;
b. forming a green body within the mold by
i. a single application of microwave energy to the combination of the mold and slip to cake the slip at the mold surface and
ii. thereafter setting up the cake in ambient air without the application microwave energy;
c. decanting the excess slip from the mold;
d. removing the mold from the green body;
e. weighing the mold; and
f. adding moisture to the mold to obtain said predetermined overall weight whereby the mold is optimally moistened for reuse.

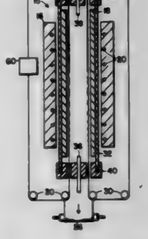
4,292,263
METHOD OF PRODUCING A FOAMED POLYURETHANE BODY-PROTECTING PAD
James R. Hanrahan, Fairfield, Conn., and Richard G. Levine, Lawrence, N.Y., assignors to Zimmer USA, Inc., Warsaw, Md.
Division of Ser. No. 774,377, Mar. 4, 1977, Pat. No. 4,193,134. This application Aug. 27, 1979, Ser. No. 69,929
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—46.9 **4 Claims**

1. The method of producing a body-protecting pad comprising:
stretching a hydrokinetic fabric sleeve over a male mold, the tautness of said stretched fabric sleeve being controlled to facilitate wetting and penetration of foam into the exterior of said fabric;
mixing a water-foamable hydrophilic polyurethane prepolymer and water in desired proportions in an open female pad mold of desired shape;



closing said molds; and
demolding the resulting, integrally molded pad and sleeve.

4,292,264
METHOD FOR PRODUCING POLYCRYSTALLINE RIBBON
Mario E. Cota, Scottsdale, and Richard W. Gurtler, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 925,734, Jul. 18, 1978, Pat. No. 4,250,148. This application Jun. 30, 1980, Ser. No. 164,102
Int. Cl.³ B29C *13/04*
U.S. Cl. 264—81 **11 Claims**



1. A method for the substantially continuous formation of a silicon ribbon in a furnace heated at a desired temperature comprising the steps of: moving a plurality of elongated foil members through said furnace; positioning said plurality of elongated foil members so each forms a substantially plane wall bounding a reaction volume within said furnace; providing silicon bearing reactant vapor in said reaction volume for depositing silicon on said foil members at said desired temperature; and cooling said foil members to separate said silicon from said foil members.

4. A method for forming polycrystalline silicon ribbon comprising the steps of: moving a plurality of elongated foils through a tube positioned within a heated furnace; positioning said foils in said tube to surround a reaction volume, said foils forming substantially plane sides of said reaction volume; vapor sealing said tube to provide a controlled ambient within said tube while allowing the moving of said foils through said tube; injecting reactant vapor into said reaction volume, said reactant vapor depositing said polycrystalline silicon on said foils; and separating said polycrystalline silicon from said foil.

4,292,265
METHOD FOR PREPARING POROUS METAL HYDRIDE COMPACTS

Moshe Ron, Haifa, Israel; Dieter M. Gruen, Downers Grove, Ill.; Marshall H. Mendelsohn, Woodridge, Ill., and Irving Sheft, Oak Park, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 21, 1980, Ser. No. 113,873
Int. Cl.³ C04B 15/14
U.S. Cl. 264—82 10 Claims

1. A method for preparing a porous metallic-matrix hydride compact comprising:

forming a mixture of a finely divided, fully hydrided metal hydride and a finely divided matrix metal the matrix metal being an oxide-free, plastically deformable metal capable of binding the metal hydride, the mixture containing matrix metal in an amount sufficient to bind the metal hydride;

thoroughly dispersing the metal hydride and the matrix metal in each other to form an intimate mixture;

contacting the initimate mixture with a hydride poison to prevent the hydride from dehydriding at room temperature and atmospheric pressure; and

compressing the mixture of matrix metal and poisoned metal hydride at room temperature and at a pressure sufficient for the matrix metal to flow plastically to bend the metal hydride together while maintaining the mixture at a temperature below 90° C., thereby forming a porous metallic matrix hydride compact.

4,292,266
PROCESS FOR MAKING DECORATIVE GRASS

Erwin H. Weder, Highland, Ill., and Donald E. Weder, Hobart, Okla., assignors to Highland Manufacturing & Sales Co., Highland, Ill.

Division of Ser. No. 593,446, Jul. 7, 1975, Pat. No. 4,199,627.
This application Sep. 12, 1979, Ser. No. 74,750
Int. Cl.³ B29C 17/14
U.S. Cl. 264—140 3 Claims

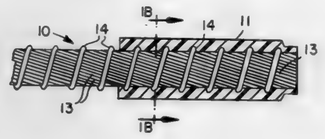


1. The process of making decorative grass consisting of the steps of passing flexible, thin, extruded, thermoplastic film strips through a slow speed godet, passing the strips through an oven, passing the strips through a high speed godet having a linear speed approximately 5 times the linear speed of the slow speed godet to stretch the heated strips and reduce their width approximately 2.5 times from about 125 mils to about 50 mils and reduce the thickness approximately 3.5 times from about 3.5 mils to about 1 mil, and chopping the stretched strips into predetermined lengths approximately 2 inches to 12 inches with the stretched cut-off strips having random longitudinal and transverse curls, and conveying the cut-off strips to an area for subsequent use as a lightweight cohesive mass of decorative grass.

4,292,267
METHOD FOR TERMINATING FLEXIBLE HELICAL WIRE CONDUIT

Charles E. Haynes, Adrian, Mich., assignor to ACCO Industries Inc., Trumbull, Conn.

Division of Ser. No. 956,975, Nov. 2, 1978, abandoned, which is a continuation of Ser. No. 761,215, Jan. 21, 1977, abandoned.
This application Aug. 27, 1979, Ser. No. 69,761
Int. Cl.³ B29C 6/04, 17/14
U.S. Cl. 264—157 3 Claims



1. The method of forming termination members on ends of helical wire conduits of the type comprising a helix of contiguous wires coiled with a relatively long pitch and an outer wire helix, comprising the steps of sequentially:

(a) providing a continuous length of a wire conduit;

(b) feeding the length of wire conduit axially of its length into a mold cavity until a secion thereof intermediate its ends is disposed within said cavity, said section having a predetermined cut-off point, intermediate thereof, defining the ends of two wire conduits;

(c) injecting thermoplastic material into said mold cavity at sufficient pressure and temperature to mold said material along said section and the surfaces of the exposed wires thereof and fill the external spaces between adjacent helical wire turns, the molding of the material being along an axial length of the wire conduit section being sufficient to form the termination member for one end of the conduit on one axial side of said cut-off point and the termination member of one end of a second conduit on the other axial side of said cut-off point;

(d) removing the molded section from said mold cavity;

(e) repeating the molding operation of steps (b), (c) and (d) at successive spaced sections along said wire conduit; and,

(f) cutting the wire conduit at said predetermined cut-off points into separate wire conduits.

4,292,268
LIQUID EPOXY MOLDING SYSTEM

George A. Salensky, Whitehouse Station, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,496
Int. Cl.³ B29C 25/00
U.S. Cl. 264—236 15 Claims

1. Method of injection molding of liquid epoxy resin compositions which comprises:

(A) Blending a mixture of:

(1) normally liquid epoxy resin having an epoxy equivalent of about 140 to about 225 grams per gram mole of oxirane oxygen;

(2) about 3 to about 15 parts by weight of an organic carboxylic acid containing at least 6 carbon atoms and at least one free carboxyl group;

(3) about 2 to about 250 parts by weight of a siliceous filler having a minimum surface area of 0.5 m^2/g.; and

(4) about 0 to about 30 parts by weight of a reactive diluent containing at least one 1,2-epoxy group;

with an approximately stoichiometric amount of a polyfunctional, primary or secondary amine used as a curing agent for liquid epoxy resins;

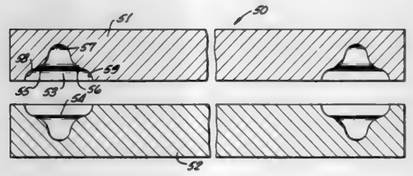
(B) injecting the resultant mixture at a temperature of about 25° C. to about 150° C. and a pressure of up to about 500 psig into a pressure mold; and

(C) retaining the mixture in said mold until hardened sufficiently so that the molded mixture can be ejected from the mold without distortion.

4,292,269
METHOD OF MANUFACTURING A RING SPRING FOR COMPOSITE MACHINERY SEALS

Jules M. Hock, 16056 Arbela Dr., Whittier, Calif. 90603

Filed Apr. 14, 1980, Ser. No. 140,302
Int. Cl.³ B29F 1/00
U.S. Cl. 264—299 4 Claims



1. A method for molding an elastomeric ring spring for use in an annular elastomeric boot of the U-cup type, comprising the steps of:

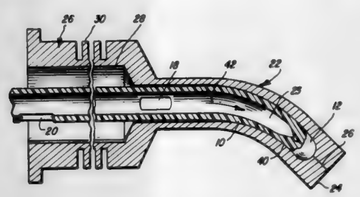
providing a mold having a generally ring-shaped mold cavity a pair of mold halves, the parting plane between said mold halves being a single plane which extends diametrically through said ring-shaped mold cavity so as to define, in each mold half an exposed annular cavity half therein, the surface defining each cavity half comprising first and second inwardly directed lobes extending at a 90° angle to each other from the inner corners of said cavity half, at 45° angles to said parting plane; and

utilizing such mold to mold, in a generally conventional manner, a ring spring having a generally +-shape.

4,292,270
METHOD AND APPARATUS FOR MAKING COUDE CATHETERS

Richard E. Hannah, Spring Grove, and Steffen Lyons, Grayslake, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 22, 1979, Ser. No. 51,331
Int. Cl.³ B29C 1/04
U.S. Cl. 264—320 15 Claims

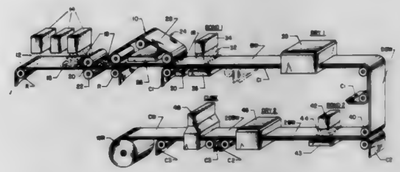


1. The method of making a elbowed-end catheter which comprises: inserting an end of a flexible, thermoplastic tube into the bore of a closed-end, hollow, tubular one piece die which defines the desired curve of the elbowed-end catheter; heating said tubular die to a temperature above the plastic melt temperature of said thermoplastic tube, while advancing said tube into the die, to cause at least 0.5 cm. of the tube end to collapse into a curved mass; cooling said die and tube to a temperature below said plastic melt temperature; and withdrawing said tube from the die.

4,292,271
METHODS OF APPLYING BONDING MATERIALS ONTO FIBROUS WEBS

James F. Buob, and Walter L. Pauls, both of Appleton, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 28, 1979, Ser. No. 108,022
Int. Cl.³ B29J 5/00
U.S. Cl. 264—518 33 Claims



1. A method of forming a dry-formed bonded fibrous web product, which comprises:

dispensing fibers from a distributor onto a foraminous forming surface to form a loose web surface,

applying a bonding material selected from the group consisting of binder solids-containing solutions and emulsions onto one side of the loose fibrous web to add to it from about 20% to about 40% by weight of the total binder solids to be included in the fibrous web product,

heating the solids-bearing loose fibrous web to at least partly dry it and form a once-bonded web,

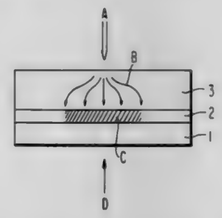
applying a bonding material selected from the group consisting of binder solids-containing solutions and emulsions onto the other side of the once-bonded web to add to it the rest of the total binder solids to be included in the fibrous web product, and

heating the web to thereby form a twice-bonded dry-formed cured fibrous web product, said first-applied bonding material having a greater binder solids concentration than said second-applied bonding material.

4,292,272
MULTILAYER ANALYSIS SHEET FOR ANALYZING LIQUID SAMPLES

Masao Kitajima; Fuminori Arai, and Asaji Kondo, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 9, 1980, Ser. No. 157,737
Claims priority, application Japan, Jun. 8, 1979, 54-72047
Int. Cl.³ G01N 21/84, 33/53, 33/50
U.S. Cl. 422—57 16 Claims



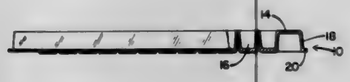
1. A multilayer analysis sheet for analyzing liquid samples comprising, in sequence, a light transmitting water-impermeable support having on one side thereof at least one layer containing at least one reagent in a binder, and a liquid sample spreading layer made of fabric, said layers being laminated to form an intergral unit together with the support, and wherein said fabric has the ability to supply a liquid sample placed on the surface thereof to said reagent-containing layer at a substantially constant volume per unit area, which ability is conferred upon said fabric by rendering it hydrophilic.

4,292,273

RADIOIMMUNOASSAY PLATE

David E. Butz, Littleton, and Pasquale L. Pepicelli, Chelmsford, both of Mass., assignors to Data Packaging Corporation, Cambridge, Mass.

Filed Jun. 29, 1979, Ser. No. 53,260
Int. Cl.³ C12M 1/20
U.S. Cl. 422—102 **8 Claims**



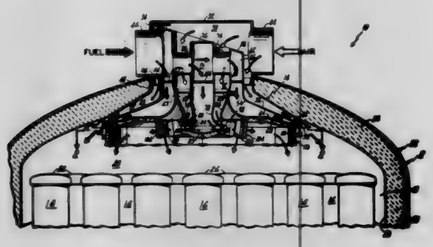
1. A radioimmunoassay plate comprising:
a bottom tray made of transparent material and having a plurality of wells extending downwardly from its top plane with the wells defined by downwardly tapered side walls and a bottom wall, said bottom walls lying in a common plane parallel to the top plane of the tray,
a peripheral side wall extending downwardly from the top plane and terminating at its lower edge above the plane of the bottom walls, whereby the bottom walls may all contact a planar surface on which the tray is placed without interference from the peripheral side walls,
each of said well bottom walls being flat at its central portion and having a substantial radius at the junction of the bottom and side wall equal to approximately half the radius of the bottom wall,
a removable cover for the bottom tray having a top wall which is adapted to closely overlie the top plane of the tray and having a skirt which engages and is supported by the peripheral side wall of the tray and forms a seal therewith when positioned to cover the tray and the wells in it,
an outwardly extending flange formed at the bottom of the peripheral side wall of the tray,
a seat formed in the cover for receiving the flange of a second bottom tray stacked on it to support the second tray on the cover,
and means provided in the cover for preventing a second bottom tray stacked on it from sliding sideways off the cover.

4,292,274

CATALYTIC REACTOR WITH IMPROVED BURNER

Joseph J. Faitani, Hartford; George W. Austin, Glastonbury; Terry J. Chase, Somers; George T. Suljak, Vernon, and Robert J. Misage, Manchester,all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 4, 1980, Ser. No. 175,226
Int. Cl.³ B01J 19/26
U.S. Cl. 422—197 **3 Claims**



1. Catalytic reaction apparatus comprising:
A. a furnace having cylindrical, vertical wall means and top and bottom wall means in communication with said vertical wall means defining an enclosed space within said furnace;
B. a plurality of vertical, closely spaced, reaction tubes distributed substantially uniformly within said enclosed space and adapted to have catalyst disposed therein, said tubes each having an upper end, said upper ends being spaced below said top wall means of said furnace defining a combustion cavity in said enclosed space above said tube upper ends; and
C. burner means disposed in said furnace above said tube upper ends and including:
a. primary annular air and fuel outlet means disposed radially inwardly from said cylindrical wall means and constructed and arranged to cause the air and fuel to exit therefrom into said combustion cavity as concentric, adjacent annular sheets, including means for directing the exiting air and fuel toward said tube ends adjacent said cylindrical wall means;
b. secondary annular air and fuel outlet means disposed radially inwardly from and concentric with said primary air and fuel outlet means constructed and arranged to cause the air and fuel to exit substantially horizontally therefrom into said combustion cavity as concentric; adjacent annular sheets;
c. first annular baffle means concentric with said secondary air and fuel outlet means and disposed radially outwardly therefrom for deflecting a first portion of the fuel and air from said secondary outlet means downwardly toward said tube ends nearest the center of said furnace, said first baffle means including gaps therein permitting a second portion of the fuel and air from said secondary outlet means to pass horizontally therethrough; and
d. second annular baffle means concentric with and disposed radially outwardly from said first annular baffle means and constructed and arranged to deflect at least a portion of said second portion of the fuel and air downwardly toward said tube ends which are disposed between said tube ends adjacent said cylindrical wall means and said tube ends nearest the center of said furnace.

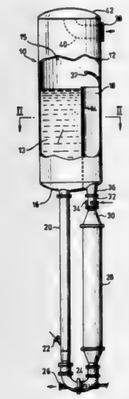
4,292,275

MODULAR CHLORINE DIOXIDE GENERATION SYSTEMS

James H. Forster, Mississauga, Canada, assignor to ERCO Industries Limited, Islington, Canada

Division of Ser. No. 45,850, Jun. 5, 1979, Pat. No. 4,251,502.
This application May 22, 1980, Ser. No. 152,565
Claims priority, application United Kingdom, Jun. 28, 1978, 28105/78
Int. Cl.³ F28D 21/00; B01J 19/00
U.S. Cl. 422—198 **11 Claims**

1. A modular chlorine dioxide generation unit, comprising:
a generally cylindrical upright enclosed generator vessel for housing a liquid reaction medium capable of producing chlorine dioxide, chlorine and steam as gaseous product thereof and said solid by-product salt,
a first outlet means located in a lower end closure of said vessel for removing a slurry of said solid by-product salt in admixture with reaction medium,
a second outlet means located in an upper region of said vessel for removal of said gaseous product from a vapor space above the intended liquid level in said vessel,
means within said generator vessel defining a fluid flow path from an inlet means located in said lower end closure of said vessel to a location above the intended liquid level in said generator which is out of direct fluid flow relationship with said reaction medium within said vessel,
means defining a recycle flow path from said first outlet means to said inlet means, said recycle flow path means including pump means for pumping liquor around said recycle flow path, heat exchanger means for heating recycling liquor to the boiling temperature of the reaction medium under an applied subatmospheric pressure, first frusto-conical pipe means located downstream of said pump means and said heat exchanger means and having a decreasing cross-sectional dimension in the direction of liquid flow for exerting a back pressure on said recycling liquor to prevent boiling of the same in said recycle flow path upstream of said first frusto-conical pipe means, collar pipe means located downstream of said first frusto-conical pipe means and having acid inlet means for injection of strong mineral acid reactant into liquor passing



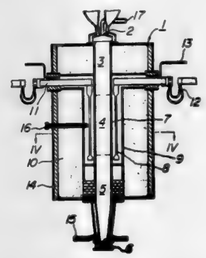
through said collar pipe means and second frusto-conical pipe means located downstream of said collar pipe means and immediately upstream of said generator vessel inlet and having an increasing cross-sectional dimension in the direction of fluid flow to permit expansion of gases at low acceleration, and
means for feeding alkali metal chlorate reactant to said recycle flow path.

4,292,276

APPARATUS FOR PRODUCING SILICON CARBIDE

Ryo Enomoto, Ohgaki; Mitihiro Yoshioka, Yoro, and Takao Yokoyama, Ohgaki, all of Japan, assignors to Ibigawa Electric Industry Co., Ltd., Ohgaki, Japan

Division of Ser. No. 797,609, May 16, 1977, Pat. No. 4,162,167.
This application Mar. 9, 1979, Ser. No. 18,939
Claims priority, application Japan, May 24, 1976, 51-60501; May 26, 1976, 51-61432
Int. Cl.³ C01D 1/32; H05B 7/18
U.S. Cl. 422—199 **2 Claims**



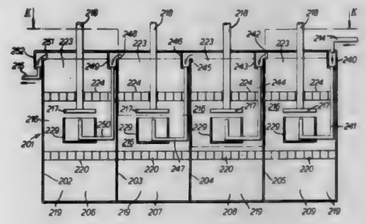
1. An apparatus for producing silicon carbide consisting mainly of β-type crystal, comprising a gravity-feed reaction vessel having an inlet for a starting material, a preheating zone, a heating zone, a cooling zone and a closeable outlet for a product in this order, and a heating means for the starting material in the heating zone by an electrically indirect heating; said heating zone being made of a graphite cylinder and having an effective heating width of 0.10–0.35 m; and further comprising a heat insulating layer for said heating zone, said layer composed of fine powder selected from the group consisting of carbon, graphite and mixtures thereof;
wherein said heating means is composed of one or more graphite heating elements vertically arranged outside said graphite cylinder, and a graphite reflective cylinder arranged near the outside of said heating elements and inside said heat insulating layer.

4,292,277

LIQUID-LIQUID CONTACTING APPARATUS

Christopher F. Bonney, Yarm, and George A. Rowden, Stockton-on-Tees, both of England, assignors to Davy McKee (Minerals & Metals) Limited, Stockton-on-Tees, England

Filed Jul. 11, 1980, Ser. No. 167,473
Claims priority, application United Kingdom, Jul. 20, 1979, 25385/79
Int. Cl.³ B01D 11/04
U.S. Cl. 422—259 **10 Claims**



1. Apparatus for effecting liquid-liquid contact in a plurality of stages between an aqueous liquid medium and an organic hydrophobic liquid medium capable of undergoing mass transfer with the aqueous liquid medium, comprising:
a first mixer-settler;
a second mixer-settler adjacent the first mixer-settler and sharing a common wall therewith;
each mixer-settler comprising:
a mixing chamber;
agitator means in the mixing chamber for mixing the aqueous and organic hydrophobic liquid media so as to form a dispersion of globules of one medium dispersed in the other, which globules are of a size such that, upon standing under gravity, the dispersion is capable of disengaging substantially completely into two separate layers;
an upper settling chamber above the mixing chamber;
a lower settling chamber below the mixing chamber; and
upper and lower baffle means extending across the mixer-settler so as to divide the mixing chamber from the upper settling chamber and the lower settling chamber respectively, each baffle means being adapted to provide a plurality of flow paths for liquid between the mixing chamber and the respective settling chamber and to permit maintenance in the respective settling chamber of conditions favouring dispersion disengagement despite turbulent mixing conditions in the mixing chamber;
means for supplying the heavier medium of the two to the mixing chamber of the first mixer-settler;
means for removing disengaged heavier medium from the lower settling chamber of the second mixer-settler;
means for supplying the lighter medium of the two to the mixing chamber of one of the first and second mixer-settlers;
means for removing disengaged lighter medium from the upper settling chamber of the other one of the first and second mixer-settlers;
weir means in the flow path of lighter medium between the first and second mixer-settlers and having a length which exceeds half the length of the common wall, over which weir means disengaged lighter medium from the upper settling chamber of the said one mixer-settler may overflow;
first conduit means for passing disengaged lighter medium that

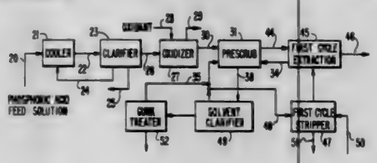
overflows the weir means from the said one mixer-settler to the mixing chamber of the said other mixer-settler; and second conduit means for passing disengaged heavier medium from the lower settling chamber of the first mixer-settler to the mixing chamber of the second mixer-settler.

4,292,278

PURIFICATION OF WET PROCESS PHOSPHORIC ACID AS A PRETREATMENT STEP IN THE RECOVERY OF URANIUM

Leonard Elikan; Regis R. Stana, and Robert W. Ritchey, all of Lakeland, Fla., assignors to Wyoming Mineral Corp., Lakewood, Colo.

Filed Feb. 21, 1979, Ser. No. 13,700
Int. Cl.³ C01B *25/235*
U.S. Cl. 423—8 **7 Claims**



1. A method of removal of humic acid impurities from a metal containing acidic solution also containing humic acid impurities, as a pretreatment in a metal recovery process, comprising the steps of:

(1) mixing the humic acid containing acidic solution with a scrubbing agent in a mixer-settler means, the scrubbing agent consisting essentially of:

(a) an organic, metal extractant material that has low solubility in the acidic solution, and is effective to form a metal derivative with metal ions in the acidic solution, and

(b) an organic hydrocarbon solvent for the metal extract material, said hydrocarbon solvent having a boiling point of over about 70° C., a limited solubility in the acidic solution, and comprising from about 50 vol. % to about 90 vol. % of the scrubbing agent, where the scrubbing agent is interactive with the humic acid impurities, and is added in an amount effective to scrub the humic acid impurities from the acidic solution; where after mixing, the acid and scrubbing agent flow at a high rate into the settler, forming a mixture consisting of a scrubbing agent-impurities sludge phase and a purified acidic solution phase, where the sludge phase forms on top of the purified acidic solution phase, where the flow rate of the mixed acid and scrubbing agent into the settler is such that the thickness ratio of the top sludge phase:bottom purified acidic phase is maintained at from about 1:2 to 10,

(2) removing the scrubbing agent-impurities sludge phase, and then

(3) passing the purified acidic solution phase into a metal extraction means.

4,292,279

PRODUCTION OF HIGH PURITY URANIUM COMPOUNDS FROM CRUDE YELLOW CAKE

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Apr. 19, 1979, Ser. No. 31,655
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—15 **8 Claims**

1. A process for the production of high purity uranium salts from crude yellow cake which comprises the steps of:

(a) dissolving of crude yellow cake with an effective amount of aqueous mineral acid selected from sulfuric, hydrochloric, nitric, and phosphoric acids, thereby forming an aqueous acidic solution containing dissolved uranium,

(b) adding, to the said acidic solution containing dissolved uranium, sufficient ammonium uranyl tricarbonate-forming components to thereby substantially convert the uranium in said acidic solution to ammonium uranyl tricarbonate, wherein said ammonium uranyl tricarbonate forming materials are selected from ammonia, carbon dioxide, ammonium carbonate, ammonium carbamate, carbamic acid, ammonium bicarbonate, and mixtures of these,

(c) treating said solution containing ammonium uranyl tricarbonate with a water-soluble organic lower alcohol or ketone in amounts and under conditions effective to precipitate said ammonium uranyl tricarbonate, and

(d) separating said precipitated ammonium uranyl tricarbonate as a solid ammonium uranyl tricarbonate leaving an aqueous filtrate.

4,292,280

SEPARATION OF ANIONIC METAL COMPLEXES BY OXYGEN CONTAINING POLYMERS

Bertus van Engelenburg, and Hendrik F. van Wijk, both of Zeist, Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepastnatuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Feb. 5, 1979, Ser. No. 9,454
Claims priority, application Netherlands, Feb. 9, 1978, 7801516
Int. Cl.³ C01G *9/04, 3/05, 53/09*
U.S. Cl. 423—24 **8 Claims**

1. A process for the separation of iron and zinc from a mixture of iron, zinc, and copper, which comprises the steps of:

(a) dissolving the mixture of iron, zinc, and copper in 6 M hydrochloric acid solution;

(b) contacting the solution from step (a) with a solid, insoluble polymer containing oxygen bonded to carbon to cause chloride complexes of iron III to bond to the polymer;

(c) recovering iron-free solution;

(d) recovering iron III chloride by contacting the polymer from step (b) with water;

(e) adjusting the iron-free solution from step (c) to comprise 8 M hydrochloric solution;

(f) contacting the solution from step (e) with the polymer to cause zinc chloride complexes to bind to the polymer;

(g) recovering iron-free and zinc-free, copper chloride solution; and

(h) recovering zinc chloride by contacting the polymer from step (f) with water.

5. A process for the separation of iron III, cobalt II, and nickel II from a mixture thereof, which comprises the steps of:

(a) dissolving the mixture of metals in a 2 M potassium thiocyanate medium;

(b) adjusting the solution from step (a) to 0.5 M of hydrochloric acid;

(c) containing the solution from step (b) with a solid, insoluble polymer containing oxygen bonded to carbon to cause chloride complexes of iron III, cobalt II, and nickel II, respectively, to bond to the polymer; and

(d) rinsing the polymer in step (c) in several steps with water or 0.01 M potassium thiocyanate to respectively recover nickel II, cobalt II, and iron III.

4,292,281

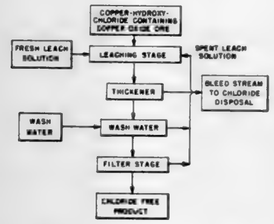
SELECTIVE LEACHING OF CHLORIDE FROM COPPER OXIDE MINERALS

Dennis D. Chilcote, Hibbing, and Donald J. Kaczyski, Pengilly, both of Minn., assignors to The Hanna Mining Company, Cleveland, Ohio

Filed Jul. 15, 1980, Ser. No. 169,179
Int. Cl.³ C01G *3/02*
U.S. Cl. 423—27 **30 Claims**

1. A method for extracting chloride for copper-hydroxy-chloride containing copper oxide ore comprising the steps of

(a) contacting said ore with an aqueous solution of the basic salt of a Group I-A Group II-A metal in a leaching stage to extract chloride ions from said ore and dissolve said chloride ions in said solution, said salt including an anionic portion with a valence of minus one or minus two, the molar ratio of said anionic portion to the chloride ions in said ore being in the range of about 5:1 to about 1:1 when the valence of said ionic portion is minus one and about 5:2 to about 1:2 when the valence of said ionic portion is minus two;



(b) removing part of said solution from the mixture of ore and solution as a bleed stream for chloride disposal; and

(c) separating said ore from the remainder of said solution.

4,292,282

PROCESS FOR RECOVERING METALS FROM CATALYSTS FOR THE HYDRODESULFURIZATION OF HYDROCARBONS

Jay Y. Welsh, Catonsville, Md.; Pierre C. Picquet, and Pierre D. Schyns, both of Mons, Belgium, assignors to Societe Europeenne des Derives du Manganese, en abrege Sedema Societe Anonyme, Brussels, Belgium

Filed Apr. 7, 1980, Ser. No. 137,695
Claims priority, application France, Apr. 9, 1979, 79 08940
Int. Cl.³ C01G *39/04, 31/04;* C01F *7/56*
U.S. Cl. 423—60 **17 Claims**

1. A process for recovering molybdenum, vanadium an aluminum metal values from residues of hydrodesulfurization catalysts from which catalysts the residual hydrocarbons have been removed, comprising chlorinating said residues of hydrodesulfurization catalysts using a mixture of gaseous chlorine, hydrogen chloride and water vapor at a temperature of from about 200° C. to about 400° C., whereby the molybdenum and vanadium are volatilized as oxychlorides and aluminum is volatilized as chloride, and absorbing said volatilized oxychlorides and chloride at a temperature between about 20° C. and about 70° C. into an aqueous medium containing hydrochloric acid.

4,292,283

METHOD FOR THE RECOVERY OF ZINC

Horst Weigel, Cologne, Fed. Rep. of Germany, and Jorge Lema-Patino, La Paz, Bolivia, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 846,160
Int. Cl.³ C01G *9/06;* C22B *5/16*
U.S. Cl. 423—107 **3 Claims**

1. In a method for the recovery of zinc from zinc ores or concentrates in which said ores or concentrates are subjected to a primary leaching resulting in a leaching residue having a relatively high content of undissolved zinc and other metals, the residue is dried, suspended in hot gases under reducing conditions resulting in the volatilization of volatilizable zinc compounds and compounds of said other metals which are subsequently precipatated as mixed oxides, and oxide mixtures from pyrometallurgical treatment are subjected to a secondary leaching in a weakly acidic solution, the improvement which comprises:

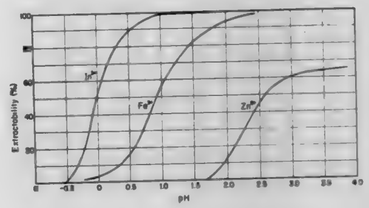
recycling the mixed oxides to said primary leaching step, then through said volatilization step and then into said secondary leaching.

4,292,284

SOLVENT EXTRACTION RECOVERY PROCESS FOR INDIUM

Keishi Tomii, Funabashi, and Hideyuki Tsuchida, Annaka, both of Japan, assignors to Toho Aen Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 153,271
Int. Cl.³ C01G *15/00*
U.S. Cl. 423—112 **6 Claims**



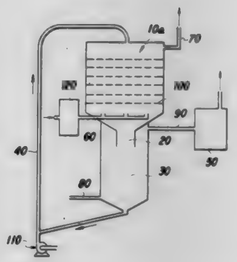
1. A process of recovering indium, comprising the steps of adjusting the pH of an aqueous solution containing indium ions to 0.25–4.5, bringing the aqueous solution into contact with an organic solvent solution prepared by diluting an extracting reagent containing a monoalkylphosphoric acid and/or a dialkylphosphoric acid and a trialkylphosphoric acid in 1:2–5 by volume ratio with a phase-stabilizing water-immiscible organic solvent to extract the indium ions in the organic solvent solution and then bringing the organic solvent solution into contact with an aqueous sulfuric acid-acidic solution containing 100–500 g/liter free sulfuric acid to back-extract the indium ions into the aqueous sulfuric acid-acidic solution to provide an indium concentrate.

4,292,285

METHOD FOR REMOVING COMPOUNDS WITH OFFENSIVE ODOR FROM A GAS CONTAINING THE SAME

Masaaki Nakao, Kunitachi, and Zenya Shiiki, Narashino, both of Japan, assignors to Taiyo Kaken Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 854,063, Nov. 22, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 101,435
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—210 **8 Claims**



1. In the method of removing basic compounds and other compounds with offensive odor from a large amount of a flowing exhaust gas containing the same at a low concentration by bringing said gas into contact with particles of activated carbon, the improvement comprising:

using a mixture of (1) particles of activated carbon having a value of compression strength of 500 to 1,500 g/cm² and (2) particles of porous carbon impregnated with an amount of 1–50% by weight of phosphoric acid or ammo-

nium phosphate or mixtures thereof, said particles of activated carbon being prepared by (a) mixing a pitch of softening point of 50° to 350° C., of a carbon content of 80 to 97%, of a ratio of hydrogen to carbon of 0.3 to 2.5 and of a nitrobenzene-insoluble fraction of less than 60% by weight with at least one aromatic hydrocarbon, (b) forming the mixture into substantially spherical particulate shape, (c) immersing the thus formed spherical particles into a solvent in which said pitch is hardly soluble but said aromatic hydrocarbon is easily soluble thereby extracting said aromatic hydrocarbon from said spherical particles of pitch, (d) oxidizing the extracted particles at a temperature of from room temperature to 400° C. with an oxidant thereby forming infusible pitch particles, (e) carbonizing the pitch particles thus made infusible in an inert atmosphere at a temperature higher than 600° C., and (f) activating said carbonized particles with steam;

controlling the humidity of said exhaust gas;

bringing said controlled exhaust gas into countercurrent contact in a fluidized bed with said mixture of particles of activated carbon and particles of porous carbon impregnated with phosphoric acid or ammonium phosphate or mixtures thereof at a temperature of lower than 100° C. thereby removing from said exhaust gas said compounds with offensive odor;

heating said mixture after said countercurrent contact with said exhaust gas together with steam thereby expelling said compounds with offensive odor as condensed gaseous matter from said mixture and also regenerating the adsorbing capability of said mixture of particles; and

recycling the thus regenerated mixture into said step of countercurrent contact.

4,292,286

PROCESS FOR SELECTIVE REMOVAL OF CYCLIC UREA FROM HINDERED AMINE GAS TREATING SOLUTION

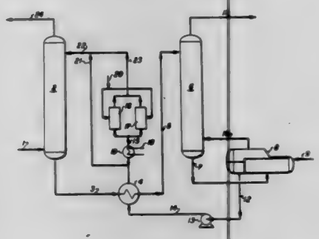
Geoffrey R. Say; James R. Hays, Sr., both of Baton Rouge, La., and Jagannathan N. Iyengar, Rockaway, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 972,500, Dec. 22, 1978, Pat. No. 4,180,548. This application Dec. 11, 1979, Ser. No. 102,611

The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—223 **8 Claims**

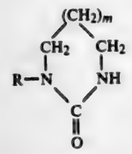


1. An acid gas scrubbing process providing for the selective removal of a cyclic urea reaction product which forms as a by-product of the acid gas removal, said process comprising:

a. contacting an acid gas mixture with an aqueous solution in an absorption zone, said aqueous solution comprising a basic alkali salt, or metal hydroxide selected from the group consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures, and an activator for said basic salt comprising at least one sterically hindered amine having the generic formula:

$$R—NH—(CH_2)_m—NH_2$$

where R is a secondary or tertiary alkyl or cycloalkyl hydrocarbon having 4–20 carbon atoms and m is 2–5, at elevated temperatures and pressures such that there is formed a cyclic urea reaction product having the formula:



where R is a secondary or tertiary alkyl or cycloalkyl hydrocarbon having 4–20 carbon atoms and m is 0–3;

b. passing said acid gas rich aqueous solution to a regeneration zone where it is contacted with steam to remove the acid gas impurities therefrom;

c. cooling a portion of the lean solution exiting from said regeneration zone to a temperature ranging from 180°–80° F. to selectively precipitate the cyclic urea from said lean solution;

d. passing said lean solution containing said precipitated cyclic urea to a separation zone to remove at least a portion of the cyclic urea from said lean solution.

4,292,287

METHOD FOR DIRECTLY RECOVERING FLUORINE FROM GAS STREAMS

Michael J. Orlett, Portsmouth, and Anthony J. Saraceno, Waverly, both of Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 24, 1980, Ser. No. 143,246

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—241 **13 Claims**

1. A process for the removal of gaseous fluorine from a gas stream containing the same, said process comprising:

directing said stream through a bed of sintered anhydrous K_3NiF_6 pellets at a temperature effecting fluorination of said pellets to K_3NiF_7.

6. A process for the removal of gaseous fluorine from a gas stream containing the same, comprising:

contacting said stream with anhydrous K_3NiF_6 pellets, said pellets having been prepared by the steps of:

(a) providing a 3:1 mole-ratio powder mixture of potassium fluoride and hydrated nickel fluoride,

(b) contacting said mixture with finely divided water at a temperature effecting conversion of said mixture to agglomerates of hydrated K_3NiF_5,

(c) heating the agglomerates to a temperature effecting sintering but not fusion thereof to form sintered pellets of anhydrous K_3NiF_5, and

(d) reacting said pellets with gaseous fluorine to convert them to K_3NiF_6.

4,292,288

CATALYST FOR CO REMOVAL FROM FLUE GAS

Elroy M. Gladrow, East Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 18, 1977, Ser. No. 843,277

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—247 **4 Claims**

1. A process for reducing the level of CO in the effluent flue gas from the regeneration of a cracking catalyst which comprises contacting said regenerator effluent flue gas with a spent noble metal-containing reforming catalyst at temperatures ranging from 1000° F. to 1350° F. to oxidize CO to CO_2, said catalyst comprising from 0.1 to 1.0% of platinum, palladium, iridium, rhodium, rhenium or mixtures thereof.

4,292,289

PROCESS FOR PRODUCING HYDROGEN FLUORIDE AND PHOSPHORIC ACID

Curtis W. Cannon, San Diego, Calif., and Robert N. Hall, Boulder, Colo., assignors to Climax Chemical Company, Hobbs, N. Mex.

Continuation-in-part of Ser. No. 987, Jan. 4, 1979, Pat. No. 4,202,867, which is a continuation-in-part of Ser. No. 939,958, Sep. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 828,925, Aug. 29, 1977, abandoned. This application Feb. 14, 1980, Ser. No. 121,486

Int. Cl.³ C01B *25/10, 25/16*

U.S. Cl. 423—301 **16 Claims**

1. A process for producing hydrogen fluoride from fluoride bearing ores comprising

contacting a fluoride and a phosphate bearing raw material with fluorosulfonic acid to release hydrogen fluoride and volatile phosphorous compounds,

separating said hydrogen fluoride and said volatile phosphorous compounds from the excess fluorosulfonic acid and residual matter,

separating said hydrogen fluoride from said volatile phosphorous compounds and recovering same.

4,292,290

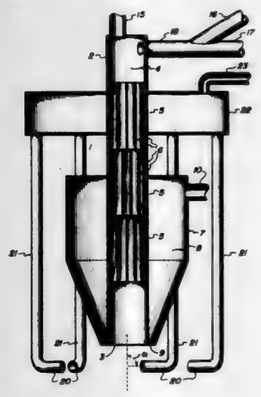
PROCESS FOR THE PRODUCTION OF FINELY-DIVIDED METAL AND METALLOID OXIDES

Donald E. Tunison, III, Savoy, Ill., assignor to Cabot Corporation, Boston, Mass.

Filed Apr. 16, 1980, Ser. No. 140,856

Int. Cl.³ C01B *33/18, 13/14*

U.S. Cl. 423—336 **13 Claims**



1. In a process for the production of finely-divided particulate metal and metalloid oxides comprising mixing, within a burner means, a vaporous or gaseous metal or metalloid halide, or mixture thereof, with a hydrogen-containing water-producing fuel and an oxidant therefor; projecting the resulting reactant mixture as a continuous stream from the mouth of said burner means into a reaction space; continuously discharging a purge gas at a fouling preventive rate along the boundary of said reactant mixture stream in the region of the burner mouth and continuously combusting the reactant mixture stream within said reaction space to produce said finely-divided particulate oxide therein; the improvement which comprises: substantially tangentially contacting the periphery of said reactant mixture stream, at a plane substantially normal thereto and spaced downstream from said burner mouth, with a plurality of continuous pilot flames.

4,292,291

PROCESS FOR THE PRODUCTION OF FURNACE BLACK

Lothar Rothbuhr, Hermulheim, and Josef Witte, Bruhl, both of Fed. Rep. of Germany, assignors to Deutsche Gold- Und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,770

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827872

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 **11 Claims**

1. In a process for the production of furnace black comprising spraying an oily carbon black forming material into a stream of hot combustion gases produced by reaction of fuel with reaction air, chilling and recovery of the carbon black by separation from the waste gases during which the reaction air is heated by means of the waste gases separate from the carbon black conducting conduit, the improvement comprising burning the waste gases in a combustion apparatus by means of secondary air in an amount to provide an oxygen excess over that required to burn the waste gases in order to heat the reaction air to a temperature between 600° and 1,250° C., and then introducing the thus heated reaction air into the process.

4,292,292

CHLORINE DIOXIDE GENERATION PROCESS

Bruce W. Hicks, Rio Linda, and Jerry D. Hicks, Sacramento, both of Calif., assignors to Rio Linda Chemical Company, Rio Linda, Calif.

Filed May 30, 1980, Ser. No. 154,831

Int. Cl.³ C01B *11/02*

U.S. Cl. 423—477 **5 Claims**

1. A continuous process for producing chlorine dioxide by the reaction of a chlorite in a strong hydrochloric acid solution which comprises: Maintaining a constant level in a single reactor, in the absence of dilution water, by continuously feeding an undiluted solution of sodium chlorite that is from 0.7 molar to 3.49 molar into the reactor, and continuously feeding an undiluted hydrochloric acid solution that is from 6 molar to 12 molar into the reactor wherein from 0.8 moles to 2 moles of hydrochloric acid is supplied per mole of sodium chlorite, continuously removing the excess solution containing the generated chlorine dioxide from the reactor.

5. A process for producing chlorine dioxide by the reaction of a chlorite in a strong hydrochloric acid solution which comprises:

reacting in the absence of dilution water an undiluted solution of sodium chlorite that is from 0.7 molar to 3.49 molar with an undiluted hydrochloric acid solution that is from 6 molar to 12 molar in a reactor wherein from 0.8 moles to 2 moles of hydrochloric acid is supplied per mole of sodium chlorite.

4,292,293

METHOD FOR THE OXIDATION OF WATER-SOLUBLE SULFIDE COMPOUNDS TO HIGHER OXIDATION STATES

Donald A. Johnson, Bolingbrook, and Baker N. Nimry, Downers Grove, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 28, 1980, Ser. No. 172,608

Int. Cl.³ C02F *1/76;* C01B *17/06*

U.S. Cl. 423—571 **11 Claims**

1. An improved method for the oxidation of water-soluble inorganic sulfide ions found in aqueous systems to higher oxidation states which method utilizes a metallic ion catalyst selected from the group consisting of nickel, cobalt, magnesium, copper and iron in the presence of an oxidizing agent selected from the group consisting of oxygen, hydrogen peroxide and chlorine, the improvement comprising adding to the aqueous system a water-soluble anionically charged polymer

having a molecular weight of from 1,000–100,000 in an effective amount to improve the efficiency of the metallic ion catalyst.

4,292,294

YELLOW PIGMENTS STABLE AT HIGH TEMPERATURES

Arvind S. Patil, Grosse Ile, Mich., and Lowell E. Netherton, Summit, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 37,567, May 9, 1979, abandoned. This application Jan. 25, 1980, Ser. No. 115,309

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—594 **10 Claims**

1. A transparent, temperature-stable spinel in the form of acicular particles having a length of 0.01 to 0.13 microns and consisting essentially of oxygen, iron, and at least one other metal, said spinel corresponding to the formula

$$XFe_2O_4$$

wherein X is said other metal, said other metal being one selected from the group consisting of magnesium, zinc and tin.

5. A method of making a transparent yellow pigment having good stability at high temperatures, said method consisting essentially of the steps of

forming a first aqueous solution consisting essentially of water, a soluble ferrous salt, and at least one other salt, said salt being a soluble salt of a non-ferrous metal selected from the group consisting of magnesium, zinc, and tin, said ferrous salt and said non-ferrous salt being present in said solution in proportions such that the respective quantities of iron and other metal which are present will yield, when said solution is so adjusted in pH as to cause precipitation, the formation of a substantial quantity of a precipitate oxidizable to a spinel of the formula XFe_2O_4, in which X is a metal selected from the group consisting of magnesium, zinc, and tin

mixing with said first aqueous solution a second aqueous solution to form a reaction mixture, said second solution containing a substantial proportion of a soluble alkalizing compound selected from the group consisting of the carbonates, bicarbonates, and hydroxides of the alkali metals, the said second solution being used in such quantity and the said first and second solutions being in such a state of dilution that there results upon said mixing the formation of a precipitate in the form of particles of sub-micron size, the liquid phase of said reaction mixture being as a result of such precipitation substantially completely depleted in its content of metal ions having a valence greater than one;

oxidizing at 15° to 35° C. the said precipitate to form a spinel in aqueous solution;

then heating said aqueous solution having said spinel therein to a temperature of from about 75° to 100° C.; and

recovering said spinel.

4,292,295

HIGHLY REACTIVE ALUMINA AND PROCESS FOR THE PREPARATION THEREOF

Michel Pajot, and Laurent Seigneurin, both of Salindres, France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 51,172, Jun. 22, 1979, abandoned. This application Aug. 1, 1980, Ser. No. 174,659

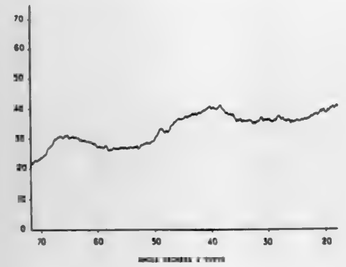
Claims priority, application France, Jul. 26, 1978, 78 22095

Int. Cl.³ C01F *7/30, 7/02*

U.S. Cl. 423—625 **4 Claims**

1. Highly reactive aluminum oxide (Al_2O_3) containing no more than about 10% water, said aluminum oxide having an amorphous structure and a specific surface of greater than about 600 m^2/g and the X-ray diffraction pattern of FIG. 1.

2. A process of preparing highly reactive aluminum oxide (Al_2O_3), having an amorphous structure and a specific surface of greater than about 600 m^2/g., comprising thermally decomposing the double carbonate of aluminum and ammonium of the formula $AlNH_4CO_3(OH)_2$ at a temperature of between about 200° and about 500° C., for a period of time of between



a fraction of a second and about 5 hours at atmospheric pressure, wherein the double carbonate has an X-ray diffraction diagram whose interplanar spacings and relative intensities have approximately the following values:

d A	$1/1_1$	d A	$1/1_1$	d A	$1/1_1$
5.82	100	2.57	25	1.815	2
4.07	21	2.25	5	1.729	12
3.41	10	2.19	7	1.657	7
3.32	44	2.038	20	1.465	3
2.90	18	1.991	9	1.429	6
2.63	2	1.879	2	1.410	3
				1.388	3

4,292,296

DIAGNOSTIC METHOD

George H. Parsons, Jr., Arlington, Mass., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 12, 1978, Ser. No. 941,707

Int. Cl.³ G01N *33/48*; A61K *43/00*; G01T *1/00*

U.S. Cl. 424—1 **41 Claims**

1. A method for directly determining free, unbound analyte in a sample containing a proportion of analyte bound to a receptor in the sample, comprising

(a) contacting the sample with an unlabelled receptor for the analyte to bind the free analyte in the sample;

(b) removing the sample from contact with the unlabelled receptor;

(c) contacting the unlabelled receptor with a labelled reagent selected from the group of

(i) a labelled analyte analogue, or

(ii) a labelled, soluble analyte receptor;

(d) separating the receptor of step c from unbound labelled reagent;

(e) measuring the amount of bound or unbound label; and

(f) correlating the measured amount in step (e) with the amount of free analyte in the sample.

4,292,297

SELENOMETHIONINE-^{75}SE-CONTAINING SOLUTION HAVING A THIOL AS A STABILIZER

Jan Nielsen, and Karel J. Panek, both of Petten, Netherlands, assignors to Byk-Mallinckrodt Cil B.V., Petten, Netherlands

Filed Feb. 12, 1979, Ser. No. 11,337

Claims priority, application Netherlands, Feb. 21, 1978, 7801908

Int. Cl.³ A61K *29/00, 43/00*; G01T *1/00*

U.S. Cl. 424—1 **16 Claims**

8. A method of performing radiodiagnostic tests comprising administering to an animal a stabilized selenomethionine solution comprising selenomethionine enriched with radioactive ^{75}Se and a thiol dissolved in a pharmaceutically acceptable liquid carrier, the thiol being an organic compound as represented by the formula

$$HS-(CH_2)_n-CHR-CO-NH-CH_2-COOH$$

in which formula n is 0 or 1 and R is a methyl group or a glutamyl group with the proviso that when n is 0, R represents the methyl group and when n is 1, R represents the glutamyl group.

4,292,298

PHARMACEUTICAL COMPOSITIONS CONTAINING PARACETAMOL

Adrian F. Davis, Dorking, England, assignor to Beecham Group Limited, England

Filed Sep. 12, 1980, Ser. No. 186,767

Claims priority, application United Kingdom, Sep. 14, 1979, 31925/79

Int. Cl.³ A61K *9/22, 9/52, 31/165, 31/375*

U.S. Cl. 424—10 **10 Claims**

1. An analgesic and antipyretic pharmaceutical composition suitable for oral administration, comprising paracetamol, characterised in that the composition further includes a sufficient amount of ascorbic acid in a sustained release form to counteract the potential liver toxicity effects of the paracetamol.

4,292,299

SLOW-RELEASING MEDICAL PREPARATION TO BE ADMINISTERED BY ADHERING TO A WET MUCOUS SURFACE

Yoshiki Suzuki; Hiroshi Ikura, both of Hino, and Gentaro Yamashita, Koganei, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP79-00284, § 371 Date Jul. 7, 1980, § 102(e), Date Jul. 7, 1980, PCT Pub. No. W080/00916, PCT Pub. Date May 15, 1980.

This PCT application filed Ser. No. 202,384

Claims priority, application Japan, Nov. 6, 1978, 53-135883

Int. Cl.³ A61L *15/03*; A61K *9/24*

U.S. Cl. 424—16 **9 Claims**

1. A slow-releasing medical preparation to be administered by adhering to a wet mucous surface comprising an adhesive layer composed of a polymer which has the adhesiveness to a wet mucous surface and a property to swell upon moistening and a nonadhesive, either water soluble or disintegrable, layer which has no adhesiveness to a wet mucous surface and at least either one of said adhesive layer and nonadhesive layer is made to contain a medicament.

4,292,300

CONTROLLED RELEASE SUPPOSITORIES

Geoffry A. Byrne, Gifford, and Ross I. Aylott, Edinburgh, both of Scotland, assignors to Inveresk Research International, Musselburgh, England

Filed Jul. 20, 1977, Ser. No. 817,412

Claims priority, application United Kingdom, Jul. 23, 1976, 30793/76

Int. Cl.³ A61K *9/02*

U.S. Cl. 424—19 **6 Claims**

1. A non-dissolving, non-disintegrating slow-release suppository consisting essentially of methyl cellulose, water, and a therapeutically effective amount of a water-soluble therapeutically active ingredient wherein the water is present in an amount of more than 35 parts by weight.

4,292,301

POLYMERIC DIFFUSION MATRIX CONTAINING EPHEDRINE

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 109,242, Jan. 3, 1980, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 47,084, Jun. 11, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,010

Claims priority, application Japan, Aug. 14, 1979, 54-103459

Int. Cl.³ A61L *15/03*; A61K *31/79*

U.S. Cl. 424—28 **10 Claims**

1. A self-supporting polymeric diffusion matrix for the sustained release of ephedrine in order to transdermally deliver said ephedrine to a patient and provide said patient with a decongestant effect, said matrix comprising from about 2 to about 60% of a polar plasticizer, from about 6 to about 20% by weight polyvinylalcohol, from about 2 to 10% by weight polyvinylpyrrolidone, and a pharmaceutically effective amount of ephedrine to provide a sustained release of said ephedrine over a prolonged period.

4,292,302

POLYMERIC DIFFUSION MATRIX CONTAINING TERBUTALINE

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 109,242, Jan. 3, 1980, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned, and Ser. No. 47,084, Jun. 11, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,104

Claims priority, application Japan, Aug. 14, 1979, 54-103459

Int. Cl.³ A61L *15/03*; A61K *31/79*

U.S. Cl. 424—28 **10 Claims**

1. A self-supporting polymeric diffusion matrix for the sustained release of terbutaline in order to transdermally deliver said terbutaline to a patient and provide said patient with a bronchodilator effect, said matrix comprising from about 2 to about 60% of a polar plasticizer, from about 6 to about 20% by weight polyvinylalcohol, from about 2 to 10% by weight polyvinylpyrrolidone, and a pharmaceutically effective amount of terbutaline to provide a sustained release of said terbutaline over a prolonged period.

4,292,303

POLYMERIC DIFFUSION MATRIX CONTAINING CLONIDINE

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 109,242, Jan. 3, 1980, which is a continuation-in-part of Ser. No. 47,084, Jun. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,106

Claims priority, application Japan, Aug. 14, 1979, 54-103459

Int. Cl.³ A61L *15/03*; A61K *31/79*

U.S. Cl. 424—28 **10 Claims**

1. A self-supporting polymeric diffusion matrix for the sustained release of clonidine in order to transdermally deliver said clonidine to a patient and provide said patient with an antihypertensive effect, said matrix comprising from about 2 to about 60% of a polar plasticizer, from about 6 to about 20% by weight polyvinylalcohol, from about 2 to 10% by weight polyvinylpyrrolidone, and a pharmaceutically effective amount of clonidine to provide a sustained release of said clonidine over a prolonged period.

4,292,304

OIL BASED DENTIFRICE

Ronald R. Barels, 14 Doral Dr., Moraga, Calif. 94566, and Daniel J. Ghinazzi, 1374 Mossy Ct., Concord, Calif. 94521

Filed Sep. 30, 1980, Ser. No. 192,465
Int. Cl.³ A61K *9/48, 9/16, 9/18, 31/355*
U.S. Cl. 424—37 **2 Claims**

1. An encapsulated dentifrice comprising:
an edible capsule having an interior chamber, said capsule adapted to be placed into a user's mouth, readily crushed between the teeth to release a dentifrice, and then the ruptured capsule chewed and/or swallowed, said capsule being formed of a gelatin material which is water soluble and which is substantially oil insoluble;
a quantity of from about 0.5 g to about 1 g of a substantially anhydrous, oil based dentifrice within said interior chamber and encapsulated by said capsule, said dentifrice including an edible oil base in an amount of from about 10 weight percent to about 85 weight percent of said dentifrice to thereby easily disperse said dentifrice throughout the oral cavity, an abrasive agent in an amount of from about 3 weight percent to about 35 weight percent of said dentifrice suspended therein to aid in the disposal of plaque, a surfactant agent, and at least about 10 mg of vitamin E.

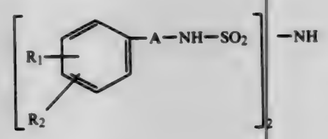
4,292,305

ANTIALLERGIC IMIDODISULFAMIDES

Fadia E. Ali, Cherry Hill; Robert D. Krell, Medford, both of N.J., and Kenneth M. Snader, Hatboro, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Feb. 13, 1980, Ser. No. 121,066
Int. Cl.³ A61K *31/135;* **C07C** *143/72, 143/84*
U.S. Cl. 424—45 **14 Claims**

1. A compound represented by the formula:



wherein:
A is a single valence bond, an alkylene chain $-(CH_2)_n-$ in which n is a positive integer 2, 3, 4 or 6, a branched alkylene chain of from 2 to 4 carbon atoms, or phenylmethylene;
R_1 is hydrogen, 3- or 4-bromo, 3- or 4-chloro, or 3- or 4-trifluoromethyl; and
R_2 is hydrogen, with the proviso that when n is 2, R_1 is 4-chloro, 4-bromo, 4-methoxy or 3-trifluoromethyl and R_2 is hydrogen or together with R_1 in adjacent positions forms either a 3,4-dichloro substitution or a fused benzo ring, and further with the proviso that when A is a single valence bond R_1 is not hydrogen or 4-chloro, or
an alkali metal salt of said compound.

7. A pharmaceutical composition for inhibiting the symptoms of asthma comprising a nontoxic pharmaceutical carrier or diluent and an amount sufficient to produce said inhibition of a compound of claim 1.

4,292,306

DENTIFRICE WITH TOPICAL AND SYSTEMIC PHOSPHATE FLUORIDE SYSTEM

Frank R. Faunce, 201 Wilcrest Dr., Apt. 946, Houston, Tex. 77042

Division of Ser. No. 973,910, Dec. 28, 1978, Pat. No. 4,203,966. This application Nov. 8, 1979, Ser. No. 92,277
Int. Cl.³ A61K *7/18*
U.S. Cl. 424—52 **1 Claim**

1. A dentifrice composition for topical fluoride treatment of human teeth during oral hygiene, said dentifrice composition comprising:
a quantity of stannous fluoride sufficient to develop a fluoride concentration of said composition from about 0.03% to about 0.05% by weight of said dentifrice composition;
a sufficient quantity of sodium dihydrogen phosphate compound for pH adjustment to a pH range of about 3.5 and for developing an energized tooth surface for enhancement of said topical fluoride treatment, said stannous fluoride and said sodium dihydrogen phosphate providing a complex stannous fluoride fluorophosphate compound at the energized tooth surface during oral hygiene that develops a caries inhibiting fluorophosphate complex within the crystalline latticework of the tooth enamel; and
a water-free gel carrier that inhibits deterioration of the stannous fluoride and the sodium dihydrogen phosphate compound prior to use in an aqueous environment.

4,292,307

VACCINE AND METHOD FOR PROPHYLAXIS AND TREATMENT OF CLOSTRIDIOSES OF ANIMALS AND POULTRY

Valentina P. Zemlyakova, ulitsa Jugo-Zapadnaya, dom 73/26, kv. 48, Minsk, U.S.S.R.

Continuation of Ser. No. 942,145, Sep. 14, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,172
Claims priority, application U.S.S.R., Sep. 30, 1977, 2523702
Int. Cl.³ A61K *9/12, 39/08, 39/116*
U.S. Cl. 424—92 **12 Claims**

1. A universal vaccine for prophylaxis and treatment of clostridiosis of animals and poultry, comprising formaldehyde-detoxicated toxoids of *Clostridium perfringens* types A, B, and D, *Cl.oedematiens* and *Cl.septicum* separated from the microbial mass, a sorbent comprised of a aluminum gel and a solvent comprised of phosphate buffer and physiological salt solution in a weight ratio of about 1:1, said vaccine being substantially free of bacterial cells and nonspecific proteins, the antigenic activity of said components, expressed in combining units per ml of the vaccine being as follows:

toxoid of *Cl. perfringens* type A	2–100
toxoid of *Cl. perfringens* type B	2–100
toxoid of *Cl. perfringens* type D	1–80
toxoid of *Cl. oedematiens*	1–80
toxoid of *Cl. septicum*	2–10 mg
sorbent	1–10 mg
solvent	balance.

4,292,308

TREATMENT OF ANIMALS EXPOSED TO OR SUBJECT TO EXPOSURE TO ORGANOPHOSPHATE ANIMAL POISONOUS NERVE AGENTS

Murray J. Sanders, Delray Beach, Fla., and James A. Vick, Annandale, Va., assignors to Biotherapeutics, Inc., Delray Beach, Fla.

Filed Aug. 21, 1979, Ser. No. 68,446
Int. Cl.³ A61K *35/58, 39/38*
U.S. Cl. 424—98 **15 Claims**

1. A method for treatment of an animal exposed to, or subject to exposure to, organophosphate animal poisonous nerve agents, comprising administering to the animal an effective protective amount of detoxified but neurotropically active modified neurotoxin having a Semliki Forest Virus Test Plaque Forming Unit reduction of at least 30%, and being derived from venom selected from the group consisting of venom of a snake of the genus Naja or the genus Bungarus and combinations thereof.

4,292,309

ANTIBIOTICS C-14482 B_1, B_2 AND B_3

Eiji Higashide, Takarazuka; Seiichi Tanida, Nagaokakyo; Masayuki Muroi, Suita, and Mitsuko Asai, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 17, 1980, Ser. No. 113,131
Claims priority, application Japan, Feb. 2, 1979, 54-11561
Int. Cl.³ A61K *35/74;* **C12P** *1/04;* **C12N** *1/20*
U.S. Cl. 424—119 **5 Claims**

1. Antibiotics C-14482 B_1, B_2 or B_3 which have the following properties, and their salts

(a) Antibiotic C-14482 B_1:
(1) Elemental analysis (%) (recrystallized from acetone-hexane and dried under reduced pressure at a room temperature for 30 hours or more):
C 55.61±1.0
H 6.31±0.5
N 13.64±1.0
(2) Melting point: Not lower than 300° C.
(3) Absorption spectra in the ultraviolet and visible regions:
λ_{max}^{MeOH} 213±3 nm ($E_{1cm}^{1\%}$ 592±60)
λ_{max}^{MeOH} 283±3 nm ($E_{1cm}^{1\%}$ 227±25)
λ_{max}^{MeOH} 496±3 nm ($E_{1cm}^{1\%}$ 50.1±10)
(4) Infrared absorption spectrum (KBr disc method), principal peaks (cm^{-1}): 3580, 3420, 3175, 2950, 2900, 2840, 1685, 1650, 1610, 1455, 1395, 1345, 1330, 1250, 1230, 1175, 1110, 1075, 1025, 1000, 965, 940, 915, 855, 825, 780, 760;
(5) Solubility:
Insoluble in: Hexane, petroleum ether
Slightly soluble in: Ethyl acetate, chloroform, methylene chloride, diethyl ether, water;
Soluble in: Ethanol
Readily soluble in: Methanol, dimethyl sulfoxide
(6) Color reactions:
Negative to: Ninhydrin reaction, Sakaguchi reaction;
Positive to: Dragendorff's reaction, Barton reaction; Potassium permanganate reagent is decolorized;
(7) Acidity, neutrality of basicity: Weakly basic
(8) Color: Dark red or reddish brown
(9) Thin-layer chromatography; silica gel (Spot film f, Tokyo Kasei Co., Japan)
(i) Chloroform-methanol (9:1), Rf 0.37
(ii) Ethyl acetate-methanol (1:1), Rf 0.31

(b) Antibiotic C-14482 B_2:
(1) Elemental analysis (%) (dried under reduced pressure at a room temperature for 30 hours or more):
C 57.40±1.0
H 6.51±0.5
N 13.44±1.0
(2) Melting point: Not lower than 300° C.
(3) Absorption spectra in the ultraviolet and visible regions:
$_{max}^{MeOH}$ 214.5±3 nm ($E_{1cm}^{1\%}$ 555±60)
$_{max}^{MeOH}$ 283±3 nm ($E_{1cm}^{1\%}$ 207±25)
$_{max}^{MeOH}$ 499±3 nm ($E_{1cm}^{1\%}$ 55.8±10)
(4) Infrared absorption spectrum (KBr disc method), principal peaks (cm^{-1}): 3430, 2940, 2980, 1680, 1650, 1625, 1590, 1480, 1450, 1390, 1340, 1250, 1175, 1110, 1075, 1055, 1025, 995, 960, 940, 905, 855, 825;
(5) Solubility:
Insoluble in: Hexane, petroleum ether
Slightly soluble in: Ethyl acetate, diethyl ether, water
Soluble in: Ethanol, chloroform
Readily soluble in: Methanol, dimethyl sulfoxide
(6) Color reaction:
Negative to: Ninhydrin reaction, Sakaguchi reaction;
Positive to: Dragendorff's reaction, Barton reaction; Potassium permanganate reagent is decolorized;
(7) Acidity, neutrality or basicity: Weakly basic
(8) Color: Dark red or reddish brown
(9) Thin-layer chromatography; silica gel (spot film f. Tokyo Kasei Co., Japan)
(i) Chloroform-methanol (9:1), Rf 0.43
(ii) Ethyl acetate-methanol (1:1), Rf 0.23

(c) Antibiotic C-14482 B_3:
(1) Elemental analysis (%) (dried under reduced pressure at a room temperature for 30 hours or more):
C 58.74±1.0
H 6.64±0.5
N 14.31±1.0
(2) Melting point: Not lower than 300° C.
(3) Absorption spectra in the ultraviolet and visible regions:
λ_{max}^{MeOH} 214±3 nm ($E_{1cm}^{1\%}$ 620±60)
λ_{max}^{MeOH} 283±3 nm ($E_{1cm}^{1\%}$ 251±25)
λ_{max}^{MeOH} 492±3 nm ($E_{1cm}^{1\%}$ 55.6±10)
(4) Infrared absorption spectrum (KBr disc method), principal peaks (cm^{-1}): 3430, 2940, 2890, 1680, 1650, 1630, 1595, 1450, 1390, 1340, 1320, 1250, 1175, 1105, 1075, 1020, 995, 935, 905, 825;
(5) Solubility:
Insoluble in: Hexane, petroleum ether
Slightly soluble in: Ethyl acetate, diethyl ether, water
Soluble in: Ethanol, chloroform
Readily soluble in: Methanol, dimethyl sulfoxide
(6) Color reaction:
Negative to: Ninhydrin reaction, Sakaguchi reaction
Positive to: Dragendorff's reaction, Barton reaction; Potassium permanganate reagent is decolorized;
(7) Acidity, neutrality or basicity: Weakly basic
(8) Color: Dark red or reddish brown
(9) Thin-layer chromatography; silica gel (Spot Film f, Tokyo Kasei Co., Japan)
(i) Chloroform-methanol (9:1), Rf 0.20
(ii) Ethyl acetate-methanol (1:1), Rf 0.18.

4,292,310

METHOD OF TREATING HYPERCHOLESTEROLEMIA WITH N-ACYL AMPHOTERICIN B

Harry W. Gordon, 210 E. 181st St., Bronx, N.Y. 10457, and Carl P. Schaffner, 10 Youngs Rd., Trenton, N.J. 08619

Division of Ser. No. 794,920, May 9, 1977, Pat. No. 4,163,050, which is a division of Ser. No. 521,289, Nov. 6, 1974, Pat. No. 4,039,659, which is a division of Ser. No. 177,512, Sep. 2, 1971, Pat. No. 3,855,409, which is a continuation of Ser. No. 221,062, Jan. 26, 1972, Pat. No. 3,966,910, and a continuation of Ser. No. 24,797, Apr. 1, 1970, abandoned, which is a continuation of Ser. No. 627,313, Mar. 31, 1967, Pat. No. 3,627,879. This application Apr. 12, 1979, Ser. No. 29,198
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—122 **3 Claims**

1. A process for treating hypercholesterolemia in a large mammal in need of said treatment which comprises orally administering an effective dose for treating hypercholesterolemia of N-acyl amphotericin B to said mammal.

4,292,311

CYANIDE ANTIDOTE

Stanley J. Sarnoff, 7507 Hampden La., Bethesda, Md. 20034

Filed Dec. 23, 1980, Ser. No. 219,852
Int. Cl.³ A61K *33/04, 33/02*
U.S. Cl. 424—162 **13 Claims**

1. A process of treating a mammal which has had cyanide poisoning with an antidote therefor comprising injecting the mammal with sufficient hydroxylamine hydrochloride solution to increase the mammal's methemoglobin concentration and to convert the cyanide to cyanomethemoglobin.

4,292,312
METHOD FOR PREPARING ALLOXAN STABLE AQUEOUS SOLUTIONS AND SOLUTIONS RESULTING THEREFROM

Henri Griffon, 72 Rue de Longchamps, 75782 Paris, France

Filed Jun. 13, 1980, Ser. No. 159,168
Claims priority, application France, Jun. 15, 1979, 79 15363
Int. Cl.³ A61K *31/00, 47/00, 31/505*
U.S. Cl. 424—176 10 Claims

1. A method for preparing a stable, aqueous solution of alloxan, which comprising:

dissolving in an aqueous fluid a predetermined quantity by weight of alloxan and adding from about 5 to 25 times the weight of said alloxan of at least one sugar selected from the group consisting of levulose, glucose and lactose to said fluid.

4,292,313
LRF ANTAGONISTS

Wylie W. Vale, Jr., and Jean E. F. Rivier, both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Apr. 15, 1980, Ser. No. 140,487
Int. Cl.³ A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 30 Claims

1. A peptide or a nontoxic salt thereof, said peptide having the formula:

$$R_1\text{-}R_2\text{-pCl-D-Phe-D-Trp-Ser-Tyr-}R_3\text{-}R_4\text{-Arg-Pro-}R_5$$

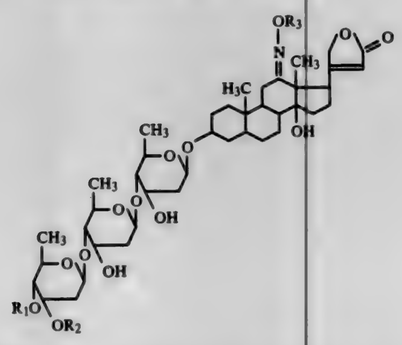
wherein R_1 is selected from the group consisting of hydrogen, formyl, acetyl, acrylyl, benzoyl and allyl; R_2 is selected from the group consisting of dehydro Pro, dehydro D-Pro, Thz and D-Thz; R_3 is selected from the group consisting of D-Trp and (imBzl)D-His; R_4 is selected from the group consisting of Leu and N^{α}MeLeu; and R_5 is selected from the group consisting of Gly—NH_2 and $NHCH_2CH_3$.

4,292,314
CARDIOACTIVE 12-DEHYDRODIGOXIN-OXIMES

Fritz Kaiser, Lampertheim; Klaus Koch, Mannheim; Wolfgang Schaumann, Heidelberg, and Wolfgang Voigtländer, Viernheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Sandhofer, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,481
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926026
Int. Cl.³ C07J *17/00;* A61K *31/58*
U.S. Cl. 424—182 7 Claims

1. A 12-dehydrodigoxin oxime of the formula



in which

R_1 and R_2 each independently is hydrogen, formyl, acetyl, propionyl, methyl, ethyl, n-propyl and isopropyl, or R_1 and R_2 together are ethylidene, propylidene or cyclohexylidene, and

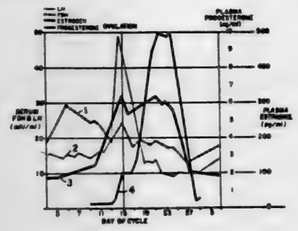
R_3 is hydrogen, methyl, ethyl, n-propyl, isopropyl, benzyl, phenylethyl or phenylpropyl.

6. A method for reducing the cardiac activity of a patient which comprises administering to such a patient enterally or parenterally in liquid or solid form a cardioactive effective amount of a compound according to claim 1.

4,292,315
FOLLICULAR PHASE ESTROGEN OR PROGESTIN WITH PHYSIOLOGIC ESTROGEN/PROGESTIN LUTEAL PHASE REPLACEMENT DRUG DELIVERY SYSTEM

Nichols Vorys, 336 S. Columbia Ave., Columbus, Ohio 43209

Division of Ser. No. 865,851, Dec. 30, 1977, abandoned. This application Aug. 24, 1979, Ser. No. 69,275
Int. Cl.³ A01N *45/00;* A61K *31/56*
U.S. Cl. 424—240 20 Claims



1. A drug delivery system including twenty-one (21) ordered and individually dispensable pharmacologically active tablets for the daily oral administration of one (1) tablet daily formulated in the predetermined order comprising:

an initial approximately seven (7) tablets which are first through seventh in the order of tablets, each including a same pharmacologically active low daily dosage of one unopposed steroid composition selected from the group of estrogen active steroids and progestin active steroids;

a following approximately four (4) tablets which are eighth through eleventh in the order of tablets, each containing a same pharmacologically low daily dosage of an estrogen active steroid combined with a progestin active steroid;

a following approximately seven (7) tablets which are twelfth through eighteenth in the order of tablets, each containing a same pharmacologically adequate regulation daily dosage of an estrogen active steroid combined with a progestin active steroid; and

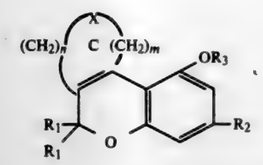
a concluding approximately three (3) tablets which are nineteenth through twenty-first in the order of tablets, each containing a same diminished dosage of an estrogen active steroid combined with a progestin active steroid, the same diminished dosage reduced by approximately one-half in pharmacological dosage strength from the dosage strength of the preceding adequate daily dosage of combined steroids.

4,292,316
ANTIGLAUCOMA AGENTS

Anthony T. Dren, Waukegan, and Barbara A. Bopp, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 948,058, Oct. 2, 1978, Pat. No. 4,217,351, which is a division of Ser. No. 711,749, Aug. 4, 1976, Pat. No. 4,136,183. This application Jan. 17, 1980, Ser. No. 112,989
Int. Cl.³ A61K *27/00, 31/54, 31/495, 31/445*
U.S. Cl. 424—248.56 3 Claims

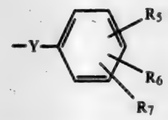
1. A method of reducing intra-ocular pressure in mammalian patients comprising administering to a glaucoma patient a therapeutic effective amount of a compound of the formula



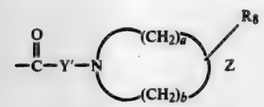
wherein, in the C ring, X is CH_2 or



n is an integer of 0 to 3 and m is an integer of 0 to 3; each R_1 is loweralkyl and when taken together the substituents R_1R_1 form oxygen; R_2 is a C_1–C_{20} straight or branched chain alkyl, cycloalkyl, or



wherein Y is a straight or branched chain alkylene group having from 1 to 10 carbon atoms, and each R_5, R_6 and R_7 are the same or different members selected from the group consisting of H, halo and loweralkyl; R_3 is



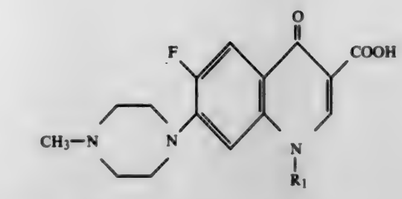
wherein Y′ is a straight or branched chain alkylene group having 1 to 8 carbon atoms, a is an integer from 1 to 4, b is an integer from 1 to 4, Z is CH_2, O, S or NR_9 where R_9 is H or loweralkyl, with the provision that when Z is O, S or NR_9, the sum of a and b is 3 or 4, and R_8 is H or loweralkyl; and thepharmaceutically acceptable salts thereof.

4,292,317
1,4-DIHYDRO-QUINOLINE-3-CARBOXYLIC ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Marcel Pesson, Paris, France, assignor to Laboratorie Roger Bellon, France and Dainippon Pharmaceutical, Japan

Filed Sep. 15, 1978, Ser. No. 942,635
Claims priority, application United Kingdom, Sep. 20, 1977, 39197/77; Apr. 3, 1978, 12983/78; May 30, 1978, 39197/12983/78
Int. Cl.³ A61K *31/495;* C07D *401/04*
U.S. Cl. 424—250 12 Claims

1. A compound of formula:



in which

R_1 is a methyl, ethyl, vinyl or allyl group and its physiologically acceptable non-toxic acid addition salts thereof.

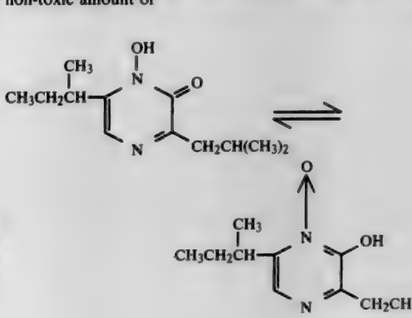
7. An anti-bacterial pharmaceutical composition comprising at least one active compound according to any of claims 1, 2, 3, 4 or 5 present in a pharmaceutically effective amount and in admixture with an inert, physiologically acceptable carrier.

4,292,318
PRODUCT AND METHOD FOR COMBATING SWINE DYSENTERY

Eugen Diethelm, Triesen, Liechtenstein, assignor to Grissman Chemicals Limited, England

Filed Jun. 6, 1980, Ser. No. 157,100
Claims priority, application United Kingdom, Jul. 10, 1979, 24003/79
Int. Cl.³ A61K *31/495*
U.S. Cl. 424—250 5 Claims

1. A method for the treatment or prophylaxis of swine dysentery which comprises administering to swine an effective non-toxic amount of



4,292,319
ANTIPHLOGISTIC PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Oswald Tauber; Günther Engelhardt; Mátyás Leitold, and Günther Schmidt, all of Biberach, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 25,718, Mar. 30, 1979, which is a continuation-in-part of Ser. No. 878,904, Feb. 17, 1978, Pat. No. 4,154,833. This application Jul. 14, 1980, Ser. No. 168,608
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708520
Int. Cl.³ A61K *31/19, 31/40, 31/445, 31/495*
U.S. Cl. 424—250 7 Claims

1. A method of suppressing the undesirable gastrointestinal side-effects produced by administering a non-steroidal antiphlogistic compound selected from the group consisting of 2-(4-isobutyl-phenyl)-propionic acid, 4-[4-(2′-fluoro-biphenylyl)]-4-hydroxy-crotonic acid, d-2-(6-methoxy-2-naphthyl)-propionic acid, o-[(2,6-dichloro-phenyl)-amino]-phenylacetic acid, 2-(2-fluoro-4-biphenyl)-propionic acid, and nontoxic, pharmaceutically acceptable salts thereof formed with

inorganic or organic bases, to a warm-blooded animal in need thereof, which comprises simultaneously administering to said animal 1 part by weight of 5,11-dihydro-11-[4-methyl-1-piperazinyl)-acetyl]-6H-pyrido[2,3-b][1,4]benzodiazepin-6-one or a non-toxic, pharmaceutically acceptable acid addition salt thereof per 2 to 500 parts by weight of non-steroidal antiphlogistic compound.

4,292,320

1,2,3,4-TETRAHYDROISOQUINOLINE DERIVATIVES AND THE PREPARATION THEREOF

Teiji Kishimoto, Kawanishi; Hiromu Kochi, Sakai, and Yoshiyuki Kaneda, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

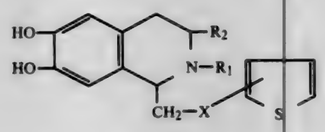
Continuation of Ser. No. 695,975, Jun. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 489,993, Jul. 19, 1974, Pat. No. 3,978,063. This application Aug. 17, 1979, Ser. No. 67,393

Claims priority, application Japan, Jul. 30, 1973, 48/85987

Int. Cl.[3] **A61K** *31/47;* **C07D** *409/12*

U.S. Cl. 424—258 **4 Claims**

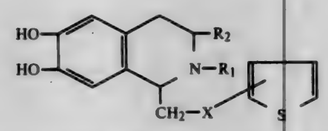
1. A 1,2,3,4-tetrahydroisoquinoline having smooth muscle relaxant activity of the formula:



wherein R_1 and R_2 are each hydrogen or lower alkyl and X is -O- or -S-, and pharmaceutically acceptable salts thereof.

4. A pharmaceutical composition effective for relaxing smooth muscles, comprising:

as an active ingredient, a pharmaceutically effective amount of 1,2,3,4-tetrahydroisoquinoline or a pharmaceutically acceptable salt thereof having the formula:



or mixtures thereof, wherein R_1 and R_2 are each hydrogen or lower alkyl and X is -O- or -S-, in a pharmaceutically acceptable carrier.

4,292,321

1,3,8-TRIAZASPIRODECANE-4-ONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

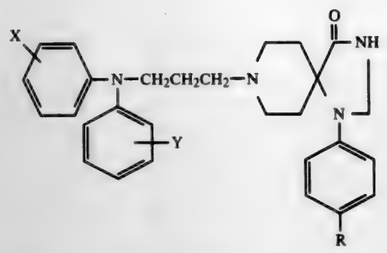
Ian C. Pattison, Ann-Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 42,175, May 24, 1979, abandoned. This application Jan. 10, 1980, Ser. No. 111,043

Int. Cl.[3] **A61K** *31/445;* **C07D** *471/10;* **A61K** *31/415*

U.S. Cl. 424—267 **8 Claims**

1. A compound having the structural formula II



(II)

wherein X is hydrogen, halogen, lower alkyl or nitro; Y is hydrogen, halogen, lower alkyl or nitro; R is hydrogen, halogen, lower alkyl, or lower alkoxy; and the non-toxic, pharmaceutically acceptable salts thereof.

7. A composition for treating schizophrenia and related ailments in a mammal consisting essentially of an anti-schizophrenically effective amount of a compound as defined in claim 1, in combination with a pharamceutically acceptable carrier.

4,292,322

METHOD FOR KILLING INSECTS WITH ELECTRO-MECHANICAL ULTRASONIC NEBULIZER

Takayoshi Muramoto, Hiroshima, and Kunitaka Orita, Yanai, both of Japan, assignors to Fumakilla Limited, Tokyo, Japan

Continuation of Ser. No. 696,825, Jun. 16, 1976, Pat. No. 4,173,651. This application Aug. 9, 1979, Ser. No. 65,173

Int. Cl.[3] **A01N** *43/36, 37/00, 37/08*

U.S. Cl. 424—274 **2 Claims**

1. A method of killing insects on plants or in nearby air comprising the steps of:

applying thereto an insecticidal effective amount of a composition selected from the group consisting of the following solutions, and wherein each solution contains an agent and a solvent, said agent being about 2 to 20% by weight of said composition:

a solution of allethrin in n-tridecane;
a solution of resmethrin in n-tridecane;
a solution of phenothrin in n-tridecane;
a solution of phthalthrin in n-tridecane;
a solution of permethrin in n-tridecane;
a solution of allethrin in n-tetradecane;
a solution of resmethrin in n-tetradecane;
a solution of phenothrin in n-tetradecane;
a solution of phthalthrin in n-tetradecane;
a solution of permethrin in n-tetradecane;
a solution of allethrin in kerosene-isopropyl alcohol (78:7 by weight);
a solution of resmethrin in kerosene-isopropyl alcohol (78:7 by weight);
a solution of phenothrin in kerosene-isopropyl alcohol (78:7 by weight);
a solution of phthalthrin in kerosene-isopropyl alcohol (78:7 by weight);
a solution of permethrin in kerosene-isopropyl alcohol (85:5 by weight);
a solution of kadethrin in kerosene-isopropyl alcohol (85:5 by weight);
a solution of cypermethrin in kerosene-isopropyl alcohol (85:5 by weight);
a solution of decamethrin in kerosene-isopropyl alcohol (85:5 by weight);
a solution of permethrin-allethrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of phenothrin-allethrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of kadethrin-allethrin in kerosene-isopropyl alcohol (90:10 by weight);

a solution of decamethrin-allethrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of cypermethrin-allethrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of permethrin-phthalthrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of phenothrin-phthalthrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of kadethrin-phthalthrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of decamethrin-phthalthrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of cypermethrin-phthalthrin in kerosene-isopropyl alcohol (90:10 by weight);
a solution of permethrin in kerosene-ethyl alcohol (93:7 by weight);
a solution of permethrin in kerosene-ethyl malonate (93:7 by weight);
a solution of permethrin in kerosene-sesame oil (93:7 by weight);
a solution of permethrin in kerosene-sesame oil-isopropyl alcohol (93% kerosene and equal mixtures of the other two solvents); and
a solution of permethrin in kerosene-isopropyl alcohol-ethyl alcohol (93% kerosene and equal mixtures of the other two solvents),

wherein said composition is applied by nebulization in an electromechanical ultrasonic transducer operating in a frequency range of between 800,000 and 1,700,000 Hz to effect atomization and vaporization in air of a uniform concentration of said composition, the atomized and vaporized particles of said composition having a particle size in the range of 0.5 to 5 microns.

4,292,323

PHENYL-1,2,3,4-TETRAHYDROCARBAZOLES AND USE THEREOF

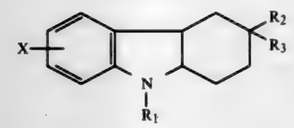
Pirouz Tahbaz, Cedar Grove, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Mar. 31, 1980, Ser. No. 136,015

Int. Cl.[3] **C07D** *209/88;* **A61K** *31/40*

U.S. Cl. 424—274 **10 Claims**

1. A 1,2,3,4-tetrahydrocarbazole of the formula



wherein X is methoxy, halo or methyl; R_1 and R_2 are hydrogen and R_3 is phenyl or halo or alkoxy substituted phenyl.

10. A method for treating mental depression in warm blooded animals which comprises administering thereto a therapeutically effective quantity of a compound of claim 1.

4,292,324

AQUEOUS ZINC SOLUTIONS FOR MEDICAL USE

Karl E. Jönsson, Lund, and Nils F. E. Moren, Staffanstorp, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

Continuation of Ser. No. 849,174, Nov. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 845,367, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 71,720, Apr. 25, 1975, abandoned. This application Mar. 19, 1979, Ser. No. 22,208

Claims priority, application Sweden, May 2, 1974, 7405839

Int. Cl.[3] **A61K** *31/315*

U.S. Cl. 424—289 **5 Claims**

1. In the treatment of zinc deficiency in mammals, including humans, by administering zinc gastrointestinally, the improvement which comprises administering zinc orally in the form of a palatable aqueous solution containing a zinc salt and a complex-forming carboxylic acid selected from the group consisting of citric acid, tartaric acid, malic acid, lactic acid, and glycolic acid, and acid anhydrides and salts thereof, the relation of complex former to zinc being at least equimolecular and the amount of zinc being 3 to 500 mg per peroral dose, the pH of the solution being in the range of 3 to 9.

4,292,325

OXYIMINO-SUBSTITUTED (1R,CIS)CYCLOPROPANECARBOXYLATE PESTICIDES

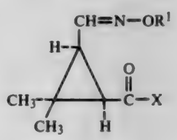
Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 13,841, Feb. 21, 1979, which is a continuation-in-part of Ser. No. 911,743, Jun. 2, 1978, abandoned. This application Aug. 15, 1980, Ser. No. 178,336

Int. Cl.[3] **A01N** *53/00;* **C07C** *131/02*

U.S. Cl. 424—304 **14 Claims**

1. A (1R,cis)-cyclopropane compound, substantially free of other stereoisomers, having the formula



wherein R^1 is an alkyl group containing from 3 to 6 carbon atoms and X is OR in which R is α-cyano-3-phenoxybenzyl or 3-phenoxybenzyl, with the proviso that when R is α-cyano-3-phenoxybenzyl then the alcohol moiety is in the R,S-racemic or S-optical configuration.

10. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of an oxyimino-substituted (1R,cis)cyclopropane carboxylate according to claim 1.

4,292,326

PROCESS FOR TREATMENT OF HYPERPIGMENTARY DERMATOSES

Marcella Nazzaro-Porro, Via Viminale 38, Rome, Italy

Continuation-in-part of Ser. No. 895,565, Apr. 12, 1978, abandoned. This application Dec. 1, 1978, Ser. No. 965,584

Claims priority, application Italy, Dec. 30, 1977, 31471 A/77

Int. Cl.[3] **A61K** *31/19*

U.S. Cl. 424—317 **9 Claims**

1. A method for the treatment of individuals exhibiting noncancerous or non-precancerous hyperpigmentary dermatoses which comprises administering to said individual a therapeutically effective amount of an active ingredient in a pharmaceutically acceptable carrier until said condition is reduced or its further development is arrested wherein said active ingredient is at least one dicarboxylic acid containing from 7 to 13 carbon atoms or a mono or dimercapto derivative of said acid or a salt thereof.

4,292,327

METHOD FOR TREATMENT OF HUMAN EYE DISEASE

Lewis A. Johnson, 1050 Park Ave., New York, N.Y. 10028, and Emil Wirostko, E. 208 Midland Ave., Paramus, N.J. 07652

Division of Ser. No. 932,904, Aug. 11, 1978, Pat. No. 4,220,657, which is a division of Ser. No. 453,463, Jan. 23, 1974, abandoned. This application Mar. 31, 1980, Ser. No. 135,887

Int. Cl.[3] **A61K** *31/13*

U.S. Cl. 424—325 **20 Claims**

1. A method of treating active endogenous uveitis caused by *Micromyces intracellularis* comprising administering to a patient having endogenous uveitis an effective amount therefor

of a therapeutic agent comprising d-2,2'-(ethylenediimino) di-1-butanol.

6. A method of treating chronic conjunctivitis caused by *Micromyces intracellularis* comprising administering to a patient having chronic conjunctivitis an effective amount therefor of a therapeutic agent comprising d-2,2'-(ethylenediimino)-di-1-butanol.

11. A method of treating kerato-conjunctivitis caused by *Micromyces intracellularis* comprising administering to a patient having kerato-conjunctivitis an effective amount therefor of a therapeutic agent comprising d-2,2'-(ethylenediimino1(di-1-butanol.

16. A method of treating keratitis caused by *Micromyces intracellularis* comprising administering to a patient having keratitis an effective amount therefor of a therapeutic agent comprising d-2,2'-(ethylenediimino)di-1-butanol.

4,292,328

THERMOPHILIC AEROBIC DIGESTION PROCESS FOR PRODUCING ANIMAL NUTRIENTS AND OTHER DIGESTED PRODUCTS

T. Lionel Coulthard, 4433 W. 6th Ave., Vancouver, B.C., Canada (V6R 1V2); Philip M. Townsley, 4569 W. 13th Ave., Vancouver, B.C., Canada (V6R 2V5), and Hugh S. Saben, 819 W. 20th Ave., Vancouver, B.C., Canada (V52 1Y3)

Continuation-in-part of Ser. No. 935,141, Aug. 21, 1978, abandoned, which is a continuation of Ser. No. 679,994, Apr. 26, 1976, abandoned. This application Dec. 18, 1979, Ser. No. 104,763

Int. Cl.³ A23K *1/14, 1/12*

U.S. Cl. 426—2 **28 Claims**

1. A process for using thermophilic bacterial microorganisms for thermophilically digesting an aqueous mixture of at least one material selected from the group consisting of animal fecal matter, lignocellulose and vegetable matter under aerobic conditions consisting essentially the steps of:

introducing said mixture into a digester that is sufficiently insulated to prevent substantial heat loss therefrom,

continuously introducing air into said mixture while continuously, mechanically and vigorously agitating said mixture, said air being introduced at a rate sufficient to maintain the dissolved oxygen level in said mixture above about 0.2 mg/l. and said mixture being vigorously agitated at a level effective to cause and promote the temperature of said mixture to rise from ambient temperatures, through mesophilic temperatures, to a temperature of at least 55° C. without the addition of external heat to said mixture until said material is digested, said mixture when digested forming a digested product, said air further being supplied at a rate sufficient to maintain a dissolved oxygen level in said mixture effective to supply the biological oxygen demand of the mixture,

continuing to agitate said mixture at a level and to introduce said oxygenating gas at a rate effective to maintain said temperature of at least 55° C. without the addition of external heat, said oxygenating gas being introduced at a rate sufficient to raise the dissolved oxygen level in said mixture to and maintain it above about 1.0 mg/l. after the temperature of said mixture has reached 55° C.

4,292,329

CENTER-FILLED CHEWING GUM

Koichi Ogawa, Tokyo; Shichigoro Tezuka, Kawasaki; Masatoshi Terasawa, Tokorozawa, and Shizuo Iwata, Tama, all of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 875,205, Feb. 6, 1978, Pat. No. 4,157,402. This application Feb. 9, 1979, Ser. No. 10,893

The portion of the term of this patent subsequent to Jun. 5, 1996, has been disclaimed.

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—5 **16 Claims**

1. In a method of making chewing gum having a gum base and a flavored, liquid center fill, the improvement comprising the steps of adding a natural emulsifier to the center fill in an amount of from 0.01–0.50% by weight of the center fill, said natural emulsifier being selected from the group consisting of lecithin, alginic acid, gelatin, natural gums, or a mixture thereof, and thereafter incorporating the center fill with said emulsifier into the base.

4,292,330

BREAD LEAVENING YEAST

Wilmore Williams, Wheaton, and Anthony J. Luksas, Chicago, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Jul. 18, 1979, Ser. No. 58,619

Int. Cl.³ A21D *2/00*

U.S. Cl. 426—20 **16 Claims**

1. In a process for producing a leavened dough, comprising forming a dough of a cereal, shortening, leavening yeasts and a yeast growth source, fermenting the dough and leavening the dough, the improvement wherein the leavening yeasts are at least in part rapid flavor-producing yeasts which are a mixture of *Candida lusitaniae* and *Saccharomyces delbrueckii.*

4,292,331

PROCESS AND COMPOSITION FOR THE PRESERVATION OF VEGETABLES

Louis Ostre, Paris, France, assignor to Ceva, France

Continuation-in-part of Ser. No. 824,448, Aug. 15, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,545

Claims priority, application France, Aug. 17, 1976, 76 24943; May 18, 1977, 77 15417

Int. Cl.³ A23B *7/10;* **A23K** *3/00*

U.S. Cl. 426—52 **15 Claims**

1. In the process of ensilaging vegetables by lactic acidification comprising addition of sufficient bacteria causing lactic fermentation thereof to raise the pH to below about 4.5, the improvement which comprises additionally adding to said vegetables an agent which is capable of degrading higher carbohydrates into fermentable sugars usable by said lactic bacteria in an amount sufficient to produce sufficient fermentable sugars to realize said pH by said lactic fermentation, said agent being Enterobacteriacees bacteria capable of fermenting starch but not capable of fermenting maltose.

4,292,332

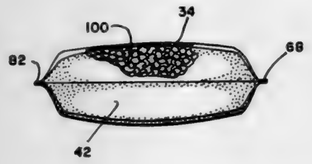
CONTAINER FOR PREPACKAGING, POPPING AND SERVING POPCORN

David E. McHam, 16061 E. Kellogg, Wichita, Kans. 67230

Continuation-in-part of Ser. No. 684,719, May 10, 1976, abandoned. This application Jan. 19, 1978, Ser. No. 870,838

Int. Cl.³ B65D *81/34, 65/28*

U.S. Cl. 426—111 **7 Claims**



7. A cooking bag comprising a fluid impervious and expansible container formed of a flexible sheet material, said sheet material being comprised of kraft paper having a fluid impervious coating of a synthetic resin on one side thereof, said one side of the paper being on the innermost side of the container, a common means for both venting the bag solely when fluid pressure exceeds a predetermined superatmospheric pressure that is less than that which will otherwise disrupt the integrity of the bag, and for opening after its contents are cooked, said common means comprising the sheet material having an intermittent line of scoring which comprises cut intervals spaced by unscored segments with said cut intervals being of a depth which extends through the paper layer and penetrates a fraction only of the resin coating, the remaining fractional thickness of the resin coating in the cut intervals having sufficient thickness to prevent food contaimination and sufficient strength to withstand bag expanding pressure but is frangible at a superatmospheric pressure that is less than that required to disrupt the integrity of the container thus allowing the intervals to open for the passage of steam or vapor therethrough while the unscored segments remain intact being manually rupturable when the bag is to be opened.

4,292,333

LOW-FAT, BUTTER-FLAVORED, LIQUID SPREAD AND PROCESS

Peter M. Bosco, Brookfield Center, and William L. Sledzieski, Norwalk, both of Conn., assignors to Standard Brands Incorporated, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,645

Int. Cl.³ A23D *3/00, 5/00*

U.S. Cl. 426—335 **19 Claims**

9. A process for preparing a low-fat, butter-flavored spread, which comprises: preparing an oil-in-water emulsion by admixing a dispersed phase comprising butter flavor, from 5 to 40%, based on the weight of the emulsion, of a fat having an SFI profile within the following ranges

50° F.—0–35%
70° F.—0–25%
92° F.—<8%,

with a continuous aqueous phase, including a stabilizer, and an emulsifier system comprising a combination of lipophilic emulsifier and a hydrophilic emulsifier, the emulsifier system being present in an amount of from 0.1 to 4.0%, based on the total weight of the spread, and each of the lipophilic and hydrophilic emulsifiers being present at levels of at least 0.025% on the same basis, and the relative and total amounts of the emulsifiers and stabilizer being effective to provide a stable emulsion and a product which is liquid at about 40° F.; and homogenizing the emulsion under conditions effective to form a stable product which is liquid at about 40° F.

4,292,334

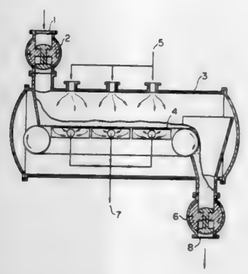
PROCESS FOR PUFFING FEATHER OR ANIMAL FUR

Yoshihiko Nishizawa; Yoshihiro Aketa, both of Noda, and Takeshi Akao, Abiko, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Japan

Continuation of Ser. No. 948,797, Oct. 5, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,977

Int. Cl.³ A23L *1/18*

U.S. Cl. 426—447 **2 Claims**



1. A process for treating animal feathers or animal fur which comprises feeding uncompressed animal feathers or animal fur into a pressure-resistant vessel, directly heating it for 2 to 10 minutes under an elevated pressure in the presence of a saturated steam of 4–8 Kg/cm² G or a superheated steam of 4–6 Kg/cm² G at a temperature of 180°–240° C., then rapidly discharging it into an atmosphere of lower pressure to instantaneously puff-explode said animal feathers or animal fur.

4,292,335

METHOD FOR SEPARATING THE FRUIT FLESH OF NUTS OR KERNELS INTO FIBRE MASS, OIL AND CELL LIQUID

Olof Jönsson, Drottningtorget 3, S- 211 25 Malmö, Sweden

Filed Dec. 11, 1979, Ser. No. 102,511

Claims priority, application Sweden, Dec. 21, 1978, 7813155

Int. Cl.³ A23L *1/36*

U.S. Cl. 426—489 **4 Claims**

1. A method of separating the fruit flesh of nuts or kernels into fibre mass, oil and cell liquid, which comprises tempering the fruit flesh to a temperature of 0° to 70° C. at which the oil is in liquid form without the proteins coagulating, then cutting the fruit flesh to comminute it and, simultaneously, centrifuging it to divide it into a fibre mass and a liquid mixture comprising oil and cell liquid, and to break down natural emulsions, and filtering the fibre mass to separate it from the liquid mixture.

4,292,336

SWEETENING COMPOSITIONS CONTAINING PEPTIDE SWEETENERS AND A METHOD FOR THEIR MANUFACTURE

Zdenek Latymer, Reading, England, assignor to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Feb. 1, 1980, Ser. No. 117,445

Claims priority, application United Kingdom, Feb. 6, 1979, 4165/79

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548 **16 Claims**

1. A sweetening composition which comprises gelatin intimately mixed with a protein sweetener selected from the group consisting of monellin and thaumatin, the ratio by weight of gelatin to protein sweetener being 1:1 to less than 100:1.

4,292,337

SUGAR-FREE CONFECTIONERY MATERIAL BASED ON XYLITOL AND SORBITOL

Geert Andersen, Halle, Fed. Rep. of Germany, assignor to August Storck KG, Halle, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,781

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912411

Int. Cl.³ A23G *3/00*

U.S. Cl. 426—573 **2 Claims**

1. Chewy sugar-free confectionery material comprising,

about 20 to 50 wt.% of a sugar-free swelling agent selected from the group consisting of a carrageenate, a pectin, agar, an alginate, carob bean flour, tragacanth, methyl cellulose, carboxymethyl cellulose, gelatine, gum arabic and low-sugar maltodextrin,

about 20 to 35 wt.% xylitol;

about 0.5 to 3 wt.% water, and

about 0.1 to 5 wt.% of one or more additives selected from the groups consisting of aromatic substances, flavoring, acids and dyes,

the remainder being sorbitol.

4,292,338

PROCESS FOR PRODUCING CONFECTIONERS' BUTTER

George E. Ainger, Wareham, and Brian L. Caverly, Neopham, both of England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 848,675, Nov. 4, 1977, Pat. No. 4,214,012, which is a continuation of Ser. No. 393,865, Sep. 4, 1973, abandoned, which is a continuation of Ser. No. 210,550, Dec. 21, 1971, abandoned. This application Sep. 13, 1979, Ser. No. 75,342
Claims priority, application United Kingdom, Jan. 6, 1971, 714/71
Int. Cl.[3] A23D *3/02*
U.S. Cl. 426—603 1 Claim

1. A process of producing confectioners' butter comprising co-randomising a lauric component with a non-lauric component to produce an ester interchanged co-randomized fat having an iodine value from 10–25, a slip melting point of between 28° and 40° C., a dilatation drop of at least 500 over the last 10° C. below the slip melting point and having a fatty acid composition in random distribution of a blend consisting essentially of at least 88 weight percent C_{10}-C_{18} fatty acids including at most 15 weight percent stearic acid of from 80–50 weight percent lauric and 20–50 weight percent edible non-lauric fats wherein the sum of the palmitic and stearic acid content of said composition is 45 weight percent.

4,292,339

STABLE CONCENTRATED LACTIC ACID CONTAINING MIXTURE

Hans E. Bisle, Ingelheim am Rhein, Fed. Rep. of Germany, assignor to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 867,483, Jan. 6, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 80,057
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1977, 2700568
Int. Cl.[3] A23L *1/22*
U.S. Cl. 426—650 9 Claims

1. A stable, aqueous solution of a mixture of pre-mixed edible, organic acids consisting essentially of lactic acid and solid edible organic acids, said solution having a dry substance content of over 55% by weight, wherein a mixture of lactic acid and more than 5% and up to 25% by weight, based on the weight of the total mixture, of an organic acid selected from the group consisting of citric acid, tartaric acid, malic acid, and gluconic acid is present in aqueous solution and between about 8 to 20% of the acid equivalents are neutralized by potassium ions or a mixture of ions consisting predominantly of potassium ions.

4,292,340

METHODS AND APPARATUS FOR PRODUCING CRYOGENIC INERTIALLY DRIVEN FUSION TARGETS

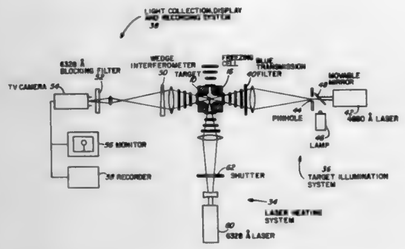
John R. Miller, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 872,284, Jan. 25, 1978. This application Aug. 20, 1979, Ser. No. 67,859
Int. Cl.[3] E21B *47/00*
U.S. Cl. 427—6 3 Claims

1. In a method of forming a solid substantially uniform layer of material on a surface of a microballoon on which said material is deposited at cryogenic temperatures the steps comprising:

maintaining said microballoon at cryogenic temperatures within an isothermal freezing cell;

locally heating said microballoon to vaporize said material deposited on said surface of said microballoon; and then, rapidly removing local heating such that said material vaporized by said local heating condenses and freezes on



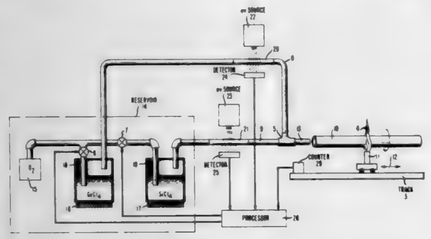
said surface of said microballoon in a solid substantially uniform layer.

4,292,341

METHOD OF CONTROLLING THE INDEX PROFILE OF OPTICAL FIBER PREFORMS

Dietrich Marcuse, Lincroft, and Herman M. Presby, Highland Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 26, 1980, Ser. No. 124,923
Int. Cl.[3] G03C *17/02;* G02B *1/10, 5/14*
U.S. Cl. 427—10 16 Claims



1. A method of fabricating an optical fiber preform characterized by a process that includes the steps of:

illuminating (**22, 23**) the gaseous precursor being delivered to a preform substrate tube (**10**) with ultraviolet radiation;

detecting (**24, 25**) the radiant energy from said illuminated gas;

comparing (**26**) the intensity of the detected energy with a reference signal;

and changing the concentration of the measured material in said gas in response to said comparison.

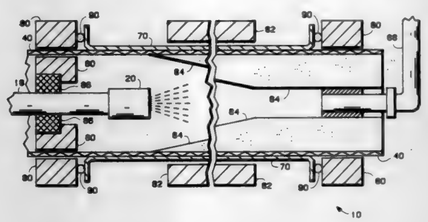
4,292,342

HIGH PRESSURE PLASMA DEPOSITION OF SILICON

Kalluri R. Sarma; M. John Rice, Jr., both of Tempe, and I. Arnold Lesk, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumberg, Ill.

Filed May 9, 1980, Ser. No. 148,095
Int. Cl.[3] B05I *1/08*
U.S. Cl. 427—34 10 Claims

1. A process for depositing silicon in a plasma reactor apparatus which comprises the steps of: providing a substrate positioned in said reactor apparatus, said substrate heated to an elevated deposition temperature; providing a high pressure plasma nozzle for conveying separate gas streams; raising said high pressure nozzle to a high rf potential to initiate a high pressure plasma in said reactor apparatus; introducing hydrogen and silicon bearing reactant through said high pressure plasma nozzle to create a plasma of said hydrogen and said silicon bearing reactant; reacting said plasma of hydrogen and said silicon bearing reactant to deposit silicon on said substrate;



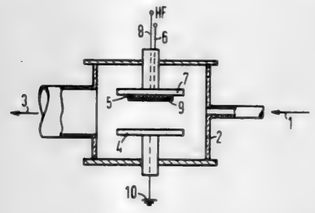
removing said substrate from said reactor apparatus; and separating said silicon and said substrate.

4,292,343

METHOD OF MANUFACTURING SEMICONDUCTOR BODIES COMPOSED OF AMORPHOUS SILICON

Rolf Plaettner, Ottobrunn; Wolfgang Kruehler, Unterhaching, and Josef Grabmaier, Berg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,982
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904171
Int. Cl.[3] C23C *11/00*
U.S. Cl. 427—39 8 Claims



1. A process for producing semiconductor bodies comprised of amorphous silicon and useful for fabrication of solar cells, comprising:

sequentially depositing a plurality of individual amorphous silicon layers onto a heat-resistant substrate via a glow discharge at temperatures in the range of about 200° to 300° C. and in an enclosed chamber containing a reaction gas at a pressure in the range of about 0.06 to 5 mbar, said gas including a gaseous silicon halide compound; and

hydrogenating each individual amorphous silicon layer with atomic hydrogen in the same enclosed chamber and at substantially identical temperature-pressure conditions used to deposit such layer before depositing a subsequent amorphous silicon layer.

4,292,344

FLUIDIZED BED HEATING PROCESS AND APPARATUS

Edward J. McHale, North Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

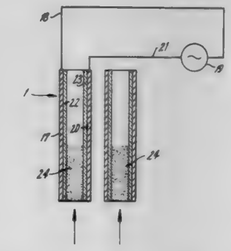
Filed Feb. 23, 1979, Ser. No. 14,645
Int. Cl.[3] C01B *33/00;* H05B *6/54*
U.S. Cl. 427—45.1 44 Claims

10. An improved process for the production of high purity, polycrystalline silicon in a fluidized bed reaction zone comprising:

(a) introducing a silicon-containing gas capable of gas phase decomposition into a fluidized bed of silicon seed particles in a reaction zone maintained within the decomposition temperature range of said gas and below the melting point temperature of silicon, said decomposition temperature being maintained by applying an A.C. voltage potental between spaced-apart electrodes positioned in contact with said fluidized bed, at least one of said electrodes having a dielectric coating thereon, said voltage potential and the electrical frequency being sufficient to create electrical currents through the individual solid particles in said fluidized bed, with the heat dissipated within said individual particles being the predominant heat dissipated in said fluidized bed;

(b) removing unreacted fluidizing vapor and reaction by-product gases from said fluidized bed reaction zone; and

(c) withdrawing said particles having silicon product deposited thereon from said reaction zone, whereby silicon is recoverable as low-cost, high purity polycrystalline product capable of being produced at relatively high production rates on a semicontinuous or continuous basis, the heat flow within said reaction zone passing from the individual particles to the surrounding gas within the fluidized bed and then exiting through the wall of the reaction zone or with said fluidizing vapor and by-product gases, the individual silicon particles thus being the hottest portion of the reaction zone, thereby enhancing the heterogeneous depositing of silicon on the seed particles and minimizing undesired coating of silicon on the wall of the reaction zone and the homogeneous formation of fine silicon powder within said reaction zone.



4,292,345

METHOD OF PROTECTING CARBON-CONTAINING COMPONENT PARTS OF METALLURGICAL UNITS FROM OXIDATION

Mikhail I. Kolesnik, ulitsa Posadochnaya, 6, kv. 12; Anatoly P. Egorov, ulitsa Portovaya, 9a, kv. 9; Anatoly A. Kuznetsov, ulitsa Istoricheskaya, 20, kv. 116; Anatoly P. Gobov, ulitsa Rekordnaya, 34, kv. 5; Jury M. Ryabukhin, ulitsa Pobedy, 95, kv. 49, all of Zaporozhie; Viktor A. Rudakov, ulitsa Bogdana Khmelnitskogo, 60, kv. 121; Gennady V. Pisarev, ulitsa 23 Partsiezda, 1, kv. 45, both of Kalush Ivano-Frankovskoi oblasti; Jury M. Zheleznov, prospekt Lenina, 234, kv. 27, Zaporozhie, and Alexei V. Vasiliev, ulitsa Bogdana Khmelnitskogo, 66, kv. 57, Ivano-Frankovskaya oblast. Kalush, all of U.S.S.R.

Filed Feb. 4, 1980, Ser. No. 118,637
Int. Cl.[3] B05D *3/02, 5/12;* H01B *1/06*
U.S. Cl. 427—113 18 Claims

1. A method of producing carbon-containing component parts of metallurgical units which are protected against oxidation, comprising the steps of:

(a) impregnating a porous carbon-containing component part with orthophosphoric acid to substantially fill the pores thereof with said orthophosphoric acid;

(b) drying said component part until the moisture is completely removed from the pores of the carbon-containing material;

(c) further impregnating the thus orthophosphoric acid-impregnated component part with an organoelement com-

pound based on an element selected from the group consisting of Si, Ti, and Al, which organoelement compound is capable of reacting with orthophosphoric acid to form phosphates of said elements; and

(d) heating the thus further impregnated component part to a temperature at which said organoelement compound reacts with orthophosphoric acid to form the corresponding phosphates, said phosphates being formed both in the pores and on the surface of the carbon-containing material.

2. The method of claim 1, wherein the further impregnation of the component parts is effected with solutions of silicon organic polymers in organic solvents.

4,292,346

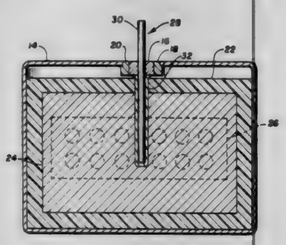
LITHIUM-HALOGEN BATTERIES

Lee F. Athearn, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 20,809, Mar. 15, 1979, Pat. No. 4,212,930. This application Aug. 22, 1979, Ser. No. 68,872

Int. Cl.³ B05D *5/12*; H01M *2/26*

U.S. Cl. 427—115 **6 Claims**



1. In the method of preparing a lithium electrode having a lithium coated electrical lead attached thereto, the steps of:

providing an electrode collector having an electrical lead attached thereto, and

dipping the collector and a substantial portion of the lead, extending from the collector, into molten lithium to provide a lithium coating thereon.

4,292,347

PYROLYTIC COATING REACTANT FOR DEFECT AND DURABILITY CONTROL

Harold E. Donley, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 3, 1979, Ser. No. 99,459

Int. Cl.³ C03C *17/25*

U.S. Cl. 427—168 **9 Claims**

1. A method for coating glass with a durable metal oxide film which comprises contacting the glass at a temperature sufficient to thermally decompose metal diketonates and carboxylates to the corresponding metal oxides with a composition comprising in combination:

a. a metal diketonate capable of thermal decomposition to the oxide of said metal; and

b. a metal carboxylate capable of thermal decomposition to the oxide of said metal wherein said metals are independently selected from the group consisting of a single metal and a mixture of metals.

4,292,348

LOW DENSITY CERAMIC INSULATING

Calvin M. Dolan, King of Prussia, Pa., assignor to Johnson Matthey, Inc., Malvern, Pa.

Filed Jan. 14, 1980, Ser. No. 112,106

Int. Cl.³ B05D *3/00, 1/28, 3/12*; B01J *35/00*

U.S. Cl. 427—299 **9 Claims**



1. A method of preparing an insulating system for a catalyst to be packed in a can, said method consisting essentially of the steps of

(a) applying a thin coat of low viscosity ceramic inorganic fiber formulation with about 5% rigidizer to a clean, dry substrate or catalyst to wet the surface thereof to facilitate adhesion, the ceramic inorganic fiber formulation having a viscosity of about 483–1197 centipoise at 21.1° C.;

(b) producing a high viscosity ceramic inorganic fiber formulation by mixing about 3–10% hollow silica microspheres with the low viscosity ceramic inorganic fiber formulation, the high viscosity formulation having a viscosity of about 96,000–336,000 centipoise at 21.1° C.;

(c) applying a single coat of the high viscosity ceramic inorganic fiber formulation to the thin coated substrate or catalyst to provide a ceramic inorganic fiber formulation having sufficient thickness to provide the necessary insulation; and

(d) drying the coated substrate or catalyst.

2. A method of preparing a catalyst to be packed in a can, said method consisting essentially of the steps of

(a) applying a thin coat of low viscosity ceramic inorganic fiber formulation with about 5% rigidizer to a clean, dry substrate or catalyst at about room temperature to wet the surface thereof to facilitate adhesion, the ceramic inorganic fiber formulation having a viscosity of about 483–1197 centipoise at 21.1° C.;

(b) producing a high viscosity ceramic inorganic fiber formulation by mixing about 2% hollow silica microspheres with the low viscosity ceramic inorganic fiber formulation, the high viscosity formulation having a viscosity of about 60,000 to 100,000 centipoise at 21.1° C.;

(c) applying a plurality of coats of high viscosity ceramic inorganic fiber formulation to the thin coated substrate or catalyst until a coating thickness sufficient to provide the necessary insulating is produced; and

(d) drying each coat after application thereof.

7. A method as recited in claim 1 or 2 wherein the substrate or catalyst has been cleaned by glass bead blasting or with Zirconia before step (a) is practiced.

4,292,349

COATING METHOD AND APPARATUS

Mamoru Ishiwata; Shinji Uematsu; Kazuo Ozaki, and Masashi Ishiyama, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 30, 1979, Ser. No. 99,232

Claims priority, application Japan, Dec. 6, 1978, 53-151222

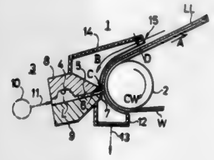
Int. Cl.³ B05D *3/10*

U.S. Cl. 427—335 **11 Claims**

1. A method for applying a film forming material including a coating liquid having an organic solvent of high volatility directly or through other coated films to a web which is continuously conveyed, comprising the steps of forming a coated film on said web by applying said coating liquid thereto by means of an extrusion-type hopper while changing the direction of conveyance of said web in a range of from a substantially horizontal direction to a substantially vertical direction by a coating backing roll, collecting, by means of a hood, evaporated gas of the organic solvent from said coating liquid

which flows out of said hopper in a region where a three-phase, solid-phase, liquid-phase and gas-phase interface exists around the upper surface of said hopper and at a coating point, and suppressing, by means of said hood, gas evaporation in said region with evaporated gas of said organic solvent from said coated film which is moving in said vertical direction from said coating point, thereby to prevent the occurrence of stripe-like defects due to solidification of said coating liquid in said region and to stably carry out the coating operation.

2. A coating apparatus for applying a film forming material including a coating liquid having an organic solvent of high volatility to a web comprising: a backing roll for moving a web to which a coating liquid is to be applied while changing the



direction of conveyance of said web; a hopper in which at least the flow path of said coating liquid from a metering pump to a slot outlet is of a completely closed system; and a hood for covering a region and a volume above said region which is on said web downstream of a coating point which is formed by said coating liquid bridged between an edge of said hopper and said web and in which region a three-phase, solid-phase, liquid-phase and gas-phase, interface exists, said hood being adapted for collecting gas from organic solvent evaporation from said coating liquid and coated film in said region where said three-phase interface exists, said evaporation gas thus collected being utilized to prevent solidification of said coating liquid to perform a stable coating operation.

4,292,350

ISOCYANATE MIXTURE AND ITS USE AS BINDER IN ONE-COMPONENT LACQUERS

Werner Kubitza; Gerhard Mennicken, both of Leverkusen, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,021

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845514

Int. Cl.³ C08L *75/04*

U.S. Cl. 427—385.5 **7 Claims**

1. An isocyanate mixture suitable for use as a binder for one-component lacquers, which mixture is stable in storage in the absence of moisture and is cross-linked by moisture with the formation of urea groups and has a solvent-free viscosity measured in a DIN cup 4 according to DIN 53 211 of from about 30 to 200 seconds and contains a maximum of about 0.7% by weight of

readily volatile organic diisocyanates, comprising a mixture of:

(a) at least one lacquer polyisocyanate containing biuret, urethane and/or isocyanurate groups and having an average isocyanate functionality greater than 2 and an isocyanate content of from about 13 to 30% by weight and

(b) at least one monoisocyanate corresponding to the following general formula:

$$R_1—O—CO—NH—R_2—NCO$$

wherein

R_1 represents a hydrocarbon group having from 1 to 18 carbon atoms optionally interrupted by ether bridges and

R_2 represents a group such as is obtained by removal of the isocyanate groups from an aliphatic, cycloaliphatic, araliphatic or aromatic diisocyanate having a molecular weight of from about 140 to 300,

the proportion by weight of component (a) to component (b) being from about 2:1 to 5:1, and the average isocyanate functionality of the mixture being greater than about 1.8.

4,292,351

METHOD OF BLASTING CONCRETE

Yasuro Ito, 4-38-16, Numabukuro, Nakano-Ku, Tokyo; Yoshiro Higuchi, Tokyo; Yutaka Mochida, Hakodate; Hideharu Kaga, Tokyo; Yasuhiro Yamamoto, Kawasaki, and Tadayuki Sumita, Tokyo, all of Japan, assignors to Yasuro Ito and Taisei Corporation, both of Tokyo, Japan

Filed Apr. 20, 1979, Ser. No. 31,930

Claims priority, application Japan, Apr. 28, 1978, 53-50060; Nov. 17, 1978, 53-141203

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—403 **19 Claims**

1. A method of blasting concrete or mortar against a surface to be coated utilizing a blasting nozzle which comprises the steps of preparing a slurry-like freshly mixed fluid composition by admixing a powder of hydraulic substance and water, conveying said slurry-like freshly mixed fluid composition to a remote location through a conduit, under pressure, conveying an aggregate through a separate conduit to said remote location under pressure, combining said slurry-like composition and said aggregate at said remote location by introducing said slurry-like composition into the conduit conveying said aggregate to form a unified mixture and conveying said mixture through a common conduit to said blasting nozzle, and blasting said unified mixture against the surface to be coated, said unified mixture being formed substantially immediately before said blasting nozzle.

4,292,352

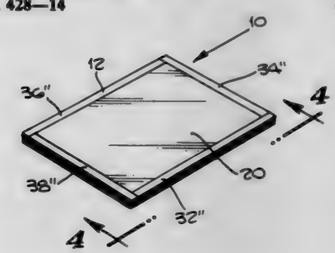
REMOVABLE GLASS DESK PAD

Larry Singer, 1758 S. Preuss Rd., Los Angeles, Calif. 90035

Filed Feb. 11, 1980, Ser. No. 120,042

Int. Cl.³ A47G *1/06, 23/03*

U.S. Cl. 428—14 **6 Claims**



1. An improved removable glass desk pad comprising:

a. a rectangular base member;

b. a rectangular border member rigidly attached to one surface of said base member;

c. said rectangular border member constructed of multiple layers wherein the lowermost layer consists of four elongated sections of equal width arranged so that one widthwise portion of each section abuts and is perpendicular to the lengthwise portion of an adjacent section such that the four sections form a rectangle whose outer circumference is aligned with the circumference of said base member, wherein the second layer of four sections is arranged so that each section is aligned with the corresponding section directly beneath it but offset in its lengthwise direction by a distance equivalent to the width of the section, wherein the four sections of the third layer are in direct alignment with the four sections of the lowermost layer, and each successive layer is so arranged that the four sections of that layer are in direct alignment with the four sections of

the layer two levels below, such that a rectangular border is formed wherein the circumference of the outer edge of the layers of sections is aligned with the circumference of said base member and the inner edge of the layer of sections combine to form a recessed area within the central portion of said desk pad;

d. said lowermost layer of sections being rigidly attached to said base member and each successive layer of sections being rigidly attached to the corresponding layer of sections directly beneath it; and

e. a glass plate removably placed on top of said base member and within said recess created by said rectangular border member such that the circumference of the glass plate is only slightly smaller than the inner circumference of said rectangular border member.

4,292,353

URETHANE MODIFIED POLYISOCYANURATE FOAM SURFACED WITH ALUMINUM FOIL OR SHEET

Takashi Ohashi, Iruma; Toru Okuyama, Sagamihara; Akira Suzuki, Hidaka; Katsuhiko Arai, Higashimurayama; Minoru Kojima, Ohme; Yoshiko Taniguchi, Higashimurayama; Masako Yoshida, Kodaira; Ryozo Sakata, Higashiyamato; Hideki Sugihara, Miura-Gun; Masashi Dobashi, Yokohama, and Hirobumi Ohwada, Kamakura, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,811

Claims priority, application Japan, Nov. 14, 1977, 52-135614

Int. Cl.³ B32B *5/20*

U.S. Cl. 428—211 **13 Claims**

1. A laminate consisting essentially of (1) an urethane modified polyisocyanurate foam as a single core material and (2) a surface material piled on one or both surfaces of the foam, wherein

(a) said surface material is an aluminum foil or sheet having a thickness of not less than 0.1 mm, said surface material being piled on said core material through a self-adhesion of said foam;

(b) said core material is formed by reacting an organic polyisocyanate with a polyol wherein said polyol is a compound having two or more hydroxyl groups at its terminal, and wherein said polyol is selected from the group consisting of the addition product of a polyhydric alcohol with an alkylene oxide, the addition product of an alkanol amine with an alkylene oxide, the addition product of a polyamine with an alkylene oxide, the addition product of phosphoric acid with an alkylene oxide, the addition product of a phenol with an alkylene oxide, the addition product of an intermediate having a phenolic hydroxyl group with an alkylene oxide, a mixture of a polyhydric alcohol and a polyether polyol, and any combination of the above polyols, and wherein said polyol has a hydroxyl equivalent of 200 to 2,000 in an amount of 0.05 to 0.13 equivalent of said polyol to said organic polyisocyanate in the presence of

(1) an isocyanate trimerization catalyst selected from the group consisting of an alkali metal salt of a carboxylic acid having a carbon number of 2–12 and a combination of a tertiary amino compound and said alkali metal salt;

(2) a blowing agent; and, optionally

(3) a foam stabilizer or

(4) other additives;

(c) said laminate passes Grade 2 incombustibility (quasi-incombustible material) according to JIS A-1321 combustion test.

13. A laminate as claimed in claim 1, wherein the aluminum foil or sheet is subjected to an anodic oxidation, a coating or a sticking of printed decorative paper.

4,292,354

MOLDINGS FOR AUTOMOBILES

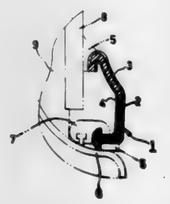
Hisanori Katoh, Tokyo, Japan, assignor to Inoue Gomu Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 21, 1978, Ser. No. 944,306

Claims priority, application Japan, Mar. 31, 1978, 53/42503[U]

Int. Cl.³ B32B *15/08*; B60R *13/02*

U.S. Cl. 428—31 **12 Claims**



1. A molding for automobiles comprising:

a base made of synthetic resin;

a stainless foil layer integrally formed on the outer surface of said base, and

oil proof protective layer means selected from the group consisting of polyvinyl chloride resin, cellulose acetate resin, cellulose butyrate resin and cellulose acetate-butyrate resin, integrally formed on the backside of said base for preventing solvent from contacting the backside of said base, wherein the thickness of said base is greater than the thickness of said foil layer or said protective layer means.

4,292,355

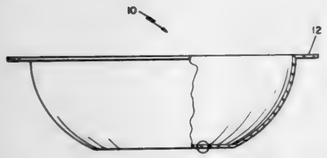
MOISTURE-IMPERVIOUS COEXTRUDED CONTAINER

Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.

Filed Jun. 18, 1979, Ser. No. 49,482

Int. Cl.³ B65D *11/00*

U.S. Cl. 428—35 **7 Claims**



1. A moisture impervious plastic container, with a wall comprising

a layer of polypropylene and

a layer of butadiene-styrene polymer directly adhered by coextrusion, without an intervening layer, to said polypropylene layer,

neither of said layers containing any adhesive material mixed therewith for the purpose of adhering said layers together,

adhesion between said layers being provided solely by interaction between said polypropylene and butadiene-styrene polymer,

said polypropylene layer being sufficiently thick to provide a moisture barrier in said wall, and

said butadiene-styrene polymer layer being sufficiently thick to permit thermoforming of said container from a sheet comprised of said two layers.

4,292,356

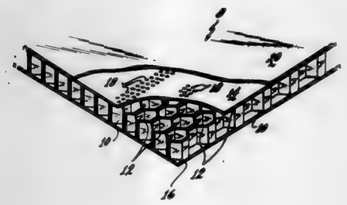
METHOD OF MANUFACTURING OF HONEYCOMB NOISE ATTENUATION STRUCTURE AND THE STRUCTURE RESULTING FROM THE METHOD

Christopher E. Whitemore, Riverside, and Robert M. Carrillo, San Bernardino, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Jul. 6, 1979, Ser. No. 55,681

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—116 **8 Claims**



1. A method of manufacturing an acoustic panel having a central cellular core portion with a plurality of endwise directed cells sandwiched between an imperforate sheet and a perforate sheet, said perforate sheet having a layer of porous fibrous material bonded to its surface remote from said central cellular core portion, said acoustic panel utilized in a severe environment in which at least the porous fibrous material is exposed to a high speed gas flow therealong, said acoustic panel is exposed to wide temperature gradients and is capable of reducing a broad range of sound frequencies exposed thereto, said method comprising the steps of:

(a) cleaning the surfaces of said central cellular core, imperforate sheet and at least the perforation exposed side of a combined sheet of perforate and porous fibrous materials;

(b) providing a layer of adhesive material between said imperforate sheet and said central cellular core and between said central cellular core and the perforation exposed surface of said combined sheet of perforate and porous fibrous material;

(c) securing together the adhesive coated components; and

(d) venting the cells of said central cellular core through said layer of porous fibrous material and said perforated sheet while secured together during curing.

4,292,357

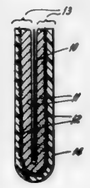
ZINC/ZINC OXIDE LAMINATED ANODE ASSEMBLY

Lester R. Erisman, and Robert A. Brown, both of Joplin, Mo., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Jul. 25, 1979, Ser. No. 60,355

Int. Cl.³ B32B *3/04, 3/24*; H01M *4/42, 4/74*

U.S. Cl. 428—124 **23 Claims**



1. A zinc anode comprising a series of parallel layers including

a central layer of electrolyte-absorptive inert material which in use forms an internal electrolyte reservoir,

said central layer of inert material disposed between two active elements each including,

a foraminous current collector,

each current collector having on at least one side thereof a zinc or zinc oxide active layer in electrical contact with the current collector,

a zinc or zinc oxide active layer on the respective current collectors being adjacent the central layer.

4,292,358

HEAT PROTECTIVE BARRIER COMPRISING APERTURED MEMBER HAVING INTUMESCENT COATING

Kevin C. Fryer, Feltham, and Edgar C. Prentice, London, both of England, assignors to Blevex Limited, Borehamwood, England

Filed Nov. 2, 1979, Ser. No. 90,808

Claims priority, application United Kingdom, Nov. 2, 1978, 42943/78; Nov. 23, 1978, 45786/78; Feb. 19, 1979, 05698/79; Mar. 27, 1979, 10628/79

Int. Cl.³ B32B *3/24, 5/20, 15/04*

U.S. Cl. 428—135 **18 Claims**

1. A heat resistant and protective barrier having at least one layer, said at least one layer comprising: a free and unattached carrier substrate in the form of a sheet material having a plurality of spaced-apart strands defining therebetween a plurality of apertures, and a heat actuated and resistive intumescent coating disposed on said substrate, said substrate comprising the sole supporting means for said intumescent coating.

13. A method of forming a heat barrier, said method comprising: coating a free and unattached carrier substrate in the form of a sheet material having a plurality of spaced-apart strands defining therebetween a plurality of apertures with a heat actuated and resistive intumescent material, said substrate comprising the sole supporting means for said intumescent coating.

4,292,359

PROCESS FOR THE CONTINUOUS PRODUCTION OF A PARTLY FINISHED CLAY PRODUCT

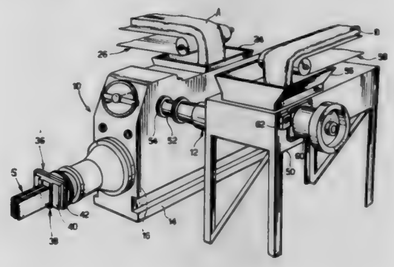
Luigi Mosso, Santena, Italy, assignor to Laria-Laterizi Rivestimenti ed Affini-S.p.A., Santena, Italy

Filed Jan. 9, 1980, Ser. No. 110,725

Claims priority, application Italy, Jan. 24, 1979, 67153 A/79

Int. Cl.³ A23G *1/20*

U.S. Cl. 428—151 **7 Claims**



1. A process for producing partly finished clay tiles in the form of a pair of facing strips joined together by longitudinally extending frangible bridges comprising:

(a) feeding continuously a first clay to a first screw extruder having first and second screw conveyors in series with one another and a degasing chamber disposed intermediate said first and second screw conveyors,

(b) feeding intermittently a second clay having a different color into said degasing chamber by means of a second screw extruder for variable time intervals which are separated by variable non-feeding time intervals,

(c) imparting a rotory motion to the mixture of said first and second clays by means of said second screw conveyer to swirl said mixture,

(d) extruding the swirled mixture through an extrusion head

on said first extruder to form a pair of continuous strips joined together by longitudinally extending bridges, and

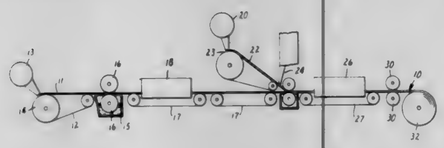
(e) cutting from each continuous strip at the output of said extrusion head a longitudinally extending layer having a width equal to the width of said strip and a substantial thickness to provide colored stripes on the surface of the remaining portion of each strip resembling a natural wood grain.

4,292,360

PRESSURE SENSITIVE ADHESIVE TAPE

John E. Riedel, White Bear Lake, and Paul G. Cheney, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 5, 1980, Ser. No. 127,390
Int. Cl.³ B32B *7/04, 5/22, 31/08*
U.S. Cl. 428—171 **11 Claims**



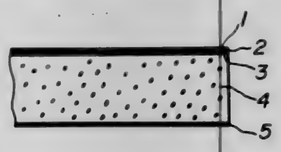
1. A conformable pressure-sensitive adhesive tape comprised of a sheet material and a pressure-sensitive adhesive thereon, said sheet material comprising a first layer of a nonwoven web of randomly interlaced fibers, bonded to each other by a rewettable binder dispersed therethrough, and at least one additional layer comprising a nonwoven web of randomly interlaced fibers having a rewettable binder dispersed therethrough, said fiber of said additional layer being laid directly on said first layer prior to adding said binder to said additional layer whereby said binder in said additional layer bonds the interlaced fibers of said additional layer to each other and to the fibers of said first layer whereby said layers are not readily separable across their common surfaces.

4,292,361

ASBESTOS-METAL SURFACED URETHANE MODIFIED POLYISOCYANURATE FOAM

Takashi Ohashi, Iruma; Toru Okuyama, Sagamihara; Akira Suzuki, Hidaka, and Katsuhiko Arai, Akigawa, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1979, Ser. No. 68,289
Claims priority, application Japan, Aug. 18, 1978, 53/100775
Int. Cl.³ B32B *5/20, 15/04*
U.S. Cl. 428—215 **16 Claims**



1. A fireproof laminate comprising a urethane modified polyisocyanurate foam as a single core material and surface materials piled on both sides of the foam, and passing Grade 2 incombustibility according to Japanese Industrial Standard (JIS) A-1321 combustion test, which comprises:

(a) an asbestos paper having a thickness of 0.1 to 0.5 mm lined with a metal foil having a thickness of less than 0.1 mm as a front surface material for said core material, said asbestos paper being united with said core material through said metal foil by self-adhesion of said foam;

(b) an aluminum foil having a thickness of not more than 0.1 mm as a back surface material for said core material;

(c) as said core material, a urethane modified polyisocyanurate with a polyol having a hydroxyl equivalent of 30 to 2,000 in an amount of 0.05 to 0.5 equivalent per isocyanate group of said organic polyisocyanate in the presence of an isocyanate polymerization catalyst selected from the group consisting of alkali metal salts of carboxylic acids having 2 to 12 carbon atoms and combinations with a tertiary amino compound thereof, a blowing agent and, if necessary, other additives, said core material having a density of 0.02–0.04 g/cm³; and

(d) said laminate having a total thickness of not more than 30 mm.

4,292,362

ORGANOPOLYSILOXANE COMPOSITIONS AND A PROCESS FOR TREATING ORGANIC FIBERS

Heinrich Marwitz, and Eckhart Louis, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 782,124, Mar. 28, 1977, abandoned. This application Jan. 19, 1978, Ser. No. 870,909
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2615078
Int. Cl.³ B32B *7/00, 17/00;* **B05D** *3/02*
U.S. Cl. 428—245 **10 Claims**

1. A process for treating organic fibers which comprises applying to the organic fibers an organopolysiloxane composition which can be stored under substantially anhydrous conditions, but when exposed to moisture cures to a solid consisting essentially of:

(A) a diorganopolysiloxane having terminal Si-bonded hydroxyl groups;

(B) an organosilicon compound selected from the group consisting of organosilanes of the formula $RSiR'_nX_{3-n}$, in which R is a monovalent radical having at least two amino groups which are bonded to silicon via silicon-carbon bonds, R′ is selected from the group consisting of an alkyl and aryl radical, X is selected from the group consisting of alkyl and substituted alkyl radicals having from 1 to 14 carbon atoms per radical which are bonded to silicon via oxygen, n is 0 or 1, partial hydrolysates of said organosilanes and mixtures thereof and

(C) an organosilane other than (B) having the formula $R''Si(ON{=}CX)_3$, where R″ is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and X is selected from the group consisting of R''_2, a bivalent hydrocarbon radical and a halogenated hydrocarbon radical and an organic solvent, and thereafter curing the composition on the organic fibers.

10. The product obtained from the process of claim 1.

4,292,363

REINFORCED FOAM LAMINATES AND A PROCESS FOR THEIR MANUFACTURE

Peter J. Briggs, Cheadle Hulme, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 14, 1980, Ser. No. 139,676
Claims priority, application United Kingdom, May 31, 1979, 18922/79
Int. Cl.³ B32B *5/02, 5/20, 5/28;* **B29D** *7/04*
U.S. Cl. 428—247 **10 Claims**

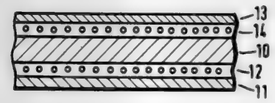
1. A laminated panel comprising a core of rigid isocyanurate-based foam sandwiched between two facing sheets characterized in that a mesh of continuous glass fiber strands readily permeable to the foam forming ingredients is embedded in multiple layers substantially throughout the thickness of the foam core, the whole being bonded together by the foam core into a unitary construction.

4,292,364

MULTI-LAYER BOARD

Ludwig Wesch, Heibelberg, and Adolf Meyer, Leimen-Lingental, both of Fed. Rep. of Germany, assignors to Heidelberger Zement Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 893,257, Apr. 5, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,780
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718626; Austria, Apr. 13, 1978, 2581/78; Switzerland, Apr. 14, 1978, 4014/78; Spain, Apr. 22, 1978, 469063; United Kingdom, Apr. 22, 1978, 10751/78; Japan, Apr. 24, 1978, 53-49189; France, Apr. 26, 1978, 78 2321; Netherlands, Oct. 26, 1978, 7810667; Canada, Oct. 31, 1978, 315251
Int. Cl.³ B32B *13/12, 13/14*
U.S. Cl. 428—286 **21 Claims**



1. A multi-layer load-bearing board comprising at least three layers of different composition, including

(a) basic layer comprised of a cementitious inorganic material,

(b) a cover layer subjectable to mechanical forces and consisting of a fiber-reinforced organic plastic and

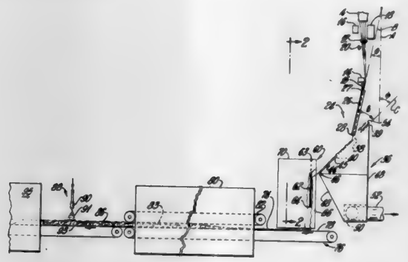
(c) an intermediate layer of a hydrophilic resin dilutable or miscible with water interconnecting the basic layer and cover layer in a force-transmitting manner.

4,292,365

POLYMERIC MATS HAVING CONTINUOUS FILAMENTS WITH AN ASYMMETRICAL CROSS-SECTIONAL SHAPE

John L. Kane, and Vikas M. Nadkarni, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 21, 1980, Ser. No. 113,995
Int. Cl.³ D04H *1/58*
U.S. Cl. 428—288 **9 Claims**



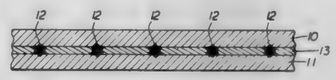
1. A lofted mat comprising a plurality of continuous polymeric filaments having an asymmetrical cross-sectional shape, the cross-sectional shape having a major dimension within the range from about 0.00150 inch to about 0.00350 inch, the filaments having a crimp factor within the range from about 0.1 to about 4 waves per inch of filament, said mat having a density within the range from about 0.33 pounds per cubic foot to about 1.74 pounds per cubic foot.

4,292,366

MACHINE DEGRADABLE REINFORCED PAPER BARRIER MATERIAL

Cyrus B. Fulton, Jr., 108 Walter Davis Dr., Birmingham, Ala. 35209

Filed Feb. 28, 1980, Ser. No. 125,546
Int. Cl.³ B32B *5/10, 29/00*
U.S. Cl. 428—293 **2 Claims**



1. A machine degradable reinforced paper barrier material comprising:

(a) at least two laminar sheets of paper mounted in face-to-face relationship to each other,

(b) a plurality of machine degradable and biodegradable reinforcing strands of repulpable twisted paper between said sheets, and

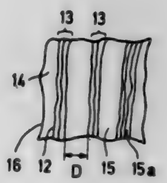
(c) adhesive means between said sheets adhering said sheets to each other and to said reinforcing strands.

4,292,367

PATTERNED TEXTILE MATERIAL

Günter Tesch, Fribourg, Switzerland, assignor to Breveteam S.A., Fribourg, Switzerland

Filed Jan. 3, 1980, Ser. No. 109,303
Claims priority, application Switzerland, Jan. 9, 1979, 158/79
Int. Cl.³ B32B *5/06*
U.S. Cl. 428—300 **18 Claims**



1. A textile material, comprising in combination:

a carrier,

an outer layer composed of individual endless threads, mounted on, and covering a portion of said carrier, and forming a predetermined design thereon, leaving visible the remainder of said carrier, said threads being separated from one another by respective prearranged distances, and

holding fibers, including fiber pieces emanating and projecting from at least some of said threads, said fiber pieces attaching said layer to said carrier by active needling.

4,292,368

PROCESS FOR MAKING A CONNECTING ROD FOR CONTROLLING OR TRANSMITTING EFFORTS, AND CONNECTING ROD THUS OBTAINED

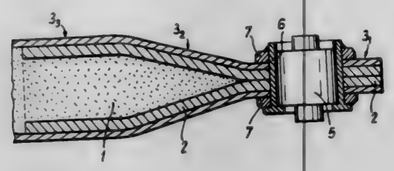
Jacques Mialon, Vitrolles, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jan. 9, 1980, Ser. No. 110,662
Claims priority, application France, Jan. 15, 1979, 79 00863
Int. Cl.³ F16C *3/02;* **B65H** *81/00*
U.S. Cl. 428—310 **8 Claims**

1. A process for making a connecting rod provided with a connecting member on at least one of its ends, comprising the steps of:

forming a tubular element by winding high strength fibers

impregnated with polymerizable resin on a light, rigid, deformable, cylindrical solid mandrel having a length not greater than the length of said connecting rod, said mandrel having, adjacent at least one of its ends, a section of smaller diameter than the remainder thereof, said winding extending over said section;



flattening said tube at said one end of said mandrel so that is is obturated,

polymerizing said resin impregnating said fibers in the presence of said mandrel to form a hardened tubular element having a flattened end; and

arranging said connecting member in said hardened, flattened end of said tubular element.

4,292,369

FIREPROOF LAMINATES

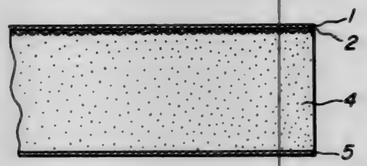
Takashi Ohashi, Iruma; Toru Okuyama, Sagamihara; Katsuhiko Arai, Akigawa, and Hiroshi Kaneda, Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,668

Claims priority, application Japan, Mar. 6, 1979, 54-26043; Nov. 30, 1979, 54-154196

Int. Cl.³ B32B *5/20*

U.S. Cl. 428—313 **15 Claims**



1. A fireproof laminate comprising a urethane modified polyisocyanurate foam as a core material and a surface material piled on at least one side of the foam, which comprises:

(1) an aluminum foil having a thickness of not less than 0.015 mm, as a surface material for said core material, said surface material being united with said core material by self-adhesion of said urethane modified polyisocyanurate foam; and

(2) a matted or woven glass fiber interposed between said core material and said front surface material; said urethane modified polyisocyanurate foam being obtained by reacting an organic polyisocyanate with a polyol in the presence of an isocyanate trimerization catalyst, a blowing agent and other additives, provided that

(1) said polyol being a combination of (a) a low molecular weight diol having a hydroxyl equivalent of not more than 100 selected from diethylene glycol, triethylene glycol, tetraethylene glycol, dipropylene glycol, tripropylene glycol, 2,3-butane diol and 2-butene-1,4-diol and (b) at least one high molecular weight polyol having a hydroxyl equivalent of 600–2,000 and 2 to 4 hydroxyl groups in its molecule;

(2) the weight ratio of said low molecular weight diol to said high molecular weight polyols being 0.55 to 7.0; and

(3) said polyol being used in a total amount of 12.5 to 25 parts by weight per 100 parts by weight of said organic polyisocyanate.

4,292,370

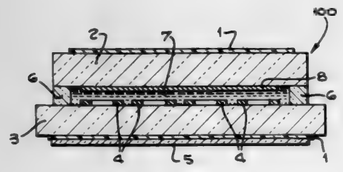
MOISTURE AND TEMPERATURE RESISTANT POLARIZING LAMINATION

John A. Pekko, Whittier, Calif., assignor to Avery International Corporation, San Marino, Calif.

Filed Dec. 6, 1979, Ser. No. 100,933

Int. Cl.³ G02F *1/13*

U.S. Cl. 428—355 **3 Claims**



1. A moisture resistant lamination comprising:

a polyvinyl alcohol polarizing film;

protective polypropylene films on both sides of said polyvinyl alcohol polarizing film; and

transparent urethane bonding agent layers firmly bonding said polypropylene films to the two sides of said polarizing film.

4,292,371

ASPHALT COMPOSITIONS MODIFIED WITH ORGANO SILANE COMPOUNDS

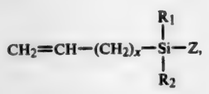
Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 66,207, Aug. 13, 1979, Pat. No. 4,243,426, which is a continuation-in-part of Ser. No. 852,772, Nov. 18, 1977, abandoned. This application Mar. 24, 1980, Ser. No. 133,170

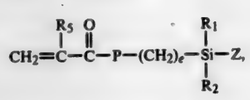
Int. Cl.³ B32B *17/04*; D02G *3/00*

U.S. Cl. 428—378 **4 Claims**

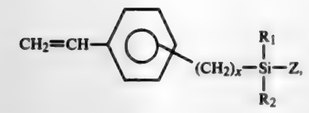
1. Glass fibers coated with a silicon-modified bitumen composition prepared by reaction of (1) a bitumen selected from the group consisting of a bitumen and a bitumen chemically modified with a modifying agent selected from the group consisting of steam and air, and (2) an organo silicon compound selected from the group consisting of a compound having the formula:



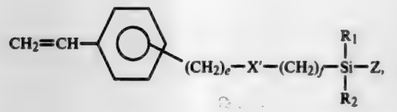
a compound having the formula:



a compound having the formula:



and a compound having the formula:



wherein x is 0 or an integer from 1–3, Z is a readily hydrolyzable group; R_1 and R_2 are selected from the group consisting of Z and a non-hydrolyzable organic group; R_5 is hydrogen or methyl; P is O or —NH—; e is an integer from 2–6, wherein X' is —NH— or —NH—$(CH_2)_e$—NH— and f is an integer from 2 to 6, and the hydrolysis products of said organo silicon compound, in the presence of a catalyst to promote the reaction between the ethylenic unsaturation of said organo silicon compound with ethylenic unsaturation in the bitumen.

4,292,372

POLYVINYLBUTYRAL SHEETING

Robert E. Moynihan, Lowell, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 2, 1980, Ser. No. 155,221

Int. Cl.³ C08F *45/38*; B32B *19/10, 27/42*

U.S. Cl. 428—437 **9 Claims**

8. In a laminar structure comprising at least one layer of glass and a sheet of polyvinyl butyral plasticized with a compatible quantity of at least one hydrolyzable ester selected from the group consisting of triethyleneglycol di-n-heptanoate and tetraethyleneglycol di-n-heptanoate, the improvement wherein the polyvinylbutyral comprises at least one adhesion control agent selected from alkali and alkaline earth metal formates and the polyvinyl butyral sheet has an acid concentration of less than about 10 equivalents of acid per million parts of sheet.

9. In a process for the preparation of PVB sheet by blending polyvinylbutyral, a compatible quantity of at least one hydrolyzable ester plasticizer selected from the group consisting of triethyleneglycol di-n-heptanoate and tetraethyleneglycol di-n-heptanoate and an adhesion control agent, and extruding the blend to form a sheet, the improvement which comprises adding to the blend, as an adhesion control agent, about from 50 to 1500 parts, per million parts of sheeting, of at least one alkali or alkaline earth metal formate in an amount to provide on acid concentration in the sheet of less than about 10 equivalents of acid per million parts of sheet.

4,292,373

SAPPHIRE SINGLE CRYSTAL SUBSTRATE FOR SEMICONDUCTOR DEVICES

Jun-ichi Nishizawa, and Mitsuhiro Kimura, both of Sendai, Japan, assignors to Semiconductor Research Foundation, Sendai, Japan

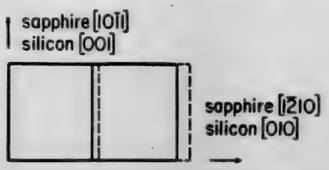
Division of Ser. No. 947,851, Oct. 2, 1978, abandoned, which is a division of Ser. No. 625,527, Oct. 14, 1975, Pat. No. 4,126,731. This application May 19, 1980, Ser. No. 151,282

Claims priority, application Japan, Oct. 26, 1974, 49-123616

Int. Cl. ³C04B *35/46*; C30B *29/20*; C30B *29/32*

U.S. Cl. 428—446 **15 Claims**

1. A sapphire-containing rhombohedral single crystal substrate for epitaxial growth thereon of a layer of a semiconductor, said single crystal substrate being an electrically insulating material consisting essentially of $MgTiO_3$ in an amount between 56 and 86 mol % with the balance being essentially Al_2O_3, whereby the lattice misfit coefficient between said



substrate and an epitaxially grown semiconductor thereon is not more than about 1% along the [1011] axis.

4,292,374

SAPPHIRE SINGLE CRYSTAL SUBSTRATE FOR SEMICONDUCTOR DEVICES

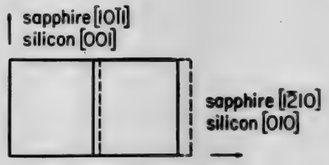
Jun-ichi Nishizawa, and Mitsuhiro Kimura, both of Sendai, Japan, assignors to Semiconductor Research Foundation, Sendai, Japan

Division of Ser. No. 947,851, Oct. 2, 1978, abandoned, which is a division of Ser. No. 625,527, Oct. 14, 1975, Pat. No. 4,126,731. This application May 19, 1980, Ser. No. 151,283

Claims priority, application Japan, Oct. 26, 1974, 49-123616

Int. Cl.³ C30B *29/20, 29/22*

U.S. Cl. 428—446 **19 Claims**



1. A sapphire-containing rhombohedral single crystal substrate for epitaxial growth thereon of a layer of a semiconductor, said single crystal substrate being an electrically insulating material consisting essentially of Sc_2O_3 in an amount between 24 and 38 mol % with the balance being essentially Al_2O_3, whereby the lattice misfit coefficient between said substrate and an epitaxially grown semiconductor thereon is not more than about 1% along the [1011] axis.

4,292,375

SUPERPLASTICALLY FORMED DIFFUSION BONDED METALLIC STRUCTURE

William L. Ko, Lancaster, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,944

Int. Cl.³ B32B *3/12*; B64C *1/00, 3/20*

U.S. Cl. 428—593 **5 Claims**

1. A diffusion bonded metallic sandwich structure characterized by an orthogonally corrugated core comprising:

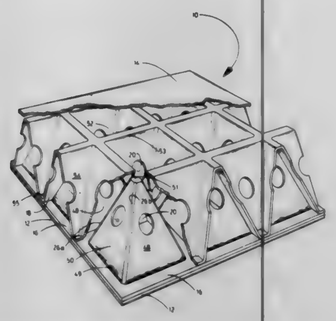
A. a base plate of a planar configuration;

B. a first core member comprising a first core plate seated on said base plate and consisting of a first uniform array of mutually spaced protuberances, each protuberance being of a truncated pyramidical configuration and protruding away from said base plate;

C. a second core member comprising a second core plate seated on said first core member and consisting of a second uniform array of mutually spaced protuberances, each protuberance of said second uniform array being of truncated pyramidical configuration and protruding toward said base plate in a manner such that the protuberances of

said first array are uniformly interspersed with the protuberances of the second array;

D. a cover plate seated on said second core member; and



E. means comprising diffusion welds bonding said plates into an integrated structure.

4,292,376

POROUS METAL SHEET LAMINATE

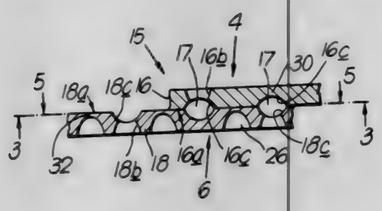
David Hustler, Nelson, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 12, 1979, Ser. No. 84,128

Claims priority, application United Kingdom, Oct. 28, 1978, 42364/78

Int. Cl.[3] B32B *15/01*

U.S. Cl. 428—593 2 Claims



1. A porous sheet metal laminate for use in environments where the sheet metal laminate is subjected to tensile stresses in a direction co-planar with the sheet metal laminate, said sheet metal laminate having outer surfaces and abutting inner faces and comprising at least two metal sheets permanently joined together along the abutting inner faces thereof, each of said abutting inner faces having a pattern of grooves formed therein and cooperating to define internal channels for the laminate, a plurality of holes in each of said sheets extending from the outer surfaces thereof to said internal channels for providing communication between said internal channels and said outer surfaces of the laminate, and a plurality of blind pockets in at least one of said outer surfaces of said laminate, said pockets being positioned in said at least one of said outer surfaces intermediate said channels so that stress concentrations from said tensile stresses in said laminate are evenly distributed through metal surrounding said holes, channels and blind pockets.

4,292,377

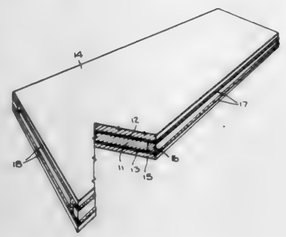
GOLD COLORED LAMINATED COMPOSITE MATERIAL HAVING MAGNETIC PROPERTIES

Walter A. Petersen, Ridgewood; Jonathan A. Travis, Oak Ridge, and Frank A. Badia, Ringwood, all of N.J., assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Jan. 25, 1980, Ser. No. 114,310

Int. Cl.[3] B32B *15/04, 15/18*

U.S. Cl. 428—675 5 Claims



1. A pressure bonded composite material comprising a multi-layered laminate having a central core layer of ferromagnetic metal or alloy selected from the group consisting of nickel, iron and alloys thereof, the core layer representing from about 3.5% to about 85% of the thickness of the composite, a pair of intermediate layers of essentially pure copper, each layer representing from about 1% to about 6% of the thickness of the laminate, each intermediate layer being bonded to a respective one of opposed surfaces of the core, and a pair of gold colored sheathing layers, each of which is bonded remotely from said core to a respective surface of one of said intermediate layers, each layer having a thickness representing from about 5% to 45% of the thickness of the laminate, each of the sheathing layers consisting of an alloy which comprises, by weight: 0.5 to 10% Al, 0 to 9.5% Ni, the balance being copper in an amount of at least 85% and layer edges at least partially welded together to maintain the layers in their superimposed relationship to one another prior to the application of pressure.

4,292,378

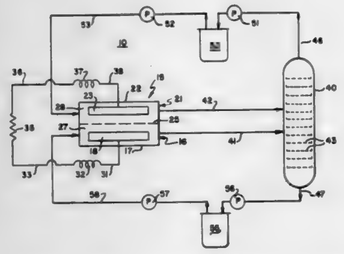
THERMAL REGENERATION OF AN ELECTROCHEMICAL CONCENTRATION CELL

Michael Krumpelt, Naperville, and John K. Bates, Plainfield, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 9, 1980, Ser. No. 148,326

Int. Cl.[3] H01M *8/06, 6/36*

U.S. Cl. 429—15 26 Claims



1. A system comprising an electrochemical cell having first and second metallic electrodes respectively positioned in contact with first and second electrolytes separated by an ion exchange member, said first and second electrolytes being composed of different concentrations of an ionic solvent and a salt having cations of the metallic electrodes, said ionic solvent and said salt in the concentrations of one or said first and second electrolytes forming a complex wherein the free energy of formation of said complex is less than about −5 Kcal/mole, thermal decomposing means for receiving said first and second electrolytes and thermally decomposing the complex whereby producing a first feed material for said first electrolyte having a high concentration of said cations and second feed material for said second electrolyte having a low concentration or none of said cations, and means for recycling the first feed material to said first electrolyte and the second feed material to said second electrolyte, thereby regenerating said electrochemical cell.

4,292,379

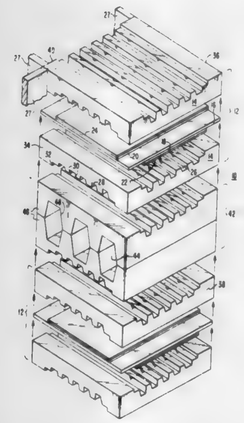
VARIABLE AREA FUEL CELL PROCESS CHANNELS

Richard E. Kothmann, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1980, Ser. No. 144,088

Int. Cl.[3] H01M *8/04*

U.S. Cl. 429—17 11 Claims



1. An improved fuel cell of the type wherein a fuel is passed through a plurality of fuel channels on one side of an electrolyte from a fuel inlet to a fuel outlet, and an oxidant is passed through a plurality of oxidant channels on the other side of the electrolyte from an oxidant inlet to an oxidant outlet, said fuel and oxidant channels arranged so that one of said fuel channel inlets is positioned closer to said oxidant channel inlets than another one of said fuel channel inlets, and one of said oxidant channel inlets is positioned closer to said fuel channel inlets than another one of said oxidant channel inlets, the improvement comprising:

the flow area of one of said fuel channels being different than the flow area of another one of said fuel channels, and the flow area of one of said oxidant channels being different than the flow area of another one of said oxidant channels.

3. A bipolar plate for a fuel cell comprising a plate having a plurality of fuel channels on one side thereof and a plurality of oxidant channels on the opposite side, the size of said fuel channels varying in a predetermined fashion from one to another, and the size of said oxidant channels varying in a predetermined fashion from one to another.

4,292,380

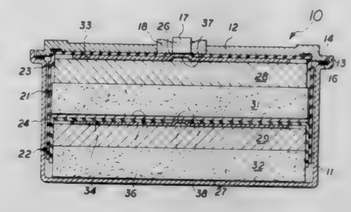
TWO-CELL BATTERY STRUCTURE

Matthew O'Boyle, Timonium, and Ross E. Magladry, Towson, both of Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Oct. 23, 1980, Ser. No. 199,696

Int. Cl.[3] H01M *6/18*

U.S. Cl. 429—101 5 Claims



1. A lithium halide battery comprising:

a. a metal encasing means having a top member sealed thereto, and through which is positioned a terminal and electrically insulated therefrom; and

b. first and second cell elements positioned within said encasing means, each of said elements comprising an insulating cup having an opening therethrough, a lithium anode positioned within said cup and a cathode positioned in contact with said anode, the opening in said cup of said first cell element being aligned with said terminal and said cup of said second cell element being positioned within said first cup such that said anode of said second cell is in electrical contact with the cathode of said first cell, said first and second cell elements being positioned within said encasing means such that the anode of said first cell is in electrical contact with said terminal through the opening in the cup of said first cell, and the cathode of said second cell is in electrical contact with said encasing means.

4,292,381

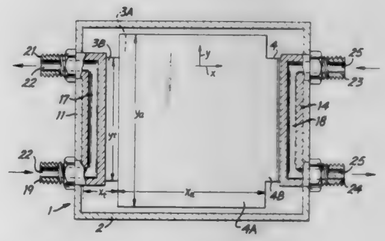
BATTERY CONSTRUCTION FOR UNIFORM ELECTRODE CURRENT DENSITY

Martin G. Klein, Brookfield, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Jan. 30, 1980, Ser. No. 116,772

Int. Cl.[3] H01M *2/32, 10/50*

U.S. Cl. 429—120 16 Claims



1. An electrochemical cell comprising:

a number of positive electrodes, each of said positive electrodes comprising a first plate forming a current collector and having a main area with first and second direction extent and a tab with first direction extent outward of said main area and second direction extent, the tabs of said first plates being arranged in aligned contacting relationship;

a number of negative electrodes, each of said negative electrodes comprising a second plate forming a current collector and having a main area with first and second direction

extent and a tab with first direction extent outward of said main area and second direction extent, the tabs of said second plates being arranged in aligned contacting relationship;

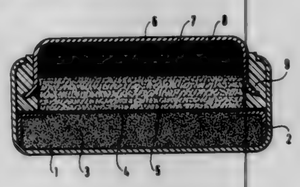
and means for cooling said tabs of said first plates and said second plates, said cooling means including: a first transport means for transporting a cooling medium in the second direction and along the expanse of the face of an exterior tab of said aligned tabs of said first plates; and a second transport means for transporting a cooling medium in the second direction and along the expanse of the face of an exterior tab of said aligned tabs of said second plates.

4,292,382

POSITIVE ACTIVE MATERIAL FOR AN ELECTRIC CELL. A METHOD OF PREPARING THE POSITIVE ACTIVE MATERIAL AND A CELL WHICH USES IT

André Lecerf, Pace, and Michel Broussely, Poitiers, both of France, assignors to Saft Leclanche, Poitiers, France

Filed Jun. 9, 1980, Ser. No. 157,893
Claims priority, application France, Jun. 27, 1979, 79 16554
Int. Cl.³ H01M *4/58*
U.S. Cl. 429—197 **5 Claims**



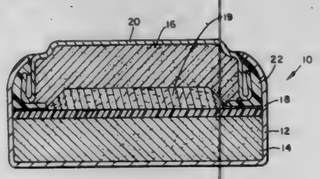
1. An electric cell having a positive electrode which comprises a positive active material, said material consisting of an anhydrous copper borate whose formula is $Cu_3B_2O_6$.

4,292,383

BILEVEL RECHARGEABLE CELL

Ralph Di Palma, New Hyde Park, and Arthur Phillips, White Plains, both of N.Y., assignors to Duracell International Inc., Bethel, Conn.

Continuation of Ser. No. 956,479, Oct. 30, 1978, abandoned.
This application Nov. 21, 1979, Ser. No. 96,582
Int. Cl.³ H01M *4/34*
U.S. Cl. 429—219 **8 Claims**



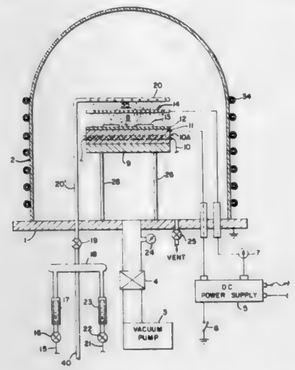
1. A method for improving the rechargeability of an electrochemical cell having an anode, a separator, an electrolyte, and a cathode comprising monovalent silver oxide comprising the steps of admixing with said silver oxide a material selected from the group consisting of mercuric oxide, cadmium oxide, cadmium hydroxide and manganese dioxide; and substantially homogeneously dispersing above about ten percent by weight of the cathode of a metal selected from the group consisting of silver, nickel and a mixture of silver and nickel throughout said cathode; whereby, upon discharging of said cell a stepped decrease in cell voltage occurs and recharging of said said cell can be effected prior to complete discharge of said cathode whereby a matrix of said metal will be maintained in said cathode to improve the rechargeability of said cathode.

4,292,384

GASEOUS PLASMA DEVELOPING AND ETCHING PROCESS EMPLOYING LOW VOLTAGE DC GENERATION

Virgil E. Straughan, Euclid, and Eugene Wainer, Shaker Hts., both of Ohio, assignors to Horizons Research Incorporated, Cleveland, Ohio

Continuation of Ser. No. 838,297, Sep. 30, 1977, abandoned. This application Jul. 10, 1979, Ser. No. 56,165
Int. Cl.³ G03C *5/00, 5/24*
U.S. Cl. 430—5 **28 Claims**



1. In the processing of silicon wafers in the manufacture of semiconductor devices, wherein the wafers are treated to form an adherent oxide layer on one surface thereof, of a thickness between about 5000 and 10,000 A° and the oxide layer is then coated with a photoresist composition, and said composition is then dried and then exposed to a pattern of radiation and the coated wafers are thereafter heated to fix an image formed in said photoresist, and then the photoresist is then developed, the improvements which comprise:

developing the photoresist by dry means by subjecting the photoresist composition on said wafers to a low pressure oxygen containing atmosphere which has been energized by application of low voltage direct-current to electrodes positioned adjacent said wafers, whereby the areas of said photoresist which were not exposed to said radiation are removed from said wafers by oxidation in a plasma;

and providing as said photoresist composition, a composition which comprises the following materials dissolved in a resin binder;

at least one polymerizable N-vinyl monomer;

at least one photoactivator selected from the group of organic halogen compounds in which at least two halogen atoms are attached to a single carbon atom, sulfonyl halides, and mercapto compounds in which the mercapto group is attached to a carbon atom in a heterocyclic nucleus.

4,292,385

BI-MODAL PHOTORECEPTOR AND METHOD

Robert G. Blanchette, Northfield, and Denis J. Curtin, Chicago, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,450
Int. Cl.³ G03G *13/044, 5/04, 5/10*
U.S. Cl. 430—58 **8 Claims**

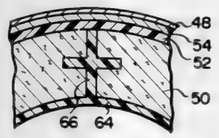
1. A bi-modal photoreceptor comprising a conductive backing, a first charge generative layer on said backing capable of photogenerating and injecting photo excited charge carriers, a top second charge generative layer formed of a composition containing a polyalkyl carbazole and a sensitizing dyestuff which is characterized by transparency to light of a first band width and is absorptive to a second band width, and an intermediate layer capable of transporting photogenerated charge carriers which is characterized by transparency to the first band width.

4,292,386

PHOTOCONDUCTIVE DRUM WITH PAPER LAYER ATTACHMENT

Toshimasa Takano, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 17, 1979, Ser. No. 104,061
Claims priority, application Japan, Dec. 22, 1978, 53-158828; Dec. 22, 1978, 53-176360[U]; Dec. 27, 1978, 53-180564[U]
Int. Cl.³ G03G *5/14*
U.S. Cl. 430—63 **2 Claims**



1. A photosensitive drum for a copying apparatus, comprising:

a hollow cylinder including

a plastic hollow cylinder base;

a projection secured to the outer periphery of the cylinder base extending parallel to the axis of the cylinder base and having a cross-shaped section; and

a rectangular paper sheet rolled about the outer periphery of the cylinder base, the edges of the paper sheet being attached to the projection;

a conductive layer formed on the outer periphery of the hollow cylinder, the conductive layer being fabricated from a synthetic resin containing carbon powder that is partly impregnated into the outer periphery of the hollow cylinder; and

a low resistance layer formed on the outer periphery of the conductive layer; and

a photosensitive layer formed on the outer periphery of the low resistance layer.

4,292,387

MAGNETIC DEVELOPING METHOD UNDER A.C. ELECTRICAL BIAS AND APPARATUS THEREFOR

Junichiro Kanbe, Tokyo; Tsutomu Toyono, Higashi; Nagao Hosono, Chofu, and Tohru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,435
Claims priority, application Japan, Jul. 28, 1978, 53-92108; Apr. 28, 1979, 54-52640; Jun. 11, 1979, 54-68564
Int. Cl.³ G03G *13/09, 15/09*
U.S. Cl. 430—102 **32 Claims**

1. A dry developing method for developing a latent image comprising the steps of:

defining a developing zone wherein a latent image bearing member having a latent image with an image area and a non-image area, and a non-magnetic conductive member carrying a layer of one component magnetic developer on the surface thereof are disposed in opposed relationship with a clearance between the surface of the latent image bearing member and the surface of the non-magnetic conductive member, the clearance being greater than the thickness of said developer layer so as to create an air gap;

providing a magnetic field in said developing zone;

moving said latent image bearing member and said non-magnetic conductive member; and



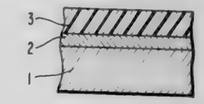
imparting an alternating electric field sufficient to produce electric fields across said developing clearance which alternate both in the image area and the non-image area.

4,292,388

IMAGE-FORMING MATERIAL OF ALUMINUM-IRON ALLOY

Tomoaki Ikeda; Masamiti Sigyoo; Sadaharu Ikeda; Satoshi Yoshida, and Takeshi Tomotsu, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 685,571, May 12, 1976, abandoned. This application Nov. 14, 1978, Ser. No. 960,547
Claims priority, application Japan, May 12, 1975, 50-56552
Int. Cl.³ G03C *1/94*
U.S. Cl. 430—162 **14 Claims**



1. A metal image-forming material for line work and halftone dot images comprising a base, a resist-forming photosensitive resin layer formed thereon, said photosensitive resin layer comprising a monomer, a prepolymer or a polymer, which, when exposed to radiation, chemically changes in its molecular structure and thereby changes in its solvent solubility, and a layer ranging in the thickness from about 300 A to about 1500 A of an aluminum/iron alloy consisting essentially of aluminum and iron, said alloy containing from about 0.2 to about 10 atomic % of iron, formed between said base and said photosensitive resin layer said alloy being entirely removed in areas where exposed to an etching solution.

4,292,389

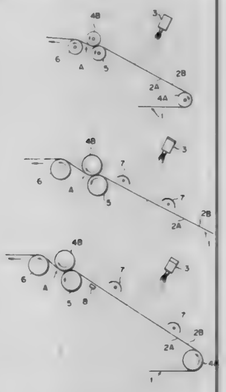
PROCESS FOR PREPARING PHOTOSENSITIVE PLATES FOR PRINTING

Hiroshi Kojima; Kunio Ito; Masami Akiyama, and Takeshi Tanaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1980, Ser. No. 115,124
Claims priority, application Japan, Jan. 31, 1979, 54-9186; Mar. 9, 1979, 54-28044; Mar. 9, 1979, 54-28045
Int. Cl.³ G03C *1/76*
U.S. Cl. 430—169 **15 Claims**

1. A process for the production of a photosensitive plate for printing which comprises a photosensitive layer side and a support side having a fine powder fixed to the surface of said photosensitive layer side, which comprises

uniformly dispersing and adhering a heat-depositable fine powder having a constant directional size of 0.5–40μ onto said surface of a photosensitive plate in an amount of 0.005–0.5 g. of the said powder per square meter of the said plate;



preheating said photosensitive plate; and

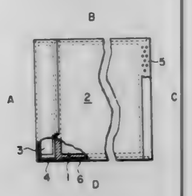
contacting said surface of said preheated plate to which said powder is adhered with a heating roll to fuse and fix said fine powder to said surface of said plate.

4,292,390

INTEGRAL DIFFUSION TRANSFER PHOTOGRAPHIC FILM UNIT

Kazunobu Katoh, and Teruyoshi Makino, both of Minami-asigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 30, 1980, Ser. No. 154,739
Claims priority, application Japan, May 30, 1979, 54-67212
Int. Cl.³ G03C *1/40, 1/76, 1/48*
U.S. Cl. 430—207 **9 Claims**



1. An integral diffusion transfer photographic film unit comprising at least one photosensitive silver halide emulsion layer in association with a dye-image-providing material and an image-receiving layer positioned between two support layers, at least one of said supports being transparent, and also containing a processing composition to be distributed between said two support layers, wherein at least one marginal portion of said integral film unit is masked by a masking material having on a surface facing said integral film unit a pressure-sensitive or heat-sensitive adhesive layer containing an acid or an acid-releasing material.

4,292,391

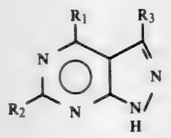
SILVER HALIDE DEVELOPMENT ACCELERATORS

Joseph D. Overman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 6, 1980, Ser. No. 119,296
Int. Cl.³ G03C *5/30*
U.S. Cl. 430—267 **8 Claims**

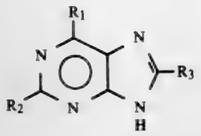
1. In a process for developing a photographic light-sensitive material for the graphic arts which comprises image-wise exposing and infectiously developing a photographic film comprising a support having coated thereon a silver halide emulsion layer, in an infectious developing solution comprising (1) hydroquinone or a hydroquinone derivative, (2) an alkali, (3) an alkali metal bromide, (4) an alkali metal sulfite, (5) an aldehyde/alkali metal bisulfite adduct, and (6) an antifoggant, the improvement comprising incorporating into the emulsion or into the developer an accelerator in amount sufficient to reduce the induction period of said photographic film; said accelerator being a compound selected from the group consisting of:

(a) a pyrazolo pyrimidine of the structure



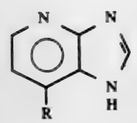
wherein R_1 and R_2=H, OH, or NH_2, with the proviso that when R_1=OH, R_2 must be H or NH_2, and R_3=H or $-O(CH_2)_n-OH$, wherein n is an integer from 1 to 3;

(b) a substituted purine of the structure:



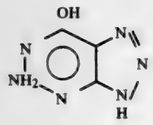
wherein R_1=OH or NH_2; R_2=H, NH_2, or OH with the proviso that when R_1=OH, R_2=H or NH_2, and when R_1=NH_2, R_2=H; R_3=H, OH, NH_2, or CH_3 with the proviso that when R_3=OH, R_1 and R_2 may be OH; when R_3=NH_2, R_1 must be OH and R_2 must be H; and when R_3=CH_3, R_1 and R_2 must be OH.

(c) a 4-aza-benzimidaziole of the structure:



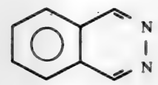
wherein R=H or NH_2;

(d) 8-azaguanine



and

(e) phthalazine



4,292,392

PROTECTIVE LAYER OF FATTY ACID OR NYLON ON PHOTOSENSITIVE RESIN FOR METAL-IMAGE FORMING ELEMENT

Tomoaki Ikeda; Fumiaki Shinozaki, and Sho Nakao, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 17,669, Mar. 5, 1979, abandoned, which is a continuation of Ser. No. 772,044, Feb. 25, 1977, abandoned. This application Oct. 22, 1980, Ser. No. 199,122
Claims priority, application Japan, Feb. 25, 1976, 51-19786
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—271 **23 Claims**

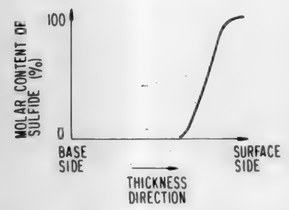
1. A method for producing a metal image which comprises (1) exposing a metal image-forming material comprising a support, a metal layer formed on the support, a photosensitive resin layer formed on the metal layer and a protective layer formed on the photosensitive resin layer, said metal layer being etchable with an aqueous alkaline solution, said photosensitive resin layer being developable with an aqueous alkaline solution and said protective layer being aqueous alkaline solution permeable and consisting essentially of a member selected from the group consisting of a higher fatty acid having 11 to 31 carbon atoms excluding the carbon atom(s) of the carboxyl group(s) thereof or an alcohol-soluble nylon, and (2) developing the exposed photosensitive resin layer to form a resist and etching the metal layer with an aqueous alkaline solution or aqueous alkaline solutions, to thereby form a metal image having a resist layer thereon and said protective layer on said resist layer.

4,292,393

PHOTOSENSITIVE IMAGE FORMING MATERIALS

Minoru Wada; Fumiaki Shinozaki; Yohnosuke Takahashi; Satoshi Yoshida, all of Asaka, and Tomoaki Ikeda, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 14, 1980, Ser. No. 177,963
Claims priority, application Japan, Aug. 14, 1979, 54-103373
Int. Cl.³ G03C *1/94*
U.S. Cl. 430—275 **3 Claims**



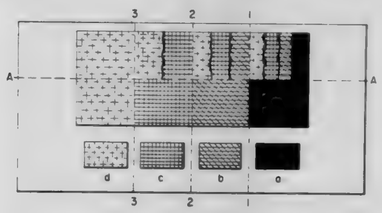
1. A photosensitive image forming material which comprises a photosensitive resin composition layer on a support and an image forming layer comprising a mixture of a metal and a metal sulfide between said support and said photosensitive resin composition layer, wherein the molar ratio of said metal to said metal sulfide is in the range of 20:1 to 2:1.

4,292,394

PROCESS FOR PREPARING MULTICOLOR TONED IMAGES ON A SINGLE PHOTOSENSITIVE LAYER

Victor F. H. Chu, Wilmington, Del., and James Riesenfeld, Basking Ridge, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 959,627, Nov. 13, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,839
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—291 **17 Claims**



1. Process for the preparation of a multicolor image using a negative-working tonable photosensitive layer which comprises:

(a) exposing said layer imagewise to actinic radiation through an image-bearing transparency, the exposed image areas of the layer becoming tacky;

(b) toning the tacky image areas by applying and adhering thereto a toner material which is swollen or solubilized when in contact with the tacky image areas, and removing any excess toner;

(c) buffing or rubbing the toned image areas whereby the areas become glossy;

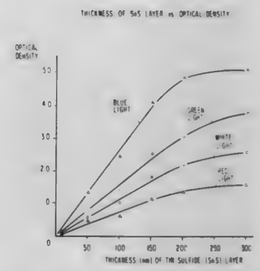
(d) repeating steps (a), (b) and (c) at least once using a different image-bearing transparency for each exposure (a) and toning with a toner of appropriate color difference from the color of the toner of step (b).

4,292,395

PHOTOGRAPHIC PROCESS OF DEVELOPING AND ETCHING AN ELEMENT CONTAINING A TIN SULFIDE

Minoru Wada; Fumiaki Shinozaki; Yohnosuke Takahashi; Satoshi Yoshida, all of Asaka, and Tomoaki Ikeda, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 14, 1980, Ser. No. 177,965
Claims priority, application Japan, Aug. 17, 1979, 54-104680
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—299 **4 Claims**



1. An image forming process which comprises:

(1) imagewise exposing a photosensitive image forming material comprising a tin sulfide image forming layer on a base and a photosensitive resin composition layer on said layer with actinic radiation; and

(2) developing said photosensitive resin composition layer by contact with an aqueous alkaline solution to simultaneously remove the tin sulfide image forming layer by etching in areas where said photosensitive resin composition layer has been removed.

4,292,396

METHOD FOR IMPROVING THE PRESS LIFE OF A LITHOGRAPHIC IMAGE HAVING AN OUTER LAYER COMPRISING AN EPOXY RESIN AND ARTICLE PRODUCED BY METHOD

Lester O. Eime, St. Louis County, and Edward H. Parker, Ballwin, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

Filed Mar. 3, 1980, Ser. No. 126,687
Int. Cl.³ G03F *7/00, 7/08*
U.S. Cl. 430—302 **11 Claims**

1. A method of increasing the strength, abrasion-resistance, solvent-resistance and press life of a lithographic image of a lithographic plate comprising said image over a substrate having a water-wettable hydrophilic surface, said image comprising a layer of light-reacted light sensitive material and an outer layer comprising an epoxy resin overlying said light-reacted layer, the method comprising the steps of:

contacting and wetting the surface of said outer layer with an aqueous solution comprising at least about 7% by weight of a boron trifluoride-amine complex;

evaporating solvent from said solution on said surface to deposit dry boron trifluoride-amine complex on said outer layer; and

heating said outer layer in the presence of said complex to cross-link said epoxy resin and form a hard, tough abrasion-resistant, solvent-resistant and wear-resistant epoxy resin layer at the outside of said image.

11. A planographic printing plate comprising a substrate having a water-wettable hydrophilic surface and over said hydrophilic surface a printing image defined by a coating comprising a layer comprising a light-reacted light sensitive layer and overlying said light-reacted layer an outer oleophilic ink-receptive layer comprising an epoxy resin cross-linked by heating in the presence of a topically applied boron trifluoride-amine complex, said outer layer imparting strength, abrasion resistance, solvent resistance and press wear resistance to said plate.

4,292,397

METHOD FOR PREPARING DRY PLANOGRAPHIC PLATES WITH PLASMA

Satoshi Takeuchi, Kawasaki; Masanori Akada, Tokyo; Hitoshi Fujii, Kasukabe; Takashi Toida, Chiba; Minoru Takamizawa, and Yoshio Inoue, both of Annaka, all of Japan, assignors to Dai Nippon Printing Co., Ltd. and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 141,187
Int. Cl.³ G03F *7/02*
U.S. Cl. 430—303 **13 Claims**



1. A method for the preparation of a planographic printing plate which comprises the steps of:

(a) providing a layer of an organopolysiloxane on one surface of a base plate,

(b) providing a pattern-wise protective resist layer on the surface of the organopolysiloxane layer,

(c) subjecting at least the superficial layer of the organopolysiloxane in the areas where no protective resist layer is provided thereon to a chemical treatment with chemical species activated in a plasma state to render the superficial layer oleophilic and ink-receptive, and

(d) removing the protective resist layer.

4,292,398

METHOD FOR THE PREPARATION OF RELIEF STRUCTURES BY PHOTOTECHNIQUES

Roland Rubner, Röttenback; Eberhard Kühn, Hemhofen, and Hellmut Ahne, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,143
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919840
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—306 **7 Claims**

1. In a method for the preparation of relief structures by phototechniques wherein a mixture of a photo-initiator and an unsaturated photo- or radiation-sensitive polymer containing ethylenically unsaturated acrylate and/or methacrylate groups is applied to a substrate in the form of a layer or foil; the layer or foil is exposed or irradiated through a mask; and the non-exposed or non-irradiated portions of the layer or foil are removed from the substrate to obtain a relief structure, the improvement comprising utilizing as said photo-initiator an aromatic azide free of maleinimide groups.

4,292,399

COBALT (III) COMPLEX IMAGING COMPOSITIONS HAVING IMPROVED PHOTOGRAPHIC PROPERTIES

Anthony Adin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,191
Int. Cl.³ G03C *1/40, 1/48, 1/00, 1/10*
U.S. Cl. 430—338 **15 Claims**

1. A light-sensitive image-forming composition, comprising, in admixture:

(a) a reducing cobalt(III) complex;

(b) a reducing-agent precursor which forms, in the presence of reduction products of said complex, a reducing agent for said cobalt(III) complex; and

(c) an organic oxidizing agent capable of functioning as an antifoggant in said composition.

4,292,400

PHOTOGRAPHIC SILVER HALIDE DEVELOPMENT IN THE PRESENCE OF THIOETHER DEVELOPMENT ACTIVATORS

Robert J. Pollet, Vremde; Francis J. Sels, Kontich; Karel A. Brems, Begijnendijk, and Maurice A. de Ramaix, Hove, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Claims priority, application United Kingdom, Sep. 27, 1979, 33608/79
Filed Sep. 10, 1980, Ser. No. 185,931
Int. Cl.³ G03C *5/30, 1/48, 7/00*
U.S. Cl. 430—383 **12 Claims**

1. Method of developing an image-wise exposed photographic silver halide element in the presence of an oxathioether development activator, wherein the oxathioether development activator corresponds to the following general formula:

$$R^1—A—(OCH_2CH_2)_n—S—A'—(X—A''—)_m—Y—R^2$$

wherein:

R^1 represents hydrogen, a C_1–C_4 alkyl group, a C_1–C_4 alkyl group substituted by one or more hydroxy groups, or the group $R^2—Y—(A''—X)_m—A'—S—$,

A, A', and A'' (same or different) each represent a C_1–C_5 alkylene group, with the proviso that A is a chemical monovalent bond when R^1 is hydrogen or alkyl or substituted alkyl,

X represents —OCO—, —SO_2—, —CONH—, or the group Y,

Y represents a ligand or complexing function of the type of —S— and —N(Q)—, Q being hydrogen or alkyl,

R^2 represents a C_1–C_4 alkyl group or a C_1–C_4 alkyl group substituted by one or more hydroxy groups, or when Y is —N(Q)—, R^2 may represent together with Q the atoms necessary to complete a nitrogen-containing saturated ring,

n is a positive whole number of at least 2, and

m is 0 or 1.

5. Method according to claim 1, wherein the photographic element is a colour element and the development is a colour development.

7. Method according to claim 5, wherein said photographic colour element is a multicolour element comprising a blue-sensitive emulsion layer with yellow-forming colour coupler, a green-sensitized emulsion layer with magenta-forming colour coupler, and a red-sensitized emulsion layer with a cyan-forming colour coupler.

4,292,401

BLEACHING COMPOSITION FOR PHOTOGRAPHIC PROCESSING

Isamu Itoh; Taiji Hashimura, and Takatoshi Ishikawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 10, 1980, Ser. No. 139,038
Claims priority, application Japan, Apr. 12, 1979, 54/44621
Int. Cl.³ G03C *5/32*
U.S. Cl. 430—393 **28 Claims**

1. A bleaching composition for use in processing silver halide color photographic light-sensitive material, comprising compounds [I], [II], and [III] as follows:

Compound [I]: at least one persulfate;

Compound [II]: a water-soluble halide; and

Compound [III]: at least one compound selected from the compounds represented by following general formula [III];



wherein X represents carbon atoms or carbon and nitrogen atoms forming an unsubstituted or substituted 5-membered ring containing two unsaturated bonds, including a 5-membered ring fused with a 5- or 6-membered carbocyclic or heterocyclic ring.

4,292,402

LIGHT-SENSITIVE SILVER HALIDE MATERIALS CONTAINING FLUORINE-CONTAINING SURFACTANTS

Robert J. Pollet, Vremde; Hendrik E. Kokelenberg, Merksem; Rafaël P. Samijn, Wilrijk; Francis J. Sels, Kontich; Frans J. Ville, Edegem, and Nikolaas C. de Jaeger, Mortsel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 8, 1980, Ser. No. 120,111
Claims priority, application United Kingdom, Feb. 28, 1979, 07040/79
Int. Cl.³ G03C *1/76, 1/38*
U.S. Cl. 430—631 **7 Claims**

1. Light-sensitive silver halide material comprising a support and one or more hydrophilic colloid layers including at least one light-sensitive silver halide emulsion layer, wherein at least one hydrophilic colloid layer comprises at least one surface-active agent corresponding to the general formula:

$$(Rf—X)_n—A—L—Z$$

wherein

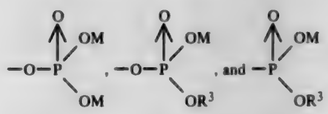
Rf represents a short-chain fluorine-containing group derived from hexafluoropropylene or trifluorochloroethylene, such short-chain group corresponding to one of the formulae Y—HCF—CF_2—, Y—CF=CF—, and F_2C=CF—CF_2— wherein Y represents chlorine or trifluoromethyl,

X represents oxygen, sulphur, or sulphonyl,

n represents an integer of at least 2, the Rf groups being same or different,

L represents a monovalent bond or a bivalent group selected from —COO—alkylene—, —$CONR^1$—alkylene—, and —SO_2NR^1—alkylene—, wherein R^1 is hydrogen or C_1–C_5 alkyl, and

Z represents a hydrophilic polyoxyethylene group or a hydrophilic group selected from the group consisting of —SO_3M, —OSO_3M, —COOM,



wherein M is hydrogen, an alkali metal, ammonium, or organic ammonium, and R^3 is alkyl, A represents a straight-chain or branched-chain aliphatic hydrocarbon group, an aromatic hydrocarbon group or a mixed aliphatic-aromatic hydrocarbon group which groups may be substituted or not; A being an aromatic hydrocarbon group when L is a monovalent bond and Z is a hydrophilic polyoxyethylene group.

4,292,403

DETECTION AND/OR DETERMINATION OF IGM, IGA, IGD AND IGE IMMUNOGLOBULINS

Willem Duermeyer, OSS, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Aug. 20, 1979, Ser. No. 67,680
Claims priority, application Netherlands, Aug. 24, 1978, 7808730
Int. Cl.³ G01N *33/54;* **C12Q** *1/70;* **G01N** *33/16;* **C12N** *9/96*
U.S. Cl. 435—5 **31 Claims**

1. Method for the detection or determination of an antigen specific immunoglobulin of a predetermined IgX class in a test medium wherein X is selected from the group consisting of M, A, D and E, comprising:

(a) contacting and reacting the test medium with either insolubilized anti-IgX against the antigen specific immunoglobulin of the peculiar IgX class to be detected or determined, or antigen binding fragment of said anti-IgX under conditions suitable for forming a reaction product of said insolubilized anti-IgX bound to said IgX;

(b) incubating said contacted and reacted test medium with an antigen for which the immunoglobulin to be detected or determined has specific affinity, and with a labelled antigen binding fragment of an antibody against said antigen; and

(c) detecting or determining the labelling fragment, which detection or determination provides qualitative or quantitative information about the antigen specific immunoglobulin to be detected or determined.

4,292,404

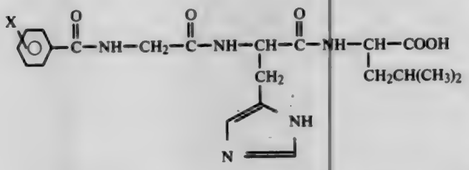
METHOD FOR DETERMINING THE ACTIVITY OF THE ANGIOTENSIN-CONVERTING ENZYME

Yasushi Kasahara, Tama, and Yoshihiro Ashihara, Fuchu, both of Japan, assignors to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,075
Claims priority, application Japan, Sep. 26, 1979, 54-122562
Int. Cl.³ C12Q *1/34, 1/28*
U.S. Cl. 435—18 **4 Claims**

1. A method for determining the activity of the angiotensin-converting enzyme comprising the steps of:

(1) mixing a liquid containing the angiotensin-converting enzyme with a reagent consisting essentially of X-hippuryl-L-histidyl-L-leucine having the formula



wherein X is OH, NH_2 or $N(CH_3)_2$, and with hippuricase, peroxidase, 4-aminoantipyrine and H_2O_2, under reaction conditions effective to form quinonimine dye, and

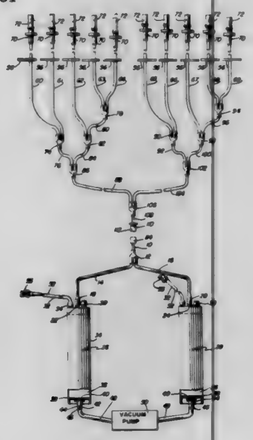
(2) colorimetrically measuring the concentration of said quinonimine dye produced in step (1).

4,292,405

STERILITY TEST SET

Carmine C. Mascoli, Deerfield; J. Lee Pope, Jr., Antioch, and Phillip L. Weber, Niles, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 885,747, Mar. 13, 1978. This application Feb. 19, 1980, Ser. No. 122,548
Int. Cl.³ C12Q *1/22*; C12M *1/12*
U.S. Cl. 435—31 **3 Claims**



1. A method for testing sterility, which comprises the steps of:

connecting a conduit at its upstream end to a sample to be tested;

gravity-feeding the sample to be tested without vacuum through the conduit and to a test chamber connected to the downstream end of the conduit,

said test chamber including a main chamber portion and a filter located downstream of said main chamber portion, an inlet communicating with the main chamber portion for connection to the downstream end of the conduit, a separate test medium inlet communicating with the main chamber portion for enabling introduction of a test medium into the main chamber portion without requiring disconnection of the downstream end of the conduit from said inlet, and an air vent communicating with the main chamber portion for venting the main chamber portion during flow of the sample to be tested into the main chamber portion, whereby the sample to be tested may be fed into the main chamber portion by gravity flow;

drawing the sample to be tested through said filter within the main chamber portion using a vacuum pump;

injecting a test medium to the test chamber through said test medium inlet;

incubating the test chamber; and

observing the filter.

4,292,406

ANAEROBIC THERMOPHILIC CULTURE SYSTEM

Lars G. Ljungdahl, Athens, Ga., and Jürgen K. W. Wiegel, Göttingen, Fed. Rep. of Germany, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 11, 1979, Ser. No. 74,286
Int. Cl.³ C12P *39/00*
U.S. Cl. 435—42 **6 Claims**

1. The mixed culture system comprising a biologically pure strain of the microorganism *Thermoanaerobacter ethanolicus*, having the identifying characteristics of ATCC 31550 and a biologically pure strain of the microorganism *Clostridium thermocellum*, having the identifying characteristics of ATCC 31549, said culture system having the ability to produce ethanol in recoverable quantities upon fermentation in an aqueous nutrient culture containing cellulose material.

4,292,407

ANAEROBIC THERMOPHILIC CULTURE

Lars G. Ljungdahl, Athens, Ga., and Jürgen K. W. Wiegel, Göttingen, Fed. Rep. of Germany, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 11, 1979, Ser. No. 74,287
Int. Cl.³ C12P *7/06*
U.S. Cl. 435—161 **11 Claims**

1. A biologically pure culture of the microorganism *Thermoanaerobacter ethanolicus*, having the identifying characteristics of ATCC 31550, said culture having the ability to product ethanol upon fermentation in an aqueous nutrient medium containing a substrate selected from the group consisting essentially of the monosaccharides, disaccharides, pyruvate, pectin, and starch.

4,292,408

MASS AND A METHOD OF PREPARING SAME OF LIVING CELLS OF ORGANISMS FOR ADSORBING METAL IONS FROM A PHYSIOLOGICAL SOLUTION, AND EMPLOYMENT OF THE MASS FOR ENRICHING METALS

Ulrich Zimmermann, and Günter Pilwat, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 753,474, Dec. 22, 1976, abandoned. This application Mar. 12, 1979, Ser. No. 19,436
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558750
Int. Cl.³ C12N *13/00, 1/20, 1/12*; C02F *3/00*
U.S. Cl. 435—173 **3 Claims**

1. A method specifically for removing metal ions contained in an aqueous solution, the method comprising the steps of:

providing a treating solution which is physiologically compatible with living cells;

preparing a mass of single cell microorganisms, each having a cell wall with a membrane supported thereby, the mass weighing approximately 20% of the physiologically compatible solution;

suspending the mass of cells in the solution;

exposing the treating solution with the mass of cells suspended therein to an electric field having an intensity in the range of 1 to 20 KV/CM for a period of time sufficient to increase the porosity of the cell membranes wherein the increased porosity allows molecules within the cells and having diameters in the range of 2 to 50 Angström units to pass through the cell walls and into the treating solution;

limiting the exposure to a level which permits regeneration of the membranes after termination of the exposure;

removing the cells from the treating solution;

adsorbing the metal ions in the aqueous solution onto the cells by suspending the cells in the aqueous solution; and

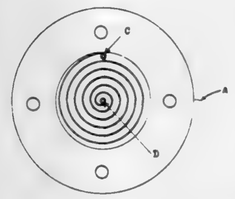
removing the adsorbed metals from the aqueous solution by removing suspended cells therefrom, the aqueous solution having the desired metal ions include uranium ions, wherein the microorganisms are selected from the group consisting of chlorella algae, dunalliela algae, sea water, bacteria grown in nitrate and phosphate waste waters, wherein the exposure step comprises pulsing the treating solution four times at an intensity of about 10 KV/CM with a pulse duration of about 10 μsec, wherein the removing step comprises centrifuging the solution to separate the microorganisms from the solution and wherein the adsorbing step comprises suspending the microorganisms.

4,292,409

FLOW REACTOR FOR ENZYMATIC REACTIONS IN WHICH THE ENZYME IS IMMOBILIZED ON A SOLID MATRIX HAVING A PLANAR SURFACE

Pietro Cremonesi, Milan, Italy, assignor to Italfarmaco S.p.A., Milan, Italy

Filed Sep. 26, 1979, Ser. No. 79,036
Claims priority, application Italy, May 8, 1979, 22448 A/79
Int. Cl.³ C12M *1/40*
U.S. Cl. 435—288 **6 Claims**



1. A laminar flow reactor for reactions with an enzyme or a cofactor in which the enzyme or cofactor is immobilized on a matrix having planar surface, and the reaction solution is continuously introduced to react with said enzyme or said cofactor which consists of a cell comprising two semi-blocks having a planar surface, the first of said semi-blocks being provided with a spiral channel, said channel constituting the reaction chamber having a laminar flow, said two semi-blocks being hermetically fastened, the second semi-block closes said reaction chamber, said matrix adhering onto said second semi-block, and being compressed against said channel, and wherein one orifice is provided at the inlet of the spiral and one orifice is provided at the outlet of the spiral, said reaction solution being introduced through the inlet flowing through said channel with a laminar flow and being removed from the outlet after it has come in contact with said matrix.

4,292,410

PROCESS FOR THE PREPARATION OF HYDROCARBONS FROM SYNTHESIS GAS

Martin F. M. Post, and Lambert Schaper, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 16, 1979, Ser. No. 95,028
Claims priority, application Netherlands, Nov. 30, 1978, 7811735
Int. Cl.³ C07C *1/04*
U.S. Cl. 518—714 **8 Claims**

1. In a process for the preparation of a hydrocarbon mixture of pentanes and higher and containing aromatics, which process comprises contacting a mixture of carbon monoxide and hydrogen at an elevated temperature and pressure with a catalyst mixture consisting essentially of two catalysts, a catalyst X being capable of catalysing the conversion of an H_2/CO mixture into substantially methanol and/or dimethyl ether, and containing zinc together with chromium, and a catalyst Y, which is a crystalline silicate, which silicate is characterized by having the following properties after 1 hour's calcining in air at 500° C.:

(a) thermally stable up to a temperature above 600° C.,

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A:

TABLE A

Radiation: Cu-Ka 2θ	Wavelength 0.15418 nm relative intensiyl
7.8–8.2	S
8.7–9.1	M
11.8–12.1	W
12.4–12.7	W
14.6–14.9	W
15.4–15.7	W
15.8–16.1	W
17.6–17.9	W
19.2–19.5	W
20.2–20.6	W
20.7–21.1	W
23.1–23.4	VS
23.8–24.1	VS
24.2–24.8	S
29.7–30.1	M

where the letters used have the following meanings: VS=very strong; S=strong; M=moderate, W=weak; θ=angle according to Bragg's law.

(c) after evacuation at 2×10^{-9} bar and 400° C. for 16 hours and measured at a hydrocarbon pressure of 8×10^{-2} and 100° C., and adsorption of n-hexane is at least 0.8 mmol/g, the adsorption of 2,2-dimethylbutane at least 0.5 mmol/g, and the ratio

$$\frac{\text{adsorption of n-hexane}}{\text{adsorption of 2,2-dimethylbutane}}$$

at least 1.5

(d) the composition, expressed in moles of the oxides, is as follows: $y.(1.0\pm0.3)$. $M_2O.y.Al_2O_3.SiO_2$, where M=H and alkali metal, the improvement comprising $0.0020<y\leqq0.0040$.

4,292,411

PROCESS FOR PREPARING INTEGRAL SKIN POLYURETHANE AND POLYURETHANE SO OBTAINED

Lucien Jourquin, Wetteren, and Eddie Du Prez, St. Maria Dudenhove, both of Belgium, assignors to S.A. PRB, Brussels, Belgium

Filed Mar. 10, 1980, Ser. No. 128,768
Claims priority, application Luxembourg, Mar. 9, 1979, 81024
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—51 **30 Claims**

1. An improved process for preparing integral skin polyure-

thane foam, wherein a reaction mixture comprising polyol, polyisocyanate the NCO groups of which are not directly bonded to an aromatic group, no more than 0.5 part by weight of water to 100 parts by weight of polyol, and a catalyst is reacted in a mould, said improvement comprising using as the catalyst a synergistic combination of (a) at least one organic initiator containing at least one of a primary or secondary amino functional group, and (b) at least one organic compound of bismuth.

4,292,412

HYDROPHILIC, FABRIC SOFTENER FOAM COMPOSITIONS AND METHOD OF MAKING

Louis L. Wood, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 16, 1980, Ser. No. 112,575
Int. Cl.³ C08G *18/14, 18/10, 18/32, 18/38*
U.S. Cl. 521—107 **5 Claims**

1. A fabric softener-containing, urethane foam-forming composition comprising

(a) a water reactant;

(b) a prepolymer comprising at least one isocyanate-capped polyol having a reaction functionality of at least two, the total of said polyol present having an ethylene oxide content of at least 40 weight percent before capping;

(c) when the reaction functionality of (b) is two, a crosslinking agent containing at least three functional groups;

(d) a hydrophilic polyether polyol release agent

and (e) a fabric softener, the weight ratio of (a):(b) being 0.3 to 2.0:1.0.

4,292,413

PROCESS FOR THE PRODUCTION OF EPOXY CELLULAR SOLID PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 107,044, Dec. 26, 1979, Pat. No. 4,235,974, which is a continuation-in-part of Ser. No. 4,039, Jan. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 821,584, Aug. 4, 1977.
This application Jun. 25, 1980, Ser. No. 162,723
Int. Cl.³ C08J *9/02*
U.S. Cl. 521—136 **44 Claims**

1. The process for the production of epoxy cellular solid reaction products in a non aqueous medium without the addition of a blowing agent, by the following steps:

(a) adding about 1 to 3 parts by weight of an organic polyamine compound selected from the group consisting of alkylenepolyamine, polyalkylenepolyamine, arylenepolyamine, polyamide polymers containing 2 or more free amine groups per molecule and mixtures thereof,

(b) adding slowly 1 to 5 parts by weight of an epoxy compound while

(c) agitating the mixture and keeping the temperature between 20° C. to 70° C. until the resulting chemical reaction is complete, thereby

(d) producing an epoxy prepolymer,

(e) admixing 0 to 2 parts by weight of a foam regulator and 1 to 2 parts by weight of an isocyanate, selected from the group consisting of arylene polyisocyanates, alkylene polyisocyanates, and mixtures thereof, to the epoxy prepolymer

(f) heating the epoxy prepolymer to a temperature of 80° C. to 100° C. until the mixture expands, thereby

(g) producing an epoxy cellular reaction product.

4,292,414

PROCESS FOR THE PREPARATION OF MODIFIED BLOCK COPOLYMERS

Akira Saito, Fujisawa; Akio Yamori, and Toshio Ibaragi, both of Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1979, Ser. No. 89,237
Claims priority, application Japan, Aug. 16, 1978, 53/99102; Oct. 31, 1978, 53/133244
Int. Cl.³ C08L *53/02*
U.S. Cl. 525—255 **23 Claims**

1. A process for preparing a modified block copolymer by graft-reacting at least one maleic acid compound with an aromatic vinyl compound-conjugated diene compound block copolymer containing at least one polymer block mainly composed of a conjugated diene compound at least one polymer block mainly composed of an aromatic vinyl compound, the aromatic vinyl compound/conjugated diene compound weight ratio being within the range of from 5/95 to 97/3, characterized in that said graft reaction is carried out by melt-mixing said block copolymer and maleic acid compound in the presence of a radical inhibitor without using any radical initiator while adjusting reaction temperatures and times wherein the generation of radicals can be substantially inhibited to obtain a modified block copolymer grafted with a maleic acid compound having a toluene insolubles content of not more than 1% by weight, and a ratio of melt flow index of said modified block copolymer to that of the block copolymer before modification of 0.025–2.0.

4,292,415

NOVEL FISCHER-TROPSCH CATALYSTS

Kurt P. C. Vollhardt, Kensington, and Patrick Perkins, Berkeley, both of Calif., assignors to The United State of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 39,986, May 17, 1979, Pat. No. 4,230,633. This application Apr. 29, 1980, Ser. No. 145,187
Int. Cl.³ C08F *8/18, 8/22*
U.S. Cl. 525—357 **9 Claims**

1. A process of preparing a polystyrene supported cycloalkadienyl metal complex of the formula:

$$(PS)\text{—}RMe(CO)_nH_m$$

where:

(PS) represents a macroporous divinylbenzene crosslinked polystyrene in which the divinylbenzene crosslinking is greater than 1% and in which the pore size is in the range of about 100 through 900 A°.

R represents a cycloalkadienyl radical of 4 through 6 carbon atoms;

Me represents a Group VIII metal;

CO represents a carbonyl radical;

H represents hydrogen;

n represents an integer varying from 0 to 3, and

m is an integer varying from 0 to 2 inclusively with the further provision that 2n+m must total 18 when added to the electrons in R and Me, or n+m must total 0, which process comprises:

brominating (PS)—H by treating same with bromine in the presence of a thallium salt in a partially or fully halogenated hydrocarbon solvent to form (PS)—Br;

treating said (PS)—Br so produced with an alkyl lithium of about 1 through 12 carbon atoms in an aromatic hydrocarbon solvent of 6 through 8 carbon atoms to produce (PS)—Li;

substituting said PS—Li so produced by reaction with a 2-cycloalkenone of 4 to 6 carbon atoms in the presence of an ether solvent and using a water work-up to form a cycloalkenylalcohol-substituted (PS);

dehydrating said alcohol so produced by heating under a vacuum to produce a cycloalkadienyl-substituted (PS);

reacting said cycloalkadienyl-substituted (PS) with metal carbonyl in the presence of a partially or fully halogenated hydrocarbon, an aromatic hydrocarbon of 6 through 8 carbon atoms, ethers and esters of 4 through 10 carbon atoms as solvent to produce a polystyrene-supported cycloalkadienyl metal carbonyl.

4,292,416

POLYMER BLENDS

Robert S. Shue, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Feb. 21, 1980, Ser. No. 122,980
Int. Cl.³ C08L *81/04, 77/00*
U.S. Cl. 525—420 **12 Claims**

1. A polymeric blend exhibiting improved properties comprising:

(a) a major amount of a polyamide selected from the group consisting of polyamide resins obtained by

(1) the polymerization of caprolactam, and

(2) the condensation of a dibasic acid and a diamine, and

(b) a small but effective minor amount ranging from about 0.01 to about 10 weight percent of the total composition, sufficient to improve impact strength and/or warpage resistance of the blend, of a poly(arylene sulfide) resin.

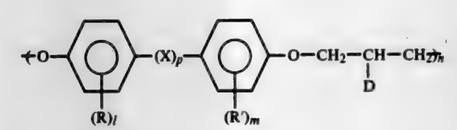
4,292,417

SEMIPERMEABLE MEMBRANE

Kiyoshi Ishii; Ryoshu Suzuki; Zenjiro Honda, and Hitoshi Tsugaya, all of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 910,877, May 30, 1978, Pat. No. 4,200,726. This application Sep. 20, 1979, Ser. No. 77,202
Claims priority, application Japan, Jun. 1, 1977, 52-64427
Int. Cl.³ C08G *59/14;* C02F *1/44*
U.S. Cl. 525—510 **15 Claims**

1. A water-insoluble semipermeable membrane which has been prepared by immersing a semipermeable membrane consisting essentially of a membrane-forming polymer having the formula:



(I)

wherein

R and R′ are halogen, nitro, methyl or ethyl and R and R′ are the same or different, X is a divalent group selected from the group consisting of methylene, ethylene, isopropylidene, ether (—O—), carbonyl (—CO—), sulfide (—S—), sulfoxide (—SO—) and sulfone ($-SO_2-$), l and m are integers of from 0 to 4, p is 0 or 1, n is an integer of from 100 to 1000, wherein from 15 to 90% of said D groups are sulfuric acid groups or salts thereof with an alkali metal, ammonia or a nitrogen-containing basic organic compound, and the balance of said D groups are hydroxyl groups,

in an aqueous solution or an organic solvent solution of a cross-linking agent selected from the group consisting of melamine and urea resins, benzoguanamine resins, amino resins mixed with benzoguanamine resins, aldehydes, di-functional epoxides, tri-functional epoxides and alkaline earth metal divalent cations, under conditions effective to cross-link said polymer whereby to reduce the swelling of the membrane caused by an organic solvent, minimize the reduction of the membrane properties when the membrane is used continuously for a long time and to increase the mechanical strength of the membrane.

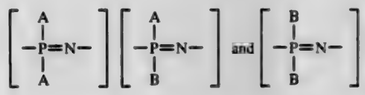
4,292,418

CURING FLUORINATED ALKOXY PHOSPHONITRILE POLYMER WITH PEROXIDE AND ALUMINUM COMPOUND

Jong Joung, South Pasadena, Calif., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 26, 1979, Ser. No. 107,140
Int. Cl.³ C08G *79/04*
U.S. Cl. 525—538 **6 Claims**

1. In a method of cross-linking a linear polymer containing randomly distributed repeating units having the structures:



wherein A represents $X(CF_2)m\ CH_2O$- and B represents $Y(CF_2)N\ CH_2O$-, X and Y each being selected from the group consisting of hydrogen and fluorine, and m and n each being an integer from 1 to 8 inclusive with an organic peroxide by contacting said polymer with said peroxide, the improvement comprising including along with the organic peroxide an alkyl aluminum compound having the composition

$$AL\ R_1R_2R_3$$

wherein R_1 is selected from the group consisting of hydrogen and alkyl having from 2 to 8 carbon atoms and R_2 and R_3 are alkyl having from 2 to 8 carbon atoms, the amount of said alkyl aluminum compound being from 0.1 to 2% by weight of said polymer.

4,292,419

PROCESS FOR PRODUCING RADIATION-SHIELDING PLASTIC MATERIALS

Kazumasa Kamada, and Kazuya Okada, both of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

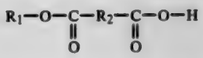
Filed Apr. 24, 1980, Ser. No. 143,516
Claims priority, application Japan, May 15, 1979, 54/59357; May 16, 1979, 54/59957
Int. Cl.³ C08F *2/44;* G21F *1/00;* C07F *7/24*
U.S. Cl. 526—192 **14 Claims**

1. A process for producing a radiation-shielding plastic material, which comprises polymerizing, in the presence of a radical polymerization initiator and a lead compound, a mixture of:

(A) 10 to 94% by weight of a vinyl monomer component consisting of at least one vinyl monomer selected from the group consisting of alkyl methacrylates, alkyl acrylates, hydroxyalkyl methacrylates and hydroxyalkyl acrylates, in each of which the alkyl radical has 1 to 4 carbon atoms, and styrene, and;

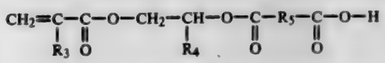
(B) 6 to 90% by weight of an organic acid component containing, as an indispensable ingredient, at least one carboxylic acid selected from the group consisting of:

(a) dibasic carboxylic acid monoesters of the formula (I):



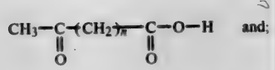
(I),

(b) unsaturated carboxylic acid of the formula (II):



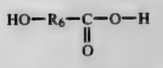
(II)

(c) oxocarboxylic acids of the formula (III):



and;

(d) hydroxycarboxylic acids of the formula (IV):



(IV)

in which formulae (I) through (IV), R_1 represents a hydrocarbon radical having 1 to 10 carbon atoms; R_2 represents a hydrocarbon radical having 1 to 7 carbon atoms; R_3 and R_4 respectively represent, independently from each other, a member selected from the group consisting of a hydrogen atom and a methyl radical; R_5 represents a hydrocarbon radical having 2 to 7 carbon atoms; R_6 represents a hydrocarbon radical having 1 to 3 carbon atoms, and; n represents an integer of from 0 to 4.

4,292,420

EMULSION POLYMERIZATION PROCESS FOR PRODUCING VINYL DISPERSION RESINS

James W. Turner, Bay Village, and Bela K. Mikofalvy, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 20, 1979, Ser. No. 105,693
Int. Cl.[3] C08F *14/06*
U.S. Cl. 526—212 16 Claims

1. A process for producing polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with up to about 80% by weight of one or more other monoethylenically unsaturated monomers copolymerizable therewith comprising, forming a monomer premix containing the monomer or monomers to be polymerized, the aqueous reaction medium, from about 0.05% to about 0.5% by weight of a free radical yielding catalyst based on the weight of 100 parts of monomer(s) being polymerized, from about 0.5% to about 4.0% by weight, based on the weight of the monomer or monomers being polymerized, of at least one emulsifier for the polymerization system selected from the group consisting of fatty acid salts containing from 8 to 20 carbon atoms, and sulfate and sulfonate type soaps from C_{12} to C_{20} alkyl or aryl hydrocarbons, mixing said premix at a temperature below the reactivity of the catalyst or catalysts employed, passing said premix to a reaction zone, emulsion polymerizing said premix in said zone at a temperature in the range of about 30° C. to about 70° C. to form a polymer latex containing individual spheres of polymer particles, maintaining the pH in the reaction zone in the range of about 3.0 to about 12.0 until the reaction is complete, removing the polymer latex from said reaction zone, mixing with said polymer latex from about 0.05% to about 5.0% by weight of a partially fugitive gas producing electrolyte, based on the weight of the polymer in the latex, filtering said latex to recover polymer and friable aggregates of polymer while removing the electrolyte therefrom, and lightly crushing said dried friable aggregates to form individual spheres of polymer particles.

4,292,421

(III) ANIONIC POLYMERIZATION INITIATORS BASED ON ALKALI METAL AMIDES IN COMBINATION WITH ALKALI METAL SALTS AND ANIONIC POLYMERIZATION PROCESS USING THESE INITIATORS

Sylvie L. Boileau, Paris; Paul L. Caubere, Nancy; Serge F. Raynal, Draveil; Serge L. Lecolier, Janville sur Juine, and Gilberte N. N'Debeka, Vandoeuvre, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jun. 6, 1979, Ser. No. 46,192
Claims priority, application France, Jul. 6, 1978, 78 20220
Int. Cl.[3] C08F *4/08, 112/08, 112/34, 120/14*
U.S. Cl. 526—220 5 Claims

1. Process for the polymerisation of vinyl or diene monomers capable of polymerising anionically by opening of an ethylenic double bond, wherein the reaction is initiated, in the presence of an aprotic solvent, by means of an initiator which is the product of the reaction of an alkali metal amide which is a member selected from the group consisting of sodium amide, potassium amide and lithium amide and at least one alkali metal salt of which the cation is a member selected from the group consisting of potassium, lithium, and sodium, the anion being a member selected from the group consisting of the thiocyanate, cyanate, cyanide and nitrite anions, in a molar ratio of alkali metal amide/associated salt at least equal to 1 up to 12.

4,292,422

OXYGEN-CURABLE MERCAPTO-FUNCTIONAL ORGANOSILICON-ORGANIC COMPOUND COMPOSITIONS CATALYZED BY METAL CARBONYL COMPOUNDS AND METHOD OF FORMING HIGHER MOLECULAR WEIGHT PRODUCTS THEREFROM

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,254
Int. Cl.[3] C08G *77/06*
U.S. Cl. 528—15 28 Claims

1. A composition of matter, stable in the absence of oxygen, which consists essentially of a product obtained by mixing the following substantially in the absence of oxygen

(A) 100 parts by weight of an ingredient selected from the group consisting of

(1) at least one mercapto-functional copolymer having both organic compound segments and organosilicon compound segments, there being an average of at least two mercapto groups per copolymer molecule and

(2) a mixture of at least two different types of components, said components being selected from the group consisting of (a) at least one copolymer as described in (A)(1) above, (b) at least one mercapto-functional organic compound which contains an average of at least two mercapto groups per molecule and (c) at least one mercapto-functional organosilicon compound selected from the group consisting of mercapto-functional organosilanes and mercapto-functional organosiloxanes,

wherein

each organic compound segment and mercapto-functional organic compound is free of silicon atoms, aliphatic unsaturation and radicals which are reactive with mercapto groups at room temperature;

said mercapto-functional organosilanes have an average of at least two mercapto groups per molecule and are of an average formula

$$\{(HS)_vZ\}_wSiR^8_{4-w}$$

where

each Z is a divalent or polyvalent hydrocarbon radical free of aliphatic unsaturation, the valence of Z being v+1,

each R^8 is a monovalent hydrocarbon radical free of aliphatic unsaturation or OR^7,

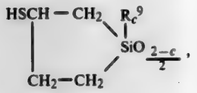
each R^7 is an alkyl radical of 1 to 4 inclusive carbon atoms,

v has a value greater than 0,

w has a value of from 1 to 3 inclusive and the sum of v+w has a value of at least 3; and

said mercapto-functional organosiloxanes have an average of at least two mercapto-functional siloxane units per molecule selected from the group consisting of mercapto-functional siloxane units of the average unit formula

$$\{HSC_nH_{2n}\}aR^9_bSiO_{(4-a-b)/2}$$ and



any other siloxane units present having the average unit formula

$$R^{10}_dSiO_{(4-d)/2}$$

where

each R^{10} is a hydroxyl radical or an organic radical selected from the group consisting of R^9 and 3,3,3-trifluoropropyl radicals,

each R^9 is R^6 or OR^7,

each R^6 is an alkyl radical of 1 to 4 inclusive carbon atoms or phenyl radical,

n has a value of from 2 to 4 inclusive,

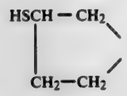
a has a value of from 1 to 2 inclusive,

b has a value of from 0 to 2 inclusive,

c has a value of from 0 to 1 inclusive,

d has a value of from 0 to 3 inclusive and the sum of a+b has a value of from 1 to 3 inclusive, and

the ratio of the total R^6, $HSC_nH_{2n}-$,



and 3,3,3-trifluoropropyl radicals to silicon atoms in the mercapto-functional organosiloxane is in the range of 0.98/1 to 3.00/1;

(B) 0 to 200 parts by weight of at least one filler; and

(C) a catalytic amount of a metal carbonyl compound selected from the group consisting of $Fe(CO)_5$, $Fe_2(CO)_9$, $Fe_3(CO)_{12}$, dicyclopentadienyldiiron tetracarbonyl, butadieneiron tricarbonyl, cyclohexadieneiron tricarbonyl, $Ni(CO)_4$, dicyclopentadienyldinickel dicarbonyl, $Mn_2(CO)_{10}$, methylcyclopentadienylmanganese tricarbonyl and cyclopentadienylcobalt dicarbonyl.

4,292,423

PROCESS FOR THE PREPARATION OF ORGANOPOLYSILOXANES

Rudolf Kaufmann; Johann Müller, and Karl-Heinrich Wegehaupt, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,407
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915751; May 25, 1979, 2921375
Int. Cl.[3] C08G *77/06*
U.S. Cl. 528—18 4 Claims

1. A process for preparing organopolysiloxanes having substituted carbamoyl groups which are bonded to silicon through oxygen, which comprises reacting a diorganopolysiloxane having at least one Si-bonded hydroxyl group with an organic isocyanate having at least 2 isocyanate groups per molecule as the sole reactants in the presence of a catalytic amount of an organic tin compound supported on a solid material and thereafter separating the resultant reaction product from the catalyst under anhydrous conditions.

3. The process of claim 1, wherein activated carbon is used as the support for the tin compound.

4,292,424

PROCESS FOR RECOVERING VINYL POLYMERS FROM EMULSION POLYMERIZATION LATICES

George R. Huddleston, Jr., Lorain; James W. Turner, Bay Village, both of Ohio, and Kenneth D. Konter, Washburn, Ill., assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Mar. 3, 1980, Ser. No. 126,789
Int. Cl.[3] C08F *6/14, 6/16*
U.S. Cl. 528—500 18 Claims

1. A process for producing polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with one or more polymerizable unsaturated olefinic monomers which comprises forming a monomer premix containing an aqueous reaction medium, the monomer or monomers to be polymerized, a free radical yielding catalyst, and at least one emulsifier, homogenizing said premix and passing the same to a reaction zone, polymerizing said premix in said zone at a temperature in the range of about 30° C. to about 70° C. and at a pH of about 3 to about 12 to produce a vinyl polymer latex, passing said latex through a stripping zone to remove unreacted monomer(s) therefrom with steam, passing said stripped latex to a coagulation zone, adding a coagulating agent to said latex in said coagulation zone at a pH in the range of about 2 to about 8 to form a slurry of friable agglomerates of polymer particles in a serum, passing said slurry to a pressure filter zone wherein the serum is removed under pressure through a permeable membrane and a wetcake of polymer is formed, rinsing said wetcake to remove residual compounds therefrom, pressing said wetcake to a solids content in the range of about 65% to about 75% by weight, passing said wetcake to a crumbling zone and breaking the same to form friable polymer agglomerates and particles, passing said polymer agglomerates and particles into a fluid energy mill while injecting heated air into said mill under a pressure in the range of about 2.5 psig. to about 80 psig. thereby grinding and drying said polymer agglomerates and particles, and recovering the polymer from said mill in the form of discrete particles thereof.

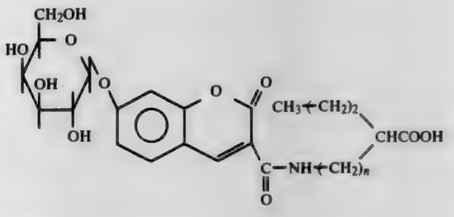
4,292,425

βGALACTOSYL-UMBELLIFERONE VALPROIC ACID CONJUGATES

Robert T. Buckler, Edwardsburg, Mich.; John F. Burd, and Raphael C. Wong, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 93,372, Nov. 13, 1979. This application Apr. 14, 1980, Ser. No. 139,716
Int. Cl.[3] C07H *15/22, 17/04*
U.S. Cl. 536—4 2 Claims

1. A β-galactosyl-umbelliferone-valproic acid conjugate of the formula:



wherein n is an integer from 3 through 8.

4,292,426

PROCESS OF PRODUCING HYDROXYPROPYL CELLULOSE

Seiji Orii, Nakagomura; Yukio Sasagawa, Arai; Akinori Ito, Joetsu; Maruyama, Hiromi, and Yoshiteru Sakai, both of Nakagomura, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,639
Claims priority, application Japan, Jun. 15, 1979, 54/75440
Int. Cl.³ C08B *11/00*
U.S. Cl. 536—95 **4 Claims**

1. A process of producing hydroxypropyl cellulose which comprises

(a) swelling of cellulose with an aqueous sodium hydroxide solution containing 10–50 w% of NaOH.

(b) driving out excess aqueous caustic soda solution from the swollen cellulose to prepare a dehydrated cellulose,

(c) obtaining an alkali cellulose having the NaOH/cellulose ratio of 0.05–0.16 and the water/cellulose ratio of 0.2–0.5 by washing the dehydrated cellulose with an aqueous caustic soda solution containing less than 7 w% of caustic soda, and subsequent drying of the washed cellulose,

(d) reacting the alkali cellulose with propylene oxide in the presence of an inert diluent until M.S. of the reactant reaches to greater than 1.5 but less than 2,

(e) adding to the reaction mixture 0.2–0.7 parts of water per one part cellulose in the raw material alkali cellulose, and

(f) continuing further the etherification reaction until M.S. of the reactant reaches to greater than 2.5.

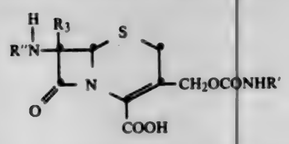
4,292,427

CEPHALOSPORIN COMPOUNDS

Stephen Marburg, Plainfield, and Janos Kollonitsch, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 742,486, Nov. 17, 1976, which is a continuation of Ser. No. 647,961, Jan. 9, 1976, abandoned, which is a continuation of Ser. No. 487,851, Jul. 11, 1974, abandoned, which is a continuation of Ser. No. 275,614, Jul. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 174,949, Aug. 25, 1971, abandoned. This application Dec. 13, 1979, Ser. No. 103,123
Int. Cl.³ C07D *501/20*
U.S. Cl. 544—021 **1 Claim**

1. A cephalosporin compound of the formula:



wherein R_3 methoxy, R' is benzhydryl or trifluoroacetyl; and R'' is 2-thienylacetyl.

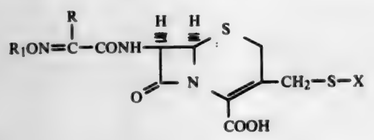
4,292,428

CEPHALOSPORIN DERIVATIVES

Marc Montavon, and Roland Reiner, both of Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

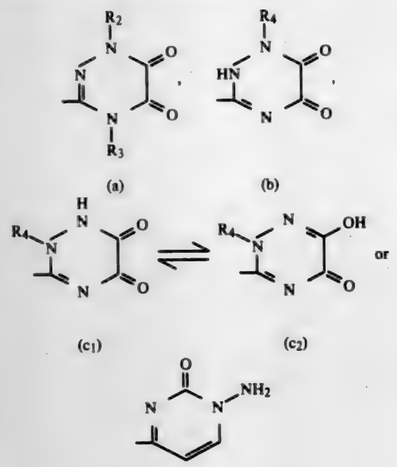
Filed Jun. 25, 1979, Ser. No. 51,669
Claims priority, application Switzerland, Jul. 19, 1978, 7786/78
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.
Int. Cl.³ C07D *501/56*
U.S. Cl. 544—27 **9 Claims**

1. Readily hydrolysable esters selected from the group consisting of acetoxymethyl, pivaloyloxymethyl, 1-acetoxyethyl, 1-pivaloyloxyethyl, methoxycarbonyloxymethyl, 1-ethoxycarbonyloxyethyl, 1-isopropoxycarbonyloxyethyl, phthalidyl, thiophthalidyl, methoxymethyl, acetamidomethyl, benzyl and cyanomethyl esters and readily hydrolysable ethers selected from the group consisting of the acetoxymethyl, pivaloyloxymethyl, 1-acetoxyethyl, 1-pivaloyloxyethyl, methoxycarbonylmethyl, 1-ethoxycarbonyloxyethyl, 1-isopropoxycarbonyloxyethyl, phthalidyl, thiophthalidyl, methoxymethyl and acetamidomethyl ethers of compounds of the formula



(I)

wherein R represents furyl, thienyl, phenyl or phenyl monosubstituted by halo, hydroxy, lower alkoxy or lower alkyl, R_1 represents lower alkyl or aminocarbonylmethyl and X represents a group of the formula



(a) (b) (c1) (c2) (d)

in which one of the two symbols R_2 and R_3 represents hydrogen and the other represents lower alkyl and R_4 represents lower alkyl,

and salts with pharmaceutically acceptable bases or acids of said esters and ethers and hydrates of said esters, ethers and salts.

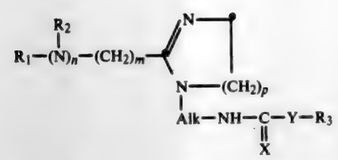
4,292,429

IMIDAZOLE UREA AND AMIDO COMPOUNDS

Adrian Marxer, Muttenz, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 23, 1979, Ser. No. 14,661
Claims priority, application Switzerland, Mar. 8, 1978, 2519/78
Int. Cl.³ C07D *401/04, 401/06, 401/12*
U.S. Cl. 546—278 **6 Claims**

1. A urea or amido compound of the formula



(I)

in which R_1 is pyridyl or pyridyl substituted by a group selected from halogen, lower alkyl, lower alkoxy, alkoxycarbonyl, carboxyl and trifluoromethyl and R_3 is phenyl or phenyl substituted by a group selected from halogen, lower alkyl, lower alkoxy, power alkoxycarbonyl, carboxyl and trifluoromethyl, R_2 is hydrogen or lower alkyl, n is 0 or 1, m is 0 or 1, p is 1, Alk is a lower alkylene radical with 2–3 carbon atoms in the linear chain, X is oxygen or sulphur and Y an imino group or a direct bond, and therapeutically acceptable salts thereof.

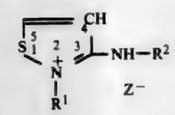
4,292,430

2,3-SUBSTITUTED-1,2-ISOTHIAZOLIUM SALT ANTIMICROBIALS

Joshua Rokach, Chomedey-Laval, Canada; Clarence S. Rooney, Worcester, and Edward J. Cragoe, Jr., Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 23, 1977, Ser. No. 854,292
Int. Cl.³ C07D *275/02*
U.S. Cl. 548—206 **3 Claims**

1. A compound of the formula:



I

wherein

R^1 and R^2 are the same and are, C_1 to C_{16} alkyl, benzyl, or phenyl;

and Z^- is a counter anion.

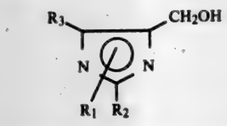
4,292,431

PROCESS FOR THE PRODUCTION OF HYDROXYMETHYLIMIDAZOLES

Choong S. Kim; Kee J. Lee; Hong S. Kim, and Yung B. Chae, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

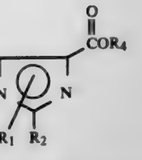
Filed Jun. 5, 1980, Ser. No. 156,806
Claims priority, application Rep. of Korea, Mar. 31, 1980, 80-1346
Int. Cl.³ C07D *233/64*
U.S. Cl. 548—342 **24 Claims**

1. A process for the production of an hydroxymethylimidazole of formula I or an organic or inorganic acid addition salt thereof



(I)

wherein R_1 represents hydrogen, a loweralkyl, cycloalkyl, aryl or aralkyl which is located on any one of the two nitrogen atoms in the imidazole nucleus; and R_2 and R_3 each independently represents hydrogen, a loweralkyl, cycloalkyl, aryl or aralkyl, which comprises reacting a compound of formula II



(II)

wherein R_1, R_2 and R_3 are as defined above and R_4 is hydrogen or a C_1–C_6 alkyl, with a source of formaldehyde in the presence of an alkali in an aqueous medium and optionally treating the resultant compound of Formula I with an organic or inorganic acid.

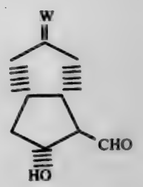
4,292,432

NOVEL ALDOL DERIVATIVES AND PRODUCTION THEREOF

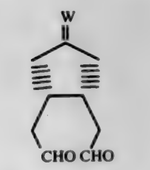
Keiichi Ono, Osaka; Akihiko Sugie, Toyonaka; Hajime Kawakami, Takarazuka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 4, 1980, Ser. No. 117,981
Claims priority, application Japan, Feb. 9, 1979, 54/14690
Int. Cl.³ C07D *317/12, 319/08, 339/06*
U.S. Cl. 549—35 **4 Claims**

1. A process for producing a compound of the formula:



wherein C=W is a carbonyl group or a protected carbonyl group which comprises reacting a compound of the formula:



wherein C=W is as defined above in the presence of an acid or a base at a temperature ranging from −70° C. to room temperature.

4,292,433

METHOD FOR PRODUCING 3-CHLOROPROPYLTRICHLOROSILANE

Izao Koga, Sakurashi; Yohji Terui, Chibashi; Masuhito Ohgushi, Minamatashi; Tohru Kitahara, Minamatashi, and Kenichi Watanabe, Minamatashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Oct. 31, 1980, Ser. No. 202,621
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—479 **2 Claims**

1. In the method for producing 3-chloropropyltrichlorosilane by the addition reaction of trichlorosilane to allyl chloride, the improvement comprising reacting said reactants in the presence of a complex of dichloro-bis(triphenylphosphine) platinum (II), $[Pt(PPh_3)_2Cl_2]$.

4,292,434

PROCESS FOR THE ADDITION OF SI-BONDED HYDROGEN TO AN ALIPHATIC MULTIPLE BOND

Tassilo Lindner, Mehring-Öd, Fed. Rep. of Germany; Georg Engelsberger, Ach, Austria; Norbert Zeller, and Rudolf Riedle, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,140

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3000768

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—479 **6 Claims**

1. An improved process for the addition of Si-bonded hydrogen to an aliphatic multiple bond in the presence of a platinum catalyst, the improvement which comprises carrying out said addition reaction in the presence of a catalyst solution obtained from the reaction of a platinum halide with at least 20 parts by weight of olefin for each part by weight of platinum halide, and thereafter heating the resultant solution with from 0.5 to 1 mole of an amine selected from the group consisting of a primary and secondary amine for each gram atom of platinum.

4,292,435

METHOD OF PRODUCING BIPHENYLTETRACARBOXYLIC ESTERS

Hiroshi Itatani, Chiba; Akinori Shiotani, Ichihara, and Akiyoshi Yokota, Ishikawa, all of Japan, assignors to Ube Industries, Ltd., Chiba, Japan

Filed May 21, 1980, Ser. No. 151,818

Claims priority, application Japan, May 21, 1979, 54-61531; Sep. 27, 1979, 54-123169

Int. Cl.³ C07C *67/343*

U.S. Cl. 560—96 **15 Claims**

1. A method for producing biphenyltetracarboxylic esters, comprising oxidative coupling an orthophthalic diester in a molecular oxygen-containing atmosphere in the presence of a catalyst consisting of at least one member selected from the group consisting of (a) mixtures of at least one palladium salt with 1,10-phenanthroline in a molar amount of 0.9 to 4 times that of said palladium salt and (b) chelating reaction products of at least one palladium salt with 1,10-phenanthroline and.

4,292,436

PROCESS FOR THE PREPARATION OF N-PROTECTED N-FORMIMIDOYL 2-AMINOETHANETHIOL

Thomas M. H. Liu, Westfield; Robert A. Reamer, Bloomfield; Ichiro Shinkai, Westfield, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 25, 1980, Ser. No. 162,990

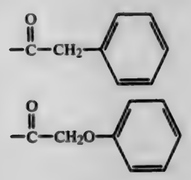
Int. Cl.³ C07C *149/20, 125/06*; C07F *7/10*

U.S. Cl. 560—148 **8 Claims**

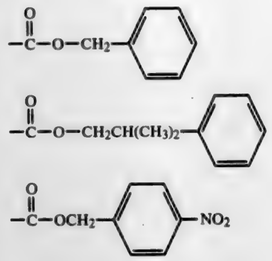
1. A compound of the formula:



wherein R^2 is hydrogen or a protecting group is selected from the group consisting of: triorganosilyl,



-continued



4,292,437

PREPARATION OF ISOBUTYRIC ACID AND ESTERS

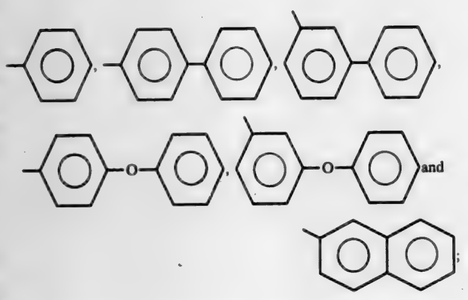
Edward N. Squire, Glen Mills, Pa., and Francis J. Waller, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 27, 1979, Ser. No. 53,232

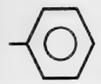
Int. Cl.³ C07C *67/38*

U.S. Cl. 560—233 **5 Claims**

1. In the process for the carbonylation of propylene by contacting the propylene and carbon monoxide with water or a lower alkanol of 1 to 4 carbon atoms in the presence of solvent and a palladium catalyst in complex with a ligand, the improvement which comprises using as said ligand an ortho-substituted ligand of the formula P Ar_3 wherein each Ar is independently selected from



and wherein the Ar moieties bear a total of one or two substituents in positions ortho to one or two carbon-phosphorus bonds, the substituents being selected from the group consisting of lower alkyl of 1–4 carbon atoms, lower alkoxy and phenyl, and wherein the Ar groups each contain up to three substituents in positions meta or para to a carbon-phosphorus bond and selected from the group consisting of lower alkyl, lower alkoxy, chloride, fluoride, hydroxyl and carboxyl and provided that when Ar is



one or two of the Ar moieties can each bear one substituent selected from phenoxy and a fused aromatic hydrocarbon ring at an ortho position to form 1-naphthyl, and provided further that when the substituent is a fused aromatic hydrocarbon ring, each such Ar moiety can bear one additional substituent at a second ortho position selected from alkyl of 1–4 carbon atoms, alkoxy and phenyl.

4,292,438

13,14-DIDEHYDRO-9-DEOXY-9-METHYLENE-19-OXO-PGF_2 COMPOUNDS

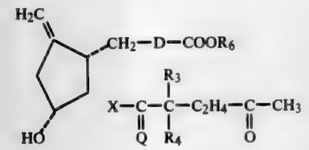
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,962

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—, or
(4) trans—$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

4,292,439

13,14-DIHYDRO-INTER-OXA-11-DEOXY-11-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-19-OXO-PGF_1 COMPOUNDS

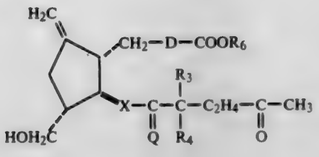
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,003

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_2$—O—$(CH_2)CH_2$—, or
(3) —CH_2—O—$(CH_2)_3$—,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

4,292,440

13,14-DIDEHYDRO-9-DEOXY-9-METHYLENE-19-OXO-PGF_1 COMPOUNDS

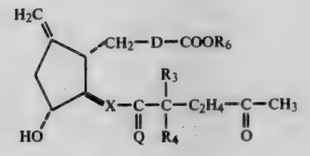
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,971

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula

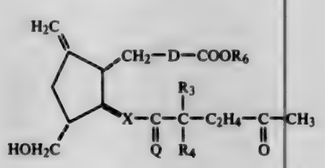


wherein D is
(1) $(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(2) $(CH_2)_3$—$(CH_2)_g$—CF_2—; wherein g is zero, one, two, or three; wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl; wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g)-(p—Ph)—CO—CH_3,
(h)-(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i)-(p—Ph)—NH—CO—(p—Ph),
(j)-(p—Ph)—NH—CO—CH_3,
(k)-(p—Ph)—NH—CO—NH_2,
(l)-(p—Ph)—CH=N—NH—CO—Nh_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is —C≡C—.

4,292,441
13,14-DIDEHYDRO-11-DEOXY-11-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-19-OXO-PGF$_2$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,977
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

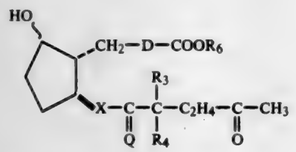
1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—, or
(4) trans—$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β—naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenlyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

4,292,442
13,14-DIDEHYDRO-11-DEOXY-19-OXO-PGF$_2$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,976
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

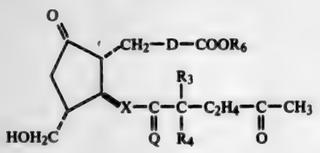
1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—, or
(4) trans-$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(P—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

4,292,443
13,14-DIDEHYDRO-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGE$_2$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,978
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

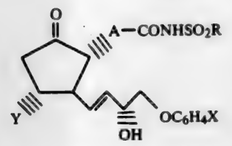
1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—, or
(4) trans—$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α-OH;β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

4,292,444
SULFONYL PROSTAGLANDIN CARBOXAMIDE DERIVATIVES
James F. Eggler, Stonington, and Thomas K. Schaaf, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.
Filed Feb. 8, 1980, Ser. No. 119,732
Int. Cl.^{3} C07C *143/74, 177/00*
U.S. Cl. 564—97 **6 Claims**

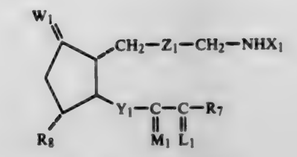
1. A sulfonyl prostaglandin carboxamide derivative of the formula



or the pharmacologically acceptable salt thereof, wherein:
R is alkyl of 1 to 4 carbons;
A is cis $(CH_2)_2HC$=$CH(CH_2)_2$ or trans $(CH_2)_4HC$=CH;
Y is H or OH; and
X is H, F, Cl, Br, OCH_3, CF_3 or CH_3.

4,292,445
AMIDE AND SULFONAMIDE DERIVATIVES OF 2-DECARBOXY-2-AMINOMETHYL-PG-TYPE COMPOUNDS
Norman A. Nelson, Charleston Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Apr. 28, 1980, Ser. No. 144,709
Int. Cl.^{3} C07C *103/00, 143/72*; A61K *31/16, 31/18*
U.S. Cl. 564—98 **28 Claims**

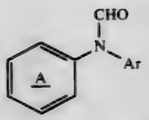
1. A prostaglandin analog of the formula I



(a) wherein R_8 is hydrogen or hydroxy,
(b) wherein L_1 is β-R_3:α-R_4, α-R_3:β-R_4 or a mixture of both,
(c) wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
(d) wherein X_1 is —CO—R_1 or SO_2—R_1, wherein R_1 is alkyl of from 1 to 4 carbon atoms, —CH_2F, —CHF_2, —CF_3, phenyl, or monosubstituted phenyl, said substituted phenyl substituted by fluorine, chlorine, bromine, —CF_3, or —OCH_3 in the ortho, meta or para position,
(e) wherein M_1 is α-R_5:β-OH or β-R_5:α-OH; wherein R_5 is hydrogen or methyl;
(f) wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, or methylene;
(g) wherein R_7 is
(1) —$(CH_2)_m$—CH_3,
(2) -cis—CH=CH—CH_2CH_3,
(3) phenyl or alkylphenyl, wherein the alkyl portion of the moiety is from one to 3 carbon atoms, and the phenyl portion is optionally substituted by one to 3 of the following: chloro, fluoro, trifluoromethyl, alkyl of from one to 3 carbon atoms, with the proviso that no more than 2 groups are other than alkyl; or
(4) phenoxy optionally substituted by one, 2 or 3 of the following: chloro, fluoro, trifluoromethyl, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms; with the proviso that no more than 2 groups are other than alkyl;
wherein m is one to 5, inclusive,
(h) wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —CH_2CH_2—, or
(4) —C≡C—; and
(i) wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—(CH_2)—CH_2—,
(7) —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—,
(8) —$(CH_2)_3$—O—$(CH_2)_{107}$ —,
(9) —(m-Ph)—CH_2—(CH_2)—, wherein (m-Ph) is 1,3-phenylene, or
(10) —(m-Ph)—O—$(CH_2)_g$— wherein (m-Ph) is 1,3-phenylene,
wherein g is zero, one, two, or three and 1 is one, two or three; and the pharmacologically acceptable acid addition salts thereof when X_1 is —SO_2R_1.

4,292,446
ANILINE DERIVATIVES
Norman Riley, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation of Ser. No. 935,498, Aug. 18, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,513
Claims priority, application United Kingdom, Jan. 18, 1978, 1991/78
Int. Cl.^{3} C07C *102/00, 85/153*
U.S. Cl. 564—221 **8 Claims**

1. A formanilido compound of the formula:



wherein Ar is an aromatic radical and the benzene ring A contains at least two electron-withdrawing substituents and may be further substituted by methyl or methoxy.

4,292,447

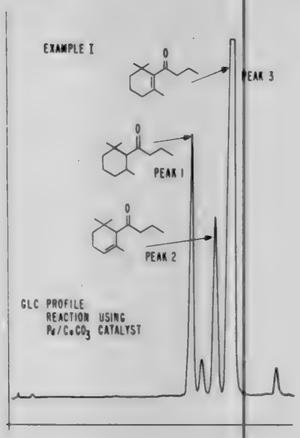
PROCESS FOR HYDROGENATION OF 2,6,6-TRIMETHYL CYCLOHEXENE DERIVATIVES, PRODUCTS PRODUCED THEREBY AND ORGANOLEPTIC USES OF SAID PRODUCTS

Robert W. Trenkle, Bricktown; Braja D. Mookherjee; Frederick L. Schmitt, both of Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

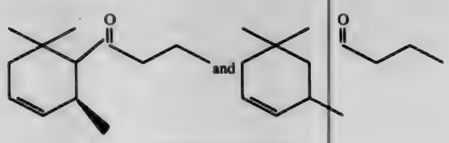
Filed Dec. 15, 1978, Ser. No. 969,852

Int. Cl.³ C07C *49/303, 49/543;* C11B *9/00*

U.S. Cl. 568—378 **4 Claims**



1. The compound having the structure selected from the group consisting of:



4,292,448

PROCESS FOR THE HYDROFORMYLATION OF OLEFINS

Yoshitoshi Tsunoda; Shimpei Tomita, and Chikiro Miyazawa, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,686

Claims priority, application Japan, May 11, 1979, 54-57862; Jan. 18, 1980, 55-4332

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—456 **15 Claims**

1. In a process for the hydroformylation of an olefin comprising reacting the olefin with carbon monoxide and hydrogen in a catalyst liquid containing a Group VIII noble metal-triarylphosphine complex as a catalyst, excess triarylphosphine and an organic solvent in a reaction zone to thereby form an aldehyde, and separating the aldehyde by evaporation from said reaction zone or by distillation in a separating step, the improvement which comprises:

removing a part of said catalyst liquid from said reaction zone or said separating step as a spent catalyst liquid containing a Group VIII nobel metal-triarylphosphine complex, free triarylphosphine, triarylphosphine oxide, and, high-boiling organic byproducts;

cooling said spent catalyst liquid to selectively crystallize said free triarylphosphine;

separating the crystals of said triarylphosphine from said spent catalyst liquid; and,

recycling said separated triarylphosphine to the reaction zone.

4,292,449

POLYFLUOROALLYLOXY COMPOUNDS, THEIR PREPARATION AND COPOLYMERS THEREFROM

Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 20,354, Mar. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 850,729, Nov. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,029, Dec. 2, 1976, abandoned. This application May 1, 1980, Ser. No. 145,759

Int. Cl.³ C07C *43/205, 43/15*

U.S. Cl. 568—649 **12 Claims**

1. A polyfluoroallyloxy compound of the formula:

$$CF_2{=}CCF_2OR_F$$
$$\quad\quad|$$
$$\quad\quad X$$

wherein X is —Cl or —F, and

R_F is:

$$-CFR^1CFQ \quad\quad (i)$$
$$\quad\quad|\quad\;|$$
$$\quad\quad Y\quad Y'$$

wherein R^1 is a carbon-carbon bond or a linear or branched perfluoroalkylene group of 1 to 12 carbon atoms; Q is $-OCF_2CF{=}CF_2$ or $-OC_6F_5$; Y and Y', independently, are —F or $-CF_3$ and only one of Y and Y' can be $-CF_3$; or

$$-CF[CF_2OCF(CF_3)_2]_2 \text{ ; or} \quad\quad (ii)$$
$$-(CF_2CFO)_nR^3Q' \quad\quad (iii)$$
$$\quad\quad\quad|$$
$$\quad\quad\quad Y$$

wherein R^3 is a linear or branched perfluoroalkylene group of carbon content such that the moiety

$$-(CF_2CFO)_nR^3$$
$$\quad\quad\quad|$$
$$\quad\quad\quad Y$$

does not exceed 15 carbon atoms; Y is —F or $-CF_3$; n is 1 to 4; and Q' is —F, —Cl, —Br, —I, $-OCF_2CF{=}CF_2$, or $-OC_6F_5$.

4,292,450

SELECTIVE ALKYLATION OF 2,5-XYLENOL IN THE PRESENCE OF 2,4-XYLENOL

John R. Dodd, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Division of Ser. No. 97,248, Nov. 26, 1979, Pat. No. 4,249,026. This application Jun. 12, 1980, Ser. No. 158,972

Int. Cl.³ C07C *37/11*

U.S. Cl. 568—788 **1 Claim**

1. A method for selectively alkylating a 2,4-/2,5-xylenol mixture to yield predominantly 4-t-alkyl-2,5-xylenol with a lesser amount of 6-t-alkyl-2,4-xylenol comprising

(a) contacting a 2,4-/2,5-xylenol mixture together with an alkylating agent selected from the group consisting of olefins yielding a tertiary alkyl group in the presence of a strongly acidic sulfonated divinylbenzene-styrene copolymer at a temperature of 55° C. or less, then

(b) fractionating the resulting mixture to remove all unreacted xylenol.

4,292,451

HIGH MANNITOL PROCESS (ALKALINE HYDROGENATION IN PRESENCE OF ALKALI METAL CARBONATE)

Albert J. deBerardinis, and Walter M. Kruse, both of New Castle County, Del., assignors to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 891,712, Mar. 30, 1978, abandoned. This application Jul. 13, 1979, Ser. No. 57,397

Int. Cl.³ C07C *31/26;* C12P *19/24*

U.S. Cl. 568—863 **12 Claims**

1. A process for preparing a mannitol-rich solution of sorbitol and mannitol which comprises hydrogenating an aqueous epimerizate solution comprising glucose and mannose with hydrogen in the presence of a hydrogenation catalyst at a temperture from about 60° to about 100° C., said epimerizate solution containing an alkali metal salt of a weak acid in sufficient quantity to impart an initial pH from about 8 to about 10, so that the percentage of mannitol in said mannitol-rich solution exceeds the percentage of mannitol which would be obtained from hydrogenation of said epimerizate solution under non-isomerizing conditions.

4,292,452

RHODIUM-CATALYZED HYDROGENATION OF UNSATURATED ALDEHYDES TO UNSATURATED ALCOHOLS

Richard J. Lee, Downers Grove; Delbert H. Meyer, Naperville, and Darrell M. Senneke, Aurora, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 1, 1978, Ser. No. 874,132

Int. Cl.³ C07C *29/14, 33/03*

U.S. Cl. 568—881 **9 Claims**

1. A process for the selective hydrogenation of acrolein to allyl alcohol which comprises reacting acrolein with gaseous hydrogen at a temperature in the range 0° C.-250° C. in the presence of a rhodium-complex catalyst consisting essentially of:

(a) a rhodium atom;

(b) an organic polymer support having at least one functional atom selected from the group consisting of nitrogen and sulfur which is anchored onto the rhodium atom; and

(c) a plurality of activating ligands coordinated with the rhodium atom.

4,292,453

PROCESS FOR PREPARING RING HALOGENATED STYRENES

Stephen L. J. Daren, Beer Sheva; David Vofsi, and Meir Asscher, both of Rehovot, all of Israel, assignors to Makhteshim Chemical Works Ltd., Beer Sheva, Israel

Filed May 24, 1979, Ser. No. 42,159

Int. Cl.³ C07C *25/14*

U.S. Cl. 570—193 **13 Claims**

1. A process for preparing ring halogenated styrene monomers which comprises:

(a) reacting heterogenously ring halogenated beta-bromoethyl benzene with a strong aqueous alkali base in the presence of a quarternary phase transfer catalyst including a catalytic quantity of an inorganic nitrite salt reaction accelerator until substantially all the bromoethyl benzene has been converted to ring halogenated styrene monomer;

(b) separating the different phases,

(c) washing and neutralizing the organic phase, and

(d) recovering said ring halogenated styrene monomer.

4,292,454

COUPLING REACTION INVOLVING A GRIGNARD AND ALLYLIC HALIDE

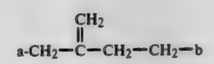
Carlos G. Cardenas, and Zia Ud Din, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 865,668, Dec. 29, 1977, Pat. No. 4,228,313, which is a division of Ser. No. 786,973, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 596,273, Jul. 16, 1975, abandoned, Ser. No. 596,426, Jul. 16, 1975, abandoned, Ser. No. 596,274, Jul. 16, 1975, abandoned, and Ser. No. 596,361, Jul. 16, 1975, abandoned. This application Mar. 18, 1980, Ser. No. 131,534

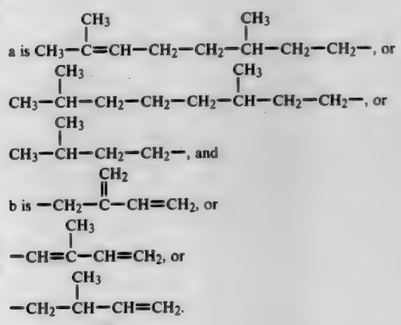
Int. Cl.³ C07C *11/21*

U.S. Cl. 585—16 **6 Claims**

1. A compound



wherein



4,292,455

MULTI-STAGE DEHYDROGENATION PROCESS FOR PREPARING INDENE

Joseph P. Bartek, University Heights; Rimoydas L. Cepulis, Euclid, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 108,328

Int. Cl.³ C07C *5/42, 5/367, 4/12, 5/48*

U.S. Cl. 585—320 **16 Claims**

1. A multi-stage catalytic dehydrogenation process for pre-

paring indene and substituted indenes from indene precursors more saturated than indene comprising

(a) contacting said indene precursor in a first dehydrogenation zone with a dehydrogenation catalyst at an elevated temperature to form an intermediate product,

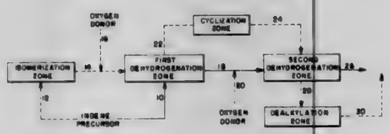
(b) advancing the product of the first dehydrogenation zone to a second dehydrogenation zone,

(c) contacting said product in the second dehydrogenation zone with a second dehydrogenation catalyst at an elevated temperature, and

(d) recovering indene or a substituted indene from said second zone.

15. A multi-stage catalytic oxydehydrogenation process for preparing indene comprising

(a) contacting a mixture of tetrahydroindene and a minor amount of vinyl norbornene in a first dehydrogenation zone at a temperature above about 100° C. with an oxygen source and a phosphate catalyst having the formula



$M_aP_xO_y$

wherein M is Mg, Cr, Fe, U, Ni, Bi, or sb and

$0.1\times \leqq \Sigma a \leqq 10\times$

wherein Σ a represents the sum of the subscripts a of all the metal ions and y is a number such that the valence requirements of the metal ions for oxygen are satisfied,

(b) advancing the product of the first zone to a second dehydrogenation zone,

(c) contacting said product in the second dehydrogenation zone at a temperature above about 100° C. with oxygen and a different phosphate catalyst of the formula $M_aP_xO_y$ wherein M is Mg, Co, La, Th, Bi, Sb, Pb, Ce or other rare earths and Σ a, x and y are as defined in (a) above, and

(d) recovering indene from said second zone.

4,292,456

OXYDEHYDROGENATION PROCESS FOR PREPARING INDENES

Oliver A. Kilkka, Willoughby, Ohio, assignor to The Standard Oil Co., Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 108,259

Int. Cl.³ C07C *5/32*

U.S. Cl. 585—431 **11 Claims**

1. An oxydehydrogenation process for producing unsubstituted or substituted indenes from at least one unsubstituted or substituted indene precursor more saturated than indene which comprises contacting said indene precursor and an oxygen donor with a catalyst comprising cobalt oxide and molybdenum oxide at a temperature above about 300° C.

4,292,457

ALKYLATION OF AROMATIC HYDROCARBONS

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 897,360, Apr. 18, 1978, which is a continuation-in-part of Ser. No. 733,267, Oct. 18, 1976, abandoned, Ser. No. 819,974, Jul. 28, 1977, abandoned, and Ser. No. 836,403, Sep. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 733,267,. This application Aug. 29, 1980, Ser. No. 182,792

Int. Cl.³ C07C *3/52, 15/00*

U.S. Cl. 585—447 **65 Claims**

1. A process for the alkylation of an aromatic hydrocarbon, which process comprises contacting a feed comprising said hydrocarbon under alkylation conditions and in the presence of an alkylating agent with a catalyst comprising a crystalline borosilicate which comprises a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

d(Å)	Assigned Strength
11.2 ± 0.2	W-VS
10.0 ± 0.2	W-MS
5.97 ± 0.07	W-M
3.82 ± 0.05	VS
3.70 ± 0.05	MS
3.62 ± 0.05	M-MS
2.97 ± 0.02	W-M
1.99 ± 0.02	VW-M

and having the following composition in terms of mole ratios of oxides:

$0.9\pm0.2\ M_{2/n}O:B_2O_3:YSiO_2:ZH_2O,$

wherein M is at least one cation having a valence of n, Y is between 4 and about 600, and Z is between 0 and about 160.

4,292,458

PRODUCTION OF HYDROCARBONS FROM ALCOHOLS

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 897,360, Apr. 18, 1978, which is a continuation-in-part of Ser. No. 733,267, Oct. 18, 1976, abandoned, Ser. No. 819,974, Jul. 28, 1977, abandoned, and Ser. No. 836,403, Sep. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 733,267, , abandoned. This application Aug. 29, 1980, Ser. No. 182,691

Int. Cl.³ C07C *1/20, 11/00, 15/00*

U.S. Cl. 585—469 **50 Claims**

1. A process for the conversion of an alcohol to useful hydrocarbon products, which process comprises contacting a feed comprising said alcohol under suitable conversion conditions with a catalyst comprising a crystalline borosilicate which comprises a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

d (A)	Assigned Strength
11.2 ± 0.2	W-VS
10.0 ± 0.2	W-MS
5.97 ± 0.07	W-M
3.82 ± 0.05	VS
3.70 ± 0.05	MS
3.62 ± 0.05	M-MS
2.97 ± 0.02	W-M
1.99 ± 0.02	VW-M

and having the following composition in terms of mole ratios of oxides:

$0.9\pm0.2\ M_{2/n}O:B_2O_3:YSiO_2:ZH_2O,$

wherein M is at least one cation having a valence of n, Y is between 4 and about 600, and Z is between 0 and about 160.

6. A process for the conversion of an alcohol to hydrocarbon products boiling in the gasoline boiling range, which process comprises contacting a feed comprising said alcohol under suitable conversion conditions with a catalyst comprising a crystalline borosilicate, said borosilicate comprising a molecular sieve material providing an X-ray diffraction pattern

comprising the following X-ray diffraction lines and assigned strengths:

d (A)	Assigned Strength
11.2 ± 0.2	W-VS
10.0 ± 0.2	W-MS
5.97 ± 0.07	W-M
3.82 ± 0.05	VS
3.70 ± 0.05	MS
3.62 ± 0.05	M-MS
2.97 ± 0.02	W-M
1.99 ± 0.02	VW-M

and having the following composition in terms of mole ratios of oxides:

$0.9\pm0.2\ M_{2/n}O:B_2O_3:YSiO_2:ZH_2O,$

wherein M is at least one cation having a valence of n, Y is within the range of about 4 and about 600, and Z is within the range of 0 to about 160.

4,292,459

COUPLING REACTION INVOLVING A GRIGNARD AND ALLYLIC HALIDE

Carlos G. Cardenas, and Zia Ud Din, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 596,273, Jul. 16, 1975, abandoned, Ser. No. 596,426, Jul. 16, 1975, abandoned, Ser. No. 596,274, Jul. 16, 1975, abandoned, and Ser. No. 596,361, Jul. 16, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 786,973

Int. Cl.³ C07C *1/26*

U.S. Cl. 585—641 **10 Claims**

1. In the process for coupling a Grignard reagent RMgX, R being alkyl, alkenyl, vinyl, aryl, aralkyl, alicyclic, or alkadienyl, with a secondary allylic halide in the presence of a solvent to form an olefinic hydrocarbon, the improvement for obtaining improved yield and selectivity comprising

(a) adding a Kharasch reaction catalyst to said Grignard reagent or allylic halide, said solvent being a dipolar aprotic solvent, and then

(b) carrying out the coupling reaction by the addition of the Grignard reagent to the allylic halide, said reaction being characterized by cross-coupling and allylic rearrangement defined as displacement by the R group of the Grignard reagent at the gamma position relative to the halide of the allylic halide, migration of the double bond in the direction of the halide, and loss of halogen.

4,292,460

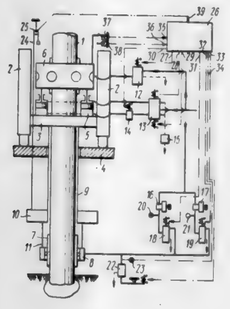
ELECTRODE-SLIPPING APPARATUS FOR ELECTRIC FURNACES

Jury F. Frolov, M. Muranovskaya ulitsa 11, korpus 1, kv.29, Moscow; Nariman A. Sukoian, Pamirskaya ulitsa, 48, kv.78, Novosibirsk; Ivan T. Proshkin, ulitsa Zorge, 5, kv. 30, Novosibirsk, and Anany M. Basalaev, ulitsa Rimskogo Korsakova, 7/1, kv. 15, Novosibirsk, all of U.S.S.R.

Continuation-in-part of Ser. No. 748,536, Dec. 8, 1976, abandoned. This application May 25, 1979, Ser. No. 42,339

Int. Cl.[3] H05B *7/10*

U.S. Cl. 13—14 11 Claims



1. In an electric furnace comprising an electrode, contact shoes effecting electric contact with the electrode and provided with clamp means and hydraulic mechanisms, and a hydraulic fluid pressure control unit including pressure-reducing valves and slide valves and set in the hydraulic fluid pressure and drain line of said hydraulic mechanisms and said clamp mechanism, an apparatus for continuous slipping of the electrode comprising:

a hydraulic hoist lifting the electrode and being rigidly connected with said clamp means, said hydraulic hoist including hydraulic plungers and a cross beam interconnecting said hydraulic plungers;

a support structure on which said hydraulic plungers are mounted;

hydraulic mechanisms enabling the slipping of said electrode and mounted on said cross beam of said hydraulic hoist;

a first slide valve controlling said electrode-slipping hydraulic mechanisms and being set in the hydraulic fluid pressure and drain line of the electrode-slipping hydraulic mechanisms;

a sliding spool flow control valve continuously effecting the meter-out flow control in the electrode-slipping hydraulic mechanisms, said sliding spool flow control valve being set between said hydraulic electrode-slipping mechanisms and said first slide valve in the fluid pressure and drain line and connected therewith;

a locking ring connected with said hydraulic electrode-slipping mechanisms and including gripping means intermittently holding said electrode;

a second slide valve controlling said locking ring and being set in the hydraulic fluid supply line of said locking ring and connected therewith;

an upper end switch limiting upward movement of said locking ring;

a lower end switch limiting downward movement of said locking ring; and

a programming device having six outputs respectively connected to spools of said first slide valve, said second slide valve, and said sliding spool flow control valve and to the hydraulic fluid pressure control unit, and two inputs respectively connected to said upper and lower end switches.

4,292,461

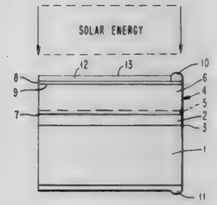
AMORPHOUS-CRYSTALLINE TANDEM SOLAR CELL

Harold J. Hovel, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,550

Int. Cl.[3] H01L *31/04*

U.S. Cl. 136—249 9 Claims



1. In a tandem solar cell device where solar energy passes through a plurality of superimposed layers of photo-responsive materials, each layer converting principally different energy photons, the improvement comprising in combination:

a crystalline semiconductor substrate layer having a photo-responsive junction associated therewith;

an optically transparent conducting layer chosen from the group consisting of indium tin oxide, tin oxide, tin antimony oxide, cadmium stannate, and zinc oxide over said crystalline semiconductor layer;

an amorphous silicon light receiving layer over said optically transparent conducting layer;

a photo-responsive junction associated with said amorphous silicon layer; and

an ohmic contact to each of said amorphous Si solar cell structure and said crystalline semiconductor substrate layer.

4,292,462

LIQUID DIELECTRIC COMPOSITIONS COMPRISING BROMOCHLOROBENZENE/POLYCHLOROBENZENE ADMIXTURES

Bruno Rey-Coquais, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Mar. 18, 1980, Ser. No. 131,488

Claims priority, application France, Mar. 21, 1979, 79 07713

Int. Cl.[3] H01B *3/24*

U.S. Cl. 174—17 LF 36 Claims

1. A liquid, non-flammable dielectric composition, comprising (i) a bromochlorobenzene fraction, and (ii) a polychlorobenzene fraction including a member selected from the group consisting of at least one trichlorobenzene, at least one tetrachlorobenzene, and admixtures thereof.

4,292,463

CABLE SHIELDING TAPE AND CABLE

Kenneth E. Bow, Lake Jackson, Tex., and Thomas H. Lyon, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 860,368, Dec. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 673,842, Apr. 5, 1976, abandoned. This application Sep. 17, 1979, Ser. No. 76,035

Int. Cl.[3] B32B *15/08*; H01B *7/18, 7/22*

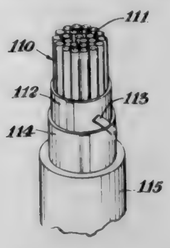
U.S. Cl. 174—107 16 Claims

15. An improved cable adapted for use in supplying electrical power and communications comprising a core of at least one insulated conductor, a shield surrounding said core comprising

(1) a metal strip having tightly and directly adhered to one side thereof a first adhesive layer composed of a copolymer of ethylene and from about 2 to about 20 percent

based on copolymer weight of an ethylenically unsaturated carboxylic acid; and

(2) a first deformation resistant layer composed of a polymeric resinous material tightly adhered to said first adhesive layer, said first deformation resistant layer having a deformation temperature of at least about 270° F. and



positioned inwardly in the direction of said core and an outer plastic jacket surrounding said shield, the adhesive bond between said metal strip and said first adhesive layer and between said first adhesive layer and said first deformation resistant layer being at least 2.2 pounds per inch of shielding tape width after aging for seven (7) days in deionized water maintained at a temperature of 70° C.

4,292,464

GLASS PASS THROUGH WITH AN ADDITIONAL INSULATOR FOR LENGTHENING LEAKAGE PATH

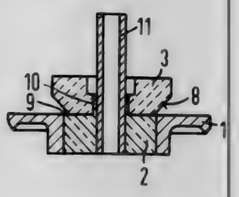
Herbert Vogt; Lothar Wassill, and Christian Wengler, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,529

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1978, 2800696

Int. Cl.³ H01B *17/26*; H01L *23/02*

U.S. Cl. 174—152 GM **2 Claims**



1. A power semiconductor component, comprising a glass part having at least one end face, a metal case part having an opening formed therein in which said glass part is disposed and sealed to said metal case part, a ceramic ring having a planar end face and an outer diameter which is larger than the opening in said metal case part, said ceramic ring being connected at said end face thereof to said at least one end face of said glass part, at least one electric conductor extending through said glass part and an opening formed in said ceramic ring, said at least one electric conductor having an outside diameter which is smaller than the diameter of the opening in said ceramic ring forming a space therebetween, and glass disposed in said space sealing said glass part and said ceramic part to said at least one electric conductor, said connection between said ceramic ring and said glass part comprising a glass fusion-melt, said end face of said ceramic ring connected to said glass part having a bevel formed at the periphery thereof extended beyond the opening in said metal case part, forming a capillary gap for said glass fusion-melt and leaving a diameter inside said bevel at the periphery which is smaller than the diameter of the opening in said metal case part.

4,292,465

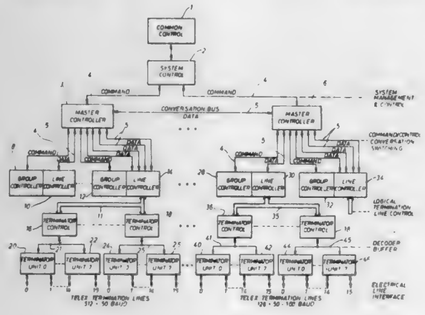
DISTRIBUTED PROCESSING TELEX EXCHANGE

John F. Wilson; Edward D. Hoover; Philip K. Hammond, all of Woodland Hills; William A. Moshier, Arleta; Jack L. Woodell, La Canada; John W. Spaniol, Studio City, all of Calif.; John J. Bowerman, Rock Ridge, Md.; Larry C. Bieber, Simi Valley, and Marvin Perlman, Granada Hills, both of Calif., assignors to Frederick Electronics Corporation, Frederick, Md.

Filed Nov. 6, 1979, Ser. No. 92,066

Int. Cl.³ H04L *11/00*; H04Q *3/54*; G06F *11/00*

U.S. Cl. 178—3 **60 Claims**



1. A distributed processing telecommunications switch having different levels of processor control for handling conversation calls between terminations connected to the switch, the switch comprising:

(a) a common control processor, for system-wide management and control of each termination connected to the switch, said common control occupying the highest level of processor control;

(b) a command data bus, for coupling command data signals between said common control and the processors in the lower levels of processor control;

(c) at least one master controller processor connected by said command bus to said common control, for command bus data switching between said common control and the lower levels of processor control, and for handling the conversation data for a first predetermined number of terminations under its control by storing in each said master controller processor the conversation data generated by each termination connected to the switch, said master controller processor occupying the next lower level of processor control from said common control;

(d) at least one group controller processor connected by said command bus to an associated one of said master controller processors, for supervising the processing of the data signals in each of a second predetermined number of terminations, said group controller processors occupying the next lower level of processor control from said master controller processors;

(e) a conversation data bus, for coupling the conversation data of the terminations to and between said master controller processors; and

(f) a line controller processor associated with each said group controller processor and responsive thereto, for transmitting to and receiving from the second predetermined number of terminations, data signals indicative of the signaling levels in these terminations, said line controller processor connected by said conversation bus to said master controller processor associated with said group controller processor that said line controller processor is associated with, said associated group controller and line controller processors cooperating together to produce the required signaling sequences between the switch and the terminations to service a call from or to a termination, said line controller processors occupying the lowest level of processor control.

4,292,466

CIRCUIT ARRANGEMENT FOR RECEIVING UNIPOLAR DC SIGNALS

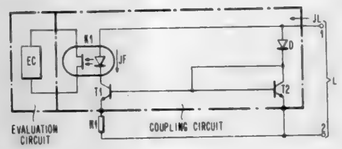
Giselher Eckel, Mount Laurel, N.J., assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,290

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933847

Int. Cl.³ H04M *1/26*

U.S. Cl. 178—3 **11 Claims**



1. A circuit arrangement for receiving unipolar direct current signals from a receiving branch of a transmission line of a telecommunication system and for supplying said DC signals to an evaluation circuit having adjustable threshold value characteristics for evaluating said DC signals, said circuit arrangement comprising:

(a) an opto-coupler circuit having a light-emitting element associated with an input side and a light-receiving element associated with an output side; said input side coupled to the receiving branch of the transmission line and said output side connected with said evaluation circuit; and

(b) a first current reflector circuit arranged at the input side of said opto-coupler circuit and being composed of both a first and a second transistor, forming a transistor pair with a common base connection, as well as a resistor;

(b1) said first transistor being connected by its collector-emitter-path in series with said light-emitting element;

(b2) said second transistor being symmetrically arranged in parallel to the series connection of said light-emitting element and said first transistor; and

(b3) said resistor being arranged in the emitter circuit of one of said transistors for controlling a current reflection ratio of said current reflector circuit.

4,292,467

CONTROL FOR AUDIO RECEIVER

Lars Odlen, Lund, and Anders Hansson, Trelleborg, both of Sweden, assignors to Transcale A.B., Vesteras, Sweden

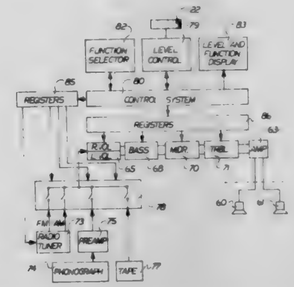
Filed Oct. 4, 1978, Ser. No. 948,422

Claims priority, application Sweden, Oct. 7, 1977, 7711298

Int. Cl.³ H03G *5/02*

U.S. Cl. 179—1 D **19 Claims**

15. Control apparatus for an audio receiver having a plurality of audio signal processing devices each providing a variable modification in an associated characteristic of an associated audio signal comprising a plurality of electrically controllable means each associated with a corresponding one of said audio signal processing devices for setting the extent of modification of the associated audio signal, a plurality of addressable registers each coupled to a corresponding one of said electrically controllable means for storing and providing to the associated electrically controllable means a digital signal determining the extent of modification of the associated audio signal, a single adjusting means for providing adjustment signals indicating the magnitude and direction of a desired change in signal processing by a selected signal processing means, a memory for storing the addresses of said addressable registers and their respectively associated digital signals, means for selecting one of said audio signal processing devices for adjustment, display means, and control means for causing said display means to display an indication of the extent of signal modification being provided by the selected audio signal processing device, for determining



an adjusted digital signal for the selected audio signal processing device in accordance with said adjustment signal and for providing said adjusted digital signal to said register for the selected audio signal processing device.

4,292,468

FREQUENCY SELECTION CIRCUIT

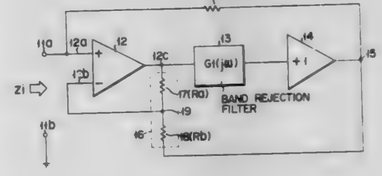
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 22, 1979, Ser. No. 41,322

Claims priority, application Japan, Jun. 9, 1978, 53-69515

Int. Cl.³ H03J *5/04*; H03G *5/02*

U.S. Cl. 179—1 D **10 Claims**



1. A frequency selection circuit having a circuit impedance, and resonance frequency, comprising:

an operational amplifier having an inverting input, a noninverting input and an output, said noninverting input of said operational amplifier being connected to receive an input signal;

a band rejection filter circuit having an input and an output, the input of said band rejection filter circuit being coupled to said output of said operational amplifier, for controlling the resonance frequency of the frequency selection circuit;

a voltage divider circuit connected between said output of said operational amplifier and said output of said band rejection filter circuit, and having an output coupled to said inverting input of said operational amplifier for controlling the quality factor of the frequency selection circuit; and

a feedback resistor coupled between said output of said band rejection filter circuit and said non-inverting input of said operational amplifier for determining the circuit impedance of the frequency selection circuit;

wherein the circuit impedance of the frequency selection circuit depends solely on the feedback resistor, and the quality factor of the frequency selection circuit depends solely on the dividing factor of the voltage divider circuit,

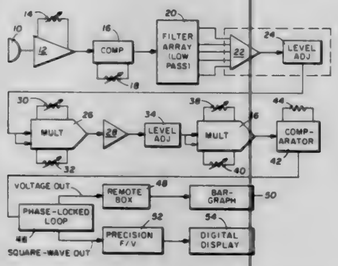
and wherein the resonance frequency of the frequency selection circuit is controlled by the band rejection filter circuit independently of said circuit impedance and said quality factor.

4,292,469

VOICE PITCH DETECTOR AND DISPLAY

Brian L. Scott, and Lee H. Hardesty, both of Denton, Tex., assignors to Scott Instruments Company, Denton, Tex.

Filed Jun. 13, 1979, Ser. No. 48,238
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **21 Claims**



1. Apparatus for analyzing the acoustic components of a speech signal, comprising:

a low pass filter array, each filter of the array responsive to all of the acoustic components of a speech signal representative of human voice and passing selected speech frequencies to an output,

means for summing the output of each filter into a composite signal,

multiplication means connected to the output of said means for summing for multiplying the composite signal with at least one preset offset signal,

circuit means having one input connected to receive a hysteresis signal and a second input connected to the output of said multiplication means to compare the output of said multiplication means with the hysteresis signal, and

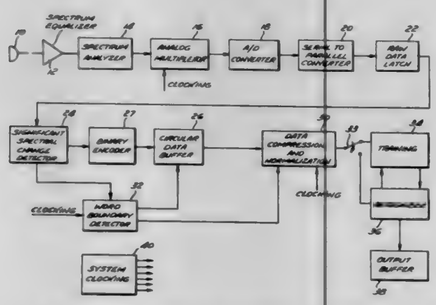
a phase locked loop responsive to the output of said means for comparing to generate an output representing the acoustic components of the speech signal.

4,292,470

AUDIO SIGNAL RECOGNITION COMPUTER

Byung H. An, Anaheim, Calif., assignor to Interstate Electronics Corp., Anaheim, Calif.

Filed Sep. 10, 1979, Ser. No. 73,792
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1.5 D **9 Claims**



1. A signal pattern encoder including a transducer, a signal processing assembly coupled to the output of said transducer for providing spectrum samples representative of the signal output of said transducer and a timing and control assembly connected to said signal processing assembly wherein the improvement comprises:

event encoding logic means coupled to the output of said signal processing assembly and also coupled to said timing and control assembly for computing the difference between a current spectrum sample and the last previous spectrum sample accepted by said event encoding logic means;

first means responsive to said event encoding logic means for rejecting said current spectrum sample if said difference is below a predetermined value;

second means responsive to said event encoding logic means for encoding said current spectrum sample into a binary signal if said difference is above said predetermined value;

circularly addressed data buffer means connected to said encoding means for continuously storing said encoded spectrum samples within said circularly addressed data buffer means;

an event detector connected to said circularly addressed data buffer means and responsive to said event encoding logic means for determining the boundaries of a particular event, and for storing the addresses within said circularly addressed data buffer means of said boundaries; and

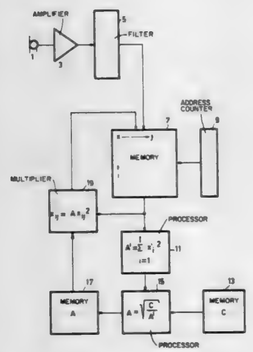
third means connected to said circularly addressed data buffer means and responsive to said event detector for reading data relating to said particular even from said circularly addressed data buffer means.

4,292,471

METHOD OF VERIFYING A SPEAKER

Michael H. Kuhn, Hamburg, and Horst Tomaschewski, Stuvenborn, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 83,197
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844156
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SB **9 Claims**



1. An improved method of verifying a speaker from which a number of reference speech samples have been obtained, a number of characteristics having been derived in the same manner from each reference speech sample, the mean value of the values of each characteristic of all reference speech samples having been determined from the characteristic values of all reference speech samples, a distance value having been determined, the characteristic mean values and the distance value having been stored; and characteristics from a speech sample to be verified having been derived in the same manner and the distance of this speech sample from the center point given by the characteristic mean values having been formed from the sum of the squares of the differences between each characteristic value of the speech sample and the associated

characteristic mean value, an O.K. signal having been generated when the sum at the most equals the distance value, characterized in that:

determining and storing a separate distance value from the differences between the characteristic values of two reference speech samples of at least a part of all reference speech samples;

storing the characteristic values of additional reference speech samples within the range defined by the center point and the distance value in the separate range of which, defined by the relevant reference speech sample and the separate distance value, the largest number of further reference speech samples are situated, said separate range being situated partly outside said range;

the distance of the speech sample to be verified being determined also with respect to the reference speech samples and being compared with the separate distance value;

storing, in addition, the characteristic values of reference speech samples which are situated outside the range defined by the center point and the distance value, for the verification of a speech sample to be verified whose distance from the center point is larger than the distance value;

successively determining and comparing the distance from the additionally stored reference speech samples with the stored separate distance value and

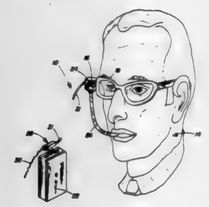
generating an O.K. signal if at least one distance is smaller than the separate distance value.

4,292,472

ELECTRONIC ARTIFICIAL LARYNX

Thomas M. Lennox, 7670 Acacia Ave., Mentor, Ohio 44060

Continuation-in-part of Ser. No. 70,851, Aug. 29, 1979, abandoned. This application Feb. 14, 1980, Ser. No. 121,300
Int. Cl.³ A61F *1/20*; G10I *1/10*
U.S. Cl. 179—1 AL **10 Claims**



10. In an electronic artificial larynx having a tone generator and a signal generator, the improvement comprising:

(a) clamping means for supporting the tone generator and attaching it to a pair of eyeglasses;

(b) a band adapted to fit securely around a human limb;

(c) a switch attached to the band for operating the artificial larynx; and,

(d) a switch actuator to actuate the switch in response to movement of the limb.

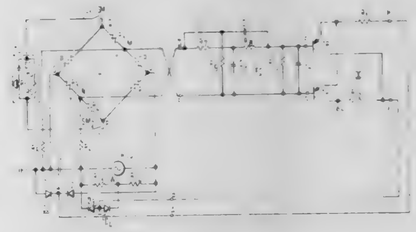
4,292,473

LOOP SUPERVISION CIRCUIT

Jan H. G. Venken, Schilde, and Jozef A. M. Robijns, Heers, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,344
Int. Cl.³ H04M *3/02, 3/22*
U.S. Cl. 179—18 FA **21 Claims**

1. Impedance network for monitoring the condition of a line, said network including a source having a DC component and an AC component, a DC detector circuit, a multiport impedance bridge network, said line coupled to one port of said bridge network, said source coupled to the opposed port of the bridge network and said detector circuit coupled to an output port of said bridge network formed by intermediate tapping of impedances in opposed arms of said bridge network, a filter circuit associated with said DC detector circuit to substantially prevent said AC component from having an influence on the operation of said DC detector circuit, said detector circuit



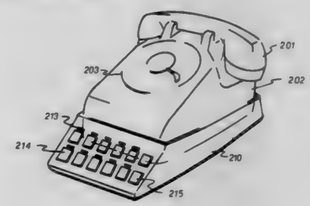
having at least one terminal at a fixed DC potential, the invention wherein said terminal is coupled to said source to apply a potential having an AC component to the detector circuit cancelling the effect of any AC signal present on the terminals of an input port to said DC detector circuit from said bridge network.

4,292,474

ELECTRONIC KEY TELEPHONE SYSTEM WITH BI-DIRECTIONAL SERIAL DATA STREAM STATION CONTROL

Wilfred L. Morrell, Boca Raton, and William M. Levine, Lauderdale Lake, both of Fla., assignors to OKI Electronics of America, Inc., Ft. Lauderdale, Fla.

Filed Aug. 13, 1979, Ser. No. 66,474
Int. Cl.³ H04Q *5/18*
U.S. Cl. 179—99 M **14 Claims**



1. In an electronic key telephone system using time division multiplexing for the communication of command, status and supervisory signals among functional circuit elements, and including a group of stations each equipped with audible signaling means and nonlocking key switches with associated lamp indicators, each station having access to a plurality of communication lines by means of an individual speech conductor pair, a central processor module for controlling the connection and intercommunication of signals between said lines and stations, and by an individual data conductor pair associated with each of said stations for the bi-directional communication of data control signals, the improvement comprising:

central processor electronic timing means, including a system clock for generating a clock pulse stream;

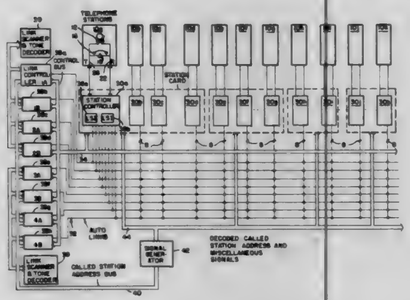
central processor logic means for generating unipolar digital data signals common to each station;

central processor multiplex means for interlacing said common data signals with clock pulses of said clock pulse stream to form a serial bit stream, each bit position of which begins with a clock pulse and includes either zero or a one data information;

said timing means including bit counting means for dividing said serial bit stream into repetitive frames of a predetermined number of bit positions;

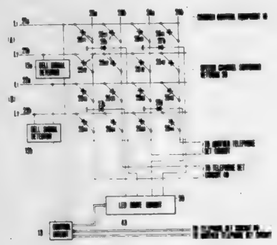
a station circuit module associated with each station and connected thereto by a separate speech conductor pair and data conductor pair;
a line circuit module associated with each communication line;
plural bus means for intermodule communication of clock pulse and data signal information;
said station circuit module including latch means for storing unipolar digital data signals proprietary to the associated station;
said station circuit module further including multiplex means associated with said latch means for interlacing said proprietary data signals with clock pulses at predetermined bit positions of said serial bit stream for communication to the associated station;
separate data interface means connected to each end of said data conductor path for the bi-directional transfer of said serial bit stream between said station circuit module and the associated station;
first data separator means associated with the station data interface means for separating data signals from the clock pulses of selected positions of said serial bit stream;
station latch means for storing said separated data signals, and associated decoding means operative on said stored data signals for controlling said lamp indicators and audible signalling means
station multiplex means associated with the station interface means and connected to the output of said nonlocking key switches for interlacing unipolar digital key switch data signals with clock pulses at predetermined bit positions of said serial bit stream for communication to said station circuit module;
station circuit data separator means associated with said station circuit data interface means for separating said key switch data signals from the clock pulses of said serial bit stream; and
station circuit output latch means associated with said station circuit data separator means for storing key switch data signals for communication to said central processor.

4,292,475
EXPANDABLE LINK TELEPHONE INTERCOM SYSTEM
Stephen R. Hill, Seattle; Victor M. De Pinto, Bellevue, and John D. Gillen, Woodinville, all of Wash., assignors to Tone Commanders Systems, Inc., Redmond, Wash.
Filed Aug. 28, 1979, Ser. No. 70,403
Int. Cl.³ H04M *9/00*
U.S. Cl. 179—99 A **7 Claims**



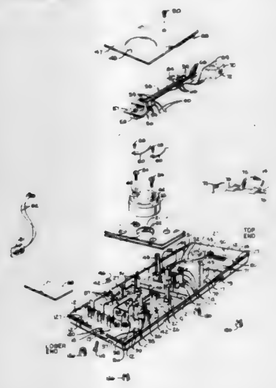
1. A telephone intercom system comprising a plurality of self-contained station controllers each adapted to connect a respective telephone station to one of M audio links to make or receive a telephone call, and each having an operating cycle of M equal operating periods during which a calling station controller searches for and then connects itself to a corresponding available audio link and a called station receives an enabling signal derived from a station address generated by the calling station and connects itself to the audio link to which the calling station is connected, said system including means for allowing N of said system controllers to operate in parallel for each station to selectively connect said station to one of M×N audio links, each of said audio links being controlled by a respective link controller which receives the station address of the called station from the calling station, decodes the address and applies the address in time-multiplexed form to a plurality of demultiplexers associated with the respective stations during one of N address valid periods of the M operating periods corresponding to the one of M×N audio links to which the calling station is connected to allow the demultiplexer for the called station to decode said time division multiplexed address and apply said enabling signal to the one of N station controllers corresponding to the one of N address valid periods of said operating period.

4,292,476
SPEECH CHANNEL SWITCHING NETWORKS SUITABLE FOR USE IN COMBINATION WITH ELECTRONIC KEY TELEPHONE SETS
Kazuyuki Yamamoto, and Seiei Ohkoshi, both of Yokohama, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Oct. 11, 1979, Ser. No. 83,897
Claims priority, application Japan, Oct. 18, 1978, 53-127399
Int. Cl.³ H04Q *3/52*
U.S. Cl. 179—99 R **3 Claims**



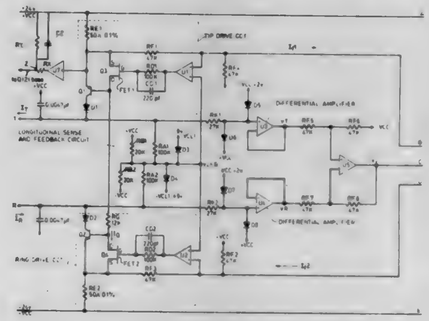
1. In a speech channel switching network adapted to be used in combination with an electronic key telephone set of a key telephone system including an electronic speech channel switching circuit, and an electronic key telephone set adapted to be selectively connected to central office lines by said speech channel switching circuit, the improvement wherein said speech channel switching circuit comprises first and second incoming lines for connection to a pair of central office lines; first and second outgoing lines connected to a telephone set circuit of said electronic key telephone set, said incoming lines and said outgoing lines being arranged in a matrix; and four controllable unidirectional switching elements each disposed at a different one of four cross-points between said incoming and outgoing lines, a first one of said unidirectional switching elements being connected between said first incoming line and said first outgoing line with a first polarity, a second one of said unidirectional switching elements being connected between said first incoming line and said second outgoing line with a polarity opposite that of said first polarity, a third one of said unidirectional switching elements being connected between said second incoming line and said first outgoing line with said first polarity, and a fourth one of said unidirectional switching elements being connected between said second incoming line and said second outgoing line with a polarity opposite that of said first polarity, so that the polarity of current flowing along said outgoing lines is unaffected by the relative polarity of signals on said incoming lines.

4,292,477
TELEPHONE SET BASE FOR BOTH WALL AND DESK MOUNTING
William J. Adams, Franklin, and Steve W. Haskins, Laverne, both of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada
Filed Sep. 25, 1979, Ser. No. 78,674
Int. Cl.³ H04M *1/02*
U.S. Cl. 179—100 C **17 Claims**



1. A telephone set base for both wall and desk mounting, comprising:
an elongate molded plastic base plate having a base member and an upstanding peripheral rim extending around the base member, said rim including a lateral slot therein;
an enclosed recess extending upward from said base member for containing therein a first modular plug adapted for plugging into a wall outlet jack;
a further recess extending upward from said base member adjacent to said enclosed recess, said further recess including snap means for retention of a modular jack and an aperture defining a passage communicating with said enclosed recess for receiving a short first line cord connected between the first modular plug and a second modulator plug connected to the modular jack;
said base plate including an inlet at one end for a long second line cord and a cord slot connecting said inlet and said enclosed recess for receiving the second line cord as it passes from said inlet to said further recess;
a flat weight having an aperture therein and being spaced from said base member, defining therewith an acoustic chamber, said chamber being enclosed at its periphery and said lateral slot in said peripheral rim opening into said acoustic chamber;
a speaker mounted on said weight at said aperture;
a printed circuit board mounted over said flat weight; and
a flexible circuit member having at least one modular jack mounted thereon, said flexible circuit member interconnecting said speaker and said printed circuit board, said modular jack being retained at said further recess by said snap means;
whereby said telephone set base is adapted to have the short first line cord extend from said enclosed recess to said further recess with said first modular plug on one end of the cord being positioned in said enclosed recess and with said second modular plug on the other end of said first line cord being connected to said modular jack retained by said snap means above said further recess when the telephone is in a wall mounted form, and the telephone base set base is adapted to have the long second line cord enter said inlet and pass along said cord slot to said enclosed recess and then through said passage to said further recess where it is connected with said modular jack retained by said snap means above said further recess when the telephone is in a desk mounted form.

4,292,478
INTERFACE CIRCUITS
John C. H. Davis, Oak Ridges, and Krishnaswamy Natarajan, Bramalea, both of Canada, assignors to Plessey Canada Limited, Downsview, Canada
Filed May 25, 1979, Ser. No. 42,530
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **30 Claims**

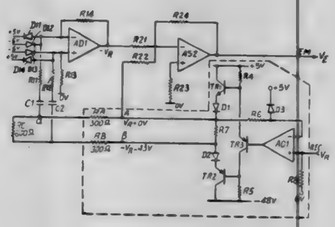


1. Means for providing power to a pair of lines comprising :
means for connecting a positive voltage datum over the main conduction path of a first transistor to create a relatively positive voltage on such line,
means for connecting the other line over the main conduction path of a second transistor to a negative voltage datum, to create a relatively negative voltage on said other line,
where the high impedance power terminals of said first and second transistors are connected to said lines and the low impedance power terminals are connected to said datums,
means for controlling current flow through the respective conducting path of each of said transistors,
means for obtaining a measure of the sum of the voltages on said pair of lines,
means responsive to the said sum being more negative and more positive, for co-operating with said respective controlling means to increase and decrease, respectively, current flow along said main conducting path of said first transistor from said positive datum; and to decrease and increase current flow along said main conducting path of said second transistor to said negative datum.

4,292,479
SEPARATION AND BALANCE DEVICE FOR TELEPHONE EXCHANGES
Andre Chataignon, Argenteuil; Alain Nicolas, Courbevoie, and Jean P. Poirier, Saint-Denis, all of France, assignors to Le Materiel Telephonique Thomson-CSF, Colombes, France
Filed Sep. 14, 1979, Ser. No. 75,799
Claims priority, application France, Sep. 19, 1978, 78 26822
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **11 Claims**

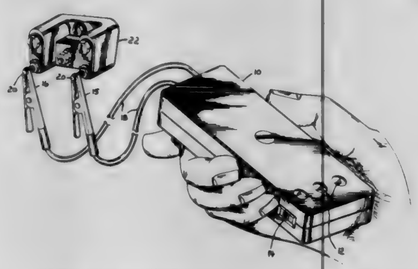
1. An electronic separation and balance device comprising a first two-to-four wire converter circuit connected between subscriber's telephone set lines and a four wire path, and a second two-to-four wire converter circuit connected between the four wire path and a network junctor, wherein said first two-to-four wire converter circuit comprises: first, second and third operational amplifiers, the input of said first amplifier being connected to the receive wires of the four wire path, and its output being connected to a transistor circit for forming a DC amplifier the balanced outputs of which are connected to the subscriber's telephone set lines through resistors of equal

value, each of the inputs of said second amplifier being connected to the subscriber's telephone set lines through a capacitor in series with a resistor, and the (negative) input of said third amplifier being connected to the output of the second amplifier through a resistor and to one output of said DC amplifier through another resistor, the output of said third amplifier being connected to the transmit wires of the four wire path; means for preventing the voltages on inputs of said second and third amplifiers from being higher than a given positive low voltage and from being lower than a given negative low voltage; and means for preventing the voltage on the inputs of said first amplifier from being higher than a given



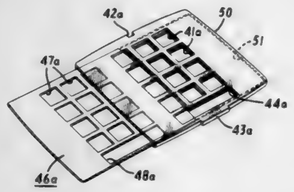
positive low voltage; and wherein said second two-to-four wire converter comprises first, second and third operational amplifiers, said first and second amplifiers being connected to the transmit wires of the four-wire path, their outputs being coupled through resistors of equal value to the inputs of the network junctor, the (negative) input of said third amplifier being connected through a passive R.C. network to the output of said first amplifier, the (positive) input of said third amplifier being connected through a resistor to the input of the network junctor which is coupled to the output of said first amplifier, the output of said third amplifier being connected to the receive wires of the four-wire path.

4,292,480
METHOD AND APPARATUS FOR LOCATING TELEPHONES
Robert L. Sweatt, Decatur, Ga., assignor to Western Electric Company, Inc., New York, N.Y.
Filed Feb. 19, 1980, Ser. No. 122,091
Int. Cl.³ H04M *1/24*
U.S. Cl. 179—175.2 B **8 Claims**



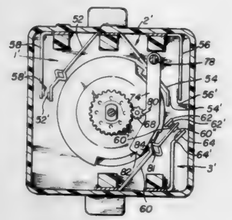
1. A method of determining the presence of an out-of-service telephone within a building, said telephone connected to a building interior telephone loop that is coupled with a building exterior telephone loop, without having to enter the building, and with the method comprising the steps of electrically isolating the interior loop from the exterior loop; determining if the electrical resistance of the interior loop is within a selected resistance range; determining if the electrical capacitance of the interior loop exceeds a selected capacitance level; and generating a telephone present signal should either the determined resistance be within the selected resistance range or the determined capacitance exceed the selected capacitance level.

4,292,481
DECORATIVE APPLIQUE AND DECORATIVE FACEPLATE ASSEMBLY FOR PUSH-BUTTON TELEPHONES
Wayne R. Barnes, and Lawrence K. Barnes, both of 207 E. 17th St., New York, N.Y. 10003
Filed Jul. 16, 1975, Ser. No. 596,220
Int. Cl.³ H04M *1/02*
U.S. Cl. 179—178 **3 Claims**



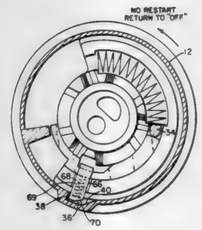
1. A decorative faceplate assembly for a push-button telephone comprising: a transparent faceplate configured for use on a push-button telephone and having plural openings therein located so as to overlie respective ones of the telephone push-buttons when the faceplate assembly is installed on a push-button telephone, said transparent faceplate having therein a slot dimensioned to receive a decorative applique; and a decorative applique removably inserted into said slot and containing on the top surface thereof a decorative design which is visible through said transparent faceplate and having plural openings therein superposed over respective ones of the plural faceplate openings.

4,292,482
CIRCUIT CONTROLLER FOR ANTI-WRINKLE CONTROL
Steven W. Smock, Indianapolis, and George W. Adams, Greenwood, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.
Filed Dec. 3, 1979, Ser. No. 99,914
Int. Cl.³ H01H *43/10*
U.S. Cl. 200—38 R **7 Claims**



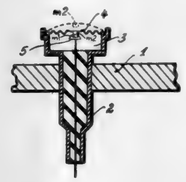
1. In an apparatus wherein a cam means is rotatably driven by a motor drive means and wherein first electrical switch means is responsive to said cam means to be opened and closed in accordance with a program of said cam means, means providing an extra program of short switching pulses, comprising:
(a) a gear train coupled between said motor drive means and said cam means, said gear train including program means providing said extra program,
(b) follower means engaging said program means to be actuated in accordance with said extra program,
(c) second electrical switch means responsive to said follower means to be opened and closed thereby, and
(d) locator means engaging said second electrical switch means to selectively position same into and out of an operable position with said follower means.

4,292,483
IGNITION SWITCH WITH STARTER LOCKOUT
Leo F. Roytberg, Brookline, Mass., assignor to Joseph Pollak Corporation, Boston, Mass.
Filed Feb. 27, 1980, Ser. No. 125,175
Int. Cl.³ H01H *27/06*
U.S. Cl. 200—42 A **6 Claims**



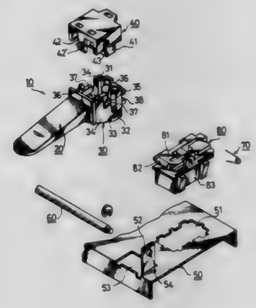
1. In a rotary switch having a stationary element and a rotary element, said rotary element being rotatable relative to said stationary element from one position to another to selectively energize circuits in a predetermined sequence, apparatus for preventing repeated energization of one of said circuits by movement in a first direction of said rotary element from a given position directly to a position adjacent thereto comprising a third element in frictional contact and normally rotatable with said rotary element, stops being provided on said stationary element to limit rotation of said third element with said rotary element, a fourth element rotatable with said rotary element and movable along said third element upon said third element engaging one of said stops on said stationary element and means disposed on said stationary element for engaging said fourth element, said third element having a portion thereof relieved to permit orthogonal movement of said fourth element relative thereto, said orthogonal movement resulting in engagement of said fourth element by said means disposed on said stationary element, the position of one of said stops and the position of said relieved portion of said third element being such that said fourth element is aligned with the relieved portion after the rotary element has been rotated beyond said given position in said first direction.

4,292,484
RESPONSIVE DEVICE FOR A VEHICLE TIRE
Günter Pruss, Amselweg 3, 2211 Wrist, Fed. Rep. of Germany
Filed Apr. 23, 1979, Ser. No. 32,477
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2818027; Aug. 9, 1978, 2834808
Int. Cl.³ H01H *35/24*
U.S. Cl. 200—61.25 **14 Claims**



1. In a device for signalling a pressure loss in the inner space of a tire mounted on a vehicle wheel; said device including mounting means for securing the device to said wheel; housing means defining a chamber projecting into said inner space; a diaphragm secured to said housing means and sealing said chamber from said inner space, whereby opposite faces of the diaphragm are exposed to pressures prevailing in said chamber and in said inner space, respectively; said diaphragm constituting a movable electrical contact; a stationary electric contact supported in said housing; said diaphragm having a first position in which said diaphragm is in electric contact with said stationary contact and a second position in which said diaphragm is electrically separated from said stationary contact; said diaphragm being moved from said first position into said second position when the pressure in said inner space drops below a predetermined value; the improvement comprising a valve means supported in said housing means, said valve means communicating with said chamber and being accessible externally of said wheel for sealing said chamber with respect to ambient atmosphere and for providing for a variability of the pressure in said chamber at will and further wherein said diaphragm is in a relaxed state in said first position and in a stressed state in said second position.

4,292,485
LEVER SWITCH WITH IMPROVED ACTUATING MEMBER
Shiro Kondo, and Michitada Akazawa, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1979, Ser. No. 93,909
Claims priority, application Japan, Nov. 18, 1978, 53-159230[U]
Int. Cl.³ H01H *3/06*
U.S. Cl. 200—332 **8 Claims**



1. A lever switch comprising
(a) a base frame having supports for a mounting rod;
(b) a switch body secured to said base frame, said switch body having an actuator pivotably mounted thereon and having an engaging portion at an end portion thereof;
(c) an actuating member having an elongated operating portion and a base portion, said base portion comprising a first slot extending downwardly from the top edge of said base portion for guiding said mounting rod upon its insertion, a second slot adjacent said first slot for supporting said mounting rod, and an engaging member for engaging with said engaging portion of said actuator of the switch body;
(d) a cover plate connected to said base portion of said actuating member for holding said actuating member on said mounting rod, and
(e) a fastening means for connecting said actuator member with said cover member.

4,292,486

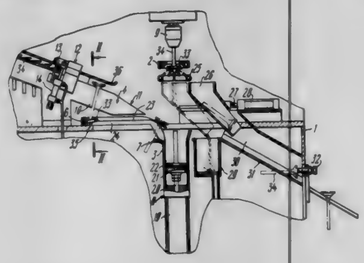
APPARATUS FOR DELIVERY OF MELTING RINGS AND VALVES TO AN INDUCTOR HEATER

Daniil A. Dudko, ulitsa Anri Barbjusa, 22/26, kv. 113; Anatoly A. Mozzhukhin, ulitsa Grodnenskaya, 3/5, kv. 37, both of Kiev; Vladimir V. Breze, ulitsa Revoljutsionnaya, 12, kv. 40, Tolyatti; Anatoly E. Kozlov, ulitsa Revoljutsionnaya, 73, kv. 85, Tolyatti; Veniamin G. Grigoriev, ulitsa Jubileinaya, 110, kv. 87, Tolyatti; Vladimir P. Sotchenko, ulitsa P. Tychiny, 13, kv. 210, Kiev; Boleslav I. Maximovich, ulitsa Anri Barbjusa, 22/26, kv. 107, Kiev; Bogdan P. Budzan, Dneprovskaya naberezhnaya, 11, kv. 122, Kiev, and Vitaly V. Zavodian, bulvar Lepse, 55, kv. 20, Kiev, all of U.S.S.R.

Filed Dec. 18, 1979, Ser. No. 104,712

Int. Cl.³ H05B *5/00*; B23K *13/00*

U.S. Cl. 219—9.5 **4 Claims**



1. An apparatus for delivery of melting rings and valves to an inductor heater, for hard facing of said valves by melting said melting rings upon a working surface of said valves, comprising:

an inductor heater;

a tubular body installed vertically under said inductor heater;

a first gravity feed tray for feeding said valves;

a second gravity feed tray for feeding said melting rings;

a horizontal feed tray positioned between an exit of said second gravity feed tray and said tubular body and under said first gravity feed tray, said melting rings being delivered onto said horizontal feed tray from said second gravity feed tray, the distance between sliding surfaces of said first gravity feed tray and sliding surfaces of said horizontal feed tray being less than the length of stems of said valves, such that said stems of said valves engage respective rings and slide along said horizontal feed tray toward said tubular body;

a stop positioned near an upper end of said tubular body and near an end of said horizontal feed tray and orienting said valve in said tubular body with said stem of said valve upwardly directed;

a pusher positioned under said tubular body and delivering said valve and said melting ring to said inductor heater; and

a clamping mechanism for holding said valve and melting ring within said inductor heater.

4,292,487

METHOD FOR INITIATING THE FLOAT ZONE MELTING OF SEMICONDUCTORS

Noel De Leon, Frederikssund, Denmark, assignor to Topsil A/S, Frederikssund, Denmark

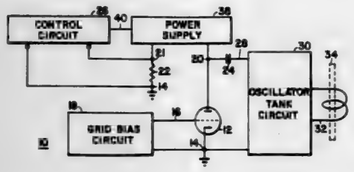
Continuation of Ser. No. 904,105, May 8, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,997

Claims priority, application Denmark, Jul. 7, 1977, 3063/77

Int. Cl.³ H05B *6/30*

U.S. Cl. 219—10.43 **4 Claims**

1. An improved method for initiating the float zone melting of semiconductor material using an apparatus which includes an induction heating coil for heating said semiconductor material, said induction heating coil being driven from an oscillator including a triode and having a switchable energy source, the improvement comprising the steps of: delivering current from said energy source to the anode of said triode to transfer energy to said inductive heating coil; maintaining said current to said anode constant to effect a controlled slow rate of induction heating of said semiconductor material to a first temperature below its melting temperature, said slow rate of induction heating reducing thermal shock to said semiconductor material; and subsequently switching said energy source to a constant voltage mode to induction heat said semiconductor material to a second temperature higher than said first temperature.



4,292,488

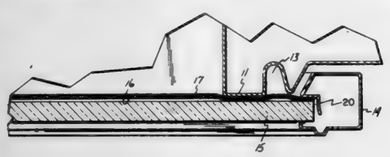
MICROWAVE OVEN DOOR HAVING A CONFORMABLE SCREEN

Earl Birk, Sioux Falls, S. Dak., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jun. 25, 1980, Ser. No. 162,983

Int. Cl.³ H05B *6/76*

U.S. Cl. 219—10.55 D **7 Claims**



1. A microwave oven door comprising a frame, a sheet of substantially flat glass mounted in said frame, said frame substantially encircling said glass, a flexible metal screen overlying and substantially coplanar with said sheet of glass and mounted in said frame, the edges of said screen being deformed away from the general plane of said screen, said deformed edges extending into said frame; whereby the compression of said deformed edges of said screen by said frame causes said screen to bow away from said glass.

4,292,489

TAB HEATING AND APPLYING APPARATUS

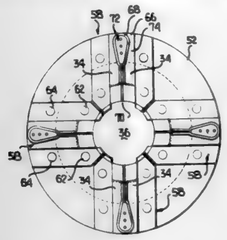
Howard L. Gerber, Park Forest, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,679

Int. Cl.³ H05B *6/10, 6/44*

U.S. Cl. 219—10.71 **15 Claims**

1. An induction heating apparatus comprising a fixed primary coil, a circumferentially segmented secondary coil formed of a plurality of circumferentially spaced and adjacent separate segments and telescoped relative to said primary coil, means mounting said secondary coil for rotation relative to said primary coil, and a like plurality of induction heating elements carried by said segments of said seconary coil at one end thereof, the number of induction heating elements being equal to the number of secondary coil segments.



4,292,490

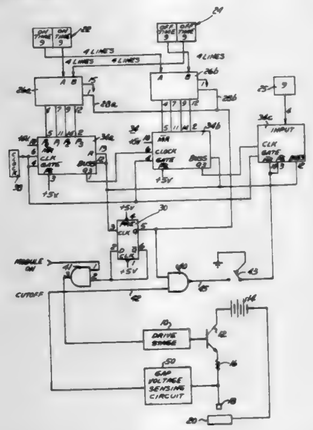
ELECTRICAL DISCHARGE MACHINING POWER SUPPLY WITH DIGITALLY CONTROLLED ON AND OFF TIME AND PROTECTIVE SYSTEM

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Continuation of Ser. No. 794,440, May 6, 1977, abandoned. This application May 7, 1979, Ser. No. 36,570

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 P **10 Claims**



1. An electrical discharge machining apparatus including an electronic output switch and a power source operatively connected to a machining gap for providing machining power pulses of digitally predetermined ON-OFF time duration thereto, and a free-running, digital type multivibrator, comprising:

a plurality of separately settable ON time and OFF time switches;

a counter stage sequentially connectable to said ON time and OFF time switches;

a data selector stage coupled intermediate said switches and said counter stage, respectively;

a high frequency pulse source directly connected to said counter stage for providing a continuous pulse train thereto for operating said counter stage;

a bistable control means having a pair of different output terminals, the first of said pair operatively connected to said data selector stage for alternately connecting said ON time and said OFF time switches to the counter stage responsive to high and low state of said first output terminal, said counter stage further operable to provide a separate enabling clock pulse to said bistable control means at the end of each count cycle of each ON time and each OFF time; and

the other of said pair connected to the control electrode of said electronic output switch for controlling its ON-OFF time operation.

4,292,491

WIRE ELECTRODE ELECTRIC DISCHARGE MACHINE WITH CONTROLLED ELECTRICAL PARAMETERS

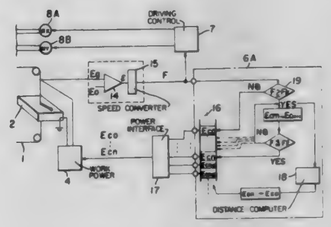
Yutaka Tanaka, and Takeshi Yatomi, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1979, Ser. No. 66,313

Claims priority, application Japan, Aug. 16, 1978, 53-99843; Nov. 2, 1978, 53-135552

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 W **12 Claims**



1. In an electric discharge machine for forming electric discharge between a wire electrode and a work piece in a work liquid by applying a voltage between said electrode and workpiece and performing a desired work by relatively moving said wire electrode and said workpiece, the improvement comprising;

means for detecting a gap voltage between said wire electrode and said workpiece;

a first comparator which compares the gap voltage detected by said detected means with the reference voltage to generate a differential signal for the difference in the voltages;

a converter which receives the output of said comparator to generate a speed signal used for a speed control of the relative movement between said wire electrode and said workpiece; and

a second comparator which compares a reference speed signal corresponding to the reference work area with the said speed signal, whereby a circuit constant of a power device for applying the voltage between said wire electrode and said workpiece is controllable and when the speed signal as the output of said converter is smaller than a predetermined speed signal, the circuit constant of said power device is controlled to increase through an electric condition control circuit depending upon the output of said second comparator; and when the work area is decreased, it is controlled to decrease the power of said power device whereas when the work area is increased, it is controlled by increase the power of said power device.

4,292,492

SEAM WELDING OF PIPES

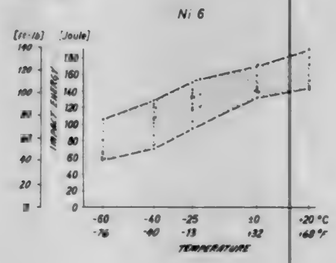
Karl Düren, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann AG, Dusseldorf, Fed. Rep. of Germany

Filed May 6, 1977, Ser. No. 794,418

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2621182

Int. Cl.³ B23K 9/18

U.S. Cl. 219—73 **2 Claims**



1. In a method of longitudinally, submerged-arc, seam welding pipes made of pipe steel having up to 0.1% carbon, 2% manganese, 0.35% molybdenum and up to 0.5% nickel, using at least one welding wire having the following consistency:
up to 0.1% C
up to 0.4% Si
up to 1.5% Mn
up to 0.6% Mo
4.5 to 7.5 N:
up to 0.015% P and S
the remainder being Fe.

4,292,493

METHOD FOR DECOMPOSING OZONE

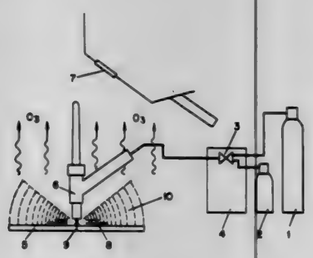
Lennart Selander, Balsta; Lars Fahlen, Villingby, and Ladislav Sipek, Täby, all of Sweden, assignors to AGA Aktiebolag, Sweden

Continuation-in-part of Ser. No. 849,390, Nov. 7, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 54,923

Claims priority, application Sweden, Nov. 5, 1976, 7612355

Int. Cl.³ B23K 9/16

U.S. Cl. 219—74 **13 Claims**



1. A method of decomposing ozone formed when welding or working with an electric arc, wherein a nitrogen compound is introduced into the welding or working area, said nitrogen compound being solely nitric oxide.

4,292,494

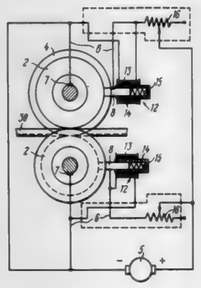
ELECTRIC SPARK BUILDING-UP OF METAL ON THE WORKING SURFACE OF ROLLS

Igor S. Trishevsky, ulitsa 23 Avgusta, 47, kv. 42; Nikolai M. Vorontsov, prospekt Gagarina, 92, kv. 82; Anatoly B. Jurchenko, ulitsa Bairona, 154-a, kv. 114; Vladimir F. Korobeinik, ulitsa Gogolya, 11, kv. 14; Valery N. Zherebtsov, prospekt Traktorostroitelei, 138-a, kv. 25; Igor A. Svistunov, prospekt Moskovsky, 238-a, kv. 49; Sergei I. Rudjuk, ulitsa 23 Avgusta, 47, kv. 63; Vladimir S. Marin, ulitsa Darvina, 16, kv. 74; Viktor N. Bruskov, ulitsa Katsarskaya, 19, kv. 8; Vitaly N. Krupenik, ulitsa Sumskaya, 124-a, kv. 13, all of Kharkov; Alexei A. Sitarchuk, ulitsa Lenina, 176, kv. 81, Zaporozhie; Alexandr D. Bondarenko, ulitsa Transvaalnaya, 15, kv. 1, Kharkov; Vadim M. Schekin, prospekt Dzjuby, 5, kv. 1, Kharkov, and Iraida A. Baldakova, ulitsa Fesenkovskaya, 16, kv. 10, Kharkov, all of U.S.S.R.

Filed Mar. 29, 1979, Ser. No. 24,974

Int. Cl.³ B23K 28/00, 9/04

U.S. Cl. 219—76.13 **6 Claims**



1. A method for electric spark build-up of metal on a working surface of rolls in the course of operation of a rolling mill, wherein a voltage from a unipolar current source is applied to each roll being treated and to electrodes each interacting with the working surface of a respective roll, the current and voltage being so adjusted that the rate of build-up of metal exceeds the rate of its wear, thus enabling the formation on the working surface of rolls of a limit layer of metal of predetermined thickness which is a function of the applied current and voltage.

3. A device for electronic spark build-up of metal on the working surfaces of rolls in the course of operation of a rolling mill having a stand on which are mounted at least a pair of rolls having a working surface, the device comprising a unipolar current source, sliding contacts, holders, electrodes secured in said holders for transverse movement relative to the axis of said rollers, said sliding contacts and said electrodes being connected to said unipolar current source, said sliding contacts being in contact with each roll, and each of said electrodes interacting with the working surface of each roll during operation of the rolling mill for providing electric spark treatment of the working surface of each roll, thereby maintaining the initial shape thereof.

4,292,495

WELDING TORCH WEAVING DEVICE

Takashi Saito; Katuhiko Otake, both of Kamakura, and Tokuji Maruyama, Fujisawa, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

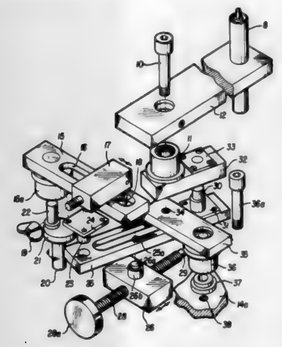
Filed Feb. 20, 1980, Ser. No. 122,853

Int. Cl.³ B23K 9/30

U.S. Cl. 219—125.12 **5 Claims**

1. A welding torch weaving device comprising a first link having a first elongated slot at one end thereof and pivoted to a drive source at another end to make an arc shaped movement

at said another end thereof, a first adjustably fixed shaft fitted within said first elongated slot in said first link, a second link having one end thereof pivoted on a mid portion of said first link and having a second elongated slot, a second adjustably fixed shaft fitted within said second



elongated slot in said second link, a third link having one end thereof pivoted on the other end of said second link, and a fourth link having one end thereof pivoted on the other end of said third link and the other end thereof pivoted on a fixed pivot shaft, wherein a weaving arm is disposed on said other end of said third link for mounting a welding torch.

4,292,496

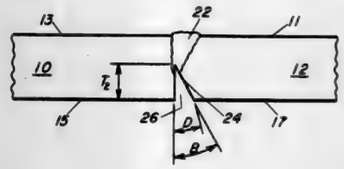
VERTICAL PLATE WELDING USING DOUBLE BEVEL JOINT

Malcolm G. Hoy, and Walter R. Reichelt, both of New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 17, 1980, Ser. No. 112,833

Int. Cl.³ B23K 9/16

U.S. Cl. 219—126 **25 Claims**



1. A method of gas metal-arc welding of substantially vertical plates comprising:
(a) providing a first plate and a second plate with abutting edges to be welded forming a substantially vertical weld line;
(b) providing a first weld groove on one surface of the plates along the weld line formed by the abutting edges by removing plate material from the edge of only the second plate, the second plate edge including a planar root portion substantially normal to the plate surface and equal to or less than one-half the plate thickness;
(c) welding the plates together in a single upward pass by depositing a weld bead in the first weld groove to completely fill said groove;
(d) thereafter, providing a second weld groove on the opposite surface of the welded plates by removing plate material substantially from the abutting edge of only said second plate to a depth extending at least to the weld bead deposited in the first weld groove on the opposite surface of the plates; and thereafter
(e) welding the plates together in a single upward pass by depositing a weld bead in the second weld groove to completely fill said second groove;
(f) said welding steps include impressing a direct current of 290 to 420 amperes between an electrode of a welding torch and said plates with the electric arc formed thereby shielded primarily by argon gas, the torch maintaining a positive lead angle relative to the plate surface.

19. A welded joint made by gas metal-arc welding for joining base metal plates comprising:
(a) a joining line lying in a substantially vertical plane formed between abutting edges of welded plates;
(b) a first narrow and deep weld bead extending along said joining line on one surface of the joined base metal plates deposited in a single welding pass to completely fill a first weld groove prepared by removing base metal material from the edge of only one plate leaving a planar root portion equal to or less than one-half the plate thickness;
(c) a second narrow and deep weld bead on the opposite surface of the joined articles and deposited in a single welding pass to completely fill a second weld groove formed by removing base metal material substantially from the same plate as for said first weld groove along a line coextensive with said joining line of said first weld bead and to a depth at least extending to said first weld bead penetrating from the opposite surface of the joined articles;
(d) said first and second weld beads forming a generally K-shaped welded joint having a total weld bead thickness up to twice as great as the bead width; and
(e) said weld beads deposited in said grooves by a welding torch maintained at a positive lead angle relative to the plate surface.

23. Metal plate articles joined by gas metal-arc welding comprising:
(a) a welded joint extending along a joining line formed by the abutting edges of welded articles;
(b) a first weld bead extending along said joining line on one surface of the joined articles and deposited by a single welding pass to completely fill a first weld groove prepared by removing base metal material from the edge of only one plate leaving a planar root portion equal to or less than one-half the plate thickness;
(c) a second weld bead on the article surface opposite said first weld bead and deposited by a single welding pass to completely fill a second weld groove formed by removing base material substantially from the same metal plate as for said first weld groove along a line coextensive with said joining line of said first weld bead and to a depth at least extending to said first weld bead penetration from the opposite surface of the joined articles;
(d) said first and second weld beads forming a generally K-shaped welded joint having a total weld bead thickness up to twice as great as the bead width; and
(e) said weld beads deposited in said grooves by a welding torch maintained at a positive lead angle relative to the plate surface.

4,292,497

PULSED ARC WELDING AND SURFACING APPARATUS

Boris E. Paton, ulitsa Chkalova, 41a, kv. 26; Vladimir K. Lebedev, ulitsa Engelsa, 25, kv. 12; Pavel P. Sheiko, prospekt Nauki, 19/3, kv. 16, and Mikhail P. Pashulya, ulitsa Konstantinovskaya, 61, kv. 11, all of Kiev, U.S.S.R.

Filed Feb. 1, 1979, Ser. No. 8,561

Int. Cl.³ B23K 9/09

U.S. Cl. 219—130.51 **8 Claims**

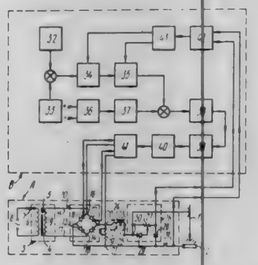
1. A pulsed arc welding and surfacing apparatus comprising a power circuit including
an article to be welded;
a single-phase output voltage regulated leakage transformer having a primary winding connected to a power supply, and a secondary winding;
a controlled bridge rectifier electrically connected to the

secondary winding of said transformer, said controlled bridge rectifier having controlled rectifiers, a positive output and a negative output electrically connected to said article to be welded;

an induction coil having a variable non-linear inductance connected to the positive output of said controlled bridge rectifier;

a variable resistor connected to said positive and negative outputs of said controlled bridge rectifier, said variable resistor varying the output voltage of said apparatus during no-load running thereof;

an integrator including a variable resistor having a first lead electrically connected to said induction coil, said variable resistor of said integrator having a second lead and a movable electrode for varying the output thereof, a capacitor connected to the second lead of said variable resistor of said integrator and to the negative output of said controlled bridge rectifier, and a diode electrically connected between the movable electrode of said variable resistor of said integrator and said induction coil thereby shunting a section of said variable resistor between said movable electrode and said first lead of said variable resistor, said diode being connected with a polarity preventing the passage therethrough of the charging current of said capacitor; and



a power circuit control unit acting upon the power circuit to permit the welding arc to be fed a current the variation of which in time can be represented in the form of a sum curve of a direct current component and a periodic curve, said sum curve having its leading edge rising approximately linearly and its trailing edge falling approximately exponentially, said power circuit control unit being electrically connected to said controlled bridge rectifier.

4,292,498

HIGH VOLTAGE ELECTRODE STEAM BOILER AND ELECTRODE ASSEMBLY THEREFOR

Mohammad A. Rouf, Kewanee, Ill., assignor to Kewanee Boiler Corporation, Kewanee, Ill.

Filed Sep. 7, 1979, Ser. No. 73,282

Int. Cl.³ H05B *3/60*; F22B *1/30*

U.S. Cl. 219—288 **22 Claims**

1. An electrode boiler comprising

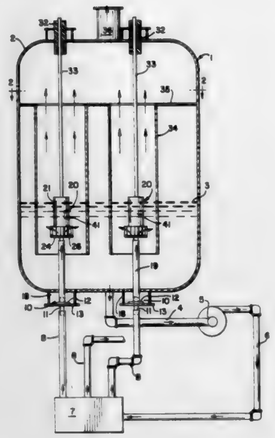
boiler means for receiving a quantity of electrically conductive fluid,

an electrode positioned within said boiler means and adapted to be coupled to a source of electrical potential for directing electrical current through the quantity of fluid to raise the temperature thereof,

said electrode having an internal flow passage and an outer peripheral surface, said flow passage being provided with outlet means in said peripheral surface,

fluid supply means coupled to said internal flow passage for supplying fluid under pressure to said internal flow passage, and

said electrode further including fluid guide means arranged with respect to said peripheral surface of said electrode in the path of fluid exiting from said outlet means for causing fluid circulation adjacent said outer peripheral surface of the electrode to remove steam bubbles therefrom during



the heating of the quantity of fluid within said boiler means.

4,292,499

ELECTRONIC CALCIFICATION INDICATOR FOR FLOW HEATERS HEATED BY PTC RESISTORS

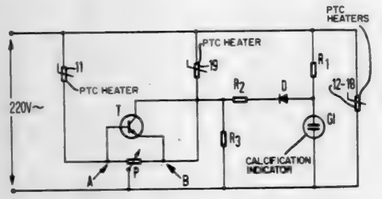
Peter Kleinschmidt, Munich; Hans Meixner, Haar, and Valentin Magori, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,691

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2839062

Int. Cl.³ H05B *1/02*; A47J *31/56, 31/88*; F24H *1/10*

U.S. Cl. 219—308 **6 Claims**



1. An electronic calcification indicator for a flow heater for determining a change of condition which arises in the flow heater because of increasing calcification, comprising: a flow heater heated by separate PTC resistors forming heating elements; one of said PTC resistors being provided at least at a region of water entry and at a region of water exit with each having a separate current supply line; an electrically operated display device operative by a signal; and circuit means connected to the display device for determining when a relative current difference in the current supply lines of the entry and exit region PTC resistors with respect to one another exceeds a predetermined amount so as to create a signal for activating the display device indicative of increased calcification of the exit PTC resistor element relative to the entry element.

4,292,500

MODULAR, CONSTRUCTIONAL HEATING UNIT

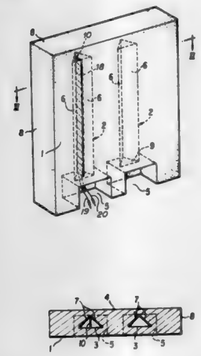
Daniel Semanaz, Vernaison, and Robert Cassat, Ternay, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 914,922, Jun. 12, 1978, abandoned, and a continuation-in-part of Ser. No. 828,603, Aug. 29, 1977, abandoned, which is a continuation of Ser. No. 813,353, Jul. 6, 1977, abandoned. This application Sep. 7, 1978, Ser. No. 940,364

Claims priority, application France, Sep. 7, 1977, 77 27676

Int. Cl.³ F24H *9/02*; H05B *3/02*

U.S. Cl. 219—345 **31 Claims**



1. A modular, constructional heating unit, which can be used for producing heating partitions by juxtaposition, said heating unit consisting essentially of a plaster based solid panel formed of at least one member; said panel having opposing, essentially parallel front and back face surfaces and a plurality of edge surfaces, and being provided with at least one internal, elongate, continuously rectilinear cavity, each such cavity being internally shaped into said solid panel between the front and back face surfaces thereof, the longitudinal axis of each such cavity being parallel to the face surfaces of the panel, each such cavity being exteriorly communicating through said panel at one of its ends, and each such cavity containing in the free space thereof an electrical heating element and means for coupling said heating element to an electrical power source, said electrical heating element being in the form of a flexible strip including an electrical wire embedded more than 50% in an electrically insulating material comprised of a macromolecular material and a reinforcing filler, said strip being arranged along a plane generally perpendicular to the face surface of the panel.

4,292,501

PYROLYTIC OVEN WITH A VARIABLE HEATING SPEED

Paul Maitenaz, Olivet, France, assignor to Compagnie Europeenne pour l'Equipement Menager "CEPEM", Paris, France

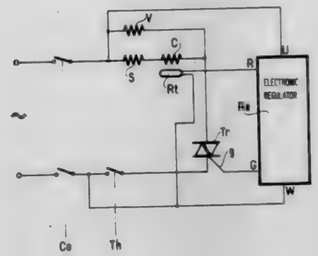
Filed May 11, 1978, Ser. No. 904,967

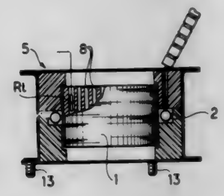
Claims priority, application France, May 16, 1977, 77 14895

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—413 **4 Claims**

1. A pyrolytically cleaned domestic cooking oven including: an oven compartment, heating elements for heating the oven during cooking and pyrolytic cleaning, a catalyst for combustion of smoke given off during pyrolytic cleaning, said catalyst formed by a block pierced with a plurality of ducts which pass through said block to allow the smoke to pass over a large contact surface of said block, a temperature sensor positioned inside the body of the catalyst in one of said ducts to generate a temperature signal to regulate the heating control of the oven during pyrolytic cleaning, an electronic control connected in series with the oven heating elements, an electronic regulator connected to said temperature sensor to control said electronic control, a thermostat placed in series with the electronic control in order to regulate the maximum temperature of pyrolytic cleaning, and wherein said catalyst includes a heating resistor





and said temperature sensor is placed in a position where it is protected from the direct influence of said catalyst heating resistor.

4,292,502

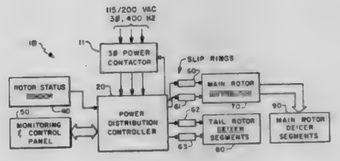
HELICOPTER DEICER CONTROL SYSTEM

Lowell J. Adams, Tallmadge, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed Feb. 5, 1979, Ser. No. 9,636

Int. Cl.³ H05B *3/02*

U.S. Cl. 219—483 **17 Claims**



1. A device for selectively distributing electrical power to a plurality of load elements on at least one rotating member comprising:

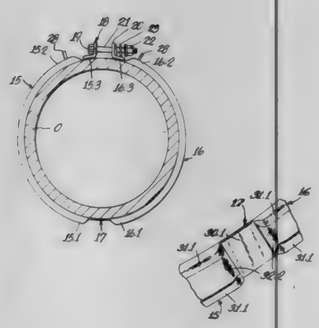
a source of electrical power;

controller means connected to said source of electrical power and providing an output signal having an electrical parameter variable between at least two distinguishable states, a first control state for selecting which of the load elements is to next receive power and a second power state for distributing electrical power to whichever load element is selected; and,

distributor means rotating with the rotating member for receiving said output signal from said controller means, said distributor means switching upon receipt of said

output signal in said first control state to the load element to next receive power, and distributing electrical power only upon receipt of said output signal in said second power state to whichever load element is selected.

4,292,503
SPLIT-BAND ELECTRIC HEATER
Richard W. Brent, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
Filed May 14, 1979, Ser. No. 38,402
Int. Cl.³ H05B 3/58
U.S. Cl. 219—535 **4 Claims**



2. In a split band heater adapted to encompass the outer periphery of a cylindrical object for heating the same, said heater having disconnectable tensioning means at the split thereof, said tensioning means when connected and tensioned being adapted to draw said split-band heater tightly around and against a transverse outer peripheral surface of the object, the improvement wherein said split-band heater comprises:

at least two arcuately-shaped metal-sheathed strip heaters, each for positionment along a respective portion of the transverse outer peripheral surface of the object,

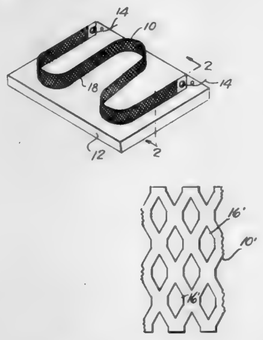
each strip heater comprising an elongated metal channel having a planar base wall and a pair of coextensive side walls extending in the same direction from the edges of said base wall, said channel containing a resistance wire and electrical insulation means therefor, both disposed lengthwise of and within said channel and an elongated metal strip substantially equal to the length of said channel and fitting transversely within said channel and in spanning relation with respect to said side walls, the latter being bent over adjoining longitudinal margins of said strip to lock said resistance wire and insulation means within said channel,

each strip heater being arcuately bent so that its base wall is curved and located innermost of the arc so as to be adapted to closely fit along and against the curved transverse outer surface of the cylindrical object,

said strip heaters being arranged in spaced-apart, end-to-end relationship as longitudinal continuations to transversely fit along a substantial portion of the outer peripheral surface of the cylindrical object, a juxtaposed pair of spaced strip heater ends defining said split and said tensioning means being connected thereto, the remaining juxtaposed pairs of spaced ends each being connected together by a flexible metal band which forms a structurally integral continuation of the base walls of the so-connected strip heaters so as to also lie close to the juxtaposed outer surface of the cylindrical object without any substantial space between,

the flexibility of the band enabling said strip heaters to be moved apart, when said tensioning means are disconnected to open said split enough so that the heaters may be moved in a direction transverse to the longitudinal axis of the object to a position around the object, and the flexibility of the band further permitting the base walls of said strip heaters to be drawn against the transverse peripheral wall of the object to closely conform said walls and the band to the curvature of the object by the connected and tensioned tensioning means.

4,292,504
EXPANDED METAL ELECTRIC HEATING ELEMENT WITH EDGE SUPPORT
Peter D. Gebarowski, Cookeville, Tenn., and Sam W. Henry, North Ogden, Utah, assignors to Tutco, Inc., Cookeville, Tenn.
Filed Oct. 2, 1979, Ser. No. 81,256
Int. Cl.³ H05B 3/06
U.S. Cl. 219—542 **11 Claims**



1. An electric resistance heating unit, comprising: a support board of ceramic fiber insulating material having a continuous groove on the surface, a thin apertured expanded strip of foil-like electric resistance material wherein said strip has one of its edges embedded in said groove and is substantially perpendicular to the surface of said support board, means supporting said strip of foil-like material on edge along substantially its entire length on said support board comprising: cement distributed at least semi-continuously along said strip to fasten the edge of the strip in the support board, and terminals conductively connected to said thin strip of foil-like electric resistance material, said terminals being insulatedly passed through said support board.

4,292,505
FURNACE FOR GENERATING HEAT BY ELECTRICAL RESISTANCE
Jeoung K. Lee, 6231 Fuji Tou, Fuji Tsawa-City, Kanakawa-Ken, Japan
Filed Sep. 19, 1979, Ser. No. 76,849
Claims priority, application Philippines, May 9, 1979, 22468
Int. Cl.³ H05B 3/10
U.S. Cl. 219—553 **1 Claim**

1. A controlled electrically resistant heat generating furnace comprising:

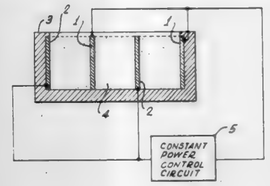
a furnace body;

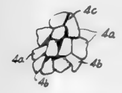
a plurality of electrodes secured in and to oppose each other within said furnace body;

a plurality of heat generating elements disposed between said electrodes; and

constant power control circuit means for supplying an electric current across said electrodes;

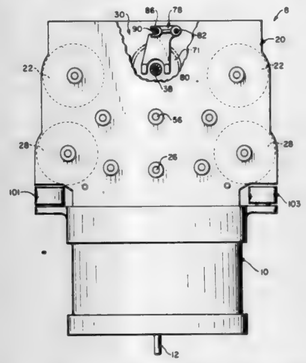
said heat generating elements comprising a substantially homogencous mixture of carbonized plant particles, non-





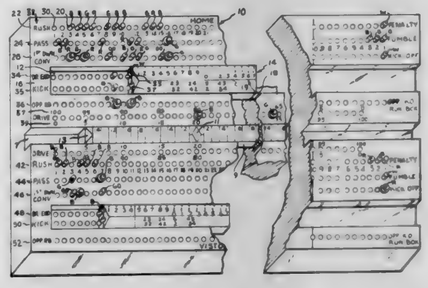
organic particles and a carbonized binder, the amount by weight of said carbonized plant particles in said mixture being greater than the amount by weight of said non-organic particles, and said non-organic particles being electrical insulators below a predetermined temperature and being conductors or semiconductors above said predetermined temperature.

4,292,506
FUEL PUMP COMPUTER PRICE VARIATOR
Raymond H. Devanney, Winsted, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed May 4, 1979, Ser. No. 35,991
Int. Cl.³ B67D 5/22; F16H 3/22; G06C 15/04
U.S. Cl. 235—61 L **6 Claims**



1. In a fuel delivery pump computer mechanism having a drive shaft connected to be driven in accordance with the volume amount of fuel delivered, a price selector mechanism driven by the drive shaft and selectively settable for selectively establishing an adjustable unit volume price within a predetermined price range with a predetermined maximum unit volume price of at least 99 and 9/10 cents and having a rotary cost output driven in accordance with the volume amount of fuel delivered and the selected unit volume price established by the setting of the price selector mechanism, and a register having a volume counter connected to be driven by the drive shaft for registering the volume amount of fuel delivered and a cost counter for registering the cost amount of fuel delivered, the computer mechanism having a price adder mechanism in the register for establishing a unit volume price adder to the selected unit volume price of the price selector mechanism and connected for driving the cost counter for registering the cost amount of fuel delivered in accordance with the volume amount delivered and registered by the volume counter and the sum of the selected price established by the price selector mechanism and the price adder established by the price adder mechanism, the improvement wherein the price adder mechanism is selectively settable independently of the price selector mechanism to either of two operational positions thereof to alternatively selectively establish predetermined first and second substantially different fixed unit volume price adders which provide successive approximately equal fixed increments to the adjustable unit volume price established by the price selector mechanism and which are approximately one-half said predetermined maximum unit volume price.

4,292,507
FOOTBALL STATISTIC PEGBOARD
J. Warren Hovorka, 10102 Verde Lomas Dr., Villa Park, Calif. 92667
Continuation-in-part of Ser. No. 736,368, Oct. 28, 1976, abandoned. This application Mar. 9, 1978, Ser. No. 884,762
Int. Cl.³ A63F 1/18
U.S. Cl. 235—90 **25 Claims**



1. A recording device useful for calculating and recording play statistics during a football game which comprises:

a body bearing at least two longitudinal grooves;

a slide movably carried on said body and in at least one of said grooves;

a scale calibrated in indicia of arithmetic progression coextensive with said slide;

removable marker means, each bearing an indicum of a single class of a plurality of distinct classes of indicia identifying said marker as pass complete, pass incomplete, pass intercepted, and rushing play; and

first and second sets of first, second, and third parallel rows of a plurality on receiver means on said body one set each associated with one of said grooves and associated therewith, indica identifying one each of said rows with a respective indicum of passing, rushing, and first down statistics, said plurality of receiver means being located in equal arithmetic spacing to the spacing of said indicia on said slide forming a plurality of aligned lateral columns of receiver means, one column for each of the plays by the team in possession during the recording interval of a football game and receiving said removable marker means to record passing, rushing, and first down statistical information.

4,292,508

TRADING SYSTEM

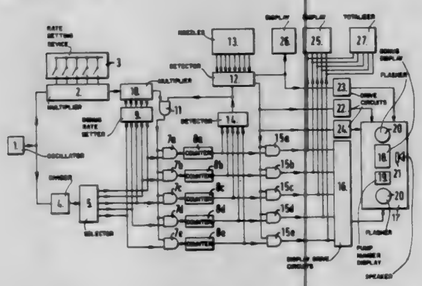
Kenneth N. Rudd, 23, Kings Walk, Shoreham by Sea, Sussex, England

Filed Jun. 13, 1979, Ser. No. 48,315

Claims priority, application United Kingdom, Jun. 14, 1978, 26959/78

Int. Cl.³ G06M *3/02*

U.S. Cl. 235—92 GA **11 Claims**



1. Apparatus for use in a trading system to determine the allocation of bonuses to customers, comprising means for continuously generating input signals at a fixed rate proportional to time, a plurality of store means, distribution means coupled to said signal generating means for distributing said input signals to said plurality of store means, and means coupled to said store means for receiving from said store means respective store-full signals, said last-named means being responsive to said store-full signals for conditioning the apparatus in readiness to allocate a bonus which is determined by which store means is full.

4,292,509

INDICATOR FOR TAPE RUNNING DIRECTION AND TAPE REMNANT AMOUNT

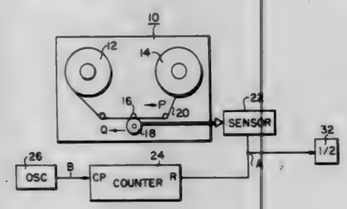
Masanobu Sato; Ken Satoh; Toshihiro Nakao, and Kenzi Furuta, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,688

Claims priority, application Japan, Sep. 30, 1977, 52/117561

Int. Cl.³ G06M *3/14*

U.S. Cl. 235—92 MP **17 Claims**



1. An indicator for tape running direction and tape remnant amount comprising:

a tape transport;

display means in which a plurality of digit display sections including display elements are arranged side by side;

sensing means coupled to said tape transport for providing a sensing signal corresponding to the rotation of a tape reel;

running indication signal generating means operatively connected to said sensing means for sequentially generating running indication signals corresponding to a tape running direction on the basis of the sensing signal;

gate circuit means in which at least one running indication signal corresponding to the amount of tape remnant is selected and, upon the selection, tape running direction/-tape remnant amount indication signals are sequentially produced;

drive means for driving at least one display element for each digit display section in accordance with the tape running direction/tape remnant amount indication signals in order to indicate the tape running direction and the tape remnant amount by means of said display means;

counter means for counting a clock signal to make a count corresponding to tape running and adapted to be reset by the sensing signal; and

comparing means in which a count output of said counter means and reference data corresponding to the fixed tape remnant amount are compared and the selection operation of said gate circuit means is controlled on the basis of the result of the comparison.

4,292,510

KEYBOARD FOR A MINIATURE CALCULATOR

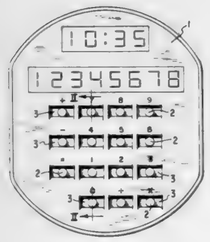
Manfred Hild, Staibenäcker 24, D-7000, Stuttgart 1, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,725

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813234; Sep. 23, 1978, 2841463

Int. Cl.³ G06C *7/02*

U.S. Cl. 235—145 R **12 Claims**



1. In a keyboard for a calculator including a face plate, a plurality of key means supported in a predetermined location with respect to the face plate and being arranged to be selectively accessible by a user; the improvement comprising means defining narrow recesses in said face plate in alignment with respective said key means; each recess having a length dimension and a width dimension measured transversely to the length dimension; said dimensions defining an area of the recess; said area being of sufficient size for providing access to the associated key means by a fingernail of a user; said area being of insufficient size for providing access to the associated key means by a finger tip of the user; each key means having an outline extending substantially over the entire width dimension of the respective recess for preventing the user's fingernail from slipping off the key means during depression thereof.

4,292,511

APPARATUS AND METHOD FOR READING AN IDENTIFYING LABEL ON AN INFORMATION RECORD

Philip M. Heyman, Robbinsville, and David P. Bortfeld, Kendall Park, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,133

Int. Cl.³ G06K *7/00*

U.S. Cl. 235—454 **9 Claims**

1. Apparatus for reading an identifying label on an information record, wherein the label comprises an annular area of the surface of the information record having first surface regions which have a circular surface effect for scattering light in a first direction and second surface regions which have a circular surface effect for scattering light substantially away from the first direction wherein the arrangement of the first surface regions with respect to the arrangement of the second surface regions is representative of the identity of the information signal stored in the annular area, which apparatus comprises:

a light source;

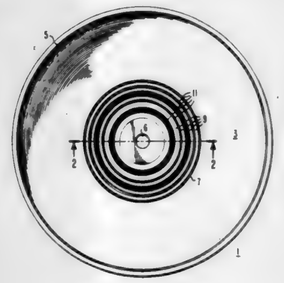
a collimating optical system for collecting and partially collimating a light beam emitted by the light source for illumination of a radial portion of the annular area;

means for positioning the information record to receive and scatter the light beam;

a focusing optical system for collecting that portion of the light beam scattered in a first direction from the annular area and focusing the collected light beam onto a light sensitive detector;

a light sensitive detector having a multiplicity of light sensitive elements and positioned for simultaneously detecting light scattered from the area of the information record having the label thereon wherein light scattered from successive regions of the label are focused on successive elements of the light detector and detected therein; and

electrical means whereby the detected light is converted into a serial electrical signal representative of the identifying label on the information record.



4,292,512

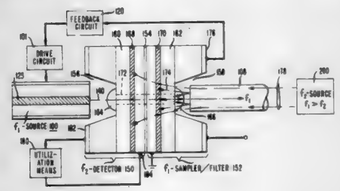
OPTICAL MONITORING PHOTODIODE SYSTEM

Richard C. Miller, Summit, and Bertram Schwartz, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1978, Ser. No. 916,501

Int. Cl.² G01J *1/32*

U.S. Cl. 250—205 **4 Claims**



1. A monitoring system comprising:

a source of optical radiation,

feedback means for sensing the intensity of a portion of said radiation and for generating an electrical signal proportional thereto,

control means for controlling the intensity of radiation from said source in response to said electrical signal, and

utilization means for receiving said radiation, characterized in that, said feedback means comprises a double heterostructure photodiode which includes:

a pair of wide bandgap semiconductor layers transparent to said radiation,

a light-absorbing semiconductor active layer interposed between and contiguous with said wide bandgap layers and oriented to intercept said radiation,

said active layer having a bandgap and thickness which are mutually adapted to absorb only a small portion of said radiation and to transmit therethrough a major portion of said radiation to said utilization means, said utilization means including an optical fiber positioned to receive said radiation transmitted through said active layer, and

a p-n junction in said active layer for collecting photocarriers generated by the absorption of said radiation in said active layer, thereby to produce in said photodiode a photocurrent which is essentially linearly proportional to the intensity of said radiation, said photocurrent constituting said electrical signal to which said control means is responsive, further characterized in that said system includes

a first transceiver station including said source (f_1-source) for transmitting said beam of optical frequency f_1 (f_1-beam) over said fiber,

a remote transceiver station for receiving said f_1-beam and including another optical source (f_2-source) for transmitting a beam of optical frequency f_2 (f_2-beam), $f_1 > f_2$, over said fiber to said first station,

said first station including

said double heterostructure photodiode (f_1-PD) disposed between said f_1-source and said fiber,

a second double heterostructure photodiode (f_2-PD) disposed between said f_1-source and said f_1-PD and including an active layer having a thickness and bandgap adapted to absorb substantially all of said f_2-beam incident thereon, thereby generating a photocurrent in response to the absorption of said f_2-beam, and

second utilization means to which said photocurrent of said f_2-PD is applied,

said f_2-PD having a light transparent path extending transversely therethrough to prevent substantial absorption of said f_1-beam by said active layer of said f_2-PD.

4,292,513

HEAT DETECTOR CIRCUIT

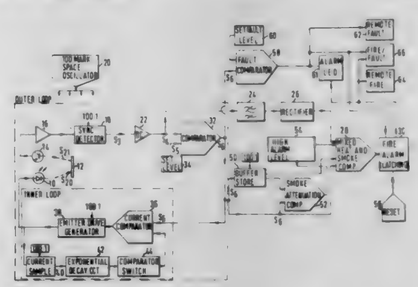
Richard R. Simmons, Twickenham, and Harvey A. Thompson, Weybridge, both of England, assignors to Chubb Fire Security Limited, Sunbury on Thames, England

Filed Oct. 1, 1979, Ser. No. 80,716

Claims priority, application United Kingdom, Sep. 29, 1978, 38757/78

Int. Cl.³ G01N *21/28*

U.S. Cl. 250—205 **11 Claims**



1. Heat detection apparatus comprising a light emitter, a light detector for receiving light from the emitter, and an alarm circuit responsive to variations in the output of the detector due to variations in the optical coupling between the emitter and detector, and further comprising an automatic gain control circuit having a time constant such that it does not react to the

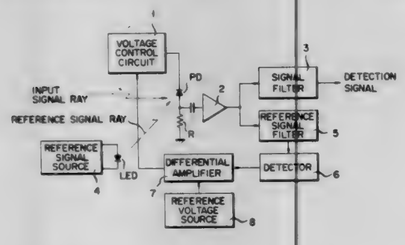
thermal turbulence to which the apparatus is designed to respond, the automatic gain control circuit including an emitter control circuit which is responsive to a variation in the amplitude of the signal derived from the light detector from a preset amplitude and which is such that the said variation results in an exponential increase in the driving signal for the light emitter.

4,292,514

APPARATUS FOR, AND METHOD FOR, ACHIEVING A TEMPERATURE COMPENSATION OF AN AVALANCHE PHOTODIODE

Fumio Ohtomo, Kawagoe, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,555
Claims priority, application Japan, Nov. 20, 1978, 53-142208
Int. Cl.³ H01J 40/14
U.S. Cl. 250—214 C **4 Claims**



1. An apparatus for achieving temperature compensation of an avalanche photodiode, comprising:
- a voltage-generating circuit for applying bias voltage to the avalanche photodiode;
- controlling means for controlling output voltage of said voltage-generating circuit; and
- holding means for holding bias voltage which is applied to the photodiode when the breakdown of the avalanche photodiode occurs,
- in which said controlling means causes said voltage-generating circuit to deliver the bias voltage for causing breakdown in the photodiode immediately before the photodiode is operated, and causes said voltage-generating circuit to deliver bias voltage, when said photodiode is operated, which is lower by a predetermined value than said bias voltage held by said holding means, so that, during the operation time, bias voltage lower by a predetermined value than the breakdown voltage of the photodiode is supplied to the photodiode.

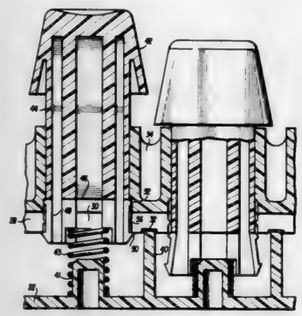
4,292,515

RECONFIGURABLE PHOTO-ELECTRIC KEYBOARD HAVING REMOVABLE KEYS

Edward I. Nelson, Sunrise, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,370
Int. Cl.³ G01D 5/34
U.S. Cl. 250—229 **6 Claims**

1. A photo-optical keyboard having apertures for keys comprising:
- a key having a keystem with sidewalls shaped to said apertures, at least one of said sidewalls having at least one flexible portion with a retainer flange thereon, said retainer flange serves as a stop restricting the upward motion of said key in said aperture said flexible portion having the resilience to allow said keys to be withdrawn from said aperture by hand pressure.

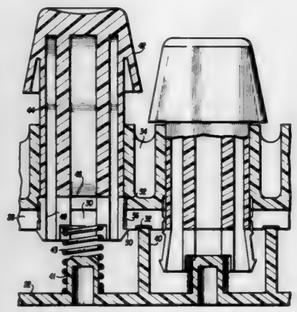


4,292,516

PHOTO-OPTICAL KEYBOARD HAVING DEBRIS PROTECTION

Edward I. Nelson, Sunrise, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,394
Int. Cl.³ G01D 5/34
U.S. Cl. 250—229 **6 Claims**



1. A photo-optical keyboard comprising:
- a keyboard housing having a matrix of rows and columns of apertures for keys, said housing having recesses open to the top of the keyboard between said apertures; and
- multiple keys for positioning in said keyboard housing apertures, said keys each having an umbrella cap with edges extending over said recesses between said apertures, whereby liquid and debris spilling on said umbrella cap will fall into said recesses to be contained.

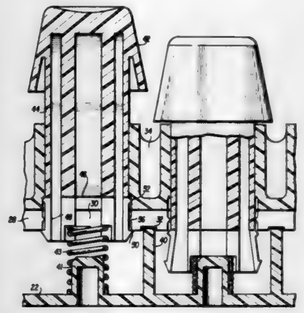
4,292,517

PHOTO-OPTICAL KEYBOARD PROVIDING TACTILE FEEL

Edward I. Nelson, Sunrise, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,395
Int. Cl.³ G01D 5/34
U.S. Cl. 250—229 **5 Claims**

1. A photo-optical keyboard comprising:
- a keyboard housing having a matrix of rows and columns of apertures for keys, each said aperture having at least one ridges on the inside surface of said apertures; and multiple keys each shaped to said apertures, each said key further having at least one flexible finger on its side walls said flexible finger having ridges thereon, the ridges on said flexible finger making contact with the ridges on the inside surface of said apertures during key depression to provide tactile feel.

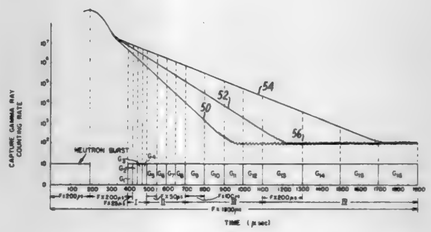


4,292,518

METHODS AND APPARATUS FOR MEASURING THERMAL NEUTRON DECAY CHARACTERISTICS OF EARTH FORMATIONS

Charles W. Johnstone, Houston, Tex., assignor to Schlumberger Technology Corp., Houston, Tex.

Division of Ser. No. 955,176, Oct. 26, 1978, Pat. No. 4,224,516.
This application Apr. 24, 1980, Ser. No. 143,416
Int. Cl.³ G01V 5/00
U.S. Cl. 250—262 **10 Claims**



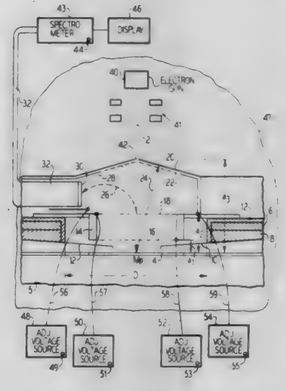
1. A method for measuring a thermal neutron decay characteristic of an earth formation, comprising the steps of:
- (a) irradiating a formation with a plurality of discrete bursts of fast neutrons;
- (b) selecting, as a function of a known value of the thermal neutron decay characteristic of the formation to be measured, a certain set of two different measurement intervals following each neutron burst from among a number of such sets of two measurement intervals, each of such sets of measurement intervals corresponding to a particular range of values of said decay characteristic, said certain set of measurement intervals selected being that set which corresponds to the decay characteristic value range which encompasses said known value of the decay characteristic;
- (c) measuring indications of the thermal neutron concentration in the formation during each of said measurement intervals in said selected set following each neutron burst;
- (d) measuring indications of background radiation during a third measurement interval following each neutron burst;
- (e) forming a background-compensation measurement from the background measurements made in step (d) accumulated over two or more pluralities of said plurality of neutron bursts;
- (f) combining said background-compensation measurement with the neutron-concentration measurements of step (c) accumulated over said plurality of neutron bursts to form background-compensated neutron-concentration measurements;
- (g) forming a ratio R of the background-compensated measurements made in step (f);
- (h) determining a new value of said decay characteristic as a function of the value of the ratio R formed in step (g); and
- (i) repeating steps (a) through (h) using the new value of the decay characteristic determined in step (h) above as the known value of the decay characteristic in new step (b).

4,292,519

DEVICE FOR CONTACT-FREE POTENTIAL MEASUREMENTS

Hans P. Feuerbaum, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,645
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902495
Int. Cl.³ H01J 37/26
U.S. Cl. 250—310 **3 Claims**

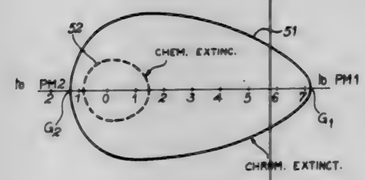


1. A device for contact-free potential measurement with a primary electron beam which releases secondary electrons at the measuring location of an electronic component (4), preferably an integrated circuit, a scintillator for receiving said secondary electrons, with the energy of said secondary electrons being determined with a spectrometer comprising, a first extraction electrode (16) with a spacing (a_1) from the measuring location (MP) of the component, a retarding field electrode (18) with a spacing (a_2) from the measuring location (MP), said first extraction electrode (16) and said retarding field electrode (18) substantially parallel to the surface of said component (4), a second extraction electrode (28) mounted between said retarding field electrode (18) and said scintillator (30), and said second extraction electrode (28) mounted at an angle which is greater than 0° relative to said retarding field electrode (18), said primary electron beam (2) impinging substantially normal to the surface of said component (4), and said first and second extraction electrodes and said retarding field electrode formed as grids.

4,292,520
LIQUID SCINTILLATION SPECTROMETRY PROCESS AND APPARATUS

Pierre Jordan, Carmenstr. 41, CH-8032 Zurich, Switzerland

Continuation-in-part of Ser. No. 54,907, Jul. 5, 1979, abandoned.
This application Sep. 4, 1979, Ser. No. 71,867
Int. Cl.³ G01T 1/00; B01T 1/20
U.S. Cl. 250—328 12 Claims



1. A liquid scintillation spectrometry process for samples having a fluorescence efficiency quenching comprising a chromatic quenching and a chemical quenching wherein:

(a) an external standard source is used which emits an ionizing radiation;

(b) using said source, a small area of the sample cross-section and hence a small columnar partial volume of the sample are irradiated;

(c) double-channel spectrometry is performed by means respectively having first and second photodetectors as inputs thereof on a first and second fluorescent radiation emitted by said columnar volume and respectively having different optical paths through the sample between said columnar volume and the photodetector in each case and then for performing said double-channel spectrometry:

(i) a ratio G_1 of the scintillation counting rates respectively obtained in two channels of different energies is measured by detecting the scintillations by a first of said photodetectors exposed to the first radiation;

(ii) a ratio G_2 of the scintillation counting levels obtained in two channels of different energies is measured by detecting the said scintillations by a second of said photodetectors exposed to the second radiation;

(iii) ratio G_1/G_2 is measured and this gives a parameter B;

(d) a parameter G_x is measured which is equal to the ratio of the scintillation counting rates obtained in two channels of different energies by measuring the sum of the scintillations simultaneously detected by the first and the second photodetectors;

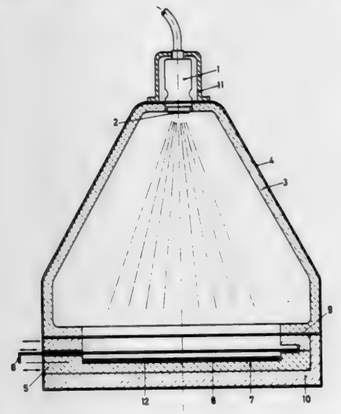
(e) calibrations are carried out by the foregoing steps (b), (c) and (d) using standard solutions having predetermined chromatic and chemical quenching proportions as samples and a graphically displayable correspondence is established between parameters B and G_x, the chemical/-chromatic quenching proportions and the fluorescence efficiency;

(f) the fluorescence efficiency of the another sample of unknown proportion of chromatic to chemical quenching is then deduced from said calibration and from the values of B and G_x obtained by analysis of said sample.

4,292,521
RADIOGRAPHIC DEVICE AND METHOD FOR RECOVERING INFORMATION FROM OVER-EXPOSED RADIOGRAPHS

Fernand Luchtmans; Pierre Jehenson, both of Varese, and Angelo Pisoni, Luino, all of Italy, assignors to European Atomic Energy Community (EURATOM), Luxembourg, Luxembourg

Filed Apr. 13, 1979, Ser. No. 29,936
Claims priority, application Italy, Apr. 17, 1978, 48929 A/78
Int. Cl.³ G03B 27/04, 41/16; G01N 21/00, 23/00
U.S. Cl. 250—323 8 Claims



1. A radiographic device for use in deriving information from an over-exposed region of a first film, comprising:

a light-tight housing, having a first end with an opening permitting the passage of ionizing radiation therethrough,

a source of ionizing radiation mounted to a second end of said housing opposite the first for projecting ionizing radiation into said housing and through said opening,

a base plate attached to said first end of said housing and defining a recess adjacent said opening,

a removable cassette mounted in said recess to receive ionizing radiation passing through said opening, said cassette carrying the first film in close contact with a second film on which said information is to be recorded and having a light-tight cover protecting said second film from exposure which is displaceable to permit exposure of said second film to an image produced by irradiation of the first film by the source, and

a layer of lead covering the exterior of said housing and base plate.

4,292,522
MATERIAL DENSITY RADIOLOGICAL MEASUREMENT SYSTEM WITH SUBSTANTIALLY LINEAR OUTPUT

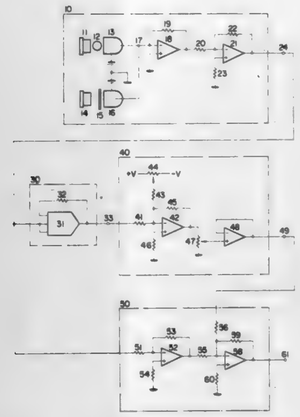
Yutaka Okumoto, Tokyo, Japan, assignor to The Japan Tobacco & Salt Public Corporation, Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,860
Claims priority, application Japan, Dec. 20, 1978, 53-156353
Int. Cl.³ G01N 23/00; A24C 5/32
U.S. Cl. 250—358 R 3 Claims

1. A material density radiological measurement system comprising a material density radiological detector having a radiation souce for density measurement, an ionization chamber for density measurement, and a means for generating a reference density signal, said detector producing an output signal from a difference of an output signal of said ionization chamber for density measurement and said reference density signal;

a squaring circuit connected to the output terminal of said detector;

a constant multiplying circuit connected to the output terminal of said squaring circuit, said constant being predetermined to have a value which is smaller than the reciprocal



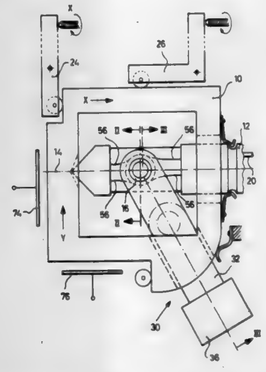
of an ionization current obtained when the density of a material to be measured is equal to the reference density; and

a subtracting circuit, which input terminals being connected to the output terminals of said detector and said constant multiplying circuit, respectively.

4,292,523
SPECIMEN ADJUSTMENT METHOD AND SYSTEM FOR A CORPUSCULAR BEAM APPARATUS

Walter Hoppe, Lochham, Fed. Rep. of Germany, assignor to Max-Planck-Gesellshaft zur Forderung der Wissenschaften e.V., Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,643
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825417
Int. Cl.³ G21K 5/10
U.S. Cl. 250—442 10 Claims



1. A method for adjusting a specimen supported by a specimen support of a corpuscular beam apparatus, such as an electronmicroscope, in relation to the axis of the beam of said apparatus, comprising the sequential steps of:

coupling said specimen support to a specimen table having at least one angular adjustment axis;

making a first adjustment of said specimen table in two coordinate directions in a plane normal to said beam axis so that a selected portion of said specimen intersects said beam axis;

releasing said specimen support from said table and coupling said specimen support to a support member which remains substantially in a fixed position in relation to said axis of said beam as determined by said first adjustment, as long as said specimen support is coupled to said support member;

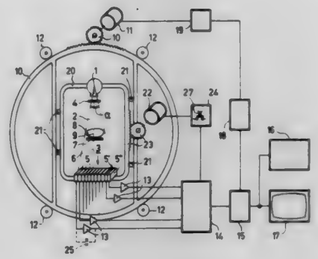
making a second adjustment of said specimen table to align said angular adjustment axis with said beam axis; and

returning said specimen support, which has been maintained by said support member in the position selected by said first adjustment, to said specimen table, whereby said specimen may be rotationally adjusted while maintaining said selected portion on said beam axis.

4,292,524
EXAMINING DEVICE FOR DETERMINING LOCAL ABSORPTION VALUES IN A SLICE OF A BODY

Cornelius B. J. d. Albrecht, and Jan J. M. Mulleneers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 5, 1978, Ser. No. 948,736
Claims priority, application Netherlands, Oct. 14, 1977, 7711285
Int. Cl.² A61B 6/00
U.S. Cl. 250—445 T 6 Claims



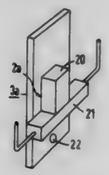
1. An examining device for determining local absorption values in a slice of a body, comprising a radiation source for generating a beam of radiation which irradiates the body, radiation direction means for irradiating the slice in a number of different directions, the radiation beam being situated in the slice to be examined, and an array of detectors which covers the entire beam and which serves for converting the radiation emerging from the body into electrical measuring values, characterized in that the examining device further comprises amplifier circuits, each of which is connected to a detector, a sensitivity of an amplifier circuit associated with a detector which is situated in or in the vicinity of the centre of the array of detectors being higher than a sensitivity of an amplifier circuit which is connected to a detector at or in the vicinity of an end of the array of detectors.

4,292,525

DIAGNOSTIC RADIOLOGY APPARATUS FOR PRODUCING LAYER IMAGES OF AN EXAMINATION SUBJECT

Edgar Tschunt, Rathsberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,230
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840965
Int. Cl.³ A61B *6/00*; G01T *1/20*; H01J *35/16*
U.S. Cl. 250—445 T **5 Claims**



1. In a diagnostic radiology apparatus for producing layer images of an examination subject with a patient support, a measuring arrangement for irradiating the examination subject from various directions including a radiation source adapted to emit a radiation beam which penetrates the layer to be examined, a radiation receiver which supplies electrical output signals corresponding to the radiation intensity measured, and a measured value converter connected with the radiation receiver for computing from the output signals of the radiation receiver attenuation values of specific image points of the irradiated body layer, an improvement to the radiation receiver comprising:

a collimator grid formed with a plurality of spaced apart compartments with a detector located at least partly in each said compartment,

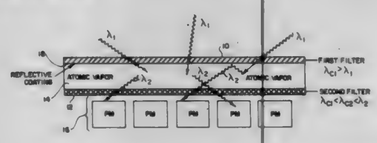
each said detector comprises a scintillating crystal with an optical output and an associated photoelectric transducer adapted to sense light emitted from said optical output, each said crystal and said associated photoelectric transducer are attached to a selected wall of a respective collimator compartment whereby each said crystal, said associated photoelectric transducer and said wall form a unit.

4,292,526

ISOTROPICALLY SENSITIVE OPTICAL FILTER EMPLOYING ATOMIC RESONANCE TRANSITIONS

John B. Marling, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 21, 1979, Ser. No. 50,860
Int. Cl.³ G02B *5/20*
U.S. Cl. 250—458 **19 Claims**



1. A method for detecting light at a first wavelength λ_1 comprising the steps of:

providing an atomic vapor having atoms at a first energy level and capable of absorbing light at said first wavelength λ_1 and, having absorbed said light at said first wavelength λ_1, fluorescing light at a second wavelength λ_2;

providing a first optical filter chosen to transmit said first wavelength λ_1 and block said second wavelength λ_2;

providing a second optical filter spaced apart from said first optical filter and partially defining a cavity therewith for containment of said atomic vapor, said second optical filter being chosen to block said first wavelenght λ_1 and transmit said second wavelength λ_2; and

subjecting said atomic vapor to irradiation by light at said first wavelength λ_1 thereby causing said atoms having said first energy level to be excited to a second higher energy level by absorption of light at a narrow band wavelength centered at λ_1, said excited atoms then fluorescing at a fluorescence wavelength λ_2 to a third energy level lower than said second energy level whereby light at said first wavelength λ_1 passing through said first optical filter is converted to light having said second wavelength λ_2 passing through said second optical filter.

4,292,527

RADIATION DETECTION SYSTEM

Larry A. Franks; Stephen S. Lutz, both of Santa Barbara, Calif., and Peter B. Lyons, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 6, 1978, Ser. No. 949,163
Int. Cl.³ G01J *1/58*; G01T *1/16*; C09K *11/06*
U.S. Cl. 250—483 **29 Claims**



1. A radiation detection system comprising:

a. means for emitting light at wavelengths greater than about 500 nm with a decay time of less than about 10 ns in response to the detection of radiation, and

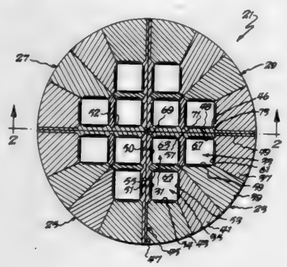
b. a fiber optic wave guide positioned to receive said emitted light at its one end for the transmission of said light to a desired location.

4,292,528

CASK FOR RADIOACTIVE MATERIAL AND METHOD FOR PREVENTING RELEASE OF NEUTRONS FROM RADIOACTIVE MATERIAL

Peter T. B. Shaffer, Grand Island, and Michael F. Gaffney, Ransomville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,908
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—506 **18 Claims**



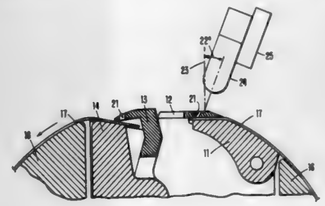
1. A cylindrical cask for nuclear reactor fuel which comprises a plurality of longitudinally extending walled internal compartments for containing such material and for absorbing radiation emitted by such material, at least some of which compartments are of four interchangeable wall members of the same shape that are fitted together at sides thereof to make such compartments of square cross-section, which wall members have bodies of a material selected from the group consisting of stainless steel, copper, aluminum and silver, and have as inserts in such bodies neutron absorbing plates of boron carbide particles in a matrix of phenolic polymer to bar movements of neutrons emitted from the nuclear fuel, and a plurality of thermally conductive members about such walled compartments to carry heat away from the nuclear fuel and from compartments containing such fuel, which members are in thermal contact with the compartment walls and in thermal contact with each other along surfaces thereof, said surfaces extending radially from such compartments to external surfaces of such thermally conductive members, which external surfaces form an outer cylindrical wall of the cask, with such thermally conductive members being of a material selected from the group consisting of copper, aluminum and silver, and with at least some of them being of the same shape as other such members, and radiation absorbing means and thermally conductive covers therefor at ends of the cask for preventing radiation emissions at such ends and for conducting heat away from the nuclear fuel at such ends of the cask.

4,292,529

MISFEED DETECTOR

Thomas R. Thurston, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,756
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—561 **30 Claims**



1. Apparatus for sensing registration of a sheet comprising:

a registration plate having a reference edge at which the sheet may be registered and an aperture through which the presence of the sheet adjacent the reference edge may be detected;

means for scanning across said registration plate and across the aperture therein, said scanning means sensing no transition or one transition in the scan signal when the sheet is not under the aperture and sensing two transitions when the sheet is registered under the aperture.

4,292,530

DEVELOPER MATERIAL LEVEL SENSOR

Robert F. Nepper, North St. Paul, and Dennis L. Peterson, Brooklyn Center, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 3, 1980, Ser. No. 126,322
Int. Cl.³ G01N *21/26*
U.S. Cl. 250—577 **7 Claims**

1. Apparatus for use to provide an electrical signal when developer material for a copy machine recedes to a predetermined level including:

a container for developer material,

a shaft mounted longitudinally within said container and adapted for rotation about its axis,

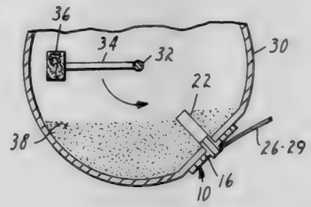
an arm means secured to and extending radially from said shaft for movement with said shaft,

a cleaning member secured to the free end portion of said arm means,

a light generating means,

a light to electric transducer means,

a support means carrying said light to electric transducer means and said light generating means so light from said light generating means is directed to said light to electric transducer means, said support means secured to said container and positioning said light generating means and



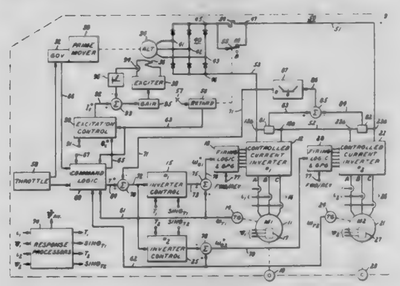
said light to electric transducer means within said container in relation to the predetermined level for the developer material and relative to said cleaning member so rotation of said arms means carries said cleaning member between said light generating means and said light to electric transducer means and in contact with support means to displace any developer material that is present in the light path between said light generating means and said light to electric transducer means.

4,292,531

ELECTRICAL PROPULSION PROCESS AND SYSTEM FOR A TRACTION VEHICLE WITH AN ON-BOARD SOURCE OF POWER

Dennis F. Williamson, Kingston, Canada, assignor to General Electric Company, Erie, Pa.

Continuation-in-part of Ser. No. 864,422, Dec. 27, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 16,755
Int. Cl.³ B60L *11/02*; B61C *9/38*; H02P *5/28*; H02M *5/45*
U.S. Cl. 290—14 **11 Claims**



7. An improved propulsion system for a traction vehicle having an on-board source of power, said vehicle being equipped with at least one adjustable speed a-c traction motor energized by the alternating output current of a variable-frequency controlled current, static electric power inverter, the improvement comprising in combination:

a. a traction alternator having armature and field windings and a rotor driven by a prime mover;

b. means for exciting the field winding of said alternator;

c. means for converting the alternating output current of the armature windings of said alternator to a unidirectional current;

d. means connected between said converting means and d-c input terminals of said inverter for feeding said unidirectional current to said inverter, said current feeding means

consisting of a d-c link characterized by inductance of insufficient value to appreciably smooth said unidirectional current and by capacitance of insufficient value to appreciably smooth the d-c terminal voltage of said inverter;

e. means for controlling the switching frequency of said inverter so as to vary the fundamental frequency of its alternating output current as desired; and

f. means for controlling said field winding exciting means so as to vary, as desired, the fundamental amplitude of the alternating output current of said armature windings and consequently the average magnitude of said unidirectional current and hence the amplitude of the inverter output current.

4,292,532

TWO-STAGE ELECTRIC GENERATOR SYSTEM

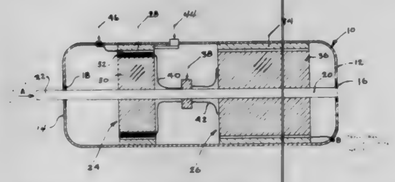
Adrien Leroux, Sherbrooke, Canada, assignor to h.o.p. ConsuLab Inc., Quebec, Canada

Filed Apr. 2, 1980, Ser. No. 136,707

Claims priority, application Canada, Mar. 14, 1980, 347792

Int. Cl.³ H02P 9/04; H02K 19/12

U.S. Cl. 290—6 **4 Claims**



1. A two-stage electric generator system for converting mechanical energy from a wind or hydraulic driven turbine into electrical energy comprising, in combination:

housing means;

an exciter generator and a main generator in said housing means;

a shaft rotatable in said housing means;

said exciter generator consisting of permanent magnet means mounted to said housing means and of a rotor rotatably supported on said shaft, said rotor being made of non-magnetic material to eliminate cogging and static torque associated with permanent magnet excitation, said rotor including a one-phase winding distributed around the circumference thereof;

said main generator consisting of a three-phase stator winding on a magnetic core mounted to said housing means and of a pole-type rotor rotatably supported on said shaft and having a winding wound on a magnetic core;

a rectifying bridge rotatably mounted to said shaft;

first means electrically connecting said one-phase winding to said rectifying bridge; and

second means electrically connecting said rectifying bridge to said winding to said main generator rotor whereby rotation of said shaft as a result of mechanical energy applied thereon generates a three-phase electric energy output from said stator winding; and

means for controlling the normalized power versus speed curve of the generator so that the curve intercepts the power versus speed curve of the turbine to assure a stable operating point around design speed.

4,292,533

MOTORING CONTROL FOR HYDRAULIC PUMP-TURBINE

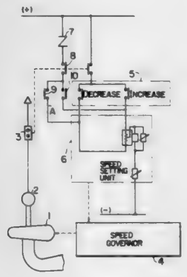
Toshiaki Yokoyama, Hitachi; Akira Hara, Hitachiota, and Takeshi Okuyama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1978, Ser. No. 967,516

Claims priority, application Japan, Dec. 9, 1977, 52/147111

Int. Cl.³ G05D 13/02

U.S. Cl. 290—40 B **5 Claims**



1. In a hydraulic turbine control apparatus comprising a prime mover including an electric generator, and a hydraulic turbine having movable guide vanes, drivingly connected to said generator; means to synchronously electrically connect said motor-generator to an electric power system including a synchronous on-off unit; a speed governor governing the speed of said prime mover; and a speed setting unit associated with said speed governor, wherein the improvement comprises:

means for detecting the position of the guide vanes of said turbine;

said guide vane position detecting means being operatively connected to said speed setting unit associated with said speed governor for increasing the opening of said guide vanes immediately after the synchronous connection of said generator to said power system by said synchronous on-off unit, to override said speed governor and to exceed a fixed opening value at which said turbine is not placed in the motoring mode; and

means for thereafter resetting the speed setting in said speed setting unit associated with said speed governor to the value corresponding to the standard frequency of the voltage in said power system and returning control of the opening of said movable guide vanes to said speed governor.

4,292,534

POWER AND SPEED CONTROL DEVICE FOR A TURBO-GENERATOR SET

Dieter Diegel, Röttenbach, and Heinz-Alfred Borgmann, Mülheim, both of Fed. Rep. of Germany, assignors to Kraftwerk Union AG, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 113,118

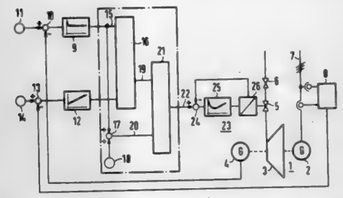
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2903039

Int. Cl.³ F01B 25/06

U.S. Cl. 290—40 R **1 Claim**

1. Power and speed control device for a turbo-generator set having a generator, a turbine, and a governing valve with a positioning control input, for regulating steam fed to the turbine, comprising a turbine speed controller and a turbine power controller each having an output; a maximum selection circuit, a minimum selection circuit and a summing stage each having a first and a second input and an output, and means for supplying a constant reference value to said first input of said summing stage, each of said outputs of said controllers being connected, respectively, to an input of said maximum selection circuit for switching between speed and power control, said

output of said speed controller being additionally connected to said second input of said summing stage, said output of said summing stage being connected to said first input of said minimum selection circuit, said output of said maximum selection



circuit being connected to said second input of said minimum selection circuit, and said output of said minimum selection circuit being fed to the positioning control input of the governing valve.

4,292,535

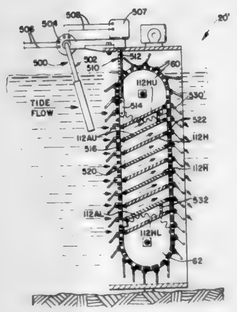
MODULAR CURRENT POWER APPARATUS

Richard E. Diggs, 12A Rd., Carthage, Mo. 64836

Continuation-in-part of Ser. No. 692,378, Jun. 3, 1976, abandoned. This application Sep. 3, 1980, Ser. No. 183,968

Int. Cl.³ F01D 23/00

U.S. Cl. 290—54 **4 Claims**



1. Apparatus for converting water movement from one to two opposing directions into usable power comprising:

a plurality of modules, each module including:

a supporting structure mounted on the bed of a waterway so that water flows from an upstream side of said supporting surface to a downstream side thereof, said supporting structure including a pair of spaced piers embedded in the bed of the waterway, a pair of standards fixed to said piers to extend vertically upwards therefrom, a module frame detachably connected to said standards, said module frame including a pair of vertical stanchions each slidably attached to one of said vertical standards, a top frame member connected to said stanchions and a bottom frame member connected to said stanchions, an anchor cable attached to said frame and a thrust anchor embedded in the waterway bed at a location spaced from said supporting structure, said anchor cable connecting said supporting structure to said thrust anchor to support said structure against force generated thereon by water moving through the waterway;

a sprocket wheel rotatably mounted on said supporting structure;

a power generating means mounted on said supporting structure and connected to said sprocket wheel to be operated by rotation of said sprocket wheel, said power generating means including a dynamo and a speed controlling means connecting said sprocket wheel to said dynamo;

an endless chain trained around said sprocket wheel to define an elongate loop having a longitudinal axis which is oriented to be essentially vertical so that said chain has an upstream reach located adjacent said supporting structure upstream side and a downstream reach located adjacent said supporting structure downstream side, said chain including a plurality of pivotally connected chain links;

a multiplicity of planar guide vanes movably mounted on said supporting structure to extend transversely across said supporting structure from a point immediately adjacent said upstream reach to a point immediately adjacent said downstream reach to define a multiplicity of linear raceways through which water flowing through said supporting structure is conducted in a multiplicity of separate rectilinear paths through said structure from said upstream reach of said chain to said downstream reach thereof so that a substantial portion of the areas within said chain loop is subdivided into a multiplicity of separate rectilinear paths by said guide vanes;

a plurality of elongate planar blades including side and end edges and pivotally connected to said chain by a connecting means to extend outwardly of said chain loop in both of said reaches and to a tilt downwardly in both of said chain reaches to be at an angle greater than 45° with respect to flow direction of water flowing in the body of water so that water located on said upstream side of said structure impacts said downwardly disposed blades when they are located in said upstream reach and drives said blades by impact force and water exiting from said raceways impacts said downwardly disposed blades when they are located in said downstream reach and drives said blades by impact force so that said blades are impacted by water at least twice during a single revolution of said chain about said sprocket wheel, said planar blades being arranged so an outer end edge of one blade overlaps an inner end edge of a next adjacent blade so that an imbricated orientation for said blades is defined in both of said reaches, said connecting means including a first connecting means located adjacent one of said side edges of said blade, and a second connecting means located adjacent the other side edge of said blade with each connecting means including a first coupling member connected between and to a pair of adjacent chain links, said first coupling member being located on one side edge of said chain, and further including a second coupling member located on another side edge of said chain, a plurality of coupler means each comprising a clevis and a clevis pin pivotally connecting said clevis to said connecting means so that said clevis extends outwardly of said chain, a pair of V-shaped stop arms located between said blade and said chain and fixed to side edges of each of said clevises and having link engaging means thereon including an elongate link engaging bar connected at both ends to said stop arms to engage links of said chain to constrain the pivotal movement of said coupler means, and attaching means attaching said blade to said coupler means; and

guide vane moving means which includes a tidal current flow direction sensing means having a part thereof submerged, a sensor means connected to said flow direction sensing means and having an output generating means which generates an output dependent upon the direction of movement of said flow direction sensing means relative to said supporting structure, a guide vane moving means mounted on said supporting structure and connected to said output generating means to be controlled thereby, said moving means including a shaft which moves according to an output signal generated by said output means, and a drive arm connected to said shaft to be moved thereby, said guide vanes each having one end thereof pivotally connected to said drive arm and another end thereof pivotally connected to said supporting structure to be tilted in as said drive bar is moved by said shaft so that

said guide vanes are moved in response to flow direction changes of water movement in a waterway.

4,292,536

RADIATION METHOD AND ASSEMBLY FOR ASSESSING WEB PARAMETERS

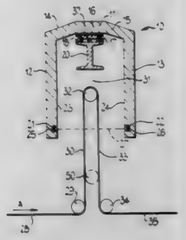
Ivor Cameron, Dumfries, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 27, 1979, Ser. No. 62,225

Claims priority, application United Kingdom, Aug. 7, 1978, 32466/78

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—359 **7 Claims**



1. An assembly for assessing variations in a radiation-sensitive parameter of a moving web by monitoring radiation transmitted by the web comprising

a stirrup-like cradle having a root portion, and extending therefrom, a pair of confronting limbs relatively spaced apart and dimensioned to define a bight to accommodate a web introduced and withdrawn along a path between the free ends of the limbs and the root portion,

a mounting for a source of radiation on a distal portion of one limb,

a mounting on a distal portion of the other limb for a detector to monitor radiation emitted by the source across the bight, and

means for supporting the cradle about the web path.

4,292,537

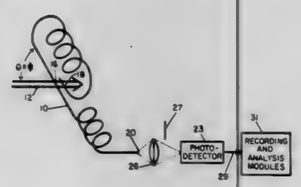
SYSTEM FOR TESTING OPTICAL FIBERS

Terence J. Davies; Larry A. Franks, and Melvin A. Nelson, all of Santa Barbara, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 868,636, Jan. 11, 1978, abandoned. This application Aug. 26, 1980, Ser. No. 181,511

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—361 R **7 Claims**



1. A method for nondestructively determining the attenuation coefficient $\alpha(\lambda)$ of a length of fiber optic wave guide comprising:

a. Launching identical light pulses at essentially the same time at a plurality of locations along said wave guide for transmission toward one end thereof,

b. Detecting the time of arrival and intensity of said light pulses at selected wavelengths of said pulses at said one end, and

c. Utilizing said time of arrival and intensity information to unfold the $\alpha(\lambda)$.

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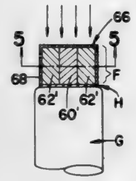
SHAPED DETECTOR

Roland W. Carlson, Lyndhurst, Ohio, assignor to Technicare Corporation, Cleveland, Ohio

Filed Aug. 8, 1979, Ser. No. 64,835

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—367 **55 Claims**



1. A computerized tomographic scanning apparatus for examining a planar slice of an object in the plane of a scan circle with radiation and producing a representation of an image of the planar slice, comprising:

at least one source of radiation for producing at least a beam of radiation in the plane of said scan circle;

radiation detector means for producing electrical signals in response to received radiation, said detector means disposed to receive radiation from the source which has traversed the scan circle, said detector means having a non-constant spatial response in at least a first dimension in the plane of the scan circle; and

processing means for processing the electrical signals from the detector means to produce the representation of an image.

4,292,539

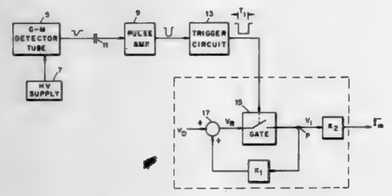
COMPENSATED COUNT-RATE CIRCUIT FOR RADIATION SURVEY METER

Richard A. Todd, Powell, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 12, 1980, Ser. No. 148,862

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—374 **6 Claims**



1. In a radiation survey meter comprising an ionizing radiation detector which produces pulses at an output thereof dependent upon the radiation dose rate and having a counting loss due to a known detector dead time, a trigger circuit means for producing fixed-width pulses at an output thereof in response to each of said pulses from said detector and an indicating current meter for indicating the radiation dose rate in response to a pulsed meter current flowing therethrough, a count rate compensating circuit, comprising:

means for generating a reference voltage that is a function of the rate of said pulses from said trigger circuit;

meter current-generating means for generating said meter current proportional to the rate and amplitude of pulses applied to the input thereof; and

gating means responsive to the pulse rate from said trigger circuit for gating said reference voltage to the input of said current-generating means for the duration of each of said fixed-width pulses from said trigger circuit means so that said metering current generated by said current-generating means is compensated for counting losses due to the known detector dead time and is thus directly proportional to the actual radiation dose rate.

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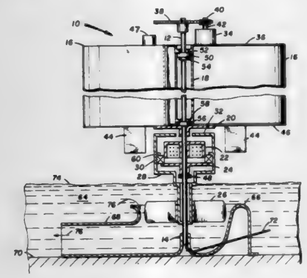
WIND-POWERED IMPELLER-MIXER

Worthington J. Thompson, 109 Powell St., Snow Hill, Md. 21863, and Peter A. Freeman, Box 2210, Ocean Pines, Berlin, Md. 21811

Filed Jul. 30, 1980, Ser. No. 173,694

Int. Cl.³ F03D *9/02, 3/02;* F04D *13/08*

U.S. Cl. 290—55 **21 Claims**



1. A wind-powered impeller-mixer, comprising:

a center mast member;

a wind rotor structure, said wind rotor structure being rotatable located around said center mast member;

a solenoid means, said solenoid means being affixed to said center mast member and having an armature means, said armature means being slidably located on said center mast member;

an impeller structure, said impeller structure being rotatably located around said solenoid means and below said wind rotor structure; and

a clutch means, said clutch means being located between said wind rotor structure and said impeller structure, separate parts of said clutch means being affixed to said wind rotor structure and to said impeller structure.

4,292,541

SAFEGUARD OR LOCK DEVICE

Bernd Ambrosius, In der Au 4-12, 6000 Frankfurt/Main-Rödelheim, Fed. Rep. of Germany

Continuation of Ser. No. 915,403, Jun. 14, 1978. This application Dec. 13, 1979, Ser. No. 103,176

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1977, 2726737

Int. Cl.³ B60R *25/04*

U.S. Cl. 307—10 AT **7 Claims**

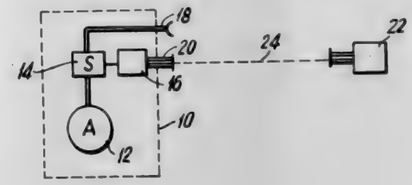
1. A device for safeguarding an engine against unauthorized use, said engine having a starter therefor, and a starter mechanism switch for switching on said starter, said device comprising:

a code signal receiver located in an immediate vicinity of said starter and said starter mechanism switch, said code signal receiver including a decoder to determine an authorized pre-selected code signal combination, said decoder including means for engaging the starter mechanism switch for activation;

means for encasing said code signal receiver, said starter and said starter mechanism switch together within a unit structure to prevent access thereto;

said unit structure having only three connections extending from an interior thereof, a first of said connections being a mechanical connection from said starter for starting said engine, a second of said connections being lead lines for providing electrical energy to said starter, said starter mechanism switch and said code signal receiver, and a third of said connections being a code signal input line to said code signal receiver;

a neutral code signal generator for generating a code for transmission through said code signal input line to said code signal receiver, said code signal generator being spaced from said unit structure and being of relatively easy access to an authorized user of the engine;



said code signal input line providing means for electronically connecting said code signal generator to said code signal receiver;

code transmitter means for creating said authorized preselected code signal combination upon engagement with said code signal generator, which pre-selected code signal combination is thereupon electronically transmitted by said code signal generator to said decoder of said code signal receiver so that said decoder activates said starter mechanism switch; and

said code signal receiver further including time delay means to block forwarding of a following code signal combination for a predetermined time after receiving any first code signal combination to foil tampering by an unauthorized person using a count generator.

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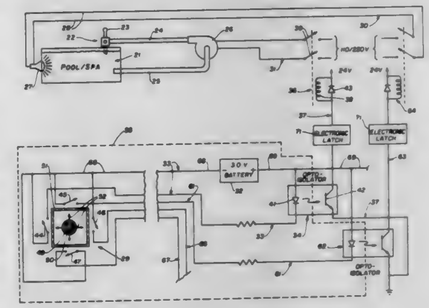
SUBMERSIBLE REMOTE CONTROL SWITCH ASSEMBLY

Peter Bajka, Los Altos, Calif., assignor to Compool Corporation, Mountain View, Calif.

Filed Apr. 14, 1980, Ser. No. 140,162

Int. Cl.³ H02J *13/00*

U.S. Cl. 307—28 **8 Claims**



1. Submersible remote control switch assembly for the control of electrically powered apparatus associated with a pool of

water, such as a spa, said electrically powered apparatus being electrically connected to a source of relatively high voltage electricity by a high voltage circuit, wherein the improvement in said switch assembly is comprised of:

an independent, relatively low voltage, source of electricity, and a low voltage circuit electrically coupled thereto;

manually engageable switch means electrically coupled to and interposed in said low voltage circuit and formed for selective opening and closing of said low voltage circuit, said switch means being insulated for submersion into a body of water without interfering with said low voltage circuit;

light emitting means mounted in said low voltage circuit and operable by said low voltage source of electricity upon closing of said low voltage circuit;

relay means mounted in an electrical relay circuit and formed to enable opening and closing of said high voltage circuit for selective actuation of said electrically powered apparatus; and

light activated means electrically connected to said relay circuit and optically coupled for the transmission of light from said light emitting means to said light activated means.

7. The submersible remote control switch as defined in claim 1, and

a plurality of relatively high voltage circuits electrically coupled to power a plurality of electrical apparatus used in connection with said pool of water; and wherein

said switch means includes a plurality of reed switches;

said low voltage circuit includes a plurality of low voltage circuits each electrically connected to individual ones of said reed switches and a source of relatively low voltage;

said relay circuit includes a plurality of relay circuits each having relay means therein coupled to open and close ones of said high voltage circuits; and

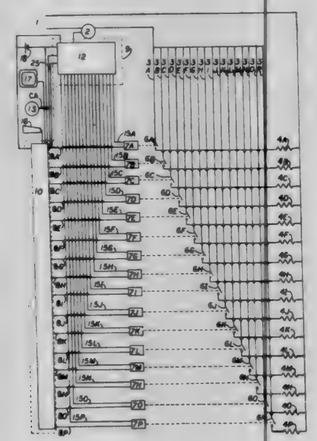
said light emitting means and said light activated means are provided by a plurality of opto-isolators electrically connected on light emitting sides thereof to said low voltage circuits and electrically connected on light receiving sides to said relay circuits.

4,292,543

ELECTRICAL ENERGY MANAGEMENT DEVICES

Jerry K. Reed, Sr., 17 Maple St., Speed, Ind. 47172

Filed Sep. 21, 1979, Ser. No. 77,586
Int. Cl.³ H02H *1/06, 3/06, 3/24*
U.S. Cl. 307—35 **1 Claim**



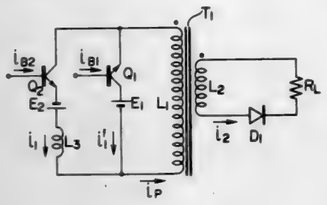
1. Apparatus for minimizing peak load usage in selected electrical system having multiple electrical power loads where each load is provided electrical power source means by means of load power supply circuit means, including: first switch means disposed in selected load power supply circuit means, first switch operator means to selectively open and close said first switch means; real time clock means to supply real time to control means where the control means is adapted to actuate and deactuate each said first switch operator means at a preselected time to correspondingly open and close first switch means associated with the operator means where the control means prevents simultaneous actuation of more than one first switch operator means within a selected time interval; and power outage detector means to detect power interruption at the electrical power source means; second control means actuated by said control means upon resumption of power after power interruption, where the second control means is adapted to override the first control means in the event of power interruption and at the time of power resumption to sequentially reactivate said first switch means and load means which are to be in active condition at the real time of power resumption and where reactivation of said first switch means which can be activiated at time of power resumption occurs at selected time intervals and in selected sequence, and return control from the second control means to the first control means upon resumption of power to all switch means which are to be activated at time of power resumption; and alternate power supply means actuated by power interruption to supply power to said first and second control means during the period of rush power interruption.

4,292,544

POWER CONTROL CIRCUIT

Masanori Ishii, Kawagoi, and Kazuo Kameya, Tsurugashima, both of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,441
Claims priority, application Japan, Nov. 18, 1977, 52/138760
Int. Cl.³ H02M *3/10*; H02J *1/10*
U.S. Cl. 307—52 **5 Claims**



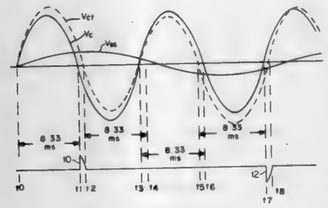
1. A power control circuit comprising a transformer having a primary winding and at least one secondary winding; a first series circuit including a first DC power source, a first transistor and the primary winding of said transformer; a second series circuit including said primary winding, an excitation coil arranged to flow through said primary winding a current which increases with time, a second DC power source and a second transistor; and a rectifier circuit connected with the secondary winding of said transformer, wherein an excitation current is first caused to flow through the primary winding of said transformer so that energy is stored therein; thereafter, a current opposite to said excitation current is caused to flow through said primary winding; a current which is induced in the secondary winding by the current flowing through the primary winding of said transformer and a current resulting from the stored energy are superimposed upon each other in said secondary winding; and a current resulting from the superimposition is rectified by said rectifier circuit so that an output is provided.

4,292,545

METHOD AND MEANS FOR DAMPING SUBSYNCHRONOUS OSCILLATIONS AND DC OFFSET IN AN AC POWER SYSTEM

Narain G. Hingorani, Los Altos Hills, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 30,691, Apr. 16, 1979. This application Jul. 23, 1979, Ser. No. 59,994
Int. Cl.³ G05F *1/12*
U.S. Cl. 307—102 **12 Claims**



6. Apparatus for damping subsynchronous oscillations and DC current offset in an AC power line comprising

reactance means serially connected in said power line,

circuit means connected in parallel with said reactance means and including a resistor, a selectively bi-directional conduction means, and means connecting said selectively bi-directional conduction means with said resistor including a transformer having a primary winding and a secondary winding, said primary winding being serially connected with said resistor and said secondary winding being connected to said selectively bi-directional conduction means, and

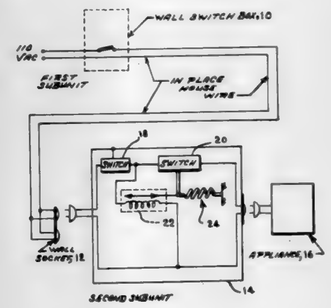
means for triggering said selectively bi-directional conduction means in response to half-cycle time period of voltage across said reactance means exceeding a preselected time period.

4,292,546

APPARATUS FOR CONTROLLING POWER APPLICATION

Warren P. Clark, 10 Evans Dr., Wilmington, Mass. 01887

Filed Mar. 6, 1980, Ser. No. 127,688
Int. Cl.³ H02J *13/00*
U.S. Cl. 307—114 **3 Claims**



1. A power control apparatus for applying or removing power to an electrical appliance comprising in combination:

a first power control means connected to input power lines to receive the power thereon, said input power lines being connected to a wall socket, said first power control means comprising a normally closed momentary action switch, said switch being serially connected in one of said input power lines, and,

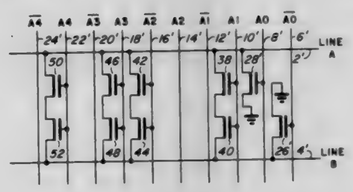
a second power control means connected to said wall socket by means of an electrical plug, said second power control means including a parallel pair of electrical wires from said electrical plug to an electrical socket mounted thereon, said second power control means comprising a solenoid means connected between said parallel pair of electrical wires, and a first and second switch means, said first switch means connected in one of said electrical wires between said electrical plug and said solenoid means, said second switch means connected from the junction of said first switch means and said solenoid means to said electrical socket, said electrical socket receiving the input plug of an electrical appliance which is to be controlled, said first switch means comprising a normally closed momentary action switch, said second switch means mechanically connected to the plunger of said solenoid means by a mechanical linkage, said mechanical linkage connected to the frame of said second power control means by a spring, said second switch means having a first and second switch position, said solenoid means holding said second switch means in said first switch position, said solenoid means responding to a temporary current interruption by allowing said second switch means to move to said second switch position, after said current interruption said solenoid means returns said second switch means to said first switch position, said second switch means being switched between an on state and an off state in response to said solenoid means reaction to said current interruption.

4,292,547

IGFET DECODE CIRCUIT USING SERIES-COUPLED TRANSISTORS

James R. Pfiester, Austin, and Doyle V. McAlister, Pflugerville, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1979, Ser. No. 61,206
Int. Cl.³ H03K *19/094*; G11C *8/00*; H01L *29/52*
U.S. Cl. 307—463 **3 Claims**



1. A decoder circuit for selecting one of a plurality of output lines in response to address signals comprising:

(a) a plurality of address lines for conducting the address signals, the plurality of address lines including first, second and third address lines, the first and second address lines conducting address signals which are logical complements of each other;

(b) a plurality of output lines including a first and a second output line;

(c) first and second switching means each having a control electrode and first and second conduction electrodes, the first conduction electrode of the first and second switching means being coupled to a reference voltage source, the second conduction electrode of the first and second switching means being coupled, respectively, to the first and second output lines, and the control electrodes of the first and second switching means being coupled, respectively, to the first and second address lines; and

(d) third and fourth switching means each having a control electrode and first and second conduction electrodes, the first conduction electrodes of the third and fourth switching means being coupled, respectively, to the first and second output lines, the second conduction electrodes of the third and fourth switching means being coupled to each other, and the control electrodes of the third and

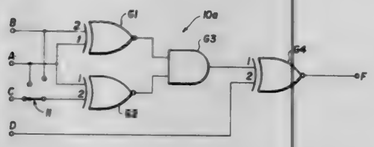
fourth switching means being coupled to the third address line for selectively effecting electrical coupling between the first and second output lines.

4,292,548

DYNAMICALLY PROGRAMMABLE LOGIC CIRCUITS

Ricardo Suarez, Estado Miranda; Oscar Chang, and Vladimir Adam, both of Caracas, all of Venezuela, assignors to Instituto Venezolano de Investigaciones Cientificas (IVIC), Venezuela

Filed Jul. 27, 1979, Ser. No. 62,233
Int. Cl.³ H03K *19/08, 19/20*
U.S. Cl. 307—465 **17 Claims**



1. A programmable logic circuit including at least one gate comprising:

first exclusive NOR circuit means having first input means, second input means and output means;

second exclusive NOR circuit means having first input means, second input means and output means, said first input means of said second exclusive NOR circuit means being coupled to said first input means of said first exclusive NOR circuit means;

AND circuit means having first input means, second input means and output means, said first input means of said AND circuit means being coupled to said output means of said first exclusive NOR circuit means and said second input means of said AND circuit means being coupled to said output means of said second exclusive NOR circuit means; and

third exclusive NOR circuit means having first input circuit means, second input circuit means and output circuit means, said first input circuit means of said third exclusive NOR circuit means being coupled to said output means of said AND circuit means;

whereby the least one gate can selectively function as an OR, NOR, AND and NAND circuit depending on ONE and ZERO signal levels applied to the respective second input means of the second and the third exclusive NOR circuit means as program variables, with one independent variable being applied to the first input means of the first exclusive NOR circuit means and to the first input means of the second exclusive NOR circuit means, and another independent variable being applied to the second input means of the first exclusive NOR circuit means.

4,292,549

MONOSTABLE MULTIVIBRATOR AND FM DETECTOR CIRCUIT EMPLOYING DIFFERENTIAL TRANSISTOR PAIR (THRESHOLD) TRIGGER CIRCUIT TO AVOID INTERFERENCE SIGNAL OPERATION

Takeshi Wada; Masanori Ienaka, both of Kodaira; Yasuo Kominami, Kokubunji; Yukihiko Miyamoto, and Tsuneo Yamada, both of Tokyo, all of Japan, assignors to Hitachi Ltd. and Trio Kabushiki Kaisha, both of Tokyo, Japan

Filed Jan. 12, 1979, Ser. No. 3,120
Claims priority, application Japan, Mar. 15, 1978, 53-28662
Int. Cl.³ H03K *5/08, 3/033*
U.S. Cl. 307—247 R **7 Claims**

1. A monostable multivibrator circuit including a time constant circuit which includes a capacitor, an amplifier circuit which receives an output signal of the time constant circuit, a positive feedback circuit which is connected between an output end of the amplifier circuit and an input end of the time constant circuit, and trigger circuit means for applying a trigger signal and coupled to a circuit loop constructed of the time constant circuit, the amplifier circuit and the positive feedback circuit, characterized in that said trigger circuit means comprises:

a pair of transistors means;

impedance means connected to emitters of said pair of transistors means in common;

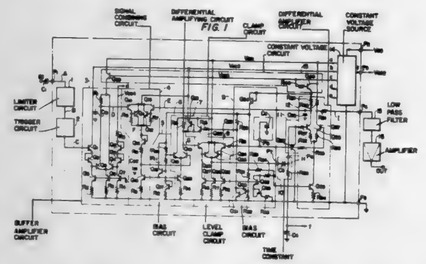


FIG. 1

a trigger input terminal for applying the trigger signal and connected to a base of one of said pair of transistors means;

a feedback input terminal for receiving a feedback signal from said amplifier circuit and connected to a base of the other of said pair of transistors means; and

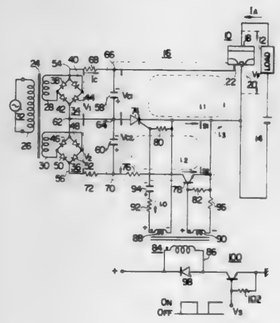
an output terminal coupled with said impedance means and coupled with an input end of said positive feedback circuit.

4,292,550

GATE CONTROL CIRCUIT WITH CAPACITOR FOR FIELD CONTROLLED THYRISTOR

Kenichi Onda, and Norikazu Tokunaga, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,475
Claims priority, application Japan, Feb. 24, 1978, 53-19660
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—252 A **7 Claims**



1. A gate control circuit for providing a gate control bias signal to a field controlled thyristor having an anode and a cathode coupled, respectively, to positive and negative terminals of a voltage source, and a gate coupled to said gate control circuit, wherein a current generated from said voltage source will flow from said anode to said cathode when said gate control circuit biases said field controlled thyristor with a gate-to-cathode negative bias voltage lower than a pinch-off voltage of the field controlled thyristor and wherein said current flow will be blocked when a gate-to-cathode negative bias voltage higher than the pinch-off voltage is applied to the field controlled thyristor by said gate control circuit, comprising:

a first d.c. source having a first positive terminal and a first negative terminal;

a capacitor having a second positive terminal connected to both the first positive terminal and the cathode of the field controlled thyristor, and having a second negative terminal connected to both the first negative terminal and the gate of the field controlled thyristor, the capacitance of said capacitor being so selected as to be large enough to store sufficient charge from said first d.c. source to turn off the field controlled thyristor;

first switching means connected between the second positive terminal of said capacitor and the cathode of the field controlled thyristor so that said capacitor will discharge to provide negative voltage between the gate and cathode of the field controlled transistor to turn it off when the first switching means is closed;

a second d.c. source having a third positive terminal and a third negative terminal, and having an output voltage higher than the pinch-off voltage, the third positive terminal and the third negative terminal being respectively coupled to the cathode and the gate of the field controlled thyristor; and

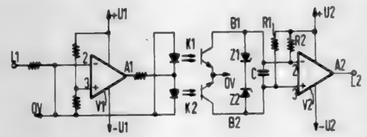
second switching means connected between the third positive terminal of said second d.c. source and the cathode of the field controlled thyristor, so that said second d.c. source will be coupled between the gate and cathode of the field controlled thyristor to hold it in its off state after turn-off when the second switching means is closed.

4,292,551

OPTOELECTRONIC COUPLING DEVICE FOR TRANSMITTING DC SIGNALS

Ewald Kolmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 14, 1979, Ser. No. 103,434
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903327
Int. Cl.³ H03F *17/00;* **H03K** *5/04*
U.S. Cl. 307—311 **8 Claims**



1. An optoelectronic coupling device for transmitting digital signals from an input to an output, which input and output are electrically isolated from each other, said coupling device comprising in combination:

(a) an input stage including an input for receiving digital input signals from an incoming signal line and an output;

(b) an optoelectronic coupling circuit including:

(1) two luminescent diodes connected in series via a connector tap, said connector tap being connected to the output of said input stage; and

(2) two phototransistors arranged adjacent to respective ones of said luminescent diodes and having collectors and emitters, one of said collectors and said emitters of both phototransistors commonly connected to a first voltage source;

(c) an output stage including:

(1) an operational amplifier having an output, a non-inverting input and an inverting input, said non-inverting and inverting inputs each being connected to one of said emitters and collectors of both phototransistors not being connected to the first voltage source;

(2) two ohmic resistors, each connecting a second voltage source with a respective one of said non-inverting and inverting inputs of the operational amplifier; and

(3) a capacitor connected between said non-inverting and inverting inputs;

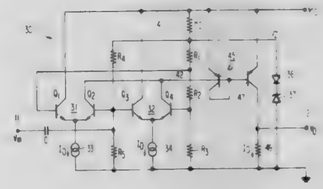
whereby said capacitor and respective ones of said resistors form RC circuits for removing a remaining charge of respective phototransistors when said phototransistors are cut off from saturation.

4,292,552

BIPOLAR VOLTAGE DETECTOR COMPRISING DIFFERENTIAL TRANSISTOR PAIRS

Kouichi Tanaka, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,148
Claims priority, application Japan, Dec. 20, 1977, 52-153935
Int. Cl.³ H03K *5/153, 5/08*
U.S. Cl. 307—354 **3 Claims**



1. In a bipolar voltage detector comprising an input terminal for a bipolar input signal, an output terminal for an output signal, a power supply terminal for a power supply voltage, and transistor means connected to said input, said output, and said power supply terminals and having threshold levels predetermined for positive and negative components of said input signal for supplying said output signal, the improvement wherein said transistor means comprises:

a first transistor pair comprising a first and a second transistor having emitter electrodes connected in common,

a second transistor pair comprising a third and a fourth transistor having emitter electrodes connected in common,

a first and a second constant current circuit grounding the emitter electrodes of the transistors of said first and said second transistor pairs, respectively, to allow a preselected current to flow through each thereof,

biasing means for biasing base electrodes of said first and said thid transistors higher than base electrodes of said second and said fourth transistors, respectively, the differences between the base bias voltages of said first and said second transistors and between the base bias voltages of said third and said fourth transistors being determined by the threshold levels for said positive and said negative components, respectively,

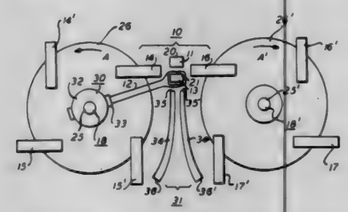
a connection between collector electrodes of said first and said third transistors and said power supply terminal,

input means connected to said input terminal for superposing said input signal on each of the base bias voltages of said second and said third transistors,

output means coupled to collector electrodes of said second and said fourth transistors and said output terminal for transferring the collector outputs of said first and said fourth transistors to said output terminal, and

wherein said biasing means comprises means for producing a stabilized voltage, and resistors for dividing said stabilized voltage into the base bias voltages of said first through said fourth transistors, the base bias voltages of said second and said third transistors being equal to each other.

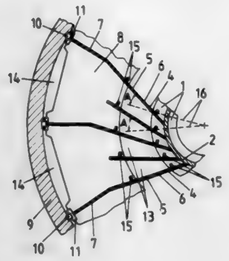
4,292,553
APPARATUS FOR GENERATING MECHANICAL ENERGY RESPONSIVE TO INTERACTION OF MAGNETIC FIELDS
Frank V. Deputato, 1116 79th St., North Bergen, N.J. 07047
Continuation of Ser. No. 789,072, Apr. 20, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,184
Int. Cl.³ H02K 7/00
U.S. Cl. 310—46 **13 Claims**



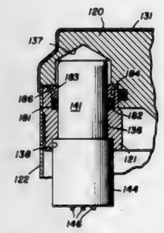
1. An apparatus for generating mechanical energy responsive to the interaction of magnetic fields, comprising:
(a) a permanent magnet;
(b) a core comprised of magnetizable material positionable proximate to, but not in contact with, the permanent magnet within the influence of the magnetic field emanating from the permanent magnet;
(c) a conductor wound about the core;
(d) a plurality of permanent magnets;
(e) means for supporting the plurality of permanent magnets, movable in response to the interaction of magnetic fields so as to move the permanent magnets to positions proximate the permanent magnet and magnetized core within the influence of the magnetic fields emanating therefrom;
(f) means for alternately conducting and not conducting electricity through the conductor, such that when electricity is conducted therethrough, magnetism is induced by flow of electricity about the core, of polarity such that the core repels each one of the plurality of permanent magnets as it moves to a position proximate thereto, and when electricity is not conducted, magnetism is induced in the core by the permanent magnet, of polarity such that the core attracts each one of the plurality of permanent magnets as it moves to a position proximate thereto, with the conductive cycle timed to coincide with the proximity to the core and permanent magnet of each one of the plurality of permanent magnets and with the nonconductive cycle timed to coincide with the approach to the core and permanent magnet of each one of the plurality of permanent magnets; and
(g) means for generating mechanical energy responsive to movement of the supporting means.

4,292,554
RADIALLY AERATED DISC ROTOR
Mihailo Starcevic, Mellingen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Nov. 8, 1979, Ser. No. 92,336
Claims priority, application Switzerland, Nov. 27, 1978, 12101/78
Int. Cl.³ H02K 9/00
U.S. Cl. 310—58 **5 Claims**

1. A radially aerated disc rotor comprising:
a central hub having an axis and an outer diameter;
a plurality of ribs having one end connected to said hub, said ribs extending from said hub, said ribs each being canted from a radial line through said hub;
an annular disc being fixed to each axial edge of the other end of said canted ribs, said annular discs having an inner diameter greater than said outer diameter of said central hub, to form an annular portion therebetween wherein said central hub and said discs are connected only through said ribs, wherein an annular space exists between both said annular discs and said hub to admit the flow of cooling medium into the area between said ribs from both axial sides of said ribs; and
a rotor collar supported by said discs.



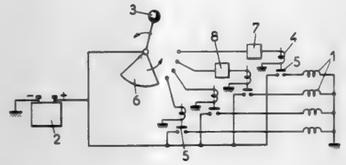
4,292,555
START WINDING CUT-OUT CIRCUIT FOR AN ELECTRIC MOTOR
Edward J. Schaefer, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.
Continuation-in-part of Ser. No. 770,110, Feb. 18, 1977, which is a continuation-in-part of Ser. No. 618,359, Oct. 1, 1975, abandoned. This application Nov. 16, 1978, Ser. No. 961,465
Int. Cl.³ H02K 11/00
U.S. Cl. 310—68 R **12 Claims**



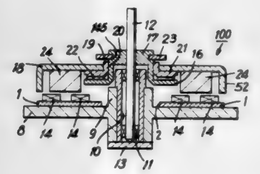
1. An electric motor adapted to be connected to an AC power supply by power supply lines, comprising an outer casing, an electrical power connector secured to said casing and adapted to be fastened to said power supply lines, start and run windings in said casing and electrically connected to said connector, a capsule containing a start winding cutout switch, means for mounting said capsule in said casing with said capsule accessible from the exterior of said motor, and means within said casing and electrically connecting said switch with said start winding.

4,292,556
SPEED REDUCING EQUIPMENT, PARTICULARLY FOR VEHICLES
Jean-Marie Jollois, Courbevoie, France, assignor to Labavia-S.G.E., Paris, France
Filed Jul. 12, 1979, Ser. No. 57,003
Claims priority, application France, Jul. 20, 1978, 78 21548
Int. Cl.³ H02K 49/00
U.S. Cl. 310—93 **17 Claims**

1. A speed reducer device for a vehicle, comprising an electric retarder with n conductor windings, n being an integer chosen among 3, 4, and 5, a DC voltage source and control means with a control member having n+1 control positions for causing the retarder to generate n+1 braking torques whose values increase from 0 to a maximum value when the control member passes from its 0 position to its n position, said subsequent passages resulting respectively in the connection of the source to a number of inductor windings increasing from 0 to n, wherein, if P is the maximum electrical power, comprised between 2000 and 3500 Watts, capable of being absorbed by the whole of the n inductor windings when they are all permanently connected to the source, without the corresponding heating damages the retarder, each of said windings is chosen so as to consume a power K^2P/n when it is connected to the source, K being a coefficient between 1.1 and 1.7, and safety means for automatically preventing the energization of the speed retarder to reach a dangerous threshold when the control member is in its last position n.

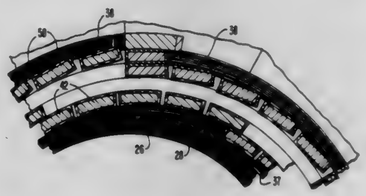


4,292,557
MOTOR WITH INTEGRAL CLUTCH
Yoshio Kishi, Hachiouji, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 2, 1979, Ser. No. 35,506
Claims priority, application Japan, May 10, 1978, 53-55378; May 10, 1978, 53-55379
Int. Cl.³ H02K 7/10
U.S. Cl. 310—78 **8 Claims**



1. A motor comprising:
a drive shaft mounted for rotation about its longitudinal axis;
a stator yoke extending radially in respect to said axis and containing magnetic material;
a rotor assembly mounted for rotation about said axis and for movement in the direction of said axis relative to said stator yoke, said rotor assembly including a rotor magnet which is in opposing relation to said stator yoke in said direction of the axis and which produces a magnetic attraction therebetween tending to move said rotor magnet in said direction toward said stator yoke;
driving coil means on said stator yoke for generating a rotating magnetic field interacting with said rotor magnet so as to urge said rotor assembly to rotate; and
first and second clutch members secured to said rotor magnet and said drive shaft, respectively, and having portions which are in opposing relation to each other in said direction of the axis and which are urged to frictionally engage each other by movement of said rotor magnet in said direction toward the stator yoke in response to said magnetic attraction, whereby to transmit a torque from said rotor magnet to said drive shaft which has a maximum value proportional to said magnetic attraction produced between said stator yoke and said rotor magnet.

4,292,558
SUPPORT STRUCTURE FOR DYNAMOELECTRIC MACHINE STATORS SPIRAL PANCAKE WINDING
Carl Flick, Pittsburgh, and Sui-Chun Ying, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Aug. 15, 1979, Ser. No. 66,732
Int. Cl.³ H02K 1/00
U.S. Cl. 310—194 **7 Claims**

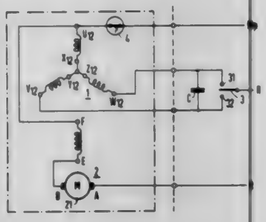


1. A dynamoelectric machine comprising:
a frame structure; and
a substantially cylindrical stator structure having a longitudinal axis, said stator structure being supported by said frame, said stator structure comprising
a plurality of electrical coils, each of which comprise an electrical conductor formed in a plurality of concentric turns which are serially electrically connected, said turns in each coil spiraling outwardly about the longitudinal axis,
rigid foundation means, disposed within the concentrically innermost turn of each coil, for structurally supporting the turns of each coil, and comprising a support member lying in a curved plane which corresponds to the spiral shape of the associated coil, said member's plane thickness perpendicular to said spiral being less than or equal to said associated coil's conductor's thickness perpendicular to said spiral, and
means for structurally connecting said turns of each coil with said supporting foundation means of each coil including a first plurality of bands protruding through said support member and in engagement with said turns, said engagement being on said turn's remote side relative to said support member, said bands being disposed at selected axial and circumferential locations.

4,292,559
ELECTRIC DRIVE WITH A UNIVERSAL AND INDUCTION MOTOR COMBINED ON A COMMON LAMINATION STACK
Herbert Auinger, Nüremberg; Peter Bradler; Rüdolf Weppler, both of Lengfeld, and Jaroslav Stepina, Kaiserslautern, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Oct. 2, 1978, Ser. No. 947,522
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744472
Int. Cl.³ H02K 23/30
U.S. Cl. 310—206 **10 Claims**

1. In an electric two motor drive including means for separately connecting each motor to a single phase AC line service as the only supply source comprising a stator winding of a commutator motor having a lower pole number and a stator winding of an induction motor having a higher pole number arranged in the common stator lamination stack, and a common armature which forms short circuits to give a number of poles corresponding to a higher pole number of the exciting induction motor stator field from series connected coils in each phase winding and a segmented commutator, the segments of which form circuits with a number of poles corresponding to the lower pole number of the exciting commutator stator field the improvement comprising a common single armature wind-

ing system provided for the commutator as well as the induction motor operation, said winding having an uncrossed lap winding and a crossed lap winding connected to the same segments of the commutator, the coil span of said windings



corresponding respectively at least approximately to one pole pitch of the lower pole number commutator stator winding and to an uneven integral multiple of the pole pitch of the higher pole number induction stator winding.

4,292,560

TACHOMETER GENERATOR BRUSH CARRIER

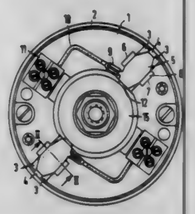
Albin Vorndran, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,583

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804681

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—242 **4 Claims**



1. In a tachometer generator having a brush carrier of insulating material which is fastened to the tachometer housing at the end face and which supports at least two brush holders each acting, together with the brush carrier, to form a brush guide for a carbon brush and its coil spring, each coil spring being braced against an abutment of the brush holder, there being means by which an electric wire can be connected to the brush holder, the improvement comprising:

a channel comprising axially projecting ribs formed on the brush carrier for guiding each brush,

cut-outs in the brush carrier on the outside of the axially projecting ribs of each channel, and

a plate-shaped brush holder resting on the axially projecting ribs of each channel and having axially projecting, laterally resilient, spreading arms axially directed into the cut-outs of the brush carrier and engaging the cut-outs in a snap-on connection, the brush holder having an abutment to which the coil spring is firmly connected.

4,292,561

ATTENUATING MEANS FOR ELECTROACOUSTIC TRANSDUCER

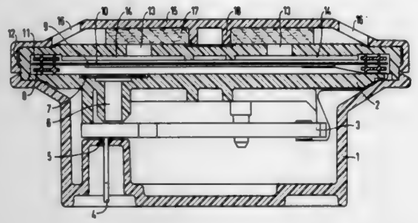
Erwin Martin, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,408

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831411

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—322 **8 Claims**



1. In an electroacoustic transducer having a transducer membrane disposed in a cavity by means of which the volume in the cavity is subdivided into a front membrane space and a rear membrane space, and with a mounting cap terminating the front membrane space and which is provided with acoustic transmission openings, and in which an attenuating means is provided in the front membrane space for the attenuation of resonance ratio effects, the combination of a separation plate disposed in the front membrane space between the membrane and the attenuating means, the separation plate being provided with acoustic transmission openings therein all of which lie radially inwardly of the mounting cap acoustic openings, the attenuating means disposed in the area of the separate plate extending across the acoustic transmission openings therein, and the attenuating means and acoustic openings being positioned relative to one another such that sound waves entering through the cap acoustic openings travel laterally and radially inwardly through the attenuating means and then out of the attenuating means into the separation plate acoustical openings towards the transducer membrane.

4,292,562

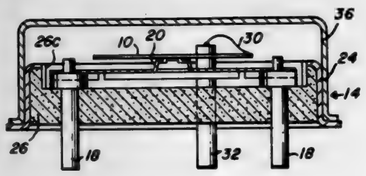
MOUNTING ARRANGEMENT FOR CRYSTAL ASSEMBLY

Alvin Feder, Lauderhill, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1979, Ser. No. 35,373

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—348 **6 Claims**



1. A crystal mounting arrangement comprising in combination:

a crystal plate having a plurality of conductive areas on a first surface thereof;

a conductive bridge span member having three connected collinear portions, the end portions having a first, angled position and a second, coplanar position, relative to the center portion, and the center portion having an elevated section, the crystal plate being attached to the elevated section;

two bridge support members for supporting the bridge span member, without fixed attachment when the end portions of the span member are in the first position and fixedly attached to the span member when the span end portions are in the second position;

a non-conductive carrier having a depressed portion dimensioned to receive and support the bridge structure with portions of the attached crystal plate resting on the upper surface of the carrier when the bridge span ends are in the first position;

a plurality of conductive terminal means supported by the carrier and positioned beyond and adjacent the edge of the plate; and

a plurality of wire bonds each conductively attached at one end to a respective one of the conductive terminals on the carrier and conductively attached at the other end to a respective one of the conductive areas on the upper surface of the crystal, the bonds having been made while the bridge span ends are in the first position and the crystal is supported on the carrier surface.

4,292,563

MULTIPLE CATHODE X-RAY TUBE FOR DENSITOMETERS

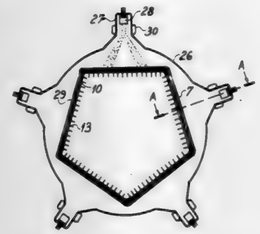
Emile Gabbay; Dang Tran Quang, and Andre Lafitte, all of Paris, France, assignors to Compagnie Generale de Radiologie, Paris, France

Filed Jan. 23, 1979, Ser. No. 5,767

Claims priority, application France, Jan. 27, 1978, 78 02340

Int. Cl.³ H01J *35/16, 35/30*

U.S. Cl. 313—56 **9 Claims**



1. An X-ray tube, for tomodensitometers in particular, containing:

an envelope (**26**) in the form of a ring, fitted with collars (**27**) in which cathodes (**28**) are placed,

an anode assembly functioning by transmission which is arranged along the sides of a regular convex polygon, each cathode being on the median line of one side (**29**) of this polygon,

a beam deviation device (**30**) associated with each cathode (**28**) for sweeping the relating side of the polygon,

a collimation device (**10**) with several openings placed in front of the anode assembly to produce a series of fine X-ray beams which are roughly parallel and coplanar when the electron beams emitted by the cathodes (**28**) sweep the anode assembly, the number of beams being equal to the number of openings in the collimation device (**10**).

4,292,564

LAMP/REFLECTOR UNIT

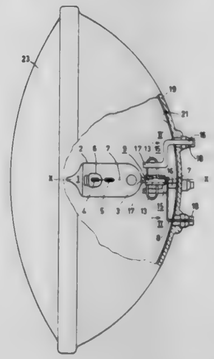
Volker Kuhnert, Kerkrade, Netherlands, and Dieter Wilhelm, Eschweiler, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,527

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829677

Int. Cl.³ H01J *5/16, 5/48, 5/50*

U.S. Cl. 313—318 **3 Claims**



1. A lamp/reflector unit having a concave reflector member and a lens member attached thereto, a tubular light bulb being supported in spaced relation to the reflecting surface of said reflector member, said light bulb having a pinch seal at one end thereof which is substantially rectangular in cross-section and from which current conductors emanate, said bulb including a filament disposed therein, said current conductors being in electrical contact with said filament disposed within said light bulb, said reflector member having mutually electrically insulated contact members, said unit including support pins attached to each of said contact members, each of said support pins also being connected to one of said current conductors, characterized in that the pinch seal is secured between two opposed mounting clips which each engage around a respective narrow side of the pinch seal in a clamping manner, each of said mounting clips having an elongate intermediate member attached thereto which extends at least over a part of its length along an imaginary circle having its center on the axis of the light bulb and lying in a plane transverse to said axis, said support pins being crank shaped and each of said intermediate members being attached to a respective one of said support pins.

4,292,565

SHADOW MASK ASSEMBLY FOR A CATHODE RAY TUBE

Masaharu Kanto, Hyogo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 19, 1979, Ser. No. 31,600

Int. Cl.³ H01J *29/07*

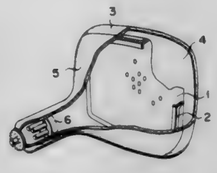
U.S. Cl. 313—407 **3 Claims**

1. A shadow mask assembly for a cathode ray tube, comprising:

a shadow mask made of steel; and

a mask frame made of steel;

at least one of said shadow mask and mask frame having a diffusion layer including nickel and iron and a black oxide



layer including mainly iron oxide, the oxide layer being formed on the diffusion layer.

4,292,566

TRAVELING WAVE TUBE WITH A HELICAL DELAY LINE

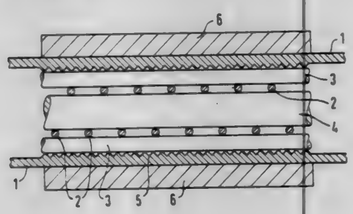
Hinrich Heynisch, Graefelfing; Erwin Huebner, and Heinz Barth, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 10, 1979, Ser. No. 65,733

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840782

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **3 Claims**



1. A method for the manufacture of a traveling wave tube comprising the steps of placing a copper delay line onto an inner mandrel formed of a material having a greater coefficient of expansion than copper, assembling said delay line and a plurality of dielectric holding rods with a vacuum envelope, inserting the assembly into a tube formed of a material with a lower coefficient of expansion than copper, bringing the assembly to a temperature between 400° C. and 700° C.; exposing the assembly to a temperature of approximately 150° C. in dry air for approximately 90 minutes; exposing the assembly to a temperature of approximately 600° C. in dry nitrogen for approximately 10 minutes; and exposing the assembly to a temperature of approximately 600° C. in cracked gas or H_2 for approximately 15 minutes.

4,292,567

IN-BAND RESONANT LOSS IN TWT'S

Cliff D. Fritchle, Mountain View; Charles E. Hobrecht, Sunnyvale, and Allan W. Scott, Los Altos, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 28, 1979, Ser. No. 97,995

Int. Cl.³ H01J *25/34*

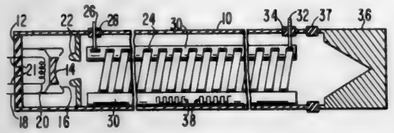
U.S. Cl. 315—3.5 **20 Claims**

1. A traveling wave tube having internal gain reduction comprising:

a helix-type slow-wave circuit for interaction with a linear electron beam over a selected band of frequencies, said interaction tending to produce a gain which varies with frequency over said band,

a dielectric rod near said circuit extending in the direction of the axis of said slow-wave circuit, and

resonant resistive conductor means attached to the surface



of said rod, the resonance bandwidth of said means including a substantial portion of said selected band,

whereby said gain varying with frequency is reduced internally over a substantial portion of said band.

4,292,568

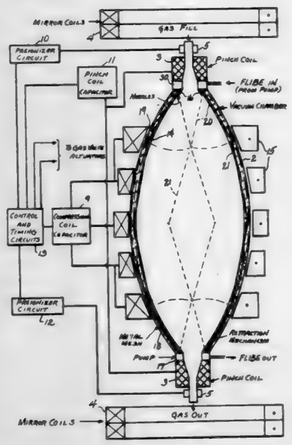
METHOD AND APPARATUS FOR HEATING AND COMPRESSING PLASMA

Daniel R. Wells, Miami, Fla., and Joseph J. Packo, Austin, Tex., assignors to Triosops, Inc., Austin, Tex.

Filed Mar. 16, 1979, Ser. No. 21,207

Int. Cl.² G21B *1/00*

U.S. Cl. 315—111.4 **11 Claims**



1. Apparatus for heating and compressing plasma comprising a vacuum chamber, means for generating a containment seed field in the chamber, means for generating plasma and confining said plasma in said vacuum chamber, means forming plasmoids in said chamber having a plasma configuration in which plasma mass flow in the chamber is predominantly along an axis extending in a direction parallel to said containment seed field, means for urging the plasmoids toward collision with each other, a collapsible molten metal liner in said chamber surrounding said plasmoids and means for collapsing said liner on the plasmoids after said collision with each other, to amplify said seed field and heat the plasmoids to thermonuclear temperature, and wherein said liner includes a flexible metal mesh sandwiched in the molten metal for stabilizing the liner during collapse.

4,292,569

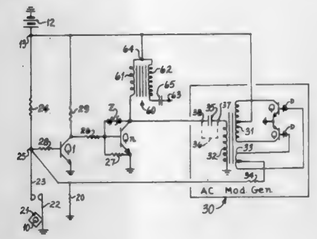
HIGH ENERGY MODULATION IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 923,828, Jul. 12, 1978, Pat. No. 4,216,412. This application Jun. 7, 1979, Ser. No. 46,569

Int. Cl.³ H05B *37/02, 39/04, 41/36*

U.S. Cl. 315—209 R **16 Claims**



1. An ignition system for a fuel burning engine including a timer for effecting first and second states of operation of said system, comprising the combination of:

alternating current modulation means having an output transformer with an output winding for providing alternating current from said output winding during the second state;

an ignition transformer with a single primary winding coupled in series to said output winding during the second state; and

electronic logic means, connected to said primary winding and controlled by said timer and coupled to said output winding, for enabling charging current to flow in the primary winding during the first state, for inhibiting said charging current and alternating current from flowing in said output winding during the first state, and for enabling said alternating current to flow in said output winding and primary winding so as to modulate discharge current of the primary winding during said second state.

4,292,570

ENERGY-CONSERVING ILLUMINATION SYSTEM

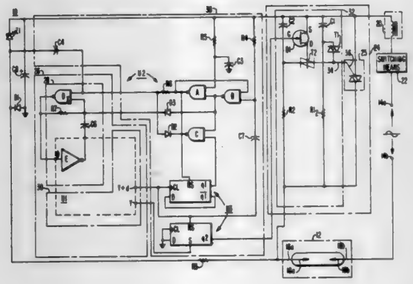
Joseph C. Engel, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 861,591, Dec. 12, 1977, Pat. No. 4,147,962. This application Mar. 28, 1979, Ser. No. 24,766

The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.

Int. Cl.³ H05B *41/38*

U.S. Cl. 315—360 **6 Claims**



1. An energy-conserving solid-state-controlled illumination system which operates lamp means at about a predetermined rated power consumption with a relatively high light output for a predetermined initial period of time during the initial night when a high degree of illumination is most needed and then operates said lamp means for a later period of the night at a reduced power which is a predetermined amount less than rated power consumption for a second predetermined period of time when a lower degree of illumination can be tolerated, and thereafter, if said lamp means is still energized according to the seasonal variations, operates said lamp means at said relatively high light output for the remainder of the night to accommodate early morning traffic, said system comprising:

a. input terminal means adapted to be connected to a source of electrical energy, and output terminal means adapted to be connected to the input terminals of said lamp means;

b. lamp ballasting means in circuit with said lamp means, said lamp ballasting means having a first operating mode in which the average power passed to said lamp means causes same to operate at about rated power consumption, and said lamp ballasting means having a second operating mode in which the average power passed to said lamp means is a predetermined amount less than the rated power consumption for said lamp means;

c. main switching means having an open state and a closed state, said switching means connected in circuit with said input terminal means and said lamp ballasting means to energize said lamp means when said switching means is in said closed state and to de-energize said lamp means when in said open state;

d. controlled switching means, the controlled closing and opening of which determines whether said ballasting means is in said first operating mode or said second operating mode;

e. timing means actuated by closing of said main switching means, said timing means when actuated, operating to generate a first time-related control signal after said initial predetermined period of time has elapsed, thereafter, said timing means continuing to operate to count down toward said second predetermined period of time, and if said timing means is still actuated by said main switching means remaining closed after said second predetermined period of time has elapsed, said timing means operating to generate a second time-related control signal, said first time-related control signal from said timing means is applied to said controlled switching means to switch said ballasting means from said first operating mode to said second operating mode, in the case said main switching means is still closed after said second predetermined period of time has elapsed, said second time-related control signal from said timing means is applied to said controlled switching means to switch said ballasting means from said second operating mode back to said first operating mode, said system continuing operation until said main switching means is opened, and said system is thereafter quiescent until said main switching means is again closed.

4,292,571

CONTROL DEVICE FOR CONTROLLING THE ROTATIONAL SPEED OF A PORTABLE POWER TOOL

Giuseppe Cuneo, Calolziocorte, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 14, 1980, Ser. No. 121,538

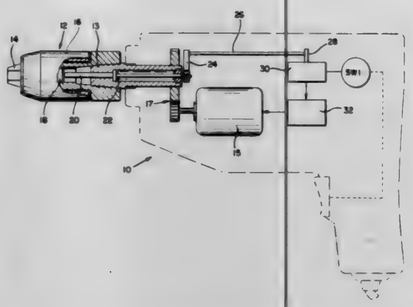
Int. Cl.³ H02P *5/16*

U.S. Cl. 318—17 **16 Claims**

1. In a portable electric tool having an electric motor for driving an adjustable tool holder capable of receiving and accommodating various diameter tools, the improvement comprising:

sensor means operatively connected to said tool holder for

sensing the diameter of the tool secured in said tool holder; and,



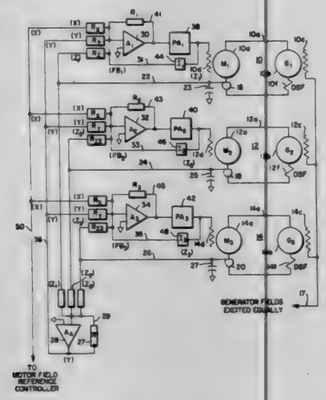
speed control means operatively connected to said sensor means for controlling the speed of said motor in accordance with the sensed diameter of said tool.

4,292,572

METHOD AND APPARATUS FOR REGULATING ELECTRIC MOTOR ARMATURE CURRENTS

Joel G. Ivy, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 26, 1979, Ser. No. 60,761
Int. Cl.³ B61C *15/08*
U.S. Cl. 318—52 **8 Claims**



5. Apparatus for regulating the armature currents of a plurality of electric motors driving a common load and each motor having a separate source of excitation, comprising:

sensing means for detecting the values of the armature currents of each motor and for producing output signals having values, respectively, proportional thereto,

averaging means for receiving said sensing means output signals and for producing therefrom an output signal having a value proportional to the average of the values of said sensing means output signals, and

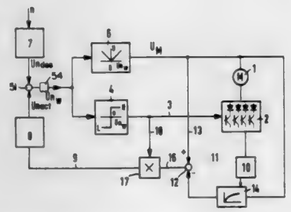
a plurality of regulating circuit means, one of which is coupled to provide varying excitation to each said motor, each said regulating circuit means including means for receiving and comparing the sensing means output signal for the motor associated therewith with said averaging means output signal and for producing a difference signal having a value proportional to the result of the comparison, the value of said difference signal thereby controlling the armature current of the motor connected to the regulating circuit means.

4,292,573

REVERSIBLE DIRECT CURRENT MOTOR WITH A PERMANENT MAGNET ROTOR AND ELECTRONIC COMMUTATING DEVICE

Hermann Ebert; Johann Grüntleitner, both of Nuremberg, and Hans Kühnlein, Nürnberg-Grossgründlach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,106
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743695
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—138 **5 Claims**



1. In a reversible direct current motor with a permanent magnet rotor and electronic commutating device, in which the polarity of the desired speed voltage of a speed control device and the commutating sequence of the commutating transistors, which apply a motor voltage specified by the speed control device to the stator windings, are reversed for reversing the direction of rotation in response to a change in a direction of rotation signal, initiated by the speed control device, to a selection circuit, the improvement comprising:

(a) means to sense the motor voltage;

(b) means to subtract the motor I×R factor from the sensed motor voltage to develop a voltage proportional to the motor CEMF.

(c) means of feed said voltage proportional to CEMF to the motor controller; and

(d) means to reverse the polarity of said voltage proportional to the CEMF in the event of a change of the direction of rotation signal.

4,292,574

PERSONAL AIR SAMPLER WITH ELECTRIC MOTOR DRIVEN BY INTERMITTENT FULL-POWER PULSES UNDER CONTROL, BETWEEN PULSES, OF MOTOR'S BACK ELECTROMOTIVE FORCE

Anatole J. Sipin, New York, and Herbert R. Carleton, Setauket, both of N.Y., assignors to Anatole J. Sipin Company, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,687
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—331 **8 Claims**

1. An electric motor speed control system comprising:

an electric motor;

a source of power;

power switch means for connecting or disconnecting said motor to said source of power;

an operational amplifier connected as a voltage follower having an input and an output;

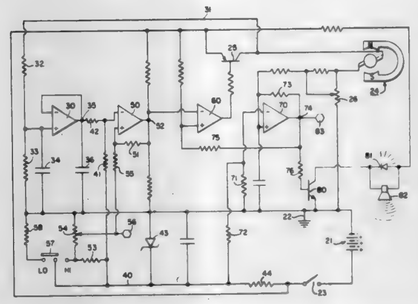
means to connect the input of said voltage follower to said motor to sense the voltage applied thereto while said power switch means connects said motor to said source of power and to sense the internal back electromotive force thereof while said power switch means disconnects said motor from said source of power and said electric motor is coasting;

said voltage follower operating as a linear amplifier rendered inoperative when sensing the larger voltage existing while said electric motor is connected to said source of power;

a capacitive storage device connected to the output of said operational amplifier;

resistive means for slowly charging said capacitive storage device while said voltage follower is inoperative to;

a level corresponding to increasing motor speed;



whereby, when said motor is disconnected from said source of power, the charge on said capacitive storage device varies directly in one direction with the decreasing speed of said electric motor while coasting; and

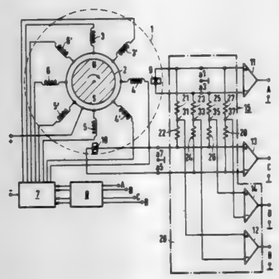
whereby, when said electric motor is connected to said source of power, the charge on said capacitive storage device receives current through said resistive means.

4,292,575

CONTROL SIGNAL TRANSMITTER FOR THE COMMUTATING DEVICE OF AN ELECTRONICALLY COMMUTATED D-C MOTOR

Hans Kühnlein; Hans Grüntleitner, and Hermann Ebert, all of Nürnberg-Grossgründlach, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 105,963
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900541
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—254 **9 Claims**



1. In a commutatorless d-c motor including a rotor, a stator with 4n stator windings, where n is an integer greater than 1, a commutating device including 4n switching transistors for driving said 4n stator windings and a control signal transmitter for providing switching signals to said commutating device, an improved control signal transmitter for developing 4n switching signals with only n rotor position transmitters comprising:

(a) n rotor position transmitters which deliver electrical output signals which depend on the position of the rotor and change in time continuously when the rotor is rotated steadily, said rotor position transmitters spaced 180/n° el from each other;

(b) an evaluation circuit including:

(i) 2n operational amplifiers wired to provide switching outputs;

(ii) means coupling the inputs of each operational amplifier to said rotor position transmitters, said operational amplifiers providing as outputs 2n sequential signals equally spaced in time; and

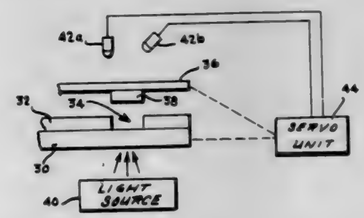
(iii) means developing, from said 2n signals, 4n sequential individual switching signals for driving said 4n switching transistors in said commutating device.

4,292,576

MASK-SLICE ALIGNMENT METHOD

Roderick K. Watts, Summit, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 29, 1980, Ser. No. 126,072
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—640 **10 Claims**



1. The method of aligning a mask on a semiconductor slice comprising the steps of:

forming a light transmissive pattern on a semiconductor slice,

forming a matching opaque pattern on a mask,

positioning said mask above said semiconductor slice with the matching patterns in approximate alignment,

illuminating the bottom of said semiconductor slice with light signals,

passing said light signals through said light transmissive pattern, and,

placing said mask on said semiconductor slice and moving said mask to minimize the amount of said light signals that passes through said mask.

4,292,577

A.C. MOTOR CONTROL CIRCUIT

Michael R. Cesarz, Mequon, and Richard E. Stobbe, Greenfield, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 12, 1979, Ser. No. 19,936
Int. Cl.³ H02P *5/28, 5/34*
U.S. Cl. 318—802 **16 Claims**

1. An a.c. motor control circuit comprising:

an a.c. motor having a plurality of stator windings and a rotor;

a tachometer coupled to said rotor and operable to produce an output signal proportional to the speed of said rotor;

means for generating a velocity command signal having an amplitude proportional to a desired speed for said motor;

means for comparing the output signal of said tachometer to said velocity command signal and for generating an error signal proportional to the difference between said tachometer output signal and said velocity command signal;

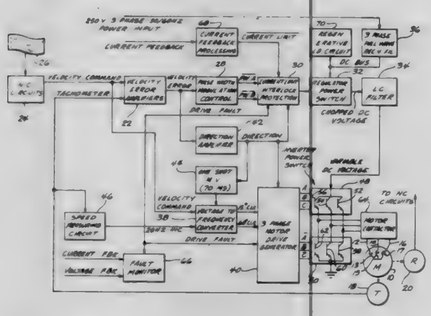
a d.c. power source;

a first switching circuit coupled to the output of said d.c. power source;

modulator means coupled to said first switching circuit and responsive to said error signal for periodically opening and closing said first switching circuit to cause said first

switching circuit to produce a train of d.c. pulses having a substantially fixed frequency and having a variable pulse width which is proportional at any time to the amplitude of said error signal;

a filter coupled to the output of said first switching circuit for filtering said train of d.c. pulses to produce a d.c. voltage which is substantially proportional to the amplitude of said error signal;



an inverter coupled between the output of said filter and the stator windings of said motor, said inverter being operative to change said d.c. voltage into an a.c. voltage of variable frequency to drive said motor, said inverter including a variable frequency oscillator responsive to said velocity command signal for controlling the frequency of said a.c. voltage in accordance with said velocity signal.

4,292,578

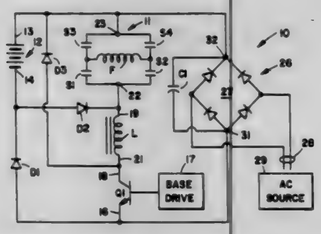
COMBINATION FIELD CHOPPER AND BATTERY CHARGER

Robert L. Steigerwald, Scotia, N.Y.; Keith E. Crouch, Pittsfield, Mass., and James W. A. Wilson, Scotia, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 13, 1979, Ser. No. 65,772

Int. Cl.³ H02J 7/06, 7/34

U.S. Cl. 320—9 **10 Claims**



1. A combination field chopper and battery charger comprising:

a battery,

an electronic switch,

a field unit having a series connected field coil and field switch,

a rectifier unit having an a-c input and a d-c output,

first and second diodes,

circuit means for connecting said battery, said field unit, said electronic switch and said first diode in series with each other to form a first unidirectional current flow path therethrough and for connecting together said d-c output of said rectifier unit, said battery, said second diode and said electronic switch in series with each other to form a second uni-directional flow path therethrough, with the direction of the first and second flow paths through said electronic switch being the same and with the direction of the first and second flow paths through said battery being opposite to each other.

4,292,579

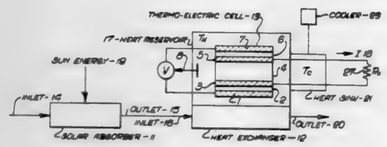
THERMOELECTRIC GENERATOR

James N. Constant, 1603 Danbury Dr., Claremont, Calif. 91711

Continuation-in-part of Ser. No. 834,452, Sep. 19, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,550

Int. Cl.³ H02N 3/00; H01L 35/28

U.S. Cl. 322—2 R **36 Claims**



1. In a thermoelectric generator for converting heat directly from a heat source into electrical energy, the combinatin of:

at least one active cell comprising a semiconductor means sandwiched between a pair of metal electrodes;

means including a heat source for heating at least portions of said cell;

means including one of a voltage or current source for applying an external electromotive force (emf) to said semiconductor means, said emf producing the drifting of charges and thereby producing a current in said semiconductor means, said drifting of charges being along a path one of smaller or greater than the mean free path of charges, said source being substantially decoupled from said current in said semiconductor means; and

means for connecting an external load across said metal electrodes for receiving the current generated by said semiconductor means.

4,292,580

CIRCUIT ARRANGEMENT FOR ATTENUATION OF POWER OSCILLATIONS IN NETWORKS

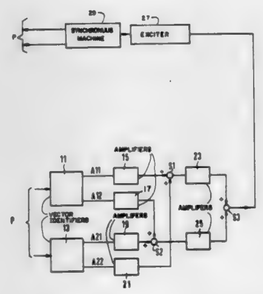
Günther Ott, and Wolfgang Kaufhold, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,896

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851871

Int. Cl.³ G05F 5/00

U.S. Cl. 323—212 **3 Claims**



1. A circuit arrangement for supplying a signal to the exciter of at least one synchronous machine in order to attenuate power oscillations in a network to which the synchronous machine is coupled comprising:

(a) first and second vector identifiers having as an input detected power oscillations in the system, each vector identifier providing a direct and a phase-shifted output, each designed for a different frequency;

(b) first, second, third and fourth matching means receiving as inputs respectively, the direct output of said first vector identifier, the phase-shifted output of said first vector identifier, the direct output of said second vector identifier and the phase-shifted output of said second vector identifier;

(c) first and second summing junctions, said first summing junction having as inputs the output of said first and fourth matching means and the second summing junction having as inputs the outputs of said second and third matching means;

(d) fifth and sixth matching means having as inputs respectively, the outputs of said first and second summing junctions; and

(e) third summing junction having as inputs the outputs of said fifth and sixth matching means and providing at its output a total signal which, over a selectable frequency range, varies in a mathematically positive sense with increasing oscillation frequency whereby said signal can be supplied to the exciter of a synchronous machine in order to damp power oscillations in the network.

4,292,581

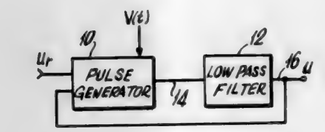
LINEAR SWITCHING REGULATOR

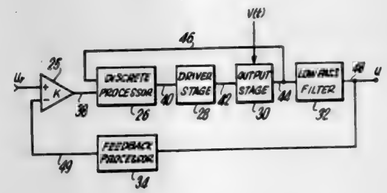
Tat S. Tan, P.O. Box 24, Mt. Marion, N.Y. 12456

Filed Jul. 13, 1979, Ser. No. 57,353

Int. Cl.³ H02P 13/32

U.S. Cl. 323—283 **28 Claims**





1. A linear switching voltage regulator for regulating line voltage comprising:

a linear amplifier receiving a reference signal and an output feedback signal and producing an overall feedback signal;

discrete processor means for receiving said overall feedback signal as well as a high frequency feedback from its own output switching signal and for producing as its output switching signal a pulse strength modulation signal;

output means for turning on and off the line voltage by means of said switching signal to produce an intermediate output signal, and

filter means filtering said intermediate output signal to produce a voltage regulated output signal, said output feedback signal being derived from said voltage regulated output signal.

4,292,582

RESIDUAL VOLTAGE REGULATING CIRCUIT FOR HALL ELEMENT

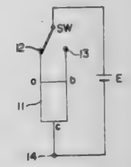
Mitsuaki Hino, Tokyo, Japan, assignor to Nippon Klingage Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,983

Claims priority, application Japan, Jun. 22, 1977, 52/74000; Nov. 22, 1977, 52/140413; Dec. 12, 1977, 52/166790[U]; Dec. 12, 1977, 52/166791[U]

Int. Cl.³ G05F 7/00

U.S. Cl. 323—294 **9 Claims**



1. A residual voltage regulating circuit for a Hall element comprising:

a Hall element having first, second and third terminals;

a source of constant-current;

an oscillator;

switching means, responsive to said oscillator, for interconnecting said Hall element and said source for directing said constant-current through said first and third terminals during a first time period, and through said second and third terminals during a second time period;

measuring means, connected to said first, second and third terminals and responsive to said switching means, for measuring the voltage across said second and third terminals during said first time period and for measuring the voltage across said first and third terminals during said second time period, said measuring means including a high input impedance amplifier; and

means, attached to said measuring means, for subtracting the voltage measured during said first time period from the voltage measured during said second time period so that the even effects of a magnetic field applied to said Hall element are cancelled, and said subtracting means produces a signal related only to the Hall voltage of said Hall element.

4,292,583

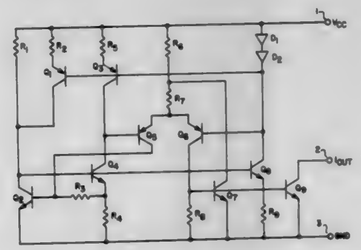
VOLTAGE AND TEMPERATURE STABILIZED CONSTANT CURRENT SOURCE CIRCUIT

Werner H. Hoeft, Santa Clara County, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 31, 1980, Ser. No. 117,118

Int. Cl.³ G05F 1/56

U.S. Cl. 323—316 **8 Claims**



1. A voltage and temperature stabilized constant current

source circuit having power supply and ground terminals, which comprises:

differential amplifier circuit means having first and second input terminals, first and second output terminals and a current supply terminal;

voltage reference circuit means for providing a reference voltage to the first input terminal of said differential amplifier;

voltage stabilizing circuit means for compensating for changes in the voltage applied to said power supply terminal and having an input terminal coupled to said second output terminal of the differential amplifier and an output terminal coupled to said second input terminal of the differential amplifier;

temperature stabilizing circuit means for compensating for changes in circuit component characteristics with temperature variations and having an input terminal coupled to the first output terminal of said differential amplifier and an output terminal coupled to said current supply terminal of the differential amplifier; and

output circuit means having an input terminal coupled to said first output terminal of the differential amplifier and an output terminal for providing a stabilized constant current output signal.

4,292,585

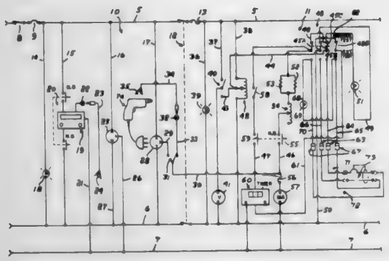
LEAKAGE CURRENT TESTING CIRCUIT

George F. Charette, 14 Skelton Rd., Burlingto, Mass. 01803

Filed Jan. 17, 1979, Ser. No. 4,322

Int. Cl.[3] G01R *31/02*

U.S. Cl. 324—51 6 Claims



1. A leakage current testing circuit to be connected to an energized three wire outlet and for use where either the outlet is protected by a ground fault circuit interrupter device or such a device is to be tested prior to its installation, said testing circuit including three parallel lines of which the second is neutral and the third a ground, first and second parallel leads connecting said first and neutral lines, the first parallel lead including a voltmeter and the second parallel lead a potentiometer adjustable to the prevailing first line voltage and including a lead for the adjusted output, first and second tripping leads connected to the ground line, the first tripping lead including parallel resistors, a potentiometer adjustable in a milliampere range and a milliammeter, and the second tripping lead including a digital readout timer of a type latching its reading when the device being tested trips and a timer lead, first switch means in control of said tripping leads and operable to close them in the alternative or simultaneously, second switch means having first and second operative positions in the first of which the adjusted output lead is closed to said tripping leads and said timer lead is connected to said neutral line, the first position used when the circuit is protected by a ground fault circuit interrupter device to be tested and the second position used when an external test is to be made of such a device prior to its installation, and said circuit including an external test section provided with first and second outlets each of which includes first and second leads to which said device is to be connected, and when said second switch means is in its second position with the device to be tested connected to said leads, the adjusted output lead is closed to the external test section through the device and the tripping leads, and the timer lead closed through the device to the neutral line, whereby in either position of the second switch means, device leakage can be measured in terms of milliamperes and then in terms of milliseconds at an established milliampere value.

4,292,584

CONSTANT CURRENT SOURCE

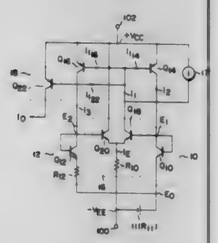
Hiromi Kusakabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 4, 1979, Ser. No. 45,335

Claims priority, application Japan, Jun. 9, 1978, 53-69532

Int. Cl.[3] G05F *3/20*

U.S. Cl. 323—316 16 Claims



1. A constant current source circuit comprising:

first potential providing means, including a first transistor connected in diode fashion, for providing at one end thereof a first potential;

second potential providing means, including a second transistor which is connected in diode fashion and has a lower emitter current density than that of said first transistor and a first resistor connected in series to said second transistor, for providing at one end a second potential;

comparing means for comparing the first and second potentials and providing a first current corresponding to a potential difference between these potentials;

a third transistor for providing at the collector circuit thereof a second current, corresponding to the first current, said second current being provided to said first potential providing means;

a fourth transistor for providing at the collector circuit thereof a third current corresponding to the first current said third current being provided to said second potential providing means; and

current supply means for supplying a constant current output corresponding to the first current.

4,292,586

TESTING OF CIRCUIT ARRANGEMENTS

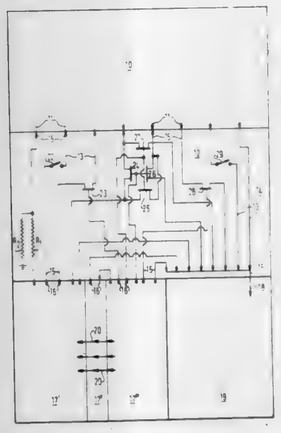
Donald A. Longmuir, Loanhead, and John M. Morrison, Edinburgh, both of Scotland, assignors to Ferranti Limited, Cheadle, England

Filed May 31, 1979, Ser. No. 44,311

Claims priority, application United Kingdom, May 31, 1978, 25470/78

Int. Cl.[3] G01R *15/12*

U.S. Cl. 324—73 R 14 Claims



1. Apparatus comprising a circuit arrangement having a plurality of terminals, test equipment to provide a plurality of different test signals from output terminals thereof, at least one test signal to be supplied in a test sequence to the circuit arrangement, indicating means to receive output signals from the circuit arrangement in response to the test sequence from the test equipment, the output signals from the circuit arrangement being indicative of the manners of operation of the parts of the circuit arrangement to receive the test signals, and interface means connected between the test equipment and the circuit arrangement, the interface means including a pattern of conductors and connector parts mounted upon a substrate of electrical insulating material, the connector parts cooperating with the terminals of the circuit arrangement and the output terminals of the test equipment, to complete electrical connections between the circuit arrangement and the test equipment through the interface means, and the interface means including at least one electrical component arranged to modify in a required manner at least one of the test signals before it is supplied to the circuit arrangement.

4,292,587

Patent Not Issued For This Number

4,292,588

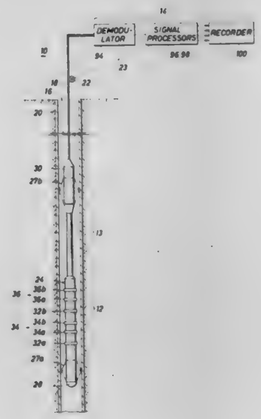
ELECTROMAGNETIC INSPECTION TOOL FOR FERROMAGNETIC CASINGS

Glenn S. Smith, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Dec. 18, 1978, Ser. No. 970,671

Int. Cl.[3] G01N *27/72, 27/82;* G01R *33/12*

U.S. Cl. 324—221 22 Claims



1. In an electromagnetic thickness measuring tool having means for generating a thickness signal indicative of the thickness of a ferromagnetic casing, and means for generating a permeability signal indicative of the permeability of the casing the improvement comprisng:

means for generating a corrected permeability signal corrected for the variations of inside diameter of the casing and

means for generating a corrected thickness signal corrected for the variations of permeability of the casing.

4,292,589

EDDY CURRENT METHOD AND APPARATUS FOR INSPECTING FERROMAGNETIC TUBULAR MEMBERS

Stephen D. Bonner, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed May 9, 1979, Ser. No. 37,423

Int. Cl.[3] G01N *27/72, 27/82;* G01R *33/12*

U.S. Cl. 324—221 32 Claims

1. Apparatus for locating and evaluating defects in ferromagnetic casing comprising:

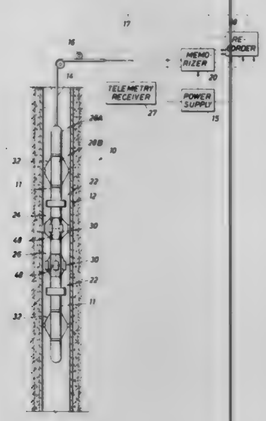
an elongated body adapted for suspension in said casing from a well logging cable;

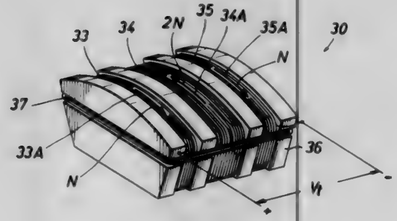
first means, adapted to be disposed within said casing, and located on said body, for generating an alternating magnetic field along a portion of the longitudinal axis of said casing which induces circumferential currents therein;

second means, adapted to be disposed within said casing and located on said body, said second means disposed axially from said first means, for generating at least one signal in response to perturbations of said circumferential current in said casing, said second means including:

a carrying member,

a first coil having N number of windings supported by said carrying member,
a second coil disposed adjacent said first coil and having 2 N number of windings serially opposed to the windings of said first coil, and
a third coil disposed adjacent said second coil and having N

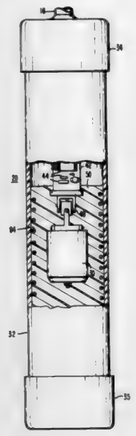




number of windings serially opposed to the windings of said second coil; and
a signal processor coupled to said second means for receiving at least one of said signals for measuring the amplitude and phase components thereof, thereby determining the characteristics of said defect.

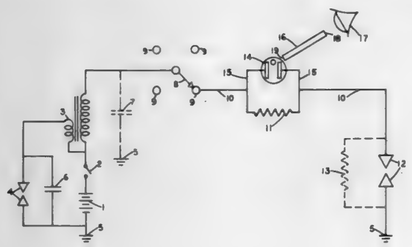
4,292,590
MAGNETOMETER APPARATUS WITH DETECTOR IMMOBILIZED IN WAX
James H. Wilson, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 13, 1979, Ser. No. 93,329
Int. Cl.³ G01R *33/02*; C01G *21/16*; B65B *23/00*; H02G *13/08*
U.S. Cl. 324—226 **7 Claims**

1. A magnetometer assembly comprising:
(a) a housing;
(b) a magnetometer detector disposed within said housing to sense external magnetic disturbances;
(c) support means for supporting said detector and being of the type which allows said detector to swing freely so as to assume a vertical orientation;
(d) said detector being suspended in a material which is a solid at the normal operating temperature of said detector so as to prevent swinging movement of said detector but



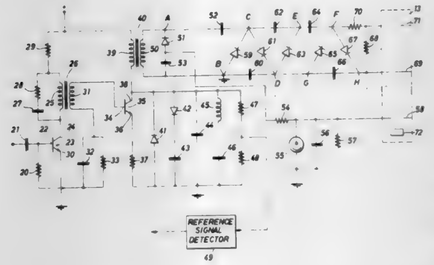
is a liquid at a relatively higher temperature so as to allow swinging movement of said detector; and
(e) means for heating said material to said higher temperature.

4,292,591
IGNITION PERFORMANCE MONITOR FOR PERMANENT INSTALLATION
James D. Doss, 905 Tewa Loop, Los Alamos, N. Mex. 87544
Filed May 9, 1979, Ser. No. 37,330
Int. Cl.³ F02P *17/00*
U.S. Cl. 324—395 **5 Claims**



1. A device which may be permanently installed for visually monitoring the performance of electrical ignition systems which are used in the operation of internal combustion engines, wherein parasitic system capacitance is that electrical capacitance which exists between the ignition system high voltage terminal and the ignition system ground connection to the engine, comprising:
a composite current sensor which is a combination of two components connected electrically in parallel; the first component being an electrical resistance element and the second component being a gaseous discharge device consisting essentially of two electrically conductive electrodes which are separated within a region containing a gas or mixture of gases which will ionize and emit visible light when electric current flow resulting from a discharge of parasitic system capacitance through said parallel resistance element causes a sufficient electric potential to be developed between the said two electrodes to cause ionization of said gaseous discharge device, and
electrical connection of said composite current sensor comprising said resistance element and said gaseous discharge device in series with an electrical conductor which is used to provide a path for electrical current flow between a source of high voltage and a spark plug high voltage terminal wherein said spark plug is used in an electric ignition system which is incorporated into an internal combustion engine.

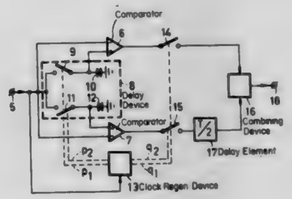
4,292,592
PULSED POWER SUPPLY SYSTEM
James A. Birdwell, and Joseph M. Delasko, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed May 29, 1979, Ser. No. 43,866
Int. Cl.³ H05H *5/00*; G21G *4/02*
U.S. Cl. 328—233 **4 Claims**



1. A circuit for pulsing a high voltage ion source in an accelerator tube having an anode, a cathode and a grid, comprising:
a step-up transformer having a primary winding and a secondary winding;
a low voltage, square wave clock signal source;
first transistor means for shaping said low voltage clock signal;
second transistor means responsive to said shaped low voltage clock signal for inducing voltages within said primary winding of said transformer;
a voltage multiplier circuit coupled to said secondary winding of said transformer for supplying first and second voltage potential to said anode and said cathode of said accelerator tube; and
a voltage regulator circuit coupled to said secondary winding of said transformer for producing a third voltage potential, said third voltage potential being coupled to said grid of said accelerator tube.

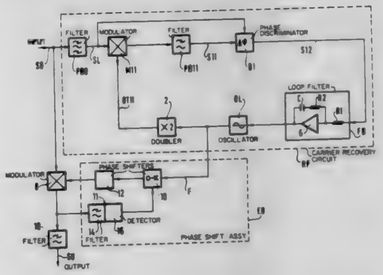
4,292,593
METHOD OF DEMODULATING A QUADPHASE CODED DATA SIGNAL AND RECEIVER FOR CARRYING OUT THE METHOD
Frank de Jager; Rudolf A. Van Doorn; Johannes J. Verboom, and Marino G. Carasso, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 29, 1979, Ser. No. 53,577
Claims priority, application Netherlands, Mar. 26, 1979, 7902341
Int. Cl.³ H03K *13/01*
U.S. Cl. 329—50 **6 Claims**

1. A method of demodulating a quadphase coded data signal which comprises data words consisting of first, second, third and fourth equally long, consecutive half-bit intervals, said method comprising the steps of:
sampling said data words in each of said half-bit intervals forming separate sampling values;
synchronously comparing, bit and word, the sampling value in the third half-bit interval with the sampling value in the first half-bit interval forming a first difference value;
synchronously comparing, bit and word, the sampling value in the fourth half-bit interval with the sampling value in



the second half-bit interval forming a second difference value;
delaying said second difference value for a half-bit interval such that said second difference value follows said first difference value by one bit interval; and
combining said first difference value with said second difference value to form a demodulated data word.

4,292,594
METHOD AND APPARATUS FOR CARRIER REGENERATION AND SYNCHRONOUS AMPLITUDE DEMODULATION
Jacques David, Lannion, and Hubert Mionet, Perros-Guirec, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed Aug. 21, 1979, Ser. No. 68,439
Claims priority, application France, Aug. 30, 1978, 78 24994
Int. Cl.³ H03D *1/00*
U.S. Cl. 329—50 **15 Claims**



1. A method of recovering the modulation carrier wave of a modulated signal whose frequency spectrum includes components whose frequencies are symmetrical in pairs about the carrier frequency, said method including the following operations:
generating a local carrier (F) at a controllable frequency;
deriving, where necessary, an "original" signal (SL) from the said modulated signal, such that the frequency spectrum of the original signal is constituted substantially entirely by a frequency component at the carrier frequency and modulation components arranged symmetrically in pairs about the carrier frequency;
using the local carrier in conjunction with modulation means and filtering means to generate two image signals from the "original" signal such that the frequency spectrum of one of the image signals is inverted about its central frequency with respect to the frequency spectrum of the other of the

image signals, and such that the frequency difference between the central frequencies of the image signals is proportional to the frequency difference between the frequency of the local carrier and the frequency of the modulation carrier;

performing a step of phase discrimination between the said image signals; and

controlling the frequency of the local carrier by the signal which results from the discrimination after removal of the high frequencies.

4,292,595

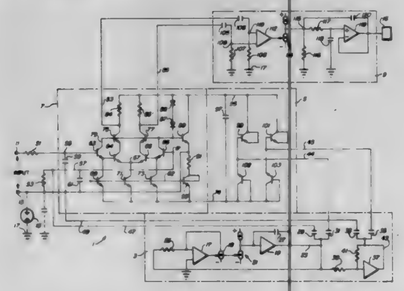
CAPACITANCE COUPLED ISOLATION AMPLIFIER AND METHOD

Lewis R. Smith, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Nov. 13, 1979, Ser. No. 93,918

Int. Cl.³ H03F *3/38*

U.S. Cl. 330—10 **16 Claims**



1. An isolation amplifier for producing an isolated output signal in response to a differential input signal, said isolation amplifier comprising in combination:

a. first means for producing first and second signals each having a triangular wave shape, said first and second signals being substantially complementary;

b. floating power supply means for producing an electrically floating D C voltage difference;

c. first and second coupling means for capacitively coupling first portions of said first and second signals, respectively, to said floating power supply means; and

d. input circuit means receiving operating power from said floating power supply means for receiving and operating upon said differential input voltage, said input circuit means being electrically floating.

4,292,596

GAIN CONTROL CIRCUIT

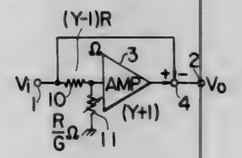
Kohei Ishizuka, Hachiouji; Yasuhiro Kita, Hachiouji, and Narimichi Maeda, Tachikawt, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 13, 1979, Ser. No. 66,239

Claims priority, application Japan, Aug. 11, 1978, 53-97209

Int. Cl.³ H03G *3/00*

U.S. Cl. 330—86 **9 Claims**



1. A digital gain control circuit having (a) an input terminal and an output terminal; (b) an amplifier connected between said input and output terminals; and (c) a resistance network which includes a variable resistance circuit disposed between one of said terminals and said amplifier, said variable resistance circuit comprising a plurality of resistance elements and switch means including a plurality of switches for changing-over said resistance elements, said variable resistance circuit including circuit means for driving said plurality of switches directly with digital code signals, said amplifier and said resistance network being such that the transfer function between said input and output terminals is:

$$\frac{\frac{Y+1}{Y-1}+(AG+B)}{\frac{Y+1}{Y-1}-(AG+B)}$$

where Y denotes a constant which determines the gain of said amplifier and/or a value of the constituent resistance of said resistance network, G denotes a coefficient which varies in direct proportion to the digital code signal, and A and B denote constants.

4,292,597

CIRCUIT FOR CONVERTING SINGLE-ENDED INPUT SIGNALS TO A PAIR OF DIFFERENTIAL OUTPUT SIGNALS

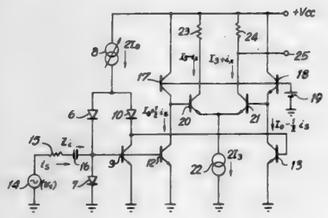
Tsutomu Niimura, Hiratsuka; Kyoichi Murakami, Chigasaki, and Akira Yamakoshi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,858

Claims priority, application Japan, Oct. 13, 1978, 53/126532; Oct. 13, 1978, 53/141273[U]

Int. Cl.³ H03F *3/45*; H03G *3/30*

U.S. Cl. 330—254 **16 Claims**



1. A circuit for converting a single-ended input signal to a pair of differential output signals, comprised of first and second diode means connected in a first series circuit; third diode means; transistor means having its collector-emitter circuit connected in a second series circuit with said third diode means, the first series circuit formed of said first and second diode means being connected in parallel with the second series circuit formed of said third diode means and the collector-emitter circuit of said transistor means; said transistor means having its base electrode connected to the junction defined by said first and second diode means such that the base-emitter circuit thereof is in parallel arrangement with said second diode means; current source means connected to the parallel-connected first and second series circuits so as to supply currents thereto; means for supplying a signal current to said junction defined by said first and second diode means; and first and second output means coupled to said junction defined by said first and second diode means and to the collector electrode of said transistor means, respectively, for providing a pair of differential output signal currents to flow therethrough that are a function of said supplied signal current.

4,292,598

AUTOMATIC GAIN CONTROL CIRCUIT

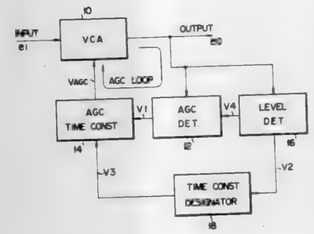
Hiroto Yasumura, Kumagaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 25, 1979, Ser. No. 42,345

Claims priority, application Japan, Jun. 1, 1978, 53-66077; Feb. 15, 1979, 54-15453; Feb. 15, 1979, 54-15454; Feb. 15, 1979, 54-15455

Int. Cl.³ H03G *3/20*

U.S. Cl. 330—281 **18 Claims**



1. An automatic gain control circuit comprising:

(a) first means for amplifying an input signal by a gain factor controlled by a control signal;

(b) second means for providing a first signal including a DC component corresponding to the amplitude of an output signal derived from said first means;

(c) third means for providing said control signal with a DC level corresponding to the DC component of said first signal and having a variable time constant enough to remove the ripple component of the first signal, said first to third means forming an automatic gain control (AGC) loop;

(d) fourth means for providing a second signal when the amplitude of said input signal or said output signal reaches a given value; and

(e) fifth means for providing a third signal to designate the changing of the time constant of said third means when receiving said second signal, said time constant of said third means increasing to a predetermined value only in response to said third signal.

4,292,599

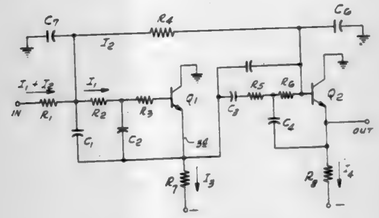
LOW PASS ACTIVE FILTER

Stephen M. Bench, Huntington Beach, Calif., assignor to The Anaconda Company, New York, N.Y.

Filed Jan. 19, 1979, Ser. No. 4,707

Int. Cl.² H03F *3/04*

U.S. Cl. 330—290 **8 Claims**



1. In a low pass filter, the combination comprising

(a) multiple stages including multiple active devices,

(b) circuitry including resistance and capacitance providing AC coupling of the stages in series sequence, successive stages being DC isolated, and

(c) high impedance biasing resistance coupled between the first and last stage inputs, whereby the DC operating point is determined by one active device.

4,292,600

PULSED GAS LASER EMITTING HIGH-POWER BEAM OF SHORT WAVELENGTH

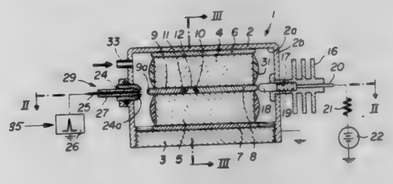
Arnold Neracher, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Filed Jun. 21, 1977, Ser. No. 808,525

Claims priority, application Switzerland, Jun. 23, 1976, 8009/76

Int. Cl.³ H01S *3/097*

U.S. Cl. 331—94.5 G **12 Claims**



1. A laser comprising:

a pair of flat nonconductive bodies separated by a narrow interspace, at least one of said bodies being a member with two parallel major faces composed of a solid material having a high dielectric constant;

a housing disposed around said bodies and provided with a radiation-transparent window, said housing having a conductive wall portion in full-face contact with a first metallic layer on a major face of said member remote from said interspace;

a second metallic layer in said interspace overlying part of the opposite major face of said member and defining a storage capacitance with said first layer;

a third metallic layer coplanar with said second layer in said interspace overlying another part of said opposite face and defining a pulse-shaping capacitance with said first layer, said second and third layers having substantially rectilinear confronting edges defining an elongate cavity in said interspace; said cavity having an end adjacent said window;

impedance means galvanically interconnecting said second and third layers;

terminal means for connecting a source of charging voltage between said first and second layers; and

circuit means including said conductive wall portion connected between said first and third layers for periodically discharging said pulse-shaping capacitance, thereby exciting a radiation-emitting gas in said elongate cavity.

4,292,601

FLASHLAMP EXCITED FLUID LASER AMPLIFIER

Henry R. Aldag, Boston, Mass.; John B. Marling, Pleasanton, Calif., and Charles T. Pike, Lexington, Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Continuation of Ser. No. 810,952, Jun. 29, 1977, abandoned. This application Apr. 7, 1978, Ser. No. 894,416

Int. Cl.² H01S *3/093*

U.S. Cl. 331—94.5 L **14 Claims**

1. Apparatus for exciting a fluid laser medium comprising:

first and second confronting walls disposed parallel to each other to define a fluid channel for the flow of the fluid laser medium between said confronting walls;

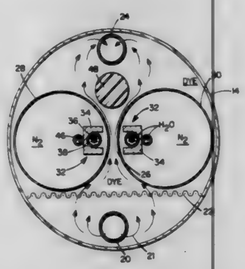
said confronting walls including optically transmissive portions along the length of said fluid channel transverse to the fluid flow;

means adjacent the optically transmissive portions of said confronting walls for applying optical excitation to said

fluid channel from a location behind said confronting walls;

means associated with said excitation applying means for providing cooling thereof;

the laser medium being forced through said fluid channel; and



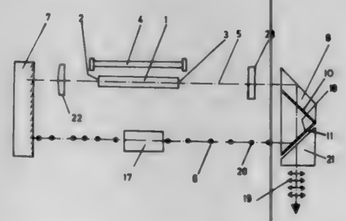
means including a gas filled region between said excitation applying means and said fluid channel for providing thermal isolation between said excitation applying means and said fluid channel whereby heat transfer between said excitation means and said fluid channel is reduced.

4,292,602

LASER RESONATOR

Erik Bergqvist, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Sweden

Filed Apr. 17, 1978, Ser. No. 897,070
Claims priority, application Sweden, Apr. 28, 1977, 7704874
Int. Cl.[3] H01S *3/02*
U.S. Cl. 331—94.5 C 6 Claims



1. A laser apparatus, comprising:

an optical resonant cavity of the folded type, said cavity having a first and a second end, both ends of said cavity being limited by the same totally reflecting mirror;

an active material arranged in said cavity;

means for exciting said active material to generate oscillating radiation moving between said ends in said cavity; and

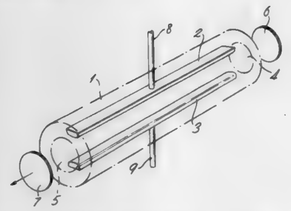
a corner cube prism arranged between said ends in said cavity, said prism comprising a plurality of plane reflective surfaces which successively reflect said radiation so that reflected radiation is parallel to incident radiation, one of said reflective surfaces having disposed thereon a beam dividing polarizer means for separating the output beam of the laser from the radiation oscillating in said cavity.

4,292,603

EXCIPLEX LASERS

Marcus H. R. Hutchinson, Harrow, England, assignor to National Research Development Corporation, London, England

Filed Jun. 20, 1978, Ser. No. 917,358
Claims priority, application United Kingdom, Jun. 21, 1977, 25861/77
Int. Cl.[3] H01S *3/22, 3/223*
U.S. Cl. 331—94.5 G 8 Claims



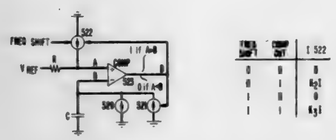
1. A laser comprising a container of a noble gas and of a compound which includes hydroxyl ions, means for pumping energy into the container so as to raise the noble gas to an excited state and allow the formation of a noble gas hydroxide exciplex and resonating means comprising a multiple reflection path which includes the container so as to enable the exciplex to emit a coherent beam of energy of a defined wavelength and thereupon disassociate into its constituents.

4,292,604

RELAXATION OSCILLATOR WITH PLURAL CONSTANT CURRENT SOURCES

Milton L. Embree; David C. Goldthorp, both of Reading, Pa., and David R. Vogelpohl, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 20, 1979, Ser. No. 67,717
Int. Cl.[3] H03K *3/023, 3/282*
U.S. Cl. 331—111 5 Claims



1. An oscillatory signal generator circuit comprising in combination:

a capacitor (C);

means (V_{ref}, R, **522**) for providing a first voltage reference potential and a second voltage reference potential for determining the charging and discharging voltage range of the capacitor, and for causing and discharging voltage range of the capacitor, and for causing operation of the generator circuit at a first frequency;

a plurality of interrelated constant current sources including a first current source (**522**) and wherein the means include in combination a resistor (R) and and voltage source (V_{ref}) and the first current source for providing the first voltage reference potential, and the voltage source providing the second voltage reference potential, the plurality of constant current sources further including a second current source (**520**) for discharging the capacitor to the second voltage reference potential and a third current source (**521**) for charging the capacitor to the first voltage reference potential; and

a comparison means (**523**) for comparing the voltage on the capacitor with the first and second voltage reference potentials, the comparison means providng an input signal to the first current source and to the third current source

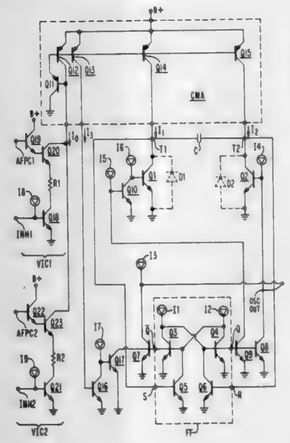
upon the capacitor voltage going outside of the voltage range defined by the first and second voltage reference potentials, the capacitor, the second current source and the third current source being commonly connected to a third reference potential and to a first input of the comparison means, a second input of the comparison means having the voltage source coupled thereto through the resistor, and one side of the first current source connected thereto, the other side of the first current source being connected to the third reference potential.

4,292,605

RELAXATION OSCILLATORS WITH ELECTRICAL CONTROL OF PERIODICITIES OF OSCILLATION

Robert L. Rodgers, III, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 15, 1979, Ser. No. 94,752
Int. Cl.[3] H03K *3/28*
U.S. Cl. 331—111 4 Claims



1. A relaxation oscillator with electrical control of the periodicity of its oscillations comprising:

a reference voltage bus;

a timing capacitor;

first and second terminals between which said timing capacitor is connected;

first and second electrically controlled constant current generators respectively supplying a first current to said first terminal and a second current proportional to said first current to said second terminal;

R-S flip-flop means set by the voltage at said first terminal departing in a first sense from said reference voltage by a predetermined amount and reset by the voltage at said second terminal departing in said first sense from said reference voltage by a predetermined amount;

first switching means responding to the set condition of said R-S flip-flop for completing connection of said first terminal to said reference voltage bus and responding to the reset condition of said R-S flip flop for interrupting connection of said first terminal to said reference voltage bus; and

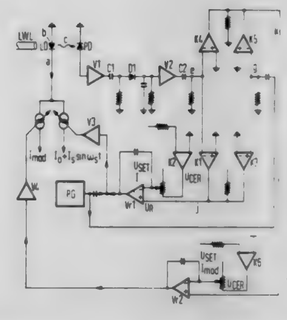
second switching means responding to the reset condition of said R-S flip-flop for completing connection of said second terminal to said reference voltage bus and responding to the set condition of said R-S flip-flop for interrupting connection of said second terminal to said reference voltage bus.

4,292,606

MODULATION CURRENT CONTROL OF LASER DIODES

Herwig Trimmel, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,155
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2847182
Int. Cl.[3] H01S *3/096*
U.S. Cl. 332—7.51 10 Claims



1. A method to control the modulation current supplied to a laser diode, which is employed as a light transmitter in a transmission stage of a signal transmission system with a lightwave guide, and which has a light-current characteristic curve with two breakpoints, comprising the steps of:

supplying a bias current to the laser diode;

superimposing a selected pilot signal on bias current;

applying a modulation current to the laser diode such that the total current applied to the diode, for limited time intervals, exceeds the value of the current at the second breakpoint on the light-current characteristic curve;

sensing a portion of the light emitted by the laser diode;

converting the sensed portion of the light emitted by the laser diode into a corresponding electrical signal;

comparing the electrical signal to a reference signal;

forming a control signal from a selected portion of the output signal of the comparator;

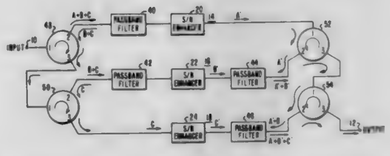
adjusting the value of the modulation current based on the value of the control signal.

4,292,607

BROADBAND CIRCUIT FOR MICROWAVE S/N ENHANCERS

Harry Goldie, Randallstown, and Steven N. Stitzer, Ellicott City, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 19, 1980, Ser. No. 131,586
Int. Cl.[3] H01P *5/00, 1/32*
U.S. Cl. 333—24.1 5 Claims



1. A microwave circuit network having an input and an output port and comprising N parallel branches which are operative, in combination, to enhance the signal-to-noise ratio

of an input signal over a predetermined frequency bandwidth, said network comprising:

a signal-to-noise enhancer of the magnetostatic wave excitation type utilizing ferrite material, disposed in each branch of said network, said predetermined operational frequency bandwidth of said network being comprised of N frequency sub-bands, each enhancer being adjustedly operative over a corresponding one of said frequency sub-bands exclusively;

an input passband microwave filter, disposed in each of a number of appropriate branches of said network and coupled to the input of the signal enhancer of the corresponding branch, for passing, with relatively low losses, signals having frequencies substantially within the adjusted operational frequency sub-band of the branch-related signal enhancer and for reflecting signals having frequencies outside of said corresponding frequency sub-band;

N −1 input microwave circuits, each having a first, second and third port and each operative to pass signals unidirectionally from said first to second ports and second to third ports, the first port of a first of said N −1 microwave circuits being coupled to the input port of the network, the second port of said first microwave circuit being coupled to the input passband filter of a first branch, and the third port thereof being coupled to the first port of another microwave circuit, each of the remaining N −2 microwave circuits having the second ports thereof coupled respectively to the input passband filters of corresponding network branches, the remaining microwave circuit coupled to the ith network branch having the third port thereof connected to the first port of the remaining microwave circuit coupled to the (i +1)th network branch, the remaining third port of a final microwave circuit being coupled to the signal enhancer of a final network branch;

an output passband microwave filter disposed in each of a number of appropriate branches of said network and coupled to the output of the signal enhancer of the corresponding branch, each output passband filter being operative to pass, with relatively low losses, signals having frequencies substantially within the adjusted operating frequency sub-band of said coupled enhancer and to reflect signals having frequencies outside of said frequency sub-band; and

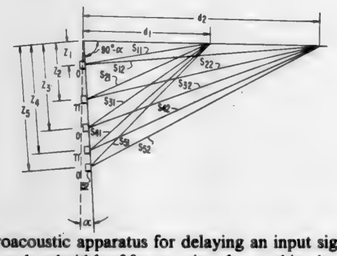
N −1 output microwave circuits each having a first, second and third port and each operative to pass signals unidirectionally from said first to second port and from said second to third ports, the first port of a first of said N −1 microwave circuits being coupled to the output of the enhancer disposed in a first branch of the network, the second port of said first microwave circuit being coupled to said output passband filter of a second branch of said network and the third port thereof being coupled to said first port of another of said N −1 microwave circuits, each of the remaining N −2 microwave circuits having the second ports thereof respectively coupled to said output passband filters of corresponding network branches, the remaining microwave circuit coupled to the ith network branch having the third port thereof connected to the first port of the remaining microwave circuit coupled to the (i +1)th branch, the remaining third port of a final microwave circuit being coupled to the output port of the network.

4,292,608

ELECTROACOUSTIC DELAY LINE APPARATUS

Robert W. Weinert, Monroeville, and John de Klerk, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1979, Ser. No. 61,089
Int. Cl.³ H03H *9/30, 9/40*
U.S. Cl. 333—141 **12 Claims**



1. In electroacoustic apparatus for delaying an input signal having a known bandwidth of frequencies, the combination of

a delay line made of acoustic wave propagating material and having a first surface and a second surface,

a first transducer including a plurality of series connected electrode elements positioned on the first surface for generating acoustic wave energy toward the second surface, with each electrode element of the first transducer being energized to be phase shifted by π radians in relation to the energization of the adjacent electrode elements of the first transducer,

a second transducer positioned on the second surface for receiving the generated acoustic wave energy from the first surface,

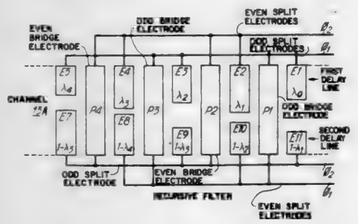
with the spacing between the successive pairs of adjacent electrode elements of the first transducer having a predetermined variation determined in relation to the acoustic wavelength Λ_1 at the low end of said bandwidth of frequencies of said input signal, the distance Z_1 of the first electrode element of the first transducer from the second surface and the distance d_1 of the second transducer from the first surface to provide constructive interference in the acoustic wave energy radiation from the first transducer toward the second transducer.

4,292,609

RECURSIVE FILTER FOR TRANSFER OF CHARGE DEPOSITS

Michel Feldman, 45, rue Saint Lambert, 75015 Paris, and Jeanine Le Goff épouse Henaff, 3, ter Place Marquis, 92140 Clamart, both of France

Filed Jun. 13, 1979, Ser. No. 48,155
Claims priority, application France, Jun. 26, 1978, 78 19829; Feb. 21, 1979, 79 05108
Int. Cl.³ H03H *15/02, 17/04;* **G11C** *19/14*
U.S. Cl. 333—165 **32 Claims**



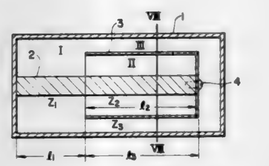
1. A charge transfer device ("CTD") recursive filter comprising a semiconductor substrate having a single channel formed thereon; means comprising at least two side-by-side CTD delay lines for respectively transferring charges in opposite directions along said channel; a plurality of split electrodes in a first of said CTD delay lines, each of which constitutes a pair with a corresponding one of a plurality of split electrodes in the other of said CTD delay lines; even bridge electrode means occupying the entire width of said channel and separating each even pair of split electrodes from the next odd pair of split electrodes; odd bridge electrode means occupying the entire width of said channel and separating each odd pair of split electrodes from the next even pair of split electrodes; each even-odd pair of said split electrodes having first and second delay lines, respectively, which together provide a constant delay period if said even-odd pair is separated by an even bridge electrode; each odd-even pair of said split electrodes having first and second delay lines, respectively, which together provide a constant delay period if said odd-even pair is separated by an odd bridge electrode; each of said delay lines having an input connected to receive signals to be filtered and having an output connected to deliver filtered signals, means for separately generating odd and even clock pulses; means responsive to each odd clock pulse at said odd bridge electrodes for distributing charges at said odd bridge electrodes to the closer even bridge electrodes in accordance with the lengths the split electrodes associated with the odd bridge electrode; and means responsive to each even clock pulse at said even bridge electrodes for distributing charges at said even bridge electrodes to the closer odd bridge electrodes in accordance with the lengths of the split electrodes associated with the even bridge electrodes.

4,292,610

TEMPERATURE COMPENSATED COAXIAL RESONATOR HAVING INNER, OUTER AND INTERMEDIATE CONDUCTORS

Mitsuo Makimoto, and Sadahiko Yamashita, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 25, 1980, Ser. No. 115,396
Claims priority, application Japan, Jan. 26, 1979, 54-8352
Int. Cl.³ H01P *1/30, 7/04*
U.S. Cl. 333—222 **6 Claims**



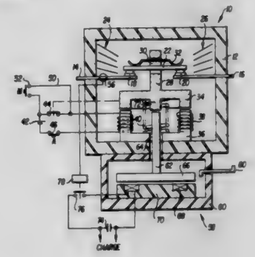
1. A temperature compensated, coaxial cavity resonator comprising, a first, outer conductor of a hollow structure, a second, inner conductor internally disposed in a coaxial relationship with said first conductor and in a short-circuit connection at one end thereof with one end wall of said first conductor and in an open-circuit relationship with the other end wall of the first conductor, and a third, inner conductor of a hollow structure coaxially disposed with and encircling said second conductor, said third conductor having a closed end which is connected to the open-circuit end of said second conductor and the axial extent of said third conductor being smaller than the axial extent of said second conductor, said first conductor having a thermal expansion coefficient equal to or greater than the thermal expansion coefficient of said second conductor and greater than the thermal expansion coefficient of said third conductor, longitudinal expansion of said first, second and third conductors as a function of temperature being electrically compensated by transverse expansion as a function of temperature of said first and third conductors, whereby said resonator has a resonant frequency that is substantially independent of temperature.

4,292,611

HIGH-SPEED AUTOMATIC TRIPPING CONTACTOR

Raymond Bresson, and Andre P. Ducluzaux, both of Grenoble, France, assignors to Merlin Gerin S.A., Grenoble, France

Filed Mar. 31, 1980, Ser. No. 135,271
Claims priority, application France, Apr. 9, 1979, 79 09123
Int. Cl.³ H01H *77/10*
U.S. Cl. 335—6 **9 Claims**



1. An electromagnetic contactor having a contactor unit comprising:

a coil wound on a stationary magnetic core which attracts a movable armature of magnetic material upon energization of said coil,

a movable contact carrier secured mechanically to said armature so as to be actuated between an open position and a closed position of contactor,

a stationary contact cooperating with a movable contact supported by said contact carrier, said contacts coming into engagement with each other in the closed position and being maintained in this position upon attraction of said movable armature against the magnetic core,

bias means urging a movable element comprising said armature and said contact carrier towards the open position upon deenergization of said coil,

a high-speed electrodynamic trip device associated to said contactor unit and including a control winding, a movable conductive disc arranged in front of said winding and a striker secured to said disc so as to strike said movable element upon energization of said control winding ensuring an electrodynamic repulsion of said disc which moves said movable element towards the open position against the electromagnetic attraction forces developed between said armature and core.

4,292,612

REMOTELY SWITCHABLE RESIDENTIAL CIRCUIT BREAKER

E. Keith Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 14, 1979, Ser. No. 94,021
Int. Cl.³ H01H *75/00, 77/00, 83/00*
U.S. Cl. 335—14 **6 Claims**

1. A remotely switchable circuit breaker comprising, in combination:

A. a molded, insulative breaker case;

B. a stationary breaker contact within said breaker case;

C. a movable breaker contact within said breaker case;

D. an over-center toggle-type breaker operating mechanism within said breaker case including

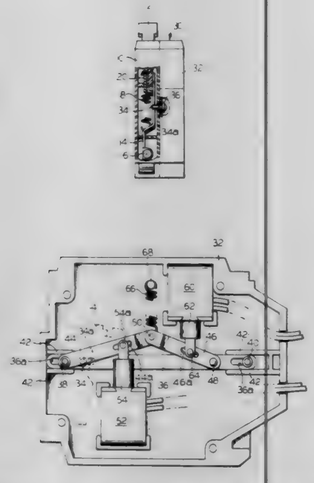
(1) a manual operating handle,

(2) a movable arm carrying said movable contact and pivotally connected with said handle,

(3) a cradle, and

(4) a mechanism spring acting between said cradle and

said arm, with said operating mechanism in its ON condition, said spring biasing said arm in one direction to a closed circuit position with said movable contact in electrical contacting engagement with said stationary contact, and, with said operating mechanism in its OFF condition, said spring biasing said arm in the opposite direction to bring said movable contact to an open circuit position in displaced relation to said stationary contact; and



E. a molded, insulative module case disposed in side-by-side relation with said breaker case; and

F. an operator module within said module case and including a remotely controllable actuating mechanism having an element reaching laterally into said breaker case and, with said breaker operating mechanism in its ON condition, engagingly moving said arm in said opposite direction away from its closed circuit position against the bias of said spring to create a current switching gap between said movable and stationary breaker contacts.

4,292,613

FLAT-SHAPED ELECTROMAGNETIC RELAY HAVING MULTIPLE CONTACTS

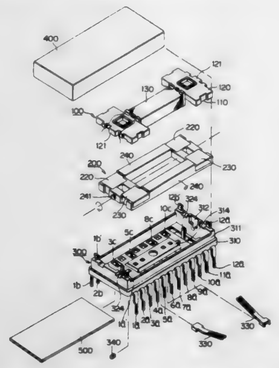
Yoshihide Bando, Kyoto, and Toshiki Tanaka, Yawata, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 17, 1979, Ser. No. 67,225
Claims priority, application Japan, Sep. 8, 1978, 53-110852
Int. Cl.³ H01H *45/02, 45/14*
U.S. Cl. 335—128 **15 Claims**

1. An electromagnetic relay having a plurality of external terminals comprising:

a flat electromagnetic device including a flat electromagnet, a plate member positioned opposite to said electromagnet, at least a portion of said plate member consisting in a magnetic member so that said magnetic member and electromagnet may be attracted toward each other upon energization of said electromagnet and at least one projecting member formed in said electromagnet or said plate member, said projecting member being disposed for a substantially vertical movement thereof in response to energization of said electromagnet;

a flat contact circuit device including a base made of electrically nonconductive material, a plurality of contact member pairs, each pair consisting of an elongated movable contact member and a stationary contact member, all of said contact members being supported by said circuit device and electrically connected to corresponding external terminals, each pair of said movable and stationary contact members providing a single close-and-open switching operation, said movable contact members being arranged in parallel with each other and substantially in coplanar relation, said electromagnetic device being mounted on said contact circuit device in parallel with each other and in mutually opposed relation,



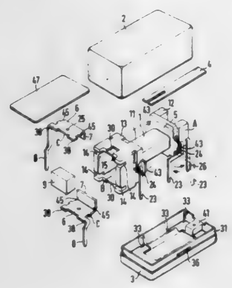
whereby said movable contact members are selectively biased by engagement at free ends thereof with said projection member in a lowered position thereof and return to their original positions by disengagement from said projection member in a raised position thereof to thereby accomplish a switching function such that predetermined pairs of said movable and stationary contact members are closed or opened on energization of said electromagnet.

4,292,614

ELECTROMAGNETIC RELAY

Kenji Ono, Yawata; Hidetoshi Matsushita, Ibaraki, and Minoru Shibata, Kadoma, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan and Hans Sauer, Deisenhofen, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,356
Claims priority, application Japan, Aug. 29, 1978, 53-106045; Mar. 13, 1979, 54-29014
Int. Cl.³ H01H *45/04*
U.S. Cl. 335—202 **15 Claims**



1. An electromagnetic relay comprising

a bobbin having a coil wound thereon;

at least one fixed contact disposed relative to said bobbin and having a contact terminal;

at least one magnetically movable contact disposed for co-

operating with said at least one fixed contact in dependence upon energization of said coil;

coil terminals connected to respective ends of said coil;

a base having bores in its bottom wall through which said contact and coil terminals extend, and a peripheral wall projecting upwardly from said bottom wall; and

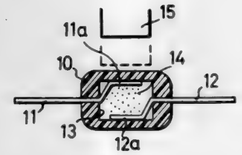
a cover fit onto said peripheral wall of said base to form a casing for said relay, wherein said cover has a downwardly projecting peripheral edge portion engaging the inner surface of said peripheral wall of said base, pockets for receiving a sealant being provided between said mutually engaging cover edge portion and base wall, and a projection extending upwardly from said base bottom wall to confine areas in which the sealant is to be injected.

4,292,615

SWITCHING ELEMENT

Shigeo Ohashi, 5-20 Okusawa 1-chome, Setagaya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 804,205, Jun. 7, 1977, abandoned. This application Jul. 24, 1979, Ser. No. 60,083
Int. Cl.³ H01H *9/00*
U.S. Cl. 335—205 **7 Claims**



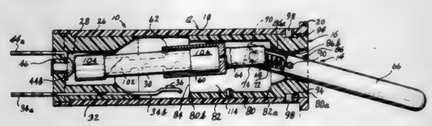
1. In a switching element comprising a container made of insulating material, a plurality of terminals made of magnetic material and fixed on said container and extending from the inside of said container to the outside of said container, a mixture filled and hermetically sealed in said container, and magnetic means operatively connected to said container and operable to apply a magnetic field to said mixture, the improvement which resides in said mixture, said mixture being composed of a non-conductive liquid selected from the group consisting of lubricating oil and contact oil, and powder or particles made of conductive magnetic material suspended in said non-conductive liquid.

4,292,616

COMBINED TOGGLE SWITCH AND FRONT ACCESS FUSE HOLDER

James H. Andersen, 8005 E. Mercer Way, Mercer Island, Wash. 98040

Filed Apr. 4, 1980, Ser. No. 137,806
Int. Cl.³ H01H *85/00*
U.S. Cl. 337—4 **18 Claims**



1. A combination fuse holder and switch comprising:

body means including a first receptacle means for receiving one contact end of an elongated fuse, said body means defining a channel communicating between said first receptacle means and an opening on said body means, a first terminal associated with said body means and having a first contact in said first receptacle means, and a second terminal associated with said body means and having an arm located in said channel, said arm having a second contact therein spaced from said first contact,

switch means including a second receptacle means for retentively receiving a second contact end of said fuse, said switch means for moving said fuse transversely relative to the longitudinal axis thereof, means for placing said second contact end of said fuse in electrical contact with the exterior of said second receptacle means,

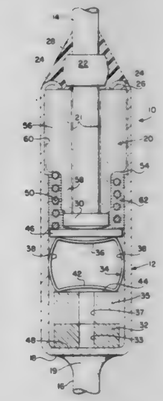
holder means for said switch means for coupling said switch means to said body means so that the first contact end of said fuse is in electrical contact with the first contact in said first receptacle means, the second contact on the arm of said second terminal being so positioned relative to said second receptacle means and said second receptacle means being so constructed as to make and break contact with the second end of said fuse when said second receptacle means is moved transversely relative to said fuse axis by said switch means.

4,292,617

THERMAL SWITCH WITH ELECTRICALLY CONDUCTIVE THERMAL SENSING PELLET

John K. McVey, Bensenville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 27, 1980, Ser. No. 134,712
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—407 **10 Claims**



1. A thermal switch comprising an elongated conductive housing having first and second ends, a first axial lead electrically connected to said conductive housing at said first end, an insulator positioned in said conductive housing at said second end, a second lead that passes through said insulator into the interior of said housing, a thermally sensitive pellet comprising a metallic composition and having a generally flat top surface inserted into said housing at said first end and positioned so as to leave a gap between said insulated lead and said first end, a thin conductive disc positioned in contact with said insulated lead, a compressed coiled spring that encircles at least a portion of said insulator so as to provide a spring bias force on said disc toward said sensing pellet and a ring-shaped electrically conductive contact member having a continuous periphery and a generally flat base surface which lies substantially parallel to said top surface of said thermal sensing pellet, side contact surfaces which contact the inside of said conductive housing when said contact member is inserted into said gap and a generally flat top surface which lies substantially parallel to said conductive disc, a load bearing wafer which has a substantially flat top and bottom surfaces positioned between the base surface of said contact member and the top surface of said thermal sensing pellet and a liquid metal-repellent grease con-

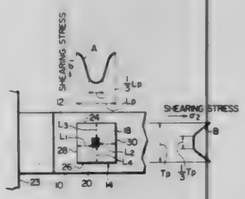
fined around said coiled spring by said conductive disc and said insulator.

4,292,618

SEMICONDUCTOR STRAIN GAUGE WITH ELASTIC LOAD PLATE

Masanori Tanabe; Satoshi Shimada, both of Hitachi; Akio Yasukawa, Chiyoda; Motohisa Nishihara, Katsuta, and Takeo Nagata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1980, Ser. No. 129,195
Claims priority, application Japan, Mar. 16, 1979, 54-31294
Int. Cl.³ G01L *1/22*
U.S. Cl. 338—5 **5 Claims**



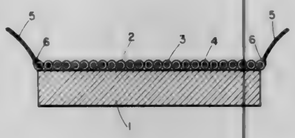
1. A semiconductor strain gauge comprising an elastic load plate having a surface subject to stress; and a semiconductor substrate having opposed major surfaces one of which is bonded to said elastic load plate and the other of which is provided thereon with at least one strain gauge stripe, and electrodes connected to said strain gauge stripe, said strain gauge stripe being spaced from the peripheral edge of the latter major surface of said substrate by a distance which is at least ½ times the length of the latter major surface.

4,292,619

RESISTANCE MATERIAL

Cornelis A. H. A. Mutsaers, and Alexander H. Boonstra, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,643
Claims priority, application Netherlands, Jan. 12, 1978, 7800355
Int. Cl.³ H01C *1/012*
U.S. Cl. 338—308 **8 Claims**



1. A resistance material consisting essentially of oxidic particles, each of said particles coated with a resistance determining layer of a thickness of between 0.5–100 nm of at least one resistance determining material selected from the group consisting of resistance determining oxides and oxidic compounds.

4,292,620

FUEL LEVEL MONITORING ENGINE CONTROL AND VEHICLE THEFT INHIBITING DEVICE

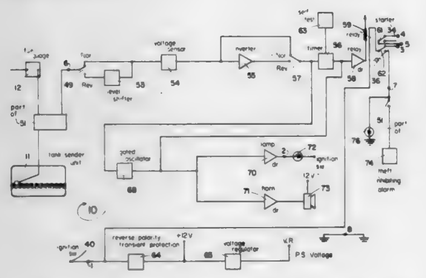
Warren H. Pagane, 16 Forbes Hill Rd., Wollaston, Mass. 02170

Filed Jun. 13, 1979, Ser. No. 48,025
Int. Cl.³ B60R *25/04, 25/10*
U.S. Cl. 340—63 **6 Claims**

1. A fuel level monitoring, engine control and theft inhibition device for use with an engine having an electrical ignition system including an electrical ignition switch, a starter system, a fuel supply tank and an electrically operated fuel gauge system including a fuel sending unit and a fuel gauge interconnected electrically to the electrical ignition system, whereby a first signal voltage is generated to indicate the quantity of fuel in said fuel tank, said device serving to shut down the engine when the fuel supply in said tank reaches a predetermined low level but before said fuel supply is exhausted and to prevent said engine from being started by unauthorized persons, said device comprising:

voltage sensing means connected to the junction of the fuel sending unit and the fuel gauge of said electrically operated fuel gauge system, which voltage sensing means changes state when the first signal voltage reaches a predetermined value indicating a low level of fuel in said supply tank;

a gated oscillator connected to said voltage sensing means, said gated oscillator being enabled when voltage sensing means changes to a state indicating low fuel level, such that said oscillator operates at a predetermined frequency when enabled;



a warning means connected to and activated by said oscillator, such that said warning means provides an intermittent warning;

a relay including contacts connected electrically to the ignition system of said engine;

timing means including a counter connected to said oscillator to count cycles from said oscillator, such that after a predetermined number of cycles said counter de-energizes said relay and when said relay is de-energized said relay turns off said ignition system before said fuel supply is exhausted,

said counter being further connected electrically to said warning means by a feedback loop such that when said counter has reached a predetermined count, said warning means operates continuously;

switching means connected to said voltage sensing means, said warning means and said ignition system such that when said switching means is activated, the activation of said ignition system results in a simulation of a fuel condition below the predetermined low level such that said voltage sensing means changes state as indicated above thereby deactivating the ignition system of said engine.

4,292,621

CHARACTER READER

Paul Fuller, 29, Homeway, Harold Park, Romford, England

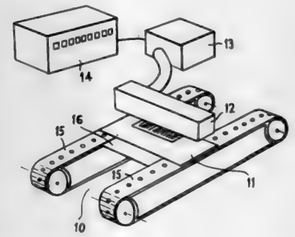
Filed Aug. 10, 1979, Ser. No. 65,658
Claims priority, application United Kingdom, Aug. 14, 1978, 33216/78
Int. Cl.³ G06K *9/28*
U.S. Cl. 340—146.3 H **9 Claims**

1. A method of reading characters arranged in a line on a document by means of a scanning action caused by relative movement between a reading device and said document, said method comprising the steps of:

(a) effecting said relative movement in a direction normal to the direction of said line of characters whereby all of the characters in said line are read simultaneously by said reading device;

(b) generating simultaneously a plurality of parallel data signals in respect of each character read by said reading device so as to provide digitisation of each said character along a first axis transverse to the direction of the line of characters and thereby to form parts of matrices each of which is representative of a character;

(c) generating a pulsed signal the frequency of which is dependent on the speed of said document relative to said reading device;



(d) utilizing said pulsed signal to sample said plurality of parallel data signals so as to provide digitization of each character along a second axis orthogonal to said first axis and thereby complete said character matrices;

(e) storing said digitized matrix signals in a first memory means; and

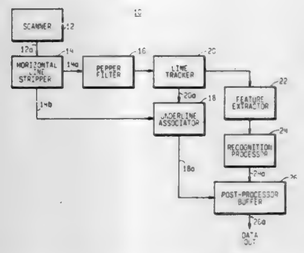
(f) comparing said stored matrix signals with stored patterns in second storage means thereby to recognize the characters read by said reading device.

4,292,622

SYSTEM AND METHOD FOR PROCESSING HORIZONTAL LINE CHARACTERISTICS IN AN IMAGE

Ernest G. Henrichon, Jr., Bedford, N.H., assignor to Hendrix Electronics, Inc., Manchester, N.H.

Filed Feb. 21, 1980, Ser. No. 123,485
Int. Cl.³ G06K *9/34*
U.S. Cl. 340—146.3 SG **56 Claims**



1. Method for detecting horizontal line characteristics in an image, said image including one or more lines of symbols defined by elemental areas (pixels) having a first optical characteristic against a background defined by pixels having a second optical characteristic, said lines extending in a first direction, wherein each of said symbols is representative of a text character, or a horizontal line character, or a text character and an associated horizontal line character below said text character, comprising the steps of:

scanning at least one of said lines of symbols in said first direction, and

detecting the optical characteristics of the pixels in said scanned line and storing binary data representative of said detected characteristics,

processing said stored optical characteristic data corresponding to a succession of rectangular swaths of said scanned line, each swath being one pixel wide in said first direction and extending a predetermined number of pixels beyond said scanned line in said second direction, said processing including the step of identifying the stored data representative of each pixel for each current swath which one of the following conditions is met:

A. the corresponding pixel in said current swath has said first optical characteristic, and the corresponding pixels in at least a predetermined number (X−1) of contiguous swaths have said first optical characteristic,

B. the corresponding pixel in said current swath has said first optical characteristic, and the corresponding pixels in at least a predetermined number (Y−1) of contiguous swaths have said first optical characteristic, and said corresponding pixel is adjacent to a pixel in said current swath for which the corresponding stored data bit is representative of a horizontal line characteristic, where X and Y are integers and Y is less than X, and

C. the corresponding pixel in said current swath has said first characteristic and corresponding stored data bit for the next previous swath in said succession is representative of a horizontal line characteristic,

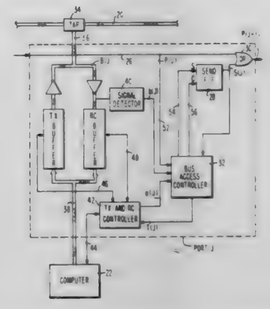
said identified data being representative of said horizontal line characteristics.

4,292,623

PORT LOGIC FOR A COMMUNICATION BUS SYSTEM

Kapali P. Eswaran, San Jose, Calif.; Vincent C. Hamacher, Toronto, Canada, and Gerald St. Shedler, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,493
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—147 R **12 Claims**



1. Method for attaining asynchronous, collision-free data signal communication on a local shared bus network interconnecting a plurality of transceiving ports, each port executing the steps of:

(1) signalling an intention to transmit a message;

(2) delaying transmission for a period equal to the total bus latency plus the propagation delay of an intention to transmit signal;

(3) ascertaining that no signals indicating an intention to transmit, and no data signals, are being received at said each port; and then

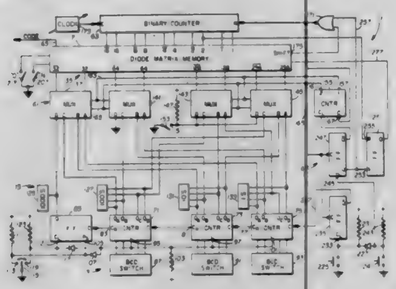
(4) sending the message.

4,292,624

INTERNATIONAL MORSE CODE NUMBER GENERATOR

William K. Serp, 4027 Harvey Ave., Western Springs, Ill. 60558

Filed Oct. 25, 1974, Ser. No. 517,813
Int. Cl.[3] H04L *3/04*
U.S. Cl. 340—347 DD 17 Claims



1. An apparatus for generating an encoded selected number having a plurality of significant digits comprising:

means for serially generating an encoded most significant digit of the number and subsequently serially generating encoded progressively lesser significant digits of the number;

said serial generating means including a selectively addressable memory having a plurality of exclusively addressable segments each containing an encoded digit, each of said segments having a plurality of individually addressable bit locations;

means for sequentially addressing those memory segments which correspond to the digits of the number;

means for sequentially addressing the bit locations of the addressed memory segment, and means responsive to the generation of an encoded digit for resetting said bit location address means and for advancing said segment address means to the address of a next lesser significant digit of the selected number whereby the selected number is translated into a serially generated code;

means for storing the selected number;

means for inhibiting the advance of said bit location address means and said segment address means upon the completion of the generation of the least significant digit of the selected number; and

means for changing the number within said storage means to the next sequential number and for disabling said inhibiting means thereby initiating generation of said next sequential number.

4,292,625

MONOLITHIC DIGITAL-TO-ANALOG CONVERTER

John A. Schoeff, Los Gatos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 12, 1979, Ser. No. 57,046
Int. Cl.[3] H03K *13/05*
U.S. Cl. 340—347 DA 14 Claims

1. An apparatus for converting binary number signals into an analog signal comprising:

a segment generator including

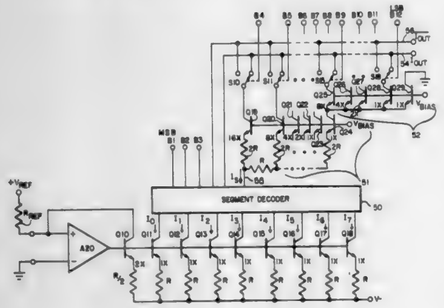
a first set of N input terminals disposed for receiving N binary bit signals representing the most significant bits of a binary number of M bits to be converted, wherein N and M are integers,

first, second and complementary output terminals,

2^N equal current sources,

N switching means, each coupled to one of said first set of input terminals and for generating a true logic output signal or a complementary logic output signal at a voltage level associated with the significance of said binary bit responsive to the signal upon said input terminal,

N sets of true and complementary current switches, each true current switch capable of coupling one of said current sources to said first output terminal in response to a true output signal, each complementary current switch capable of coupling one of said current sources to said complementary output terminal in response to a complementary output signal, each of said current switches further responsive to the voltage level of said true or complementary output signal so that a first current switch coupling one of said current sources in response to a true or complementary output signal of a more significant binary bit overrides a second current switch capable of coupling said one current source in response to a true or complementary output signal of a less significant binary bit, each set having 2^N current switches coupled to one of said switching means, said sets of current switches arranged with respect to each other and said current sources so that for any combination of said N binary bit signals all but one of said current sources being coupled to said first or complementary output terminals and the number of current sources being coupled to said first output terminal increases by one as the value of said most significant binary bits increases by one, and



means for coupling to said second output terminal said one current source not coupled to said first or complementary output terminals;

a step generator circuit including

a second set of input terminals disposed for receiving the remaining M–N of the binary bit signals of the binary number to be converted,

a step generator input terminal coupled to said second output terminal of said segment generator,

means for dividing the current supplied to said step generator input terminal into a plurality of individual currents, and means for coupling certain ones of said individually divided currents selected as a function of the magnitude of the binary number to a step generator output terminal; and

means for combining the current provided at said first output terminal of said segment generator with the current provided at said output terminal of said step generator so as to form a combined analog signal having an amplitude proportional to the value of the binary number to be converted.

4,292,626

MANCHESTER DECODER

John R. Smithlin, North Hollywood, Calif., assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Aug. 23, 1979, Ser. No. 69,213
Int. Cl.[2] H03K *13/24*
U.S. Cl. 340—347 DD 5 Claims

1. Means for decoding a Manchester coded signal to an NRZ coded signal comprising:

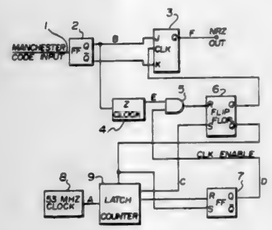
(a) means for receiving said Manchester signal,

(b) means for generating output pulses, each of said pulses starting when the generating means is enabled and ending when the generating means is disabled,

(c) means for providing a timing pulse signal having a bit period which is similar to that of the Manchester coded signal, but out of phase by about 90 degrees,

(d) means for providing a clock pulse with each baseline crossing of the Manchester coded signal,

(e) means for sensing of the direction of the crossing of the baseline upon the coincidence of the clock pulse and a predetermined polarity of the timing pulse signal,



(f) means for timing an interval following each sensed baseline crossing of the Manchester coded signal, which interval is greater than one-half of a bit period,

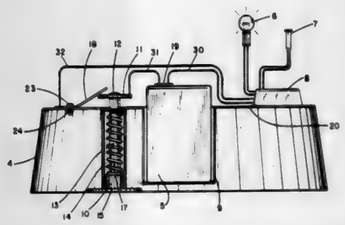
(g) means for enabling of the generating means upon each said sensing which is outside said time interval and in the event the sensed direction of the baseline crossing is the same as the first baseline crossing, and for disabling the generating means upon each said sensing which is outside said time interval and in the event the sensed direction of the baseline crossing is opposite to that of said first baseline crossing to provide an NRZ coded signal at the output of the generating means.

4,292,627

TRAFFIC MARKER

Val F. Knight, 5900 W. Tropicana Ave., #45, Las Vegas, Nev. 89103

Filed Sep. 4, 1979, Ser. No. 72,127
Int. Cl.[3] E01F *9/00*; H01H *35/02*
U.S. Cl. 340—114 R 2 Claims



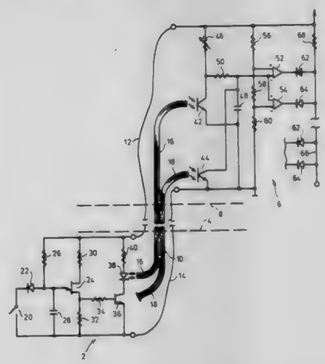
1. A road safety device comprises a ground-supported, weighted base, a hollow upright translucent marker member, electric light means for illuminating the marker member, battery means, switch means for automatically activating the light means when the marker is in an operating position and deactivating the light means when the marker is in a non-operating position, light-actuated switch means operatively electrically connected to the light means and the battery means such that said light-actuated switch means permits current to flow to the light means when ambient illumination is less than a predetermined level, and prohibits said current flow when the ambient illumination is greater than said predetermined level, the switch means comprising an actuating arm movable between an extended position protruding beyond the base and a depressed position, circuit closure means for electrically connecting the battery means to the light means when the actuating arm is in the depressed position and for disconnecting the battery means and light means when the actuating arm is in the extended position, biasing means for maintaining the actuating arm in a normally extended position, said actuating arm being positioned such that it is moved to the depressed position when the safety device is placed in operating position.

4,292,628

FIBRE OPTIC SECURITY SYSTEM

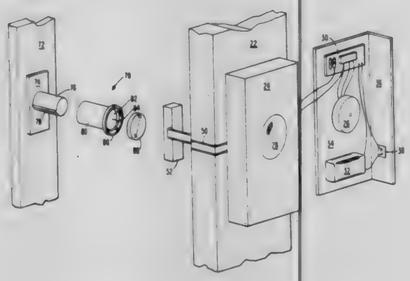
John A. Sadler, Rexdale, Canada, assignor to Chubb Industries Limited, Toronto, Canada

Filed Aug. 28, 1978, Ser. No. 937,577
Int. Cl.[3] G08B *1/00*; G02B *5/14*
U.S. Cl. 340—531 4 Claims



1. In a security alarm system comprising at least one sensor unit, a control unit, a connection between the sensor unit and the control unit, and an alarm circuit conditionable by said control unit to an alarm condition, the sensor unit being operative to apply a signal to the connection and to switch that signal from a normal state in response to sensing an abnormal condition, and the control unit being operative to monitor said signal for deviation from its normal state and to condition said alarm circuit in response to detection of such a deviation, the improvement in which the sensor unit includes an optoelectronic transmitter and the control unit includes first and second optoelectronic receivers, the said connection is established by a flexible optical light fibre guide coupled to said optoelectronic transmitter in the sensor unit and said first optoelectronic receiver in the control unit for transmission of said signal in the form of light from the sensor unit for reception by the control unit, and the control unit monitors at least one parameter of the signal in its normal state which is dependent upon the optical integrity of the guide for deviation outside predetermined limits, the optical fibres of said guide form two sub-bundles the fibres of which are intermingled intermediate the ends of the guide, one of the two sub-bundles being optically coupled to said transmitter and said first receiver and the other of the two sub-bundles being optically coupled to said second optoelectronic receiver but isolated from said transmitter.

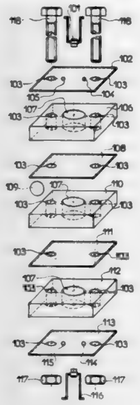
4,292,629
ALARM SYSTEM
Ronald R. Kerr; Keith M. Mullins, both of Ft. Collins, Colo., and Bruce H. Bowie, Sparks, Nev., assignors to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Dec. 10, 1979, Ser. No. 101,875
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—547 **3 Claims**



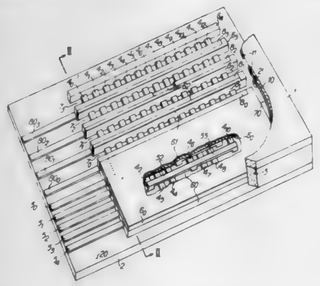
1. An intrusion alarm system comprising:
a first closure member;
a second closure member movable relative to said first closure member;
an electrical switch mounted upon one of siad closure members and having an element responsive to a magnetic field for developing a signal;
magnet means mounted upon the other of said closure members and productive of a magnetic field interactive with said element upon raltive movement of said members into a predetermined relationship;
signaling means coupled to said switch for yielding an alarm indication upon the occurrence of a given interaction of said field with said element;
means for mounting said magnet means on said other member in a position adjustably selectable in distance from said element, said mounting means including:
an outstanding stub from which a rib radially projects;
a sleeve the base of which gradually decreases in diameter in a circumferential direction from a given location until reaching an abrupt step back to said location;
and the radius of said rib permitting receipt of said stub within said sleeve in an appropriate relative rotational relationship but locking said sleeve to said stub upon rotation of said step relatively away from said rib.

4,292,630
DEVICE FOR THE OBTAINING OF AN ELECTRIC SIGNAL WHICH IS PROPORTIONAL TO AN AMOUNT OF MOVEMENT AND THEREFORE CAPABLE OF DETECTING ANY MOVEMENT OR ACCELERATION
Claude Dumont, Heillecourt, France, assignor to Societe d'Etudes Techniques et Commerciales d'Automation, France
Filed Mar. 22, 1979, Ser. No. 22,994
Claims priority, application France, Sep. 19, 1978, 78 26759
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—573 **7 Claims**

1. Apparatus for detecting and signalling the presence of movement and absence of movement of an object moving randomly in space and time comprising, a portable transmitter carried in use by an object moving randomly in space and time and transmitting a carrier frequency signal, a detector associated with said transmitter for detecting the random movement of said object comprising a sensing means movable randomly in three dimensions in response to the random movement of said object and including a switch activated by said sensing means interrupting emission of the carrier frequency signal when said object is substantially immobile and re-establishing said emission of said carrier frequency signal upon renewed movement of said object after being substantially immobile an alarm, a portable receiver unit positioned in an area for receiving said carrier frequency signal, means on said receiver unit for activating said alarm after a predetermined period of continuous absence of emission of said carrier frequency signal is detected by said receiver unit, said sensing means comprising an element freely movable randomly in a three dimensional detection space in response to random movement of said object, and means defining said space.

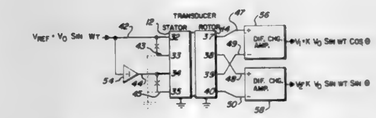


4,292,631
PLASMA MATRIX DISPLAY UNIT
Guy Gerard, 1, cité du Colombier, Perros Guirec, France (22700)
Filed Mar. 24, 1980, Ser. No. 133,321
Claims priority, application France, Apr. 3, 1979, 79 08393
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—771 **11 Claims**



1. A plasma matrix display unit comprising:
a prismatic gastight enclosure containing a low pressure gas, said gastight enclosure being constituted by a first rectangualr insulating plate which is transparent at least at the level of a plurality of uniformly spaced points aligned along a longitudinal line, by a second rectangular insulating plate and by a leak-tight sealing means defining the periphery of said enclosure and maintaining opposite the internal surfaces of said first and second plates,
first, second and third insulating strips which are substantially parallelepipedic on the internal surface of said second plate and which are perpendicualr to third metallic strips, said insulating strips forming two parallel longitudinal grooves therebetween, said second insulating strip extending longitudinally between said first and third insulating strips, each of said first and second insulating strips having a slot on the longitudinal edge facing to said third insulating layer and said groove between said second and third insulating strips being aligned with the longitudinal line of transparent points of said first plate,
a first metallic strip and at least a second metallic strip extending parallely and longitudinally between said internal surfaces of said first and second plates, each of said first and second metallic strips having an external connection and being disposed at a predetermined distance from said internal surface of said second insulating plate in said slots,
a plurality of third parallel metallic strips on said internal surface of said second plate extending orthogonally to and at said predetermined distance from said first and second metallic strips, each of said third metallic strips passing plumb with one of said points and having an external connection,
means for succssively applying between said external connection of said first or second metallic strip and said external connections of said third metallic strips a voltage causing a glow discharge which occurs between these strips and which emerges through the corresponding point when the voltage is applied to said second metallic strip, and
means receiving a display data signal for controlling the switching of said first and second metallic strips in said voltage applying means dependent on the data signal amplitude.

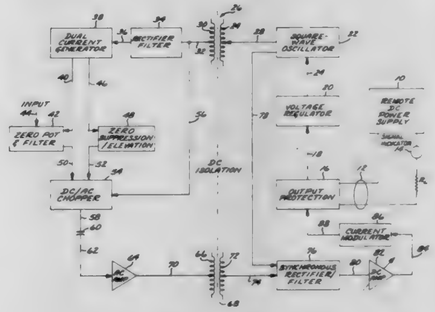
4,292,632
DISPLACEMENT SENSING DEVICE HAVING CAPACITANCE TRANSDUCTION ELEMENT
Lester M. Yeakley, 776 Morgan Dr., Boulder, Colo. 80303
Filed Aug. 29, 1978, Ser. No. 937,700
Int. Cl.³ G08C *19/10*
U.S. Cl. 340—870.37 **23 Claims**



1. A linear displacement sensing device, comprising:
a capacitance transduction element having relatively movable elongated portions capable of being adjacent to one another with each of said elongated portions having a substantially uniform surface area, and with one of said portions being connectable with a unit having one member displaceable with respect to another member to sense the displacement of said one member with respect to said another member;
input means for providing an input reference voltage to said capacitance transduction element; and
output means connected with said capacitance transduction element to receive charges therefrom and responsive thereto providing output voltages in snychro-resolver form to indicate the displacement of said one member with respect to said another member.

4,292,633
TWO-WIRE ISOLATED SIGNAL TRANSMITTER
Perry H. Goodwin, Jr., Dana Point, and Richard J. Kotalik, Santa Ana, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Nov. 24, 1978, Ser. No. 963,194
Int. Cl.³ G08C *19/02, 25/02*
U.S. Cl. 340—870.39 **8 Claims**

1. A two-wire signal transmitter for connection to a two-wire transmission line having a direct current voltage impressed thereon, and transmitter comprising:
(a) transducer input circuit means for directly connecting as one input to said transmitter a transducer signal;
(b) reference voltage means for generating a reference voltage signal connected as a second input to said transmitter;
(c) comparator and converter means having as inputs said transducer signal and said reference voltage signal for providing an output as an alternating current signal indicative of the difference between said transducer signal and said reference voltage signal;
(d) alternating current amplifier means for amplifying said alternating current signal;
(e) signal transformer means having primary and secondary windings with said amplified alternating current signal connected to its primary winding for transferring said amplified alternating current signal to its secondary winding;
(f) alternating current to direct current synchronous detector means for converting the alternating signal in the secondary of said signal transformer means to a direct current signal;



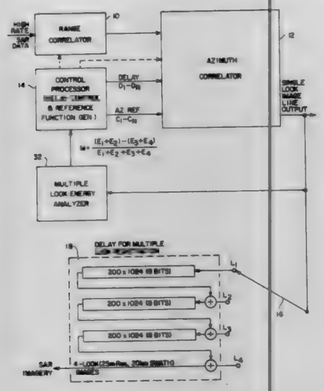
(g) direct current amplifier means for amplifying said direct current signal;
(h) current modulator means for modulating a current in said transmission line in accordance with said amplified direct current signal;
(i) a power transformer having primary and secondary windings;
(j) direct current to alternating current power converter means for converting said direct current voltage on said transmission line to an alternating current power signal connected to said primary winding of said power transformer with said secondary winding of said power transformer connected to said comparator and coverter means as a converting drive signal thereto, and
(k) alternating current to direct current power converter means for converting an alternating current signal in said secondary winding of said power transformer to a direct current voltage to power said transducer input circuit means

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4,292,634
REAL-TIME MULTIPLE-LOOK SYNTHETIC APERTURE RADAR PROCESSOR FOR SPACECRAFT APPLICATIONS
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Chialin Wu, Pasadena, and Vance C. Tyree, Arcadia, both of Calif.
Filed Dec. 15, 1978, Ser. No. 969,761
Int. Cl.³ G01S *13/90*
U.S. Cl. 343—5 CM **6 Claims**

1. In a synthetic aperture data processor having pipeline multiple-look data capability with time-multiplexed single-look image lines from an azimuth correlator, the combination comprising means for analyzing the mean energy in an even number of multiple looks of the same target and means responsive

to the mean energy for closed-loop control processing of delay control and reference function coefficients for said azimuth



correlator to track and refine the radar antenna boresight information.

4,292,635

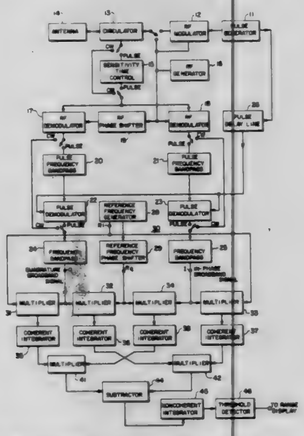
SIGNAL PROCESSING SYSTEM

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 973,356, Dec. 26, 1978, Pat. No. 4,219,812. This application Feb. 19, 1980, Ser. No. 122,217

Int. Cl.³ G01S *13/52*; G06G *7/78*

U.S. Cl. 343—5 NQ **6 Claims**



1. A signal processing system responsive to at least one in-phase broadband signal and to at least one quadrature broadband signal in phase quadrature with said in-phase broadband signal, said processing system including at least one signal processor,

each of said signal processors including a reference frequency generator for providing a reference frequency output of a frequency lying within a predetermined portion of said signal band width,

a reference frequency phase shifter coupled to said reference frequency generator for providing a quadrature reference signal,

first quadrature means for multiplying said quadrature broad band signal and said reference frequency output,

second quadrature means for multiplying said quadrature broad band signal and said quadrature reference frequency output,

first in-phase means for multiplying said in-phase broad band signal and said quadrature reference frequency output,

second in-phase means for multiplying said in-phase broad band signal and said reference frequency output,

a coherent integrator coupled to each of said multipliers,

means for cross-multiplying the outputs of the integrators coupled to said first quadrature means for multiplying and to said first in-phase means for multiplying,

means for cross-multiplying the outputs of the integrators coupled to said second quadrature means for multiplying and to said second in-phase means for multiplying, and

a subtractor connected to the outputs of said first and second multiplying means.

4,292,636

PASSIVE REPLY DEVICE FOR USE IN THE AUTOMATIC WIRELESS TRANSMISSION OF MULTI-PLACE NUMERICAL INFORMATION BETWEEN ACTIVE INTERROGATION DEVICES AND SUCH PASSIVE REPLY DEVICES, WHICH ARE MOVABLE WITH RESPECT TO ONE ANOTHER AND METHOD OF MAKING THE SAME

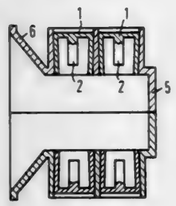
Walter Egger, Munich; Egon Edinger, Graefelfing, and Friedrich Pedall, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,668

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855721

Int. Cl.³ G01S *13/80*; H03J *5/14*

U.S. Cl. 343—6.5 SS **11 Claims**



1. A passive reply device for automatic wireless transmission of multi-place numerical information between active interrogation and passive reply devices which are movable with respect to one another, particularly for track-bound transport means, comprising, a high frequency line section having a high frequency antenna at one end, and short circuited at its opposite end and formed with a plurality of bores, and a plurality of high frequency coaxial resonators received in said bores and extending transversely to and carried by said line section, each resonator formed of a soft metallic material and comprising a tubular member having an open end communicating with the interior of said line section and closed at its opposite end, each resonator being provided with a rod-like coaxial inner conductor stub, said resonators having a like construction with the exception of the respective end walls at their closed ends, the respective resonant frequencies of the respective resonators being derived from differences in configuration of the inner faces of said resonator end walls, which due to the application of axial force to said end walls may vary from convex shape to concave shape, depending upon the direction and amount of said axial force each of said resonators being disposed in a respective cooperable bore in said line section, with their open ends communicating with the interior of said line section and retained therein by a press fit.

4,292,637

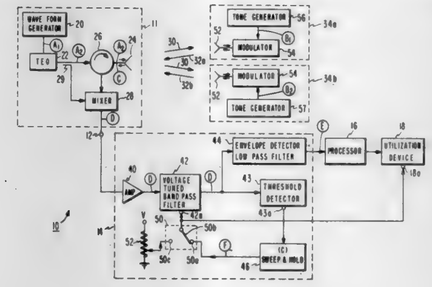
INTERROGATING RADAR FOR USE WITH TAGGED TARGETS

Henry C. Johnson, Hillsborough Township, Somerset County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,110

Int. Cl.³ G01S *13/78*

U.S. Cl. 343—6.5 SS **7 Claims**



1. An interrogating station for use in a system which includes a plurality of targets remote from said interrogating station for identifying one of said targets and at least one of its range and range rate, said targets having means for receiving modulated interrogtion signals from said station and, in response thereto further modulating said signals, and radiating to said interrogating station said further modulated signals, said further modulated signals having a characteristic indicia which differs from target to target, said interrogating station comprising in combination:

means for generating said modulated interrogation signals including means for generating a sample signal indicative of said interrogation signals;

means receptive of said further modulated signals and said sample signal for generating difference signals having distinguishable components indicative of signals from various ones of said targets, said distinguishable components varying from target to target;

means providing a control signal having a selectable value;

means responsive to said difference signals and to said control signal for passing only that difference signal associated with a given target determined by the value of said control signal; and

means responsive to said passed difference signals for generating a signal indicative of at least one of range and range rate relative to said interrogating station of the target associated with said passed difference signal.

4,292,638

AUGMENTED RADIOMETRIC SYSTEM

Robert E. Lazarchik, Largo, and Robert S. Roeder, Dunedin, both of Fla., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 17, 1971, Ser. No. 154,099

Int. Cl.³ G01S *13/86*

U.S. Cl. 343—7.5 **12 Claims**

1. In a radiometric system:

voltage controlled variable frequency circuit means for supplying first and second cyclic signals in substantially phase quadrature relation,

first noise source means for space transmission of cyclic noise signals in response to said first cyclic signal,

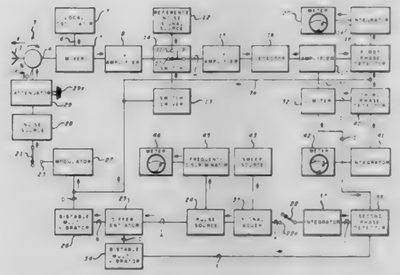
receiver means for receiving versions of said cyclic noise signals,

said receiver means having signal envelope detection means,

first and second phase detector means,

said first phase detector means being responsive to said first cyclic signal and to said signal envelope detector means for producing a signal of amplitude related to the amplitude of said received cyclic noise signals,

said second phase detector means being responsive to said second cyclic signal and to said envelope means for producing a frequency control signal, and



means for applying said frequency control signal for the control of the operating frequency of said variable frequency circuit means.

4,292,639

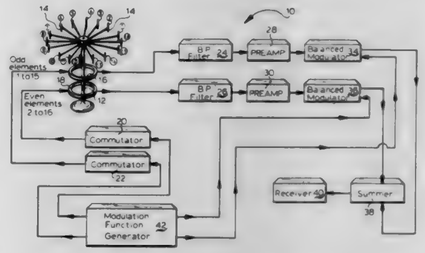
QUASI-DOPPLER DIRECTION FINDING EQUIPMENT

Joseph E. Bambara, North Babylon, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Dec. 17, 1979, Ser. No. 103,930

Int. Cl.³ G01S *3/54*

U.S. Cl. 343—113 DE **8 Claims**



1. A quasi-doppler direction finder comprising: an antenna having a plurality of elements arranged in circular array, said elements being divided into a plurality of inter-leaved groups;

means for commutating through each of the elements to sequentially turn said elements on and then off step wise through each group and sequentially between groups with overlap of the on time between adjacent elements;

a modulation function generator for generating signals to attenuate the signals received by the elements of each group with modulating signals, the modulating signal for each group of elements being out of phase with respect to the modulating signal for each other group of elements;

a receiver; and

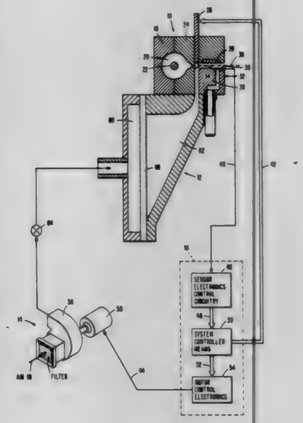
means for combining the attenuated element signals and feeding the same to said receiver.

4,292,640

CLOSED LOOP COMPENSATION OF INK JET AERODYNAMICS

Gerald B. Lammers, Boulder, and Gregory L. Ream, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1980, Ser. No. 135,041
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **22 Claims**



1. In an ink jet printing system wherein one or more continuous streams of ink are broken up into streams of individual droplets of ink and a trajectory characterizing means for channeling the droplets into a print flight path and a no-print flight path, the improvement comprising:
   a first means for ejecting a laminar airflow into the flight path of the droplets;
   a means approximately positioned in relation to the ink droplets, said means being operable to sense a velocity associated with the droplets and for developing a first control signal representative of said velocity; and
   a controller operable to receive the first control signal and to generate a second control signal, said second control signal being operable to energize the first means so that the velocity of the laminar airflow is adjusted.

4,292,641

ELECTRICALLY HEATED RECORDING INDICATOR FOR RECORDING INSTRUMENTS AND THE LIKE

Josef Grassmann, Cäcilienstrasse 4, D-5202 Hennef 1, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,075
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 7908387[U]
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 R **9 Claims**



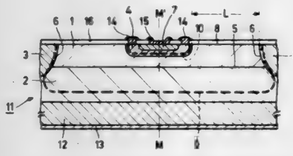
1. An electrically heated recording indicator for use in a recording instrument utilizing a thermosensitive recording medium, comprising:
   (a) an outer tubular support member having an aperture therein located in the vicinity of one end thereof constituting the writing area;
   (b) an inner non-metallic tubular member positioned in said outer tubular support member, said inner tubular member extending across said aperture in said outer tubular support port member; and
   (c) electrical means for heating said inner tubular member;
   (d) whereby said heated inner tubular member may directly contact said thermosensitive recording medium through said aperture in said tubular support member to write on said recording medium.

4,292,642

SEMICONDUCTOR DEVICE

Johannes A. Appels; Marnix G. Collet; Paul A. H. Hart, and Johannes F. C. M. Verhoeven, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1979, Ser. No. 4,004
Claims priority, application Netherlands, Jan. 18, 1978, 7800582; Jul. 24, 1978, 7807835
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **34 Claims**



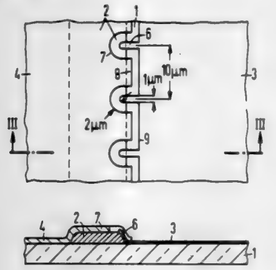
1. A semiconductor device having a semiconductor body having at least one bipolar high voltage semiconductor circuit element, said bipolar circuit element comprising:
   substantially flat first and second opposed surfaces on said semiconductor body;
   an island-shaped first region of a first conductivity type adjoining said first substantially flat surface;
   a second region of a second conductivity type underlying said first region;
   said first region forming with said underlying second region of the second conductivity type a first pn-junction extending substantially parallel to said first surface;
   a third region of said second conductivity type extending betwen said second region and said first surface;
   said first region being laterally bounded at least partly by a second pn-junction with an associated depletion zone which is formed between said first region and said third region;
   said second pn-junction having a lower breakdown voltage than said first pn-junction;
   a contact region adjoining said first surface and said first region;
   said contact region being bounded entirely by said first region;
   the doping concentration and the thickness of said first region being so small that upon applying a voltage in the reverse direction between said first and said second regions, the depletion zone, at least between said contact region and said third region extends from said first pn-junction up to said first surface at a voltage between said first and second regions which is lower than the breakdown voltage of said second pn-junction.

4,292,643

HIGH CUT-OFF FREQUENCY PLANAR SCHOTTKY DIODE HAVING A PLURALITY OF FINGER-LIKE PROJECTIONS ARRANGED IN PARALLEL IN A TRANSMISSION LINE

Walter Kellner, Putzbrunn; Hermann Kniepkamp, Munich, and Dietrich Ristow, Neubiberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,677
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837283
Int. Cl.³ H01L *29/48, 29/56, 29/64*
U.S. Cl. 357—15 **5 Claims**



1. A planar Schottky diode for high cut-off frequency, comprising: a substrate; a conductive transmission line having first and second parts arranged on the substrate; a doped semiconductor area positioned between a portion of the transmission line and portions of the substrate; a Schottky contact comprising finger-like extensions of the first part of the transmission line extending into a recess of the second part of the transmission line such that said second part partially surrounds on ohmic metal contact created between the finger-like portion and the doped semiconductor area on which the finger-like portion lies and where a contact edge of the Schottky contact is formed; said recess of the second part of the transmission line being defined by an ohmic resistance contact edge along the contact between said doped semiconductor area and the transmission line second part; a ratio of a length of said ohmic resistance contact edge to a length of said contact edge of the Schottky contact being significantly greater than 1; and a plurality of said Schottky contacts arranged parallel to one another at right angles to a running direction of the first and second parts of the transmission line and extending substantially over a width of the transmission line whereby a disruption of a characteristic impedance of the transmission line is avoided.

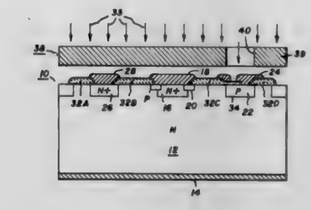
4,292,644

CONTROL OF VALLEY CURRENT IN A UNIJUNCTION TRANSISTOR BY ELECTRON IRRADIATION

Hing C. Chu, and Y. S. Edmund Sun, both of Liverpool, N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation of Ser. No. 828,028, Aug. 26, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 25,870
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—21 **3 Claims**

1. An improved unijunction transistor comprising:
   a body of semiconductor material of a first conductivity type characterized by a first lifetime;
   first and second spaced apart base electrodes on said body;
   a region in said body of semiconductor material of a conductivity type opposite said first conductivity type for controlling current flow between said first and second base electrodes, said region forming a p-n junction with said body;



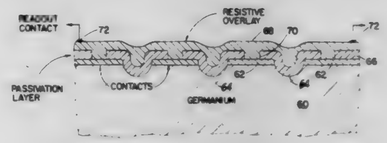
   at least a portion of said region of opposite conductivity type proximate said junction having a lower lifetime than said first lifetime.

4,292,645

CHARGE SPLITTING RESISTIVE LAYER FOR A SEMICONDUCTOR GAMMA CAMERA

Philip A. Schlosser, Columbus, and Don W. Miller, Westerville, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Oct. 19, 1979, Ser. No. 86,464
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—29 **8 Claims**



1. A semiconductor gamma camera detector comprising:
   (a) a portion of semiconductor material with two surfaces, a first surface including an n doped region and a second surface including a p doped region; said doping configured with the semiconductor material to form a p-i-n diode with a depletion region for producing electrical charge in response to radiation impinging on the semiconductor material;
   (b) a passivation layer substantially covering at least some of said doped regions and defining openings extending therethrough in communication with portions of said doped regions;
   (c) a resistive layer covering at least a part of said passivation layer and extending through said passivation layer openings to contact said regions; and
   (d) electrical connections attached to said resistive layer.

4,292,646

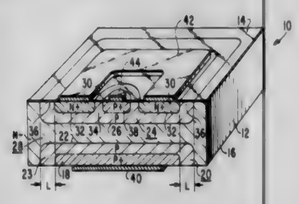
SEMICONDUCTOR THYRISTOR DEVICE HAVING INTEGRAL BALLAST MEANS

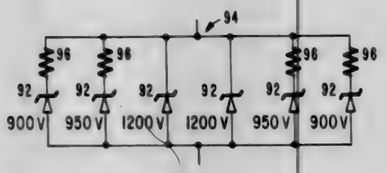
Jacques M. Assour, South Brunswick, N.J.; Theresa I. Bates, Long Pond, Pa.; John R. Bender, Middlesex, and John M. S. Neilson, Bridgewater, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,554
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **8 Claims**

1. An overvoltage protected semiconductor thyristor device in which breakdown due to overvoltage originates where a PN junction intersects the exterior surface of the semiconductor, said device comprising:
   a body of semiconductor material having first and second major opposing surfaces;

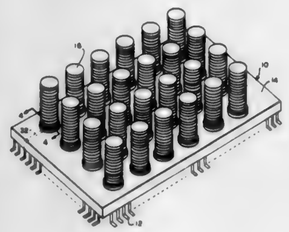
a base region within said body and having a one type conductivity;
an anode region within said body and adjacent said second surface of said body, said anode having a second type conductivity;
a first region having said second type conductivity and bounding said anode region within said body, said first region having a comparatively higher resistivity than said anode region;
a gate region within said body and adjacent said first surface and having said second type conductivity;
said base region spacing said first region from said gate region;
said base region and said first region forming a first PN junction where they meet, said first PN junction extending to the exterior surface of said body;
said base region and said gate region forming a second PN junction where they meet, said second PN junction extending to the exterior surface of said body;
a cathode region within said body and adjacent said first surface having said one type conductivity, said cathode region being spaced from said base region by said gate region, said cathode region having a comparatively higher carrier concentration than said gate region;
first electrode means overlying and electrically contacting said cathode region;

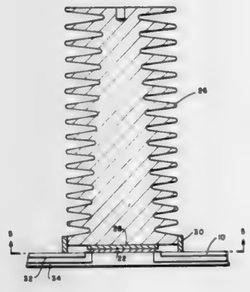




second electrode means overlying and electrically contacting said anode region;
said first region having therein a first resistive ballast means for, in the event of an overvoltage breakdown of said first PN junction in the vicinity of where it intersects said exterior surface, limiting the breakdown current which will flow through a localized breakdown region of said first PN junction in the vicinity of where said first PN junction intersects the exterior surface of said body, said first resistive ballast means being that portion of said first region through which breakdown current will flow in passing from said second electrode means to the portion of said first PN junction which is in the vicinity of said exterior surface;
said gate region having therein a second resistive ballast means for, in the event of an overvoltage breakdown of said second PN junction in the vicinity of said exterior surface, limiting the breakdown current which will flow to a localized breakdown region of said second PN junction in the vicinity of where it intersects said exterior surface of said body, said second resistive ballast means being that portion of said gate region through which breakdown current will flow in passing between said first electrode means and the portion of said second PN junction which is in the vicinity of said exterior surface.

4,292,647
SEMICONDUCTOR PACKAGE AND ELECTRONIC ARRAY HAVING IMPROVED HEAT DISSIPATION
James C. K. Lee, Los Altos Hills, Calif., assignor to Amdahl Corporation, Santa Clara, Calif.
Filed Apr. 6, 1979, Ser. No. 27,769
Int. Cl.[3] H01L 39/02, 23/02, 23/12
U.S. Cl. 357—81 **20 Claims**



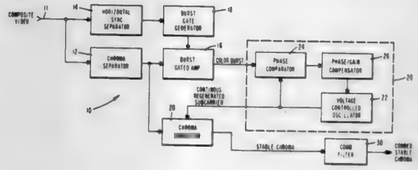


1. An electronic array comprising a substrate having a conductive lead pattern and a plurality of sets of contacts on a major surface, each set of contacts being configured to receive contacts of a semiconductor chip, a closed length of bond receptive material surrounding each set of contacts, a plurality of semiconductor chips, each of said chips having a plurality of contacts on one surface with said plurality of contacts attached to one of said sets of contacts on said major surface, a plurality of heat dissipation members each with a contact surface having an area greater than the area of a corresponding one of said chips and each having an outer wall formed at the termination of said contact surface, means attaching each chip to a central region of the contact surface of a heat dissipation member, and means bonded to the outer wall of each of said heat dissipation members and to one of said closed length of bond receptive material for enclosing each of said chips.

4,292,648
COLOR CORRECTOR FOR A COMPOSITE COLOR VIDEO SIGNAL
Leonard Kowal, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 9, 1979, Ser. No. 28,303
Int. Cl.[3] H04N 5/76, 5/78
U.S. Cl. 358—8 **7 Claims**

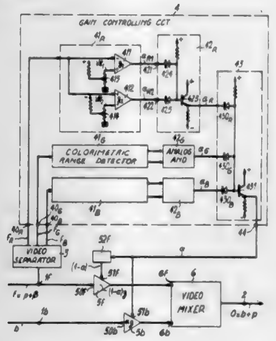
1. A system for color correcting a composite color video signal having horizontal sync defining consecutive horizontal lines and having an unstable chrominance component containing time base errors, the system comprising:
means for separating the chrominance component including color burst from said composite video signal;
means for separating the horizontal sync from said composite video signal;

means responsive to the horizontal sync for gating the color burst to a color subcarrier generating means;
means for generating a continuous color subcarrier signal that is substantially phase locked to the phase of the color burst;
means for stabilizing the unstable chroma component utilizing said continuous color subcarrier signal;
comb filter means including an input and a summing junction



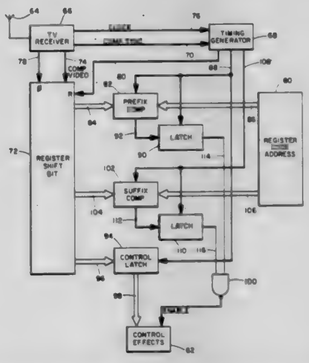
with two circuit paths coupled between said input and summing junction, said input being coupled to said stabilizing means for receiving the stabilized chroma component, one of said paths including a phase inversion means and a delay line serially coupled to said phase inversion means, said delay line having a time delay greater than the circuit time delay of the other of said paths by an amount equal to the time duration of one horizontal line of the color video signal.

4,292,649
COMPOSITE VIDEO SIGNAL COMBINING SYSTEM
Guy R. Macheboeuf, Vitry-sur-Seine, France, assignor to Telediffusion de France, Paris, France
Filed Feb. 14, 1980, Ser. No. 121,779
Claims priority, application France, Feb. 12, 1979, 79 03521
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—22 **13 Claims**



1. A system for combining first and second composite video signals into a resulting composite video signal, said first composite video signal representing a first color picture having a first trichromatic region envelopping a second trichromatic region through a trichromatic transition region and said second composite video signal representing a second color picture, said system comprising:
first input means for receiving said first composite video signal;
second input means for receiving said second composite video signal;
third input means for receiving first component video signals forming said first composite video signal;
means connected to said third input means for producing a first analog signal $(1-\alpha)$ and a second analog signal (α) which control the crossing of said first and second composite video signals through said first and second input means to provide first and second output composite video signals which are obtained from an amplification with a gain proportional to said first and second analog signals,
said first analog signal having first and second levels when said first component video signals are representative of said first and second picture regions and having intermediate levels lying between said first and second levels when said first component video signals are representative of said transition region; and
means for mixing said first and second output composite video signals into said resulting composite video signal.

4,292,650
STV SUBSCRIBER ADDRESS SYSTEM
Melvin C. Hendrickson, Elmhurst, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.
Filed Oct. 29, 1979, Ser. No. 88,902
Int. Cl.[3] H04N 7/16
U.S. Cl. 358—123 **20 Claims**

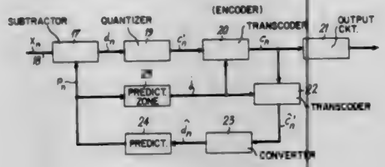


1. In a system wherein each of a plurality of television receivers is identified by a unique address code, a method for addressing selected ones of said plurality of television receivers comprising the steps of:
transmitting during a first predetermined horizontal scanning line of the vertical interval of a broadcast television signal an address code portion which is common to the address codes identifying at least a group of said selected television receivers;
transmitting during a second predetermined horizontal scanning line of the vertical interval of a broadcast television signal the remaining portions of the address codes identifying at least two of said selected television receivers of said group; and
decoding said transmissions for addressing said at least two television receivers.

4,292,651
EXPANSION AND COMPRESSION OF TELEVISION SIGNALS BY USE OF DIFFERENTIAL CODING
Francis Kretz, 5 rue de la Coer'x-Connue, 35510 Cesson-Sevigne, and Jean-Louis Boudeville, 6 rue de la Cotiniere, 35500 Vitre, both of France
Filed Feb. 9, 1979, Ser. No. 10,694
Claims priority, application France, Dec. 8, 1978, 78 35485
Int. Cl.[3] H04N 7/12
U.S. Cl. 358—135 **11 Claims**

1. A method of compressing and expanding numerical television signals with DPCM differential coding, said method comprising the steps of:
a. predicting an estimate of what a television signal should be;
b. at least partially quantizing said signals with a quantizing

characteristic which is non-symmetrical relative to zero; and



c. modifying said quantized signals with respect to the value of a predetermined reconstruction threshold and to the levels of the differences between the actual value of a television signal sample and the value predicted in step a.

4,292,652

METHOD OF RECEIVING A VIDEO SIGNAL

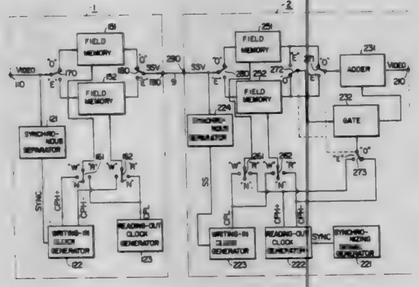
Yasufumi Yumde, and Takashi Furuhata, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1978, Ser. No. 905,524

Claims priority, application Japan, May 13, 1977, 52-54303

Int. Cl.³ H04N *7/12*

U.S. Cl. 358—138 **17 Claims**



1. In a method of receiving a video signal made up of picture elements the number of which is reduced by one-half transmitted with a narrow band frequency wherein the received video signals are first written as a narrow band frequency video signal into memories and are then read out therefrom at a higher reading-out speed than the writing-in speed so as to broaden the band allocation to the read-out signals, the improvement in which the timing of reading out odd lines corresponding to an odd field constituting one field of a display image of the video signal is shifted from the timing of reading out even lines corresponding to an even field constituting the other field of the same display image by a time substantially equal to half the reciprocal of the transmission wide band frequency which corresponds to the resolution limit for the reproduction of the image, said even lines being interlaced with said odd lines, and vacant picture elements included among said odd lines in said even lines being interpolated by means of adjacent real picture elements included among said odd lines and said even lines.

4,292,653

METHOD AND CIRCUIT FOR READING-OUT DATA FROM A TELEVISION PICKUP (IMAGE SENSOR)

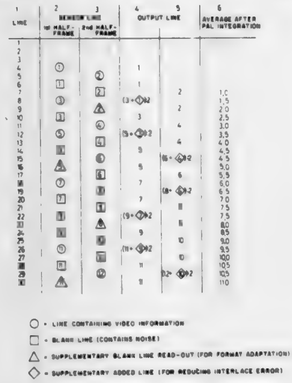
Gerd Bock, Seeheim; Herbert Zettl, Erfelden; Hans-Wilhelm Zappen, Bensheim, and Friedrich Zimmermann, Rossdorf, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 128,441

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2913116

Int. Cl.³ H04N *5/02*

U.S. Cl. 358—140 **11 Claims**



1. A method for reading out data from a TV pickup (image sensor) designed for a 525line standard, in compatibility with a 625-line standard user system, wherein, according to the invention,

every third line scan of said pickup is repeated twice.

4,292,654

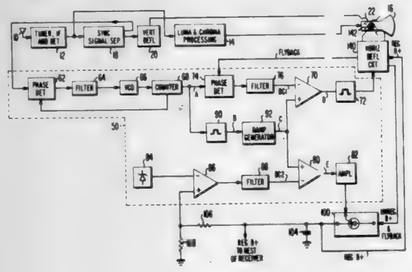
DEFLECTION SYSTEM AND SWITCHED-MODE POWER SUPPLY USING A COMMON RAMP GENERATOR

Steven A. Steckler, Clark, and Alvin R. Balaban, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,503

Int. Cl.³ H04N *5/04, 3/18*

U.S. Cl. 358—158 **10 Claims**



1. In a television receiver, including a deflection generator adapted to be synchronized with pulses produced by a source of synchronizing pulses, apparatus comprising:

a ramp generator having an input coupled to said source of synchronizing pulses and an output for producing a sawtooth waveform;

a phase detector having a first input coupled to said source of synchronizing pulses and a second input coupled to said

deflection generator for receiving horizontal rate pulses therefrom for producing a first control signal in response to the frequency and phase difference between said synchronizing pulses and said horizontal rate pulses;

a first comparator having a first input coupled to receive said first control signal and a second input coupled to receive said sawtooth waveform, and an output;

means for coupling the output of said first comparator to said deflection generator for applying a horizontal drive signal thereto;

a second comparator having a first input coupled to receive said sawtooth waveform, a second input, and an output for producing a gating signal;

a regulator circuit, including a gated semiconductor device responsive to said gating signal, coupled to receive unregulated direct voltage from said deflection generator, for producing a regulated voltage;

a source of reference voltage;

a third comparator having a first input coupled to said reference voltage source and a second input responsive to said regulated voltage for producing a second control signal; and

means for coupling said second control signal to said second input of said second comparator.

4,292,655

SYSTEM INCORPORATING WORD SYNCHRONIZATION FOR A SERIAL SIGNAL SEQUENCE

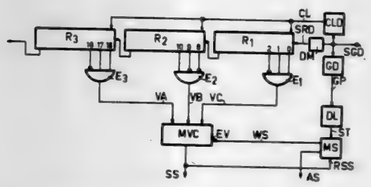
Marino G. Carasso, and Johannes J. Verboom, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,735

Claims priority, application Netherlands, Nov. 6, 1978, 7811004

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—40 **13 Claims**



1. A system incorporating a medium which presents signal sequences which consist at least partly of binary signal sequences, and a device for generating a synchronization signal for synchronizing at least parts of said signal sequences (words, blocks), wherein a binary signal sequence contains a synchronization pattern which consists of (2N+1) groups of codes, each with a number of n (n>2) bits, a number of (at the most N+1) groups having a code content which has at least a given minimum Hamming distance with respect to the code (codes) of the other group (groups), said device constituting a majority decision device which produces the synchronization signal by means of said codes on the basis of a majority decision (N+1 out of 2N+1), characterized in that:

a number of m (m>0) bits is added to the codes of n bits in the (2N+1) groups, the groups having a code length m+n such that there is only an acceptably small risk that a disturbance (burst) occurring or present in the medium extends over a length which exceeds the length of m+n bits;

the number (at the most N+1) of groups consisting of m+n bits having a code content which has a given at least minimum Hamming distance with respect to the code (codes) of the other group (groups); and

only the n bits of each group still being used for producing the synchronization signal.

4,292,656

ENCLOSED-TYPE MAGNETIC DISC RECORDING AND/OR REPRODUCING APPARATUS

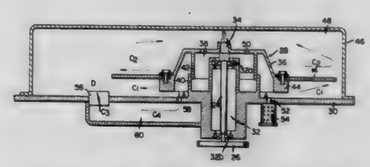
Masahiko Fujioka, Hamura, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 835,060, Sep. 21, 1977, Pat. No. 4,185,308. This application May 29, 1979, Ser. No. 42,786

Claims priority, application Japan, Sep. 24, 1976, 51-114436

Int. Cl.³ G11B *17/00*

U.S. Cl. 360—97 **1 Claim**



1. An enclosed-type magnetic disc recording and/or reproducing apparatus for use in conjunction with a magnetic disc, comprising:

a base;

a disc cover attached to said base and defining an enclosed chamber between said cover and said base;

a bearing unit having a first end protruding into said enclosed chamber from said base and a second end exposed to open air;

a shaft supported by said bearing unit and having a tip end protruding into said enclosed chamber;

a flange attached to the tip end of said shaft and adapted to have said magnetic disc attached thereto;

a first cylindrical projecting member projecting toward said flange from said base concentrically with said shaft;

a second cylindrical projecting member projecting toward said base from said flange and overlapping said first cylindrical projection member to form a narrow gap between the overlapping portions of said cylindrical projecting members, whereby a separate preasure chamber surrounded by said flange, said base and both cylindrical projecting members is formed;

blades attached to said flange and protruding toward said base from said flange;

means for rotating said shaft, said flange, said disc, said second cylindrical projecting member and said blades during operation of said recording and/or reproducing apparatus to produce thereby a first region of relatively lower pressure in the vicinity of said blades and a second region of relatively higher pressure between said flange and said cover, said first region being communicated with open air through a first air inlet bored in said base, and said second region being communicated with said separate pressure chamber through a second air inlet bored in said flange;

wherein said gap between the overlapping portions of said first and second cylindrical projecting members is sufficiently narrow and sufficiently long to restrict air leakage from said separate pressure chamber through said gap to maintain said separate pressure chamber at higher than atmospheric pressure; and

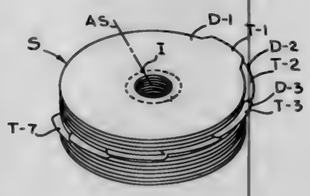
a filter attached to said base for cleaning air flowing into said enclosed chamber through said first air inlet.

4,292,657

PARTITIONABLE FLEXIBLE DISK PACK

Wilfred D. Iwan, Sierra Madre, and Ko K. Gyi, Thousand Oaks, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 21, 1979, Ser. No. 40,956
Int. Cl.[3] G11B 5/82, 25/04
U.S. Cl. 360—98 12 Claims



1. An improved method of providing manipulating a floppy disk file comprising:

arranging and forming flexible data processing record disks so that each includes a prescribed like engagement edge extending radially at a certain point on the disks's periphery, this engagement edge comprising an indentation along a prescribed segment of the disk edge, this indentation being formed as a gradual recession, radially inward along said segment, this recession terminating, relatively abruptly, in said edge;

stacking the disks into a pack so that each said engagement edge is disposed at a different angular position about the stack circumference; and

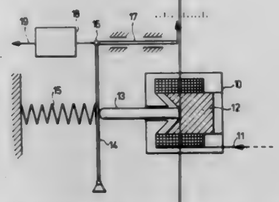
providing automatic disk-file partition means adapted to split the disk pack and expose a selected disk surface by timed engagement with a prescribed one of the engagement edges; while rotating said stack and providing data processing transducer means adapted to operate upon said selected disk surface by timed entry into the pack so-split.

4,292,658

MONITOR APPARATUS FOR ELECTRICAL CIRCUITS WITH VIRTUAL RESISTANCE

Johannes Locher, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 11,022
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805876
Int. Cl.[3] H02H 03/08; F02B 03/08
U.S. Cl. 361—93 6 Claims



1. A monitoring apparatus for electrical devices, especially for sensors and control elements associated with the fuel management system of an internal combustion engine, wherein one control element to control operation of the fuel management system includes an electromagnetic and movable armature, said control element exhibiting inductance, whereby the current passing through said control element is diminished during motions of said armature, said monitoring apparatus comprising:

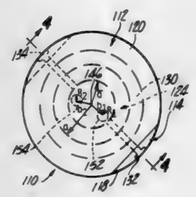
at least one threshold switch for comparing electrical signals from said sensors and control elements having a threshold value and for actuating said control elements when the value of said signals exceeds the threshold value, and wherein the improvement comprises that the actuation current of said control element lies between zero and the threshold value.

4,292,659

PRESSURE SENSING CAPACITIVE TRANSDUCER

Binneg Y. Lao, West Bloomfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 947,908, Oct. 2, 1978, Pat. No. 4,238,662.
This application Dec. 26, 1979, Ser. No. 107,290
Int. Cl.[3] H01G 7/00
U.S. Cl. 361—283 5 Claims



1. In a capacitive pressure transducer of the type comprising:

first and second oppositely situated, parallel, insulative, flexible plates separated by a peripheral sealing means for forming an internal chamber therebetween, and defining pressure responsive regions in said first plate and said second plate in the areas of said plates interior to said sealing means, said plates deflecting in response to pressure applied thereto;

conductive means located on said plates within said internal chamber for forming the conducting surfaces of a pressure sensitive capacitor and for generating a capacitive signal indicative of said applied pressure, said capacitor defining a first value of capacitance at a determinable first level of applied pressure and a second value of capacitance at a determinable second level of applied pressure, wherein the first value and the second value exceed by a determinable amount the desired value of capacitance at said first and at said second pressure levels and wherein said conductive means includes a first and second conductive layer or electrode each respectively applied to the inside portion of one of said plates and located apart from and coaxial to said sealing means;

said first electrode includes at least one eccentrically located hole, such that the center of said hole is situated a distance b from the center of said first electrode, and wherein the area A of said hole is chosen to reduce said first value of capacitance to the desired value at said first level of applied pressure and wherein the distance b is chosen to reduce said second value of capacitance at said second level of applied pressure.

4,292,660

VARIABLE CAPACITOR

Tetsuo Tatsumi, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 18, 1978, Ser. No. 970,267
Claims priority, application Japan, Dec. 24, 1977, 52/174805[U]; Mar. 27, 1978, 53/39547[U]
Int. Cl.[3] H01G 5/06
U.S. Cl. 361—293 11 Claims

1. A variable capacitor, comprising:

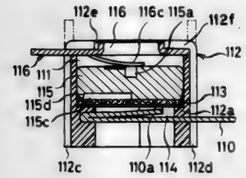
a generally cylindrical insulating case;

a dielectric plate non-rotatably housed in said cylindrical case and having first and second opposed main surfaces, said insulating case having a bottom inner wall surface contacting said first main surface of said dielectric plate over a substantial area thereof such that said inner wall surface defines a structural support seat for said dielectric plate;

a stator electrode formed directly on a portion of said first main surface of said dielectric plate;

a rotor electrode rotatably housed in said cylindrical case and disposed in contact with a portion of said second main surface of said dielectric plate such that said rotor electrode is opposed to said stator electrode and is separated therefrom by said dielectric plate;

stator electrode leading-out means electrically connected to said stator electrode and extending outside said cylindrical case, said stator electrode leading-out means including a stator terminal having a resilient contact portion which is spring biased into contact with said stator electrode, said



bottom inner wall surface having a recess formed therein which accommodates said resilient contact portion such that said resilient contact portion may be spring biased into contact with said stator electrode;

rotor electrode leading-out means electrically connected to said rotor electrode and extending outside said cylindrical case; and

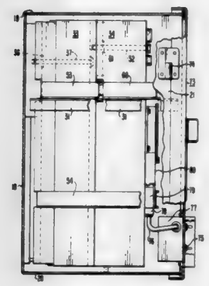
a spring member which presses said rotor electrode against said second main surface or said dielectric plate and thereby presses said dielectric plate against said bottom inner wall surface of said cylindrical case, the spring force of said spring member being higher than the spring force exerted on said stator electrode by said resilient contact portion of said stator terminal such that said dielectric member is maintained in engagement with said inner wall surface of said cylindrical case by said spring member.

4,292,661

POWER AND CONTROL SYSTEM ARRANGEMENT FOR TRANSPORT REFRIGERATION UNIT

Dannis R. Johnson, Prior Lake; Elgin J. Foster, Credit River Twp., Scott County, and Richard J. Soukup, Lakeville, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Sep. 26, 1979, Ser. No. 79,013
Int. Cl.[3] H02B 1/04
U.S. Cl. 361—393 6 Claims



1. A power and control system arrangement for a transport refrigeration unit which utilizes both high and low voltage for operation and control, comprising:

an enclosure having walls and an open face;

a hard-wired, electrically-passive assembly comprising a plurality of both high and low voltage terminals and both high and low voltage plug-in receptacles in the enclosure at the wall opposite the open face;

a unitary interface module having both high voltage and low voltage plugs received by said passive assembly receptacles, said interface module having both high voltage and low voltage electrically operable components, and having low voltage plug-in receptacle means;

a separate, unitary front module having low voltage plug-in means received by said low voltage plug-in receptacle means of said interface module, and carrying electrical elements of solely low voltage character;

a separate cover for the enclosure carrying electrical components including switch means controlling operation of the refrigeration unit;

wiring means detachably connecting said switch means to said front module;

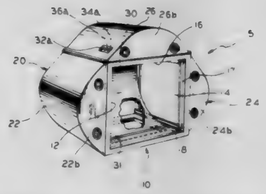
means for supporting and releasably securing said modules in stacked relation in said enclosure, with said interface module plugged in an electrically connected to said passive assembly solely by said plugged in relation, and said front module plugged in and electrically connected to said interface module solely by said plugged in relation, and said cover electrical components being electrically connected to said front module solely by said wiring means.

4,292,662

PHOTOGRAPHIC EXPOSURE CHAMBER

Eugene Gasperini, 110 W. Foster Ave., Bensenville, Ill. 60106

Filed Sep. 10, 1979, Ser. No. 74,395
Int. Cl.[3] G03B 15/02
U.S. Cl. 362—17 7 Claims



1. A portable light stage comprising: an open-faced chamber, said chamber having a floor, a ceiling and sides which are translucent and interior reflective; a plurality of curved hoods, each hood covering a side and the ceiling of said chamber, said hoods having interior light reflective surfaces; an independently operable light source positioned within each of said hoods and between said hoods and said chamber whereby an object placed within said chamber can be illuminated or placed in shadows from above, behind, or from the sides as desired.

4,292,663

HIGH INTENSITY ILLUMINATION LIGHT TABLE

Ronald J. Martino, Geneva, and Alfred L. Shawcross, Lima, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 869,968, Jan. 6, 1978, Pat. No. 4,220,982.
This application Sep. 11, 1979, Ser. No. 74,276
Int. Cl.[3] G09F 13/04
U.S. Cl. 362—97 13 Claims

1. A high intensity light table for transilluminating film for viewing with microscope optics, said light table comprising:

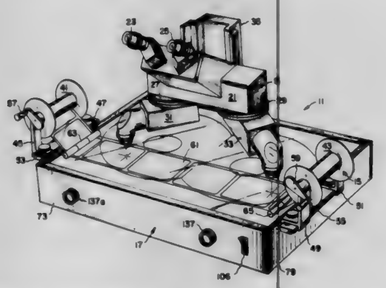
(a) housing means;

(b) a plano light transmitting surface supported by said housing means;

(c) means for producing in the plane of said light transmitting surface an annular ring of illumination which fills both the numerical aperture and the field of view of said microscope optics, said means including

(i) a reflector in the form of a surface of revolution positioned within said housing means, and

(ii) a source of high intensity illumination nominally positioned at the center of focus of said reflector whereby, when said source is energized, said reflector produces an annular image of said source;



(d) means for diffusing said annular ring of illumination to thereby eliminate both the image of said source and the scratches and other defects on a film surface which, if illuminated by non-diffused light, would be visible when viewed through said microscope optics, said diffusing means including a diffuser, located in the light path between said source and said light transmitting surface and beyond the depth of focus of said microscope optics; and

(e) means, connected to said housing means, for dimming said source.

4,292,664

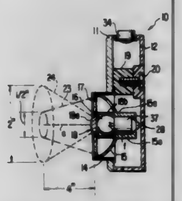
DENTAL PLAQUE DISCLOSING LIGHT AND METHOD

William Mack, Commack, N.Y., assignor to Clairol Incorporated, New York, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,408

Int. Cl.³ B25K *23/18*

U.S. Cl. 362—120 **24 Claims**



1. A dental plaque disclosing light for use in conjunction with a fluorescent dye plaque disclosing solution contained in an individual's mouth, said dental plaque disclosing light comprising:

a. a casing;

b. a light source emitting only light which causes the fluorescent dye to fluoresce;

c. a power supply selectively connected to the light source for illuminating the light source;

d. a parabolic reflector supported by the casing having a focus, the light source supported in conjunction with the parabolic reflector to cause the parabolic reflector to project a solid converging cone of light; and

e. lens means supported adjacent the light source for projecting a solid, diverging cone of light having an axis concentric with the axis of the converging cone of light.

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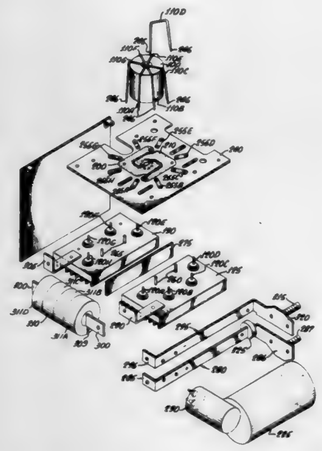
OUTPUT STAGE FOR SWITCHING REGULATED POWER SUPPLY

Wallace N. Hersom, Tustin, and John E. Crum, Mission Viejo, both of Calif., assignors to LH Research, Tustin, Calif.

Continuation-in-part of Ser. No. 908,563, May 23, 1978, Pat. No. 4,184,211. This application Jan. 14, 1980, Ser. No. 111,833

Int. Cl.³ H02M *1/00*

U.S. Cl. 363—141 **19 Claims**



1. An output stage for a switching regulated power supply comprising:

two parallel coplanar heat sinks in close adjacent relation with one another, each said heat sink having plural fins for the dissipation of heat;

a first and second set of diodes respectively mounted on and in electrical communication with said heat sink;

a printed circuit board disposed above said heat sinks having two conductors printed thereon, each said conductor in electrical communication with one of said heat sinks;

a ferromagnetic core mounted on said printed circuit board having primary winding;

first and second sets of single turn, secondary windings on said core, each said winding comprised of a generally U-shaped wire disposed over said core so that one end of said winding extends through the interior of said core while the other end is disposed exterior of said core, said interior end and said exterior end of each secondary winding respectively connected to the terminals of one of said diodes;

said exterior end of said first set of windings connected to one terminal of said first set of diodes and said exterior end of said second set of windings attached to the opposite terminal of said second set of diodes; and

said interior end of said first set of windings connected by means of one of said printed conductors to the other terminal of said second set of diodes and said interior end of said second set of windings connected by means of the other printed conductor to the other terminal of said first set of diodes.

4,292,666

PROGRAMMABLE CONTROLLER

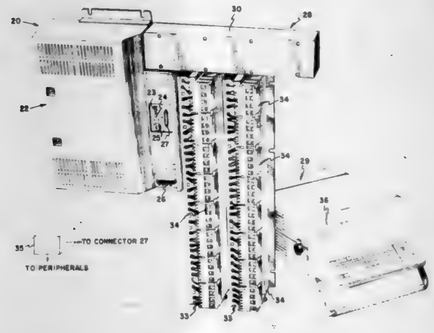
Lawrence W. Hill, Arlington; Thomas J. Stoodley III, Lowell, and Ronald Malcolm, Andover, all of Mass., assignors to Modicon Div. Gould Inc., Andover, Mass.

Filed Apr. 12, 1978, Ser. No. 895,581

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—104 **18 Claims**

3. An improved programmable controller of the type having a mainframe including a central processing unit, associated electronics and memory for solving a user control program comprising a plurality of nodes in a network format, the nodes representing user selectable circuit elements that can reference other nodes, an input/output system for communicating input data from external devices to the mainframe and for transferring output data from the mainframe to the external devices for control thereof in response to the control program, and a programming panel for programming, monitoring and displaying on a cathode ray tube (CRT) at least a portion of the user selected control program, wherein the improvement comprises an improved programming panel and mainframe each having



interacting means for performing one of a plurality of search functions containing one or more search parameters as designated by the user so as to display on the programming panel CRT the control program network satisfying the search parameters, wherein the search parameters that can be designated by the user include the searching for the first node of a network, the searching for the first occurrence of a particular contact type of a particular circuit element, the searching for the first occurrence of a particular reference number, the searching for the first occurrence of a particular circuit element having a particular reference number, and the searching for the first occurrence of a particular node.

4,292,667

MICROPROCESSOR SYSTEM FACILITATING REPETITION OF INSTRUCTIONS

Robert D. Catiller, Garden Grove, and Brian K. Forbes, Huntington Beach, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 27, 1979, Ser. No. 52,687

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—200 **11 Claims**

1. A universal-type microprocessor system which cooperates with an application-dependent logic module to form a peripheral-controller capable of handling data transfers between the main memory of a host computer and a plurality of peripheral terminal units which can be either "word-oriented" or "byte-oriented", and wherein said application-dependent logic module provides external register means having bus connections to said plurality of peripheral terminal units and to said host computer, and wherein said application-dependent logic module further includes an external memory for storage of programs related to control of said peripheral terminal units and for temporary storage of data undergoing transfer, and wherein said application-dependent logic module further includes control logic means for communicating with and controlling said external register means, said external memory, and communicating with a decoder-controller in said microprocessor system, the said microprocessor system comprising:

(a) data processing means including:

(a1) an arithmetic logic unit providing an output to a shift logic circuit and to a byte-swap circuit;

(a2) said shift logic circuit providing output to an I/O bus said shift logic circuit functioning to rotate one or more bits of a word being processed, to the right or to the left;

(a3) said byte-swap circuit providing output to said I/O bus said byte-swap circuit functioning to exchange the sequential positions of the higher order byte and the lower order byte of a received two-byte word;

(b) said I/O bus providing connecting lines from said data processing means to said external registers, to said external memory, to an accumulator register means, and to an addressing means;

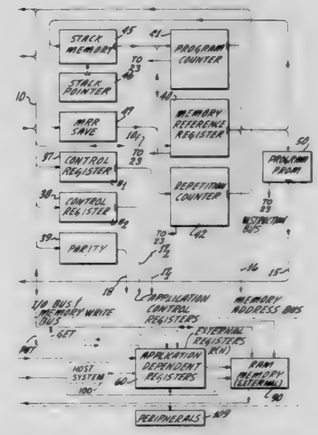
(c) addressing means receiving input data from said I/O bus and storing addresses useful for accessing data from an internal memory or said external memory storage, said addressing means including:

(c1) a program counter storing consecutive addresses of data located in said internal program memory;

(c2) a memory reference register for storing addresses of data located in said external memory, and including:

(c2-1) a memory address bus which connects to said external memory;

(c2-2) and wherein a dedicated non-address bit in said memory reference register being set to signal said decoder-controller to initiate a byte-swap operation in said byte-swap circuit, or when not-set, to pass data without a byte-swap operation;



(c2-3) a bus connection from said memory reference register to said decoder-controller;

(c3) an address register in said decoder-controller connecting by means of an address bus to said accumulator register means, which include a plurality of accumulator registers for selection of data from an addressed accumulator register;

(d) said internal program memory storage for storing program instructions and data words, said internal memory being addressed from said program counter and providing instruction words and data, via an instruction bus, to an instruction register and memory operand register;

(e) register means for temporary storage of data, said register means including:

(e1) said plurality of addressable accumulator registers which provide an output to the input of said arithmetic logic unit, said accumulator registers receiving input data words from said I/O bus;

(e2) a memory operand register for receiving operand data from said internal program memory via said instruction bus or from said external memory via a memory data bus;

(e3) an instruction register for receiving instruction words from said internal program memory via said instruction

bus and providing instruction words to said decoder-controller;

(f) said instruction decoder-controller receiving instruction signals from said instruction register and including incoming and outgoing control signal lines connected to said data processing means, to said addressing means, to said register means, to said internal and external memory means, to said external registers and said control logic means;

(f1) and wherein said decoder-controller further includes:

(f1a) connection means for receiving control signals from said control logic in said application-dependent logic module for performing clocking, interrupt, and halt functions;

(f1b) address lines to said external registers for selecting a specific register;

(f1c) control lines for strobing address signals to said external registers;

(g) said memory data bus for carrying data from said external memory to said instruction register and said memory operand register;

(h) a repitition counter having an input from said I/O bus and an output to said memory reference register;

(i) instruction word means in said internal program memory for signalling said decoder-controller, said instruction word means including:

(i-1) a GET operator which functions to place the contents of said repetition counter into one of said selected accumulator registers as its destination;

(i-2) a PUT operator which functions to take the contents of said destination accumulator and place it via said data processing means into a selected external register;

(j) means for controlling the number of repetitive operations of a selected instruction word means, said means for controlling including flip-flop means, in said decoder-controller, which receives information signals from said repetition counter.

4,292,668

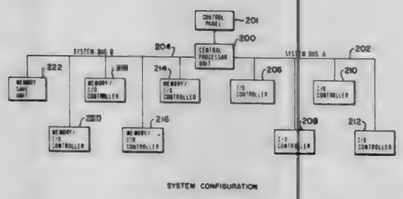
DATA PROCESSING SYSTEM HAVING DATA MULTIPLEX CONTROL BUS CYCLE

Robert C. Miller, Braintree; John J. Bradley, Framingham, both of Mass.; Richard L. King, Hollis, N.H.; Ming T. Miu, Chelmsford, Mass.; Jian-Kuo Shen, Watertown, Mass., and Theodore R. Staplin, Jr., Chelmsford, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 31, 1979, Ser. No. 8,002

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **16 Claims**



SYSTEM CONFIGURATION

1. A data processing system comprising a main memory capable of storing a plurality of data words, each of said data words having a unique memory address, a central processing unit (CPU) and an input/output controller (IOC), said CPU and said IOC coupled to a common bus for the bidirectional transfer of information between said CPU and said IOC during information transfer cycles, said system further comprising:

A. first means, included in said IOC, for sending to said CPU an IOC identification signal identifying said IOC desiring to transfer a unit of data to or from said main memory;

B. second means, included in said CPU, and responsive to said IOC identification signal from said IOC, for generating an address information of where said unit of data is to be read from or written into said main memory; and

C. third means, included in said CPU, and coupled to said second means, for receiving said unit of data from said IOC and sending it and said address information to said main memory if data is to be written into said main memory, or for sending said address information to said main memory and receiving said unit of data from said main memory and sending it to said IOC if data is to be read from said main memory.

4,292,669

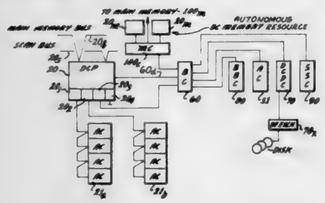
AUTONOMOUS DATA COMMUNICATIONS SUBSYSTEM

James E. Wollum, San Clemente, and Robert L. Rawlings, El Toro, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 882,213, Feb. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 764,473, Jan. 31, 1977, abandoned. This application Aug. 10, 1979, Ser. No. 65,521

Int. Cl.³ G06F *11/20*

U.S. Cl. 364—200 **15 Claims**



1. In a data communications network having a plurality of terminals connected via transmission lines to a central station wherein said central station includes a main host system having a host processor and main memory which connects to a data communications subsystem, or to a plurality of data communications subsystems, an improved data communications subsystem comprising:

(a) a Data Communications Processor connected to said main host system for providing pointer addresses of instructions to be accessed by Front-End Controllers associated with the subsystem, said instructions being normally accessed from main memory when said main host system in on-line;

(b) a plurality of specialized Front-End Controllers for executing data-transfer operations for different speeds and line disciplines of transmission lines to peripheral terminals, each of said Front-End Controllers capable of accessing instructions from addresses in main memory or local Data Communications Memory storage means, said addresses provided by said Data Communications Processor;

(c) a Basic Control Interface providing control and communication exchange between said Data Communications Processor, a local Data Communications Memory storage means, and said Front-End Controllers;

(d) local Data Communications Memory storage means directly accessible to said Data Communications Processor and each of said Front-End Controllers, said Data Communications Memory storage means providing instructions to be accessed by said Front-End Controllers during such periods when said main host system is off-line;

(e) A Command Block located in main memory and in local Data Communications Memory for providing instructions, control, and information data for each individual Front-End Controller;

(f) and wherein said Data Communications Processor includes;

(f1) means to sense a halt or failure in said main host system and;

(f2) means to initiate continuous autonomous operation of said data communications subsystem independently of said main host system during any period when said main host system is inoperative.

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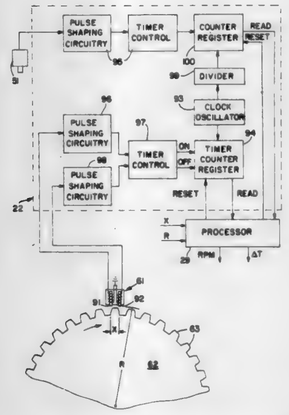
DIAGNOSIS OF ENGINE POWER AND COMPRESSION BALANCE

David L. Reid, and Dennis O. Taylor, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 11, 1979, Ser. No. 47,066

Int. Cl.³ G01M *15/00*

U.S. Cl. 364—431 **25 Claims**



10. Apparatus for diagnosing the performance of the cylinders of a multicylinder internal combustion engine, each of said cylinders having a firing interval and the intervals for all of said cylinders forming an engine cycle, comprising speed sensing means for sensing the substantially instantaneous engine speed at a plurality of angularly spaced positions in the engine cycle, and processing means responsive to said speed sensing means for squaring the engine speeds to obtain the change in a function of the kinetic energy over each of said firing intervals during a first operating condition of the engine, for squaring the engine speeds to obtain the change in the function of the kinetic energy over each of said firing intervals during a second operating condition of the engine, and for each of said intervals determining the difference between the functions of the kinetic energy.

4,292,671

DIGITAL ALTIMETER COMPUTER

James D. Evans, and Sam L. Pool, both of Houston, Tex., assignors to Hydac, Inc., Houston, Tex.

Filed Jul. 30, 1979, Ser. No. 61,928

Int. Cl.³ G06F *15/50*; G01L *7/00*

U.S. Cl. 364—433 **7 Claims**

1. An apparatus for determining the altitude of an aircraft, comprising:

(a) pressure transducer means for sensing the atmospheric pressure at the aircraft's altitude and forming an output signal indicative of such pressure;

(b) means for forming a digital atmospheric pressure signal from the output signal from the pressure transducer means;

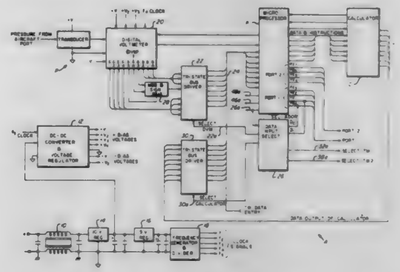
(c) ground level storing means for storing a local ground level atmospheric pressure signal;

(d) computing means for forming digital altitude signals representing the aircraft's altitude, said computer means comprising:

(1) means for storing the digital atmospheric pressure signal;

(2) means for computing, as a non-linear function of the atmospheric pressure at the elevation of the aircraft and the local ground level atmospheric pressure, digital altitude signals representing the altitude of the aircraft;

(3) means for storing the computed digital altitude signals;



(4) control means for controlling the operation of said means for computing; and

(5) data input select means for causing each of said means for storing to present the signals stored therein to said means for computing on request from said control means; and

(e) display means for indicating the computed digital altitude signal formed by said computer means.

4,292,672

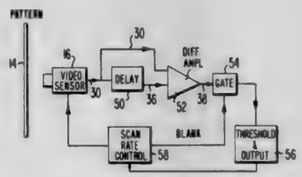
INSPECTION SYSTEM FOR DETECTING DEFECTS IN REGULAR PATTERNS

Peter D. Southgate, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,822

Int. Cl.³ G01N *33/34, 33/36*

U.S. Cl. 364—507 **8 Claims**



8. An inspection system for detecting defects in regular patterns wherein the elements of the patterns have variations in spatial period, said system comprising

a video sensor,

a platform movable in two directions upon which said video sensor is mounted,

a first circuit for linearizing a scan rate of said video sensor over a regular pattern, said first circuit including a first portion and a second portion parallel with said first portion, said second portion including a delay line, said first circuit further including gate means and differential amplifier means for comparing the periods of the signals in said two portions and for producing a scan rate signal related to the difference in periods, and

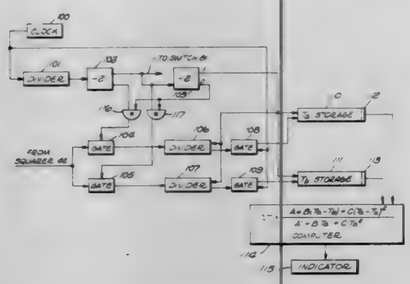
a second circuit for autocorrelating the output signal from said video sensor, said second circuit including two parallel portions one of which includes a delay line, said two parallel portions of said second circuit connected to the inputs of a differential amplifier.

4,292,673

VISCOSIMETER

Hyung Du Bae, Brea, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,666
Int. Cl.³ G01N *11/02*
U.S. Cl. 364—509 **4 Claims**



1. A viscosimeter comprising: a probe having an input lead and an output lead; a loop circuit having an input lead connected from said probe output lead, a first output lead connected to said probe input lead, and a second output lead, said probe and said loop circuit forming an electromechanical oscillator, said probe including a vibratable structure immersable in a fluid, means connected from said probe input lead to vibrate said vibratable structure, a transducer, means connecting said transducer to said first and second output leads, said last named connection producing first and second varying signals on said first and second output leads, respectively both of the same frequency as that at which said vibratable structure vibrates, said first signal having periods T_a and T_b at different times, the product of the kinematic viscosity and density of said fluid being a function of said periods T_a and T_b; utilization means; output means connecting said loop circuit second output lead to said utilization means; and phase adjustment means connected to said loop circuit for periodically switching the phase of one of said first and second signals so that said one signal phase altnerates between two different values relative to the phase of the other signal, said one signal being connected from one of said first and second output leads wherein means are connected from said one output lead to provide a signal proportional to the viscosity v of said fluid thus:

$$v = \frac{A + B(T_a - T_b) + C(T_a - T_b)^2}{A' + B'T_a + C'T_a^2}$$

where

T_a is the period during which said one signal lags,

T_b is the period during which said one signal leads,

and A, B, C, A', B' and C' are constants such that $A'+B'T_a+C'T_a^2$ is directly proportional to the density of said fluid.

4,292,674

ONE WORD BUFFER MEMORY SYSTEM

James H. Scheuneman, St. Paul, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 27, 1979, Ser. No. 61,226
Int. Cl.³ G06F *9/32*; G11C *8/00*
U.S. Cl. 364—900 **18 Claims**

1. A memory system for storing a plurality of data words at addressable locations therein, comprising:

a first address register for sequentially holding a succession of reference addresses of ones of said plurality of data words;

adder means coupled to said first address register for respectively sequentially incrementing each and every reference address of one of said plurality of said data words and providing a result of said first address plus one;

a second address register coupled to said result of said adder means for holding one plus said reference address of one of said plurality of data words;

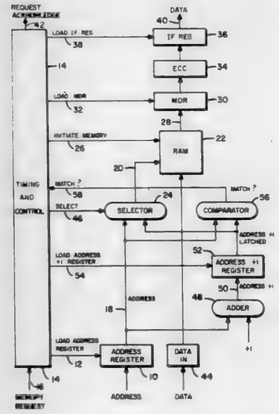
comparison means coupled to said first address register and to said second address register for comparing a second reference address when sequentially subsequently lodged in said first address register with a first reference address plus one as lodged in said second address register and providing a match output when the comparison agrees;

selector means having two inputs selectively coupled to said first address register and to said second address register and providing an output of either of said two inputs and capable of switching between said two inputs;

a randomly accessible memory having an address input coupled to said output of said selector means for storing said plurality of data words therein and having an output of one of said plurality of said data words whose address is present on said address input;

a data register coupled to said output of said randomly accessible memory for holding said one of said plurality of said data words addressed; and

an interface register coupled to said data register and communicative for data transfer to an external requestor of said memory system;



sequence control means for,

selectively upon the lack of a match output from said comparison means firstly causing said first address when and as firstly held in said first address register to be firstly selectively coupled through said selector means to said randomly accessible memory as will cause addressed data at said first address to become firstly collectively lodged in said data register and transferred to said interface register and output to said requestor,

alternatively selectively upon the existence of a match output from said comparison means firstly causing the contents of said data register to be transferred to said interface register and output to said requestor,

and always secondly causing said incremented first address from said second address register to be secondly selectively coupled through said selector means to said randomly accessible memory as will cause addressed data at said incremented first address to become secondly lodged in said data register;

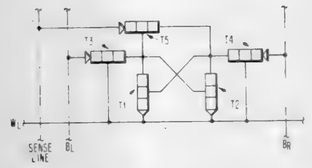
whereby a second data word may be sequentially accessed from said memory system utilizing the prefetched data word as has during a prior first access become secondly lodged in said data register when said address of said second data word is one more than the address of a first data word already accessed from said memory system.

4,292,675

FIVE DEVICE MERGED TRANSISTOR RAM CELL

Bernard A. Denis, Mennecy, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,973
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—156 **7 Claims**



1. A bipolar transistor memory array cell, each transistor of said cell having collector, base and emitter, said cell comprising:

a pair of flip-flop cross-connected transistors having a pair of nodes corresponding to the collectors of said cross-connected transistors,

a pair of bit lines,

a word line,

a pair of input-output transistors of a type complementary to said flip-flop transistors connecting said nodes to said bit lines via the emitter-collector current paths thereof, the bases of said input-output transistors and the emitters of said cross-connected transistors being connected to said word line,

a sense line, and

a sense transistor,

the collector of said sense transistor being connected to one of said nodes;

the base of said sense transistor being connected to the other of said nodes, and

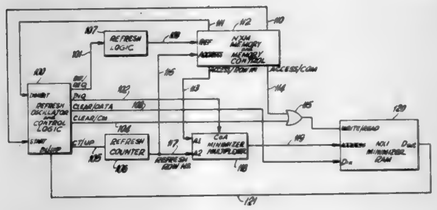
the emitter of said sense transistor being connected to said sense line.

4,292,676

REFRESH CYCLE MINIMIZER IN A DYNAMIC SEMICONDUCTOR MEMORY

Sammy S. Henig, Clifton, N.J., assignor to Lockheed Electronics Co., Inc., Plainfield, N.J.

Filed Nov. 15, 1978, Ser. No. 960,874
Int. Cl.² G11C *8/00*
U.S. Cl. 365—222 **5 Claims**



1. A refresh circuit for an N×M dynamic semiconductor memory comprising:

means for identifying rows in the N×M memory requiring the application of a refresh signal thereto,

means for periodically applying refresh signals to the N×M memory rows identified by the identifying means,

an N×1 auxiliary memory, having N storage locations, the number of storage locations corresponding to the number of rows in the N×M memory,

means for detecting access, for the storage and retrieval of information, to a predetermined N×M memory row,

means responsive to the detecting means for storing a control bit in the N×1 memory at a storage location corresponding to the predetermined row in the N×M memory, and

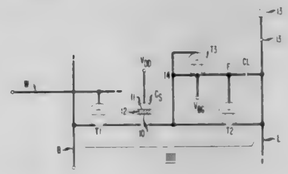
means responsive to the presence of a control bit in said N×1 memory storage location for preventing the applying means from applying a refresh signal to the predetermined row.

4,292,677

SELF-REFRESHED CAPACITOR MEMORY CELL

Harry J. Boll, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 7, 1980, Ser. No. 109,777
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—222 **4 Claims**



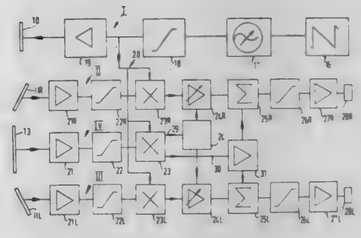
1. Semiconductor apparatus including a network for refreshing the memory state of a semiconductor capacitor memory cell (C_S) comprising a first transistor (T_2), one of whose high current carrying terminals is DC coupled to one terminal of the capacitor, and another of whose high current terminals is DC coupled to a refresh line terminal (13.1), characterized in that, a low current carrying terminal of the first transistor (T_2) is DC coupled to one terminal of a two-terminal threshold resistive element (T_3 or R) whose other terminal is DC coupled to said one terminal of the first transistor (T_2).

4,292,678

METHOD OF AND APPARATUS FOR ECHO LOCATION OF OBJECTS

Leslie Kay, 82 Scarborough Rd., Christchurch 8, New Zealand

Filed Aug. 13, 1979, Ser. No. 65,880
Claims priority, application New Zealand, Aug. 14, 1978, 188126
Int. Cl.³ G01S *15/34*, *15/88*
U.S. Cl. 367—102 **15 Claims**



1. In a method of providing information as to the existence and/or position of an object otherwise than by direct vision, including the steps of radiating wave energy (herein called the transmitted signal) from a station to a field of view, receiving at the station at least part of the transmitted signal (such part

being herein called the received signal) reflected from the object, carrying out a frequency modulation of the transmitted signal to produce a frequency difference between the received signal and a correspondingly frequency modulated locally generated signal in a mode such that the magnitude of the frequency difference represents the range of the object from the station, operating upon the received signal with the locally generated signal to produce a range signal of said difference frequency, and determining or sensing the angular position of the object with respect to a reference axis extending through the station and the field of view by observation of a characteristic of the received signal and which is dependent upon the angular position of the object, the improvement comprising the further steps of:

a. establishing, in respect of the received signal, respective directional receptivities, herein called the outer lobes, defined by receiving polar diagrams having maxima spaced apart angularly on opposite sides of the reference axis,

b. establishing a further directional receptivity, herein called the inner lobe, defined by a further polar diagram having a maximum lying angularly between the respective maxima of the outer lobes and being of narrower angular width than the width of the outer lobes considered collectively,

c. effecting approximate determination of the angular position of the object by observation of a characteristic in respect of indicator signals developed from the received signals due to the outer lobes,

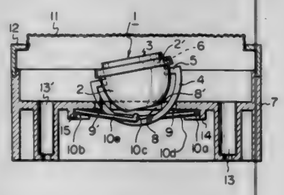
d. effecting more precise determination of said angular position by observation of a characteristic of the indicator signal developed from the received signal due to the inner lobe.

4,292,679

VARIABLE DIRECTIVITY MOUNTING MEANS

Mikio Kondo, Tsu; Hiromitsu Inoue, Kyoto, and Hiroshi Ohashi, Hirakata, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 7, 1980, Ser. No. 110,103
Claims priority, application Japan, Jan. 10, 1979, 54-1654[U]
Int. Cl.³ H04B *11/00*
U.S. Cl. 367—188 **7 Claims**



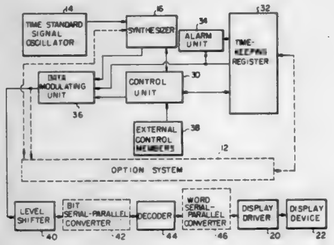
1. In a means for mounting a member which functions with a desired directivity to a mounting station of an associated device or the like in a manner in which the directivity is variable, the combination comprising a tapered peripheral surface provided on said member, said surface being tapered toward the other end of the member opposite to its one end forming a functional surface of the member, means substantially of a semi-arcuate shape for rotatably bearing at both ends the member at diametrally opposed positions on the periphery thereof, a mounting hole provided through said mounting station and having a diameter smaller than that of the member at said opposed bearing positions so that said hole engages at the peripheral edge with said tapered peripheral surface of the member, a pair of grooves for allowing arcuate body of said bearing means to be freely engaged therein, said grooves being provided in the mounting station to communicate with said hole at diametrally opposed positions of the periphery of the hole, and a resilient means slidably engaged with said arcuate body of the bearing means for providing through the bearing means to the member a force with which the tapered peripheral surface of the member is resiliently urged into said engagement with the peripheral edge of the hole.

4,292,680

ELECTRONIC TIMEPIECE

Shigeru Morokawa, Higashiyamato; Fukuo Sekiya, Tokorozawa; Yukio Hashimoto, Ishigami-Niiza; Yasushi Nomura, and Keiichiro Koga, both of Tokorozawa, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Division of Ser. No. 626,791, Oct. 29, 1975, Pat. No. 4,150,535.
This application Sep. 15, 1978, Ser. No. 943,262
Claims priority, application Japan, Oct. 31, 1974, 49/125801
Int. Cl.³ G04C *9/00*; G04B *17/12*
U.S. Cl. 368—187 **8 Claims**



1. An electronic timepiece comprising:

a frequency supply for providing a relatively high frequency timebase signal;

a frequency converter responsive to said timebase signal for providing a relatively low frequency time unit signal;

timekeeping means responsive to said time unit signal for providing current time information;

means for correcting said current time information;

display means for displaying said current time information;

command means for generating a calculation command signal;

circuit means enabled by said calculation command signal to produce, in response to said time unit signal a frequency error signal indicative of an error in the frequency of said time unit signal;

means for generating a gain/loss adjustment signal in response to said frequency error signal;

frequency adjusting circuit means for adjusting the frequency of said time unit signal in response to said gain/-loss adjustment signal; and

external control means responsive to actuation for

generating said calculation command signal; wherein said timekeeping means includes a seconds counter, and wherein said external control means is arranged to reset the seconds counter of said timekeeping means and energize said command means simultaneously with the resetting of said seconds counter.

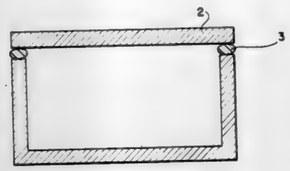
4,292,681

HOUSING FOR INSTRUMENTS POWERED BY AMBIENT OXYGEN ELEMENTS

Wolfgang Kloss, Ellwangen, and Hans Sauer, Idstein-Walsdorf, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,985
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804205
Int. Cl.³ G04B *37/00*; H01M *12/06*
U.S. Cl. 368—280 **6 Claims**

1. A housing for completely enclosing an electrical instrument and the ambient oxygen cell by which it is powered, said housing comprising two separate but interconnected gas-impermeable portions and a sealing body positioned at the interconnection between said housing portions, the sealing



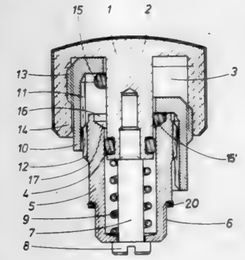
body being formed of a hydrophobic microporous substance and constituting a gas passage for the housing, the housing being gas tight except at the sealing body.

4,292,682

WATER-TIGHT WINDER FOR A DIVER'S WATCH

Karl Wenger, Chambesy-Geneva, Switzerland, assignor to Boninchi, S.A., Geneva, Switzerland

Filed Mar. 26, 1980, Ser. No. 134,061
Claims priority, application Switzerland, Mar. 29, 1979, 2913/79
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—289 **3 Claims**



1. A water-tight push-piece for a diver's watch comprising a recessed head provided with an axially extending core, a rod unitary with said core, a tube in which the rod is mounted and which is intended to be secured to a watch case, a return spring located between the tube and the head, a first gasket between said core and the tube, means for locking the push-piece in an inoperative position and comprising a sleeve having a base and mounted inside the head around the tube, which sleeve is prevented from rotating but is able to slide axially on the tube and defines externally a screw thread cooperating with an internal screw-thread defined by the head in order to move axially upon rotation of the head, and a second gasket located between the base of the sleeve and an end of the tube whereby, in the locked inoperative position of the push-piece, the base of the sleeve abuts against the end of the tube thus compressing the gasket.

4,292,683

GUARD BAND REDUCTION IN OPEN LOOP TDMA COMMUNICATIONS

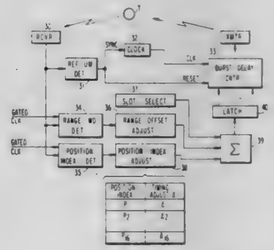
Robert R. Jueneman, Gaithersburg, Md., assignor to Satellite Business Systems, McLean, Va.

Filed Nov. 6, 1979, Ser. No. 92,242
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—104 **5 Claims**

1. In an open loop TDMA communication system including a reference station, a transponder located on board a spacecraft in quasi-synchronous earth orbit and a plurality of geographically separated stations, in which said reference station periodically transmits a timing marker through said transponder, from which each of said stations derive TDMA transmit timing, apparatus to reduce inter-burst guard time required as a result of spacecraft motion comprising:

means for transmitting, through said transponder, a spacecraft position index signal,

and TDMA transmit timing adjusting means, at a plurality of said stations, each of said TDMA transmit timing adjusting means including receiving means for receiving said spacecraft position index signal,



means responsive to said spacecraft position index signal for determining a corresponding position index timing adjustment unique to said stations, said position index timing adjustment determined by said position index and the geographic location of the associated station, and

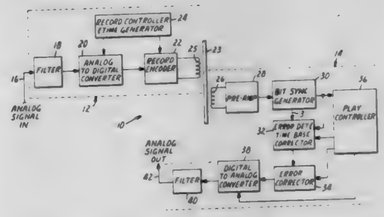
means responsive to said timing adjustment for effecting a corresponding advancement or retardation of station TDMA transmit timing.

4,292,684

FORMAT FOR DIGITAL TAPE RECORDER

Michael J. Kelly, Erin Prairie Township, St. Croix County, Wis., and Robert J. Youngquist, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 956,581, Nov. 1, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 81,880
Int. Cl.³ G06F *11/12*; G11B *27/00*
U.S. Cl. 371—38 **12 Claims**



1. A circuit for processing digital signals to be recorded on a single track of a suitable record medium, said circuit comprising

means for encoding said digitized signal into a serialized signal suitable for recording on said record medium, said serialized signal containing a succession of frames in which each frame comprises a preselected number of data words, a preselected number of parity words, an error check code word corresponding to the frame and a sync word defining the frame location, said encoding means including means for generating the parity words of each frame by an exclusive −OR combination of data words of at least two other preselected frames according to the expression:

$$P_K{}^N = D_{K+}{}^{f(N-m)} \oplus D_{K+k}{}^{(N+n)}$$

where

P_K^N is a given parity word located at segment K of frame N,

$D_{K+j}^{(N+n)}$ is a given data word located at segment K+j of another preselected frame N+n located N frames ahead of frame N, where J is an integer,

$D_{K+k}^{(N-m)}$ is a given data word located at segment K+k of yet another preselected frame N−m, located m frames in back of frame N, where K is an integer, k is an integer, and m and n are integers not equal to 0, whereby each frame which is incorrectly played back may be detected, correct data words of that frame may be reconstructed from the data words of at least one of said other preselected frames N+n, located ahead of frame N in combination with the parity words P_K generated from the data words of that frame and which are located behind frame N such that the placement of the parity words P_K between the data words D^{N+n} and D^{N-m} ensures the availability of correctable data at every given position along the medium within the bounds of N−m to N+n and the corrected data words inserted into a serialized playback signal in place of the data words of the incorrectly played back frame.

4,292,685

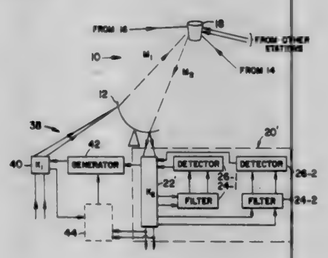
APPARATUS AND METHOD FOR CONTROLLING CROSSPOLARIZATION OF SIGNALS IN A FREQUENCY REUSE SYSTEM

Lin-Shan Lee, P.O. Box 5874, Stanford, Calif. 94305

Filed May 31, 1978, Ser. No. 911,954

Int. Cl.³ H04B *7/155, 7/185, 15/00*

U.S. Cl. 455—12 **12 Claims**



4. Apparatus for controlling the crosspolarization between first dual signals propagated in a frequency reuse satellite communications system having a plurality of remote stations and a local station communicating via a satellite, in which the first dual signals transmitted by each station are of different polarization and the propagative medium around the local station causes the crosspolarization of the first dual signals transmitted by the remote stations and the local station, the apparatus being for use at the local station, comprising:

(a) first adjustable means for controllably crosscoupling the first dual signals transmitted by the local station to the satellite to compensate for the crosspolarization due to the propagative medium;

(b) second adjustable means for controllably crosscoupling the first dual signals received by the local station via the satellite to compensate for the crosspolarization due to the propagative medium; and

(c) closed-loop control means for transmitting second dual-polarized reference signals via said first adjustable means and through the propagative medium, and for receiving the transmitted reference signals through the propagative medium and via said second adjustable means, said second adjustable means being adjusted in response to the received reference signals to control the crosscoupling of the received first dual signals and said first adjustable means being adjusted in response to the received reference signals to control the crosscoupling of the transmitted first dual signals.

4,292,686

TUNING SYSTEM FOR RECEIVER OF PILOT-MODULATED CARRIER WAVES

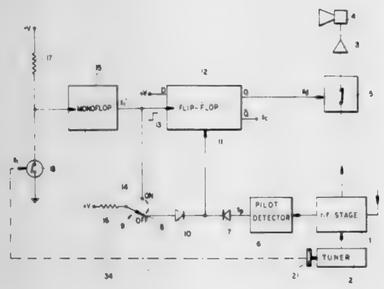
Ernst O. Pagel, Böhmfeld, and Robert Harth, Wettstetten, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,849

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824006

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—194 **10 Claims**



1. In a radio receiver including a high-frequency stage, a low-frequency stage and coupling means for releasably interconnecting said stages,

the combination therewith of:

tuning means connected to said high-frequency stage for adjusting same to pick up incoming carrier waves modulated by a pilot frequency;

detector means connected to said high-frequency stage for emitting an enabling signal only in the presence of said pilot frequency;

sensing means operatively coupled with said tuning means for generating an interrupt signal in response to manipulation of said tuning means; and

bistable means with input connections to said detector means and to said sensing means and with an output connection to said coupling means for switching to a first state interconnecting said stages in response to said enabling signal and for switching to a second state disconnecting said low-frequency stage from said high-frequency stage only upon coincidence of said interrupt signal with an absence of said enabling signal, said bistable means being unswitchable from said first state by the disapperance of said enabling signal in the absence of said interrupt signal whereby said stages remain interconnected at least until the next manipulation of said tuning means.

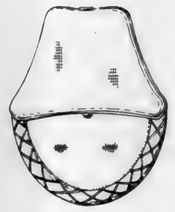
DESIGN PATENTS

GRANTED SEP. 29, 1981

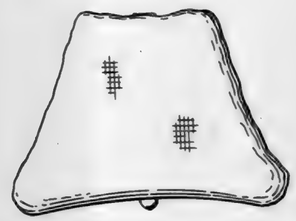
ERRATA

For CLASS	See PATENT NO.
D32-049	260,959

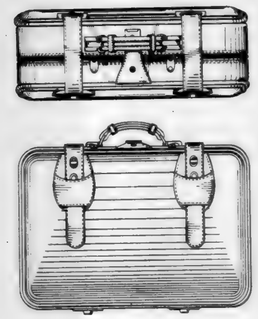
260,945
NECKTIE FOR FORMAL ATTIRE
Gaetano Leonardi, 452 69th St., Brooklyn, N.Y. 11220
Filed Nov. 5, 1979, Ser. No. 90,908
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—343



260,946
NECKTIE FOR FORMAL ATTIRE
Gaetano Leonardi, 452 69th St., Brooklyn, N.Y. 11220
Filed Nov. 5, 1979, Ser. No. 91,591
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—343



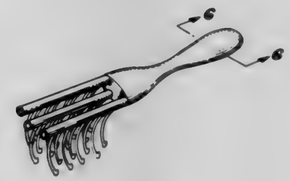
260,947
LUGGAGE CASE
Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed Aug. 4, 1978, Ser. No. 931,113
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



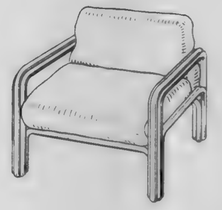
260,948
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Apr. 2, 1979, Ser. No. 25,808
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



260,949
HAIR BRUSH
Salvatore J. Megna, 3721 Fair Oaks Blvd., Sacramento, Calif. 95825
Filed Nov. 23, 1979, Ser. No. 96,666
Term of patent years
Int. Cl. D4—*02*
U.S. Cl. D4—35



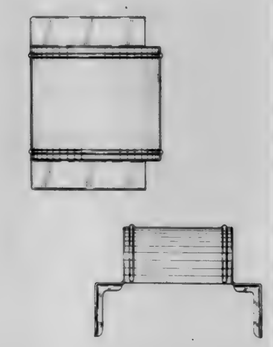
260,950
SEAT OR SIMILAR ARTICLE
Gae Aulenti, Milan, Italy, assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 827,609, Aug. 25, 1977. This application Mar. 24, 1980, Ser. No. 133,657
Term of patent years
Int. Cl. D6—*01*
U.S. Cl. D6—73



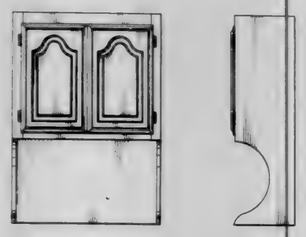
260,951
PLATFORM WATERBED
Michael D. Paripovich, and Donald R. Kendall, both of Chickasha, Okla., assignors to CMF Mattress Company, Chickasha, Okla.
Filed Jan. 10, 1980, Ser. No. 111,177
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



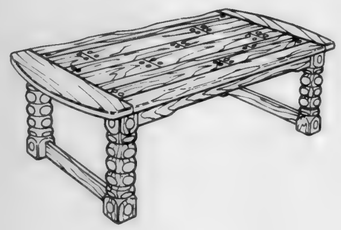
260,952
TOILET TISSUE COVER
Michael A. Perez, 5825 Glenis St., Taylor, Mich. 48180
Filed Mar. 3, 1980, Ser. No. 126,812
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



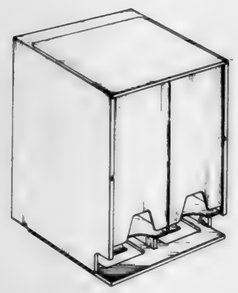
260,953
MEDICINE CABINET
Donald R. Patterson, 2509 Jackson, Joplin, Mo. 64801
Filed Apr. 4, 1980, Ser. No. 137,118
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—104



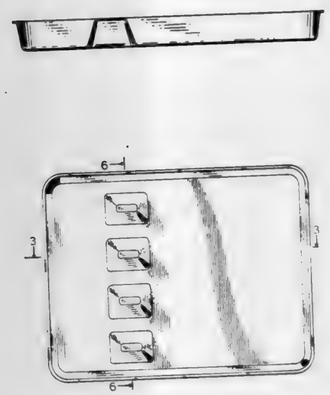
260,954
TABLE
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Feb. 12, 1979, Ser. No. 11,196
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



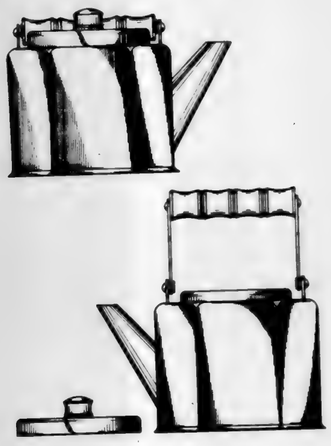
260,955
MODULAR SUTURE CABINET BOX
Michael Schuler, Edison; Harvey B. Mandel, North Brunswick, and John E. Studer, Flemington, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Jul. 19, 1978, Ser. No. 926,064
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



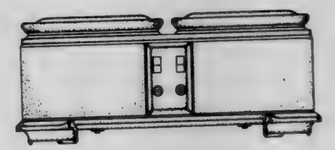
260,956
SERVING TRAY
Stephen D. DesMarais, R.R. 2, Staples, Minn. 56479
Filed Mar. 19, 1979, Ser. No. 21,560
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—38



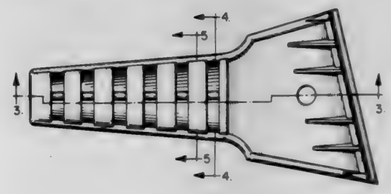
260,957
TEA KETTLE OR SIMILAR ARTICLE
Joy C. Urich, New York, N.Y., assignor to M. Kamenstein, Inc., White Plains, N.Y.
Filed Dec. 1, 1978, Ser. No. 965,658
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—60



260,958
DOUBLE WELL SLOW COOKER
Hideo Nishikawa, Osaka, Japan, assignor to Imanishi Flexible Tube Mfg. Co., Ltd., Japan
Filed Nov. 29, 1977, Ser. No. 855,746
Claims priority, application Japan, Jul. 15, 1977, 52-28059
Term of patent 7 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



260,959
ICE SCRAPER
Randall T. Schnarr, Toronto, Canada, assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 30, 1979, Ser. No. 71,250
Claims priority, application Canada, Mar. 15, 1979, 1503799
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—49



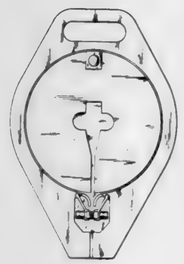
260,960
TELESCOPING PLANT STAKE
John G. Malia, Jr., 2295 Pinon Rd., Rescue, Calif. 95672
Filed Feb. 5, 1979, Ser. No. 9,161
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—1



260,961
RATCHET WRENCH HANDLE
David J. Leehaug, West Chicago, Ill., assignor to Maremont Corporation, Chicago, Ill.
Filed Dec. 8, 1978, Ser. No. 967,616
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—107



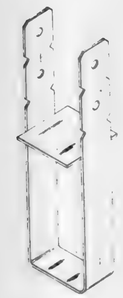
260,962
HOSE REEL
Valentine Hechler, IV, Northfield, Ill., assignor to Injecto Mold, Inc., Chicago, Ill.
Filed Jan. 24, 1979, Ser. No. 5,951
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—359



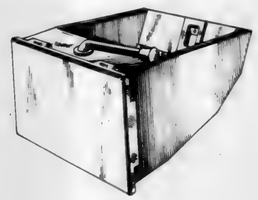
260,963
MARINE BLOCK
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.
Filed Jan. 14, 1980, Ser. No. 111,764
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D8—360



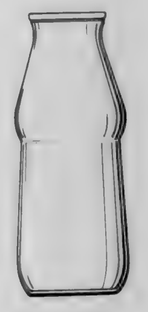
260,964
CONNECTOR FOR WOOD MEMBERS
Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.
Filed Oct. 10, 1978, Ser. No. 950,090
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373



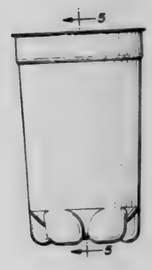
260,965
VACUUM MOUNTED BRACKET FOR ELECTRONIC EQUIPMENT OR THE LIKE
Jerry W. Harrison, 5505 Vegas St., Rowlett, Tex. 75088; James D. Koncak, 8835 Arborside Dr., Dallas, Tex. 75231, and Frank E. Kline, 3100 Richmond Ave. Ste. 103, Houston, Tex. 77098
Filed Mar. 26, 1979, Ser. No. 23,717
Term of patent 14 years
Int. Cl. D8—*08;* D3—*99;* D12—*16;* D14—*10*
U.S. Cl. D8—373



260,966
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 17, 1979, Ser. No. 39,922
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349



260,967
CONTAINER FOR LIQUIDS
Harold E. Taylor, Leeds, England, assignor to Plastona (John Waddington) Limited, Leeds, England
Filed Dec. 1, 1978, Ser. No. 965,655
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—355



260,968
PACKAGING CONTAINER FOR OIL OR THE LIKE
Piero Pavia; Massimo Pavia, and Giorgio Pavia, all of Via Biglia 2, 16100 Genoa, Italy
Filed Nov. 17, 1978, Ser. No. 961,751
Claims priority, application Italy, May 17, 1978, 21885/78[U]
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—428



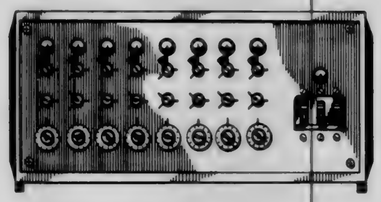
260,969
STOPPER
Michael K. Goettner, Sylvania, and James E. Plummer, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Jun. 21, 1979, Ser. No. 50,711
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—439



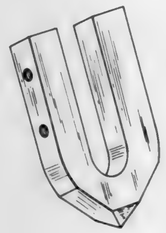
260,970
WRISTWATCH
Jean Dinh Van, 15, Place Gailloe, 75002 Paris, France
Filed Mar. 19, 1979, Ser. No. 21,680
Claims priority, application Switzerland, Sep. 19, 1978, 67543/78
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



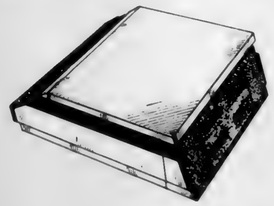
260,971
TEMPERATURE CONTROL APPARATUS
Richard Littlefield, P.O. Box 285, Kennebunk, Me. 04043
Filed Jul. 5, 1979, Ser. No. 54,934
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50



260,972
BACKHOE DEPTH GAUGE
Larry C. Sharpe, 31948 Olean, Hayward, Calif. 94544
Filed Mar. 19, 1979, Ser. No. 22,073
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



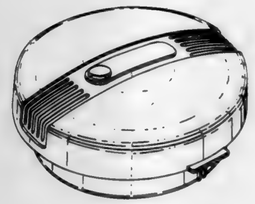
260,973
WEIGHING SCALE
Edward Lawing, Columbus, Ohio, assignor to Reliance Electric Co., Cleveland, Ohio
Filed Aug. 30, 1979, Ser. No. 71,314
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91



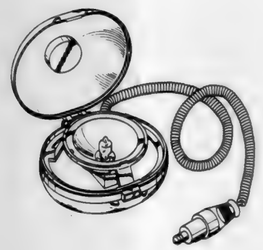
260,974
SAMPLING DEPTH BOB
N. Lewis Lesser, 536 Ridgewood Ave., Glen Ridge, N.J. 07028
Filed Oct. 25, 1979, Ser. No. 87,999
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—101



260,975
FIRE ALARM
Yanta H. T. Lam, Kowloon, Hong Kong, assignor to Meyer Aluminum Ltd., Kowloon, Hong Kong
Filed Jun. 25, 1979, Ser. No. 52,016
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



260,976
AUTOMOTIVE EMERGENCY LAMP
Oskar H. Emmerling, Feldkirchen, and Horst Ehlebracht, Enger, both of Fed. Rep. of Germany, assignors to OSRAM GmbH, Munich and Berlin, Fed. Rep. of Germany
Filed Dec. 14, 1978, Ser. No. 969,385
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 11429
Term of patent 14 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114



260,977
WATCH STRAP
William F. Rimmler, West Warwick, R.I., assignor to Garstan Corporation, Providence, R.I.
Filed Nov. 27, 1978, Ser. No. 965,249
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—4



260,978
FIGURINE OF A MOUSE
Jesus A. C. Santa Eulalia, and Javier B. C. Santa Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 29, 1978, Ser. No. 946,826
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158



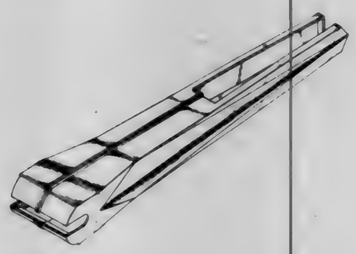
260,979
FIGURINE OR THE LIKE
John O. Van Koert, Wilson, N.C. 27893
Filed Oct. 31, 1979, Ser. No. 89,864
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—160



260,980
BIRD STATUETTE OR THE LIKE
John O. Van Koert, Wilson, N.C. 27893
Filed Oct. 31, 1979, Ser. No. 89,865
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—162



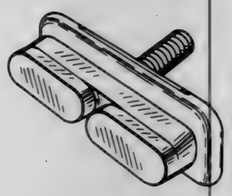
260,981
COVER FOR WRECKER BOOMS
Harold F. Carr, Jr., Hixson, Tenn., and David F. Humphries, Lafayette, Ga., assignors to Dover Corporation/Ernest Holmes Division, Chattanooga, Tenn.
Filed Jun. 26, 1978, Ser. No. 918,931
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—14



260,982
AIR FILTER FOR A MOTORCYCLE
Henry R. Ortiz, 1017 Madison St., Delano, Calif. 93215
Filed Jun. 11, 1979, Ser. No. 47,288
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



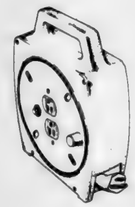
260,983
BRAKE SHOE
Richard C. Everett, 225 S. Sunshine La., West Linn, Oreg. 97221
Filed Jan. 17, 1979, Ser. No. 4,026
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180



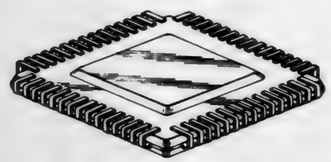
260,984
AUTOMOBILE WHEEL COVER
Ralph E. Jonsson, Hasselkullegatan 114, S-461 00 Trollhättan, Sweden
Filed Dec. 7, 1978, Ser. No. 967,618
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



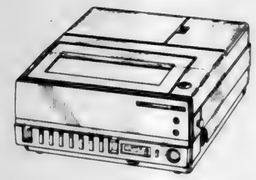
260,985
CORD REEL
John Moylan, Tillsonburg, Canada, assignor to Fleck Manufacturing Company, Tillsonburg, Canada
Filed Jun. 15, 1979, Ser. No. 48,885
Claims priority, application Canada, Apr. 4, 1979, 04-04-79
Term of patent 14 years
Int. Cl. D8—*99*; D13—*03*; D22—*05*
U.S. Cl. D13—30



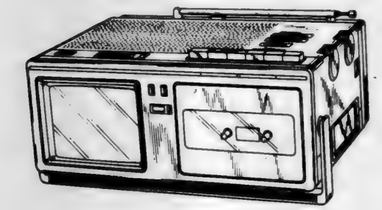
260,986
SEMICONDUCTOR
Hidetoshi Mochizuki, Fuchu; Keizo Otsuki, Higashiyamayo; Hideki Kosaka, Kodaira, and Gen Murakami, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 26, 1979, Ser. No. 15,159
Claims priority, application Japan, Aug. 25, 1978, 53-35731
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—99

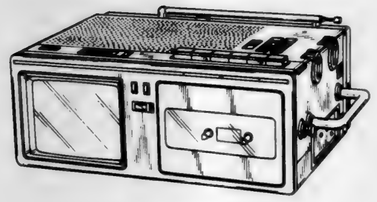


260,987
VIDEO TAPE RECORDER
Masaaki Furukawa, Sagamihara; Michiko Nishibayashi, Tokyo, and Noboru Onozaki, Ohmorinishi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 26, 1979, Ser. No. 52,202
Claims priority, application Japan, Jan. 8, 1979, 54-62
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2

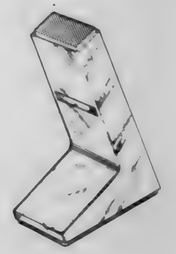


260,988
COMBINED CASSETTE TAPE RECORDER, RADIO AND TELEVISION RECEIVER
Akira Takahashi, Tokyo; Shunji Fujimori, Akishima, and Takeshi Abe, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 9, 1979, Ser. No. 82,933
Claims priority, application Japan, Apr. 16, 1979, 54-14986; Jul. 27, 1979, 54-31280
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

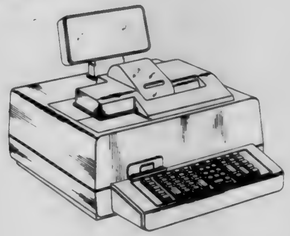




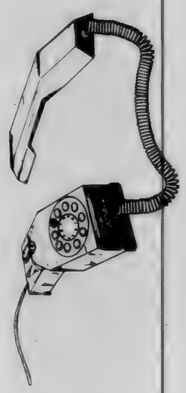
260,989
MICROPHONE
Michael J. McGourty, Littleport, England, assignor to Pye Electronics Products Limited, Cambridge, England
Filed Nov. 14, 1978, Ser. No. 960,529
Claims priority, application United Kingdom, May 19, 1978, 984679/78; May 19, 1978, 984680/78; May 19, 1978, 984681/78
Term of patent 14 years
Int. Cl. D14—*03, 01*
U.S. Cl. D14—12



260,990
STORE DATA ENTRY TERMINAL
Roger C. Williams, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Dec. 19, 1978, Ser. No. 971,144
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—105

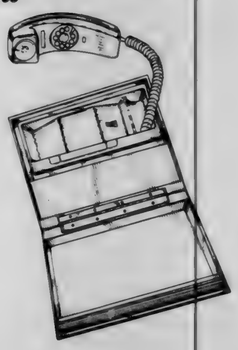


260,991
TELEPHONE SET
Luigi Bandini-Buti, and Marco Del Corno, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed Jul. 28, 1978, Ser. No. 929,028
Claims priority, application Italy, Feb. 3, 1978, 35592 A/78
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

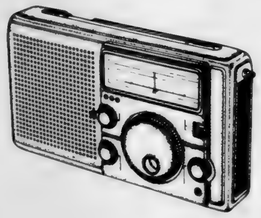




260,992
PHONE BOOK TELEPHONE
Martin Feinberg, Fort Lee, and William G. MacKenzie, Matawan, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 9, 1978, Ser. No. 932,393
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



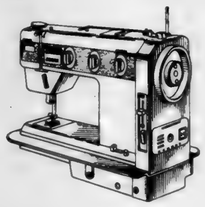
260,993
RADIO RECEIVER
Takeyoshi Kawano, Kyoto, and Teruyuki Nishimoto, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Sep. 6, 1978, Ser. No. 940,642
Claims priority, application Japan, Mar. 10, 1978, 53-9276
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



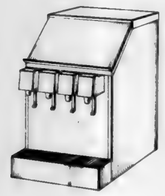
260,994
GASOLINE DISPENSING PUMP
Fred C. Resh, Bensalem, Pa., assignor to The Standard Oil Company, Cleveland, Ohio
Filed Sep. 15, 1980, Ser. No. 187,295
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9.1



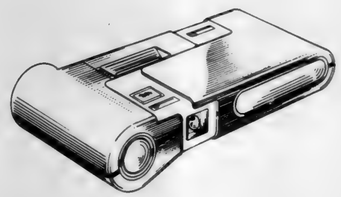
260,995
SEWING MACHINE
Marcel Fresard, Petit-Lancy, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Aug. 5, 1977, Ser. No. 822,280
Claims priority, application Switzerland, Feb. 8, 1977, 109013/77
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70



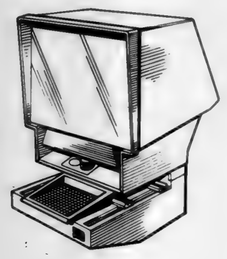
260,996
DISPENSER CABINET
Donald F. Cornett, Cartersville, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Mar. 4, 1980, Ser. No. 127,210
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—116



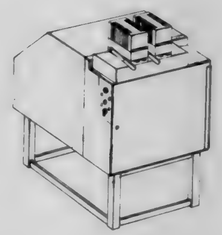
260,997
CAMERA WITH INTEGRATED FLASH
James T. Asaki, Middletown, and William G. MacKenzie, Matawan, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 3, 1978, Ser. No. 930,770
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—06



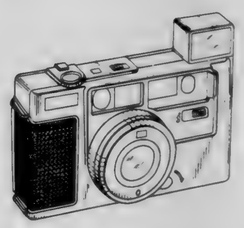
260,998
MICROFICHE READER
Peter J. Hall, 274 Burton Ave., Barrie, Ontario, Canada (L4N 2S2)
Filed Jun. 18, 1979, Ser. No. 49,231
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—14



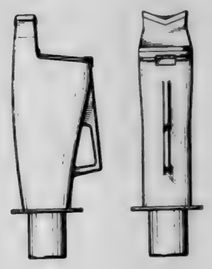
260,999
PHOTOGRAPHIC ENLARGEMENT PRINTER
Sam Schwartz, Los Angeles, Calif., assignor to Post-R-Matic, Inc., Marina del Rey, Calif.
Filed Nov. 27, 1978, Ser. No. 963,911
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—28



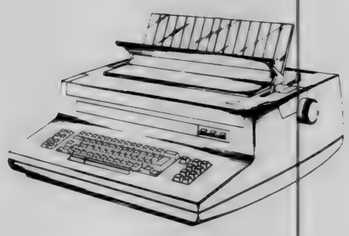
261,000
CAMERA WITH STROBO
Yuzo Miura, Tokyo, and Mutsuhide Matsuda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1979, Ser. No. 52,988
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—42



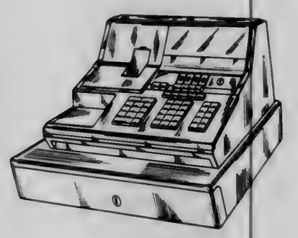
261,001
VIEWING AND ANGLING DEVICE FOR ICE FISHING
Dennis C. Michaels, 114 First Ave. N.E., Buffalo, Minn. 55313, and John W. Michaels, Box 6 - 7612 Huron, Chanhassen, Minn. 55317
Filed Feb. 12, 1979, Ser. No. 11,515
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—130



261,002
TYPEWRITER OR THE LIKE
Vincent Giannotti, Jr., Austin, Tex.; Henry Kapper, Raleigh, N.C., and Edward J. Sabella, Georgetown, Tex., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Oct. 30, 1978, Ser. No. 956,012
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1



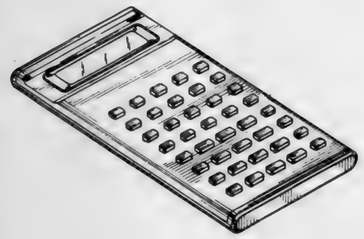
261,003
CASH REGISTER
Katsumi Jinbo, and Junichi Sakamoto, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Apr. 3, 1978, Ser. No. 893,178
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4



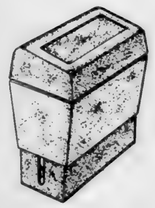
261,004
CASH REGISTER
Katsumi Jinbo, and Junichi Sakamoto, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 16, 1978, Ser. No. 907,180
Claims priority, application Japan, Nov. 22, 1977, 52-46240
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4



261,005
CASE FOR AN ELECTRONIC CALCULATOR
Shinpei Ichikawa, and Robert A. Welch, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation-in-part of Ser. No. 923,859, Jul. 12, 1978, and Ser. No. 924,038, Jul. 12, 1978. This application Aug. 21, 1978, Ser. No. 935,213
The portion of the term of this patent subsequent to May 12, 1985, has been disclaimed.
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



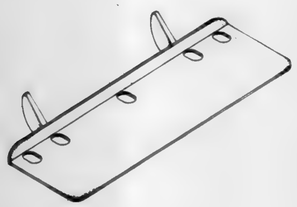
261,006
SELF-INKING STAMP
Alexander C. Wall, Nokomis, Fla., and Leonard H. Sculler, Englishtown, N.J., assignors to M & R Seal Press Co., Inc., Roselle, N.J.
Filed Dec. 21, 1979, Ser. No. 106,090
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D18—15



261,007
BAR CODE SYMBOLS
Barry E. Passer, Ithaca, and George A. Sculley, Endicott, both of N.Y., assignors to NCR Corporation, Dayton, Ohio
Filed May 14, 1979, Ser. No. 38,999
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—26



261,008
SHEET LIFTER FOR A LOOSE LEAF RING BINDER
Theodore C. Mizejewski, Chicopee, Mass., assignor to National Blank Book Company, Inc., Holyoke, Mass.
Filed Aug. 9, 1979, Ser. No. 65,115
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—32



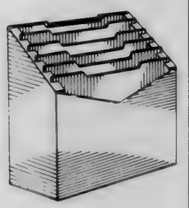
261,009
PEN
Francine Gomez, Paris, France, assignor to Waterman, S.A., Paris, France
Filed Sep. 11, 1979, Ser. No. 74,329
Claims priority, application France, Mar. 16, 1979, 79 77412
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49



261,010
PEN OR SIMILAR ARTICLE
Kunio Itoh, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 9, 1979, Ser. No. 82,622
Claims priority, application Japan, May 15, 1979, 54-19567
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51



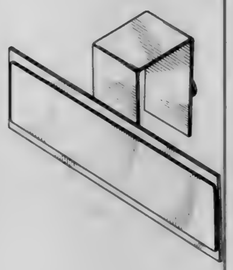
261,011
DESK TOP FILE
Gary Brown, 3251 SW. 11 Ave., Ft. Lauderdale, Fla. 33335
Filed Oct. 17, 1979, Ser. No. 85,694
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90



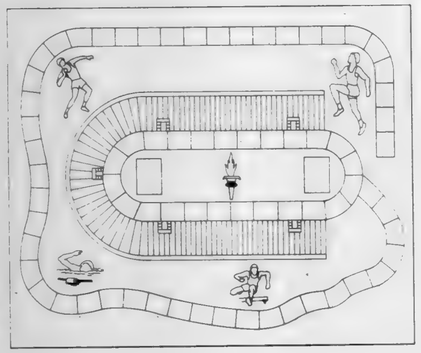
261,012
WIG STAND
Christopher J. V. White, Moreton-in-Marsh, England, assignor to Impulse Merchandising Limited, Moreton-in-Marsh, England
Filed Jan. 30, 1979, Ser. No. 7,574
Claims priority, application United Kingdom, Aug. 23, 1978, 986046/78
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D20—10



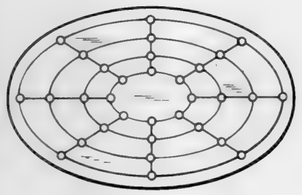
261,013
WALL OR PARTITION HUNG NAME PLATE/COAT HOOK
Donald A. DeMars, Canoga Park, Calif., assignor to Leroy M. Lefkowitz, Van Nuys, Calif., a part interest
Filed Nov. 30, 1978, Ser. No. 965,444
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—42



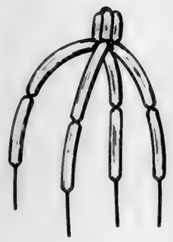
261,014
GAME BOARD
Joseph G. St. Jean, 146 Summer St., Haverhill, Mass. 01830
Filed Jul. 13, 1979, Ser. No. 57,367
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27



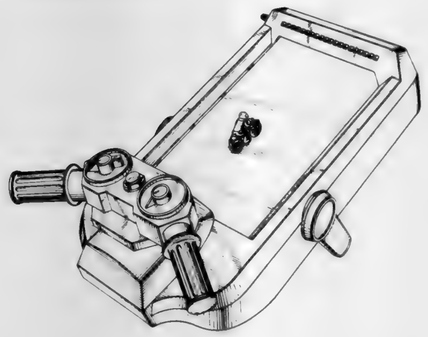
261,015
GAME BOARD
Nicholas Siedun, P.O. Box 578, Clifton, N.J. 07012
Filed Aug. 11, 1978, Ser. No. 933,250
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—35



261,016
INFLATABLE BALLOON MERRY-GO-ROUND TOY
Eugene E. Curtis, 708 S. Byrne Rd., Toledo, Ohio 43609
Filed Dec. 8, 1978, Ser. No. 967,614
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—84



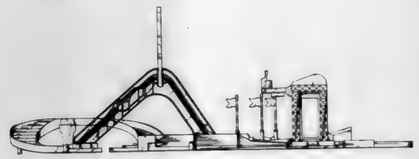
261,017
COMBINED TOY VEHICLE AND STEERING DEVICE THEREFOR
John Birdsall, Los Angeles, Calif.; Edward B. Bretschger, Cos Cob, Conn.; Fred Adickes, El Segundo, and Ronald Hellenthal, Torrance, both of Calif., assignors to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 10, 1978, Ser. No. 876,798
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—142



261,018
FLEXIBLE TOY TRACK
Antonie Vandenbrink, Westmaas, Netherlands, assignor to Aurora Products Canada Ltd., Rexdale, Canada
Filed Jan. 19, 1979, Ser. No. 4,956
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



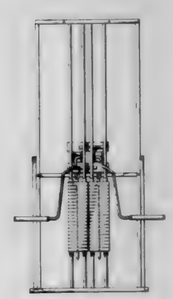
261,019
TOY TRACKWAY
Toru Hirano, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Mar. 20, 1979, Ser. No. 22,172
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



261,020
ROLLING TOY
David J. Ciganko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 10, 1979, Ser. No. 101,804
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



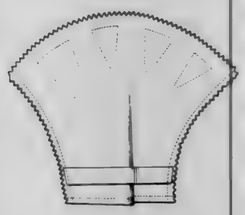
261,021
PHYSICAL EXERCISER
Lloyd J. Lambert, Sr., 1538 College Ave., South Houston, Tex. 77587
Continuation-in-part of Ser. No. 815,363, Jul. 13, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,548
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—196



261,022
SEAT FOR SKATEBOARD
William F. Hoskins, 3165 Stonebridge, Apt. #6, Portage, Mich. 49081
Filed Nov. 20, 1978, Ser. No. 962,294
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—227



261,023
SWIMMING GLOVE
Walter Pesarek, 595 Summer St., West Lynn, Mass. 01901
Filed Apr. 24, 1978, Ser. No. 899,024
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—239

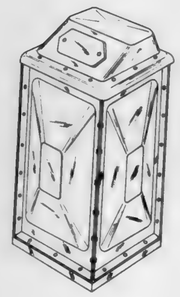


261,024
TARGET PISTOL OR SIMILAR ARTICLE
Paul A. LaViolette, 140 Hartley St., North Haven, Conn. 06473
Filed Jan. 24, 1980, Ser. No. 114,847
Term of patent 7 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

261,025
MOUSE TRAP
Donald C. Lindley, Long Beach, Calif., assignor to Farnam Companies, Inc., Phoenix, Ariz.
Filed Nov. 30, 1979, Ser. No. 98,737
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



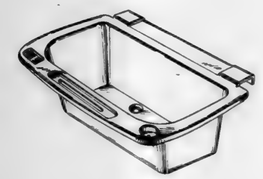
261,026
STORAGE TANK FOR LIQUIDS OR THE LIKE
Keisaku Koga, Ibaraki, and Takeshi Iseda, Yahata, both of Japan, assignors to Sekisui Koji Kabushiki Kaisha, Japan
Filed Oct. 13, 1978, Ser. No. 951,282
Claims priority, application Japan, Apr. 24, 1978, 53-16615
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



261,027
SPOUT FOR A SHOWER HEAD OR THE LIKE
Odo Klose, Wuppertal, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany
Filed Aug. 27, 1979, Ser. No. 70,172
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, MR 6936
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



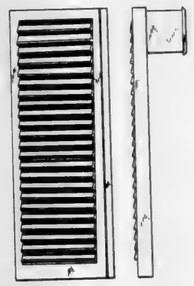
261,028
CHILD'S WASH BASIN
Tivadar Bitvai, Vallhamnsgatan 110, S-421 66 Vastra Frolunda, Sweden
Filed Apr. 4, 1979, Ser. No. 27,746
Claims priority, application Sweden, Oct. 4, 1978, 782284
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



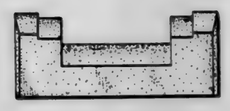
261,029
COMBINED TOILET SEAT AND COVER, OR SIMILAR ARTICLE
Mogens Boyter, Ega, Denmark, assignor to Dansk Pressalit A/S, Arhus, Denmark
Continuation-in-part of Ser. No. 904,715, May 10, 1978. This application Jun. 1, 1979, Ser. No. 44,815
Claims priority, application Denmark, Nov. 11, 1977, 873/77
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



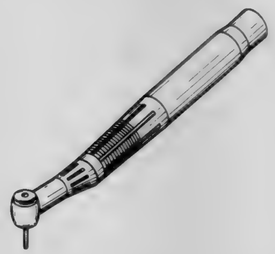
261,030
SOLAR PANEL
Harold King, 3925 Tiverton Rd., Randallstown, Md. 21133
Filed May 29, 1980, Ser. No. 154,430
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72



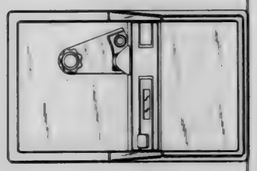
261,031
VENT BAFFLE
Bruce K. Ward, St. Louis Park, Minn., assignor to Insulation Sales, Co.
Continuation-in-part of Ser. No. 749,834, Dec. 13, 1976, Pat. No. Des. 249,704. This application Apr. 7, 1978, Ser. No. 894,395
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

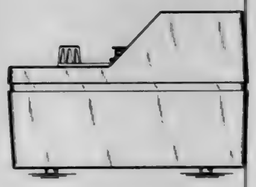


261,032
DENTAL HANDPIECE
N. Dominic Marucci, Philadelphia, and Arthur A. Knopp, Chalfont, both of Pa., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Feb. 28, 1979, Ser. No. 16,055
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12

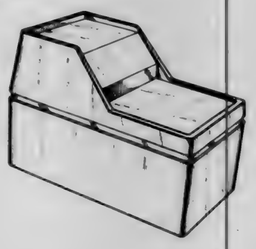


261,033
BILIRUBIN CONCENTRATION ANALYZER
John T. Armbruster, Niagara Falls, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 5, 1979, Ser. No. 9,318
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

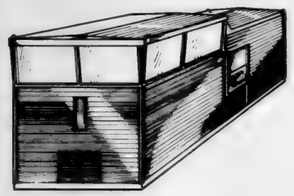




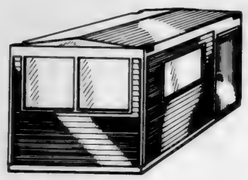
261,034
MEDICAL INSTRUMENT HOUSING
John T. Armbruster, Niagara Falls, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 5, 1979, Ser. No. 9,333
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



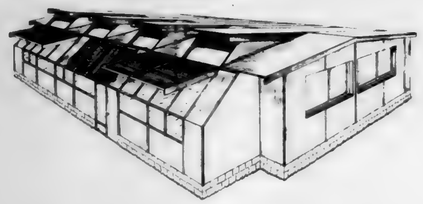
261,035
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Dec. 12, 1979, Ser. No. 102,989
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



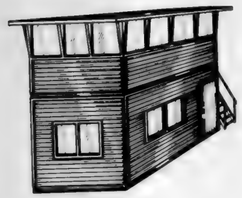
261,036
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Dec. 12, 1979, Ser. No. 102,990
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



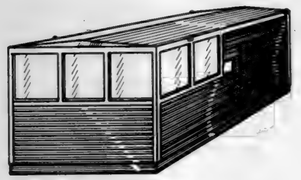
261,037
MODULAR PASSIVE SOLAR HOME
Thomas P. Schlageter, P.O. Box 12, and Charles D. Schleiger, P.O. Box 1, both of, Pulga, Calif. 95965
Filed Jan. 7, 1980, Ser. No. 110,339
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



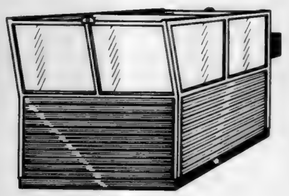
261,038
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed May 2, 1980, Ser. No. 145,996
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



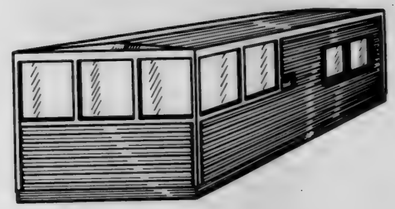
261,039
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed May 2, 1980, Ser. No. 145,997
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



261,040
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed May 2, 1980, Ser. No. 145,998
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22

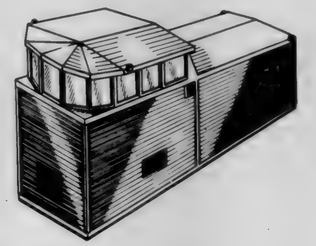


261,041
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed May 2, 1980, Ser. No. 145,999
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22

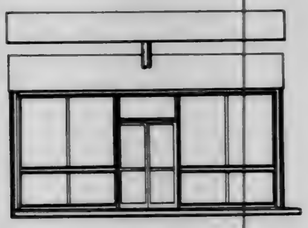


261,042
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed May 2, 1980, Ser. No. 146,000
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22

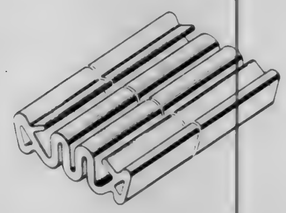
261,043
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Dec. 12, 1979, Ser. No. 102,991
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—32



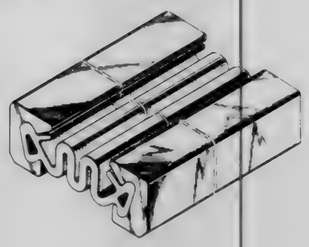
261,044
COMBINED SERVICE STATION BUILDING AND CANOPY
Charles M. Baffo, Wilton, Conn., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Mar. 30, 1979, Ser. No. 25,317
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—33



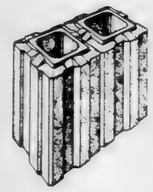
261,045
EXPANSION JOINT SEALING STRIP FOR ROADWAY JOINTS AND THE LIKE
William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.
Filed Nov. 16, 1979, Ser. No. 95,141
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



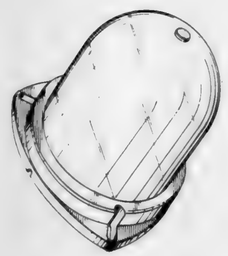
261,046
EXPANSION JOINT SEALING STRIP ASSEMBLY FOR ROADWAYS AND THE LIKE
William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.
Filed Nov. 16, 1979, Ser. No. 95,143
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



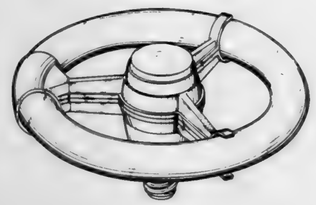
261,047
MODULAR BUILDING UNIT
Leonard L. Long, The Darlington, Suite Seven,, 2025 Peachtree Rd., NE. Atlanta, Ga. 30309
Filed Jan. 2, 1979, Ser. No. 654
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



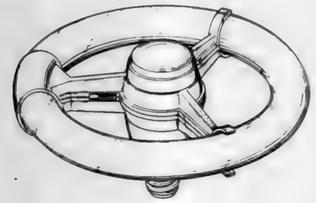
261,048
BEACON LAMP
Clifford D. Price, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Jul. 18, 1978, Ser. No. 925,840
Claims priority, application United Kingdom, Jan. 18, 1978, 983003/78
Term of patent 14 years
Int. Cl. D26—*03, 06*
U.S. Cl. D26—24



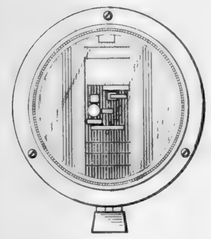
261,049
FLUORESCENT LAMP UNIT
Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,775
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—26



261,050
FLUORESCENT LAMP UNIT
Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,776
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—26



261,051
HEADLIGHT
Pierre Catte, Sevres, France, assignor to Cibie Projecteurs, Bobigny, France
Filed Jul. 12, 1979, Ser. No. 57,143
Claims priority, application France, Jun. 1, 1979, 79 42153
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—29



261,052
POCKET TORCH
Walter Henkels, 5142 Hückelhoven, Holunderweg 1, Fed. Rep. of Germany
Filed Apr. 20, 1978, Ser. No. 898,312
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 108
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—46



261,053
CANDLESTICK LAMP STAND
Robert J. Zellner, 2201 Chestnut Ave., Wilmette, Ill. 60091
Filed Mar. 12, 1979, Ser. No. 19,861
Term of patent 14 years
Int. Cl. D26—*05, 01*
U.S. Cl. D26—66



261,054
STAND FOR FLOOR LAMP
Robert J. Zellner, 2201 Chestnut Ave., Wilmette, Ill. 60091
Filed Mar. 12, 1979, Ser. No. 19,862
Term of patent 14 years
Int. Cl. D26—*05, 01*
U.S. Cl. D26—66



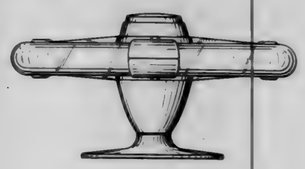
261,055
LAMP STAND
Robert J. Zellner, 2201 Chestnut Ave., Wilmette, Ill. 60091
Filed Mar. 12, 1979, Ser. No. 19,463
Term of patent 14 years
Int. Cl. D26—*05, 01*
U.S. Cl. D26—66



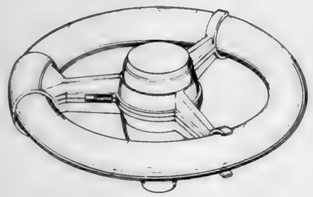
261,056
LIGHT FIXTURE HOUSING
Lars Andersson, Halmstad, Sweden, assignor to HAFA Fabriks AB, Halmstad, Sweden
Filed Nov. 29, 1978, Ser. No. 964,589
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—85



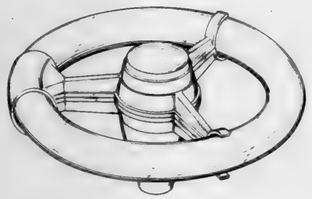
261,057
FLUORESCENT LAMP UNIT
Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,771
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93



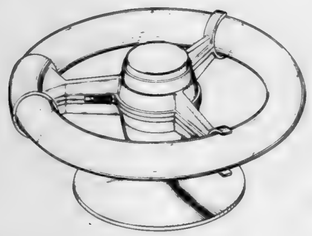
261,058
FLUORESCENT LAMP UNIT
Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,774
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D26—93



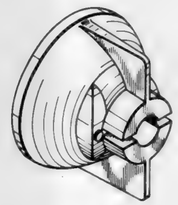
261,059
FLUORESCENT LAMP UNIT
Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,777
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93



261,060
FLUORESCENT LAMP UNIT
Joseph P. Wotowiec, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,780
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93



261,061
PROJECTION LAMP REFLECTOR
Emmett H. Wiley, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 12, 1979, Ser. No. 11,474
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—134



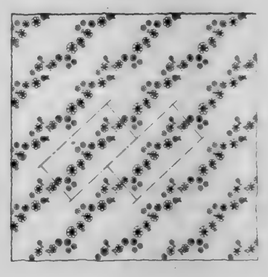
261,062
LIGHTER OR THE LIKE
Kaname Ichikawa, Tokyo, Japan, assignor to Modern Royal Co., Ltd., Tokyo, Japan
Filed Nov. 17, 1978, Ser. No. 961,487
Claims priority, application Japan, May 26, 1978, 53-21245
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



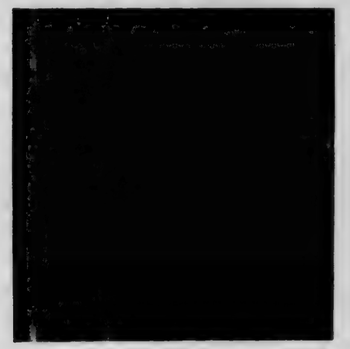
261,063
RAZOR HOLDER
Karl M. Keck, 2155 Silver Palm West, Boca Raton, Fla. 33432
Filed Sep. 24, 1979, Ser. No. 78,291
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—44



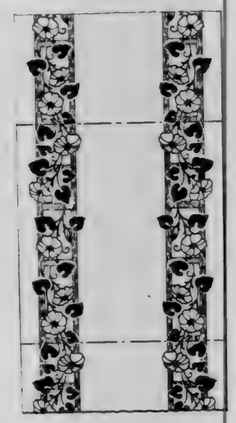
261,064
CONTINUOUS SHEET PAPER OR SIMILAR ARTICLE
Sylvia M. Kauffman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 8, 1979, Ser. No. 92,774
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



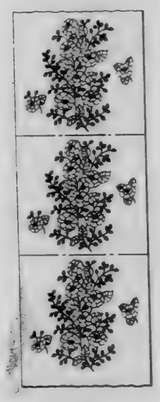
261,065
LAMINATE SHEET
Harry R. Ford, Parkdale, Ohio, and Yasuo Yoshihashi, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Jul. 11, 1978, Ser. No. 923,616
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R



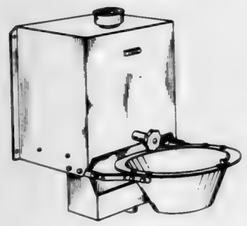
261,066
NONWOVEN SHEET MATERIAL
Diane M. McElwain, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 1, 1979, Ser. No. 80,915
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 E



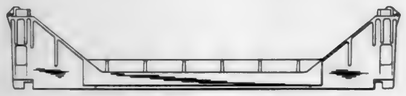
261,067
NONWOVEN SHEET MATERIAL
Diane M. McElwain, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 1, 1979, Ser. No. 80,916
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 C



261,068
ABLUTION UNIT
Bruce Lotherington, Solihull, England, assignor to Teal Patents Limited, Birmingham, England
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261,069
MULTI-LEVEL BAKERY TRAY
Emil L. Munch, Cincinnati, and Stuart A. Clipson, Glendale, both of Ohio, assignors to Nestier Corporation, Cincinnati, Ohio
Filed Dec. 15, 1978, Ser. No. 969,697
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TO WHOM

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Barnes, Wayne R.; and Barnes, Lawrence K. Decorative applique and decorative faceplate assembly for push-button telephones. 4,292,481, Cl. 179-178.000.

Barone, Joseph P.; Loynaz, Sergio A.; and Bauer, Frederick W., to Martin Marietta Corporation. Non-abrasive bauxite-based fire retardant. 4,292,188, Cl. 252-62.000.

Barr, Arthur. Cosmetic breath freshener and palate coolant composition and method of use. 4,292,028, Cl. 433-180.000.

Barr, Charles W.; Lerer, Michael I.; Sanders, Royden C., Jr.; and Vassar, Russell J., Jr., to R. C. Sanders Technology Systems, Inc. Printer pin control circuitry. 4,291,992, Cl. 400-124.000.

Barrera, Giorgio, to Officine Meccaniche Pavesi & C. S.p.A. Device for inserting pre-wound coils into stator slots. 4,291,459, Cl. 29-734.000.

Barrett, Melvin L. Material feeder. 4,292,066, Cl. 65-335.000.

Barriquand: *See*—
Barriquand, Bernard, 4,291,555, Cl. 68-13.00R.

Barriquand, Bernard, to Barriquand. Machines for the wet treatment of fabrics in rope form. 4,291,555, Cl. 68-13.00R.

Barry, Robert F., to Westinghouse Electric Corp. Monitoring of operating processes. 4,292,129, Cl. 176-24.000.

Barry Wright Corporation: *See*—
Peterson, Robert R.; and Ventura, Daniel S., 4,291,925, Cl. 308-26.000.

Bartek, Joseph P.; Cepulis, Rimoydas L.; and Grasselli, Robert K., to Standard Oil Co., The. Multi-stage dehydrogenation process for preparing indene. 4,292,455, Cl. 585-320.000.

Barth, Heinz: *See*—
Heynisch, Hinrich; Huebner, Erwin; and Barth, Heinz, 4,292,566, Cl. 315-3.500.

Barty, Bernd, to AB Nordplat. Bottom structure for containers, load-carrying platforms or the like. 4,291,632, Cl. 108-51.100.

Basalaev, Anany M.: *See*—
Frolov, Jury F.; Sukoian, Nariman A.; Proshkin, Ivan T.; and Basalaev, Anany M., 4,292,460, Cl. 13-14.000.

BASF Aktiengesellschaft: *See*—
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Lechtken, Peter; Bronstert, Bernd; Hoffmann, Gerhard; Vyvial, Rudolf; and Lynch, John, 4,292,152, Cl. 204-159.150.
Lindner, Alfred; Volkamer, Klaus; Wagner, Ulrich; Pommer, Dieter; Schneider, Klaus-Juergen; and Schwentker, Harald, 4,292,141, Cl. 203-49.000.

BASF Wyandotte Corporation: *See*—
Davis, Pauls; Maxwell, Jerrold F.; and Wilson, Joe C., 4,292,190, Cl. 252-75.000.
Patil, Arvind S.; and Netherton, Lowell E., 4,292,294, Cl. 423-594.000.

Bash, C. Malcolm; and Pasquito, Joseph, to Prince Manufacturing Co., Inc. Propulsion device for spherical objects having an oscillating support frame providing a programmed discharge of said objects. 4,291,665, Cl. 124-56.000.

Basili, Robert A.; and Wilson, William B., to Plastic Reel Corporation of America. Video cassette storage container. 4,291,801, Cl. 206-387.000.

Bass, Sidney; and Pimentel, Gary W., to Mattel, Inc. Board game apparatus and method of playing. 4,291,884, Cl. 273-249.000.

Bassani, Mariano. Apparatus for opening textile fabrics in rope form. 4,291,441, Cl. 26-75.000.

Bates, John K.: *See*—
Krumpelt, Michael; and Bates, John K., 4,292,378, Cl. 429-15.000.

Bates, Junior L.: *See*—
Marchant, David D.; and Bates, Junior L., 4,292,209, Cl. 252-521.000.

Bates, Richard L.: *See*—
D'Antonio, Nicholas F.; and Bates, Richard L., 4,291,894, Cl. 280-612.000.

Bates, Theresa I.: *See*—
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Battelle Memorial Institute: *See*—
Neracher, Arnold, 4,292,600, Cl. 331-94.50G.
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,292,089, Cl. 127-1.000.

Battrell, Charles F., to Procter & Gamble Company, The. Fabric softening compositions. 4,292,035, Cl. 8-137.000.

Batts, Tom, to Swift & Company. Tendon pulling. 4,291,434, Cl. 17-11.300.

Baudoin, Patrice, to Regie Nationale des Usines Renault. Method of vehicle engine control. 4,291,594, Cl. 74-857.000.

Baudot, Jean-Jacques, to Societe Anonyme de Telecommunications. Optical panoramic survey. 4,291,937, Cl. 350-23.000.

Bauer, Dieter W., to B. F. Goodrich Company, The. Power transmission and energy absorbing systems. 4,291,794, Cl. 192-107.00M.

Bauer, Frederick W.: *See*—
Barone, Joseph P.; Loynaz, Sergio A.; and Bauer, Frederick W., 4,292,188, Cl. 252-62.000.

Bauer, Philippe, to Societe Industrielle de Brevets et d'Etudes. Solenoid valves, particularly for carburetors. 4,291,860, Cl. 251-129.000.

Baum, Gary A.; and Habeger, Charles C., to Institute of Paper Chemistry, The. On line ultrasonic velocity gauge. 4,291,577, Cl. 73-597.000.

Baur, Eduard. Method of manufacturing a hollow casting mold. 4,291,739, Cl. 164-5.000.

Bausch & Lomb Incorporated: *See*—
Martino, Ronald J.; and Shawcross, Alfred L., 4,292,663, Cl. 362-97.000.

Baxter Travenol Laboratories, Inc.: *See*—
Hannah, Richard E.; and Lyons, Steffen, 4,292,270, Cl. 264-320.000.
Mascoli, Carmine C.; Pope, J. Lee, Jr.; and Weber, Phillip L., 4,292,405, Cl. 435-31.000.
Newman, Ferris E., 4,291,470, Cl. 34-12.000.
Parsons, George H., Jr., 4,292,296, Cl. 424-1.000.

Baybrook, Howard E.: *See*—
Santoli, Pat A.; and Baybrook, Howard E., 4,291,558, Cl. 72-38.000.

Bayer Aktiengesellschaft: *See—*
Binsack, Rudolf; Rempel, Dieter; Humme, Gert; and Ott, Karl-Heinz. 4,292,233, Cl. 260-40.00R.
Blume, Gotz; and Muller, Hans-Otto, 4,292,210, Cl. 252-522.00R.
Grigo, Ulrich; Morbitzer, Leo; Arlt, Klaus-Peter; Binsack, Rudolf; and Merten, Josef, 4,292,222, Cl. 260-29.1SB.
Hennig, Hans J.; Ziemek, Peter; and Schellmann, Erhard, 4,292,255, Cl. 260-453.0AR.
Hentschel, Karl-Heinz; Dhein, Rolf; and Schule, Wolfgang, 4,292,187, Cl. 252-49.500.
Kruckenberg, Winfried; and Schundehutte, Karl H., 4,292,239, Cl. 260-158.000.
Kubitza, Werner; Mennicken, Gerhard; and Pedain, Josef, 4,292,350, Cl. 427-385.500.
Kuhlthau, Hans-Peter, 4,292,238, Cl. 260-158.000.
Scharf, Hans-Dieter; and Frauenrath, Herbert, 4,292,246, Cl. 260-347.400.
Schroder, Rolf; and Lurssen, Klaus, 4,292,072, Cl. 71-105.000.
Schulte, Klaus; and Ersfeld, Heinrich, 4,291,991, Cl. 366-159.000.
Wenzel, Wolfgang; and Meckel, Walter, 4,292,226, Cl. 260-29.2TN.
Bayer Antwerpen: *See—*
Denecker, Gabriel; Sluyts, Domien; Putseys, Roland; Van Herck, Willy; Claes, Ludo; and Spott, Georg, 4,292,043, Cl. 23-296.000.
Bayerische Motoren Werke Aktiengesellschaft: *See—*
Steinberg, Klaus; and Hoffmann, Gerhard, 4,291,501, Cl. 49-386.000.
Bayles, Bruce R. Solar panel. 4,291,683, Cl. 126-448.000.
BBC Brown, Boveri & Co., Ltd.: *See—*
Oplatka, George, 4,291,537, Cl. 60-652.000.
Starcevic, Mihailo, 4,292,554, Cl. 310-58.000.
Beale, Paul E., to Beatrice Foods Co. Double nozzle block. 4,292,018, Cl. 425-144.000.
Beatrice Foods Co.: *See—*
Beale, Paul E., 4,292,018, Cl. 425-144.000.
Williams, Wilmore; and Luksas, Anthony J., 4,292,330, Cl. 426-20.000.
Becchi, Giorgio: *See—*
Palazzetti, Mario; Becchi, Giorgio; and Cane, Guiseppe, 4,291,834, Cl. 237-12.100.
Becker, Carl H. Method of making laser disc memory storage article. 4,292,109, Cl. 156-281.000.
Beecham Group Limited: *See—*
Davis, Adrian F., 4,292,298, Cl. 424-10.000.
Beigel, Michael L.: *See—*
Tavel, Donald L.; and Beigel, Michael L., 4,291,605, Cl. 84-1.260.
Beimgraben, Herbert W.; and Reinhardt, Paul H., to Baker International Corporation. Fluid pressure actuated by-pass and relief valve. 4,291,723, Cl. 137-508.000.
Bekkering, Hendrik M.; and Schmidt, Ernst M., to Duphar International Research B.V. Disposable injection syringe. 4,291,695, Cl. 128-218.0NV.
Bell, Harry E., to Alcan Aluminum Corporation. Coatings pigmented with nonleafing aluminum flake. 4,292,087, Cl. 106-193.00M.
Bell & Howell Company: *See—*
Bowman, Ronald, 4,291,701, Cl. 128-675.000.
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., to Colt Industries Operating Corp. Electrical discharge machining power supply with digitally controlled on and off time and protective system. 4,292,490, Cl. 219-69.00P.
Bell, Seymour; and Juengel, Richard O., to Valeron Corporation, The. Transducer for measuring workpieces. 4,291,466, Cl. 33-148.00H.
Bell Telephone Laboratories, Incorporated: *See—*
Boll, Harry J., 4,292,677, Cl. 365-222.000.
Cheung, Nim K., 4,292,260, Cl. 264-1.500.
Embree, Milton L.; Goldthorp, David C.; and Vogelpohl, David R., 4,292,604, Cl. 331-111.000.
Marcuse, Dietrich; and Presby, Herman M., 4,292,341, Cl. 427-10.000.
Miller, Richard C.; and Schwartz, Bertram, 4,292,512, Cl. 250-205.000.
Bemis Company, Inc.: *See—*
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Bender, John R.: *See—*
Assour, Jacques M.; Bates, Theresa I.; Bender, John R.; and Neilson, John M. S., 4,292,646, Cl. 357-38.000.
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Probyn, Keith A.; Nolen, Richard W.; Erickson, Charles W.; Dawson, Gerald G.; Goldstein, Ralph; and Bender, Max, 4,292,034, Cl. 493-92.000.
Bendix Corporation, The: *See—*
Anderson, Eric G., 4,291,584, Cl. 73-861.720.
Buike, James W., 4,291,583, Cl. 73-861.750.
Lao, Binneg Y., 4,292,659, Cl. 361-283.000.
Bendoni, Leonard V.; and Green, Lawrence E., to Polaroid Corporation. Photographic film assemblage. 4,291,966, Cl. 354-275.000.
Bengtsson, Algot E. Hand stamp having an adjustable stamp print. 4,291,622, Cl. 101-368.000.
Benkert, Donald E. Rotary crop harvester with rapidly replaceable parts. 4,291,525, Cl. 56-327.00R.
Berg, Lloyd, to International Synthetic Rubber Co., Ltd. Separation of ethylbenzene from para- and meta-xylenes by extractive distillation. 4,292,142, Cl. 203-51.000.
Berger, Dale F. Drop latch. 4,291,907, Cl. 292-188.000.
Berger, Eugene; and Derroitte, Jean-Louis, to Solvay & Cie. Catalyst composition for polymerization of olefins. 4,292,200, Cl. 252-431.00C.
Berger, Richard M., to American Filtrona Corporation. Tobacco smoke filter providing tobacco flavor enrichment, and method for producing same. 4,291,711, Cl. 131-336.000.
Bergman, Oswald: *See—*
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Bergqvist, Erik, to Aktiebolaget Bofors. Laser resonator. 4,292,602, Cl. 331-94.50C.
Bergsten, Victor E.; Eardley, Edward P.; and Halvorson, Thomas G., to Union Carbide Corporation. Solid refuse disposal apparatus. 4,291,634, Cl. 110-235.000.
Bergsten, Victor E.; Eardley, Edward P.; and Fisher, Theodore F., to Union Carbide Corporation. Solid refuse disposal process. 4,291,636, Cl. 110-346.000.
Bernard, Walter J., to Sprague Electric Company. Post-treatment of etched aluminum capacitor foil. 4,292,148, Cl. 204-144.000.
Bernardo, Matthew: *See—*
Cretella, Salvatore J.; Bernardo, Matthew; and DeMusis, Ralph T., 4,291,448, Cl. 29-156.80B.
Bernhard Forster GmbH: *See—*
Forster, Rolf, 4,292,025, Cl. 433-18.000.
Berringer, Robert T. Flat plate heat exchangers. 4,291,681, Cl. 126-445.000.
Bers, Abraham, to Massachusetts Institute of Technology. System and method for generating steady state confining current for a toroidal plasma fusion reactor. 4,292,125, Cl. 176-3.000.
Berthold, Gert; Dreyhaupt, Dieter; Dunse, Helmfried; Henker, Erich; and Viehweg, Bernd, to VEB Wissenschaftlich-Technisches Zentrum Automobilbau. Snow vehicle. 4,291,892, Cl. 280-28.000.
Bertotti, Elvio: *See—*
Corrado, Giovanni; Bertotti, Elvio; and Sopino, Bruno, 4,292,218, Cl. 260-22.0CB.
Bevan, Thomas M.: *See—*
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Beveridge, John H.: *See—*
Linhardt, Hans D.; and Beveridge, John H., 4,292,050, Cl. 55-1.000.
Beynet, Pierre A., to Standard Oil Company (Indiana). Drilling fluid bypass for marine riser. 4,291,772, Cl. 175-5.000.
Bezwada, Rao S., to American Cyanamid Company. Method of adhesion of rubber to reinforcing materials. 4,292,111, Cl. 156-307.700.
Biasotti, Joseph B.: *See—*
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Bidegain, Georgy, to Embadac S.A. Process and machine for covering a tubular member, more particularly for covering a box. 4,292,102, Cl. 156-213.000.
Bieber, Larry C.: *See—*
Wilson, John F.; Hoover, Edward D.; Hammond, Philip K.; Moshier, William A.; Woodell, Jack L.; Spaniol, John W.; Bowerman, John J.; Bieber, Larry C.; and Perlman, Marvin, 4,292,465, Cl. 178-3.000.
Bier, Larry J.: *See—*
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Bik, Johannes T. J.: *See—*
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Bilancini, Luigi: *See—*
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Billeter, Henry R., to Sloan Valve Company. Empty and load brake device. 4,291,923, Cl. 303-23.00R.
Billig, Frederick S.: *See—*
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Binek, Paul H.; Cherney, Thomas M.; Magnusson, John M.; and Cronk, Bryon J., to Minnesota Mining and Manufacturing Company. Connector for optical fiber cables. 4,291,943, Cl. 350-96.220.
Binsack, Rudolf; Rempel, Dieter; Humme, Gert; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. High-impact polybutylene terephthalate. 4,292,233, Cl. 260-40.00R.
Binsack, Rudolf: *See—*
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Biotherapeutics, Inc.: *See—*
Sanders, Murray J.; and Vick, James A., 4,292,308, Cl. 424-98.000.
Birdwell, James A.; and Delasko, Joseph M., to Dresser Industries, Inc. Pulsed power supply system. 4,292,592, Cl. 328-233.000.
Birk, Earl, to Litton Systems, Inc. Microwave oven door having a conformable screen. 4,292,488, Cl. 219-10.55D.
Bishop, Walter S., Jr. Combination socket wrench and gauge. 4,291,426, Cl. 7-100.000.
Bisle, Hans E., to Boehringer Ingelheim GmbH. Stable concentrated lactic acid containing mixture. 4,292,339, Cl. 426-650.000.
Black & Decker Inc.: *See—*
Cuneo, Giuseppe, 4,292,571, Cl. 318-17.000.
Blackburn, Martin J.; and Smith, Michael P., to United Technologies Corporation. Titanium alloys of the Ti_3Al type. 4,292,077, Cl. 75-175.500.
Blanchette, Claude. Convertible sled. 4,291,891, Cl. 280-9.000.
Blanchette, Robert G.; and Curtin, Denis J., to A. B. Dick Company. Bi-modal photoreceptor and method. 4,292,385, Cl. 430-58.000.
Blevex Limited: *See—*
Fryer, Kevin C.; and Prentice, Edgar C., 4,292,358, Cl. 428-135.000.

Blickley, Michael; and Naccara, Nicholas G., to Midland-Ross Corporation. Shaftless rewind chuck. 4,291,844, Cl. 242-68.200.
Bloom, Terry R., to CTS Corporation. Exhaust system and method for venting a tunnel kiln. 4,291,471, Cl. 34-12.000.
Bloomer, Ivan, to Carrier Drysys Limited. Endless paint separating member for paint spray booths. 4,292,056, Cl. 55-243.000.
Blount, David H. Process for the production of polyurethane products. 4,292,214, Cl. 260-9.000.
Blount, David H. Process for the production of epoxy cellular solid products. 4,292,413, Cl. 521-136.000.
Blume, Gotz; and Muller, Hans-Otto, to Bayer Aktiengesellschaft. 1-Phenyl- and -benzyl-2,2-dichloro-cyclopropanes as scents. 4,292,210, Cl. 252-522.00R.
Bock, Gerd; Zettl, Herbert; Zappen, Hans-Wilhelm; and Zimmermann, Friedrich, to Robert Bosch GmbH. Method and circuit for reading-out data from a television pickup (image sensor). 4,292,653, Cl. 358-140.000.
Boder, Wilfried, to PPT Pyrolyse-und Prozessanlagentechnik GmbH & Co. Process and apparatus for ducting flue gas within a boiler. 4,291,649, Cl. 122-136.00R.
Boehringer Ingelheim GmbH: *See—*
Bisle, Hans E., 4,292,339, Cl. 426-650.000.
Tauber, Oswald; Engelhardt, Gunther; Leitold, Matyas; and Schmidt, Gunther, 4,292,319, Cl. 424-250.000.
Boehringer Mannheim GmbH: *See—*
Kaiser, Fritz; Koch, Klaus; Schaumann, Wolfgang; and Voigtlander, Wolfgang, 4,292,314, Cl. 424-182.000.
Boeing Company, The: *See—*
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Klees, Garry W., 4,291,782, Cl. 181-215.000.
Matysak, Edward A., 4,291,785, Cl. 184-55.00A.
Schrock, Jesse C. E., 4,291,905, Cl. 285-192.000.
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Simmons, Gerald C., 4,291,852, Cl. 244-147.000.
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Bogdan, Wesley: *See—*
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Bogenschutz, Thomas M.; and Bohusch, Glen O., to General Signal Corporation. Hydraulic slack adjusting apparatus. 4,291,789, Cl. 188-351.000.
Bohusch, Glen O.: *See—*
Bogenschutz, Thomas M.; and Bohusch, Glen O., 4,291,789, Cl. 188-351.000.
Boileau, Sylvie L.; Caubere, Paul J.; Raynal, Serge F.; Lecolier, Serge L.; and N'Debeka, Gilberte N., to Societe Nationale des Poudres et Explosifs. Anionic polymerization initiators based on alkali metal amides in combination with alkali metal salts and anionic polymerization process using these initiators. 4,292,421, Cl. 526-220.000.
Boksjo, Lennart. Pier construction. 4,292,005, Cl. 405-219.000.
Bolen, Charles E.: *See—*
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Boll, Harry J., to Bell Telephone Laboratories, Incorporated. Self-refreshed capacitor memory cell. 4,292,677, Cl. 365-222.000.
Bollinger, Joseph M., to Rohm and Haas Company. Polymeric additive for lubricants and fuels. 4,292,185, Cl. 252-47.500.
Bombardier-Rotax Gesellschaft m.b.H.: *See—*
Obermayer, Alfred, 4,291,654, Cl. 123-185.0BA.
Bonacci, John C.; and Patterson, John R., to Mobil Oil Corporation. Noble metal reforming of naphtha. 4,292,167, Cl. 208-66.000.
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Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.
Boninchi, S.A.: *See—*
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Bonis, Laszlo J., to Composite Container Corporation. Moisture-impervious coextruded container. 4,292,355, Cl. 428-35.000.
Bonner, Stephen D., to Schlumberger Technology Corporation. Eddy current method and apparatus for inspecting ferromagnetic tubular members. 4,292,589, Cl. 324-221.000.
Bonney, Christopher F.; and Rowden, George A., to Davy McKee (Minerals & Metals) Limited. Liquid-liquid contacting apparatus. 4,292,277, Cl. 422-259.000.
Boonstra, Alexander H.: *See—*
Mutsaers, Cornelis A. H. A.; and Boonstra, Alexander H., 4,292,619, Cl. 338-308.000.
Bopp, Barbara A.: *See—*
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Borel, Albert W., to Phillips Petroleum Co. Silane reinforcing promoters in reinforcement of silica-filled rubbers. 4,292,234, Cl. 260-42.150.
Borg-Warner Corporation: *See—*
Argyle, Charles S.; Bamsey, Robert C.; and Millard, Gregory S. T., 4,291,760, Cl. 165-166.000.
Henao, Alvaro, 4,291,792, Cl. 192-89.00B.
Ross, Louis, 4,291,591, Cl. 74-650.000.
Borgmann, Heinz-Alfred: *See—*
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Bortfeld, David P.: *See—*
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Bosco, Peter M.; and Sledzieski, William L., to Standard Brands Incorporated. Low-fat, butter-flavored, liquid spread and process. 4,292,333, Cl. 426-335.000.
Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., to PPG Industries, Inc. Cationic electrodeposition employing novel mercapto chain extended products. 4,292,155, Cl. 204-181.00C.
Boudeville, Jean-Louis: *See—*
Kretz, Francis; and Boudeville, Jean-Louis, 4,292,651, Cl. 358-135.000.
Bourland, Joe D.: *See—*
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Bow, Kenneth E.; and Lyon, Thomas H., to Dow Chemical Company, The. Cable shielding tape and cable. 4,292,463, Cl. 174-107.000.
Bower, Arnold B., Jr., to General Electric Company. Parallel tube resin capsules. 4,291,799, Cl. 206-219.000.
Bowerman, John J.: *See—*
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Bowes, Emmerson, to Mobil Oil Corporation. Ion exchange and impregnation of catalysts. 4,292,205, Cl. 252-455.00Z.
Bowie, Bruce H.: *See—*
Kerr, Ronald R.; Mullins, Keith M.; and Bowie, Bruce H., 4,292,629, Cl. 340-547.000.
Bowman, Robert J.; and Westenskow, Dwayne R., to University of Utah. Closed-loop infusion system, both method and apparatus, based on real time urine measurement. 4,291,692, Cl. 128-214.00E.
Bowman, Ronald, to Bell & Howell Company. Pressure transducing and methods and apparatus for filling a cavity. 4,291,701, Cl. 128-675.000.
Bracht, Armand. Heat accumulator. 4,291,756, Cl. 165-104.170.
Braddy, Dale E.: *See—*
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Bradler, Peter: *See—*
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Bradley, John J.: *See—*
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Breiding, Hans-Joachin; and Bachen, Manfred, to G. Siempelkamp GmbH & Co. Hydraulic press. 4,291,569, Cl. 72-403.000.
Breitschwerdt, Werner: *See—*
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Brent, Richard W., to Emerson Electric Co. Split-band electric heater. 4,292,503, Cl. 219-535.000.
Brentham, Jerry D. Exercising device with double acting hydraulic cylinder. 4,291,787, Cl. 188-318.000.
Bresan, Joseph R. Stabilizing attachment for hand gun. 4,291,482, Cl. 42-72.000.
Bresson, Raymond; and Ducluzaux, Andre P., to Merlin Gerin S.A. High-speed automatic tripping contactor. 4,292,611, Cl. 335-6.000.
Brett, Dennis A. Vehicle rust-inhibiting spray gun with lighting means. 4,291,839, Cl. 239-289.000.
Breuer, Uwe: *See—*
Stahl, Werner; Breuer, Uwe; Richter, Bernhard; Alstetter, Franz; Krappmann, Franz; and Schuster, Hans, 4,292,177, Cl. 210-325.000.
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Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V., 4,292,486, Cl. 219-9.500.
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Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; Arai, Katsuhiko; Kojima, Minoru; Taniguchi, Yoshiko; Yoshida, Masako; Sakata, Ryozo; Sugihara, Hideki; Dobashi, Masashi; and Ohwada, Hirobumi, 4,292,353, Cl. 428-211.000.
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Ohashi, Takashi; Okuyama, Toru; Arai, Katsuhiko; and Kaneda, Hiroshi, 4,292,369, Cl. 428-313.000.
Bridgnell, David G. Heat exchanger core attachment and sealing apparatus and method. 4,291,752, Cl. 165-81.000.

Briggs, Peter J., to Imperial Chemical Industries Limited. Reinforced foam laminates and a process for their manufacture. 4,292,363, Cl. 428-247.000.
Brilando, Frank P.; and Szymski, Eugene J., to Excelsior Fitness Equipment Co. Ergometric exerciser with fluid-actuated indicator. 4,291,872, Cl. 272-73.000.
British-American Tobacco Company Limited: *See*—
Luke, John A., 4,292,032, Cl. 493-43.000.
British Steel Corporation: *See*—
Aftalion, Sebastian, 4,291,743, Cl. 164-66.100.
Brogdex Company: *See*—
Lewis, Philip J., 4,291,472, Cl. 34-31.000.
Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Thio-bis-(hydrocarbon-bisoxazolines) as oleaginous additives for lubricants and fuels. 4,292,184, Cl. 252-46.300.
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Sanin, Sergei A.; Ponomarenko, Jury F.; Firstov, Vladislav D.; Khorin, Vladimir N.; Ragutsky, Arnold M.; Kostjunin, Boris N.; and Bronfen, Petr M., 4,291,718, Cl. 137-87.000.
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Brooke, Edric R., to Xerox Corporation. Scanning system. 4,291,973, Cl. 355-71.000.
Brooks, Herbert; and Waite, Frederick A., to Imperial Chemical Industries Limited. Modification of liquid hydrocarbons. 4,292,045, Cl. 44-62.000.
Brotherston, Collin P., to Lucas Industries Limited. Liquid fuel injection pumping apparatus. 4,292,012, Cl. 417-462.000.
Broussely, Michel: *See*—
Lecerf, Andre; and Broussely, Michel, 4,292,382, Cl. 429-197.000.
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VanderLugt, Thomas, Jr., 4,291,829, Cl. 229-43.000.
Brown, Robert A.: *See*—
Erisman, Lester R.; and Brown, Robert A., 4,292,357, Cl. 428-124.000.
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Brunswick Corporation: *See*—
Carpenter, Robert L., 4,291,846, Cl. 242-84.20G.
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Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.
Buck, Gordon H.; Gabler, Otto L.; Kilroy, Eugene J.; and Leoncavallo, Richard, to Mattel, Inc. Ball throwing machine. 4,291,663, Cl. 124-26.000.
Buckeye Molding Company: *See*—
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Buckler, Robert T.; Burd, John F.; and Wong, Raphael C., to Miles Laboratories, Inc. βGalactosyl-umbelliferone valproic acid conjugates. 4,292,425, Cl. 536-4.000.
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Buelens, Edward, to AGFA-GEVAERT N.V. Light-tight cassette. 4,291,802, Cl. 206-409.000.
Buetemeister, Earl H., to General Motors Corporation. Shift control mechanism for a countershaft transmission. 4,291,586, Cl. 74-335.000.
Buike, James W., to Bendix Corporation, The. Drag flow meter. 4,291,583, Cl. 73-861.750.
Bulle, Marshall; and Johnson, Dale A. Trailer hitch lock. 4,291,557, Cl. 70-58.000.
Bunker Ramo Corporation: *See*—
Stupay, Lawrence J., 4,291,931, Cl. 339-45.00R.
Buob, James F.; and Pauls, Walter L., to American Can Company. Methods of applying bonding materials onto fibrous webs. 4,292,271, Cl. 264-518.000.
Burd, John F.: *See*—
Buckler, Robert T.; Burd, John F.; and Wong, Raphael C., 4,292,425, Cl. 536-4.000.
Burdick, Glenn A. Electrical isolation system for the mast and shrouds of a sailboat. 4,291,639, Cl. 114-39.000.
Burnell, James R.: *See*—
Stinson, John M.; and Burnell, James R., 4,292,067, Cl. 71-29.000.
Burr-Brown Research Corporation: *See*—
Smith, Lewis R., 4,292,595, Cl. 330-10.000.
Burri, Peter, to Ciba-Geigy Corporation. Recording material employing substituted 3,6-diaminophthalides as color formers. 4,291,902, Cl. 282-27.500.
Burroughs Corporation: *See*—
Catiller, Robert D.; and Forbes, Brian K., 4,292,667, Cl. 364-200.000.
Iwan, Wilfred D.; and Gyi, Ko K., 4,292,657, Cl. 360-98.000.
Nelson, Edward I., 4,292,515, Cl. 250-229.000.
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Wollum, James E.; and Rawlings, Robert L., 4,292,669, Cl. 364-200.000.
Butz, David E.; and Pepicelli, Pasquale L., to Data Packaging Corporation. Radioimmunoassay plate. 4,292,273, Cl. 422-102.000.
Buzzell, Colby E.; and Allen, Malcolm H., Jr., to General Electric Company. Mass rate of flow meter with phase shift compensation. 4,291,582, Cl. 73-861.350.
Byk-Mallinckrodt Cil B.V.: *See*—
Nielsen, Jan; and Panek, Karel J., 4,292,297, Cl. 424-1.000.
Byrne, Geoffry A.; and Aylott, Ross I., to Inveresk Research International. Controlled release suppositories. 4,292,300, Cl. 424-19.000.
C. M. Kemp Mfg. Co., The: *See*—
Lehmann, Wallace K., 4,291,719, Cl. 137-112.000.
C. R. Bard, Inc.: *See*—
Williams, Andrew S., 4,291,838, Cl. 239-138.000.
Cabal, Luis A.; and Dali, Carmelo, to Novametrix Medical Systems, Inc. Combined respirator and catheter suction adapter. 4,291,691, Cl. 128-204.180.
Cabot Corporation: *See*—
Tunison, Donald E., III, 4,292,290, Cl. 423-336.000.
Cactus Pipe & Supply Co., Inc.: *See*—
Hardcastle, Phillip, 4,291,889, Cl. 277-116.400.
Caffes, Peter J., to Caffes Trust, The. Solid/liquid separation through liquid vaporization and condensation, and apparatus therefor. 4,292,121, Cl. 159-3.000.
Caffes Trust, The: *See*—
Caffes, Peter J., 4,292,121, Cl. 159-3.000.
Cahn, Robert P.: *See*—
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., 4,292,181, Cl. 210-638.000.
CamAct Pump Corp.: *See*—
Justice, Orien N., 4,291,588, Cl. 74-421.00R.
Cameron Iron Works, Inc.: *See*—
Miller, Henry W., 4,291,724, Cl. 137-555.000.
Cameron, Ivor, to Imperial Chemical Industries Limited. Radiation method and assembly for assessing web parameters. 4,292,536, Cl. 250-359.000.
Campbell, David A., to Rolls-Royce Limited. Gas turbine engine. 4,291,531, Cl. 60-39.51R.
Campbell, Norma J.: *See*—
Hansen, Robert N., 4,291,893, Cl. 280-507.000.
Campbell, William M.: *See*—
Hansen, Robert N., 4,291,893, Cl. 280-507.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Smithlin, John R., 4,292,626, Cl. 340-347.0DD.
Canadair Limited: *See*—
Lamoureux, Paul, 4,291,816, Cl. 220-243.000.
Canadian Patents & Development Ltd.: *See*—
Kawasaki, Brian S.; Hill, Kenneth O.; and Johnson, Derwyn C., 4,291,940, Cl. 350-96.150.
Cane, Guiseppe: *See*—
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Cannon, Curtis W.; and Hall, Robert N., to Climax Chemical Company. Process for producing hydrogen fluoride and phosphoric acid. 4,292,289, Cl. 423-301.000.
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Ikemori, Keiji, 4,291,951, Cl. 350-458.000.
Ito, Tadashi; Murakami, Hiroyasu; Suzuki, Masayuki; Yamamichi, Masayoshi; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,291,960, Cl. 354-53.000.
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,292,387, Cl. 430-102.000.
Taniishi, Shinnosuke; and Kuge, Tsukasa, 4,291,505, Cl. 51-289.00R.
Yanagawa, Hitoshi; Konishi, Motofumi; Ando, Yoshio; and Kashiwagi, Kazuo, 4,291,843, Cl. 242-57.000.
Carasso, Marino G.; and Verboom, Johannes J., to U.S. Philips Corporation. System incorporating word synchronization for a serial signal sequence. 4,292,655, Cl. 360-40.000.
Carasso, Marino G.: *See*—
de Jager, Frank; Van Doorn, Rudolf A.; Verboom, Johannes J.; and Carasso, Marino G., 4,292,593, Cl. 329-50.000.
Carborundum Company, The: *See*—
Shaffer, Peter T. B.; and Gaffney, Michael F., 4,292,528, Cl. 250-506.000.
Cardenas, Carlos G.; and Ud Din, Zia, to SCM Corporation. Coupling reaction involving a Grignard and allylic halide. 4,292,454, Cl. 585-16.000.
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Cardullo, John J. Air pollution control device and method. 4,292,052, Cl. 55-19.000.
Carleton, Herbert R.: *See*—
Sipin, Anatole J.; and Carleton, Herbert R., 4,292,574, Cl. 318-331.000.
Carlson, Roland W., to Technicare Corporation. Shaped detector. 4,292,538, Cl. 250-367.000.
Carlton, Guy L. Gun barrel cleaning device. 4,291,477, Cl. 42-1.0BC.

Carnahan, James R.: *See*—
Newsom, William D.; and Carnahan, James R., 4,291,433, Cl. 15-405.000.
Carpenter, Robert L., to Brunswick Corporation. Rotor brake for fishing reel. 4,291,846, Cl. 242-84.20G.
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Shields, J. Rodger, 4,291,540, Cl. 60-694.000.
Carrier Drysys Limited: *See*—
Bloomer, Ivan, 4,292,056, Cl. 55-243.000.
Carrillo, Robert M.: *See*—
Whitemore, Christopher E.; and Carrillo, Robert M., 4,292,356, Cl. 428-116.000.
Cassat, Robert: *See*—
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Catalyst Research Corporation: *See*—
O'Boyle, Matthew; and Magladry, Ross E., 4,292,380, Cl. 429-101.000.
Caterpillar Tractor Co.: *See*—
Goloff, Alexander, 4,291,535, Cl. 60-602.000.
Catiller, Robert D.; and Forbes, Brian K., to Burroughs Corporation. Microprocessor system facilitating repetition of instructions. 4,292,667, Cl. 364-200.000.
Caubere, Paul J.: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Raynal, Serge F.; Lecolier, Serge L.; and N'Debeka, Gilberte N., 4,292,421, Cl. 526-220.000.
Caunter, Earl G., to Allen R. Shuffleboard Company. Shuffleboard cue with replaceable runner. 4,291,880, Cl. 273-129.00L.
Caverly, Brian L.: *See*—
Ainger, George E.; and Caverly, Brian L., 4,292,338, Cl. 426-603.000.
CEM Corporation: *See*—
Collins, Michael J., 4,291,775, Cl. 177-1.000.
Centro Ricerche Fiat S.p.A.: *See*—
Palazzetti, Mario; Becchi, Giorgio; and Cane, Guiseppe, 4,291,834, Cl. 237-12.100.
Cepulis, Rimoydas L.: *See*—
Bartek, Joseph P.; Cepulis, Rimoydas L.; and Grasselli, Robert K., 4,292,455, Cl. 585-320.000.
Ceraver: *See*—
Willem, Michel, 4,291,741, Cl. 164-9.000.
Cesarz, Michael R.; and Stobbe, Richard E., to Kearney & Trecker Corporation. A.C. Motor control circuit. 4,292,577, Cl. 318-802.000.
Ceva: *See*—
Ostre, Louis, 4,292,331, Cl. 426-52.000.
Chae, Yung B.: *See*—
Kim, Choong S.; Lee, Kee J.; Kim, Hong S.; and Chae, Yung B., 4,292,431, Cl. 548-342.000.
Chai, S. Apparatus and method for performing a thoracic operation. 4,291,694, Cl. 128-214.400.
Chamberlin, Ronald D., to PPG Industries, Inc. Method of preparing electrocatalyst for an oxygen depolarized cathode electrolytic cell. 4,292,197, Cl. 252-425.300.
Champion International Corporation: *See*—
Austin, John J., 4,291,806, Cl. 206-620.000.
Mulroy, Terence J., 4,291,827, Cl. 229-39.00R.
Chance, Davey J.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,292,490, Cl. 219-69.00P.
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corp. Porous polyfluoroalkylene sheet useful for separating anolyte from catholyte in electrolytic cells. 4,292,146, Cl. 204-98.000.
Chang, Oscar: *See*—
Suarez, Ricardo; Chang, Oscar; and Adam, Vladimir, 4,292,548, Cl. 307-465.000.
Chao, Chris C., to Textron Inc. Removal of titanium dioxide from a filter element. 4,292,090, Cl. 134-2.000.
Charchian, Loris J.; Emmons, Donald O.; and Zlotek, Thaddeus F. Coupling lubrication system. 4,291,795, Cl. 192-113.00B.
Chardon, Max M. F. Seat for bus, train or airplane. 4,291,916, Cl. 297-367.000.
Charette, George F. Leakage current testing circuit. 4,292,585, Cl. 324-51.000.
Chase, Terry J.: *See*—
Faitani, Joseph J.; Austin, George W.; Chase, Terry J.; Suljak, George T.; and Misage, Robert J., 4,292,274, Cl. 422-197.000.
Chataignon, Andre; Nicolas, Alain; and Poirier, Jean P., to Le Materiel Telephonique Thomson-CSF. Separation and balance device for telephone exchanges. 4,292,479, Cl. 179-170.0NC.
Chen-Hsiung, Wu. Intermittent water-supply system. 4,291,836, Cl. 239-37.000.
Chen, Johnson C., to Pennwalt Corporation. Thermal energy storage composition comprising sodium sulfate decahydrate; sodium carbonate decahydrate; and sodium tetraborate decahydrate. 4,292,189, Cl. 252-70.000.
Cheney, Paul G.: *See*—
Riedel, John E.; and Cheney, Paul G., 4,292,360, Cl. 428-171.000.
Cherney, Thomas M.: *See*—
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Cherry, Gary D., to Sladco, Inc. Brake apparatus for power wrench. 4,291,598, Cl. 81-57.150.
Cheung, Nim K., to Bell Telephone Laboratories, Incorporated. Molding optical fiber connectors. 4,292,260, Cl. 264-1.500.
Chibnik, Sheldon; Otto, Ferdinand P., deceased; and Otto, Helen F., executrix, to Mobil Oil Corporation. Metal complexes of alkylsuccinic compounds as lubricant and fuel additives. 4,292,186, Cl. 252-49.700.
Chicago Bridge & Iron Company: *See*—
Engdahl, Gerald E.; and Maher, James B., 4,291,550, Cl. 62-544.000.
Husain, Matloob; Lai, Ban-Yen; and Maher, James B., 4,291,538, Cl. 60-661.000.
Chilcote, Dennis D.; and Kaczyski, Donald J., to Hanna Mining Company, The. Selective leaching of chloride from copper oxide minerals. 4,292,281, Cl. 423-27.000.
Chin, HsuS. Multi-purpose surveying instrument. 4,291,982, Cl. 356-249.000.
Chisso Corporation: *See*—
Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; Kitahara, Tohru; and Watanabe, Kenichi, 4,292,433, Cl. 556-479.000.
Chrysler Corporation: *See*—
Lewakowski, John J.; and Ciagala, Theodore M., 4,291,563, Cl. 72-216.000.
Chu, Hing C.; and Sun, Y. S. Edmund, to General Electric Company. Control of valley current in a unijunction transistor by electron irradiation. 4,292,644, Cl. 357-21.000.
Chu, Victor F. H.; and Riesenfeld, James, to Du Pont de Nemours, E. I., and Company. Process for preparing multicolor toned images on a single photosensitive layer. 4,292,394, Cl. 430-291.000.
Chubb Fire Security Limited: *See*—
Simmons, Richard R.; and Thompson, Harvey A., 4,292,513, Cl. 250-205.000.
Chubb Industries Limited: *See*—
Sadler, John A., 4,292,628, Cl. 340-531.000.
Churchman, Ronald K., to Otis Engineering Corporation. Drill string safety and kill valve. 4,291,722, Cl. 137-496.000.
Ciagala, Theodore M.: *See*—
Lewakowski, John J.; and Ciagala, Theodore M., 4,291,563, Cl. 72-216.000.
Ciallella, John G.: *See*—
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Ciba-Geigy Corporation: *See*—
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Galafassi, Pierre; Adam, Jean-Marie; Loew, Peter; and Scheidegger, Hans, 4,292,037, Cl. 8-554.000.
Marxer, Adrian, 4,292,429, Cl. 546-278.000.
Petitpierre, Jean C., 4,291,901, Cl. 282-27.500.
Cirkler, Werner; and Krueger, Hans, to Siemens Aktiengesellschaft. Process for making a liquid crystal cell. 4,291,947, Cl. 350-336.000.
Citizen Watch Company Limited: *See*—
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,292,680, Cl. 368-187.000.
Claes, Ludo: *See*—
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Clairol Incorporated: *See*—
Mack, William, 4,292,664, Cl. 362-120.000.
Clardey, Johannes G.: *See*—
Koster, Hendrikus J.; Bik, Johannes T. J.; Clardey, Johannes G.; and Smorenberg, Dirk, 4,291,712, Cl. 131-339.000.
Clark, Constance C., executrix: *See*—
Clark, Trevor P., deceased; and Clark, Constance C., executrix, 4,292,086, Cl. 106-172.000.
Clark, Keith E., to United States of America, Navy. Missile seeker optical system. 4,291,848, Cl. 244-3.160.
Clark-Schwebel Fiber Glass Corp.: *See*—
Herschdorfer, C. George; and Vaughan, Dennis J., 4,292,106, Cl. 156-243.000.
Clark, Trevor P., deceased; and by Clark, Constance C., executrix. All weather wood sealer and marker. 4,292,086, Cl. 106-172.000.
Clark, Warren P. Apparatus for controlling power application. 4,292,546, Cl. 307-114.000.
Claussen, Paul O., to Schloemann-Siemag Aktiengesellschaft. Forging press. 4,291,571, Cl. 72-453.180.
Clavier, Philippe, to Spie-Batignolles. Device for desalting sea or brackish water by using solar energy. 4,292,136, Cl. 202-234.000.
Clements, Robert: *See*—
Hansen, Robert N., 4,291,893, Cl. 280-507.000.
Click, Bobbie J. Flower holder. 4,291,496, Cl. 47-55.000.
Climax Chemical Company: *See*—
Cannon, Curtis W.; and Hall, Robert N., 4,292,289, Cl. 423-301.000.
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, to Energy Recycling Company. Selective extraction heat storage unit. 4,291,750, Cl. 165-34.000.
Coatantiec, Alain, to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Clamping jaws assembly. 4,291,909, Cl. 294-88.000.
Coates, David: *See*—
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Coca-Cola Company, The: *See*—
Richter, Simon J.; and Sanscharowskiy, Michael, 4,291,573, Cl. 73-37.000.
Codrington, Ernest R. Diesel engine speed governor. 4,291,657, Cl. 123-387.000.
Cogswell, Arthur R. Anchor chain cleaning brush. 4,291,432, Cl. 15-160.000.
Cohen, Robert S. Ball recovery system. 4,291,885, Cl. 273-347.000.

Cole, James E.; and Thornton, Peter, to Gould Inc. Catheter flushing apparatus. 4,291,702, Cl. 128-675.000.
Colgate-Palmolive Company: *See—*
Gray, Frederick W., 4,292,191, Cl. 252-99.000.
Collet, Marnix G.: *See—*
Appels, Johannes A.; Collet, Marnix G.; Hart, Paul A. H.; and Verhoeven, Johannes F. C. M., 4,292,642, Cl. 357-13.000.
Collins, John D.; and Wood, Donald A., to Tenneco Chemicals Inc. Process for preparing organotin esters. 4,292,252, Cl. 260-429.700.
Collins, Michael J., to CEM Corporation. Method and apparatus for improving weighing accuracy. 4,291,775, Cl. 177-1.000.
Colt Industries Operating Corp.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,292,490, Cl. 219-69.00P.
Combustion Engineering, Inc.: *See—*
Schukei, Glen E.; Horlacher, Walter R., III; and Sampson, William T., 4,292,132, Cl. 176-36.00S.
Cominco Ltd.: *See—*
Laurie, Gordon H.; Seymour, Theodore J.; Sakauye, Randall T.; and Marlow, John V., 4,291,443, Cl. 29-6.100.
Commercial Shearing, Inc.: *See—*
Singer, Carl M.; and Ratkay, Edward J., 4,292,013, Cl. 418-132.000.
Communications Technology Corp.: *See—*
Kund, August, 4,291,934, Cl. 339-95.00R.
Compagnie Europeenne pour l'Equipement Menager "CEPEM": *See—*
Maitenaz, Paul, 4,292,501, Cl. 219-413.000.
Compagnie Generale de Radiologie: *See—*
Gabbay, Emile; Tran Quang, Dang; and Lafitte, Andre, 4,292,563, Cl. 313-56.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
David, Jacques; and Mionet, Hubert, 4,292,594, Cl. 329-50.000.
Compool Corporation: *See—*
Bajka, Peter, 4,292,542, Cl. 307-28.000.
Composite Container Corporation: *See—*
Bonis, Laszlo J., 4,292,355, Cl. 428-35.000.
Comte, Paul Y.; and Repetti, Rene J., to Agence Nationale de Valorisation de la Recherche. Processes and devices for climatizing greenhouses. 4,291,674, Cl. 126-419.000.
Concast Incorporated: *See—*
Langner, Carl, 4,291,748, Cl. 164-426.000.
Conn, John L. Container with drinking tube. 4,291,814, Cl. 220-90.400.
Conoco, Inc.: *See—*
Dodd, John R., 4,292,450, Cl. 568-788.000.
Sooter, Matthew C., 4,292,165, Cl. 208-8.0LE.
Consolidated Refining Co., Inc.: *See—*
Gordon, Richard; and Cialleila, John G., 4,291,815, Cl. 220-200.000.
Constant, James N. Thermoelectric generator. 4,292,579, Cl. 322-2.00R.
Continental Group, Inc., The: *See—*
Gerber, Howard L., 4,292,489, Cl. 219-10.710.
Payne, Robert D.; and Jordan, Thomas F., 4,291,640, Cl. 118-50.100.
Schlinsog, Hans-Juergen, 4,292,095, Cl. 148-6.14R.
Cook, Edward H., Jr.: *See—*
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., 4,292,146, Cl. 204-98.000.
Cools, Antoon S. P., to Sperry Corporation. Row crop apparatus. 4,291,523, Cl. 56-94.000.
Corder, E. E., to A.S.M., Inc. Shearing device. 4,291,462, Cl. 30-221.000.
Corning Glass Works: *See—*
Heimbach, Kim P.; and Johnson, Ronald E., 4,292,104, Cl. 156-235.000.
Martin, Francis W., 4,292,080, Cl. 501-4.000.
Corrado, Giovanni; Bertotti, Elvio; and Sopino, Bruno. Low viscosity unsaturated polyester resins. 4,292,218, Cl. 260-22.0CB.
Corsini, Tullio: *See—*
Piccolo, Luigi; Corsini, Tullio; Paolinelli, Antonio; Ferri, Gaudenzio; and La Rovere, Angelo, 4,292,085, Cl. 106-109.000.
Cota, Marlo E.; and Gurtler, Richard W., to Motorola, Inc. Method for producing polycrystalline ribbon. 4,292,264, Cl. 264-81.000.
Cothran, Liggett A., to Dayco Corporation. Hose construction. 4,291,728, Cl. 138-122.000.
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Covington Brothers, Inc.: *See—*
Artzer, Richard F., 4,291,732, Cl. 140-112.000.
Covington, William S., to Permavision. Ocular membrane and method for preparation thereof. 4,291,953, Cl. 351-160.00H.
Cox, Jeanette. Combined suitcase and child's safety seat. 4,291,915, Cl. 297-193.000.
Cox, Larry R., to United States of America, Navy. Electrical connector receptacle assembly. 4,291,932, Cl. 339-60.00R.
Cragoe, Edward J., Jr.: *See—*
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,292,430, Cl. 548-206.000.
Craig, Robert G.; and Douglas, William H., to University of Michigan. Hydrophobic composite restorative materials and their use in tooth treatment. 4,292,029, Cl. 433-228.000.
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Renwick, Peter J., 4,291,638, Cl. 111-61.000.
Cremonesi, Pietro, to Italfarmaco S.p.A. Flow reactor for enzymatic reactions in which the enzyme is immobilized on a solid matrix having a planar surface. 4,292,409, Cl. 435-288.000.
Cretella, Salvatore J.; Bernardo, Matthew; and DeMusis, Ralph T., to Turbine Components Corporation. Method of restoring the shrouds of turbine blades. 4,291,448, Cl. 29-156.80B.
Crippen, Michael R. Apparatus and method for driving stakes. 4,291,495, Cl. 47-23.000.
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Cronk, Bryon J.: *See—*
Binek, Paul H.; Cherney, Thomas M.; Magnusson, John M.; and Cronk, Bryon J., 4,291,943, Cl. 350-96.220.
Crossland, William A.; Morrissy, Joseph H.; and Coates, David, to International Standard Electric Corporation. Liquid crystal display incorporating positive and negative smectic material. 4,291,948, Cl. 350-340.000.
Crouch, Keith E.: *See—*
Steigerwald, Robert L.; Crouch, Keith E.; and Wilson, James W. A., 4,292,578, Cl. 320-9.000.
Cruchelow, Marilyn: *See—*
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Cruchelow, Wayne L.; and Cruchelow, Marilyn. Pet shelter. 4,291,645, Cl. 119-19.000.
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CTS Corporation: *See—*
Bloom, Terry R., 4,291,471, Cl. 34-12.000.
Geddes, Leslie A.; Bourland, Joe D.; and Terry, Reese S., 4,291,699, Cl. 178-419.00D.
Culbertson, Billy M.: *See—*
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Cuneo, Giuseppe, to Black & Decker Inc. Control device for controlling the rotational speed of a portable power tool. 4,292,571, Cl. 318-17.000.
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Curtiss-Wright Corporation: *See—*
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Hosek, William S., 4,292,022, Cl. 431-170.000.
Dai Nippon Printing Co., Ltd.: *See—*
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Daicel Ltd.: *See—*
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Dalrymple, Philip W.; Hyle, Michael J.; Myers, Daryl L.; and Wright, James G., Jr., to Western Electric Company, Inc. Methods of and apparatus for taking up lightguide fiber. 4,291,841, Cl. 242-18.00A.
Damiano, Victor V.: *See—*
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Daniels, Robert J., to Monsanto Company. Isolation and determination of nitrosoamines. 4,292,040, Cl. 23-230.00R.
Danjyo, Hiroyuki; Okuda, Shigeru; and Yorita, Eiichi, to Shinagawa Refractories Co. Ltd. Unshaped refractories. 4,292,082, Cl. 501-100.000.
D'Antonio, Nicholas F.; and Bates, Richard L. Electrical ski boot release. 4,291,894, Cl. 280-612.000.
Daren, Stephen L. J.; Vofsi, David; and Asscher, Meir, to Makhteshim Chemical Works Ltd. Process for preparing ring halogenated styrenes. 4,292,453, Cl. 570-193.000.
Data Packaging Corporation: *See—*
Butz, David E.; and Pepicelli, Pasquale L., 4,292,273, Cl. 422-102.000.
David, Jacques; and Mionet, Hubert, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Method and apparatus for carrier regeneration and synchronous amplitude demodulation. 4,292,594, Cl. 329-50.000.
Davies, David H. K.: *See—*
van Hoogstraten, Samuel D.; and Davies, David H. K., 4,292,068, Cl. 71-88.000.
Davies, David R.; Zuiderwijk, Jacobus J. M.; and Hagelaars, Adrianus M. P. M., to Shell Oil Company. Process for consolidating water-wet sands with an epoxy resin-forming solution. 4,291,766, Cl. 166-276.000.
Davies, Graham, to Service (Engineers) Limited. Manufacture of ceramic ware. 4,292,006, Cl. 409-131.000.
Davies, Terence J.; Franks, Larry A.; and Nelson, Melvin A., to United States of America, Energy. System for testing optical fibers. 4,292,537, Cl. 250-361.00R.

Davis, Adrian F., to Beecham Group Limited. Pharmaceutical compositions containing paracetamol. 4,292,298, Cl. 424-10.000.
Davis, Grant L.: *See—*
Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., 4,292,108, Cl. 156-259.000.
Davis, John C. H.; and Natarajan, Krishnaswamy, to Plessey Canada Limited. Interface circuits. 4,292,478, Cl. 179-170.0NC.
Davis, Pauls; Maxwell, Jerrold F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Corrosion inhibited aqueous compositions containing tertiary, bicyclic, or tricyclic amines. 4,292,190, Cl. 252-75.000.
Davy McKee (Minerals & Metals) Limited: *See—*
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Day, Edward G., to General Motors Corporation. Power brake system differential air pressure control valve assembly. 4,291,612, Cl. 91-6.000.
Dayco Corporation: *See—*
Cothran, Liggett A., 4,291,728, Cl. 138-122.000.
Mathieu, Julien C., 4,291,453, Cl. 29-417.000.
Dazzi, Joachim; Jost, Max; and Wick, Arnold, to Ciba-Geigy Corporation. Process for the mass coloration of thermoplastics with anthraquinonylaminotraizines. 4,292,232, Cl. 260-40.00P.
Dean, Robert S.: *See—*
Reckin, George M.; Lofy, Richard A.; and Dean, Robert S., 4,291,500, Cl. 49-68.000.
Deane, Kenneth E., to Emhart Industries, Inc. Electrical temperature sensing means having moisture tight seals. 4,291,576, Cl. 73-352.000.
deBerardinis, Albert J.; and Kruse, Walter M., to ICI Americas Inc. High mannitol process (alkaline hydrogenation in presence of alkali metal carbonate). 4,292,451, Cl. 568-863.000.
De Capitani, Francesco. Cigarettes having an individual lighting structure. 4,291,710, Cl. 131-351.000.
De Castella, Pierre M. T.; and Reinhold, Charles L. Purifier for gaseous fluids. 4,292,055, Cl. 55-233.000.
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DeFeo, Angelo; and Hosek, William S., to Curtiss-Wright Corporation. Fluidized bed combustor and removable windbox and tube assembly therefor. 4,292,023, Cl. 431-170.000.
Degussa Aktiengesellschaft: *See—*
Kunst, Helmut; and Scondo, Christian, 4,292,094, Cl. 148-6.110.
de Jaeger, Nikolaas C.: *See—*
Pollet, Robert J.; Kokelenberg, Hendrik E.; Samijn, Rafael P.; Sels, Francis J.; Ville, Frans J.; and de Jaeger, Nikolaas C., 4,292,402, Cl. 430-631.000.
de Jager, Frank; Van Doorn, Rudolf A.; Verboom, Johannes J.; and Carasso, Marino G., to U.S. Philips Corporation. Method of demodulating a quadphase coded data signal and receiver for carrying out the method. 4,292,593, Cl. 329-50.000.
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De Leon, Noel, to Topsil A/S. Method for initiating the float zone melting of semiconductors. 4,292,487, Cl. 219-10.430.
Del Monte, Samie J. Bingo card holder. 4,291,882, Cl. 273-148.00A.
DeLuca, Hector F.; Schnoes, Heinrich K.; and LeVan, Leon W., to Wisconsin Alumni Research Foundation. Vitamin D derivatives. 4,292,250, Cl. 260-397.200.
De Mattei, Robert C.; Elwell, Dennis; and Feigelson, Robert S., to Leland Stanford Junior University, The Board of Trustees of. Electrodeposition of molten silicon. 4,292,145, Cl. 204-60.000.
DeMusis, Ralph T.: *See—*.
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Denecker, Gabriel; Sluyts, Domien; Putseys, Roland; Van Herck, Willy; Claes, Ludo; and Spott, Georg, to Bayer Antwerpen. Process for working up effluent containing ammonium sulphate. 4,292,043, Cl. 23-296.000.
Denis, Bernard A., to International Business Machines Corp. Five device merged transistor RAM cell. 4,292,675, Cl. 365-156.000.
Dennis, James T.; and Kolomayets, George, to Dennis, James T. Automatic record changer. 4,291,886, Cl. 369-203.000.
De Pinto, Victor M.: *See—*
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Deputato, Frank V. Apparatus for generating mechanical energy responsive to interaction of magnetic fields. 4,292,553, Cl. 310-46.000.
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Derbyshire, Francis J.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Liquefaction of carbonaceous material with hydrogen and naphtha-extracted recycle solvent without heterogeneous catalyst. 4,292,164, Cl. 208-8.0LE.
Derbyshire, Francis J.; Mitchell, Thomas O.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Upgrading heavy oils by non-catalytic treatment with hydrogen and hydrogen transfer solvent. 4,292,168, Cl. 208-107.000.
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Derroitte, Jean-Louis: *See—*
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DeTorre, Robert P., to PPG Industries, Inc. Self-aligning method for scoring fracturable material. 4,291,824, Cl. 225-2.000.
Deutsch Company Electronic Components Division, The: *See—*
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Deutz, Roger T. Passive solar roof ice melter. 4,291,673, Cl. 126-417.000.
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Diegel, Dieter; and Borgmann, Heinz-Alfred, to Kraftwerk Union AG. Power and speed control device for a turbo-generator set. 4,292,534, Cl. 290-40.00R.
Diehl, Robert J., to W-K-M Wellhead Systems, Inc. Packing assembly for wellheads. 4,291,768, Cl. 166-315.000.
Diethelm, Eugen, to Grissman Chemicals Limited. Product and method for combating swine dysentery. 4,292,318, Cl. 424-250.000.
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DiFrancesco, Alphonse B., to Eastman Kodak Company. Apparatus for producing duplex copies. 4,291,970, Cl. 355-3.00R.
Diggs, Richard E. Modular current power apparatus. 4,292,535, Cl. 290-54.000.
Dikoff, Joseph K., to Tasis, Elizabeth A. Toothbrush with re-fillable paste reservoir. 4,291,995, Cl. 401-175.000.
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Dinger, Leon J., to AMP Incorporated. Method for environmentally sealing a wire splice. 4,292,099, Cl. 156-49.000.
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Director-General of the Agency of Industrial Science and Technology: *See—*
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Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; Arai, Katsuhiko; Kojima, Minoru; Taniguchi, Yoshiko; Yoshida, Masako; Sakata, Ryozo; Sugihara, Hideki; Dobashi, Masashi; and Ohwada, Hirobumi, 4,292,353, Cl. 428-211.000.
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Doepel, Wallace A. Apparatus for compressing tablets. 4,292,017, Cl. 425-107.000.
Dolan, Calvin M., to Johnson Matthey, Inc. Low density ceramic insulating. 4,292,348, Cl. 427-299.000.
Dolibois, Ewald, deceased; and Dolibois, Rose V., administratrix, to Dolibois, Rose. Anti-skid mechanism for wheeled vehicle. 4,291,922, Cl. 301-46.000.
Dolibois, Rose: *See—*
Dolibois, Ewald, deceased; and Dolibois, Rose V., administratrix, 4,291,922, Cl. 301-46.000.
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Doss, James D. Ignition performance monitor for permanent installation. 4,292,591, Cl. 324-395.000.

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Dow Corning Corporation: *See—*
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Dowty Fuel Systems Limited: *See—*
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Dreyhaupt, Dieter: *See—*
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Drill Tech Equipment, Inc.: *See—*
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Du Bae, Hyung, to International Telephone and Telegraph Corporation. Viscosimeter. 4,292,673, Cl. 364-509.000.

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Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V. Apparatus for delivery of melting rings and valves to an inductor heater. 4,292,486, Cl. 219-9.500.

Duermeyer, Willem, to Akzona Incorporated. Detection and/or determination of IgM, IgA, IgD and IgE immunoglobulins. 4,292,403, Cl. 435-5.000.

Dugger, Gordon L.; and Billig, Frederick S., to United States of America, Navy. Supersonic ramjet missile. 4,291,533, Cl. 60-240.000.

Dumont, Claude, to Societe d'Etudes Techniques et Commerciales d'Automation. Device for the obtaining of an electric signal which is proportional to an amount of movement and therefore capable of detecting any movement or acceleration. 4,292,630, Cl. 340-573.000.

Dunse, Helmfried: *See—*
Berthold, Gert; Dreyhaupt, Dieter; Dunse, Helmfried; Henker, Erich; and Viehweg, Bernd, 4,291,892, Cl. 280-28.000.

Duphar International Research B.V.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
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Moynihan, Robert E., 4,292,372, Cl. 428-437.000.
Nacci, George R., 4,292,120, Cl. 156-660.000.
Overman, Joseph D., 4,292,391, Cl. 430-267.000.
Squire, Edward N.; and Waller, Francis J., 4,292,437, Cl. 560-233.000.

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Duracell International Inc.: *See—*
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Easterly, Donald O., to Eastman Kodak Company. Photographic apparatus. 4,291,959, Cl. 354-31.000.

Eastman Kodak Company: *See—*
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Frank, Lee F.; and Lee, James K., 4,291,958, Cl. 354-25.000.

Eaton Corporation: *See—*
Hammond, Howard A., 4,291,734, Cl. 144-2.00Z.

Ebert, Hermann; Gruntleitner, Johann; and Kuhnlein, Hans, to Siemens Aktiengesellschaft. Reversible direct current motor with a permanent magnet rotor and electronic commutating device. 4,292,573, Cl. 318-138.000.

Ebert, Hermann: *See—*
Kuhnlein, Hans; Gruntleitner, Hans; and Ebert, Hermann, 4,292,575, Cl. 318-254.000.

Eckel, Giselher, to Siemens Aktiengesellschaft. Circuit arrangement for receiving unipolar DC signals. 4,292,466, Cl. 178-3.000.

Edinger, Egon: *See—*
Egger, Walter; Edinger, Egon; and Pedall, Friedrich, 4,292,636, Cl. 343-6.5SS.

Educase Incorporated: *See—*
Fast, John; and Williams, Harvey, 4,291,602, Cl. 83-745.000.

Egger, Walter; Edinger, Egon; and Pedall, Friedrich, to Siemens Aktiengesellschaft. Passive reply device for use in the automatic wireless transmission of multi-place numerical information between active interrogation devices and such passive reply devices, which are movable with respect to one another and method of making the same. 4,292,636, Cl. 343-6.5SS.

Eggler, James F.; and Schaaf, Thomas K., to Pfizer Inc. Sulfonyl prostaglandin carboxamide derivatives. 4,292,444, Cl. 564-97.000.

Egli, Fischer & Co. AG: *See—*
Schenkel, Willi; and Seger, Hans, 4,291,855, Cl. 248-74.00A.

Egorov, Anatoly P.: *See—*
Kolesnik, Mikhail I.; Egorov, Anatoly P.; Kuznetsov, Anatoly A.; Gobov, Anatoly P.; Ryabukhin, Jury M.; Rudakov, Viktor A.; Pisarev, Gennady V.; Zheleznov, Jury M.; and Vasiliev, Alexei V., 4,292,345, Cl. 427-113.000.

Egtvedt, Myron D.: *See—*
Ziemba, Richard T.; Kinzel, Joseph A.; and Egtvedt, Myron D., 4,291,627, Cl. 102-265.000.

Ehrlinger, Friedrich: *See—*
Meyerle, Michael; and Ehrlinger, Friedrich, 4,291,592, Cl. 74-687.000.

Eichenlaub, Rolf; and Novakovic, Boris Z. Cutting wheel. 4,291,667, Cl. 125-15.000.

Eime, Lester O.; and Parker, Edward H., to Western Litho Plate & Supply Co. Method for improving the press life of a lithographic image having an outer layer comprising an epoxy resin and article produced by method. 4,292,396, Cl. 430-302.000.

Eka Aktiebolag: *See—*
Grunewald, Kurt H.; and Mansson, Inge G., 4,292,216, Cl. 260-17.500.

Electric Power Research Institute, Inc.: *See—*
Hingorani, Narain G., 4,292,545, Cl. 307-102.000.

Elikan, Leonard; Stana, Regis R.; and Ritchey, Robert W., to Wyoming Mineral Corp. Purification of wet process phosphoric acid as a pretreatment step in the recovery of uranium. 4,292,278, Cl. 423-8.000.

ELITEX, koncern textilniho strojirenstvi: *See—*
Prohazka, Miloslav; and Kaulich, Karel, 4,291,731, Cl. 139-438.000.

Elliott, Herbert J. Apparatus for solidifying molten material. 4,292,016, Cl. 425-101.000.

Elliott, Margaret L.; and Wright, Mary J. Catalyst and solvent free epoxy materials. 4,292,213, Cl. 260-2.300.

Elmberg, Dwayne R., to Honeywell Inc. Pilot stage valve. 4,291,716, Cl. 137-83.000.

Elwell, Dennis: *See—*
De Mattei, Robert C.; Elwell, Dennis; and Feigelson, Robert S., 4,292,145, Cl. 204-60.000.

Embadac S.A.: *See—*
Bidegain, Georgy, 4,292,102, Cl. 156-213.000.

Embree, Milton L.; Goldthorp, David C.; and Vogelpohl, David R., to Bell Telephone Laboratories, Incorporated. Relaxation oscillator with plural constant current sources. 4,292,604, Cl. 331-111.000.

Emerson Electric Co.: *See—*
Brent, Richard W., 4,292,503, Cl. 219-535.000.
Schnyder, William J., 4,291,455, Cl. 29-596.000.

Emhart Industries, Inc.: *See—*
Deane, Kenneth E., 4,291,576, Cl. 73-352.000.
Smock, Steven W.; and Adams, George W., 4,292,482, Cl. 200-38.00R.

Emmons, Donald O.: *See—*
Charchian, Loris J.; Emmons, Donald O.; and Zlotek, Thaddeus F., 4,291,795, Cl. 192-113.00B.

Energy Recycling Company: *See—*
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, 4,291,750, Cl. 165-34.000.

Energy Research Corporation: *See—*
Klein, Martin G., 4,292,381, Cl. 429-120.000.

Engdahl, Gerald E.; and Maher, James B., to Chicago Bridge & Iron Company. Fluidized bed crystallization apparatus and method. 4,291,550, Cl. 62-544.000.

Engel, Joseph C., to Westinghouse Electric Corp. Energy-conserving illumination system. 4,292,570, Cl. 315-360.000.

Engelhardt, Gunther: *See—*
Tauber, Oswald; Engelhardt, Gunther; Leitold, Matyas; and Schmidt, Gunther, 4,292,319, Cl. 424-250.000.

Engelsberger, Georg: *See—*
Lindner, Tassilo; Engelsberger, Georg; Zeller, Norbert; and Riedle, Rudolf, 4,292,434, Cl. 556-479.000.

Engler, Louis C. Levee disc apparatus. 4,291,770, Cl. 172-185.000.

Engmann, Gunther; Lepach, Werner; and Speyerer, Heinz, to Maschinenfabrik Niehoff KG. Apparatus for coiling wire. 4,292,114, Cl. 156-447.000.

Enomoto, Ryo; Yoshioka, Mitihiro; and Yokoyama, Takao, to Ibigawa Electric Industry Co., Ltd. Apparatus for producing silicon carbide. 4,292,276, Cl. 422-199.000.

Ensmann, Burt W.; Kuriloff, Fredric M.; and Rosenhagen, William, to Ideal Toy Corporation. Toy vehicle engine sound device. 4,291,877, Cl. 273-86.00B.

Enso-Gutzeit Osakeytio : *See—*
Lintunen, Tuomo; and Kohonen, Raimo, 4,292,123, Cl. 162-60.000.

Entwistle Company, The: *See—*
Allard, Joseph R., 4,291,527, Cl. 57-58.840.

ERCO Industries Limited: *See—*
Forster, James H., 4,292,275, Cl. 422-198.000.

Erdmann, Jurgen; and von Stein, Walter, to Erwin Sick GmbH Optik-Elektronik. Adjustment device for aligning a group of cyclically switched light transmitters or receivers with a single light receiver or transmitter. 4,291,977, Cl. 356-152.000.

Erickson, Charles W.: *See—*
Probyn, Keith A.; Nolen, Richard W.; Erickson, Charles W.; Dawson, Gerald G.; Goldstein, Ralph; and Bender, Max, 4,292,034, Cl. 493-92.000.

Erickson, John W., to Kobe, Inc. Turbo pump gas compressor. 4,292,011, Cl. 417-53.000.

Eriksson, Olle, to Ab Asea Atom. Biological shield for insulating pressure vessels. 4,292,134, Cl. 176-38.000.

Erisman, Lester R.; and Brown, Robert A., to Eagle-Picher Industries, Inc. Zinc/zinc oxide laminated anode assembly. 4,292,357, Cl. 428-124.000.

Ersfeld, Heinrich: *See—*
Schulte, Klaus; and Ersfeld, Heinrich, 4,291,991, Cl. 366-159.000.

Ershov, Geny S.: *See—*
Anfilov, Igor V.; Ershov, Geny S.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; Suvorov, Gennady P.; and Scherbatenko, Boris G., 4,291,971, Cl. 355-14.00R.

Erwin Sick GmbH Optik-Elektronik: *See—*
Erdmann, Jurgen; and von Stein, Walter, 4,291,977, Cl. 356-152.000.
Sick, Erwin; and Mankel, Siegfried, 4,291,987, Cl. 356-431.000.

Escher Wyss Aktiengesellschaft: *See—*
Marchioro, Ignazio, 4,291,446, Cl. 29-116.0AD.

Escher Wyss Limited: *See—*
Marchioro, Ignazio, 4,291,447, Cl. 29-116.0AD.

Eswaran, Kapali P.; Hamacher, Vincent C.; and Shedler, Gerald St., to International Business Machines Corporation. Port logic for a communication bus system. 4,292,623, Cl. 340-147.00R.

Ethyl Corporation: *See—*
Rifkin, Ellis B., 4,292,139, Cl. 203-6.000.

Etsion, Izhak: *See—*
United States of America, National Aeronautics and Space Administration; Etsion, Izhak; and Lipshitz, Abraham, 4,291,887, Cl. 277-27.000.

European Atomic Energy Community (EURATOM): *See—*
Luchtmans, Fernand; Jehenson, Pierre; and Pisoni, Angelo, 4,292,521, Cl. 250-323.000.

Euteco Impianti S.p.A.: *See—*
Piccolo, Luigi; Corsini, Tullio; Paolinelli, Antonio; Ferri, Gaudenzio; and La Rovere, Angelo, 4,292,085, Cl. 106-109.000.

Evans, James D.; and Pool, Sam L., to Hydac, Inc. Digital altimeter computer. 4,292,671, Cl. 364-433.000.

Evans, Robert F. Strictive material deflectable collar for use in borehole angle control. 4,291,773, Cl. 175-61.000.

Ewertowski, Norbert, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Pallet changer for a manufacture plant. 4,291,797, Cl. 198-472.000.

Ex-Cell-O Corporation: *See—*
Fitzpatrick, Paul; and Gavasso, Richard J., 4,291,504, Cl. 51-165.880.

Excelsior Fitness Equipment Co.: *See—*
Brilando, Frank P.; and Szymski, Eugene J., 4,291,872, Cl. 272-73.000.

Exxon Research & Engineering Co.: *See—*
Brois, Stanley J.; and Gutierrez, Antonio, 4,292,184, Cl. 252-46.300.
Gladrow, Elroy M., 4,292,169, Cl. 208-120.000.
Gladrow, Elroy M., 4,292,288, Cl. 423-247.000.
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., 4,292,181, Cl. 210-638.000.
Malatesta, Alberto, 4,292,221, Cl. 260-23.70C.
Mauldin, Charles H.; and Baird, William C., Jr., 4,292,204, Cl. 252-439.000.
Mayer, Francis X.; and Arey, William F., Jr., 4,292,171, Cl. 208-164.000.
Say, Geoffrey R.; Hays, James R., Sr.; and Iyengar, Jagannathan N., 4,292,286, Cl. 423-223.000.
Wesselhoft, Robert D.; and Ryan, Daniel F., 4,292,048, Cl. 48-197.00R.

Eymuller, Helmut: *See—*
Mann, Egon; and Eymuller, Helmut, 4,291,779, Cl. 180-305.000.

Fabriken fur Lager- und Betriebseinrichtungen: *See—*
Weidt, Karl A., 4,291,804, Cl. 206-509.000.

Fahlen, Lars: *See—*
Selander, Lennart; Fahlen, Lars; and Sipek, Ladislav, 4,292,493, Cl. 219-74.000.

Faitani, Joseph J.; Austin, George W.; Chase, Terry J.; Suljak, George T.; and Misage, Robert J., to United Technologies Corporation. Catalytic reactor with improved burner. 4,292,274, Cl. 422-197.000.

Farber, Milton; and Mariotti, Nancy S., to Uniroyal, Inc. Iodine treated elastomeric article. 4,292,150, Cl. 204-159.120.

Faria, Carl R., to Thermionics Laboratory, Inc. Gate valve with slideable closure expandable upon oscillation. 4,291,861, Cl. 251-158.000.

Farnam Companies, Inc.: *See—*
Lindley, Donald C., 4,291,486, Cl. 43-61.000.

Farris, Clyde A.; and Farris, Clyde A., Jr. Method and apparatus for controlling dissolved solid concentrations. 4,292,039, Cl. 23-230.00A.

Farris, Clyde A., Jr.: *See—*
Farris, Clyde A.; and Farris, Clyde A., Jr., 4,292,039, Cl. 23-230.00A.

Fast, John; and Williams, Harvey, to Educase Incorporated. Panel cutting device. 4,291,602, Cl. 83-745.000.

Faunce, Frank R. Dentifrice with topical and systemic phosphate fluoride system. 4,292,306, Cl. 424-52.000.

Faust, Karl-Volker, to Paul Hettich & Co. Guiding reciprocable drawers of pieces of furniture or the like. 4,291,929, Cl. 312-341.00R.

Feder, Alvin, to Motorola, Inc. Mounting arrangement for crystal assembly. 4,292,562, Cl. 310-348.000.

Feigelson, Robert S.: *See—*
De Mattei, Robert C.; Elwell, Dennis; and Feigelson, Robert S., 4,292,145, Cl. 204-60.000.

Feldman, Michel; and Le Goff epouse Henaff, Jeannine. Recursive filter for transfer of charge deposits. 4,292,609, Cl. 333-165.000.

Feng, C. T. Indexed book. 4,291,900, Cl. 281-15.00R.

Ferranti Limited: *See—*
Longmuir, Donald A.; and Morrison, John M., 4,292,586, Cl. 324-73.00R.

Ferri, Gaudenzio: *See—*
Piccolo, Luigi; Corsini, Tullio; Paolinelli, Antonio; Ferri, Gaudenzio; and La Rovere, Angelo, 4,292,085, Cl. 106-109.000.

Feuerbaum, Hans P., to Siemens Aktiengesellschaft. Device for contact-free potential measurements. 4,292,519, Cl. 250-310.000.

Fiat-Allis Construction Machinery, Inc.: *See—*
Highland, Edward, 4,291,589, Cl. 74-526.000.
Koch, Otto E., 4,291,896, Cl. 280-775.000.

Fiat Veicoli Industriali S.p.A.: *See—*
Formia, Antonio; and Filtri, Giorgio, 4,291,650, Cl. 123-41.82A.

Fields, Robert E. Connector for tubing. 4,291,903, Cl. 285-39.000.

Figlhuber, Dietgar; Gallwas, Johannes; Weber, Robert; and Weber, Jakob, to Kraftwerk Union Aktiengesellschaft. Inspection device. 4,291,579, Cl. 73-636.000.

Filtri, Giorgio: *See—*
Formia, Antonio; and Filtri, Giorgio, 4,291,650, Cl. 123-41.82A.

Finn, Bernard J.; and Haddlesey, Brian T., to General Motors Corporation. Restraint belt positioner. 4,291,898, Cl. 280-804.000.

Finn, Bernard J.; Haddlesey, Brian T.; and Reid, Kenneth H., to General Motors Corporation. Buckle assembly for continuous loop occupant restraint belt system. 4,291,918, Cl. 297-483.000.

Firstov, Vladislav D.: *See—*
Sanin, Sergei A.; Ponomarenko, Jury F.; Firstov, Vladislav D.; Khorin, Vladimir N.; Ragutsky, Arnold M.; Kostjunin, Boris N.; and Bronfen, Petr M., 4,291,718, Cl. 137-87.000.

Fisch, Nathaniel J., to Massachusetts Institute of Technology. System and method for generating steady state confining current for a toroidal plasma fusion reactor. 4,292,124, Cl. 176-3.000.

Fisher, Richard L.; Wright, David J.; and Scheel, Randall, to Teledyne Industries, Inc. Scraper assembly for use with a fluidized bed condenser. 4,291,753, Cl. 165-94.000.

Fisher, Theodore F.: *See—*
Bergsten, Victor E.; Eardley, Edward P.; and Fisher, Theodore F., 4,291,636, Cl. 110-346.000.

Fisons Limited: *See—*
van Hoogstraten, Samuel D.; and Davies, David H. K., 4,292,068, Cl. 71-88.000.

Fitzpatrick, Paul; and Gavasso, Richard J., to Ex-Cell-O Corporation. Method and apparatus for in-process gaging of tool elements. 4,291,504, Cl. 51-165.880.

Flex Kleen Corp.: *See—*
Ulvestad, Edward A.; and Harris, Charles M., 4,292,057, Cl. 55-302.000.

Flick, Carl; and Ying, Sui-Chun, to Westinghouse Electric Corp. Support structure for dynamoelectric machine stators spiral pancake winding. 4,292,558, Cl. 310-194.000.

Flinn, Robert W., to American Greetings Corporation. Apparatus and method for installing wicking in candles. 4,291,458, Cl. 29-650.000.

Folland Corporation: *See—*
Folland, Roy E., 4,291,720, Cl. 137-209.000.

Folland, Roy E., to Folland Corporation. Pressure controlled receiver for storing emulsion. 4,291,720, Cl. 137-209.000.

Follett, Earl C., to Measurematic Development Company. Mechanical point locator. 4,291,468, Cl. 33-192.000.

Forbes, Brian K.: *See—*
Catiller, Robert D.; and Forbes, Brian K., 4,292,667, Cl. 364-200.000.

Ford Motor Company: *See—*
Rhodes, Eugene E., 4,291,450, Cl. 29-157.30R.
Theodore, Ares N.; Pett, Robert A.; and Qaderi, S. Burhan A., 4,292,223, Cl. 260-29.1SB.
Theodore, Ares N., 4,292,224, Cl. 260-29.1SB.
Theodore, Ares N.; and Lemieux, Marvin A., 4,292,225, Cl. 260-29.1SB.
Trzoska, Peter R., 4,291,652, Cl. 123-90.570.

Formia, Antonio; and Filtri, Giorgio, to Fiat Veicoli Industriali S.p.A. Cylinder head for compression-ignition internal combustion engine. 4,291,650, Cl. 123-41.82A.

Forster, James H., to ERCO Industries Limited. Modular chlorine dioxide generation systems. 4,292,275, Cl. 422-198.000.

Forster, Rolf, to Bernhard Forster GmbH. Orthodontic device for rotating a tooth. 4,292,025, Cl. 433-18.000.

Fort, Pierre H., to Pont-a-Mousson S.A. Machine for extracting centrifuged pipe. 4,291,630, Cl. 104-173.00R.

Foster, Elgin J.: *See*—
Johnson, Dannis R.; Foster, Elgin J.; and Soukup, Richard J., 4,292,661, Cl. 361-393.000.

Fowler, James M.: *See*—
Alvarez, Patricio D.; Fowler, James M.; and Moran, George A., 4,291,862, Cl. 257-167.000.

Fox, Robert M.; Mogk, Robert D.; and Priebe, Edward T., to General Motors Corporation. Wind deflector for sun roof. 4,291,912, Cl. 296-217.000.

Franchina, Anthonino A., to Wojcik, Karl, a part interest. Heating system with focused solar panels and heat pump assist. 4,291,833, Cl. 237-2.00B.

Francis, Colin G.: *See*—
Ozin, Geoffrey A.; Francis, Colin G.; and Huber, Helmut X., 4,292,253, Cl. 260-429.500.

Frank, Lee F.; and Lee, James K., to Eastman Kodak Company. Camera with electronic flash and piezoelectric lens motor. 4,291,958, Cl. 354-25.000.

Frank, Willi, to Hauni-Werke Korber & Co. KG. Device for heating the seams of wrappers for rod-like fillers in cigarette making machines or the like. 4,291,713, Cl. 131-68.000.

Franklin Electric Co., Inc.: *See*—
Schaefer, Edward J., 4,292,555, Cl. 310-68.00R.

Franks, Larry A.; Lutz, Stephen S.; and Lyons, Peter B., to United States of America, Energy. Radiation detection system. 4,292,527, Cl. 250-483.000.

Franks, Larry A.: *See*—
Davies, Terence J.; Franks, Larry A.; and Nelson, Melvin A., 4,292,537, Cl. 250-361.00R.

Frauenrath, Herbert: *See*—
Scharf, Hans-Dieter; and Frauenrath, Herbert, 4,292,246, Cl. 260-347.400.

Fray, Derek J.; and Thomas, Bernard K., to National Research Development Corporation. Zinc chloride electrolysis. 4,292,147, Cl. 204-118.000.

Frederick Electronics Corporation: *See*—
Wilson, John F.; Hoover, Edward D.; Hammond, Philip K.; Mosher, William A.; Woodell, Jack L.; Spaniol, John W.; Bowerman, John J.; Bieber, Larry C.; and Perlman, Marvin, 4,292,465, Cl. 178-3.000.

Freeman, James D.; and Freeman, Robert L. Track-mounted pull-down luggage-carrier for automobiles. 4,291,823, Cl. 224-310.000.

Freeman, Peter A.: *See*—
Thompson, Worthington J.; and Freeman, Peter A., 4,292,540, Cl. 290-55.000.

Freeman, Robert L.: *See*—
Freeman, James D.; and Freeman, Robert L., 4,291,823, Cl. 224-310.000.

Frei, Ephraim H.; and Sollish, Bruce D., to Yeda Research & Development Co. Ltd. Apparatus and method for detection of tumors in tissue. 4,291,708, Cl. 128-734.000.

Friese, Karl-Hermann: *See*—
Muller, Klaus; Maurer, Helmut; Dietz, Hermann; Friese, Karl-Hermann; Leibfried, Wolfgang; Stecher, Gunther; and Linder, Ernst, 4,292,158, Cl. 204-195.00S.

Frissora, Anthony P., to Allied Chemical Corporation. Liquid level monitor. 4,291,575, Cl. 73-302.000.

Fritchle, Cliff D.; Hobrecht, Charles E.; and Scott, Allan W., to Varian Associates, Inc. In-band resonant loss in TWT's. 4,292,567, Cl. 315-3.500.

Fritz Schafer Gesellschaft Mit Beschrankter Haftung: *See*—
Weidt, Karl A., 4,291,804, Cl. 206-509.000.

Frolov, Jury F.; Sukoian, Nariman A.; Proshkin, Ivan T.; and Basalaev, Anany M. Electrode-slipping apparatus for electric furnaces. 4,292,460, Cl. 13-14.000.

Frolow, Jack L. Tennis racket. 4,291,574, Cl. 73-65.000.

Frydman, Samuel: *See*—
Grenga, John; and Frydman, Samuel, 4,291,738, Cl. 160-176.00R.

Fryer, Kevin C.; and Prentice, Edgar C., to Blevex Limited. Heat protective barrier comprising apertured member having intumescent coating. 4,292,358, Cl. 428-135.000.

Fuchs, Hedwig, heir: *See*—
Fuchs, Heinz, deceased; Muller, Hans-Friedrich; and Hecht, Hildegard, 4,291,698, Cl. 128-335.000.

Fuchs, Heinz, deceased (by Fuchs, Hedwig, heir); Muller, Hans-Friedrich; and Hecht, Hildegard, to Intermedicat GmbH. Button for surgical applications. 4,291,698, Cl. 128-335.000.

Fuji Photo Film Co., Ltd.: *See*—
Ikeda, Tomoaki; Sigyoo, Masamiti; Ikeda, Sadaharu; Yoshida, Satoshi; and Tomotsu, Takeshi, 4,292,388, Cl. 430-162.000.
Ikeda, Tomoaki; Shinozaki, Fumiaki; and Nakao, Sho, 4,292,392, Cl. 430-271.000.
Ishiwata, Mamoru; Uematsu, Shinji; Ozaki, Kazuo; and Ishiyama, Masashi, 4,292,349, Cl. 427-335.000.
Itoh, Isamu; Hashimura, Taiji; and Ishikawa, Takatoshi, 4,292,401, Cl. 430-393.000.
Katoh, Kazunobu; and Makino, Teruyoshi, 4,292,390, Cl. 430-207.000.
Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, 4,292,272, Cl. 422-57.000.
Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,292,393, Cl. 430-275.000.
Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,292,395, Cl. 430-299.000.

Fujii, Hitoshi: *See*—
Takeuchi, Satoshi; Akada, Masanori; Fujii, Hitoshi; Toida, Takashi; Takamizawa, Minoru; and Inoue, Yoshio, 4,292,397, Cl. 430-303.000.

Fujii, Masao; Ogawa, Yoshifusa; and Morihiro, Yoshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Preparation of boiling heat transfer surface. 4,291,758, Cl. 165-133.000.

Fujii, Toru: *See*—
Takase, Hiroshi; and Fujii, Toru, 4,291,952, Cl. 350-471.000.

Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, to Ube Industries, Ltd. Method of dispersing a liquid into another liquid. 4,291,549, Cl. 62-534.000.

Fujioka, Masahiko, to Tokyo Shibaura Electric Co., Ltd. Enclosed-type magnetic disc recording and/or reproducing apparatus. 4,292,656, Cl. 360-97.000.

Fujisawa Pharmaceutical Company, Limited: *See*—
Kishimoto, Teiji; Kochi, Hiromu; and Kaneda, Yoshiyuki, 4,292,320, Cl. 424-258.000.

Fujita, Kenji; Shibata, Yuji; Mikuni, Hisao; and Shibuya, Tsuneo, to Sumitomo Heavy Industries, Ltd. Door lifter for coke oven. 4,292,137, Cl. 202-248.000.

Fujitsu Limited: *See*—
Kudo, Daijiro; and Ikeda, Kiyoshi, 4,292,153, Cl. 204-164.000.

Fujizoki Pharmaceutical Co., Ltd.: *See*—
Kasahara, Yasushi; and Ashihara, Yoshihiro, 4,292,404, Cl. 435-18.000.

Fukuda, Shiro: *See*—
Ida, Yoshiaki; Fukuda, Shiro; and Imamura, Osayoshi, 4,291,989, Cl. 356-440.000.

Fukui, Shiomi: *See*—
Kotani, Teizo; Arai, Kozo; Fukui, Shiomi; and Nagata, Masaki, 4,292,261, Cl. 264-24.000.

Fulkerson, Earl. Apparatus for wires in the ground. 4,291,780, Cl. 181-121.000.

Fuller, Paul. Character reader. 4,292,621, Cl. 340-146.30H.

Fullerton, W. Wardle, to Merck & Co., Inc. Surfactant assay. 4,292,041, Cl. 23-230.300.

Fulton, Cyrus B., Jr. Machine degradable reinforced paper barrier material. 4,292,366, Cl. 428-293.000.

Fumakilla Limited: *See*—
Muramoto, Takayoshi; and Orita, Kunitaka, 4,292,322, Cl. 424-274.000.

Furuhata, Takashi: *See*—
Yumde, Yasufumi; and Furuhata, Takashi, 4,292,652, Cl. 358-138.000.

Furukawa, Yosio: *See*—
Tomioka, Shunzo; Okano, Kinpei; Matsuo, Masanori; and Furukawa, Yosio, 4,291,926, Cl. 308-73.000.

Furuta, Kenzi: *See*—
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,292,509, Cl. 235-92.0MP.

Fuwa, Yoshio: *See*—
Komiyama, Yoshiro; Kondo, Katsumi; Fuwa, Yoshio; Matsui, Akira; Miyazaki, Shoji; and Hasegawa, Tokushiro, 4,292,074, Cl. 75-122.000.

G. Siempelkamp GmbH & Co.: *See*—
Breiding, Hans-Joachin; and Bachen, Manfred, 4,291,569, Cl. 72-403.000.

Gabbay, Emile; Tran Quang, Dang; and Lafitte, Andre, to Compagnie Generale de Radiologie. Multiple cathode X-ray tube for densitometers. 4,292,563, Cl. 313-56.000.

Gabler, Otto L.: *See*—
Buck, Gordon H.; Gabler, Otto L.; Kilroy, Eugene J.; and Leoncavallo, Richard, 4,291,663, Cl. 124-26.000.

Gabriel, Hans R. L.; Post, Larry K.; Culbertson, Billy M.; and Graham, Curtis M., to Ashland Oil, Inc. Pressure sensitive adhesion compositions. 4,292,231, Cl. 260-33.4UR.

Gachot, Jean. Antifriction device for a valve control shaft. 4,291,863, Cl. 251-214.000.

Gaffney, Michael F.: *See*—
Shaffer, Peter T. B.; and Gaffney, Michael F., 4,292,528, Cl. 250-506.000.

Gagnebin, Gustave, to Hermes Precisa International S.A. Device for installing and securing a printing disc. 4,291,993, Cl. 400-144.200.

Galafassi, Pierre; Adam, Jean-Marie; Loew, Peter; and Scheidegger, Hans, to Ciba-Geigy Corporation. Process for dyeing cellulose-containing fibre materials. 4,292,037, Cl. 8-554.000.

Gallmeyer, William W. Air dam apparatus for a motor vehicle. 4,291,911, Cl. 296-78.00R.

Gallwas, Johannes: *See*—
Figlhuber, Dietgar; Gallwas, Johannes; Weber, Robert; and Weber, Jakob, 4,291,579, Cl. 73-636.000.

Garner, Edward D. Dressing tool for grinding wheels. 4,291,666, Cl. 125-11.0TP.

Garrett Corporation, The: *See*—
Morse, Calvin J.; and Kossuth, Gabor, 4,291,754, Cl. 165-165.000.

Garrett, Ernest R. Lid piercing device. 4,291,464, Cl. 30-363.000.

Garvin, Gregory A. Livestock feeder. 4,291,648, Cl. 119-61.000.

Gasperini, Eugene. Photographic exposure chamber. 4,292,662, Cl. 362-17.000.

Gates, Donald C., to Alloway Manufacturing Inc. Method of defoliating. 4,291,524, Cl. 56-121.430.

Gavasso, Richard J.: *See*—
Fitzpatrick, Paul; and Gavasso, Richard J., 4,291,504, Cl. 51-165.880.

Gebarowski, Peter D.; and Henry, Sam W., to Tutco, Inc. Expanded metal electric heating element with edge support. 4,292,504, Cl. 219-542.000.

Gebhardt, Elfriede. Retarding conveyor for cargo. 4,291,796, Cl. 198-460.000.

Geddes, Leslie A.; Bourland, Joe D.; and Terry, Reese S., to CTS Corporation. Method of and apparatus for automatically detecting and treating ventricular fibrillation. 4,291,699, Cl. 178-419.00D.

Gelman Sciences, Inc.: *See*—
Ambler, Jeffrey, 4,292,154, Cl. 204-180.00G.
Ambler, Jeffrey, 4,292,162, Cl. 204-299.00R.

Gemignani, Francois. Apparatus for pressure detection and control of a safety valve. 4,291,721, Cl. 137-492.000.

General Dynamics Corporation: *See*—
Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., 4,292,108, Cl. 156-259.000.

General Electric Company: *See*—
Bower, Arnold B., Jr., 4,291,799, Cl. 206-219.000.
Buzzell, Colby E.; and Allen, Malcolm H., Jr., 4,291,582, Cl. 73-861.350.
Chu, Hing C.; and Sun, Y. S. Edmund, 4,292,644, Cl. 357-21.000.
Gigliotti, Michael F. X.; Jackson, Melvin R.; Henry, Michael F.; Woodford, David A.; Yang, Sherwin S.; and Bruch, Charles A., 4,292,076, Cl. 75-170.000.
Howell, E. Keith, 4,292,612, Cl. 335-14.000.
Laskaris, Evangelos T., 4,291,997, Cl. 403-24.000.
McCarty, Lewis V.; and Pugh, John W., 4,291,444, Cl. 29-25.140.
Williamson, Dennis F., 4,292,531, Cl. 290-14.000.
Ziemba, Richard T.; Kinzel, Joseph A.; and Egtvedt, Myron D., 4,291,627, Cl. 102-265.000.

General Motors Corporation: *See*—
Baldwin, Bryce R.; Brady, Laurence M.; and Holcomb, Warren N., 4,292,000, Cl. 403-320.000.
Buetemeister, Earl H., 4,291,586, Cl. 74-335.000.
Day, Edward G., 4,291,612, Cl. 91-6.000.
Finn, Bernard J.; and Haddlesey, Brian T., 4,291,898, Cl. 280-804.000.
Finn, Bernard J.; Haddlesey, Brian T.; and Reid, Kenneth H., 4,291,918, Cl. 297-483.000.
Fox, Robert M.; Mogk, Robert D.; and Priebe, Edward T., 4,291,912, Cl. 296-217.000.
Livesay, J. D., 4,291,548, Cl. 62-503.000.
Staub, Vincent M., Jr., 4,291,790, Cl. 192-3.280.

General Signal Corporation: *See*—
Bogenschutz, Thomas M.; and Bohusch, Glen O., 4,291,789, Cl. 188-351.000.

Genieys, Emile J.: *See*—
Lepetit, Pierre J.; and Genieys, Emile J., 4,292,144, Cl. 204-23.000.

Georgevich, Stephen. Cleaning and application device for medical purposes. 4,291,697, Cl. 128-269.000.

Georgia-Pacific Corporation: *See*—
Sorensen, James R., 4,291,830, Cl. 229-45.00R.

Gerard, Guy. Plasma matrix display unit. 4,292,631, Cl. 340-771.000.

Gerber, Howard L., to Continental Group, Inc., The. Tab heating and applying apparatus. 4,292,489, Cl. 219-10.710.

Gerritsen, Leendert A.; and Scholten, Joseph J. F., to Stamicarbon, B.V. Heterogeneous catalyst on the basis of an organometallic complex. 4,292,198, Cl. 252-428.000.

Gerry, Martin E. Inductive-capacitive modulated ignition system. 4,291,661, Cl. 123-606.000.

Gerry, Martin E. High energy modulation ignition system. 4,292,569, Cl. 315-209.00R.

Gerstenmaier, Jurgen: *See*—
Leiber, Heinz; and Gerstenmaier, Jurgen, 4,291,924, Cl. 303-111.000.

Gheen, Lyndle G. Automatic multiple move irrigation line. 4,291,837, Cl. 239-70.000.

Ghinazzi, Daniel J.: *See*—
Barels, Ronald R.; and Ghinazzi, Daniel J., 4,292,304, Cl. 424-37.000.

Giallorenzi, Thomas G.; and Steinberg, Richard A., to United States of America, Navy. Polarization-independent optical switches/modulators. 4,291,939, Cl. 350-96.140.

Gibbs, Charles G.: *See*—
Rutter, Jerry L.; Gibbs, Charles G.; and Hedrich, Loren W., 4,292,069, Cl. 71-94.000.

Gigliotti, Michael F. X.; Jackson, Melvin R.; Henry, Michael F.; Woodford, David A.; Yang, Sherwin S.; and Bruch, Charles A., to General Electric Company. Transverse ductile fiber reinforced eutectic nickel-base superalloys. 4,292,076, Cl. 75-170.000.

Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Positive nail angling device for metal connectors. 4,291,996, Cl. 403-14.000.

Gilbert, James C. Winch means. 4,291,847, Cl. 242-95.000.

Gilchrist, Ralph E.; Hover, George W.; and Barber, Robert M., to Mitchell Energy Corporation. Water flooding process using multiple fluids. 4,291,765, Cl. 166-273.000.

Giles, Barry R. Clamping apparatus for work table. 4,291,868, Cl. 269-93.000.

Gilleland, Randall C.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,292,490, Cl. 219-69.00P.

Gillen, John D.: *See*—
Hill, Stephen R.; De Pinto, Victor M.; and Gillen, John D., 4,292,475, Cl. 179-99.00A.

Gillette Company, The: *See*—
Nowak, Herman P., 4,291,641, Cl. 118-408.000.

Ginn, Le Roy D.; Ginn, Le Royce S.; Morris, John C.; and Travaglio, Dalny, to Universal Pneumatic Controls, Inc. System powered reset velocity controller. 4,291,832, Cl. 236-49.000.

Ginn, Le Royce S.: *See*—
Ginn, Le Roy D.; Ginn, Le Royce S.; Morris, John C.; and Travaglio, Dalny, 4,291,832, Cl. 236-49.000.

Giordano, Vincent; and Senor, Charles, to International Folding Paper Box Co., Inc. Folding box. 4,291,807, Cl. 206-626.000.

Girard, Edmond, to Messier S.A. Apparatus enabling the storage of radioactive wastes and the recovery of the extraneous heat emitted thereby, and a storage element for incorporation in such apparatus. 4,291,536, Cl. 60-644.000.

Gittins, Marvin W., Sr. Safety gate latch system. 4,291,908, Cl. 292-299.000.

Gladrow, Elroy M., to Exxon Research & Engineering Co. Hydrocarbon conversion with zeolite catalyst in metals-absorbing matrix. 4,292,169, Cl. 208-120.000.

Gladrow, Elroy M., to Exxon Research & Engineering Co. Catalyst for CO removal from flue gas. 4,292,288, Cl. 423-247.000.

Glaenzer Spicer: *See*—
Orain, Michel A., 4,291,552, Cl. 64-21.000.

Glanz, Richard, to Baldwin-Korthe Web Controls, Inc. Web guiding system. 4,291,825, Cl. 226-18.000.

Glass, Howard L., to Rockwell International Corporation. Growth of single-crystal $2PbO.Fe_2O_3$. 4,292,119, Cl. 156-624.000.

Gobov, Anatoly P.: *See*—
Kolesnik, Mikhail I.; Egorov, Anatoly P.; Kuznetsov, Anatoly A.; Gobov, Anatoly P.; Ryabukhin, Jury M.; Rudakov, Viktor A.; Pisarev, Gennady V.; Zheleznov, Jury M.; and Vasiliev, Alexei V., 4,292,345, Cl. 427-113.000.

Goldie, Harry; and Stitzer, Steven N., to Westinghouse Electric Corp. Broadband circuit for microwave S/N enhancers. 4,292,607, Cl. 333-24.100.

Goldstein, Ralph: *See*—
Probyn, Keith A.; Nolen, Richard W.; Erickson, Charles W.; Dawson, Gerald G.; Goldstein, Ralph; and Bender, Max, 4,292,034, Cl. 493-92.000.

Goldthorp, David C.: *See*—
Embree, Milton L.; Goldthorp, David C.; and Vogelpohl, David R., 4,292,604, Cl. 331-111.000.

Goloff, Alexander, to Caterpillar Tractor Co. Method and apparatus avoiding blowdown losses in compound engines. 4,291,535, Cl. 60-602.000.

Goodwin, Perry H., Jr.; and Kotalik, Richard J., to Robertshaw Controls Company. Two-wire isolated signal transmitter. 4,292,633, Cl. 340-870.390.

Gordon, Harry W.; and Schaffner, Carl P. Method of treating hypercholesterolemia with n-acyl amphotericin B. 4,292,310, Cl. 424-122.000.

Gordon, Richard; and Ciallella, John G., to Consolidated Refining Co., Inc. Ceramic lid assembly for hermetic sealing of a semiconductor chip. 4,291,815, Cl. 220-200.000.

Gore, Donald B.; Krigbaum, Ronald S.; and Peterson, James O., to Plaskon Products, Inc. Amino molding compound for cold manifold injection molding. 4,292,215, Cl. 260-17.300.

Gorring, Robert L.; and La Pierre, Rene B., to Mobil Oil Corporation. Catalytic process for manufacture of lubricating oils. 4,292,166, Cl. 208-59.000.

Goto, Hiromi; and Ojima, Kenji, to Aisin Seiki Kabushiki Kaisha. Free wheel hub mechanism. 4,291,791, Cl. 192-67.00R.

Gould Inc.: *See*—
Cole, James E.; and Thornton, Peter, 4,291,702, Cl. 128-675.000.

Grabmaier, Josef: *See*—
Plaettner, Rolf; Kruehler, Wolfgang; and Grabmaier, Josef, 4,292,343, Cl. 427-39.000.

Graham, Curtis M.: *See*—
Gabriel, Hans R. L.; Post, Larry K.; Culbertson, Billy M.; and Graham, Curtis M., 4,292,231, Cl. 260-33.4UR.

Gramelt, Stefan: *See*—
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Grasselli, Robert K.: *See*—
Bartek, Joseph P.; Cepulis, Rimoydas L.; and Grasselli, Robert K., 4,292,455, Cl. 585-320.000.

Grassmann, Josef. Electrically heated recording indicator for recording instruments and the like. 4,292,641, Cl. 346-76.00R.

Gray, Frederick W., to Colgate-Palmolive Company. Activated peroxy compound bleaching compositions and bleaching detergent compositions. 4,292,191, Cl. 252-99.000.

Great Lakes Chemical Corporation: *See*—
Sanders, David C., 4,292,183, Cl. 252-8.55R.

Grede Foundries, Inc.: *See*—
Scheiderer, Willard R., 4,291,745, Cl. 164-394.000.

Green, Lawrence E.: *See*—
Bendoni, Leonard V.; and Green, Lawrence E., 4,291,966, Cl. 354-275.000.

Greer Hydraulics, Incorporated: *See*—
Zahid, Abduz, 4,291,726, Cl. 138-30.000.

Greig, Richard C.: *See—*
Werner, Frank D.; Kleven, Lowell A.; and Greig, Richard C., 4,291,684, Cl. 126-450.000.

Grenga, John; and Frydman, Samuel. Universal support for vertical blinds and the like. 4,291,738, Cl. 160-176.00R.

Griffon, Henri. Method for preparing alloxan stable aqueous solutions and solutions resulting therefrom. 4,292,312, Cl. 424-176.000.

Grigo, Ulrich; Morbitzer, Leo; Arlt, Klaus-Peter; Binsack, Rudolf; and Merten, Josef, to Bayer Aktiengesellschaft. Homogeneous thermoplastic mixtures of propylene-ethylene copolymers and liquid, saturated diorganopolysiloxanes within a certain viscosity range. 4,292,222, Cl. 260-29.1SB.

Grigoriev, Veniamin G.: *See—*
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V., 4,292,486, Cl. 219-9.500.

Grimsby, Emerson A.; and Levasheff, Stanley W., to International Telephone and Telegraph Corporation. Grinding or polishing tool. 4,291,502, Cl. 51-120.000.

Grissman Chemicals Limited: *See—*
Diethelm, Eugen, 4,292,318, Cl. 424-250.000.

Grosjean, William C.; and Hensley, John J., to International Harvester Company. Gas turbine cooling systems. 4,292,008, Cl. 415-115.000.

Gruen, Dieter M.: *See—*
Ron, Moshe; Gruen, Dieter M.; Mendelsohn, Marshall H.; and Sheft, Irving, 4,292,265, Cl. 264-82.000.

Grundy, Brian R., to Westinghouse Electric Corp. Radial cold trap. 4,291,865, Cl. 266-227.000.

Grunewald, Kurt H.; and Mansson, Inge G., to Eka Aktiebolag. Lignin-based glue. 4,292,216, Cl. 260-17.500.

Gruntleitner, Hans: *See—*
Kuhnlein, Hans; Gruntleitner, Hans; and Ebert, Hermann, 4,292,575, Cl. 318-254.000.

Gruntleitner, Johann: *See—*
Ebert, Hermann; Gruntleitner, Johann; and Kuhnlein, Hans, 4,292,573, Cl. 318-138.000.

Grutsch, James F.; and Mallatt, Russell C., to Standard Oil Company (Indiana). Use of activated carbon in waste water treating process. 4,292,176, Cl. 210-616.000.

Gudgel, Howard S., to Drill Tech Equipment, Inc. Apparatus for rapidly attaching an inside blowout preventer sub to a drill pipe. 4,291,762, Cl. 166-85.000.

Gulf Oil Corporation: *See—*
Kirkpatrick, Joel L.; Patel, Natu R.; and Rutter, Jerry L., 4,292,071, Cl. 71-96.000.
Rutter, Jerry L.; Gibbs, Charles G.; and Hedrich, Loren W., 4,292,069, Cl. 71-94.000.

Guly, Grigory A.: *See—*
Korytov, Vladimir A.; Maljushevsky, Pavel P.; Guly, Grigory A.; Shkatov, Alexandr S.; Sladkoshteev, Vladimir T.; Patanin, Ruslan V.; Dorokhov, Vasily I.; Klemeshov, Georgy A.; and Arkulis, Grigory E., 4,291,742, Cl. 164-501.000.

Gurtler, Richard W.: *See—*
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Gutierrez, Antonio: *See—*
Brois, Stanley J.; and Gutierrez, Antonio, 4,292,184, Cl. 252-46.300.

Gutmann, Otto: *See—*
Kremer, Hubert; Konigs, Heinz; and Gutmann, Otto, 4,291,730, Cl. 139-65.000.

Gutnov, Ruslanbek B.: *See—*
Medovar, Boris I.; Artamonov, Viktor L.; Kirsanov, Pavel I.; Marchenko, Alexandr M.; Bogachenko, Alexei G.; Pavlov, Leonid V.; Kamensky, Jury M.; Gutnov, Ruslanbek B.; and Platonov, Pavel M., 4,291,744, Cl. 164-509.000.

Guynup, William J. Shake resaw feed system. 4,291,601, Cl. 83-415.000.

Gyi, Ko K.: *See—*
Iwan, Wilfred D.; and Gyi, Ko K., 4,292,657, Cl. 360-98.000.

H. Krantz GmbH & Co., Firma: *See—*
Sodec, Frank, 4,291,615, Cl. 98-40.00C.

h.o.p. ConsuLab Inc.: *See—*
Leroux, Adrien, 4,292,532, Cl. 290-6.000.

Haake, Hinrich, to Klockner-Humboldt-Deutz AG-Zweigniederlassung FAHR. Husk separator for corn harvester. 4,291,521, Cl. 56-13.500.

Habeger, Charles C.: *See—*
Baum, Gary A.; and Habeger, Charles C., 4,291,577, Cl. 73-597.000.

Haddlesey, Brian T.: *See—*
Finn, Bernard J.; and Haddlesey, Brian T., 4,291,898, Cl. 280-804.000.
Finn, Bernard J.; Haddlesey, Brian T.; and Reid, Kenneth H., 4,291,918, Cl. 297-483.000.

Hagelaars, Adrianus M. P. M.: *See—*
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Halbergerhutte GmbH: *See—*
Wolfsgruber, Friedrich; Kasel, Hans W.; Odendahl, Manfred H. A.; and Morsdorf, Wolfram W., 4,292,075, Cl. 75-130.00R.

Hall, Emmitt D., Jr. Method for stabilizing and hanging surface casing. 4,291,767, Cl. 166-290.000.

Hall, Robert N.: *See—*
Cannon, Curtis W.; and Hall, Robert N., 4,292,289, Cl. 423-301.000.

Hallen Company: *See—*
Allen, Herbert, 4,291,597, Cl. 81-3.480.

Halliburton Company: *See—*
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Halsted, Raymond T.: *See—*
Raab, Andrew F.; and Halsted, Raymond T., 4,291,725, Cl. 137-625.250.

Halvorson, Thomas G.: *See—*
Bergsten, Victor E.; Eardley, Edward P.; and Halvorson, Thomas G., 4,291,634, Cl. 110-235.000.

Hamacher, Vincent C.: *See—*
Eswaran, Kapali P.; Hamacher, Vincent C.; and Shedler, Gerald St., 4,292,623, Cl. 340-147.00R.

Hamm, Thomas: *See—*
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,292,089, Cl. 127-1.000.

Hammond, Howard A., to Eaton Corporation. Tree processing apparatus. 4,291,734, Cl. 144-2.00Z.

Hammond, Philip K.: *See—*
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Hanak, Joseph J., to RCA Corporation. Laser processing technique for fabricating series-connected and tandem junction series-connected solar cells into a solar battery. 4,292,092, Cl. 148-1.500.

Hanna Mining Company, The: *See—*
Chilcote, Dennis D.; and Kaczyski, Donald J., 4,292,281, Cl. 423-27.000.

Hannah, Richard E.; and Lyons, Steffen, to Baxter Travenol Laboratories, Inc. Method and apparatus for making coude catheters. 4,292,270, Cl. 264-320.000.

Hanrahan, James R.; and Levine, Richard G., to Zimmer USA, Inc. Method of producing a foamed polyurethane body-protecting pad. 4,292,263, Cl. 264-46.900.

Hansen, Robert N., to Campbell, William M.; Campbell, Norma J.; Bogdan, Wesley; Clements, Robert; Krone, William; Krone, Keith; Kovacic, Thomas; Stickel, Arloa; and Aurea, Walter C. Coupling guard. 4,291,893, Cl. 280-507.000.

Hansen, Val. Knife guide device for opening of milk and soft drink paper cartons. 4,291,461, Cl. 30-2.000.

Hansson, Anders: *See—*
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Hara, Akira: *See—*
Yokoyama, Toshiaki; Hara, Akira; and Okuyama, Takeshi, 4,292,533, Cl. 290-40.00B.

Hard, Robert A.: *See—*
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Hardcastle, Phillip, to Cactus Pipe & Supply Co., Inc. Seal for wellheads. 4,291,889, Cl. 277-116.400.

Hardesty, Lee H.: *See—*
Scott, Brian L.; and Hardesty, Lee H., 4,292,469, Cl. 179-1.0SC.

Harding, Claude G., to John Lysaght International Holdings S.A. Structural elements. 4,291,515, Cl. 52-694.000.

Hardy, Thomas A.: *See—*
Walsh, Edward N.; and Hardy, Thomas A., 4,292,036, Cl. 8-182.000.

Harmes, O. Burton; and McGregor, Duane F., to Algona Food Engineering Company. Pallet storage rack attachment. 4,291,812, Cl. 211-207.000.

Harris, Charles M.: *See—*
Ulvestad, Edward A.; and Harris, Charles M., 4,292,057, Cl. 55-302.000.

Harris, David A., to Owens-Corning Fiberglas Corporation. Acoustical panel for suspended ceilings. 4,291,783, Cl. 181-295.000.

Hart, Paul A. H.: *See—*
Appels, Johannes A.; Collet, Marnix G.; Hart, Paul A. H.; and Verhoeven, Johannes F. C. M., 4,292,642, Cl. 357-13.000.

Harth, Robert: *See—*
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Hartley, Kenneth; Moulding, Trevor L. J.; and Rostron, Norman, to United Kingdom Atomic Energy Authority. Nuclear fuel pins. 4,292,127, Cl. 176-17.000.

Hartmann, Franz, to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Method of processing fish. 4,291,435, Cl. 17-45.000.

Harvey, Barrie J., to M. H. Detrick Co., Limited. High temperature enclosures. 4,291,514, Cl. 52-509.000.

Harvey, Walter W.: *See—*
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Hasbro Industries, Inc.: *See—*
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Hasegawa Chemical Industry Co., Ltd.: *See—*
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Hasegawa, Paul M.: *See—*
Janick, Jules; Hasegawa, Paul M.; and Pence, Valerie C., 4,291,498, Cl. 47-58.000.

Hasegawa, Shigeji, to Hasegawa Chemical Industry Co., Ltd. FRP Racket frame. 4,291,876, Cl. 273-73.00F.

Hasegawa, Tokushiro: *See—*
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Hashiguchi, Koichi: *See—*
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Hashimoto, Nobuyuki: *See—*
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Hashimoto, Yukio: *See—*
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,292,680, Cl. 368-187.000.

Hashimura, Taiji: *See—*
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Haskins, Steve W.: *See—*
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Hattori, Teruo: *See—*
Tanaka, Kentaro; Shoji, Jun'ichi; Kawamura, Yoshimi; Hattori, Teruo; Kondo, Eiji; Matsumoto, Kouichi; Yoshida, Tadashi; and Tsuji, Naoki, 4,292,241, Cl. 260-245.20T.

Hauni-Werke Korber & Co. KG: *See—*
Frank, Willi, 4,291,713, Cl. 131-68.000.

Hawks, Gail B. Low pressure infant seat for normally seating infants with meningomyelocele or other sensitive back deformities. 4,291,917, Cl. 297-452.000.

Hay, Robert A.; and Bergman, Oswald, to Dow Chemical Company, The. Extruded plastic foam shaping apparatus. 4,292,019, Cl. 425-325.000.

Hay, Wayne W., to Airco, Inc. Evacuation manifold for medical anesthesia circuits. 4,291,689, Cl. 128-200.240.

Hayamizu, Yoshisada, to Olympus Optical Co., Ltd. Pentagonal roof prism for viewfinder. 4,291,945, Cl. 350-286.000.

Haynes, Charles E., to ACCO Industries Inc. Method for terminating flexible helical wire conduit. 4,292,267, Cl. 264-157.000.

Hays, James R., Sr.: *See—*
Say, Geoffrey R.; Hays, James R., Sr.; and Iyengar, Jagannathan N., 4,292,286, Cl. 423-223.000.

Hechenberger, Dieter A.; and Neye, Angelika, to Lingner + Fischer. Adhesives. 4,292,229, Cl. 260-30.60R.

Hecht, Hildegard: *See—*
Fuchs, Heinz, deceased; Muller, Hans-Friedrich; and Hecht, Hildegard, 4,291,698, Cl. 128-335.000.

Heckrotte, John R., Sr., to Morlock Corporation. Key for driving tamper-proof bolt. 4,291,599, Cl. 81-444.000.

Hedrich, Loren W.: *See—*
Rutter, Jerry L.; Gibbs, Charles G.; and Hedrich, Loren W., 4,292,069, Cl. 71-94.000.

Heidelberger Zement Aktiengesellschaft: *See—*
Wesch, Ludwig; and Meyer, Adolf, 4,292,364, Cl. 428-286.000.

Heilman, Marlin S.; and Langer, Alois A., to Mirowski, Mieczyslaw. Implantable cardiac defibrillating electrode. 4,291,707, Cl. 128-784.000.

Heimbach, Kim P.; and Johnson, Ronald E., to Corning Glass Works. Decalcomania manufacture. 4,292,104, Cl. 156-235.000.

Heiser, Warren R.; and Acey, Eugene A., to Heiser, Warren R. Method and apparatus for folding and crushing empty cylindrical cans. 4,291,618, Cl. 100-35.000.

Heller, Martin G.; Rudder, Joel; and Arasim, Stanley J., Jr., to Heller, Martin G. High speed dispenser for electrical components. 4,291,819, Cl. 221-298.000.

Hemeyer, Arley C. Caliper rule device having extended measurement range. 4,291,465, Cl. 33-143.00M.

Henao, Alvaro, to Borg-Warner Corporation. Clutch assembly with modulated cushion fulcrum. 4,291,792, Cl. 192-89.00B.

Hendrickson, Melvin C., to Zenith Radio Corporation. Stv Subscriber address system. 4,292,650, Cl. 358-123.000.

Hendrix Electronics, Inc.: *See—*
Henrichon, Ernest G., Jr., 4,292,622, Cl. 340-146.3SG.

Henig, Sammy S., to Lockheed Electronics Co., Inc. Refresh cycle minimizer in a dynamic semiconductor memory. 4,292,676, Cl. 365-222.000.

Henkel Corporation: *See—*
Melby, Allan L., 4,292,212, Cl. 252-547.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Scheuffgen, Ingeborg; and Ploog, Uwe, 4,292,088, Cl. 106-268.000.

Henker, Erich: *See—*
Berthold, Gert; Dreyhaupt, Dieter; Dunse, Helmfried; Henker, Erich; and Viehweg, Bernd, 4,291,892, Cl. 280-28.000.

Hennig, Hans J.; Ziemek, Peter; and Schellmann, Erhard, to Bayer Aktiengesellschaft. Process for the preparation of organic polyisocyanates containing urea groups. 4,292,255, Cl. 260-453.0AR.

Henrichon, Ernest G., Jr., to Hendrix Electronics, Inc. System and method for processing horizontal line characteristics in an image. 4,292,622, Cl. 340-146.3SG.

Henry, Michael F.: *See—*
Gigliotti, Michael F. X.; Jackson, Melvin R.; Henry, Michael F.; Woodford, David A.; Yang, Sherwin S.; and Bruch, Charles A., 4,292,076, Cl. 75-170.000.

Henry, Raymond; and Simon, Jacques, to Thomson-CSF. Opto-electronic coupling head. 4,291,942, Cl. 350-96.200.

Henry, Sam W.: *See—*
Gebarowski, Peter D.; and Henry, Sam W., 4,292,504, Cl. 219-542.000.

Hensley, John J.: *See—*
Grosjean, William C.; and Hensley, John J., 4,292,008, Cl. 415-115.000.

Hentschel, Karl-Heinz; Dhein, Rolf; and Schule, Wolfgang, to Bayer Aktiengesellschaft. Lubricating oils for the working of metals. 4,292,187, Cl. 252-49.500.

Herlitze, Gerd: *See—*
Voges, Karl-Friedrich; and Herlitze, Gerd, 4,291,706, Cl. 128-762.000.

Herman, Justin, to Shaw Mudge & Company. Fragrance dispersant composition. 4,292,211, Cl. 252-529.000.

Hermes Precisa International S.A.: *See—*
Gagnebin, Gustave, 4,291,993, Cl. 400-144.200.

Herne, Robert H., Jr. Efficient fuel burning stove or furnace with thermal energy slow propagation flue structure. 4,291,669, Cl. 126-83.000.

Herschdorfer, C. George; and Vaughan, Dennis J., to Clark-Schwebel Fiber Glass Corp. Process of producing reinforced laminates from crosslinkable thermoplastic olefin polymer material. 4,292,106, Cl. 156-243.000.

Hersom, Wallace N.; and Crum, John E., to LH Research. Output stage for switching regulated power supply. 4,292,665, Cl. 363-141.000.

Hetz, Walter; and Derndinger, Walter, to Siemens Aktiengesellschaft. Apparatus for ultrasonic scanning of objects. 4,291,578, Cl. 73-633.000.

Heyman, Philip M.; and Bortfeld, David P., to RCA Corporation. Apparatus and method for reading an identifying label on an information record. 4,292,511, Cl. 235-454.000.

Heynisch, Hinrich; Huebner, Erwin; and Barth, Heinz, to Siemens Aktiengesellschaft. Traveling wave tube with a helical delay line. 4,292,566, Cl. 315-3.500.

Heyraud, Marc. Method of making self-supporting rotor coil dc-machine. 4,291,457, Cl. 29-598.000.

Hickman, Ronald P., to Tekron Licensing B.V. Workbench. 4,291,869, Cl. 269-139.000.

Hicks, Bruce W.; and Hicks, Jerry D., to Rio Linda Chemical Company. Chlorine dioxide generation process. 4,292,292, Cl. 423-477.000.

Hicks, Jerry D.: *See—*
Hicks, Bruce W.; and Hicks, Jerry D., 4,292,292, Cl. 423-477.000.

Higashi, Yasunaga. Workpiece treating barrel. 4,291,503, Cl. 51-164.100.

Higashide, Eiji; Tanida, Seiichi; Muroi, Masayuki; and Asai, Mitsuko, to Takeda Chemical Industries, Ltd. Antibiotics C-14482 B_1, B_2 and B_3. 4,292,309, Cl. 424-119.000.

Higashiguchi, Shigehiko. Method for preparing flock transfer including drying release adhesive prior to applying flock. 4,292,100, Cl. 156-72.000.

Highland, Edward, to Fiat-Allis Construction Machinery, Inc. Shifting lever brakes off restriction latch. 4,291,589, Cl. 74-526.000.

Highland Manufacturing & Sales Co.: *See—*
Weder, Erwin H.; and Weder, Donald E., 4,292,266, Cl. 264-140.000.

Hightower, Ronald. Janitor's rake for removing staples imbedded in carpet. 4,291,430, Cl. 15-142.000.

Higuchi, Yoshiro: *See—*
Ito, Yasuro; Higuchi, Yoshiro; Mochida, Yutaka; Kaga, Hideharu; Yamamoto, Yasuhiro; and Sumita, Tadayuki, 4,292,351, Cl. 427-403.000.

Hild, Manfred. Keyboard for a miniature calculator. 4,292,510, Cl. 235-145.00R.

Hill, Kenneth O.: *See—*
Kawasaki, Brian S.; Hill, Kenneth O.; and Johnson, Derwyn C., 4,291,940, Cl. 350-96.150.

Hill, Lawrence W.; Stoodley III, Thomas J.; and Malcolm, Ronald, to Modicon Div. Gould Inc. Programmable controller. 4,292,666, Cl. 364-104.000.

Hill, Stephen R.; De Pinto, Victor M.; and Gillen, John D., to Tone Commanders Systems, Inc. Expandable link telephone intercom system. 4,292,475, Cl. 179-99.00A.

Hillberg, Robert L., to Wildey Firearms Company, Inc. Firearm magazine safety mechanism. 4,291,481, Cl. 42-70.00A.

Hilti Aktiengesellschaft: *See—*
Lang, Gusztav; Storck, Friedrich; and Seghezzi, Hans-Dieter, 4,291,608, Cl. 411-16.000.

Hingorani, Narain G., to Electric Power Research Institute, Inc. Method and means for damping subsynchronous oscillations and DC offset in an AC power system. 4,292,545, Cl. 307-102.000.

Hino, Mitsuaki, to Nippon Klingage Kabushiki Kaisha. Residual voltage regulating circuit for hall element. 4,292,582, Cl. 323-294.000.

Hirata, Mituto, to Toyo Kagaku Kabushiki Kaisha. Method and apparatus for manufacturing corrugated tubes. 4,292,113, Cl. 156-428.000.

Hirt Combustion Engineers: *See—*
Hirt, John H., 4,292,020, Cl. 431-5.000.

Hirt, John H., to Hirt Combustion Engineers. Method and apparatus for abatement of gasoline vapor emissions. 4,292,020, Cl. 431-5.000.

Hisaka Works, Limited: *See—*
Sumitomo, Hiroyuki, 4,291,759, Cl. 165-146.000.

Hitachi Cable Ltd.: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Keizo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,291,644, Cl. 118-704.000.

Hitachi, Ltd.: *See—*
Ishizuka, Kohei; Kita, Yasuhiro; and Maeda, Narimichi, 4,292,596, Cl. 330-86.000.
Onda, Kenichi; and Tokunaga, Norikazu, 4,292,550, Cl. 307-252.00A.
Sakurai, Shoichiro; and Otani, Tadahiko, 4,292,258, Cl. 261-39.00A.
Sasaki, Masayoshi; Ishii, Yoshimi; Yoshida, Tomiharu; and Sugiyama, Sen, 4,292,133, Cl. 176-36.00R.
Satou, Takehide; Yoshida, Kasumi; Sagusa, Hisayuki; Ohno, Osamu; and Abe, Tetuaki, 4,291,986, Cl. 356-410.000.
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Tachibana, Keiji; Terasaki, Masatosi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,291,587, Cl. 74-363.000.

Takeda, Renzo; Kurihara, Kunitoshi; and Uchikawa, Sadao, 4,292,128, Cl. 176-20.00R.

Tanabe, Masanori; Shimada, Satoshi; Yasukawa, Akio; Nishihara, Motohisa; and Nagata, Takeo, 4,292,618, Cl. 338-5.000.

Tomioka, Shunzo; Okano, Kinpei; Matsuo, Masanori; and Furukawa, Yosio, 4,291,926, Cl. 308-73.000.

Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,292,549, Cl. 307-247.00R.

Yokoyama, Toshiaki; Hara, Akira; and Okuyama, Takeshi, 4,292,533, Cl. 290-40.00B.

Yumde, Yasufumi; and Furuhata, Takashi, 4,292,652, Cl. 358-138.000.

Hiyama Farms, Inc.: *See—*
Hiyama, Kazuo; and Hiyama, Howard K., 4,291,526, Cl. 56-330.000.

Hiyama, Howard K.: *See—*
Hiyama, Kazuo; and Hiyama, Howard K., 4,291,526, Cl. 56-330.000.

Hiyama, Kazuo; and Hiyama, Howard K., to Hiyama Farms, Inc. Method and apparatus for harvesting fruit from a row crop trained on trellis wires or the like. 4,291,526, Cl. 56-330.000.

Hobart Corporation: *See—*
Warner, Norbert C.; and Treiber, Fritz F., 4,291,516, Cl. 53-219.000.

Hobrecht, Charles E.: *See—*
Fritchle, Cliff D.; Hobrecht, Charles E.; and Scott, Allan W., 4,292,567, Cl. 315-3.500.

Hock, Jules M. Method of manufacturing a ring spring for composite machinery seals. 4,292,269, Cl. 264-299.000.

Hoechst Roussel Pharmaceuticals Incorporated: *See—*
Martin, Lawrence L.; and Worm, Manfred, 4,292,243, Cl. 260-340.90R.

Martin, Lawrence L.; and Worm, Manfred, 4,292,245, Cl. 260-346.220.

Hoefer, Peter S.; and Whitesides, Michael, to Hoefer Scientific Instruments. Vertical gel slab electrophoresis apparatus. 4,292,161, Cl. 204-299.00R.

Hoefer Scientific Instruments: *See—*
Hoefer, Peter S.; and Whitesides, Michael, 4,292,161, Cl. 204-299.00R.

Hoeft, Werner H., to Signetics Corporation. Voltage and temperature stabilized constant current source circuit. 4,292,583, Cl. 323-316.000.

Hoffmann, Gerhard: *See—*
Lechtken, Peter; Bronstert, Bernd; Hoffmann, Gerhard; Vyvial, Rudolf; and Lynch, John, 4,292,152, Cl. 204-159.150.

Steinberg, Klaus; and Hoffmann, Gerhard, 4,291,501, Cl. 49-386.000.

Hoffmann-La Roche Inc.: *See—*
Montavon, Marc; and Reiner, Roland, 4,292,428, Cl. 544-27.000.

Hoffmann, Werner; and Thoemel, Frank, to BASF Aktiengesellschaft. Novel 2,4-disubstituted pyran derivatives, their preparation and their use as scents. 4,292,244, Cl. 260-345.100.

Holcomb, Warren N.: *See—*
Baldwin, Bryce R.; Brady, Laurence M.; and Holcomb, Warren N., 4,292,000, Cl. 403-320.000.

Hollingsworth, Elmont E., to Minnesota Mining and Manufacturing Company. Graphic forming device with toggle clamped lamp arm. 4,291,957, Cl. 354-14.000.

Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Oxygen-curable mercapto-functional organosilicon-organic compound compositions catalyzed by metal carbonyl compounds and method of forming higher molecular weight products therefrom. 4,292,422, Cl. 528-15.000.

Homeier, Edwin H.; Dodds, Alan R.; and Imai, Tamotsu, to UOP Inc. Catalyst recovery. 4,292,196, Cl. 252-412.000.

Honda, Sinya; Komura, Takeshi; Sugita, Naomi; and Okamoto, Tatuya, to Nippon Tungsten Co., Ltd. Electrical contact material. 4,292,078, Cl. 75-176.000.

Honda, Zenjiro: *See—*
Ishii, Kiyoshi; Suzuki, Ryoshu; Honda, Zenjiro; and Tsugaya, Hitoshi, 4,292,417, Cl. 525-510.000.

Honeywell Inc.: *See—*
Elmberg, Dwayne R., 4,291,716, Cl. 137-83.000.

Honeywell Information Systems Inc.: *See—*
Miller, Robert C.; Bradley, John J.; King, Richard L.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., 4,292,668, Cl. 364-200.000.

Honor Gard, Inc.: *See—*
Domkowski, Ronald A., 4,291,831, Cl. 232-15.000.

Hoogovens Ijmuiden, B.V.: *See—*
Pelt, Cornelis P.; and De Jong, Hendrikus, 4,291,854, Cl. 246-271.000.

Hooker Chemicals & Plastics Corp.: *See—*
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., 4,292,146, Cl. 204-98.000.

Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Personal washing detergent bars with an effective amount of a citric acid ester. 4,292,192, Cl. 252-132.000.

Hoover, Edward D.: *See—*
Wilson, John F.; Hoover, Edward D.; Hammond, Philip K.; Moshier, William A.; Woodell, Jack L.; Spaniol, John W.; Bowerman, John J.; Bieber, Larry C.; and Perlman, Marvin, 4,292,465, Cl. 178-3.000.

Hoover Universal, Inc.: *See—*
Mizelle, Ned W., 4,291,914, Cl. 297-361.000.

Hoppe, Walter, to Max-Planck-Gesellshaft zur Forderung der Wissenschaften e.V. Specimen adjustment method and system for a corpuscular beam apparatus. 4,292,523, Cl. 250-442.000.

Horike, Akihiro: *See—*
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Horike, Akihiro, 4,292,151, Cl. 204-159.150.

Horikoshi, Kouki: *See—*
Shibanai, Ichiro; Horikoshi, Kouki; and Nakamura, Nobuyuki, 4,292,044, Cl. 44-1.00R.

Horizons Research Incorporated: *See—*
Straughan, Virgil E.; and Wainer, Eugene, 4,292,384, Cl. 430-5.000.

Horlacher, Walter R., III: *See—*
Schukei, Glen E.; Horlacher, Walter R., III; and Sampson, William T., 4,292,132, Cl. 176-36.00S.

Horwitt, Laurence G. High-production method for making grooved resistance ribbon for electrical heating coils. 4,291,560, Cl. 72-186.000.

Hosek, William S., to Curtiss Wright Corporation. Pressurized fluidized bed combustor and coal gun construction therefor. 4,292,022, Cl. 431-170.000.

Hosek, William S.: *See—*
DeFeo, Angelo; and Hosek, William S., 4,292,023, Cl. 431-170.000.

Hoskinson, Gordon H. Incinerator. 4,291,633, Cl. 110-235.000.

Hosler, Peter: *See—*
Lyons, James E.; Hosler, Peter; and Suntech, Inc., 4,292,219, Cl. 260-29.6ME.

Hosokawa, Masuo; Yokoyama, Tohei; and Kaya, Noriyoshi, to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho. Apparatus for classifying particles. 4,292,172, Cl. 209-144.000.

Hosono, Nagao: *See—*
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,292,387, Cl. 430-102.000.

Hovel, Harold J., to International Business Machines Corporation. Amorphous-crystalline tandem solar cell. 4,292,461, Cl. 136-249.000.

Hoveler, Egon: *See—*
Zodrow, Rudolf; and Hoveler, Egon, 4,292,117, Cl. 156-578.000.

Hover, George W.: *See—*
Gilchrist, Ralph E.; Hover, George W.; and Barber, Robert M., 4,291,765, Cl. 166-273.000.

Hovorka, J. Warren. Football statistic pegboard. 4,292,507, Cl. 235-90.000.

Howell, E. Keith, to General Electric Company. Remotely switchable residential circuit breaker. 4,292,612, Cl. 335-14.000.

Hoy, Malcolm G.; and Reichelt, Walter R., to Aluminum Company of America. Vertical plate welding using double bevel joint. 4,292,496, Cl. 219-126.000.

Hritz, Michael. Apparatus for rotational molding. 4,292,015, Cl. 425-73.000.

Huber, Guntram: *See—*
Schmid, Walter; Breitschwerdt, Werner; and Huber, Guntram, 4,291,919, Cl. 297-483.000.

Huber, Helmut X.: *See—*
Ozin, Geoffrey A.; Francis, Colin G.; and Huber, Helmut X., 4,292,253, Cl. 260-429.500.

Huddleston, George R., Jr.; Turner, James W.; and Konter, Kenneth D., to B.F. Goodrich Company, The. Process for recovering vinyl polymers from emulsion polymerization latices. 4,292,424, Cl. 528-500.000.

Hudson, James L.: *See—*
Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., 4,292,108, Cl. 156-259.000.

Huebner, Erwin: *See—*
Heynisch, Hinrich; Huebner, Erwin; and Barth, Heinz, 4,292,566, Cl. 315-3.500.

Hughes Aircraft Company: *See—*
Leo, Bruno S., 4,291,547, Cl. 62-402.000.

Pepper, David M.; and Klein, Marvin B., 4,291,950, Cl. 350-389.000.

Humme, Gert: *See—*
Binsack, Rudolf; Rempel, Dieter; Humme, Gert; and Ott, Karl-Heinz, 4,292,233, Cl. 260-40.00R.

Hunt, Arthur J.; and Hunt, Arthur J., Jr. Screw press with controllable rear door. 4,291,619, Cl. 100-43.000.

Hunt, Arthur J., Jr.: *See—*
Hunt, Arthur J.; and Hunt, Arthur J., Jr., 4,291,619, Cl. 100-43.000.

Husain, Matloob; Lai, Ban-Yen; and Maher, James B., to Chicago Bridge & Iron Company. Power producing dry cooling apparatus and method. 4,291,538, Cl. 60-661.000.

Hustler, David, to Rolls-Royce Limited. Porous metal sheet laminate. 4,292,376, Cl. 428-593.000.

Hutchinson, Marcus H. R., to National Research Development Corporation. Exciplex lasers. 4,292,603, Cl. 331-94.50G.

Hyatt, Everett C.; and Hyatt, Everett C. Gas fired fireplace insert with heat extractor. 4,291,670, Cl. 126-121.000.

Hyatt, Everett C.: *See—*
Hyatt, Everett C.; and Hyatt, Everett C., 4,291,670, Cl. 126-121.000.

Hydac, Inc.: *See—*
Evans, James D.; and Pool, Sam L., 4,292,671, Cl. 364-433.000.

Hyle, Michael J.: *See—*
Dalrymple, Philip W.; Hyle, Michael J.; Myers, Daryl L.; and Wright, James G., Jr., 4,291,841, Cl. 242-18.00A.

Ibaragi, Toshio: *See—*
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Ibigawa Electric Industry Co., Ltd.: *See—*
Enomoto, Ryo; Yoshioka, Mitihiro; and Yokoyama, Takao, 4,292,276, Cl. 422-199.000.

Ibsen, Robert L.; and Reed, William R., Jr., to Den-Mat, Inc. Composition for repair of porcelain fixtures. 4,292,236, Cl. 260-42.520.

ICI Americas Inc.: *See—*
deBerardinis, Albert J.; and Kruse, Walter M., 4,292,451, Cl. 568-863.000.

Ida, Yoshiaki; Fukuda, Shiro; and Imamura, Osayoshi, to Mitsubishi Denki Kabushiki Kaisha. Abnormality sensing device for gas-insulated electric apparatus. 4,291,989, Cl. 356-440.000.

Ideal Toy Corporation: *See—*
Ensmann, Burt W.; Kuriloff, Fredric M.; and Rosenhagen, William, 4,291,877, Cl. 273-86.00B.

Idemitsu Kosan Company Limited: *See—*
Kawasaki, Hiroaki; and Akashi, Shigeharu, 4,292,140, Cl. 203-22.000.

Ieki, Mitsuru: *See—*
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Ienaka, Masanori: *See—*
Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,292,549, Cl. 307-247.00R.

Iivarinen, Antero. Apparatus for assembling a projectile and a booster charge case to a shot. 4,291,609, Cl. 86-1.00R.

Ikeda, Kiyoshi: *See—*
Kudo, Daijiro; and Ikeda, Kiyoshi, 4,292,153, Cl. 204-164.000.

Ikeda, Masaki, to Tomy Kogyo Co., Inc. Moving toys. 4,291,490, Cl. 46-251.000.

Ikeda, Sadaharu: *See—*
Ikeda, Tomoaki; Sigyoo, Masamiti; Ikeda, Sadaharu; Yoshida, Satoshi; and Tomotsu, Takeshi, 4,292,388, Cl. 430-162.000.

Ikeda, Tomoaki; Sigyoo, Masamiti; Ikeda, Sadaharu; Yoshida, Satoshi; and Tomotsu, Takeshi, to Fuji Photo Film Co., Ltd. Image-forming material of aluminum-iron alloy. 4,292,388, Cl. 430-162.000.

Ikeda, Tomoaki; Shinozaki, Fumiaki; and Nakao, Sho, to Fuji Photo Film Co., Ltd. Protective layer of fatty acid or nylon on photosensitive resin for metal-image forming element. 4,292,392, Cl. 430-271.000.

Ikeda, Tomoaki: *See—*
Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,292,393, Cl. 430-275.000.

Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,292,395, Cl. 430-299.000.

Ikemori, Keiji, to Canon Kabushiki Kaisha. Compact type retrofocus lens. 4,291,951, Cl. 350-458.000.

Ikura, Hiroshi: *See—*
Suzuki, Yoshiki; Ikura, Hiroshi; and Yamashita, Gentaro, 4,292,299, Cl. 424-16.000.

Illinois Tool Works Inc.: *See—*
McVey, John K., 4,292,617, Cl. 337-407.000.

Wagner, David P., 4,292,007, Cl. 411-156.000.

Imai, Tamotsu: *See—*
Homeier, Edwin H.; Dodds, Alan R.; and Imai, Tamotsu, 4,292,196, Cl. 252-412.000.

Imamura, Osayoshi: *See—*
Ida, Yoshiaki; Fukuda, Shiro; and Imamura, Osayoshi, 4,291,989, Cl. 356-440.000.

IMBAC S.p.A.: *See—*
Santambrogio, Vincenzo, 4,291,593, Cl. 74-799.000.

IMI Marston Limited: *See—*
Warne, Michael A., 4,292,149, Cl. 204-147.000.

Imperial Chemical Industries Limited: *See—*
Briggs, Peter J., 4,292,363, Cl. 428-247.000.

Brooks, Herbert; and Waite, Frederick A., 4,292,045, Cl. 44-62.000.

Cameron, Ivor, 4,292,536, Cl. 250-359.000.

Riley, Norman, 4,292,446, Cl. 564-221.000.

Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Horike, Akihiro, to Teijin Limited. Process for preparing a cured copolyetherester elastomeric composition. 4,292,151, Cl. 204-159.150.

Indak Manufacturing Corp.: *See—*
Raab, Andrew F.; and Halsted, Raymond T., 4,291,725, Cl. 137-625.250.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Alluto, Luigi, 4,291,543, Cl. 62-158.000.

Inoue Gomu Kogyo Kabushiki Kaisha: *See—*
Katoh, Hisanori, 4,292,354, Cl. 428-31.000.

Inoue, Hiromitsu: *See—*
Kondo, Mikio; Inoue, Hiromitsu; and Ohashi, Hiroshi, 4,292,679, Cl. 367-188.000.

Inoue, Yoshio: *See—*
Takeuchi, Satoshi; Akada, Masanori; Fujii, Hitoshi; Toida, Takashi; Takamizawa, Minoru; and Inoue, Yoshio, 4,292,397, Cl. 430-303.000.

Institute of Gas Technology: *See—*
Yie, Gene G.; and Bevan, Thomas M., 4,291,727, Cl. 138-93.000.

Institute of Paper Chemistry, The: *See—*
Baum, Gary A.; and Habeger, Charles C., 4,291,577, Cl. 73-597.000.

Instituto Venezolano de Investigaciones Cientificas (IVIC): *See—*
Suarez, Ricardo; Chang, Oscar; and Adam, Vladimir, 4,292,548, Cl. 307-465.000.

Intermedicat GmbH: *See—*
Fuchs, Heinz, deceased; Muller, Hans-Friedrich; and Hecht, Hildegard, 4,291,698, Cl. 128-335.000.

Voges, Karl-Friedrich; and Herlitze, Gerd, 4,291,706, Cl. 128-762.000.

International Business Machines Corp.: *See—*
Denis, Bernard A., 4,292,675, Cl. 365-156.000.

Eswaran, Kapali P.; Hamacher, Vincent C.; and Shedler, Gerald St., 4,292,623, Cl. 340-147.00R.

Hovel, Harold J., 4,292,461, Cl. 136-249.000.

Kenney, Eugene J.; Lazzarini, Donald J.; and Winters, Robert J., 4,292,230, Cl. 260-33.2EP.

Lammers, Gerald B.; and Ream, Gregory L., 4,292,640, Cl. 346-75.000.

Smith, Thor L.; and Weiche, William J., 4,291,994, Cl. 400-241.100.

Thurston, Thomas R., 4,292,529, Cl. 250-561.000.

Wagner, Dietmar, 4,291,938, Cl. 350-91.000.

International Flavors & Fragrances Inc.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,292,447, Cl. 568-378.000.

Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,292,193, Cl. 252-174.110.

International Folding Paper Box Co., Inc.: *See—*
Giordano, Vincent; and Senor, Charles, 4,291,807, Cl. 206-626.000.

International Harvester Company: *See—*
Grosjean, William C.; and Hensley, John J., 4,292,008, Cl. 415-115.000.

International Nickel Co., Inc., The: *See—*
Petersen, Walter A.; Travis, Jonathan A.; and Badia, Frank A., 4,292,377, Cl. 428-675.000.

Pickens, Joseph R.; Schelleng, Robert D.; Donachie, Stephen J.; and Nichol, Thomas J., 4,292,079, Cl. 75-232.000.

International Standard Electric Corporation: *See—*
Crossland, William A.; Morrissy, Joseph H.; and Coates, David, 4,291,948, Cl. 350-340.000.

Venken, Jan H. G.; and Robijns, Jozef A. M., 4,292,473, Cl. 179-18.0FA.

International Synthetic Rubber Co., Ltd.: *See—*
Berg, Lloyd, 4,292,142, Cl. 203-51.000.

International Telephone and Telegraph Corporation: *See—*
Du Bae, Hyung, 4,292,673, Cl. 364-509.000.

Grimsby, Emerson A.; and Levasheff, Stanley W., 4,291,502, Cl. 51-120.000.

Landgreen, Eleanor A., 4,291,930, Cl. 339-14.00P.

Interstate Electronics Corp.: *See—*
An, Byung H., 4,292,470, Cl. 179-1.50D.

Intonti, Antonio: *See—*
Intonti, Francesco; and Intonti, Antonio, 4,291,419, Cl. 3-1.500.

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Murakami, Ryoichi; Shimizu, Hideo; Yoshii, Takashi; Ishida, Minoru; and Yonekura, Hiroto, 4,292,096, Cl. 148-6.15Z.

Ishii, Kiyoshi; Suzuki, Ryoshu; Honda, Zenjiro; and Tsugaya, Hitoshi, to Daicel Ltd. Semipermeable membrane. 4,292,417, Cl. 525-510.000.

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Ishii, Yoshimi: *See—*
Sasaki, Masayoshi; Ishii, Yoshimi; Yoshida, Tomiharu; and Sugiyama, Sen, 4,292,133, Cl. 176-36.00R.

Ishikawa, Norio: *See—*
Yuasa, Yoshio; Ishikawa, Norio; and Taniguchi, Nobuyuki, 4,291,979, Cl. 356-218.000.

Ishikawa, Takatoshi: *See—*
Itoh, Isamu; Hashimura, Taiji; and Ishikawa, Takatoshi, 4,292,401, Cl. 430-393.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Kawasaki, Hiroaki; and Akashi, Shigeharu, 4,292,140, Cl. 203-22.000.

Ishimaru, Kenji: *See—*
Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, 4,292,249, Cl. 260-397.200.

Ishiwata, Mamoru; Uematsu, Shinji; Ozaki, Kazuo; and Ishiyama, Masashi, to Fuji Photo Film Co., Ltd. Coating method and apparatus. 4,292,349, Cl. 427-335.000.

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Ishiwata, Mamoru; Uematsu, Shinji; Ozaki, Kazuo; and Ishiyama, Masashi, 4,292,349, Cl. 427-335.000.

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Island Creek Coal Co.: *See—*
Yale, Boyd R., 4,291,777, Cl. 180-24.060.

Isley, Ralph E., to Standard Oil Company, The. Physical property improvement in nitrile resins by use of certain processing aids and fillers. 4,292,228, Cl. 260-30.40A.

Isoard, Bernard, to Rhone-Poulenc-Textile. Spindle for winding textile yarns. 4,291,842, Cl. 242-46.500.

Italfarmaco S.p.A.: *See—*
Cremonesi, Pietro, 4,292,409, Cl. 435-288.000.

Itatani, Hiroshi; Shiotani, Akinori; and Yokota, Akiyoshi, to Ube Industries, Ltd. Method of producing biphenyltetracarboxylic esters. 4,292,435, Cl. 560-96.000.

Itek Corporation: *See—*
Lobdell, Alban J.; and Rupp, Wiktor J., 4,292,030, Cl. 434-262.000.

Ito, Akinori: *See—*
Orii, Seiji; Sasagawa, Yukio; Ito, Akinori; Maruyama, Hiromi; and Sakai, Yoshiteru, 4,292,426, Cl. 536-95.000.

Ito, Kunio: *See—*
Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, 4,292,389, Cl. 430-169.000.

Ito, Sadayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Balancing piece for ventilated brake discs. 4,291,786, Cl. 188-218.00A.

Ito, Tadashi; Murakami, Hiroyasu; Suzuki, Masayuki; Yamamichi, Masayoshi; Sakurada, Nobuaki; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. Display device. 4,291,960, Cl. 354-53.000.

Ito, Yasuro; Higuchi, Yoshiro; Mochida, Yutaka; Kaga, Hideharu; Yamamoto, Yasuhiro; and Sumita, Tadayuki, to Ito, Yasuro; and Taisei Corporation. Method of blasting concrete. 4,292,351, Cl. 427-403.000.

Itoh, Isamu; Hashimura, Taiji; and Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Bleaching composition for photographic processing. 4,292,401, Cl. 430-393.000.

Iversen, Niels A.; Pedersen, Jorgen; and Lolk, Hans, to Arkay Packaging Corporation. Filter holder. 4,291,904, Cl. 285-162.000.

Ivy, Joel G., to Dresser Industries, Inc. Method and apparatus for regulating electric motor armature currents. 4,292,572, Cl. 318-52.000.

Iwan, Wilfred D.; and Gyi, Ko K., to Burroughs Corporation. Partitionable flexible disk pack. 4,292,657, Cl. 360-98.000.

Iwata, Shizuo: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Iwata, Shizuo, 4,292,329, Cl. 426-5.000.

Iwatani Sangyo Kabushiki Kaisha: *See—*
Miyagawa, Yoshihisa, 4,292,021, Cl. 431-13.000.

Iwawaki, Yasutaka: *See—*
Yamasaki, Hitoshi; and Iwawaki, Yasutaka, 4,291,620, Cl. 101-99.000.

Iyengar, Jagannathan N.: *See—*
Say, Geoffrey R.; Hays, James R., Sr.; and Iyengar, Jagannathan N., 4,292,286, Cl. 423-223.000.

J. D. Engineering Services Pty. Ltd.: *See—*
Marrington, Jack D., 4,291,820, Cl. 222-70.000.

J & H Manufacturing, Inc.: *See—*
Jones, Herman L.; and Kent, Richard F., 4,292,115, Cl. 156-502.000.

Jackson, Andrew H., Jr. Positive locking adjustable mount for camera and flash. 4,291,967, Cl. 354-293.000.

Jackson, Melvin R.: *See—*
Gigliotti, Michael F. X.; Jackson, Melvin R.; Henry, Michael F.; Woodford, David A.; Yang, Sherwin S.; and Bruch, Charles A., 4,292,076, Cl. 75-170.000.

Jackson, Thomas. Lens mask for cameras and photographic method. 4,291,962, Cl. 354-122.000.

Jacoby, Charles H. Monitoring earth/rock movements. 4,291,581, Cl. 73-784.000.

Jagenberg Werke AG: *See—*
Zodrow, Rudolf; and Hoveler, Egon, 4,292,117, Cl. 156-578.000.

Jahn, Alex K., to Badische Corporation. Imparting anti-soiling properties to fibers. 4,292,182, Cl. 252-8.600.

Jalan, Hemant: *See—*
Michaels, Alan S.; Weiner, Michael W.; and Jalan, Hemant, 4,292,227, Cl. 260-29.60H.

Janick, Jules; Hasegawa, Paul M.; and Pence, Valerie C., to Purdue Research Foundation. Method for production of mature asexual cacao embryos, and product thereof. 4,291,498, Cl. 47-58.000.

Japan Crown Cork Co., Ltd.: *See—*
Murayama, Kashiwa, 4,291,567, Cl. 72-347.000.

Japan Synthetic Rubber Company Limited: *See—*
Kotani, Teizo; Arai, Kozo; Fukui, Shiomi; and Nagata, Masaki, 4,292,261, Cl. 264-24.000.

Japan Tobacco & Salt Public Corporation, The: *See—*
Okumoto, Yutaka, 4,292,522, Cl. 250-358.00R.

Jehenson, Pierre: *See—*
Luchtmans, Fernand; Jehenson, Pierre; and Pisoni, Angelo, 4,292,521, Cl. 250-323.000.

Jelaca, Svetozar, to Luburich, George, a part interest. Gas saving transmission. 4,291,595, Cl. 74-863.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Aldag, Henry R.; Marling, John B.; and Pike, Charles T., 4,292,601, Cl. 331-94.50L.

Jessen, John W. Means for performing an emergency cricothyrotomy. 4,291,690, Cl. 128-200.260.

Jikihara, Tetsuo: *See—*
Wakabayashi, Osamu; Matsuya, Kuni; Ohta, Hiroki; Jikihara, Tetsuo; and Suzuki, Seiichi, 4,292,070, Cl. 71-96.000.

John Lysaght International Holdings S.A.: *See—*
Harding, Claude G., 4,291,515, Cl. 52-694.000.

Johncock, Allan W.: *See—*
Wright, Robert M.; and Johncock, Allan W., 4,292,138, Cl. 203-2.000.

Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Apparatus for automatically selecting a preselected focal position for a lens system. 4,291,965, Cl. 354-195.000.

Johnson, Dale A.: *See—*
Bulle, Marshall; and Johnson, Dale A., 4,291,557, Cl. 70-58.000.

Johnson, Daniel. Bottle carton filling machine. 4,291,519, Cl. 53-534.000.

Johnson, Dannis R.; Foster, Elgin J.; and Soukup, Richard J., to Thermo King Corporation. Power and control system arrangement for transport refrigeration unit. 4,292,661, Cl. 361-393.000.

Johnson, Derwyn C.: *See—*
Kawasaki, Brian S.; Hill, Kenneth O.; and Johnson, Derwyn C., 4,291,940, Cl. 350-96.150.

Johnson, Donald A.; and Nimry, Baker N., to Nalco Chemical Company. Method for the oxidation of water-soluble sulfide compounds to higher oxidation states. 4,292,293, Cl. 423-571.000.

Johnson, George A.: *See—*
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,292,192, Cl. 252-132.000.

Johnson, Henry C., to RCA Corporation. Interrogating radar for use with tagged targets. 4,292,637, Cl. 343-6.5SS.

Johnson & Johnson Products, Inc.: *See—*
Ring, David F., 4,291,696, Cl. 128-263.000.

Johnson, Lewis A.; and Wirostko, Emil. Method for treatment of human eye disease. 4,292,327, Cl. 424-325.000.

Johnson, Lloyd D., to Standard-Knapp, Inc. Packing case tab slitter. 4,291,518, Cl. 53-491.000.

Johnson Matthey, Inc.: *See—*
Dolan, Calvin M., 4,292,348, Cl. 427-299.000.

Johnson, Morris V., to National-Standard Company. Rotary cutting blade assembly. 4,291,445, Cl. 29-78.000.

Johnson, Ronald E.: *See—*
Heimbach, Kim P.; and Johnson, Ronald E., 4,292,104, Cl. 156-235.000.

Johnson, William R., to Boeing Company, The. Thermal insulation for aircraft fuselage. 4,291,851, Cl. 244-119.000.

Johnstone, Charles W., to Schlumberger Technology Corp. Methods and apparatus for measuring thermal neutron decay characteristics of earth formations. 4,292,518, Cl. 250-262.000.

Jollois, Jean-Marie, to Labavia-S.G.E. Speed reducing equipment, particularly for vehicles. 4,292,556, Cl. 310-93.000.

Jones, David, to Lucas Industries Limited. Servo booster assembly. 4,291,534, Cl. 60-547.00R.

Jones, Herman L.; and Kent, Richard F., to J & H Manufacturing, Inc. Cartridge film unloading and splicing system. 4,292,115, Cl. 156-502.000.

Jonsson, Karl E.; and Moren, Nils F. E., to Aktiebolaget Draco. Aqueous zinc solutions for medical use. 4,292,324, Cl. 424-289.000.

Jonsson, Olof. Method for separating the fruit flesh of nuts or kernels into fibre mass, oil and cell liquid. 4,292,335, Cl. 426-489.000.

Jordan, Donald L.: *See—*
Peck, Kenneth E., Jr.; and Jordan, Donald L., 4,291,456, Cl. 29-597.000.

Jordan, Pierre. Liquid scintillation spectrometry process and apparatus. 4,292,520, Cl. 250-328.000.

Jordan, Thomas F.: *See—*
Payne, Robert D.; and Jordan, Thomas F., 4,291,640, Cl. 118-50.100.

Joseph Pollak Corporation: *See—*
Roytberg, Leo F., 4,292,483, Cl. 200-42.00A.

Jost, Max: *See—*
Dazzi, Joachim; Jost, Max; and Wick, Arnold, 4,292,232, Cl. 260-40.00P.

Joung, Jong, to Kendall Company, The. Curing fluorinated alkoxy phosphonitrile polymer with peroxide and aluminum compound. 4,292,418, Cl. 525-538.000.

Jourquin, Lucien; and Du Prez, Eddie, to S.A. PRB. Process for preparing integral skin polyurethane and polyurethane so obtained. 4,292,411, Cl. 521-51.000.

Joyce, Edward R.: *See—*
Reynolds, Ellis W.; and Joyce, Edward R., 4,291,492, Cl. 47-12.000.

Jueneman, Robert R., to Satellite Business Systems. Guard band reduction in open loop TDMA communications. 4,292,683, Cl. 370-104.000.

Juengel, Richard O.: *See—*
Bell, Seymour; and Juengel, Richard O., 4,291,466, Cl. 33-148.00H.

Jurchenko, Anatoly B.: *See—*
Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.

Justice, Orien N., to CamAct Pump Corp. Transmission. 4,291,588, Cl. 74-421.00R.

K. R. Evans & Associates: *See—*
Newsom, William D.; and Carnahan, James R., 4,291,433, Cl. 15-405.000.

Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho: *See—*
Hosokawa, Masuo; Yokoyama, Tohei; and Kaya, Noriyoshi, 4,292,172, Cl. 209-144.000.

Kabushiki Kaisha Kyoto Daiichi Kagaku: *See—*
Ohnishi, Masaaki; and Saito, Akio, 4,291,981, Cl. 356-244.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Miyamoto, Noriaki; Shiraki, Masao; and Mitsuya, Kinpei, 4,291,528, Cl. 57-58.950.
Seiki, Kazuo; and Miyamoto, Noriaki, 4,291,438, Cl. 19-112.000.
Yoshizawa, Toshio; Yoshida, Yoshiaki; and Sugiura, Katsuaki, 4,291,437, Cl. 19-112.000.

Kabushikikaisha Sankyo Seisakujo: *See—*
Kato, Heizaburo; and Ogawa, Yoshio, 4,291,553, Cl. 64-29.000.

Kaczyski, Donald J.: *See—*
Chilcote, Dennis D.; and Kaczyski, Donald J., 4,292,281, Cl. 423-27.000.

Kaga, Hideharu: *See—*
Ito, Yasuro; Higuchi, Yoshiro; Mochida, Yutaka; Kaga, Hideharu; Yamamoto, Yasuhiro; and Sumita, Tadayuki, 4,292,351, Cl. 427-403.000.

Kaidoshko, Eduard A.: *See—*
Anfilov, Igor V.; Ershov, Geny S.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; Suvorov, Gennady P.; and Scherbatenko, Boris G., 4,291,971, Cl. 355-14.00R.

Kaiser, Fritz; Koch, Klaus; Schaumann, Wolfgang; and Voigtlander, Wolfgang, to Boehringer Mannheim GmbH. Cardioactive 12-dehydrodigoxin-oximes. 4,292,314, Cl. 424-182.000.

Kakaris, Aristotelis, to Akzona Incorporated. Electrical connector having improved non-decoupling mechanism. 4,291,933, Cl. 339-89.00R.

Kamada, Kazumasa; and Okada, Kazuya, to Mitsubishi Rayon Co., Ltd. Process for producing radiation-shielding plastic materials. 4,292,419, Cl. 526-192.000.

Kamensky, Jury M.: *See—*
Medovar, Boris I.; Artamonov, Viktor L.; Kirsanov, Pavel I.; Marchenko, Alexandr M.; Bogachenko, Alexei G.; Pavlov, Leonid V.; Kamensky, Jury M.; Gutnov, Ruslanbek B.; and Platonov, Pavel M., 4,291,744, Cl. 164-509.000.

Kamensky, Veniamin V.: *See—*
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; and Tupitsyn, Sergei K., 4,291,774, Cl. 175-417.000.

Kameya, Kazuo: *See—*
Ishii, Masanori; and Kameya, Kazuo, 4,292,544, Cl. 307-52.000.

Kamiyama, Shinichi: *See—*
Kobayashi, Yuochi; and Kamiyama, Shinichi, 4,291,643, Cl. 118-669.000.

Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, to Canon Kabushiki Kaisha. Magnetic developing method under A.C. electrical bias and apparatus therefor. 4,292,387, Cl. 430-102.000.

Kane, John L.; and Nadkarni, Vikas M., to Owens-Corning Fiberglas Corporation. Polymeric mats having continuous filaments with an asymmetrical cross-sectional shape. 4,292,365, Cl. 428-288.000.

Kaneda, Hiroshi: *See—*
Ohashi, Takashi; Okuyama, Toru; Arai, Katsuhiko; and Kaneda, Hiroshi, 4,292,369, Cl. 428-313.000.

Kaneda, Yoshiyuki: *See—*
Kishimoto, Teiji; Kochi, Hiromu; and Kaneda, Yoshiyuki, 4,292,320, Cl. 424-258.000.

Kaneko, Junichi: *See—*
Tachibana, Keiji; Terasaki, Masatosi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,291,587, Cl. 74-363.000.

Kaneko, Yasuo: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Keizo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,291,644, Cl. 118-704.000.

Kanto, Masaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Shadow mask assembly for a cathode ray tube. 4,292,565, Cl. 313-407.000.

Kanzawa, Masahide: *See—*
Tanaka, Takehiko; and Kanzawa, Masahide, 4,291,888, Cl. 277-65.000.

Karnis, Alkibiadis; and Wood, John R., to Domtar Inc. Bonding properties of mechanical pulps. 4,292,122, Cl. 162-28.000.

Kasahara, Yasushi; and Ashihara, Yoshihiro, to Fujizoki Pharmaceutical Co., Ltd. Method for determining the activity of the angiotensin-converting enzyme. 4,292,404, Cl. 435-18.000.

Kasei Optonix, Ltd.: *See—*
Tanaka, Michio; Miura, Norio; and Shimiya, Keiji, 4,292,107, Cl. 156-249.000.

Kasel, Hans W.: *See—*
Wolfsgruber, Friedrich; Kasel, Hans W.; Odendahl, Manfred H. A.; and Morsdorf, Wolfram W., 4,292,075, Cl. 75-130.00R.

Kashiwagi, Kazuo: *See—*
Yanagawa, Hitoshi; Konishi, Motofumi; Ando, Yoshio; and Kashiwagi, Kazuo, 4,291,843, Cl. 242-57.000.

Kato, Heizaburo; and Ogawa, Yoshio, to Kabushikikaisha Sankyo Seisakujo. Torque limiter. 4,291,553, Cl. 64-29.000.

Kato, Osamu: *See—*
Tanaka, Hiroshi; and Kato, Osamu, 4,292,049, Cl. 51-309.000.

Kato, Takashi: *See—*
Nakamura, Norihiko; Nakanishi, Kiyoshi; and Kato, Takashi, 4,291,662, Cl. 123-661.000.

Kato, Tetuo, to Tokico Ltd. Cylinder head. 4,291,788, Cl. 188-322.170.

Katoh, Hisanori, to Inoue Gomu Kogyo Kabushiki Kaisha. Moldings for automobiles. 4,292,354, Cl. 428-31.000.

Katoh, Kazunobu; and Makino, Teruyoshi, to Fuji Photo Film Co., Ltd. Integral diffusion transfer photographic film unit. 4,292,390, Cl. 430-207.000.

Katsube, Junki: *See—*
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; and Katsube, Junki, 4,292,432, Cl. 549-35.000.

Katz, Bernard R. Electronic organ. 4,291,603, Cl. 84-1.010.

Kauffman, Clayton O., to Ketchum, James. Floating bridge for string instruments. 4,291,607, Cl. 84-299.000.

Kaufhold, Wolfgang: *See—*
Ott, Gunther; and Kaufhold, Wolfgang, 4,292,580, Cl. 323-212.000.

Kaufman, Samuel. Mist producing nozzle. 4,291,835, Cl. 239-11.000.

Kaufmann, Rudolf; Muller, Johann; and Wegehaupt, Karl-Heinrich, to Wacker-Chemie GmbH. Process for the preparation of organopolysiloxanes. 4,292,423, Cl. 528-18.000.

Kaulich, Karel: *See—*
Prohazka, Miloslav; and Kaulich, Karel, 4,291,731, Cl. 139-438.000.

Kawaguchi, Yosiyuki; Nishida, Takashi; Marukawa, Nobuaki; Tanaka, Tadakazu; and Kontani, Yoshinari, to Kobe Steel, Limited; and Nippon Koshuha Steel Co., Ltd. Process and apparatus for cutting circumferential surface to remove rod surface flaws. 4,291,600, Cl. 82-1.00C.

Kawai, Kazumichi; Kaneko, Yasuo; Abe, Keizo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, to Hitachi Cable Ltd. Apparatus for fabricating composite metal wire. 4,291,644, Cl. 118-704.000.

Kawakami, Hajime: *See—*
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; and Katsube, Junki, 4,292,432, Cl. 549-35.000.

Kawamura, Yoshimi: *See—*
Tanaka, Kentaro; Shoji, Jun'ichi; Kawamura, Yoshimi; Hattori, Teruo; Kondo, Eiji; Matsumoto, Kouichi; Yoshida, Tadashi; and Tsuji, Naoki, 4,292,241, Cl. 260-245.20T.

Kawasaki, Brian S.; Hill, Kenneth O.; and Johnson, Derwyn C., to Canadian Patents & Development Ltd. Low loss access coupler for multimode optical fiber distribution systems. 4,291,940, Cl. 350-96.150.

Kawasaki, Hiroaki; and Akashi, Shigeharu, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Idemitsu Kosan Company Limited. Process for recovering heat in distillation process. 4,292,140, Cl. 203-22.000.

Kawasaki, Masami; and Sadakane, Hirofumi, to Kubota Ltd. Mower mounted on vehicle. 4,291,522, Cl. 56-15.800.

Kawasaki Steel Corporation: *See—*
Nakazato, Yoshio; Tanaka, Tomoo; Hashiguchi, Koichi; and Soeda, Naohiko, 4,292,097, Cl. 148-12.00C.

Kay, Leslie. Method of and apparatus for echo location of objects. 4,292,678, Cl. 367-102.000.

Kaya, Noriyoshi: *See—*
Hosokawa, Masuo; Yokoyama, Tohei; and Kaya, Noriyoshi, 4,292,172, Cl. 209-144.000.

Kayama, Takashi: *See—*
Uemoto, Yasuo; Togami, Shigenori; Takano, Tsumoru, deceased; Ono, Ichiro; and Kayama, Takashi, 4,292,235, Cl. 260-42.180.

Kearney & Trecker Corporation: *See—*
Cesarz, Michael R.; and Stobbe, Richard E., 4,292,577, Cl. 318-802.000.

Keith, Alec D.; and Snipes, Wallace, to Key Pharmaceuticals, Inc. Polymeric diffusion matrix containing ephedrine. 4,292,301, Cl. 424-28.000.

Keith, Alec D.; and Snipes, Wallace, to Key Pharmaceuticals, Inc. Polymeric diffusion matrix containing terbutaline. 4,292,302, Cl. 424-28.000.

Keith, Alec D.; and Snipes, Wallace, to Key Pharmaceuticals, Inc. Polymeric diffusion matrix containing clonidine. 4,292,303, Cl. 424-28.000.

Kelen, George J., to Del Mar Avionics. Pacemaker monitoring recorder. 4,291,703, Cl. 128-711.000.

Kellner, Walter; Kniepkamp, Hermann; and Ristow, Dietrich, to Siemens Aktiengesellschaft. High cut-off frequency planar Schottky diode having a plurality of finger-like projections arranged in parallel in a transmission line. 4,292,643, Cl. 357-15.000.

Kelly, Michael J.; and Youngquist, Robert J., to Minnesota Mining and Manufacturing Company. Format for digital tape recorder. 4,292,684, Cl. 371-38.000.

Kendall Company, The: *See—*
Joung, Jong, 4,292,418, Cl. 525-538.000.

Kenmochi, Hirohito: *See—*
Nishikuri, Masao; Takeshita, Akira; and Kenmochi, Hirohito, 4,292,247, Cl. 260-381.000.

Kennecott Corporation: *See—*
Lingane, Peter J.; Redman, Michael J.; Park, Won C.; Hard, Robert A.; and Harvey, Walter W., 4,291,920, Cl. 299-4.000.
Marcantonio, Paul J., 4,292,160, Cl. 204-237.000.

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Zimmermann, Ulrich; and Pilwat, Gunter, 4,292,408, Cl. 435-173.000.

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Rouf, Mohammad A., 4,292,498, Cl. 219-288.000.

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Sanin, Sergei A.; Ponomarenko, Jury F.; Firstov, Vladislav D.; Khorin, Vladimir N.; Ragutsky, Arnold M.; Kostjunin, Boris N.; and Bronfen, Petr M., 4,291,718, Cl. 137-87.000.

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Nishizawa, Yoshihiko; Aketa, Yoshihiro; and Akao, Takeshi, 4,292,334, Cl. 426-447.000.

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Miller, Robert C.; Bradley, John J.; King, Richard L.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., 4,292,668, Cl. 364-200.000.

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Ishizuka, Kohei; Kita, Yasuhiro; and Maeda, Narimichi, 4,292,596, Cl. 330-86.000.

Kitahara, Tohru: *See—*
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Kiyosawa, Kesaomi. Showcase. 4,291,928, Cl. 312-257.00R.

Klamer, Reuben B. Kaleidoscopic game device. 4,291,881, Cl. 273-142.00H.

Klaren, Dick G., to Pieper, Gustav Adolf. Multistage-expansion evaporator. 4,292,135, Cl. 202-173.000.

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Klasing, Wayne G., 4,291,793, Cl. 192-95.000.

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Kleeb, Thomas R.: *See—*
Thrower, Stephen W.; Criss, George H.; and Kleeb, Thomas R., 4,292,084, Cl. 501-107.000.

Klees, Garry W., to Boeing Company, The. Simplified method and apparatus for hot-shield jet noise suppression. 4,291,782, Cl. 181-215.000.

Klein, Martin G., to Energy Research Corporation. Battery construction for uniform electrode current density. 4,292,381, Cl. 429-120.000.

Klein, Marvin B.: *See—*
Pepper, David M.; and Klein, Marvin B., 4,291,950, Cl. 350-389.000.

Kleinschmidt, Peter; Meixner, Hans; and Magori, Valentin, to Siemens Aktiengesellschaft. Electronic calcification indicator for flow heaters heated by PTC resistors. 4,292,499, Cl. 219-308.000.

Klemeshov, Georgy A.: *See—*
Korytov, Vladimir A.; Maljushevsky, Pavel P.; Guly, Grigory A.; Shkatov, Alexandr S.; Sladkoshteev, Vladimir T.; Patanin, Ruslan V.; Dorokhov, Vasily I.; Klemeshov, Georgy A.; and Arkulis, Grigory E., 4,291,742, Cl. 164-501.000.

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Kloss, Wolfgang; and Sauer, Hans, to Varta Batterie Aktiengesellschaft. Housing for instruments powered by ambient oxygen elements. 4,292,681, Cl. 368-280.000.

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Knablein, David J.; and Rees, Chandler D. Indoor greenhouse. 4,291,494, Cl. 47-17.000.

Knarr, John E.: *See—*
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, 4,291,750, Cl. 165-34.000.

Kneip, George D., Jr.; and Anderson, Marvin H., to Varian Associates, Inc. Cryostat with external refrigerator for super-conducting NMR spectrometer. 4,291,541, Cl. 62-45.000.

Kniepkamp, Hermann: *See—*
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Knight, Val F. Traffic marker. 4,292,627, Cl. 340-114.00R.

Knippel, Willis H., to Pullman Incorporated. Railway car side discharge door locking arrangement. 4,291,631, Cl. 105-252.000.

Knowlton, Lloyd L. Carburetor and valving therefor. 4,292,257, Cl. 261-37.000.

Knox, Lloyd C., to Halliburton Company. Platform leg plug. 4,292,004, Cl. 405-203.000.

Ko, William L., to United States of America, National Aeronautics and Space Administration. Superplastically formed diffusion bonded metallic structure. 4,292,375, Cl. 428-593.000.

Kobayashi, Takashi: *See—*
Kondo, Koichi; Yoshida, Isamu; and Kobayashi, Takashi, 4,292,038, Cl. 23-230.00B.

Kobayashi, Yuochi; and Kamiyama, Shinichi, to Ricoh Co., Ltd. Developing apparatus in a magnification-variable copier. 4,291,643, Cl. 118-669.000.

Kobe, Inc.: *See—*
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Kobe Steel, Limited: *See—*
Kawaguchi, Yosiyuki; Nishida, Takashi; Marukawa, Nobuaki; Tanaka, Tadakazu; and Kontani, Yoshinari, 4,291,600, Cl. 82-1.00C.
Saito, Takashi; Otake, Katuhiko; and Maruyama, Tokuji, 4,292,495, Cl. 219-125.120.
Tanaka, Takehiko; and Kanzawa, Masahide, 4,291,888, Cl. 277-65.000.

Koch, Klaus: *See—*
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Koch, Otto E., to Fiat-Allis Construction Machinery, Inc. Adjustable steering wheel and control lever console. 4,291,896, Cl. 280-775.000.

Kochi, Hiromu: *See—*
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Koga, Keiichiro: *See—*
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Kohonen, Raimo: *See—*
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Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, to Konishiroku Photo Industry Co., Ltd. Process for preparing photosensitive plates for printing. 4,292,389, Cl. 430-169.000.

Kojima, Minoru: *See—*
Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; Arai, Katsuhiko; Kojima, Minoru; Taniguchi, Yoshiko; Yoshida, Masako; Sakata, Ryozo; Sugihara, Hideki; Dobashi, Masashi; and Ohwada, Hirobumi, 4,292,353, Cl. 428-211.000.

Kokelenberg, Hendrik E.: *See—*
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Kolb, Gustav; and Bardenheuer, Friedrich, to Mannesmann Aktiengesellschaft; and Kolb, Gustav. Device for sampling molten steel. 4,291,585, Cl. 73-863.230.

Kolc, Ronald F., to RCA Corporation. Nozzle for dispensing viscous fluid. 4,291,642, Cl. 118-415.000.

Kolesnik, Mikhail I.; Egorov, Anatoly P.; Kuznetsov, Anatoly A.; Gobov, Anatoly P.; Ryabukhin, Jury M.; Rudakov, Viktor A.; Pisarev, Gennady V.; Zheleznov, Jury M.; and Vasiliev, Alexei V. Method of protecting carbon-containing component parts of metallurgical units from oxidation. 4,292,345, Cl. 427-113.000.

Koller, Josef. Automatically releasing mounting system for a weight member. 4,291,485, Cl. 43-43.120.

Kollonitsch, Janos: *See—*
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Kolmann, Ewald, to Siemens Aktiengesellschaft. Optoelectronic coupling device for transmitting DC signals. 4,292,551, Cl. 307-311.000.

Kolomayets, George: *See—*
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Kominami, Yasuo: *See—*
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Komiyama, Yoshiro; Kondo, Katsumi; Fuwa, Yoshio; Matsui, Akira; Miyazaki, Shoji; and Hasegawa, Tokushiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Wear resistant alloy. 4,292,074, Cl. 75-122.000.

Komura, Takeshi; *See—*
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Kondo, Asaji: *See—*
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Kondo, Eiji: *See—*
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Kondo, Katsumi: *See—*
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Kondo, Koichi; Yoshida, Isamu; and Kobayashi, Takashi, to Takeda Chemical Industries, Ltd. Formamide-containing latex agglutinating reagent for immunoassay. 4,292,038, Cl. 23-230.00B.

Kondo, Mikio; Inoue, Hiromitsu; and Ohashi, Hiroshi, to Matsushita Electric Works, Ltd. Variable directivity mounting means. 4,292,679, Cl. 367-188.000.

Kondo, Shiro; and Akazawa, Michitada, to Alps Electric Co., Ltd. Lever switch with improved actuating member. 4,292,485, Cl. 200-332.000.

Konigs, Heinz: *See—*
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Konishi, Motofumi: *See—*
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Kono, Shinichi: *See—*
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Kontani, Yoshinari: *See—*
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Korber, Hermann, to Balda-Werke. Electronic flasher. 4,291,963, Cl. 354-128.000.

Korea Institute of Science and Technology: *See—*
Kim, Choong S.; Lee, Kee J.; Kim, Hong S.; and Chae, Yung B., 4,292,431, Cl. 548-342.000.

Korobeinik, Vladimir F.: *See—*
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Korytov, Vladimir A.; Maljushevsky, Pavel P.; Guly, Grigory A.; Shkatov, Alexandr S.; Sladkoshteev, Vladimir T.; Patanin, Ruslan V.; Dorokhov, Vasily I.; Klemeshov, Georgy A.; and Arkulis, Grigory E. Method and apparatus for obtaining an ingot. 4,291,742, Cl. 164-501.000.

Kossuth, Gabor: *See—*
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Koster, Hendrikus J.; Bik, Johannes T. J.; Clardey, Johannes G.; and Smorenberg, Dirk, to Sigarettenfabriek Ed. Laurens B.V. Cigarette filter and filter cigarette. 4,291,712, Cl. 131-339.000.

Kostjunin, Boris N.: *See—*
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Kotalik, Richard J.: *See—*
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Kotani, Teizo; Arai, Kozo; Fukui, Shiomi; and Nagata, Masaki, to Japan Synthetic Rubber Company Limited. Pressure sensitive conductor and method of manufacturing the same. 4,292,261, Cl. 264-24.000.

Kothmann, Richard E., to Westinghouse Electric Corp. Variable area fuel cell process channels. 4,292,379, Cl. 429-17.000.

Kovach, Julius L. By-pass proof adsorber cell. 4,292,059, Cl. 55-350.000.

Kovacic, Thomas: *See—*
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Kowal, Leonard, to Ampex Corporation. Color corrector for a composite color video signal. 4,292,648, Cl. 358-8.000.

Kowalski, Jerome R., to Mohasco, Corp. Manually-operated reclining chairs. 4,291,913, Cl. 297-89.000.

Kozlov, Anatoly E.: *See—*
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V., 4,292,486, Cl. 219-9.500.

Kraft, Thomas L.; Vick, Howard A.; and Meador, James W., to American Home Products Corporation. Photometric apparatus and method. 4,291,983, Cl. 356-338.000.

Kraftwerk Union AG: *See—*
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Figlhuber, Dietgar; Gallwas, Johannes; Weber, Robert; and Weber, Jakob, 4,291,579, Cl. 73-636.000.

Kramm, Carl H., to RLK Research, Inc. Hone stone with compressible ends. 4,291,506, Cl. 51-338.000.

Krappmann, Franz: *See—*
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Krause, William A.; and Langeland, Leonard E., to Omnipure, Inc. Compact electrocatalytic sewage treatment unit for maritime use. 4,292,175, Cl. 210-192.000.

Krauss-Maffei Aktiengesellschaft: *See—*
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Krell, Robert D.: *See—*
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Kremer, Hubert; Konigs, Heinz; and Gutmann, Otto, to Maschinenfabrik Carl Sangs Aktiengesellschaft. Double-lift open-shed jacquard machine. 4,291,730, Cl. 139-65.000.

Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. Polyfluoroallyloxy compounds, their preparation and copolymers therefrom. 4,292,449, Cl. 568-649.000.

Kretz, Francis; and Boudeville, Jean-Louis. Expansion and compression of television signals by use of differential coding. 4,292,651, Cl. 358-135.000.

Krigbaum, Ronald S.: *See—*
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Krone, Keith: *See—*
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Krone, William: *See—*
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Kruckenberg, Winfried; and Schundehutte, Karl H., to Bayer Aktiengesellschaft. Benzisothiazole azo dyestuffs containing polyether groups. 4,292,239, Cl. 260-158.000.

Krueger, Hans: *See—*
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Kruehler, Wolfgang: *See—*
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Krumpelt, Michael; and Bates, John K., to United States of America, Energy. Thermal regeneration of an electrochemical concentration cell. 4,292,378, Cl. 429-15.000.

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Kruse, Walter M.: *See—*
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Kubitza, Werner; Mennicken, Gerhard; and Pedain, Josef, to Bayer Aktiengesellschaft. Isocyanate mixture and its use as binder in one-component lacquers. 4,292,350, Cl. 427-385.500.

Kubota Ltd.: *See—*
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Kudo, Daijiro; and Ikeda, Kiyoshi, to Fujitsu Limited. Method for processing substrate materials by means of plasma treatment. 4,292,153, Cl. 204-164.000.

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Kuhn, Eberhard: *See—*
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Kuhn, Michael H.; and Tomaschewski, Horst, to U.S. Philips Corporation. Method of verifying a speaker. 4,292,471, Cl. 179-1.0SB.

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Kuhnlein, Hans; Gruntleitner, Hans; and Ebert, Hermann, to Siemens Aktiengesellschaft. Control signal transmitter for the commutating

device of an electronically commutated d-c motor. 4,292,575, Cl. 318-254.000.
Kuhnlein, Hans: *See*—
Ebert, Hermann; Gruntleitner, Johann; and Kuhnlein, Hans, 4,292,573, Cl. 318-138.000.
Kumagai, Yuzo, to Bridgestone Tire Company Limited. Tire building drum. 4,292,112, Cl. 156-415.000.
Kund, August, to Communications Technology Corp. Crimp type cable shield bonding device. 4,291,934, Cl. 339-95.00R.
Kunst, Helmut; and Scondo, Christian, to Degussa Aktiengesellschaft. Process for increasing the corrosion resistance of nitrided structural parts made of iron material. 4,292,094, Cl. 148-6.110.
Kuo, Han C.; Ahn, Byung K.; Dotson, Ronald L.; and Woodard, Kenneth E., Jr., to Olin Corporation. Cell having in situ reduction of electrode overvoltage. 4,292,159, Cl. 204-237.000.
Kupper, Walter; and Utzinger, Diethelm, to Mettler Instrumente AG. Scale with cantilever beam strain measurement. 4,291,776, Cl. 177-229.000.
Kurihara, Kunitoshi: *See*—
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Ensmann, Burt W.; Kuriloff, Fredric M.; and Rosenhagen, William, 4,291,877, Cl. 273-86.00B.
Kusakabe, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Constant current source. 4,292,584, Cl. 323-316.000.
Kuznetsov, Anatoly A.: *See*—
Kolesnik, Mikhail I.; Egorov, Anatoly P.; Kuznetsov, Anatoly A.; Gobov, Anatoly P.; Ryabukhin, Jury M.; Rudakov, Viktor A.; Pisarev, Gennady V.; Zheleznov, Jury M.; and Vasiliev, Alexei V., 4,292,345, Cl. 427-113.000.
Kyoshin Co., Ltd.: *See*—
Shibanai, Ichiro; Horikoshi, Kouki; and Nakamura, Nobuyuki, 4,292,044, Cl. 44-1.00R.
Kyuchukov, Yanko P.; and Srebrov, Bojidar M., to ZM "Cherno More". Manometer body. 4,291,580, Cl. 73-741.000.
Labavia-S.G.E.: *See*—
Jollois, Jean-Marie, 4,292,556, Cl. 310-93.000.
Laboratorie Roger Bellon: *See*—
Pesson, Marcel, 4,292,317, Cl. 424-250.000.
Lafitte, Andre: *See*—
Gabbay, Emile; Tran Quang, Dang; and Lafitte, Andre, 4,292,563, Cl. 313-56.000.
Lai, Ban-Yen: *See*—
Husain, Matloob; Lai, Ban-Yen; and Maher, James B., 4,291,538, Cl. 60-661.000.
Lai, John T.; and Son, Pyong N., to B. F. Goodrich Company, The. 2-Keto-1,4-diazacycloalkanes. 4,292,240, Cl. 260-239.30R.
Laine, Richard M., to SRI International. Production of amines. 4,292,242, Cl. 260-326.800.
Lakeside Bridge & Steel Co.: *See*—
Reckin, George M.; Lofy, Richard A.; and Dean, Robert S., 4,291,500, Cl. 49-68.000.
Lammers, Gerald B.; and Ream, Gregory L., to International Business Machines Corporation. Closed loop compensation of ink jet aerodynamics. 4,292,640, Cl. 346-75.000.
Lamoureux, Paul, to Canadair Limited. Fuel tank access door for aircraft. 4,291,816, Cl. 220-243.000.
Land, Charles M. Air cleaner for fuel injected engines. 4,292,061, Cl. 55-493.000.
Land, Edwin H., to Polaroid Corporation. Strobe switch with camera control feature. 4,291,964, Cl. 354-145.000.
Landgreen, Eleanor A., to International Telephone and Telegraph Corporation. Ground lug for electrical connector. 4,291,930, Cl. 339-14.00P.
Lang, Gusztav; Storck, Friedrich; and Seghezzi, Hans-Dieter, to Hilti Aktiengesellschaft. Expansion dowel. 4,291,608, Cl. 411-16.000.
Langeland, Leonard E.: *See*—
Krause, William A.; and Langeland, Leonard E., 4,292,175, Cl. 210-192.000.
Langer, Alois A.: *See*—
Heilman, Marlin S.; and Langer, Alois A., 4,291,707, Cl. 128-784.000.
Langner, Carl, to Concast Incorporated. Dummy bar for a continuous casting machine. 4,291,748, Cl. 164-426.000.
Lao, Binneg Y., to Bendix Corporation, The. Pressure sensing capacitive transducer. 4,292,659, Cl. 361-283.000.
La Pierre, Rene B.: *See*—
Gorring, Robert L.; and La Pierre, Rene B., 4,292,166, Cl. 208-59.000.
Laria-Laterizi Rivestimenti ed Affini-S.p.A.: *See*—
Mosso, Luigi, 4,292,359, Cl. 428-151.000.
La Rovere, Angelo: *See*—
Piccolo, Luigi; Corsini, Tullio; Paolinelli, Antonio; Ferri, Gaudenzio; and La Rovere, Angelo, 4,292,085, Cl. 106-109.000.
Larsen, Kurt A., to Danfoss A/S. Control apparatus for the low pressure evaporator of a refrigeration plant. 4,291,544, Cl. 62-221.000.
Laska, Ronald C.; and Pone, Janis, to Pako Corporation. Photographic reprint system with large print quantity verification. 4,291,972, Cl. 355-40.000.
Laskaris, Evangelos T., to General Electric Company. Flexible support for superconducting machine rotor. 4,291,997, Cl. 403-24.000.
Lathrops, Donald D. W.: *See*—
Whitman, Archie E., Sr.; and Lathrops, Donald D. W., 4,291,452, Cl. 29-235.000.
Latymer, Zdenek, to Talres Development (N.A.) N.V. Sweetening compositions containing peptide sweeteners and a method for their manufacture. 4,292,336, Cl. 426-548.000.
Laurie, Gordon H.; Seymour, Theodore J.; Sakauye, Randall T.; and Marlow, John V., to Cominco Ltd. Forming expanded mesh sheet from deformable strip. 4,291,443, Cl. 29-6.100.
Layer, Robert W.; and Son, Pyong N., to B. F. Goodrich Company, The. Polymeric ultraviolet light stabilizers containing hindered alkyl amines. 4,292,237, Cl. 260-45.8NW.
Lazarchik, Robert E.; and Roeder, Robert S., to Sperry Corporation. Augmented radiometric system. 4,292,638, Cl. 343-7.500.
Lazarz, Christine A.: *See*—
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., 4,292,146, Cl. 204-98.000.
Lazzarini, Donald J.: *See*—
Kenney, Eugene J.; Lazzarini, Donald J.; and Winters, Robert J., 4,292,230, Cl. 260-33.2EP.
Le Materiel Telephonique Thomson-CSF: *See*—
Chataignon, Andre; Nicolas, Alain; and Poirier, Jean P., 4,292,479, Cl. 179-170.0NC.
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Paton, Boris E.; Lebedev, Vladimir K.; Sheiko, Pavel P.; and Pashulya, Mikhail P., 4,292,497, Cl. 219-130.510.
Lecerf, Andre; and Broussely, Michel, to Saft Leclanche. Positive active material for an electric cell, a method of preparing the positive active material and a cell which uses it. 4,292,382, Cl. 429-197.000.
Lechtken, Peter; Bronstert, Bernd; Hoffmann, Gerhard; Vyvial, Rudolf; and Lynch, John, to BASF Aktiengesellschaft. Photopolymerizable recording composition containing acylphosphine oxide photoinitiator. 4,292,152, Cl. 204-159.150.
Lecolier, Serge L.: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Raynal, Serge F.; Lecolier, Serge L.; and N'Debeka, Gilberte N., 4,292,421, Cl. 526-220.000.
Lee, Chi-Long: *See*—
Homan, Gary R.; and Lee, Chi-Long, 4,292,422, Cl. 528-15.000.
Lee, James C. K., to Amdahl Corporation. Semiconductor package and electronic array having improved heat dissipation. 4,292,647, Cl. 357-81.000.
Lee, James K.: *See*—
Frank, Lee F.; and Lee, James K., 4,291,958, Cl. 354-25.000.
Lee, Jeoung K. Furnace for generating heat by electrical resistance. 4,292,505, Cl. 219-553.000.
Lee, Jin W.; and Kim, Jin S. Exercise device. 4,291,873, Cl. 272-146.000.
Lee, Kee J.: *See*—
Kim, Choong S.; Lee, Kee J.; Kim, Hong S.; and Chae, Yung B., 4,292,431, Cl. 548-342.000.
Lee, Lin-Shan. Apparatus and method for controlling crosspolarization of signals in a frequency reuse system. 4,292,685, Cl. 455-12.000.
Lee, Richard J.; Meyer, Delbert H.; and Senneke, Darrell M., to Standard Oil Company (Indiana). Rhodium-catalyzed hydrogenation of unsaturated aldehydes to unsaturated alcohols. 4,292,452, Cl. 568-881.000.
Le Goff epouse Henaff, Jeannine: *See*—
Feldman, Michel; and Le Goff epouse Henaff, Jeannine, 4,292,609, Cl. 333-165.000.
Legrain, Michel A. J. Device for distributing liquid in given doses for a machine feeding as desired young suckling mammals. 4,291,647, Cl. 119-51.110.
Lehmann, Wallace K., to C. M. Kemp Mfg. Co., The. Valve sub-assembly. 4,291,719, Cl. 137-112.000.
Leiber, Heinz; and Gerstenmaier, Jurgen, to Robert Bosch GmbH. Anti-skid control system for motor vehicles. 4,291,924, Cl. 303-111.000.
Leibfried, Wolfgang: *See*—
Muller, Klaus; Maurer, Helmut; Dietz, Hermann; Friese, Karl-Hermann; Leibfried, Wolfgang; Stecher, Gunther; and Linder, Ernst, 4,292,158, Cl. 204-195.00S.
Leitold, Matyas: *See*—
Tauber, Oswald; Engelhardt, Gunther; Leitold, Matyas; and Schmidt, Gunther, 4,292,319, Cl. 424-250.000.
Leland Stanford Junior University, The Board of Trustees of: *See*—
De Mattei, Robert C.; Elwell, Dennis; and Feigelson, Robert S., 4,292,145, Cl. 204-60.000.
Michaels, Alan S.; Weiner, Michael W.; and Jalan, Hemant, 4,292,227, Cl. 260-29.60H.
Leliaert, Raymond M.: *See*—
Schulte, Harold F.; Leliaert, Raymond M.; and Rohr, Robert D., 4,291,509, Cl. 51-432.000.
Lema-Patino, Jorge: *See*—
Weigel, Horst; and Lema-Patino, Jorge, 4,292,283, Cl. 423-107.000.
Lemieux, Marvin A.: *See*—
Theodore, Ares N.; and Lemieux, Marvin A., 4,292,225, Cl. 260-29.1SB.
Lenders, Wilhelmus L. L., to U.S. Philips Corporation. Device for the winding of coils. 4,291,840, Cl. 242-7.140.
Lennox, Thomas M. Electronic artificial larynx. 4,292,472, Cl. 179-1.0AL.
Leo, Bruno S., to Hughes Aircraft Company. Screw compressor-expander cryogenic system. 4,291,547, Cl. 62-402.000.
Leonaggeo, Angelo, Jr. Whirlpool therapy facility and method of treatment. 4,291,646, Cl. 119-29.000.
Leonard, John J., to Atlantic Richfield Company. Preparation of polyisocyanates from polycarbamates. 4,292,254, Cl. 260-453.00P.
Leoncavallo, Richard: *See*—
Buck, Gordon H.; Gabler, Otto L.; Kilroy, Eugene J.; and Leoncavallo, Richard, 4,291,663, Cl. 124-26.000.

Lepach, Werner: *See*—
Engmann, Gunther; Lepach, Werner; and Speyerer, Heinz, 4,292,114, Cl. 156-447.000.
Lepage, Raymond. Musical string instrument. 4,291,606, Cl. 84-291.000.
Lepetit, Pierre J.; and Genieys, Emile J., to Office National d'Etudes et de Recherches Aerospatiales. Process and device for coating small-sized elements with a metal deposit. 4,292,144, Cl. 204-23.000.
Lerer, Michael I.: *See*—
Barr, Charles W.; Lerer, Michael I.; Sanders, Royden C., Jr.; and Vassar, Russell J., Jr., 4,291,992, Cl. 400-124.000.
Leroux, Adrien, to h.o.p. ConsuLab Inc. Two-stage electric generator system. 4,292,532, Cl. 290-6.000.
Lesk, I. Arnold: *See*—
Sarma, Kalluri R.; Rice, M. John, Jr.; and Lesk, I. Arnold, 4,292,342, Cl. 427-34.000.
LeVan, Leon W.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and LeVan, Leon W., 4,292,250, Cl. 260-397.200.
Levasheff, Stanley W.: *See*—
Grimsby, Emerson A.; and Levasheff, Stanley W., 4,291,502, Cl. 51-120.000.
Lever Brothers Company: *See*—
Ainger, George E.; and Caverly, Brian L., 4,292,338, Cl. 426-603.000.
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,292,192, Cl. 252-132.000.
Levine, Harriet B. Combination earring and finger ring. 4,291,551, Cl. 63-12.000.
Levine, Richard G.: *See*—
Hanrahan, James R.; and Levine, Richard G., 4,292,263, Cl. 264-46.900.
Levine, William M.: *See*—
Morrell, Wilfred L.; and Levine, William M., 4,292,474, Cl. 179-99.00M.
Levy, Jacques: *See*—
Viaud, Jean-Luc; and Levy, Jacques, 4,292,130, Cl. 176-30.000.
Lewakowski, John J.; and Ciagala, Theodore M., to Chrysler Corporation. Method of making L-seal for gas turbine regenerator. 4,291,563, Cl. 72-216.000.
Lewis, John C., Jr., to Tucel Industries, Inc. Tufted angular brush consturction. 4,291,431, Cl. 15-159.00R.
Lewis, Philip J., to Brogdex Company. Drying apparatus for aqueous coated articles and method. 4,291,472, Cl. 34-31.000.
LH Research: *See*—
Hersom, Wallace N.; and Crum, John E., 4,292,665, Cl. 363-141.000.
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., to Exxon Research & Engineering Co. Use of liquid membrane systems for selective ion transfer. 4,292,181, Cl. 210-638.000.
Linder, Ernst: *See*—
Maurer, Helmut; Dillman, Gerhard; Rieger, Franz; and Linder, Ernst, 4,291,572, Cl. 73-23.000.
Muller, Klaus; Maurer, Helmut; Dietz, Hermann; Friese, Karl-Hermann; Leibfried, Wolfgang; Stecher, Gunther; and Linder, Ernst, 4,292,158, Cl. 204-195.00S.
Lindley, Donald C., to Farnam Companies, Inc. Rodent trap. 4,291,486, Cl. 43-61.000.
Lindner, Alfred; Volkamer, Klaus; Wagner, Ulrich; Pommer, Dieter; Schneider, Klaus-Juergen; and Schwentker, Harald, to BASF Aktiengesellschaft. Isolation of butadiene from a C_4-hydrocarbon mixture. 4,292,141, Cl. 203-49.000.
Lindner, Tassilo; Engelsberger, Georg; Zeller, Norbert; and Riedle, Rudolf, to Wacker-Chemie GmbH. Process for the addition of Si-bonded hydrogen to an aliphatic multiple bond. 4,292,434, Cl. 556-479.000.
Lingane, Peter J.; Redman, Michael J.; Park, Won C.; Hard, Robert A.; and Harvey, Walter W., to Kennecott Corporation. In situ exploitation of deep set porphyry ores. 4,291,920, Cl. 299-4.000.
Lingner + Fischer: *See*—
Hechenberger, Dieter A.; and Neye, Angelika, 4,292,229, Cl. 260-30.60R.
Linhardt & Associates, Inc.: *See*—
Linhardt, Hans D.; and Beveridge, John H., 4,292,050, Cl. 55-1.000.
Linhardt, Hans D.; and Beveridge, John H., to Linhardt & Associates, Inc. Curved duct separator for removing particulate matter from a carrier gas. 4,292,050, Cl. 55-1.000.
Lintunen, Tuomo; and Kohonen, Raimo, to Enso-Gutzeit Osakeytio . Procedure and apparatus for cellulose washing. 4,292,123, Cl. 162-60.000.
Lipes, Arnold. Method and apparatus for bag filling, tieing and transfer. 4,291,517, Cl. 53-468.000.
Lippert, Wilmot T. Exercising and method for exercising finger, hand and arm muscles. 4,291,871, Cl. 272-68.000.
Lipshitz, Abraham: *See*—
United States of America, National Aeronautics and Space Administration; Etsion, Izhak; and Lipshitz, Abraham, 4,291,887, Cl. 277-27.000.
Littlehorn, John J., Jr. High speed grinding wheel for glass. 4,291,507, Cl. 51-374.000.
Litton Systems, Inc.: *See*—
Birk, Earl, 4,292,488, Cl. 219-10.55D.
Liu, Thomas M. H.; Reamer, Robert A.; Shinkai, Ichiro; and Sletzinger, Meyer, to Merck & Co., Inc. Process for the preparation of N-protected N-formimidoyl 2-aminoethanethiol. 4,292,436, Cl. 560-148.000.
Livesay, J. D., to General Motors Corporation. Liquid accumulator. 4,291,548, Cl. 62-503.000.
Ljungdahl, Lars G.; and Wiegel, Jurgen K. W., to United States of America, Energy. Anaerobic thermophilic culture system. 4,292,406, Cl. 435-42.000.
Ljungdahl, Lars G.; and Wiegel, Jurgen K. W., to United States of America, Energy. Anaerobic thermophilic culture. 4,292,407, Cl. 435-161.000.
Lobdell, Alban J.; and Rupp, Wiktor J., to Itek Corporation. Teaching device for progressive power lenses. 4,292,030, Cl. 434-262.000.
Locher, Johannes, to Robert Bosch GmbH. Monitor apparatus for electrical circuits with virtual resistance. 4,292,658, Cl. 361-93.000.
Lockheed Corporation: *See*—
Sharples, Wilbert, 4,291,850, Cl. 244-102.0SS.
Lockheed Electronics Co., Inc.: *See*—
Henig, Sammy S., 4,292,676, Cl. 365-222.000.
Loew, Peter: *See*—
Galafassi, Pierre; Adam, Jean-Marie; Loew, Peter; and Scheidegger, Hans, 4,292,037, Cl. 8-554.000.
Lofy, Richard A.: *See*—
Reckin, George M.; Lofy, Richard A.; and Dean, Robert S., 4,291,500, Cl. 49-68.000.
Lolk, Hans: *See*—
Iversen, Niels A.; Pedersen, Jorgen; and Lolk, Hans, 4,291,904, Cl. 285-162.000.
Lonati, Francesco, to Lonati S.p.A. Device for changing the number of the needles at work in a circular knitting machine for stockings and like articles. 4,291,554, Cl. 66-53.000.
Lonati S.p.A.: *See*—
Lonati, Francesco, 4,291,554, Cl. 66-53.000.
Longmuir, Donald A.; and Morrison, John M., to Ferranti Limited. Testing of circuit arrangements. 4,292,586, Cl. 324-73.00R.
Longwell, Paul A.: *See*—
Qasim, Javed; Walker, Samuel C.; and Longwell, Paul A., 4,291,859, Cl. 251-123.000.
Lotte Co., Ltd.: *See*—
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Iwata, Shizuo, 4,292,329, Cl. 426-5.000.
Lough, Lewis E., to United States of America, Army. Infrared aiming light mounting bracket for weapon. 4,291,478, Cl. 42-1.00A.
Lough, Lewis E., to United States of America, Army. Day-night sight mounting bracket for weapon. 4,291,479, Cl. 42-1.00A.
Louis, Eckhart: *See*—
Marwitz, Heinrich; and Louis, Eckhart, 4,292,362, Cl. 428-245.000.
Loynaz, Sergio A.: *See*—
Barone, Joseph P.; Loynaz, Sergio A.; and Bauer, Frederick W., 4,292,188, Cl. 252-62.000.
Luburich, George: *See*—
Jelaca, Svetozar, 4,291,595, Cl. 74-863.000.
Lucas Industries Limited: *See*—
Brotherston, Collin P., 4,292,012, Cl. 417-462.000.
Jones, David, 4,291,534, Cl. 60-547.00R.
Luce, David A.: *See*—
Scott, James L.; and Luce, David A., 4,291,604, Cl. 84-1.190.
Luchtmans, Fernand; Jehenson, Pierre; and Pisoni, Angelo, to European Atomic Energy Community (EURATOM). Radiographic device and method for recovering information from over-exposed radiographs. 4,292,521, Cl. 250-323.000.
Luke, John A., to British-American Tobacco Company Limited. Production of tobacco-smoke filters. 4,292,032, Cl. 493-43.000.
Luksas, Anthony J.: *See*—
Williams, Wilmore; and Luksas, Anthony J., 4,292,330, Cl. 426-20.000.
Lummus Company, The: *See*—
Simone, Andre A., 4,292,170, Cl. 208-131.000.
Lupke, Gerd P. H.: *See*—
Lupke, Manfred A. A.; and Lupke, Gerd P. H., 4,292,014, Cl. 425-72.00R.
Lupke, Manfred A. A.; and Lupke, Gerd P. H. Feed mechanism comprising an endless member configured as a double helix. 4,292,014, Cl. 425-72.00R.
Lurssen, Klaus: *See*—
Schroder, Rolf; and Lurssen, Klaus, 4,292,072, Cl. 71-105.000.
Lutz, Stephen S.: *See*—
Franks, Larry A.; Lutz, Stephen S.; and Lyons, Peter B., 4,292,527, Cl. 250-483.000.
Lynch, John: *See*—
Lechtken, Peter; Bronstert, Bernd; Hoffmann, Gerhard; Vyvial, Rudolf; and Lynch, John, 4,292,152, Cl. 204-159.150.
Lyon, Edwin J. Pencil holder. 4,291,809, Cl. 211-69.500.
Lyon, Thomas H.: *See*—
Bow, Kenneth E.; and Lyon, Thomas H., 4,292,463, Cl. 174-107.000.
Lyons, James E.; Hosler, Peter; and Suntech, Inc. Latex-base paint containing 2-methoxy-2-phenyl propane or 8-methoxy-p-menthane. 4,292,219, Cl. 260-29.6ME.
Lyons, Peter B.: *See*—
Franks, Larry A.; Lutz, Stephen S.; and Lyons, Peter B., 4,292,527, Cl. 250-483.000.
Lyons, Steffen: *See*—
Hannah, Richard E.; and Lyons, Steffen, 4,292,270, Cl. 264-320.000.
M. H. Detrick Co., Limited: *See*—
Harvey, Barrie J., 4,291,514, Cl. 52-509.000.
Macheboeuf, Guy R., to Telediffusion de France. Composite video signal combining system. 4,292,649, Cl. 358-22.000.

Mack, William, to Clairol Incorporated. Dental plaque disclosing light and method. 4,292,664, Cl. 362-120.000.

Maddock, Mitchell E. Liquid herbicide applicator. 4,291,491, Cl. 47-1.500.

Maeda, Narimichi: *See—*
Ishizuka, Kohei; Kita, Yasuhiro; and Maeda, Narimichi, 4,292,596, Cl. 330-86.000.

Maehara, Norio: *See—*
Ootsuka, Fumio; Ninomiya, Morimasa; Maehara, Norio; and Yoshimi, Akiro, 4,291,749, Cl. 165-27.000.

Magid, Sidney H. Inflatable article with external means to control internal movement. 4,291,487, Cl. 46-88.000.

Magladry, Ross E.: *See—*
O'Boyle, Matthew; and Magladry, Ross E., 4,292,380, Cl. 429-101.000.

Magnusson, John M.: *See—*
Binek, Paul H.; Cherney, Thomas M.; Magnusson, John M.; and Cronk, Bryon J., 4,291,943, Cl. 350-96.220.

Magori, Valentin: *See—*
Kleinschmidt, Peter; Meixner, Hans; and Magori, Valentin, 4,292,499, Cl. 219-308.000.

Maher, James B.: *See—*
Engdahl, Gerald E.; and Maher, James B., 4,291,550, Cl. 62-544.000.
Husain, Matloob; Lai, Ban-Yen; and Maher, James B., 4,291,538, Cl. 60-661.000.

Maitenaz, Paul, to Compagnie Europeenne pour l'Equipement Menager "CEPEM". Pyrolytic oven with a variable heating speed. 4,292,501, Cl. 219-413.000.

Makhteshim Chemical Works Ltd.: *See—*
Daren, Stephen L. J.; Vofsi, David; and Asscher, Meir, 4,292,453, Cl. 570-193.000.

Makimoto, Mitsuo; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Temperature compensated coaxial resonator having inner, outer and intermediate conductors. 4,292,610, Cl. 333-222.000.

Makino, Teruyoshi: *See—*
Katoh, Kazunobu; and Makino, Teruyoshi, 4,292,390, Cl. 430-207.000.

Malatesta, Alberto, to Exxon Research & Engineering Co. Preparation of modified petroleum resins. 4,292,221, Cl. 260-23.70C.

Malcolm, Ronald: *See—*
Hill, Lawrence W.; Stoodley III, Thomas J.; and Malcolm, Ronald, 4,292,666, Cl. 364-104.000.

Maliarik, Mary J.: *See—*
Rohrbach, Ronald P.; and Maliarik, Mary J., 4,292,199, Cl. 252-430.000.

Maljushevsky, Pavel P.: *See—*
Korytov, Vladimir A.; Maljushevsky, Pavel P.; Guly, Grigory A.; Shkatov, Alexandr S.; Sladkoshteev, Vladimir T.; Patanin, Ruslan V.; Dorokhov, Vasily I.; Klemeshov, Georgy A.; and Arkulis, Grigory E., 4,291,742, Cl. 164-501.000.

Mallatt, Russell C.: *See—*
Grutsch, James F.; and Mallatt, Russell C., 4,292,176, Cl. 210-616.000.

Manankov, Mikhail K. Method of introducing chemical agents into plants. 4,291,497, Cl. 47-58.000.

Mankel, Siegfried: *See—*
Sick, Erwin; and Mankel, Siegfried, 4,291,987, Cl. 356-431.000.

Mann, Egon; and Eymuller, Helmut, to Zahnradfabrik Friedrichshafen, Aktiengesellschaft. Wheel-mounted hydraulic drive system. 4,291,779, Cl. 180-305.000.

Mannesmann AG: *See—*
Duren, Karl, 4,292,492, Cl. 219-73.000.

Mannesmann Aktiengesellschaft: *See—*
Kolb, Gustav; and Bardenheuer, Friedrich, 4,291,585, Cl. 73-863.230.

Mansson, Inge G.: *See—*
Grunewald, Kurt H.; and Mansson, Inge G., 4,292,216, Cl. 260-17.500.

Marburg, Stephen; and Kollonitsch, Janos, to Merck & Co., Inc. Cephalosporin compounds. 4,292,427, Cl. 544-021.000.

Marcantonio, Paul J., to Kennecott Corporation. Apparatus for electrochemical removal of heavy metals such as chromium from dilute wastewater streams using flow-through porous electrodes. 4,292,160, Cl. 204-237.000.

Marchant, David D.; and Bates, Junior L., to United States of America, Energy. Ceramic component for MHD electrode. 4,292,209, Cl. 252-521.000.

Marchenko, Alexandr M.: *See—*
Medovar, Boris I.; Artamonov, Viktor L.; Kirsanov, Pavel I.; Marchenko, Alexandr M.; Bogachenko, Alexei G.; Pavlov, Leonid V.; Kamensky, Jury M.; Gutnov, Ruslanbek B.; and Platonov, Pavel M., 4,291,744, Cl. 164-509.000.

Marchioro, Ignazio, to Escher Wyss Aktiengesellschaft. Controlled deflection roll. 4,291,446, Cl. 29-116.0AD.

Marchioro, Ignazio, to Escher Wyss Limited. Controlled deflection roll. 4,291,447, Cl. 29-116.0AD.

Marco, Francis W., to Milliken Research Corporation. Process for fibrillating textiles. 4,291,442, Cl. 28-159.000.

Marcuse, Dietrich; and Presby, Herman M., to Bell Telephone Laboratories, Incorporated. Method of controlling the index profile of optical fiber preforms. 4,292,341, Cl. 427-10.000.

Mariani, Rodolfo. Hair curler. 4,291,714, Cl. 132-40.000.

Marin, Vladimir S.: *See—*
Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.

Mariotti, Nancy S.: *See—*
Farber, Milton; and Mariotti, Nancy S., 4,292,150, Cl. 204-159.120.

Marjoram, John R.: *See—*
Meetham, Geoffrey W.; and Marjoram, John R., 4,292,010, Cl. 416-241.00R.

Marling, John B., to United States of America, Energy. Isotropically sensitive optical filter employing atomic resonance transitions. 4,292,526, Cl. 250-458.000.

Marling, John B.: *See—*
Aldag, Henry R.; Marling, John B.; and Pike, Charles T., 4,292,601, Cl. 331-94.50L.

Marlow, John V.: *See—*
Laurie, Gordon H.; Seymour, Theodore J.; Sakauye, Randall T.; and Marlow, John V., 4,291,443, Cl. 29-6.100.

Marrington, Jack D., to J. D. Engineering Services Pty. Ltd. Liquid metering dispenser. 4,291,820, Cl. 222-70.000.

Marteness, Bruce A., to Minnesota Mining and Manufacturing Company. Fabric-reinforced bonding sheet comprising an epoxy resin and dianiline and use thereof to make an insulated rail joint. 4,292,110, Cl. 156-92.000.

Martin, Charles F. Sheave making apparatus and method. 4,291,559, Cl. 72-84.000.

Martin, Erwin, to Siemens Aktiengesellschaft. Attenuating means for electroacoustic transducer. 4,292,561, Cl. 310-322.000.

Martin, Francis W., to Corning Glass Works. Cesium-stuffed cordierite ceramics. 4,292,080, Cl. 501-4.000.

Martin, Lawrence L.; and Worm, Manfred, to Hoechst Roussel Pharmaceuticals Incorporated. 3''-Phenyldispiro[1,3-dioxolane-2,4'-cyclohexane-1',1''-(3''H)-isobenzofuran]. 4,292,243, Cl. 260-340.90R.

Martin, Lawrence L.; and Worm, Manfred, to Hoechst-Roussel Pharmaceuticals Incorporated. 3'-Phenylspiro[cyclohexane-1,1'(3'H)-isobenzofuran]-4-one. 4,292,245, Cl. 260-346.220.

Martin Marietta Corporation: *See—*
Barone, Joseph P.; Loynaz, Sergio A.; and Bauer, Frederick W., 4,292,188, Cl. 252-62.000.

Martino, Ronald J.; and Shawcross, Alfred L., to Bausch & Lomb Incorporated. High intensity illumination light table. 4,292,663, Cl. 362-97.000.

Marukawa, Katsukiyo; Anezaki, Syoji; and Masuda, Seiichi, to Sumitomo Metal Industries, Inc. Steel making process. 4,292,073, Cl. 75-60.000.

Marukawa, Nobuaki: *See—*
Kawaguchi, Yosiyuki; Nishida, Takashi; Marukawa, Nobuaki; Tanaka, Tadakazu; and Kontani, Yoshinari, 4,291,600, Cl. 82-1.00C.

Maruyama, Hiromi: *See—*
Orii, Seiji; Sasagawa, Yukio; Ito, Akinori; Maruyama, Hiromi; and Sakai, Yoshiteru, 4,292,426, Cl. 536-95.000.

Maruyama, Tokuji: *See—*
Saito, Takashi; Otake, Katuhiko; and Maruyama, Tokuji, 4,292,495, Cl. 219-125.120.

Marwitz, Heinrich; and Louis, Eckhart, to Wacker-Chemie GmbH. Organopolysiloxane compositions and a process for treating organic fibers. 4,292,362, Cl. 428-245.000.

Marxer, Adrian, to Ciba-Geigy Corporation. Imidazole urea and amido compounds. 4,292,429, Cl. 546-278.000.

Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Asphalt compositions modified with organo silane compounds. 4,292,371, Cl. 428-378.000.

Masaki, Kenji; and Nakamura, Koyo, to Nissan Motor Company, Limited. Automotive engine carburetor. 4,291,658, Cl. 123-440.000.

Maschinenfabrik Augsburg-Nurnberg AG: *See—*
Willeitner, Eberhard, 4,292,058, Cl. 55-348.000.

Maschinenfabrik Carl Sangs Aktiengesellschaft: *See—*
Kremer, Hubert; Konigs, Heinz; and Gutmann, Otto, 4,291,730, Cl. 139-65.000.

Maschinenfabrik Niehoff KG: *See—*
Engmann, Gunther; Lepach, Werner; and Speyerer, Heinz, 4,292,114, Cl. 156-447.000.

Mascoli, Carmine C.; Pope, J. Lee, Jr.; and Weber, Phillip L., to Baxter Travenol Laboratories, Inc. Sterility test set. 4,292,405, Cl. 435-31.000.

Mason, Anthony, to Whirlpool Corporation. Automatic washer transmission shift mechanism. 4,291,556, Cl. 68-23.700.

Massachusetts Institute of Technology: *See—*
Bers, Abraham, 4,292,125, Cl. 176-3.000.
Fisch, Nathaniel J., 4,292,124, Cl. 176-3.000.

Massey, Peyton L.; and Stormon, Lester T., to Stormon, Lester T. Hand and forearm prostheses. 4,291,421, Cl. 3-12.600.

Mastroianni, Joseph E.; and Newton, William F., to United States of America, Navy. Liquid propellant. 4,292,098, Cl. 149-89.000.

Masuda, Seiichi: *See—*
Marukawa, Katsukiyo; Anezaki, Syoji; and Masuda, Seiichi, 4,292,073, Cl. 75-60.000.

Mathieu, Julien C., to Dayco Corporation. Apparatus for and method of severing a flexible reinforced elastomeric conduit supported on a plurality of elongated end-to-end rigid mandrels. 4,291,453, Cl. 29-417.000.

Matsui, Akira: *See—*
Komiyama, Yoshiro; Kondo, Katsumi; Fuwa, Yoshio; Matsui, Akira; Miyazaki, Shoji; and Hasegawa, Tokushiro, 4,292,074, Cl. 75-122.000.

Matsumoto, Kouichi: *See—*
Tanaka, Kentaro; Shoji, Jun'ichi; Kawamura, Yoshimi; Hattori, Teruo; Kondo, Eiji; Matsumoto, Kouichi; Yoshida, Tadashi; and Tsuji, Naoki, 4,292,241, Cl. 260-245.20T.

Matsumoto, Shinichi: *See—*
Wakizaka, Hiroshi; Shinohara, Hiroshi; Otsuka, Yasuhiro; and Matsumoto, Shinichi, 4,292,157, Cl. 204-195.00S.

Matsumoto, Takashi; and Nawata, Takahiro, to VLSI Technology Research Association. Method of manufacturing semiconductor devices. 4,292,156, Cl. 204-192.0EC.

Matsuo, Hideo: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Keizo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,291,644, Cl. 118-704.000.

Matsuo, Masanori: *See—*
Tomioka, Shunzo; Okano, Kinpei; Matsuo, Masanori; and Furukawa, Yosio, 4,291,926, Cl. 308-73.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,292,610, Cl. 333-222.000.
Niguchi, Hirotoshi; and Ieki, Mitsuru, 4,291,781, Cl. 181-169.000.

Matsushita Electric Works, Ltd.: *See—*
Kondo, Mikio; Inoue, Hiromitsu; and Ohashi, Hiroshi, 4,292,679, Cl. 367-188.000.
Ono, Kenji; Matsushita, Hidetoshi; and Shibata, Minoru, 4,292,614, Cl. 335-202.000.

Matsushita, Hidetoshi: *See—*
Ono, Kenji; Matsushita, Hidetoshi; and Shibata, Minoru, 4,292,614, Cl. 335-202.000.

Matsuya, Kuni: *See—*
Wakabayashi, Osamu; Matsuya, Kuni; Ohta, Hiroki; Jikihara, Tetsuo; and Suzuki, Seiichi, 4,292,070, Cl. 71-96.000.

Matsuyama, Yoshihiro: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Keizo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,291,644, Cl. 118-704.000.

Mattel, Inc.: *See—*
Bass, Sidney; and Pimentel, Gary W., 4,291,884, Cl. 273-249.000.
Buck, Gordon H.; Gabler, Otto L.; Kilroy, Eugene J.; and Leoncavallo, Richard, 4,291,663, Cl. 124-26.000.

Matysak, Edward A., to Boeing Company, The. Oil metering apparatus for air line lubricators. 4,291,785, Cl. 184-55.00A.

Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,292,204, Cl. 252-439.000.

Maupate, Jacques, to Societe Generale pour l'Emballage. Disappearing grasping head. 4,291,910, Cl. 294-95.000.

Maurer, Helmut; Dillman, Gerhard; Rieger, Franz; and Linder, Ernst, to Robert Bosch GmbH. Method and system for controlling the temperature of a heat measuring sensor especially in motor vehicles. 4,291,572, Cl. 73-23.000.

Maurer, Helmut: *See—*
Muller, Klaus; Maurer, Helmut; Dietz, Hermann; Friese, Karl-Hermann; Leibfried, Wolfgang; Stecher, Gunther; and Linder, Ernst, 4,292,158, Cl. 204-195.00S.

Mauser-Werke Oberndorf GmbH: *See—*
Repa, Otto, 4,291,476, Cl. 42-1.0ST.

Max-Planck-Gesellshaft zur Forderung der Wissenschaften e.V.: *See—*
Hoppe, Walter, 4,292,523, Cl. 250-442.000.

Maximovich, Boleslav I.: *See—*
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V., 4,292,486, Cl. 219-9.500.

Maxwell, Jerrold F.: *See—*
Davis, Pauls; Maxwell, Jerrold F.; and Wilson, Joe C., 4,292,190, Cl. 252-75.000.

Mayer, Francis X.; and Arey, William F., Jr., to Exxon Research & Engineering Co. Magnetically stabilized, fluidized beds. 4,292,171, Cl. 208-164.000.

McAlister, Doyle V.: *See—*
Pfiester, James R.; and McAlister, Doyle V., 4,292,547, Cl. 307-463.000.

McCarthy, Thomas C., Jr., to Hasbro Industries, Inc. Push toy. 4,291,489, Cl. 46-205.000.

McCarty, Lewis V.; and Pugh, John W., to General Electric Company. Process of manufacturing a tungsten lamp filament. 4,291,444, Cl. 29-25.140.

McDonnel Douglas Corporation: *See—*
Walker, James V., 4,291,890, Cl. 277-165.000.

McGregor, Duane F.: *See—*
Harmes, O. Burton; and McGregor, Duane F., 4,291,812, Cl. 211-207.000.

McHale, Edward J., to Union Carbide Corporation. Fluidized bed heating process and apparatus. 4,292,344, Cl. 427-45.100.

McHam, David E. Container for prepackaging, popping and serving popcorn. 4,292,332, Cl. 426-111.000.

McMahon, Donald H., to Sperry Corporation. Digital fiber optic position sensor. 4,291,976, Cl. 356-150.000.

McMurray, John C.; and Kudelko, Arthur G., to Russell, Burdsall and Ward Corporation. Prevailing torque lock nut and method of forming same. 4,291,737, Cl. 411-282.000.

McVey, John K., to Illinois Tool Works Inc. Thermal switch with electrically conductive thermal sensing pellet. 4,292,617, Cl. 337-407.000.

Meador, James W.: *See—*
Kraft, Thomas L.; Vick, Howard A.; and Meador, James W., 4,291,983, Cl. 356-338.000.

Measuremetic Development Company: *See—*
Follett, Earl C., 4,291,468, Cl. 33-192.000.

Meckel, Walter: *See—*
Wenzel, Wolfgang; and Meckel, Walter, 4,292,226, Cl. 260-29.2TN.

Medac Gesellschaft fur Klinische Spezialpraparate mbH: *See—*
Reul, Helmut, 4,291,420, Cl. 3-1.500.

Medovar, Boris I.; Artamonov, Viktor L.; Kirsanov, Pavel I.; Marchenko, Alexandr M.; Bogachenko, Alexei G.; Pavlov, Leonid V.; Kamensky, Jury M.; Gutnov, Ruslanbek B.; and Platonov, Pavel M. Apparatus for electroslag remelting of consumable electrodes. 4,291,744, Cl. 164-509.000.

Medtronic, Inc.: *See—*
Athearn, Lee F., 4,292,346, Cl. 427-115.000.

Meetham, Geoffrey W.; and Marjoram, John R., to Rolls-Royce Limited. Cambered blade or vane for a gas turbine engine. 4,292,010, Cl. 416-241.00R.

Mefina S.A.: *See—*
Rosselet, Jean, 4,291,628, Cl. 102-276.000.

Meixner, Hans: *See—*
Kleinschmidt, Peter; Meixner, Hans; and Magori, Valentin, 4,292,499, Cl. 219-308.000.

Melby, Allan L., to Henkel Corporation. Shampoo creme rinse. 4,292,212, Cl. 252-547.000.

Melzer, Erich G., to Deutsch Company Electronic Components Division, The. Optical fiber connector. 4,291,941, Cl. 350-96.180.

Mendelsohn, Marshall H.: *See—*
Ron, Moshe; Gruen, Dieter M.; Mendelsohn, Marshall H.; and Sheft, Irving, 4,292,265, Cl. 264-82.000.

Mennicken, Gerhard: *See—*
Kubitza, Werner; Mennicken, Gerhard; and Pedain, Josef, 4,292,350, Cl. 427-385.500.

Merceron, Daniel: *See—*
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Merck & Co., Inc.: *See—*
Fullerton, W. Wardle, 4,292,041, Cl. 23-230.300.
Liu, Thomas M. H.; Reamer, Robert A.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,292,436, Cl. 560-148.000.
Marburg, Stephen; and Kollonitsch, Janos, 4,292,427, Cl. 544-021.000.
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,292,430, Cl. 548-206.000.

Meridian Industries Inc.: *See—*
Zylka, Kenneth R.; and Witte, Earl R., 4,292,180, Cl. 210-496.000.

Merlin Gerin S.A.: *See—*
Bresson, Raymond; and Ducluzaux, Andre P., 4,292,611, Cl. 335-6.000.

Merten, Josef: *See—*
Grigo, Ulrich; Morbitzer, Leo; Arlt, Klaus-Peter; Binsack, Rudolf; and Merten, Josef, 4,292,222, Cl. 260-29.1SB.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Weiland, Emil; and Brunsch, Klaus, 4,292,009, Cl. 416-134.00A.

Messier S.A.: *See—*
Girard, Edmond, 4,291,536, Cl. 60-644.000.

Mettler Instrumente AG: *See—*
Kupper, Walter; and Utzinger, Diethelm, 4,291,776, Cl. 177-229.000.

Meyer, Adolf: *See—*
Wesch, Ludwig; and Meyer, Adolf, 4,292,364, Cl. 428-286.000.

Meyer, Delbert H.: *See—*
Lee, Richard J.; Meyer, Delbert H.; and Senneke, Darrell M., 4,292,452, Cl. 568-881.000.

Meyerle, Michael; and Ehrlinger, Friedrich, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Load splitting hydromechanical transmission. 4,291,592, Cl. 74-687.000.

Mialon, Jacques, to Societe Nationale Industrielle Aerospatiale. Process for making a connecting rod for controlling or transmitting efforts, and connecting rod thus obtained. 4,292,368, Cl. 428-310.000.

Michaels, Alan S.; Weiner, Michael W.; and Jalan, Hemant, to Leland Stanford Junior University, Board of Trustees of. Stable supersaturated solutions of sparingly soluble salts. 4,292,227, Cl. 260-29.60H.

Michalowicz, William A., to American Color & Chemical Corporation. Preparation of hydroxyanthraquinones. 4,292,248, Cl. 260-383.000.

Michelson, Anatol. Apparatus and method for heatless production of hollow items, for instance, foundry shell cores. 4,291,740, Cl. 164-7.100.

Midland-Ross Corporation: *See—*
Blickley, Michael; and Naccara, Nicholas G., 4,291,844, Cl. 242-68.200.

Mikofalvy, Bela K.: *See—*
Turner, James W.; and Mikofalvy, Bela K., 4,292,420, Cl. 526-212.000.

Mikuni, Hisao: *See—*
Fujita, Kenji; Shibata, Yuji; Mikuni, Hisao; and Shibuya, Tsuneo, 4,292,137, Cl. 202-248.000.

Milberger, Ernest C.; and Wong, Eunice K. T., to Standard Oil Company, The. Oxidation catalysts. 4,292,203, Cl. 252-438.000.

Miles Laboratories, Inc.: *See—*
Buckler, Robert T.; Burd, John F.; and Wong, Raphael C., 4,292,425, Cl. 536-4.000.

Millard, Gregory S. T.: *See—*
Argyle, Charles S.; Bamsey, Robert C.; and Millard, Gregory S. T., 4,291,760, Cl. 165-166.000.
Miller, Don W.: *See—*
Schlosser, Philip A.; and Miller, Don W., 4,292,645, Cl. 357-29.000.
Miller, Dye O.; Antunes, August J.; and Antunes, Jerome, to A. J. Antunes & Co. Pressurized injection steamer. 4,291,617, Cl. 99-483.000.
Miller, Henry W., to Cameron Iron Works, Inc. Flowline switching apparatus. 4,291,724, Cl. 137-555.000.
Miller, John R., to United States of America, Energy. Methods and apparatus for producing cryogenic inertially driven fusion targets. 4,292,340, Cl. 427-6.000.
Miller, Richard C.; and Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Optical monitoring photodiode system. 4,292,512, Cl. 250-205.000.
Miller, Robert C.; Bradley, John J.; King, Richard L.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., to Honeywell Information Systems Inc. Data processing system having data multiplex control bus cycle. 4,292,668, Cl. 364-200.000.
Miller, Stanley: *See—*
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, 4,291,750, Cl. 165-34.000.
Milliken Research Corporation: *See—*
Marco, Francis W., 4,291,442, Cl. 28-159.000.
Minami, Yoriteru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Unlocking device for seatbelt system. 4,291,897, Cl. 280-802.000.
Minnesota Mining and Manufacturing Company: *See—*
Binek, Paul H.; Cherney, Thomas M.; Magnusson, John M.; and Cronk, Bryon J., 4,291,943, Cl. 350-96.220.
Hollingsworth, Elmont E., 4,291,957, Cl. 354-14.000.
Kelly, Michael J.; and Youngquist, Robert J., 4,292,684, Cl. 371-38.000.
Marteness, Bruce A., 4,292,110, Cl. 156-92.000.
Nepper, Robert F.; and Peterson, Dennis L., 4,292,530, Cl. 250-577.000.
Riedel, John E.; and Cheney, Paul G., 4,292,360, Cl. 428-171.000.
Vogelgesang, Peter J., 4,291,956, Cl. 354-14.000.
Minolta Camera Kabushiki Kaisha: *See—*
Yuasa, Yoshio; Ishikawa, Norio; and Taniguchi, Nobuyuki, 4,291,979, Cl. 356-218.000.
Minto, Wallace L., to Sun Power Systems Inc. Method and apparatus for accumulating, storing and releasing thermal energy. 4,291,755, Cl. 165-3.000.
Mionet, Hubert: *See—*
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Mirowski, Mieczyslaw: *See—*
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Misage, Robert J.: *See—*
Faitani, Joseph J.; Austin, George W.; Chase, Terry J.; Suljak, George T.; and Misage, Robert J., 4,292,274, Cl. 422-197.000.
Mitchell Energy Corporation: *See—*
Gilchrist, Ralph E.; Hover, George W.; and Barber, Robert M., 4,291,765, Cl. 166-273.000.
Mitchell, Thomas O.: *See—*
Derbyshire, Francis J.; Mitchell, Thomas O.; and Whitehurst, Darrell D., 4,292,168, Cl. 208-107.000.
Mitsubishi Chemical Industries Ltd.: *See—*
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Wakabayashi, Osamu; Matsuya, Kuni; Ohta, Hiroki; Jikihara, Tetsuo; and Suzuki, Seiichi, 4,292,070, Cl. 71-96.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujii, Masao; Ogawa, Yoshifusa; and Morihiro, Yoshiyuki, 4,291,758, Cl. 165-133.000.
Ida, Yoshiaki; Fukuda, Shiro; and Imamura, Osayoshi, 4,291,989, Cl. 356-440.000.
Tanaka, Yutaka; and Yatomi, Takeshi, 4,292,691, Cl. 219-69.00W.
Mitsubishi Rayon Co., Ltd.: *See—*
Kamada, Kazumasa; and Okada, Kazuya, 4,292,419, Cl. 526-192.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Uemoto, Yasuo; Togami, Shigenori; Takano, Tsumoru, deceased; Ono, Ichiro; and Kayama, Takashi, 4,292,235, Cl. 260-42.180.
Mitsuya, Kinpei: *See—*
Miyamoto, Noriaki; Shiraki, Masao; and Mitsuya, Kinpei, 4,291,528, Cl. 57-58.950.
Miu, Ming T.: *See—*
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Miura, Norio: *See—*
Tanaka, Michio; Miura, Norio; and Shimiya, Keiji, 4,292,107, Cl. 156-249.000.
Miyagawa, Yoshihisa, to Iwatani Sangyo Kabushiki Kaisha. Gas lighter. 4,292,021, Cl. 431-13.000.
Miyagi, Hideo; and Nakano, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of controlling the rotational speed of an internal combustion engine. 4,291,656, Cl. 123-320.000.
Miyake, Yasuhiko: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Keizo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,291,644, Cl. 118-704.000.
Miyamoto, Noriaki; Shiraki, Masao; and Mitsuya, Kinpei, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Mounting of fiber supply channel defining means in spinning units of an open end spinning machine. 4,291,528, Cl. 57-58.950.
Miyamoto, Noriaki: *See—*
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Miyamoto, Yukihiko: *See—*
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Miyashiro, David J. Back and spine exerciser. 4,291,686, Cl. 128-52.000.
Miyazaki, Shoji: *See—*
Komiyama, Yoshiro; Kondo, Katsumi; Fuwa, Yoshio; Matsui, Akira; Miyazaki, Shoji; and Hasegawa, Tokushiro, 4,292,074, Cl. 75-122.000.
Miyazawa, Chihiro: *See—*
Tsunoda, Yoshitoshi; Tomita, Shimpei; and Miyazawa, Chihiro, 4,292,448, Cl. 568-456.000.
Mizelle, Ned W., to Hoover Universal, Inc. Adjustable seat hinge. 4,291,914, Cl. 297-361.000.
Mizusaki, Yoshinobu, to Nisshin Kogyo Kabushiki Kaisha. Mechanism for mounting side mirrors to the master cylinder for motor bicycles. 4,291,590, Cl. 74-551.800.
Mobil Oil Corporation: *See—*
Bonacci, John C.; and Patterson, John R., 4,292,167, Cl. 208-66.000.
Bowes, Emmerson, 4,292,205, Cl. 252-455.00Z.
Chibnik, Sheldon; Otto, Ferdinand P., deceased; and Otto, Helen F., executrix, 4,292,186, Cl. 252-49.700.
Derbyshire, Francis J.; and Whitehurst, Darrell D., 4,292,164, Cl. 208-8.0LE.
Derbyshire, Francis J.; Mitchell, Thomas O.; and Whitehurst, Darrell D., 4,292,168, Cl. 208-107.000.
Gorring, Robert L.; and La Pierre, Rene B., 4,292,166, Cl. 208-59.000.
Piotrowski, Alfred B., 4,292,046, Cl. 44-63.000.
Spencer, Arthur T., 4,292,217, Cl. 260-18.00N.
Mochida, Yutaka: *See—*
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Modicon Div. Gou'd Inc.: *See—*
Hill, Lawrence W.; Stoodley III, Thomas J.; and Malcolm, Ronald, 4,292,666, Cl. 364-104.000.
Moeller, Erwin W. Griddle ventilating system. 4,291,668, Cl. 126-41.00R.
Mogk, Robert D.: *See—*
Fox, Robert M.; Mogk, Robert D.; and Priebe, Edward T., 4,291,912, Cl. 296-217.000.
Mohasco, Corp.: *See—*
Kowalski, Jerome R., 4,291,913, Cl. 297-89.000.
Molle, Egon; and Rosch, Fritz, to Alcan Aluminiumwerk Nurnberg GmbH. Piston and process for its manufacture. 4,291,614, Cl. 92-187.000.
Molyneaux, Isaac. Recycling exhaust fumes valve. 4,291,660, Cl. 123-568.000.
Monash University: *See—*
Potter, Owen E., 4,291,539, Cl. 60-670.000.
Monk, Robert J. Solar energy collector. 4,291,677, Cl. 126-438.000.
Monsanto Company: *See—*
Daniels, Robert J., 4,292,040, Cl. 23-230.00R.
Monson, Eugene. Apparatus for sprouting seeds. 4,291,493, Cl. 47-14.000.
Montavon, Marc; and Reiner, Roland, to Hoffmann-La Roche Inc. Cephalosporin derivatives. 4,292,428, Cl. 544-27.000.
Monte, Woodrow S. Foot support crutch. 4,291,715, Cl. 135-68.000.
Mookherjee, Braja D.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,292,447, Cl. 568-378.000.
Moran, George A.: *See—*
Alvarez, Patricio D.; Fowler, James M.; and Moran, George A., 4,291,862, Cl. 257-167.000.
Morbitzer, Leo: *See—*
Grigo, Ulrich; Morbitzer, Leo; Arlt, Klaus-Peter; Binsack, Rudolf; and Merten, Josef, 4,292,222, Cl. 260-29.1SB.
Moren, Nils F. E.: *See—*
Jonsson, Karl E.; and Moren, Nils F. E., 4,292,324, Cl. 424-289.000.
Mori, Kazuo: *See—*
Mori, Takehiko; and Mori, Kazuo, 4,292,178, Cl. 210-352.000.
Mori, Takehiko; and Mori, Kazuo. Filtering apparatus. 4,292,178, Cl. 210-352.000.
Morihiro, Yoshiyuki: *See—*
Fujii, Masao; Ogawa, Yoshifusa; and Morihiro, Yoshiyuki, 4,291,758, Cl. 165-133.000.
Morinaga, Tsuto: *See—*
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Horike, Akihiro, 4,292,151, Cl. 204-159.150.
Morlock Corporation: *See—*
Heckrotte, John R., Sr., 4,291,599, Cl. 81-444.000.
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, to Citizen Watch Company Limited. Electronic timepiece. 4,292,680, Cl. 368-187.000.
Morrell, Wilfred L.; and Levine, William M., to OKI Electronics of America, Inc. Electronic key telephone system with bi-directional serial data stream station control. 4,292,474, Cl. 179-99.00M.
Morris, John C.: *See—*
Ginn, Le Roy D.; Ginn, Le Royce S.; Morris, John C.; and Travaglio, Dalny, 4,291,832, Cl. 236-49.000.

Morris, Roger E., to B. F. Goodrich Company, The. Non-fugitive antioxidants. 4,292,195, Cl. 252-401.000.
Morrison, John M.: *See—*
Longmuir, Donald A.; and Morrison, John M., 4,292,586, Cl. 324-73.00R.
Morrissy, Joseph H.: *See—*
Crossland, William A.; Morrissy, Joseph H.; and Coates, David, 4,291,948, Cl. 350-340.000.
Morsdorf, Wolfram W.: *See—*
Wolfsgruber, Friedrich; Kasel, Hans W.; Odendahl, Manfred H. A.; and Morsdorf, Wolfram W., 4,292,075, Cl. 75-130.00R.
Morse, Calvin J.; and Kossuth, Gabor, to Garrett Corporation, The. Thermal management of heat exchanger structure. 4,291,754, Cl. 165-165.000.
Moses, Owen L. Compact, quick assembly scaffold. 4,291,784, Cl. 182-178.000.
Moshier, William A.: *See—*
Wilson, John F.; Hoover, Edward D.; Hammond, Philip K.; Moshier, William A.; Woodell, Jack L.; Spaniol, John W.; Bowerman, John J.; Bieber, Larry C.; and Perlman, Marvin, 4,292,465, Cl. 178-3.000.
Mosso, Luigi, to Laria-Laterizi Rivestimenti ed Affini-S.p.A. Process for the continuous production of a partly finished clay product. 4,292,359, Cl. 428-151.000.
Motorola, Inc.: *See—*
Cota, Marlo E.; and Gurtler, Richard W., 4,292,264, Cl. 264-81.000.
Feder, Alvin, 4,292,562, Cl. 310-348.000.
Pfiester, James R.; and McAlister, Doyle V., 4,292,547, Cl. 307-463.000.
Sarma, Kalluri R.; Rice, M. John, Jr.; and Lesk, I. Arnold, 4,292,342, Cl. 427-34.000.
Schoemer, Hans L., 4,291,475, Cl. 40-338.000.
Moulding, Trevor L. J.: *See—*
Hartley, Kenneth; Moulding, Trevor L. J.; and Rostron, Norman, 4,292,127, Cl. 176-17.000.
Moynihan, Robert E., to Du Pont de Nemours, E. I., and Company. Polyvinylbutyral sheeting. 4,292,372, Cl. 428-437.000.
Mozzhukhin, Anatoly A.: *See—*
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V., 4,292,486, Cl. 219-9.500.
Muckli, Heinz, to Schloemann-Siemag Aktiengesellschaft. Method of and apparatus for rolling sheet steel profiles of different cross-sectional shape in universal beam rolling mill trains. 4,291,564, Cl. 72-234.000.
Mulleneers, Jan J. M.: *See—*
Albrecht, Cornelius B. J. d.; and Mulleneers, Jan J. M., 4,292,524, Cl. 250-445.00T.
Muller, Erich. Foam fire extinguishing unit for rescue vehicle. 4,291,769, Cl. 169-13.000.
Muller, Hans-Friedrich: *See—*
Fuchs, Heinz, deceased; Muller, Hans-Friedrich; and Hecht, Hildegard, 4,291,698, Cl. 128-335.000.
Muller, Hans-Otto: *See—*
Blume, Gotz; and Muller, Hans-Otto, 4,292,210, Cl. 252-522.00R.
Muller, Johann: *See—*
Kaufmann, Rudolf; Muller, Johann; and Wegehaupt, Karl-Heinrich, 4,292,423, Cl. 528-18.000.
Muller, Klaus; Maurer, Helmut; Dietz, Hermann; Friese, Karl-Hermann; Leibfried, Wolfgang; Stecher, Gunther; and Linder, Ernst, to Robert Bosch GmbH. Oxygen sensor of the polarographic type, particularly for use with internal combustion engines. 4,292,158, Cl. 204-195.00S.
Mullins, Keith M.: *See—*
Kerr, Ronald R.; Mullins, Keith M.; and Bowie, Bruce H., 4,292,629, Cl. 340-547.000.
Mulroy, Terence J., to Champion International Corporation. Carton with self-locking end closure and blank for forming same. 4,291,827, Cl. 229-39.00R.
Multi Products Co.: *See—*
Watson, Willie L., 4,291,761, Cl. 166-66.000.
Murakami, Hiroyasu: *See—*
Ito, Tadashi; Murakami, Hiroyasu; Suzuki, Masayuki; Yamamichi, Masayoshi; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,291,960, Cl. 354-53.000.
Murakami, Kyoichi: *See—*
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,292,597, Cl. 330-254.000.
Murakami, Ryoichi; Shimizu, Hideo; Yoshii, Takashi; Ishida, Minoru; and Yonekura, Hiroto, to Nippon Paint Co., Ltd. Phosphating process of metal surface. 4,292,096, Cl. 148-6.15Z.
Muramoto, Hisao, to Toyo Kogyo Co., Ltd. Vehicle occupant restraining safety apparatus. 4,291,899, Cl. 280-806.000.
Muramoto, Takayoshi; and Orita, Kunitaka, to Fumakilla Limited. Method for killing insects with electro-mechanical ultrasonic nebulizer. 4,292,322, Cl. 424-274.000.
Murata Manufacturing Co., Ltd.: *See—*
Tatsumi, Tetsuo, 4,292,660, Cl. 361-293.000.
Murayama, Kashiwa, to Japan Crown Cork Co., Ltd. Easily openable container closure having a shell and a sealing member, apparatus for producing the same. 4,291,567, Cl. 72-347.000.
Muroi, Masayuki: *See—*
Higashide, Eiji; Tanida, Seiichi; Muroi, Masayuki; and Asai, Mitsuko, 4,292,309, Cl. 424-119.000.
Musgrave, Daniel D. Interacting leaf springs. 4,291,480, Cl. 42-50.000.
Musgrave, Daniel D. Cartridge receptacle. 4,291,483, Cl. 42-87.000.
Mutsaers, Cornelis A. H. A.; and Boonstra, Alexander H., to U.S. Philips Corporation. Resistance material. 4,292,619, Cl. 338-308.000.
Myers, Daryl L.: *See—*
Dalrymple, Philip W.; Hyle, Michael J.; Myers, Daryl L.; and Wright, James G., Jr., 4,291,841, Cl. 242-18.00A.
Naccara, Nicholas G.: *See—*
Blickley, Michael; and Naccara, Nicholas G., 4,291,844, Cl. 242-68.200.
Nacci, George R., to Du Pont de Nemours, E. I., and Company. Process of forming a magnetic toner resist using a transfer film. 4,292,120, Cl. 156-660.000.
Nadkarni, Vikas M.: *See—*
Kane, John L.; and Nadkarni, Vikas M., 4,292,365, Cl. 428-288.000.
Nagata, Masaki: *See—*
Kotani, Teizo; Arai, Kozo; Fukui, Shiomi; and Nagata, Masaki, 4,292,261, Cl. 264-24.000.
Nagata, Takeo: *See—*
Tanabe, Masanori; Shimada, Satoshi; Yasukawa, Akio; Nishihara, Motohisa; and Nagata, Takeo, 4,292,618, Cl. 338-5.000.
Nagato, Nobuo, to Ohkuma Seisakusho Co., Ltd. Ball hitting game. 4,291,879, Cl. 273-119.00R.
Nagel, Dietmar; and Kennedy, Melvin. Starting gate for a multiple-track toy vehicle racing set. 4,291,878, Cl. 273-86.00R.
Nakahara, Kazumi, to NGK Spark Plug Co. Ltd. Assembly of piezoelectric element unit and sheet metal mount for ignition device. 4,291,626, Cl. 102-200.000.
Nakamura, Koyo: *See—*
Masaki, Kenji; and Nakamura, Koyo, 4,291,658, Cl. 123-440.000.
Nakamura, Nobuyuki: *See—*
Shibanai, Ichiro; Horikoshi, Kouki; and Nakamura, Nobuyuki, 4,292,044, Cl. 44-1.00R.
Nakamura, Norihiko; Nakanishi, Kiyoshi; and Kato, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine equipped with an auxiliary combustion chamber. 4,291,662, Cl. 123-661.000.
Nakanishi, Kiyoshi: *See—*
Nakamura, Norihiko; Nakanishi, Kiyoshi; and Kato, Takashi, 4,291,662, Cl. 123-661.000.
Nakano, Jiro: *See—*
Miyagi, Hideo; and Nakano, Jiro, 4,291,656, Cl. 123-320.000.
Nakao, Masaaki; and Shiiki, Zenya, to Taiyo Kaken Company, Ltd. Method for removing compounds with offensive odor from a gas containing the same. 4,292,285, Cl. 423-210.000.
Nakao, Sho: *See—*
Ikeda, Tomoaki; Shinozaki, Fumiaki; and Nakao, Sho, 4,292,392, Cl. 430-271.000.
Nakao, Toshihiro: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,292,509, Cl. 235-92.0MP.
Nakayama, Yoshihiko: *See—*
Tachibana, Keiji; Terasaki, Masatosi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,291,587, Cl. 74-363.000.
Nakazato, Yoshio; Tanaka, Tomoo; Hashiguchi, Koichi; and Soeda, Naohiko, to Kawasaki Steel Corporation. High tensile strength steel sheets having high press-formability and a process for producing the same. 4,292,097, Cl. 148-12.00C.
Nalco Chemical Company: *See—*
Johnson, Donald A.; and Nimry, Baker N., 4,292,293, Cl. 423-571.000.
Namura, Shigekazu; and Sumi, Takao, to Nissha Printing Co., Ltd. Transfer printing. 4,292,103, Cl. 156-230.000.
Natarajan, Krishnaswamy: *See—*
Davis, John C. H.; and Natarajan, Krishnaswamy, 4,292,478, Cl. 179-170.0NC.
National Research Development Corporation: *See—*
Fray, Derek J.; and Thomas, Bernard K., 4,292,147, Cl. 204-118.000.
Hutchinson, Marcus H. R., 4,292,603, Cl. 331-94.50G.
National-Standard Company: *See—*
Johnson, Morris V., 4,291,445, Cl. 29-78.000.
Nawata, Takahiro: *See—*
Matsumoto, Takashi; and Nawata, Takahiro, 4,292,156, Cl. 204-192.0EC.
Nazzaro-Porro, Marcella. Process for treatment of hyperpigmentary dermatoses. 4,292,326, Cl. 424-317.000.
N'Debeka, Gilberte N.: *See—*
Boileau, Sylvie L.; Caubere, Paul J.; Raynal, Serge F.; Lecolier, Serge L.; and N'Debeka, Gilberte N., 4,292,421, Cl. 526-220.000.
Nedelec, Maurice; Presta, Claude; and Vitoux, Francois, to Saint Gobain Industries. Method and apparatus for shaping thermoplastic sheet material. 4,292,065, Cl. 65-104.000.
Nederlandse Centrale Organisatie voor Toegepastnatuurwetenschappelijk Onderzoek: *See—*
van Engelenburg, Bertus; and van Wijk, Hendrik F., 4,292,280, Cl. 423-24.000.
Neilson, John M. S.: *See—*
Assour, Jacques M.; Bates, Theresa I.; Bender, John R.; and Neilson, John M. S., 4,292,646, Cl. 357-38.000.
Nelson, Edward I., to Burroughs Corporation. Reconfigurable photoelectric keyboard having removable keys. 4,292,515, Cl. 250-229.000.
Nelson, Edward I., to Burroughs Corporation. Photo-optical keyboard having debris protection. 4,292,516, Cl. 250-229.000.
Nelson, Edward I., to Burroughs Corporation. Photo-optical keyboard providing tactile feel. 4,292,517, Cl. 250-229.000.

Nelson Industries, Inc.: *See—*
Stone, Walter H.; and Nostrand, William G., 4,292,179, Cl. 210-443.000.

Nelson, James F., to Quaker Oats Company, The. Apparatus for feeding fluidized bed incinerator, and method of autogenic operation of same. 4,291,635, Cl. 110-245.000.

Nelson, Melvin A.: *See—*
Davies, Terence J.; Franks, Larry A.; and Nelson, Melvin A., 4,292,537, Cl. 250-361.00R.

Nelson, Norman A., to Upjohn Company, The. Amide and sulfonamide derivatives of 2-decarboxy-2-aminomethyl-PG-type compounds. 4,292,445, Cl. 564-98.000.

Nelson, Stephen J., to Upjohn Company, The. N-[(Phosphinyl-)amino]thio- and N-[(phosphinothioyl)amino]thiomethylcarbamates. 4,292,256, Cl. 260-937.000.

Nepper, Robert F.; and Peterson, Dennis L., to Minnesota Mining and Manufacturing Company. Developer material level sensor. 4,292,530, Cl. 250-577.000.

Neracher, Arnold, to Battelle Memorial Institute. Pulsed gas laser emitting high-power beam of short wavelength. 4,292,600, Cl. 331-94.50G.

NeSmith, Kenneth L. Clip apparatus for concrete foundation forms. 4,291,858, Cl. 249-216.000.

Netherton, Lowell E.: *See—*
Patil, Arvind S.; and Netherton, Lowell E., 4,292,294, Cl. 423-594.000.

Newman, Ferris E., to Baxter Travenol Laboratories, Inc. Method for preshrinking semipermeable membranes. 4,291,470, Cl. 34-12.000.

Newsom, William D.; and Carnahan, James R., to K. R. Evans & Associates, a part interest. Apparatus for steam cleaning liners in oil well bores and the like. 4,291,433, Cl. 15-405.000.

Newton, William F.: *See—*
Mastroianni, Joseph E.; and Newton, William F., 4,292,098, Cl. 149-89.000.

Neye, Angelika: *See—*
Hechenberger, Dieter A.; and Neye, Angelika, 4,292,229, Cl. 260-30.60R.

Nezworski, James E., to Perlick Company, Inc., The. Keg tapping system unit and valve interlock. 4,291,821, Cl. 222-153.000.

NGK Spark Plug Co. Ltd.: *See—*
Nakahara, Kazumi, 4,291,626, Cl. 102-200.000.
Tanaka, Hiroshi; and Kato, Osamu, 4,292,049, Cl. 51-309.000.

Nichol, Thomas J.: *See—*
Pickens, Joseph R.; Schelleng, Robert D.; Donachie, Stephen J.; and Nichol, Thomas J., 4,292,079, Cl. 75-232.000.

Nicolas, Alain: *See—*
Chataignon, Andre; Nicolas, Alain; and Poirier, Jean P., 4,292,479, Cl. 179-170.0NC.

Nielsen, Jan; and Panek, Karel J., to Byk-Mallinckrodt Cil B.V. Seleno-methionine-^{75}Se-containing solution having a thiol as a stabilizer. 4,292,297, Cl. 424-1.000.

Nigro, Paul R., to Royal Continental Box Company. Combination collapsable self-erecting self-locking carton. 4,291,828, Cl. 229-41.00B.

Niguchi, Hirotoshi; and Ieki, Mitsuru, to Matsushita Electric Industrial Co., Ltd. Speaker diaphragm and method of preparation of the same. 4,291,781, Cl. 181-169.000.

Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, to Sony Corporation. Circuit for converting single-ended input signals to a pair of differential output signals. 4,292,597, Cl. 330-254.000.

Nimry, Baker N.: *See—*
Johnson, Donald A.; and Nimry, Baker N., 4,292,293, Cl. 423-571.000.

Ninomiya, Morimasa: *See—*
Ootsuka, Fumio; Ninomiya, Morimasa; Maehara, Norio; and Yoshimi, Akiro, 4,291,749, Cl. 165-27.000.

Nippon Denshoku Kogyo Co., Ltd.: *See—*
Tsujimura, Masatoshi, 4,291,985, Cl. 356-408.000.

Nippon Electric Co., Ltd.: *See—*
Tanaka, Kouichi, 4,292,552, Cl. 307-354.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Yokoyama, Kenji, 4,292,468, Cl. 179-1.00D.

Nippon Klingage Kabushiki Kaisha: *See—*
Hino, Mitsuaki, 4,292,582, Cl. 323-294.000.

Nippon Koshuha Steel Co., Ltd.: *See—*
Kawaguchi, Yosiyuki; Nishida, Takashi; Marukawa, Nobuaki; Tanaka, Tadakazu; and Kontani, Yoshinari, 4,291,600, Cl. 82-1.00C.

Nippon Paint Co., Ltd.: *See—*
Murakami, Ryoichi; Shimizu, Hideo; Yoshii, Takashi; Ishida, Minoru; and Yonekura, Hiroto, 4,292,096, Cl. 148-6.15Z.

Nippon Soda Company Limited: *See—*
Orii, Seiji; Sasagawa, Yukio; Ito, Akinori; Maruyama, Hiromi; and Sakai, Yoshiteru, 4,292,426, Cl. 536-95.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Yamamoto, Kazuyuki; and Ohkoshi, Seiei, 4,292,476, Cl. 179-99.00R.

Nippon Tungsten Co., Ltd.: *See—*
Honda, Sinya; Komura, Takeshi; Sugita, Naomi; and Okamoto, Tatuya, 4,292,078, Cl. 75-176.000.

Nippondenso Co., Ltd.: *See—*
Ootsuka, Fumio; Ninomiya, Morimasa; Maehara, Norio; and Yoshimi, Akiro, 4,291,749, Cl. 165-27.000.

Nishida, Takashi: *See—*
Kawaguchi, Yosiyuki; Nishida, Takashi; Marukawa, Nobuaki; Tanaka, Tadakazu; and Kontani, Yoshinari, 4,291,600, Cl. 82-1.00C.

Nishihara, Motohisa: *See—*
Tanabe, Masanori; Shimada, Satoshi; Yasukawa, Akio; Nishihara, Motohisa; and Nagata, Takeo, 4,292,618, Cl. 338-5.000.

Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, to Teijin Limited. 25-Hydroxy-24-oxocholestane derivatives and preparation thereof. 4,292,249, Cl. 260-397.200.

Nishikuri, Masao; Takeshita, Akira; and Kenmochi, Hirohito, to Sumitomo Chemical Company, Limited. Process for producing anthraquinone intermediates. 4,292,247, Cl. 260-381.000.

Nishimura, Toshifumi: *See—*
Suzuki, Mikio; and Nishimura, Toshifumi, 4,291,659, Cl. 123-440.000.

Nishioka, Jim Z. Projectile shooting guide for bows. 4,291,664, Cl. 124-41.00A.

Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, to Semiconductor Research Foundation. Sapphire single crystal substrate for semiconductor devices. 4,292,373, Cl. 428-446.000.

Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, to Semiconductor Research Foundation. Sapphire single crystal substrate for semiconductor devices. 4,292,374, Cl. 428-446.000.

Nishizawa, Yoshihiko; Aketa, Yoshihiro; and Akao, Takeshi, to Kikkoman Shoyu Co., Ltd. Process for puffing feather or animal fur. 4,292,334, Cl. 426-447.000.

Nissan Motor Company, Limited: *See—*
Masaki, Kenji; and Nakamura, Koyo, 4,291,658, Cl. 123-440.000.
Suzuki, Mikio; and Nishimura, Toshifumi, 4,291,659, Cl. 123-440.000.

Nissha Printing Co., Ltd.: *See—*
Namura, Shigekazu; and Sumi, Takao, 4,292,103, Cl. 156-230.000.

Nisshin Kogyo Kabushiki Kaisha: *See—*
Mizusaki, Yoshinobu, 4,291,590, Cl. 74-551.800.

NL Industries, Inc.: *See—*
Robinson, Ralph L.; and Parrish, David D., 4,291,623, Cl. 102-310.000.

Noack, Rolf; and Gramelt, Stefan, to Deutsche Babcock Aktiengesellschaft. Apparatus for monitoring the temperature of adsorbers. 4,292,054, Cl. 55-181.000.

Nolen, Richard W.: *See—*
Probyn, Keith A.; Nolen, Richard W.; Erickson, Charles W.; Dawson, Gerald G.; Goldstein, Ralph; and Bender, Max, 4,292,034, Cl. 493-92.000.

Nomura, Hidetuka, to Sato, Hideji. Auxiliary cylinder for camera. 4,291,944, Cl. 350-257.000.

Nomura, Yasushi: *See—*
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,292,680, Cl. 368-187.000.

Nordica S.p.A.: *See—*
Sartor, Mariano, 4,291,473, Cl. 36-132.000.

Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See—*
Hartmann, Franz, 4,291,435, Cl. 17-45.000.
Wulff, Hermann, 4,291,436, Cl. 17-59.000.

Norlin Industries, Inc.: *See—*
Scott, James L.; and Luce, David A., 4,291,604, Cl. 84-1.190.

Northern Petrochemical Co.: *See—*
Probyn, Keith A.; Nolen, Richard W.; Erickson, Charles W.; Dawson, Gerald G.; Goldstein, Ralph; and Bender, Max, 4,292,034, Cl. 493-92.000.

Northern Telecom, Inc.: *See—*
Adams, William J.; and Haskins, Steve W., 4,292,477, Cl. 179-100.00C.

Northern Telecom Limited: *See—*
Abe, Koichi, 4,292,063, Cl. 65-3.120.

Nostrand, William G.: *See—*
Stone, Walter H.; and Nostrand, William G., 4,292,179, Cl. 210-443.000.

Novak, Ronald W.; and Wolf, Leslie R., to Rohm and Haas Company. Addition polymer comprising air-curable alkyl diamide. 4,292,220, Cl. 260-23.0AR.

Novakovic, Boris Z.: *See—*
Eichenlaub, Rolf; and Novakovic, Boris Z., 4,291,667, Cl. 125-15.000.

Novametrix Medical Systems, Inc.: *See—*
Cabal, Luis A.; and Dali, Carmelo, 4,291,691, Cl. 128-204.180.

Novus Inc.: *See—*
Petersen, Paul S., 4,291,866, Cl. 269-1.000.

Nowak, Herman P., to Gillette Company, The. Liquid dispensing apparatus. 4,291,641, Cl. 118-408.000.

Nozawa, Takamitsu; and Tazaki, Takaharu, to Yoshino Kogyosho Co., Ltd. Lid structures. 4,291,818, Cl. 220-335.000.

Nugent, Richard M.: *See—*
Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., 4,292,155, Cl. 204-181.00C.

Obermayer, Alfred, to Bombardier-Rotax Gesellschaft m.b.H. Pullback starter for internal combustion engines. 4,291,654, Cl. 123-185.0BA.

O'Boyle, Matthew; and Magladry, Ross E., to Catalyst Research Corporation. Two-cell battery structure. 4,292,380, Cl. 429-101.000.

Odendahl, Manfred H. A.: *See—*
Wolfsgruber, Friedrich; Kasel, Hans W.; Odendahl, Manfred H. A.; and Morsdorf, Wolfram W., 4,292,075, Cl. 75-130.00R.

Odlen, Lars; and Hansson, Anders, to Transcale A.B. Control for audio receiver. 4,292,467, Cl. 179-1.00D.

Office National d'Etudes et de Recherches Aerospatiales: *See—*
Lepetit, Pierre J.; and Genieys, Emile J., 4,292,144, Cl. 204-23.000.

Officine Meccaniche Pavesi & C. S.p.A.: *See—*
Barrera, Giorgio, 4,291,459, Cl. 29-734.000.

Ogasawara, Makoto: *See—*
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Horike, Akihiro, 4,292,151, Cl. 204-159.150.

Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Iwata, Shizuo, to Lotte Co., Ltd. Center-filled chewing gum. 4,292,329, Cl. 426-5.000.

Ogawa, Masahiro: *See—*
Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, 4,291,549, Cl. 62-534.000.

Ogawa, Yoshifusa: *See—*
Fujii, Masao; Ogawa, Yoshifusa; and Morihiro, Yoshiyuki, 4,291,758, Cl. 165-133.000.

Ogawa, Yoshio: *See—*
Kato, Heizaburo; and Ogawa, Yoshio, 4,291,553, Cl. 64-29.000.

Ohashi, Hiroshi: *See—*
Kondo, Mikio; Inoue, Hiromitsu; and Ohashi, Hiroshi, 4,292,679, Cl. 367-188.000.

Ohashi, Shigeo. Switching element. 4,292,615, Cl. 335-205.000.

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Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; Kitahara, Tohru; and Watanabe, Kenichi, 4,292,433, Cl. 556-479.000.

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Ohkuma Seisakusho Co., Ltd.: *See—*
Nagato, Nobuo, 4,291,879, Cl. 273-119.00R.

Ohnishi, Masaaki; and Saito, Akio, to Kabushiki Kaisha Kyoto Daiichi Kagaku. Reference scatter for use in the correction of scattering photometers. 4,291,981, Cl. 356-244.000.

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Ohta, Hiroki: *See—*
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Goto, Hiromi; and Ojima, Kenji, 4,291,791, Cl. 192-67.00R.

Okada, Kazuya: *See—*
Kamada, Kazumasa; and Okada, Kazuya, 4,292,419, Cl. 526-192.000.

Okamoto, Tatuya: *See—*
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Okamura, Masatoshi; and Shiba, Haruo, to TDK Electronics. Tape cassette. 4,291,800, Cl. 206-387.000.

Okano, Kinpei: *See—*
Tomioka, Shunzo; Okano, Kinpei; Matsuo, Masanori; and Furukawa, Yosio, 4,291,926, Cl. 308-73.000.

OKI Electronics of America, Inc.: *See—*
Morrell, Wilfred L.; and Levine, William M., 4,292,474, Cl. 179-99.00M.

Okuda, Shigeru: *See—*
Danjyo, Hiroyuki; Okuda, Shigeru; and Yorita, Eiichi, 4,292,082, Cl. 501-100.000.

Okumoto, Yutaka, to Japan Tobacco & Salt Public Corporation, The. Material density radiological measurement system with substantially linear output. 4,292,522, Cl. 250-358.00R.

Okuyama, Takeshi: *See—*
Yokoyama, Toshiaki; Hara, Akira; and Okuyama, Takeshi, 4,292,533, Cl. 290-40.00B.

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Oldfield, William W.; and Bier, Larry J., to Wiltron Company. Coaxial connector with improved female conductor structure. 4,291,936, Cl. 339-177.00R.

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Kuo, Han C.; Ahn, Byung K.; Dotson, Ronald L.; and Woodard, Kenneth E., Jr., 4,292,159, Cl. 204-237.000.

Olson, Gerald: *See—*
Robertson, Alan D.; Robertson, Blythe J.; and Olson, Gerald, 4,291,736, Cl. 145-30.00A.

Olympus Optical Co., Ltd.: *See—*
Hayamizu, Yoshisada, 4,291,945, Cl. 350-286.000.
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,292,509, Cl. 235-92.0MP.
Takase, Hiroshi; and Fujii, Toru, 4,291,952, Cl. 350-471.000.
Takayama, Syuichi, 4,291,961, Cl. 354-62.000.

Omnipure, Inc.: *See—*
Krause, William A.; and Langeland, Leonard E., 4,292,175, Cl. 210-192.000.

Omron Tateisi Electronics Co.: *See—*
Bando, Yoshihide; and Tanaka, Toshiki, 4,292,613, Cl. 335-128.000.

Onda, Kenichi; and Tokunaga, Norikazu, to Hitachi, Ltd. Gate control circuit with capacitor for field controlled thyristor. 4,292,550, Cl. 307-252.00A.

O'Neill, Brian S.; and Tully, Clay E. O-Ring tool. 4,291,451, Cl. 29-235.000.

Ono, Ichiro: *See—*
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Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Novel aldol derivatives and production thereof. 4,292,432, Cl. 549-35.000.

Ono, Kenji; Matsushita, Hidetoshi; and Shibata, Minoru, to Matsushita Electric Works, Ltd.; and Sauer, Hans. Electromagnetic relay. 4,292,614, Cl. 335-202.000.

Ootsuka, Fumio; Ninomiya, Morimasa; Maehara, Norio; and Yoshimi, Akiro, to Nippondenso Co., Ltd. Method and apparatus for controlling compartment temperature of a vehicle. 4,291,749, Cl. 165-27.000.

Oplatka, George, to BBC Brown, Boveri & Co., Ltd. Thermal energy storage for covering peak loads. 4,291,537, Cl. 60-652.000.

Orain, Michel A., to Glaenzer Spicer. Axial retaining device in particular for a homokinetic tripod joint. 4,291,552, Cl. 64-21.000.

Orcutt, John W., to Texas Instruments Incorporated. Proportional stroke automatic temperature control system. 4,291,717, Cl. 137-86.000.

Orenstein, Henry. Hoppity toy systems. 4,291,488, Cl. 46-116.000.

Orii, Seiji; Sasagawa, Yukio; Ito, Akinori; Maruyama, Hiromi; and Sakai, Yoshiteru, to Nippon Soda Company Limited. Process of producing hydroxypropyl cellulose. 4,292,426, Cl. 536-95.000.

Orita, Kunitaka: *See—*
Muramoto, Takayoshi; and Orita, Kunitaka, 4,292,322, Cl. 424-274.000.

Orlett, Michael J.; and Saraceno, Anthony J., to United States of America, Energy. Method for directly recovering fluorine from gas streams. 4,292,287, Cl. 423-241.000.

Orr, Howard S. Three roll tension stand. 4,291,562, Cl. 72-205.000.

Ostre, Louis, to Ceva. Process and composition for the preservation of vegetables. 4,292,331, Cl. 426-52.000.

Otake, Katuhiko: *See—*
Saito, Takashi; Otake, Katuhiko; and Maruyama, Tokuji, 4,292,495, Cl. 219-125.120.

Otani, Tadahiko: *See—*
Sakurai, Shoichiro; and Otani, Tadahiko, 4,292,258, Cl. 261-39.00A.

Otis Engineering Corporation: *See—*
Churchman, Ronald K., 4,291,722, Cl. 137-496.000.

Otsuka, Yasuhiro: *See—*
Wakizaka, Hiroshi; Shinohara, Hiroshi; Otsuka, Yasuhiro; and Matsumoto, Shinichi, 4,292,157, Cl. 204-195.00S.

Ott, Gunther; and Kaufhold, Wolfgang, to Siemens Aktiengesellschaft. Circuit arrangement for attenuation of power oscillations in networks. 4,292,580, Cl. 323-212.000.

Ott, Karl-Heinz: *See—*
Binsack, Rudolf; Rempel, Dieter; Humme, Gert; and Ott, Karl-Heinz, 4,292,233, Cl. 260-40.00R.

Otto, Ferdinand P., deceased: *See—*
Chibnik, Sheldon; Otto, Ferdinand P., deceased; and Otto, Helen F., executrix, 4,292,186, Cl. 252-49.700.

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Overbeek, Gerhard A., to Akzona Incorporated. 11β-Substituted steroids. 4,292,251, Cl. 260-397.300.

Overman, Joseph D., to Du Pont de Nemours, E. I., and Company. Silver halide development accelerators. 4,292,391, Cl. 430-267.000.

Owens-Corning Fiberglas Corporation: *See—*
Harris, David A., 4,291,783, Cl. 181-295.000.
Kane, John L.; and Nadkarni, Vikas M., 4,292,365, Cl. 428-288.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,292,371, Cl. 428-378.000.
Propster, Mark A., 4,292,064, Cl. 65-27.000.

Owens-Illinois, Inc.: *See—*
White, Rodney V., 4,291,680, Cl. 126-443.000.

Ownby, Gary W.; White, Clark W.; and Zehner, David M., to United States of America, Energy. Method using laser irradiation for the production of atomically clean crystalline silicon and germanium surfaces. 4,292,093, Cl. 148-4.000.

Ozaki, Kazuo: *See—*
Ishiwata, Mamoru; Uematsu, Shinji; Ozaki, Kazuo; and Ishiyama, Masashi, 4,292,349, Cl. 427-335.000.

Ozin, Geoffrey A.; Francis, Colin G.; and Huber, Helmut X. Organometal catalysts and processes for their preparation. 4,292,253, Cl. 260-429.500.

P.I.V. Antrieb Werner Reimers Kommanditgesellschaft: *See—*
Rattunde, Manfred, 4,292,031, Cl. 474-18.000.

Package Machinery Company: *See—*
Prince, Clarence F.; and Putnam, Roger L., Jr., 4,291,520, Cl. 53-551.000.

Packo, Joseph J.: *See—*
Wells, Daniel R.; and Packo, Joseph J., 4,292,568, Cl. 315-111.400.

Pagane, Warren H. Fuel level monitoring engine control and vehicle theft inhibiting device. 4,292,620, Cl. 340-63.000.

Pagano, Alice L. Protective head covering. 4,291,417, Cl. 2-202.000.

Pagel, Ernst O.; and Harth, Robert, to Audi NSU Auto Union AG. Tuning system for receiver of pilot-modulated carrier waves. 4,292,686, Cl. 455-194.000.

Pai, Venkatrao: *See—*
Barnes, Robert E., Jr.; and Pai, Venkatrao, 4,292,206, Cl. 252-463.000.

Pajot, Michel; and Seigneurin, Laurent, to Rhone-Poulenc Industries. Highly reactive alumina and process for the preparation thereof. 4,292,295, Cl. 423-625.000.

Pako Corporation: *See—*
Laska, Ronald C.; and Pone, Janis, 4,291,972, Cl. 355-40.000.

Palazzetti, Mario; Becchi, Giorgio; and Cane, Guiseppe, to Centro Ricerche Fiat S.p.A. System for heating air. 4,291,834, Cl. 237-12.100.

Pampell, Davy G., to Baker International Corporation. Well casing scraping apparatus. 4,291,764, Cl. 166-173.000.

Panek, Karel J.: *See—*
Nielsen, Jan; and Panek, Karel J., 4,292,297, Cl. 424-1.000.

Paolinelli, Antonio: *See—*
Piccolo, Luigi; Corsini, Tullio; Paolinelli, Antonio; Ferri, Gaudenzio; and La Rovere, Angelo, 4,292,085, Cl. 106-109.000.

Park Energy Company: *See—*
Werner, Frank D.; Kleven, Lowell A.; and Greig, Richard C., 4,291,684, Cl. 126-450.000.

Park, Won C.: *See—*
Lingane, Peter J.; Redman, Michael J.; Park, Won C.; Hard, Robert A.; and Harvey, Walter W., 4,291,920, Cl. 299-4.000.

Parker, Edward H.: *See—*
Eime, Lester O.; and Parker, Edward H., 4,292,396, Cl. 430-302.000.

Parmentier, Alfred H. Vertical filtering device. 4,292,173, Cl. 210-138.000.

Parrish, David D.: *See—*
Robinson, Ralph L.; and Parrish, David D., 4,291,623, Cl. 102-310.000.

Parsons, George H., Jr., to Baxter Travenol Laboratories, Inc. Diagnostic method. 4,292,296, Cl. 424-1.000.

Pashulya, Mikhail P.: *See—*
Paton, Boris E.; Lebedev, Vladimir K.; Sheiko, Pavel P.; and Pashulya, Mikhail P., 4,292,497, Cl. 219-130.510.

Pasquito, Joseph: *See—*
Bash, C. Malcolm; and Pasquito, Joseph, 4,291,665, Cl. 124-56.000.

Patanin, Ruslan V.: *See—*
Korytov, Vladimir A.; Maljushevsky, Pavel R.; Guly, Grigory A.; Shkatov, Alexandr S.; Sladkoshteev, Vladimir T.; Patanin, Ruslan V.; Dorokhov, Vasily I.; Klemeshov, Georgy A.; and Arkulis, Grigory E., 4,291,742, Cl. 164-501.000.

Patel, Natu R.: *See—*
Kirkpatrick, Joel L.; Patel, Natu R.; and Rutter, Jerry L., 4,292,071, Cl. 71-96.000.

Patil, Arvind S.; and Netherton, Lowell E., to BASF Wyandotte Corporation. Yellow pigments stable at high temperatures. 4,292,294, Cl. 423-594.000.

Paton, Boris E.; Lebedev, Vladimir K.; Sheiko, Pavel P.; and Pashulya, Mikhail P. Puised arc welding and surfacing apparatus. 4,292,497, Cl. 219-130.510.

Patterson, James A., to Amco Standards International. Styrene-divinylbenzene copolymer and method of manufacture. 4,291,980, Cl. 356-243.000.

Patterson, John R.: *See—*
Bonacci, John C.; and Patterson, John R., 4,292,167, Cl. 208-66.000.

Pattison, Ian C., to Warner-Lambert Company. 1,3,8-Triazaspirodecane-4-ones, pharmaceutical compositions thereof and method of use thereof. 4,292,321, Cl. 424-267.000.

Paul Hettich & Co.: *See—*
Faust, Karl-Volker, 4,291,929, Cl. 312-341.00R.

Paul, Richard: *See—*
Smith, James D.; and Paul, Richard, 4,292,174, Cl. 210-167.000.

Pauls, Walter L.: *See—*
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Pavlov, Leonid V.: *See—*
Medovar, Boris I.; Artamonov, Viktor L.; Kirsanov, Pavel I.; Marchenko, Alexandr M.; Bogachenko, Alexei G.; Pavlov, Leonid V.; Kamensky, Jury M.; Gutnov, Ruslanbek B.; and Platonov, Pavel M., 4,291,744, Cl. 164-509.000.

Payne, Robert D.; and Jordan, Thomas F., to Continental Group, Inc., The. Powder coating apparatus for two-piece cans. 4,291,640, Cl. 118-50.100.

Peck, Kenneth E., Jr.; and Jordan, Donald L. Method of winding a commutator. 4,291,456, Cl. 29-597.000.

Pedain, Josef: *See—*
Kubitza, Werner; Mennicken, Gerhard; and Pedain, Josef, 4,292,350, Cl. 427-385.500.

Pedall, Friedrich: *See—*
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Pedersen, Jorgen: *See—*
Iversen, Niels A.; Pedersen, Jorgen; and Lolk, Hans, 4,291,904, Cl. 285-162.000.

Pekko, John A., to Avery International Corporation. Moisture and temperature resistant polarizing lamination. 4,292,370, Cl. 428-355.000.

Pelt, Cornelis P.; and De Jong, Hendrikus, to Hoogovens Ijmuiden, B.V. Rail system having wheel-engaged hydraulic piston-and-cylinder assembly, and such an assembly. 4,291,854, Cl. 246-271.000.

Pence, Valerie C.: *See—*
Janick, Jules; Hasegawa, Paul M.; and Pence, Valerie C., 4,291,498, Cl. 47-58.000.

Pennwalt Corporation: *See—*
Chen, Johnson C., 4,292,189, Cl. 252-70.000.

Pepicelli, Pasquale L.: *See—*
Butz, David E.; and Pepicelli, Pasquale L., 4,292,273, Cl. 422-102.000.

Pepper, David M.; and Klein, Marvin B., to Hughes Aircraft Company. Electro-optic devices using Stark-induced birefringence and dichroism. 4,291,950, Cl. 350-389.000.

Perales, Raul, to Windsor Communications Group, Inc. Protective end cap. 4,291,803, Cl. 206-443.000.

Perazzoni, Pierluigi; and Bilancini, Luigi, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Liquid composition for light and heat stabilization of polyamides. 4,292,194, Cl. 252-400.00R.

Perkins, Patrick: *See—*
Vollhardt, Kurt P. C.; and Perkins, Patrick, 4,292,415, Cl. 525-357.000.

Perlick Company, Inc., The: *See—*
Nezworski, James E., 4,291,821, Cl. 222-153.000.

Perlman, Marvin: *See—*
Wilson, John F.; Hoover, Edward D.; Hammond, Philip K.; Moshier, William A.; Woodell, Jack L.; Spaniol, John W.; Bowerman, John J.; Bieber, Larry C.; and Perlman, Marvin, 4,292,465, Cl. 178-3.000.

Permavision: *See—*
Covington, William S., 4,291,953, Cl. 351-160.00H.

Perraud, Raymond J., to Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A. Societe Anonyme. Rotary percussion hydraulic drilling machine. 4,291,771, Cl. 173-106.000.

Persson, Stig, to SKF Industries, Inc. Integral foamed plastic sliding bearings. 4,291,927, Cl. 308-121.000.

Pesson, Marcel, to Laboratorie Roger Bellon; and Dainippon Pharmaceutical. 1,4-Dihydro-quinoline-3-carboxylic acid derivatives, process for their preparation and compositions containing them. 4,292,317, Cl. 424-250.000.

Peter, Donald: *See—*
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,292,192, Cl. 252-132.000.

Petersen, Paul S., to Novus Inc. Support for windshield repair apparatus. 4,291,866, Cl. 269-1.000.

Petersen, Walter A.; Travis, Jonathan A.; and Badia, Frank A., to International Nickel Co., Inc., The. Gold colored laminated composite material having magnetic properties. 4,292,377, Cl. 428-675.000.

Peterson, Dennis L.: *See—*
Nepper, Robert F.; and Peterson, Dennis L., 4,292,530, Cl. 250-577.000.

Peterson, James O.: *See—*
Gore, Donald B.; Krigbaum, Ronald S.; and Peterson, James O., 4,292,215, Cl. 260-17.300.

Peterson, Mark. Finger twirled toy with balancing mass. 4,291,874, Cl. 273-1.0GF.

Peterson, Robert R.; and Ventura, Daniel S., to Barry Wright Corporation. Laminated bearings with dual stock layers. 4,291,925, Cl. 308-26.000.

Petitpierre, Jean C., to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 4,291,901, Cl. 282-27.500.

Pett, Robert A.: *See—*
Theodore, Ares N.; Pett, Robert A.; and Qaderi, S. Burhan A., 4,292,223, Cl. 260-29.1SB.

Petty, Thomas L.; and Baidwan, Balinderjeet S., to Braddy, Dale E. Spirometer device. 4,291,704, Cl. 128-728.000.

Pfiester, James R.; and McAlister, Doyle V., to Motorola, Inc. IGFET Decode circuit using series-coupled transistors. 4,292,547, Cl. 307-463.000.

Pfizer Inc.: *See—*
Eggler, James F.; and Schaaf, Thomas K., 4,292,444, Cl. 564-97.000.

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Phillips Petroleum Co.: *See—*
Borel, Albert W., 4,292,234, Cl. 260-42.150.
Reusser, Robert E., 4,292,279, Cl. 423-15.000.
Shue, Robert S.; and Scoggins, Lacey E., 4,292,416, Cl. 525-420.000.

Piccolo, Luigi; Corsini, Tullio; Paolinelli, Antonio; Ferri, Gaudenzio; and La Rovere, Angelo, to Euteco Impianti S.p.A. Method for converting into a non-polluting particulate product the ferrous sulphate obtained in the production of titanium dioxide by the sulphate process. 4,292,085, Cl. 106-109.000.

Pickens, Joseph R.; Schelleng, Robert D.; Donachie, Stephen J.; and Nichol, Thomas J., to International Nickel Co., Inc., The. High strength aluminum alloy and process. 4,292,079, Cl. 75-232.000.

Picker Corporation: *See—*
Schlosser, Philip A.; and Miller, Don W., 4,292,645, Cl. 357-29.000.

Picquet, Pierre C.: *See—*
Welsh, Jay Y.; Picquet, Pierre C.; and Schyns, Pierre D., 4,292,282, Cl. 423-60.000.

Pieper, Gustav Adolf: *See—*
Klaren, Dick G., 4,292,135, Cl. 202-173.000.

Pike, Charles T.: *See—*
Aldag, Henry R.; Marling, John B.; and Pike, Charles T., 4,292,601, Cl. 331-94.50L.

Pilwat, Gunter: *See—*
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Pimentel, Gary W.: *See—*
Bass, Sidney; and Pimentel, Gary W., 4,291,884, Cl. 273-249.000.

Piotrowski, Alfred B., to Mobil Oil Corporation. Detergent compositions. 4,292,046, Cl. 44-63.000.

Pisarev, Gennady V.: *See—*
Kolesnik, Mikhail I.; Egorov, Anatoly P.; Kuznetsov, Anatoly A.; Gobov, Anatoly P.; Ryabukhin, Jury M.; Rudakov, Viktor A.; Pisarev, Gennady V.; Zheleznov, Jury M.; and Vasiliev, Alexei V., 4,292,345, Cl. 427-113.000.

Pisoni, Angelo: *See—*
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Plaettner, Rolf; Kruehler, Wolfgang; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Method of manufacturing semiconductor bodies composed of amorphous silicon. 4,292,343, Cl. 427-39.000.

Plaskon Products, Inc.: *See—*
Gore, Donald B.; Krigbaum, Ronald S.; and Peterson, James O., 4,292,215, Cl. 260-17.300.

Plastic Reel Corporation of America: *See—*
Basili, Robert A.; and Wilson, William B., 4,291,801, Cl. 206-387.000.

Plastofilm Industries, Inc.: *See—*
Seeley, Leonard, 4,291,805, Cl. 206-563.000.

Plasynski, Joseph E.: *See—*
Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., 4,292,155, Cl. 204-181.00C.

Platonov, Pavel M.: *See—*
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Plessey Canada Limited: *See—*
Davis, John C. H.; and Natarajan, Krishnaswamy, 4,292,478, Cl. 179-170.0NC.

Ploog, Uwe: *See—*
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Pobst, David F., to Sid Richardson Carbon & Gasoline Company. Method of and apparatus for burning wet lean gas. 4,292,024, Cl. 432-13.000.

Poirier, Jean P.: *See—*
Chataignon, Andre; Nicolas, Alain; and Poirier, Jean P., 4,292,479, Cl. 179-170.0NC.

Polaroid Corporation: *See—*
Bendoni, Leonard V.; and Green, Lawrence E., 4,291,966, Cl. 354-275.000.
Johnson, Bruce K.; and Whiteside, George D., 4,291,965, Cl. 354-195.000.
Land, Edwin H., 4,291,964, Cl. 354-145.000.
Wilson, Stewart W., 4,291,954, Cl. 353-42.000.

Polderman, Pieter A., to Stork Repak B.V. Device for handling containers. 4,291,733, Cl. 141-152.000.

Pollet, Robert J.; Sels, Francis J.; Brems, Karel A.; and de Ramaix, Maurice A., to Agfa-Gevaert, N.V. Photographic silver halide development in the presence of thioether development activators. 4,292,400, Cl. 430-383.000.

Pollet, Robert J.; Kokelenberg, Hendrik E.; Samijn, Rafael P.; Sels, Francis J.; Ville, Frans J.; and de Jaeger, Nikolaas C., to Agfa-Gevaert, N.V. Light-sensitive silver halide materials containing fluorine-containing surfactants. 4,292,402, Cl. 430-631.000.

Pommer, Dieter: *See—*
Lindner, Alfred; Volkamer, Klaus; Wagner, Ulrich; Pommer, Dieter; Schneider, Klaus-Juergen; and Schwentker, Harald, 4,292,141, Cl. 203-49.000.

Pond, Alan R., to Underman Greeman Berger Limited. Connectors for furniture. 4,292,003, Cl. 403-407.000.

Pone, Janis: *See—*
Laska, Ronald C.; and Pone, Janis, 4,291,972, Cl. 355-40.000.

Ponomarenko, Jury F.: *See—*
Sanin, Sergei A.; Ponomarenko, Jury F.; Firstov, Vladislav D.; Khorin, Vladimir N.; Ragutsky, Arnold M.; Kostjunin, Boris N.; and Bronfen, Petr M., 4,291,718, Cl. 137-87.000.

Pont-a-Mousson S.A.: *See—*
Fort, Pierre H., 4,291,630, Cl. 104-173.00R.

Pool, Sam L.: *See—*
Evans, James D.; and Pool, Sam L., 4,292,671, Cl. 364-433.000.

Pope, J. Lee, Jr.: *See—*
Mascoli, Carmine C.; Pope, J. Lee, Jr.; and Weber, Phillip L., 4,292,405, Cl. 435-31.000.

Porter, Edward B.; to Ross Operating Valve Company. Monitor for double safety valves. 4,291,613, Cl. 92-131.000.

Post, Larry K.: *See—*
Gabriel, Hans R. L.; Post, Larry K.; Culbertson, Billy M.; and Graham, Curtis M., 4,292,231, Cl. 260-33.4UR.

Post, Martin F. M.; and Schaper, Lambert, to Shell Oil Company. Process for the preparation of hydrocarbons from synthesis gas. 4,292,410, Cl. 518-714.000.

Potter, Owen E., to Monash University. Power generation system. 4,291,539, Cl. 60-670.000.

PPG Industries, Inc.: *See—*
Bosso, Joseph F.; Nugent, Richard M.; and Plasynski, Joseph E., 4,292,155, Cl. 204-181.00C.
Chamberlin, Ronald D., 4,292,197, Cl. 252-425.300.
DeTorre, Robert P., 4,291,824, Cl. 225-2.000.
Donley, Harold E., 4,292,347, Cl. 427-168.000.

PPT Pyrolyse-und Prozessanlagentechnik GmbH & Co.: *See—*
Boder, Wilfried, 4,291,649, Cl. 122-136.00R.

Prentice, Edgar C.: *See—*
Fryer, Kevin C.; and Prentice, Edgar C., 4,292,358, Cl. 428-135.000.

Presby, Herman M.: *See—*
Marcuse, Dietrich; and Presby, Herman M., 4,292,341, Cl. 427-10.000.

Presta, Claude: *See—*
Nedelec, Maurice; Presta, Claude; and Vitoux, Francois, 4,292,065, Cl. 65-104.000.

Prewer, John R. Propagation of plants. 4,291,499, Cl. 47-59.000.

Priebe, Edward T.: *See—*
Fox, Robert M.; Mogk, Robert D.; and Priebe, Edward T., 4,291,912, Cl. 296-217.000.

Prince, Clarence F.; and Putnam, Roger L., Jr., to Package Machinery Company. Vertical form, fill and seal packaging machine with improved end sealing and stripping means. 4,291,520, Cl. 53-551.000.

Prince Manufacturing Co., Inc.: *See—*
Bash, C. Malcolm; and Pasquito, Joseph, 4,291,665, Cl. 124-56.000.

Probyn, Keith A.; Nolen, Richard W.; Erickson, Charles W.; Dawson, Gerald G.; Goldstein, Ralph; and Bender, Max, to Northern Petrochemical Co. Partition folding and inserting machine. 4,292,034, Cl. 493-92.000.

Procter & Gamble Company, The: *See—*
Battrell, Charles F., 4,292,035, Cl. 8-137.000.

Prohazka, Miloslav; and Kaulich, Karel, to ELITEX, koncern textilniho strojirenstvi. Mechanism for launching grippers in gripper looms. 4,291,731, Cl. 139-438.000.

Propster, Mark A., to Owens-Corning Fiberglas Corporation. Glass batch feeding using a fluidized bed for predrying agglomerates. 4,292,064, Cl. 65-27.000.

Proshkin, Ivan T.: *See—*
Frolov, Jury F.; Sukoian, Nariman A.; Proshkin, Ivan T.; and Basalaev, Anany M., 4,292,460, Cl. 13-14.000.

Prunier, Louis, to American Optical Corporation. Lens surfacing pad. 4,291,508, Cl. 51-395.000.

Pruss, Gunter. Responsive device for a vehicle tire. 4,292,484, Cl. 200-61.250.

Pugh, John W.: *See—*
McCarty, Lewis V.; and Pugh, John W., 4,291,444, Cl. 29-25.140.

Puglisi, Vincent J.: *See—*
Seiger, Harvey N.; and Puglisi, Vincent J., 4,292,143, Cl. 204-2.100.

Pullman Incorporated: *See—*
Knippel, Willis H., 4,291,631, Cl. 105-252.000.

Purdue Research Foundation: *See—*
Janick, Jules; Hasegawa, Paul M.; and Pence, Valerie C., 4,291,498, Cl. 47-58.000.

Putnam, Roger L., Jr.: *See—*
Prince, Clarence F.; and Putnam, Roger L., Jr., 4,291,520, Cl. 53-551.000.

Putseys, Roland: *See—*
Denecker, Gabriel; Sluyts, Domien; Putseys, Roland; Van Herck, Willy; Claes, Ludo; and Spott, Georg, 4,292,043, Cl. 23-296.000.

Qaderi, S. Burhan A.: *See—*
Theodore, Ares N.; Pett, Robert A.; and Qaderi, S. Burhan A., 4,292,223, Cl. 260-29.1SB.

Qasim, Javed; Walker, Samuel C.; and Longwell, Paul A., to Aerojet-General Corporation. Plug-type valve. 4,291,859, Cl. 251-123.000.

Quaker Oats Company, The: *See—*
Nelson, James F., 4,291,635, Cl. 110-245.000.

R. C. Sanders Technology Systems, Inc.: *See—*
Barr, Charles W.; Lerer, Michael I.; Sanders, Royden C., Jr.; and Vassar, Russell J., Jr., 4,291,992, Cl. 400-124.000.

Raab, Andrew F.; and Halsted, Raymond T., to Indak Manufacturing Corp. Fluid control switches. 4,291,725, Cl. 137-625.250.

Raccah, Paul M., to Scientific Gem Identification, Inc. Apparatus for determining the color characteristics of a gem. 4,291,975, Cl. 356-30.000.

Ragutsky, Arnold M.: *See—*
Sanin, Sergei A.; Ponomarenko, Jury F.; Firstov, Vladislav D.; Khorin, Vladimir N.; Ragutsky, Arnold M.; Kostjunin, Boris N.; and Bronfen, Petr M., 4,291,718, Cl. 137-87.000.

Rahman, Muhammed A. Solar energy collector. 4,291,675, Cl. 126-432.000.

Ratkay, Edward J.: *See—*
Singer, Carl M.; and Ratkay, Edward J., 4,292,013, Cl. 418-132.000.

Rattunde, Manfred, to P.I.V. Antrieb Werner Reimers Kommanditgesellschaft. Infinitely variable cone-pulley transmission. 4,292,031, Cl. 474-18.000.

Rauch, Harry W., Sr., to United States of America, Energy. High temperature, low expansion, corrosion resistant ceramic and gas turbine. 4,292,083, Cl. 501-104.000.

Rawlings, Robert L.: *See—*
Wollum, James E.; and Rawlings, Robert L., 4,292,669, Cl. 364-200.000.

Raymond, Gary E. Photographic developer-printer assembly, and a conveying roller unit therefor. 4,291,969, Cl. 354-322.000.

Raynal, Serge F.: *See—*
Boileau, Sylvie L.; Caubere, Paul J.; Raynal, Serge F.; Lecolier, Serge L.; and N'Debeka, Gilberte N., 4,292,421, Cl. 526-220.000.

RCA Corporation: *See—*
Assour, Jacques M.; Bates, Theresa I.; Bender, John R.; and Neilson, John M. S., 4,292,646, Cl. 357-38.000.
Hanak, Joseph J., 4,292,092, Cl. 148-1.500.
Heyman, Philip M.; and Bortfeld, David P., 4,292,511, Cl. 235-454.000.
Johnson, Henry C., 4,292,637, Cl. 343-6.5SS.
Kolc, Ronald F., 4,291,642, Cl. 118-415.000.
Rodgers, Robert L., III, 4,292,605, Cl. 331-111.000.
Southgate, Peter D., 4,292,672, Cl. 364-507.000.
Steckler, Steven A.; and Balaban, Alvin R., 4,292,654, Cl. 358-158.000.

Ream, Gregory L.: *See—*
Lammers, Gerald B.; and Ream, Gregory L., 4,292,640, Cl. 346-75.000.

Reamer, Robert A.: *See—*
Liu, Thomas M. H.; Reamer, Robert A.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,292,436, Cl. 560-148.000.

Reckin, George M.; Lofy, Richard A.; and Dean, Robert S., to Lakeside Bridge & Steel Co. Apparatus for opening and closing air lock doors. 4,291,500, Cl. 49-68.000.

Redden, George H., to Westinghouse Electric Corp. Multiple heat pump and heat balancing system for multi-stage material processing. 4,291,757, Cl. 165-104.310.

Redman, Michael J.: *See—*
Lingane, Peter J.; Redman, Michael J.; Park, Won C.; Hard, Robert A.; and Harvey, Walter W., 4,291,920, Cl. 299-4.000.

Reed, Jerry K., Sr. Electrical energy management devices. 4,292,543, Cl. 307-35.000.

Reed, William R., Jr.: *See—*
Ibsen, Robert L.; and Reed, William R., Jr., 4,292,236, Cl. 260-42.520.

Rees, Chandler D.: *See—*
Knablein, David J.; and Rees, Chandler D., 4,291,494, Cl. 47-17.000.

Regie Nationale des Usines Renault: *See—*
Baudoin, Patrice, 4,291,594, Cl. 74-857.000.

Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, to Battelle Memorial Institute. Process for continuously dissolving a particulate solid material, notably a lignocellulose material. 4,292,089, Cl. 127-1.000.

Reichelt, Walter R.: *See—*
Hoy, Malcolm G.; and Reichelt, Walter R., 4,292,496, Cl. 219-126.000.

Reichert, James B. Method of fabricating composite members. 4,292,101, Cl. 156-156.000.

Reid, David L.; and Taylor, Dennis O., to Cummins Engine Company, Inc. Diagnosis of engine power and compression balance. 4,292,670, Cl. 364-431.000.

Reid, Kenneth H.: *See—*
Finn, Bernard J.; Haddlesey, Brian T.; and Reid, Kenneth H., 4,291,918, Cl. 297-483.000.

Reiner, Roland: *See—*
Montavon, Marc; and Reiner, Roland, 4,292,428, Cl. 544-27.000.

Reinhardt, Paul H.: *See—*
Beimgraben, Herbert W.; and Reinhardt, Paul H., 4,291,723, Cl. 137-508.000.

Reinhold, Charles L.: *See—*
De Castella, Pierre M. T.; and Reinhold, Charles L., 4,292,055, Cl. 55-233.000.

Remillieux, Jean, to Air Industrie. Declogging process for filtration installation and improved filtration installation. 4,292,053, Cl. 55-96.000.

Remizov, Jury B.: *See—*
Anfilov, Igor V.; Ershov, Geny S.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; Suvorov, Gennady P.; and Scherbatenko, Boris G., 4,291,971, Cl. 355-14.00R.

Rempel, Dieter: *See—*
Binsack, Rudolf; Rempel, Dieter; Humme, Gert; and Ott, Karl-Heinz, 4,292,233, Cl. 260-40.00R.

Renwick, Peter J., to Craven Tasker (Andover) Limited. Agricultural implements. 4,291,638, Cl. 111-61.000.

Repa, Otto, to Mauser-Werke Oberndorf GmbH. Sight rail for shoulder firearms. 4,291,476, Cl. 42-1.0ST.

Repetti, Rene J.: *See—*
Comte, Paul Y.; and Repetti, Rene J., 4,291,674, Cl. 126-419.000.

Reul, Helmut, to Medac Gesellschaft fur Klinische Spezialpraparate mbH. Artificial heart valve. 4,291,420, Cl. 3-1.500.

Reusser, Robert E., to Phillips Petroleum Co. Production of high purity uranium compounds from crude yellow cake. 4,292,279, Cl. 423-15.000.

Rey-Coquais, Bruno, to Rhone-Poulenc Industries. Liquid dielectric compositions comprising bromochlorobenzene/polychlorobenzene admixtures. 4,292,462, Cl. 174-17.0LF.

Reynolds, Darcie F. Drum winches. 4,291,868, Cl. 254-375.000.

Reynolds, Ellis W.; and Joyce, Edward R., to SCM Corporation. Tree slashing apparatus. 4,291,492, Cl. 47-12.000.

Rhea, Richard L. Floatation garment. 4,291,427, Cl. 9-335.000.

Rheinmetall GmbH: *See—*
Sabranski, Udo, 4,291,624, Cl. 102-307.000.

Rhodes, Eugene E., to Ford Motor Company. Method and apparatus for manufacturing finned heat exchangers. 4,291,450, Cl. 29-157.30R.

Rhone-Poulenc Industries: *See—*
Pajot, Michel; and Seigneurin, Laurent, 4,292,295, Cl. 423-625.000.
Rey-Coquais, Bruno, 4,292,462, Cl. 174-17.0LF.
Semanaz, Daniel; and Cassat, Robert, 4,292,500, Cl. 219-345.000.

Rhone-Poulenc-Textile: *See—*
Isoard, Bernard, 4,291,842, Cl. 242-46.500.

Rice, M. John, Jr.: *See—*
Sarma, Kalluri R.; Rice, M. John, Jr.; and Lesk, I. Arnold, 4,292,342, Cl. 427-34.000.

Richmond, George E., to Young Dental Manufacturing Co. Sealing dental collet. 4,292,027, Cl. 433-127.000.

Richter, Bernhard: *See—*
Stahl, Werner; Breuer, Uwe; Richter, Bernhard; Alstetter, Franz; Krappmann, Franz; and Schuster, Hans, 4,292,177, Cl. 210-325.000.

Richter, Simon J.; and Sanscharowskiy, Michael, to Coca-Cola Company, The. Reject system for in-line pressure testing systems. 4,291,573, Cl. 73-37.000.

Ricks, Jay W. Floatable solar heat modules. 4,291,672, Cl. 126-415.000.

Ricoh Co., Ltd.: *See—*
Kobayashi, Yuochi; and Kamiyama, Shinichi, 4,291,643, Cl. 118-669.000.

Riedel, John E.; and Cheney, Paul G., to Minnesota Mining and Manufacturing Company. Pressure sensitive adhesive tape. 4,292,360, Cl. 428-171.000.

Riedle, Rudolf: *See—*
Lindner, Tassilo; Engelsberger, Georg; Zeller, Norbert; and Riedle, Rudolf, 4,292,434, Cl. 556-479.000.

Rieger, Franz: *See—*
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Riesenfeld, James: *See—*
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Rieter Machine Works, Ltd.: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,291,529, Cl. 57-291.000.

Rifkin, Ellis B., to Ethyl Corporation. Method for inhibiting deposit formation in distillation units associated with separation and purification of alkyl phosphorochloridothioates. 4,292,139, Cl. 203-6.000.

Riley, Norman, to Imperial Chemical Industries Limited. Aniline derivatives. 4,292,446, Cl. 564-221.000.

Ring, David F., to Johnson & Johnson Products, Inc. Compact tampon-applicator assembly with ribbed inner tube. 4,291,696, Cl. 128-263.000.

Rio Linda Chemical Company: *See—*
Hicks, Bruce W.; and Hicks, Jerry D., 4,292,292, Cl. 423-477.000.

Ristow, Dietrich: *See—*
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Ritchey, Robert W.: *See—*
Elikan, Leonard; Stana, Regis R.; and Ritchey, Robert W., 4,292,278, Cl. 423-8.000.

Riti, Alfred A. Knot securing device. 4,291,439, Cl. 24-119.000.

Rittenbach, Otto E., to United States of America, Army. Signal processing system. 4,292,635, Cl. 343-5.0NQ.

Rivier, Jean E. F.: *See—*
Vale, Wylie W., Jr.; and Rivier, Jean E. F., 4,292,313, Cl. 424-177.000.

RLK Research, Inc.: *See—*
Kramm, Carl H., 4,291,506, Cl. 51-338.000.

Robert Bosch GmbH: *See—*
Bock, Gerd; Zettl, Herbert; Zappen, Hans-Wilhelm; and Zimmermann, Friedrich, 4,292,653, Cl. 358-140.000.
Leiber, Heinz; and Gerstenmaier, Jurgen, 4,291,924, Cl. 303-111.000.
Locher, Johannes, 4,292,658, Cl. 361-93.000.
Maurer, Helmut; Dillman, Gerhard; Rieger, Franz; and Linder, Ernst, 4,291,572, Cl. 73-23.000.
Muller, Klaus; Maurer, Helmut; Dietz, Hermann; Friese, Karl-Hermann; Leibfried, Wolfgang; Stecher, Gunther; and Linder, Ernst, 4,292,158, Cl. 204-195.00S.

Roberts, Michael G.: *See—*
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Robertshaw Controls Company: *See—*
Goodwin, Perry H., Jr.; and Kotalik, Richard J., 4,292,633, Cl. 340-870.390.
Williamson, Warren G., 4,291,449, Cl. 29-157.10R.

Robertson, Alan D.; Robertson, Blythe J.; and Olson, Gerald, to Robertson, Alan D.; and Robertson, Blythe J. Magnetic hammer. 4,291,736, Cl. 145-30.00A.

Robertson, Blythe J.: *See—*
Robertson, Alan D.; Robertson, Blythe J.; and Olson, Gerald, 4,291,736, Cl. 145-30.00A.

Robijns, Jozef A. M.: *See—*
Venken, Jan H. G.; and Robijns, Jozef A. M., 4,292,473, Cl. 179-18.0FA.

Robinson, Keith, to Dowty Fuel Systems Limited. Fuel supply system. 4,291,532, Cl. 60-223.000.

Robinson, Ralph L.; and Parrish, David D., to NL Industries, Inc. Binary electroexplosive device and method of assembly thereof. 4,291,623, Cl. 102-310.000.

Rockwell International Corporation: *See—*
Glass, Howard L., 4,292,119, Cl. 156-624.000.
Williams, Ernest E.; and Brennan, William M., 4,291,867, Cl. 269-43.000.

Rodgers, Aubrey; and Bailey, Escar L., to United States of America, Army. Reaction-jet torquer. 4,291,849, Cl. 244-3.220.

Rodgers, Robert L., III, to RCA Corporation. Relaxation oscillators with electrical control of periodicities of oscillation. 4,292,605, Cl. 331-111.000.

Rodth, Joseph J., to Alco Foodservice Equipment Company. Cold plate heat exchanger. 4,291,546, Cl. 62-398.000.

Roeder, Robert S.: *See—*
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Rohm and Haas Company: *See—*
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Novak, Ronald W.; and Wolf, Leslie R., 4,292,220, Cl. 260-23.0AR.

Rohr Industries, Inc.: *See—*
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Rohr, Robert D.: *See—*
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Rohrbach, Ronald P.; and Maliarik, Mary J., to UOP Inc. Method of preparing a support matrix. 4,292,199, Cl. 252-430.000.

Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. 2,3-Substituted-1,2-isothiazolium salt antimicrobials. 4,292,430, Cl. 548-206.000.

Rolls-Royce Limited: *See—*
Ballard, John R., 4,291,530, Cl. 60-39.09P.
Campbell, David A., 4,291,531, Cl. 60-39.51R.
Dinsdale, Raymond, 4,291,566, Cl. 72-342.000.
Hustler, David, 4,292,376, Cl. 428-593.000.
Meetham, Geoffrey W.; and Marjoram, John R., 4,292,010, Cl. 416-241.00R.
Snell, Leonard S., 4,292,001, Cl. 403-359.000.

Roloff, Carl A., to Allis-Chalmers Corporation. Roller conveyor-classifier. 4,291,808, Cl. 209-668.000.

Roman, Steven A.; and Soloway, Samuel B., to Shell Oil Company. Oxyimino-substituted (1R,cis)cyclopropanecarboxylate pesticides. 4,292,325, Cl. 424-304.000.

Ron, Moshe; Gruen, Dieter M.; Mendelsohn, Marshall H.; and Sheft, Irving, to United States of America, Energy. Method for preparing porous metal hydride compacts. 4,292,265, Cl. 264-82.000.

Rooney, Clarence S.: *See—*
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Rosch, Fritz: *See—*
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Rosenhagen, William: *See—*
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Ross, Louis, to Borg-Warner Corporation. Double-shuttle motion transmitting apparatus. 4,291,591, Cl. 74-650.000.

Ross Operating Valve Company: *See—*
Porter, Edward B., 4,291,613, Cl. 92-131.000.

Rosselet, Jean, to Mefina S.A. Safety mechanism for fuses. 4,291,628, Cl. 102-276.000.

Rostron, Norman: *See—*
Hartley, Kenneth; Moulding, Trevor L. J.; and Rostron, Norman, 4,292,127, Cl. 176-17.000.

Roth, Zdenek; and Altmann, Josef, to SKODA, oborovy podnik. Arrangement for sucking-off gases. 4,292,259, Cl. 261-123.000.

Rothbuhr, Lothar; and Witte, Josef, to Deutsche Gold- Und Silber-Scheideanstalt Vormals Roessler. Process for the production of furnace black. 4,292,291, Cl. 423-450.000.

Rouf, Mohammad A., to Kewanee Boiler Corporation. High voltage electrode steam boiler and electrode assembly therefor. 4,292,498, Cl. 219-288.000.

Rowden, George A.: *See—*
Bonney, Christopher F.; and Rowden, George A., 4,292,277, Cl. 422-259.000.

Rowland-Hill, E. W.: *See—*
Weber, Steven J.; and Rowland-Hill, E. W., 4,291,709, Cl. 130-27.00T.

Royal Continental Box Company: *See—*
Nigro, Paul R., 4,291,828, Cl. 229-41.00B.

Roytberg, Leo F., to Joseph Pollak Corporation. Ignition switch with starter lockout. 4,292,483, Cl. 200-42.00A.

Rozhenko, Anatoly L.: *See—*
Anfilov, Igor V.; Ershov, Geny S.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; Suvorov, Gennady P.; and Scherbatenko, Boris G., 4,291,971, Cl. 355-14.00R.

Rubenstein, Irving. Package clip. 4,291,810, Cl. 211-89.000.

Rubner, Roland; Kuhn, Eberhard; and Ahne, Hellmut, to Siemens Aktiengesellschaft. Method for the preparation of relief structures by phototechniques. 4,292,398, Cl. 430-306.000.

Rudakov, Viktor A.: *See—*
Kolesnik, Mikhail I.; Egorov, Anatoly P.; Kuznetsov, Anatoly A.; Gobov, Anatoly P.; Ryabukhin, Jury M.; Rudakov, Viktor A.; Pisarev, Gennady V.; Zheleznov, Jury M.; and Vasiliev, Alexei V., 4,292,345, Cl. 427-113.000.

Rudd, Kenneth N. Trading system. 4,292,508, Cl. 235-92.0GA.

Rudder, Joel: *See—*
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Rudjuk, Sergei I.: *See—*
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Rupp, Wiktor J.: *See—*
Lobdell, Alban J.; and Rupp, Wiktor J., 4,292,030, Cl. 434-262.000.

Russell, Burdsall and Ward Corporation: *See—*
McMurray, John C.; and Kudelko, Arthur G., 4,291,737, Cl. 411-282.000.

Ruti Machinery Works Ltd.: *See—*
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Rutter, Jerry L.; Gibbs, Charles G.; and Hedrich, Loren W., to Gulf Oil Corporation. Arylthioureido pyridinecarbamino compounds and use as plant growth regulants. 4,292,069, Cl. 71-94.000.

Rutter, Jerry L.: *See—*
Kirkpatrick, Joel L.; Patel, Natu R.; and Rutter, Jerry L., 4,292,071, Cl. 71-96.000.

Ryabukhin, Jury M.: *See—*
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Ryan, Daniel F.: *See—*
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Saben, Hugh S.: *See—*
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Sabranski, Udo, to Rheinmetall GmbH. Explosive charges. 4,291,624, Cl. 102-307.000.

Sachetto, Jean-Pierre: *See—*
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,292,089, Cl. 127-1.000.

Sadakane, Hirofumi: *See—*
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Sadler, John A., to Chubb Industries Limited. Fibre optic security system. 4,292,628, Cl. 340-531.000.

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Sagusa, Hisayuki: *See—*
Satou, Takehide; Yoshida, Kasumi; Sagusa, Hisayuki; Ohno, Osamu; and Abe, Tetuaki, 4,291,986, Cl. 356-410.000.

Saint Gobain Industries: *See—*
Nedelec, Maurice; Presta, Claude; and Vitoux, Francois, 4,292,065, Cl. 65-104.000.

Saito, Akio: *See—*
Ohnishi, Masaaki; and Saito, Akio, 4,291,981, Cl. 356-244.000.

Saito, Akira; Yamori, Akio; and Ibaragi, Toshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the preparation of modified block copolymers. 4,292,414, Cl. 525-255.000.

Saito, Kenichi: *See—*
Takahashi, Tetsuo; Taguchi, Yoshinobu; Tando, Shuichi; and Saito, Kenichi, 4,292,116, Cl. 156-566.000.

Saito, Takashi; Otake, Katuhiko; and Maruyama, Tokuji, to Kobe Steel, Limited. Welding torch weaving device. 4,292,495, Cl. 219-125.120.

Sakai, Yoshiteru: *See—*
Orii, Seiji; Sasagawa, Yukio; Ito, Akinori; Maruyama, Hiromi; and Sakai, Yoshiteru, 4,292,426, Cl. 536-95.000.

Sakakibara, Naoji; and Hashimoto, Nobuyuki, to Aisin Sieki Kabushiki Kaisha. Air-filter assembly. 4,292,060, Cl. 55-385.00R.

Sakakibara, Shiro, to Aisin-Warner Kabushiki Kaisha. Flow regulator valve in hydraulic control system for automatic transmission. 4,291,596, Cl. 74-867.000.

Sakata, Ryozo: *See—*
Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; Arai, Katsuhiko; Kojima, Minoru; Taniguchi, Yoshiko; Yoshida, Masako; Sakata, Ryozo; Sugihara, Hideki; Dobashi, Masashi; and Ohwada, Hirobumi, 4,292,353, Cl. 428-211.000.

Sakauye, Randall T.: *See—*
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Sakurada, Nobuaki: *See—*
Ito, Tadashi; Murakami, Hiroyasu; Suzuki, Masayuki; Yamamichi, Masayoshi; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,291,960, Cl. 354-53.000.

Sakurai, Shoichiro; and Otani, Tadahiko, to Hitachi, Ltd. Altitude compensating device for carburetors. 4,292,258, Cl. 261-39.00A.

Salensky, George A., to Union Carbide Corporation. Liquid epoxy molding system. 4,292,268, Cl. 264-236.000.

Salk Institute for Biological Studies, The: *See—*
Vale, Wylie W., Jr.; and Rivier, Jean E. F., 4,292,313, Cl. 424-177.000.

Samijn, Rafael P.: *See—*
Pollet, Robert J.; Kokelenberg, Hendrik E.; Samijn, Rafael P.; Sels, Francis J.; Ville, Frans J.; and de Jaeger, Nikolaas C., 4,292,402, Cl. 430-631.000.

Sampson, William T.: *See—*
Schukei, Glen E.; Horlacher, Walter R., III; and Sampson, William T., 4,292,132, Cl. 176-36.00S.

Sanders, David C., to Great Lakes Chemical Corporation. High-density fluid compositions. 4,292,183, Cl. 252-8.55R.

Sanders, Murray J.; and Vick, James A., to Biotherapeutics, Inc. Treatment of animals exposed to or subject to exposure to organophosphate animal poisonous nerve agents. 4,292,308, Cl. 424-98.000.

Sanders, Nicholas A.: *See—*
Dinulescu, Horia A.; and Sanders, Nicholas A., 4,292,062, Cl. 62-7.000.

Sanders, Royden C., Jr.: *See—*
Barr, Charles W.; Lerer, Michael I.; Sanders, Royden C., Jr.; and Vassar, Russell J., Jr., 4,291,992, Cl. 400-124.000.

Sanin, Sergei A.; Ponomarenko, Jury F.; Firstov, Vladislav D.; Khorin, Vladimir N.; Ragutsky, Arnold M.; Kostjunin, Boris N.; and Bronfen, Petr M. Pressure valve. 4,291,718, Cl. 137-87.000.

Sanscharowskiy, Michael: *See—*
Richter, Simon J.; and Sanscharowskiy, Michael, 4,291,573, Cl. 73-37.000.

Santambrogio, Vincenzo, to IMBAC S.p.A. Torque reduction unit having small bevel gears, particularly for the operation of rolling shutters. 4,291,593, Cl. 74-799.000.

Santoli, Pat A.; and Baybrook, Howard E., to Allegheny Ludlum Steel Corporation. Process of rolling iron-silicon strip material. 4,291,558, Cl. 72-38.000.

Santos, Gerard R., to Budd Company, The. Replacement handle for a tool. 4,291,998, Cl. 403-263.000.

Saraceno, Anthony J.: *See—*
Orlett, Michael J.; and Saraceno, Anthony J., 4,292,287, Cl. 423-241.000.

Sarma, Kalluri R.; Rice, M. John, Jr.; and Lesk, I. Arnold, to Motorola, Inc. High pressure plasma deposition of silicon. 4,292,342, Cl. 427-34.000.

Sarnoff, Stanley J. Cyanide antidote. 4,292,311, Cl. 424-162.000.

Sartor, Mariano, to Nordica S.p.A. Ski boot device for facilitating walking. 4,291,473, Cl. 36-132.000.

Sasagawa, Yukio: *See—*
Orii, Seiji; Sasagawa, Yukio; Ito, Akinori; Maruyama, Hiromi; and Sakai, Yoshiteru, 4,292,426, Cl. 536-95.000.

Sasaki, Masayoshi; Ishii, Yoshimi; Yoshida, Tomiharu; and Sugiyama, Sen, to Hitachi, Ltd. Method of and apparatus for replacing control rod drive. 4,292,133, Cl. 176-36.00R.

Satellite Business Systems: *See—*
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Sato, Hideji: *See—*
Nomura, Hidetuka, 4,291,944, Cl. 350-257.000.

Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Indicator for tape running direction and tape remnant amount. 4,292,509, Cl. 235-92.0MP.

Satoh, Ken: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,292,509, Cl. 235-92.0MP.

Satou, Takehide; Yoshida, Kasumi; Sagusa, Hisayuki; Ohno, Osamu; and Abe, Tetuaki, to Hitachi, Ltd. Optical rate assay apparatus. 4,291,986, Cl. 356-410.000.

Sauer, Hans: *See—*
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Ono, Kenji; Matsushita, Hidetoshi; and Shibata, Minoru, 4,292,614, Cl. 335-202.000.

Saunders, Albert A., to ASA Enterprises, Inc. Wire drawing device. 4,291,565, Cl. 72-290.000.

Sawaryn, John, to United States of America, Navy. Rubber boot expander. 4,291,454, Cl. 29-426.600.

Say, Geoffrey R.; Hays, James R., Sr.; and Iyengar, Jagannathan N., to Exxon Research & Engineering Co. Process for selective removal of cyclic urea from hindered amine gas treating solution. 4,292,286, Cl. 423-223.000.

Schaaf, Thomas K.: *See—*
Eggler, James F.; and Schaaf, Thomas K., 4,292,444, Cl. 564-97.000.

Schaefer, Edward J., to Franklin Electric Co., Inc. Start winding cut-out circuit for an electric motor. 4,292,555, Cl. 310-68.00R.

Schaffner, Carl P.: *See—*
Gordon, Harry W.; and Schaffner, Carl P., 4,292,310, Cl. 424-122.000.

Schaper, Lambert: *See—*
Post, Martin F. M.; and Schaper, Lambert, 4,292,410, Cl. 518-714.000.

Scharf, Hans-Dieter; and Frauenrath, Herbert, to Bayer Aktiengesellschaft. Preparation of tetrahydrofuran-3-aldehydes. 4,292,246, Cl. 260-347.400.

Schaumann, Wolfgang: *See—*
Kaiser, Fritz; Koch, Klaus; Schaumann, Wolfgang; and Voigtlander, Wolfgang, 4,292,314, Cl. 424-182.000.

Scheel, Randall: *See—*
Fisher, Richard L.; Wright, David J.; and Scheel, Randall, 4,291,753, Cl. 165-94.000.

Scheidegger, Hans: *See—*
Galafassi, Pierre; Adam, Jean-Marie; Loew, Peter; and Scheidegger, Hans, 4,292,037, Cl. 8-554.000.

Scheiderer, Willard R., to Grede Foundries, Inc. Foundry mold jacket. 4,291,745, Cl. 164-394.000.

Schekin, Vadim M.: *See—*
Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.

Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, to Rieter Machine Works, Ltd. False twist machine. 4,291,529, Cl. 57-291.000.

Schelleng, Robert D.: *See—*
Pickens, Joseph R.; Schelleng, Robert D.; Donachie, Stephen J.; and Nichol, Thomas J., 4,292,079, Cl. 75-232.000.

Schellmann, Erhard: *See—*
Hennig, Hans J.; Ziemek, Peter; and Schellmann, Erhard, 4,292,255, Cl. 260-453.0AR.

Schenkel, Eduard: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,291,529, Cl. 57-291.000.

Schenkel, Willi; and Seger, Hans, to Egli, Fischer & Co. AG. Pipe clamp. 4,291,855, Cl. 248-74.00A.

Scherbatenko, Boris G.: *See—*
Anfilov, Igor V.; Ershov, Geny S.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; Suvorov, Gennady P.; and Scherbatenko, Boris G., 4,291,971, Cl. 355-14.00R.

Schering Corp.: *See—*
Kistler, Frederic E., 4,291,688, Cl. 128-200.230.
Tahbaz, Pirouz, 4,292,323, Cl. 424-274.000.

Scheuffgen, Ingeborg; and Ploog, Uwe, to Henkel Kommanditgesellschaft auf Aktien. Beeswax substitute. 4,292,088, Cl. 106-268.000.

Scheuneman, James H., to Sperry Corporation. One word buffer memory system. 4,292,674, Cl. 364-900.000.

Schlinsog, Hans-Juergen, to Continental Group, Inc., The. Process for hydrophilization of metal surfaces and/or metal oxide surfaces. 4,292,095, Cl. 148-6.14R.

Schloemann-Siemag Aktiengesellschaft: *See—*
Claussen, Paul O., 4,291,571, Cl. 72-453.180.
Muckli, Heinz, 4,291,564, Cl. 72-234.000.

Schlosser, Philip A.; and Miller, Don W., to Picker Corporation. Charge splitting resistive layer for a semiconductor gamma camera. 4,292,645, Cl. 357-29.000.

Schlumberger Technology Corporation: *See—*
Bonner, Stephen D., 4,292,589, Cl. 324-221.000.
Johnstone, Charles W., 4,292,518, Cl. 250-262.000.
Smith, Glenn S., 4,292,588, Cl. 324-221.000.

Schmid, Walter; Breitschwerdt, Werner; and Huber, Guntram, to Daimler-Benz Aktiengesellschaft. Deflection fitting for safety belts for vehicles. 4,291,919, Cl. 297-483.000.

Schmidt, Ernst M.: *See—*
Bekkering, Hendrik M.; and Schmidt, Ernst M., 4,291,695, Cl. 128-218.0NV.

Schmidt, Frederick J. Dredge swell compensator apparatus. 4,291,474, Cl. 37-67.000.

Schmidt, Gunther: *See—*
Tauber, Oswald; Engelhardt, Gunther; Leitold, Matyas; and Schmidt, Gunther, 4,292,319, Cl. 424-250.000.

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Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,292,447, Cl. 568-378.000.
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,292,193, Cl. 252-174.110.

Schneider, Klaus-Juergen: *See—*
Lindner, Alfred; Volkamer, Klaus; Wagner, Ulrich; Pommer, Dieter; Schneider, Klaus-Juergen; and Schwentker, Harald, 4,292,141, Cl. 203-49.000.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and LeVan, Leon W., 4,292,250, Cl. 260-397.200.

Schnyder, William J., to Emerson Electric Co. Method of making an extended life, moisture resistant electric motor and method of making same. 4,291,455, Cl. 29-596.000.

Schoeff, John A., to Advanced Micro Devices, Inc. Monolithic digital-to-analog converter. 4,292,625, Cl. 340-347.0DA.

Schoemer, Hans L., to Motorola, Inc. Labelling device. 4,291,475, Cl. 40-338.000.

Scholten, Joseph J. F.: *See—*
Gerritsen, Leendert A.; and Scholten, Joseph J. F., 4,292,198, Cl. 252-428.000.

Schrock, Jesse C. E., to Boeing Company, The. Duct seal. 4,291,905, Cl. 285-192.000.

Schroder, Rolf; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Novel α-isocyanocarboxylic acid compounds and plant growth regulant compositions. 4,292,072, Cl. 71-105.000.

Schukei, Glen E.; Horlacher, Walter R., III; and Sampson, William T., to Combustion Engineering, Inc. Hydraulically centered control rod. 4,292,132, Cl. 176-36.00S.

Schule, Wolfgang: *See—*
Hentschel, Karl-Heinz; Dhein, Rolf; and Schule, Wolfgang, 4,292,187, Cl. 252-49.500.

Schulte, Harold F.; Leliaert, Raymond M.; and Rohr, Robert D., to Wheelabrator-Frye Inc. Guard housing and liner for bladed centrifugal blasting wheels. 4,291,509, Cl. 51-432.000.

Schulte, Klaus; and Ersfeld, Heinrich, to Bayer Aktiengesellschaft. Apparatus for the preparation of a reaction mixture from fluid components. 4,291,991, Cl. 366-159.000.

Schundehutte, Karl H.: *See—*
Kruckenberg, Winfried; and Schundehutte, Karl H., 4,292,239, Cl. 260-158.000.

Schuster, Hans: *See—*
Stahl, Werner; Breuer, Uwe; Richter, Bernhard; Alstetter, Franz; Krappmann, Franz; and Schuster, Hans, 4,292,177, Cl. 210-325.000.

Schwander, Andreas: *See—*
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Schwartz, Bertram: *See—*
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Schwentker, Harald: *See—*
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Schyns, Pierre D.: *See—*
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Scientific Gem Identification, Inc.: *See—*
Raccah, Paul M., 4,291,975, Cl. 356-30.000.

Scintrex Limited: *See—*
Seigel, Harold O., 4,291,978, Cl. 356-152.000.

SCM Corporation: *See—*
Cardenas, Carlos G.; and Ud Din, Zia, 4,292,454, Cl. 585-16.000.
Cardenas, Carlos G.; and Ud Din, Zia, 4,292,459, Cl. 585-641.000.
Reynolds, Ellis W.; and Joyce, Edward R., 4,291,492, Cl. 47-12.000.

Scoggins, Lacey E.: *See—*
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Scondo, Christian: *See—*
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Scott, Allan W.: *See—*
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Scott, Brian L.; and Hardesty, Lee H., to Scott Instruments Company. Voice pitch detector and display. 4,292,469, Cl. 179-1.0SC.

Scott Instruments Company: *See—*
Scott, Brian L.; and Hardesty, Lee H., 4,292,469, Cl. 179-1.0SC.

Scott, James L.; and Luce, David A., to Norlin Industries, Inc. Memory override system for programmed electronic synthesizer. 4,291,604, Cl. 84-1.190.

Seeley, Leonard, to Plastofilm Industries, Inc. Ice cream cone tray. 4,291,805, Cl. 206-563.000.

Seger, Hans: *See—*
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Seghezzi, Hans-Dieter: *See—*
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Seigel, Harold O., to Scintrex Limited. Apparatus for automatically determining the position at which a beam of light impinges on a target. 4,291,978, Cl. 356-152.000.

Seiger, Harvey N.; and Puglisi, Vincent J., to Yardney Electric Corporation. Method of making sintered plaque nickel electrodes. 4,292,143, Cl. 204-2.100.

Seigneurin, Laurent: *See—*
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Seiki, Kazuo; and Miyamoto, Noriaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Fiber feeding roller of open-end spinning apparatus. 4,291,438, Cl. 19-112.000.

Sekiya, Fukuo: *See—*
Morokawa, Shigeru; Sekiya, Fukuo; Hashimoto, Yukio; Nomura, Yasushi; and Koga, Keiichiro, 4,292,680, Cl. 368-187.000.

Selander, Lennart; Fahlen, Lars; and Sipek, Ladislav, to AGA Aktiebolag. Method for decomposing ozone. 4,292,493, Cl. 219-74.000.

Sels, Francis J.: *See—*
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Pollet, Robert J.; Kokelenberg, Hendrik E.; Samijn, Rafael P.; Sels, Francis J.; Ville, Frans J.; and de Jaeger, Nikolaas C., 4,292,402, Cl. 430-631.000.

Semanaz, Daniel; and Cassat, Robert, to Rhone-Poulenc Industries. Modular, constructional heating unit. 4,292,500, Cl. 219-345.000.

Semiconductor Research Foundation: *See—*
Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, 4,292,373, Cl. 428-446.000.
Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, 4,292,374, Cl. 428-446.000.

Senne, Dennis R. Apparatus for fuel economy. 4,291,671, Cl. 126-292.000.

Senneke, Darrell M.: *See—*
Lee, Richard J.; Meyer, Delbert H.; and Senneke, Darrell M., 4,292,452, Cl. 568-881.000.

Senor, Charles: *See—*
Giordano, Vincent; and Senor, Charles, 4,291,807, Cl. 206-626.000.

Serp, William K. International Morse Code number generator. 4,292,624, Cl. 340-347.0DD.

Servadio, Robert. Drill attachment. 4,291,429, Cl. 15-104.3SN.

Service (Engineers) Limited: *See—*
Davies, Graham, 4,292,006, Cl. 409-131.000.

Servo Corporation of America: *See—*
Bambara, Joseph E., 4,292,639, Cl. 343-113.0DE.

Sevastakis, Gus. Cooler for twin strand continuous casting. 4,291,747, Cl. 164-420.000.

Severinghaus, Edwin M.: *See—*
Severinghaus, John W.; and Severinghaus, Edwin M., 4,291,705, Cl. 128-733.000.

Severinghaus, John W.; and Severinghaus, Edwin M., to University of California, The Regents of the. Neuromuscular block monitor. 4,291,705, Cl. 128-733.000.

Seymour, Theodore J.: *See—*
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Shaffer, Peter T. B.; and Gaffney, Michael F., to Carborundum Company, The. Cask for radioactive material and method for preventing release of neutrons from radioactive material. 4,292,528, Cl. 250-506.000.

Sharp Kabushiki Kaisha: *See—*
Yamasaki, Hitoshi; and Iwawaki, Yasutaka, 4,291,620, Cl. 101-99.000.

Sharples, Wilbert, to Lockheed Corporation. Contractable shock absorber strut. 4,291,850, Cl. 244-102.0SS.

Shaver, William A. Display stand. 4,291,811, Cl. 211-205.000.

Shaw Mudge & Company: *See—*
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Shawcross, Alfred L.: *See—*
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Shedler, Gerald St.: *See—*
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Sheft, Irving: *See—*
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Sheiko, Pavel P.: *See—*
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Shell Oil Company: *See—*
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Post, Martin F. M.; and Schaper, Lambert, 4,292,410, Cl. 518-714.000.
Roman, Steven A.; and Soloway, Samuel B., 4,292,325, Cl. 424-304.000.

Shen, Jian-Kuo: *See—*
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Shiba, Haruo: *See—*
Okamura, Masatoshi; and Shiba, Haruo, 4,291,800, Cl. 206-387.000.

Shibanai, Ichiro; Horikoshi, Kouki; and Nakamura, Nobuyuki, to Kyoshin Co., Ltd. Solid fuel. 4,292,044, Cl. 44-1.00R.

Shibata, Minoru: *See—*
Ono, Kenji; Matsushita, Hidetoshi; and Shibata, Minoru, 4,292,614, Cl. 335-202.000.

Shibata, Yuji: *See—*
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Shibuya, Tsuneo: *See—*
Fujita, Kenji; Shibata, Yuji; Mikuni, Hisao; and Shibuya, Tsuneo, 4,292,137, Cl. 202-248.000.

Shields, J. Rodger, to Carrier Corporation. Power generation unit. 4,291,540, Cl. 60-694.000.

Shiiki, Zenya: *See—*
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Shimada, Satoshi: *See—*
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Shimiya, Keiji: *See—*
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Shimizu, Hideo: *See—*
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Shin-Etsu Chemical Co., Ltd.: *See—*
Takeuchi, Satoshi; Akada, Masanori; Fujii, Hitoshi; Toida, Takashi; Takamizawa, Minoru; and Inoue, Yoshio, 4,292,397, Cl. 430-303.000.

Shinagawa Refractories Co. Ltd.: *See—*
Danjyo, Hiroyuki; Okuda, Shigeru; and Yorita, Eiichi, 4,292,082, Cl. 501-100.000.

Shinkai, Ichiro: *See—*
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Shinoda, Nobuhiko: *See—*
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Shinozaki, Fumiaki: *See—*
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Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,292,395, Cl. 430-299.000.

Shionogi & Co., Ltd.: *See—*
Tanaka, Kentaro; Shoji, Jun'ichi; Kawamura, Yoshimi; Hattori, Teruo; Kondo, Eiji; Matsumoto, Kouichi; Yoshida, Tadashi; and Tsuji, Naoki, 4,292,241, Cl. 260-245.20T.

Shiotani, Akinori: *See—*
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Shiraki, Masao: *See—*
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Shkatov, Alexandr S.: *See—*
Korytov, Vladimir A.; Maljushevsky, Pavel P.; Guly, Grigory A.; Shkatov, Alexandr S.; Sladkoshteev, Vladimir T.; Patanin, Ruslan V.; Dorokhov, Vasily I.; Klemeshov, Georgy A.; and Arkulis, Grigory E., 4,291,742, Cl. 164-501.000.

Shoemaker, John J.; and Stark, Kenneth R. Hydraulic toilet seat. 4,291,422, Cl. 4-251.000.

Shoji, Jun'ichi: *See—*
Tanaka, Kentaro; Shoji, Jun'ichi; Kawamura, Yoshimi; Hattori, Teruo; Kondo, Eiji; Matsumoto, Kouichi; Yoshida, Tadashi; and Tsuji, Naoki, 4,292,241, Cl. 260-245.20T.

Shrier, Adam L.: *See—*
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., 4,292,181, Cl. 210-638.000.

Shue, Robert S.; and Scoggins, Lacey E., to Phillips Petroleum Co. Polymer blends. 4,292,416, Cl. 525-420.000.

Shultz, William L., Jr. Guide rule for automobile moulding or the like. 4,291,467, Cl. 33-177.000.

Sick, Erwin; and Mankel, Siegfried, to Erwin Sick GmbH, Optik-Elektronik. Hole seeking apparatus. 4,291,987, Cl. 356-431.000.

Sid Richardson Carbon & Gasoline Company: *See—*
Pobst, David F., 4,292,024, Cl. 432-13.000.

Siemens Aktiengesellschaft: *See—*
Auinger, Herbert; Bradler, Peter; Weppler, Rudolf; and Stepina, Jaroslav, 4,292,559, Cl. 310-206.000.
Cirkler, Werner; and Krueger, Hans, 4,291,987, Cl. 350-336.000.
Ebert, Hermann; Gruntleitner, Johann; and Kuhnlein, Hans, 4,292,573, Cl. 318-138.000.
Eckel, Giselher, 4,292,466, Cl. 178-3.000.
Egger, Walter; Edinger, Egon; and Pedall, Friedrich, 4,292,636, Cl. 343-6.5SS.
Feuerbaum, Hans P., 4,292,519, Cl. 250-310.000.
Hetz, Walter; and Derndinger, Walter, 4,291,578, Cl. 73-633.000.
Heynisch, Hinrich; Huebner, Erwin; and Barth, Heinz, 4,292,566, Cl. 315-3.500.
Kellner, Walter; Kniepkamp, Hermann; and Ristow, Dietrich, 4,292,643, Cl. 357-15.000.
Kleinschmidt, Peter; Meixner, Hans; and Magori, Valentin, 4,292,499, Cl. 219-308.000.
Kolmann, Ewald, 4,292,551, Cl. 307-311.000.
Kuhnlein, Hans; Gruntleitner, Hans; and Ebert, Hermann, 4,292,575, Cl. 318-254.000.
Martin, Erwin, 4,292,561, Cl. 310-322.000.
Ott, Gunther; and Kaufhold, Wolfgang, 4,292,580, Cl. 323-212.000.
Plaettner, Rolf; Kruehler, Wolfgang; and Grabmaier, Josef, 4,292,343, Cl. 427-39.000.
Rubner, Roland; Kuhn, Eberhard; and Ahne, Hellmut, 4,292,398, Cl. 430-306.000.
Trimmel, Herwig, 4,292,606, Cl. 332-7.510.
Tschunt, Edgar, 4,292,525, Cl. 250-445.00T.
Vogt, Herbert; Wassill, Lothar; and Wengler, Christian, 4,292,464, Cl. 174-152.0GM.
Vorndran, Albin, 4,292,560, Cl. 310-242.000.

Sigalla, Armand, to Boeing Company. Airplane all-moving airfoil with moment reducing apex. 4,291,853, Cl. 244-87.000.

Sigarettenfabriek Ed. Laurens B.V.: *See—*
Koster, Hendrikus J.; Bik, Johannes T. J.; Clardey, Johannes G.; and Smorenberg, Dirk, 4,291,712, Cl. 131-339.000.

Sigman, Earl H., to AMCA International Corporation. Apparatus for stripping ingots from molds. 4,291,746, Cl. 164-407.000.

Signetics Corporation: *See—*
Hoeft, Werner H., 4,292,583, Cl. 323-316.000.

Sigyoo, Masamiti: *See—*
Ikeda, Tomoaki; Sigyoo, Masamiti; Ikeda, Sadaharu; Yoshida, Satoshi; and Tomotsu, Takeshi, 4,292,388, Cl. 430-162.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-9-deoxy-9-methylene-19-oxo-PGF_2 compounds. 4,292,488, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-oxa-11-deoxy-11-hydroxymethyl-9-deoxy-9-methylene-19-oxo-PGF_1 compounds. 4,292,439, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-9-deoxy-9-methylene-19-oxo-PGF_1 compounds. 4,292,440, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-11-deoxy-11-hydroxymethyl-9-deoxy-9-methylene-19-oxo-PGF_2 compounds. 4,292,441, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-11-deoxy-19-oxo-PGF_2 compounds. 4,292,442, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 13,14-Didehydro-11-deoxy-11-hydroxymethyl-19-oxo-PGE_2 compounds. 4,292,443, Cl. 562-503.000.

Silken, Howard. Router guide. 4,291,735, Cl. 144-136.00C.

Silverberg, Morton, to Xerox Corporation. Dual mode document belt system. 4,291,974, Cl. 355-76.000.

Simmons, Gerald C., to Boeing Company, The. Parachute release for cargo aircraft. 4,291,852, Cl. 244-147.000.

Simmons, Richard R.; and Thompson, Harvey A., to Chubb Fire Security Limited. Heat detector circuit. 4,292,513, Cl. 250-205.000.

Simon, Jacques: *See—*
Henry, Raymond; and Simon, Jacques, 4,291,942, Cl. 350-96.200.

Simonds, Lawrence. Guitar strap. 4,291,822, Cl. 224-257.000.

Simone, Andre A., to Lummus Company, The. Removal of quinoline insolubles from coal derived fractions. 4,292,170, Cl. 208-131.000.

Simpson Manufacturing Co., Inc.: *See—*
Gilb, Tyrell T., 4,291,996, Cl. 403-14.000.

Singer, Carl M.; and Ratkay, Edward J., to Commercial Shearing, Inc. Rotary impeller or motor with pressure balanced end plates. 4,292,013, Cl. 418-132.000.

Singer, Larry. Removable glass desk pad. 4,292,352, Cl. 428-14.000.

Singer, Mortimer. Dispenser for oil well treating chemicals. 4,291,763, Cl. 166-110.000.

Sinnreich, Manfred. Inflatable packing for surgical use having auxiliary intestinal supporting member. 4,291,687, Cl. 128-129.000.

Sipek, Ladislav: *See—*
Selander, Lennart; Fahlen, Lars; and Sipek, Ladislav, 4,292,493, Cl. 219-74.000.

Sipin, Anatole J.; and Carleton, Herbert R., to Anatole J. Sipin Company. Personal air sampler with electric motor driven by intermittent full-power pulses under control, between pulses, of motor's back electromotive force. 4,292,574, Cl. 318-331.000.

Sitarchuk, Alexei A.: *See—*
Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.

Sivachenko, Eugene W. Prefabricated building construction. 4,291,510, Cl. 52-90.000.

SKF Industries, Inc.: *See—*
Persson, Stig, 4,291,927, Cl. 308-121.000.

SKODA, oborovy podnik: *See—*
Roth, Zdenek; and Altmann, Josef, 4,292,259, Cl. 261-123.000.

SKW Trostberg Aktiengesellschaft: *See—*
Wolfsgruber, Friedrich; Kasel, Hans W.; Odendahl, Manfred H. A.; and Morsdorf, Wolfram W., 4,292,075, Cl. 75-130.00R.

Sladco, Inc.: *See—*
Cherry, Gary D., 4,291,598, Cl. 81-57.150.

Sladkoshteev, Vladimir T.: *See—*
Korytov, Vladimir A.; Maljushevsky, Pavel P.; Guly, Grigory A.; Shkatov, Alexandr S.; Sladkoshteev, Vladimir T.; Patanin, Ruslan V.; Dorokhov, Vasily I.; Klemeshov, Georgy A.; and Arkulis, Grigory E., 4,291,742, Cl. 164-501.000.

Slazas, John J., to Allis-Chalmers Corporation. Foot pedal arrangement for a motor vehicle. 4,291,778, Cl. 180-271.000.

Sledzieski, William L.: *See—*
Bosco, Peter M.; and Sledzieski, William L., 4,292,333, Cl. 426-335.000.

Sletzinger, Meyer: *See—*
Liu, Thomas M. H.; Reamer, Robert A.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,292,436, Cl. 560-148.000.

Sloan Valve Company: *See—*
Billeter, Henry R., 4,291,923, Cl. 303-23.00R.

Sluyts, Domien: *See—*
Denecker, Gabriel; Sluyts, Domien; Putseys, Roland; Van Herck, Willy; Claes, Ludo; and Spott, Georg, 4,292,043, Cl. 23-296.000.

Smart, Ethel D.: *See—*
Smart, Isaac W.; and Smart, Ethel D., 4,291,883, Cl. 273-163.00R

Smart, Isaac W.; and Smart, Ethel D. Adjustable putter blade sight. 4,291,883, Cl. 273-163.00R.

Sminge, Poul E.; and Thoegersen, Svend I., to A/S Dantherm. Air drying apparatus of the condensation type. 4,291,542, Cl. 62-156.000.

Smith, Allan J., Jr. Split-singles stick for tennis courts. 4,291,875, Cl. 273-29.00B.

Smith, Glenn S., to Schlumberger Technology Corporation. Electromagnetic inspection tool for ferromagnetic casings. 4,292,588, Cl. 324-221.000.

Smith, James D.; and Paul, Richard. Filter and cooling apparatus for dry-cleaning systems. 4,292,174, Cl. 210-167.000.

Smith, Lewis R., to Burr-Brown Research Corporation. Capacitance coupled isolation amplifier and method. 4,292,595, Cl. 330-10.000.

Smith, Michael P.: *See—*
Blackburn, Martin J.; and Smith, Michael P., 4,292,077, Cl. 75-175.500.

Smith, Thor L.; and Weiche, William J., to International Business Machines Corporation. Tear resistant ribbon for non-impact printing. 4,291,994, Cl. 400-241.100.

SmithKline Corporation: *See—*
Ali, Fadia E.; Krell, Robert D.; and Snader, Kenneth M., 4,292,305, Cl. 424-45.000.

Smithlin, John R., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Manchester decoder. 4,292,626, Cl. 340-347.0DD.

Smock, Steven W.; and Adams, George W., to Emhart Industries, Inc. Circuit controller for anti-wrinkle control. 4,292,482, Cl. 200-38.00R.

Smorenberg, Dirk: *See—*
Koster, Hendrikus J.; Bik, Johannes T. J.; Clardey, Johannes G.; and Smorenberg, Dirk, 4,291,712, Cl. 131-339.000.

Snader, Kenneth M.: *See—*
Ali, Fadia E.; Krell, Robert D.; and Snader, Kenneth M., 4,292,305, Cl. 424-45.000.

Snell, Leonard S., to Rolls-Royce Limited. Shaft coupling. 4,292,001, Cl. 403-359.000.

Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Perazzoni, Pierluigi; and Bilancini, Luigi, 4,292,194, Cl. 252-400.00R.

Snipes, Wallace: *See—*
Keith, Alec D.; and Snipes, Wallace, 4,292,301, Cl. 424-28.000.
Keith, Alec D.; and Snipes, Wallace, 4,292,302, Cl. 424-28.000.
Keith, Alec D.; and Snipes, Wallace, 4,292,303, Cl. 424-28.000.

Socapex: *See—*
Badoz, Jean-Marie; and Merceron, Daniel, 4,291,935, Cl. 339-97.00R.

Societe Anonyme Automobiles Citroen: *See—*
Coatantiec, Alain, 4,291,909, Cl. 294-88.000.

Societe Anonyme de Telecommunications: *See—*
Baudot, Jean-Jacques, 4,291,937, Cl. 350-23.000.

S.A. PRB: *See—*
Jourquin, Lucien; and Du Prez, Eddie, 4,292,411, Cl. 521-51.000.

Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A. Societe Anonyme: *See—*
Perraud, Raymond J., 4,291,771, Cl. 173-106.000.

Societe d'Etudes Techniques et Commerciales d'Automation: *See—*
Dumont, Claude, 4,292,630, Cl. 340-573.000.

Societe Europeenne des Derives du Manganese, en abrege Sedema Societe Anonyme: *See—*
Welsh, Jay Y.; Picquet, Pierre C.; and Schyns, Pierre D., 4,292,282, Cl. 423-60.000.

Societe Generale pour l'Emballage: *See—*
Maupate, Jacques, 4,291,910, Cl. 294-95.000.

Societe Industrielle de Brevets et d'Etudes: *See—*
Bauer, Philippe, 4,291,860, Cl. 251-129.000.

Societe Nationale des Poudres et Explosifs: *See—*
Boileau, Sylvie L.; Caubere, Paul J.; Raynal, Serge F.; Lecolier, Serge L.; and N'Debeka, Gilberte N., 4,292,421, Cl. 526-220.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Mialon, Jacques, 4,292,368, Cl. 428-310.000.

Sodec, Frank, to H. Krantz GmbH & Co., Firma. Linear air outlet. 4,291,615, Cl. 98-40.00C.

Soeda, Naohiko: *See—*
Nakazato, Yoshio; Tanaka, Tomoo; Hashiguchi, Koichi; and Soeda, Naohiko, 4,292,097, Cl. 148-12.00C.

Sollish, Bruce D.: *See—*
Frei, Ephraim H.; and Sollish, Bruce D., 4,291,708, Cl. 128-734.000.

Soloway, Samuel B.: *See—*
Roman, Steven A.; and Soloway, Samuel B., 4,292,325, Cl. 424-304.000.

Solvay & Cie: *See—*
Berger, Eugene; and Derroitte, Jean-Louis, 4,292,200, Cl. 252-431.00C.

Son, Pyong N.: *See—*
Lai, John T.; and Son, Pyong N., 4,292,240, Cl. 260-239.30R.
Layer, Robert W.; and Son, Pyong N., 4,292,237, Cl. 260-45.8NW.

Sony Corporation: *See—*
Kishi, Yoshio, 4,292,557, Cl. 310-78.000.
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,292,597, Cl. 330-254.000.

Sooter, Matthew C., to Conoco, Inc. Processing high sulfur coal. 4,292,165, Cl. 208-8.0LE.

Sopino, Bruno: *See—*
Corrado, Giovanni; Bertotti, Elvio; and Sopino, Bruno, 4,292,218, Cl. 260-22.0CB.

Sorensen, James R., to Georgia-Pacific Corporation. Container with locking lid. 4,291,830, Cl. 229-45.00R.

Sorenson Research Company, Inc.: *See—*
Todd, Robert J.; and Wonder, Terry M., 4,291,693, Cl. 128-214.00C.

Sotchenko, Vladimir P.: *See—*
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V., 4,292,486, Cl. 219-9.500.

Soukup, Richard J.: *See—*
Johnson, Dannis R.; Foster, Elgin J.; and Soukup, Richard J., 4,292,661, Cl. 361-393.000.

Souriau & Compagnie: *See—*
Badoz, Jean-Marie; and Merceron, Daniel, 4,291,935, Cl. 339-97.00R.

Southgate, Peter D., to RCA Corporation. Inspection system for detecting defects in regular patterns. 4,292,672, Cl. 364-507.000.

Spaniol, John W.: *See—*
Wilson, John F.; Hoover, Edward D.; Hammond, Philip K.; Moshier, William A.; Woodell, Jack L.; Spaniol, John W.; Bowerman, John J.; Bieber, Larry C.; and Perlman, Marvin, 4,292,465, Cl. 178-3.000.

Spencer, Arthur T., to Mobil Oil Corporation. Cationic aqueous emulsion systems. 4,292,217, Cl. 260-18.00N.

Sperry Corporation: *See—*
Cools, Antoon S. P., 4,291,523, Cl. 56-94.000.
Lazarchik, Robert E.; and Roeder, Robert S., 4,292,638, Cl. 343-7.500.
McMahon, Donald H., 4,291,976, Cl. 356-150.000.
Scheuneman, James H., 4,292,674, Cl. 364-900.000.

Weber, Steven J.; and Rowland-Hill, E. W., 4,291,709, Cl. 130-27.00T.

Speyerer, Heinz: *See—*
Engmann, Gunther; Lepach, Werner; and Speyerer, Heinz, 4,292,114, Cl. 156-447.000.

Spie-Batignolles: *See—*
Clavier, Philippe, 4,292,136, Cl. 202-234.000.

Spitzer, Erlys C.; and Spitzer, Frank. Weatherproof panel enclosure. 4,291,817, Cl. 220-327.000.

Spitzer, Frank: *See—*
Spitzer, Erlys C.; and Spitzer, Frank, 4,291,817, Cl. 220-327.000.

Spott, Georg: *See—*
Denecker, Gabriel; Sluyts, Domien; Putseys, Roland; Van Herck, Willy; Claes, Ludo; and Spott, Georg, 4,292,043, Cl. 23-296.000.

Sprague Electric Company: *See—*
Bernard, Walter J., 4,292,148, Cl. 204-144.000.

Sprecker, Mark A.: *See—*
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,292,193, Cl. 252-174.110.

Squire, Edward N.; and Waller, Francis J., to Du Pont de Nemours, E. I., and Company. Preparation of isobutyric acid and esters. 4,292,437, Cl. 560-233.000.

Srebrov, Bojidar M.: *See—*
Kyuchukov, Yanko P.; and Srebrov, Bojidar M., 4,291,580, Cl. 73-741.000.

SRI International: *See—*
Laine, Richard M., 4,292,242, Cl. 260-326.800.

Stagg, George A., Jr. Shot gun shell construction. 4,291,625, Cl. 102-449.000.

Stahl, Werner; Breuer, Uwe; Richter, Bernhard; Alstetter, Franz; Krappmann, Franz; and Schuster, Hans, to Krauss-Maffei Aktiengesellschaft. Pressurizable rotary filter. 4,292,177, Cl. 210-325.000.

Stamicarbon, B.V.: *See—*
Gerritsen, Leendert A.; and Scholten, Joseph J. F., 4,292,198, Cl. 252-428.000.

Stana, Regis R.: *See—*
Elikan, Leonard; Stana, Regis R.; and Ritchey, Robert W., 4,292,278, Cl. 423-8.000.

Standard Brands Incorporated: *See—*
Bosco, Peter M.; and Sledzieski, William L., 4,292,333, Cl. 426-335.000.

Standard-Knapp, Inc.: *See—*
Johnson, Lloyd D., 4,291,518, Cl. 53-491.000.

Standard Oil Co., The: *See—*
Bartek, Joseph P.; Cepulis, Rimoydas L.; and Grasselli, Robert K., 4,292,455, Cl. 585-320.000.
Isley, Ralph E., 4,292,228, Cl. 260-30.40A.
Kiikka, Oliver A., 4,292,456, Cl. 585-431.000.
Milberger, Ernest C.; and Wong, Eunice K. T., 4,292,203, Cl. 252-438.000.

Standard Oil Company (Indiana): *See—*
Beynet, Pierre A., 4,291,772, Cl. 175-5.000.
Grutsch, James F.; and Mallatt, Russell C., 4,292,176, Cl. 210-616.000.
Klotz, Marvin R., 4,292,457, Cl. 585-447.000.
Klotz, Marvin R., 4,292,458, Cl. 585-469.000.
Lee, Richard J.; Meyer, Delbert H.; and Senneke, Darrell M., 4,292,452, Cl. 568-881.000.
Wright, Robert M.; and Johncock, Allan W., 4,292,138, Cl. 203-2.000.

Stanley Electric Co.: *See—*
Wada, Masanobu; Uchida, Tatsuo; and Teshima, Toru, 4,291,949, Cl. 350-349.000.

Staplin, Theodore R., Jr.: *See—*
Miller, Robert C.; Bradley, John J.; King, Richard L.; Miu, Ming T.; Shen, Jian-Kuo; and Staplin, Theodore R., Jr., 4,292,668, Cl. 364-200.000.

Starcevic, Mihailo, to BBC Brown, Boveri & Company, Limited. Radially aerated disc rotor. 4,292,554, Cl. 310-58.000.

Stark, Kenneth R.: *See—*
Shoemaker, John J.; and Stark, Kenneth R., 4,291,422, Cl. 4-251.000.

Staub, Vincent M., Jr., to General Motors Corporation. Torque converter clutch and vibration damper. 4,291,790, Cl. 192-3.280.

Stauffer Chemical Company: *See—*
Walsh, Edward N.; and Hardy, Thomas A., 4,292,036, Cl. 8-182.000.

Stecher, Gunther: *See—*
Muller, Klaus; Maurer, Helmut; Dietz, Hermann; Friese, Karl-Hermann; Leibfried, Wolfgang; Stecher, Gunther; and Linder, Ernst, 4,292,158, Cl. 204-195.00S.

Stecklein, Gary L., to Deere & Company. Shaft lever coupling means. 4,292,002, Cl. 403-376.000.

Steckler, Steven A.; and Balaban, Alvin R., to RCA Corporation. Deflection system and switched-mode power supply using a common ramp generator. 4,292,654, Cl. 358-158.000.

Steigerwald, Robert L.; Crouch, Keith E.; and Wilson, James W. A., to United States of America, Energy. Combination field chopper and battery charger. 4,292,578, Cl. 320-9.000.

Steinberg, Klaus; and Hoffmann, Gerhard, to Bayerische Motoren Werke Aktiengesellschaft. Device for counterbalancing a swivelable body part on a motor vehicle. 4,291,501, Cl. 49-386.000.

Steinberg, Richard A.: *See—*
Giallorenzi, Thomas G.; and Steinberg, Richard A., 4,291,939, Cl. 350-96.140.

Steiner, Alois, to Ruti Machinery Works Ltd. Multiple longitudinal traversing shed weaving apparatus. 4,291,729, Cl. 139-28.000.

Stepina, Jaroslav: *See—*
Auinger, Herbert; Bradler, Peter; Weppler, Rudolf; and Stepina, Jaroslav, 4,292,559, Cl. 310-206.000.

Stickel, Arloa: *See—*
Hansen, Robert N., 4,291,893, Cl. 280-507.000.

Stifano, Vincent A., Jr., to Veeder Industries Inc. Method of forming socket wrenches. 4,291,568, Cl. 72-356.000.

Stinson, John M.; and Burnell, James R., to Tennessee Valley Authority. Production of urea-ammonium polyphosphates from urea phosphate. 4,292,067, Cl. 71-29.000.

Stitzer, Steven N.: *See—*
Goldie, Harry; and Stitzer, Steven N., 4,292,607, Cl. 333-24.100.

Stoakes, Richard L. Structural assemblies. 4,291,511, Cl. 52-235.000.

Stobbe, Richard E.: *See—*
Cesarz, Michael R.; and Stobbe, Richard E., 4,292,577, Cl. 318-802.000.

Stoehr, Herbert M. Apparatus for providing taped coils of sheet material. 4,291,460, Cl. 29-820.000.

Stone, Walter H.; and Nostrand, William G., to Nelson Industries, Inc. Spin-on filter coalescer unit with flow reversing baffle assembly. 4,292,179, Cl. 210-443.000.

Stoodley III, Thomas J.: *See—*
Hill, Lawrence W.; Stoodley III, Thomas J.; and Malcolm, Ronald, 4,292,666, Cl. 364-104.000.

Storck, Friedrich: *See—*
Lang, Gusztav; Storck, Friedrich; and Seghezzi, Hans-Dieter, 4,291,608, Cl. 411-16.000.

Stork Repak B.V.: *See—*
Polderman, Pieter A., 4,291,733, Cl. 141-152.000.

Stormon, Lester T.: *See—*
Massey, Peyton L.; and Stormon, Lester T., 4,291,421, Cl. 3-12.600.

Straughan, Virgil E.; and Wainer, Eugene, to Horizons Research Incorporated. Gaseous plasma developing and etching process employing low voltage DC generation. 4,292,384, Cl. 430-5.000.

Strickland, Benjamin W. Solar furnace apparatus. 4,291,678, Cl. 126-438.000.

Strohman, Robert E.: *See—*
Wells, Warren W.; Strohman, Robert E.; and Wiese, Harold H., 4,291,611, Cl. 89-47.000.

Stupay, Lawrence J., to Bunker Ramo Corporation. Shear plane separable connector. 4,291,931, Cl. 339-45.00R.

Suarez, Ricardo; Chang, Oscar; and Adam, Vladimir, to Instituto Venezolano de Investigaciones Cientificas (IVIC). Dynamically programmable logic circuits. 4,292,548, Cl. 307-465.000.

Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; and Tupitsyn, Sergei K. Rock-breaking implement for percussive machines. 4,291,774, Cl. 175-417.000.

Sugie, Akihiko: *See—*
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; and Katsube, Junki, 4,292,432, Cl. 549-35.000.

Sugihara, Hideki: *See—*
Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; Arai, Katsuhiko; Kojima, Minoru; Taniguchi, Yoshiko; Yoshida, Masako; Sakata, Ryozo; Sugihara, Hideki; Dobashi, Masashi; and Ohwada, Hirobumi, 4,292,353, Cl. 428-211.000.

Sugita, Naomi: *See—*
Honda, Sinya; Komura, Takeshi; Sugita, Naomi; and Okamoto, Tatuya, 4,292,078, Cl. 75-176.000.

Sugiura, Katsuaki: *See—*
Yoshizawa, Toshio; Yoshida, Yoshiaki; and Sugiura, Katsuaki, 4,291,437, Cl. 19-112.000.

Sugiyama, Sen: *See—*
Sasaki, Masayoshi; Ishii, Yoshimi; Yoshida, Tomiharu; and Sugiyama, Sen, 4,292,133, Cl. 176-36.00R.

Sukoian, Nariman A.: *See—*
Frolov, Jury F.; Sukoian, Nariman A.; Proshkin, Ivan T.; and Basalaev, Anany M., 4,292,460, Cl. 13-19.000.

Suljak, George T.: *See—*
Faitani, Joseph J.; Austin, George W.; Chase, Terry J.; Suljak, George T.; and Misage, Robert J., 4,292,274, Cl. 422-197.000.

Sumi, Takao: *See—*
Namura, Shigekazu; and Sumi, Takao, 4,292,103, Cl. 156-230.000.

Sumita, Tadayuki: *See—*
Ito, Yasuro; Higuchi, Yoshiro; Mochida, Yutaka; Kaga, Hideharu; Yamamoto, Yasuhiro; and Sumita, Tadayuki, 4,292,351, Cl. 427-403.000.

Sumitomo Chemical Company, Limited: *See—*
Nishikuri, Masao; Takeshita, Akira; and Kenmochi, Hirohito, 4,292,247, Cl. 260-381.000.
Ono, Keiichi; Sugie, Akihiko; Kawakami, Hajime; and Katsube, Junki, 4,292,432, Cl. 549-35.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Fujita, Kenji; Shibata, Yuji; Mikuni, Hisao; and Shibuya, Tsuneo, 4,292,137, Cl. 202-248.000.

Sumitomo, Hiroyuki, to Hisaka Works, Limited. Cross-current type plate heat exchanger. 4,291,759, Cl. 165-146.000.

Sumitomo Metal Industries, Inc.: *See—*
Marukawa, Katsukiyo; Anezaki, Syoji; and Masuda, Seiichi, 4,292,073, Cl. 75-60.000.

Sun Power Systems Inc.: *See—*
Minto, Wallace L., 4,291,755, Cl. 165-3.000.

Sun, Y. S. Edmund: *See—*
Chu, Hing C.; and Sun, Y. S. Edmund, 4,292,644, Cl. 357-21.000.

Suntech, Inc.: *See—*
Lyons, James E.; Hosler, Peter; and Suntech, Inc., 4,292,219, Cl. 260-29.6ME.

Suvorov, Gennady P.: *See—*
Anfilov, Igor V.; Ershov, Geny S.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; Suvorov, Gennady P.; and Scherbatenko, Boris G., 4,291,971, Cl. 355-14.00R.

Suzuki, Akira: *See—*
Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; Arai, Katsuhiko; Kojima, Minoru; Taniguchi, Yoshiko; Yoshida, Masako; Sakata, Ryozo; Sugihara, Hideki; Dobashi, Masashi; and Ohwada, Hirobumi, 4,292,353, Cl. 428-211.000.
Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; and Arai, Katsuhiko, 4,292,361, Cl. 428-215.000.

Suzuki, Masayuki: *See—*
Ito, Tadashi; Murakami, Hiroyasu; Suzuki, Masayuki; Yamamichi, Masayoshi; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,291,960, Cl. 354-53.000.

Suzuki, Mikio; and Nishimura, Toshifumi, to Nissan Motor Company, Limited. Air-fuel ratio control system for an internal combustion engine. 4,291,659, Cl. 123-440.000.

Suzuki, Ryoshu: *See—*
Ishii, Kiyoshi; Suzuki, Ryoshu; Honda, Zenjiro; and Tsugaya, Hitoshi, 4,292,417, Cl. 525-510.000.

Suzuki, Seiichi: *See—*
Wakabayashi, Osamu; Matsuya, Kuni; Ohta, Hiroki; Jikihara, Tetsuo; and Suzuki, Seiichi, 4,292,070, Cl. 71-96.000.

Suzuki, Tomohiro, to Hitachi, Ltd. Coupling mechanism of control rod for nuclear reactor. 4,292,131, Cl. 176-36.00C.

Suzuki, Yoshiki; Ikura, Hiroshi; and Yamashita, Gentaro, to Teijin Limited. Slow-releasing medical preparation to be administered by adhering to a wet mucous surface. 4,292,299, Cl. 424-16.000.

Svistunov, Igor A.: *See—*
Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.

Swanson, John L. Storage container. 4,291,826, Cl. 229-31.0FS.

Sweatt, Robert L., to Western Electric Company, Inc. Method and apparatus for locating telephones. 4,292,480, Cl. 179-175.20B.

Sweitzer, John D. Socket wrench. 4,291,425, Cl. 7-100.000.

Swift & Company: *See—*
Batts, Tom, 4,291,434, Cl. 17-11.300.

Szymski, Eugene J.: *See—*
Brilando, Frank P.; and Szymski, Eugene J., 4,291,872, Cl. 272-73.000.

Tachibana, Keiji; Terasaki, Masatosi; Nakayama, Yoshihiko; and Kaneko, Junichi, to Hitachi, Ltd. Multistage speed change gear system. 4,291,587, Cl. 74-363.000.

Tachikawa Spring Co. Ltd.: *See—*
Urai, Muneharu, 4,291,856, Cl. 248-429.000.

Taelman, Dennis L. Therapeutic heat and cosmetic applicator. 4,291,685, Cl. 128-24.100.

Taguchi, Yoshinobu: *See—*
Takahashi, Tetsuo; Taguchi, Yoshinobu; Tando, Shuichi; and Saito, Kenichi, 4,292,116, Cl. 156-566.000.

Tahbaz, Pirouz, to Schering Corporation. Phenyl-1,2,3,4-tetrahydrocarbazoles and use thereof. 4,292,323, Cl. 424-274.000.

Taisei Corporation: *See—*
Ito, Yasuro; Higuchi, Yoshiro; Mochida, Yutaka; Kaga, Hideharu; Yamamoto, Yasuhiro; and Sumita, Tadayuki, 4,292,351, Cl. 427-403.000.

Taiyo Kaken Company, Ltd.: *See—*
Nakao, Masaaki; and Shiiki, Zenya, 4,292,285, Cl. 423-210.000.

Takahashi, Tetsuo; Taguchi, Yoshinobu; Tando, Shuichi; and Saito, Kenichi, to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha. Apparatus for mounting chip type circuit elements on a printed circuit board. 4,292,116, Cl. 156-566.000.

Takahashi, Tohru: *See—*
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,292,387, Cl. 430-102.000.

Takahashi, Yohnosuke: *See—*
Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,292,393, Cl. 430-275.000.
Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, 4,292,395, Cl. 430-299.000.

Takamizawa, Minoru: *See—*
Takeuchi, Satoshi; Akada, Masanori; Fujii, Hitoshi; Toida, Takashi; Takamizawa, Minoru; and Inoue, Yoshio, 4,292,397, Cl. 430-303.000.

Takano, Misayo, legal representative: *See—*
Uemoto, Yasuo; Togami, Shigenori; Takano, Tsumoru, deceased; Ono, Ichiro; and Kayama, Takashi, 4,292,235, Cl. 260-42.180.

Takano, Toshimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Photoconductive drum with paper layer attachment. 4,292,386, Cl. 430-63.000.

Takano, Tsumoru, deceased: *See—*
Uemoto, Yasuo; Togami, Shigenori; Takano, Tsumoru, deceased; Ono, Ichiro; and Kayama, Takashi, 4,292,235, Cl. 260-42.180.

Takase, Hiroshi; and Fujii, Toru, to Olympus Optical Co., Ltd. Gauss type lens system. 4,291,952, Cl. 350-471.000.

Takasu, Shinichiro, to VLSI Technology Research Association. Apparatus for measuring the distribution of irregularities on a mirror surface. 4,291,990, Cl. 356-445.000.

Takayama, Syuichi, to Olympus Optical Company, Ltd. Apparatus for endoscopic photography. 4,291,961, Cl. 354-62.000.

Takeda Chemical Industries, Ltd.: *See—*
Higashide, Eiji; Tanida, Seiichi; Muroi, Masayuki; and Asai, Mitsuko, 4,292,309, Cl. 424-119.000.
Kondo, Koichi; Yoshida, Isamu; and Kobayashi, Takashi, 4,292,038, Cl. 23-230.00B.

Takeda, Renzo; Kurihara, Kunitoshi; and Uchikawa, Sadao, to Hitachi, Ltd. Boiling water type nuclear reactor. 4,292,128, Cl. 176-20.00R.

Takeshita, Akira: *See—*
Nishikuri, Masao; Takeshita, Akira; and Kenmochi, Hirohito, 4,292,247, Cl. 260-381.000.

Takeshita, Toru: *See—*
Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, 4,292,249, Cl. 260-397.200.

Takeuchi, Satoshi; Akada, Masanori; Fujii, Hitoshi; Toida, Takashi; Takamizawa, Minoru; and Inoue, Yoshio, to Dai Nippon Printing Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Method for preparing dry planographic plates with plasma. 4,292,397, Cl. 430-303.000.

Talres Development (N.A.) N.V.: *See—*
Latymer, Zdenek, 4,292,336, Cl. 426-548.000.

Tan, Tat S. Linear switching regulator. 4,292,581, Cl. 323-283.000.

Tanabe, Masanori; Shimada, Satoshi; Yasukawa, Akio; Nishihara, Motohisa; and Nagata, Takeo, to Hitachi, Ltd. Semiconductor strain gauge with elastic load plate. 4,292,618, Cl. 338-5.000.

Tanaka, Hiroshi; and Kato, Osamu, to NGK Spark Plug Co., Ltd. Ceramic materials for high-speed cutting. 4,292,049, Cl. 51-309.000.

Tanaka, Kentaro; Shoji, Jun'ichi; Kawamura, Yoshimi; Hattori, Teruo; Kondo, Eiji; Matsumoto, Kouichi; Yoshida, Tadashi; and Tsuji, Naoki, to Shionogi & Co., Ltd. Antibiotic PA-31088-IV and production thereof. 4,292,241, Cl. 260-245.20T.

Tanaka, Kouichi, to Nippon Electric Co., Ltd. Bipolar voltage detector comprising differential transistor. 4,292,552, Cl. 307-354.000.

Tanaka, Michio; Miura, Norio; and Shimiya, Keiji, to Kasei Optonix, Ltd. Process for manufacturing a radiographic intensifying screen. 4,292,107, Cl. 156-249.000.

Tanaka, Tadakazu: *See—*
Kawaguchi, Yosiyuki; Nishida, Takashi; Marukawa, Nobuaki; Tanaka, Tadakazu; and Kontani, Yoshinari, 4,291,600, Cl. 82-1.00C.

Tanaka, Takehiko; and Kanzawa, Masahide, to Kobe Steel, Limited. Rotor shaft sealing mechanism in synthetic resin kneading machines or extruders. 4,291,888, Cl. 277-65.000.

Tanaka, Takeshi: *See—*
Kojima, Hiroshi; Ito, Kunio; Akiyama, Masami; and Tanaka, Takeshi, 4,292,389, Cl. 430-169.000.

Tanaka, Tomoo: *See—*
Nakazato, Yoshio; Tanaka, Tomoo; Hashiguchi, Koichi; and Soeda, Naohiko, 4,292,097, Cl. 148-12.00C.

Tanaka, Toshiki: *See—*
Bando, Yoshihide; and Tanaka, Toshiki, 4,292,613, Cl. 335-128.000.

Tanaka, Yutaka; and Yatomi, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Wire electrode electric discharge machine with controlled electrical parameters. 4,292,491, Cl. 219-69.00W.

Tando, Shuichi: *See—*
Takahashi, Tetsuo; Taguchi, Yoshinobu; Tando, Shuichi; and Saito, Kenichi, 4,292,116, Cl. 156-566.000.

Tanida, Seiichi: *See—*
Higashide, Eiji; Tanida, Seiichi; Muroi, Masayuki; and Asai, Mitsuko, 4,292,309, Cl. 424-119.000.

Tanigawa, Nobuyoshi: *See—*
Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, 4,291,549, Cl. 62-534.000.

Taniguchi, Nobuyuki: *See—*
Yuasa, Yoshio; Ishikawa, Norio; and Taniguchi, Nobuyuki, 4,291,979, Cl. 356-218.000.

Taniguchi, Yoshiko: *See—*
Ohashi, Takashi; Okuyama, Toru; Suzuki, Akira; Arai, Katsuhiko; Kojima, Minoru; Taniguchi, Yoshiko; Yoshida, Masako; Sakata, Ryozo; Sugihara, Hideki; Dobashi, Masashi; and Ohwada, Hirobumi, 4,292,353, Cl. 428-211.000.

Taniishi, Shinnosuke; and Kuge, Tsukasa, to Canon Kabushiki Kaisha. Process for producing negative-crowned roller. 4,291,505, Cl. 51-289.00R.

Tasis, Elizabeth A.: *See—*
Dikoff, Joseph K., 4,291,995, Cl. 401-175.000.

Tatsumi, Tetsuo, to Murata Manufacturing Co., Ltd. Variable capacitor. 4,292,660, Cl. 361-293.000.

Tauber, Oswald; Engelhardt, Gunther; Leitold, Matyas; and Schmidt, Gunther, to Boehringer Ingelheim GmbH. Antiphlogistic pharmaceutical compositions and method of use. 4,292,319, Cl. 424-250.000.

Tavel, Donald L.; and Beigel, Michael L., to Tavel, Donald L. Music synthesizer. 4,291,605, Cl. 84-1.260.

Taylor, Alexander P. Roaster tray. 4,291,616, Cl. 99-446.000.

Taylor, Dennis O.: *See—*
Reid, David L.; and Taylor, Dennis O., 4,292,670, Cl. 364-431.000.

Taylor, Gordon J., to Union Carbide Corporation. Method of impregnating a fibrous textile material with a plastic resin. 4,292,105, Cl. 156-242.000.

Tazaki, Takaharu: *See—*
Nozawa, Takamitsu; and Tazaki, Takaharu, 4,291,818, Cl. 220-335.000.

TDK Electronics: *See—*
Okamura, Masatoshi; and Shiba, Haruo, 4,291,800, Cl. 206-387.000.

Technicare Corporation: *See—*
Carlson, Roland W., 4,292,538, Cl. 250-367.000.

Teijin Limited: *See—*
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Horike, Akihiro, 4,292,151, Cl. 204-159.150.
Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, 4,292,249, Cl. 260-397.200.
Suzuki, Yoshiki; Ikura, Hiroshi; and Yamashita, Gentaro, 4,292,299, Cl. 424-16.000.

Tekron Licensing B.V.: *See—*
Hickman, Ronald P., 4,291,869, Cl. 269-139.000.

Telediffusion de France: *See—*
Macheboeuf, Guy R., 4,292,649, Cl. 358-22.000.

Teledyne Industries, Inc.: *See—*
Fisher, Richard L.; Wright, David J.; and Scheel, Randall, 4,291,753, Cl. 165-94.000.
Kerr, Ronald R.; Mullins, Keith M.; and Bowie, Bruce H., 4,292,629, Cl. 340-547.000.

Tenneco Chemicals Inc.: *See—*
Collins, John D.; and Wood, Donald A., 4,292,252, Cl. 260-429.700.

Tennessee Valley Authority: *See—*
Stinson, John M.; and Burnell, James R., 4,292,067, Cl. 71-29.000.

Terasaki, Masatosi: *See—*
Tachibana, Keiji; Terasaki, Masatosi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,291,587, Cl. 74-363.000.

Terasawa, Masatoshi: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Iwata, Shizuo, 4,292,329, Cl. 426-5.000.

Terry, Reese S.: *See—*
Geddes, Leslie A.; Bourland, Joe D.; and Terry, Reese S., 4,291,699, Cl. 178-419.00D.

Terui, Yohji: *See—*
Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; Kitahara, Tohru; and Watanabe, Kenichi, 4,292,433, Cl. 556-479.000.

Tesch, Gunter, to Breveteam S.A. Patterned textile material. 4,292,367, Cl. 428-300.000.

Teshima, Toru: *See—*
Wada, Masanobu; Uchida, Tatsuo; and Teshima, Toru, 4,291,949, Cl. 350-349.000.

Texaco Inc.: *See—*
Vartanian, Paul F.; and Biasotti, Joseph B., 4,292,047, Cl. 44-65.000.

Texas Instruments Incorporated: *See—*
Orcutt, John W., 4,291,717, Cl. 137-86.000.

Textron Inc.: *See—*
Chao, Chris C., 4,292,090, Cl. 134-2.000.

Tezuka, Shichigoro: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Iwata, Shizuo, 4,292,329, Cl. 426-5.000.

Thalmann, Dieter: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,291,529, Cl. 57-291.000.

Theodore, Ares N.; Pett, Robert A.; and Qaderi, S. Burhan A., to Ford Motor Company. Highly filled thermally conductive elastomers I. 4,292,223, Cl. 260-29.1SB.

Theodore, Ares N., to Ford Motor Company. Highly filled thermally conductive elastomers II. 4,292,224, Cl. 260-29.1SB.

Theodore, Ares N.; and Lemieux, Marvin A., to Ford Motor Company. Highly filled thermally conductive elastomers IV. 4,292,225, Cl. 260-29.1SB.

Thermionics Laboratory, Inc.: *See—*
Faria, Carl R., 4,291,861, Cl. 251-158.000.

Thermo King Corporation: *See—*
Johnson, Dannis R.; Foster, Elgin J.; and Soukup, Richard J., 4,292,661, Cl. 361-393.000.

Thoegersen, Svend I.: *See—*
Sminge, Poul E.; and Thoegersen, Svend I., 4,291,542, Cl. 62-156.000.

Thoemel, Frank: *See—*
Hoffmann, Werner; and Thoemel, Frank, 4,292,244, Cl. 260-345.100.

Thomas, Bernard K.: *See—*
Fray, Derek J.; and Thomas, Bernard K., 4,292,147, Cl. 204-118.000.

Thomas, Charles F. Adaptable stencil for different mimeograph machines. 4,291,621, Cl. 101-114.000.

Thompson, Harvey A.: *See—*
Simmons, Richard R.; and Thompson, Harvey A., 4,292,513, Cl. 250-205.000.

Thompson, Worthington J.; and Freeman, Peter A. Wind-powered impeller-mixer. 4,292,540, Cl. 290-55.000.

Thomson-CSF: *See—*
Henry, Raymond; and Simon, Jacques, 4,291,942, Cl. 350-96.200.

Thornton, Peter: *See—*
Cole, James E.; and Thornton, Peter, 4,291,702, Cl. 128-675.000.

Thrower, Stephen W.; Criss, George H.; and Kleeb, Thomas R., to Dresser Industries, Inc. Vibratable plastic refractory. 4,292,084, Cl. 501-107.000.

Thurston, Thomas R., to International Business Machines Corporation. Misfeed detector. 4,292,529, Cl. 250-561.000.

Tipper, Maynard J. G. Method and apparatus for forming clips. 4,291,561, Cl. 72-187.000.

Tobin, Leo W., Jr. Ceramic material processing. 4,292,262, Cl. 264-26.000.

Todd, Richard A., to United States of America, Energy. Compensated count-rate circuit for radiation survey meter. 4,292,539, Cl. 250-374.000.

Todd, Robert J.; and Wonder, Terry M., to Sorenson Research Company, Inc. Fluid metering device. 4,291,693, Cl. 128-214.00C.

Togami, Shigenori: *See—*
Uemoto, Yasuo; Togami, Shigenori; Takano, Tsumoru, deceased; Ono, Ichiro; and Kayama, Takashi, 4,292,235, Cl. 260-42.180.

Togei, Ryoiku, to VLSI Technology Research Association. Method of producing semiconductor devices by selective laser irradiation and oxidation. 4,292,091, Cl. 148-1.500.

Toho Aen Kabushiki Kaisha: *See—*
Tomii, Keishi; and Tsuchida, Hideyuki, 4,292,284, Cl. 423-112.000.

Toida, Takashi: *See—*
Takeuchi, Satoshi; Akada, Masanori; Fujii, Hitoshi; Toida, Takashi; Takamizawa, Minoru; and Inoue, Yoshio, 4,292,397, Cl. 430-303.000.

Tokico Ltd.: *See—*
Kato, Tetuo, 4,291,788, Cl. 188-322.170.

Toko, Inc.: *See—*
Ishii, Masanori; and Kameya, Kazuo, 4,292,544, Cl. 307-52.000.

Tokunaga, Norikazu: *See—*
Onda, Kenichi; and Tokunaga, Norikazu, 4,292,550, Cl. 307-252.00A.

Tokyo Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Takahashi, Tetsuo; Taguchi, Yoshinobu; Tando, Shuichi; and Saito, Kenichi, 4,292,116, Cl. 156-566.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Ohtomo, Fumio, 4,292,514, Cl. 250-214.00C.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kanto, Masaharu, 4,292,565, Cl. 313-407.000.
Kusakabe, Hiromi, 4,292,584, Cl. 323-316.000.
Takano, Toshimasa, 4,292,386, Cl. 430-63.000.
Yasumura, Hiroto, 4,292,598, Cl. 330-281.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Fujioka, Masahiko, 4,292,656, Cl. 360-97.000.

Tomaschewski, Horst: *See—*
Kuhn, Michael H.; and Tomaschewski, Horst, 4,292,471, Cl. 179-1.0SB.

Tomii, Keishi; and Tsuchida, Hideyuki, to Toho Aen Kabushiki Kaisha. Solvent extraction recovery process for indium. 4,292,284, Cl. 423-112.000.

Tomioka, Shunzo; Okano, Kinpei; Matsuo, Masanori; and Furukawa, Yosio, to Hitachi, Ltd. Guide bearing device. 4,291,926, Cl. 308-73.000.

Tomita, Shimpei: *See—*
Tsunoda, Yoshitoshi; Tomita, Shimpei; and Miyazawa, Chihiro, 4,292,448, Cl. 568-456.000.

Tomotsu, Takeshi: *See—*
Ikeda, Tomoaki; Sigyoo, Masamiti; Ikeda, Sadaharu; Yoshida, Satoshi; and Tomotsu, Takeshi, 4,292,388, Cl. 430-162.000.

Tomy Kogyo Co., Inc.: *See—*
Ikeda, Masaki, 4,291,490, Cl. 46-251.000.

Tone Commanders Systems, Inc.: *See—*
Hill, Stephen R.; De Pinto, Victor M.; and Gillen, John D., 4,292,475, Cl. 179-99.00A.

Topsil A/S: *See—*
De Leon, Noel, 4,292,487, Cl. 219-10.430.

Totten, David S.; and Worringer, Thomas J., to Allis-Chalmers Corporation. Vehicle seat suspension. 4,291,857, Cl. 248-559.000.

Tournier, Herve: *See—*
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,292,089, Cl. 127-1.000.

Townsley, Philip M.: *See—*
Coulthard, T. Lionel; Townsley, Philip M.; and Saben, Hugh S., 4,292,328, Cl. 426-2.000.

Toyo Kagaku Kabushiki Kaisha: *See—*
Hirata, Mituto, 4,292,113, Cl. 156-428.000.

Toyo Kogyo Co., Ltd.: *See—*
Muramoto, Hisao, 4,291,899, Cl. 280-806.000.

Toyono, Tsutomu: *See—*
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,292,387, Cl. 430-102.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ito, Sadayoshi, 4,291,786, Cl. 188-218.00A.
Komiyama, Yoshiro; Kondo, Katsumi; Fuwa, Yoshio; Matsui, Akira; Miyazaki, Shoji; and Hasegawa, Tokushiro, 4,292,074, Cl. 75-122.000.
Minami, Yoriteru, 4,291,897, Cl. 280-802.000.
Miyagi, Hideo; and Nakano, Jiro, 4,291,656, Cl. 123-320.000.
Nakamura, Norihiko; Nakanishi, Kiyoshi; and Kato, Takashi, 4,291,662, Cl. 123-661.000.
Wakizaka, Hiroshi; Shinohara, Hiroshi; Otsuka, Yasuhiro; and Matsumoto, Shinichi, 4,292,157, Cl. 204-195.00S.
Yamakawa, Yoshio, 4,291,655, Cl. 123-306.000.

Tran Quang, Dang: *See—*
Gabbay, Emile; Tran Quang, Dang; and Lafitte, Andre, 4,292,563, Cl. 313-56.000.

Transcale A.B.: *See—*
Odlen, Lars; and Hansson, Anders, 4,292,467, Cl. 179-1.00D.

Transport, Felix. Display device. 4,291,798, Cl. 206-45.240.

Travaglio, Dalny: *See—*
Ginn, Le Roy D.; Ginn, Le Royce S.; Morris, John C.; and Travaglio, Dalny, 4,291,832, Cl. 236-49.000.

Travis, Jonathan A.: *See—*
Petersen, Walter A.; Travis, Jonathan A.; and Badia, Frank A., 4,292,377, Cl. 428-675.000.

Treiber, Fritz F.: *See—*
Warner, Norbert C.; and Treiber, Fritz F., 4,291,516, Cl. 53-219.000.

Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Process for hydrogenation of 2,6,6-trimethyl cyclohexene derivatives, products produced thereby and organoleptic uses of said products. 4,292,447, Cl. 568-378.000.

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Tomii, Keishi; and Tsuchida, Hideyuki, 4,292,284, Cl. 423-112.000.

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Ishii, Kiyoshi; Suzuki, Ryoshu; Honda, Zenjiro; and Tsugaya, Hitoshi, 4,292,417, Cl. 525-510.000.

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Tanaka, Kentaro; Shoji, Jun'ichi; Kawamura, Yoshimi; Hattori, Teruo; Kondo, Eiji; Matsumoto, Kouichi; Yoshida, Tadashi; and Tsuji, Naoki, 4,292,241, Cl. 260-245.20T.

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Tucel Industries, Inc.: *See—*
Lewis, John C., Jr., 4,291,431, Cl. 15-159.00R.

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Cardenas, Carlos G.; and Ud Din, Zia, 4,292,454, Cl. 585-16.000.
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Taylor, Gordon J., 4,292,105, Cl. 156-242.000.

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Hartley, Kenneth; Moulding, Trevor L. J.; and Rostron, Norman, 4,292,127, Cl. 176-17.000.

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Watts, Roderick K., 4,292,576, Cl. 318-640.000.
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Dixon, Richard G., Jr.; and Watkins, Wendell R., 4,291,988, Cl. 356-437.000.
Kezer, Osman F., 4,291,629, Cl. 102-334.000.
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Wells, Warren W.; Strohman, Robert E.; and Wiese, Harold H., 4,291,611, Cl. 89-47.000.
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Davies, Terence J.; Franks, Larry A.; and Nelson, Melvin A., 4,292,537, Cl. 250-361.00R.
Franks, Larry A.; Lutz, Stephen S.; and Lyons, Peter B., 4,292,527, Cl. 250-483.000.
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Marchant, David D.; and Bates, Junior L., 4,292,209, Cl. 252-521.000.
Marling, John B., 4,292,526, Cl. 250-458.000.
Miller, John R., 4,292,340, Cl. 427-6.000.
Ohkawa, Tihiro, 4,292,126, Cl. 176-3.000.
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Rauch, Harry W., Sr., 4,292,083, Cl. 501-104.000.
Ron, Moshe; Gruen, Dieter M.; Mendelsohn, Marshall H.; and Sheft, Irving, 4,292,265, Cl. 264-82.000.
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Vollhardt, Kurt P. C.; and Perkins, Patrick, 4,292,415, Cl. 525-357.000.

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Clark, Keith E., 4,291,848, Cl. 244-3.160.
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Dugger, Gordon L.; and Billig, Frederick S., 4,291,533, Cl. 60-240.000.
Giallorenzi, Thomas G.; and Steinberg, Richard A., 4,291,939, Cl. 350-96.140.
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Albrecht, Cornelius B. J. d.; and Mulleneers, Jan J. M., 4,292,524, Cl. 250-445.00T.
Appels, Johannes A.; Collet, Marnix G.; Hart, Paul A. H.; and Verhoeven, Johannes F. C. M., 4,292,642, Cl. 357-13.000.
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Kuhnert, Volker; and Wilhelm, Dieter, 4,292,564, Cl. 313-318.000.
Lenders, Wilhelmus L. L., 4,291,840, Cl. 242-7.140.
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Blackburn, Martin J.; and Smith, Michael P., 4,292,077, Cl. 75-175.500.
Faitani, Joseph J.; Austin, George W.; Chase, Terry J.; Suljak, George T.; and Misage, Robert J., 4,292,274, Cl. 422-197.000.

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Ginn, Le Roy D.; Ginn, Le Royce S.; Morris, John C.; and Travaglio, Dalny, 4,291,832, Cl. 236-49.000.

University of California, The Regents of the: *See—*
Severinghaus, John W.; and Severinghaus, Edwin M., 4,291,705, Cl. 128-733.000.

University of Michigan: *See—*
Craig, Robert G.; and Douglas, William H., 4,292,029, Cl. 433-228.000.

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UOP Inc.: *See—*
Antos, George J., 4,292,207, Cl. 252-466.0PT.
Homeier, Edwin H.; Dodds, Alan R.; and Imai, Tamotsu, 4,292,196, Cl. 252-412.000.
Rohrbach, Ronald P.; and Maliarik, Mary J., 4,292,199, Cl. 252-430.000.

Upjohn Company, The: *See—*
Nelson, Norman A., 4,292,445, Cl. 564-98.000.
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Sih, John C., 4,292,438, Cl. 562-503.000.
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Urai, Muneharu, to Tachikawa Spring Co. Ltd. Assembly of a seat frame, slide rails and a locking device. 4,291,856, Cl. 248-429.000.

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Kupper, Walter; and Utzinger, Diethelm, 4,291,776, Cl. 177-229.000.

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Bell, Seymour; and Juengel, Richard O., 4,291,466, Cl. 33-148.00H.

Van Mark Products Corporation: *See—*
Van Cleave, Eugene H., 4,291,845, Cl. 242-78.700.

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Vandelanoite, Pierre. Device for the assembling of a plurality of converging tubular bars. 4,291,999, Cl. 403-297.000.

van der Lely, Cornelis. Freely rotatable soil cultivating implements with liquid dispensing. 4,291,637, Cl. 111-7.000.

van der Lely, Cornelis. Mirror arrangements to provide side and rear vision for tractor with implements. 4,291,946, Cl. 350-302.000.

VanderLugt, Thomas, Jr., to Brown Company. Ice cream container, blank therefor, partially erected tube, and package comprising same, said container plus plastic cover and plastic cover itself. 4,291,829, Cl. 229-43.000.

Van Doorn, Rudolf A.: *See—*
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Denecker, Gabriel; Sluyts, Domien; Putseys, Roland; Van Herck, Willy; Claes, Ludo; and Spott, Georg, 4,292,043, Cl. 23-296.000.

van Hoogstraten, Samuel D.; and Davies, David H. K., to Fisons Limited. Herbicidal method. 4,292,068, Cl. 71-88.000.

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Asselman, George A. A.; and Van Mensvoort, Adrianus J., 4,291,676, Cl. 126-433.000.

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Varian Associates, Inc.: *See—*
Fritchle, Cliff D.; Hobrecht, Charles E.; and Scott, Allan W., 4,292,567, Cl. 315-3.500.
Kneip, George D., Jr.; and Anderson, Marvin H., 4,291,541, Cl. 62-45.000.

Varnello, Eduard P.: *See—*
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Kloss, Wolfgang; and Sauer, Hans, 4,292,681, Cl. 368-280.000.

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Vartuli, James C.; and Zehner, Lee R., to Atlantic Richfield Company. Preparation of vanadium(IV)bis(metaphosphate) hydrocarbon oxidation catalyst containing an actinide or lanthanide series metal. 4,292,201, Cl. 252-435.000.

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Vasiliev, Alexei V.: *See—*
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Vassar, Russell J., Jr.: *See—*
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Vaughan, Dennis J.: *See—*
Herschdorfer, C. George; and Vaughan, Dennis J., 4,292,106, Cl. 156-243.000.

VEB Wissenschaftlich-Technisches Zentrum Automobilbau: *See—*
Berthold, Gert; Dreyhaupt, Dieter; Dunse, Helmfried; Henker, Erich; and Viehweg, Bernd, 4,291,892, Cl. 280-28.000.

Veeder Industries Inc.: *See—*
Devanney, Raymond H., 4,292,506, Cl. 235-61.00L.
Stifano, Vincent A., Jr., 4,291,568, Cl. 72-356.000.

Venken, Jan H. G.; and Robijns, Jozef A. M., to International Standard Electric Corporation. Loop supervision circuit. 4,292,473, Cl. 179-18.0FA.

Ventura, Daniel S.: *See—*
Peterson, Robert R.; and Ventura, Daniel S., 4,291,925, Cl. 308-26.000.

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Verhoeven, Johannes F. C. M.: *See—*
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Viaud, Jean-Luc; and Levy, Jacques. Remotely assemblable and disassemblable fuel assembly for nuclear reactors. 4,292,130, Cl. 176-30.000.

Vick, Howard A.: *See—*
Kraft, Thomas L.; Vick, Howard A.; and Meador, James W., 4,291,983, Cl. 356-338.000.

Vick, James A.: *See—*
Sanders, Murray J.; and Vick, James A., 4,292,308, Cl. 424-98.000.

Viehweg, Bernd: *See—*
Berthold, Gert; Dreyhaupt, Dieter; Dunse, Helmfried; Henker, Erich; and Viehweg, Bernd, 4,291,892, Cl. 280-28.000.

Ville, Frans J.: *See—*
Pollet, Robert J.; Kokelenberg, Hendrik E.; Samijn, Rafael P.; Sels, Francis J.; Ville, Frans J.; and de Jaeger, Nikolaas C., 4,292,402, Cl. 430-631.000.

Villella, Tony R. Internal combustion engine. 4,291,651, Cl. 123-44.00R.

Vinals, Joaquin F.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,292,447, Cl. 568-378.000.

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Nedelec, Maurice; Presta, Claude; and Vitoux, Francois, 4,292,065, Cl. 65-104.000.

VLSI Technology Research Association: *See—*
Matsumoto, Takashi; and Nawata, Takahiro, 4,292,156, Cl. 204-192.0EC.
Takasu, Shinichiro, 4,291,990, Cl. 356-445.000.
Togei, Ryoiku, 4,292,091, Cl. 148-1.500.

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Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,292,193, Cl. 252-174.110.

Vofsi, David: *See—*
Daren, Stephen L. J.; Vofsi, David; and Asscher, Meir, 4,292,453, Cl. 570-193.000.

Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. Graphic forming device with preview feature. 4,291,956, Cl. 354-14.000.

Vogelpohl, David R.: *See—*
Embree, Milton L.; Goldthorp, David C.; and Vogelpohl, David R., 4,292,604, Cl. 331-111.000.

Voges, Karl-Friedrich; and Herlitze, Gerd, to Intermedicat GmbH. Valve for closing a plurality of container outlets simultaneously. 4,291,706, Cl. 128-762.000.

Vogt, Herbert; Wassill, Lothar; and Wengler, Christian, to Siemens Aktiengesellschaft. Glass pass through with an additional insulator for lengthening leakage path. 4,292,464, Cl. 174-152.0GM.

Voigtlander, Wolfgang: *See—*
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Volkamer, Klaus: *See—*
Lindner, Alfred; Volkamer, Klaus; Wagner, Ulrich; Pommer, Dieter; Schneider, Klaus-Juergen; and Schwentker, Harald, 4,292,141, Cl. 203-49.000.

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Vorontsov, Nikolai M.: *See—*
Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.

Vorys, Nichols. Follicular phase estrogen or progestin with physiologic estrogen/progestin luteal phase replacement drug delivery system. 4,292,315, Cl. 424-240.000.

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Lechtken, Peter; Bronstert, Bernd; Hoffmann, Gerhard; Vyvial, Rudolf; and Lynch, John, 4,292,152, Cl. 204-159.150.

W-K-M Wellhead Systems, Inc.: *See—*
Diehl, Robert J., 4,291,768, Cl. 166-315.000.

W. R. Grace & Co.: *See—*
Wood, Louis L., 4,292,412, Cl. 521-107.000.

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Kaufmann, Rudolf; Muller, Johann; and Wegehaupt, Karl-Heinrich, 4,292,423, Cl. 528-18.000.
Lindner, Tassilo; Engelsberger, Georg; Zeller, Norbert; and Riedle, Rudolf, 4,292,434, Cl. 556-479.000.
Marwitz, Heinrich; and Louis, Eckhart, 4,292,362, Cl. 428-245.000.

Wada, Masanobu; Uchida, Tatsuo; and Teshima, Toru, to Wada, Masanobu; and Stanley Electric Co. Positive-type display device using guest-host type mixture of liquid crystals and dyes. 4,291,949, Cl. 350-349.000.

Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Photosensitive image forming materials. 4,292,393, Cl. 430-275.000.

Wada, Minoru; Shinozaki, Fumiaki; Takahashi, Yohnosuke; Yoshida, Satoshi; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Photographic process of developing and etching an element containing a tin sulfide. 4,292,395, Cl. 430-299.000.

Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, to Hitachi Ltd.; and Trio Kabushiki Kaisha. Monostable multivibrator and FM detector circuit employing differential transistor pair (threshold) trigger circuit to avoid interference signal operation. 4,292,549, Cl. 307-247.00R.

Wagner, David P., to Illinois Tool Works Inc. Fastener and washer assembly. 4,292,007, Cl. 411-156.000.

Wagner, Dietmar, to International Business Machines Corporation. Apparatus for dark field illumination. 4,291,938, Cl. 350-91.000.

Wagner, Ulrich: *See—*
Lindner, Alfred; Volkamer, Klaus; Wagner, Ulrich; Pommer, Dieter; Schneider, Klaus-Juergen; and Schwentker, Harald, 4,292,141, Cl. 203-49.000.

Wainer, Eugene: *See—*
Straughan, Virgil E.; and Wainer, Eugene, 4,292,384, Cl. 430-5.000.

Waiser, Shimon. Silencer for firearms. 4,291,610, Cl. 89-14.00D.

Waite, Frederick A.: *See—*
Brooks, Herbert; and Waite, Frederick A., 4,292,045, Cl. 44-62.000.

Wakabayashi, Osamu; Matsuya, Kuni; Ohta, Hiroki; Jikihara, Tetsuo; and Suzuki, Seiichi, to Mitsubishi Chemical Industries, Ltd. N-Substituted tetrahydrophthalimide and herbicidal composition. 4,292,070, Cl. 71-96.000.

Wakizaka, Hiroshi; Shinohara, Hiroshi; Otsuka, Yasuhiro; and Matsumoto, Shinichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Solid pole oxygen sensor and its manufacturing process. 4,292,157, Cl. 204-195.00S.

Walker, James V., to McDonnel Douglas Corporation. Valve seal with O-ring and backup ring. 4,291,890, Cl. 277-165.000.

Walker, Samuel C.: *See—*
Qasim, Javed; Walker, Samuel C.; and Longwell, Paul A., 4,291,859, Cl. 251-123.000.

Waller, Francis J.: *See—*
Squire, Edward N.; and Waller, Francis J., 4,292,437, Cl. 560-233.000.

Walsh, Edward N.; and Hardy, Thomas A., to Stauffer Chemical Company. Process for imparting flame retardance to textile materials. 4,292,036, Cl. 8-182.000.

Walton, Jeffrey. Joints. 4,291,512, Cl. 52-282.000.

Warde, Laurence. Vices. 4,291,870, Cl. 269-279.000.

Warne, Michael A., to IMI Marston Limited. Current rope anodes. 4,292,149, Cl. 204-147.000.

Warner-Lambert Company: *See—*
Pattison, Ian C., 4,292,321, Cl. 424-267.000.
Williams, Peter S., 4,291,463, Cl. 30-346.530.

Warner, Norbert C.; and Treiber, Fritz F., to Hobart Corporation. Package rest for wrapping station. 4,291,516, Cl. 53-219.000.

Wassill, Lothar: *See—*
Vogt, Herbert; Wassill, Lothar; and Wengler, Christian, 4,292,464, Cl. 174-152.0GM.

Watanabe, Kenichi: *See—*
Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; Kitahara, Tohru; and Watanabe, Kenichi, 4,292,433, Cl. 556-479.000.

Watanabe, Tadahiko; and Kono, Shinichi, to Director-General of the Agency of Industrial Science and Technology. Boride-based refractory bodies. 4,292,081, Cl. 501-96.000.

Watkins, Hugh: *See—*
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,292,193, Cl. 252-174.110.

Watkins, Wendell R.: *See—*
Dixon, Richard G., Jr.; and Watkins, Wendell R., 4,291,988, Cl. 356-437.000.

Watson, Willie L., to Multi Products Co. Magnetic sensing device. 4,291,761, Cl. 166-66.000.

Watts, Roderick K., to United States of America, Air Force. Mask-slice alignment method. 4,292,576, Cl. 318-640.000.

Weast, Norman J. Archery bow mount for telescopic sight. 4,291,469, Cl. 33-265.000.

Weber, Jakob: *See—*
Figlhuber, Dietgar; Gallwas, Johannes; Weber, Robert; and Weber, Jakob, 4,291,579, Cl. 73-636.000.

Weber, Phillip L.: *See—*
Mascoli, Carmine C.; Pope, J. Lee, Jr.; and Weber, Phillip L., 4,292,405, Cl. 435-31.000.

Weber, Robert: *See—*
Figlhuber, Dietgar; Gallwas, Johannes; Weber, Robert; and Weber, Jakob, 4,291,579, Cl. 73-636.000.

Weber, Steven J.; and Rowland-Hill, E. W., to Sperry Corporation. Infeed geometry. 4,291,709, Cl. 130-27.00T.

Weder, Donald E.: *See—*
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Weder, Erwin H.; and Weder, Donald E., to Highland Manufacturing & Sales Co. Process for making decorative grass. 4,292,266, Cl. 264-140.000.

Wegehaupt, Karl-Heinrich: *See—*
Kaufmann, Rudolf; Muller, Johann; and Wegehaupt, Karl-Heinrich, 4,292,423, Cl. 528-18.000.

Weiche, William J.: *See—*
Smith, Thor L.; and Weiche, William J., 4,291,994, Cl. 400-241.100.

Weidt, Karl A., to Fritz Schafer Gesellschaft Mit Beschrankter Haftung; and Fabriken fur Lager- und Betriebseinrichtungen. Stackable transport and/or storage container with access opening. 4,291,804, Cl. 206-509.000.

Weigel, Horst; and Lema-Patino, Jorge, to Klockner-Humboldt-Deutz AG. Method for the recovery of zinc. 4,292,283, Cl. 423-107.000.

Weiland, Emil; and Brunsch, Klaus, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Hingeless rotor system. 4,292,009, Cl. 416-134.00A.

Weiner, Michael W.: *See—*
Michaels, Alan S.; Weiner, Michael W.; and Jalan, Hemant, 4,292,227, Cl. 260-29.60H.

Weinert, Robert W.; and de Klerk, John, to Westinghouse Electric Corp. Electroacoustic delay line apparatus. 4,292,608, Cl. 333-141.000.

Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., to General Dynamics Corporation. Composite tape laying apparatus including means for plural longitudinal and transverse cuts. 4,292,108, Cl. 156-259.000.

Wells, Daniel R.; and Packo, Joseph J., to Triosops, Inc. Method and apparatus for heating and compressing plasma. 4,292,568, Cl. 315-111.400.

Wells, Warren W.; Strohman, Robert E.; and Wiese, Harold H., to United States of America, Army. Automatic loading device. 4,291,611, Cl. 89-47.000.

Welsh, Jay Y.; Picquet, Pierre C.; and Schyns, Pierre D., to Societe Europeenne des Derives du Manganese, en abrege Sedema Societe Anonyme. Process for recovering metals from catalysts for the hydrodesulfurization of hydrocarbons. 4,292,282, Cl. 423-60.000.

Wenger, Karl, to Boninchi, S.A. Water-tight winder for a diver's watch. 4,292,682, Cl. 368-289.000.

Wengler, Christian: *See—*
Vogt, Herbert; Wassill, Lothar; and Wengler, Christian, 4,292,464, Cl. 174-152.0GM.

Wenzel, Wolfgang; and Meckel, Walter, to Bayer Aktiengesellschaft. Process for the production of aqueous dispersions or solutions of polyurethane polyureas, and dispersions or solution obtainable by this process and their use. 4,292,226, Cl. 260-29.2TN.

Weppler, Rudolf: *See—*
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Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
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Werner, Frank D.; Kleven, Lowell A.; and Greig, Richard C., to Park Energy Company. Glazing for solar heat collectors with provisions for thermal expansion of the glazing. 4,291,684, Cl. 126-450.000.

Wesch, Ludwig; and Meyer, Adolf, to Heidelberger Zement Aktiengesellschaft. Multi-layer board. 4,292,364, Cl. 428-286.000.

Wesselhoft, Robert D.; and Ryan, Daniel F., to Exxon Research & Engineering Co. Integrated catalytic coal devolatilization and steam gasification process. 4,292,048, Cl. 48-197.00R.

Westenskow, Dwayne R.: *See—*
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Western Electric Company, Inc.: *See—*
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Westinghouse Electric Corp.: *See—*
Barry, Robert F., 4,292,129, Cl. 176-24.000.
Engel, Joseph C., 4,292,570, Cl. 315-360.000.
Flick, Carl; and Ying, Sui-Chun, 4,292,558, Cl. 310-194.000.
Goldie, Harry; and Stitzer, Steven N., 4,292,607, Cl. 333-24.100.
Grundy, Brian R., 4,291,865, Cl. 266-227.000.
Kothmann, Richard E., 4,292,379, Cl. 429-17.000.
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Weinert, Robert W.; and de Klerk, John, 4,292,608, Cl. 333-141.000.
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Wheelabrator-Frye Inc.: *See—*
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Whirlpool Corporation: *See—*
Mason, Anthony, 4,291,556, Cl. 68-23.700.

White, Clark W.: *See—*
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White, Rodney V., to Owens-Illinois, Inc. Double-walled glass solar energy collector. 4,291,680, Cl. 126-443.000.

Whitehurst, Darrell D.: *See—*
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Derbyshire, Francis J.; Mitchell, Thomas O.; and Whitehurst, Darrell D., 4,292,168, Cl. 208-107.000.

Whitemore, Christopher E.; and Carrillo, Robert M., to Rohr Industries, Inc. Method of manufacturing of honeycomb noise attenuation structure and the structure resulting from the method. 4,292,356, Cl. 428-116.000.

Whiteside, George D.: *See—*
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Whitesides, Michael: *See—*
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Whitman, Archie E., Sr.; and Lathrops, Donald D. W., to Whitlath Co. Tension relieving and bowstring replacing device for compound bow. 4,291,452, Cl. 29-235.000.

Whitney, Walter D. Straightening apparatus for vehicle bodies. 4,291,570, Cl. 72-447.000.

Wick, Arnold: *See—*
Dazzi, Joachim; Jost, Max; and Wick, Arnold, 4,292,232, Cl. 260-40.00P.

Wiegel, Jurgen K. W.: *See—*
Ljungdahl, Lars G.; and Wiegel, Jurgen K. W., 4,292,406, Cl. 435-42.000.
Ljungdahl, Lars G.; and Wiegel, Jurgen K. W., 4,292,407, Cl. 435-161.000.

Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Isochroman musk compounds and organoleptic uses thereof. 4,292,193, Cl. 252-174.110.

Wiese, Harold H.: *See—*
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Wildey Firearms Company, Inc.: *See—*
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Wilhelm, Dieter: *See—*
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Willeitner, Eberhard, to Maschinenfabrik Augsburg-Nurnberg AG. Swirl tube apparatus for separating gas or isotope mixtures. 4,292,058, Cl. 55-348.000.

Willem, Michel, to Ceraver. Method of fixing a metal strength member on a non-metal part. 4,291,741, Cl. 164-9.000.

Williams, Andrew S., to C. R. Bard, Inc. Nebulizer and associated heater. 4,291,838, Cl. 239-138.000.

Williams, Ernest E.; and Brennan, William M., to Rockwell International Corporation. Automatic insertion universal work holding system. 4,291,867, Cl. 269-43.000.

Williams, Harvey: *See—*
Fast, John; and Williams, Harvey, 4,291,602, Cl. 83-745.000.

Williams, Peter S., to Warner-Lambert Company. Water-soluble shaving aid for razor blades. 4,291,463, Cl. 30-346.530.

Williams, Wilmore; and Luksas, Anthony J., to Beatrice Foods Co. Bread leavening yeast. 4,292,330, Cl. 426-20.000.

Williamson, Dennis F., to General Electric Company. Electrical propulsion process and system for a traction vehicle with an on-board source of power. 4,292,531, Cl. 290-14.000.

Williamson, Warren G., to Robertshaw Controls Company. Method of making a stem seat for a piston and cylinder type thermal device. 4,291,449, Cl. 29-157.10R.

Wilson, James H., to Westinghouse Electric Corp. Magnetometer apparatus with detector immobilized in wax. 4,292,590, Cl. 324-226.000.

Wilson, James W. A.: *See—*
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Wilson, Joe C.: *See—*
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Wilson, John F.; Hoover, Edward D.; Hammond, Philip K.; Moshier, William A.; Woodell, Jack L.; Spaniol, John W.; Bowerman, John J.; Bieber, Larry C.; and Perlman, Marvin, to Frederick Electronics Corporation. Distributed processing telex exchange. 4,292,465, Cl. 178-3.000.

Wilson, Mahlon T. Heat reclamation for shower baths, sinks, and other fluid receiving vessels. 4,291,423, Cl. 4-598.000.

Wilson, Stewart W., to Polaroid Corporation. Audiovisual system with improved moving light pointer. 4,291,954, Cl. 353-42.000.

Wilson, William B.: *See—*
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Wiltron Company: *See—*
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Witte, Josef: *See—*
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Wohrle, Rudolf; and Kohler, Robert, to Alois Kober KG. Torsion-bar wheel support for trailer. 4,291,895, Cl. 280-723.000.
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Wolf, Bernard A. Thermal inverter. 4,291,751, Cl. 165-45.000.
Wolf, Leslie R.: *See—*
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Wolfsgruber, Friedrich; Kasel, Hans W.; Odendahl, Manfred H. A.; and Morsdorf, Wolfram W., to SKW Trostberg Aktiengesellschaft; and Halbergerhutte GmbH. Slow fade inocculant and a process for the inoculation of melted cast iron. 4,292,075, Cl. 75-130.00R.
Wollum, James E.; and Rawlings, Robert L., to Burroughs Corporation. Autonomous data communications subsystem. 4,292,669, Cl. 364-200.000.
Wolske, Eugene H., to Bemis Company, Inc. Method of providing net bags with wicketing flaps. 4,292,033, Cl. 493-221.000.
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Wright, James G., Jr.: *See—*
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Yoshimi, Akiro: *See—*
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Yoshino Kogyosho Co., Ltd.: *See—*
Nozawa, Takamitsu; and Tazaki, Takaharu, 4,291,818, Cl. 220-335.000.
Yoshioka, Mitihiro: *See—*
Enomoto, Ryo; Yoshioka, Mitihiro; and Yokoyama, Takao, 4,292,276, Cl. 422-199.000.
Yoshizawa, Toshio; Yoshida, Yoshiaki; and Sugiura, Katsuaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Combing roller utilized for an open-end spinning machine. 4,291,437, Cl. 19-112.000.
Young Dental Manufacturing Co.: *See—*
Richmond, George E., 4,292,027, Cl. 433-127.000.
Young, Earlwood. Illuminated fishing float. 4,291,484, Cl. 43-17.500.
Youngquist, Robert J.: *See—*
Kelly, Michael J.; and Youngquist, Robert J., 4,292,684, Cl. 371-38.000.
Yuasa, Yoshio; Ishikawa, Norio; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Device for measuring light under ambient light and/or flash light and a method therefor. 4,291,979, Cl. 356-218.000.
Yumde, Yasufumi; and Furuhata, Takashi; to Hitachi, Ltd. Method of receiving a video signal. 4,292,652, Cl. 358-138.000.
Zahid, Abduz, to Greer Hydraulics, Incorporated. Accumulator device having safety charging port. 4,291,726, Cl. 138-30.000.
Zahnradfabrik Friedrichshafen, Aktiengesellschaft: *See—*
Mann, Egon; and Eymuller, Helmut, 4,291,779, Cl. 180-305.000.
Meyerle, Michael; and Ehrlinger, Friedrich, 4,291,592, Cl. 74-687.000.
Zappen, Hans-Wilhelm: *See—*
Bock, Gerd; Zettl, Herbert; Zappen, Hans-Wilhelm; and Zimmermann, Friedrich, 4,292,653, Cl. 358-140.000.
Zavodian, Vitaly V.: *See—*
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Breze, Vladimir V.; Kozlov, Anatoly E.; Grigoriev, Veniamin G.; Sotchenko, Vladimir P.; Maximovich, Boleslav I.; Budzan, Bogdan P.; and Zavodian, Vitaly V., 4,292,486, Cl. 219-9.500.
Zehner, David M.: *See—*
Ownby, Gary W.; White, Clark W.; and Zehner, David M., 4,292,093, Cl. 148-4.000.
Zehner, Lee R.: *See—*
Vartuli, James C.; and Zehner, Lee R., 4,292,201, Cl. 252-435.000.
Vartuli, James C.; and Zehner, Lee R., 4,292,202, Cl. 252-435.000.
Zeisler, Kurt. Crash-helmet. 4,291,418, Cl. 2-410.000.
Zeller, Norbert: *See—*
Lindner, Tassilo; Engelsberger, Georg; Zeller, Norbert; and Riedle, Rudolf, 4,292,434, Cl. 556-479.000.
Zemlyakova, Valentina P. Vaccine and method for prophylaxis and treatment of clostridioses of animals and poultry. 4,292,307, Cl. 424-92.000.
Zenith Radio Corporation: *See—*
Hendrickson, Melvin C., 4,292,650, Cl. 358-123.000.
Zettl, Herbert: *See—*
Bock, Gerd; Zettl, Herbert; Zappen, Hans-Wilhelm; and Zimmermann, Friedrich, 4,292,653, Cl. 358-140.000.
Zheleznov, Jury M.: *See—*
Kolesnik, Mikhail I.; Egorov, Anatoly P.; Kuznetsov, Anatoly A.; Gobov, Anatoly P.; Ryabukhin, Jury M.; Rudakov, Viktor A.; Pisarev, Gennady V.; Zheleznov, Jury M.; and Vasiliev, Alexei V., 4,292,345, Cl. 427-113.000.
Zherebtsov, Valery N.: *See—*
Trishevsky, Igor S.; Vorontsov, Nikolai M.; Jurchenko, Anatoly B.; Korobeinik, Vladimir F.; Zherebtsov, Valery N.; Svistunov, Igor A.; Rudjuk, Sergei I.; Marin, Vladimir S.; Bruskov, Viktor N.; Krupenik, Vitaly N.; Sitarchuk, Alexei A.; Bondarenko, Alexandr D.; Schekin, Vadim M.; and Baldakova, Iraida A., 4,292,494, Cl. 219-76.130.
Ziemba, Richard T.; Kinzel, Joseph A.; and Egtvedt, Myron D., to General Electric Company. Electrical fuze with a plurality of modes of operation. 4,291,627, Cl. 102-265.000.
Ziemek, Peter: *See—*
Hennig, Hans J.; Ziemek, Peter; and Schellmann, Erhard, 4,292,255, Cl. 260-453.0AR.
Zimmer USA, Inc.: *See—*
Hanrahan, James R.; and Levine, Richard G., 4,292,263, Cl. 264-46.900.
Zimmermann, Friedrich: *See—*
Bock, Gerd; Zettl, Herbert; Zappen, Hans-Wilhelm; and Zimmermann, Friedrich, 4,292,653, Cl. 358-140.000.
Zimmermann, Ulrich; and Pilwat, Gunter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Mass and a method of preparing same of living cells of organisms for adsorbing metal ions from a physiological solution, and employment of the mass for enriching metals. 4,292,408, Cl. 435-173.000.
Zlotek, Thaddeus F.: *See—*
Charchian, Loris J.; Emmons, Donald O.; and Zlotek, Thaddeus F., 4,291,795, Cl. 192-113.00B.
ZM "Cherno More": *See—*
Kyuchukov, Yanko P.; and Srebrov, Bojidar M., 4,291,580, Cl. 73-741.000.
Zodrow, Rudolf; and Hoveler, Egon, to Jagenberg Werke AG. Glue roller in a labeling machine. 4,292,117, Cl. 156-578.000.
Zuiderwijk, Jacobus J. M.: *See—*
Davies, David R.; Zuiderwijk, Jacobus J. M.; and Hagelaars, Adrianus M. P. M., 4,291,766, Cl. 166-276.000.
Zylka, Kenneth R.; and Witte, Earl R., to Meridian Industries Inc. Milk filter sock. 4,292,180, Cl. 210-496.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF SEPTEMBER, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, John A.: *See—*
Narasimhan, Mandayam J.; and Anderson, John A., Re. 30,753, Cl. 435-68.000.

Arvin Industries, Inc.: *See—*
Maxey, Alexander R., Re. 30,756, Cl. 360-84.000.

Cardiac Resuscitator Corporation: *See—*
Diack, Archibald W.; Welborn, Warren S.; and Rullman, Robert G., Re. 30,750, Cl. 128-419.00D.

Castelli, Renato, to Samsonite Corporation. Tidy box made entirely of polypropylene. Re. 30,751, Cl. 220-339.000.

Diack, Archibald W.; Welborn, Warren S.; and Rullman, Robert G., to Cardiac Resuscitator Corporation. Cardiac resuscitator and monitoring apparatus. Re. 30,750, Cl. 128-419.00D.

Du Pont de Nemours, E. I., and Company: *See—*
Hammer, Clarence F.; and Sinclair, Harold K., Re. 30,754, Cl. 525-379.000.

Ethyl Corporation: *See—*
Lindsay, Kenneth L.; and Kobetz, Paul, Re. 30,755, Cl. 562-583.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, Re. 30,752, Cl. 260-463.000.

Hagiwara, Daijiro: *See—*
Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, Re. 30,752, Cl. 260-463.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Label printing and applying apparatus. Re. 30,749, Cl. 101-111.000.

Hammer, Clarence F.; and Sinclair, Harold K., to Du Pont de Nemours, E. I., and Company. Process for the preparation of graft copolymers. Re. 30,754, Cl. 525-379.000.

Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, to Fujisawa Pharmaceutical Co., Ltd. Oxime carbonates. Re. 30,752, Cl. 260-463.000.

Kamiya, Takashi: *See—*
Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, Re. 30,752, Cl. 260-463.000.

Kobetz, Paul: *See—*
Lindsay, Kenneth L.; and Kobetz, Paul, Re. 30,755, Cl. 562-583.000.

Lindsay, Kenneth L.; and Kobetz, Paul, to Ethyl Corporation. Process for the preparation of alkali-metal salts of carboxyalkoxy succinates. Re. 30,755, Cl. 562-583.000.

Maxey, Alexander R., to Arvin Industries, Inc. Method and apparatus for video signal recording. Re. 30,756, Cl. 360-84.000.

Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., Re. 30,749, Cl. 101-111.000.

Narasimhan, Mandayam J.; and Anderson, John A., to University of Minnesota, The Regents of the. Process for the large scale production of human growth hormone by serial secondary suspension culture. Re. 30,753, Cl. 435-68.000.

Rullman, Robert G.: *See—*
Diack, Archibald W.; Welborn, Warren S.; and Rullman, Robert G., Re. 30,750, Cl. 128-419.00D.

Samsonite Corporation: *See—*
Castelli, Renato, Re. 30,751, Cl. 220-339.000.

Sinclair, Harold K.: *See—*
Hammer, Clarence F.; and Sinclair, Harold K., Re. 30,754, Cl. 525-379.000.

University of Minnesota, The Regents of the: *See—*
Narasimhan, Mandayam J.; and Anderson, John A., Re. 30,753, Cl. 435-68.000.

Welborn, Warren S.: *See—*
Diack, Archibald W.; Welborn, Warren S.; and Rullman, Robert G., Re. 30,750, Cl. 128-419.00D.

LIST OF DESIGN PATENTEES

Abe, Takeshi: *See—*
Takahashi, Akira; Fujimori, Shunji; and Abe, Takeshi, 260,988, Cl. D14-5.000.

Adickes, Fred: *See—*
Birdsall, John; Bretschger, Edward B.; Adickes, Fred; and Hellenthal, Ronald, 261,017, Cl. D21-142.000.

Airway Industries, Inc.: *See—*
Davis, Michael, 260,947, Cl. D3-71.000.

American Home Products Corporation: *See—*
Schnarr, Randall T., 260,959, Cl. D32-49.000.

American Optical Corporation: *See—*
Armbruster, John T., 261,033, Cl. D24-17.000.
Armbruster, John T., 261,034, Cl. D24-17.000.

Andersson, Lars, to HAFA Fabriks AB. Light fixture housing. 261,056, 9-29-81, Cl. D26-85.000.

Armbruster, John T., to American Optical Corporation. Bilirubin concentration analyzer. 261,033, 9-29-81, Cl. D24-17.000.

Armbruster, John T., to American Optical Corporation. Medical instrument housing. 261,034, 9-29-81, Cl. D24-17.000.

Asaki, James T.; and MacKenzie, William G., to International Telephone and Telegraph Corporation. Camera with integrated flash. 260,997, 9-29-81, Cl. D16-06.000.

Aulenti, Gae, to Knoll International, Inc. Seat or similar article. 260,950, 9-29-81, Cl. D6-73.000.

Aurora Products Canada Ltd.: *See—*
Vandenbrink, Antonie, 261,018, Cl. D21-143.000.

Baffo, Charles M., to Mobil Oil Corporation. Combined service station building and canopy. 261,044, 9-29-81, Cl. D25-33.000.

Bandini-Buti, Luigi; and Del Corno, Marco, to Societa Italiana Telecomunicazioni Siemens S.p.A. Telephone set. 260,991, 9-29-81, Cl. D14-53.000.

Berkline Corporation, The: *See—*
Long, Stapleton, 260,954, Cl. D6-177.000.

Birdsall, John; Bretschger, Edward B.; Adickes, Fred; and Hellenthal, Ronald, to Louis Marx & Co., Inc. Combined toy vehicle and steering device therefor. 261,017, 9-29-81, Cl. D21-142.000.

Bitvai, Tivadar. Child's wash basin. 261,028, 9-29-81, Cl. D23-58.000.

Bowls, Thurman: *See—*
Wotowiec, Joseph P.; and Bowls, Thurman, 261,049, Cl. D26-26.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,050, Cl. D26-26.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,057, Cl. D26-93.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,058, Cl. D26-93.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,059, Cl. D26-93.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,060, Cl. D26-93.000.

Bowman Construction Supply, Inc.: *See—*
Bowman, William E., 261,045, Cl. D25-74.000.
Bowman, William E., 261,046, Cl. D25-74.000.

Bowman, William E., to Bowman Construction Supply, Inc. Expansion joint sealing strip for roadway joints and the like. 261,045, 9-29-81, Cl. D25-74.000.

Bowman, William E., to Bowman Construction Supply, Inc. Expansion joint sealing strip assembly for roadways and the like. 261,046, 9-29-81, Cl. D25-74.000.

Boyter, Mogens, to Dansk Pressalit A/S. Combined toilet seat and cover, or similar article. 261,029, 9-29-81, Cl. D23-71.000.

Bretschger, Edward B.: *See—*
Birdsall, John; Bretschger, Edward B.; Adickes, Fred; and Hellenthal, Ronald, 261,017, Cl. D21-142.000.

Brown, Gary. Desk top file. 261,011, 9-29-81, Cl. D19-90.000.

Canon Kabushiki Kaisha: *See—*
Miura, Yuzo; and Matsuda, Mutsuhide, 261,000, Cl. D16-42.000.

Carr, Harold F., Jr.; and Humphries, David F., to Dover Corporation/-Ernest Holmes Division. Cover for wrecker booms. 260,981, 9-29-81, Cl. D12-14.000.

Catte, Pierre, to Cibie Projecteurs. Headlight. 261,051, 9-29-81, Cl. D26-29.000.

Chambers, Richard F. Asphalt plant control house. 261,035, 9-29-81, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 261,036, 9-29-81, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 261,038, 9-29-81, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 261,039, 9-29-81, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 261,040, 9-29-81, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 261,041, 9-29-81, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 261,042, 9-29-81, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 261,043, 9-29-81, Cl. D25-32.000.

Cibie Projecteurs: *See—*
Catte, Pierre, 261,051, Cl. D26-29.000.

Ciganko, David J., to Quaker Oats Company, The. Rolling toy. 261,020, 9-29-81, Cl. D21-150.000.

Clipson, Stuart A.: *See—*
Munch, Emil L.; and Clipson, Stuart A., 261,069, Cl. D99-44.000.

CMF Mattress Company: *See—*
Paripovich, Michael D.; and Kendall, Donald R., 260,951, Cl. D6-79.000.

Coca-Cola Company, The: *See—*
Cornett, Donald F., 260,996, Cl. D15-116.000.

Cornett, Donald F., to Coca-Cola Company, The. Dispenser cabinet. 260,996, 9-29-81, Cl. D15-116.000.

Curtis, Eugene E. Inflatable balloon merry-go-round toy. 261,016, 9-29-81, Cl. D21-84.000.

Dansk Pressalit A/S: *See—*
Boyter, Mogens, 261,029, Cl. D23-71.000.

Davis, Michael, to Airway Industries, Inc. Luggage case. 260,947, 9-29-81, Cl. D3-71.000.

Davis, Robert P.: *See—*
Katz, Ira R.; and Davis, Robert P., 260,948, Cl. D3-71.000.

Del Corno, Marco: *See—*
Bandini-Buti, Luigi; and Del Corno, Marco, 260,991, Cl. D14-53.000.

DeMars, Donald A., to Lefkowitz, Leroy M., a part interest. Wall or partition hung name plate/coat hook. 261,013, 9-29-81, Cl. D20-42.000.

DesMarais, Stephen D. Serving tray. 260,956, 9-29-81, Cl. D7-38.000.

Dinh Van, Jean. Wristwatch. 260,970, 9-29-81, Cl. D10-39.000.

Dover Corporation/Ernest Holmes Division: *See—*
Carr, Harold F., Jr.; and Humphries, David F., 260,981, Cl. D12-14.000.

Ehlebracht, Horst: *See—*
Emmerling, Oskar H.; and Ehlebracht, Horst, 260,976, Cl. D10-114.000.

Emmerling, Oskar H.; and Ehlebracht, Horst, to OSRAM GmbH. Automotive emergency lamp. 260,976, 9-29-81, Cl. D10-114.000.

Ethicon, Inc.: *See—*
Schuler, Michael; Mandel, Harvey B.; and Studer, John E., 260,955, Cl. D6-186.000.

Everett, Richard C. Brake shoe. 260,983, 9-29-81, Cl. D12-180.000.

Farnam Companies, Inc.: *See—*
Lindley, Donald C., 261,025, Cl. D22-18.000.

Feinberg, Martin; and MacKenzie, William G., to International Telephone and Telegraph Corporation. Phone book telephone. 260,992, 9-29-81, Cl. D14-53.000.

Fleck Manufacturing Company: *See—*
Moylan, John, 260,985, Cl. D13-30.000.

Ford, Harry R.; and Yoshihashi, Yasuo, to Formica Corporation. Laminate sheet. 261,065, 9-29-81, Cl. D92-1.00R.

Formica Corporation: *See—*
Ford, Harry R.; and Yoshihashi, Yasuo, 261,065, Cl. D92-1.00R.

Fresard, Marcel, to Mefina S.A. Sewing machine. 260,995, 9-29-81, Cl. D15-70.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Klose, Odo, 261,027, Cl. D23-32.000.

Fujimori, Shunji: *See—*
Takahashi, Akira; Fujimori, Shunji; and Abe, Takeshi, 260,988, Cl. D14-5.000.

Furukawa, Masaaki; Nishibayashi, Michiko; and Onozaki, Noboru, to Hitachi, Ltd. Video tape recorder. 260,987, 9-29-81, Cl. D14-2.000.

Garstan Corporation: *See—*
Rimmler, William F., 260,977, Cl. D11-4.000.

General Electric Company: *See—*
Wiley, Emmett H., 261,061, Cl. D26-134.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,049, Cl. D26-26.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,050, Cl. D26-26.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,057, Cl. D26-93.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,058, Cl. D26-93.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,059, Cl. D26-93.000.
Wotowiec, Joseph P.; and Bowls, Thurman, 261,060, Cl. D26-93.000.

Giannotti, Vincent, Jr.; Kapper, Henry; and Sabella, Edward J., to International Business Machines Corp. Typewriter or the like. 261,002, 9-29-81, Cl. D18-1.000.

Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Connector for wood members. 260,964, 9-29-81, Cl. D8-373.000.

Goettner, Michael K.; and Plummer, James E., to Owens-Illinois, Inc. Stopper. 260,969, 9-29-81, Cl. D9-439.000.

Gomez, Francine, to Waterman, S.A. Pen. 261,009, 9-29-81, Cl. D19-49.000.

HAFA Fabriks AB: *See—*
Andersson, Lars, 261,056, Cl. D26-85.000.

Hall, Peter J. Microfiche reader. 260,998, 9-29-81, Cl. D16-14.000.

Harrison, Jerry W.; Koncak, James D.; and Kline, Frank E. Vacuum mounted bracket for electronic equipment or the like. 260,965, 9-29-81, Cl. D8-373.000.

Hartmann Luggage Company: *See—*
Katz, Ira R.; and Davis, Robert P., 260,948, Cl. D3-71.000.

Hechler, Valentine, IV, to Injecto Mold, Inc. Hose reel. 260,962, 9-29-81, Cl. D8-359.000.

Hellenthal, Ronald: *See—*
Birdsall, John; Bretschger, Edward B.; Adickes, Fred; and Hellenthal, Ronald, 261,017, Cl. D21-142.000.

Henkels, Walter. Pocket torch. 261,052, 9-29-81, Cl. D26-46.000.

Hirano, Toru, to Tomy Kogyo Co., Inc. Toy trackway. 261,019, 9-29-81, Cl. D21-143.000.

Hitachi, Ltd.: *See—*
Furukawa, Masaaki; Nishibayashi, Michiko; and Onozaki, Noboru, 260,987, Cl. D14-2.000.
Mochizuki, Hidetoshi; Otsuki, Keizo; Kosaka, Hideki; and Murakami, Gen, 260,986, Cl. D13-99.000.
Takahashi, Akira; Fujimori, Shunji; and Abe, Takeshi, 260,988, Cl. D14-5.000.

Hoskins, William F. Seat for skateboard. 261,022, 9-29-81, Cl. D21-227.000.

Humphries, David F.: *See—*
Carr, Harold F., Jr.; and Humphries, David F., 260,981, Cl. D12-14.000.

Ichikawa, Kaname, to Modern Royal Co., Ltd. Lighter or the like. 261,062, 9-29-81, Cl. D27-36.000.

Ichikawa, Shinpei; and Welch, Robert A., to Texas Instruments Incorporated. Case for an electronic calculator. 261,005, 9-29-81, Cl. D18-7.000.

Imanishi Flexible Tube Mfg. Co., Ltd.: *See—*
Nishikawa, Hideo, 260,958, Cl. D7-94.000.

Impulse Merchandising Limited: *See—*
White, Christopher J. V., 261,012, Cl. D20-10.000.

Injecto Mold, Inc.: *See—*
Hechler, Valentine, IV, 260,962, Cl. D8-359.000.

Insulation Sales, Co.: *See—*
Ward, Bruce K., 261,031, Cl. D23-163.000.

International Business Machines Corp.: *See—*
Giannotti, Vincent, Jr.; Kapper, Henry; and Sabella, Edward J., 261,002, Cl. D18-1.000.
Williams, Roger C., 260,990, Cl. D14-105.000.

International Telephone and Telegraph Corporation: *See—*
Asaki, James T.; and MacKenzie, William G., 260,997, Cl. D16-06.000.
Feinberg, Martin; and MacKenzie, William G., 260,992, Cl. D14-53.000.

Iseda, Takeshi: *See—*
Koga, Keisaku; and Iseda, Takeshi, 261,026, Cl. D23-2.000.

Itoh, Kunio, to Pentel Kabushiki Kaisha. Pen or similar article. 261,010, 9-29-81, Cl. D19-51.000.

Jinbo, Katsumi; and Sakamoto, Junichi, to Sharp Corporation. Cash register. 261,003, 9-29-81, Cl. D18-4.000.

Jinbo, Katsumi; and Sakamoto, Junichi, to Sharp Corporation. Cash register. 261,004, 9-29-81, Cl. D18-4.000.

John J. Madison Company, Inc.: *See—*
Santa Eulalia, Jesus A. C.; and Santa Eulalia, Javier B. C., 260,978, Cl. D11-158.000.

Jonsson, Ralph E. Automobile wheel cover. 260,984, 9-29-81, Cl. D12-209.000.

Kapper, Henry: *See—*
Giannotti, Vincent, Jr.; Kapper, Henry; and Sabella, Edward J., 261,002, Cl. D18-1.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 260,948, 9-29-81, Cl. D3-71.000.

Kauffman, Sylvia M., to Procter & Gamble Company, The. Continuous sheet paper or similar article. 261,064, 9-29-81, Cl. D59-2.00B.

Kawano, Takeyoshi; and Nishimoto, Teruyuki, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 260,993, 9-29-81, Cl. D14-70.000.

Keck, Karl M. Razor holder. 261,063, 9-29-81, Cl. D28-44.000.

Kendall, Donald R.: *See—*
Paripovich, Michael D.; and Kendall, Donald R., 260,951, Cl. D6-79.000.

King, Harold. Solar panel. 261,030, 9-29-81, Cl. D23-72.000.

Kline, Frank E.: *See—*
Harrison, Jerry W.; Koncak, James D.; and Kline, Frank E., 260,965, Cl. D8-373.000.

Klose, Odo, to Friedrich Grohe Armaturenfabrik GmbH & Co. Spout for a shower head or the like. 261,027, 9-29-81, Cl. D23-32.000.

Knoll International, Inc.: *See—*
Aulenti, Gae, 260,950, Cl. D6-73.000.

Knopp, Arthur A.: *See—*
Marucci, N. Dominic; and Knopp, Arthur A., 261,032, Cl. D24-12.000.

Koga, Keisaku; and Iseda, Takeshi, to Sekisui Koji Kabushiki Kaisha. Storage tank for liquids or the like. 261,026, 9-29-81, Cl. D23-2.000.

Koncak, James D.: *See—*
Harrison, Jerry W.; Koncak, James D.; and Kline, Frank E., 260,965, Cl. D8-373.000.

Kosaka, Hideki: *See—*
Mochizuki, Hidetoshi; Otsuki, Keizo; Kosaka, Hideki; and Murakami, Gen, 260,986, Cl. D13-99.000.

Kretz, Edward J., to Owens-Illinois, Inc. Bottle. 260,966, 9-29-81, Cl. D9-349.000.

Lam, Yanta H. T., to Meyer Aluminum Ltd. Fire alarm. 260,975, 9-29-81, Cl. D10-106.000.

Lambert, Lloyd J., Sr. Physical exerciser. 261,021, 9-29-81, Cl. D21-196.000.

LaViolette, Paul A. Target pistol or similar article. 261,024, 9-29-81, Cl. D22-1.000.

Lawing, Edward, to Reliance Electric Co. Weighing scale. 260,973, 9-29-81, Cl. D10-91.000.

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Fry, Byard O. Muscadine grape. 4,771, 9-29-81, Cl. 47.000.

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CLASS 128

24.1 4,291,685
52 4,291,686
129 4,291,687
200.23 4,291,688
200.24 4,291,689
200.26 4,291,690
204.18 4,291,691
214 C 4,291,693
214 E 4,291,692
214.4 4,291,694
218 NV 4,291,695
263 4,291,696
269 4,291,697
335 4,291,698
419 D Re.30,750
675 4,291,701
4,291,702
711 4,291,703
728 4,291,704
733 4,291,705
734 4,291,708
762 4,291,706
784 4,291,707

CLASS 130

27 T 4,291,709

CLASS 131

68 4,291,713
336 4,291,711
339 4,291,712
351 4,291,710

CLASS 132

40 4,291,714

CLASS 134

2 4,292,090

CLASS 135

68 4,291,715

CLASS 136

249 4,292,461

CLASS 137

83 4,291,716
86 4,291,717
87 4,291,718
112 4,291,719
209 4,291,720
492 4,291,721
496 4,291,722
508 4,291,723
555 4,291,724
625.25 4,291,725

CLASS 138

30 4,291,726
93 4,291,727
122 4,291,728

CLASS 139

28 4,291,729
65 4,291,730
438 4,291,731

CLASS 140

112 4,291,732

CLASS 141

152 4,291,733

CLASS 144

2 Z 4,291,734
136 C 4,291,735

CLASS 145

30 A 4,291,736

CLASS 148

1.5 4,292,091
4,292,092
4 4,292,093
6.11 4,292,094
6.14 R 4,292,095
6.15 Z 4,292,096
12 C 4,292,097

CLASS 149

89 4,292,098

CLASS 156

49 4,292,099
72 4,292,100

92 4,292,110
156 4,292,101
213 4,292,102
230 4,292,103
235 4,292,104
242 4,292,105
243 4,292,106
249 4,292,107
259 4,292,108
281 4,292,109
307.7 4,292,111
415 4,292,112
428 4,292,113
447 4,292,114
502 4,292,115
566 4,292,116
578 4,292,117
583.2 4,292,118
624 4,292,119
660 4,292,120

CLASS 159

3 4,292,121

CLASS 160

176 R 4,291,738

CLASS 162

28 4,292,122
60 4,292,123

CLASS 164

5 4,291,739
7.1 4,291,740
9 4,291,741
66.1 4,291,743
394 4,291,745
407 4,291,746
420 4,291,747
426 4,291,748
501 4,291,742
509 4,291,744

CLASS 165

3 4,291,755
27 4,291,749
34 4,291,750
45 4,291,751
81 4,291,752
94 4,291,753
104.17 4,291,756
104.31 4,291,757
133 4,291,758
146 4,291,759
165 4,291,754
166 4,291,760

CLASS 166

66 4,291,761
85 4,291,762
110 4,291,763
173 4,291,764
273 4,291,765
276 4,291,766
290 4,291,767
315 4,291,768

CLASS 169

13 4,291,769

CLASS 172

185 4,291,770

CLASS 173

106 4,291,771

CLASS 174

17 LF 4,292,462
107 4,292,463
152 GM 4,292,464

CLASS 175

5 4,291,772
61 4,291,773
417 4,291,774

CLASS 176

3 4,292,124
4,292,125
4,292,126
17 4,292,127
20 R 4,292,128
24 4,292,129
30 4,292,130
36 C 4,292,131
36 R 4,292,133
36 S 4,292,132
38 4,292,134

CLASS 177

1 4,291,775
229 4,291,776

CLASS 178

3 4,292,465
4,292,466
419 D 4,291,699

CLASS 179

1 AL 4,292,472
1 D 4,292,467
4,292,468
1 SB 4,292,471
1 SC 4,292,469
1.5 D 4,292,470
18 FA 4,292,473
99 A 4,292,475
99 M 4,292,474
99 R 4,292,476
100 C 4,292,477
170 NC 4,292,478
4,292,479
175.2 B 4,292,480
178 4,292,481

CLASS 180

24.06 4,291,777
271 4,291,778
305 4,291,779

CLASS 181

121 4,291,780
169 4,291,781
215 4,291,782
295 4,291,783

CLASS 182

178 4,291,784

CLASS 184

55 A 4,291,785

CLASS 188

218 A 4,291,786
318 4,291,787
322.17 4,291,788
351 4,291,789

CLASS 192

3.28 4,291,790
67 R 4,291,791
89 B 4,291,792
95 4,291,793
107 M 4,291,794
113 B 4,291,795

CLASS 198

460 4,291,796
472 4,291,797

CLASS 200

38 R 4,292,482
42 A 4,292,483
61.25 4,292,484
332 4,292,485

CLASS 202

173 4,292,135
234 4,292,136
248 4,292,137

CLASS 203

2 4,292,138
6 4,292,139
22 4,292,140
49 4,292,141
51 4,292,142

CLASS 204

2.1 4,292,143
23 4,292,144
60 4,292,145
98 4,292,146
118 4,292,147
144 4,292,148
147 4,292,149
159.12 4,292,150
159.15 4,292,151
4,292,152
164 4,292,153
180 G 4,292,154
181 C 4,292,155
192 EC 4,292,156
195 S 4,292,157
4,292,158
237 4,292,159
4,292,160
299 R 4,292,161
4,292,162
304 4,292,163

CLASS 206

45.24 4,291,798
219 4,291,799
387 4,291,800
4,291,801
409 4,291,802
443 4,291,803
509 4,291,804
563 4,291,805
620 4,291,806
626 4,291,807

CLASS 208

8 LE 4,292,164
4,292,165
39 4,292,166
66 4,292,167
107 4,292,168
120 4,292,169
131 4,292,170
164 4,292,171

CLASS 209

184 4,292,172
668 4,291,808

CLASS 210

138 4,292,173
167 4,292,174
192 4,292,175
325 4,292,177
352 4,292,178
483 4,292,179
496 4,292,180
616 4,292,176
638 4,292,181

CLASS 211

69.5 4,291,809
89 4,291,810
205 4,291,811
207 4,291,812

CLASS 215

252 4,291,813

CLASS 219

9.5 4,292,486
10.43 4,292,487
10.55 D 4,292,488
10.71 4,292,489
69 P 4,292,490
69 W 4,292,491
73 4,292,492
74 4,292,493
76.13 4,292,494
25.12 4,292,495
26 4,292,496
30.51 4,292,497
288 4,292,498
308 4,292,499
345 4,292,500
613 4,292,501
683 4,292,502
935 4,292,503
942 4,292,504
953 4,292,505

CLASS 220

90.4 4,291,814
200 4,291,815
243 4,291,816
327 4,291,817
335 4,291,818
339 Re.30,751

CLASS 221

298 4,291,819

CLASS 222

70 4,291,820
153 4,291,821

CLASS 224

257 4,291,822
310 4,291,823

CLASS 225

2 4,291,824

CLASS 226

18 4,291,825

CLASS 229

31 FS 4,291,826
39 R 4,291,827
41 B 4,291,828
43 4,291,829
45 R 4,291,830

CLASS 232

15 4,291,831

CLASS 235

61 L 4,292,506
90 4,292,507
92 GA 4,292,508
92 MP 4,292,509
145 R 4,292,510
454 4,292,511

CLASS 236

49 4,291,832

CLASS 237

2 B 4,291,833
12.1 4,291,834

CLASS 239

11 4,291,835
37 4,291,836
70 4,291,837
138 4,291,838
289 4,291,839

CLASS 242

7.14 4,291,840
18 A 4,291,841
46.5 4,291,842
57 4,291,843
68.2 4,291,844
78.7 4,291,845
84.2 G 4,291,846
95 4,291,847

CLASS 244

3.16 4,291,848
3.22 4,291,849
87 4,291,853
102 SS 4,291,850
119 4,291,851
147 4,291,852

CLASS 246

271 4,291,854

CLASS 248

74 A 4,291,855
429 4,291,856
559 4,291,857

CLASS 249

216 4,291,858

CLASS 250

205 4,292,512
4,292,513
214 C 4,292,514
229 4,292,515
4,292,516
4,292,517
262 4,292,518
310 4,292,519
323 4,292,521
328 4,292,520
358 R 4,292,522
359 4,292,536
361 R 4,292,537
367 4,292,538
374 4,292,539
442 4,292,523
445 T 4,292,524
4,292,525
458 4,292,526
483 4,292,527
506 4,292,528
561 4,292,529
577 4,292,530

CLASS 251

123 4,291,859
129 4,291,860
158 4,291,861
214 4,291,863

CLASS 252

8.55 R 4,292,183
8.6 4,292,182
46.3 4,292,184
47.5 4,292,185
49.5 4,292,187
49.7 4,292,186
62 4,292,188
70 4,292,189
75 4,292,190
99 4,292,191
132 4,292,192
174.11 4,292,193
400 R 4,292,194
401 4,292,195
412 4,292,196
425.3 4,292,197
428 4,292,198
430 4,292,199
431 C 4,292,200
435 4,292,201
4,292,202
438 4,292,203
439 4,292,204
455 Z 4,292,205
463 4,292,206
466 PT 4,292,207
470 4,292,208
521 4,292,209
522 R 4,292,210
529 4,292,211
547 4,292,212

CLASS 254

375 4,291,864

CLASS 257

167 4,291,862

CLASS 260

2.3 4,292,213
9 4,292,214
17.3 4,292,215
17.5 4,292,216
18 N 4,292,217
22 CB 4,292,218
23 AR 4,292,220
23.7 C 4,292,221
29.1 SB 4,292,222
4,292,223
4,292,224
4,292,225
29.2 TN 4,292,226
29.6 H 4,292,227
29.6 ME 4,292,219
30.4 A 4,292,228
30.6 R 4,292,229
33.2 EP 4,292,230
33.4 UR 4,292,231
40 P 4,292,232
40 R 4,292,233
42.15 4,292,234
42.18 4,292,235
42.52 4,292,236
45.8 NW 4,292,237
158 4,292,238
4,292,239
239.3 R 4,292,240
245.2 T 4,292,241
326.8 4,292,242
340.9 R 4,292,243
345.1 4,292,244
346.22 4,292,245
347.4 4,292,246
381 4,292,247
383 4,292,248
397.2 4,292,249
4,292,250
397.3 4,292,251
429.5 4,292,253
429.7 4,292,252
453 AR 4,292,255
453 P 4,292,254
463 Re.30,752
937 4,292,256

CLASS 261

37 4,292,257
39 A 4,292,258
123 4,292,259

CLASS 264

1.5 4,292,260
24 4,292,261
26 4,292,262
46.9 4,292,263
81 4,292,264
82 4,292,265
140 4,292,266
157 4,292,267
236 4,292,268
299 4,292,269
320 4,292,270
518 4,292,271

CLASS 266

227 4,291,865

CLASS 269

1 4,291,866
43 4,291,867
93 4,291,868
139 4,291,869
279 4,291,870

CLASS 272

68 4,291,871
73 4,291,872
146 4,291,873

CLASS 273

1 GF 4,291,874
29 B 4,291,875
73 F 4,291,876
86 B 4,291,877
86 R 4,291,878
119 R 4,291,879
129 L 4,291,880
142 H 4,291,881
148 A 4,291,882
163 R 4,291,883
249 4,291,884
347 4,291,885

CLASS 277

27 4,291,887
65 4,291,888
116.4 4,291,889
165 4,291,890

CLASS 280

9 4,291,891
28 4,291,892
507 4,291,893
612 4,291,894
723 4,291,895
775 4,291,896
802 4,291,897
804 4,291,898
806 4,291,899

CLASS 281

15 R 4,291,900

CLASS 282

27.5 4,291,901
4,291,902

CLASS 285

39 4,291,903
162 4,291,904
192 4,291,905
332 4,291,906

CLASS 290

6 4,292,532
14 4,292,531
40 B 4,292,533
40 R 4,292,534
54 4,292,535
55 4,292,540

CLASS 292

188 4,291,907
299 4,291,908

CLASS 294

88 4,291,909
95 4,291,910

CLASS 296

78 R 4,291,911
217 4,291,912

CLASS 297

89 4,291,913
193 4,291,915
361 4,291,914
367 4,291,916
452 4,291,917
483 4,291,918
4,291,919

CLASS 299

4 4,291,920

CLASS 301

37 AT 4,291,921
46 4,291,922

CLASS 303

23 R 4,291,923
111 4,291,924

CLASS 307

10 AT 4,292,541
28 4,292,542
35 4,292,543
52 4,292,544
102 4,292,545
114 4,292,546
247 R 4,292,549
252 A 4,292,550
311 4,292,551
354 4,292,552
463 4,292,547
465 4,292,548

CLASS 308

26 4,291,925
73 4,291,926
121 4,291,927

CLASS 310

46 4,292,553
58 4,292,554
68 R 4,292,555
78 4,292,557
93 4,292,556
194 4,292,558
206 4,292,559
242 4,292,560
322 4,292,561
348 4,292,562

CLASS 312

257 R 4,291,928
341 R 4,291,929

CLASS 313

56 4,292,563
318 4,292,564
407 4,292,565

CLASS 315

3.5 4,292,566
4,292,567
111.4 4,292,568
209 R 4,292,569
360 4,292,570

CLASS 318

17 4,292,571
52 4,292,572
138 4,292,573
254 4,292,575
331 4,292,574
640 4,292,576
802 4,292,577

CLASS 320

9 4,292,578

CLASS 322

2 R 4,292,579

CLASS 323

212 4,292,580
283 4,292,581
294 4,292,582
316 4,292,583
4,292,584

CLASS 324

51 4,292,585
73 R 4,292,586
221 4,292,588
4,292,589
226 4,292,590
395 4,292,591

CLASS 328

233 4,292,592

CLASS 329

50 4,292,593
4,292,594

CLASS 330

10 4,292,595
86 4,292,596
254 4,292,597
281 4,292,598
290 4,292,599

CLASS 331

94.5 C 4,292,602
94.5 G 4,292,600
4,292,603
94.5 L 4,292,601
111 4,292,604
4,292,605

CLASS 332

7.51 4,292,606

CLASS 333

24.1 4,292,607
141 4,292,608
165 4,292,609
222 4,292,610

CLASS 335

6 4,292,611
14 4,292,612
128 4,292,613
202 4,292,614
205 4,292,615

CLASS 337

4 4,292,616
407 4,292,617

CLASS 338

5 4,292,618
308 4,292,619

CLASS 339

14 P 4,291,930
45 R 4,291,931
60 R 4,291,932
89 R 4,291,933
95 R 4,291,934
97 R 4,291,935
177 R 4,291,936

CLASS 340

63 4,292,620
114 R 4,292,627
146.3 H 4,292,621
146.3 SG 4,292,622
147 R 4,292,623
347 DA 4,292,625
347 DD 4,292,624
4,292,626
531 4,292,628
547 4,292,629
573 4,292,630
771 4,292,631
870.37 4,292,632
870.39 4,292,633

CLASS 343

5 CM 4,292,634
5 NQ 4,292,635
6.5 SS 4,292,636
4,292,637
7.5 4,292,638
113 DE 4,292,639

CLASS 346

75 4,292,640
76 R 4,292,641

CLASS 350

23 4,291,937
91 4,291,938
96.14 4,291,939
96.15 4,291,940
96.18 4,291,941
96.20 4,291,942
96.22 4,291,943
257 4,291,944
286 4,291,945
302 4,291,946
336 4,291,947
340 4,291,948
349 4,291,949
389 4,291,950
458 4,291,951
471 4,291,952

CLASS 351

160 H 4,291,953

CLASS 353

42 4,291,954
111 4,291,955

CLASS 354

14 4,291,956
4,291,957
25 4,291,958
31 4,291,959
53 4,291,960
62 4,291,961
122 4,291,962
128 4,291,963
145 4,291,964
195 4,291,965
275 4,291,966
293 4,291,967
313 4,291,968
322 4,291,969

CLASS 355

3 R 4,291,970
14 R 4,291,971
40 4,291,972
71 4,291,973
76 4,291,974

CLASS 356

30 4,291,975
150 4,291,976
152 4,291,977
4,291,978
218 4,291,979
243 4,291,980
244 4,291,981
249 4,291,982
338 4,291,983
350 4,291,984
408 4,291,985
410 4,291,986
431 4,291,987
437 4,291,988
440 4,291,989
445 4,291,990

CLASS 357

13 4,292,642
15 4,292,643
21 4,292,644
29 4,292,645
38 4,292,646
81 4,292,647

CLASS 358

8 4,292,648
22 4,292,649
123 4,292,650
135 4,292,651
138 4,292,652
140 4,292,653
158 4,292,654

CLASS 360

40 4,292,655
84 Re.30,756
97 4,292,656
98 4,292,657

CLASS 361

93 4,292,658
283 4,292,659
293 4,292,660
393 4,292,661

CLASS 362

17 4,292,662
97 4,292,663
120 4,292,664

CLASS 363

141 4,292,665

CLASS 364

104 4,292,666
200 4,292,667
4,292,668
4,292,669
431 4,292,670
433 4,292,671
507 4,292,672
509 4,292,673
900 4,292,674

CLASS 365

156 4,292,675
222 4,292,676
4,292,677

CLASS 366

159 4,291,991

CLASS 367

102 4,292,678
188 4,292,679

CLASS 368

187 4,292,680
280 4,292,681
289 4,292,682

CLASS 369

203 4,291,886

CLASS 370

104 4,292,683

CLASS 371

38 4,292,684

CLASS 400

124 4,291,992
144.2 4,291,993
241.1 4,291,994

CLASS 401

175 4,291,995

CLASS 403

14 4,291,996
24 4,291,997
263 4,291,998
297 4,291,999
320 4,292,000
359 4,292,001
376 4,292,002
407 4,292,003

CLASS 405

203 4,292,004
219 4,292,005

CLASS 409

131 4,292,006

CLASS 411

16 4,291,608
156 4,292,007
282 4,291,937

CLASS 415

115 4,292,008

CLASS 416

134 A 4,292,009
241 R 4,292,010

CLASS 417

53 4,292,011
462 4,292,012

CLASS 418

132 4,292,013

CLASS 422

57 4,292,272
102 4,292,273
197 4,292,274
198 4,292,275
199 4,292,276
259 4,292,277

CLASS 423

8 4,292,278
15 4,292,279
24 4,292,280
27 4,292,281
60 4,292,282
107 4,292,283
112 4,292,284
210 4,292,285
223 4,292,286
241 4,292,287
247 4,292,288
301 4,292,289
336 4,292,290
450 4,292,291
477 4,292,292
571 4,292,293
594 4,292,294
625 4,292,295

CLASS 424

1 4,292,296
4,292,297
10 4,292,298
16 4,292,299
19 4,292,300
28 4,292,301
4,292,302
4,292,303
37 4,292,304
45 4,292,305
52 4,292,306
92 4,292,307
98 4,292,308
119 4,292,309
122 4,292,310
162 4,292,311
176 4,292,312
177 4,292,313
182 4,292,314
240 4,292,315
248.56 4,292,316
250 4,292,317
4,292,318
4,292,319
258 4,292,320
267 4,292,321
274 4,292,322
4,292,323
289 4,292,324
304 4,292,325
317 4,292,326
325 4,292,327

CLASS 425

72 R 4,292,014
73 4,292,015
101 4,292,016
107 4,292,017
144 4,292,018
325 4,292,019

CLASS 426

2 4,292,328
5 4,292,329
20 4,292,330
52 4,292,331
111 4,292,332
335 4,292,333
447 4,292,334
480 4,292,335
548 4,292,336
573 4,292,337
603 4,292,338
650 4,292,339

CLASS 427

6 4,292,340
10 4,292,341
34 4,292,342
39 4,292,343
45.1 4,292,344
113 4,292,345
115 4,292,346
168 4,292,347
299 4,292,348
335 4,292,349
385.5 4,292,350
403 4,292,351

CLASS 428

14 4,292,352
31 4,292,354
35 4,292,355
116 4,292,356
124 4,292,357
135 4,292,358
151 4,292,359
171 4,292,360
211 4,292,353
215 4,292,361
243 4,292,362
247 4,292,363
286 4,292,364
288 4,292,365
293 4,292,366
300 4,292,367
310 4,292,368
313 4,292,369
355 4,292,370
378 4,292,371
437 4,292,372
446 4,292,373
4,292,374
593 4,292,375
4,292,376
675 4,292,377

CLASS 429

15 4,292,378
17 4,292,379
101 4,292,380
120 4,292,381
197 4,292,382
219 4,292,383

CLASS 430

5 4,292,384
58 4,292,385
63 4,292,386
102 4,292,387
462 4,292,388
169 4,292,389
207 4,292,390
267 4,292,391
271 4,292,392
275 4,292,393
291 4,292,394
299 4,292,395
302 4,292,396
303 4,292,397
306 4,292,398
338 4,292,399
383 4,292,400
393 4,292,401
631 4,292,402

CLASS 431

5 4,292,020
13 4,292,021
170 4,292,022
4,292,023

CLASS 432

13 4,292,024

CLASS 433

18 4,292,025
69 4,292,026
127 4,292,027
180 4,292,028
228 4,292,029

CLASS 434

262 4,292,030

CLASS 435

5 4,292,403
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31 4,292,405
42 4,292,406
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161 4,292,407
173 4,292,408
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CLASS 455

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CLASS 474

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649 4,292,449
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641 4,292,459

CLASSIFICATION OF DESIGNS

D2—	343	260,945		355	260,967		5	260,988		49	261,009		72	261,030		29	261,051
		260,946		428	260,968		12	260,989		51	261,010		163	261,031		46	261,052
D3—	71	260,947		439	260,969		53	260,991		90	261,011	D24—	12	261,032		66	261,053
		260,948	D10—	39	260,970			260,992	D20—	10	261,012		17	261,033			261,054
D4—	35	260,949		50	260,971		70	260,993		42	261,013			261,034			261,055
D6—	73	260,950		70	260,972		105	260,990	D21—	27	261,014	D25—	22	261,035		85	261,056
	79	260,951		91	260,973	D15—	9.1	260,994		35	261,015			261,036		93	261,057
	86	260,952		101	260,974		70	260,995		84	261,016			261,037			261,058
	104	260,953		106	260,975		116	260,996		142	261,017			261,038			261,059
	177	260,954		114	260,976	D16—	06	260,997		143	261,018			261,039			261,060
	186	260,955	D11—	4	260,977		14	260,998			261,019			261,040		134	261,061
D7—	38	260,956		158	260,978		28	260,999		150	261,020			261,041	D27—	36	261,062
	60	260,957		160	260,979		42	261,000		196	261,021			261,042	D28—	44	261,063
	94	260,958		162	260,980		48	261,001		227	261,022		32	261,043	D32—	49	260,959
D8—	1	260,960	D12—	14	260,981	D18—	1	261,002		239	261,023		33	261,044	D59—	2 B	261,064
	107	260,961		114	260,982		4	261,003	D22—	1	261,024		74	261,045	D92—	1 C	261,067
	359	260,962		180	260,983			261,004		18	261,025			261,046		1 E	261,066
	360	260,963		209	260,984		7	261,005	D23—	2	261,026		91	261,047		1 R	261,065
	373	260,964	D13—	30	260,985		15	261,006		32	261,027	D26—	24	261,048			
		260,965		99	260,986		26	261,007		58	261,028		26	261,049	D99—	25	261,068
D9—	349	260,966	D14—	2	260,987	D19—	32	261,008		71	261,029			261,050		44	261,069

CLASSIFICATION OF PLANTS

P.—	7	4,769		47	4,770			4,771									

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	4,292,529	4,291,810	4,292,413	4,292,262		4,292,480		4,292,624
01 :	4,291,474	4,291,817	4,292,415	4,292,263	15 :	4,291,686		4,292,650
	4,291,849	4,291,830	4,292,418	4,292,274	17 :	4,291,467		4,292,662
	4,292,067	4,291,832	4,292,465	4,292,333		4,291,475	18 :	4,291,471
	4,292,366	4,291,838	4,292,470	4,292,381		4,291,535		4,291,498
04 :	4,291,491	4,291,848	4,292,507	4,292,444		4,291,538		4,291,509
	4,291,581	4,291,859	4,292,526	4,292,506		4,291,550		4,291,576
	4,291,599	4,291,861	4,292,527	4,292,612		4,291,589		4,291,586
	4,291,651	4,291,867	4,292,537	Re.30,754	10 :	4,291,591		4,291,605
	4,291,685	4,291,881	4,292,542	4,292,120		4,291,617		4,291,699
	4,291,858	4,291,884	4,292,545	4,292,391		4,291,631		4,291,839
	4,291,893	4,291,885	4,292,567	4,292,394		4,291,640		4,292,000
	4,292,213	4,291,890	4,292,569	4,292,449		4,291,668		4,292,176
	4,292,264	4,291,915	4,292,579	4,292,451		4,291,671		4,292,183
	4,292,342	4,291,930	4,292,583	4,291,424	12 :	4,291,690		4,292,257
	4,292,595	4,291,931	4,292,599	4,291,477		4,291,725		4,292,482
05 :	4,291,458	4,291,934	4,292,623	4,291,484		4,291,727		4,292,543
	4,291,770	4,291,936	4,292,625	4,291,492		4,291,734		4,292,555
06 :	Re.30,756	4,291,941	4,292,626	4,291,619		4,291,793		4,292,670
	4,291,417	4,291,950	4,292,633	4,291,639		4,291,805	19 :	4,291,645
	4,291,421	4,291,980	4,292,634	4,291,681		4,291,806		4,291,812
	4,291,433	4,291,984	4,292,647	4,291,735		4,291,823		4,291,827
	4,291,464	4,291,994	4,292,648	4,291,736		4,291,825		4,291,908
	4,291,468	4,291,996	4,292,657	4,291,740		4,291,828		4,292,002
	4,291,472	4,292,008	4,292,665	4,291,751		4,291,831	20 :	4,291,465
	4,291,486	4,292,011	4,292,667	4,291,755		4,291,871		4,292,069
	4,291,502	4,292,017	4,292,669	4,291,780		4,291,872		4,292,163
	4,291,510	4,292,020	4,292,673	4,291,811		4,291,896		4,292,332
	4,291,519	4,292,050	4,292,685	4,291,923		4,291,933	21 :	4,291,611
	4,291,525	4,292,051	08 : 4,291,461	4,291,969		4,291,967		4,291,914
	4,291,526	4,292,061	4,291,462	4,292,030		4,291,975		4,292,035
	4,291,541	4,292,090	4,291,507	4,292,278		4,292,007	22 :	Re.30,755
	4,291,547	4,292,101	4,291,621	4,292,301		4,292,034		4,291,598
	4,291,561	4,292,109	4,291,704	4,292,302		4,292,057		4,291,784
	4,291,570	4,292,119	4,292,629	4,292,303		4,292,118		4,292,169
	4,291,595	4,292,126	4,292,632	4,292,308		4,292,196		4,292,171
	4,291,607	4,292,145	4,292,640	4,292,454		4,292,199		4,292,204
	4,291,661	4,292,161	09 : 4,291,448	4,292,459		4,292,207		4,292,234
	4,291,663	4,292,174	4,291,454	4,292,474		4,292,266		4,292,286
	4,291,670	4,292,214	4,291,463	4,292,515		4,292,270		4,292,288
	4,291,672	4,292,227	4,291,481	4,292,516		4,292,290	23 :	4,291,669
	4,291,691	4,292,236	4,291,518	4,292,517		4,292,293	24 :	4,291,480
	4,291,694	4,292,242	4,291,546	4,292,562		4,292,316		4,291,483
	4,291,697	4,292,269	4,291,560	4,292,568		4,292,330		4,291,533
	4,291,701	4,292,289	4,291,568	4,292,638		4,292,378		4,291,719
	4,291,702	4,292,292	4,291,953	4,291,422	13 :	4,292,385		4,291,835
	4,291,705	4,292,304	4,292,077	4,291,430		4,292,405		4,292,079
	4,291,726	4,292,313	4,292,132	4,291,573		4,292,452		4,292,098
	4,291,732	4,292,325	4,292,143	4,291,841		4,292,457		4,292,121
	4,291,752	4,292,352	4,292,150	4,291,850		4,292,458		4,292,188
	4,291,754	4,292,356	4,292,206	4,291,875		4,292,489		4,292,282
	4,291,773	4,292,370	4,292,211	4,292,406		4,292,498		4,292,311
	4,291,794	4,292,375		4,292,407		4,292,617		4,292,380

	4,292,412		4,292,442		4,292,260		4,292,639	42 :	4,291,429		4,291,787
	4,292,540		4,292,443		4,292,268		4,292,644		4,291,451		4,291,862
	4,292,590		4,292,445		4,292,305		4,292,663		4,291,494		4,291,889
	4,292,607		4,292,659		4,292,323		4,292,664		4,291,540		4,291,907
	4,292,683	27 :	4,291,557		4,292,341	37 :	4,291,432		4,291,558		4,291,932
25 :	4,291,508		4,291,673		4,292,377		4,291,434		4,291,562		4,291,983
	4,291,520		4,291,716		4,292,427		4,291,453		4,291,565		4,292,024
	4,291,582		4,291,826		4,292,436		4,291,456		4,291,707		4,292,048
	4,291,641		4,291,866		4,292,447		4,291,728		4,291,709		4,292,108
	4,291,717		4,291,943		4,292,466		4,291,775		4,291,803		4,292,138
	4,291,738		4,291,956		4,292,511		4,291,917		4,291,824		4,292,175
	4,291,925		4,291,957		4,292,512		4,292,066		4,291,865		4,292,184
	4,291,954		4,291,972		4,292,553		4,292,490		4,291,998		4,292,306
	4,291,964		4,292,033		4,292,576	38 :	4,291,524		4,292,013		4,292,463
	4,291,965		4,292,062		4,292,635	39 :	Re.30,749		4,292,041		4,292,469
	4,291,966		4,292,110		4,292,637		4,291,444		4,292,052		4,292,518
	4,291,976		4,292,212		4,292,646		4,291,445		4,292,071		4,292,547
	4,292,124		4,292,281				4,291,516		4,292,083		4,292,588
	4,292,125		4,292,346		4,292,654		4,291,548		4,292,084		4,292,589
	4,292,148		4,292,360				4,291,680		4,292,099		4,292,592
	4,292,160		4,292,530		4,292,672		4,291,737		4,292,155		4,292,671
	4,292,273		4,292,661		4,292,676		4,291,746		4,292,166	49 :	4,291,692
	4,292,296		4,292,674	35 :	4,291,423		4,291,747		4,292,185		4,291,693
	4,292,355	28 :	4,291,847		4,291,988		4,291,761		4,292,189	50 :	4,291,431
	4,292,483		4,292,018		4,292,340		4,291,783		4,292,201		4,291,470
	4,292,546	29 :	4,291,427		4,292,591		4,291,790		4,292,202		4,291,627
	4,292,585		4,291,455	36 :	4,291,439		4,291,813		4,292,208	51 :	4,291,478
	4,292,601		4,291,809		4,291,604		4,291,880		4,292,219		4,291,479
	4,292,620		4,292,027		4,291,610		4,292,015		4,292,220		4,291,545
	4,292,666		4,292,040		4,291,612		4,292,059		4,292,248		4,291,629
	4,292,668		4,292,357		4,291,633		4,292,064		4,292,254		4,291,648
26 :	4,291,450		4,292,396		4,291,634		4,292,105		4,292,347		4,291,653
	4,291,466		4,292,535		4,291,636		4,292,195		4,292,348		4,291,675
	4,291,469	30 :	4,291,678		4,291,646		4,292,197		4,292,379		4,291,711
	4,291,504		4,292,142		4,291,660		4,292,203		4,292,437		4,291,757
	4,291,506	31 :	4,291,666		4,291,687		4,292,215		4,292,496		4,291,777
	4,291,556	32 :	4,291,763		4,291,703		4,292,228		4,292,503		4,291,799
	4,291,563		4,292,627		4,291,748		4,292,231		4,292,558		4,291,939
	4,291,583	33 :	4,291,992		4,291,789		4,292,237		4,292,570		4,292,182
	4,291,584		4,292,622		4,291,798		4,292,240		4,292,604	52 :	4,291,995
	4,291,613	34 :	4,291,482		4,291,807		4,292,287		4,292,605	53 :	4,291,495
	4,291,618		4,291,488		4,291,815		4,292,315		4,292,608		4,291,782
	4,291,750		4,291,574		4,291,822		4,292,365	44 :	4,291,489		4,291,785
	4,291,792		4,291,575		4,291,877		4,292,371		4,291,527		4,291,851
	4,291,795		4,291,603		4,291,882		4,292,372	45 :	4,291,442		4,291,852
	4,291,829		4,291,625		4,291,894		4,292,384		4,291,814		4,291,853
	4,291,833		4,291,642		4,291,913		4,292,420	46 :	4,292,488		4,291,905
	4,291,845		4,291,665		4,291,958		4,292,424	47 :	4,291,449		4,291,968
	4,291,883		4,291,696		4,291,959		4,292,455		4,291,679		4,292,115
	4,291,898		4,291,715		4,291,970		4,292,456		4,292,039		4,292,209
	4,291,911		4,291,776		4,291,974		4,292,472		4,292,093		4,292,475
	4,291,912		4,291,801		4,291,997		4,292,502		4,292,159		4,292,616
	4,291,918		4,291,819		4,292,028		4,292,538		4,292,477	54 :	4,291,616
	4,291,921		4,291,844		4,292,036		4,292,572		4,292,504		4,292,042
	4,291,922		4,291,878		4,292,047		4,292,645		4,292,539	55 :	4,291,460
	4,291,962		4,292,022		4,292,076	40 :	4,291,762	48 :	4,291,425		4,291,493
	4,292,019		4,292,023		4,292,080		4,291,772		4,291,426		4,291,500
	4,292,029		4,292,046		4,292,104		4,291,846		4,291,496		4,291,577
	4,292,139		4,292,087		4,292,106		4,291,886		4,291,551		4,291,689
	4,292,190		4,292,092		4,292,146		4,291,920		4,291,559		4,291,745
	4,292,223		4,292,111		4,292,230		4,292,004		4,291,588		4,291,778
	4,292,224		4,292,164		4,292,310		4,292,165		4,291,597		4,291,808
	4,292,225		4,292,167		4,292,327		4,292,279		4,291,623		4,291,821
	4,292,256		4,292,168		4,292,344		4,292,416		4,291,635		4,291,857
	4,292,267		4,292,170		4,292,383		4,292,450		4,291,677		4,291,874
	4,292,294		4,292,181		4,292,399	41 :	Re.30,750		4,291,722		4,292,179
	4,292,321		4,292,186		4,292,461		4,291,452		4,291,723		4,292,180
	4,292,422		4,292,191		4,292,481		4,291,601		4,291,724		4,292,250
	4,292,425		4,292,193		4,292,528		4,291,664		4,291,764		4,292,271
	4,292,438		4,292,205		4,292,574		4,291,683		4,291,765		4,292,577
	4,292,439		4,292,217		4,292,578		4,291,753		4,291,767		4,292,684
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	4,292,441		4,292,245								

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09 :	261,024		261,008		260,946		261,057	44 :	260,977		261,005
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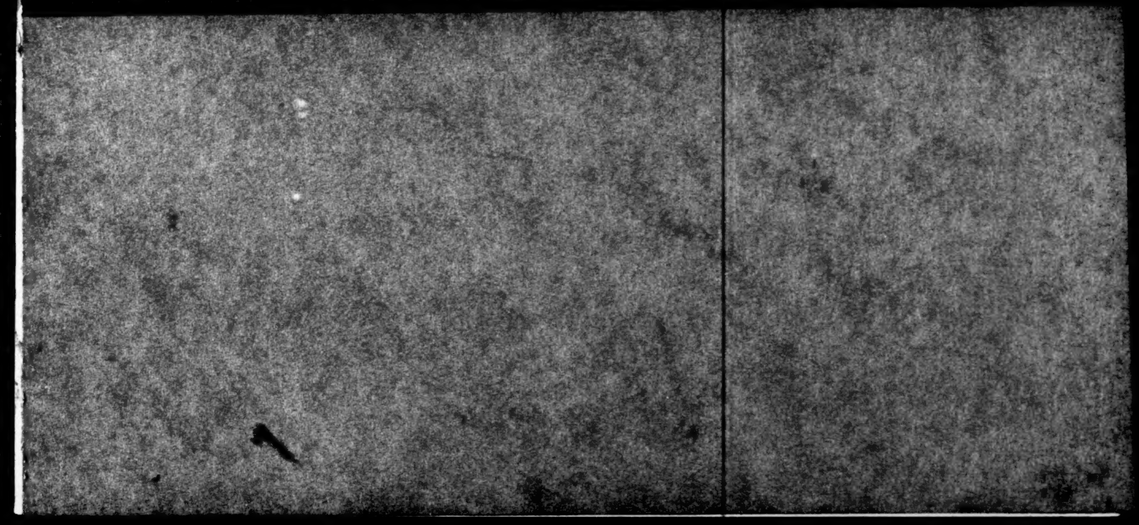
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